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

Jacob Bastian and Lance Lochner

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Abstract

Parents spend considerable time and resources investing in their children's development. Given evidence that the Earned Income Tax Credit (EITC) affects maternal labor supply, we investigate how the maximum available EITC amount affects a broad array of time-use activities, focusing on the amount and nature of time spent with children. Using 2003-2018 time-use data, we find that federal and state EITC expansions increase maternal work time, which reduces time devoted to home production, leisure, and time with children. However, almost none of the reduction comes from time devoted to "investment" activities, such as active learning and development activities.

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 time allocation decisions is critical for understanding the impacts of tax and transfer policies, including welfare-to-work initiatives, on children. 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. These studies emphasize the increase in financial resources for families that benefit from EITC expansions, with much of the increase in family income coming from greater labor force participation and higher pre-tax family earnings.[2]

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[1] See, 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] For these mothers, the EITC also improves health (Evans and Garthwaite, 2014), reduces stress and financial insecurity (Mendenhall et al., 2012; Jones and Michelmore, 2019), and reduces poverty (Hoynes and Patel, 2018).

Agostinelli and Sorrenti (2018) and Bastian and Michelmore (2018) raise concerns that the additional time mothers spend working could offset the benefits to children associated with greater financial resources. Indeed, studies spanning three decades of research have consistently concluded that the EITC 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), while several studies estimate negative effects of full-time maternal employment on child development (Brooks-Gunn et al., 2002; Ruhm, 2004; Bernal, 2008).[3] By contrast, the structure of the EITC discourages work among some married mothers; however, the overall effect on lower-income married mothers is null or very small (Eissa and Hoynes, 2004; Bastian and Jones, 2021).

Even if the EITC increases maternal labor supply by raising after-tax wages for low-income families, it need not reduce the time parents spend with their children. Positive income effects from the tax credit can shift maternal time allocation towards activities with higher income elasticities. For example, parents may respond to additional resources by devoting more time to highly enjoyable activities with children, while scaling back other less-enjoyable activities. Additionally, higher income levels can facilitate educational investments in children, especially in the presence of credit constraints. As shown by Caucutt et al. (2020), if time and other investment inputs are sufficiently complementary in the development process, then families may wish to increase all types of investment, including time investments, when after-tax wages increase, despite an increase in the opportunity cost of time. Thus, the EITC could cause parents to substitute leisure and home production activities for time at work with modest, potentially positive, effects on time actively engaging with their children. Indeed, Kooreman and Kapteyn (1987) and Kimmel and Connelly (2007) estimate that increases in maternal wages lead to reductions in leisure and home production but much weaker or even modest positive effects on child care. Hsin and Felfe (2014) and Heiland et al. (2017) estimate that maternal employment reduces mother's time with children; however, the former finds no significant effects on time devoted to *educational* or *structured* activities with children.[4] Finally, we note that among married mothers, weak labor supply

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[3]Kleven (2019) challenges the conclusion that the EITC increases employment among single mothers.

[4]Hsin and Felfe (2014) define *educational activities* to include time spent studying, doing homework, and

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responses imply that the impacts of EITC expansions on other activities, including time with children, are likely to be determined primarily by their income elasticities.

Empirically, little is known about how the EITC affects mother's time allocation at home, including time spent with children.[5] A notable exception is Bastian and Michelmore (2018), who estimate modest and statistically insignificant effects of EITC expansions on the total time parents spend with their children; however, their sample (from the Panel Study of Income Dynamics) is small and estimates are imprecise.

In this paper, we use the 2003–2018 American Time Use Surveys (ATUS) to study, in detail, the time allocation responses of mothers to state and federal expansions in the EITC with an emphasis on time spent with children. 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).[6] This specification leverages differential EITC benefit amounts offered to families of different sizes across states and over time; however, we show that results are robust to more demanding specifications.

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.[7] Next, we show that the increased

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reading or being read to; *structured activities* include organized leisure activities (e.g., arts and crafts, music and theater), classes for leisure (e.g., music, art, and dance lessons), and playing sports.

[5]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.

[6]As discussed further in Section 3, we estimate intention-to-treat effects of exposure to the maximum EITC amount for which families are eligible and not the effects of actual EITC receipt.

[7]Most 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), Bastian and Jones (2021), and Bastian and Black (2021) 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 the first three studies and reaches 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 Kleven (2019).

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. As discussed further below, Fiorini and Keane (2014) and Hsin and Felfe (2014) show that the types of activities we classify as investment produce the greatest cognitive and behavioral gains in children (relative to other activities in which children engage). Our results suggest that despite strong negative effects of EITC benefit levels on the time single mothers spend with their children, we estimate very weak effects of the EITC on time devoted to investment activities. Reductions in time spent with children are almost exclusively observed for more 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 could reflect general improvements in children's health (e.g., due to higher family income levels) as estimated by Hoynes et al. (2015), Averett and Wang (2018), and Braga et al. (2020). We also estimate moderate reductions in mothers' time devoted to social activities with their children.

While the behavior of mothers is our primary focus, we also briefly examine the impacts of EITC expansions on fathers' time use. This analysis suggests negligible effects of the EITC on time allocation of unmarried fathers. While married fathers do not adjust their labor supply in response to EITC expansions, they devote slightly more time to investment activities with their children.

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 parental time allocation is presented in Section 5. Section 6 concludes by discussing the implications of our findings for families and children.

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+ 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 are about $5,700 and $3,500 for households with 2 children and 1 child, respectively.

Appendix Figure A.1 shows the evolution of maximum benefits by number of children over time. The only change in the federal EITC schedule during the period we study (2003–2018) occurred in 2009, when the maximum credit available to families with 3+ 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).[8] Combined, the federal and state EITC can amount to over $9,000 per year, with the average recipient receiving over $2,500 annually. Appendix Figure A.2 maps the cross-country expansion of state EITC rates (as a fraction of federal benefits) over time, while Appendix Figure A.3 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

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[8]The analysis we present does not distinguish between refundable and non-refundable state credits. More general specifications allowing for differential effects by state credit refundability yielded no significant differences. We also note that while California has a high match rate, it only matches up to one-half of the maximum federal EITC benefits. We, therefore, assume one-half the stated match rate for California (i.e., 22.5% rather than 45% in recent years).

of residence, number and ages of children, and year) into the variable $MaxEITC$, measured in thousands of year 2018 dollars.[9] For our sample of mothers ages 18–49 in the 2003–2018 ATUS, Appendix Figure A.4 shows the distribution of $MaxEITC$ separately for families of different sizes and for the periods before and after the 2009 federal EITC expansion. 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 decisions. Although the maximum credit available is only one of several parameters determining credit amounts, it is almost perfectly correlated with phase-in and phase-out rates during our sample period due to the structure of state EITCs, which are proportional to the federal EITC, and nature of the 2009 federal change.[10] $MaxEITC$, therefore, serves as a useful and intuitive summary measure of EITC expansions over our sample period.

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

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[9]We use the Consumer Price Index for all Urban Consumers to adjust all dollar amounts to 2018 values.

[10]Across mothers in our sample, the correlations between the maximum credit, phase-in rate, and phase-out rate are all about 0.99. Regressing $MaxEITC$ on the EITC phase-in (or phase-out) rate, controlling for number of children, state fixed effects, and year fixed effects, yields an R^2 of 0.999 (or 0.995). Nonetheless, we consider the phase-in rate as an alternative measure of EITC policies in Section 5.7.

endogenous with respect to work behavior. Our estimation approach leverages these sources of exogenous policy variation.[11]

We mainly 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 fixed effects, marital status, race/ethnicity, age, and educational attainment), while γ_{st} reflects state × 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 × year FE.[12]

Researchers often use women without children as an explicit control group when estimating the effects of the EITC on mother's behavior. This is effective when studying outcomes like labor supply, because women in the treatment and control groups both work. However, in our context, the key outcome variables of interest (e.g., time with children) are always zero for women without children. Rather than include an explicit control group that is never "treated" by the EITC, our analysis leverages differential changes in the amount of treatment ($MaxEITC$) experienced by different families based on their number of children, state of residence, and year. We estimate intention-to-treat (ITT) effects of maximum EITC amounts and not treatment-on-the-treated effects of actual EITC amounts received by families.[13]

The inclusion of state × year FE (γ_{st}) in equation (1) means that identification of the

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[11]Our continuous treatment variable $MaxEITC$ better captures policy variation and is preferable to a binary difference-in-differences approach (e.g., Kleven, 2019) for reasons discussed in Agostinelli et al. (2020).

[12]We report standard errors that are robust to heteroskedasticity and clustered at the state level. Alternate clustering and standard error specifications yield similar results. ATUS weights are used in all specifications.

[13]We do not calculate treatment-on-the-treated effects, because changes in $MaxEITC$ reflect changes in benefit levels, as well as changes in both phase-in and phase-out rates. Because mothers with different pre-tax family income levels (e.g., single vs. married mothers) can face very different changes in after-tax wage rates when the EITC expands, the "treatment" of EITC expansions is not the same for everyone.

impacts of $MaxEITC$ (i.e., α_1 and α_2) derives from variation in the differential EITC treatment of families of different sizes. Equation (1) exploits four distinct sources of variation.[14] First, differences in state EITC rates imply larger differences in $MaxEITC$ between families of different sizes in states with higher EITC rates. Second, an increase in any state's EITC rate generates a larger change in $MaxEITC$ benefits for families with more children (since state EITCs are proportional to the federal EITC). Third, the 2009 federal expansion increased $MaxEITC$ for families (in all states) with 3+ children but not other families. 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 third 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 5.7.

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 pretrends 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.

Because the EITC is known to have different incentives for and effects on female labor supply behavior by marital status (Eissa and Hoynes, 2004; Bastian and Jones, 2021), our main specification allows for different effects of $MaxEITC$ on time allocation decisions for married and unmarried mothers. The increase in work among unmarried mothers suggests that, in aggregate, time spent at home must decline; although, that need not imply that all home activities are scaled back. Additionally, even if the EITC has little impact on

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[14]Average differences in $MaxEITC$ by number of children are absorbed by indicators for number of children in X_{ist}, while average differences across states over time are absorbed by the state $\times$ year FE.

work among married mothers, the supplemental income may lead to a reallocation of time at home and with children due to heterogeneous income elasticities for different activities. This suggests that married mothers should not be considered unaffected "controls" in our analysis, at least *a priori*; although, it would not be surprising to find weaker effects for them relative to unmarried mothers. Rather than estimate completely separate specifications by marital status, equation (1) interacts marital status with $MaxEITC$ (as well as state and time FE) to gain some precision; however, Appendix E shows that our main conclusions are largely unchanged when estimates are obtained separately for married and unmarried mothers. Like most of the literature, our analysis assumes that marital status is exogenous, which is consistent with the very modest estimated effects of the EITC on marriage (e.g., see the summary by Nichols and Rothstein, 2016).

A key identifying assumption throughout our analysis is that EITC policy expansions are not correlated with other economic policies or conditions which may themselves affect female employment or time allocation decisions. Our inclusion of state × 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 in Appendix C 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 (ATUS)

We use the 2003–2018 ATUS, the "nation's first federally administered, continuous survey on time use in the United States" (U.S. Bureau of Labor Statistics, 2019).[15] These survey data on time devoted to daily activities are linked to respondents included in the 8th-month outgoing rotation groups of the CPS, containing rich demographic and geographic information. Our analysis is based on all mothers ages 18–49 (43,685 observations) of which about one-third are unmarried.[16] These young and middle-aged mothers represent the vast

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[15]As discussed in Appendix F, time-use data exists for earlier years (American Heritage Time Use Survey, AHTUS), but these samples are relatively small and contain fewer covariates. Appendix Table G.1 shows that results for mothers in AHTUS are noisy but qualitatively similar to those with ATUS.

[16]Appendix Table E.1 shows that the results are quite similar when using the full sample of women (ages 18–49) to estimate the effects of $MaxEITC$ on several outcomes (e.g., labor supply, earnings, and EITC

majority of all mothers, especially when considering those with younger children.[17]

With the use of time diaries, ATUS asks respondents how they spent every minute of a 24 hour day — classifying that time into hundreds of detailed activity categories — and records who they spent their time with. For expositional purposes, 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.[18] All time unaccounted for by these categories can be classified as schooling, sleep, and uncategorized, where only 1.5 (out of 168) hours 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 decompose total time mothers spend with children into investment or non-investment time, based on a careful reading of each ATUS activity description and the literature on child development (see, e.g., Currie, 2009; Fiorini and Keane, 2014; Hsin and Felfe, 2014; Kalil, 2015). The activities we include in investment time 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 less focused on parent-child engagement.[19] (We offer more explicit breakdowns of all time activities and categorizations in our analysis below, as well as in Appendix H.)

We consider three main types of investment time: academic, health, and other invest-ments. Academic investment time includes such activities as reading to/with children, help-

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benefit receipt) that are not specifically related to time with children.

[17]Our age restrictions include 80% of all mothers and 99% of mothers with a child under age 6. Expanding our sample to include mothers up to age 64 yields very similar results.

[18]Home 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 Appendix H for details.

[19]Unfortunately, we are unable to measure the "quality" of time (or effort) devoted to different activities with children. To the extent that variation in the quality of time with children depends primarily on the types of activities (e.g., time spent reading vs. watching television), our effort to distinguish between investment and non-investment activities (and various subcomponents of each) may provide useful insights into the quality aspects of mother's time with children. See Chaparro et al. (2020) for a novel analysis of both the quality and quantity of time mothers spend with their children.

ing with homework, and home schooling. In their analyses of children's time allocation and skill development, both Fiorini and Keane (2014) and Hsin and Felfe (2014) refer to these as *educational* activities (with parents) and estimate that these activities produce the greatest cognitive gains (relative to all activities in which children engage). Hsin and Felfe (2014) also estimate that *educational* activities significantly improve behavioral outcomes; however, Fiorini and Keane (2014) find no such effect. Health investments include time spent providing or obtaining medical care for children. Although, this accounts for less than 5% of investment time, on average, we classify it as investment given the importance of general health for child development (e.g., see the survey by Currie, 2009). Other investment time includes a wide range of activities parents engage in with their children, including time playing games and/or sports, engaging in arts and crafts, talking/listening, attending arts and entertainment events, and looking after children as the primary activity. Hsin and Felfe (2014) include many of these activities in their measure of children's *structured* time with parents, showing that this time leads to improvements in children's behavioral outcomes, especially at older ages (i.e. ages 6+).[20]

As documented further below, non-investment activities in which mothers spend significant amounts of time with their children include housework, shopping, waiting, relaxing (including watching television), and eating. Fiorini and Keane (2014) and Hsin and Felfe (2014) estimate that these types of activities (considered collectively) produce significantly weaker cognitive gains for children relative to *educational* time with parents; they provide no developmental benefits relative to other activities in which children regularly engage.[21] Of course, it is possible that subsets of these activities — studied collectively in previous research — may still provide developmental benefits for children, even if this is not always their primary purpose. We, therefore, provide a detailed analysis of several subcategories of home production and leisure non-investment time, including social activities that mothers engage in with their children but which have not been directly studied by either Fiorini and

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[20]While Fiorini and Keane (2014) consider children's time devoted to these types of activities, they do not distinguish whether this time is spent with parents.

[21]Fiorini and Keane (2014) classify many of these activities as *general care* with parents, while Hsin and Felfe (2014) refer to many of these activities as *unstructured* time with parents.

Keane (2014) or Hsin and Felfe (2014).[22]

Finally, we note that 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.[23]

Appendix Table B.1 reports summary statistics for all mothers and for unmarried and married mothers separately (using ATUS weights). On average, mothers had 1.9 children and were 35 years old. Almost two-thirds of mothers in our sample were married and 14% and 20% were Black and Hispanic. Only 14% did not finish high school while 29% graduated from college. Mothers' own earnings averaged $23,500 while total household earnings averaged $66,000. On average, the maximum EITC benefit available to families based on family composition, state, and year (i.e., $MaxEITC$) was $4,860; however, the average EITC benefit mothers were actually eligible for (based on their earnings) was only $1,020, with roughly one-in-three mothers eligible for some benefit.[24] Compared to the sample of 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 1 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 (33–35 hours/week). By contrast, married mothers devote considerably

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[22]Fiorini and Keane (2014) consider the impacts of children's social activities but do not distinguish between those undertaken with vs. without parents. Their estimates suggest that children's time devoted to social activities (with and without parents combined) has significantly weaker effects on cognitive outcomes when compared with *educational* time with parents.

[23]ATUS time diaries also classify time devoted to work activities, but this measure is noisier, since it is based on a 24 hour period and may be collected on a weekend day.

[24]EITC benefits imputed from NBER's TAXSIM (Feenberg and Coutts, 1993).

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 about 7 hours/week devoted to investment activities. Unmarried mothers spend only about 29 hours/week with their children, about 4 hours/week of which is investment-related.

Next, consider differences in maternal time allocation across families with different numbers of children by looking across columns (3)–(8) of Table 1. 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+ 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.[25]

Appendix Figure B.1 shows that both investment and non-investment time with children decline as children age. 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 and variation in state-level EITC policies over time. We begin by estimating effects of the EITC on maternal labor supply before turning to impacts on other uses of time, including home production and leisure, as well as father's time. 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. We also explore the robustness of our results.

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[25]Appendix B reports the full distributions for each category of time use by number of children.

5.1. Labor Supply

We first study impacts of the EITC on mother's labor supply, earnings, and family resources. As outlined in Section 3, our estimation strategy is based on equation (1). Our baseline specification (for all outcomes) controls for state × 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 mother is married, black, or hispanic. Our baseline specification also includes 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. Finally, our baseline specification includes an indicator for whether the mother was surveyed on a weekday.

Estimates for all mothers, reported in Table 2 Panel A, show that a $1,000 increase in $MaxEITC$ significantly increases LFP by 2.4 percentage points, weekly work hours by 1.0, annual earnings by nearly $2,000, and EITC benefits by $378.[26] Here, work hours refer to hours worked last week, as reported in the CPS. Estimating separate effects by marital status, as in equation (1), Panel B shows larger estimated effects among unmarried mothers on LFP (4.1 percentage points), weekly work hours (1.6), earnings ($2,372), and EITC benefits ($452). That we find larger effects among unmarried mothers (here, and for other activities below) speaks to ITT effects and is consistent with statistics in Appendix Table B.1 showing that unmarried mothers are twice as likely to be eligible for the EITC—and are eligible for about twice as many EITC dollars—as married mothers. Estimated effects on unmarried mothers' LFP are also broadly consistent with those of several recent studies.[27] Effects on married mothers are notably smaller, although effects on their earnings and EITC benefits are statistically significant. Estimated effects of changes in $MaxEITC$ are significantly

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[26]Unless otherwise noted, statistical significance refers to the 0.05 level.

[27]The estimated effects of an additional $1,000 in the maximum eligible EITC amount on LFP reported in Hoynes et al. (2015), Bastian and Michelmore (2018), Bastian (2020), and Bastian and Jones (2021) range from 3.9 to 7.3 percentage points.

different by marital status for all outcomes, consistent with previous evidence of stronger positive effects of the EITC on the labor supply and incomes of unmarried mothers (Eissa and Hoynes, 2004; Bastian and Jones, 2021).

5.2.   Effects on Broad Categories of Time Allocation

Since the EITC increases labor supply among unmarried mothers, it must lead 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 induce shifts in time allocation across non-work activities even among married mothers.

In Table 3, we divide each mother'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 mothers, each \$1,000 in $MaxEITC$ increases work-related activities by 1.6 hours/week at the expense of home production and leisure (reductions of 0.5 and 1.3 hours/week, respectively).[28] We also estimate modest offsetting effects on time devoted to schooling and sleep, with negligible effects on uncategorized time. Among married mothers, we observe qualitatively similar but weaker effects of the EITC on work, home production, and leisure activities.

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 strictly more than X hours/week (for X values of 0, 10, 20,..., 120) on each of these activities, reporting the effects for unmarried mothers in Figure 2.[29] Panel A shows that EITC expansions raise the probability of working up to—but not above—40 hours/week. Thus, the EITC draws single mothers into the labor market but does not increase work beyond full-time. Panel B shows that an increase in $MaxEITC$ significantly reduces home production time in the 50–90 hours/week range, while it only

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[28]Estimated effects on work hours are less precise here (compared to those reported in Table 2), 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.

[29]In 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).

reduces leisure time at the low end of the distribution (i.e., 10–20 hours/week).

5.3.   Mother's Time With Children

We now look at how mothers spend their time with children. Appendix Table F.1 decomposes home production and leisure activities into time spent with and without children.[30] Among unmarried mothers, \$1,000 in $MaxEITC$ significantly reduces both home production and leisure time with children by 1 hour/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.

As shown by Fiorini and Keane (2014) and Hsin and Felfe (2014), the developmental impacts of these shifts away from time spent with children will depend on which activities are scaled back. 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).

Table 4 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. 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 3 explores the effects of $MaxEITC$ on the distribution of total and investment time with children measured by the probability time exceeds different thresholds. (See Appendix Figures B.5 and B.6 for the distributions of total and investment time with children, respectively.) Panel A shows that EITC expansions cause mothers to scale back their total time with children throughout much of the distribution; however, the extensive margin effect is negligible and statistically insignificant. By contrast, Panel B shows modest extensive margin effects on investment time with a \$1,000 increase in $MaxEITC$ leading to a roughly 1.5 percentage point reduction in the probability that single mothers devote some time to investment activities. More generally, EITC expansions appear to induce sin-

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[30]Time 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.

gle mothers who spend little time on investment activities to spend even less time, whereas effects on the investment time of highly engaged mothers are negligible.[31] That reductions in investment time are observed for the most investment-deprived families is a potential area of concern.

Despite negligible changes in total investment time, mothers may still adjust their time allocation across different types of investment activities depending on their income elasticities. These elasticities may differ, for example, due to different complementarities with purchased goods and services or due to varying parental preferences for different types of activities (e.g., parents may enjoy some activities more than others).

We begin by considering the impacts of EITC expansions on the broad investment subcategories of academic, health, and other investment time. Column (6) of Table 4 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. While this could indicate a harmful impact of the EITC, it may 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., 2020). The final column of Table 4 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 these investment activities (see means at 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).

Given the varied nature of other investment activities, Table 5 further decomposes this time into detailed activity subcategories. This table shows that estimated increases in other investment time are entirely explained by increases in time devoted to play and looking

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[31]See Appendix Table F.3 for estimated extensive margin effects (based on OLS, Logit, and Probit models) on the probability that mothers devote time to any investment activity, as well as to academic, health, other investment. Tables F.4–F.7 replicate Tables 4–7 with a Tobit specification.

after children; although, neither of these effects is statistically significant.[32] 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.[33]

Tables 6 and 7 examine non-investment activities in greater detail. Table 6 shows that 85% 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), or eating (4.1 hours/week) with children. Of these, eating meals with children is likely to involve the most parent-child interaction; 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. Performing joint F-tests (based on multivariate regression for all outcomes simultaneously), we reject that the EITC has no effect on all 7 subcategories of non-investment home production activities for unmarried mothers, but we cannot reject this hypothesis for married mothers.

Table 7 shows that over 60% of non-investment time with children devoted to leisure activities can best be categorized as waiting and relaxing (7.1 hours/week), which includes watching television. A \$1,000 increase in $MaxEITC$ reduces this time by about one-half hour each week for unmarried mothers and slightly less for married mothers. Three subcategories in Table 7 reflect activities in which mothers and their children are likely to interact with others: socializing at parties/events, religious activities, and volunteering. Together, these social activities account for nearly 30% (or 3.5 hours/week) of maternal non-investment leisure time, with socializing the most frequent of these activities. Our estimates suggest that mothers scale back all of these activities in response to EITC expansions: an extra \$1,000 in maximum EITC benefits significantly reduces total time devoted to socializing,

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[32]We also jointly test (separately by marital status) whether the effects on all 7 activities in Table 5 are zero and cannot reject this hypothesis for married or unmarried mothers. These tests (and similar joint tests for multiple outcomes below) are based on simultaneous multivariate regression of all 7 other investment outcomes on our baseline set of covariates. The estimates are equivalent to those reported in Table 5 (obtained by equation-by-equation estimation), but the simultaneous estimation allows for estimation of the joint covariance matrix for all coefficients across outcome equations.

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

religious activities, and volunteering (combined) by 0.53 (SE = 0.18) hours/week among unmarried mothers and 0.40 (SE = 0.18) hours/week among married mothers.[34]

5.4.   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.[35] Appendix Table F.2 shows that for unmarried mothers, \$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. Unmarried mothers spend 2.3 fewer hours with children during the work week with little impact on investment time. Effects on the weekend are generally much smaller and statistically insignificant; although, in most cases, they suggest responses that partially compensate for adjustments made during the work week.

5.5.   Heterogeneous Effects by Mother's Race, Education, and Age

We next explore whether the EITC has differential effects on the time allocation of mothers based on their race, educational attainment, or age conditional on marital status.[36] There are two main reasons to expect heterogeneous effects. First, mothers from different socioeconomic backgrounds or at different stages of their lives may respond differently to the same incentives (e.g., due to differential labor market experience or attachment). Second, nonwhite, less-educated, and younger mothers tend to be more economically disadvantaged and, therefore, more likely to be eligible for the EITC.[37] Because we estimate ITT effects, these differences in eligibility can lead to differential responses to EITC expansions.

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[34]Silveus and Stoddard (2020) also find that the EITC reduces religiosity.

[35]Estimating separate effects of the EITC by month, we find similar results across months.

[36]These estimates are based on specifications that include interactions between $MaxEITC \times$ marital status and indicators for race (white/nonwhite), educational attainment (high school or less/more than high school), or 6 different maternal age categories. 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.

[37]For example, unmarried white mothers are 22 percentage points less likely to be EITC-eligible relative to unmarried non-white mothers, and unmarried mothers with more than a high school education are 28 percentage points less likely to be EITC-eligible than their less-educated counterparts. A related factor is that economically disadvantaged mothers are more likely to be in the phase-in region of the EITC where there are strong incentives to work, whereas more advantaged mothers are more likely to be in the plateau or phase-out regions (when eligible) with very different work incentives.

Appendix Table D.1 shows that regardless of race or educational attainment, unmarried mothers tend to adjust most activities more than their married counterparts, with the strongest effects of the EITC typically observed for unmarried mothers with no more than a high school degree.[38] Figure 4 reports estimated effects by mother's age and marital status. Focusing on unmarried mothers, we see that a \$1,000 increase in $MaxEITC$ increases LFP by roughly 4 percentage points regardless of maternal age, while it reduces time spent with children more for young mothers (although reductions are statistically significant for almost all age groups). Single mothers under age 30 spend 2–3 hours/week less with their children for every \$1,000 increase in the maximum EITC benefit; yet, they (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; however, these estimates are statistically insignificant as well. Notably, for none of the subgroups we consider do we see economically or statistically significant adverse impacts on total investment time with children.[39]

5.6. Heterogeneous Effects by Children's Age

Since mothers typically spend progressively more time working and less time with children as their children grow older (see Appendix Figure B.1), 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:

$$Y_{ist}^a = \phi_1^a MaxEITC_{ist} \cdot Mar_{ist} + \phi_2^a MaxEITC_{ist} \cdot Unmar_{ist} + X_{ist}'\phi_3^a + \gamma_{st}^a + \epsilon_{ist}^a. \quad (2)$$

Here, ϕ_1^a and ϕ_2^a reflect the impacts of a \$1,000 increase in the maximum EITC benefit on total or investment hours with *children 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. Each regression is

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[38]The lack of any meaningful effects for married mothers with more than a high school education is reassuring, since only 14% of these mothers have incomes that make them eligible for the EITC.

[39]Like Table 4, Appendix Table D.1 reveals modest negative effects on health investment activities for single and married mothers from different socioeconomic backgrounds and moderate positive effects on academic activities for married mothers from different backgrounds.

restricted to mothers with at least one child in each age category a; mothers with children in more than one age category a appear in multiple regressions.

Figure 5 reports the effects of $MaxEITC$ on total time and investment time with 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 are weaker 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. 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 mothers (especially married mothers) devote to investment activities with children ages 5 and above; although, none of these coefficients is statistically significant.

Appendix Table D.2 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 (all) children more than mothers with at least one pre-teen child. Effects on investment time (with all children) are small and statistically insignificant for unmarried mothers regardless of their youngest child's age. Among married mothers, investment time (with all children) significantly increases by 30 minutes/week if all children are at least 6 years old.

5.7. Robustness

This subsection examines the robustness of our main results.

Different Controls and Sources of Identifying Variation: Table 8 explores estimation of equation (1) using several alternative sets of controls. All specifications in this table control for the same set of family demographic characteristics used throughout the analysis so far. Column (1) reports estimates from a specification that includes state FE and year FE, but not their interaction. These estimates may be confounded by state-specific changes in factors that affect time allocation decisions and are correlated with changes in state EITC rates. Our baseline specification, which includes state $\times$ year FE, is reproduced

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in column (2) and accounts for any such changes that affect all families similarly. Column (3) adds the interaction of state × year FE with marital status to allow for differential effects of state-specific time-varying unobserved factors by marital status. All 3 of these specifications produce similar results: 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 modest and statistically insignificant.

Columns (4)–(6) of Table 8 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 (since those changes are larger for families with more children). By contrast, column (5) includes interactions of state FE with the indicator for 3+ children, absorbing the 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. 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 are factors that vary at the state–year–number of children level.

Most results in columns (4)–(6) of Table 8 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 (especially for unmarried mothers) 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 8 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. We take a closer look at this expansion below.

Alternative Measure of EITC: Appendix Table E.2 shows that results are robust to an alternate measure of EITC expansions: the total (federal plus state) EITC phase-in rate.

Alternative Measures of Labor Supply: The results for LFP and hours worked last week presented in Table 2 are based on CPS data linked to ATUS. Appendix Table E.3 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, ≥ 20, or ≥ 40 hours/week).

Separate Estimation for Unmarried and Married Mothers: Appendix Table E.4 reports results when estimating the effects of $MaxEITC$ separately for the samples of married and unmarried mothers. This relaxes the implicit assumption that many coefficients are the same for married and unmarried mothers in equation (1).[40] Overall, the results reported

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[40]We note that our baseline specification includes interactions between marital status and both state and year FE, while columns (3)–(6) of Table 8 interact marital status with state × year FE.

in Appendix Table E.4 are generally consistent with our baseline specification.

Subgroups Based on Predicted Household Income: Our analysis, thus far, has shown that more economically disadvantaged mothers (e.g., unmarried, non-white, less-educated), who are more likely to be eligible for EITC benefits, tend to be more responsive to EITC expansions. To more directly look at the role of economic disadvantage (and, indirectly, EITC eligibility), we estimate separate effects of $MaxEITC$ by mother's predicted household income tercile, where we use exogenous demographic controls to predict income.[41] These results are reported in Appendix Table E.5.

Roughly 55% of mothers in the lowest predicted income tercile are eligible for the EITC, and they are most likely to be in the phase-in region of the EITC schedule, which encourages work. By contrast, only 10% of mothers in the highest predicted income tercile are eligible for the EITC, suggesting that they can be thought of as a placebo group that should be largely unaffected by changes in benefit levels. Consistent with our results for unmarried mothers, estimates for mothers in the lowest income tercile indicate strong positive impacts of the EITC on LFP and sizeable negative effects on home production + leisure and time with children. At the same time, we find no significant effects on the time allocation decisions of mothers in the highest income tercile. Estimated effects on investment time are insignificant for mothers from all income terciles.

Evidence from the 2009 Federal Expansion: We end our robustness analysis with a closer look at the 2009 federal EITC expansion, which increased $MaxEITC$ by about \$1,000 (about 15 percent from a previous level of about \$5,500) for families with 3+ children. Given the important identifying variation induced by this expansion, we examine the evolution of time allocation behavior for mothers with 3+ children vs. families with fewer children before and after the policy change. Specifically, we estimate the following specification to explore pre-trends and the dynamics of impacts after the expansion:

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

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[41]To obtain predicted household income, we regress household income on marital status, number of kids FE, 4 education categories, black, hispanic, age, birth year, year FE, and state FE. Average household incomes for those in terciles 1–3 are \$35,200, \$59,500, and \$93,400. The estimating equation is analogous to equation (1), except it includes interactions of predicted income terciles (rather than marital status) with $MaxEITC$. We obtain similar results when marital status is not used to predict household income.

where $3Kids_{ist}$ is an indicator equal to one if and only if the family has 3+ children. We divide our sample period into six smaller periods denoted by τ, omitting 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 6 reports the estimated differences in time allocation between mothers with 3+ 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 after 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: 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. For married mothers, we see no trend break after 2009, confirming our main results of insignificant impacts on their time allocation.

5.8.   Time Use of Fathers and the Influence of Other Household Members

While our results focus on maternal time use, a fuller understanding of how children are impacted would require an examination of time adjustments by other family members.

Because we observe fathers' time use measured in the same way as mothers' time use, we are able to estimate analogous specifications to equation (1). Appendix Table F.8 reports estimated effects of $MaxEITC$ on several different activities for fathers.[42] Among both married and unmarried fathers, we find no impacts on labor supply and positive but insignificant effects on home production and leisure. Interestingly, we see modest increases in time devoted to investment with children, especially among married fathers. A \$1,000 increase in $MaxEITC$ appears to benefit children from two-parent families by inducing as

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[42]Here, $MaxEITC$ is based on the household composition of fathers rather than that of their children from previous marriages living with their mothers. Because many fathers spend some time — very little, on average — with children from a previous relationship who live in another household, we consider the effects on time with all of their children (equivalent to our definition for mothers) as well as with only those living in the same household. The results are very similar, as reported in Appendix Table F.8.

much as one-half hour per week in additional investment time from both parents combined.

While we cannot generally observe the activities of household members other than fathers or mothers, Appendix Table F.9 shows that $MaxEITC$ has its largest effects on the labor supply, home production and leisure, and time with children among unmarried mothers living with other adult family members (e.g., mothers' parents or siblings). This suggests that extended family in the household may enable single mothers to work more and spend less time at home with their children. As in our baseline results, we find no evidence that mothers (with or without other family in the household) reduce investment time with children.

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. 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 mothers, with our results on labor supply confirming prior studies that considered earlier EITC expansions. That we find larger effects among unmarried mothers speaks to ITT effects and is consistent with the fact that unmarried mothers are twice as likely to be eligible for the EITC—and are eligible for about twice as many EITC dollars—as married mothers.

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 pre-schoolers. Looking carefully 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.

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Based on the relative importance of investment activities for child development as estimated by Fiorini and Keane (2014) and Hsin and Felfe (2014), these results suggest that any adverse developmental consequences of the EITC that come from drawing single mothers into the labor market (and away from their children) may be quite limited, since reductions in time with children do not appear to be very investment-oriented.[43]

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 (Hoynes et al., 2015; Braga et al., 2020; Averett and Wang, 2018); although, it is also possible that these reductions have modest deleterious impacts on child health. 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. Most notably, we find that unmarried mothers spend about one-half hour less per week on social activities (i.e., attending social events/parties, religious activities, and volunteering) with their children for every $1,000 increase in maximum EITC benefits. While these reductions may have lasting impacts on children—and some research does find negative effects of the EITC on child development (Ko, 2018; Bastian et al., 2021)—most evidence shows 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).

We conclude with a few broad lessons for government policy. Our results for single mothers demonstrate that policies designed to encourage labor supply by increasing after-tax/transfer wages can yield significant reductions in total time spent with children while

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[43]Unfortunately, we are unable to examine qualitative aspects of mother's time with children, an issue we leave to future work.

having negligible impact on time devoted to investment activities. This highlights the potential importance of income effects for mother's time allocation decisions at home. The influence of income effects is further seen in the response of married mothers to EITC expansions. Although these expansions had little impact on married mother's work behavior and total time with children, we find (limited) evidence suggesting that these mothers shifted their time with children towards more academic activities. Together, these results suggest that welfare policies like Temporary Assistance for Needy Families or food stamps, which boost family incomes with relatively modest labor supply disincentives (Fraker and Moffitt, 1988; Moffitt, 2002; Hoynes and Schanzenbach, 2012), are likely to produce modest, but positive, effects on the amount of time eligible mothers devote to investment-oriented activities with their children. That said, we caution against extrapolating our findings regarding time with children to the introduction of work-requirement policies tied to welfare eligibility, since these policies may push mothers into the labor force without raising family incomes.

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Table 1: Weekly Hours Spent on Different Activities, by Number of Children

Activity	All Mothers Mean (1)	All Mothers S.D. (2)	Mothers with 1 Child Mean (3)	Mothers with 1 Child S.D. (4)	Mothers with 2 Children Mean (5)	Mothers with 2 Children S.D. (6)	Mothers with 3+ Children Mean (7)	Mothers with 3+ Children S.D. (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 2: EITC Effects on Labor Supply, Earnings, and EITC Benefits

	LFP	Weekly Work Hours	EITC Benefits	Any EITC	Earnings	Earnings and EITC
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Average Effects						
MaxEITC	0.024	0.97	378.3	0.010	1937.8	2316.1
	(0.011)	(0.53)	(68.2)	(0.013)	(579.3)	(549.1)
R-squared	0.124	0.161	0.304	0.313	0.231	0.218
Panel B: Effects by Marital Status						
MaxEITC × Married	0.012	0.56	329.2	0.004	1647.5	1976.7
	(0.011)	(0.57)	(68.7)	(0.013)	(602.0)	(563.9)
MaxEITC × Unmarried	0.041	1.59	451.7	0.018	2371.9	2823.6
	(0.011)	(0.50)	(63.2)	(0.013)	(578.5)	(557.4)
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 mothers 18–49 years old (N=43,685). 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 and weekend × married; 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 3: Decomposing EITC Effects on All 168 Weekly Hours

	Work	Home Production	Leisure	School	Sleep	Uncat.
	(1)	(2)	(3)	(4)	(5)	(6)
MaxEITC ×	1.05	0.03	-1.02	-0.46	0.32	0.07
Married	(0.81)	(0.76)	(0.49)	(0.18)	(0.40)	(0.09)
MaxEITC ×	1.56	-0.54	-1.27	-0.40	0.56	0.08
Unmarried	(0.70)	(0.64)	(0.50)	(0.24)	(0.51)	(0.10)
Eq. Eff. (p-val.)	0.207	0.010	0.232	0.559	0.158	0.855
R-squared	0.186	0.151	0.137	0.170	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 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 2 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 4: EITC Effects on Investment and Non-Investment Time with Children

		Non-Investment Time			Investment Time			
	Total Time	Total	Home Prod	Leisure	Total	Academic	Health	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MaxEITC ×	-0.52	-0.78	-0.11	-0.82	0.26	0.20	-0.12	0.18
Married	(0.79)	(0.65)	(0.50)	(0.31)	(0.23)	(0.11)	(0.05)	(0.22)
MaxEITC ×	-1.99	-1.93	-0.96	-1.08	-0.05	0.02	-0.15	0.07
Unmarried	(0.68)	(0.58)	(0.43)	(0.31)	(0.20)	(0.09)	(0.05)	(0.20)
Eq. Eff. (p-val.)	0.000	0.000	0.000	0.034	0.000	0.000	0.021	0.088
R-squared	0.366	0.324	0.306	0.154	0.157	0.089	0.035	0.143
Mean Dep Var	38.7	32.7	19.9	11.7	6.0	1.2	0.2	4.6
% Pos Dep Var	88.0	87.6	85.9	67.4	50.8	20.3	3.3	45.2

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 2 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 5: Decomposing EITC Effects on Other Investment Time with Children (Table 4 Column 8)

	Play	Arts and Crafts	Sports	Talk and Listen	Organize and Plan	Look After Children	Attend Events
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MaxEITC ×	0.05	0.00	-0.01	-0.06	0.02	0.16	0.01
Married	(0.15)	(0.02)	(0.07)	(0.05)	(0.02)	(0.10)	(0.09)
MaxEITC ×	0.14	0.01	-0.04	-0.08	0.01	0.10	-0.08
Unmarried	(0.14)	(0.02)	(0.06)	(0.05)	(0.02)	(0.11)	(0.07)
Equal Effects (p-val.)	0.008	0.442	0.290	0.105	0.170	0.029	0.003
R-squared	0.156	0.040	0.040	0.105	0.032	0.053	0.049
Mean Dep Var	2.28	0.08	0.56	0.41	0.08	0.60	0.63
% Pos Dep Var	20.5	1.3	6.7	10.0	3.5	8.7	5.8

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 2 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 EITC Effects on Non-investment Home Production Time with Children (from Table 4 Column 3)

	Personal Care	Housework	Waiting, Shopping	Caring for Others	Civic	Eating	Errands, Travel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MaxEITC ×	-0.04	-0.16	-0.01	0.01	-0.02	0.12	-0.01
Married	(0.05)	(0.31)	(0.36)	(0.06)	(0.01)	(0.12)	(0.10)
MaxEITC ×	-0.08	-0.59	-0.11	-0.02	-0.02	0.01	-0.15
Unmarried	(0.05)	(0.29)	(0.33)	(0.04)	(0.01)	(0.12)	(0.09)
Equal Effects (p-val.)	0.239	0.000	0.062	0.374	0.809	0.036	0.002
R-squared	0.044	0.139	0.265	0.033	0.044	0.201	0.092
Mean Dep Var	0.24	6.09	6.48	0.12	0.01	4.09	2.85
% Pos Dep Var	3.5	60.0	68.5	3.4	0.2	72.8	56.9

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 2 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: Decomposing EITC Effects on Non-investment Leisure with Kids (from Table 4 Column 4)

	Helping Non-HH Members	Educ	Socializing	Waiting and Relaxing	Religious	Volunteer	Phone	Travel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MaxEITC ×	-0.04	0.00	-0.22	-0.44	-0.08	-0.11	0.05	0.01
Married	(0.06)	(0.01)	(0.14)	(0.26)	(0.06)	(0.07)	(0.03)	(0.05)
MaxEITC ×	-0.04	-0.00	-0.23	-0.52	-0.12	-0.18	0.03	-0.03
Unmarried	(0.06)	(0.01)	(0.13)	(0.27)	(0.06)	(0.08)	(0.02)	(0.05)
Equal Effects (p-val.)	0.994	0.810	0.808	0.404	0.058	0.002	0.090	0.010
R-squared	0.057	0.040	0.078	0.105	0.072	0.032	0.056	0.073
Mean Dep Var	0.18	0.02	2.66	7.09	0.52	0.33	0.14	0.78
% Pos Dep Var	5.5	0.2	25.5	49.8	7.2	3.3	4.0	26.5

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 2 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: Estimates Robust to Various Sets of Controls

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Labor Force Participation (Mean = 0.74)						
MaxEITC ×	-0.008	0.012	0.013	0.033	0.008	0.030
Married	(0.012)	(0.011)	(0.012)	(0.017)	(0.011)	(0.016)
MaxEITC ×	0.022	0.041	0.043	0.064	0.039	0.061
Unmarried	(0.010)	(0.011)	(0.011)	(0.016)	(0.010)	(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 ×	-0.24	0.56	0.57	0.98	0.41	0.62
Married	(0.44)	(0.57)	(0.60)	(0.93)	(0.64)	(1.10)
MaxEITC ×	0.82	1.59	1.59	1.92	1.42	1.64
Unmarried	(0.38)	(0.50)	(0.53)	(0.86)	(0.58)	(1.03)
R-squared	0.138	0.162	0.182	0.183	0.184	0.184
Panel C: Weekly Home Production + Leisure Hours (Mean = 79.9)						
MaxEITC ×	-0.21	-0.98	-1.09	-0.95	-0.67	0.11
Married	(0.91)	(0.95)	(0.92)	(1.14)	(1.13)	(1.58)
MaxEITC ×	-1.11	-1.80	-1.84	-1.71	-1.42	-0.64
Unmarried	(0.80)	(0.84)	(0.79)	(1.01)	(1.00)	(1.43)
R-squared	0.130	0.156	0.180	0.180	0.181	0.182
Panel D: Weekly Hours With Children (Mean = 38.7)						
MaxEITC ×	0.06	-0.52	-0.49	0.51	0.02	1.93
Married	(0.66)	(0.79)	(0.77)	(1.16)	(0.77)	(1.17)
MaxEITC ×	-1.42	-1.99	-1.87	-0.85	-1.36	0.56
Unmarried	(0.57)	(0.68)	(0.66)	(1.09)	(0.67)	(1.11)
R-squared	0.351	0.366	0.380	0.381	0.381	0.382
Panel E: Investment Hours With Children (Mean = 6.0)						
MaxEITC ×	0.29	0.26	0.25	0.35	0.23	0.36
Married	(0.22)	(0.23)	(0.27)	(0.39)	(0.27)	(0.41)
MaxEITC ×	-0.02	-0.05	-0.07	0.02	-0.08	0.04
Unmarried	(0.20)	(0.20)	(0.23)	(0.34)	(0.23)	(0.36)
R-squared	0.138	0.157	0.173	0.174	0.175	0.176
Controls:						
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 2 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.
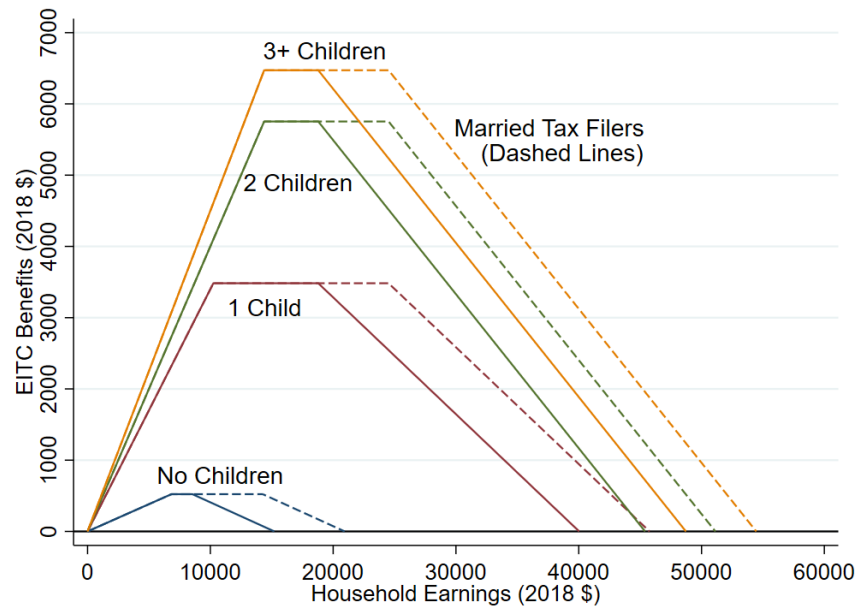
Fig. 1. Federal EITC Structure, 2018

Source: Authors' calculations from IRS data.
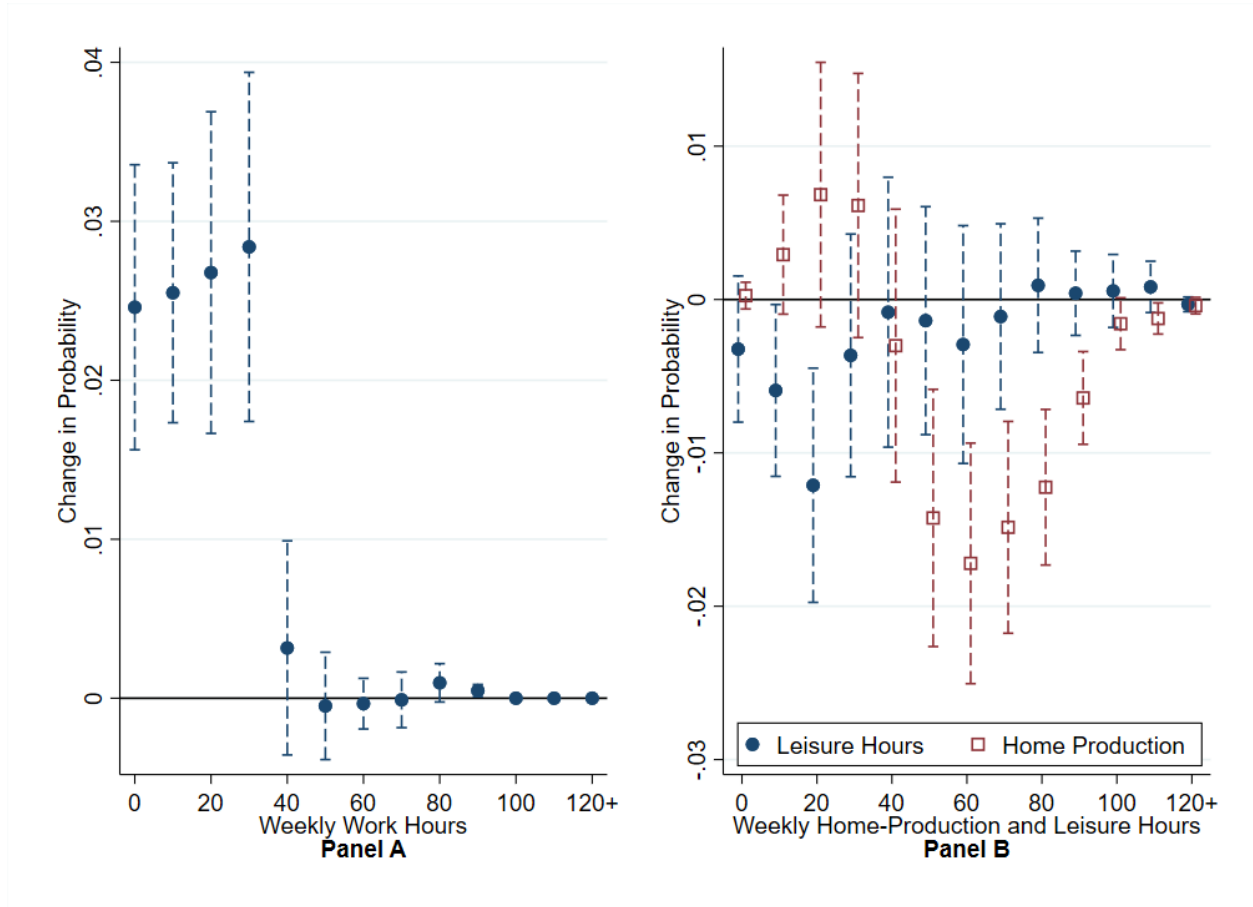
Fig. 2. Extensive and Intensive Margin Effects of the EITC on Work, Home Production, and Leisure among Unmarried Mothers: Prob(Hours > X)

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). Weekly work hours in Panel A are from CPS survey data; home production and leisure in Panel B 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 $> X$ (for X values of 0, 10, 20,..., 120) and the baseline set of controls is included (see text or Table 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Fig. 3. Extensive and Intensive Margin Effects of the EITC on Time with Children and Child Investment among Unmarried Mothers: Prob(Hours > X)

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). Time spent with children (Panel A) and investment time with children (Panel B) 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 (for X values of 0, 10, 20,..., 120) and the baseline set of controls is included (see text or Table 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.
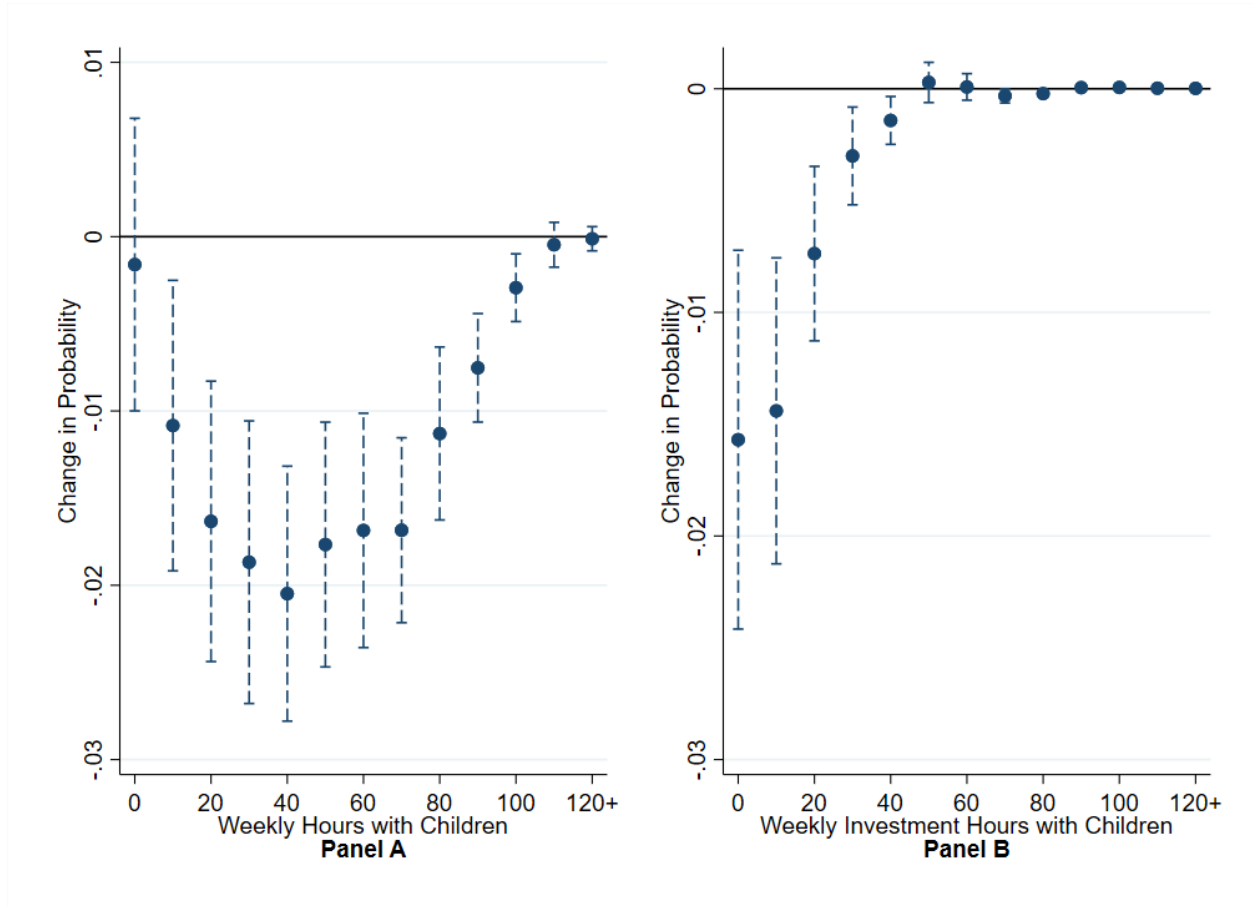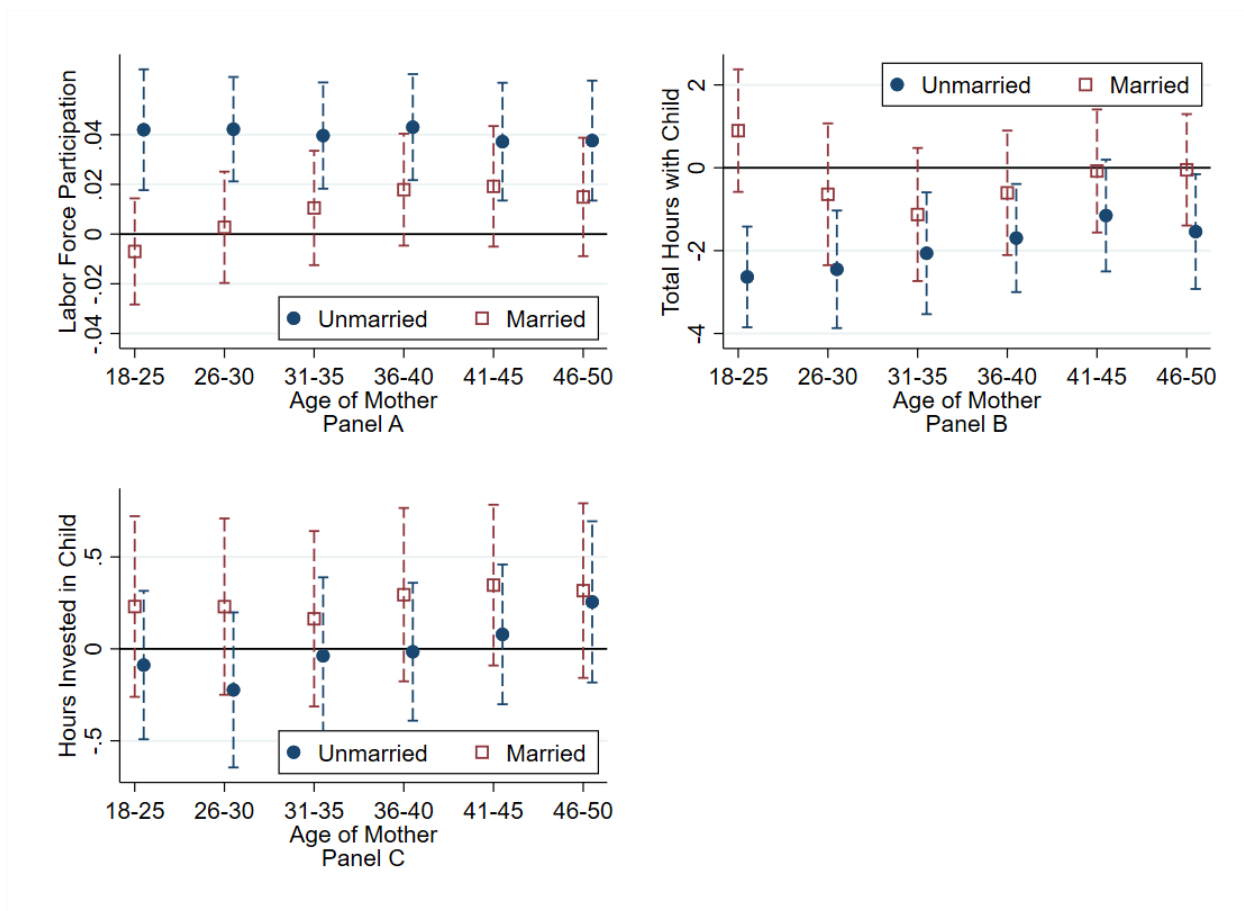
Fig. 4. EITC Effect on LFP and Time Spent with Children, by Mother's Age

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). Each estimate comes from a single regression resembling equation (1), except "MaxEITC × Unmarried" and "MaxEITC × Married" are interacted with 6 indicators for maternal age categories. Baseline set of controls used in each regression (see text or Table 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.
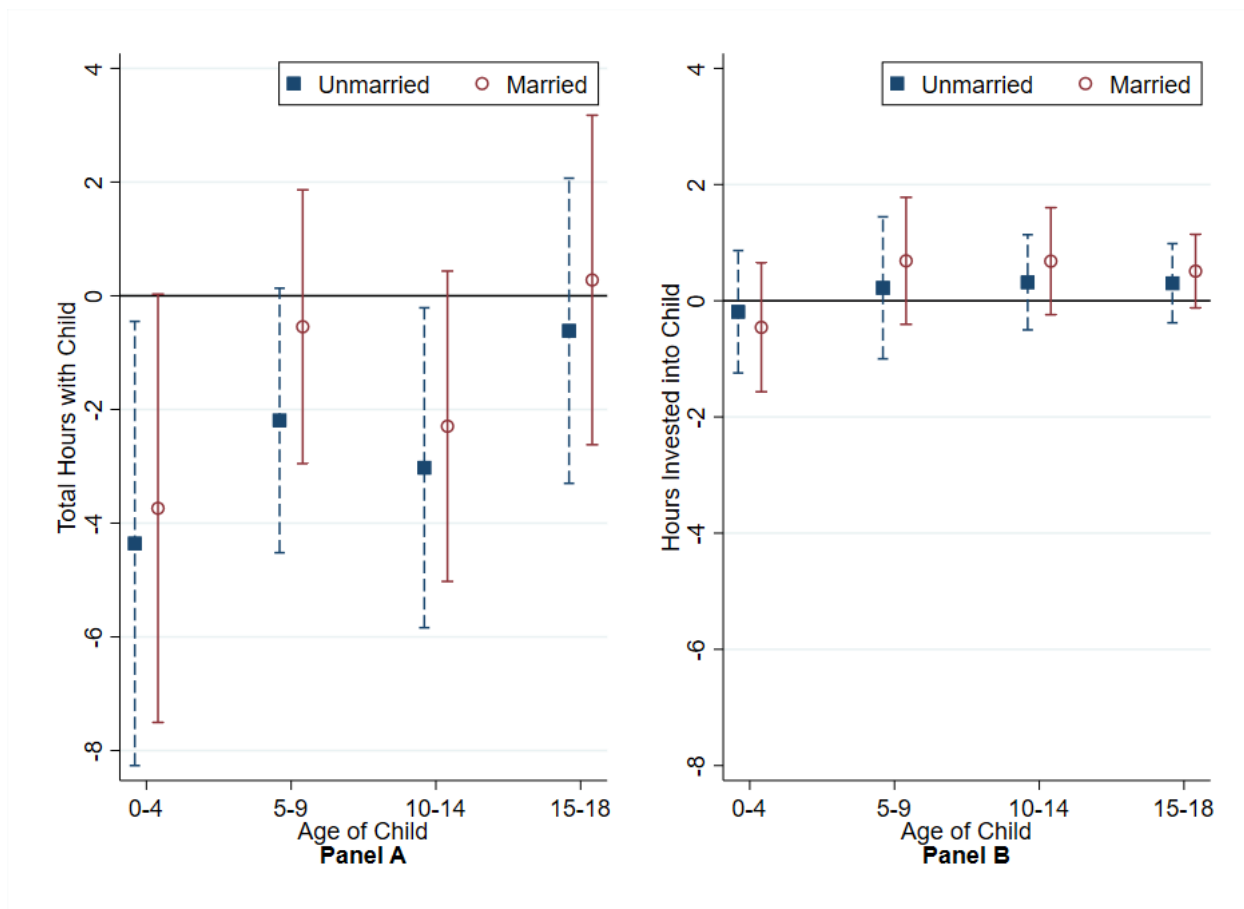
Fig. 5. Effects of the EITC on Time with Children, by Age of Children

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). Estimates from equation (2). These specifications use our baseline set of controls (see text or Table 2 notes), replacing the indicator for any child under age 6 with the number of children in age group a. Each regression restricted to mothers with at least one child in each age range: 29, 32, 29, and 15 percent of mothers have at least one child that is 0–4, 5–9, 10–14, and 15–18. Standard errors are robust to heteroskedasticity and clustered at the state level.
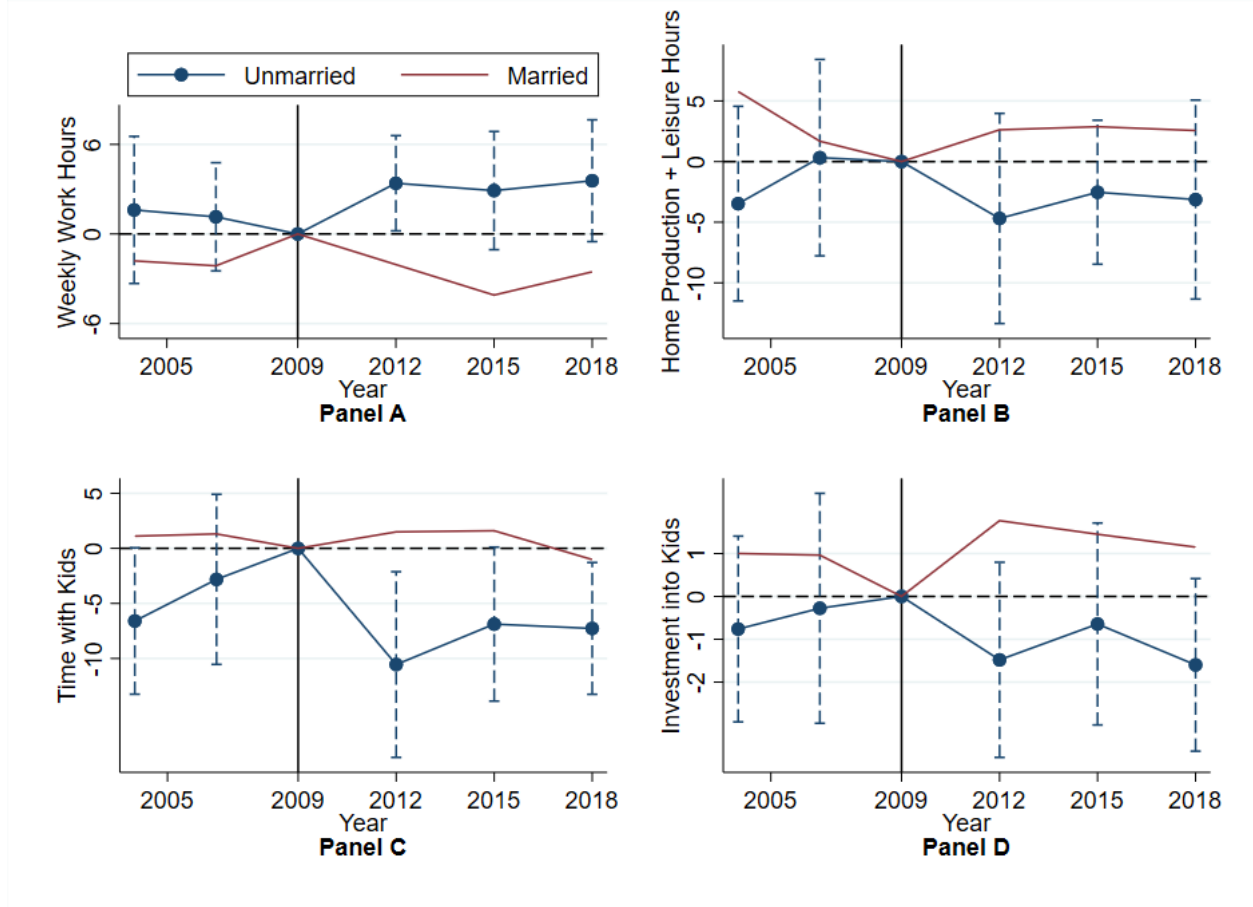
Fig. 6. Pre-trends and Effects Over Time: Evidence from 2009 Expansion

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). 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 (3), 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 2 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]

Jacob Bastian and Lance Lochner

August 30, 2021

List of Appendices:

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[1]Jacob Bastian, Rutgers University, Department of Economics. Address: New Jersey Hall, 75 Hamilton Street, New Brunswick, NJ 08901-1248. Email: jacob.bastian@rutgers.edu. Phone: (848) 932-8652. Lance Lochner, Department of Economics, University of Western Ontario, London, Ontario, Canada, N6A 5C2. Email: llochner@uwo.ca.

Appendix A.   Federal and State EITC Policies

This Appendix reports on variation in the EITC across states and over time.

Figure A.1 shows the evolution of maximum benefits by number of children over time. The only change in the federal EITC schedule during the period we study occurred in 2009, when the maximum credit available to families with 3+ 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).[2] Combined, the federal and state EITC can amount to over $9,000 per year, with the average recipient receiving over $2,500 annually. Figure A.2 maps the cross-country expansion of state EITC rates (as a fraction of federal benefits) over time. Figure A.3 shows the evolution of maximum possible federal plus state EITC benefits (for each state) by family size.

We combine state and federal annual maximum EITC benefit amounts (based on state of residence, number and ages of children, and year) into the variable $MaxEITC$, measured in thousands of year 2018 dollars.[3] For our sample of mothers ages 18–49 in the 2003–2018 ATUS, Figure A.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).

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[2]We do not distinguish between refundable and non-refundable state credits. While California has a high match rate, it only matches up to one-half of the maximum federal EITC benefits. We, therefore, assume one-half the stated match rate for California (i.e., 22.5% rather than 45% in recent years).

[3]EITC benefits are imputed from NBER's TAXSIM (Feenberg and Coutts, 1993). For details, see https://users.nber.org/~taxsim/state-eitc.html. The Consumer Price Index for all Urban Consumers is used to adjust all dollar amounts to 2018 values.
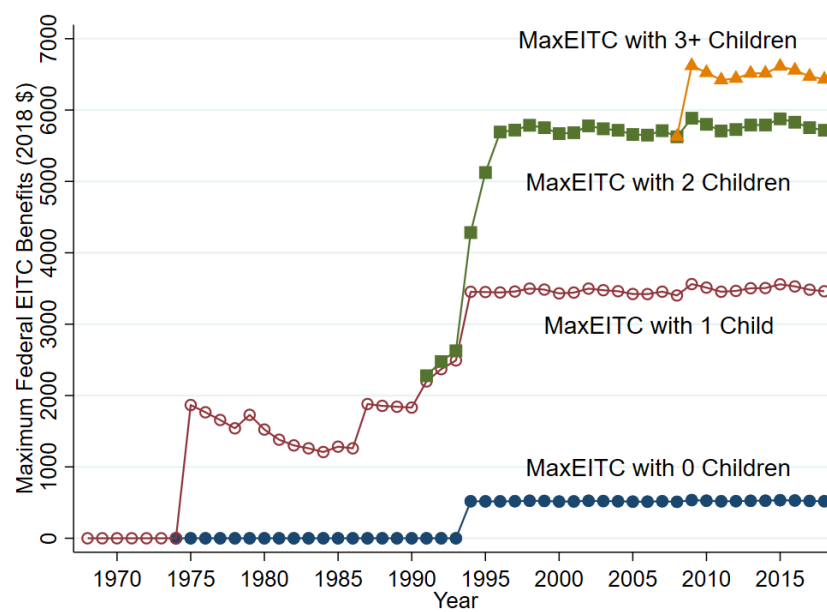
Fig. A.1. Maximum Possible Federal EITC Over Time

Source: Authors' calculations from IRS data.
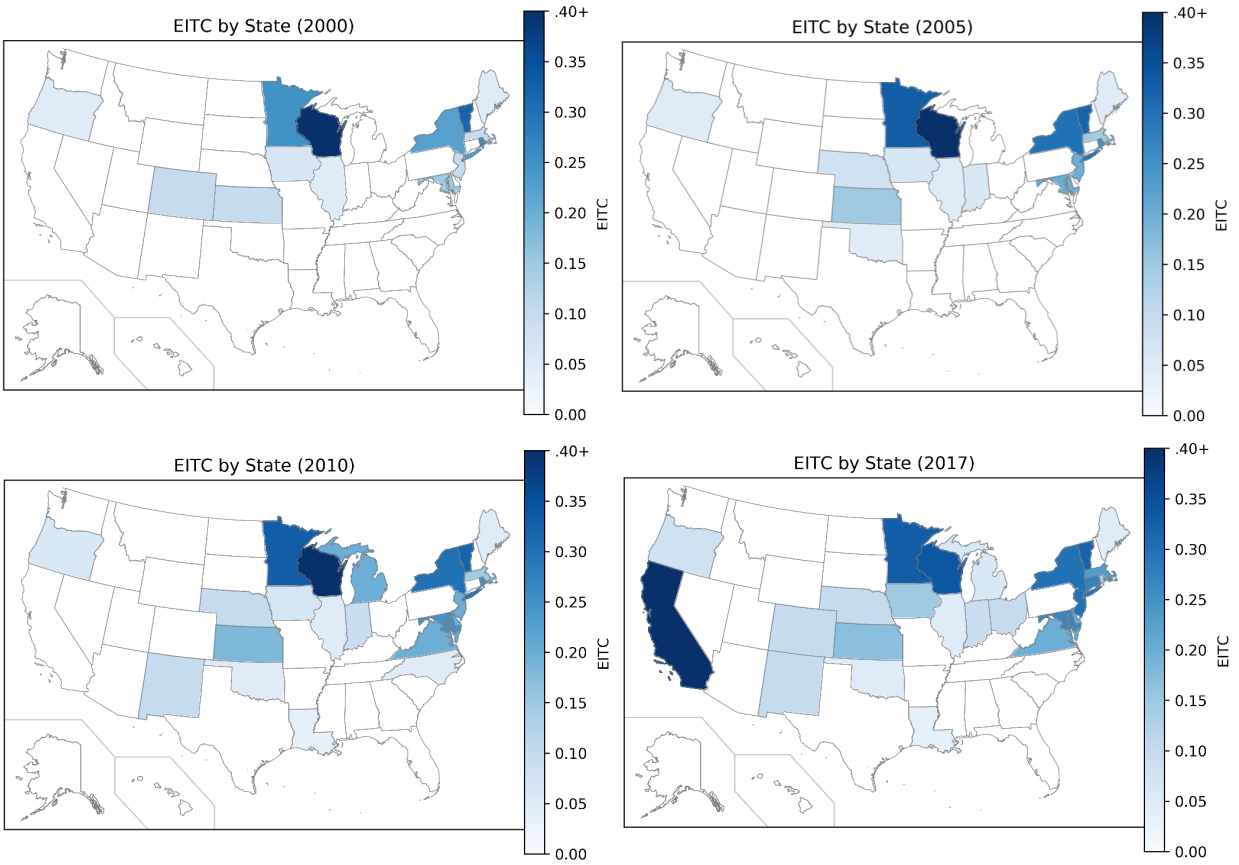
Fig. A.2. State EITC Rates (as a Fraction of Federal Benefits) Over Time

Notes: Authors' calculations from NBER data. https://users.nber.org/~taxsim/state-eitc.html. Since California only matches up to one-half of the maximum federal EITC benefit, we divide its state EITC rate by 2.
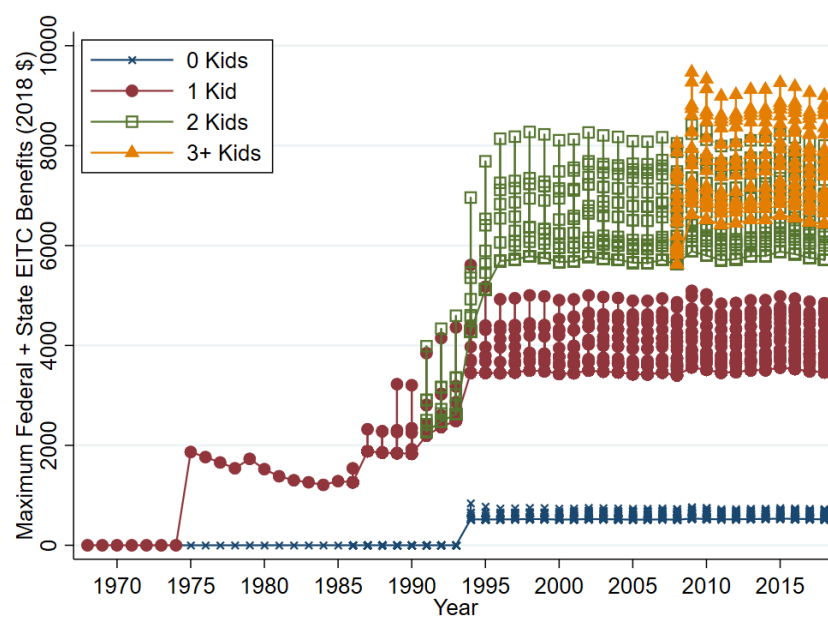
Fig. A.3. Maximum Possible Federal + State EITC Over Time

Source: Authors' calculations from IRS and NBER data. Each point denotes a state by year value.
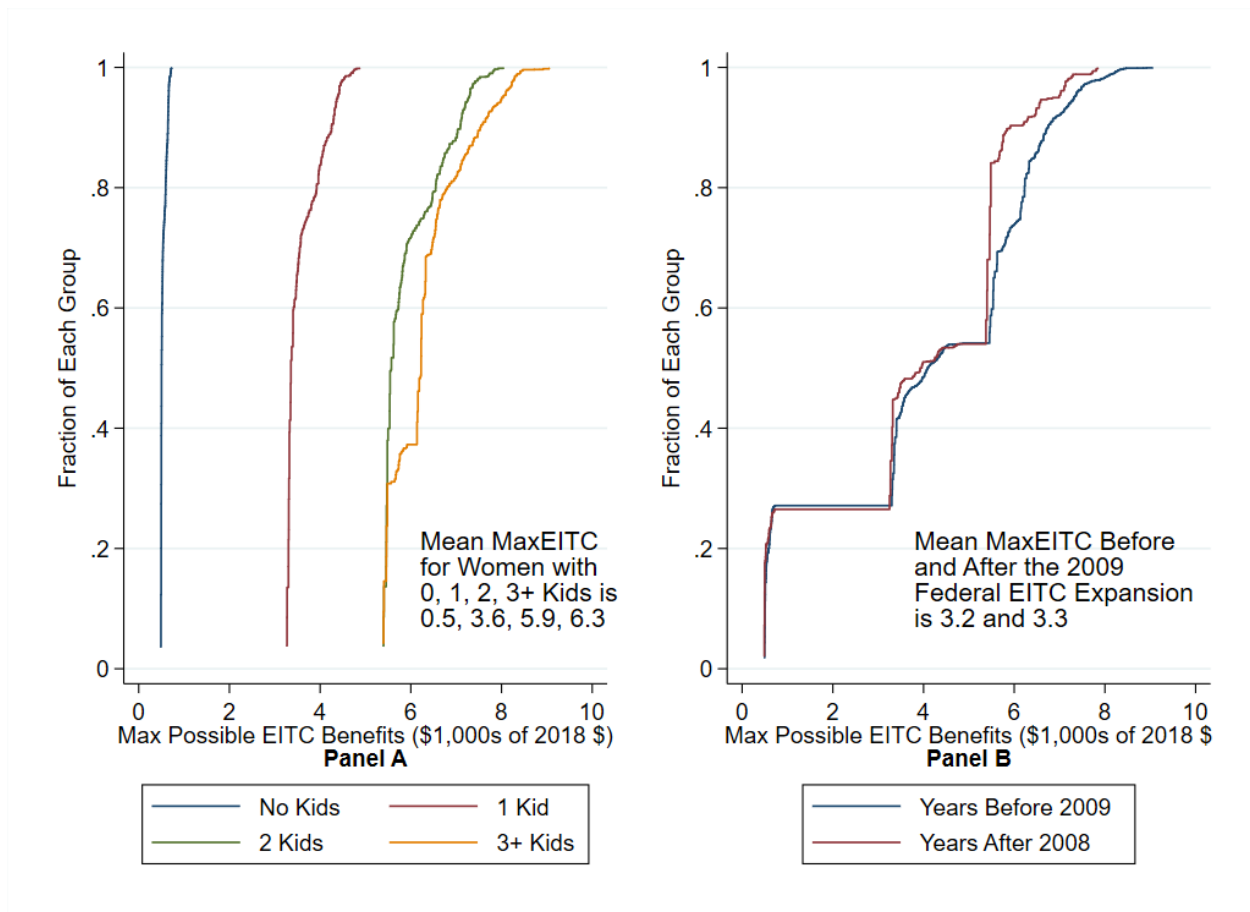
Fig. A.4. CDFs for $MaxEITC$ by Number of Children and Pre/Post-2009

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

Appendix B. ATUS Sample and Time Allocation Distributions

This appendix provides descriptive statistics for several key variables and the time allocation behavior of our main sample of mothers from ATUS. Table B.1 reports summary statistics for all mothers and for unmarried and married mothers separately (using ATUS weights). Figure B.1 reports average weekly hours mothers spend with all children, decomposed into time devoted to investment and non-investment activities. Next, we report the cumulative distribution functions (CDF) for each category of time use by number of children. Figures B.2–B.4 show the distributions of hours worked last week (CPS measure), home production, and leisure. Figures B.5 and B.6 show the distributions of total and investment time with children, respectively.

Table B.1: Summary Statistics

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

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. All dollars are real CPI-adjusted 2018 dollars. EITC benefits calculated using TAXSIM.
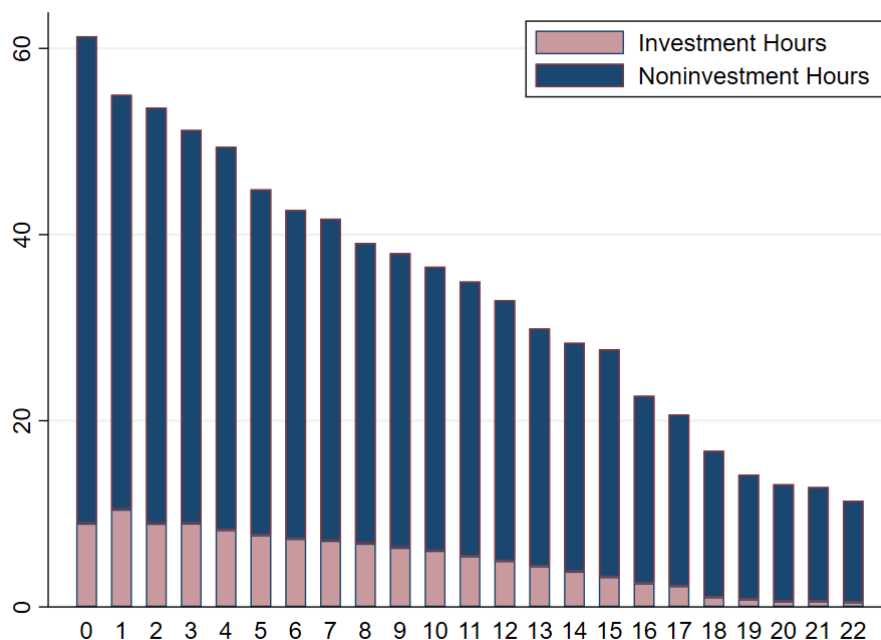
Fig. B.1. Investment and Non-Investment Time with Children by Children's Age

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old (N=43,685). This figure reports the average weekly amount of time mothers spend with all children of the reported age.
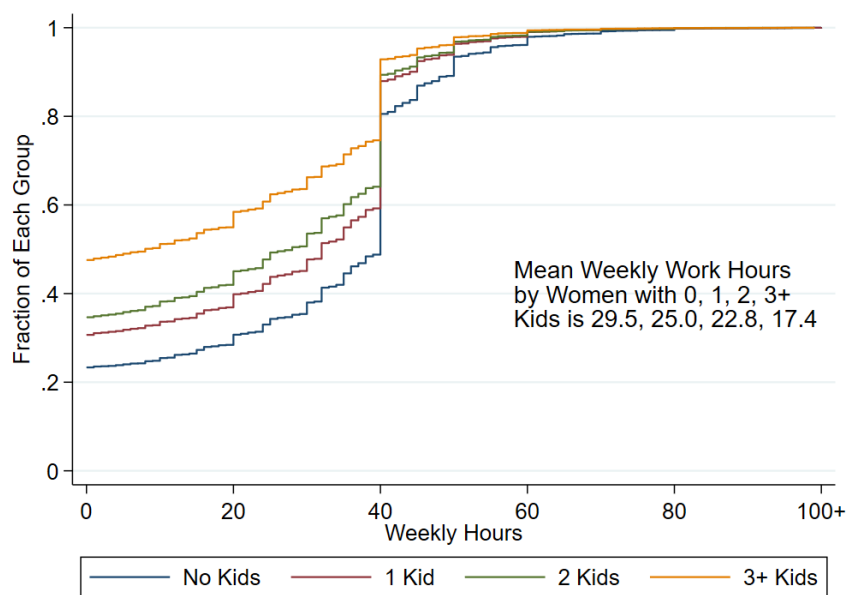
Fig. B.2. CDF of Weekly Work Hours, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Weekly work hours from CPS hours worked last week.
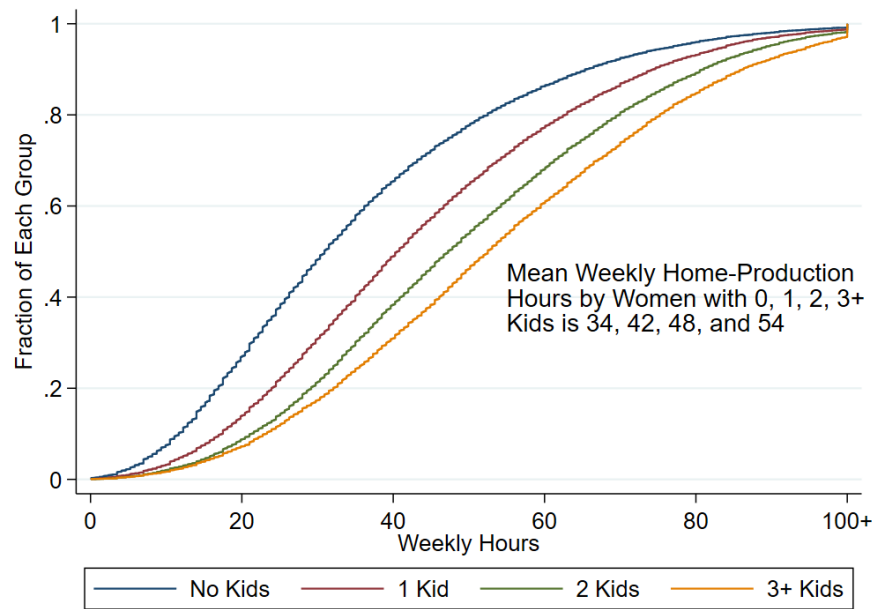
Fig. B.3. CDF of Home-Production Hours, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Home production hours from ATUS time diaries (scaled to weekly hours).
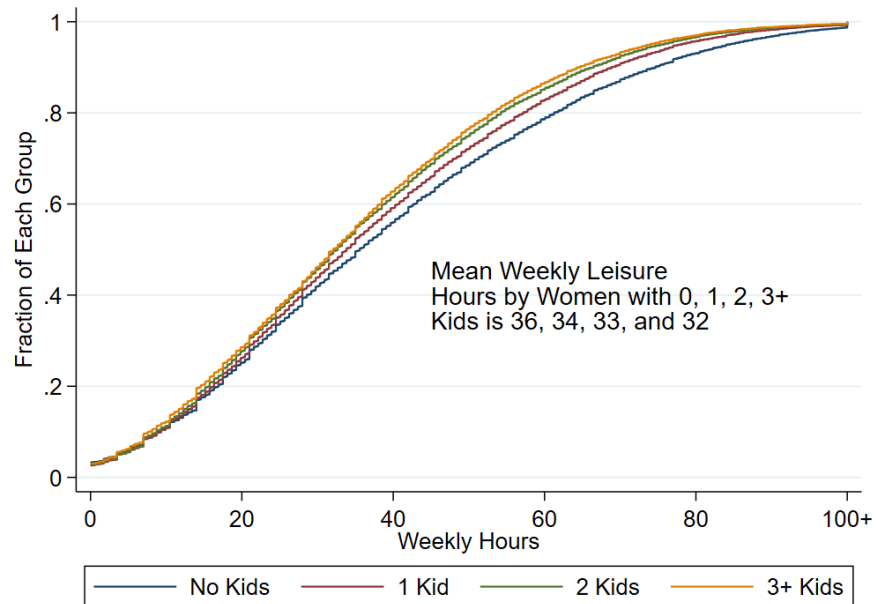
Fig. B.4. CDF of Weekly Leisure Hours, by Number of Children

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

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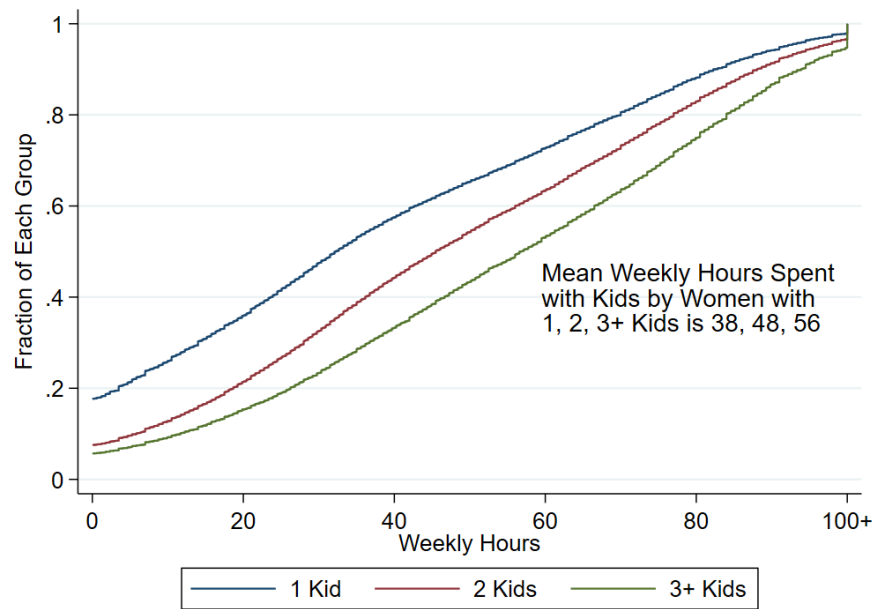
Fig. B.5. CDF of Weekly Hours with Children, by Number of Children

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old. Time with kids from ATUS time diaries (scaled to weekly hours).
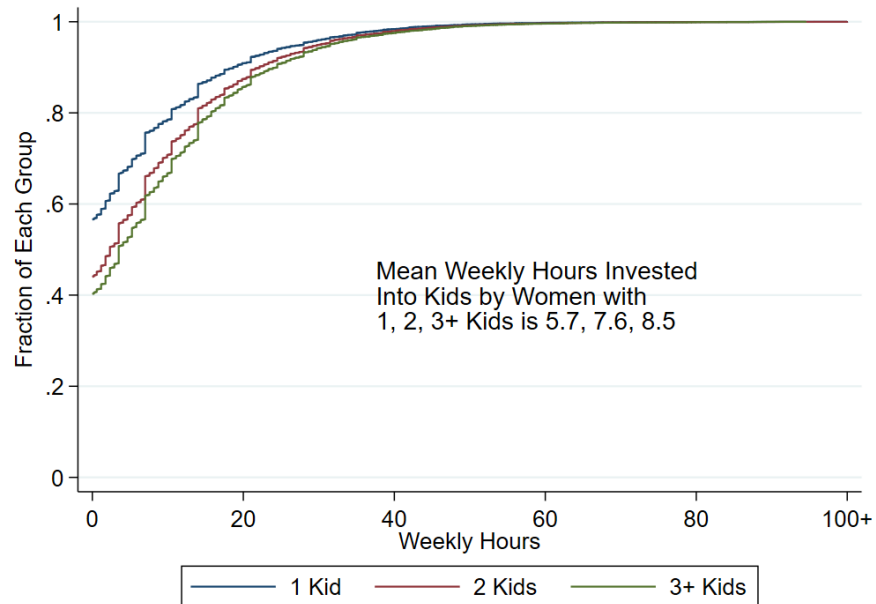
Fig. B.6. CDF of Weekly Hours of Investment Time with Children, by Number of Children

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

Appendix C. Exogeneity of State EITCs

This appendix examines whether state-level EITC expansions are correlated with changes in other state policies, economic conditions, or demographic trends. The exogeneity of state policies and conditions is central to our identification strategy; however, it is important to note that our baseline specifications account for any state-specific time-varying factors that affect all family types similarly by controlling for state × year fixed effects.

We regress 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. Table C.1 reports summary statistics (based on our ATUS sample) for these annual state-level measures. 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 C.2 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 0.50 in all columns.[4] These results provide support for the contention that state-level EITC expansions are not correlated with contemporaneous (or recent) state economic and policy conditions.

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[4]We 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)).

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

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

Notes: 2003–2018 ATUS data. Sample includes all mothers 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 C.2: 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+ 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.

Appendix D. Heterogeneous Effects of the EITC by Race, Education, and Age of Youngest Child

This appendix explores heterogeneity in the effects of EITC expansions conditional on marital status by estimating equations of the form:

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

where Z_{ist} reflects a vector of indicator variables for mother's race, educational attainment, or age. Because we estimate ITT effects, we expect the impacts of the EITC on each subgroup to vary by its family income levels, since family income determines both eligibility for the EITC and whether after-tax wages increase (phase-in region) or decrease (phase-out region) with the maximum benefit amount.

Table D.1 reports estimates that account for heterogeneity in effects of $MaxEITC \times$ marital status by mother's race and education, while Table D.2 reports results that account for heterogeneity by the age of the youngest child in the household.

Table D.1: EITC Effects by Mother's Race and Education

	LFP	Work Hours	Home Prod + Leisure	Time w/ Children	Investment Time			
					Total	Academic	Health	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Effects by Marital Status and Race								
MaxEITC × Married	0.012	0.54	-0.93	-0.48	0.29	0.20	-0.12	0.21
× White	(0.012)	(0.58)	(0.95)	(0.79)	(0.24)	(0.11)	(0.05)	(0.22)
MaxEITC × Married	0.010	0.73	-1.40	-0.87	0.05	0.25	-0.14	-0.06
× Nonwhite	(0.011)	(0.55)	(0.97)	(0.85)	(0.25)	(0.12)	(0.05)	(0.23)
MaxEITC × Unmarried	0.045	1.74	-1.98	-2.11	-0.04	0.00	-0.15	0.10
× White	(0.011)	(0.50)	(0.84)	(0.70)	(0.20)	(0.09)	(0.05)	(0.20)
MaxEITC × Unmarried	0.033	1.32	-1.49	-1.79	-0.11	0.07	-0.16	-0.02
× Nonwhite	(0.011)	(0.51)	(0.87)	(0.67)	(0.21)	(0.09)	(0.05)	(0.21)
R-squared	0.127	0.163	0.157	0.366	0.158	0.089	0.035	0.145
Panel B: Effects by Marital Status and Education								
MaxEITC × Married	0.011	0.38	-0.89	0.05	0.36	0.23	-0.08	0.21
× >12 Yrs Educ	(0.012)	(0.55)	(0.87)	(0.78)	(0.26)	(0.11)	(0.06)	(0.22)
MaxEITC × Married	0.014	0.79	-1.13	-1.22	0.16	0.17	-0.17	0.16
× ≤12 Yrs Educ	(0.020)	(0.81)	(1.50)	(1.16)	(0.31)	(0.15)	(0.07)	(0.33)
MaxEITC × Unmarried	0.035	1.41	-1.57	-1.48	-0.04	0.04	-0.10	0.02
× >12 Yrs Educ	(0.014)	(0.51)	(0.81)	(0.72)	(0.23)	(0.09)	(0.06)	(0.21)
MaxEITC × Unmarried	0.047	1.81	-2.05	-2.62	-0.09	-0.00	-0.21	0.12
× ≤12 Yrs Educ	(0.018)	(0.73)	(1.41)	(1.02)	(0.26)	(0.13)	(0.07)	(0.30)
R-squared	0.127	0.162	0.156	0.366	0.157	0.089	0.035	0.144
Mean Dep Var	0.74	21.6	79.9	38.7	6.0	1.2	0.2	4.6

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old mothers (N=43,685). LFP and work hours are based on CPS survey data; all other measures are based on ATUS time diary data. All specifications include the baseline set of controls (see text or Table 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table D.2: EITC Effects by Age of Youngest Child

	LFP	Work Hours	Home Production + Leisure	Time with Children	Investment Time
	(1)	(2)	(3)	(4)	(5)
Panel A: Effects by Whether Youngest Child is Under Age 6					
MaxEITC × Married	0.005	0.37	-0.81	-1.19	0.10
× Child <6	(0.012)	(0.59)	(0.94)	(0.84)	(0.25)
MaxEITC × Married	0.026	0.90	-1.21	0.85	0.50
× Child ≥6	(0.012)	(0.57)	(0.98)	(0.72)	(0.22)
MaxEITC × Unmarried	0.041	1.54	-1.55	-1.98	-0.22
× Child <6	(0.011)	(0.53)	(0.84)	(0.73)	(0.21)
MaxEITC × Unmarried	0.044	1.70	-2.04	-1.68	0.13
× 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 × Married	0.013	0.59	-0.98	-0.53	0.23
× Child <13	(0.011)	(0.57)	(0.93)	(0.76)	(0.23)
MaxEITC × Married	0.033	1.25	-1.80	0.09	0.10
× Child ≥13	(0.011)	(0.60)	(0.99)	(0.75)	(0.22)
MaxEITC × Unmarried	0.041	1.59	-1.65	-1.57	-0.02
× Child <13	(0.011)	(0.50)	(0.82)	(0.66)	(0.19)
MaxEITC × Unmarried	0.046	1.74	-2.56	-2.89	-0.12
× 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 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Appendix E.   Additional Robustness Results

This appendix reports several additional robustness results discussed in Section 5.7 of the paper.

Table E.1 reports effects of the EITC on labor supply and earnings using the full sample of women (all other results in this Appendix are based on the sample of mothers only). Results are quite similar to those for mother's only reported in the main text.

Table E.2 reports the estimated effects of (combined federal and state) EITC phase-in rates (rather than $MaxEITC$) on time devoted to several key activities.[5] 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 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.

Table E.3 reports estimated effects of $MaxEITC$ on different labor supply measures. Specifically, we report results 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 ≥ 20 hours/week, and working ≥ 40 hours/week). All of these measures indicate similar (significant) effects on labor supply among unmarried mothers but small (insignificant) effects on married mothers.

Table E.4 reports estimates of the effects of $MaxEITC$ on time devoted to several key activities based on separate specifications estimated for the sample of married mothers and for the sample of unmarried mothers. Estimated effects on labor supply in Table E.4 are somewhat larger for unmarried mothers and smaller for married mothers relative to our baseline estimates in Table 2; those for unmarried mothers are statistically significant and those for married mothers are not. Table E.4 also suggests that unmarried mothers spend 1.1 hours less per week with their children for every $1,000 increase in $MaxEITC$ (compared to 2.0 hours/week in Table 4), but this estimate is quite imprecise. Estimated effects on investment time become slightly more negative for single mothers and slightly more positive for married mothers, but neither of these effects is statistically significant.

We also show the effects of $MaxEITC$ interacted with predicted income terciles (not conditional on marital status) in Table E.5. The highest predicted-income tercile serves as a placebo group, largely unaffected by the EITC. Effects are largest for the lowest income tercile and mostly insignificant for the highest tercile.

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[5]Notice 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 10 in the text).

Table E.1: EITC Effects on Labor Supply, Earnings, and EITC Benefits for the Sample of All Women

	LFP	Weekly Work Hours	EITC Benefits	Any EITC	Earnings	Earnings and EITC
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Average Effects						
MaxEITC	0.022	1.18	266.6	0.002	1955.9	2222.5
	(0.007)	(0.36)	(61.2)	(0.011)	(555.8)	(564.9)
R-squared	0.129	0.184	0.346	0.338	0.253	0.244
Panel B: Effects by Marital Status						
MaxEITC × Married	0.010	0.73	206.6	-0.014	1536.7	1743.4
	(0.008)	(0.36)	(59.1)	(0.011)	(549.5)	(556.2)
MaxEITC × Unmarried	0.034	1.59	322.9	0.016	2350.1	2673.0
	(0.007)	(0.37)	(54.7)	(0.009)	(578.9)	(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

Notes: 2003–2018 ATUS data. Sample includes all women 18–49 years old (N=58,090). 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 E.2: EITC Effects Robust to EITC Definition: Phase-in Rates

	LFP	Work Hours	Home Prod. + Leisure	Time with Children	Investment Time
	(1)	(2)	(3)	(4)	(5)
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 mothers 18–49 years old (N=43,685). 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 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table E.3: EITC Effects Robust to Various Measures of Labor Supply

	ATUS Time-Use Data				CPS Data		
	Time-Use Work Hours	>0 Work Hours	≥ 20 Work Hours	≥ 40 Work Hours	Usual Hours	Working	LFP Non-Self-Emp
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MaxEITC ×	1.02	0.015	0.018	0.016	0.52	0.013	0.022
Married	(0.80)	(0.012)	(0.013)	(0.014)	(0.58)	(0.016)	(0.012)
MaxEITC ×	1.53	0.024	0.026	0.026	1.67	0.031	0.051
Unmarried	(0.69)	(0.010)	(0.011)	(0.011)	(0.51)	(0.013)	(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 mothers 18–49 years old (N=43,685). 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 2 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 E.4: Restricting the Sample to Married or Unmarried Mothers

| | LFP | Work Hours | Home Prod + Leisure | Time w/ Children | Investment Time | | | |
| | | | | | Total | Academic | Health | Other |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Sample = Married Mothers (N=28,008)								
MaxEITC	0.005	0.38	-0.65	-0.34	0.54	0.31	-0.13	0.35
	(0.016)	(0.92)	(1.16)	(0.90)	(0.43)	(0.19)	(0.08)	(0.32)
R-squared	0.151	0.153	0.161	0.318	0.147	0.100	0.053	0.140
Mean Dep Var	0.709	21.67	83.05	44.47	7.240	1.467	0.281	5.492
Panel B: Sample = Unmarried Mothers (N=15,677)								
MaxEITC	0.069	2.16	-2.00	-1.10	-0.38	-0.06	-0.10	-0.21
	(0.027)	(0.77)	(1.19)	(0.93)	(0.32)	(0.11)	(0.06)	(0.30)
R-squared	0.171	0.265	0.192	0.432	0.196	0.128	0.049	0.187
Mean Dep Var	0.787	21.39	74.40	28.71	3.933	0.700	0.135	3.098

Notes: 2003–2018 ATUS data. Samples include all 18–49 year-old married or unmarried mothers. LFP and Work Hours based on CPS; all other outcomes based on ATUS time diaries. All specifications include the baseline set of controls (see text or Table 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table E.5: EITC Effects by Predicted Income Terciles

| Outcome: | LFP | EITC Benefits | Any EITC | Time w/ Children | Investment Time | Home Production + Leisure |
	(1)	(2)	(3)	(4)	(5)	(6)
MaxEITC × Tercile 1	0.031	465.9	0.037	-2.09	-0.15	-1.67
	(0.010)	(39.6)	(0.012)	(0.60)	(0.21)	(0.79)
MaxEITC × Tercile 2	0.006	346.7	0.023	-1.05	0.10	-0.67
	(0.010)	(37.6)	(0.009)	(0.54)	(0.17)	(0.75)
MaxEITC × Tercile 3	0.002	217.6	-0.002	-0.21	0.23	-0.70
	(0.010)	(29.7)	(0.008)	(0.67)	(0.21)	(0.82)
R-squared	0.100	0.287	0.294	0.350	0.138	0.130
Observations	43,685	43,685	43,685	43,685	43,685	43,685

Notes: 2003–2018 ATUS data. Sample includes all mothers 18–49 years old. To create predicted income terciles, we regress household income on marital status, number of kids FE, 4 education categories, black, hispanic, age, and birth year, year FE, and state FE (using ATUS weights). We categorize individuals into predicted-income terciles, and interact these terciles with $MaxEITC$. The outcome regressions control for the full set of controls plus predicted income tercile FE. Average household incomes for mothers in terciles 1–3 are $35,200, $59,500, and $93,400. The fraction of mothers in each tercile eligible for any EITC benefits are 55.5%, 30.1%, and 10.3%. Standard errors are robust to heteroskedasticity and clustered at the state level.

Appendix F.   Other Results using ATUS

This appendix reports several additional results discussed in the main text.

Table F.1 estimates the effects of $MaxEITC$ (by marital status) for both home production and leisure separately based on whether the mother is with or without her children.

Table F.2 explores 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 the text), while Panels B and C restrict the sample to mothers who were interviewed on a weekday or on the weekend.[6] Average hours for each activity (reported at the bottom of each panel), as well as estimated effects, are scaled so that they are 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 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.

Table F.3 reports estimated average marginal effects on the probability of spending a positive amount of time on several key activities using OLS, Logit, and Probit specifications.

Tables F.4–F.7 replicate Tables 4–7 with a Tobit specification, reporting average marginal effects.

Table F.8 reports the estimated effects of $MaxEITC$ on father's time allocation. For fathers, as for mothers, we define $MaxEITC$ based on state, year, and number of dependent children living in the household that are age 18 or younger. $MaxEITC$ is independent of the number of one's children living outside of the household — while we can observe total time with children that live outside of the household, we do not know the number of children (even if we did, these children would not count towards the father's EITC eligibility, since each child can only be claimed as a dependent by one tax-filing unit and the child must live with this parent for more than half of the year). Table F.8 columns (1)–(4) and (6)–(9) are defined as for mothers; column (5) considers all non-household children strictly less than 18 years old, while columns (4) and (6)–(9) include all children, including those 18 years old.

While we cannot generally observe the activities of household members other than fathers

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[6]The 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).

or mothers, we can see whether the EITC has larger impacts on mothers who have other adult relatives living with them.[7] In Table F.9, we examine the effects of $MaxEITC$ on our main sample of 18–49 year-old mothers, allowing for different effects based on marital status and whether the mother lives with other related adults. Roughly 6% of mothers live with another relative, of which 38% live with a parent, 30% live with a sibling, and 58% live with an unspecified relative. (Some mothers live with multiple other adult family members.) Table F.9 shows that $MaxEITC$ has its largest effects on the labor supply, home production and leisure, and time with children among unmarried mothers who are living with other adult family members (e.g., mothers' parents or siblings). We find no evidence that mothers (with or without other family in the household) reduce their investment time with children.

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[7]Unfortunately, ATUS is not well-suited for measuring time use for grandparents or other relatives. First, we generally observe time diaries for only one person per household; few of these observations are grandparents or other relatives living with (related or unrelated) families with children. Second, while ATUS does interview many adults with grandchildren or nieces/nephews living outside of their household, it does not record anything about these children or the mothers of these children. It is, therefore, impossible to accurately determine $MaxEITC$ for the children and their mothers.

Table F.1: Decomposing EITC Effects on Home Production and Leisure into Time with and without Children

	Home Production		Leisure	
	With Children	Without Children	With Children	Without Children
	(1)	(2)	(3)	(4)
MaxEITC ×	0.07	-0.04	-0.74	-0.28
Married	(0.55)	(0.54)	(0.41)	(0.52)
MaxEITC ×	-1.04	0.51	-1.05	-0.22
Unmarried	(0.46)	(0.49)	(0.36)	(0.52)
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 3 Panel B columns 2 and 3. All specifications include the baseline set of controls (see text or Table 2 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 F.2: EITC Effects on 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 ×	1.05	-0.98	-0.52	0.26
Married	(0.81)	(0.95)	(0.79)	(0.23)
MaxEITC ×	1.56	-1.80	-1.99	-0.054
Unmarried	(0.70)	(0.84)	(0.68)	(0.20)
R-squared	0.186	0.156	0.365	0.157
Mean Dep Var (per week)	23.5	79.9	38.7	6.0
Panel B: Restricting Sample to Weekdays (Monday–Friday)				
MaxEITC ×	0.81	-1.13	-0.90	0.11
Married	(0.91)	(1.01)	(0.66)	(0.21)
MaxEITC ×	1.40	-1.98	-2.28	-0.21
Unmarried	(0.79)	(0.92)	(0.63)	(0.19)
R-squared	0.145	0.141	0.377	0.190
Mean Dep Var (per 5 days)	21.1	53.9	25.1	4.2
Panel C: Restricting Sample to Weekends (Saturday–Sunday)				
MaxEITC ×	0.18	0.28	0.34	0.20
Married	(0.23)	(0.25)	(0.32)	(0.10)
MaxEITC ×	0.16	0.28	0.19	0.17
Unmarried	(0.24)	(0.24)	(0.29)	(0.09)
R-squared	0.086	0.132	0.355	0.161
Mean Dep Var (per 2 days)	2.4	26.0	13.6	1.8

Notes: 2003–2018 ATUS data for all mothers 18–49 years old. Panel A includes all mothers (N=43,685); Panel B includes mothers surveyed Monday–Friday (N=21,608); Panel C includes mothers surveyed Friday or Saturday (N=22,077). 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. All specifications include the baseline set of controls (see text or Table 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table F.3: EITC Effects on Extensive Margin of Selected Activities

| | Work Hours (CPS) | Work Hours (ATUS) | Time w/ Children | Investment Time | | | |
| | | | | Total | Academic | Health | Other |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: OLS							
MaxEITC ×	0.003	0.015	-0.006	0.010	0.018	-0.011	0.008
Married	(0.012)	(0.012)	(0.015)	(0.012)	(0.010)	(0.004)	(0.012)
MaxEITC ×	0.028	0.024	-0.008	-0.006	0.001	-0.013	-0.002
Unmarried	(0.011)	(0.010)	(0.014)	(0.011)	(0.008)	(0.004)	(0.011)
R-squared	0.145	0.172	0.430	0.241	0.137	0.055	0.200
Panel B: Logit							
MaxEITC ×	-0.008	-0.004	0.006	0.003	0.006	-0.008	0.006
Married	(0.009)	(0.013)	(0.008)	(0.013)	(0.009)	(0.004)	(0.013)
MaxEITC ×	0.017	0.006	-0.013	-0.007	-0.010	-0.008	0.005
Unmarried	(0.008)	(0.011)	(0.007)	(0.013)	(0.009)	(0.003)	(0.014)
Panel C: Probit							
MaxEITC ×	-0.007	-0.003	0.003	0.002	0.006	-0.008	0.005
Married	(0.009)	(0.013)	(0.008)	(0.013)	(0.009)	(0.003)	(0.013)
MaxEITC ×	0.017	0.006	-0.015	-0.007	-0.010	-0.008	0.003
Unmarried	(0.008)	(0.011)	(0.007)	(0.012)	(0.009)	(0.003)	(0.013)
Mean Dep Var	0.617	0.455	0.827	0.463	0.195	0.033	0.375

Notes: 2003–2018 ATUS data. Sample includes all 18–49 year-old unmarried mothers (N=43,685). All specifications include the baseline set of controls (see text or Table 2 notes). Average marginal effects are reported for all specifications. Standard errors are robust to heteroskedasticity and clustered at the state level.

Table F.4: Replicating Table 4 with a Tobit Specification

| | Total Time | Non-Investment Time | | | Investment Time | | | |
| | | Total | Home Prod | Leisure | Total | Academic | Health | Other |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MaxEITC ×	-0.30	-0.60	-0.30	-0.57	0.01	-0.01	-0.16	0.04
Married	(0.58)	(0.41)	(0.29)	(0.21)	(0.23)	(0.05)	(0.04)	(0.24)
MaxEITC ×	-1.08	-1.12	-0.59	-0.59	-0.01	-0.10	-0.14	0.20
Unmarried	(0.52)	(0.38)	(0.24)	(0.23)	(0.22)	(0.05)	(0.05)	(0.22)
Mean Dep Var	38.7	32.7	19.9	11.7	6.0	1.2	0.2	4.6
% Pos Dep Var	88.0	87.6	85.9	67.4	50.8	20.3	3.3	45.2

Notes: Identical to Table 4, except with a Tobit specification. Average marginal effects and their standard errors are reported.

Table F.5: Replicating Table 5 with a Tobit Specification

| | Play | Arts & Crafts + Sports | Talk & Listen + Organize & Plan Look After Children + Attend Events |
	(1)	(2)	(3)
MaxEITC ×	-0.01	0.01	-0.01
Married	(0.15)	(0.05)	(0.11)
MaxEITC ×	0.21	0.07	-0.11
Unmarried	(0.13)	(0.06)	(0.11)
Mean Dep Var	2.28	0.64	1.72
% Pos Dep Var	20.5	1.3	23.7

Notes: Analogous to Table 5, except with a Tobit specification. Because the amount of time is very low for several activities in Table 5, time devoted to "Arts & Crafts" and "Sports" are combined, with results reported in column 2, while time devoted to "Talk & Listen", "Organize & Plan", "Look After Children", and "Attend Events" are combined, with results reported in column 3. Average marginal effects and their standard errors are reported.

Table F.6: Replicating Table 6 with a Tobit Specification

	Personal Care (1)	Housework (2)	Waiting, Shopping (3)	Caring for Others + Civic (4)	Eating (5)	Errands, Travel (6)
MaxEITC ×	-0.10	-0.21	-0.15	0.01	-0.05	-0.11
Married	(0.05)	(0.16)	(0.26)	(0.03)	(0.07)	(0.06)
MaxEITC ×	-0.10	-0.28	-0.02	-0.01	-0.03	-0.16
Unmarried	(0.06)	(0.19)	(0.25)	(0.03)	(0.07)	(0.05)
Mean Dep Var	0.24	6.09	6.48	0.13	4.09	2.85
% Pos Dep Var	3.5	60.0	68.5	3.4	72.8	56.9

Notes: Analogous to Table 6, except with a Tobit specification. Because the amount of time is very low for a few activities in Table 6, time devoted to "Caring for Others" and "Civic" are combined, with results reported in column 4. Average marginal effects and their standard errors are reported.

Table F.7: Replicating Table 7 with a Tobit Specification

	Helping Non-HH Members + Educ (1)	Socializing (2)	Waiting (3)	Religious and Relaxing (4)	Volunteer (5)	Phone (6)	Travel (7)
MaxEITC ×	-0.0098	-0.34	-0.54	-0.019	0.011	0.019	0.020
Married	(0.034)	(0.12)	(0.18)	(0.029)	(0.043)	(0.023)	(0.031)
MaxEITC ×	-0.011	-0.26	-0.46	-0.0043	-0.019	0.029	0.0047
Unmarried	(0.037)	(0.14)	(0.19)	(0.043)	(0.062)	(0.025)	(0.039)
Mean Dep Var	0.20	2.66	7.09	0.52	0.33	0.14	0.78
% Pos Dep Var	5.5	25.5	49.8	7.2	3.3	4.0	26.5

Notes: Analogous to Table 7, except with a Tobit specification. Because the amount of time is very low for a few activities in Table 7, time devoted to "Helping Non-HH Members" and "Educ" are combined, with results reported in column 1. Average marginal effects and their standard errors are reported.

Table F.8: Effects of EITC on Fathers' Time Use

	LFP	Work Hours	Home Prod. and Leisure	Time with Own Children	Time with Own Non-Household Children	Investment Time with Own Children			
						Total	Academic	Health	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MaxEITC × Married	-0.003	-0.01	0.70	0.64	0.85	0.30	0.10	-0.02	0.22
	(0.010)	(0.51)	(0.73)	(0.92)	(0.63)	(0.15)	(0.04)	(0.01)	(0.17)
MaxEITC × Unmarried	-0.001	-0.51	0.97	-0.34	-0.20	0.24	0.07	-0.02	0.19
	(0.009)	(0.50)	(0.73)	(0.86)	(0.61)	(0.15)	(0.03)	(0.01)	(0.16)
R-squared	0.126	0.218	0.241	0.317	0.368	0.135	0.064	0.038	0.129
Mean Dep Var	0.92	35.2	67.3	23.5	21.3	3.65	0.47	0.04	3.14

Notes: 2003–2018 ATUS data. Sample includes all fathers 18–59 years old (N=36,040). Column (5) considers all non-household children less than 18 years old, while columns (4) and (6)–(9) include all children up to age 18. All specifications include the baseline set of controls, including State × Year FE (see text or Table 2 notes). Standard errors are robust to heteroskedasticity and clustered at the state level.

Table F.9: EITC Effects for Mothers Living with Other Adult Family Members

	LFP	Home Prod and Leisure	Time with Kids	Investment			
				Total	Academic	Health	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MaxEITC × Married	0.011	-0.92	-0.42	0.28	0.21	-0.11	0.18
× No Other Adults	(0.012)	(0.95)	(0.79)	(0.23)	(0.11)	(0.05)	(0.22)
MaxEITC × Married	0.021	-1.34	-1.25	0.12	0.14	-0.14	0.12
× Other Adults	(0.012)	(1.01)	(0.87)	(0.32)	(0.15)	(0.05)	(0.25)
MaxEITC × Unmarried	0.040	-1.64	-1.81	-0.05	0.03	-0.14	0.06
× No Other Adults	(0.011)	(0.85)	(0.69)	(0.20)	(0.09)	(0.05)	(0.20)
MaxEITC × Unmarried	0.044	-2.44	-2.71	-0.07	0.01	-0.20	0.11
× Other Adults	(0.013)	(0.89)	(0.80)	(0.23)	(0.11)	(0.05)	(0.21)
R-squared	0.127	0.157	0.367	0.157	0.089	0.035	0.144
Mean Dep Var	0.74	79.9	38.7	6.04	1.19	0.23	4.62

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 2 notes). Roughly 6% of these mothers live with another relative, of which 38% live with a parent, 30% live with a sibling, and 58% live with an unspecified relative (some mothers live with multiple other adult family members). Standard errors are robust to heteroskedasticity and clustered at the state level.

Appendix G.   Results using the American Heritage Time Use Survey (AHTUS)

Time-use data exists for earlier years in the American Heritage Time Use Survey (AHTUS): 1975, 1985, 1993, 1995, 1998 AHTUS data contains interviews from 1975, 1976, 1985, 1992, 1993, 1994, 1998, 1999, and 2000. Unfortunately, these samples are relatively small — generally 2,000–4,000 observations per year, compared to 10,000–20,000 per year for 2003–2018 in ATUS — and contain fewer covariates. Furthermore, AHTUS data on "who with" is not consistent over time, making any effort to construct a measure of total time with children inconsistent over time. (For details, see https://www.ahtusdata.org/ahtus/who_variables.shtml.) Because reported time use categories are largely consistent over time, we can still construct several time allocation outcomes of interest. We estimate the effects of $MaxEITC$ on mother's reported hours at work, home production + leisure, and child care (includes care of infants; general care of older children; medical care of children; play with children; supervise child or help with homework; read to, talk with child; and other child care). Based on a sample that includes all 18–64 year-old mothers (to maximize sample size), Table G.1 shows that results for mothers in AHTUS are noisy but qualitatively similar to those with ATUS.

Table G.1: EITC and Time-Use: Using Pre-2000 AHTUS Data,
Various Controls

	(1)	(2)	(3)	(4)
Panel A: Total Work Hours (Mean = 16.3)				
MaxEITC × Married	0.61	1.36	0.04	0.12
	(0.93)	(0.92)	(1.17)	(1.49)
MaxEITC × Unmarried	1.47	2.04	1.08	2.35
	(0.98)	(0.99)	(2.18)	(2.59)
R-squared	0.033	0.060	0.125	0.201
Panel B: Home Production + Leisure Hours (Mean = 146.7)				
MaxEITC × Married	0.24	-0.59	0.14	0.72
	(0.96)	(0.95)	(1.23)	(1.46)
MaxEITC × Unmarried	-1.41	-1.89	0.92	-0.88
	(1.10)	(1.11)	(2.60)	(3.16)
R-squared	0.049	0.079	0.152	0.224
Panel C: Hours on Child Care (Mean = 7.2)				
MaxEITC × Married	1.20	0.57	1.09	0.73
	(0.28)	(0.30)	(0.48)	(0.51)
MaxEITC × Unmarried	0.24	0.01	0.67	0.62
	(0.34)	(0.32)	(0.49)	(0.56)
R-squared	0.071	0.183	0.203	0.281
Controls:				
State FE, Year FE, #Kids FE	X	X	X	X
Demographic Traits		X	X	X
Interactions			X	X
State × Year FE				X

Notes: 1975, 1985, 1993, 1995, 1998 AHTUS data contains interviews from 1975, 1976, 1985, 1992, 1993, 1994, 1998, 1999, and 2000. Sample includes all 18–64 year-old mothers (N=3,701). Child care includes: care of infants; general care of older children; medical care of children; play with children; supervise child or help with homework; read to, talk with child; and other child care. Standard errors are robust to heteroskedasticity and clustered at the state level.

Appendix H. 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.

H.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

H.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

H.3. WORK ACTIVITIES

05 Working and Work-Related Activities – all subcategories
17 Traveling
> 17.05 Travel Related to Work – all subcategories

H.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

H.5. SLEEP ACTIVITIES

01 Personal Care

01.01 Sleeping – all subcategories

H.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 5.

ACADEMIC INVESTMENT ACTIVITIES

The following activities are included in our measure of academic investment time (see Table 4, column 6):

03.01 Caring For and Helping Household Children: (03.01.02) Reading to/with 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 4, 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 5, 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.

H.7.   NON-INVESTMENT TIME WITH CHILDREN

Non-investment home production and leisure time with children is decomposed into several activity detailed subcategories in Tables 6 and 7.

HOME PRODUCTION NON-INVESTMENT ACTIVITIES AND SUBCATEGORIES

The following activities are included in our measure of home production non-investment time (see Table 6):

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.

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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 7):

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

<u>12.01 Socializing and Communicating</u>: All subcategories.

<u>12.02 Attending or Hosting Social Events</u>: All subcategories.

Column 4: Waiting and Relaxing

<u>12.03 Relaxing and Leisure</u>: (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.*

<u>12.04 Arts and Entertainment (other than sports)</u>: (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.*

<u>12.05 Waiting Associated with Socializing, Relaxing, and Leisure</u>: All subcategories.

<u>12.99 Socializing, Relaxing, and Leisure, n.e.c.*</u>: All subcategories.

<u>13.03 Waiting Associated with Sports, Exercise, and Recreation</u>: All subcategories.

<u>13.04 Security Procedures Related to Sports, Exercise, and Recreation</u>: All subcategories.

<u>13.99 Sports, Exercise, and Recreation, n.e.c.*</u>: All subcategories.

Column 5: Religious

<u>14 Religious and Spiritual Activities</u>: All subcategories.

Column 6: Volunteer

<u>15 Volunteer Activities</u>: All subcategories.

Column 7: Phone

<u>16.01 Telephone Calls (to or from)</u>: (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

<u>17.12 Travel Related to Socializing, Relaxing, and Leisure</u>: All subcategories.

<u>17.13 Travel Related to Sports, Exercise, and Recreation</u>: All subcategories.

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

<u>17.15 Travel Related to Volunteer Activities</u>: All subcategories.