The Impact of Electronic Benefit Transfer on WIC Participation: Evidence from Natality Data

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Introduction

- The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutritious foods and nutrition counseling for low-income pregnant or postpartum women, infants, and children under the age of five.
- Between 2002 and 2022, WIC transitioned from paper vouchers to electronic benefit transfer (EBT) cards. This payment reform was expected to encourage WIC participation by reducing transaction costs and welfare stigma.
- Empirical evidence to date that tests the effects of WIC EBT on participation shows mixed findings: Hanks et al. (2019) : WIC EBT increases WIC redemptions in Ohio; Li, Saitone and Sexton (2022): no significant impact of WIC EBT on the share of WIC enrollment in Oklahoma; Meckel (2020): WIC EBT decreases the number of WIC births in Texas.
- A common feature of previous work is a focus on an individual state and a shorter-run time period.

Research Question

- In this paper, we evaluate the impact of WIC EBT implementation on WIC participation nationwide by linking the WIC EBT roll-out schedule to natality data across virtually all counties in the U.S.

Data

Restricted-use Vital Statistics Natality Data 2009-2021:

- This data set starts reporting WIC status of mothers from 2009. It also provide birth level information such as year of birth, gestation length, and maternal characteristics such as age, educational attainment, and marital status. We collapse the birth-level natality data to county-of-maternal-residence-by-year-of-birth cells to make the sample size more manageable.
- We show that maternal characteristics are consistent with those of women of productive age from CPS ASEC.

Table 1: Comparing Natality Data and Current Population Survey Annual Social and Economic Supplements (CPS ASEC)

	Full Sample			WIC Participants		
	Natality Data	CPS ASEC	Mean Difference	Natality Data	CPS ASEC	Mean Difference
Race and Ethnicity						
Share of Black	16.20%	15.71%	0.49%	23.82%	22.23%	1.59%
Share of Hispanics	23.93%	21.45%	2.48%	36.45%	33.74%	2.71%
Educational Achievement						
Education < High School	14.47%	19.64%	-5.17%	25.79%	22.67%	3.12%
Education ≥ College	31.44%	28.40%	3.04%	7.09%	10.78%	-3.69%
Census Region of Residence						
Northeast	14.76%	17.03%	-2.27%	13.19%	13.61%	-0.42%
Midwest	21.93%	20.57%	1.39%	19.59%	20.46%	-0.87%
West	24.42%	24.11%	0.31%	24.83%	25.85%	-1.02%
Share of WIC Participants	39.97%	6.23%				
Observations	43,143,609	408,193		17,243,567	27,182	

Data (Cont'd)

WIC EBT Roll-out

- We compile the WIC EBT rollout schedule across virtually all counties in the U.S. from public record of state WIC agencies.
- We regress year of WIC EBT implementation on the likely related county baseline characteristics from 2006-2009. We find that, even though some county baseline characteristics are strongly correlated with timing of EBT implementation, most variation in EBT implementation timing is explained by state-level unobservable. Therefore, WIC EBT roll-out can be considered as plausibly exogenous after controlling for these baseline characteristics.

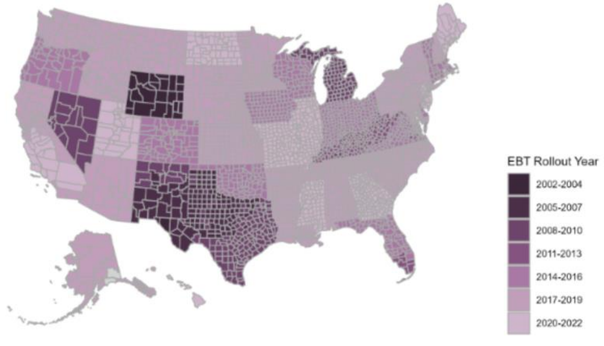


Figure 5: WIC EBT Roll-out Schedule

Methods

- We first report results from the following baseline TWFE estimator with county fixed effect and year fixed effect and use Goodman-bacon decomposition to examine its potential bias (Goodman-Bacon, 2021).
- Our main empirical estimates are staggered DD estimators from Callaway and Sant' Anna 2021. We compare shares of WIC births in counties that implemented WIC EBT with counties that have not yet implemented WIC EBT.
- $ATT(g,t;X) = E\left[Y_t - Y_{g-1} \middle| X, G_g = 1\right] - E\left[Y_t - Y_{g-1} \middle| X, G_g = 0, D_t = 0\right]$
- where g is the period counties first got treated, t is time, X is a vector of covariates, Y_t and Y_{g-1}denote the potential outcome in time t and $g-1$, G_g is equal to 1 if county is first treated in period g , D_t is equal to 1 if county is treated in period t.

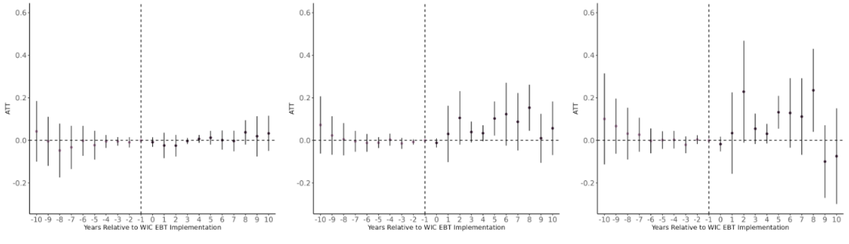
Results

- We find that TWFE estimator substantially underestimates treatment effects due to the forbidden comparison problem.
- With Callaway-Sant'Ana estimator, we document a significant increase in WIC participation among births that are more likely eligible for WIC: after the implementation of EBT, WIC participation among the births of less educated and unmarried mothers increases by 9.18%, and by 14.82% if the mothers are also black or Hispanic.

Table 4: Impacts of WIC EBT on Share of WIC Births

	Share of WIC Births					
	All Births		LEUM Births		LEUM × Black/Hisp.	
	(1)	(2)	(3)	(4)	(5)	(6)
Born after EBT	0.0082*	-0.0154	0.0239***	0.0918**	0.0229**	0.1482**
	(0.0043)	(0.0229)	(0.0089)	(0.039)	(0.0124)	(0.0657)
Baseline Characteristics		✓		✓		✓
Observations	21,047	20,956	7,722	7,709	3,549	3,549
Dep. Var. Mean (DVM)	0.4316	0.4321	0.7362	0.7363	0.7415	0.7415
%(ATT/DVM)	1.90%	-3.56%	3.25%	12.47%	3.09%	19.99%

- Event study plots based on Callaway-Sant'Anna estimator show no discernible pre-trends.



(d) All Births, with Controlling for County Baseline Characteristics

(e) LEUM Births, with Controlling for County Baseline Characteristics

(f) LEUM × Black/Hispanic, with Controlling for County Baseline Characteristics

Figure 6: Dynamic Effects of WIC EBT on Share of WIC Births

Reference

- *Hanks, Andrew S, Carolyn Gunther, Dean Lillard, and Robert L Scharff. 2019. "From paper to plastic: understanding the impact of eWIC on WIC recipient behavior." Food Policy, 83: 83–91.*
- *Li, Xuemei, Tina L Saitone, and Richard J Sexton. 2022. "Impacts of Electronic Benefit Transfer on the Women, Infants and Children Program: Evidence from Oklahoma." Journal of Agricultural and Resource Economics, 47(2): 373–389.*
- *Meckel, Katherine. 2020. "Is the cure worse than the disease? unintended effects of payment reform in a quantity-based transfer program." American Economic Review, 110(6): 1821–1865.*