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The EITC and Maternal Time Use: More Time Working and Less Time with Kids?

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ABSTRACT

Parents spend considerable sums investing in their children's development, with their own time among the most important forms of investment. Given well-documented effects of the Earned Income Tax Credit (EITC) on maternal labor supply, it is natural to ask how the EITC affects other time allocation decisions, especially time with children. We use the American Time Use Surveys to study the effects of EITC expansions since 2003 on time devoted to a broad array of activities, with considerable attention to the amount and nature of time spent with children. Our results confirm prior evidence that the EITC increases maternal work and reduces time devoted to home production and leisure, especially among unmarried women. More novel, we show that the EITC also reduces time spent with children; however, almost none of this reduction comes from time devoted to active investment-related activities that are most likely to foster child development.

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1. Introduction

A growing literature documents the importance of family investments for child development (e.g., see surveys by [Cunha et al., 2006](#); [Heckman and Mosso, 2014](#); [Kalil, 2015](#)), with parental time becoming an increasingly important form of investment (e.g., [Lee and Bowen, 2006](#); [Del Boca et al., 2014](#); [Carneiro et al., 2015](#); [Caucutt et al., 2020](#)). [Caucutt et al. \(2020\)](#) document that more than two-thirds of all family expenditures on child development (for children ages 12 or less) come in the form of parental time investments.

It is tempting to assume that the more time mothers spend working, the less they must spend with their children. Yet, such an assumption is clearly at odds with the time series for female labor supply and time with children, which have both increased substantially in recent decades.¹ Cross-sectional relationships are also at odds with a direct tradeoff. For example, [Guryan et al. \(2008\)](#) show that more educated parents both work more and spend more time with their children compared to less-educated parents. Clearly, parents devote time to many leisure and home production activities besides child care ([Becker, 1965](#); [Kooreman and Kapteyn, 1987](#); [Aguiar and Hurst, 2007](#)), and these activities trade off with work.

Understanding parental (especially maternal) time allocation decisions is critical for understanding the impacts of tax and transfer policies, including many welfare-to-work initiatives, on investments in children and child development. The Earned Income Tax Credit (EITC), the focus of our study, is one of the most significant tax/transfer policies in the United States, impacting millions of low- to middle-income families. [Dahl and Lochner \(2012, 2017\)](#), [Chetty et al. \(2011\)](#), [Bastian and Michelmore \(2018\)](#), [Manoli and Turner \(2018\)](#) and [Agostinelli and Sorrenti \(2018\)](#) estimate positive impacts of EITC expansions on the test scores, educational attainment, employment, and earnings of economically disadvantaged children.² These studies emphasize the increase in financial resources for families that benefit from EITC expansions, with much of the increase in family income coming

¹See, e.g., [Bryant and Zick \(1996\)](#), [Gauthier et al. \(2004\)](#), [Sayer et al. \(2004\)](#), [Bianchi and Robinson \(1997\)](#), [Craig \(2006\)](#), [Kimmel and Connelly \(2007\)](#), [Guryan et al. \(2008\)](#), and [Kalil et al. \(2012\)](#) for evidence on growing parental time with children, while [Costa \(2000\)](#), [Goldin \(2006\)](#), [Fernández \(2013\)](#), and [Bastian \(2020\)](#) document the substantial increase in female labor supply over time.

²[Hoynes et al. \(2015\)](#), [Averett and Wang \(2018\)](#), and [Braga et al. \(2019\)](#) show that the EITC also improves children's health.

from greater labor force participation and higher pre-tax family earnings.³ [Agostinelli and Sorrenti \(2018\)](#) and [Bastian and Micheltore \(2018\)](#) raise concerns that the additional time mothers spend working could offset the benefits associated with greater financial resources. Indeed, several studies estimate negative effects of full-time maternal employment on child development ([Brooks-Gunn et al., 2002](#); [Ruhm, 2004](#); [Bernal, 2008](#)).⁴

Even if the EITC increases maternal labor supply by increasing net-of-tax wages for low-income families, it need not reduce parental time investments in children. The positive income effects from higher wages can create incentives to increase overall investments in children. As shown by [Caucutt et al. \(2020\)](#), if all investment inputs are sufficiently complementary, families may wish to increase all types of investments, including time investments, despite the increase in their opportunity costs. Thus, higher wages may cause parents to substitute leisure and home production for time at work with little, or even positive, effects on time spent with children. Indeed, [Kooreman and Kapteyn \(1987\)](#) and [Kimmel and Connelly \(2007\)](#) estimate that increases in maternal wages lead to reductions in time devoted to leisure and home production but much weaker or even modest positive effects on child care.

Looking more directly at impacts of the EITC, studies spanning three decades of research have consistently concluded that it raises employment among single mothers ([Hoffman and Seidman, 1990](#); [Eissa and Liebman, 1996](#); [Meyer and Rosenbaum, 2001](#); [Grogger, 2003](#); [Hoynes and Patel, 2018](#); [Bastian, 2020](#)).⁵ Much less is known about changes in other uses of time. Looking at a broader set of tax policies, [Gelber and Mitchell \(2012\)](#) estimate that policies which encourage maternal labor supply also reduce time spent on home production. In their analysis of the EITC using data from the Panel Study of Income Dynamics, [Bastian and Micheltore \(2018\)](#) estimate modest and statistically insignificant effects of EITC expansions on the time parents spend with their children; however, their sample size is small and estimates imprecise.

In this paper, we use the 2003-2018 American Time Use Surveys (ATUS) to study,

³For these mothers, the EITC also improves health ([Evans and Garthwaite, 2014](#)), reduces stress and financial insecurity ([Mendenhall et al., 2012](#); [Jones and Micheltore, 2016](#)), and reduces poverty ([Hoynes and Patel, 2018](#)).

⁴Using family and child fixed effects approaches, [Heiland et al. \(2017\)](#) estimate that mothers who work 10 hours more per week spend about 3-4% less time with their children.

⁵Recently, [Kleven \(2019\)](#) has challenged this conclusion.

in detail, the time allocation responses of mothers to state and federal expansions in the EITC with an emphasis on time spent with children. More specifically, our main empirical approach estimates the effects of changes in the maximum EITC benefit level (by state, year, and family composition) on time spent in different activities, accounting for observed family demographic characteristics and unobserved differences across states over time (i.e., state \times year fixed effects). This specification leverages differential EITC benefit amounts offered to families of different sizes across states and over time; however, we show that results are similar when further limiting our identifying variation to come from differences in the evolution of EITC benefits by family size across states (by including in our specification interactions of the number of children in the household with state and year fixed effects). Using detailed information from ATUS on respondents' activities and who they were with during each activity, we estimate the same specifications for a variety of time allocation activities, with and without children.

Our analysis begins by confirming the overwhelming consensus that the EITC encourages labor market participation among single mothers. Not only do we examine a more recent period than most previous studies, but we also find similar effects on labor supply whether we use standard survey-based measures of work (from the Current Population Survey, CPS) or non-standard measures based on time diaries in ATUS.⁶ Next, we show that the increased time devoted to work comes at the expense of both leisure and home production activities. These activities are most strongly curtailed when mothers are with their children, raising concerns about adverse effects on child development.

The main contribution of our work is a close examination of how maternal time with children changes in response to EITC expansions, exploring detailed impacts on child “investment” (e.g. reading, helping with homework, playing, arts and crafts, providing medical care) vs. “non-investment” activities. Most interestingly, our results suggest that despite

⁶Most previous research examines earlier EITC expansions (especially the major expansion from 1993 to 1996). There is some disagreement on the impacts of more recent EITC expansions on female labor supply, with [Bastian and Michelmore \(2018\)](#) and [Bastian and Jones \(2019\)](#) estimating moderate positive effects (consistent with the previous literature) and [Kleven \(2019\)](#) finding more modest effects of the 2009 federal expansion and no effects of state expansions. Our approach is similar to that of [Bastian and Michelmore \(2018\)](#) and [Bastian and Jones \(2019\)](#), reaching similar conclusions. By contrast, [Kleven \(2019\)](#) takes an event-study approach that does not leverage differences in the magnitude of different expansions for identification. See [Schanzenbach and Strain \(2020\)](#) for a replication and critique of his analysis.

negative effects of EITC benefit levels on the time single mothers spend with their children (especially young mothers and children), we estimate negligible effects of the EITC on time devoted to active investment activities. Reductions in time spent with children are almost exclusively observed for passive non-investment activities like housework, running household errands, waiting, shopping, and relaxing. An interesting exception is that both married and unmarried mothers respond to EITC expansions by spending less time providing or obtaining medical care for their children, which may reflect general improvements in children’s health (presumably due to higher family income levels) as estimated by [Hoynes et al. \(2015\)](#), [Averett and Wang \(2018\)](#), and [Braga et al. \(2019\)](#). We also estimate moderate reductions in maternal time spent volunteering and attending social events with their children, among the only activities adversely affected by the EITC that may hinder child development.

The rest of this paper proceeds as follows. Section 2 describes the EITC and its expansion at the federal and state levels over the 2003–2018 period. We describe our empirical strategy in Section 3 and the ATUS data in Section 4. Our empirical analysis of the impacts of EITC expansions on maternal time use is discussed in Section 5. Section 6 concludes by discussing the implications of our findings for families and child development.

2. Federal and State EITC Policy Details

The EITC distributes over \$65 billion each year to almost 30 million low-income families, lifting 6 million people out of poverty ([Center on Budget and Policy Priorities, 2019](#)). Total EITC benefits are determined by annual earnings, number of children, state of residence, and marital status. Figure 1 shows the relationship between EITC benefits in 2018 and household earnings by the number of children and marital status. The EITC contains a phase-in region, where benefits increase with earnings; a plateau region, where benefits do not change with earnings; and a phase-out region, where benefits decrease with earnings. Households that earn beyond this phase-out region are not eligible for the EITC. In 2018, federal EITC benefits for households with 3 or more children supplemented family earnings at a phase-in rate of 45% (for low earners), reaching a maximum benefit level of more than \$6,000 for families earning between about \$14,000 and \$24,000. Maximum possible benefits

fall to about \$5,700 and \$3,500 for households with 2 children and 1 child, respectively, while families with no children face a maximum benefit of about \$500.

Figure 2 shows the evolution of maximum benefits by number of children over time. The largest EITC expansions occurred between 1993 and 1996, which increased benefits dramatically for those with at least 2 children. Our analysis covers a later period, from 2003 to 2018. The only change in the federal EITC schedule during this period occurred in 2009, when the maximum credit available to families with three or more children increased by almost \$1,000 (and their phase-in rate increased from 40% to 45%).

As of 2018, 29 states offered their own EITC. State EITC benefits generally “top-up” federal EITC benefits by a fixed percent, varying from about 3 to 40 percent (for values up to \$220 to \$2,800). Combined, the federal and state EITC can amount to over \$9,000 per year, with the average recipient receiving over \$2,500 annually. Figure 3 maps the cross-country expansion of state EITC rates (as a fraction of federal benefits) over time, while Appendix Figure A.1 shows the evolution of maximum possible federal plus state EITC benefits. The latter highlights the considerable variation in maximum benefit levels by family size across states and over time.

We combine state and federal annual maximum EITC benefit amounts (based on state of residence, marital status, number and ages of children, and year) into the variable *MaxEITC*, measured in thousands of year 2018 dollars.⁷ For our sample of women ages 18–49 in the 2003–2018 ATUS, Figure 4 shows the distribution of *MaxEITC* separately for families of different sizes (Panel A) and for the periods before and after the 2009 federal EITC expansion (Panel B). These distributions illustrate the type of EITC variation by family size, over time, and across states that we exploit for identification.

3. Empirical Strategy

In this section, we describe our strategy for estimating the effects of federal and state EITC expansions, as embodied by changes in *MaxEITC*, on mother’s time allocation deci-

⁷We use the Consumer Price Index for all Urban Consumers to adjust all dollar amounts for inflation to year 2018 values.

sions.⁸ Two key features of federal and state EITC policies play critical roles in our analysis: (i) the federal EITC offers higher benefits to families with more children, and (ii) state EITCs are generally proportional to federal EITC amounts. Together, these features generate rich variation in EITC benefits at the state–year–number of children level in response to both state and federal EITC expansions. For example, the federal EITC expansion in 2009 raised maximum benefit levels for families with 3+ children, which effectively increased total (federal plus state) EITC benefits more in states with higher state EITC rates. Furthermore, whenever states raise their EITC rates, they effectively increase maximum benefit levels more for larger families due to the structure of the federal EITC. Importantly, these changes in maximum benefit amounts ($MaxEITC$) reflect exogenous policy variation that is independent of individual family income levels or actual receipt of the EITC, which are both endogenous with respect to work behavior (we formally test for EITC policy exogeneity in section 5). Our estimation approach leverages these sources of exogenous policy variation.

We use the following regression to estimate the effects of EITC expansions on various time-allocation outcomes, Y_{ist} , separately for married and unmarried mothers:

$$Y_{ist} = \alpha_1 MaxEITC_{ist} \cdot Mar_{ist} + \alpha_2 MaxEITC_{ist} \cdot Unmar_{ist} + X'_{ist} \alpha_3 + \gamma_{st} + \epsilon_{ist}, \quad (1)$$

where subscript i refers to mother, s to state of residence, and t to year. Mar_{ist} is an indicator equal to one for married mothers, while $Unmar_{ist} = 1 - Mar_{ist}$ is an indicator equal to one for unmarried mothers. The vector X_{ist} contains a rich set of potentially time-varying individual-level controls (e.g., number of children, marital status, race/ethnicity, age, and educational attainment), while γ_{st} reflects state \times year fixed effects (FE) that account for any unobserved factors (e.g., state-wide economic, policy, or demographic trends) that vary across states over time and similarly affect all families within a state. The idiosyncratic error, ϵ_{ist} , is assumed to be independent of $MaxEITC_{ist}$ and marital status, conditional on other covariates X_{ist} and state \times year FE.⁹

⁸ $MaxEITC$ is highly correlated with other aspects of the EITC and does a good job of capturing EITC expansions over time. For example, regressing $MaxEITC$ on the EITC phase-in rate, controlling for number of children, state fixed effects, and year fixed effects, yields an R^2 of 0.999. We also consider the phase-in rate as an alternative measure of EITC policies in Section 5.8.

⁹We report standard errors that are robust to heteroskedasticity and clustered at the state level. Alternate clustering and standard error specifications yield similar results (available upon request). ATUS weights are used in all specifications.

The inclusion of state \times year FE (γ_{st}) means that our identification of the impacts of *MaxEITC* (i.e., α_1 and α_2) derives from variation in the differential EITC treatment of families of different sizes. As foreshadowed above, equation (1) exploits four distinct sources of variation.¹⁰ First, differences in state EITC rates imply larger differences in *MaxEITC* between families of different sizes in states with higher EITC rates. Second, the 2009 federal expansion increased *MaxEITC* for families (in all states) with 3+ children but not other families. Third, an increase in any state’s EITC rate generates a larger change in *MaxEITC* benefits for families with more children. Fourth, the federal expansion raised *MaxEITC* more for families with 3+ children in states with larger EITC rates.

By including interactions between the number of children and both state FE and time FE, it is possible to eliminate the first and second sources of identifying variation, respectively, relying only on variation at the state–year–number of children level induced by the interaction of federal and state EITC policies and changes in either over time. We establish the robustness of our results to this more demanding specification (and others) below in Section 5.8.

Our robustness analysis also facilitates an exploration of variation coming from the 2009 federal EITC expansion vs. changes in state EITC policies. These results suggest that both sources of variation aid in estimation, with the federal EITC expansion providing a particularly strong source of identifying variation in *MaxEITC*. We, therefore, look more directly at the 2009 federal EITC expansion, providing graphical evidence of parallel pre-trends in time allocation for families affected and unaffected by the expansion. We also report the estimated effects of this expansion over time in an event-study format.

Given our sample sizes, we are able to explore heterogeneity in the effects of EITC expansions conditional on marital status. We do this by estimating equations of the form:

$$Y_{ist} = MaxEITC_{ist} \cdot Mar_{ist} \cdot Z'_{ist} \beta_1 + MaxEITC_{ist} \cdot Unmar_{ist} \cdot Z'_{ist} \beta_2 + X'_{ist} \beta_3 + \gamma_{st} + \epsilon_{ist}, \quad (2)$$

where Z_{ist} reflects a vector of indicator variables for mother’s race or educational attainment.

A key identifying assumption throughout our analysis is that EITC policy expansions

¹⁰We note that average differences in *MaxEITC* by number of children are absorbed by indicators for number of children in X_{ist} , while any average differences across states over time are absorbed by the state \times year FE.

are not correlated with other economic policies or conditions which may themselves affect female employment or time allocation decisions. For example, if states were more likely to create or expand an EITC during economic expansions and budget surpluses, the relationship between state EITCs, female employment, and time use would reflect economic conditions in general, not just EITC-driven increases in employment. Our inclusion of state \times year FE (γ_{st}) greatly lessens this concern, since they absorb any state-specific changes in economic or policy conditions that affect families of all sizes in the same way. Still, we show below that the EITC expansions during our time period are uncorrelated with state-specific measures of annual economic conditions and policies.

4. Data from the American Time Use Surveys

We use the 2003–2018 Bureau of Labor Statistics’ American Time Use Survey Data (ATUS). ATUS is the “nation’s first federally administered, continuous survey on time use in the United States. The goal of the survey is to measure how people divide their time among life’s activities” (U.S. Bureau of Labor Statistics, 2019).¹¹ ATUS data are linked to the CPS and contain rich demographic and geographic information. We keep all women ages 18–49 in the main sample, 58,090 observations. Of these women, 43,685 are mothers and 15,677 are unmarried mothers.

With the use of time diaries, ATUS asks respondents how they spent every minute of a 24 hour day, also recording who they spent their time with. We scale reported time-use so that units can be interpreted as weekly hours. We divide time-use into three broad categories: paid work activities (including work, commuting, job search, and job-related socializing), home production, and leisure.¹² All time unaccounted for by these categories can be classified as schooling, sleep, and “uncategorized”, where only 1.36 (out of 168) hours

¹¹Time-use data exists for earlier years, but these samples are relatively small (generally 2,000–4,000 observations per year, compared to 10,000–20,000 per year for 2003–2018) and contain fewer covariates.

¹²Home production includes activities like cooking and meal preparation, housework, car maintenance, taking care of the garden or pets, travel related to household activities, other household management, taking care of children or other household members, and shopping. Leisure time includes exercise and sports, games, watching television or movies, computer activity, socializing, talking on the phone and other communication, reading, listening to music or the radio, arts and entertainment, hobbies educational activities, and own medical care. See Online Appendix B for details.

per week are uncategorized, on average.

Based on the time diaries, we also determine whether time devoted to each leisure or home production activity was spent with children, using this to define our measure of “time with children”. Additionally, we classify each ATUS time activity as either “investment” or “non-investment” based on its likely impact on child development. Using this, we decompose total time mothers spend with children into investment time or non-investment time. Investment time includes activities like doing homework, reading to children, children’s education, providing and obtaining medical care, playing games or sports, doing crafts, and attending museums or events together. These activities naturally involve active interaction between mothers and their children, often with clear learning opportunities or health benefits. By contrast, activities we classify as non-investment tend to be more passive, where there may be very little interaction between mother and child. Their developmental benefits are likely to be relatively quite modest (Fiorini and Keane, 2014). As we document below, the non-investment activities in which mothers spend significant amounts of time with their children include housework, waiting, shopping, relaxing (includes watching television), eating, and socializing at parties and events. Since different investment and non-investment activities may provide different benefits to children, we also examine several subcategories of each. See Online Appendix B for detailed descriptions of our activity categorization.

A few measures of labor supply are available, some based on ATUS time-diary data and others based on linked CPS data. Our preferred measures are labor force participation (LFP, an indicator equal to one if employed or unemployed) and hours worked last week, both from CPS survey data. We use these CPS-based measures unless otherwise specified; however, results are qualitatively similar across measures.¹³

In studying time allocated to activities not specifically related to time with children (e.g. working, home production, leisure), we sometimes use the full sample of women, since the largest changes in incentives from EITC expansions are between women with and without children. For outcomes related to spending time with children, we focus exclusively on

¹³As already discussed, ATUS also asks about time spent on work activities, but this measure is noisier, since it is based on a 24 hour period and may be collected on a weekend day. Other available measures of labor supply in the CPS include whether mothers are currently employed and their usual weekly work hours.

mothers with children in the household. We also show key results for the sample of unmarried mothers.

Table 1 reports summary statistics for all women, all mothers, and unmarried and married mothers ages 18–49 (using ATUS weights). On average, women had 1.2 children and were 34 years old. Roughly half of all women in our sample were married and a little less than one-third were black or hispanic. Only 11% did not finish high school while one-third graduated from college. Women’s own earnings averaged \$26,000 while total household earnings averaged \$66,000. On average, the maximum EITC benefits available to families based on family composition, state, and year (i.e., *MaxEITC*) were \$3,340; however, the average EITC benefits women were actually eligible for (based on their earnings) was only \$668, with roughly one-in-four receiving some benefits.¹⁴ Compared to the sample of all women, mothers are generally older, less-educated, more likely to be married, less likely to be employed, and have lower individual earnings but similar levels of household earnings. Compared to all mothers, unmarried mothers tend to be more socially and economically disadvantaged: they are, on average, younger, less-educated, and are more likely to be nonwhite. Due to lower household earnings, they are eligible for more in EITC benefits (\$1,450 vs. \$1,020) and are more likely to be eligible for at least some benefits (50 vs. 34 percent).

Based on our sample of mothers, Table 2 reports summary statistics for our main time-use variables, reporting time allocation behavior separately by both marital status and the number of children in the household. Consider, first, the behavior of mothers across families of all sizes reported in the first two columns. Average weekly work hours (from CPS) are quite similar for both married and unmarried mothers (21–22 hours per week). Leisure hours are also quite similar, with unmarried mothers spending 35 hour/week and married mothers 33 hours/week on leisure activities. By contrast, married mothers devote considerably more time to home production (50 hours/week) than do unmarried mothers (40 hours/week). While married mothers spend roughly similar amounts of their leisure and home production time with and without their children, unmarried mothers spend much less of this time with their children. Married mothers spend about 45 hours/week with their children, with 16% of

¹⁴EITC benefits imputed from NBER’s TAXSIM (Feenberg and Coutts, 1993). Details available at <https://www.nber.org/taxsim/>.

that time (about 7 hours/week) devoted to investment activities. Unmarried mothers spend only about 29 hours/week with their children with only 14% (about 4 hours/week) devoted to investments.

Next, consider differences in maternal time allocation across families with different numbers of children by looking across columns (3)–(8) of Table 2. The patterns are qualitatively similar for both single and married mothers. Mothers with more children spend less time in the workforce but devote more time to home production. Time spent with children increases substantially in the number of children, even among leisure activities, which decline slightly overall. Time devoted to child investment activities is about 70–80% higher for mothers with 3 or more children compared to those with only one child. Of course, these increases in time with children may not imply more time with each child, as mothers often spend time with a subset of their children.¹⁵

Figure 5 shows that both investment and non-investment time with children generally declines as children age.¹⁶ Mothers spend an average of about 60 hours/week with infants, falling to 40 hours/week by ages 7–8 and 20 hours/week by age 17. Mothers with children under age 4 typically spend slightly less than 10 hours/week on investment activities with that time declining steadily over older ages. By age 18, investment time becomes negligible.

5. Results

In this section, we exploit variation in the EITC associated with the 2009 federal expansion as well as variation in state-level EITC policies over time. We first establish the exogeneity of state EITC changes. We then examine effects of the EITC on maternal labor supply before turning to impacts on other uses of time, including home production and leisure. Our main emphasis is on the effects of the EITC on time spent with children, where we decompose time with children into investment and non-investment activities to better understand how changes in the EITC might impact child development via time-use deci-

¹⁵In Online Appendix A, we display the full distribution for each category of time use by number of children. Appendix Figures A.2, A.3, and A.4 show the distribution of hours worked last week (CPS measure), home production, and leisure. Appendix Figures A.5 and A.6 show the distribution of total hours with children and investment hours in children.

¹⁶Specifically, this figure reports the average weekly amount of time mothers spend with all children of the reported age.

sions. We also explore whether there are differential effects on time allocation on weekdays vs. weekends, and whether the effects depend on age of the mother or on the ages of children in the household. Finally, we explore the robustness of our estimates to different sets of controls and specifications that leverage variation from state vs. federal EITC expansions.

5.1. *Exogeneity of State EITCs*

We begin by examining whether state-level EITC expansions are correlated with changes in other state policies, economic conditions, or demographic trends. To that end, Table 3 reports the results from regressions of annual state-level maximum EITC amounts or state EITC rates (as a percent of federal EITC) on several annual state-specific characteristics, as well as state FE and year FE. Our first specification controls for state-level economic conditions (i.e., log GDP, GDP growth rates, unemployment rates) and policies (i.e., minimum wages and maximum TANF amounts for families of different sizes), as well as one-year lags for these measures to account for the possibility that state EITCs are introduced/adjusted in response to trends or past conditions.¹⁷ Our second specification also controls for several state demographic measures (e.g., family composition, gender and racial composition, average educational attainment).

The estimates presented in Table 3 reveal no systematic relationship between state-level EITC expansions and state economic or policy trends. Only one of the state-level policy variables (Max TANF with 2 Children) is significant at the 10% level in three of the columns (none of the lags is significant), while 1 or 2 of the state-level demographic measures is significant at the 10% level, depending on the EITC measure. Most importantly, F-tests for joint significance of all state-level measures yield p-values greater than 0.5 in all columns.¹⁸ These results provide support for the contention that state-level EITC expansions are not correlated with contemporaneous (or recent) state economic and policy conditions. Still, our baseline specifications will control for unobserved state-specific differences over time.

¹⁷Table A.1 reports summary statistics (based on our ATUS sample) for these annual state-level measures.

¹⁸We obtain similar results when reducing our sample to only those states that had a state EITC at some point during the 2003–2018 period. Contrary to these results, other studies have suggested that state economic conditions/policies were associated with state EITC expansions in the 1990s (e.g., [Hoynes and Patel \(2018\)](#)).

5.2. Labor Supply

We begin our analysis of time allocation decisions by studying the impact of the EITC on labor supply, earnings, and family resources for women and mothers. The impacts of earlier EITC expansions (especially in the 1990s) on these outcomes have been the focus of much of the prior literature. This analysis, therefore, provides an opportunity to see whether more recent expansions had similar impacts.

As outlined in Section 3, our estimation strategy is based on equation (1). Our baseline specification (for all outcomes) controls for state FE \times year FE, as well as a rich set of individual-specific demographic characteristics. The latter includes indicators for the number of children in the household, number of children under age 6, four indicators for years of educational attainment (less than 12 years, 12 years, 13–15 years, and 16 or more years), a cubic polynomial in age, birth year, and separate indicators for whether the woman/mother is married, black, or hispanic. Our baseline specification also includes interactions between the four education indicators interacted with state FE, year FE, and number of children indicators, as well as the married indicator interacted with state FE and year FE. These interactions allow for differences in labor supply patterns by education and marital status across states and over time. The interaction between the education indicators and the number of children indicators allows for different effects of family size on labor supply and other outcomes by maternal education. Finally, our baseline specification includes an indicator for whether the woman/mother was surveyed on a weekday.¹⁹

Estimates for all women, reported in Table 4 Panel A, show that a \$1,000 increase in *MaxEITC* significantly increases average LFP by 2.2 percentage points, weekly work hours by 1.2, annual earnings by nearly \$2,000, and EITC benefits by \$267.²⁰ Here, work hours refer to hours worked last week, as reported in CPS data. Estimating separate effects by marital status, as in equation (1), Panel B shows larger estimated effects among unmarried women on LFP (3.4 percentage points), weekly work hours (1.6), earnings (\$2,350), and EITC benefits (\$323). Effects on married women are notably smaller, though effects on weekly hours of work, earnings, and EITC benefits are statistically significant. Results (by

¹⁹In section 5.5, we separately estimate impacts on weekdays and weekends.

²⁰Unless otherwise noted, statistical significance refers to the 0.05 level.

marital status) are similar when restricting the sample to mothers only in Panel C.²¹ In both panels B and C, estimated effects of changes in *MaxEITC* are significantly different by marital status for all outcomes (p-values < 0.01), consistent with previous evidence on the stronger positive effects of the EITC on the labor supply and incomes of unmarried mothers (Eissa and Hoynes, 2006; Bastian and Jones, 2019).

5.3. *Effects on Broad Categories of Time Allocation*

Since the EITC increased labor supply among unmarried women and mothers, it must have led to reductions in their time allocated to at least some types of non-work activities. Effects of the EITC on family income levels may also have led to shifts in time allocation across non-work activities even among married women and mothers. In Table 5, we divide each woman’s 168 weekly reported hours into home production, leisure, work activities, school, sleep, and ‘uncategorized’ based on the ATUS time diary activity data.

For unmarried women, Panel A shows that \$1,000 in *MaxEITC* increases work-related activities (2.0 hours/week), reduces home production and leisure (0.9 and 1.2 hours/week, respectively), and has little effect on school, sleep, and uncategorized time.²² Among married women, we observe qualitatively similar but weaker effects of the EITC on work, home production, and leisure activities. Panel B reveals similar patterns for the sample of mothers.

We next consider the impacts of EITC expansions on the distributions of weekly hours of work, home production, and leisure. Specifically, we estimate the effects of *MaxEITC* on the probability that mothers spend more than X hours/week (for several values of X) on each of these activities, reporting the effects for unmarried mothers in Panels A–C of Figure 6.²³ This figure shows that EITC expansions raise the probability of working up to—but not above—40 hours/week. Thus, the EITC draws single women into the labor

²¹Appendix Table A.4 further shows that estimated labor supply effects among unmarried mothers do not depend on the age of their youngest children.

²²Estimated effects on work hours are less precise here (compared to those reported in Table 4), because hours of work from ATUS are based on a time diary for a single day, which could be a weekday or weekend day, while the CPS measure is based on the total hours worked over the last week. We also note that our ATUS measure differs from the CPS measure, because it includes time allocated to all work-related activities, including job search activities and travel related to work.

²³In estimating these effects, we replace total hours devoted to each activity with an indicator for whether hours exceed X as our dependent variable in equation (1).

market but does not increase work beyond full-time. An increase in *MaxEITC* significantly reduces home production time in the 50–90 hours/week range, while it only reduces leisure time at the low end of the distribution (i.e., 10–20 hours/week).

5.4. *Time With Children and Parental Time Investment in Children*

We now look specifically at how mothers spend their time with children. Table 6 decomposes home production and leisure activities into time spent with and without children.²⁴ Among unmarried mothers, \$1,000 in *MaxEITC* significantly reduces both home production and leisure time with children by one hour per week (each) but has much smaller and statistically insignificant effects on time devoted to these activities when not with children. Married mothers appear to reduce their leisure time more when with their children than without, but neither effect (nor effects on home production time with/without children) is significant.

Reductions in time mothers spend with their children could produce undesired effects on child development. In particular, we might expect adverse impacts on children if increased maternal time at work substitutes for productive time investments like reading or playing with children, helping children with their homework, or taking them to the doctor. Of course, reductions in time mothers spend with their children may have little lasting impact on children if the lost time would have been spent watching television, cleaning the house, or doing the dishes. To investigate this issue, we decompose the effects on maternal time spent with children into effects on investment and non-investment activities (as described in Section 4).

Panel A of Table 7 shows that the negative effects of EITC expansions on the time unmarried mothers spend with their children are almost completely explained by reductions in non-investment time. In sharp contrast, the effects on time single mothers devote to investment activities are negligible and statistically insignificant. While these reflect average effects for all single mothers, Figure 6 Panel D explores the effects of *MaxEITC* on the

²⁴Time with children is not a mutually exclusive category but, rather, overlaps with home production and leisure. We do not decompose work, school, sleep, or uncategorized time into with/without children, because time with children is negligible for these activities and pre-2010 ATUS did not collect information about who respondents were with when they reported sleeping, grooming, personal/private activities, or working.

distribution of total and investment time with children (measured by the probability time exceeds different thresholds). This figure shows that EITC expansions cause mothers to scale back their total time with children throughout much of the distribution. By contrast, EITC expansions appear to induce single mothers who spend little time on investment activities to spend even less time, but they have no impact on the investment time of highly engaged mothers. That reductions in investment time are observed for the most investment-deprived families is a potential area of concern.

Returning to Table 7, Panel B shows that the impacts on unmarried mothers are largely the same regardless of race, while Panel C suggests stronger effects for less-educated single mothers. Among married mothers, we find mostly insignificant impacts on investment and non-investment time with children; although, there is some indication that white and college-educated married mothers increase their investment time with children in response to EITC expansions. Appendix Table A.4 shows that the effects of EITC expansions on mother's time allocation are qualitatively similar regardless of the age of her youngest child; although, unmarried mothers whose youngest child is a teenager appear to reduce their total time with children more than mothers with at least one pre-teen child. Effects on investment time with children are small and statistically insignificant for all unmarried mothers. Among married mothers, investment time significantly increases by 30 minutes/week if all children are at least 6 years old.

Although changes in total investment time are negligible, mothers may still choose to adjust their time allocation across different types of investment activities. Given the changes in family income induced by EITC expansions, parents may adjust the types of investment activities they engage in depending on the income elasticities of those activities. These elasticities may differ, for example, due to different complementarities with purchased goods and services or due to heterogeneous parental preferences for different types of activities (e.g. parents may enjoy some activities more than others).

We consider the impacts of EITC expansions on the broad investment subcategories of “academic”, “health”, and “other” investment time. Column (6) of Table 7 shows negligible and statistically insignificant effects of $MaxEITC$ on “academic” investment time, indicating no adjustments in time spent reading to/with children or helping them with their homework.

By contrast, column (7) suggests modest but statistically significant reductions in “health” investment time. Rather than indicating a harmful impact of the EITC, this may simply reflect a reduced need for medical attention due to improvements in children’s health (associated with improved health care and family income) that have previously been attributed to the EITC (Hoynes et al., 2015; Averett and Wang, 2018; Braga et al., 2019). The final column of Table 7 suggests an offsetting (but insignificant) increase in “other” time investment activities. In gauging the magnitudes of these effects, it is worth noting that mothers, on average, devote relatively little of their time each week to investment activities (see the bottom of the table). Still, only reductions in time devoted to health care activities reflect a substantial effect when measured in percentage terms (relative to average amounts of time).

In Table 8, we further decompose “other” investment time into detailed activity subcategories.²⁵ This table shows that increases in “other” investment time are entirely explained by increases in time devoted to “play” and “looking after” children; although, neither of these effects is statistically significant. The moderate increases in “play” time could be driven by the increased family income associated with EITC expansions if mothers view time spent playing with children as a luxury.²⁶

Because non-investment activities may also provide developmental benefits for children, Tables 9 and 10 examine these activities in greater detail. Table 9 shows that much of the time mothers spend on non-investment home production activities is devoted to “waiting and shopping” (6.5 hours/week), “housework” (6.1 hours/week), and “eating” (4.1 hours/week) with children. Of these, eating meals with children is most likely to produce developmental benefits (e.g., through extended conversations), yet the EITC has negligible effects on the time single mothers devote to this activity. Instead, we find that a \$1,000 increase in $MaxEITC$ appears to reduce the weekly time single mothers spend on “housework” (0.6 hours), “waiting and shopping” (0.1 hours), and “errands and travel” (0.2 hours), where only the first of these effects is statistically significant. While some of this time could involve

²⁵We do not decompose “academic” or “health” investment time further. The former reflects time spent reading to/with children, helping with homework, attending meetings and school conferences for children, and home schooling; the latter reflects time spent providing and obtaining medical care. (See Online Appendix B.)

²⁶Indeed, Krueger et al. (2009) find that parents enjoy time spent playing with their children relative to nearly any other activity they study.

conversation and bonding between mothers and children, these activities appear to reflect mostly passive time spent together.

Non-investment time devoted to leisure activities is decomposed in Table 10. Nearly all of this time can best be categorized as “socializing” at parties/events (2.7 hours/week) or “waiting and relaxing” (7.1 hours/week). Focusing on broader social interactions as potentially beneficial for children, we note that a \$1,000 increase in *MaxEITC* reduces time unmarried mothers spend with their children engaged in “volunteer” activities and “socializing” (at events/parties), each by about 0.2 hours/week. Of less obvious importance for child development, we estimate that the same increase in EITC benefits reduces the time unmarried mothers devote to “waiting and relaxing” (including watching television) with children by about half an hour each week. Effects of the EITC on non-investment leisure time with children are generally smaller and statistically insignificant for married mothers; although, estimated reductions in “socializing” and “waiting and relaxing” are moderate in size.

5.5. *Weekends vs. Weekdays*

Since most jobs are Monday to Friday, we examine whether there is a larger impact on weekday relative to weekend time use. In Table 11, we explore the EITC’s impacts on weekend and weekday time spent on work, home production, and leisure, as well as time spent with children. Panel A pools mothers interviewed on weekends and weekdays (results shown in previous tables), while Panels B and C restrict the sample to mothers who were interviewed on weekdays or weekends.²⁷ We note that average hours for each activity (reported at the bottom of each panel), as well as estimated effects, are reported in terms of total hours per week in Panel A, total hours over all 5 weekdays in Panel B, and total hours over the 2 weekend days in Panel C.

For unmarried mothers, columns 1 and 2 show that \$1,000 in *MaxEITC* increases weekday work activities by 1.4 hours each week, while it reduces home production and leisure (combined) by 2.0 hours over the work week. Columns 3 and 4 show that unmarried mothers spend 2.3 fewer hours with children during the work week with little impact on investment

²⁷The EITC does not affect the probability of responding to the survey on a weekend: estimated effects are smaller than 0.001 and insignificantly different from zero (p-values are larger than 0.9).

time. Effects on the weekend are generally much smaller (even if considered on a per day basis) and statistically insignificant; although, in most cases, they suggest responses that partially compensate for adjustments made during the work week.

5.6. *Heterogeneous Effects by Mother’s Age*

We next explore whether there are important differences in the way younger vs. older mothers respond to changes in the EITC, since they have differential labor market experience, attachment, and opportunity costs.

In Figure 7, we allow the effects of the EITC to vary by age for unmarried and married mothers by replacing $MaxEITC \cdot Mar$ and $MaxEITC \cdot Unmar$ in equation (1) with $\sum_a MaxEITC \cdot Mar \cdot \mathbf{1}(Age \in a)$ and $\sum_a MaxEITC \cdot Unmar \cdot \mathbf{1}(Age \in a)$, where a represents six age categories: 18–25, 26–30, 31–35, 36–40, 41–45, and 46–50.²⁸

We first focus on unmarried mothers. The EITC leads to significant increases of roughly 4 percentage points in LFP for mothers of all ages. Reductions in time spent with children associated with EITC expansions are generally declining in mother’s age; however, they are statistically significant for almost all age groups. Single mothers under age 30 spend 2–3 hours/week less with their children when the maximum EITC benefit increases by \$1,000; yet, these mothers (insignificantly) reduce their child investment time by less than 15 minutes/week. Point estimates for unmarried mothers in their late-40s suggest modest positive effects of EITC expansions on investment time; although, these estimates are statistically insignificant as well.

Effects of the EITC on married mothers LFP and time with children are generally small and insignificant. Perhaps most interesting, there is some suggestion that young married mothers respond to EITC expansions by reducing their participation in the labor market and increasing time with children; however, both estimates are statistically insignificant.²⁹

²⁸We note that our baseline demographic controls include an indicator for having a child under age 6, accounting for the fact that younger mothers tend to have younger children.

²⁹Modest negative LFP effects for these mothers would be generally consistent with previous evidence on the labor supply impacts of EITC expansions on married mothers (Eissa and Hoynes, 2004; Bastian and Jones, 2019).

5.7. *Heterogeneous Effects by Child’s Age*

Since mothers typically spend progressively more time working and less time with children as their children grow older (see Figure 5), we next explore whether responses to EITC expansions depend on children’s ages. To do so, we consider the effects of total time spent with children in age group a (i.e., ages 0–4, 5–9, 10–14, 15–18), Y_{ist}^a , by separately estimating the following regressions for mothers with any children in each age group:

$$Y_{ist}^a = \phi_1^a MaxEITC_{ist} \cdot Mar_{ist} + \phi_2^a MaxEITC_{ist} \cdot Unmar_{ist} + X'_{ist} \phi_3^a + \gamma_{st}^a + \epsilon_{ist}^a. \quad (3)$$

Here, ϕ_1^a and ϕ_2^a reflect the impact of a \$1,000 increase in the maximum EITC benefit on hours with (or investing in) *children who are in age group a* for married and unmarried mothers, respectively. These specifications use our baseline set of controls, replacing the indicator for any child under age 6 with the number of children in age group a .

Figure 8 reports the effects of $MaxEITC$ on time spent with and investing in children in each age group. Panel A shows strong negative effects (about 4 hours/week reductions per \$1,000 in maximum EITC benefits) on total time spent with children ages 4 or less. Effects for children ages 5–9 and 10–14 range from -2 to -3 hours/week for unmarried mothers and weaker effects for married mothers. Effects on time spent with children ages 15–18 are negligible. The declining effects with age are not surprising given the declining amount of time mothers spend with their children as they age (see Figure 5). Most importantly, Panel B shows no evidence that the EITC reduces investment time for any age group. Indeed, the most visible pattern is the modest positive effect on time married mothers devote to investment in children ages 5 and above; although, none of these coefficients is statistically significant.

5.8. *Robustness*

In this subsection, we examine the robustness of our results to different sets of controls and sources of identifying variation in $MaxEITC$, alternative measures of the EITC expansions, and restricting the sample to unmarried mothers.³⁰ We also provide a focused look at time allocation decisions surrounding the 2009 federal EITC expansion.

³⁰When we separately estimate effects of the EITC by month, we find similar results across months.

Different Controls and Sources of Identifying Variation: We explore estimation of equation (1) using several alternative sets of controls, presenting these results in Table 12. These results continue to use our sample of mothers only; however, Appendix Table A.5 shows similar results for several outcomes based on the full sample of women. All specifications in Table 12 control for the same set of family demographic characteristics used throughout the analysis so far, with our full baseline specification that includes state \times year FE reported in column (2). As noted in Section 3, this exploits variation in *MaxEITC* due to average differences in benefits by family size across states and over time, as well as variation driven by the effects of federal and state EITC expansions on the benefits of larger vs. smaller families. Column (1) reports estimates from a standard difference-in-difference specification that includes state FE and year FE (but not their interaction), thereby exploiting time variation in differences in average benefit levels across states (in addition to the sources exploited by our baseline specification). Of course, these estimates may be confounded by state-specific changes in factors affecting time allocation decisions that are correlated with changes in state EITC rates. As previously noted, our baseline specification (including state \times year FE) in column (2) accounts for any such changes that affect all families similarly, while column (3) uses state \times year \times unmarried FE to allow for differential effects of state-specific time-varying unobserved factors by marital status. The results reported in columns (1)-(3) are all quite similar: among unmarried mothers, EITC expansions increase labor supply, reduce home production + leisure and time spent with children, but have negligible effects on investment time with children; effects on married mothers are always modest and statistically insignificant.

The next three columns of Table 12 further restrict the sources of variation we use for identification. Column (4) includes interactions of year FE with an indicator for 3+ children, which absorbs the average effects, common to all states, of the 2009 federal EITC expansion by family size and accounts for any other nationwide time-varying factors that differentially affect small vs. large families. This specification continues to exploit the fact that the federal expansion increased *MaxEITC* more for families with 3+ children in states with larger EITC rates, as well as variation derived from cross-state differences in EITC rates and changes in those rates over time. By contrast, column (5) includes interactions of

state FE with the indicator for 3+ children, absorbing the long-run average differences across states in their benefits for small vs. large families. In the absence of changes in state EITC rates, these estimates would be identified only from the 2009 federal expansion in benefits for larger families. The fact that several states expanded their EITCs provides an important additional source of identification, since increases in their rates generate larger changes in *MaxEITC* for families with more children. Finally, column (6) is extremely demanding and incorporates interactions between the indicator for 3+ children and both year FE and state FE, leaving only variation in *MaxEITC* at the state–year–number of children level coming from changes in federal and state expansions. Specifically, these estimates are identified only from (i) the larger impacts of the 2009 expansion on *MaxEITC* for families with 3+ children in states with larger EITC rates and (ii) larger effects of increases in state EITC rates on *MaxEITC* for larger families. Because column (6) controls for all two-way components of state–year–number of children FE, the only remaining identification threats that we cannot account for include factors that vary at the state–year–number of children level.

Most results in columns (4)–(6) of Table 12 are quite similar to those of our baseline specification in column (2). Effects of the EITC on labor supply are positive and significant for unmarried mothers, while they are small and insignificant for married mothers. The increases in weekly hours worked among single mothers are roughly offset by reductions in leisure and home production time; although, the latter are more imprecisely estimated. We observe similar patterns for time with children, except in the final column, which includes all two-way interaction components. Estimated effects on investment time are quite small and insignificant across all columns. As in our baseline specification, none of the estimates are statistically significant for married mothers.

We conclude our discussion of Table 12 with a few general comments. First, estimated effects are remarkably similar regardless of the source of EITC variation. Second, most standard errors increase very little when moving from column (3) to (5), suggesting that our baseline estimates do not rely heavily on long-run differences in state EITC rates for identification. Third, standard errors increase noticeably more when introducing interactions between year FE and the indicator for 3+ children in columns (4) and (6). This suggests that variation induced by the 2009 federal EITC expansion plays an important role in our

estimation strategy.

Alternative Measures of the EITC: Appendix Table A.6 shows that results are robust to alternate measures of EITC expansions, specifically the total (federal plus state) EITC phase-in rate.³¹ We find consistent evidence that EITC expansions lead to increases in LFP and work hours, coupled with reductions in home production and leisure time, for unmarried women and mothers. The expansions also cause unmarried mothers to reduce their total time with children but have little impact on their investment time. Our estimates suggest no effect of changes in EITC phase-in rates on the time allocation decisions of married mothers.

Alternative Measures of Labor Supply: The results for LFP and hours worked last week presented in Table 4 are based on CPS data linked to ATUS. Appendix Table A.7 reports similar effects on labor supply using other measures from the CPS (usual weekly work hours, employed, and non-self-employed LFP) or from time diary data collected as part of ATUS (weekly work hours, working > 0 hours/week, working \geq 20 hours/week, and working \geq 40 hours/week).

Restricting the Sample to Unmarried Mothers: Appendix Table A.8 shows that our main results are similar, though less precise, when restricting the sample to unmarried mothers only. Each \$1,000 in *MaxEITC* significantly increases LFP by 7 percentage points and weekly work hours by 2.2, while it insignificantly reduces time with children by 1.1 hours/week and investment time by 0.4 hours/week. Little of the reduction in investment time comes from academic activities (-0.06 hours/week), about one-quarter from health investments (-0.10 hours/week), and half from other investments (-0.21 hours/week); although, none of these effects are statistically significant.

Evidence from 2009 Federal Expansion, Parallel Pre-trends and Effects Over Time: We end with a closer look at the 2009 federal EITC expansion, which increased *MaxEITC* by about \$1,000 for families with 3 or more children. Given the important identifying variation induced by this expansion, we briefly examine the evolution of time allocation behavior for families with 3+ children vs. families with fewer children before and

³¹Notice that if the federal phase in rate is 40 percent and the state EITC matches 20 percent of the federal EITC, then the total phase-in rate is $0.40(1+0.20)=0.48$. *MaxEITC* and the phase-in rate are highly correlated (see footnote 8).

after the policy change. Specifically, we estimate the following specification to explore pre-trends and the dynamics of impacts after the expansion:

$$Y_{ist} = \sum_{\tau} \mathbf{1}(t \in \tau) (\alpha_1^{\tau} \cdot 3Kids_{ist} \cdot Mar_{ist} + \alpha_2^{\tau} \cdot 3Kids_{ist} \cdot Unmar_{ist}) + X'_{ist} \alpha_3 + \gamma_{st} + \epsilon_{ist}, \quad (4)$$

where $3Kids_{ist}$ is an indicator equal to one if and only if the family has 3 or more children. We divide our sample period into six smaller periods denoted by τ , reflecting years 2003–2005, 2006–2008, 2009, 2010–2012, 2013–2016, and 2017–2018, where we omit the indicator for 2009 so that each estimate can be interpreted relative to the year of the federal expansion.

Using our baseline set of controls, Figure 9 reports the estimated differences in time allocation between mothers with 3 or more children relative to those with 1–2 children for each reported time period (i.e. α_1^{τ} and α_2^{τ}). Panels A–D show effects on work hours, home production + leisure hours, total time with children, and child investment time. Consistent with our earlier results for unmarried mothers, we observe immediate jumps up for their labor supply and down for their time devoted to home production + leisure and time spent with children in 2009, with the effects lasting throughout the post-expansion period. We also observe a modest and statistically insignificant drop in time devoted to investment activities. Importantly, we see no evidence of trends prior to 2009 that foreshadow these jumps. Indeed, formal F-tests cannot reject parallel pre-2009 trends for unmarried mothers with 3+ vs. fewer children for all outcomes except time with children where the modest pre-trend moves in the opposite direction to the jump in 2009. The time patterns for differences between married mothers with 3+ vs. fewer children show little trend or break in 2009 when the federal expansion took place, confirming our main results suggesting insignificant impacts on the time allocation of married mothers.

6. Conclusions

Using data from the 2003–2018 ATUS, we study the effects of the 2009 federal EITC expansion and several state EITC expansions on maternal time allocation decisions. Our results provide strong evidence that recent expansions in the EITC increase maternal work time, while reducing time allocated to home production and leisure activities. These impacts

are concentrated among unmarried and otherwise economically disadvantaged women, with our results on labor supply confirming the prior literature that considered earlier expansions of the EITC.

Our most novel contribution lies in our detailed analysis of maternal time allocation at home, focusing on time spent with children. We find robust evidence that unmarried mothers respond to increases in the EITC by scaling back time with their children, especially preschoolers. Looking at the types of activities unmarried mothers engage in with their children, we find that they spend less time on housework, shopping, waiting, and relaxing when with their children. As a whole, they do not devote less time to active learning and development activities we classify as investment-related, like reading with their children, helping them with their homework, playing sports or engaging in arts and crafts with them. Indeed, we find that unmarried mothers spend more time actively playing with their children in response to EITC expansions, although these estimates are not statistically significant. Altogether, these results suggest that while expansions of the EITC draw single mothers into the labor market and away from their children, the adverse developmental consequences of this are likely to be quite limited, since reductions in time spent with children do not appear to be very investment-oriented.

Three additional results add nuance to this broad conclusion. First, we find that time devoted to health care activities declines in response to EITC expansions. We suspect that these modest, though statistically significant, reductions reflect diminished need for medical services due to health benefits associated with higher incomes and/or greater health care access (Hoyne et al., 2015; Braga et al., 2019; Averett and Wang, 2018). Second, our estimates suggest that unmarried mothers who spend little time engaged in investment activities with their children appear to scale back this time even more in response to EITC expansions. This suggests that while the EITC may have negligible average effects on investment activities with children, it may adversely impact children most in need of additional active learning time with their mothers. Third, some of the activities we classify as non-investment may still provide developmental benefits for children through socialization and broader interactions with others. Among such activities, we find that unmarried mothers spend about 25 minutes less per week volunteering and attending social events/parties with their children for

every \$1,000 increase in maximum EITC benefits. While these reductions may have lasting impacts on children, previous studies establish that the developmental benefits from greater financial resources appear to dominate (Dahl and Lochner, 2012, 2017; Chetty et al., 2011; Bastian and Michelmore, 2018; Manoli and Turner, 2018; Agostinelli and Sorrenti, 2018).

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Table 1: Summary Statistics

	All Women		All Mothers		Unmarried Mothers		Married Mothers	
	Mean (1)	S.D. (2)	Mean (3)	S.D. (4)	Mean (5)	S.D. (6)	Mean (7)	S.D. (8)
Children	1.20	1.25	1.86	1.10	1.75	1.13	1.92	1.07
Age	33.8	9.26	35.1	8.72	31.1	9.69	37.4	7.18
Birth Year	1976.5	10.5	1975.1	9.85	1979.3	10.7	1972.7	8.38
Married	0.52	0.50	0.64	0.48	0	0	1	0
HS Graduate	0.89	0.32	0.86	0.34	0.80	0.40	0.90	0.30
Some College	0.63	0.48	0.58	0.49	0.47	0.50	0.65	0.48
College Graduate	0.33	0.47	0.29	0.45	0.13	0.33	0.39	0.49
Black	0.13	0.34	0.14	0.34	0.26	0.44	0.071	0.26
Hispanic	0.17	0.38	0.20	0.40	0.22	0.42	0.19	0.39
Employed	0.71	0.45	0.67	0.47	0.68	0.47	0.67	0.47
Individual Earnings (1,000s)	25.8	30.6	23.5	30.1	19.0	23.5	26.1	33.0
Household Income (1,000s)	65.8	48.2	66.1	48.6	46.0	41.2	77.5	48.7
Max Possible EITC (1,000s)	3.34	2.47	4.86	1.68	4.63	1.66	4.99	1.68
EITC Benefit Eligibility (100s)	6.68	15.2	10.2	17.9	14.5	19.3	7.79	16.6
EITC Eligible	0.24	0.43	0.34	0.47	0.50	0.50	0.25	0.43
Observations	58,090		43,685		15,677		28,008	

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. All dollars are real CPI-adjusted 2018 dollars. EITC benefits calculated using TAXSIM.

Table 2: Weekly Hours Spent on Different Activities, by Number of Children

Activity	All Mothers		Mothers with 1 Child		Mothers with 2 Children		Mothers with 3+ Children	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Unmarried Mothers								
Work (CPS)	21.4	19.2	22.6	19.3	21.5	19.4	18.1	18.5
Home Production	39.7	22.5	36.4	21.2	41.4	22.4	45.7	24.3
with Children	15.3	19.2	11.0	15.8	17.7	19.8	22.5	22.9
Not with Children	24.4	18.1	25.4	18.3	23.6	17.6	23.2	18.3
Leisure	34.7	23.7	36.1	23.9	33.8	23.1	32.4	23.7
with Children	12.5	18.5	10.8	17.8	13.7	18.7	15.3	19.2
Not with Children	22.2	23.0	25.3	23.7	20.1	22.0	17.1	21.0
Total Hours with Children	28.7	31.5	22.5	28.7	32.4	31.9	39.2	34.1
Investment into Children	3.9	8.5	3.0	7.5	4.6	9.0	5.4	9.5
Observations	15,677		7,838		4,975		2,864	
Panel B: Married Mothers								
Work (CPS)	21.7	19.6	24.9	19.6	21.9	19.4	16.3	19.0
Home Production	50.4	23.5	45.3	22.3	51.1	23.1	56.9	24.5
with Children	25.9	21.1	18.8	18.7	27.4	20.3	34.2	22.2
Not with Children	24.4	18.0	26.4	19.2	23.7	17.2	22.7	17.3
Leisure	32.7	21.1	33.6	21.8	32.2	20.7	32.0	20.3
with Children	17.4	18.1	15.1	18.0	18.0	18.0	19.8	18.3
Not with Children	15.3	16.7	18.6	18.9	14.3	15.3	12.2	14.5
Total Hours with Children	44.5	30.3	34.8	29.8	46.7	28.8	55.5	29.0
Investment into Children	7.2	10.8	5.4	9.9	7.8	10.9	9.1	11.6
Observations	28,008		9,174		12,169		6,665	

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. All measures based on ATUS time-diary data except work hours, which are based on hours worked last week in CPS.

Table 3: Testing the Exogeneity of State EITCs

	Max State EITC Benefits		State EITC Rates	
	(1)	(2)	(3)	(4)
State GDP Growth Rate	-3.1 (5.4)	-3.9 (5.9)	-7.0 (8.8)	-8.3 (9.5)
Lag State GDP Growth Rate	-0.3 (2.6)	-1.0 (2.7)	-1.7 (4.3)	-3.1 (4.4)
State Unemp Rate	0.6 (19.3)	0.6 (20.3)	-3.1 (30.9)	-0.7 (32.4)
Lag State Unemp Rate	-7.7 (21.7)	-10.6 (22.7)	-5.3 (34.9)	-11.6 (36.4)
Log State GDP	2.3 (4.1)	3.5 (4.4)	2.2 (6.6)	4.2 (7.1)
Lag Log State GDP	-4.1 (4.7)	-5.3 (4.8)	-4.4 (7.5)	-5.9 (7.7)
State Min Wage	-4.3 (14.6)	0.5 (14.5)	-2.2 (23.2)	5.0 (23.3)
Lag State Min Wage	7.0 (17.4)	1.6 (17.5)	25.3 (27.7)	16.0 (28.2)
Max TANF with 1 Child	-3.4 (2.2)	-3.7 (2.2)	-6.4 (3.7)	-6.8 (3.7)
Lag Max TANF with 1 Child	-1.8 (1.7)	-1.6 (1.7)	-2.3 (2.7)	-2.2 (2.7)
Max TANF with 2 Children	37.3 (24.5)	40.6 (23.9)	64.1 (38.5)	68.0 (37.7)
Lag Max TANF with 2 Children	30.0 (19.7)	30.1 (19.6)	45.9 (29.9)	48.3 (30.1)
Max TANF with 3 Children	-0.8 (0.9)	-0.9 (0.8)	-1.3 (1.3)	-1.4 (1.2)
Lag Max TANF with 3 Children	-1.2 (1.0)	-1.3 (1.0)	-1.9 (1.4)	-2.2 (1.5)
Avg Family Size		-4.6 (3.6)		-7.4 (5.8)
Avg Number of Kids		13.1 (7.9)		20.9 (13.0)
Avg Number of Kids Under 5		-16.4 (10.9)		-20.6 (17.9)
Fraction Female		-28.2 (19.8)		-42.6 (31.8)
Avg Age		-22.7 (38.8)		-5.9 (66.2)
Fraction Married		1.7 (10.6)		1.8 (17.8)
Fraction White		-14.9 (12.3)		-25.7 (20.2)
Avg Years Education		-4.7 (2.1)		-7.3 (3.6)
Fraction Born Out of State		5.2 (10.6)		9.7 (17.8)
Fraction Non-Citizen		-5.0 (21.2)		-22.6 (36.1)
R-squared	0.951	0.951	0.953	0.953
Observations	763	763	763	763
Mean Dep Var	434.2	434.2	727.2	727.2
Testing Joint Significance P-Value	0.946	0.528	0.899	0.695

Notes: Observations at the state-by-year level. Each regression controls for state FE, year FE, and state time trends. All dollars are in real CPI-adjusted 2018 dollars. EITC data from NBER and IRS. Unemployment rates from BLS. GDP from BEA regional data. Minimum wage from the Tax Policy Center's Tax Facts. Welfare benefits from the Urban Institute's Welfare Rules Database. Maximum state EITC benefits are for families with 3 or more children. State EITC rates in percentage points. Annual state average demographic traits calculated by authors from ACS data using the sample of all adults at least 18 years old. Robust standard errors in parentheses.

Table 4: Labor Supply, Earnings, and EITC Benefits

	LFP	Weekly Work Hours	EITC Benefits	Any EITC	Earnings and EITC	Earnings and EITC
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Average Effects (Sample of All Women, N=58,090)						
MaxEITC	0.022 (0.007)	1.18 (0.36)	266.6 (61.2)	0.002 (0.011)	1955.9 (555.8)	2222.5 (564.9)
R-squared	0.129	0.184	0.346	0.338	0.253	0.244
Mean Dep Var	0.78	23.2	668.0	0.24	25782.9	26450.8
Panel B: Effects by Marital Status (Sample of All Women, N=58,090)						
MaxEITC × Married	0.010 (0.008)	0.73 (0.36)	206.6 (59.1)	-0.014 (0.011)	1536.7 (549.5)	1743.4 (556.2)
MaxEITC × Unmarried	0.034 (0.007)	1.59 (0.37)	322.9 (54.7)	0.016 (0.009)	2350.1 (578.9)	2673.0 (584.1)
Equal Effects (p-val.)	0.000	0.000	0.000	0.000	0.000	0.000
R-squared	0.132	0.187	0.353	0.344	0.254	0.245
Mean Dep Var	0.78	23.2	668.0	0.24	25782.9	26450.8
Panel C: Effects by Marital Status (Sample of Mothers, N=43,685)						
MaxEITC × Married	0.012 (0.011)	0.56 (0.57)	329.0 (68.8)	0.004 (0.013)	1656.1 (603.3)	1985.1 (564.8)
MaxEITC × Unmarried	0.041 (0.011)	1.59 (0.50)	451.6 (63.3)	0.018 (0.013)	2378.3 (577.8)	2829.9 (556.5)
Equal Effects (p-val.)	0.000	0.000	0.000	0.001	0.004	0.001
R-squared	0.127	0.162	0.306	0.313	0.231	0.219
Mean Dep Var	0.74	21.6	1021.9	0.34	23514.9	24536.9

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Outcomes are based on CPS data. All specifications include the baseline set of controls: demographic characteristics (number of kids indicators; indicator for any kids under age 6; four education indicators for schooling less than 12, 12, 13–15, or at least 16 years; married indicator; black indicator; hispanic indicator; age; age-squared; age-cubed; and birth year); an indicator for being surveyed on a weekend; education indicators interacted with state FE, year FE, and number of kids indicators; married indicator interacted with state FE and year FE; and state FE × year FE. “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 5: Decomposing All 168 Weekly Hours of Time Use

	Work	Home	Leisure	School	Sleep	Uncat.
	Production					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Sample of All Women (N=58,090)						
MaxEITC ×	1.34	-0.43	-0.92	-0.17	0.05	0.13
Married	(0.48)	(0.51)	(0.37)	(0.32)	(0.27)	(0.08)
MaxEITC ×	1.96	-0.91	-1.16	-0.25	0.26	0.10
Unmarried	(0.50)	(0.50)	(0.37)	(0.30)	(0.31)	(0.08)
Equal Effects (p-val.)	0.001	0.000	0.091	0.326	0.020	0.278
R-squared	0.208	0.195	0.136	0.162	0.123	0.048
Mean Dep Var	26.1	41.7	34.2	3.1	61.4	1.4
Panel B: Sample of Mothers (N=43,685)						
MaxEITC ×	1.02	0.03	-1.01	-0.43	0.32	0.08
Married	(0.80)	(0.77)	(0.49)	(0.19)	(0.40)	(0.09)
MaxEITC ×	1.53	-0.54	-1.26	-0.38	0.56	0.08
Unmarried	(0.69)	(0.64)	(0.50)	(0.24)	(0.51)	(0.10)
Equal Effects (p-val.)	0.198	0.010	0.227	0.608	0.157	0.864
R-squared	0.186	0.151	0.137	0.166	0.136	0.050
Mean Dep Var	23.5	46.5	33.4	2.2	60.9	1.5

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. The six time allocation categories are mutually exclusive and add to 168 weekly hours. All specifications include the baseline set of controls (see text or Table 4 notes). “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 6: Decomposing Home Production and Leisure into Time with and without Children (Mothers)

	Home Production		Leisure	
	With Children (1)	Without Children (2)	With Children (3)	Without Children (4)
MaxEITC × Married	0.07 (0.55)	-0.05 (0.55)	-0.70 (0.40)	-0.31 (0.53)
MaxEITC × Unmarried	-1.04 (0.46)	0.50 (0.49)	-1.02 (0.36)	-0.24 (0.53)
Equal Effects (p-val.)	0.000	0.000	0.023	0.730
R-squared	0.310	0.128	0.201	0.200
Mean Dep Var	22.0	24.4	15.6	17.8

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). Home production and leisure decompose the outcomes in Table 5 Panel B columns 2 and 3. All specifications include the baseline set of controls (see text or Table 4 notes). “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 7: Investment and Non-Investment Time with Children (Mothers)

	Total Time	Non-Investment Time			Investment Time			
		Total	Home	Leisure	Total	Academic	Health	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Effects by Marital Status								
MaxEITC × Married	-0.48 (0.78)	-0.74 (0.64)	-0.10 (0.50)	-0.79 (0.30)	0.27 (0.24)	0.20 (0.11)	-0.12 (0.05)	0.19 (0.22)
MaxEITC × Unmarried	-1.95 (0.67)	-1.90 (0.58)	-0.95 (0.43)	-1.06 (0.31)	-0.05 (0.20)	0.02 (0.09)	-0.15 (0.05)	0.08 (0.20)
Equal Effects (p-val.)	0.000	0.000	0.000	0.028	0.000	0.000	0.023	0.078
R-squared	0.365	0.323	0.306	0.152	0.157	0.088	0.035	0.143
Panel B: Effects by Marital Status and Race								
MaxEITC × Married × White	-0.43 (0.78)	-0.72 (0.63)	-0.10 (0.50)	-0.77 (0.30)	0.29 (0.24)	0.19 (0.11)	-0.12 (0.05)	0.21 (0.22)
MaxEITC × Married × Nonwhite	-0.83 (0.83)	-0.88 (0.69)	-0.09 (0.52)	-0.90 (0.31)	0.05 (0.25)	0.25 (0.12)	-0.14 (0.05)	-0.05 (0.23)
MaxEITC × Unmarried × White	-2.07 (0.69)	-2.03 (0.59)	-1.00 (0.45)	-1.13 (0.31)	-0.04 (0.20)	0.00 (0.09)	-0.15 (0.05)	0.11 (0.20)
MaxEITC × Unmarried × Nonwhite	-1.76 (0.67)	-1.65 (0.58)	-0.84 (0.41)	-0.91 (0.31)	-0.10 (0.21)	0.07 (0.09)	-0.16 (0.05)	-0.01 (0.21)
R-squared	0.365	0.323	0.306	0.153	0.158	0.088	0.035	0.144
Panel C: Effects by Marital Status and Education								
MaxEITC × Married × >12 Yrs Educ	0.08 (0.77)	-0.28 (0.74)	0.05 (0.58)	-0.61 (0.37)	0.36 (0.26)	0.23 (0.11)	-0.08 (0.06)	0.21 (0.22)
MaxEITC × Married × ≤12 Yrs Educ	-1.15 (1.16)	-1.32 (0.95)	-0.30 (0.63)	-1.02 (0.56)	0.16 (0.31)	0.16 (0.15)	-0.17 (0.07)	0.17 (0.33)
MaxEITC × Unmarried × >12 Yrs Educ	-1.46 (0.72)	-1.42 (0.74)	-0.78 (0.51)	-0.85 (0.39)	-0.04 (0.23)	0.04 (0.09)	-0.11 (0.06)	0.03 (0.21)
MaxEITC × Unmarried × ≤12 Yrs Educ	-2.57 (1.02)	-2.48 (0.89)	-1.15 (0.63)	-1.30 (0.54)	-0.09 (0.26)	-0.01 (0.13)	-0.21 (0.07)	0.13 (0.30)
R-squared	0.365	0.323	0.306	0.152	0.157	0.088	0.035	0.143
Mean Dep Var	38.7	32.7	19.9	11.7	6.0	1.2	0.2	4.6

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers (N=43,685). All specifications include the baseline set of controls (see text or Table 4 notes). “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 8: Decomposing Other Investment Time with Children (Table 7 Column 8)

	Play	Arts and Crafts	Sports	Talk and Listen	Organize and Plan	Look After Kids	Attend Events
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MaxEITC × Married	0.06 (0.14)	0.00 (0.02)	-0.01 (0.07)	-0.06 (0.05)	0.02 (0.02)	0.16 (0.10)	0.02 (0.09)
MaxEITC × Unmarried	0.15 (0.14)	0.01 (0.02)	-0.03 (0.06)	-0.08 (0.05)	0.01 (0.02)	0.10 (0.11)	-0.08 (0.07)
Equal Effects (p-val.)	0.008	0.443	0.282	0.113	0.174	0.029	0.002
R-squared	0.156	0.040	0.040	0.063	0.032	0.053	0.048
Mean Dep Var	2.28	0.08	0.56	0.41	0.08	0.60	0.63

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers (N=43,685). All specifications include the baseline set of controls (see text or Table 4 notes). “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 9: Decomposing Non-investment Home Production Time with Children (from Table 7 Column 3)

	Personal Care	Housework	Waiting, Shopping	Caring for Others	Civic	Eating	Errands, Travel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MaxEITC × Married	-0.04 (0.05)	-0.16 (0.31)	-0.02 (0.36)	0.01 (0.06)	-0.02 (0.01)	0.13 (0.12)	-0.01 (0.10)
MaxEITC × Unmarried	-0.08 (0.05)	-0.59 (0.29)	-0.11 (0.34)	-0.02 (0.04)	-0.02 (0.01)	0.02 (0.12)	-0.15 (0.09)
Equal Effects (p-val.)	0.238	0.000	0.064	0.373	0.815	0.028	0.002
R-squared	0.044	0.139	0.265	0.033	0.044	0.199	0.092
Mean Dep Var	0.24	6.09	6.48	0.12	0.01	4.09	2.85

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers (N=43,685). All specifications include the baseline set of controls (see text or Table 4 notes). “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 10: Decomposing Non-investment Leisure with Kids (from Table 7 Column 4)

	Helping Non-HH Members	Educ	Socializing	Waiting and Relaxing	Religious	Volunteer	Phone	Travel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MaxEITC × Married	-0.04 (0.06)	0.00 (0.01)	-0.20 (0.14)	-0.44 (0.26)	-0.07 (0.06)	-0.10 (0.07)	0.05 (0.03)	0.01 (0.05)
MaxEITC × Unmarried	-0.04 (0.06)	-0.00 (0.01)	-0.22 (0.13)	-0.51 (0.27)	-0.11 (0.06)	-0.18 (0.08)	0.03 (0.02)	-0.03 (0.05)
Equal Effects (p-val.)	0.994	0.810	0.755	0.397	0.044	0.002	0.092	0.008
R-squared	0.057	0.040	0.076	0.105	0.070	0.032	0.056	0.071
Mean Dep Var	0.18	0.02	2.66	7.09	0.52	0.33	0.14	0.78

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers (N=43,685). All specifications include the baseline set of controls (see text or Table 4 notes). “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 11: Time-Use Effects: Weekends vs Weekdays

	Work	Home Production + Leisure	With Children	
			Total Time	Investment Time
	(1)	(2)	(3)	(4)
Panel A: Full Sample, Includes Weekends and Weekdays				
MaxEITC × Married	1.02 (0.80)	-0.98 (0.95)	-0.48 (0.78)	0.27 (0.24)
MaxEITC × Unmarried	1.53 (0.69)	-1.80 (0.84)	-1.95 (0.67)	-0.05 (0.20)
R-squared	0.186	0.156	0.365	0.157
Observations	43,685	43,685	43,685	43,685
Mean Dep Var (per week)	23.5	79.9	38.7	6.0
Panel B: Restricting Sample to Weekdays (Monday–Friday)				
MaxEITC × Married	0.81 (0.91)	-1.13 (1.01)	-0.90 (0.66)	0.11 (0.21)
MaxEITC × Unmarried	1.40 (0.79)	-1.98 (0.92)	-2.28 (0.63)	-0.21 (0.19)
R-squared	0.145	0.141	0.377	0.190
Observations	21,608	21,608	21,608	21,608
Mean Dep Var (per 5 days)	21.1	53.9	25.1	4.2
Panel C: Restricting Sample to Weekends (Saturday–Sunday)				
MaxEITC × Married	0.18 (0.23)	0.28 (0.25)	0.34 (0.32)	0.20 (0.10)
MaxEITC × Unmarried	0.16 (0.24)	0.28 (0.24)	0.19 (0.29)	0.17 (0.09)
R-squared	0.086	0.132	0.355	0.161
Observations	22,077	22,077	22,077	22,077
Mean Dep Var (per 2 days)	2.4	26.0	13.6	1.8

Notes: 2003–2018 ATUS data. Hours are reported such that Panel A reports impacts on total hours over the full week, Panel B reports impacts on total hours over 5 weekdays, and Panel C reports impacts on total hours over 2 weekend days. Sample includes all women 18–49 years old. All specifications include the baseline set of controls (see text or Table 4 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table 12: Estimates Robust to Various Sets of Controls (Mothers)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Labor Force Participation (Mean = 0.74)						
MaxEITC × Married	-0.008 (0.012)	0.012 (0.011)	0.013 (0.012)	0.029 (0.018)	0.008 (0.011)	0.025 (0.018)
MaxEITC × Unmarried	0.022 (0.010)	0.041 (0.011)	0.044 (0.011)	0.060 (0.016)	0.039 (0.010)	0.055 (0.015)
R-squared	0.101	0.127	0.151	0.151	0.152	0.152
Panel B: Weekly Work Hours (Mean = 21.6)						
MaxEITC × Married	-0.24 (0.44)	0.56 (0.57)	0.57 (0.60)	0.98 (0.80)	0.41 (0.64)	0.77 (0.92)
MaxEITC × Unmarried	0.82 (0.38)	1.59 (0.50)	1.59 (0.53)	2.00 (0.71)	1.42 (0.58)	1.79 (0.84)
R-squared	0.138	0.162	0.182	0.182	0.184	0.184
Panel C: Weekly Home Production + Leisure Hours (Mean = 79.9)						
MaxEITC × Married	-0.21 (0.91)	-0.98 (0.95)	-1.09 (0.92)	-1.19 (1.22)	-0.67 (1.13)	-0.44 (1.62)
MaxEITC × Unmarried	-1.10 (0.80)	-1.80 (0.84)	-1.84 (0.79)	-1.95 (1.07)	-1.42 (1.00)	-1.19 (1.45)
R-squared	0.130	0.156	0.180	0.180	0.181	0.181
Panel D: Weekly Hours With Children (Mean = 38.7)						
MaxEITC × Married	0.09 (0.66)	-0.48 (0.78)	-0.46 (0.77)	0.55 (0.98)	0.06 (0.76)	1.62 (0.99)
MaxEITC × Unmarried	-1.41 (0.57)	-1.95 (0.67)	-1.85 (0.66)	-0.83 (0.91)	-1.34 (0.66)	0.23 (0.94)
R-squared	0.350	0.365	0.379	0.379	0.380	0.381
Panel E: Investment Hours With Children (Mean = 6.0)						
MaxEITC × Married	0.29 (0.22)	0.27 (0.24)	0.25 (0.27)	0.20 (0.39)	0.24 (0.27)	0.17 (0.42)
MaxEITC × Unmarried	-0.02 (0.20)	-0.05 (0.20)	-0.07 (0.23)	-0.13 (0.34)	-0.08 (0.23)	-0.15 (0.37)
R-squared	0.138	0.157	0.173	0.173	0.175	0.175
<i>Controls:</i>						
State FE, Year FE	X	X	X	X	X	X
State FE×Year FE		X	X	X	X	X
State FE×Year FE×Unmarried			X	X	X	X
Year FE×(3+ Kids)				X		X
State FE×(3+ Kids)					X	X

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). LFP and weekly work hours from CPS survey data; home production and leisure hours, hours with children, and investment with children from ATUS time-diary data. All specifications control for demographic characteristics (see text or Table 4 notes); an indicator for being surveyed on a weekend; education indicators interacted with state FE, year FE, and number of kids indicators; and married indicator interacted with state FE and year FE. Standard errors are robust to heteroskedasticity and clustered at the state level.

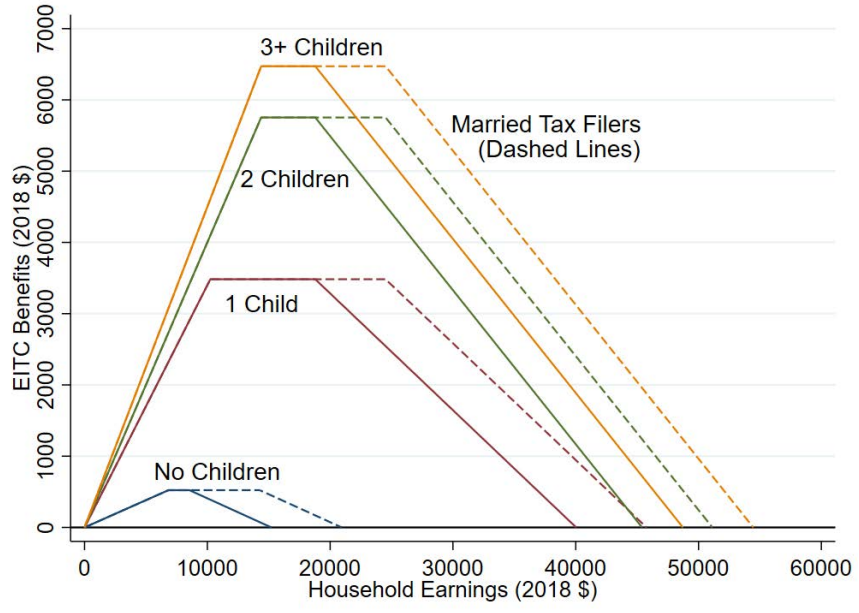


Fig. 1. Federal EITC Structure, 2018

Source: Authors' calculations from IRS data.

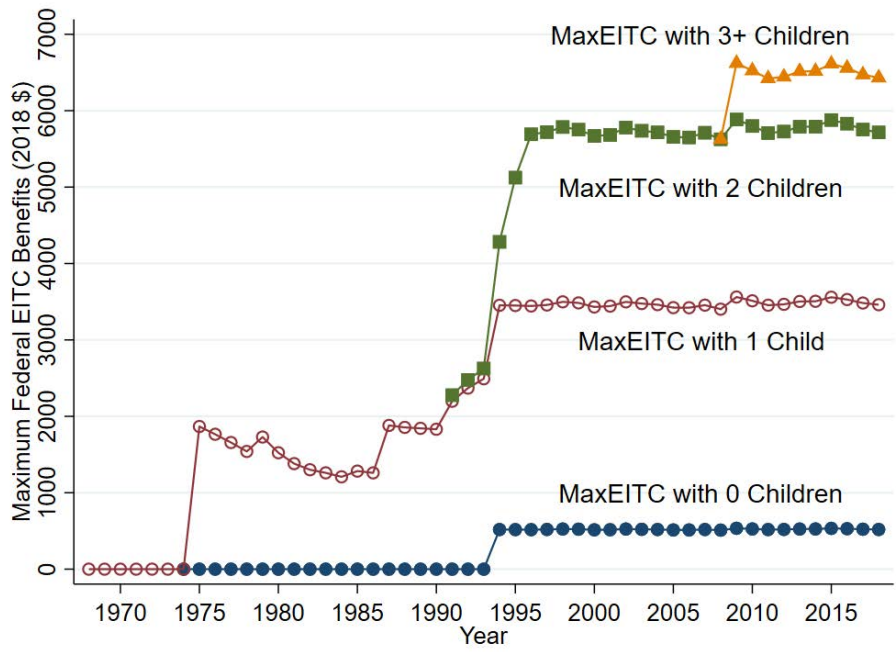


Fig. 2. Maximum Possible Federal EITC Over Time

Source: Authors' calculations from IRS data.

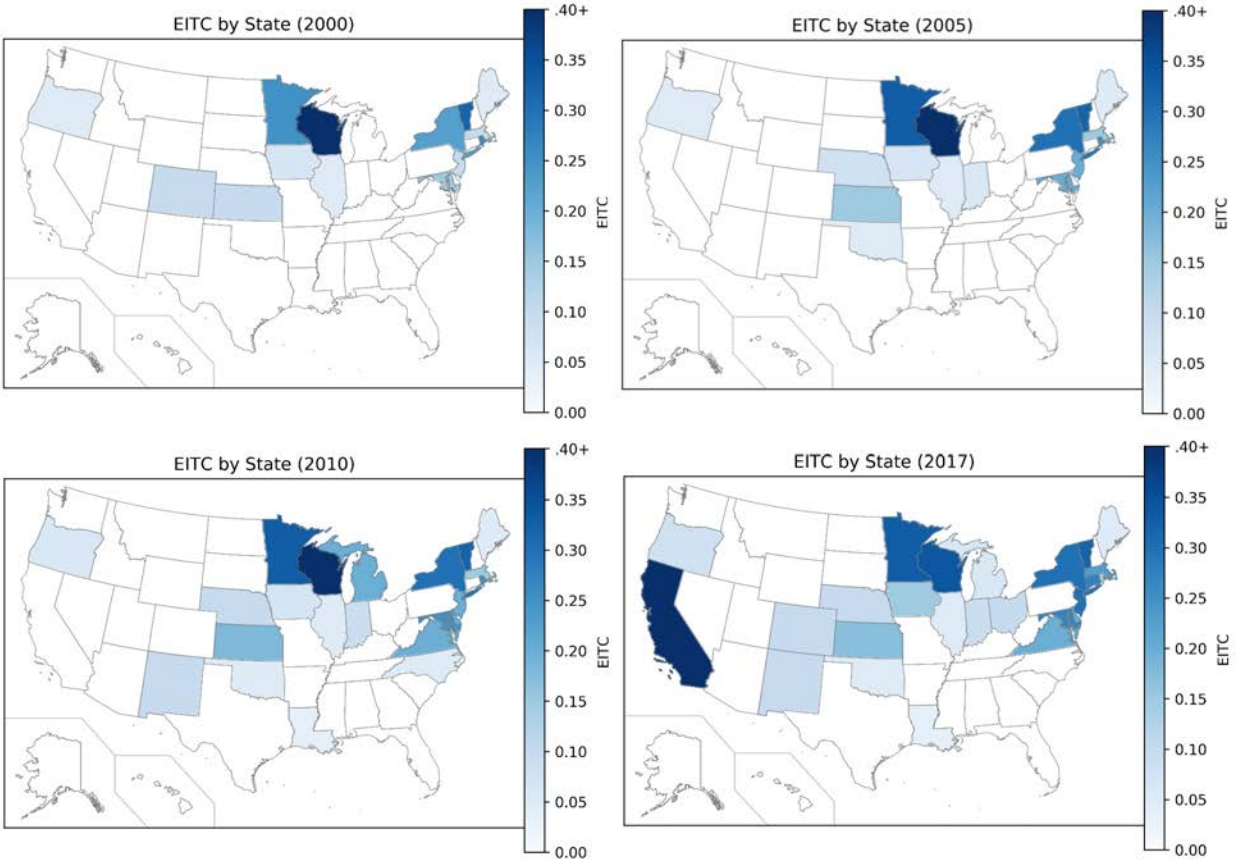


Fig. 3. State EITC Rates (as a Fraction of Federal Benefits) Over Time

Notes: Authors' calculations from NBER data. <https://users.nber.org/~taxsim/state-eitc.html>. Although CA has a high match rate, it only matches up to half of the maximum federal EITC benefit, so in our regressions we divide the CA state EITC rate by two.

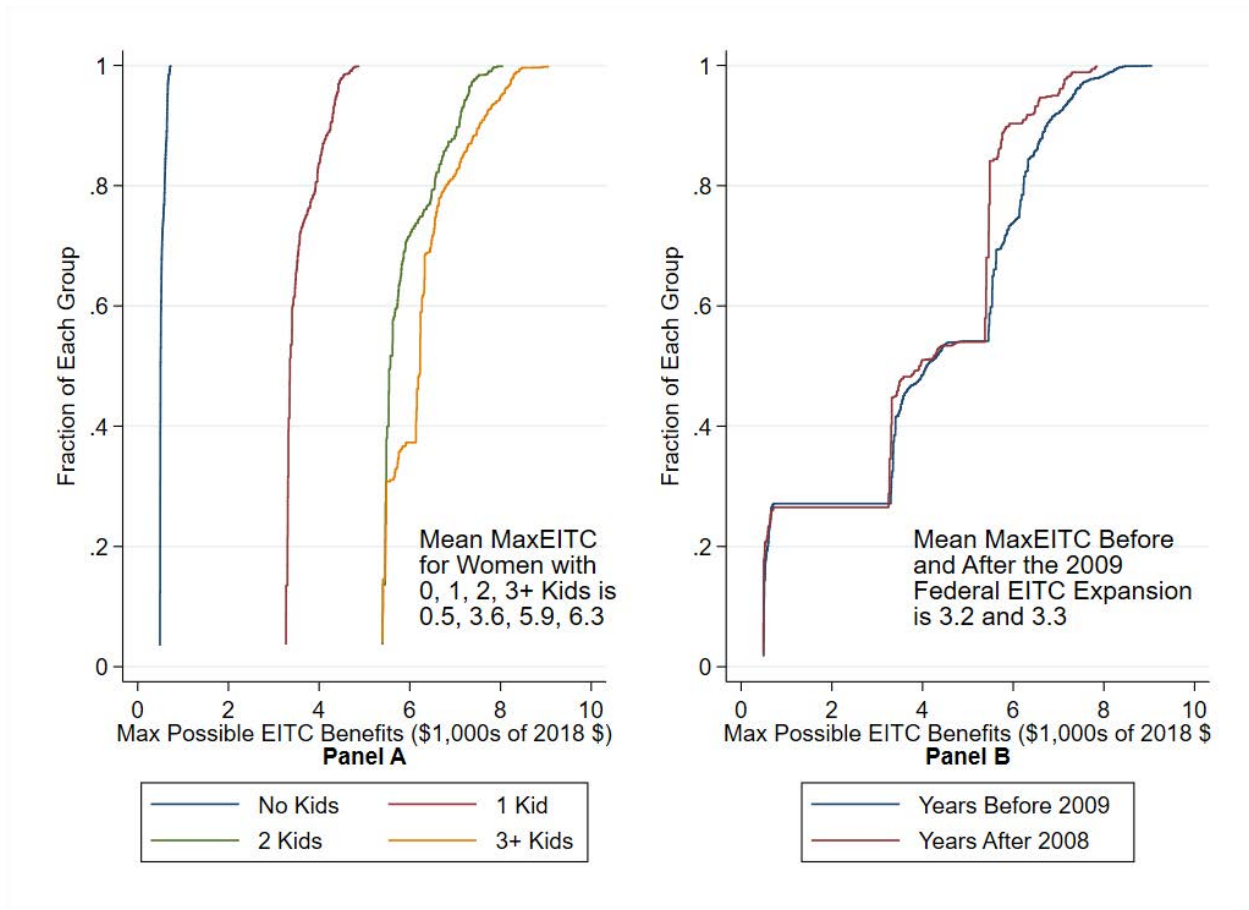


Fig. 4. CDFs for *MaxEITC* by Number of Children and Pre/Post-2009

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old.

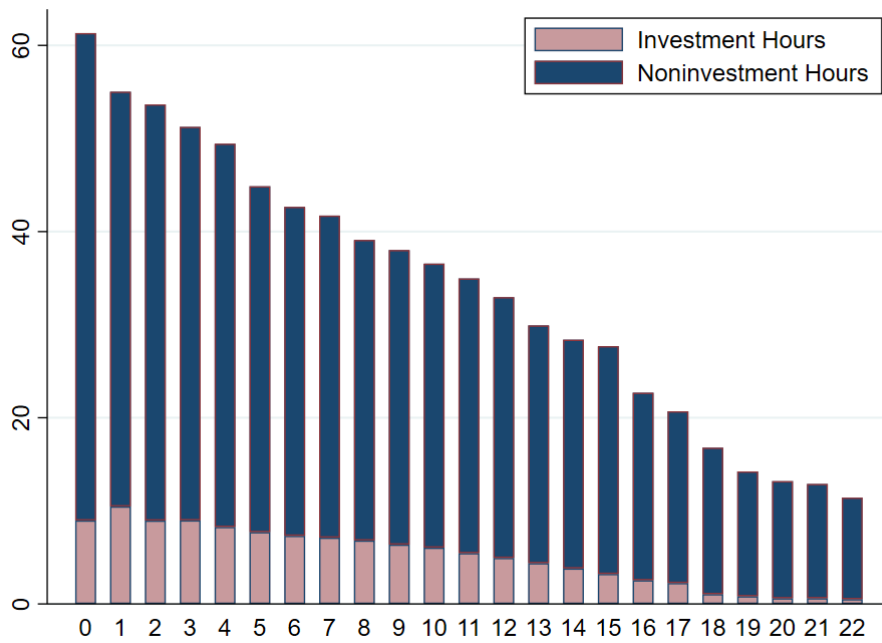


Fig. 5. Investment and Non-Investment Time with Children by Children's Age

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old.

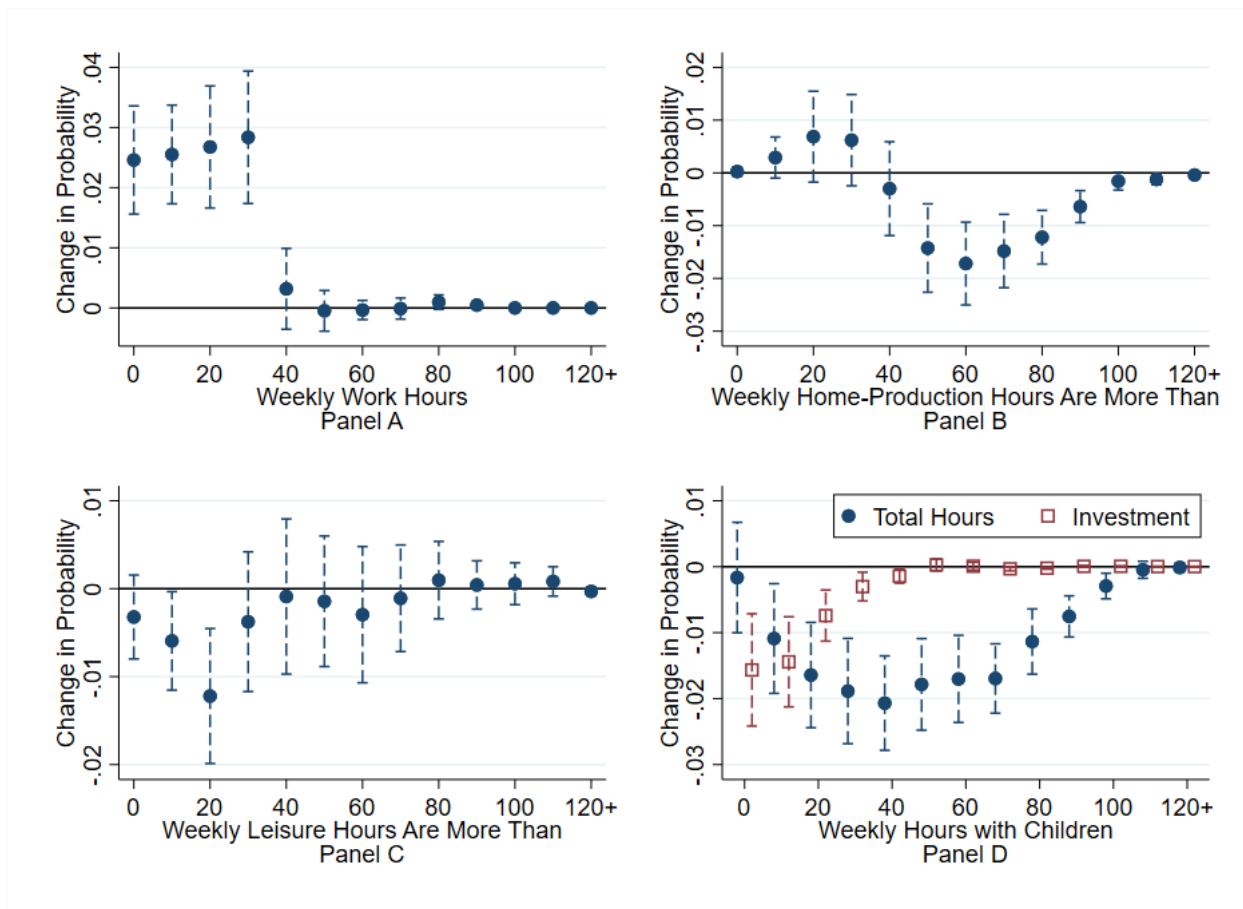


Fig. 6. Effect of the EITC on Time-Use among Unmarried Mothers: $\text{Prob}(\text{Hours} > X)$

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Weekly work hours in Panel A are from CPS survey data; outcomes in Panels B–D are from ATUS time diary data (scaled to weekly hours). Each estimate comes from a separate regression using equation (1) where the dependent variable is an indicator for hours $> X$ and the baseline set of controls is included (see text or Table 4 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

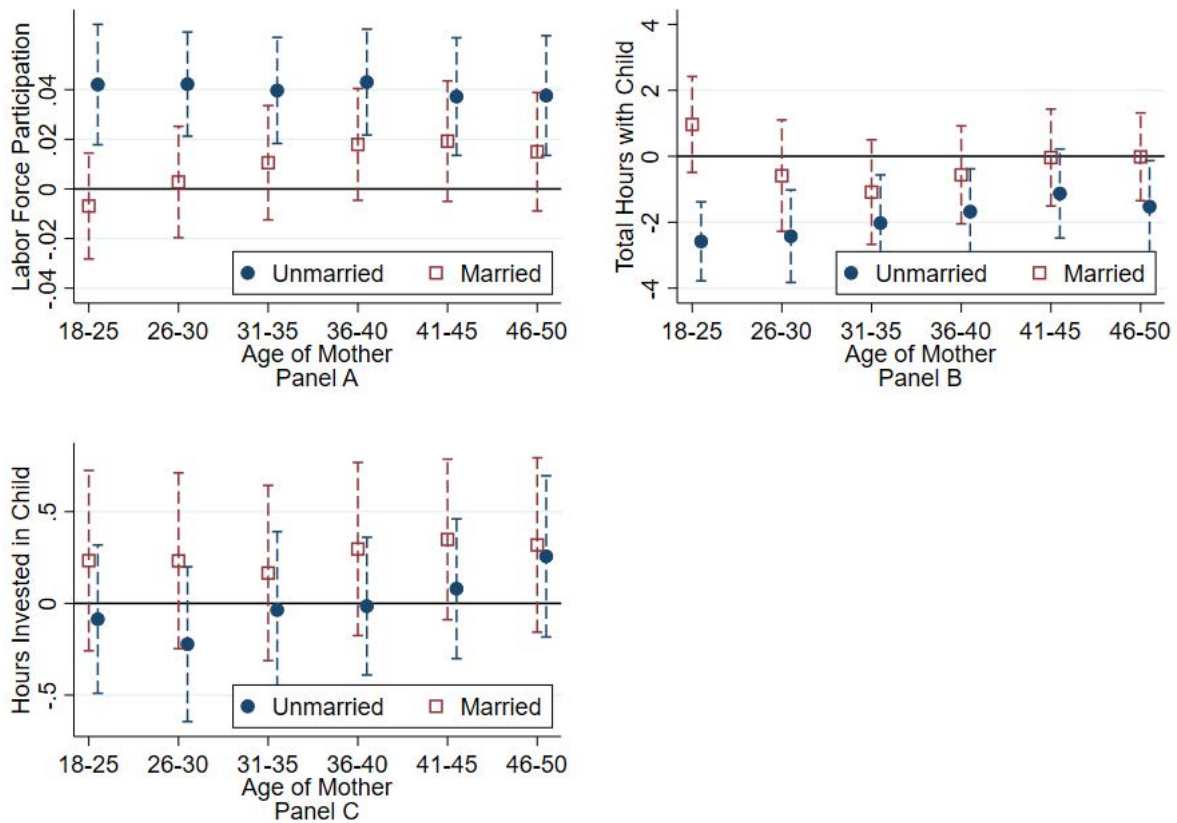


Fig. 7. EITC Effect on LFP and Time Spent with Children, by Mother's Age

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Each estimate comes from a single regression resembling equation (1), except “MaxEITC × Unmarried” and “MaxEITC × Married” are interacted with six binary age categories of the mother. Baseline set of controls used in each regression (see text or Table 4 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

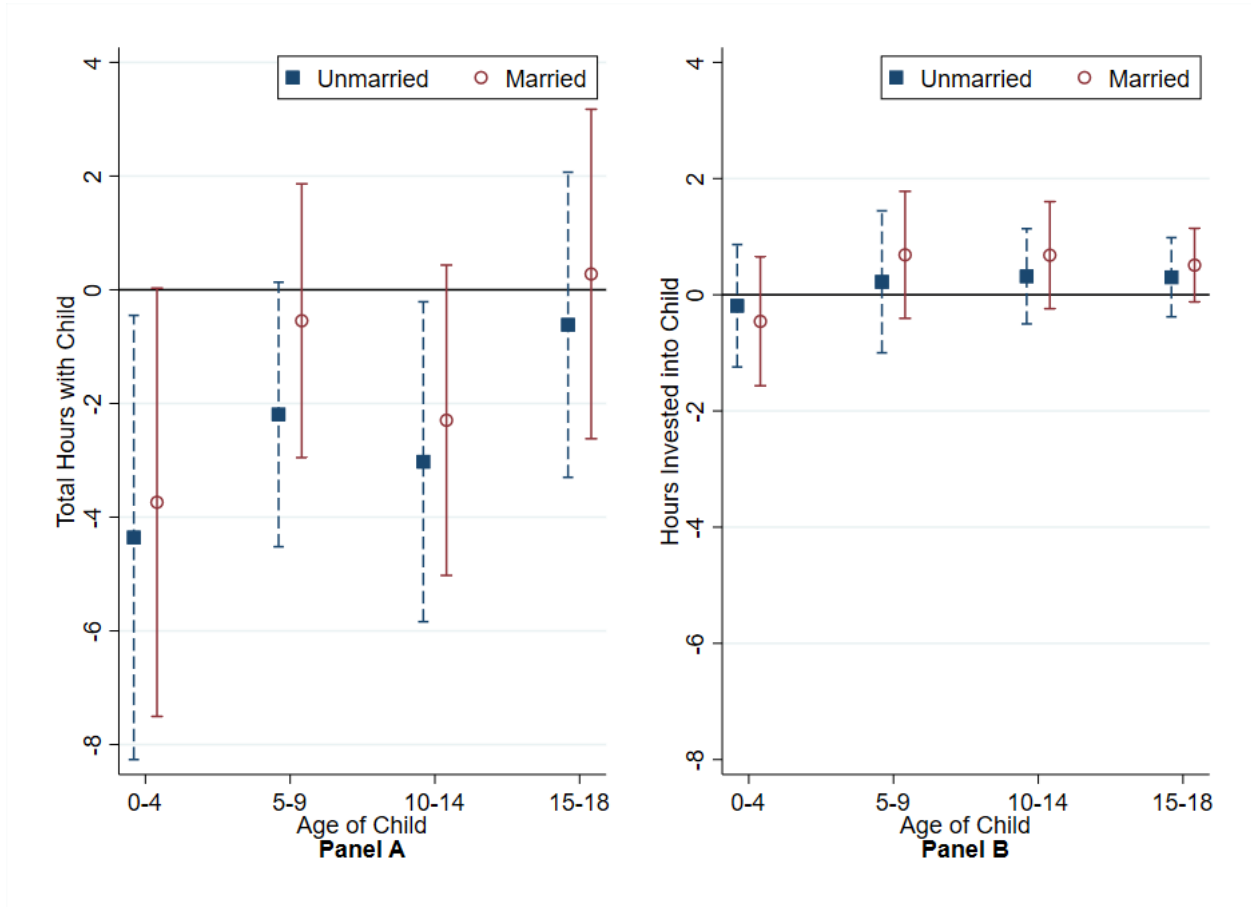


Fig. 8. Effects of the EITC on Time with Children, by Age of Children

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Estimates from equation (3). These specifications use our baseline set of controls (see text or Table 4 notes), replacing the indicator for any child under age 6 with the number of children in age group a . Standard errors are robust to heteroskedasticity and clustered at the state level.

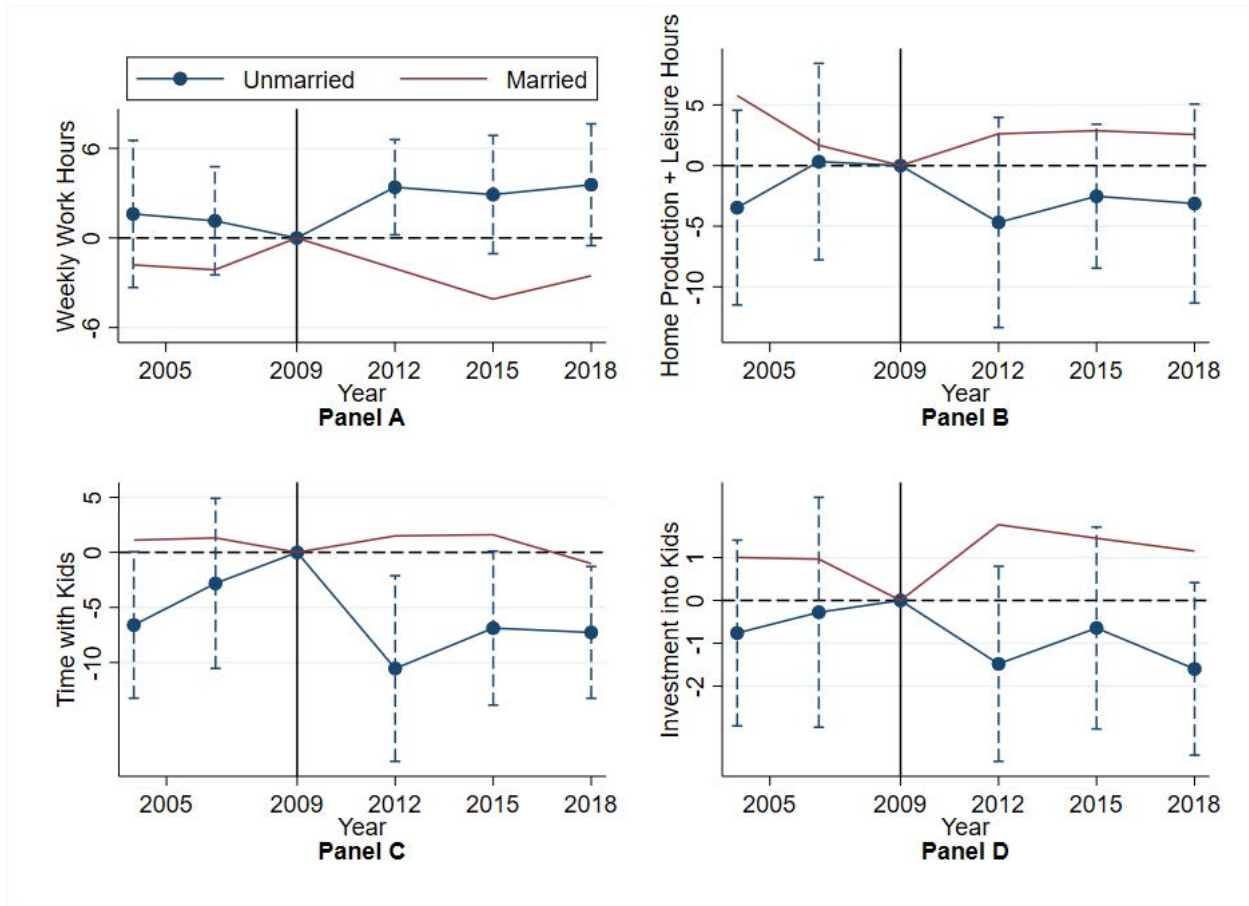


Fig. 9. Pre-trends and Effects Over Time: Evidence from 2009 Expansion

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. Estimates reflect differences in time allocation between mothers with 3+ children relative to fewer than 3 children by marital status and are based on equation (4), which pools 2003–2005, 2006–2008, 2009, 2010–2012, 2013–2016, and 2017–2018 (2009 is the omitted period). Baseline set of controls used in each regression (see text or Table 4 notes). F-tests for parallel pre-2009 trends (i.e. 2003–2005 and 2006–2008 effects both equal 0) in Panels A–D yield p-values for unmarried mothers of 0.77, 0.60, 0.06, and 0.76, respectively; corresponding p-values for married mothers are 0.18, 0.01, 0.70, and 0.48. Standard errors are robust to heteroskedasticity and clustered at the state level.

Online Appendix

The EITC and Maternal Time Use: More Time Working and Less Time with Kids?¹

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Appendix A: Additional Tables and Figures

Table A.1: Summary Statistics for State-Year Factors (ATUS Sample)

	All Women		All Mothers		Unmarried Mothers		Married Mothers	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
State GDP Growth Rate	4.03	2.82	4.04	2.86	3.99	2.78	4.07	2.91
State GDP (Billions)	13.2	0.96	13.2	0.96	13.2	0.95	13.2	0.97
State Minimum Wage	8.05	1.12	8.04	1.12	8.04	1.11	8.04	1.12
State Unemployment Rate	6.21	2.10	6.22	2.10	6.29	2.11	6.19	2.09
Max TANF with 1 Kid (100s)	4.10	1.66	4.09	1.67	4.01	1.66	4.13	1.67
Max TANF with 2 Kids (100s)	5.06	2.06	5.04	2.07	4.95	2.08	5.09	2.07
Max TANF with 3 Kids (100s)	5.97	2.44	5.95	2.45	5.85	2.46	6.00	2.44
Observations	58,090		43,685		15,677		28,008	

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. All dollars are real CPI-adjusted 2018 dollars. EITC data from NBER and IRS. EITC benefits calculated using TAXSIM. Unemployment rates from BLS. GDP from BEA regional data. Minimum wage from the Tax Policy Center’s Tax Facts. Welfare benefits from the Urban Institute’s Welfare Rules Database.

Table A.2: Labor Supply, Earnings, and EITC Benefits: by Race, Education (Mothers)

	LFP	Weekly Work Hours	EITC Benefits	Any EITC	Earnings	Earnings and EITC
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Effects by Marital Status and Race						
MaxEITC ×	0.012	0.54	326.9	0.004	1639.6	1966.5
White × Married	(0.011)	(0.43)	(35.3)	(0.009)	(543.8)	(536.2)
MaxEITC ×	-0.008	-0.03	261.3	0.010	543.2	804.5
Nonwhite × Married	(0.011)	(0.55)	(65.5)	(0.013)	(587.8)	(564.7)
MaxEITC ×	0.045	1.74	432.3	0.013	2593.0	3025.3
White × Unmarried	(0.011)	(0.50)	(64.7)	(0.013)	(562.8)	(538.7)
MaxEITC ×	0.033	1.32	494.1	0.030	1952.1	2446.2
Nonwhite × Unmarried	(0.011)	(0.51)	(62.3)	(0.013)	(611.5)	(594.7)
Equal Effects (p-val.)	0.000	0.000	0.000	0.000	0.000	0.000
	0.127	0.163	0.308	0.315	0.232	0.219
Panel B: Effects by Marital Status and Education						
MaxEITC × Married	0.011	0.38	172.1	-0.009	2380.4	2552.5
× >12 Yrs Educ	(0.012)	(0.55)	(63.3)	(0.012)	(785.5)	(770.2)
MaxEITC × Married	0.014	0.79	514.3	0.018	785.4	1299.7
× ≤12 Yrs Educ	(0.020)	(0.81)	(92.3)	(0.024)	(676.6)	(650.2)
MaxEITC × Unmarried	0.035	1.41	336.6	0.015	2975.0	3311.6
× >12 Yrs Educ	(0.014)	(0.51)	(61.6)	(0.011)	(789.3)	(781.6)
MaxEITC × Unmarried	0.047	1.81	602.2	0.025	1617.2	2219.4
× ≤12 Yrs Educ	(0.018)	(0.73)	(86.2)	(0.023)	(622.5)	(613.4)
Equal Effects (p-val.)	0.000	0.000	0.000	0.000	0.012	0.006
R-squared	0.127	0.162	0.309	0.315	0.231	0.219
Mean Dep Var	0.74	21.6	1021.9	0.34	23514.9	24536.9

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). Outcomes are based on CPS data. All specifications include the baseline set of controls (see text or Table 4 notes). “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table A.3: Decomposing All Time-Use for Mothers (168 Weekly Hours)

	Work	Home	Leisure	School	Sleep	Uncat.
	Production					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Effects by Marital Status and Race						
MaxEITC ×	0.98	0.01	-0.94	-0.43	0.30	0.08
White × Married	(0.81)	(0.76)	(0.48)	(0.19)	(0.41)	(0.09)
MaxEITC ×	1.28	0.21	-1.61	-0.45	0.49	0.07
Nonwhite × Married	(0.79)	(0.75)	(0.49)	(0.20)	(0.42)	(0.09)
MaxEITC ×	1.75	-0.72	-1.26	-0.38	0.53	0.09
White × Unmarried	(0.69)	(0.63)	(0.49)	(0.25)	(0.52)	(0.10)
MaxEITC ×	1.13	-0.15	-1.34	-0.37	0.65	0.08
Nonwhite × Unmarried	(0.72)	(0.65)	(0.51)	(0.26)	(0.54)	(0.10)
R-squared	0.187	0.152	0.139	0.166	0.136	0.050
Panel B: Effects by Marital Status and Education						
MaxEITC × Married	0.24	-0.05	-0.84	0.06	0.46	0.14
× >12 Yrs Educ	(0.91)	(0.67)	(0.58)	(0.21)	(0.45)	(0.12)
MaxEITC × Married	2.03	0.07	-1.19	-1.08	0.17	0.00
× ≤12 Yrs Educ	(1.39)	(1.18)	(1.00)	(0.38)	(0.48)	(0.13)
MaxEITC × Unmarried	0.57	-0.38	-1.19	0.27	0.61	0.13
× >12 Yrs Educ	(1.00)	(0.55)	(0.63)	(0.29)	(0.54)	(0.10)
MaxEITC × Unmarried	2.68	-0.69	-1.36	-1.14	0.48	0.03
× ≤12 Yrs Educ	(1.21)	(1.11)	(0.97)	(0.39)	(0.58)	(0.15)
R-squared	0.186	0.152	0.137	0.168	0.136	0.050
Mean Dep Var	23.5	46.5	33.4	2.18	60.9	1.49

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). The six time allocation categories are mutually exclusive and add to 168 weekly hours. All specifications include the baseline set of controls (see text or Table 4 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table A.4: Impacts of the EITC, by Age of Youngest Child

	LFP	Work Hours	Home Production and Leisure	Time with Kids	Investment in Kids
	(1)	(2)	(3)	(4)	(5)
Panel A: Effects by Whether Youngest Child is Under Age 6					
MaxEITC \times Married	0.005	0.37	-0.81	-1.19	0.10
\times Child <6	(0.012)	(0.59)	(0.94)	(0.84)	(0.25)
MaxEITC \times Married	0.026	0.90	-1.21	0.85	0.50
\times Child ≥ 6	(0.012)	(0.57)	(0.98)	(0.72)	(0.22)
MaxEITC \times Unmarried	0.041	1.54	-1.55	-1.98	-0.22
\times Child <6	(0.011)	(0.53)	(0.84)	(0.73)	(0.21)
MaxEITC \times Unmarried	0.044	1.70	-2.04	-1.68	0.13
\times Child ≥ 6	(0.011)	(0.49)	(0.86)	(0.64)	(0.20)
R-squared	0.130	0.163	0.156	0.370	0.158
Panel B: Effects by Whether Youngest Child is Under Age 13					
MaxEITC \times Married	0.013	0.59	-0.98	-0.53	0.23
\times Child <13	(0.011)	(0.57)	(0.93)	(0.76)	(0.23)
MaxEITC \times Married	0.033	1.25	-1.80	0.09	0.10
\times Child ≥ 13	(0.011)	(0.60)	(0.99)	(0.75)	(0.22)
MaxEITC \times Unmarried	0.041	1.59	-1.65	-1.57	-0.02
\times Child <13	(0.011)	(0.50)	(0.82)	(0.66)	(0.19)
MaxEITC \times Unmarried	0.046	1.74	-2.56	-2.89	-0.12
\times Child ≥ 13	(0.012)	(0.51)	(0.89)	(0.74)	(0.19)
R-squared	0.128	0.163	0.157	0.404	0.169

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers (N=43,685). All specifications include the baseline set of controls (see text or Table 4 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table A.5: Estimates Robust to Various Sets of Controls (All Women)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Labor Force Participation (Mean = 0.78)							
MaxEITC × Married	0.006 (0.009)	0.010 (0.008)	0.018 (0.011)	0.018 (0.011)	0.036 (0.016)	0.014 (0.011)	0.032 (0.017)
MaxEITC × Unmarried	0.029 (0.008)	0.034 (0.007)	0.040 (0.010)	0.041 (0.011)	0.059 (0.016)	0.037 (0.010)	0.055 (0.016)
R-squared	0.112	0.132	0.152	0.170	0.170	0.171	0.171
Panel B: Weekly Work Hours (Mean = 23.2)							
MaxEITC × Married	0.31 (0.35)	0.73 (0.36)	0.73 (0.51)	0.75 (0.54)	1.19 (0.71)	0.61 (0.59)	1.03 (0.84)
MaxEITC × Unmarried	1.18 (0.36)	1.59 (0.37)	1.51 (0.49)	1.54 (0.52)	1.99 (0.70)	1.40 (0.58)	1.82 (0.83)
R-squared	0.168	0.187	0.207	0.223	0.223	0.224	0.224
Panel C: Weekly Home Production + Leisure (Mean = 75.9)							
MaxEITC × Married	-0.84 (0.60)	-1.35 (0.58)	-1.12 (0.87)	-1.28 (0.86)	-1.44 (1.17)	-0.89 (1.07)	-0.76 (1.58)
MaxEITC × Unmarried	-1.62 (0.59)	-2.07 (0.54)	-1.82 (0.89)	-1.95 (0.88)	-2.11 (1.19)	-1.56 (1.09)	-1.43 (1.59)
R-squared	0.166	0.188	0.212	0.230	0.230	0.231	0.231
<i>Controls:</i>							
State FE, Year FE	X	X	X	X	X	X	X
State FE×Year FE		X	X	X	X	X	X
State FE×Year FE×Any Kids			X	X	X	X	X
State FE×Year FE×Unmarried				X	X	X	X
Year FE ×(3+ Kids)					X		X
State FE×(3+ Kids)						X	X

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old (N=58,090). LFP and weekly work hours from CPS survey data, home production and leisure hours from ATUS time-diary data. All specifications control for demographic characteristics (see text or Table 4 notes); an indicator for being surveyed on a weekend; education indicators interacted with state FE, year FE, and number of kids indicators; and married indicator interacted with state FE and year FE. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table A.6: Outcomes Robust to EITC Definition: Phase-in Rates

	LFP	Work Hours	Home Prod. and Leisure Hours	Time with Children Hours	Investing in Children Hours
	(1)	(2)	(3)	(4)	(5)
Panel A: Sample of All Women (N=58,090)					
EITC Phase-In Rate	0.011	0.90	-1.98		
× Married	(0.011)	(0.52)	(0.94)		
EITC Phase-In Rate	0.044	2.12	-2.92		
× Unmarried	(0.009)	(0.52)	(0.89)		
R-squared	0.132	0.187	0.188		
Panel B: Sample of All Mothers (N=43,685)					
EITC Phase-In Rate	0.014	0.59	-1.54	-0.94	0.42
× Married	(0.019)	(0.93)	(1.78)	(1.28)	(0.33)
EITC Phase-In Rate	0.064	2.45	-2.59	-3.69	-0.17
× Unmarried	(0.017)	(0.83)	(1.64)	(1.08)	(0.28)
R-squared	0.126	0.162	0.156	0.365	0.157

Notes: 2003–2018 ATUS data. Sample includes all women or all mothers 18–49 years old. Phase-in rates are in 10 percentage points and reflect the combined federal plus state-specific rates. All specifications include the baseline set of controls (see text or Table 4 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table A.7: Robust to Various Measuring of Labor Supply

	ATUS Time-Use Data				CPS Data		
	Time-Use Work Hours (1)	>0 Work Hours (2)	≥ 20 Work Hours (3)	≥ 40 Work Hours (4)	Usual Working Hours (5)	LFP Non- Self-Emp (6)	(7)
Panel A: Average Effects (Sample of All Women, N=58,090)							
MaxEITC	1.66 (0.47)	0.020 (0.008)	0.028 (0.007)	0.027 (0.008)	1.18 (0.32)	0.023 (0.007)	0.024 (0.007)
R-squared	0.208	0.187	0.197	0.191	0.187	0.144	0.121
Mean Dep Var	26.15	0.49	0.44	0.38	23.22	0.72	0.74
Panel B: Effects by Marital Status (Sample of All Women, N=58,090)							
MaxEITC \times Married	1.34 (0.48)	0.016 (0.008)	0.024 (0.008)	0.021 (0.009)	0.69 (0.32)	0.015 (0.008)	0.012 (0.008)
MaxEITC \times Unmarried	1.96 (0.50)	0.024 (0.008)	0.033 (0.007)	0.032 (0.008)	1.65 (0.33)	0.030 (0.007)	0.036 (0.007)
Equal Effects (p-val.)	0.001	0.001	0.001	0.000	0.000	0.000	0.000
R-squared	0.208	0.187	0.198	0.192	0.189	0.145	0.125
Mean Dep Var	26.15	0.49	0.44	0.38	23.22	0.72	0.74
Panel C: Effects by Marital Status (Sample of Mothers, N=43,685)							
MaxEITC \times Married	1.02 (0.80)	0.015 (0.012)	0.018 (0.013)	0.016 (0.014)	0.52 (0.58)	0.013 (0.016)	0.022 (0.012)
MaxEITC \times Unmarried	1.53 (0.69)	0.024 (0.010)	0.026 (0.011)	0.026 (0.011)	1.67 (0.51)	0.031 (0.013)	0.051 (0.011)
Equal Effects (p-val.)	0.198	0.196	0.201	0.098	0.000	0.002	0.000
R-squared	0.186	0.172	0.180	0.174	0.167	0.140	0.118
Mean Dep Var	23.5	0.46	0.40	0.34	21.4	0.67	0.69

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. ATUS outcomes are based on time-diary data, while CPS outcomes are based on survey data. All specifications include the baseline set of controls (see text or Table 4 notes). “Equal Effects” reports p-values for F-tests of equality for both coefficients on MaxEITC interactions with marital status. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table A.8: Restricting the Sample to Unmarried Mothers

	LFP	Work Hours	Time with Kids	Investment Time	Academic Investment	Health Investment	Other Investment
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MaxEITC	0.069 (0.027)	2.16 (0.77)	-1.10 (0.93)	-0.38 (0.32)	-0.06 (0.11)	-0.10 (0.06)	-0.21 (0.30)
R-squared	0.171	0.265	0.432	0.196	0.128	0.049	0.187
Mean Dep Var	0.79	21.4	28.7	3.9	0.7	0.1	3.1

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old unmarried mothers (N=15,677). All specifications include the baseline set of controls (see text or Table 4 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

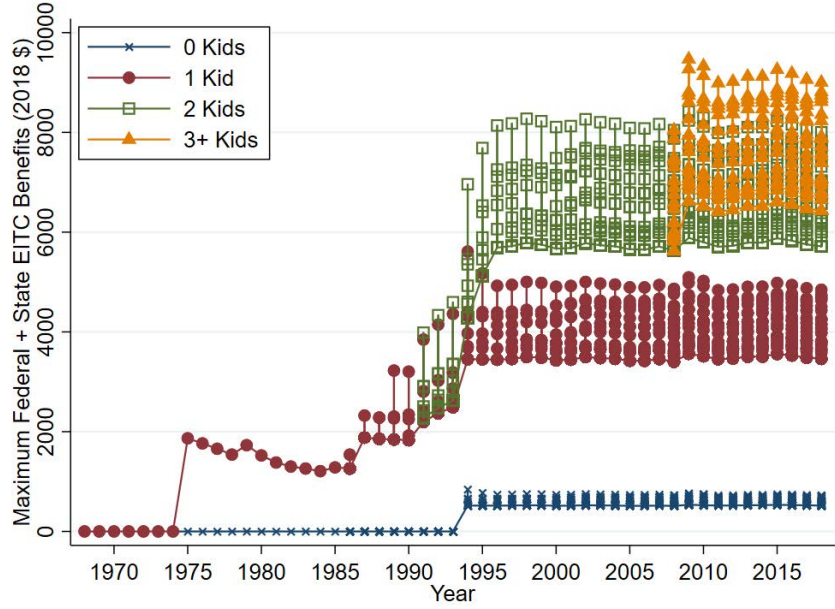


Fig. A.1. Maximum Possible Federal + State EITC Over Time

Source: Authors' calculations from IRS and NBER data. Each point denotes a state by year value.

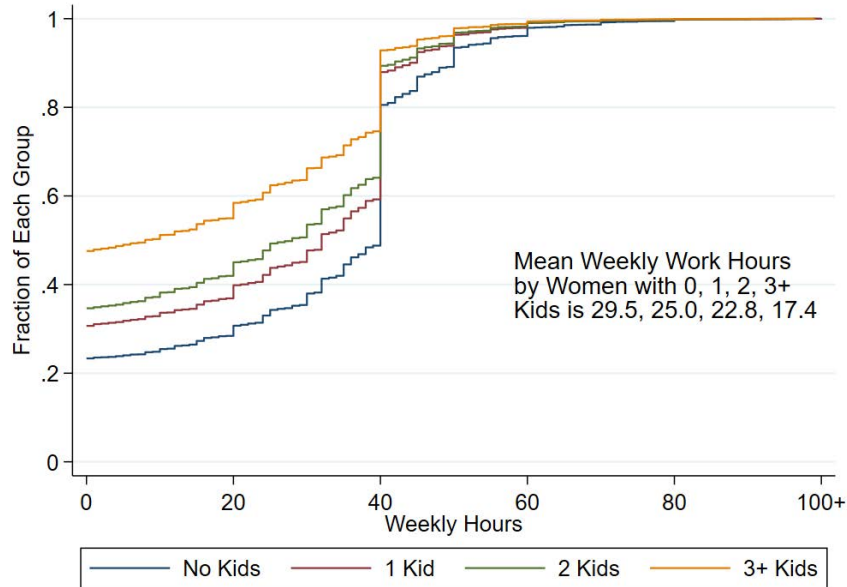


Fig. A.2. CDF of Weekly Work Hours, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Weekly work hours from CPS hours worked last week.

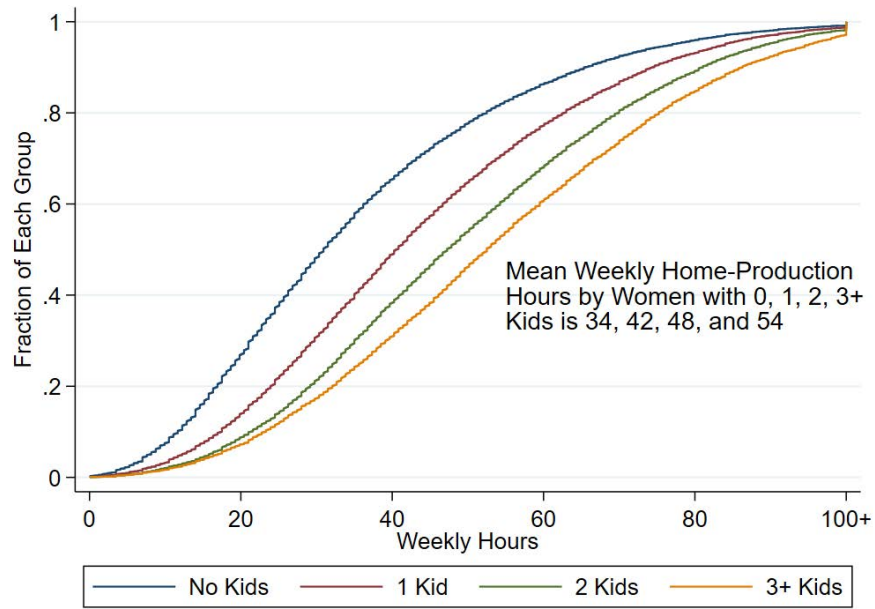


Fig. A.3. CDF of Home-Production Hours, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Home production hours from ATUS time diaries (scaled to weekly hours).

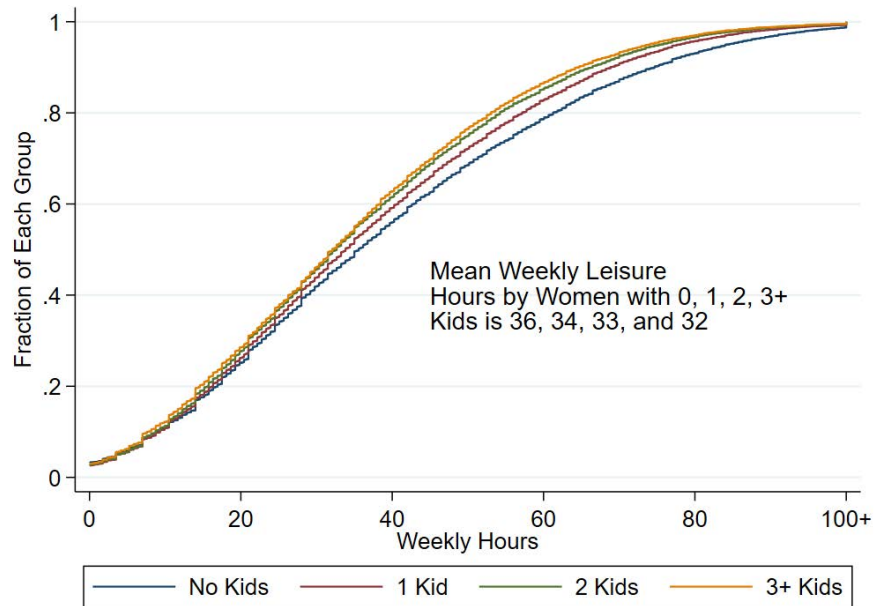


Fig. A.4. CDF of Weekly Leisure Hours, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Leisure hours from ATUS time diaries (scaled to weekly hours).

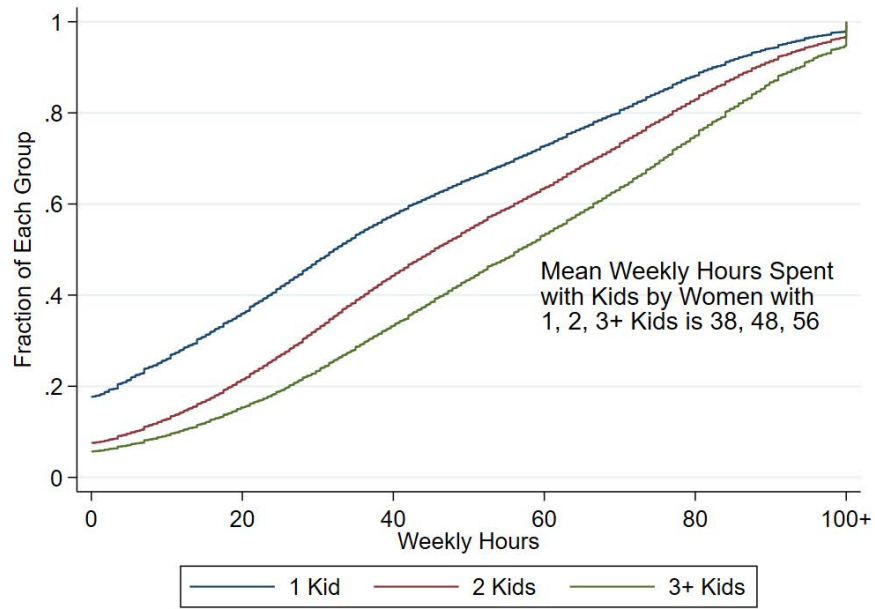


Fig. A.5. CDF of Weekly Hours with Children, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Time with kids from ATUS time diaries (scaled to weekly hours).

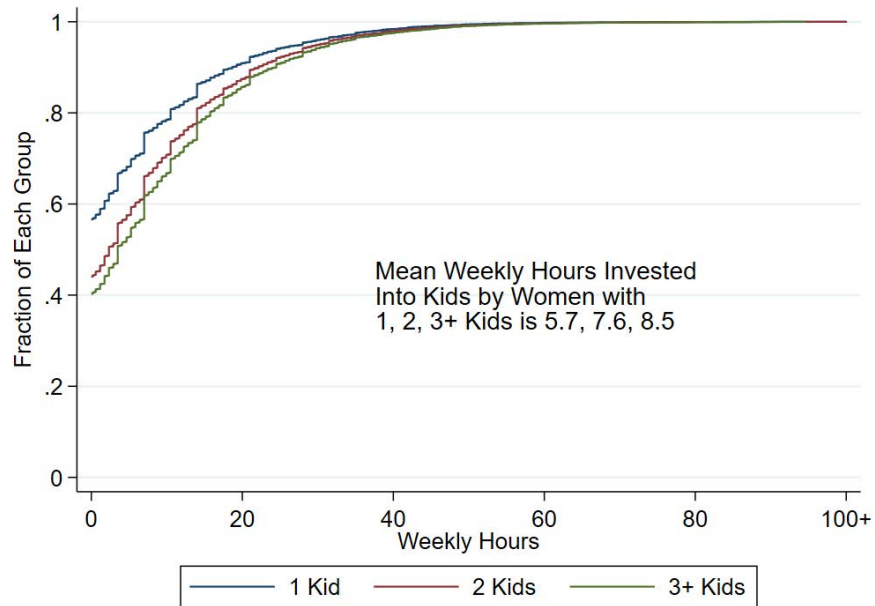


Fig. A.6. CDF of Weekly Hours Invested in Children, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Investment hours from ATUS time diaries (scaled to weekly hours).

Appendix B: ATUS Data Activity Categories

This appendix provides a detailed description of how we categorize all ATUS time-use activities.

The American Time Use Survey (ATUS) is a comprehensive survey of time use in the U.S. and has been administered annually since 2003. The ATUS sample is drawn from the Current Population Surveys (CPS), covering the population of non-institutionalized civilians at least 15 years old. Typical sample sizes have been about 26,000 respondents since 2004 with surveys administered evenly throughout the year. We use sample weights designed to adjust for stratified sampling, non-response, and to get a representative measure for each day of the year.

The survey asks individuals detailed information about all of their activities over the previous day, including who they were with at the time. The survey also collects information about the respondent and household. It can be linked with the CPS data. Our analysis combines data from the 2003–2018 surveys.

The following provides a detailed breakdown of how we categorized all ATUS time-use activities based on the 2003 ATUS Data Activity Lexicon.

B.1 HOME PRODUCTION ACTIVITIES

01 Personal Care

- 01.02 Grooming – all subcategories
- 01.03 Health-related Self Care – all subcategories
- 01.05 Personal Care Emergencies – all subcategories
- 01.99 Personal Care, n.e.c* – all subcategories

02 Household Activities

- 02.01 Housework – all subcategories
- 02.02 Food and Drink Preparation, Presentation, and Clean-up – all subcategories
- 02.03 Interior Maintenance, Repair, and Decoration – all subcategories
- 02.04 Exterior Maintenance, Repair, and Decoration – all subcategories
- 02.05 Lawn, Garden, and Houseplants – all subcategories
- 02.06 Animals and Pets – all subcategories
- 02.07 Vehicles – all subcategories
- 02.08 Appliances and Tools – all subcategories
- 02.09 Household Management – all subcategories
- 02.99 Household Activities, n.e.c* – all subcategories

03 Caring For and Helping Household Members

- 03.01 Caring For and Helping Household Children
 - 03.01.01 Physical care for household children
 - 03.01.06 Talking with/listening to household children
 - 03.01.07 Helping/teaching household children (not related to education)
 - 03.01.08 Organization and planning for household children
 - 03.01.09 Looking after household children (as a primary activity)
 - 03.01.11 Waiting for/with household children
 - 03.01.12 Picking up/dropping off household children (as a primary activity)

- 03.01.99 Caring for and helping household children, n.e.c.*
- 03.02 Activities Related to household Children’s Education – all subcategories
- 03.03 Activities Related to household Children’s Health – all subcategories
- 03.04 Caring for Household Adults – all subcategories
- 03.05 Helping Household Adults – all subcategories
- 03.99 Caring for and Helping Household Members, n.e.c.* – all subcategories
- 04 Caring For and Helping Nonhousehold Members**
- 04.01 Caring For and Helping nonhousehold Children
 - 04.01.01 Physical care for nonhousehold children
 - 04.01.06 Talking with/listening to nonhousehold children
 - 04.01.07 Helping/teaching nonhousehold children (not related to education)
 - 04.01.08 Organization and planning for nonhousehold children
 - 04.01.09 Looking after nonhousehold children (as primary activity)
 - 04.01.11 Waiting for/with nonhousehold children
- 07 Consumer Purchases** – all subcategories
- 08 Professional and Personal Care Services** – all subcategories
- 09 Household Services** – all subcategories
- 10 Government Services and Civic Obligations** – all subcategories
- 11 Eating and Drinking** – all subcategories
- 16 Telephone Calls**
- 16.01 Telephone Calls (to or from)
 - 16.01.03 Telephone calls to/from education services providers
 - 16.01.04 Telephone calls to/from salespeople
 - 16.01.05 Telephone calls to/from professional or pers. care svcs providers
 - 16.01.06 Telephone calls to/from household services providers
 - 16.01.07 Telephone calls to/from paid child or adult care providers
 - 16.01.08 Telephone calls to/from government officials
- 16.99 Telephone Calls, n.e.c.* – all subcategories
- 17 Traveling**
- 17.01 Travel Related to Personal Care – all subcategories
- 17.02 Travel Related to Household Activities – all subcategories
- 17.03 Travel Related to Caring For and Helping household Members – all subcategories
- 17.04 Travel Related to Caring For and Helping Nonhousehold Members – all subcategories
- 17.07 Travel Related to Consumer Purchases – all subcategories
- 17.08 Travel Related to Using Professional and Personal Care Services – all subcategories
- 17.09 Travel Related to Using Household Services – all subcategories
- 17.10 Travel Related to Using Government Services and Civic Obligations – all subcategories
- 17.11 Travel Related to Eating and Drinking – all subcategories
- 17.16 Travel Related to Telephone Calls – all subcategories
- 17.17 Security Procedures Related to Traveling – all subcategories
- 17.99 Travel n.e.c.* – all subcategories

B.2 SCHOOL ACTIVITIES

06 Education

06.01 Taking Class

- 06.01.01 Taking class: degree
- 06.01.03 Waiting associated with taking classes
- 06.01.04 Security procedures related to taking classes
- 06.01.99 Taking class, n.e.c.*

06.03 Research/Homework

- 06.03.01 Research/homework: class for degree
- 06.03.03 Waiting associated with research/homework
- 06.03.99 Research/homework n.e.c.*

06.04 Registration/Administrative Activities

- 06.04.01 Administrative activities: class for degree
- 06.04.03 Waiting associated with administrative activities (education)
- 06.04.99 Administrative for education, n.e.c.*
- 06.99 Education, n.e.c.* – all subcategories

17 Traveling

- 17.06 Travel Related to Education – all subcategories

B.3 WORK ACTIVITIES

05 Working and Work-Related Activities – all subcategories

17 Traveling

- 17.05 Travel Related to Work – all subcategories

B.4 LEISURE ACTIVITIES

01 Personal Care

- 01.04 Personal Activities – all subcategories

03 Caring For and Helping Household Members

03.01 Caring For and Helping Household Children

- 03.01.02 Reading to/with household children
- 03.01.03 Playing with household children, not sports
- 03.01.04 Arts and crafts with household children
- 03.01.05 Playing sports with household children
- 03.01.10 Attending household children's events

04 Caring For and Helping Nonhousehold Members

04.01 Caring For and Helping nonhousehold Children

- 04.01.02 Reading to/with nonhousehold children
- 04.01.03 Playing with nonhousehold children
- 04.01.04 Arts and crafts with nonhousehold children
- 04.01.05 Playing sports with nonhousehold children
- 04.01.10 Attending nonhousehold children's events
- 04.01.12 Dropping off/picking up nonhousehold children

- 04.01.99 Caring for nonhousehold children n.e.c.*
- 04.02 Activities Related to Nonhousehold Children’s Education – all subcategories
- 04.03 Activities Related to Nonhousehold Children’s Health – all subcategories
- 04.04 Caring For Nonhousehold Adults – all subcategories
- 04.05 Helping Nonhousehold Adults – all subcategories
- 04.99 Caring for and Helping Nonhousehold Members, n.e.c.* – all subcategories

06 Education

- 06.01 Taking Class
 - 06.01.02 Taking class: personal interest
- 06.02 Extracurricular School Activities (Except Sports) – all subcategories
- 06.03 Research/Homework
 - 06.03.02 Research/homework: class for personal interest
- 06.04 Registration/Administrative Activities
 - 06.04.02 Administrative activities: class for personal interest

12 Socializing, Relaxing, and Leisure – all subcategories

13 Sports, Exercise, and Recreation – all subcategories

14 Religious and Spiritual Activities – all subcategories

15 Volunteer Activities – all subcategories

16 Telephone Calls

- 16.01 Telephone Calls (to or from)
 - 16.01.01 Telephone calls to/from family members
 - 16.01.21 Telephone calls to/from friends, neighbors, or acquaintances

17 Traveling

- 17.12 Travel Related to Socializing, Relaxing, and Leisure – all subcategories
- 17.13 Travel Related to Sports, Exercise, and Recreation – all subcategories
- 17.14 Travel Related to Religious/Spiritual Activities – all subcategories
- 17.15 Travel Related to Volunteer Activities – all subcategories

B.5 SLEEP ACTIVITIES

01 Personal Care

- 01.01 Sleeping – all subcategories

B.6 INVESTMENT TIME

Our measure of child investment time sums all of the time mothers report spending with children in each of the following (leisure and home production) activities. The following reports all investment activities decomposed into academic, health, and other investment activities as reported in Table 8.

ACADEMIC INVESTMENT ACTIVITIES

The following activities are included in our measure of academic investment time (see Table 7, column 6):

03.01 Caring For and Helping Household Children: (03.01.02) Reading to/with non-household children

03.02 Activities Related to Household Children’s Education: (03.02.01) Homework (household children); (03.02.02) Meetings and school conferences (household children); (03.02.03) Home schooling of household children.

HEALTH INVESTMENT ACTIVITIES AND SUBCATEGORIES

The following activities are included in our measure of health investment time (see Table 7, column 7):

03.03 Activities Related to Household Children’s Health: (03.03.01) Providing medical care to household children; (03.03.02) Obtaining medical care for household children.

OTHER INVESTMENT ACTIVITIES AND SUBCATEGORIES

The following activities are included in our measure of other investment time (see Table 8, columns 3–9):

Column 3: Play

03.01 Caring For and Helping Household Children: (03.01.03) Playing with household children, not sports.

12.03 Relaxing and Leisure: (12.03.07) Playing games.

Column 4: Arts and Crafts

03.01 Caring For and Helping Household Children: (03.01.04) Arts and crafts with household children.

12.03 Relaxing and Leisure: (12.03.09) Arts and crafts as a hobby.

Column 5: Sports

03.01 Caring For and Helping Household Children: (03.01.05) Playing sports with household children.

13.01 Participating in Sports, Exercise, and Recreation: All subcategories.

Column 6: Talk and Listen

03.01 Caring For and Helping Household Children: (03.01.06) Talking with/listening to household children.

Column 7: Organize and Plan

03.01 Caring For and Helping Household Children: (03.01.08) Organization and planning for household children.

Column 8: Look After Kids

03.01 Caring For and Helping Household Children: (03.01.09) Looking after household children (as a primary activity).

Column 9: Attend

03.01 Caring For and Helping Household Children: (03.01.10) Attending household children's events.

12.04 Arts and Entertainment (other than sports): (12.04.01) Attending performing arts; (12.04.02) Attending museum; (12.04.03) Attending movies/film.

13.02 Attending Sporting/Recreational Events: All subcategories.

B.7 NON-INVESTMENT TIME WITH CHILDREN

Non-investment home production and leisure time with children is decomposed into several activity detailed subcategories in Tables 9 and 10.

HOME PRODUCTION NON-INVESTMENT ACTIVITIES AND SUBCATEGORIES

The following activities are included in our measure of home production non-investment time (see Table 9):

Column 1: Personal Care

01.02 Grooming: All subcategories.

01.03 Health-related Self Care: All subcategories.

01.05 Personal Care Emergencies: All subcategories.

01.99 Personal Care, n.e.c*: All subcategories.

08 Professional and Personal Care Services: All subcategories.

Column 2: Housework

02.01 Housework: All subcategories.

02.02 Food and Drink Preparation, Presentation, and Clean-up: All subcategories.

02.03 Interior Maintenance, Repair, and Decoration: All subcategories.

02.04 Exterior Maintenance, Repair, and Decoration: All subcategories.

02.05 Household Activities – Lawn, Garden, and Houseplants: All subcategories.

02.06 Household Activities – Animals and Pets: All subcategories.

02.07 Household Activities – Vehicles: All subcategories.

02.08 Household Activities – Appliances and Tools: All subcategories.

02.09 Household Management: All subcategories.

02.99 Household Activities, n.e.c*: All subcategories.

16.01 Telephone Calls (to or from): (16.01.03) Telephone calls to/from education services providers; (16.01.04) Telephone calls to/from salespeople; (16.01.05) Telephone calls to/from professional or personal care services providers; (16.01.06) Telephone calls to/from household services providers; (16.01.07) Telephone calls to/from paid child or adult care providers; (16.01.08) Telephone calls to/from government officials.

16.99 Telephone Calls, n.e.c*: All subcategories.

Column 3: Waiting, Shopping

03.01 Caring For and Helping Household Children: (03.01.01) Physical care for household children; (03.01.11) Waiting for/with household children; (03.01.12) Picking up/dropping off household children (as a primary activity); (03.01.99) Caring for and helping household children, n.e.c.*

03.02 Activities Related to household Children's Education: (03.02.04) Waiting associated with household children's education; (03.02.99) Activities related to household child's education, n.e.c.*

03.03 Activities Related to household Children's Health: (03.03.03) Waiting associated with household children's health; (03.03.99) Activities related to household child's health, n.e.c.*

07 Consumer Purchases: All subcategories.

09 Household Services: All subcategories.

Column 4: Caring for Others

03.04 Caring for Household Adults: All subcategories.

03.05 Helping Household Adults: All subcategories.

03.99 Caring for and Helping Household Members, n.e.c.*: All subcategories.

04.01 Caring For and Helping non-household Children: (04.01.01) Physical care for non-household children; (04.01.06) Talking with/listening to non-household children; (04.01.08) Organization and planning for non-household children; (04.01.09) Looking after non-household children (as primary activity); (04.01.11) Waiting for/with non-household children.

04.99 Caring For and Helping Non-household Members, n.e.c.*: All subcategories.

Column 5: Civic

10 Government Services and Civic Obligations: All subcategories.

Column 6: Eating

11 Eating and Drinking: All subcategories.

Column 7: Errands, Travel

17.01 Travel Related to Personal Care: All subcategories.

17.02 Travel Related to Household Activities: All subcategories.

17.03 Travel Related to Caring For and Helping household Members: All subcategories.

17.04 Travel Related to Caring For and Helping Non-household Members: All subcategories.

17.07 Travel Related to Consumer Purchases: All subcategories.

17.08 Travel Related to Using Professional and Personal Care Services: All subcategories.

17.09 Travel Related to Using Household Services: All subcategories.

17.10 Travel Related to Using Government Services and Civic Obligations: All subcategories.

17.11 Travel Related to Eating and Drinking: All subcategories.

17.16 Travel Related to Telephone Calls: All subcategories.

17.17 Security Procedures Related to Traveling: All subcategories.

17.99 Travel n.e.c.*: All subcategories.

LEISURE NON-INVESTMENT ACTIVITIES AND SUBCATEGORIES

The following activities are included in our measure of leisure non-investment time (see Table 10):

Column 1: Helping Non-HH Members

04.01 Caring For and Helping Non-household Children: (04.01.02) Reading to/with non-household children; (04.01.03) Playing with non-household children; (04.01.04) Arts and crafts with non-household children; (04.01.05) Playing sports with non-household children; (04.01.10) Attending non-household children's events; (04.01.12) Dropping off/picking up non-household children; (04.01.99) Caring for non-household children n.e.c.*

04.02 Activities Related to Non-household Children's Education: All subcategories.

04.03 Activities Related to Non-household Children's Health: All subcategories.

04.04 Caring For Non-household Adults: All subcategories.

04.05 Helping Non-household Adults: All subcategories.

Column 2: Education

06.01 Taking Class: (06.01.02) Taking class: personal interest.

06.02 Extracurricular School Activities (Except Sports): All subcategories.

06.03 Research/Homework: (06.03.02) Research/homework: class for personal interest.

06.04 Registration/Administrative Activities: (06.04.02) Administrative activities: class for personal interest.

Column 3: Socializing

12.01 Socializing and Communicating: All subcategories.

12.02 Attending or Hosting Social Events: All subcategories.

Column 4: Waiting and Relaxing

12.03 Relaxing and Leisure: (12.03.01) Relaxing, thinking; (12.03.02) Tobacco and drug use; (12.03.03) Television and movies (not religious); (12.03.04) Television (religious); (12.03.05) Listening to the radio; (12.03.06) Listening to/playing music (not radio); (12.03.08) Computer use for leisure (except games); (12.03.10) Collecting as a hobby; (12.03.11) Hobbies, except arts and crafts and collecting; (12.03.12) Reading for personal interest; (12.03.13) Writing for personal interest; (12.03.99) Relaxing and leisure, n.e.c.*

12.04 Arts and Entertainment (other than sports): (12.04.04) Attending gambling establishments; (12.04.05) Security procedures related to arts and entertainment; (12.04.99) Arts and entertainment, n.e.c.*

12.05 Waiting Associated with Socializing, Relaxing, and Leisure: All subcategories.

12.99 Socializing, Relaxing, and Leisure, n.e.c.*: All subcategories.

13.03 Waiting Associated with Sports, Exercise, and Recreation: All subcategories.

13.04 Security Procedures Related to Sports, Exercise, and Recreation: All subcategories.

13.99 Sports, Exercise, and Recreation, n.e.c.*: All subcategories.

Column 5: Religious

14 Religious and Spiritual Activities: All subcategories.

Column 6: Volunteer

15 Volunteer Activities: All subcategories.

Column 7: Phone

16.01 Telephone Calls (to or from): (16.01.01) Telephone calls to/from family members; (16.01.02) Telephone calls to/from friends, neighbors, or acquaintances; (16.01.99) Telephone calls, n.e.c.*

Column 8: Travel

17.12 Travel Related to Socializing, Relaxing, and Leisure: All subcategories.

17.13 Travel Related to Sports, Exercise, and Recreation: All subcategories.

17.14 Travel Related to Religious/Spiritual Activities: All subcategories.

17.15 Travel Related to Volunteer Activities: All subcategories.