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The Effects of Refundable and Nonrefundable State Earned Income Tax Credit Programs on Health of Mothers of Two or More Children

Haobing Qian, MPH, MS [a], George L. Wehby, MPH, PhD [a,b,c,d,e,*]

[a] Department of Health Management and Policy, College of Public Health, University of Iowa, Iowa City, Iowa
[b] Department of Economics, University of Iowa, Iowa City, Iowa
[c] Department of Preventive & Community Dentistry, College of Dentistry and Dental Clinics, University of Iowa, Iowa City, Iowa
[d] Public Policy Center, University of Iowa, Iowa City, Iowa
[e] National Bureau of Economic Research, Cambridge, Massachusetts

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A B S T R A C T

Background: More than one-half of U.S. states have enacted Earned Income Tax Credit (EITC) programs. Yet little is known about the effects of state EITC programs on the health of recipients. This study examines the effects of refundable and nonrefundable state EITC programs on the health of single low-educated women of childbearing age with two or more children, the group receiving the highest credits on average.

Methods: The data come from the Behavioral Risk Factors Surveillance Survey from 1993 through 2018. Outcomes include self-rated general health, days not in good physical health, and days not in good mental health, both in the past 30 days. The research design accounts for time-invariant differences between states, national trends shared across states, and other state policies.

Results: Depending on the outcome measure, the analytical sample ranges between 103,362 and 107,782 mothers. Refundable state EITC programs are associated with improvements in all three health outcomes. A 10 percentage-point increase in refundable state EITC is associated with better self-rated health by 0.02 points (95% confidence interval [CI], 0.006–0.04) on a 1- to 5-point scale, or 0.7% improvement above the sample mean; 0.2 fewer days not in good physical health (95% CI, −0.21 to −0.12) in the past 30 days, or 4.4% lower than the sample mean; and 0.2 fewer days not in good mental health (95% CI, −0.29 to −0.1), or 3.4% lower than the sample mean. Estimates for nonrefundable EITC programs are smaller and not statistically significant. As expected, there are small and statistically insignificant refundable EITC effects for single low-educated childless women who receive low state EITC benefits on average.

Conclusions: These findings suggest that an increase in refundable state EITC improves the health of single women of childbearing age with low incomes and two or more children; this factor may also lead to better preconception health. There is no evidence for effects from nonrefundable state EITC.

The Earned Income Tax Credit (EITC) is one of the largest federal antipoverty programs in the United States. Some states have also introduced their own EITC programs (beginning in 1988). As of 2020, 28 states plus Washington, DC, had effective EITC programs (Urban Institute, 2020). States differ on credit levels and on whether they refund credits that exceed income tax liability. Most states offer smaller credits than the federal EITC, but follow federal eligibility rules and offer credits as a percentage of the federal credit (Center on Budget and Policy Priorities, 2020). In most states and years, state credits have been well below 50% of federal EITC (Tax Policy Center, 2020).

Little is known about whether and how the smaller state EITCs (compared with the federal EITC) affect the health of single low-income mothers who benefit the most from the EITC.

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* Correspondence to: George L. Wehby, MPH, PhD, Professor and the John W. Colloton Chair, University of Iowa Department of Health Management and Policy, Research Associate, National Bureau of Economic Research, 145 N. Riverside Dr., 100 College of Public Health Bldg., Room N250, Iowa City, Iowa 52242-2007. Phone: 319-384-3814; fax: 319-384-4371.
E-mail address: george-wehby@uiowa.edu (G.L. Wehby).

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Moreover, less understood is how any effects might vary between refundable and nonrefundable credits. There is clearer evidence for improvement in maternal health with federal EITC expansions, likely driven by the larger income changes and increased employment. Studies have reported the federal EITC to be associated with better physical and mental maternal health, reduced smoking and marijuana use, greater use of prenatal care visits, and lower levels of biomarkers associated with inflammation during pregnancy (Averett & Wang, 2013; Boyd-Swan, Herbst, Ifcher, & Zarghamee, 2016; Cowan & Tefft, 2012; Evans & Garthwaite, 2014; Rehkopf, Strully, & Dow, 2014). In contrast, evidence on effects of state EITC alone (not combined with federal EITC benefits) on maternal health and possible heterogeneity by generosity and refundability is sparse. One study finds decreases in days not in good mental health for low-educated married mothers in states with an EITC, but not for single mothers (Gangopadhyaya, Blavin, Braga, & Gates, 2020). That study, however, did not separate mothers of one child from mothers of two or more children, who receive markedly higher credit levels, nor did it examine differences between refundable and nonrefundable EITCs. Evidence on state EITC effects on maternal health behaviors during pregnancy is also mixed. One study found more prenatal care visits and less maternal smoking during pregnancy in states with EITC between 1980 and 2002 (Strully, Rehkopf, & Xuan, 2010). However, another study using data from 1994 to 2013 found little evidence for such effects (Markowitz, Komro, Livingston, Lenhart, & Wagenaar, 2017). In addition, and in contrast with the federal EITC, there is little evidence that state EITCs affect maternal employment (Baughman & Duchovny, 2016; Cancian & Levinson, 2005; Kleven, 2019), suggesting that the effects on health, if any, would mainly result from income changes. In sum, there is yet little direct evidence specific to the effects of state EITC programs on general health outcomes of low-income mothers, especially on health at any time (during or outside pregnancy) and considering potential heterogeneity by EITC generosity and refundability.

In this study, we examine the effects of refundable and nonrefundable state EITC programs on the general health outcomes of low-educated single mothers of two or more children, the group who receives the highest EITC benefits on average using nationally representative survey data from 1993 through 2018. Our study makes several contributions. We study a longer window of changes in states enacting EITC and changing credit levels than prior studies. Over this period, the number of states with refundable EITC increased from 3 states in tax year 1992 to 23 states plus Washington, DC, in tax year 2017. Furthermore, the average refundable credit level across states has fluctuated between 16% and 31% of federal credit over the study years (Supplementary Table S1), indicating extensive changes in refundable state EITC programs. There are also some smaller changes in nonrefundable EITC programs, with two to five states offering such programs each year. Second, we estimate the effects of a relatively small income change on general maternal health outcomes, regardless of pregnancy status. The literature documents effects of federal EITC expansions with larger income changes (and possibly employment changes) on maternal health outcomes, but there is yet little direct evidence specific to the smaller state EITC benefits, which are approximately 20%–30% of the federal EITC on average. Another contribution is separately examining effects of changes in refundable and nonrefundable state EITC programs. Little is known about whether tax credits differentially affect health outcomes of low-income mothers depending on whether they are refundable or not. In refundable programs, the individual receives a cash return if the credit exceeds income tax liability. In contrast, nonrefundable credits decrease or eliminate tax liability and, therefore, may not be beneficial for very poor families who owe little or no income tax (Johnson, 2001). Furthermore, refundable credits were higher on average than nonrefundable credits in the study sample (as described elsewhere in this article), which can further lead to a difference in their effects. However, nonrefundable EITC programs have been little investigated and deserve a separate assessment, despite the prior hypothesis that they would have either no effect or smaller effect than refundable EITC, especially because many low-income families qualify for nonrefundable EITC in the states with such programs and benefit from a reduction in income tax liability (as shown elsewhere in this article). Therefore, it is important to provide evidence on both refundable and nonrefundable EITC programs.

Methods

Data and Sample

We use data from the Behavioral Risk Factors Surveillance System (BRFSS) from 1993 through 2018 for U.S. states and Washington, DC. The BRFSS is an annual survey of a nationally representative sample available from the Centers for Disease Control and Prevention (BRFSS, Annual Survey Data, 2020). It collects data on health outcomes, risk factors, and health behaviors of the U.S. population. The dataset is de-identified and publicly available; therefore, the study was not reviewed by the institutional review board.

The main analytical sample for our study includes single low-educated (high school degree or less) mothers of two or more children because they receive the largest EITC credit on average, as described elsewhere in this article. In a second sample, we include married low-educated mothers with two or more children, who receive smaller EITC credits on average. We focus on women aged 18–44 years because of the additional implications for preconception health and effects on children's health.

We examine three self-reported health outcomes. The first is general health rating on a five-category scale from excellent to poor, which we code into a 5-point measure with 1 for excellent, 2 for very good, 3 for good, 4 for fair, and 5 for poor. The two other outcomes are number of days in the past 30 days not in good physical health and number of days in the past 30 days not in good mental health. Depending on the outcome, the analytical sample ranges between 103,362 (for days not in good physical health) and 107,782 (for self-rated general health) women. Supplementary Table S2 shows the distribution of these outcomes in the analytical sample.

To capture state EITC generosity, the EITC measure is the state EITC level as a percentage of the federal credit (explained in detail elsewhere in this article). We include two separate EITC measures, one for states with refundable EITC and another for states with nonrefundable EITC. Information on state EITC programs come from National Bureau of Economic Research for tax years before 2000 (National Bureau of Economic Research, 2019) and from the Urban-Brookings Tax Policy Center for tax years 2000 through 2017 (Tax Policy Center, 2020). We code Washington as a no EITC state because it introduced an EITC in 2009 that was not implemented (owing to a lack of funds), and exclude Maryland, which began offering a refundable EITC in tax year 1987 but switched in 1998 to a mixed approach offering

beneficiaries the choice between refundable or nonrefundable credits (at different levels).

Estimation

We estimate the effects of refundable and nonrefundable state EITC programs using a two-way fixed effects regression model with state and year fixed effects. This model is generally similar to a classical difference-in-differences model, but allows for modelling the differences in the timing of EITC enactment and generosity across states, because states started their EITC programs in different years and differ in their credit levels. The model accounts for time-invariant heterogeneity between states and national time trends shared across states. This model uses within-state variation in EITC changes, comparing each state with changes to other states with no EITC changes over the same period to account for period effects and derive the EITC effect. This two-way fixed effect model is the approach used by multiple prior studies examining the effects of state EITC alone (e.g., Strully et al., 2010; Markowitz et al., 2017; Gangopadhyaya et al., 2020). We first estimate the following model:

$$Y_{ist} = \beta_1 \text{REFUND\_EITC}_{s(t-m)} + \beta_2 \text{NOREFUND\_EITC}_{s(t-m)} + \beta_3 X_{ist} + \theta_s + \lambda_t + \varepsilon_{ist} \quad (1)$$

where Y_{ist} is one of the three health outcomes for mother i in state s in survey year t and $\text{REFUND\_EITC}_{s(t-m)}$ is the refundable state EITC as a percent of federal EITC in tax year t–m; this variable is 0 for states without EITC or states with nonrefundable EITC. $\text{NOREFUND\_EITC}_{s(t-m)}$ is the nonrefundable state EITC as a percent of federal EITC in tax year t–m, which is 0 for states without EITC or states with a refundable EITC. These measures reflect the generosity of a state's EITC program, not the exact credit that each mother would receive. Therefore, the EITC measures are exogenous to individual characteristics of mothers in the sample. Each state determines its credit amount by setting a fixed percentage of the federal credit amount regardless of the individual's income and number of children. This percentage is the measure we use, and it is equivalent to using maximum state EITC amounts or dividing the maximum state EITC amount by the maximum federal EITC amount. Such measures have been used in prior studies (e.g., Gangopadhyaya et al., 2020; Strully et al., 2010).

The tax year is lagged by m years because health outcomes are measured at the time of the survey or within the past month and because individuals receive in survey year t the credit from the prior tax year. The lag is assigned based on the survey interview month. The majority of EITC refunds are received during February (Lalumia, 2013). To allow for at least 2 months for income effects on health, we use April as the cutoff month to lag the tax year by 1 ($m = 1$) or 2 ($m = 2$) years. For interview months May through December, we lag the tax year by 1 year ($m = 1$); in that case, we expect the EITC credit received in year t (based on tax year t-1) to affect health outcomes in year t. In contrast, the tax year is lagged by 2 years ($m = 2$) for interview months before May (in which case the EITC credit received in year t–1 from tax year t–2 could affect health outcomes measured in January through April of year t). Nearly one-third of the analytical sample is interviewed in January through April, and the rest in May through December. As a robustness check, we estimate the model only for mothers interviewed in May through December. X_{ist} includes individual-specific demographic characteristics including 0/1 indicators for age categories (18–24, 25–29, 30–34, 35–39, or 40–44 years), education level (high school or less), race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, or other race/ethnicity), and three or more children versus two (owing to higher credits for families of three or more children beginning in 2009). Descriptive statistics of these demographic controls are in Supplementary Table S2. Also included are 0/1 variables for month of survey. θ_s is state fixed effects, which capture time-invariant differences between states, such as demographic or economic differences, that are stable over time. λ_t is survey year fixed effects to account for effects from national events shared between states such as federal EITC changes.

One limitation of model (1) is not accounting for potential state time-varying confounders, such as other economic policies that impact health. To check for the relevance of this issue, we estimate a second model that adds multiple state time-varying policy controls in γ_{st} as follows:

$$Y_{ist} = \beta_1 \text{REFUND\_EITC}_{s(t-m)} + \beta_2 \text{NOREFUND\_EITC}_{s(t-m)} + \beta_3 X_{ist} + \beta_4 \gamma_{st} + \theta_s + \lambda_t + \varepsilon_{ist} \quad (2)$$

We include two indicators for whether the state had implemented the cash assistance programs Aid to Families with Dependent Children (AFDC) or Temporary Assistance for Needy Families (TANF) in a given year (the AFDC indicator is switched to 0 when states replace it with TANF), and the maximum state AFDC/TANF monthly payment for a family of 3. Data on state AFDC waivers, year when a state enacted TANF, and the maximum monthly payment are from the University of Kentucky Center for Poverty Research (University of Kentucky Center for Poverty Research National Welfare Data, 2020). Also included are the state's monthly minimum wage (matched to year and month of survey) using the effective real minimum wage in the state obtained from Bureau of Labor statistics (US Department of Labor Wage and Hour Division, 2020), cigarette tax rates (Tax Policy Center, 2020), and Medicaid parental eligibility as a percentage of the federal poverty level (Hamersma & Kim, 2009; Kaiser Family Foundation, 2020). For Medicaid eligibility level, data were available to us from 1996 and after, so we impute the 1993 to 1995 levels based on the 1996 level. We show the

estimates from these two alternate regression specifications (to gauge the extent to which further controlling for potential state-specific time confounders affects the results, as a way of inferring possible remaining bias). All models are estimated using weighted least squares with the BRFSS sampling probability weights. Standard errors are clustered at the state level. We consider the regression estimates to be statistically significant at a p value of less than .05. Regression analyses were done using Stata/SE version 15.1 (StataCorp, College Station, TX).

To describe the average EITC benefits in the study sample and compare to other groups, we use the National Bureau of Economic Research's TAXSIM program (Version 32) (Feenberg & Coutts, 1993). TAXSIM simulates the EITC each individual in the sample would receive based on state of residence, tax year, household income level (midpoints of income ranges reported in the BRFSS), marital status, age, and number of children under 18 as input variables. For TAXSIM, we include age during the year before the survey; BRFSS reports age in rages in 2013 and after, so we use the midpoints of these ranges. TAXSIM calculations are only approximate and we use them as descriptive information to evaluate average EITC benefits in the sample. From TAXSIM, we also obtain approximate net state income tax liability for each individual based on the same variables.

Results

Description of State EITC Benefits

Table 1 shows averages of TAXSIM simulations of state EITC benefits and net state income tax liability over tax years 1992–2017 for the main study sample, single low-educated 18- to 44-year-old mothers of two or more children. These simulations are for mothers living in states with EITC programs. Eighty-eight percent of the sample living in states with refundable EITC was eligible for EITC, with an average credit of $593 (2018 dollars) among recipients. Average net state income tax liability for this group was –$328, indicating that on average, the group received more than one-half of the credit back in cash. For sample mothers in states with nonrefundable EITC, more than three-quarters (79%) were eligible for EITC, and the average credit among recipients was $261 (2018 dollars). Furthermore, the average state income tax liability among recipients of nonrefundable EITC over this period was positive ($230), indicating that on average, nonrefundable EITC lowered income tax liability in this group by the full credit amount, and that a large proportion of the study sample in nonrefundable EITC states could benefit from a decrease in income tax liability. This finding further underscores the importance of understanding the effects of nonrefundable tax credits for this group.

Table 1
Average State EITC Benefits and Net State Income Tax Liability Among EITC Recipients for Single Low-Educated Mothers of Two or More Children, Age 18–44, in BRFSS, Tax Years 1992–2017

Simulated EITC Benefits and Income Tax Liability	States with Refundable EITC Programs	States with Nonrefundable EITC Programs
Proportion receiving state EITC	0.88	0.79
Average state EITC among recipients (2018 dollars)	$593	$261
Average state EITC including nonrecipients (2018 dollars)	$520	$208
State income tax liability among EITC recipients (2018 dollars)	$−328	$230

Abbreviations: BRFSS, Behavioral Risk Factors Surveillance System; EITC, Earned Income Tax Credit.
Note: Averages of simulations of state EITC benefits and net state income tax liability for mothers in the study analytical sample living in states with EITC. The simulations are from TAXISM.

Supplementary Table S3 shows the averages of simulated state EITC benefits for other groups of low-educated women in the total BRFSS sample over the same period, including married mothers of two or more children, single mothers of one child only, and single childless women. The average EITC benefits for those groups were smaller than benefits for single low-educated mothers of two or more children. For example, 78% of single low-educated mothers of one child only qualify for a refundable credit, but the average credit among recipients was $344, or 58% of that for mothers of two or more children. A smaller proportion of married low-educated mothers of two or more children is eligible for refundable EITC compared with single mothers (72% vs. 88%) and the average credit among recipients is also smaller. Benefits were lowest and near 0 on average (when including nonrecipients) among childless women.

Summary of State EITC Changes Over Tax Years 1992–2017

The survey period of 1993–2018 covering the 1992–2017 tax years had numerous changes in state EITC programs. Supplementary Table S1 shows the number of states with EITC programs by refundability and generosity over this period. In tax year 1992 (1993 BRFSS interview year), only five states had their own EITC compared with 27 states plus Washington, DC, in tax year 2017 (2018 BRFSS interview year). The majority of states enacted refundable EITC programs, beginning with three states in tax year 1992 and up to 21 states plus Washington, DC, in tax year 2017. Several states also changed their credit levels over time (Supplementary Figures S1 and S2). Of the states with refundable EITC in tax year 2017, 12 plus Washington, DC, increased their credit levels over the study period, three decreased their credit levels, and six kept the same credit levels. Similarly, of the three states with nonrefundable EITC in tax year 2017, one had increased its credit level, and two kept the same credit levels. Furthermore, two states switched from a nonrefundable to a refundable EITC and one state from a refundable to a nonrefundable EITC over this period. The empirical models described in this article capture these changes to estimate the effects of refundable and nonrefundable EITC levels on maternal health.

Effects of Refundable and Nonrefundable State EITC Programs

Table 2 shows the estimated effects of refundable and nonrefundable state EITC levels on health outcomes of low-educated (high school or less) reproductive-age single mothers of at least two children from the regression specifications described above. The first and third columns show the estimates for refundable and nonrefundable credits (respectively) from the same regression based on the first specification (Equation 1). The second and fourth columns show estimates from the regression adding the state policy controls (Equation 2). We present estimates as effects of a 10-percentage point increase in state credit as a percent of federal EITC credit. Because refundable credits were on average higher than nonrefundable credits in this sample (as shown elsewhere in this article) and resulted in a net cash refund, we expect refundable EITC to have stronger effects on health than nonrefundable EITC.

Table 2
Effects of a 10-Percentage Point Increase in Refundable or Nonrefundable State EITC on Health of Single Low-Educated Mothers of Two or More Children, Age 18–44, 1993–2018 BRFSS

Health Outcomes, Regression Control Variables	Refundable EITC		Nonrefundable EITC		Outcome Mean
General health (five-category scale from 1 as excellent to 5 as poor)	−0.02*	−0.02*	0.02	0.02	2.7
	(0.007)	(0.008)	(0.01)	(0.01)	
No. of days not in good physical health in past 30 days	−0.16*	−0.2*	0.02	0.03	3.6
	(0.03)	(0.02)	(0.09)	(0.1)	
No. of days not in good mental health in past 30 days	−0.2*	−0.2*	0.1	0.1	5.9
	(0.05)	(0.05)	(0.2)	(0.2)	
Demographic controls + state fixed effects + year fixed effects	Yes	Yes	Yes	Yes	
State-level controls	No	Yes	No	Yes	

Abbreviations: BRFSS, Behavioral Risk Factors Surveillance System; EITC, Earned Income Tax Credit.
Note: Each cell represents the effect of a 10-percentage point increase in refundable or nonrefundable state EITCs (relative to federal credits) in tax year t-1 for interview months May through December and in tax year t-2 for interview month January through April on a health outcome in year t using BRFSS survey years 1993–2018. The model includes two separate EITC variables, the refundable or nonrefundable percentage of federal credit (states with no EITC have 0s on both variables). The state EITC as a percentage of the federal credit is a fixed percentage determined by each state regardless of an individual's income and number of children, and represents the generosity of the state EITC. This measure is essentially equivalent to using maximum state EITC amounts or dividing the maximum state ETIC amounts by the maximum federal EITC amounts. The demographic controls include indicators for maternal age, an indicator for mothers of three or more children versus mothers of two children only, race/ethnicity, education, and state and year fixed effects. State-level controls include state minimum wage, cigarette tax, Aid to Families with Dependent Children or Temporary Assistance for Needy Families status, maximum state Aid to Families with Dependent Children or Temporary Assistance for Needy Families monthly payment for a family of three, and Medicaid parental eligibility as percent of the federal poverty level. The regression is estimated using weighted least squares using BRFSS sampling weights; standard errors are clustered at state level and shown in parentheses.
* $p < .01$.

In both specifications, a refundable EITC is associated with a statistically significant improvement in self-reported health and decline in days not in good physical health or not in good mental health. The estimates are similar between the two specifications with or without state policy controls. A 10-percentage point increase in refundable state EITC credits is associated with better general health by 0.02 points (95% confidence interval [CI], 0.006–0.040) on the 1- to 5-point scale (0.7% improvement above the sample mean) in both specifications. Also, there are 0.2 fewer days (95% CI, −0.21 to −0.12) not in good physical health in the past 30 days (4.4% lower than the sample mean), and 0.2 fewer days (95% CI, −0.29 to −0.1) not in good mental health in the past 30 days (3.4% lower than the sample mean) in both specifications. In contrast, a nonrefundable EITC has a smaller and statistically insignificant effects compared with refundable credits in either specification. Results are similar when we only include mothers interviewed between May and December, for whom the effective state EITC tax year is the prior calendar year (Supplementary Table S4). When adding married low-educated mothers of two or more children, we observe overall similar results, with smaller estimates for effects of refundable credits on self-rated health and days not in good physical health (Supplementary Table S5), consistent with the smaller EITC amounts on average for married mothers.

Placebo Check

As a check of the model's validity, we estimate the effects of refundable and nonrefundable state EITCs on health outcomes of single low-educated (with a high school degree or less) childless women who receive very little EITC on average ($33 refundable credits and $5.20 nonrefundable credits in 2018 dollars on average including nonrecipients, Supplementary Table S3). Therefore, we expect null effects of state EITC on their health. We estimate the same models discussed elsewhere in this article for this group (Table 3). There is no evidence that a refundable EITC improves the health outcomes for this group. Most estimates are small and statistically insignificant. There is a statistically significant decrease

Table 3
Effects of a 10-Percentage Point Increase in Refundable or Nonrefundable State EITC on Health of Single Low-Educated Childless Women, Age 18–44, 1993–2018 BRFSS

Health Outcomes, Regression Control Variables	Refundable EITC		Nonrefundable EITC		Outcome Mean
General health (five-category scale from 1 as excellent to 5 as poor)	−0.007	−0.005	0.08*	0.08*	2.6
	(0.009)	(0.008)	(0.03)	(0.03)	
No. of days not in good physical health in past 30 days	−0.02	−0.007	0.02	0.02	3.7
	(0.03)	(0.02)	(0.09)	(0.09)	
No. of days not in good mental health in past 30 days	−0.1*	−0.02	−0.2	−0.2	6.1
	(0.03)	(0.03)	(0.2)	(0.2)	
Demographic controls + state fixed effects + year fixed effects	Yes	Yes	Yes	Yes	
State-level controls	No	Yes	No	Yes	

Abbreviations: BRFSS, Behavioral Risk Factors Surveillance System; EITC, Earned Income Tax Credit.
Note: Each cell represents the effect of a 10-percentage point increase in refundable or nonrefundable state EITCs (relative to federal credits) in tax year t-1 for interview months May through December and in tax year t-2 for interview month January through April on a health outcome in year t using BRFSS survey years 1993–2018. The model includes two separate EITC variables, the refundable or nonrefundable percentage of federal credit (states with no EITC have 0s on both variables). The state EITC as a percentage of the federal credit is a fixed percentage determined by each state regardless of individual's income and number of children, and represents the generosity of the state EITC. This measure is essentially equivalent to using maximum state EITC amounts or dividing the maximum state ETIC amounts by the maximum federal EITC amounts. The demographic controls include indicators for age, race/ethnicity, education, and state and year fixed effects. State-level controls include state minimum wage, cigarette tax, Aid to Families with Dependent Children or Temporary Assistance for Needy Families status, maximum state Aid to Families with Dependent Children or Temporary Assistance for Needy Families monthly payment for a family of 3, and Medicaid parental eligibility as percent of federal poverty level. The regression is estimated using weighted least squares using BRFSS sampling weights; standard errors are clustered at the state level and shown in parentheses.
* $p < .05$.

in days not in good mental health with refundable EITC, but the estimate becomes small and statistically insignificant when adding state policy controls. There is a statistically significant decrease in general health with a nonrefundable EITC in this group, possibly owing to some confounding. As a whole, these results support the estimation model and results for refundable EITC for single low-educated mothers.

Discussion

This study adds to the limited literature about effects of state EITC programs on the health status of the group of mothers most affected by these programs, low-educated mothers of two or more children. It also fills a gap in knowledge about the likely differential effects of refundable and nonrefundable state EITC programs on general health in this group of mothers. We examined the effects of refundable and nonrefundable state EITC programs on general health outcomes of single low-educated 18- to 44-year-old mothers of two or more children and evaluated changes in state EITC programs and their generosity over 26 years. We find that a refundable state EITC is associated with improvements in self-reported general health and decreases in days not in good physical health or not in good mental health. The estimates are robust to controlling for conceptually relevant state time-varying policies. We find no evidence for effects on health from nonrefundable credits, consistent with the prior hypothesis given their smaller amounts on average compared with refundable credits in this sample. This effect heterogeneity highlights the need to separate refundable and nonrefundable programs when studying state EITC programs.

Our study provides novel and complementary evidence to prior studies that have examined state EITC effects separately, and our results are generally in line with the literature in terms of finding broad benefits from state EITC. By focusing on the group most likely to benefit from state EITC, single low-educated mothers of two of more children, and separating refundable and nonrefundable credits, our study finds benefits from refundable EITC to both physical and mental health. Using BRFSS data and focusing on mental health, Gangopadhyaya et al. (2020) found no effects of state EITC on days not in good mental health of low-educated single mothers, although they found improvement for low-educated married mothers. Their sample, however, included mothers of one child only (who receive smaller EITC credits on average than mothers of two or more children) and combined refundable and nonrefundable state EITC (the latter we find to have no effect), which might account for the difference in our findings for this outcome.

Our study has two main limitations. The study provides intent-to-treat effect estimates, meaning that they represent the average policy effect for a population group, not the effect for those who actually received the EITC. However, the intent-to-treat estimate is useful for understanding the average effect for a low-income population group largely affected by this policy. A second limitation is the possibility of remaining state-level time-varying confounders. As noted, we estimate the model with and without multiple conceptually relevant state policy controls and find similar results, suggesting little confounding bias from such policies. An alternative design might compare single low-educated mothers of two or more children to those with only one child (generally similar to a difference-in-difference-in-differences design). However, single low-educated mothers with one child receive on average more than half the state EITC amount received by mothers of two or more children. Therefore, such an alternative approach does not allow for estimating the full state EITC effects for single low-educated mothers with two or more children. Moreover, because state EITC credits are small, the difference between mothers of one child and two or more children is even smaller. For this reason, this design has been the main design for estimating the effects of federal EITC expansions but not for estimating effects of state EITC expansions. The difference in credits for families with one child and two or more children is much greater for federal EITC; for example, in 2018, the maximum federal EITC credit is $6431 for three or more children, $5828 for two children, and $3461 for one child. Similarly, one could consider including low-educated childless women as a control group. Such an approach would have to assume that, in the absence of state EITC programs, trends in health outcomes (before a state enacts EITC) are similar in this group to those of single low-educated mothers, which might be a strong assumption. Instead, we examine effects on single low-educated childless women as a placebo check, and find no evidence that refundable state EITC programs improve their health.

Implications for Practices and/or Policy

By improving general health among mothers of childbearing age, refundable and more generous state EITC programs also improve preconception health that might in turn improve fetal and child health. In that way, our results suggest preconception health as a pathway to explain reported decreases in low birth weight in states with EITC but little evidence of changes in prenatal behaviors, such as prenatal care use and smoking. The findings also add to growing research evidence that small to moderate income changes such as those from state EITC may have meaningful health effects in low-income households. The findings highlight possibilities for future research to examine the channels through which refundable state EITC programs affect health status in this population.

Conclusion

Our study examines the effects of refundable and nonrefundable state EITC programs on health of single low-educated mothers of two or more children, the group receiving the highest credits on average. Using a research design akin to difference-in-differences and data from 1993 to 2018, we find refundable state EITC programs are associated with improvements in self-rated health, fewer days not in good physical health, and fewer days not in good mental health in the past 30 days. Estimates for nonrefundable EITC programs are smaller and statistically insignificant. Our findings suggest more generous refundable state EITC programs improve the health of single women of childbearing age with low incomes and two or more children; this may also lead to better preconception health.

Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.whi.2021.04.004.

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Author Descriptions

Haobing Qian, MPH, MS, is with the Department of Health Management and Policy, College of Public Health, University of Iowa. Research interests include health economics, socioeconomic determinants of health based on econometric analyses, safety net programs and health of underserved populations, racial/geographic disparities in health, and maternal and child health.

George Wehby, MPH, PhD, is with the Department of Health Management and Policy, College of Public Health, University of Iowa, and the National Bureau of Economic Research. Research interests include effects of income support policies on maternal and child health, effects of insurance expansions on health and access, and social and economic determinants of health.