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EFFECTS OF THE EXPANSION OF THE EARNED INCOME TAX CREDIT FOR
CHILDLESS YOUNG ADULTS ON MATERIAL WELLBEING

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Working Paper 32571
<http://www.nber.org/papers/w32571>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
June 2024

Lee and Wimer are grateful for research funding from The JPB Foundation and the Annie E. Casey Foundation. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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Material Wellbeing

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NBER Working Paper No. 32571

June 2024

JEL No. H20,I32,J08

ABSTRACT

In 2021, the U.S. Congress temporarily expanded the Earned Income Tax Credit for workers without a qualifying child (childless EITC), to help counteract the impact of the COVID-19 pandemic on lower-wage working adults. This expansion roughly tripled the maximum benefits for qualifying filers and lowered the minimum age to claim the credit from 25 to 19, providing new benefits to low-income young adults. Using data from the Census Bureau's Household Pulse Survey and a difference-in-differences design, this study is among the first to examine the impact of the expanded childless EITC on young adults' material hardship (food, housing, and expenses). We find that the temporary expansion led to a significant decrease in housing hardship among low-income, childless, young adults, and suggestive evidence that it also reduced food insufficiency and difficulty with expenses. Overall our findings show that the temporary expansion of the childless EITC helped reduce material hardship among young adults.

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1. Introduction

In March 2021, Congress passed the American Rescue Plan (ARP), which temporarily expanded several income support policies designed to buffer the social and economic effects of the COVID-19 pandemic. One such policy was a one-year expansion of the Earned Income Tax Credit (EITC) for workers without a qualifying child (i.e., a child who lives with them for more than half of the year and that they financially support; hereafter referred to as the “childless EITC”). The temporary expansion roughly tripled the maximum value of the childless EITC (from about \$500 to \$1500), raised the income cap below which filers could claim the credit (from about \$16,000 to \$21,000), and, importantly for our study, temporarily allowed those ages 19-24 to claim the credit.¹ This reform increased the benefits of roughly 17.4 million workers with low wages, including approximately 11 million individuals who became newly eligible for the credit (Marr et al., 2022). Like other components of the ARP, the childless EITC expansion was not made permanent, and the policy reverted to its pre-pandemic parameters in the 2022 tax year.

These reforms were potentially very important for young childless adults ages 19-24, who became newly eligible for the credit due to the temporary expansion. Young adults experience high poverty levels stemming from fewer labor market opportunities, declining real annual earnings, and high living costs (Bialik & Fry, 2019; Sum & McLaughlin, 2011). One in five young adults aged under 25 live in poverty (Wimer et al., 2020) and this population has experienced declining labor force participation, from 77% in 1994 to 71% in 2023 (US Bureau of Labor Statistics, 2023). Despite being at high risk of economic insecurity, government tax and

¹ One exception to this age reduction is that full-time college students younger than 24 remained ineligible for the childless EITC, as their parents can generally claim them as qualifying children for their own EITC. The expansion also temporarily allowed those aged 65 and over to also be eligible for the credit.

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transfer programs have largely excluded childless young adults from receiving benefits. Against this backdrop, the expanded childless EITC has the potential to reduce the chances of experiencing material hardship for this vulnerable population.

To date, we know little about the impact of the temporary expansion to the childless EITC. In fact, although many studies consider the effect of the EITC on families with children, there is almost no research on the impacts of the childless EITC, even though it was first implemented in 1993, more than 30 years ago. This paper seeks to fill this gap, examining the effect of the childless EITC on the material hardships experienced by young adults. Using a difference-in-differences design, we exploit the fact that working adults aged 19-24 were made temporarily eligible for the credit in the 2021 tax year, comparing their incidence of hardship to their slightly older peers (25-34 year olds). Although the generosity of the childless EITC increased for all eligible adults in 2021, as we will illustrate, 19-24 year olds experienced a larger relative increase in benefits compared to those aged 25-34. Using the Census Bureau's Household Pulse Survey (Pulse), we examine the impacts of the ARP expansion on three measures of material hardship: food insufficiency, difficulty with routine expenses, and not being caught up on housing payments, capturing multiple dimensions of disadvantage faced by low- and moderate-income individuals and families (Neckerman et al., 2016).

We find that the ARP expansion led to a decrease in the incidence of housing hardship (not being caught up with rent or mortgage payments) among 19-24 year olds with low incomes, relative to their peers aged 25-34 in the year that the expansion was in place. Specifically, the expanded childless EITC is associated with a statistically significant 3.2 percentage point decrease in housing hardship (equivalent to a 28% reduction) among young adults aged 19-24 with household income less than \$25,000 relative to adults aged 25-34 in the same income

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bracket. Although we find some evidence of a decline in food insufficiency and difficulty with expenses associated with the childless EITC expansion, our estimates do not attain statistical significance. Our results are robust across a series of alternative specifications, robustness checks, and placebo tests, providing further evidence that our results are due to a causal impact of the expended childless EITC, and not the result of a spurious correlation.

These findings shed light on the impacts of a cash transfer program on a population that has historically been excluded from many social programs and for whom there is little prior research. Since the EITC's inception, childless workers ages 19-24 have been ineligible for the benefit and are the only group taxed further into poverty by the tax code (Llobrera, 2021). As we will show, this group also experiences similar rates of material hardship as their 25-34 year old peers, and our results suggest that they are made better off by being included in the EITC. Extending eligibility to these young adults increases the likelihood that they are caught up on their rent or mortgage, improving their housing stability, which is highly related to long-term well-being measures like physical and mental health (Desmond & Kimbro, 2015; Marçal 2024; Meltzer & Schwartz, 2016).

2. Background

The EITC

The EITC was initially implemented in 1975 as a temporary credit (made permanent in 1978) intended to offset payroll tax contributions for low-income parents. Since then, the EITC has undergone several expansions, and in 1993, under the Omnibus Budget Reconciliation Act (OBRA), a small credit was included for workers without qualifying children.² This credit was

²Although the EITC for households without qualifying children is typically referred to as the “childless EITC,” many of these filers have biological children, but cannot, or do not, claim them on their taxes. A tax filer is considered “childless” for tax purposes if they either have no dependents under the age of 19 (or 24 if a full-time

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intended to help offset a gasoline tax that was also implemented as part of OBRA 93 (Crandall-Hollick & Hughes, 2018). When it was first implemented, the maximum credit for childless workers was \$323, and although it has been adjusted for inflation over time, no other changes have been made since its inception (Crandall-Hollick & Hughes, 2018). In addition to the federal EITC, 31 states provide their own EITCs, typically structured as a percentage of the federal credit (ranging from 3% to 100%; Tax Policy Center, 2022), making childless filers eligible for a state EITC as well.³

The EITC is fully refundable, meaning that households can receive the credit in the form of a tax refund even if they have no tax liability. A taxpayer's EITC is based on a formula that considers earned income, number of qualifying children, marital status, and adjusted gross income. The benefit schedule of the EITC is trapezoidal in structure, where benefits phase in up to a threshold, remain constant over some values of income (referred to as the "plateau"), and then phase out for earnings beyond a second threshold. As of 2020, the maximum credit for childless workers was \$538 (roughly 15% of the maximum credit for workers with one qualifying child, \$3,584).

The 2021 expansion to the childless EITC as part of the ARP was meant to address several of the limitations of the childless EITC's benefit structure. The legislation temporarily increased the rate at which the credit phased in (and phased out) from 7.65% to 15.3% (see Figure 1). The expansion nearly tripled the maximum amount of the credit from \$538 to \$1,502. The expansion also increased the income level at which the credit entirely phases out from \$15,820 to \$21,410

student) or if they do not meet the residency requirements to claim a qualifying child (i.e., if the tax filer is a noncustodial parent or if they do not reside in the household with the child at least half of the year). In tiebreaker cases, where more than one filer meets the criteria to claim the qualifying child, the parent is entitled to claim the child if the other filer is a non-parental caregiver. If both filers are the parents of the qualifying child, the parent with the higher adjusted gross income is entitled to claim the child.

³ This is with one exception; Wisconsin only provides a state EITC for filers with qualifying children.

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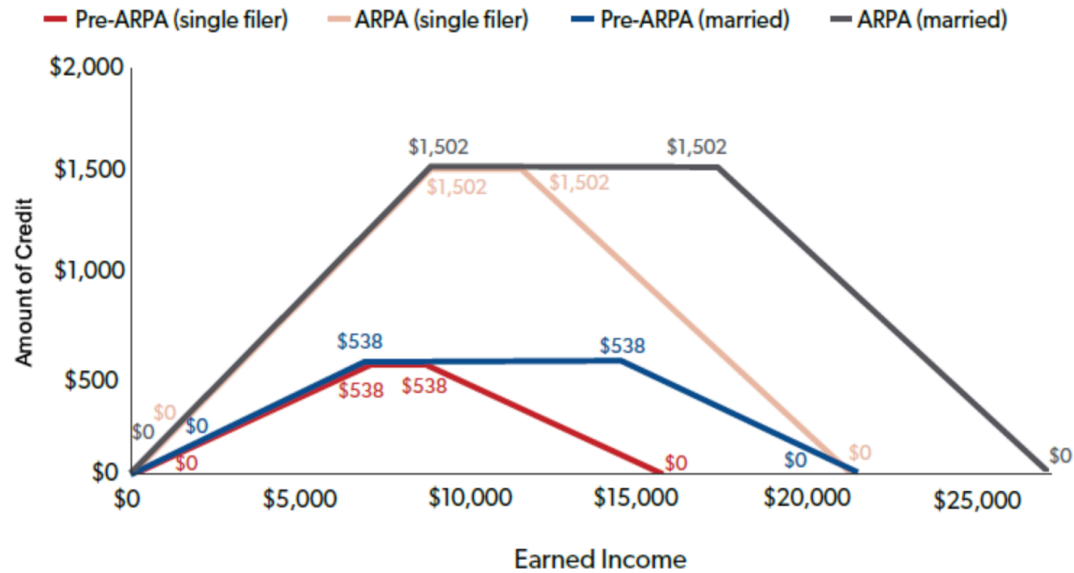
(from \$21,720 to \$27,380 for married joint filers) (Internal Revenue Service, 2023). Finally, and important for our specification, the legislation reduced the minimum age of eligibility from 25 to 19 for tax filers who were not in school at least part time.⁴ Tax filers over the age of 65 were also temporarily eligible to claim the childless EITC. Because of the increased income limit and expanded age range, eligibility for the childless EITC expanded greatly, with estimates suggesting that nearly 11 million workers without qualifying children became newly eligible for the credit in the 2021 tax year (Marr et al., 2022). The ARP expansion also increased the benefit amount available for childless filers in the 31 states that had their own EITCs in place at the time.⁵ This federal EITC expansion, however, was only in effect for one year, and the EITC parameters reverted to the pre-ARP level with the previous age requirements, once again excluding the childless workers aged 19-24 and those over 65 for tax year 2022.

Figure 1. Childless Earned Income Tax Credit: Pre-ARP and ARP

⁴ For students who are in school part time the minimum age was reduced from 25 to 24, and for former foster care children, or homeless youth, the minimum age was reduced from 25 to 18.

⁵ The maximum refundable EITC a childless adult could receive for the 2021 tax year ranged from \$1,502 to \$3,004, depending on the state. Additionally, several states had already expanded the childless EITC benefits prior to the ARP expansion, by reducing the minimum age to claim the credit, increasing its size, and adjusting income eligibility limits. As of tax year 2022, California, Colorado, Maine, Maryland, Minnesota, New Jersey, and New Mexico had reduced the minimum age at which a worker can claim the childless EITC to include childless adults under 25. In a robustness check, we exclude these seven states to ensure we capture the effect of federal EITC expansion on young adults.

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Source: Yepez (2021) based on IRS Revenue Procedure 20-45, and P.L. 117-2.

Table 1 shows the extent to which the ARP increased the childless EITC benefit available for young adults aged 19-24 compared to their slightly older counterparts, based on the federal EITC at the household level by year. Because we do not have all of the information necessary to calculate EITC eligibility in the Pulse data, we merge data from the 2022 U.S. Current Population Survey Annual Social and Economic Supplement (CPS-ASEC, Flood et al., 2023) and National Bureau of Economic Research’s TAXSIM model (Feenberg & Coutts, 1993) to estimate EITC benefit values for childless adults (see Notes of Table 1 for more details on methodology). In the 2020 tax year, when childless adults aged 19-24 were not eligible for the EITC, the average household-level benefit amount was \$44.⁶ However, following the ARP expansion in the 2021 tax year that expanded eligibility to this younger age group for the first time, this value significantly increased to \$689. After the expansion expired in tax year 2022, the

⁶ We see positive values of childless EITC among the sample of adults aged 19-24 in tax years 2020 and 2022 because the benefits are at the household level, not the individual level. Thus, positive values stem from the amount of EITC received by other adults aged 25-64 in the household.

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benefit decreased to the previous level. In comparison, the average childless EITC benefit available to households of young adults aged 25-34 increased to a smaller extent, from \$102 to \$452 in the tax year 2021 (returning to \$105 after the expansion expired). Although these adults were already eligible for the childless EITC, they also experienced an increase in benefits, from both the increase in the maximum benefit and from the expansion of the income threshold.

In sum, compared to the non-expansion years, the household-level childless EITC benefit increased by \$645 for young adults aged 19-24 due to the ARP expansion, whereas the increase was a little over half that size for adults aged 25-34 (\$353). This benefit increase (\$645) amounts to 27% of monthly income for a federal minimum wage worker employed full-time.

Table 1. Household-level childless EITC amount by tax year and age group

	Childless adults, household income below \$50,000			
	Age 19-24		Age 25-34	
Household-level childless EITC	Mean (\$)	SD (\$)	Mean (\$)	SD (\$)
Tax year 2020	44	(27)	102	(51)
Tax year 2021 (<i>ARP Expansion</i>)	689	(200)	457	(203)
Tax year 2022	45	(30)	105	(55)
Net gain in tax year 2021	645	(170)	353	(155)

Notes: Data from the Pulse Waves 23-29 (Jan 20 - May 10, 2021), Waves 42-45 (Jan 26 - May 9, 2022), Waves 54-57 (Feb 1-May 8, 2023). Sample restricted to respondents ages 19 to 34 without any children in the household, with household pre-tax incomes under \$50,000. The childless EITC values are first simulated using the National Bureau of Economic Research's tax simulation model, TAXSIM (TAXSIM35), with the 2022 CPS-ASEC. We aggregate the childless EITC benefit at the household level as income information in the Pulse is only available at the household level. We subsequently calculate the mean household-level EITC values for bins defined by the number of adults in the household (ranging from 1 to 3+), the age group (19-24 and 25-34), and three pre-tax income bins (under \$25,000; \$25,000-34,999; \$35,000-\$49,999) in the CPS-ASEC data. We then import the mean EITC values into our Pulse data, matching on the number of adults, age group, and total household income categories. "Net gain" indicates the additional benefit of EITC in tax year 2021 compared to tax years 2020 and 2022.

Prior Research and Theory

Many studies document the impact of the EITC on a wide range of outcomes. However, this literature has almost exclusively focused on the effects of the EITC on households with children, in part because the childless EITC is so small relative to the credit available for filers

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claiming children. For instance, a long line of research consistently finds significant, positive effects of the EITC on the employment of single mothers (Eissa & Liebman, 1996; Meyer & Rosenbaum, 2001; Hoynes & Patel, 2018; Bastian, 2020; Bastian & Jones, 2021; Michelmore & Pilkauskas, 2021; Schanzenbach & Strain, 2021; for an exception, see Kleven, 2019), improved health outcomes among children and adults (e.g., Evans & Garthwaite, 2014; Hoynes et al., 2015; Braga et al. 2020; Lenhart, 2019), increased children’s educational attainment (Bastian & Michelmore 2018; Dahl & Lochner, 2012), and improved long-term economic outcomes of children (Jones et al., 2020).⁷

A handful of studies have examined the impacts of the EITC on measures of material hardship, again focusing on families with children. Prior work finds that the EITC reduces housing hardships (household crowding, cost burdens, doubling up; Pilkauskas & Michelmore, 2019), medical hardship (Kondratjeva et al., 2021), and food insecurity (Kondratjeva et al., 2022; Batra & Hamad, 2021; Lenhart, 2023), but has no impact on paying bills, buying prescriptions, or making housing payments (Kondratjeva et al., 2021, 2022).

To our knowledge, no studies have examined the effects of the childless EITC on material hardship or any other measures of well-being. In fact, only one study that we are aware of has ever examined the effects of the childless EITC since its inception. Meer and Witter (2023) use the age 25 eligibility cutoff to examine impacts on labor force participation and find no effects of the credit on employment. The authors hypothesize that this is likely driven by the small size of the credit, lack of information about the credit, or because childless adults already have high labor force participation rates. Other work shows that the federal tax code taxes about 5.8 million childless adults into, or deeper into, poverty (Llobrera, 2021), only lifting about 1%

⁷ Previous EITC studies rarely include men in these analyses. In part because men are less likely to receive the credit, although there are exceptions when studies examine married households (e.g., Michelmore, 2018).

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of households without qualifying children out of poverty (Crandall-Hollick & Hughes, 2018), which may also explain small effects.

Although no other research has studied the childless EITC, MDRC conducted randomized control trials of a policy resembling an expanded childless EITC, called the Paycheck Plus Demonstration.⁸ The Paycheck Plus Demonstration was a test of the childless EITC-like expansion and was launched in 2013 in New York, NY, and in 2016 in Atlanta, GA. Paycheck Plus offered a bonus tax payment of up to \$2,000 at tax time to eligible childless adults with low earnings for up to three years. In New York, the bonus increased after-tax and bonus earnings, led to a small increase in employment, and reduced poverty (Miller et al., 2017; Courtin et al., 2022). However, studies found no effects on material hardship (food insecurity, evictions, inability to pay bills or buy necessities; Courtin et al., 2020; Miller et al., 2018) which may in part be explained by high living costs in New York City.

Overall, prior literature suggests that the EITC reduces financial and material hardships for families with children, but we know little about its impact on young, childless adults' experiences of hardship. Today's young adults face an economy and labor market that make it increasingly difficult to support themselves and their families, with heightened instability, lower social mobility, and greater economic inequality compared to older generations (Bonnie et al., 2015). Over half of all 18-24-year-olds have incomes below 200 percent of the federal poverty level (Hawkins, 2019), and they are the only age group whose poverty rate has risen since the 1960s (Wimer et al., 2020). Young adults today face increased difficulty in finding and

⁸ Paycheck Plus was designed to make the application process for the bonus similar to the EITC. To qualify, workers needed to file federal income taxes and fall within the eligible earnings range. In addition to filing taxes, they had to identify themselves as Paycheck Plus participants at one of the sites offering Volunteer Income Tax Assistance (VITA), an IRS program that provides free tax preparation for filers with low incomes. After determining the bonus amount, it was directly deposited into workers' bank accounts or loaded onto debit cards. For more details, see <https://www.mdrc.org/publication/increasing-earned-income-tax-credit-childless-workers>.

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maintaining full-time employment (Farber, 2008; Sum et al., 2011, Williamson & Côté, 2022), and many experience underemployment. Many young adults are in transition between work and education, navigating financial, residential, and social independence from their parents and guardians, and they may lack the support and resources to avoid immediate hardship and insecurity. Moreover, young adults are often left out of public assistance programs by design, which tend to target resources toward families with children. Given the context faced by this population, the temporary expansion of the childless EITC represents a crucial policy change providing financial resources for young adults employed in the low-wage sector. This paper provides the first evidence of the impact of the childless EITC on the material well-being of young adults.

3. Data and Methods

We use data from the Census Household Pulse Survey (Pulse), introduced by the U.S. Census Bureau in April 2020 to collect nationally representative information on the social and economic well-being of households across the United States. This initiative marked the creation of the first high-frequency government data on material hardship throughout the United States. To analyze the impact of the expanded childless EITC, which was distributed through tax refunds in the spring of 2022, we employ Pulse data collected between late January and early May from 2021 through 2023. Specifically, we use Pulse data from Waves 23–29 (January 20 to May 10, 2021; tax year 2020, pre-ARP expansion), Waves 42–45 (January 26 to May 9, 2022; tax year 2021, during the ARP expansion), and Waves 54–57 (February 1 to May 8, 2023; tax year 2022, after the ARP expansion expired).

Our sample includes adults aged 19-34 in households without any child under the age of 18 (“childless adults”) with a pre-tax household income below \$50,000. Ideally, we would use an

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individual's earned income to identify eligible childless adults for the credits (with earned income below \$21,000 for single filers or \$27,000 for married filing jointly). However, the only income variable available in the Pulse is a categorical household pre-tax income variable.⁹ Using more stringent income restrictions leads to a tradeoff between including those who are more likely to be eligible for the credits (also more likely to be disadvantaged) and losing sample size. For our main specification, we show the results for both a stringent sample (income below \$25,000) and broader samples (income below \$35,000 and below \$50,000, respectively).

We also restrict our sample to individuals who responded to at least one question on material hardship in the survey, resulting in a total sample size of 27,256 respondents. Not all respondents in the sample answered the survey questions on material hardship, thus the sample varies for each outcome. As described in more detail in the following section, our analytic approach leverages the fact that childless adults under 25 became newly eligible for the EITC due to the expansion, whereas those aged 25 and older were already eligible for it and thus experienced a relatively smaller benefit change.

Table 2 presents descriptive statistics on our analytic sample for both the treatment group (childless adults aged 19-24) and the comparison group (childless adults aged 25-34), separately for the expansion year (tax year 2021) and non-expansion years (tax years 2020 and 2022). Overall, characteristics of our sample appear to be similar across age groups and years, with some relatively small differences. Younger childless adults aged 19-24 are more likely to be White, unmarried, live in a larger family with lower household income, and they are less likely to be employed and hold bachelor's degrees compared to childless adults aged 25-34. However,

⁹ The Pulse surveys total household pre-tax income in 8 categories: (1) less than \$25,000; (2) \$25,000 - \$34,999; (3) \$35,000 - \$49,999; (4) \$50,000 - \$74,999; (5) \$75,000 - \$99,999; (6) \$100,000 - \$149,999; (7) \$150,000 - \$199,999; (8) \$200,000 and above.

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these differences are expected as these younger adults are more likely to be enrolled in college and less likely to be working than their older counterparts.¹⁰ Importantly, the composition of each age group remains largely stable across the years, indicating that the policy change did not cause any compositional changes and lending support for the credibility of our research design.

Table 2. Sample characteristics, tax years 2020-2022

Characteristics	Childless adults ages 19-24		Childless adults ages 25-34	
	Tax years 2020, 2022	Tax year 2021 (ARP)	Tax years 2020, 2022	Tax year 2021 (ARP)
Female	47.4%	46.2%	48.8%	48.9%
Race and ethnicity				
White, non-Hispanic	61.3%	65.8%	56.6%	58.9%
Black, non-Hispanic	6.9%	4.7%	11.3%	9.2%
Hispanic	22.9%	20.0%	21.4%	21.6%
Asian, non-Hispanic	4.9%	5.5%	5.6%	5.6%
Other, non-Hispanic	4.1%	4.0%	5.1%	4.7%
Unmarried	91.1%	90.7%	83.3%	82.4%
Metro	26.8%	27.4%	32.4%	33.0%
Family size, mean (SD)	3.0 (1.4)	3.1 (1.5)	2.6 (1.3)	2.5 (1.4)
Education level				
Less than high school	5.9%	3.8%	4.8%	4.0%
High school graduate	32.3%	33.6%	26.2%	23.0%
Some college	47.3%	48.9%	37.1%	38.8%
Bachelor's or more	14.4%	13.7%	31.9%	34.2%
Employed	67.2%	71.5%	70.9%	73.5%
Household income				
< \$25,000	48.9%	51.8%	34.1%	36.2%
\$25,000 - \$34,999	27.4%	27.9%	30.5%	31.2%
\$35,000 - \$49,999	23.7%	20.3%	35.4%	32.6%
<i>N</i>	5,126	1,865	14,315	5,947

¹⁰The Pulse survey does collect data on whether individuals are currently enrolled in school. Thus, we were unable to examine if the temporary expansion to the EITC might have impacted school enrollment.

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Note: Data from the Pulse Waves 23-29 (Jan 20 - May 10, 2021), Waves 42-45 (Jan 26 - May 9, 2022), Waves 54-57 (Feb 1-May 8, 2023). Sample restricted to respondents ages 19 to 34 without any children in the household, with household incomes under \$50,000 with at least one material hardship outcome that is non-missing. Descriptive statistics are weighted using household survey weights.

Measures

Our material hardship outcomes include household food insufficiency, difficulty with expenses, and housing hardship, as well as the total number of hardships. Appendix Table A1 presents the original survey questions in the Pulse and the operationalization of each hardship outcome. Food insufficiency is a binary measure for whether households “sometimes or often did not have enough food to eat” in the prior week(s). Difficulty with expenses is a binary measure of whether the household found it “somewhat or very difficult to pay for usual household expenses.” Housing hardship is a binary measure of whether the household is not currently caught up on rent or mortgage payments. Finally, we create the “total number of hardships” by summing these three binary measures, with values ranging from 0 to 3. For ease of interpretation, we standardize the total number of hardships for our analysis.

Methods

To analyze how the expanded childless EITC impacted the material hardship of young adults, we employ a traditional difference-in-differences analysis. We estimate models of the following form:

$$Y_{iws} = \beta_0 + \beta_1 \text{Age19_24}_i + \beta_2 \text{TY}'21_w + \beta_3 (\text{Age19_24}_i \times \text{TY}'21_w) + X_{iws} + \tau_{ims} + \alpha_w + \delta_s + \varepsilon_{iws}$$

Where Y_{iws} represents the outcome of interest for individual i , including whether the household experienced food insufficiency, had difficulty with expenses, is not caught up on their rent or

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mortgage, or the aggregate number of material hardships at survey wave w in state s . $Age19_24_i$ is an indicator for whether the respondent was between the ages of 19 and 24 at the time of the survey. We include individuals aged 25-34 as our comparison group. $TY2021_w$ is an indicator for whether the survey was conducted during the tax season of the 2021 tax year (spring of 2022 surveys), relative to the 2020 tax year (spring of 2021 surveys) or the 2022 tax year (spring of 2023 surveys). β_3 represents the change in the outcome of interest for individuals aged 19-24 in the 2021 tax year relative to older individuals (those aged 25-34) in the preceding (2020) and following tax years (2022). This identification strategy uses both the 2020 and 2022 tax years as comparisons, capturing the impact of the expansion of the childless EITC in 2021 relative to the prior year, as well as the elimination of the expansion in the 2022 tax year. X_{iws} is a vector of individual-level controls, including race and ethnicity, gender, whether the individual is living in a metropolitan area, whether the individual is partnered, and household size fixed effects. We control for both the unemployment rate and the college attendance rate that vary by state-month-age group (τ_{ism}), calculated using the monthly Current Population Survey, to control for other state factors that might influence the material hardship of 19-24 year olds. We also include survey wave fixed effects (α_w) to account for idiosyncratic differences in the outcome of interest across survey waves, as well as state fixed effects (δ_s) to absorb state-level differences in the outcomes of interest.

One key identifying assumption is that no other policies were implemented at the same time as the childless EITC expansions were realized (early 2022) that disproportionately impacted 19-24 year olds relative to 25-34 year olds. Although the expansion to the childless EITC was part of a larger package intended to provide economic support following the COVID-19 pandemic, we are aware of no other policy changes that were likely to have impacted

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childless 19-24 year olds differently from childless 25-34 year olds. Additionally, although the ARP was passed in March of 2021, changes to the childless EITC would not have been realized until the spring of 2022, when individuals began filing their taxes. Many other components of the ARP legislation took effect nearly immediately in the spring of 2021, such as the large economic impact payments (i.e., stimulus benefits) that families received in April of 2021.

The other key assumption is that trends in material hardship experiences would have evolved similarly for 19-24 year olds as 25-34 year olds over this time period, were it not for the expanded childless EITC. To test this assumption, we employ a series of event study models in the year prior to and in the year after the 2021 expansion, which we discuss in more detail in the next section.

We also conduct several placebo tests and robustness checks to ensure the reliability of our findings. First, we conduct two placebo tests, wherein we treat different age (35-44 year olds) and income groups (above \$50,000) as the treatment group, where we would expect to find few effects. Second, we test the impact of using only the pre-2021 tax year as the comparison year, or only the post-2021 tax year as the comparison year. This allows us to evaluate whether there was a differential effect of transitioning onto the policy expansion in the 2021 tax year versus transitioning off of the expansion after 2021. Third, we compare the results obtained from different model specifications, both with and without a set of covariates and fixed effects, to confirm that our main findings are robust to the alternative model specifications. Finally, we replicate the analysis for a sample that excludes individuals residing in states with a state EITC available for young adults under 25.

4. Results

Descriptive results

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Table 3 presents the summary statistics (means) on the hardship outcomes for childless adults aged 19-24 and those aged 25-34, separately for the expansion year (tax year 2021) and non-expansion years (tax years 2020 and 2022). In the non-expansion years, 19% of childless adults aged 19-24 and 18% of those aged 25-34 experienced food insufficiency. This share decreased in the tax year 2021 by 1 percentage point for those under 25 but increased by 2 percentage points for those older than 25. Nearly half of young adults had difficulties with routine expenses throughout the study period and the share decreased in the tax year 2021 for both 19-24 and 25-34 year olds. In the non-expansion years, 12-13% of young adults missed rent or mortgage payments. During the EITC expansion, this share decreased by 3, and 1, percentage points for childless young adults aged 19-24 and 25-34, respectively. The number of total hardships remained stable at around 0.8 for childless adults aged 25-34 across all years, whereas it decreased by 0.07 standard deviations among those under 25 in the tax year 2021, compared to the non-expansion years.

Table 3. Material hardship by tax years and age groups, 2020-2022

	Childless adults ages 19-24		Childless adults ages 25-34	
	Tax years 2020, 2022	Tax year 2021 (ARP)	Tax years 2020, 2022	Tax year 2021 (ARP)
Food insufficiency	0.19	0.18	0.18	0.20
Difficulties with expenses	0.47	0.45	0.49	0.47
Missed rent or mortgage	0.13	0.10	0.12	0.11
Total number of hardships (SD)	0.77 (0.85)	0.71 (0.87)	0.77 (0.87)	0.77 (0.87)

Note: Data from the Pulse Waves 23-29 (Jan 20 - May 10, 2021), Waves 42-45 (Jan 26 - May 9, 2022), Waves 54-57 (Feb 1-May 8, 2023). Sample restricted to respondents ages 19 to 34 without any children in the household, with household income under \$50,000 with at least one material hardship outcome that is non-missing. Estimates are weighted using the household survey weight.

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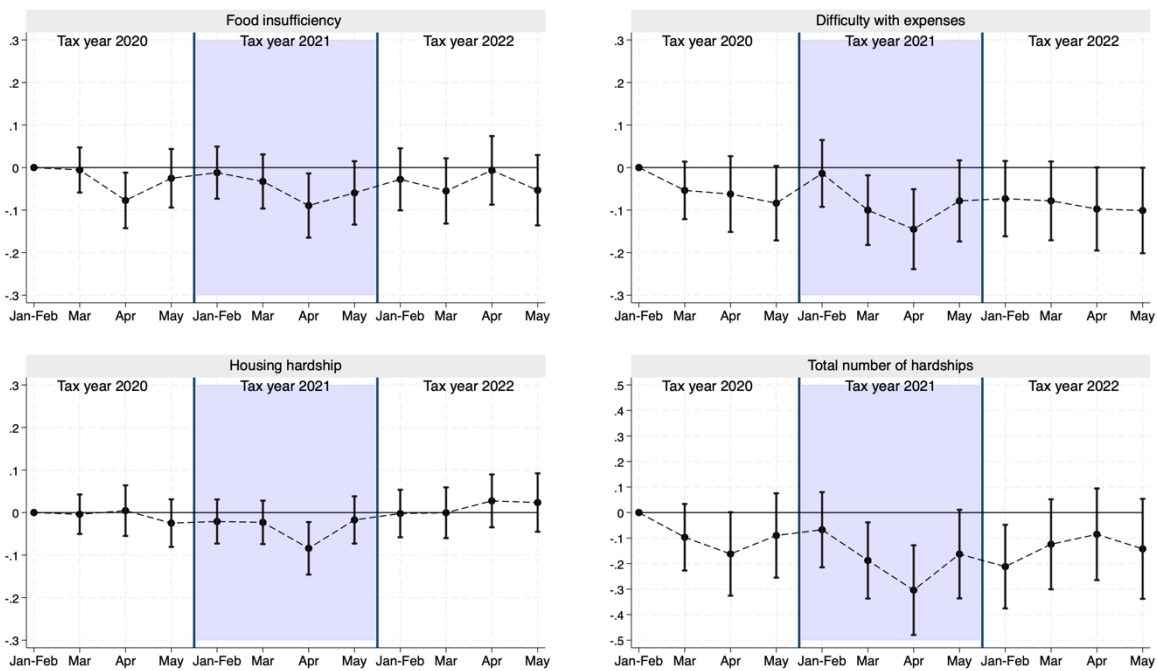
Regression Results

We begin by presenting results from event study plots illustrating trends in our material hardship outcomes for our treated sample (19-24 year olds) relative to our comparison group (25-34 year olds) over this time frame. Figure 2 shows these results for our primary sample, those with household income below \$25,000 (see Appendix Figure A1 for trends for samples with income less than \$35,000 and \$50,000). Event study coefficients represent the percentage point difference in our material hardship outcomes of childless adults aged 19-24 relative to childless adults aged 25-34 in the tax years 2020-2022. Compared to the tax year 2020, hardship rates decrease for 19-24 year olds relative to 25-34 year olds in the tax year 2021, during the year that the childless EITC was expanded to 19-24 year olds. In the tax year 2022, we again find little evidence of significant differences in hardship patterns between 19-24 year olds and 25-34 year olds, after the childless EITC expansion expired.

In general, the results from the event study confirm that the trends in hardship among childless adults aged 19-24 are not statistically different from those aged 25-34 in the year prior to and the year following the 2021 expansion (particularly for the housing hardship outcome), which lends support for the parallel trends assumption between the two groups (with few exceptions: e.g., in April 2021 (tax year 2020), 19-24 year olds had significantly lower food insecurity rates compared to 25-34 year olds). It also shows that hardship declined for 19-24 year olds in the year that the childless EITC was expanded, relative to 25-34 year olds. These figures provide some preliminary evidence that the expansion of the childless EITC led to a decline in hardship for 19-24 year olds, who became newly eligible for the credit, relative to their older peers.

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Figure 2. Event study: Material hardship among childless adults with income below \$25k, 19-24 year olds versus 25-34 year olds



Notes: Data from the Pulse Waves 23-29 (Jan 20 - May 10, 2021), Waves 42-45 (Jan 26 - May 9, 2022), Waves 54-57 (Feb 1-May 8, 2023). Sample restricted to respondents ages 19 to 34 without any children in the household, with household income under \$25,000 with at least one material hardship outcome that is non-missing. The point estimates represent the percentage point difference in material hardship outcomes among childless adults aged 19-24 relative to childless adults aged 25-34 compared to the late January-February 2021 (tax year 2020) baseline. Survey weeks are converted to months for comparison across the years (see Appendix Table A2 for the assignment of months to survey waves). The shaded blue area indicates Spring 2022 (tax year 2021), the period of childless EITC expansion. Each model includes demographic controls (race and ethnicity, gender, metro area, partnered status, household size fixed effects), time-varying state characteristics (unemployment rate and college attendance rate) as well as survey wave fixed effects and state fixed effects.

Table 4 presents results from our primary difference-in-differences estimation of the effect of the childless EITC expansion on material hardship among childless young adults aged 19-24 with household income below \$25,000 (column 1), below \$35,000 (column 2), and below \$50,000 (column 3) relative to childless adults aged 25-34. The estimates indicate that the childless EITC expansion was associated with a statistically insignificant decrease in the likelihood of reporting food insufficiency among low-income, childless young adults aged 19-24. Although statistically insignificant, the estimates suggest larger reductions among the lowest

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income group (2.1 percentage points decline, a 10% reduction from the baseline of 19.8%) compared to those with relatively higher household income. Similarly, the expansion of the childless EITC is associated with a statistically insignificant decrease of 2.5 percentage points (5% reduction from the baseline of 46.6%) in the likelihood of having difficulty with expenses among childless 19-24 year-old adults with household income below \$25,000.

We find a statistically significant 3.2 percentage point decrease in the likelihood of being behind on rent and mortgage payments among the lowest income group, which translates into a 28% decrease from the baseline of 11.1%. We find a similar pattern when we broaden our sample to those with household income below \$35,000 or below \$50,000, although the point estimates are generally smaller in magnitude or lose statistical significance. In the aggregate, we find that the childless EITC expansion is associated with a decrease in the total number of hardships, although the estimates are not statistically significant. Among the lowest income group, the number of hardships decreases by nearly 0.1 standard deviations; for the slightly higher income groups, we see that the point estimates are much smaller and nearly half the size in magnitude.

Table 4. Effect of the expanded childless EITC on material hardship outcomes

<i>Outcomes</i>	Household Income:	(1) <\$25,000	(2) <\$35,000	(3) <\$50,000
Food insufficiency	Age 19-24 × TY'21	-0.021	-0.004	-0.008
	S.E.	(0.018)	(0.013)	(0.011)
	Baseline mean	0.198	0.178	0.184
	N	10,181	17,979	27,249
Difficulty with expenses	Age 19-24 × TY'21	-0.025	0.003	-0.009
	S.E.	(0.023)	(0.018)	(0.015)
	Baseline mean	0.466	0.474	0.471
	N	10,184	17,982	27,256
Missed rent or mortgage	Age 19-24 × TY'21	-0.032*	-0.020	-0.021*
	S.E.	(0.014)	(0.011)	(0.009)
	Baseline mean	0.111	0.133	0.128
	N	8,704	15,683	23,994

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Total number of hardships (standardized)	Age 19-24 × TY'21 S.E. N	-0.096 (0.050) 8,679	-0.031 (0.039) 15,650	-0.047 (0.032) 23,955
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Notes: Data from the Pulse Waves 23-29 (Jan. 20 - May 10, 2021), Waves 42-45 (Jan. 26 - May 9, 2022), Waves 54-57 (Feb. 1-May 8, 2023). Sample restricted to respondents ages 19 to 34 without any children in the household. Each model includes demographic controls (race and ethnicity, gender, metro area, partnered status, household size fixed effects), time-varying state characteristics (unemployment rate and college attendance rate) as well as survey wave fixed effects and state fixed effects. The baseline mean indicates the mean of outcome for the treatment group in the 2020 and 2022 tax years. Robust error in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Placebo Tests

We conduct two placebo tests to provide further confidence that our results are driven by the expansion of the childless EITC and not a spurious correlation or general pattern of reductions in material hardship over this time period. Specifically, we conduct our difference-in-differences specification on two groups we do not expect to have been affected by this policy change: slightly older childless adults and those with somewhat higher incomes.

For the first placebo test, we designate childless adults aged 35-44 as the placebo treatment group and compare their changes in outcomes to those aged 25-34 (Table 5, column 1). Both age groups would have been eligible for the EITC during all three of the tax years that we analyze, so we would not expect to find any difference in their material hardship over this period. For this analysis, we focus on households with income below \$25,000, the group we observe the largest declines in material hardship in our main models. In the second test, we select a group with somewhat higher incomes, those with income above \$50,000, as our placebo treatment group and then run the same regression as our main specification, comparing 19-24 year olds to 25-34 year olds (Table 5, column 2).

In both placebo tests, the coefficients are close to zero, statistically insignificant, and in most cases the estimates point in the opposite direction from our main findings (i.e. the “treated”

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group is associated with an *increase* in the incidence of experiencing material hardship in the tax year 2021). These placebo tests provide further confidence that our main estimates are not a result of spurious correlations but are unique to low-income young adults aged 19-24 who benefit from the childless EITC expansion.

Table 5. Results from the placebo tests: Alternative age and income group

<i>Outcomes</i>	Placebo Tests			
	(1) Alternative age group Age 25-44, Income below 25k		(2) Alternative income group Age 19-34, Income above 50k	
Food insufficiency	Age 35-44 × TY'21	0.019	Age 19-24 × TY'21	0.004
	S.E.	(0.018)	S.E.	(0.007)
	Baseline	0.38	Baseline	0.078
	N	11,587	N	56,842
Difficulty with expenses	Age 35-44 × TY'21	0.001	Age 19-24 × TY'21	0.005
	S.E.	(0.020)	S.E.	(0.012)
	Baseline	0.682	Baseline	0.29
	N	11,593	N	62,366
Missed rent/mortgage	Age 35-44 × TY'21	0.027	Age 19-24 × TY'21	-0.001
	S.E.	(0.017)	S.E.	(0.009)
	Baseline	0.255	Baseline	0.081
	N	9,288	N	43,656
Total number of hardships, <i>standardized</i>	Age 35-44 × TY'21	0.045	Age 19-24 × TY'21	0.029
	S.E.	(0.045)	S.E.	(0.043)
	N	9,261	N	43,583

Notes: Data from the Pulse Waves 23-29 (Jan. 20 - May 10, 2021), Waves 42-45 (Jan. 26 - May 9, 2022), Waves 54-57 (Feb. 1-May 8, 2023). Sample restricted to respondents who do not have any children under the age of 18 in the household. Column 1 reports the results from the alternative age group (childless adults aged 35-44) as a treatment group compared to those aged 25-34. Column 2 reports the results from the alternative income group, those with household incomes above \$50,000. Each model includes demographic controls (race, gender, metro area, partnered status, household size fixed effects), time-varying state characteristics (unemployment rate and college attendance rate) as well as survey wave fixed effects and state fixed effects. The baseline mean indicates the mean of outcome for the alternative treatment group in the 2020 and 2022 tax years. Robust error in parentheses. * p<0.05, ** p<0.01, *** p<0.001.

Robustness Tests

Our main results combine the observations from tax years 2020 and 2022 as our comparison periods — the tax year just before and just after the ARP expansion. To evaluate whether our findings are influenced by the choice of the comparison year, we investigate the impact of the childless EITC expansion using only the pre-2021 tax year (2020) or only the post-

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2021 tax year (2022). For this robustness check, and the remainder of the analyses, we focus on the most stringent sample—childless adults with household income under \$25,000. This sample is most likely to be affected by the childless EITC expansion given the policy parameters and because they are at the highest risk of experiencing material hardship. This population is also where we see the clearest evidence of parallel trends between 19-24 year olds and 25-34 year olds in the years when the expansion was not in place.

When compared to the tax year 2020 (Table 6, column 1), the childless EITC expansion is associated with a decrease in the likelihood of experiencing all three hardship measures, resulting in a statistically significant reduction in the number of hardships. In comparison, when we restrict our comparison to the tax year 2022, following the expansion (Table 6, column 2), we find negative point estimates for both food insufficiency and housing hardship (as well as total hardships), but only the estimate on housing hardship is statistically significant, consistent with our main results.

Table 6. Difference-in-differences results: Results compared to individual tax years, 2020 and 2022

<i>Outcomes</i>		Tax year 2020 vs. 2021	Tax year 2021 vs. 2022
		(1)	(2)
Food insufficiency	Age 19-24 × TY'21	-0.028	-0.006
	S.E.	(0.019)	(0.023)
	Baseline mean	0.194	0.208
	N	7,891	5,200
Difficulty with expenses	Age 19-24 × TY'21	-0.043	0.010
	S.E.	(0.024)	(0.029)
	Baseline mean	0.455	0.49
	N	7,892	5,206
Missed rent or mortgage	Age 19-24 × TY'21	-0.029	-0.048**
	S.E.	(0.015)	(0.018)
	Baseline mean	0.114	0.106
	N	6,786	4,454
Total number of hardships (standardized)	Age 19-24 × TY'21	-0.131*	-0.039
	S.E.	(0.054)	(0.065)
	N	6,767	4,442

Notes: Data from the Pulse Waves 23-29 (Jan. 20 - May 10, 2021), Waves 42-45 (Jan. 26 - May 9, 2022), Waves 54-57 (Feb. 1-May 8, 2023). Sample restricted to respondents ages 19 to 34 without any children in

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the household, with household income under \$25,000. Each model includes demographic controls (race and ethnicity, gender, metro area, partnered status, household size fixed effects), time-varying state characteristics (unemployment rate and college attendance rate) as well as survey wave fixed effects and state fixed effects. The baseline mean indicates the mean of outcome for the treatment group in 2021 for column 1 and 2023 for column 2, respectively. Robust error in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In Table 7, we present the results from the difference-in-differences estimation from a variety of model specifications to ensure the robustness of our main results. We first provide estimates without any other controls in the model except year fixed effects (column 1) and then progressively add demographic controls, household size fixed effects, state fixed effects, and survey wave fixed effects (columns 2-6). The estimates from different models consistently indicate that the expanded childless EITC is associated with a statistically significant decrease of 3 percentage points in housing hardship. Our findings are robust to the inclusion of state-by-wave fixed effects, which control for any state-specific shocks occurring over this period (column 7).

Table 7. Difference-in-differences results from alternative model specifications

	Models							Main Result
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
<i>Outcome: Food insufficiency (N=10,181), baseline mean: 0.198</i>								
Age 19-24 × TY'21	-0.021	-0.020	-0.019	-0.019	-0.019	-0.020	-0.027	-0.021
(S.E.)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
<i>Outcome: Difficulty with expenses (N=10,184), baseline mean: 0.466</i>								
Age 19-24 × TY'21	-0.021	-0.020	-0.019	-0.024	-0.020	-0.025	-0.032	-0.025
(S.E.)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.024)	(0.023)
<i>Outcome: Missed rent or mortgage (N=8,704), baseline mean: 0.111</i>								
Age 19-24 × TY'21	-0.033*	-0.032*	-0.031*	-0.031*	-0.032*	-0.032*	-0.040**	-0.032*
(S.E.)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)
<i>Outcome: Total number of hardships (N=8,679), standardized</i>								
Age 19-24 × TY'21	-0.100*	-0.092	-0.090	-0.091	-0.094	-0.094	-0.138**	-0.096
(S.E.)	(0.051)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.053)	(0.050)
Year FE	Y	Y	Y	Y				
Survey wave FE					Y	Y	Y	Y
Demographic controls		Y	Y	Y	Y	Y	Y	Y
Family size FE			Y	Y	Y	Y	Y	Y
State FE				Y		Y	Y	Y
State characteristics								Y
State-by-wave FE							Y	

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Note: Data from the Pulse Waves 23-29 (Jan 20 - May 10, 2021), Waves 42-45 (Jan 26 - May 9, 2022), Waves 54-57 (Feb 1-May 8, 2023). Sample restricted to adults aged 19 to 34 without any child in the household with pre-tax household income below \$25,000. Each model includes demographic controls (race and ethnicity, gender, metro area, partnered status, household size fixed effects), time-varying state characteristics (unemployment rate and college attendance rate) as well as survey wave fixed effects and state fixed effects. The baseline mean indicates the mean of outcome for the treatment group in 2021 and 2023. The estimates in the right-most column are from our main results in Table 4. Robust error in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Apart from the federal EITC, 31 states provide a childless EITC, typically calculated as a percentage of the federal credit. Among these states, California, Maine, Maryland, Minnesota, and New Jersey allowed childless adults under age 25 to get the state childless EITC even before the ARP expansion. Colorado and New Mexico made the minimum age reduction of the ARP expansion permanent (see Appendix Table A4 for more details on state EITC rule for these states). Because childless adults aged 19-24 residing in these states were already partly eligible for the childless EITC, this could potentially lead us to underestimate the effect of the federal childless EITC expansion. Or, because working adults aged 19-24 in these states got an additional boost during the federal expansion, this additional income might bias the effects of the expansion upward. To address this potential issue, we run the same regression excluding those residing in states where state EITCs are available for adults younger than 25. Results, presented in Appendix Table A5, are similar to our main results, providing further evidence that our results are driven by the ARP expansion of the childless EITC.

5. Discussion and conclusion

The EITC is one of the largest means-tested cash transfer programs in the U.S., lifting more than 5.6 million people out of poverty in 2018 (Center on Budget and Policy Priorities, 2023). A long line of research demonstrates that the program increases employment among unmarried mothers (e.g., Schazzenbach & Strain, 2021) and improves the well-being of families with children along several dimensions (e.g, Bastian & Michelmore, 2018; Braga et al., 2020).

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However, historically the program has provided few benefits to low-income, childless adults and there is almost no research on its impact on this population. Our study fills this gap in the literature by studying the impacts of the temporary 2021 ARP expansion of the childless EITC, which, for one year, tripled the size of the credit, extended eligibility further up the income distribution, and for the first time, extended eligibility to 19-24 year old adults. Our study represents the first study to examine the impact of this expansion on the material hardships experienced by young adults under 25, a group that currently faces increased risk of hardship and has been largely excluded by most anti-poverty programs.

As a result of the temporary expansion to the childless EITC, we find that young adults aged 19-24 gained an average of \$645 in tax credits from the 2021 tax year, roughly \$300 more than the gain among their slightly older peers aged 25-34. Using a difference-in-differences strategy comparing the material hardship outcomes of these two groups, we find that the childless EITC expansion led to a significant reduction of 3.2 percentage points (28%) in housing hardship among young adults aged 19-24 with household incomes below \$25,000. We find no evidence of differential pre-trends between 19-24 year olds and 25-34 year olds that might explain this decline in housing hardship. Furthermore, our results are robust across several model specifications and several placebo tests. For instance, using the same identification strategy, we find no evidence of a decline in material hardship for households with income above \$50,000, who were unlikely to be impacted by the expansion, nor do we find any evidence of an impact on adults aged 35-44, who were already eligible for the childless EITC at the time of the expansion.

We find suggestive evidence that the childless EITC expansion is associated with a reduction in food insufficiency, although these estimates were not statistically significant.

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Specifically, we find that the EITC expansion is associated with a 2.1 percentage point (10%) decline in food insufficiency. We also find a 2.5 percentage point (5%) decrease in the share of households reporting having difficulty with routine expenses, but again these results were not statistically significant.

Our insignificant findings on food and expenses hardship may be driven by a number of factors. First, the lump sum nature of the credit received during tax time may lead households to prioritize larger expenses, such as catching up on past-due rent or repairing a car. Prior studies suggest that households typically spend their regular cash payments (e.g., monthly CTC) to meet ongoing basic needs like groceries (Jones et al., 2019; Schild et al., 2023). In contrast, lump-sum payments from EITC benefits are often used to pay bills or catch up on debts, and purchase durable goods (Goodman-Bacon & McGranahan, 2008; Linnenbrink et al., 2008; Mammen & Lawrence, 2006), or to address housing (Pilkauskas & Michelmore, 2019). Similar patterns were observed in a study on the expanded CTC, where lump-sum payments primarily reduced housing hardship, while monthly payments mainly alleviated food hardship (Parolin et al., 2023). Another explanation for the lack of significant findings is that households might have prioritized their most relevant needs at the time they received the credit. Finally, our relatively small sample size driven by the narrow age range may have limited the statistical significance of the findings. It is possible that alternative data sources with larger samples may achieve more precision.

One might question whether our observed reduction in hardship could be attributed to an increased labor supply in response to the childless EITC expansion, or other behavioral responses to the expansion. Although previous research indicates that the EITC increases labor supply among unmarried mothers (e.g., Schanzenbach & Strain, 2021), we anticipate few labor supply responses to the childless EITC expansion, given that it was announced mid-year and was

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only in place for one year. Furthermore, young adults already exhibit relatively high labor force participation rates, and there is no prior evidence suggesting that childless EITC affects employment (Meer & Witter, 2023), making further increases in labor supply unlikely.

Two other behavioral responses may also affect the interpretation of our findings: whether the expansion of the childless EITC affected young adults' choice between work and enrolling in college, and whether young adults were more likely to reside with their parents during the year that the EITC was expanded. Unfortunately, we lack information on college enrollment within the Pulse data, so we are unable to examine whether the expansion of the credit may have induced some to enter the workforce rather than enroll in college, but again, since the credit was announced in the middle of the year and only in place for one year, it is unlikely that there was a substantial shift of away from college. Additionally, there may be some concern that young adults were more likely to reside with their parents during the year that the childless EITC was expanded, which might also explain why we find such a large reduction in housing hardship. We are unable to examine the relationships of individuals who live together with the Pulse data. However, we can observe the number of individuals who live within a household and do not find any evidence of changes in household size among 19-24 year olds during the year of the expansion.

Our study is not without limitations. First, the Pulse data suffers from a very low response rate (less than 10%) that may generate nonresponse bias (Peterson et al., 2021); however, the Pulse provides the only nationally representative data with high-frequency measures of material hardship across the pandemic and post-pandemic periods, making it a valuable resource for policy analysis. Second, because our sample size by age group is relatively

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small, we were unable to explore differences across subgroups, such as heterogeneity by racial and ethnic groups.

Third, the Pulse data do not provide information on individuals' earned income and filing status, which means that we cannot perfectly identify households that were impacted by the ARP expansion. Although we include all individuals within the treatment age group with specific household income levels, we may inadvertently include those who did not earn any income and thus are not eligible to claim the EITC. Similarly, we may overlook those who are income-eligible for the childless EITC but live with other household members whose incomes exceed our specified income restriction. Relatedly, the Pulse data do not indicate whether individuals received the childless EITC, limiting our ability to understand the expansion's effects on those who took up the benefits. Estimates suggest that the take-up rate for the childless EITC is around 60-65% (Jones, 2014), which is lower than the rate for families with children. A more precise estimation of the treatment effect on the treated is likely to yield a larger effect.

Fifth, we were only able to examine a limited set of material hardship indicators. Future research that can consider a broader array of hardships, like medical, utility, or transportation insecurity, is necessary to better understand the impact of this policy on working young adults. Last, we focus on the federal EITC without considering the role of state EITCs. Future research may consider expanding our research by exploring whether the effect of the ARP expansion differs in the states that provide the portion of federal EITC for childless adults, depending on the generosity of their state EITCs.

Despite these limitations, this study has several policy implications and contributes to a broader literature on the impact of cash and near-cash assistance on financial and material hardships. By studying the impacts of the EITC on an understudied population, our findings

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highlight that childless young adults benefit from tax credit expansions, similar to households with children. This group experiences material hardships at rates akin to their slightly older peers but is excluded from the current childless EITC. Allowing working adults under 25 to claim the credit, even at its current relatively low level of support, might alleviate young adults' material hardships with potentially longer-lasting effects on economic and social well-being.

Additionally, we find that hardship reduction effects are most consistent and concentrated among the lowest-income sample, aligning with existing literature on cash and near-cash assistance (Parolin et al., 2023; Pilkauskas et al., 2022). Low-income groups are at higher risk of experiencing material hardship (Sullivan et al., 2008) and the relative size of the benefits to their household income is larger compared to their counterparts with relatively higher income. In our sample, half of childless young adults aged 19-24 are in the Pulse's lowest-income group. Our results underscore that including childless young adults in the EITC can benefit some of the most disadvantaged by meeting their needs and addressing immediate hardships.

Finally, expanding the childless EITC could have spillover effects beyond childless adult claimants. Estimates suggest that nearly two-thirds of men who have non-resident children appear to be "childless" (Micheltmore & Pilkauskas, 2022). This implies that EITC payments to "childless" filers could potentially benefit the economic circumstances of children indirectly. Moreover, as childless young adults get married and become parents in the future, the childless EITC may aid them in establishing families of their own, thereby contributing to the well-being of their future families.

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Appendix

Table A1. Overview of hardship outcomes

Type	Question in the Pulse	Operationalization
Food insufficiency	In the last 7 days, which of these statements best describes the food eaten in your household?	1 if the answer is sometimes or often not enough to eat
Difficulty with expenses	In the last 7 days, how difficult has it been for your household to pay for usual household expenses, including but not limited to food, rent or mortgage, car payments, medical expenses, student loans, and so on?	1 if somewhat or very difficult
Not caught up on rent (or mortgage)	Is this household currently caught up on rent (or mortgage) payments?	1 if no
Standardized total number of hardships		Summation of three hardship measures (0-3) and then standardize it

Table A2. Assignment of Household Pulse Waves to Months

Month	Waves	2021		2022		2023	
			Dates	Waves	Dates	Waves	Dates
January	23		Jan. 20 - Feb 1				
February	24		Feb. 3 - Feb 15	42	Jan. 26 - Feb 7	54	Feb. 1 - Feb 13
	25		Feb. 17 - Mar 1				
March	26		Mar. 3 - Mar 15	43	Mar. 2 - Mar 14	55	Mar. 1 - Mar 13
	27		Mar. 17 - Mar 29				
April	28		Apr. 14 - Apr 26	44	Mar. 30 - Apr 11	56	Mar. 29 - Apr 10
May	29		Apr. 28 - May 10	45	Apr. 27 - May 9	57	Apr. 26 - May 8
	30		May 12 - May 24				
June	31		May 26 - Jun 7	46	Jun. 1 - Jun 13	58	Jun. 7 - Jun 19
	32		June 9 - Jun 21				

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Table A3. States with state EITC extended to childless adults younger than age 25, Tax Year 2022

State	Percentage of federal credit	Eligible age	Implementation
California	85% of federal credit, up to 50% of the federal phase-in range	18-24	Tax Year 2018
Colorado	20%	19-24	Tax Year 2022
Maine	50%	18-24	Tax Year 2019
Maryland	100% (TY20-22) 28% (After TY22)	18-24	Tax Year 2019
Minnesota	Average 44%	21-24	Tax Year 2020
New Jersey	40%	21-24 18-24	Tax Year 2020 Tax Year 2021
New Mexico	20%	18-24	Tax Year 2021

Source: Tax Credits for Workers and Their Families. “State Tax Credits.” Accessed October 19, 2023. Note: Illinois extends the eligibility for people aged 18-24 and 65 older in Tax Year 2023.

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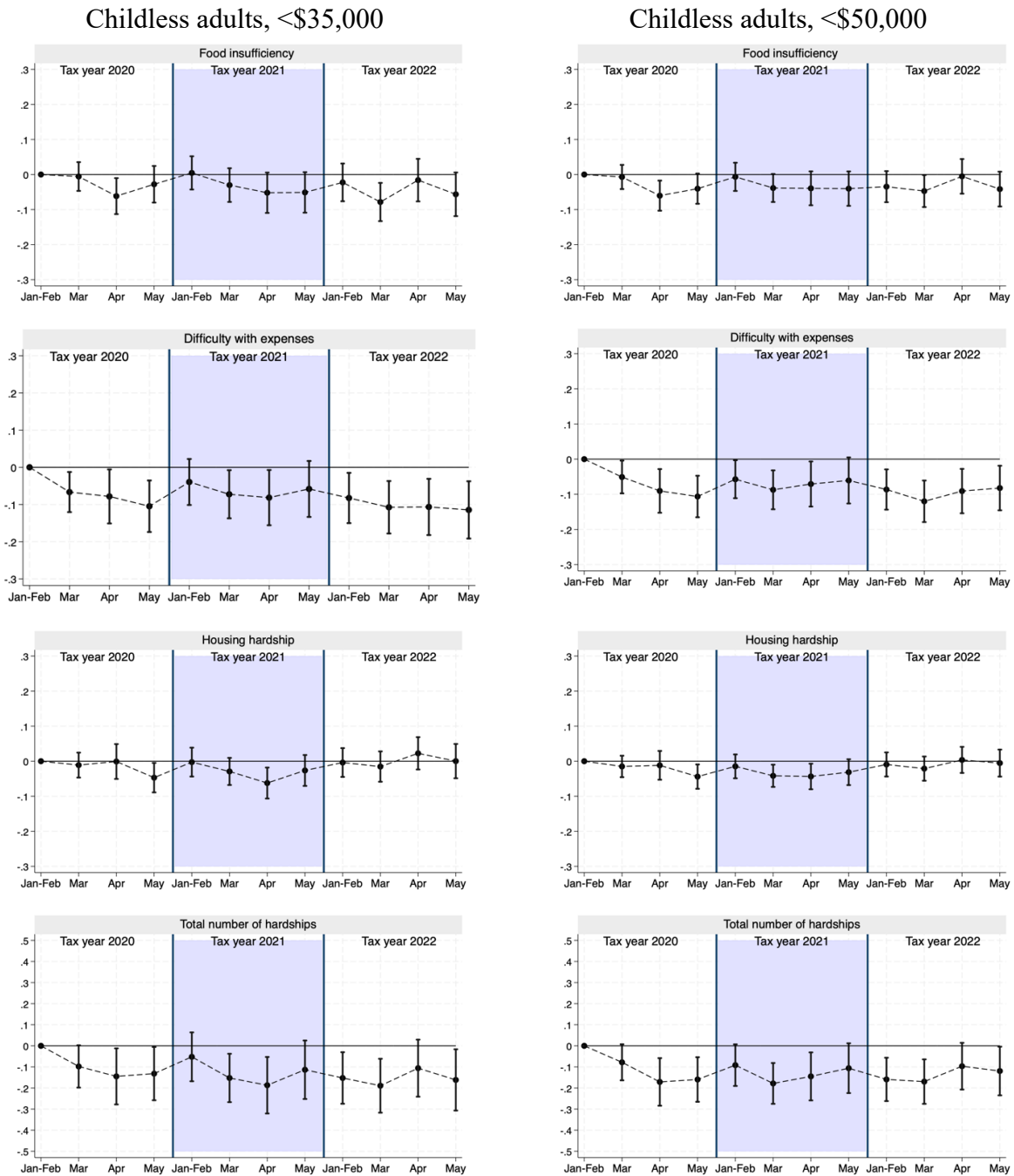
Table A4. Robustness check: Excluding states with state EITC available for childless adults under 25

Sample excluding respondents living in CA, ME, MD, MN, NJ (Tax years 2020-2022) and CO, NM (Tax year 2022)		
Food insufficiency	Age 19-24 × TY'21	-0.016
	S.E.	(0.019)
	Baseline	0.206
	N	8,760
Difficulty with expenses	Age 19-24 × TY'21	-0.031
	S.E.	(0.024)
	Baseline	0.463
	N	8,759
Missed rent or mortgage	Age 19-24 × TY'21	-0.033*
	S.E.	(0.015)
	Baseline	0.113
	N	7,504
Total number of hardships (standardized)	Age 19-24 × TY'21	-0.096
	S.E.	(0.054)
	Baseline	0.125
	N	7,481

Notes: Data from the Pulse Waves 23-29 (Jan 20 - May 10, 2021), Waves 42-45 (Jan 26 - May 9, 2022), Waves 54-57 (Feb 1- May 8, 2023). Sample restricted to respondents ages 19 to 34 without any children in the household, with household income under \$25,000 Respondents surveyed in 2021-2023 living in California, Maine, Maryland, Minnesota, and New Jersey are excluded from the analysis, as well as those surveyed in 2023 living in Colorado and New Mexico. Each model includes the same covariates and fixed effects as the main specification. The baseline mean indicates the mean of outcome for the treatment group in the tax years 2020 and 2022, excluding the above-mentioned samples living in the states with generous age requirement for the state EITC. Robust error in parentheses. * p<0.05, ** p<0.01, *** p<0.001.

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Figure A1. Event study results: broader samples



Notes: Data from the Pulse Waves 23-29 (Jan 20 - May 10, 2021), Waves 42-45 (Jan 26 - May 9, 2022), Waves 54-57 (Feb 1-May 8, 2023). Sample restricted to respondents ages 19 to 34 without any children in the household, with household income under \$25,000, with at least one material hardship outcome that is non-missing. The point estimates represent the percentage point difference in material hardship outcomes among childless adults aged 19-24 relative to childless adults aged 25-34 compared to the late January-February 2021 (tax year 2020) baseline. Survey weeks are converted to months for comparison across the years (see Appendix Table A2 for the assignment of months to survey waves). Vertical blue lines indicate Spring 2022 (tax year 2021), the period of childless EITC expansion. Each model includes demographic controls (race and ethnicity, gender, metro area,

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partnered status, household size fixed effects), time-varying state characteristics (unemployment rate and college attendance rate) as well as survey wave fixed effects and state fixed effects.