

Welfare Programs and the Time Allocation, Savings, and Human Capital Development of Single-Mother Families

Zhixiu Yu*

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Abstract

This paper investigates how welfare programs shape the behavior and long-run outcomes on human capital development of single-mother families. I develop a life-cycle model in which single mothers choose labor supply, savings, program participation, and time and monetary investments in children, under the detailed institutional rules of Temporary Assistance for Needy Families, the Supplemental Nutrition Assistance Program, and the Earned Income Tax Credit. Children's development is shaped by childcare investment through a multi-period skill production function. Mothers accumulate human capital through work experience, which further affects their future earnings and retirement wealth. The model is estimated by the Method of Simulated Moments to match life-cycle profiles of labor supply, wealth accumulation, welfare participation, childcare time, and children's development outcomes using linked data from the Panel Study of Income Dynamics. Counterfactual analysis reveals that extending the TANF lifetime limit increases welfare participation and children skill accumulation, but reduces single mothers' labor supply and retirement security. The results highlight the dynamic trade-offs between program generosity, work incentives, and family well-being in the design of welfare policy.

JEL classification: D15, H53, I31, J13, J22, J24

Keywords: Female labor supply; human capital; welfare reform; child investment

*zhixiuyu@lsu.edu. Department of Economics, Louisiana State University. I thank Mariacristina De Nardi, Siha Lee, Joseph Mullins, Cormac O'Dea, and participants at ASSA, WEAI, and SEA for helpful comments and suggestions.

1 Introduction

In the United States, welfare and transfer programs form the core of the safety net for low-income families, including Temporary Assistance for Needy Families (TANF), the Supplemental Nutrition Assistance Program (SNAP), and the Earned Income Tax Credit (EITC). Single-mother families have historically been a central target of these programs, given their high poverty rates (Moffitt, 1992, 2015). For instance, the majority of TANF adult recipients are women, particularly single mothers (Congressional Research Service, 2016), and these families account for about two-thirds of all EITC expenditures (Meyer and Rosenbaum, 2001). SNAP serves a broader population, spanning the working poor, disabled, and elderly, but single mothers and elderly single women together make up roughly one-third of SNAP households (USDA Food and Nutrition Service, 2012). The 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) replaced the open-ended entitlement of Aid to Families with Dependent Children (AFDC) with TANF, imposing a lifetime limit on federal welfare benefits, strong work requirements, and stricter income and resource eligibility rules.¹ Concurrently, the expansion of the EITC strengthened work incentives among targeted beneficiaries, signaling a shift in policy focus towards promoting work over dependence on welfare.

These reforms raise an important question: how do welfare program features shape single mothers' labor supply, childcare investment, savings, welfare use, and how do these decisions affect mothers' human capital and long-run economic security, as well as their children's development? Single mothers face significant challenges in time and budget constraints compared to married couples, placing them at a disadvantage in balancing work and childcare investment. When policy reforms reduce their access to welfare benefits, it could push them towards increased labor supply, potentially sacrificing quality childcare time—an essential factor for long-term child development and wellbeing (Cunha and Heckman, 2007; Bruins, 2017). On the flip side, working less could impeded mothers' human capital accumulation, affecting future earnings and retirement benefits (Borella et al., 2023; Goldin et al., 2024; Adda et al., 2017). In addition, asset tests in welfare programs may further discourage savings among low income families (Hubbard et al., 1995; Gruber and Yelowitz, 1999). Together, these could make single mothers less financially secure in retirement and more dependent on anti-poverty programs, such as

¹PRWORA also consolidated federal child care subsidies for low-income children into a single block grant to states, the Child Care and Development Fund (CCDF). Evidence suggests that childcare subsidies can increase single mothers' employment (Gelbach, 2002; Blau and Tekin, 2007). But access remained limited: only about 15 percent of federally eligible children received subsidies in a typical month (Office of the Assistant Secretary for Planning and Evaluation, 2015).

SNAP. Consequently, understanding the tradeoff between incentives and insurance for such welfare programs and their broader effects in both the short run and the long run is a central motivation of this research.

To that end, this paper develops a dynamic life-cycle model in which single mothers allocate time between market work and childcare, decide how much to save and invest in their children, and choose whether to participate in TANF and SNAP. The model links these decisions to two long-run outcomes: children’s human capital development and mothers’ retirement security. Children’s skills evolve through a skill production function, in which parental time and monetary investments accumulated over childhood shape later educational attainment. Mothers accumulate human capital through work experience, which further shapes their future wage and retirement wealth. The framework incorporates key institutional details of TANF, SNAP, and the EITC, including time limits, income and asset tests, and work requirements, thereby linking policy design to household decision-making across the life cycle.

The model is estimated using the Method of Simulated Moments (MSM) strategy and post-reform data from the Panel Study of Income Dynamics (PSID), linked to its Child Development Supplement (CDS) and Transition into Adulthood Supplement (TAS). The data document large and persistent differences between single- and two-parent families: single mothers work more on both extensive and intensive margins, but they earn lower wages, substantially less wealth, invest fewer resources in their children, and are much more dependent on welfare programs. Their children also have lower cognitive test scores throughout childhood and are less likely to attend college later in life. The estimated model reproduces these patterns and provides a quantitative framework for evaluating how alternative welfare designs shape mothers’ decisions and long-run outcomes.

Removing TANF’s lifetime limit increases program participation and reduces labor supply during the childrearing years. As a result, mothers accumulate less human capital and lifetime earnings by the timing of retirement, reflecting greater reliance on public support at older ages. At the same time, the reform increases childcare investment. Longer access to TANF allows mothers to make more investments in their children, improving skill accumulation and college attainment potential. These findings highlight the dynamic trade-offs inherent in welfare policy between promoting work and strengthening maternal retirement security, on the one hand, and supporting children’s human capital development, on the other. Further policy experiments consider alternative welfare designs, including changing work requirements, relaxing income and asset thresholds, expanding SNAP benefits, and increasing EITC generosity.

Existing studies provide important insights into the role of parental time and financial resources in shaping children’s development (Carneiro and Heckman, 2003; Doepke and Zilibotti, 2017; Abbott, 2022; Caucutt et al., 2026). For instance, Del Boca et al. (2014) develop a structural model of parental time allocation and child skill formation, showing that active maternal time is especially productive for young children. Related work extends this perspective by emphasizing heterogeneity in family structure and parental background (Chan and Liu, 2025; Blandin and Herrington, 2022; Guryan et al., 2008; Yum, 2023). The broader literature underscores that inequality in children’s human capital accumulation reflects differences in both parental resources and the public policy environment (Heckman and Mosso, 2014; Bolt et al., 2023).

A parallel literature studies how welfare reforms affect household decision-making and children’s development outcomes. Evidence from the U.S. and the U.K. shows substantial labor-supply responses among women, especially single mothers (Moffitt, 2002; Blundell et al., 2016). In the U.S., PRWORA increased work but weakened consumption smoothing for disadvantaged families (Grogger, 2003). Evidence on child outcomes of these reforms is mixed: some studies find that welfare reform or EITC expansions reduce children’s short-run test scores by increasing maternal employment and reducing parental time (Herbst, 2017; Chyi et al., 2014; Agostinelli and Sorrenti, 2022), while others find little reduction in active developmental engagement with children (Lochner and Bastian, 2020).

A complementary body of research examines the impact of other public programs. For instance, greater childhood access to safety net programs generates long-run benefits for children and society (Hoynes and Schanzenbach, 2018; McInnis et al., 2023; Li et al., 2023). The EITC expansion substantially increased labor force participation among single mothers (Eissa and Liebman, 1996; Meyer and Rosenbaum, 2001), while Fang and Keane (2004) show that their welfare effects differ between high- and low-educated mothers. In addition, expansions in childcare subsidies and tax credits can improve child skill accumulation (Moschini and Tran-Xuan, 2025; Aizer et al., 2023; Albanesi et al., 2022), although Bernal and Keane (2011) find that childcare use can reduce test scores among children in single-mother families.

Recent work has examined how welfare reform affects household decisions over the life cycle. Low et al. (2022) focus on family formation and dissolution, showing that time limits reduce divorce among mothers by worsening the outside option of being single. Mullins (2025) develops a dynamic model of single mothers’ labor supply, welfare participation, and parental investments to design optimal cash transfers when child human capital effects are internalized.

This paper builds on a growing literature linking welfare reform, female labor supply, and children’s human capital formation, and it contributes to this literature in two ways. First, it connects the dynamic welfare and labor supply literature, which emphasizes short-run behavioral responses to policy incentives, with the human capital and child development literature, which studies the long-run evolution of skills within families, into a unified model. Second, it explores the interaction among major welfare and tax-transfer programs: TANF, SNAP, and the EITC, which creates complex incentives on work and savings through eligibility rules and cross-program benefit offsets (Keane and Moffitt, 1998; Hubbard et al., 1995). The model analyzes how these programs affect household decisions through savings, work effort, and parental investment decisions, while allowing these behavioral responses to shape both children’s development and maternal human capital accumulation, which ultimately affects mothers’ retirement security. By linking welfare-induced behavioral responses to both maternal and child outcomes in a single framework, the paper provides new insights into how policy design shapes family decision-making over time and welfare.

The rest of the paper proceeds as follows. Section 2 describes the institutional background of TANF, SNAP, and the EITC. Section 3 presents the data and key empirical facts motivating the analysis. Section 4 develops the dynamic life-cycle model, and Section 5 describes its estimation. Section 6 presents the counterfactual experiments and policy implications, and Section 7 discusses extensions of the framework. Section 8 concludes.

2 Background: Welfare and Tax-Transfer Programs

Cash assistance through Temporary Assistance for Needy Families (TANF), food assistance through Supplemental Nutrition Assistance Program (SNAP), and earning subsidy through the Earned Income Tax Credit (EITC) form the core of the safety net for low-income families. However, they interact in ways that create complex work and savings incentives, benefit offsets, and potential poverty traps.

2.1 Welfare Program Reform

The Aid to Families with Dependent Children (AFDC) program, created by the Social Security Act of 1935, had provided open-ended federal matching grants to states to assist families with children deprived of parental support due to absence, death, or incapacity.

AFDC served as the principal income-support program for female-headed households for over six decades (Chan, 2013).

The 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) replaced AFDC with TANF and shifted U.S. cash assistance toward a work-first system. The reform introduced lifetime limits on benefit receipt, work requirements with sanctions for noncompliance, fixed federal block grants to states, and asset tests that can discourage savings. Specifically, federal TANF funds are generally limited to 60 months over a recipient's lifetime. Approximately 80% of states adopted a 60-month limit, while some imposed stricter limits using their own funds (refer to Table 1 for state-by-state TANF time limits). Families must meet work participation requirements, with single-parent families generally required to participate in qualifying activities (e.g., employment, job search, or training) for at least 30 hours per week after 24 months of receipt. Unlike AFDC's open-ended federal matching funds, TANF provides states with a fixed annual block grant, and most states maintain liquid-asset limits for eligibility.

2.2 Supplemental Nutrition Assistance Program

The SNAP, formerly the Food Stamp Program, provides in-kind food assistance to low-income households. Eligibility is primarily based on household income and assets relative to the federal poverty guidelines. Unlike TANF, SNAP is a federal entitlement, meaning all eligible households can receive benefits regardless of state budget conditions. Non-compliance with work requirements, such as the 20-hour weekly rule for able-bodied adults without dependents (ABAWDs), may lead to temporary sanctions or time-limited benefits, but single mothers with dependent children are typically exempt from these ABAWD restrictions.

2.3 Earned Income Tax Credit

The EITC expanded during the 1990s as the principal income-support mechanism for low-income working families. It is a refundable federal tax credit with a three-region structure: a phase-in range (credit rises proportionally with earnings), a plateau (credit constant at its maximum), and a phase-out range (credit declines as income rises further). Eligibility and benefit size depend strictly on earned income reported through the tax system, the number of qualifying children, and marital status.

Table 1: TANF Policy: Time Limits and Implemented Year in Each State

State	Begin	Type of Limit	Month	State	Begin	Type of Limit	Month
Alabama	1996	Lifetime	60	Montana*	1995	Lifetime	60
Alaska	1997	Lifetime	60	Nebraska*	1996	Lifetime	60
Arizona*	1996/2002	Periodic/Lifetime	60	Nevada*	1997	Lifetime	60
Arkansas	1997	Lifetime	24	New Hampshire	1996	Lifetime	60
California*	1998	Benefit Reduction		New Jersey	1997	Lifetime	60
Colorado	1997	Lifetime	60	New Mexico*	1997	Lifetime	60
Connecticut	1996	Lifetime	21	New York	1996	Lifetime	60
Delaware*	1995/2000	Lifetime	60/36	North Carolina	1997	Lifetime	60
D.C.*	1997	Lifetime	60	North Dakota*	1997	Lifetime	60
Florida	1996	Lifetime	48	Ohio*	1997	Lifetime	60
Georgia	1997	Lifetime	48	Oklahoma*	1997	Lifetime	60
Hawaii	1997	Lifetime	60	Oregon	1996	Periodic Limit	
Idaho	1997	Lifetime	24	Pennsylvania	1997	Lifetime	60
Illinois	1997	Lifetime	60	Rhode Island	1997	Benefit Reduction Limit	
Indiana*	1996/2002	Benefit Reduction/Lifetime	60	South Carolina*	1996	Lifetime	60
Iowa	1997	Lifetime	60	South Dakota*	1996	Lifetime	60
Kansas	1996	Lifetime	60	Tennessee	1996	Lifetime	60
Kentucky	1996	Lifetime	60	Texas*	1996	Lifetime	60
Louisiana	1997	Lifetime	60	Utah	1997	Lifetime	36
Maine	1996	No Limits		Vermont	1996	No Limits	
Maryland*	1997	Lifetime	60	Virginia	1997	Lifetime	60
Massachusetts	1997	No Limits		Washington*	1997	Lifetime	60
Michigan	1996	No Limits		West Virginia	1997	Lifetime	60
Minnesota	1997	Lifetime	60	Wisconsin*	1996	No Limits	
Mississippi	1996	Lifetime	60	Wyoming	1997	Lifetime	60
Missouri	1996	Lifetime	60				

Note: The year when the time limit was implemented may differ from when the policy officially began. States marked with an asterisk (*) indicate those that changed their time limit policies between 1997 and 2007; in some cases, the revised policy was applied retroactively to earlier years. States with a Periodic Limit Program of x/y months provide benefits for up to x months within any y-month period.

Source: Welfare Rules Database Project , author’s calculations.

2.4 Program Interactions

TANF and SNAP share overlapping but non-identical eligibility criteria. Both programs target low-income households, and both condition eligibility on asset tests. For instance, as of 2023 values, TANF limits liquid assets to roughly \$1,000–2,000 (state-varying), while SNAP allows liquid assets up to \$2,500 (or \$3,750 for households with an elderly or disabled member). In practice, TANF-eligible households are almost universally SNAP-eligible, but not vice versa. Further, TANF cash benefits are counted as income when determining SNAP eligibility and benefit levels. For every dollar of TANF received, the SNAP benefit falls by approximately 30 cents. Conversely, SNAP benefits are excluded from income when determining TANF eligibility and benefit at the federal level.

EITC refunds are not considered income or a resource (for at least 12 months from payment) for federally funded benefit programs, including TANF and SNAP. Conversely, TANF and SNAP receipt does not directly affect EITC eligibility or benefit amounts.

3 Data and Facts

This section provides empirical evidence on single-mother families in comparison to married-couple families, documenting key patterns in labor supply, welfare participation, childcare investment, and children’s development that motivate the structure of the model.

3.1 Data

My empirical analysis relies on data from the Current Population Survey (CPS) and the Panel Survey of Income Dynamics (PSID) linked to its Child Development Supplement (CDS) and Transition into Adulthood Supplement (TAS).

The CPS is one of the largest nationally representative surveys in the United States, providing information on employment, earnings, and welfare program receipts over a long horizon. It is used to document national trends in mothers’ labor force participation and welfare use before and after the 1996 reform.

The PSID is a nationally representative longitudinal survey that began in 1968, with annual interviews to 1997 and biennial interviews thereafter. It follows households over time and provides detailed information on labor market outcomes, wealth accumulation, and program participation.

The CDS began in 1997 with a random sample of children ages 0 to 12 from PSID households. Approximately 3,500 children in 2,400 households were interviewed in 1997 and followed in two subsequent waves in 2002 and 2007. The CDS contains rich information on child development and family environments, including children’s time-use diaries, childcare expenditure, and cognitive outcomes over waves.

The TAS follows CDS children into adolescence and early adulthood, providing information on later outcomes, such as high school completion, college attendance, and early labor market outcomes. Linking CDS measures of childhood investments and cognitive scores to TAS outcomes allows me to study how skill formation during childhood shape the long-run educational attainment.

In sum, the linked PSID-CDS-TAS data provide rich longitudinal information connecting parents’ work histories, childcare investments, welfare participation, and wealth accumulation over the lifetime to children’s development and education outcomes.

Childcare Investment and Development Outcomes The time-use diary in the CDS collects detailed information about child activities on a randomly selected weekday and

Table 2: PSID-CDS and PSID Sample Selection

PSID-CDS Sample Selection	Children	
Combined Time Diary, Child Assessment, and PCG files	3,564	
Drop if mother’s active time is missing in all CDS waves	3,330	
Drop if no test scores available in all CDS waves	3,153	
Drop if parent ID missing	3,117	
PSID-CDS children and mothers	Children	Mothers
Matched children and mothers	3,117	2,143
Drop if no biological mother appear in PCG/OCG in all CDS waves	2,994	2,056
PSID Sample Selection	Mothers	Observations
PSID-CDS Moms linked to PSID main file	2,050	79,950
Female heads or wives	2,013	33,521
Ages at childbirth between 22–40	1,418	25,935
Ages between 20–65	1,417	25,629

Sources: Panel Study of Income Dynamics and Child Development Supplement, authors’ calculations.

weekend day. Each child, with the assistance of a primary caregiver if needed, fills out a detailed 24-hour time diary, recording all activities throughout the day and who else participated with the child in these activities.

Following [Mullins \(2025\)](#) and [Caetano et al. \(2019\)](#), time investment is measured as the total duration of activities in which the mother is recorded as actively participating in the CDS time diary. Specifically, the time diary records all activities for a randomly selected weekday and one weekend day. Weekly totals are computed as $5 \times \text{weekday minutes} + 2 \times \text{weekend minutes}$, then converted to hours. Monetary investment is calculated by summing up expenditure across several sub-categories in the CDS, including lessons, sports, toys, vacation, school supplies, and clothing.

Children’s cognitive achievement are measured using the Woodcock-Johnson Achievement Test. In 1997, children aged 3-5 underwent the Letter-Word (LW) Identification and Applied Problem (AP) sub-tests, while those aged six and above underwent LW, AP, Passage Comprehension (PC), and Calculation sub-tests. In the subsequent waves, these tests were re-administered, except for the Calculation sub-test. In the paper, LW, AP, and PC sub-tests are used to measure children’s cognitive outcomes.

Sample and Summary Statistics Table 2 outlines the construction of the linked PSID–CDS sample, including restrictions based on test score availability and parental identification. The final analytic sample includes over 1,400 mothers, roughly 26,000 mother–year observations, and more than 3,100 children observed in time diaries, cognitive assessments, and household demographic files.

Table 3 summarizes the demographic characteristics of PSID mothers whose children are included in the CDS sample, distinguishing between mothers who are married and those who are ever single during the CDS waves. The table shows that single mothers are less educated: 34.4% have at most a high-school diploma, compared with 28.6% of married mothers. In contrast, only 24.8% of single mothers have a college degree or higher, compared with 40.4% of married mothers. Moreover, there is large disparity in wealth accumulation: single mothers hold only \$33,190 in net wealth at age 50 (1987 dollars), compared with \$220,240 for married-couple families, a ratio of nearly 7 to 1. This wealth gap makes single mothers acutely vulnerable to income shocks, with virtually no buffer-stock savings to draw on, indicating large gaps in long-run financial security.

Table 3: Demographics of CDS Mothers

	Ever-single Mothers	Married Mothers
Age at childbirth	27.7	28.3
Birth year	1962	1961
Education (percentage)		
Less than high school	9.3	9.9
High school graduates	25.1	18.7
Some college	40.8	31.0
College graduates	14.0	23.6
Post-college	10.8	16.8
Number of kids in CDS (percentage)		
One child	60.1	52.2
Two children	39.9	47.8
Age gap if two children	2.9	3.2
Wealth by age 50 (in thousands)	33.19	220.24
Observations (person)	666	751

Source: Panel Study of Income Dynamics, Child Development Supplement, Transition into Adulthood Study, author’s calculations.

Notes: Wealth dollar values are in 1987 dollars.

Further, [Table 4](#) presents summary statistics comparing single-mother and married-couple families along key dimensions of childcare investments, development outcomes, mothers' labor supply, and welfare program participation. Single mothers work more hours but earn lower wages, and they rely more heavily on public assistance. Their children spend less time with family members overall, while also receiving lower monetary investments. These differences in parental inputs are accompanied by lower cognitive outcomes: children in single-mother families score consistently lower on the Letter-Word, Applied Problems, and Passage Comprehension assessments.

Taken together, [Tables 3](#) and [4](#) highlight persistent gaps between single-mother and married-parents families in economic resources, parental time, and children's development outcomes.

3.2 Facts

The datasets reveal several noteworthy patterns that motivate research questions and the model framework.

3.2.1 Trends in Labor Supply and Welfare Participation

[Figure 1](#) documents two striking trends of mothers' labor force participation ([Panel \(a\)](#)) and welfare participation ([Panel \(b\)](#)) using CPS data from 1985 to 2018, varying by marital status and whether the youngest child is under or over age 13. As illustrated in the figure, employment rates among single mothers increased sharply during the late 1990s, accompanied by a simultaneous decline in welfare program participation.

Between 1993 and 2000, the employment rate of single mothers rose by more than 10 percentage points (p.p.), coinciding with the 1996 reform and concurrent EITC expansion ([Meyer and Rosenbaum, 2001](#)). The increase was concentrated among single mothers with children aged 13 or younger, while those with older children exhibited a more modest response. By comparison, married mothers show a gradual upward trend over the same period, with no visible break around 1996.

[Panel \(b\)](#) tells the mirror image story for welfare receipt. As documented in [Low et al. \(2022\)](#), time limit on welfare benefits and reductions in cash assistance were particularly pronounced among mothers with younger children, for whom meeting work requirements was more challenging. Empirically, the share of single mothers with a young child receiving AFDC/TANF fell from approximately 35% in the early 1990s to under 10% by 2006, a decline of nearly 25 p.p. before and after the reform, while those with older children fell

Table 4: Summary Statistics Comparing Single and Married Families

	Single Mothers	Married Mothers
Panel A: Summary Statistics From Children in CDS		
Children Weekly Time in Each Activity (in Hours)		
Active time with mother	15.50	18.96
Around time with mother	16.39	18.96
Active time with father	2.55	12.47
Around time with father	2.07	12.70
Active time with grandparents	5.86	2.88
Around time with grandparents	5.47	2.51
Active time with others	6.79	7.44
Around time with others	9.12	8.84
Children Development Outcomes		
Cognitive - Applied Problems	32.26	34.52
Cognitive - Letter Word	37.93	39.99
Cognitive - Passage Comprehension	23.33	25.43
Annual expenditure on children (in thousands)	6.34	7.83
Observations	1,582	4,012
Panel B: Summary Statistics From Mothers in PSID		
Annual hours worked	1844.19	1672.09
Hourly wages	11.86	13.88
Receiving SNAP (percentage)	38.51	6.61
Receiving AFDC (percentage)	30.56	1.52
Receiving TANF (percentage)	2.09	0.32
Transfers received from relatives	334.82	297.49
Transfers received from other public programs	7057.22	454.83
Observations	7,195	18,434

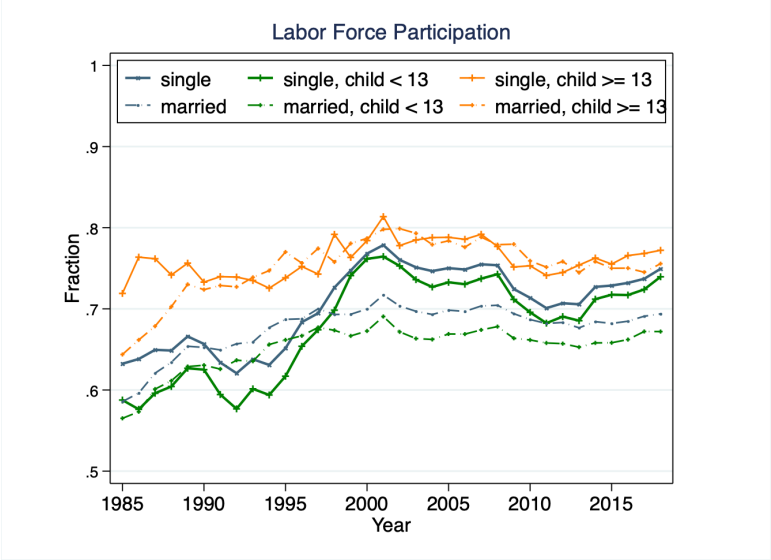
Sources: Panel Study of Income Dynamics and Child Development Supplement, authors' calculations.

Notes: All dollar values are in 1996 dollars, except for wealth dollar values are in 1987 dollars.

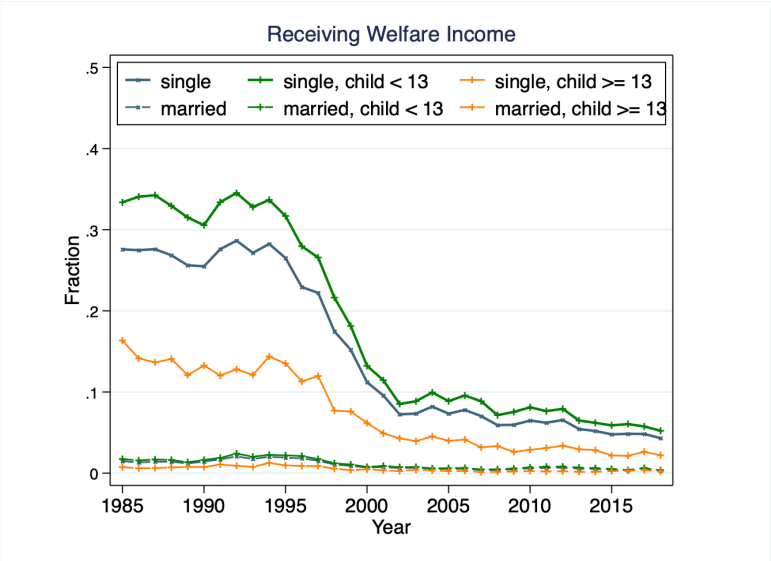
from approximately 15% to near 5% over the same period. In contrast, married mothers remained near zero throughout, reflecting that the reform’s impact was tightly targeted on single-parent families.

These aggregate CPS trends motivate the paper’s focus on the welfare reform as the key policy experiment.

Figure 1: Trends in Labor Force Participation and Welfare Participation by Marital Status and Children’s Age



(a) Labor Force Participation



(b) Welfare Participation

Data Source: Current Population Survey, author’s calculations.

3.2.2 Labor Market and Wealth over the Life Cycle

Single and married mothers exhibit strikingly different labor supply and wealth accumulation patterns over the life cycle. [Figure 2](#) documents these patterns using PSID data, separately by marital status.

Single mothers supply more labor on both extensive and intensive margins (Panels a-b). At younger ages, they are more likely to work full time, and conditional on employment, they work more annual hours than married mothers. The employment profiles of the two groups converge after age 45. This pattern is consistent with single mothers' weaker access to within-household insurance and greater reliance on their own labor income, especially during the child-rearing years.

Despite working more, single mothers earn lower hourly wages throughout the working years (Panel c). These wage gaps are consistent with the differences in educational attainment documented in [Table 3](#) and may also reflect differences in human capital accumulation through work experience and wage growth. Lower wages, combined with the absence of spousal income, translate into large disparities in wealth accumulation. Married-couple families accumulate substantial net worth over the life cycle, while their ever-single counterparts hold near-zero or only modestly positive wealth throughout (Panel d).² Greater welfare participation may further limit wealth accumulation through program asset tests and reduced incentives to save. As a result, these single mothers have limited buffer-stock savings and remain especially vulnerable to income shocks.

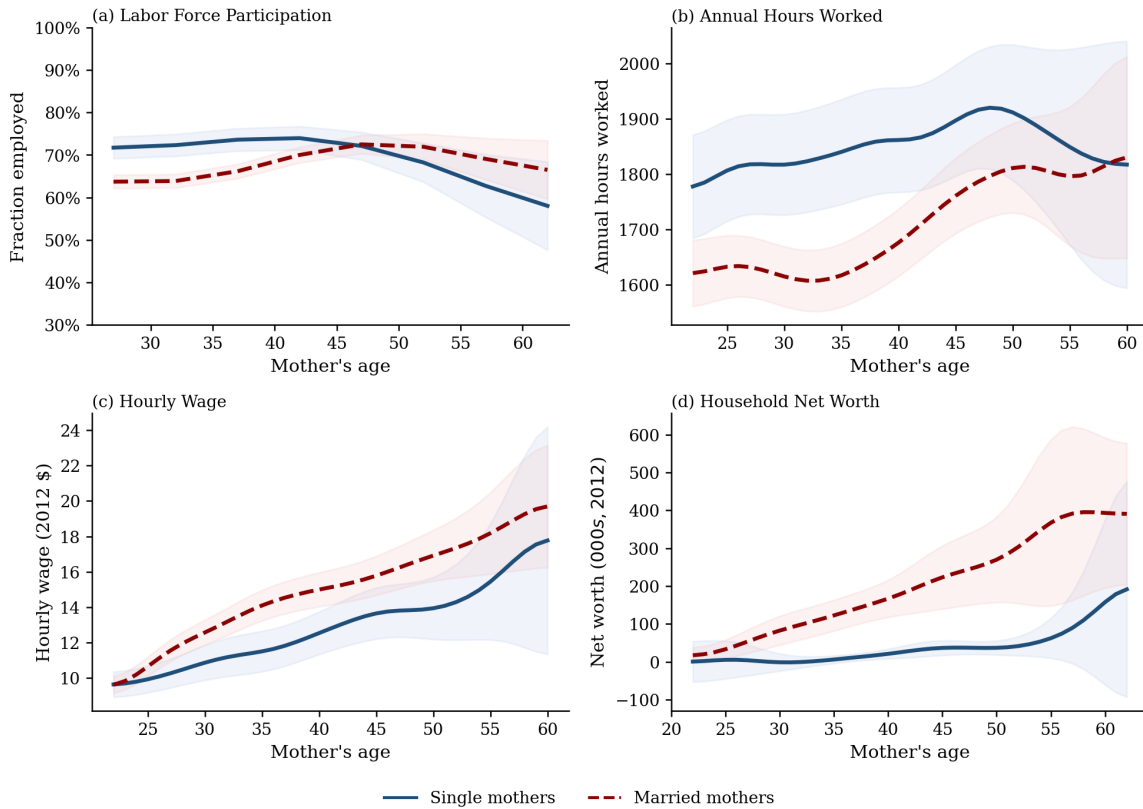
3.2.3 Childcare Investment

Beyond the labor-market and wealth gaps documented above, single- and married-mother households also differ markedly in the investments their children receive, which might ultimately shape children's long-run outcomes.

[Figure 3](#) displays the weekly time children spend actively with the mother, father, grandparents, and others, separately by child's age group and mother's marital status. Summing across all sources, children in single-mother households receive significantly less total active time at every age group than children in married-mother households. This gap reflects the binding time constraint single mothers face. Without a partner to share childrearing and with larger pressure to work, single mothers cannot match the active engagement of married mothers and spend less active time with their children at most ages, a gap of roughly 3–5 hours per week. The absence of a co-resident father further

²Figure 11 in [Appendix A](#) displays the profiles of wages and assets by the education and marital status, documenting additional heterogeneity across education groups among both single and married mothers.

Figure 2: Labor Market and Wealth Outcomes

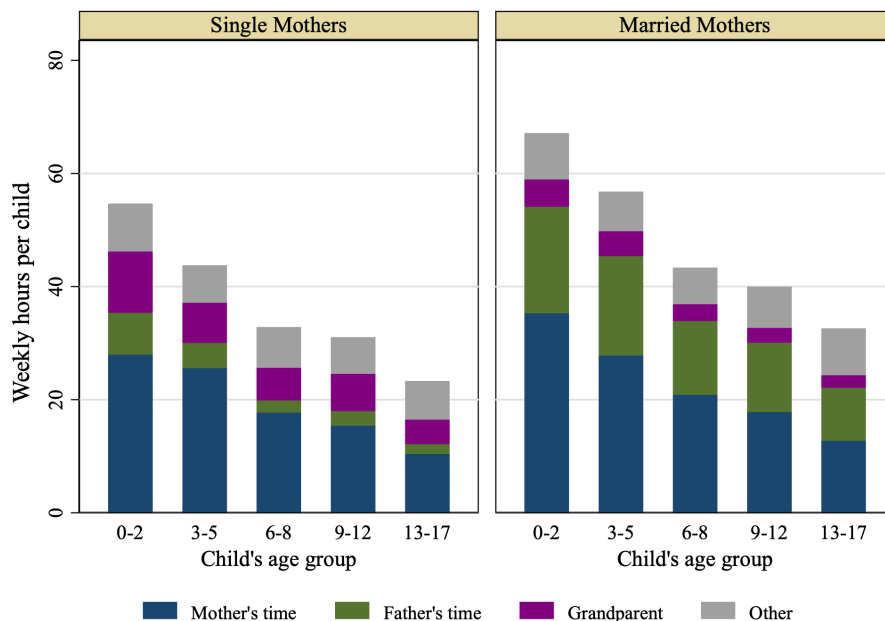


Notes: Life-cycle profiles of labor force participation (a), annual hours worked (b), hourly wages (c), and net household wealth (d), for single mothers (blue) and married mothers (red). Shaded bands denote 95% confidence intervals. Dollar values are in 1996 dollars (wages) and 1987 dollars (wealth).

Source: Panel Study of Income Dynamics, author's calculations.

widens the gap: children in single-mother households spend only 3–7 hours of active time per week with their father, compared with 10–18 hours in married-mother households. Grandparents partially compensate; however, this additional time is insufficient to close the total-time gap.

Figure 3: Childcare (Active) Time Investment by Marital Status



Source: Child Development Supplement, author's calculations.

Table 5 complements the figure along dimensions of around (passive) maternal time and total annual child expenditure, the principal monetary investment. Around maternal time differences are similar in magnitude and likewise significant from age 3 onward, indicating that single mothers are not merely substituting passive for active engagement. Both forms of maternal time investment are lower.³

Total annual child expenditure (available only from wave 2 of the CDS) shows no significant gap between single and married mothers. This pattern indicates that the disparity across households is concentrated more in time inputs than in monetary spending. Moreover, the expenditure gap is considerably smaller than the household income gap, suggesting single mothers allocate a higher share of their income to children.

³Figure 9 in Appendix A plots children's passive ("around") time with their mothers over child age, separately by the number of children in the CDS and by maternal education. The around-time profiles do not differ significantly by maternal education at any child age, nor by the number of children once the child reaches age 9.

Figure 10 in Appendix A decomposes the total annual child expenditure by category. It shows married mothers allocate a larger share to enrichment activities (lessons, sports, community programs) and to education (tuition, tutoring, supplies), whereas single mothers concentrate spending more heavily on consumer goods (clothing, toys). However, most category-level differences are not statistically significant. Overall, conditional on total expenditure being similar, single- and married-mother households allocate child spending in broadly comparable ways.

Table 5: Mother’s Childcare Investment over Child Age by Maternal Marital Status

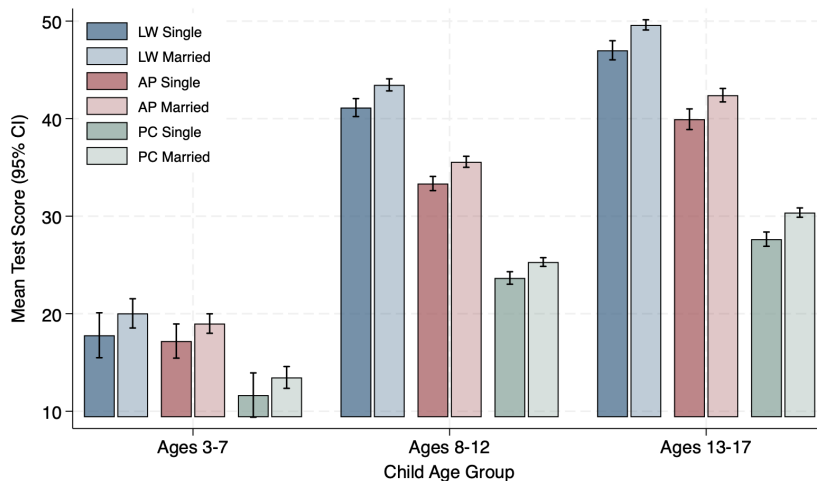
Age group	Variable	Single	Married	Diff.
0-2	Active Time	28.02	35.28	7.26**
	Around Time	17.18	18.68	1.50
	Total expenditure	–	–	–
3-5	Active Time	25.61	27.84	2.23
	Around Time	18.52	22.97	4.45***
	Total expenditure	–	–	–
6-8	Active Time	17.74	20.87	3.14***
	Around Time	15.21	18.35	3.14***
	Total expenditure	5.75	5.06	-0.69
9-12	Active Time	15.43	17.82	2.38***
	Around Time	17.29	18.83	1.54*
	Total expenditure	4.52	6.56	2.04
13-17	Active Time	10.42	12.76	2.35***
	Around Time	15.40	18.16	2.76***
	Total expenditure	8.06	9.54	1.48

Notes: Means in hours/week. Diff = Married – Single. p-values from two-sample t-tests. * p<.10, ** p<.05, *** p<.01. Active time = mother directly engaged with child; around time = mother present but not engaged. Expenditure includes childcare, education, activities, and related goods; dollar values in 1996 dollars (\$000s).

3.2.4 Child Development Outcomes

The disparities in economic resources and parental investments accumulate into gaps in children’s cognitive outcomes. Figure 4 displays Woodcock–Johnson test scores by child age and mother’s marital status for three subtests: Letter Word (LW), Applied Problems (AP), and Passage Comprehension (PC). Children of married mothers score consistently and significantly higher on all three assessments after age 8.

Figure 4: Test Scores by Child Age Group and Mothers' Marital Status

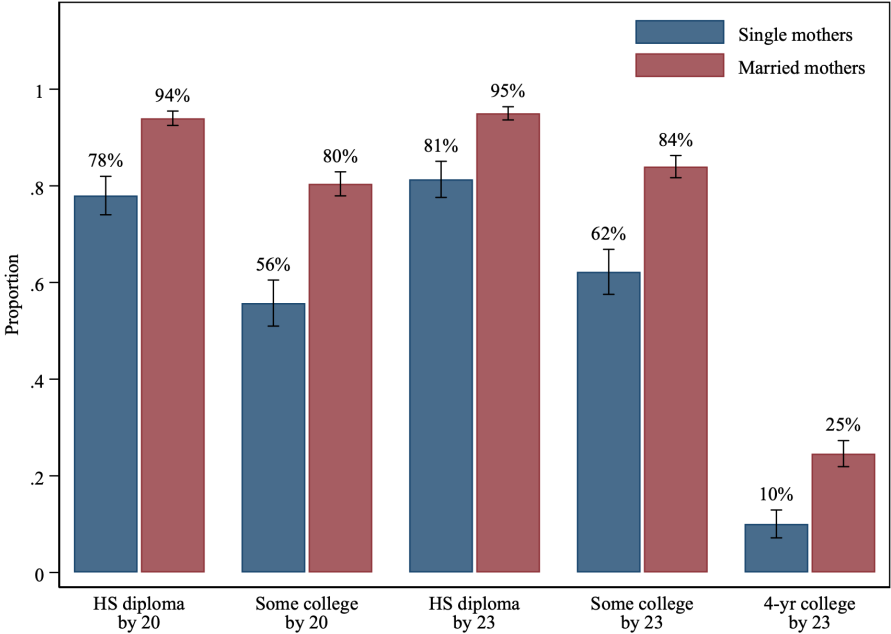


Notes: Test scores (Letter-Word, Applied Problems, Passage Comprehension) over child age for CDS children who are the only CDS sample child in the household. Source: Child Development Supplement, author's calculations.

The gaps do not close over time. [Figure 5](#) extends the analysis by documenting long-run educational attainment gaps using data from the Transition into Adulthood Supplement (TAS). Children of single mothers are far less likely to have completed high school or attended college by their early twenties. Specifically, they are 16 percentage points less likely to have a high school diploma by age 20, 24 percentage points less likely to have attended some college, and 15 percentage points less likely to hold a 4-year college degree by age 23.

The persistence of development outcome gaps from early childhood onward implies that the disadvantage of growing up in a single-mother household reflects early investment deficits that compound through the skill formation process. These descriptive gaps motivate the structural model's focus on how welfare-induced changes in maternal labor supply, time investment, and household resources translate into long-run differences in children's human capital accumulation.

Figure 5: Long-Run Educational Attainment: Children of Single vs. Married Mothers



Notes: Grouped bar chart of educational attainment rates with 95% confidence intervals, comparing children of single mothers (navy) and married mothers (dark red). Source: PSID-CDS-TAS linked sample.

4 Model

This section describes a dynamic life-cycle model of consumption, labor supply, savings, welfare program participation, and child investment. The model incorporates the key features of the TANF, SNAP, and the EITC.

Environment. Time is discrete and indexed by t . Each period spans five years, reflecting the survey frequency of the CDS and the multi-year structure of welfare program limits, while keeping the state space tractable. Each individual enters the model at age 30, with one child aged 3–7, and lives up to age T .

In each model period t , the single mother chooses: consumption c_t /savings a_{t+1} ; labor supply (both labor force participation $p_t \in \{0, 1\}$ and working hours n_t); TANF participation $p_t^w \in \{0, 1\}$, if eligible; SNAP participation $p_t^s \in \{0, 1\}$, if eligible; monetary child investment q_t and time child investment τ_t during the childhood. Child development is active from entry until age T_c , when the child reaches adulthood.

The model focuses on single-child households, which constitute approximately 60% of the CDS single-mother sample. Figure 7 in Appendix A shows that test score profiles and active maternal time do not vary significantly across one- and two-child households, supporting this simplification.

4.1 Preferences

The within-period utility for the women is parametrized as follows:

$$u(c_t, l_t) = \frac{1}{1-\nu} (c_t^\gamma l^{1-\gamma})^{1-\nu} - \theta_w p_t^w - \theta_f p_t^s \quad (1)$$

The parameter $\gamma \in [0, 1]$ is the weight on consumption. The parameter $\nu > 0$ is the coefficient of relative risk aversion (CRRA). The welfare stigma parameters $\theta_w > 0$ and $\theta_f \geq 0$ enter the preference as utility costs of claiming TANF and SNAP, respectively, representing non-monetary costs such as administrative burden and psychological costs associated with program participation.⁴

⁴Following Low et al. (2022), the cost of claiming SNAP benefits is assumed to be zero. The asymmetry is also consistent with administrative evidence: SNAP can be claimed at a grocery store without disclosing employment status, while TANF requires case-worker meetings, mandatory work-activity participation, and monthly re-certification.

Leisure in period t is given by:

$$l_t = L - n_t - \theta_p p_t - \tau_t \quad (2)$$

where L is an individual's total time endowment per period; n_t is hours worked; p_t is a binary indicator of labor force participation (equals 1 when $n_t > 0$); θ_p is a fixed cost of working measured in hours per year; and τ_t is maternal time investment in children.

4.2 Parental Human Capital and Wages

Human capital accumulation and wage dynamics are modeled in accordance with [Borella et al. \(2023\)](#). Wages are a function of one's human capital, which is accumulated through working, and are affected by shocks.

Mother's human capital, \bar{y}_t , is defined as one's average past earnings at each age

$$\bar{y}_{t+1} = \frac{\bar{y}_t(t - t_0) + \min(Y_t, \tilde{y}_t)}{t + 1 - t_0} \quad (3)$$

$$Y_t = e_t(\bar{y}_t)\epsilon_t n_t \quad (4)$$

Equation 3 describes the evolution of human capital, measured as the average accumulated earnings (up to the Social Security earnings cap \tilde{y}_t). Human capital \bar{y}_t is therefore a function of initial wages and subsequent labor market experience. A mother who takes years off work to receive welfare benefits accumulates fewer earnings in the average, reducing \bar{y}_t and hence the deterministic component of future wages $e_t(\bar{y}_t)$. This formulation captures the returns to experience and dynamic cost of welfare participation.

Moreover, the average earnings measure in Equation 3 is also used to summarize the Social Security earnings history. Average indexed monthly earnings (AIME), the basis for Social Security retirement benefits, are computed as average lifetime covered earnings, closely analogous to \bar{y}_t in structure. This linkage allows the model to capture the retirement income consequences of welfare-induced non-employment without introducing an additional state variable, preserving computational tractability.

Wages have two components: a deterministic function of age and human capital $e_t(\bar{y}_t)$ and a shock ϵ_t that evolves as follows:

$$\ln \epsilon_t = \rho \ln \epsilon_{t-1} + \eta_t, \quad \eta_t \sim N(0, \sigma_\eta^2) \quad (5)$$

The product of $e_t(\bar{y}_t)$ and ϵ_t determines the effective hourly wage.

4.3 Children's Development

Children's development outcome θ_t^c depends on the sequence of time and monetary investments from mothers and evolves according to the skill production technology:

$$\theta_{t+1}^c = \alpha \times \theta_t^{c\delta_\theta} \times q_t^{\delta_q} \times \tau_t^{\delta_\tau} \quad (6)$$

When her child turns adult at period T_c , there will be a final development outcome $\theta_{T_c}^c$.

4.4 Cohabitation

In each model period, there is a probability $m_t \in [0, 1]$ that a single mother meets and begins living with a partner who brings additional income sp_t to the household. This probability depends on age: $m_t = m(t)$. When a single mother cohabits with a partner, the household's budget constraint adds spousal earnings to total income, improving the family's liquidity and potentially reducing TANF and SNAP eligibility.

4.5 Budget Constraint

The budget constraint of a single-mother household in period t is:

$$c_t + q_t + a_{t+1} = a_t + y_t(ra_t, w_t n_t, sp_t, t^c, EITC_t) + ny_t + p_t^s \cdot SNAP_t + p_t^w \cdot TANF_t \quad (7)$$

where $a_{t+1} \geq 0$ is the borrowing constraint.

The right-hand side collects all after-tax income sources, including interest income on assets at pre-tax rate r , ra_t ; labor earnings $w_t h_t$, where $w_t = e_t(\bar{y}_t)\epsilon_t$ is the hourly wage; spousal/partner earnings sp_t (zero when single without cohabitation); non-labor, non-welfare income ny_t ; and benefits from SNAP and TANF if participate, $SNAP_t$ and $TANF_t$. The term $y_t(\cdot)$ is the after-tax income in period t , incorporating income and payroll taxes as functions of earned and capital income, subject to EITC.

The model captures in detail the rules of the welfare and tax-transfer programs to match the current U.S. system, including time limits, work requirements, asset and income tests.

$$\begin{aligned} EITC_t &= f^{EITC}(w_t h_t, t^c) \\ TANF_t &= f^{TANF}(a_t, w_t h_t, q_t, TL_t) \\ SNAP_t &= f^{SNAP}(a_t, w_t h_t, TANF_t, q_t) \end{aligned}$$

Federal EITC credit is a function of earned income and number of qualifying children, with the phase-in/plateau/phase-out schedule. Cash TANF benefit is the state-average benefit schedule with the earnings disregard, and TL_t is the remaining TANF time limit. When outside of the limit, the mother is ineligible for TANF regardless of income and assets; only SNAP and the EITC remain available. The structural model uses state-average benefit levels from the Welfare Rules Database (Urban Institute, 2021) as part of the $f^{\text{TANF}}(\cdot)$ function. The monthly benefit of SNAP is: $\max(0, A_{\max}(n) - 0.30 \times \text{NetIncome})$, where $A_{\max}(n)$ is the maximum allotment for household size n and NetIncome is gross income less a standard deduction, earned income deduction, and a shelter deduction. Because TANF cash counts toward gross income, A family receiving TANF would have its SNAP benefit automatically reduced.

Asset test and savings disincentive. TANF eligibility requires $a_t \leq \bar{a}^{\text{TANF}}$, while SNAP requires $a_t \leq \bar{a}^{\text{SNAP}}$. These asset tests create a discrete savings disincentive, since a mother who accumulates assets above the threshold loses eligibility for benefits worth thousands of dollars annually.

Welfare affects child development outcomes The model contains two channels through which welfare program participation affects child development outcomes: (i) the income channel, in which welfare take-up reduced work and hence household income and monetary investment in children q_t , ultimately reducing the child's cognitive outcomes θ^c ; and (ii) the time channel, in which fewer hours worked increases maternal time available for direct child engagement τ_t .

4.6 Recursive Formulation

The life cycle is divided into three stages, corresponding to different choice sets and sources of uncertainty.

Stage 1: Child development period ($t^c < T^c$). During this stage the mother makes the full vector of decisions: consumption, labor supply, program participation, and child investment. The state vector is: $\mathbb{X}_t = (a_t, \epsilon_t, m_t, \theta_t^c, t^c, \bar{y}_t, TL_t)$.

In recursive form, the individual's problem in state (\mathbb{X}_t) and age t can be written as:

$$\forall t^c < T^c : \quad V_t(\mathbb{X}_t) = \max_{\substack{c_t, n_t, \tau_t, q_t, \\ p_t^w, p_t^s}} u(c_t, l_t) - \theta_w p_t^w - \theta_f p_t^s + \beta \mathbb{E}[V_{t+1}(\mathbb{X}_{t+1})] \quad (8)$$

subject to Equations 2-7. The parameter β denotes the discount factor.

Stage 2: Post-child working period ($T^c \leq t < 65$). Once the child reaches adulthood at age T^c , child investment is no longer active. The mother continues to choose consumption, labor supply, and SNAP participation, but no longer makes investment decisions (τ_t, q_t) or TANF decisions. At the period when the child turns adult ($t^c = T^c$), the mother receives a terminal utility that captures the value of her child's adult outcomes:

$$\forall t^c \geq T^c : \quad V_t(\mathbb{X}_t) = \max_{c_t, n_t, p_t^s} u(c_t, l_t) + \mathbb{I}_{t^c=T^c} \kappa \tilde{V}(\theta_{T^c}^c) + \beta \mathbb{E}[V_{t+1}(\mathbb{X}_{t+1})] \quad (9)$$

where $\mathbb{X}_t = (a_t, \epsilon_t, m_t, \bar{y}_t, \theta_{T^c}^c)$. The time and budget constraints change to

$$\begin{aligned} l_t &= L - n_t - \theta_p p_t \\ c_t + a_{t+1} &= a_t + y_t(ra_t, w_t n_t, sp_t, \text{EITC}_t) + ny_t + p_t^s \cdot \text{SNAP}_t \end{aligned}$$

The parameter κ scales the weight the mother places on her child's adult outcomes.

Stage 3: Retirement ($t \geq 65$). Upon reaching age 65, the mother retires. She receives Social Security benefits based on her lifetime earnings history \bar{y}_{65} and may continue claiming SNAP if income-eligible. The value function during retirement is:

$$t \geq 65 : \quad V_t(\mathbb{X}_t) = \max_{c_t, p_t^s} u(c_t, l_t) + \beta [s_{t+1} V_{t+1}(\mathbb{X}_{t+1}) + (1 - s_{t+1}) B(a_{t+1})] \quad (10)$$

where $\mathbb{X}_t = (a_t, m_t, \bar{y}_{65})$, and \bar{y}_{65} is the mother's average lifetime earnings at retirement, which determines her retirement benefit. The budget constraint changes to

$$c_t + a_{t+1} = a_t + y_t(ra_t, sp_t) + ny_t + p_t^s \cdot \text{SNAP}_t$$

Upon retirement, mothers are subject to age-specific mortality risk $1 - s_{t+1}$ and leave bequests to their heirs if they die with positive assets. The function $B(a_t) = \frac{\theta_{beq}}{1-\nu} (a_t + \kappa_{beq})^{(1-\nu)\gamma}$, where θ_{beq} is the bequest weight, reflecting the strength of bequest motive, and κ_{beq} is the curvature parameter.

5 Estimation

5.1 Estimation Strategy

I estimate the model using the Method of Simulated Moments (MSM) on the post-reform data on single mother families from the PSID-CDS-TAS. The estimation proceeds in two steps.

In the first step, I calibrate or estimate the parameters directly from data, external sources, or standard values in the literature, without imposing the model's structure. These include the real interest rate r , survival probabilities s_{t+1} , Social Security benefit rules, and tax function parameters (EITC schedule, payroll tax, federal income tax), all taken directly from policy rules or prior literature. Spousal earnings $sp(\cdot)$, non-labor income $ny(\cdot)$, marriage/cohabitation transition probability $m(t)$, and wage equation $e_t(\bar{y}_t)$ are estimated from the PSID. The child development production function parameters $(\alpha, \delta_\theta, \delta_q, \delta_\tau)$ are estimated from the CDS-TAS data. Table 6 summarizes these parameters.

In the second step, the remaining preference parameters $\Theta = (\nu, \gamma, \beta, L, \theta_p, \theta_w, \kappa, \theta_{beq}, \kappa_{beq})$, are estimated via MSM to minimize the weighted distance between data moments and model-simulated moments. Specifically, the estimator $\hat{\Theta}$ is given by the minimized GMM criterion function:

$$\hat{\Theta} = \arg \min_{\Theta} \frac{I}{1 + \tau} \hat{\varphi}(\Theta; \chi)' \hat{\mathbf{W}}_I \hat{\varphi}(\Theta; \chi) \quad (11)$$

where τ is the ratio of the number of observations to the number of simulated observations and $\hat{\varphi}(\Theta; \chi)$ is a vector of moment conditions, such that

$$\hat{\varphi}(\Theta; \chi) = \begin{bmatrix} E[p_{imt}|m, t] - \int p_t(X, \Theta, \chi) dF_{m,t}(X|m, t) \\ E[n_{imt}|m, t] - \int n_t(X, \Theta, \chi) dF_{m,t}(X|m, t) \\ E[a_{imt}|m, t] - \int a_t(X, \Theta, \chi) dF_{m,t-1}(X|m, t) \\ E[p_{imt}^w|m, t] - \int p_t^w(X, \Theta, \chi) dF_{m,t-1}(X|m, t) \\ E[p_{imt}^s|m, t] - \int p_t^s(X, \Theta, \chi) dF_{m,t-1}(X|m, t) \\ E[q_{imt}|m, t] - \int q_t(X, \Theta, \chi) dF_{m,t}(X|m, t) \\ E[\tau_{imt}|m, t] - \int \tau_t(X, \Theta, \chi) dF_{m,t-1}(X|m, t) \\ E[\theta_{imt}^c|m, t] - \int \theta_t^c(X, \Theta, \chi) dF_{m,t-1}(X|m, t) \end{bmatrix}_{t \in \{30-35, 35-40, 40-45, \dots\}, m \in \{0,1\}}$$

where $E[p_{imt}|\cdot]$, $E[n_{imt}|\cdot]$, $E[a_{imt}|\cdot]$, $E[p_{imt}^w|\cdot]$, $E[p_{imt}^s|\cdot]$, $E[q_{imt}|\cdot]$, $E[\tau_{imt}|\cdot]$, and $E[\theta_{imt}^c|\cdot]$ are the moments that my model is estimated to match:

1. **Labor force participation** by age (30-65) and cohabitation from PSID.

2. **Hours worked conditional on participation** by age and cohabitation from PSID.
3. **Mean non-pension household assets** by age and cohabitation from PSID.
4. **TANF welfare participation** by age and cohabitation from PSID.
5. **SNAP participation** by age and cohabitation from PSID.
6. **Time investment in children** by child age and cohabitation from PSID-CDS.
7. **Monetary investment in children** by child age and cohabitation from PSID-CDS.
8. **Children development outcomes** by child age and cohabitation from PSID-CDS-TAS.

Table 6: First-Step Parameters Summary

Parameter	Description	Source
Budget Constraints		
r	Real interest rate	Borella et al. (2023)
$sp(\cdot)$	Spousal earnings	PSID
$ny(\cdot)$	Non labor income or transfers	PSID
\underline{c}	Consumption floor after 65	French and Jones (2011)
λ_t	Income tax structure	PSID
Wage Related Parameters		
$e_t(\bar{y})$	Wage function of human capital	PSID
ρ	Autoregressive coefficient	PSID
σ_ρ^2	Variance of innovation	PSID
Program Benefits Related Parameters		
$f^{EITC}(\cdot)$	EITC	Policy Rules
$f^{SNAP}(\cdot)$	SNAP	Policy Rules
$f^{TANF}(\cdot)$	TANF	Urban Institute (2021)
Children Development Parameters		
γ	Coefficient - constant	PSID-CDS
δ_θ	Coefficient - θ_t^c	PSID-CDS-TAS
δ_q	Coefficient - expenditure q_t	PSID-CDS-TAS
δ_τ	Coefficient - time τ_t	PSID-CDS-TAS
Transition		
$m(\cdot)$	Marriage/Cohabitation	PSID
$s_{t+1}(\cdot)$	Survival Rates	PSID

PSID-CDS-TAS, author's calculations.

5.2 Measurement of Children Development Outcomes

Cognitive outcomes. For cognitive ability, I use the Letter-Word (LW), Applied Problems (AP), and Passage Comprehension (PC) modules of the Woodcock-Johnson

Achievement Test. The cognitive outcomes used in estimation is the average of the three standardised sub-scores. Following Mullins (2025), I exploit the longitudinal link from CDS cognitive scores to TAS college attainment to provide an “anchoring” interpretation, as a meaningful predictor of the model’s final period skill outcome $\theta_{T_c}^c$.

5.3 Estimation Results

The current estimates are based on a simplified version of the model that abstracts from two features to be incorporated in the full estimation: (i) endogenous monetary investments in children q_t , which are currently treated as exogenous; and (ii) partner formation, with mothers assumed to remain single ($m_t = 0 \forall t$) for computational tractability during the preliminary estimation stage.

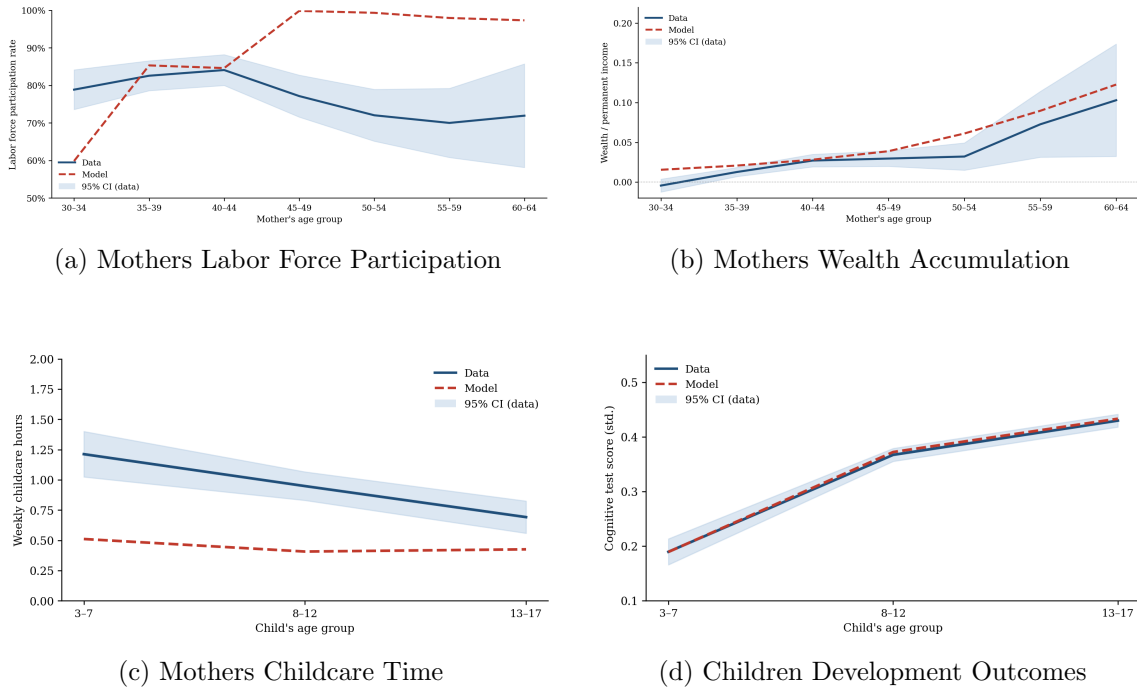
Table 7 reports the estimated structural parameters, and Figure 6 compares the data moments and model-simulated moments for the four key targets. The model successfully reproduces the lifecycle profiles of wealth accumulation (panel b) and children’s cognitive outcomes (panel d). Single mothers’ near-zero wealth accumulation is reproduced only with a high risk aversion parameter ($\nu > 5$) that limits precautionary saving when the asset tests of welfare programs impose a savings disincentive.

Table 7: Estimated Structural Parameters

Parameter	Definition	Values
γ	Consumption weight	0.571
ν	CRRA for flow utility	5.207
β	Time discount factor (yearly)	0.98
L	Leisure endowment (yearly)	3684.6
ϕ	Labor Market Participation Cost (yearly)	1309.5
θ_w	Participation cost of welfare program	70
κ	Weight on children final development outcomes	396.04
θ_B	Bequest weight	0.014
κ_B	Curvature of the bequest	395k

Incorporating the full cohabitation model with endogenous monetary investment is planned for the next estimation iteration.

Figure 6: Data v.s. Estimation



6 Counterfactual Analysis and Policy Implications

Following model estimation, I employ the structural framework to quantify the effects of alternative welfare program designs on mothers' behavior and on human capital development outcomes of families. The model's joint treatment of TANF, SNAP, and the EITC, with their overlapping eligibility rules, benefit offsets, and work incentives described in Section 2.4, is essential for evaluating counterfactuals that change only one program while holding others fixed at their current-law values.

6.1 Extension of TANF Time Limit

In this counterfactual experiment, I remove the TANF lifetime limit, extending it from five years to unlimited receipt as long as the child is under age 18 (equivalent to pre-PRWORA AFDC rules).

Labor supply and welfare participation. The simulation results indicate that relaxing the time limit generates a 14 percentage-point (p.p.) increase in average welfare participation among single-mother households. Without this constraint, the

welfare-to-work transition is slower, resulting in a 12.5 p.p. decline in labor force participation over the child-rearing years.

Human capital costs and retirement security. Correspondingly, mothers accumulate 11.5% less human capital (average past earnings \bar{y}_T) by age 65 compared to the baseline scenario. The combination of lower work experience and more years at lower earnings positions on the wage schedule implies substantially lower retirement wealth and greater reliance on public assistance at older ages.

Child outcomes. However, the additional program stability allows for more consistent childcare investment. Under the unlimited-eligibility policy, single mothers spend approximately 30% more time in childcare during the childhood, reflecting the time freed by reduced labor market participation. Correspondingly, children experience a 0.1 p.p. improvement in college attainment probabilities. The small but positive child outcome improvement reflects the time channel operating with modest elasticity in the current production function specification.

Overall, the unlimited-TANF counterfactual reveals the central trade-off in welfare policy design: longer eligibility raises program expenditures and reduces maternal human capital, but improves child investment. The net welfare effect depends on the relative social valuation of maternal earnings capacity and financial security versus child development outcomes.

6.2 Potential Couterfactuals

The current model uses national average TANF benefit levels and a uniform 60-month time limit. In practice, there is substantial state-level variation in TANF benefit levels, sanction rates, earnings disregard rules, and time limits. Additional policy counterfactual involves changing requirements of TANF, EITC Expansion, and SNAP benefit generosity.

By investigating the welfare reform impact on household decisions across different life stages and their long-run outcomes to the human capital of children and mothers, the results aim to address important policy questions related to the design and delivery of income support to economically disadvantaged families. The insights provided will be valuable for policymakers targeting diverse outcomes resulting from future possible reforms.

7 Discussion

The current model treats all single mothers as having the same earnings capacity conditional on the state variable \bar{y}_t , abstracting from the large and well-documented education-wage gradient. One extension is to allow explicit heterogeneity in education, with separate wage processes and childcare investment productivity. This would allow the model to evaluate education-conditional welfare reforms and capture the differential returns to work and childcare investment. Figure 8 in Appendix A document that both test scores of children and active maternal time differ systematically by maternal education for single-mother families.

8 Conclusion

Single mothers face severe economic disadvantages relative to married mothers. They earn lower wages, hold substantially less wealth, invest fewer resources in their children, and are much more dependent on welfare programs. Their children receive less active maternal time, monetary investment, and score lower on cognitive assessments throughout childhood, gaps that translate into college attendance later in life. The welfare reform of 1996 reduced cash assistance and strengthened work incentives over dependence on welfare. However, single mothers face significant challenges in time and budget constraints compared to married couples, placing them at a disadvantage in balancing work and childcare investment.

This paper develops and estimates a dynamic life-cycle model to study how welfare programs affect the economic behavior and human-capital development of single-mother families. The framework links mothers' decisions on labor supply, savings, welfare participation, and investments in children's development to long-run outcomes for both children and mothers under the detailed institutional rules of TANF, SNAP, and the EITC. The model analyzes how these programs affect household decisions while allowing these behavioral responses to shape both children's development and maternal human capital accumulation, with implications for mothers' long-run retirement security.

Counterfactual analysis suggests that extending TANF's lifetime limit would increase welfare participation by 14 p.p. and reduce labor force participation by 12.5 p.p., at the cost of 11.5% lower lifetime earnings and retirement benefits. However, the policy also increases maternal time with children by approximately 30% during the child-rearing years, generating modest improvements in cognitive outcomes. This trade-off illustrates policies

that prioritize work incentives generate long-run earnings gains at the cost of reduced child investment during the critical early childhood period. Policies that balance work incentives with consistent support for caregiving may enhance both maternal economic security and children's long-run human capital formation.

Overall, by linking welfare-induced behavioral responses to both maternal and child outcomes in a single framework, the paper provides new insights into how policy design shapes family decision-making over time and welfare.

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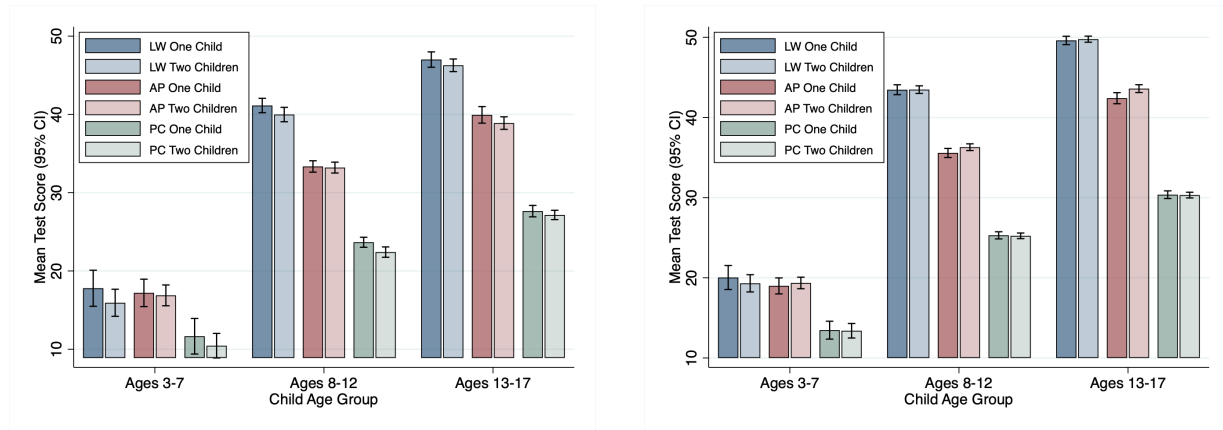
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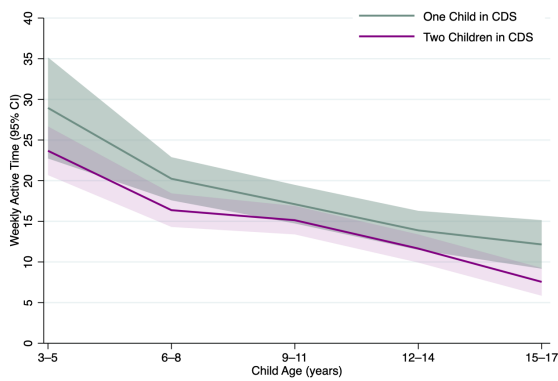
A Additional Figures

Figure 7: Test Scores and Active Time with Mothers by Number of Children in CDS

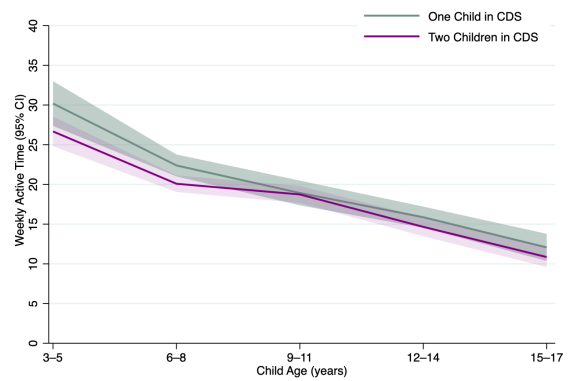


(a) Single mothers

(b) Married mothers



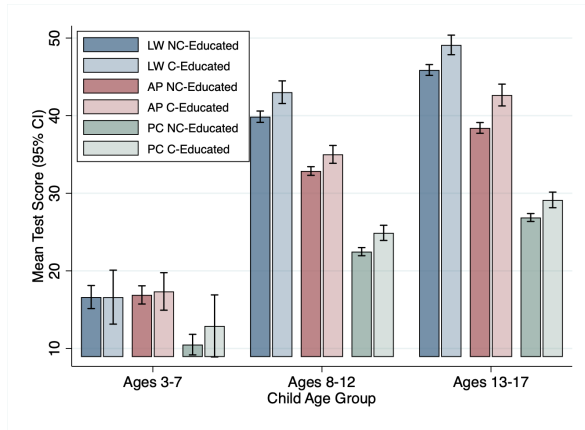
(c) Single mothers



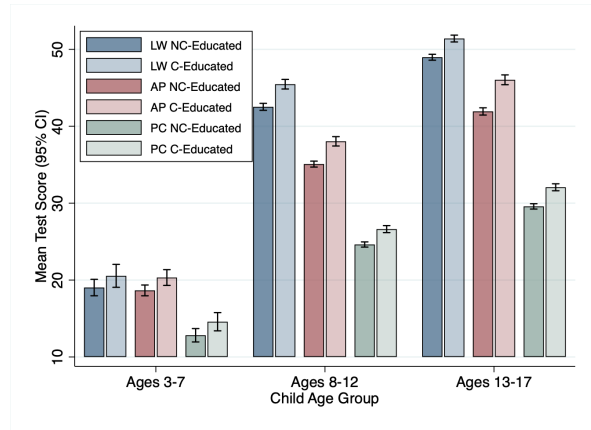
(d) Married mothers

Notes: Test scores (Letter-Word, Applied Problems, Passage Comprehension) (panels a–b) and Weekly hours of active maternal time (panels c–d) over child age by number of children in CDS. Sources: Child Development Supplement, authors' calculations.

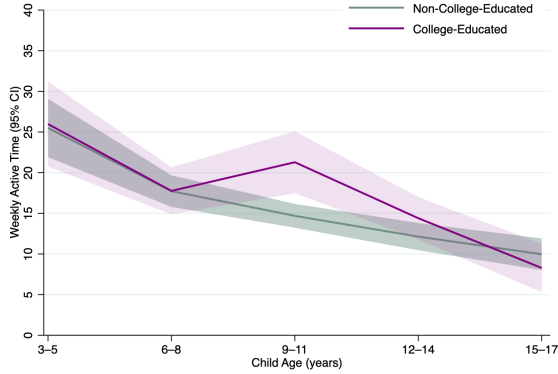
Figure 8: Test Scores and Active Time with Mothers by Maternal Education



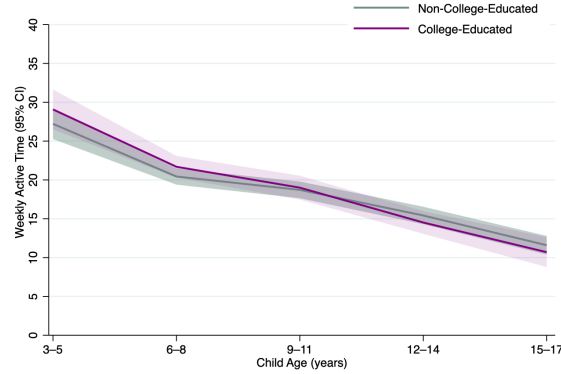
(a) Single mothers



(b) Married mothers



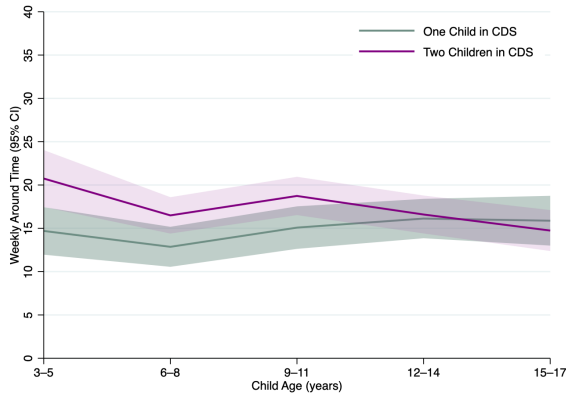
(c) Single mothers



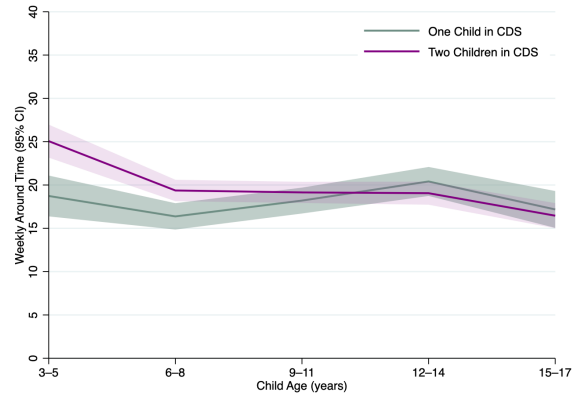
(d) Married mothers

Notes: Test scores (Letter-Word, Applied Problems, Passage Comprehension) (panels a–b) and Weekly hours of active maternal time (panels c–d) over child age by maternal education group. Sources: Child Development Supplement, authors' calculations.

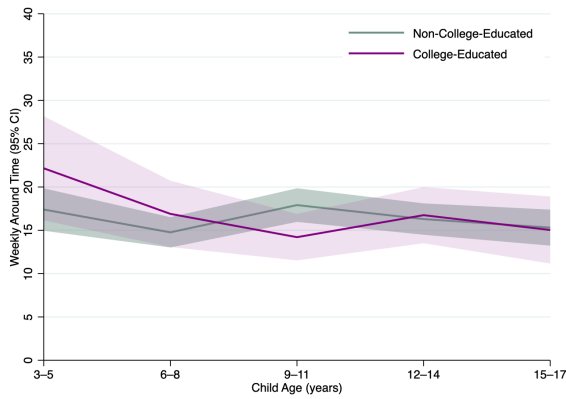
Figure 9: Around Time with Mothers by Number of Children and Maternal Education



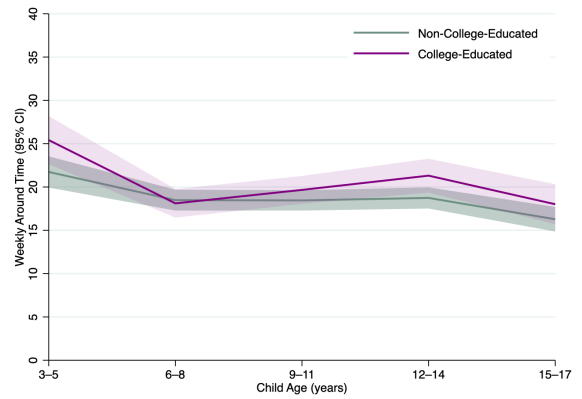
(a) Single mothers: by number of children



(b) Married mothers: by number of children



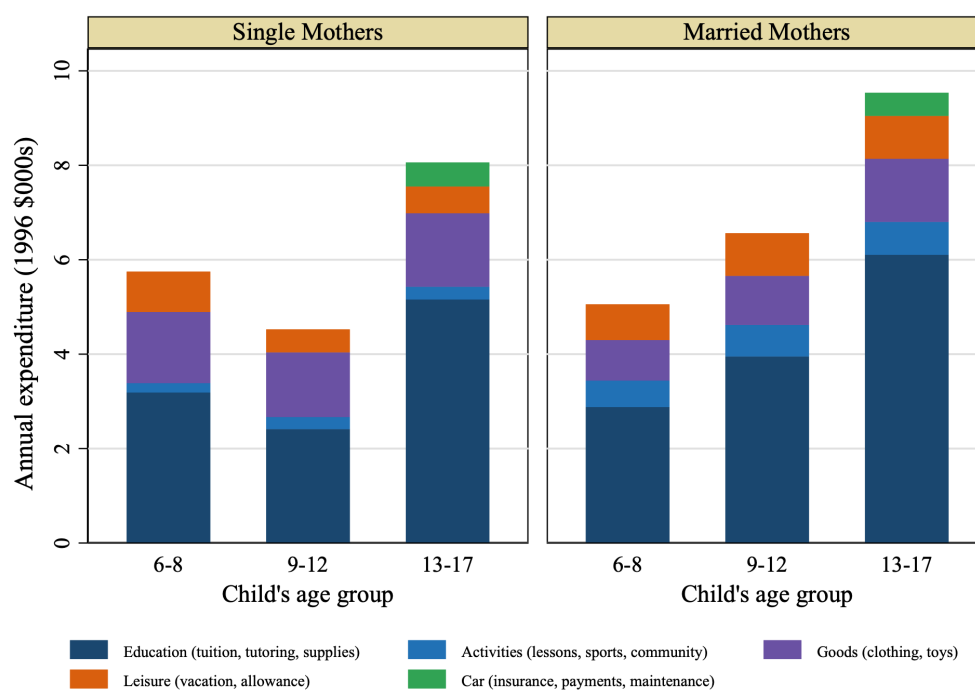
(c) Single mothers: by maternal education



(d) Married mothers: by maternal education

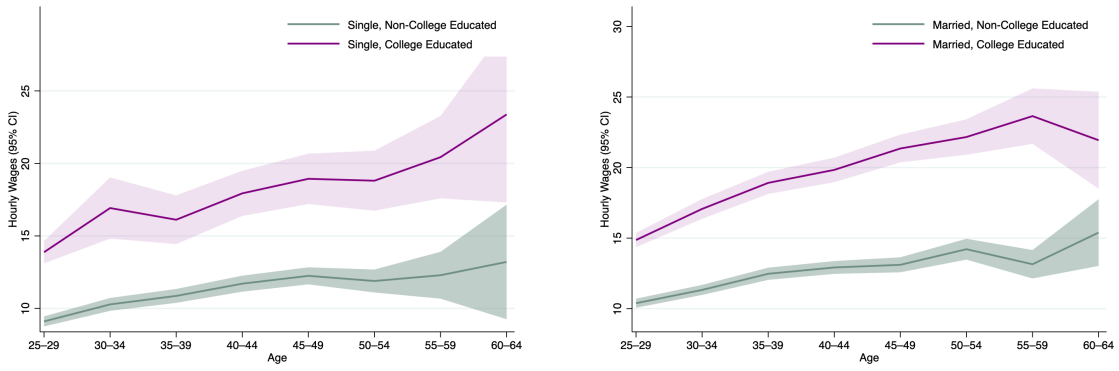
Notes: Weekly hours of passive (around) maternal time over child age by number of children in CDS (panels a–b) and maternal education group (panels c–d). Sources: Panel Study of Income Dynamics and Child Development Supplement, authors’ calculations.

Figure 10: Annual Child Expenditure by Category and Mother's Marital Status



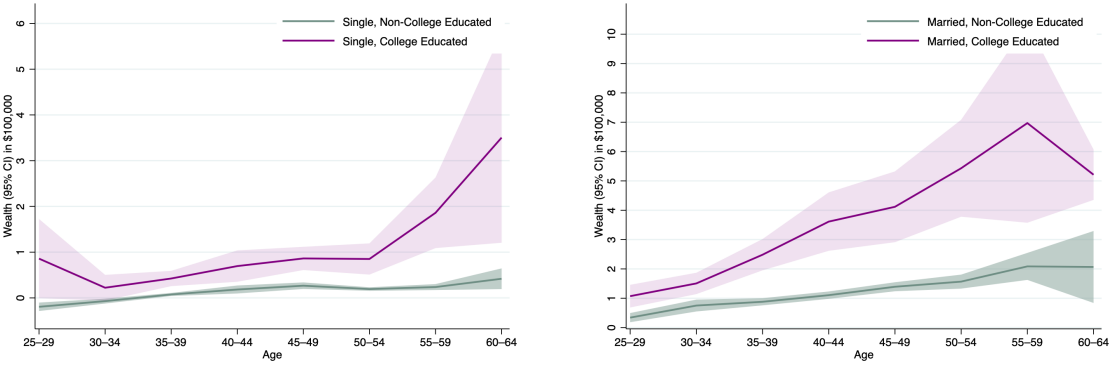
Notes: Annual expenditure on children in thousands of 1996 dollars, stacked by category (school/tuition, enrichment, consumer goods, entertainment, childcare), by child's age group and mother's marital status. Source: PSID-CDS, author's calculations.

Figure 11: Hourly Wages and Wealth Accumulation by Mothers' Marital Status and Education



(a) Hourly Wages of Single Mothers

(b) Hourly Wages of Married Mothers



(c) Assets of Single-Mother Families

(d) Assets of Married-Parent Families

Notes: Life-cycle profiles of wages (panels a-b) and assets (panels c-d) by maternal education group. Wages in 1996 dollars; net worth in 1987 dollars. Sources: Panel Study of Income Dynamics, author's calculations.