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School Lunch Policy and Parental Working Trends

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1 Introduction

The belief that women should specialize in domestic tasks was not challenged until the mid-20th century. At this point, more women sought employment outside of their homes, but they were still expected to complete all their homes' domestic tasks. The provision of lunch for students by schools, whether at cost or free of cost, was a form of lessening the load for working mothers. Having access to food at school allows students to be fed and parents to have more liberty with their time. Although the intention behind school lunch is to benefit students *and* parents, the benefits to parents are seldom outlined. One potential effect is additional free time (Datar & Nicosia, 2012). This effect is especially relevant when it comes to categorizing parents' work in and outside of the home. The question this paper will answer is how the implementation of school lunch programs affects parents' likelihood to work outside of the home, and the number of hours they work.

Previous works can be categorized into three groups: scrutinization of parents for school lunch preparation, the impact of socioeconomic status on the choice to opt in school lunch programs, and the relationship between policies and additional free time. These works provide insight into the factors that could influence school lunch uptake. Parents, but especially mothers, face scrutiny when preparing lunches for their children (Pike & Leahy, 2012). This is heightened when mothers work outside of the home. There is research on socioeconomic status and its impact on school lunch consumption (Cullen, et al., 2009) and on policies that have freed up time for parents (Datar & Nicosia, 2012). These works have found that parents are saving time when they opt for their children to eat school lunch, but they do not address what parents are doing with that additional time.

In this paper, I study the effects of the Healthy, Hunger-Free Kids Act (2010) on school lunch consumption and parental working trends. Using variables from a national survey on poverty rates and measures of income, I created a linear regression equation. This equation enabled me to analyze the effects of the policy on school lunch uptake. I found that after the policy was implemented, school lunch uptake appeared to increase for children of all income brackets. After observing this effect, I analyzed the effect of the policy on parental working trends by varying subpopulations. Most individuals in these subpopulations appeared to decrease both their likelihood of working and the hours they worked after the policy passed. The following sections will provide context and discourse about my findings.

2 Literature Review

2.1 Parent Scrutiny

School lunch is an institution that enables students to be fed and parents to have more liberty with their time. The necessity for additional liberty arises from the time constraints parents face as they juggle their responsibilities, both in and outside of the home. Time constraints affect all parents, but mothers hold more responsibilities. Due to the customary roles assigned to specific genders, mothers are expected to prioritize domestic tasks. One of these tasks is preparing school lunches. However, mothers no longer solely work in the home, they also participate in the labor economy. Even though women are contributing to the economy, they often receive scrutiny for straying away from their socially established role (Pike & Leahy, 2012).

Harman and Capellini (2015) highlight the scrutiny parents face when preparing meals for their children. They researched schools in England that had a mix of children who ate school

lunch and took lunch from home. School lunch was defined as lunch provided by schools, either at cost or free of cost for students. For many parents, the decision to pack lunches did not come from budget constraints, but because the food provided by schools was not of high nutritional value. Other times, it was simply not enough food. These parents turned to prepared foods from grocery stores to pack for their children's lunches, as these were convenient options and more pleasing to children. However, these parents faced high levels of judgment for this choice. The authors explained that packaged foods were chosen to save time, but the amount of time they saved was not expressed. There was not a comparative analysis between the amount of time parents spent preparing lunches when they relied on packaged foods and when they did not. If there was time saved, what parents chose to do with it was also not addressed.

In a paper by Pike and Leahy (2012) the increase in concern for childhood obesity, in relation to school lunch, was touched on. In response to this concern, policymakers mandated teachers to implement lessons about healthy eating at schools. The researchers found the increased attention to educating parents, but especially, mothers striking. They argued that this push to educate parents came from the notion that mothers are to be held responsible for their children's diets. Previously, England and Australia had focused on implementing policies to govern what foods children ate at school. But this is a shift towards policing the foods parents, with an emphasis on mothers, send their children to school with.

An additional example of maternal judgment is the Japanese tradition of obentos, which are easy to eat, appetizing, and cute lunches Japanese mothers are expected to prepare for their children. Anne Allison (1991) studied the relationship between obentos and the social pressure they inflicted on mothers of young children in Japan. She noted that creating these lunches put tremendous pressure on mothers, as they and their children would be judged for the lunches they

created. Furthermore, Allison (1991) argued that obentos perpetuate gender stereotypes among young children. Children witness their mothers create their lunches, and they assume that that is solely their responsibility. Similarly to Pike and Leahy (2012), Allison (1991) discusses the social pressure mothers face when preparing lunches, but not whether their likelihood to work is affected by it.

When deciding how to feed their children, parents are met with social pressure. In many cases, the brunt of this pressure falls on mothers. The quality and quantity of school lunch determines whether it will be eaten, and the level of scrutiny parents will face. Although parents save time when they opt to have their children eat school lunch, they must consider how this choice will be perceived by others, including their own children. This could impact the amount of time parents dedicate to work and domestic tasks.

2.2 Socioeconomic Status Affects the Choice to Participate in a School Lunch Program

Another factor that motivates school lunch consumption is socioeconomic status. There are many programs in place to ensure that children have access to food, regardless of their families' incomes. It is often the case that parents lack the necessary funds to properly feed their children, so they opt to enroll them in school lunch programs. However, even with school lunch policies in place, disparities among children from different socioeconomic backgrounds continue to exist. Cullen, et al. (2009) collected data before and after the implementation of the Texas Public School Nutrition Policy to analyze the connection between school socioeconomic status and student lunch consumption. They collected data in 2001-2002 and 2005-2006, and they found that there had been changes in students' consumption patterns. To study the policy from a socioeconomic lens, they observed one school where average family income was low (low SES),

and another school where it was medium (middle SES). Before the implementation of the policy, students from the low SES school were more likely to consume nutrient-rich lunches than their middle SES counterparts. However, after the policy was implemented, students from the middle SES school were consuming the healthier options their school provided. The researchers argue that this change in consumption from the middle SES students arose after certain unhealthy snacks were made unavailable to students at lunchtime. In this analysis, middle SES students chose to eat school lunch, but the reasoning behind this is not mentioned. This paper tied socioeconomic status to the choice of opting to participate in school lunch, but it failed to mention whether the choice was influenced by parents' need to save time.

Murayama et al. (2017) conducted a study to determine whether there was a connection between nutrient intake of Japanese schoolchildren and their households' incomes. They surveyed 5th-grade children and their parents, as they were old enough to document the foods they ate. Children who were eating better quality foods came from families of high socioeconomic status (high SES). Higher quality food was defined as vegetables and meat, as opposed to carbohydrates. The authors noted that these disparities in food quality were exasperated on days where there was no school lunch, like weekends. In this paper, school lunch was defined as the food provided by the school for children, but it had to be paid for. This paper provides lots of insight into the school lunch program in Japan, but it leaves room to wonder about its potential impact on the labor economy and on time constraints for parents.

The Supplemental Nutrition Assistance Program (SNAP) works, in addition to the National School Lunch Program (NSLP), to combat food insecurity in families with children. Laurito and Schwartz (2019) questioned whether these programs provided sufficient resources to last the entirety of a month. Using data from the National Household Food Acquisition and

Purchase Survey (FoodAPS), they found that children were more likely to purchase school lunch substitutes when they were just days from receiving SNAP benefits. However, this trend did not apply to children in non-SNAP households or children who were not in high school. The trend seen among high school children could be related to the increased stigma they face for participating in these programs, and their own likelihood to work. Laurito and Schwartz (2019) present the parents in this research as reliant on school-provided meals, which would indicate savings in time. Nonetheless, there is no mention of saved time or of a consequent increase in likelihood to work.

The choice to have children partake in school lunch programs is connected to socioeconomic status. This relates closely to the question I pose, as individuals' likelihood and frequency of working are often tied to their socioeconomic status. The use of public assistance, like SNAP, is an important factor to consider because it could potentially be the element that enables low SES individuals to have free time. It is possible that this free time could be used to work more hours.

2.3 Policy can free up time

In the United States, policies have been implemented with the purpose of saving parents time and money, while simultaneously feeding their children. Datar and Nicosia (2012) conducted a study to analyze the relationship between mothers' working status and their children's participation in the National School Lunch Program and the School Breakfast Program. They used data from the Early Childhood Longitudinal Study-Kindergarten Class, which gave them information about school lunch participation and maternal work for a group of children in the US. Commonly, mothers who worked spent less time preparing meals for their children and opted for them to eat lunch provided by their schools, instead. The authors found

this important because the fewer time mothers spent preparing meals, the more hours they could spend working. This is a valuable connection, but it could be supplemented by acknowledging what time constraints would look like for working mothers if the NSLP did not exist.

The program, called Community Eligibility Provision (CEP) works to aid the families at low-income schools to cover their food expenses. In order for a school to qualify, 40% of its population must be eligible for free lunch. Handbury and Moshary (2021) sought to understand how CEP affected parents' spending at grocery stores. Their research indicated that the program did save parents money, but there was no mention of saved time. If all the children at those schools received free lunch, it is likely that their parents would spend less time preparing meals. If there were savings in time, it would be useful to know what they were doing with that time.

Successful policies have the potential of saving time for parents. In order for policies to be successful they must enable changes. For working parents of school-age children, this could mean a change in school lunch quality or increased access to affordable lunch options.

2.4 Healthy Hunger-Free Kids Act (2010)

I will study the impact of the Healthy, Hunger-Free Kids Act on parents' working trends. This policy was signed into law by President Barack Obama in December of 2010. The law allocated 4.5 billion dollars to set and implement new nutritional values for schools. Part of that money enabled the provision of free lunch and child nutrition programs for 5 years. By using census data instead of paper applications, the law allowed more children to have access to free or reduced lunch.

When the law was passed, it was the first time in 30 years that the USDA was able to make real reforms to school nutrition. It created training programs for school lunch providers and audited school districts every three years to ensure they were meeting nutritional standards. The

policy also reduced portion sizes and innovated the outdated “Food Pyramid” model to create the “My Plate” model. Although it made changes to the Original Child Nutrition Act, it was met with backlash and eventually the USDA weakened the ability to enforce the act in December of 2018.

3 Methods and Data

3.1 Survey Background and Data Characteristics

The data I used came from the Integrated Public Use Microdata Series’ (IPUMS) Annual Social and Economic supplement (ASEC) of the Current Population Survey (CPS). This specific supplement provides estimates for poverty rates and measures of income. The CPS is a monthly survey used to measure unemployment in the United States. It was implemented shortly after The Great Depression and is conducted by the US Census Bureau and the Bureau of Labor Statistics. In addition to collecting data about unemployment, the survey collects data on education and demographics of the US population. The CPS is mostly used by researchers who are interested in population-related data, like economists and demographers.

Using this data, I will establish of the effect of the Healthy Hunger-Free Kids Act on school lunch uptake. Then, I will analyze the connection between school lunch quality and trends in parental employment. The hypothesis I propose is that school lunch policy betters the quality of school lunch, and that increase in quality gives parents the assurance that their children are well nourished. Confidence in school lunch quality enables parents to enroll their children in school lunch programs without feeling guilty about not packing their lunches. The time parents save by not packing food is what, I hypothesize, translates into more working hours for parents. It is important to note that in place of a measure for quality, school lunch uptake will be used as a measure of the policy’s success.

To observe similarities and differences among various sub-populations, the data will be divided by specific demographic characteristics. Some of the sub-populations I am interested in observing are low-income individuals, whose household incomes fall below 200% of the Federal Poverty Line; individuals who are not currently married; and women. The study is set up so that all the individuals in these sub-populations are parents. I have chosen to observe these groups because they will likely be the most benefitted by the policy.

I used data from the years 2000 to 2018 and focused on the population between the ages of 18 and 60. This population was chosen because parents of school-age children and employed individuals typically fall within this range. The variables used in my model can be broken down into the following categories: survey characteristics, socioeconomic variables, and school-lunch quality-related. The variables that make up the survey characteristics category are survey year, month, region and division, state, and metropolitan central city status. Survey year is needed because in order to study the effect of the Healthy, Hunger-Free Kids Act on school lunch quality, I need to compare the survey data before and after the policy was implemented. Geographic variables were included to account for region-specific effects.

Socioeconomic variables are important metrics that give information regarding parent demographics, and are necessary to study the policy's potential impact on parents' working trends. The variables I included in this category were Age, Sex, Race, Education, Marital Status, Number of Own Children in Household, Employment Status, Labor Force Status, Usual Hours Worked per Week (last year), Total Family Income, Wage and Salary Income, Welfare (Public Assistance) Income, Total Family Income for replicating official poverty rates, and Official Poverty Rate Cutoff.

The variable categorized as school lunch Quality-related is Number of Children who Ate Complete School Lunch. This variable is also known as school lunch uptake. As mentioned above, this study does not include a measure of school lunch quality. Instead, school lunch uptake is used as a measure of the policy's success, which is connected to increases in quality of school lunch.

3.2 Empirical Specification

$$Y_{irt} = \beta_0 + \beta_1 policypass_t + \beta_2 poverty_{irt} + X_{irt}\beta_3 + \alpha_r + \tau_t + u_{irt} \quad (1)$$

In equation (1), *Y* represents the outcome variable of interest, which will take on multiple identities: *Child Ate School Lunch*, *Work, Hours Worked per Week, Natural Log of Wage,* and *Public Assistance*. These will vary by individual *i* living in region *r* in survey year *t*.

β_0 represents the intercept. The independent variables in this model are *policypass*, which is a binary variable that is equal to 1 if the survey year is after the Healthy, Hunger-Free Kids Act was passed and equal to 0 if the survey year is before its implementation; *poverty*, a binary variable equal to 1 if a household's income was below 200% of the Federal Poverty Line and equal to 0 if a household's income was above 200% of the Federal Poverty Line.

To compile parent demographics into one term, I created the vector *X*, which includes controls for race, age, marital status, education, and a binary variable that was equal to 1 when an individual used public assistance and equal to 0 when they did not. In my sample, age ranges from 18-60; marital status accounts for individuals who are married and with their spouse present, never married, or in a partnership; and education is categorized as high school diploma, some college, and bachelor's degree or higher.

This equation includes region (α_r) and time (τ_t) fixed effects. α_r captures effects that are time invariant and specific to certain regions. τ_t captures annual shocks that affect the entire

nation. The error term in this equation is represented by u, and it accounts for unobserved factors.

4 Results

4.1 Impact on school lunch uptake

Table 1: Summary Statistics

		Count	Mean	Standard Deviation
Panel A: Household Income > 200% of FPL	Child Ate School Lunch	618922	0.6118	0.4873
	Work	618922	0.9005	0.2993
	Hours Worked per Week	557345	41.3559	11.2092
	Wage	526460	58,419.9886	65,657.3033
	Public Assistance	618922	0.0023	0.0479
Panel B: Household Income < 200% of FPL	Child Ate School Lunch	259410	0.7800	0.4143
	Work	259410	0.6834	0.4651
	Hours Worked per Week	177290	37.5439	11.2751
	Wage	161788	18,097.5776	11,324.2104
	Public Assistance	259410	0.0494	0.2166
	Observations	878332		

Table 1 provides descriptive statistics about the outcome variables in my regression. The statistics are divided into two panels, Panel A: Household Income above 200% of the Federal Poverty Line and Panel B: Household income below 200% of the Federal Poverty Line. Individuals who fit in Panel B can be described as low-income. On average, children from low-income households were more likely to eat school lunch than children from wealthier homes.

Table 2: School Lunch Uptake after Policy Passed

VARIABLES	(A) Child Ate School Lunch *All Individuals*	(B) Child Ate School Lunch *Less than or Equal to 200% of Federal Poverty Line*
Policy Passed	0.00275	0.0203***
	(0.00369)	(0.00602)
	(6.43e-05)	(9.67e-05)
Female	0.00162	0.00714***
	(0.00101)	(0.00174)
Married	-0.0750***	-0.0465***
	(0.00158)	(0.00222)
Never Married	-0.00975***	-0.0129***
	(0.00224)	(0.00266)
Partnership, not Married	-0.00209	-0.0143***
	(0.00305)	(0.00376)
Number of own children in household	0.0325***	0.0311***
	(0.000471)	(0.000649)
Constant	0.838***	0.786***
	(0.00577)	(0.00893)
Observations	878,332	259,392
R-squared	0.063	0.034

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 2 above shows the results for two regressions, where the first outcome variable was All Individuals Who Ate School Lunch, and the second was Individuals who Ate School Lunch and whose income was less than or equal to the federal poverty line. In column A, the results indicate that after the Healthy Hunger-Free Kids policy passed, the number of individuals who ate school lunch increased by 0.00275 percentage points. The mean of this variable is 0.6118, so this indicates that school lunch uptake increased by approximately 0.4% for all individuals in the sample.

Column B restricts the sample to those individuals who have household income of less than 200% of the FPL. This restriction enabled me to study the effects of the policy on low-income individuals so I could compare them to the rest of the sample. The results indicate that for those who were below the federal poverty line, there was a larger increase in individuals who ate school lunch of 0.0203 percentage points. Although this is a larger increase, it is still not a large change. In fact, since the mean for this variable is 0.7800, school lunch uptake only increased by about 2%.

4.2 Impact on Parents' Working Trends

Table 3: Parental Working Trends after Policy Passed

VARIABLES	(A) Work *All Individuals*	(B) Work *Low Income*	(C) Hours Worked per Week *All Individuals*	(D) Hours Worked per Week *Low Income*
Policy Passed	-0.0352***	-0.0602***	-0.662***	-1.639***
	(0.00282)	(0.00615)	(0.0922)	(0.187)
Female	-0.188***	-0.261***	-8.069***	-7.064***
	(0.000771)	(0.00178)	(0.0254)	(0.0560)
Married	-0.0681***	-0.229***	-2.096***	-2.358***
	(0.00120)	(0.00226)	(0.0395)	(0.0704)
Never Married	-0.0479***	-0.0197***	-1.583***	-0.536***
	(0.00172)	(0.00272)	(0.0571)	(0.0821)
Partnership, not Married	-0.0277***	-0.0827***	-0.969***	-1.980***
	(0.00233)	(0.00384)	(0.0773)	(0.119)
Number of own children in household	-0.0108***	0.0252***	0.0617***	0.614***
	(0.000360)	(0.000662)	(0.0123)	(0.0210)
Constant	0.933***	0.747***	42.70***	35.90***
	(0.00441)	(0.00911)	(0.146)	(0.282)
Observations	878,332	259,392	734,635	177,276
R-squared	0.104	0.202	0.143	0.125

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

After observing the policy's impact on school lunch consumption, I wanted to understand its impact on the working tendencies of parents. To do so, I ran regressions with different iterations of hours worked as the outcome variables. First, I studied column A, which was individuals' likelihood of working. Then, I looked at how their hours worked per week had been affected in column B. Table 3 shows that, after the policy was passed, all surveyed individuals had decreased their likelihood of working, but this decrease was slightly larger for low-income people. Hours worked per week had also seen a decrease. All individuals in the sample worked approximately half an hour less after the policy was implemented. Low-income people, however, appeared to decrease their weekly hours by about an hour and a half. After studying these initial results, I became interested in the policy's effects on specific demographic groups.

Table 4: Demographics Summary Statistics

		Count	Mean	Standard Deviation
Panel A: Household Income > 200% of FPL	Poverty	618922	528.3197	427.8915
	Age	618922	42.1148	7.6915
	Female	618922	0.5191	0.4996
	High School Diploma	618922	0.2527	0.4346
	Some College, No Degree	618922	0.2981	0.4574
	Bachelor's Degree or Higher	618922	0.3945	0.4887
	White	618922	0.8535	0.3536
	Black	618922	0.0721	0.2586
	Asian	618922	0.0435	0.2039
	Native American	618922	0.0094	0.0965
	Married	618922	0.8666	0.3400
	Never Married	618922	0.0444	0.2059
	Partnership, not Married	618922	0.0212	0.1441

	Number of own children in household	618922	2.0190	0.9653
Panel B: Household Income < 200% of FPL	Poverty	259410	112.5078	56.3789
	Age	259410	38.0531	8.8805
	Female	259410	0.6225	0.4848
	High School Diploma	259410	0.3684	0.4824
	Some College, No Degree	259410	0.2615	0.4394
	Bachelor's Degree or Higher	259410	0.0949	0.2930
	White	259410	0.7663	0.4232
	Black	259410	0.1491	0.3562
	Asian	259410	0.0327	0.1779
	Native American	259410	0.0249	0.1558
	Married	259410	0.5813	0.4933
	Never Married	259410	0.1973	0.3980
	Partnership, not Married	259410	0.0536	0.2251
	Number of own children in household	259410	2.3435	1.3011
	Observations	878332		

Table 4 provides context to interpret the results associated with specific subpopulations. The subpopulations I studied can be categorized using demographic characteristics, like education and marital status. Just as in table 1, these statistics are organized according to socioeconomic status. These statistics can be applied to the following results to give a sense of magnitude.

Table 5: Marital Status and Parental Working Trends after Policy Passed

VARIABLES	(A) Work *Not Currently Married*	(B) Work *Not Currently Married and Low Income*	(C) Hours Worked per Week *Not Currently Married*	(D) Hours Worked per Week *Not Currently Married and Low Income*
Policy Passed	-0.0476***	-0.0421***	-0.861***	-1.275***
	(0.00642)	(0.00914)	(0.186)	(0.265)
Female	-0.0593***	-0.0157***	-3.681***	-3.111***

	(0.00194)	(0.00300)	(0.0560)	(0.0875)
Never Married	-0.0277***	-0.00625**	-0.606***	-0.0930
	(0.00200)	(0.00274)	(0.0586)	(0.0806)
Partnership, not Married	-0.00984***	-0.0272***	0.0173	-1.189***
	(0.00250)	(0.00366)	(0.0732)	(0.111)
Number of own children in household	0.00647***	0.0303***	0.291***	0.808***
	(0.000751)	(0.000977)	(0.0228)	(0.0299)
Constant	0.780***	0.499***	35.93***	29.83***
	(0.00920)	(0.0130)	(0.272)	(0.388)
Observations	191,169	108,599	156,436	76,778
R-squared	0.103	0.269	0.091	0.118

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

One of the subgroups I was interested in was single parents. I restricted the regression to individuals who were not currently married and compared them to the rest of the sample. According to the results in table 5, all individuals who were not currently married decreased their likelihood of working by approximately -0.0476 percentage points. With a mean of When the regression was restricted further for not currently married individuals who were also low income, the decrease in likelihood of working was less negative at -0.0421 percentage points. These two groups showed a different trend in hours worked per week. Individuals who were not currently married displayed a -0.861 hour decrease, but individuals who were not currently married and low income displayed a much larger -1.275 hour decrease.

Table 6: Parental Working Trends after Policy Passed (Restricted to Women)

VARIABLES	(A) Work *Female*	(B) Work *Female and Low Income*	(C) Hours Worked per Week *Female*	(D) Hours Worked per Week *Female and Low Income*
Policy Passed	-0.0513***	-0.0755***	0.327**	-1.209***

	(0.00452)	(0.00827)	(0.138)	(0.258)
Married	-0.111***	-0.314***	-3.159***	-4.309***
	(0.00170)	(0.00278)	(0.0506)	(0.0861)
Never Married	-0.0415***	-0.00638*	-1.584***	-0.326***
	(0.00245)	(0.00329)	(0.0737)	(0.0970)
Partnership, not Married	-0.0188***	-0.0392***	-0.00302	-1.406***
	(0.00383)	(0.00519)	(0.116)	(0.160)
Number of own children in household	-0.0315***	0.00892***	-0.680***	0.302***
	(0.000576)	(0.000906)	(0.0188)	(0.0300)
Constant	0.746***	0.513***	37.57***	30.04***
	(0.00689)	(0.0120)	(0.214)	(0.380)
Observations	482,734	161,465	364,142	96,656
R-squared	0.073	0.195	0.034	0.072

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A particularly important group I was interested in observing was women, as in a previous study by Datar and Nicosia (2012) women appeared to increase the amount of time they spent working in response to a school lunch policy. I was surprised to find that my results do not align with the findings from that study. All the women in the sample decreased their likelihood of working by -0.0513 percentage points, and women who were low income displayed a larger decrease of -0.0755 percentage points. Low-income women also decreased their weekly hours by about -1.209 hours. With a mean of 0.6225, low-income women's decrease in hours was about a 194% drop. The only increase in hours worked per week was seen in women who were not classified as low income, and it was approximately 0.327 hours. The mean for this subpopulation was 0.5191, which implies a 63% increase in hours worked.

4.3 Impact on Natural Log of Wage and Public Assistance

Table 7: Natural Log of Wage and Public Assistance after Policy Passed

VARIABLES	(A) Natural Log of Wage	(B) Natural Log of Wage *Low Income*	(C) Public Assistance	(D) Public Assistance *Low Income*
Policy Passed	0.465***	0.522***	-0.0143***	-0.0480***
	(0.00737)	(0.0145)	(0.000993)	(0.00309)
Married	-0.170***	-0.382***	-0.0388***	-0.0517***
	(0.00315)	(0.00547)	(0.000423)	(0.00114)
Never Married	-0.194***	-0.0412***	0.0240***	0.0156***
	(0.00453)	(0.00628)	(0.000603)	(0.00137)
Partnership, not Married	-0.153***	-0.364***	-0.0458***	-0.0683***
	(0.00614)	(0.00914)	(0.000820)	(0.00193)
Number of own children in household	0.0405***	0.127***	0.00550***	0.00714***
	(0.000987)	(0.00164)	(0.000127)	(0.000333)
Constant	9.389***	8.019***	0.0771***	0.185***
	(0.0117)	(0.0218)	(0.00155)	(0.00458)
Observations	688,248	161,777	878,332	259,392
R-squared	0.399	0.354	0.050	0.071

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Since likelihood of working and hours worked per week appeared to decrease virtually across the board, I became curious about potential changes in wages after the policy was implemented. Once again, I modified the original regression and set the new output variable to the natural log of wage. The results from this regression, depicted in table 5, showed that the natural log of wage had increased for all individuals, but slightly more for low-income individuals. In another iteration of the regression, with Public Assistance as the outcome variable, it appeared that low-income individuals had decrease their use of public assistance by -0.0480 percentage points.

5 Discussion

After the Healthy, Hunger-Free Kids policy passed, there appeared to be an increase in the number of children who ate school lunch, but this did not translate into an increase in work or

hours worked for parents. This was especially prevalent in low-income individuals. It is possible that the policy led schools to provide better quality lunches for students, and this enabled parents to spend less on groceries, as was the case in the paper by Handbury and Moshary (2021). However, it could also be that these trends were residual effects of The Great Recession of 2007-2009. Since the policy was implemented at a time of economic recovery, the results from this study could be skewed to indicate that the policy had a great impact on parental working trends.

When I restricted the regression to only women, I found that women decreased both their likelihood of working and their weekly hours worked by more than all individuals. This finding is somewhat alarming because according to an article by Kalleburg and Wachter (2017), "employment of both men and women decreased during the Great Recession, but the drop was especially sharp among men" (Kalleburg & Wachter, 2017). Perhaps the results in my study were affected by the trends that occurred as the economy gained jobs:

> between February 2010 and June 2014, men gained 5.5 million jobs while women gained 3.6 million jobs. This recovery differs from [previous] recoveries from recessions, as this was the first time since 1970 in which men have gained more jobs than women in the first two years of a recovery. That the unemployment rates for men have fallen but risen for women underscores the unique nature of the current recovery… (Kalleburg & Wachter, 2017)

Since school lunch uptake was increasing while the likelihood of working and hours worked for women was decreasing, this raises the question of what they could have been doing with that spare time. Some possibilities are doing household tasks, looking for work, or spending quality time with their children. According to table 7, wage appeared to increase and the number of

people who used public assistance appeared to decrease. In response to this, some women may have used their additional time for leisure.

6 Conclusion

This paper demonstrates that the Healthy, Hunger-Free Kids act did lead to an increase in the number of children who ate school lunch. Whether this effect was due to increased quality standards, increased access, or any other number of factors was not examined. The conducted study indicates that after the policy was passed, many individuals decreased the amount of time they spent working. On average, hours worked per week decreased by a little more than half an hour.

There are a few limitations to this study. One of which is that there are potential confounding external factors that are not accounted for by the identification strategy used, such as recovery from the Great Recession. Also, this paper aimed to address how parents divided the time they saved as an effect of the policy, but I did not study time-use data. There are infinite ways parents could have spent their time, especially because the time they spent working decreased. Future studies could pose the research question addressed in this paper, but with a greater focus on parental time usage data. Different policies from less tumultuous time periods could also be studied.

Appendix

Table 1: Summary Statistics

		Count	Mean	Standard Deviation
Panel A: Household Income > 200% of FPL	Child Ate School Lunch	618922	0.6118	0.4873
	Work	618922	0.9005	0.2993
	Hours Worked per Week	557345	41.3559	11.2092
	Income	526460	58,419.9886	65,657.3033
	Public Assistance	618922	0.0023	0.0479
Panel B: Household Income < 200% of FPL	Child Ate School Lunch	259410	0.7800	0.4143
	Work	259410	0.6834	0.4651
	Hours Worked per Week	177290	37.5439	11.2751
	Income	161788	18,097.5776	11,324.2104
	Public Assistance	259410	0.0494	0.2166
	Observations	878332		

Table 2: School Lunch Uptake after Policy Passed

VARIABLES	(A) All Individuals	(B) Less than or Equal to Federal Poverty Line
Policy Passed	0.00275	0.0203***
	(0.00369)	(0.00602)
Poverty	-5.95e-05***	-0.000214***
	(1.36e-06)	(1.51e-05)
Age	-0.00185***	-0.000230**
	(6.43e-05)	(9.67e-05)
Female	0.00162	0.00714***
	(0.00101)	(0.00174)
High School Diploma	-0.0674***	-0.0427***
	(0.00170)	(0.00205)
Some College, No Degree	-0.101***	-0.0658***
	(0.00172)	(0.00225)
Bachelor's Degree or Higher	-0.175***	-0.163***
	(0.00180)	(0.00308)
White	-0.0461***	-0.0160***
	(0.00329)	(0.00499)
Black	0.00874**	0.0279***
	(0.00365)	(0.00540)
Asian	-0.0548***	-0.0427***
	(0.00406)	(0.00662)
Native American	0.0136***	0.0314***
	(0.00526)	(0.00707)
Married	-0.0750***	-0.0465***
	(0.00158)	(0.00222)
Never Married	-0.00975***	-0.0129***
	(0.00224)	(0.00266)
Partnership, not Married	-0.00209	-0.0143***
	(0.00305)	(0.00376)
Number of own children in household	0.0325***	0.0311***
	(0.000471)	(0.000649)
Constant	0.838***	0.786***
	(0.00577)	(0.00893)
Observations	878,332	259,392
R-squared	0.063	0.034

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Parental Working Trends after Policy Passed

VARIABLES	(A) Work *All Individuals*	(B) Work *Low Income*	(C) Hours Worked per Week *All Individuals*	(D) Hours Worked per Week *Low Income*
Policy Passed	-0.0352***	-0.0602***	-0.662***	-1.639***
	(0.00282)	(0.00615)	(0.0922)	(0.187)
Poverty	9.67e-05***	0.00290***	0.00312***	0.0382***
	(1.04e-06)	(1.54e-05)	(3.38e-05)	(0.000527)
Age	-0.00112***	-0.00418***	0.0220***	0.0119***
	(4.92e-05)	(9.87e-05)	(0.00165)	(0.00316)
Female	-0.188***	-0.261***	-8.069***	-7.064***
	(0.000771)	(0.00178)	(0.0254)	(0.0560)
High School Diploma	0.108***	0.0323***	1.213***	0.313***
	(0.00130)	(0.00210)	(0.0457)	(0.0660)
Some College, No Degree	0.143***	0.0451***	1.255***	-0.195***
	(0.00131)	(0.00230)	(0.0459)	(0.0716)
Bachelor's Degree and Beyond	0.157***	0.0426***	1.834***	-0.432***
	(0.00137)	(0.00314)	(0.0474)	(0.0968)
White	0.0153***	0.0204***	-0.285***	0.124
	(0.00251)	(0.00509)	(0.0836)	(0.158)
Black	0.0189***	0.0283***	0.200**	0.686***
	(0.00279)	(0.00552)	(0.0929)	(0.172)
Asian	-0.0180***	0.0301***	-0.306***	1.015***
	(0.00310)	(0.00675)	(0.103)	(0.211)
Native American	-0.0268***	-0.00508	-0.159	0.396*
	(0.00402)	(0.00721)	(0.136)	(0.225)
Married	-0.0681***	-0.229***	-2.096***	-2.358***
	(0.00120)	(0.00226)	(0.0395)	(0.0704)
Never Married	-0.0479***	-0.0197***	-1.583***	-0.536***
	(0.00172)	(0.00272)	(0.0571)	(0.0821)
Partnership, not Married	-0.0277***	-0.0827***	-0.969***	-1.980***
	(0.00233)	(0.00384)	(0.0773)	(0.119)
Number of own children in household	-0.0108***	0.0252***	0.0617***	0.614***
	(0.000360)	(0.000662)	(0.0123)	(0.0210)
Constant	0.933***	0.747***	42.70***	35.90***
	(0.00441)	(0.00911)	(0.146)	(0.282)
Observations	878,332	259,392	734,635	177,276
R-squared	0.104	0.202	0.143	0.125

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Demographics Summary Statistics

		Count	Mean	Standard Deviation
Panel A: Household Income > 200% of FPL	Poverty	618922	528.3197	427.8915
	Age	618922	42.1148	7.6915
	Female	618922	0.5191	0.4996
	High School Diploma	618922	0.2527	0.4346
	Some College, No Degree	618922	0.2981	0.4574
	Bachelor's Degree or Higher	618922	0.3945	0.4887
	White	618922	0.8535	0.3536
	Black	618922	0.0721	0.2586
	Asian	618922	0.0435	0.2039
	Native American	618922	0.0094	0.0965
	Married	618922	0.8666	0.3400
	Never Married	618922	0.0444	0.2059
	Partnership, not Married	618922	0.0212	0.1441
	Number of own children in household	618922	2.0190	0.9653
Panel B: Household Income < 200% of FPL	Poverty	259410	112.5078	56.3789
	Age	259410	38.0531	8.8805
	Female	259410	0.6225	0.4848
	High School Diploma	259410	0.3684	0.4824
	Some College, No Degree	259410	0.2615	0.4394
	Bachelor's Degree or Higher	259410	0.0949	0.2930
	White	259410	0.7663	0.4232
	Black	259410	0.1491	0.3562
	Asian	259410	0.0327	0.1779
	Native American	259410	0.0249	0.1558
	Married	259410	0.5813	0.4933
	Never Married	259410	0.1973	0.3980
	Partnership, not Married	259410	0.0536	0.2251
	Number of own children in household	259410	2.3435	1.3011
	Observations	878332		

Table 5: Marital Status and Parental Working Trends after Policy Passed

VARIABLES	(A) Work *Not Currently Married*	(B) Work *Not Currently Married and Low Income*	(C) Hours Worked per Week *Not Currently Married*	(D) Hours Worked per Week *Not Currently Married and Low Income*
Policy Passed	-0.0476***	-0.0421***	-0.861***	-1.275***
	(0.00642)	(0.00914)	(0.186)	(0.265)
Poverty	0.000298***	0.00385***	0.00635***	0.0597***
	(3.24e-06)	(2.08e-05)	(9.00e-05)	(0.000701)
Age	-0.00244***	-0.00617***	0.0653***	0.00939**
	(0.000101)	(0.000140)	(0.00306)	(0.00436)
Female	-0.0593***	-0.0157***	-3.681***	-3.111***
	(0.00194)	(0.00300)	(0.0560)	(0.0875)
High School Diploma	0.121***	0.0440***	1.225***	-0.0802
	(0.00252)	(0.00312)	(0.0790)	(0.0960)
Some College, No Degree	0.154***	0.0393***	1.272***	-0.927***
	(0.00257)	(0.00332)	(0.0801)	(0.101)
Bachelor's Degree and Beyond	0.180***	0.0510***	1.983***	-1.465***
	(0.00312)	(0.00514)	(0.0932)	(0.151)
White	0.0270***	0.0165**	0.141	0.136
	(0.00523)	(0.00730)	(0.155)	(0.218)
Black	0.00222	0.00554	0.115	0.542**
	(0.00555)	(0.00768)	(0.165)	(0.229)
Asian	-0.00840	-0.0197*	-0.316	0.151
	(0.00756)	(0.0111)	(0.224)	(0.334)
Native American	-0.0390***	-0.00661	-0.338	0.609**
	(0.00742)	(0.00981)	(0.224)	(0.295)
Never Married	-0.0277***	-0.00625**	-0.606***	-0.0930
	(0.00200)	(0.00274)	(0.0586)	(0.0806)
Partnership, not Married	-0.00984***	-0.0272***	0.0173	-1.189***
	(0.00250)	(0.00366)	(0.0732)	(0.111)
Number of own children in household	0.00647***	0.0303***	0.291***	0.808***
	(0.000751)	(0.000977)	(0.0228)	(0.0299)
Constant	0.780***	0.499***	35.93***	29.83***
	(0.00920)	(0.0130)	(0.272)	(0.388)
Observations	191,169	108,599	156,436	76,778
R-squared	0.103	0.269	0.091	0.118

Table 6: Parental Working Trends after Policy Passed (Restricted to Women)

VARIABLES	(A) Work *Female*	(B) Work *Female and Low Income*	(C) Hours Worked per Week *Female*	(D) Hours Worked per Week *Female and Low Income*
Policy Passed	-0.0513***	-0.0755***	0.327**	-1.209***
	(0.00452)	(0.00827)	(0.138)	(0.258)
Poverty	0.000120***	0.00318***	0.00278***	0.0494***
	(1.71e-06)	(2.07e-05)	(5.29e-05)	(0.000724)
Age	-0.000179**	-0.00349***	0.0318***	0.00412
	(7.94e-05)	(0.000135)	(0.00251)	(0.00445)
High School Diploma	0.164***	0.0670***	0.531***	-0.410***
	(0.00211)	(0.00288)	(0.0731)	(0.0965)
Some College, No Degree	0.216***	0.0854***	0.207***	-1.340***
	(0.00209)	(0.00307)	(0.0719)	(0.0997)
Bachelor's Degree and Beyond	0.232***	0.0750***	0.782***	-2.402***
	(0.00222)	(0.00429)	(0.0750)	(0.138)
White	0.00174	0.00195	-1.445***	-0.734***
	(0.00397)	(0.00685)	(0.123)	(0.218)
Black	0.0339***	0.0329***	0.295**	0.624***
	(0.00438)	(0.00735)	(0.135)	(0.232)
Asian	-0.0401***	0.0348***	0.0568	1.239***
	(0.00492)	(0.00925)	(0.153)	(0.297)
Native American	-0.0222***	0.00760	-0.274	0.700**
	(0.00629)	(0.00968)	(0.197)	(0.306)
Married	-0.111***	-0.314***	-3.159***	-4.309***
	(0.00170)	(0.00278)	(0.0506)	(0.0861)
Never Married	-0.0415***	-0.00638*	-1.584***	-0.326***
	(0.00245)	(0.00329)	(0.0737)	(0.0970)
Partnership, not Married	-0.0188***	-0.0392***	-0.00302	-1.406***
	(0.00383)	(0.00519)	(0.116)	(0.160)
Number of own children in household	-0.0315***	0.00892***	-0.680***	0.302***
	(0.000576)	(0.000906)	(0.0188)	(0.0300)
Constant	0.746***	0.513***	37.57***	30.04***
	(0.00689)	(0.0120)	(0.214)	(0.380)
Observations	482,734	161,465	364,142	96,656
R-squared	0.073	0.195	0.034	0.072

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Natural Log of Wage and Public Assistance after Policy Passed

VARIABLES	(A) Natural Log of Wage	(B) Natural Log of Wage *Low Income*	(C) Public Assistance	(D) Public Assistance *Low Income*
Policy Passed	0.465***	0.522***	-0.0143***	-0.0480***
	(0.00737)	(0.0145)	(0.000993)	(0.00309)
Poverty	0.00103***	0.0102***	-9.41e-06***	-0.000445***
	(2.73e-06)	(4.22e-05)	(3.64e-07)	(7.74e-06)
Age	0.00595***	0.00185***	-0.000137***	-0.000237***
	(0.000132)	(0.000246)	(1.73e-05)	(4.96e-05)
Female	-0.682***	-0.542***	0.0142***	0.0338***
	(0.00203)	(0.00437)	(0.000271)	(0.000895)
High School Diploma	0.286***	0.00245	-0.0172***	-0.00916***
	(0.00368)	(0.00512)	(0.000458)	(0.00105)
Some College, No Degree	0.408***	-0.0349***	-0.0223***	-0.0123***
	(0.00369)	(0.00557)	(0.000461)	(0.00115)
Bachelor's Degree and Beyond	0.662***	-0.0330***	-0.0249***	-0.0269***
	(0.00382)	(0.00761)	(0.000483)	(0.00158)
White	0.0325***	0.0380***	-0.00794***	-0.0180***
	(0.00668)	(0.0122)	(0.000883)	(0.00256)
Black	0.0390***	0.104***	0.0103***	0.0128***
	(0.00740)	(0.0132)	(0.000982)	(0.00277)
Asian	0.0384***	0.0858***	-0.00957***	-0.0266***
	(0.00826)	(0.0164)	(0.00109)	(0.00339)
Native American	-0.0729***	0.0126	0.0194***	0.0189***
	(0.0108)	(0.0173)	(0.00141)	(0.00363)
Married	-0.170***	-0.382***	-0.0388***	-0.0517***
	(0.00315)	(0.00547)	(0.000423)	(0.00114)
Never Married	-0.194***	-0.0412***	0.0240***	0.0156***
	(0.00453)	(0.00628)	(0.000603)	(0.00137)
Partnership, not Married	-0.153***	-0.364***	-0.0458***	-0.0683***
	(0.00614)	(0.00914)	(0.000820)	(0.00193)
Number of own children in household	0.0405***	0.127***	0.00550***	0.00714***
	(0.000987)	(0.00164)	(0.000127)	(0.000333)
Constant	9.389***	8.019***	0.0771***	0.185***
	(0.0117)	(0.0218)	(0.00155)	(0.00458)
Observations	688,248	161,777	878,332	259,392
R-squared	0.399	0.354	0.050	0.071

Data is from IPUMS CPS for the years 2010-2018 Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table Notes: All tables with regression results, i.e., not summary statistics, controlled for Education, race, age, and poverty and sex.

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