Where does the time go?: Decomposing men and women's time use following a first-birth *

Annabel Siegal
Boston College

Joanna Venator
Boston College

December 8, 2025

Abstract

How does men and women's time use adjust in response to having their first child? Using American Time Use Data and a pseudo-panel event study design, we show that women reduce time spent in paid labor, leisure, and sleep as their primary activity following a first birth, substituting towards childcare and housework. In contrast, while men also increase time spent in childcare, this time comes out of time previously spent in leisure and sleep, rather than paid work time. When we incorporate time spent on childcare as a secondary activity, we document a gender gap in time spent on multi-tasking with women reporting a higher amount of time spent on childcare while also engaging in leisure and childcare. Lastly, we show that these gender gaps in time-use post-birth are stronger for non-college educated mother, mothers living in states without paid family leave, and mothers living in states with greater adherence to stereotypical gender norms.

Keywords: childcare, female labor supply, time use.

*The authors have no conflicts of interest or funding sources to disclose. Corresponding Author: Joanna Venator, 140 Commonwealth Ave, Chestnut Hill, MA 02467; venator@bc.edu

1 Introduction

A growing literature documents that parenthood substantially impacts mothers' labor market outcomes relative to fathers', reducing attachment to the labor market, hours worked, and earnings (Kleven et al., 2019b, Cortes and Pan, 2020, Goldin and Mitchell, 2017, England et al., 2016, Gangl and Ziefle, 2009, Budig and England, 2001) These gender differences in the impacts of children or the so-called "child penalty" are persistent and exist across countries (Kleven et al., 2019a). Past work has documented that this child penalty is increasingly important for explaining aggregate gender differences in earnings: the proportion of the gender earnings gap attributable to presence of children since the 1980s has grown over time, and as of 2013, 80% of the overall gap is attributable to the motherhood penalty (Kleven et al., 2019b).

These papers often implicitly attribute these earnings gains to increased care work on the part of new mothers, with a number of papers exploring whether the motherhood gap differ in the presence of policies that make child care more accessible.[1] In this paper, we formally document how time spent in care work changes in response to new parenthood. Using American Time Use (ATUS) data in a pseudo-event study framework from Kleven [2022], we show that having a child is associated with an average decline in paid work of 1.3 hours per day post-birth for mothers relative to fathers. This decrease in paid work is fully off-set by an increase in hours spent on child care (+1.1 hours) and housework (+0.6 hours).

When we look at mothers and fathers separately, we see that entry into parenthood shifts men and women's behavior by different magnitudes. Both men and women decrease time spent in leisure and time spent sleeping following a birth, but the decrease is similar for both genders, resulting in a null effect on leisure and sleeping post-birth for mothers relative to fathers. Men and women re-allocate that lost leisure and sleep differently: while men increase hours in paid work by one hour and increase hours spent on childcare by 1.5 hours, women decrease hours worked by 0.5-1 hours, increase time spent in childcare by 2.5-3 hours, and increase time spent on housework by 0.5 hours.

The ATUS survey also allows us to observe how much time is spent in active childcare (i.e., childcare as the primary activity) versus passive/multi-tasking childcare (i.e., childcare is the secondary activity). When we combine passive and active childcare into a single measure, the gender gap in time spent on childcare post-birth more than doubles. Men's composite time spent on child care increases by 6 hours relative to non-fathers whereas women's composite time increases by 10 hours, resulting in a motherhood gap of 4 hours. We see that mothers are much more likely to be engaging in childcare simultaneously with 'leisure' and simultaneously with other housework.

[1] For example, Anstreicher and Venator [2024] show the child penalty is 22% lower in US counties with low child care prices and 11% lower in counties with nearby family who might provide access to informal care. Andresen and Nix [2025] show that a Norwegian policy reform which increased access to high quality child care reduced the child penalty by 23%.

This suggests an additional way in which care work disproportionately impacts mothers relative to fathers: mothers' leisure time is more likely to no longer be pure leisure, but rather be leisure spent partially caring for a child. We can re-calculate a measure of 'uninterrupted leisure' which is defined as time spent in leisure as a primary activity without childcare being reported as a secondary activity simultaneously. When we re-do the motherhood penalty for uninterrupted leisure, we now see that mothers have about 0.5 fewer hours of uninterrupted leisure post-birth relative to fathers.

To validate our results, we compare the results from the pseudo-event study in ATUS with standard child penalty event studies using the Panel Study of Income Dynamics (PSID) where we can follow women over time. Starting in 2017, the PSID biennially asked respondents to report hours spent in a typical week on paid work, child care, house work, and leisure. While we cannot observe secondary time use and have a smaller, unbalanced panel in the PSID, we are able to show similar impacts in the PSID: women experience a greater increase in unpaid care work following the birth of their first child relative to men.

We then consider how these gender gaps in time-use post-birth differ across demographic groups and state policy settings. We show that college-educated fathers spend more time on child care post-birth, reducing the overall gap in post-birth time use. In contrast, while white parents of both genders spend marginally more time on child care than non-white parents, there is no gender difference in this increase. Next, we test whether living in a state that mandates paid family leave coverage changes the gender gap in time use and find that the motherhood penalty in child care time is smaller by one-third in states with paid family leave. Lastly, using an index for market-sexism developed by Charles et al. [2025], we show that the gender gap in child care time use is stronger in states which hold more gender stereotypical views about whether mothers should work.

Taken together, these results document that the motherhood penalty in terms of hours of paid labor is almost entirely off-set by an increase in terms of hours spent on unpaid labor, but that the policy environment in which households make these home production decisions in can mediate these effects. We see our work as contributing to the literature in three primary areas.

First, our paper builds on the growing literature documenting the gendered costs associated with fertility. While a large literature has shown how fertility pulls women out of the labor force, there is less literature documenting the causal effect of fertility on time use. Analyses of time use post-child birth in Mexico (Aguilar-Gomez et al., 2026), the Netherlands (Koopmans et al., 2024, and Japan (Guo and Xie, 2024) have documented changes in women's time in care work relative to men following the birth of their first child. We see our paper as adding two new insights to this literature. One of the takeaways from these papers is that country context matters for the impacts of birth on time-use. For example, while Guo and Xie [2024] show that time spent in home production activities (i.e., childcare, housework) increase similarly for men and women but leisure declines more women, Koopmans et al. [2024] finds large relative increases in home production

activities and no relative difference in leisure post-birth for men and women. Given that the US is characterized by having relatively low access to affordable child care and parental leave relative to other economically similar countries, we might expect that having children has greater impacts on time spent in child care in particular. In addition, unlike previous work on time use post-birth in other countries, our paper incorporates both primary and secondary time use. This allows us to document that the increases in home production partially manifests as increased multi-tasking for women, over and above the amount of time spent in primary care work.

Second, these results are consistent with a long literature in economics and sociology documenting gender differences in time spent in home production (see bud for an overview of this literature). While the gender gap in time spent in home production has drastically declined over the 20th century as women entered in the workforce, women continue to spend substantially more time in child care and housework than men (Bianchi, 2011). Past work documents that there is an educational gradient in time spent on childcare, with more educated mothers spending more time on childcare (Guryan et al., 2008; Sayer et al., 2004) and more time on active rather than passive childcare (Kalil et al., 2012). Mothers' time use on childcare increases in response to increases in child care prices and decreases in response to increases in wages (Kimmel and Connelly, 2007). Similar to this past literature, we show that college-educated parents spend more time in child care, but are also able to document that this increased time in child care activities for child care is stronger for men, reducing the gender gap in time use on child care.

Lastly, we find substantive gender differences in the amount of childcare conducted simultaneously with other activities, speaking to a smaller literature documenting that women are more likely to engage in multitasking and interrupted activities in both home and work contexts (Offer and Schneider, 2011; Craig and Brown, 2016; Adams et al., 2025). Women report that their own-skills at multi-tasking is better than men and both men and women predict that on average women are better at multi-tasking. However, experimental work on multi-tasking in a lab setting suggests that multitasking has significant productivity impacts and these differences do not differe between men and women (Buser and Peter, 2012). Morever, Buser and Peter [2012] find that when given the opportunity to choose between focused time and multi-tasking, women preferred focused time significantly more than men. Our findings show that the amount of time women spend on multiple activities increases substantially more than men and that disparities in home production are exacerbated when this multi-tasking behavior is considered. This sheds like on one of the mechanisms through which the child penalty persists even once women re-enter the workforce: increases in mental and physical load caused by women taking on a greater amount of the 'passive child care' that involves being on-call during other activities such as leisure and housework.

2 Data and Methods

The primary data source this paper uses is the American Time Use Survey (ATUS) from 2003-2023. The survey provides a repeated cross-section of time use data for a nationally representative sample. Our primary outcomes of interest are average hours spent on paid work, child care, leisure (which we define as social time, sports, personal care, phone time, and eating), and sleep. The dataset also includes demographic characteristics such as education level, marital status, race, and state, and data on the year and age at which the surveyed individual had their first child.

The ATUS has 245,000 observations over the years 2003-2023. We first restrict our sample to include only parents who were aged 18-50 at first birth, resulting in 81,000 parents. Because our dataset is a repeated cross-section, we do not have information on whether and when survey respondents without children will have children. This poses a challenge for identifying a control group that can be used to measure time use in the years leading up to the first birth. To account for this, this paper implements a pseudo-event study approach, as used in [Kleven, 2022], to gain insight into how time use behavior changes in women relative to men following the birth of their first child. Because we cannot observe whether/when those without children will eventually have children, the pseudo-event study imputes observations of pre-period outcomes in $t-n$ by matching parents of age a in year y to individuals without children in year $y-n$ who were age $a-n$ and have similar demographic characteristics.

In our setting, we construct a pseudo-panel by matching parents with non-parents on year and age at birth, as well as the following demographic characteristics: sex (male or female), education level (high school or less, some college, bachelors, graduate), marital status (ever married, never married), and race (white or non-white). We then match parents to observations in the same demographic cell based on age and year of birth.[2] For example, if a parent was 30 in 2008 at time of first birth, a 28-year old non-parent in 2006 with the same demographics would be matched as a 't-2' observation for that parent.

At the end of this process, we end up with the time use data of a parent from the ATUS matched with up to five years of pre-event data leading up to the year before they gave birth. This results in a pseudo-panel of over 13,000 unique matches, who each are observed in one period as a "parent" and in at least one year as a "non-parent" (approx. 49,000 total observations). Table 2 presents the demographic characteristics of the full ATUS sample (including only parents aged 18-50 at birth and all non-parents), compared with the characteristics of our final pseudo-panel dataset (parents and their non-parent matches).

Using this pseudo-panel, we run the following model to identify the child penalty, which we estimate as the change in the difference in hours spent on activity by women relative to men post-

[2]To break ties, we order the parent and non-parent observations randomly and remove potential control matches once matched to a parent, so this process is done without replacement within a year, but with replacement across years.

birth. We now interact our treatment and covariates with an indicator for female, to estimate how women are differential adjusting their time use relative to men.

$$Y_{it} = \alpha + \beta D_{it} + \gamma X_i + \delta Z_i + \beta^f (F_i \times D_{it}) + \gamma^f (F_i \times X_i) + \delta^f (F_i \times Z_i) + u_{it} \tag{1}$$

Where D_{it} is a vector of dummies for each event-time (omitting the year before birth), X_i is a vector of demographic characteristics which parents and non-parents were matched on (education level, marital status, year at birth, age at birth), while Z_i is a vector of additional characteristics which can vary within a match (race, region. Standard errors are clustered at the individual level. Observations are weighted using the ATUS weights and the inverse of the frequency with which a pre-birth observation appears in the panel. F_i is an indicator for female, and all other coefficients are the same as in equation 2. The coefficients β^f represent the relative difference in the hours spent on an activity of interest for women relative to men.

Because the child penalty is the difference in the impact of fertility by gender, a decline in hours worked could either be attributable to an increase in work hours for men, a decrease in work hours for women, or some combination of the two. To understand which spouses' behavior drives the gap, we estimate the following specification separately for women and men:

$$Y_{it}^g = \alpha^g + \beta^g D_{it}^g + \gamma^g X_i^g + \delta^g Z_i^g + u_{it}^g \tag{2}$$

In this equation g denotes gender of the spouse. The subscript i is an index of matches and t is an index of event-times (from $t = -5$ through $t = 10$), so i represents a parent for time $t \geq 0$ and the corresponding matched non-parent for time $t < 0$.

2.1 Validation Methodology

We validate our pseudo-event study approach by comparing our results to a more traditional event study using time use data from Panel Study of Income Dynamics (PSID). The PSID is a survey which follows a nationally representative sample of approximately 18,000 individuals and their descendants over-time. While the panel structure allows us to construct a true event study following parents both before and after birth, the PSID only began asking about respondents about time use in their 2017 survey, limiting our ability to analyze impacts of births on time use. The PSID is also biennial during this time period, meaning we observe time-use data ins 2017, 2019, 2021, and 2023 for a total of around 9,500 observations. Because the PSID only begins collecting time use data in 2017, our panel is unbalanced in pre-birth trends. For instance, we can only observe respondents who are five years pre-birth in the 2017 survey, as we cannot yet know if someone is planning to have a child any time later than 2023. As a result, the coefficient on time period t-5 is identified off of only 55 observations rather than the 600-900 observations we have available for each of the first five years post-birth.

The PSID also asks a more limited set of questions about time use than ATUS. Unlike ATUS which relies on time diaries collecting the full set of activities completed in a day, the PSID asks survey respondents to report retrospectively their average time use in a typical day for four major categories: paid work, child care, leisure, and house work. There are no restrictions in the PSID data against concurrent activities, or ensuring that hours accounted for cannot exceed the number of hours in a day (there are in fact instances of the contrary). This means that we can only measure overall time in a category and cannot measure multi-tasking in the PSID data.

Because of these limitations, we prefer to use the ATUS data for our main analysis and use PSID data solely as a means of validating our pseudo-panel approach. Table 3 presents the summary statistics of the PSID sample. Columns 1-3 present the demographics of the everyone surveyed in the PSID who was aged between 18-50 at first birth, while columns 4-6 present the sample from 2017-2023. When comparing the matched pseudo-panel from ATUS and the time use panel from PSID (2017-2023), we find that the samples are generally comparable across most dimensions, however, the PSID sample is older on average, and as a result are also more likely to be married and less likely to have attended only some college.

3 Results

3.1 Impacts on Primary Time Use

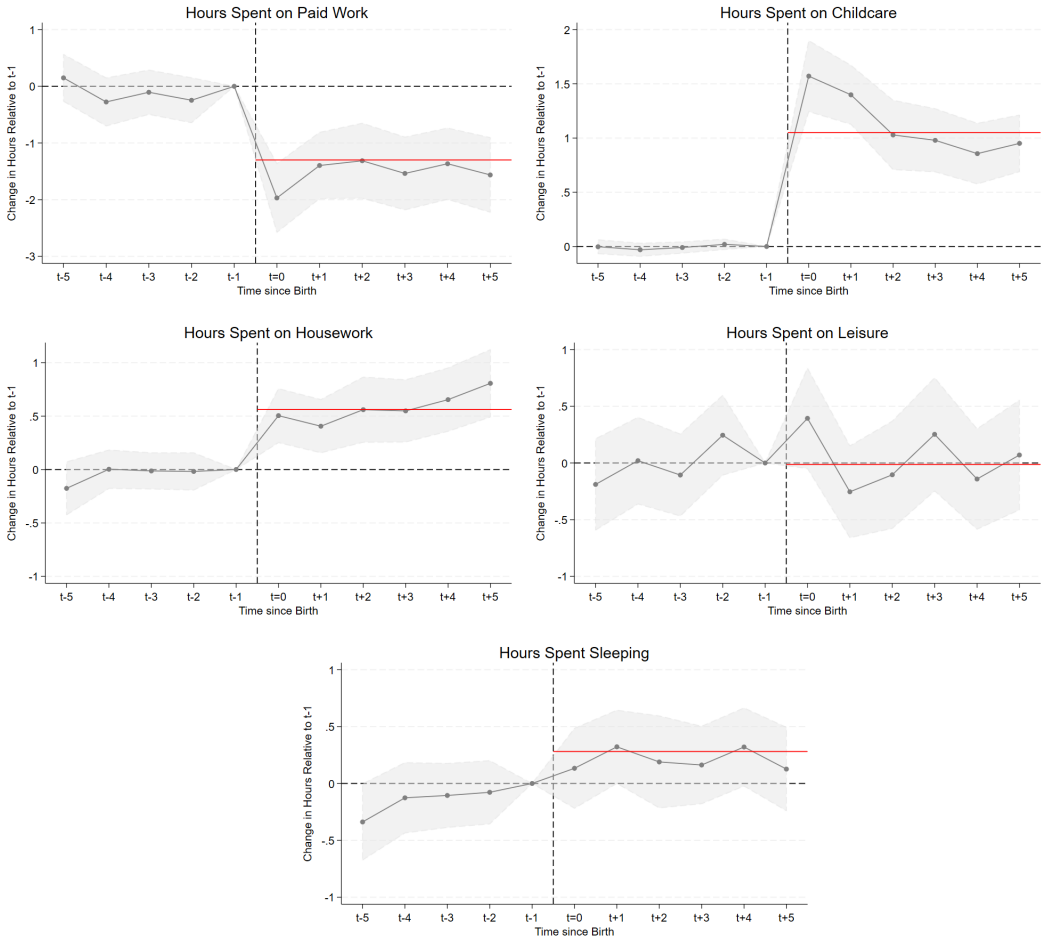
Our first analysis looks at the child penalty in time spent per day on childcare, paid work, leisure, and sleep as a primary activity. Figure 1 reports the coefficients estimated in equation 1 for these outcomes. Coefficients represent the relative difference in change in hours spent on an activity for a mother relative to a father. Horizontal lines denote the aggregate post-period effect.

We first show that women decrease their hours worked by 1.3 hours (35.5%) relative to hours worked by men. In the periods leading up to the first birth, we find no significant difference in hours worked by gender, and the gap that appears is persistent and significant for the first nine of the ten years we model post-child birth. This is consistent with the existing literature on the child penalty which finds that women reduce their weekly employment by 24% and their annual earnings by 31% (Kleven, 2022). However, unlike much of the survey data used to calculate child penalties in past papers, ATUS data allows us to explore how women are spending the time that they previously spent in paid labor.

We find that the decline in paid labor for mothers relative to fathers is primarily being shifted towards childcare. After birth, women increase their hours of childcare by 1.1 hours relative to men.[3] This effect is highest directly following birth (1.6 hours) and then persists at a lower magnitude across the subsequent years post-birth. There is also a significant increase in the time spent on

[3]Because childcare time is essentially zero for the pseudo-parents in the pre-period, we do not report percent change for childcare.

Figure 1: Pseudo-Event Study: Time Use of Women Relative to Men (ATUS)



Notes: These figures report results from regressions of hours of time use on dummies for event-time around birth interacted with gender, along with controls for year at birth, age at birth, sex, education level, marital status, race (white, black, hispanic, other), region (Northeast, Midwest, West, South). The red line denotes the aggregate post-period coefficient. 95% confidence interval shown; Standard errors are clustered at the individual level.

housework. After birth, women are on average spending an additional 0.6 hours (+38.9%) on housework relative to men with the effect persisting and increasing as the child ages. These two effects together demonstrate that increased time spent on unpaid care work fully offsets the decline in time spent on paid work.

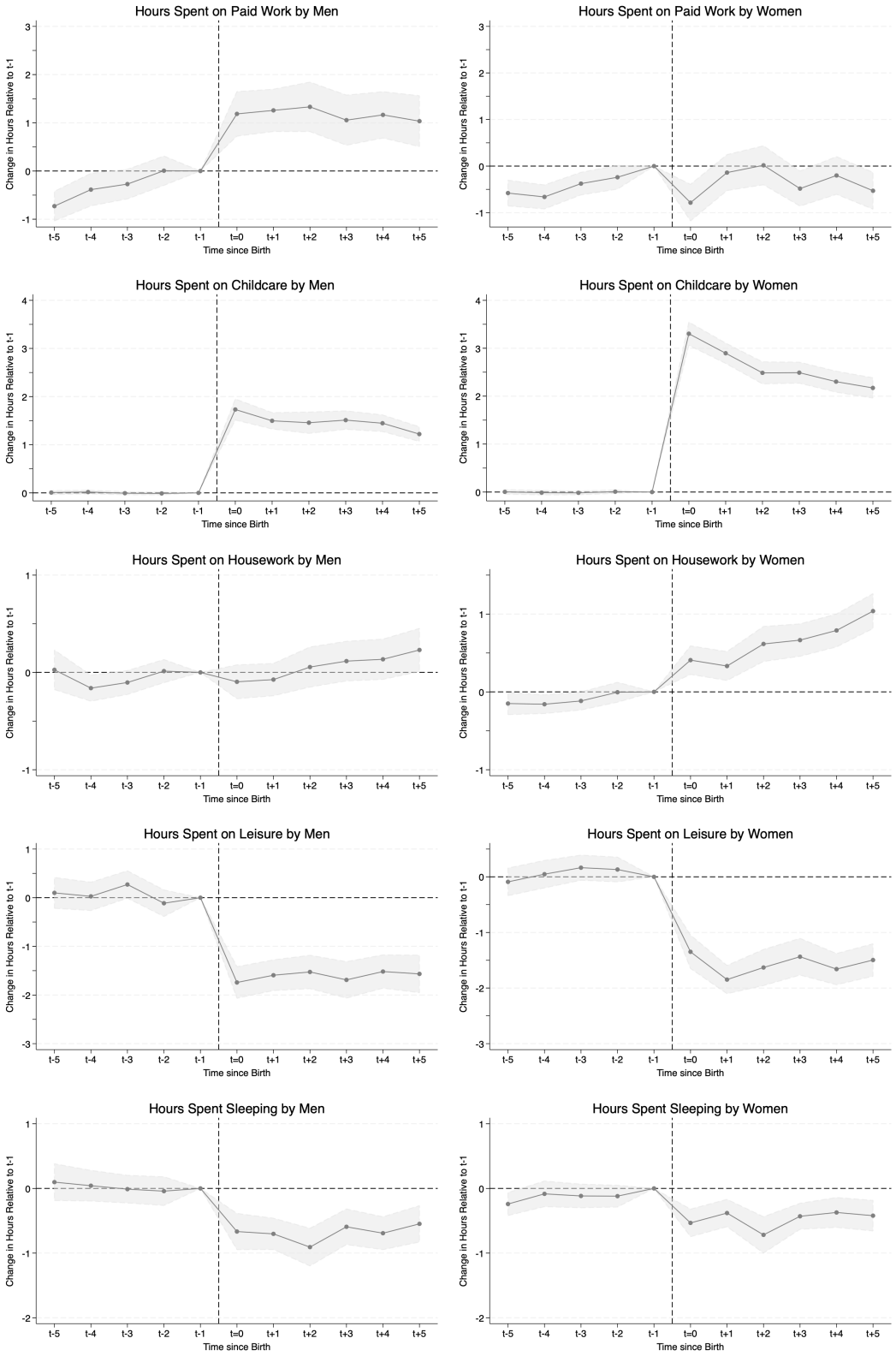
In contrast, we find no significant gender difference in time spent on leisure and a small increase in relative amount of sleep for women (+0.3 hours). This does not, however, imply that new mothers are increasing their time sleeping post-birth, but rather that men's sleep is more disrupted by a new child. In Figure 2, we decompose the gender gaps we observe, using equation 2 to estimate the effects of a first birth separately by gender. We find that the null results on leisure in Figure 1 correspond to both men and women decreasing leisure by similar amounts. We find that men are both spending 1.5 fewer hours (-20.5%) on leisure. Similarly, we find respective decreases of 0.66 hours for men and 0.38 hours of sleep for women (relative to a baseline of 9.29 hours for men and 9.58 hours for women). The decrease in time spent on leisure and sleep persists for both men and women in the following post-birth years.

This decomposition also demonstrates that post-childbirth we see greater household specialization. The decrease in leisure time for women is primarily reallocated towards childcare and housework, whereas men's former leisure time is reallocated towards childcare to a lesser extent and paid work. Childcare increases substantially for both men and women post-birth, with men and women spending minimal time on childcare pre-birth, and increasing their childcare time by 1.7 and 3.3 hours respectively in the first year. While women's housework increases substantively, men's time spent in housework is unchanged. The longer term trends for time spent on childcare and housework suggest that the downward trend in time spent on childcare and upward trend in housework which we observe in Figure 1 correspond primarily to changes in the mother's behavior, rather than a redistribution of these activities between parents.

Even as the time required for childcare decreases with older children, women are not immediately reallocating their time back into paid work. Housework is the only category where we observe an upward trend in time use for mothers over the post-birth period. This asymmetry in the relationship between paid work and child care could be explained by additional time costs of children on the overall amount of time needed for housework (cleaning up after children, preparing food, additional laundry).

Another potential contributing factor to the persistence of the child penalty could be barriers to returning to work after a gap in work experience. There is evidence that a gap in human capital accumulation through missed work experience can exacerbate the post-birth wage gap, thus increasing the opportunity cost of returning to work even as the time needed for childcare decreases [Blundell et al., 2016, Laun and Wallenius, 2021]. Overall, these findings indicate that women are decreasing their hours of paid work long term and are substituting this time towards household activities.

Figure 2: Pseudo Event Study: Time Use by Sex (ATUS)



Notes: These figures report results from regressions of hours of time use on dummies for event-time around birth separately by gender, along with controls for year at birth, age at birth, sex, education level, marital status, race (white, black, hispanic, other), region (Northeast, Midwest, West, South). 95% confidence interval shown; Standard errors are clustered at the individual level.

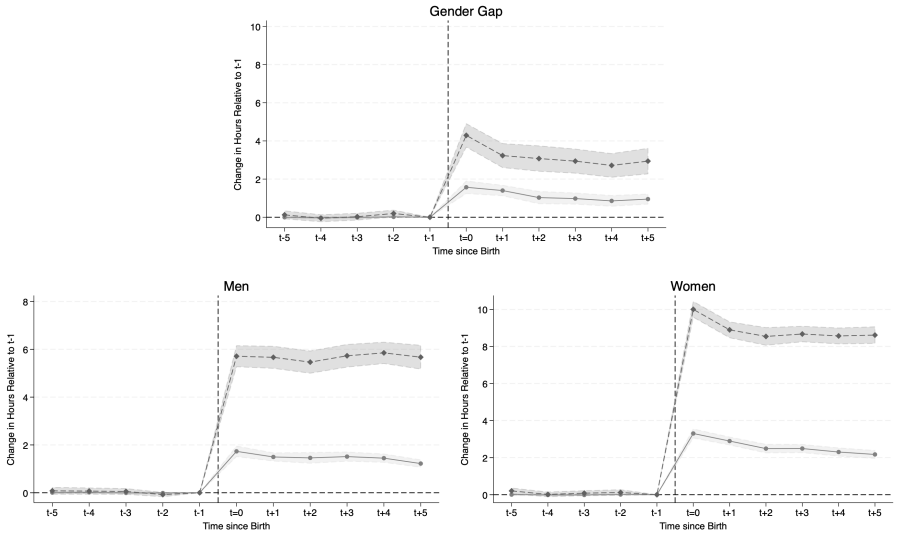
3.2 Impacts of childbirth on multi-tasking

In addition to reporting time use in primary activities, the ATUS also allows us to measure how childbirth impacts the probability that men and women are engaged in multitasking behavior. The ATUS includes data on the time spent on childcare as a secondary activity, which is defined as any time where the respondent is taking care of a child while also doing some other primary activity (such as working or eating). This allows us to answer two additional questions about time-use post-birth. First, how does composite time on childcare change for men and women? Childcare as a secondary activity is sometimes described as 'passive' childcare, such as when a parent is watching television but also keeping an eye on their child playing in the same room. If the gender gap in time use declines when we incorporate childcare as a secondary activity, this may suggest men engage more in this type of passive childcare than women. Conversely, if the gap increases, then women both spend more time engaged in both active and passive childcare. Second, how does uninterrupted time spent on other tasks change? If women are multi-tasking by taking care of children while working, this may contribute to earnings declines post-birth. Similarly, if there are differences in uninterrupted leisure time post-birth, we might expect that the spouse who is engaging in passive care during leisure gets less relaxation value from leisure, contributing to worse mental health and productivity.

To answer the first question, we re-run our event studies of time spent in childcare using composite time, defined as the sum of hours in which childcare is listed as either a primary or a secondary activity. Figure 3 reports the results both for the relative difference (top panel) and separately for men (bottom left panel) and women (bottom right panel). While both men and women significantly and persistently increase both primary and secondary time spent on childcare, we find that women are increasing their total hours of childcare relative to men by 4.3 hours in the first year (compared to 1.6 hours in primary childcare time) and the gap is persistently higher for up to five years post-birth. This suggests that not only do women spend more time focused on childcare as their primary task, but they also engage in more child-related multi-tasking than their spouses. When we account for secondary time use, our estimate for the gender gap in childcare more than doubles. Time use surveys which do not report secondary time use thus substantially underestimate the magnitude of the gender gap in hours of childcare.

To answer the second question, we further break down secondary childcare in Figure 4, which reports the corresponding primary activity done concurrently with childcare. We do not see that women are spending more time on childcare and paid work simultaneously than men. They are, however, spending a greater amount of leisure time and housework time engaging in multi-tasking. The gap in time spent multi-tasking on childcare post-birth is around two hours of which about one-third is multi-tasking during leisure and half is multi-tasking during housework. Overall, these findings suggest that there is an additional childcare time cost faced by women, particularly during home-based activities, which analyses focusing solely on primary time use categories might overlook.

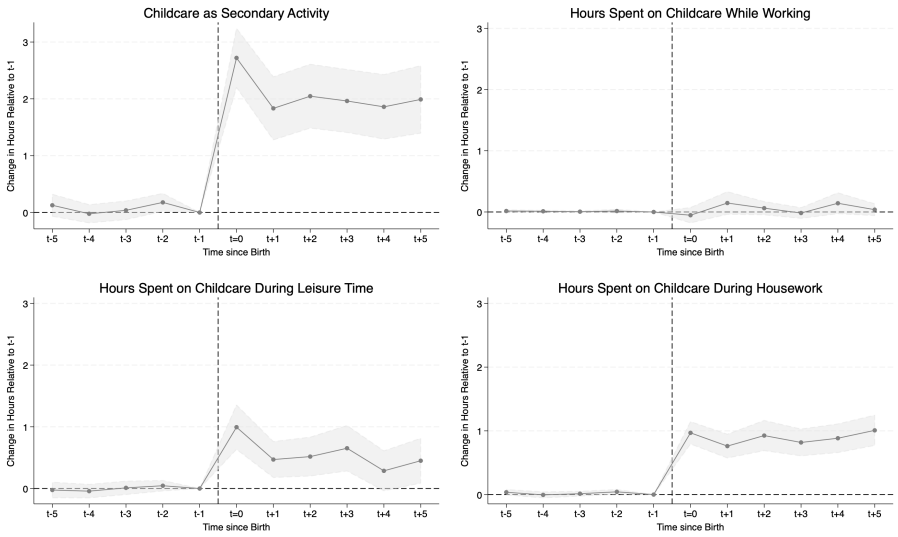
Figure 3: Pseudo-Event Study: All Hours of Childcare (ATUS)



Notes: These figures report results from regressions of all time spent on childcare (including both time where childcare is the primary and the secondary activity) on dummies for event-time around birth separately by gender, along with controls for year at birth, age at birth, sex, education level, marital status, race (white, black, hispanic, other), region (Northeast, Midwest, West, South). The top panel indicates the relative change in income for women relative to men, while the bottom two panels model the change in income for men and women separately. 95% confidence interval shown; Standard errors are clustered at the individual level.

In light of this finding, we revisit our original estimate for time spent on leisure. When only considering primary time use in leisure, we found no difference in the gender gap in time spent on leisure post-birth. In Figure 5, we compare our original estimate with an adjusted estimate of leisure, which excludes concurrent leisure/childcare time. We now do find that women have significantly decreased their time spent on leisure by an additional 0.6 hours relative to men. When we look at the effects on men and women separately, we find that men have decreased leisure by 3.2 hours (-46%). Women are now spending 3.8 fewer hours on leisure (-56%). This findings are more than double the original magnitude of the decrease in leisure hours for men and nearly triple the decrease for women.

Figure 4: Pseudo-Event Study: Secondary Time Use on Childcare (ATUS)



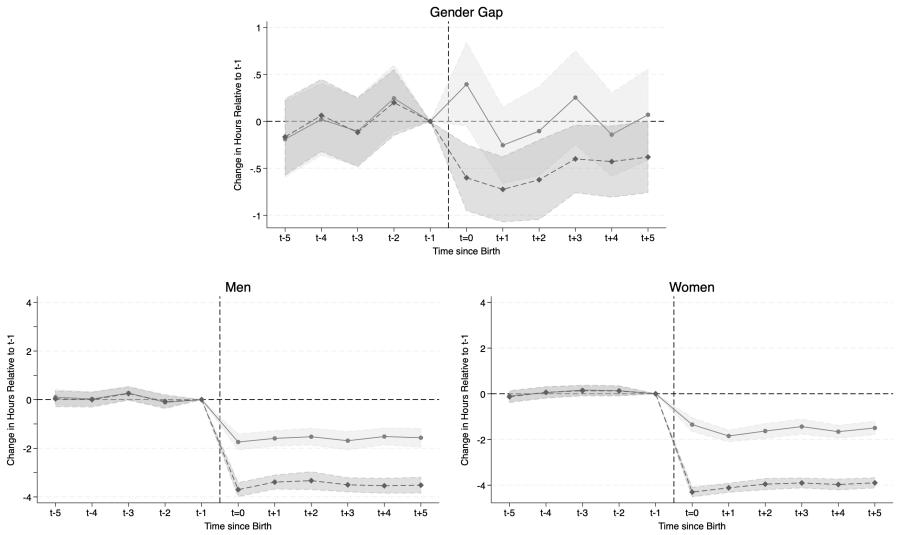
Notes: These figures report results from regressions of secondary time spent in childcare on dummies for event-time around birth separately by gender, along with controls for year at birth, age at birth, sex, education level, marital status, race (white, black, hispanic, other), region (Northeast, Midwest, West, South). The top left panel is all secondary time in childcare; the top right is secondary time in childcare while also working; the bottom left is secondary time in childcare while also engaging in leisure; and the bottom right is secondary time in childcare while also doing housework. 95% confidence interval shown; Standard errors are clustered at the individual level.

3.3 Robustness check: PSID event studies

To validate our pseudo-event study approach, we re-estimate actual event studies following equation 1 using the panel data of time use from the 2017-2023 PSID survey. Our outcomes of interest are retrospective reports of average amount of time spent per day on paid work, childcare, housework, and leisure.

Figure 6 reports these results, which are largely consistent with those of the pseudo-panel ATUS data. We find that women are spending 0.6 fewer hours on paid work relative to men in the first

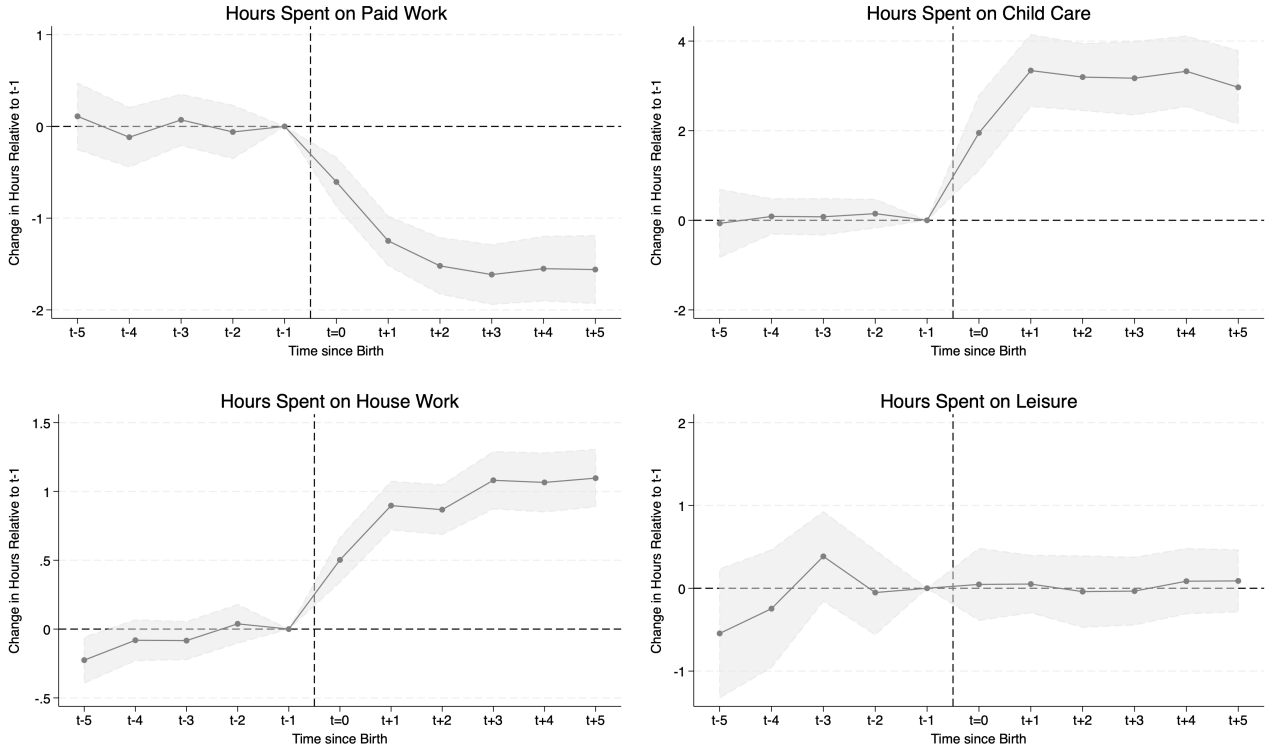
Figure 5: Pseudo-Event Study: Uninterrupted Leisure (ATUS)



Notes: These figures report results from regressions of time spent in leisure on dummies for event-time around birth separately by gender, along with controls for year at birth, age at birth, sex, education level, marital status, race (white, black, hispanic, other), region (Northeast, Midwest, West, South). The solid line represents the average daily hours that an individual reports spending on leisure, while the dashed line subtracts leisure time while the respondent is simultaneously also taking care of a child. The top panel indicates the relative change in income for women relative to men, while the bottom two panels model the change in income for men and women separately. 95% confidence interval shown; Standard errors are clustered at the individual level.

year following birth. In subsequent years, the relative time use of women falls further decreases to around 1.5 hours, which persists over the rest of the period. As in the pseudo-event study, women are persistently and significantly increasing their time use in childcare by 2-3 additional hours post-birth relative to men. Women are also persistently spending more time on housework than men on the order of 1.1 additional hours on housework per day. Similar to ATUS, we see no gender difference in leisure, though the lack of information about concurrent time on leisure and childcare in the PSID means we cannot test whether the observed gender differences in leisure net of childcare holds in this setting.

Figure 6: Event Study: Time Use of Women Relative to Men (PSID)



Notes: PSID 2017-2023. Event study on time use behavior of women and men after first birth. Controls included for age and year, sex, education level (up to high school, some college, bachelors, graduate), marital status (ever married/never married), race (white, black, hispanic, other), region (northeast, midwest, west, south). Standard errors are clustered at the individual level.

3.4 Heterogeneity in the Child Penalty: Demographics and Policy

To better understand what factors exacerbate the child penalty, we next explore how the time use penalty differs across demographic groups and policy settings. To do this, we regress total amount of time spent on childcare (primary + secondary activity) on an indicator for time periods

post-birth interacted with gender and with a number of indicators for demographic and policy characteristics. Table 1 reports the results of these regressions where the first two rows report the post-birth coefficient and the post-birth coefficient interacted with an indicator for mothers, with the latter indicating the baseline motherhood penalty in terms of childcare time use. Each subsequent panel reports these interacted with a demographic group/policy, with the interaction of Post-Birth X Group indicating how much more parents in that group spend on childcare relative to the baseline and the interaction of Post-Birth X Female X Group indicating how much larger the motherhood penalty is for that group relative to the baseline.

Table 1: Differences in Child Penalty by Demographics and Policy Settings

	(1) College	(2) White	(3) PFL	(4) Sexism Index
Post-Birth	4.979***	5.117***	5.199***	5.216***
	(0.122)	(0.162)	(0.112)	(0.109)
Post-Birth X Female	3.113***	2.936***	2.946***	2.872***
	(0.170)	(0.215)	(0.118)	(0.105)
Post-Birth X College	0.786***			
	(0.174)			
Post-Birth X College X Female	-0.717***			
	(0.242)			
Post-Birth X White		0.346*		
		(0.194)		
Post-Birth X White X Female		-0.110		
		(0.264)		
Post-Birth X PFL			-0.035	
			(0.235)	
Post-Birth X PFL X Female			-0.953***	
			(0.336)	
Post-Birth X Sexism				-0.227*
				(0.122)
Post-Birth X Sexism X Female				0.181*
				(0.102)
N	49325	49325	49325	47349

Notes. These figures report results from regressions of all time spent on childcare (including both time where childcare is the primary and the secondary activity) on a dummy for being post-birth (event-time $t > 0$) separately by gender and then interacted with demographic characteristics (Col 1: College, Col 2: White), state-level paid family leave (Col 3), and S.D. of a state-level index for sexism sourced from Charles et al. [2025] (Col 4). Additional controls include sex interacted with year at birth, age at birth, education level, marital status, race (white, black, hispanic, other), region (Northeast, Midwest, West, South). Column 3 also controls for state X sex FE. Standard errors are clustered at the individual level for columns 1 to 3 and at the state-level for columns 4 to 5.

First, we look at differences by education and race. Past literature documents that there is an educational gradient in time spent with children (Guryan et al., 2008; Sayer et al., 2004) and racial differences in time spent on child care activities (Gennetian and Rodrigues, 2021; Pepin et al., 2018). Our results indicate that college attainment (column 1) is associated with a smaller gender gap in the child penalty: the gender gap in the child care time is 0.7 hours lower for college-educated parents than non-college-educated parents. This is largely due to college-educated fathers increasing their daily time spent on child care post-birth rather than college-educated mothers decreasing their time spent in child care. When we look at differences in time spent on child care by race (column 2), we see that while White parents overall spend more time in child care activities (+0.3 hours), there is no difference in the gender gap in the child penalty by race.

Next, we explore how the expansion of paid family leave (PFL) policies over time have impacted the gender differences in time-use post-birth. PFL may decrease the gender gap in time spent on child care if it either increases the amount of time spent in childcare by fathers who take leave or if it allows women to stay more attached to the workforce. Conversely, it may increase the gender gap if women are the primary parents who take up PFL and thus spend more time in care activities. To test this, we leverage the staggered roll out of PFL policies across states. Between 2003 and 2023, 10 states (California, New Jersey, Rhode Island, New York, DC,Washington, Massachusetts, Connecticut, Oregon, and Colorado) enacted laws mandating paid family leave (PFL). We interact an indicator for living in a state and year with PFL with the post-birth and post-birth by female in column 3 of Table 1. We see that having access to paid family leave is associated with a smaller childcare motherhood penalty: the gender gap in child care time-use is -0.95 hours smaller which cuts the overall gender gap by almost one-third. This is driven by women with PFL access reducing child care time, not by men increasing child care time. When we look at the effects of PFL on other outcomes (not shown), we see reductions for both genders in time spent on paid work and that the reductions in care time for women is primarily time spent in childcare as a secondary activity. This suggests that the decrease in the gender in care work is not likely driven by women working more and sourcing child care outside the home, but rather a change in women's time multi-tasking due to both spouses taking leave following a birth.

Lastly, we test how geographic differences in gender norms relate to gender differences in time-use. Prevailing social norms about the ability of women to engage in market work or the appropriateness of men engaging in home production may affect how households divide child care responsibilities. Charles et al. [2025] develop a state-level measure of market-based sexism based on questions from the General Social Survey which ask how much respondents agree with the following statements: "(1) approval of a married woman earning money in business or industry if she has a husband capable of supporting her and (2) a working mother can establish just as warm and secure a relationship with her children as a mother who does not work." Using this index, they document that women in states which score higher on this index have children at a younger

age, work less, and earn less. We borrow this index and interact the standardized index with our post-birth and post-birth X Female variables. Column 4 of Table 1 shows that more stereotypical views are associated with a marginally significant larger gender gap in the child penalty: a one SD increase in the sexism index is associated with men spending 0.2 hours less on child care and no change in time spent for mothers, resulting in a 6% increase in the motherhood penalty in time spent on care work.

4 Conclusion

This paper documents how gender differences in labor market outcomes post-birth are mirrored by corresponding gender differences in changes in home production behavior following the birth of a first child. Using the pseudo-event study design from Kleven [2022] and time-use data from ATUS 2003-2023, we first show that there is a sizeable gender difference in time-use post-birth with women experiencing larger declines in time spent in paid work and larger increases in time spent in child care and housework. We show that the gendered decline in the labor force participation documented in other work is fully offset by an increase in time spent in unpaid care work. Moreover, when we account for both active time spent in childcare as the primary activity and passive time spent in childcare as a secondary activity, we see that the gender gap widens further. Specifically, while overall time spent in leisure declines similarly for fathers and mothers, uninterrupted time spent in leisure declines significantly more for mothers. Mothers are also more likely to be spending time engaging in multi-tasking on housework and childcare. When we look at how these gender differences in time-use differ across groups, we see that more educated couples, couples living in states with paid family leave, and couples living in states with more progressive gender norms have smaller gaps in time spent in care work, primarily driven by fathers in these households providing more childcare.

Overall, these results provide evidence that changes in household care needs are one reason that there are persistent gender differences in earnings following the birth of a first child. Having children substantially increases the amount of care work needed in a household, and the increased time burden is primarily borne by mothers. Additionally, mothers are more often balancing care of children with other tasks, increasing the amount of time needed to complete tasks and potentially reducing productivity across all tasks. Though these results persist, our heterogeneity analyses suggest that increasing time spent on care tasks by men – whether by changing norms (education, stereotypes) or through policies which encourage men to take time off work for care (paid family leave) – is one pathway towards closing gender gaps in time-use.

5 Appendix

Table 2: ATUS Summary Statistics

	Non-Matched			Matched		
	Has Child	No Child	Total	Has Child	No Child	Total
Female	54.23	49.25	50.14	53.38	50.51	51.71
Never Married	17.62	42.56	38.07	30.49	59.00	47.07
White	61.35	70.46	68.82	56.58	50.86	53.26
Education						
High School or Less	36.18	47.59	45.54	39.15	51.05	46.07
Associate/Some College	23.94	24.66	24.53	24.28	23.76	23.98
Bachelors	24.14	17.84	18.97	23.46	16.74	19.55
Graduate	15.73	9.91	10.96	13.12	8.45	10.40
Age (Mean)	33.58	46.10	43.85	33.96	26.33	29.53
Age at First Birth (Mean)	28.35	.	28.35	29.75	29.01	29.32
Observations	39,109	136,768	175,877	13,449	35,876	49,325

Notes: ATUS 2003-2023. Columns 1-3 describe parents and non-parents in the full ATUS sample of potential matches (parents who had a child aged 0-10 when they were aged 18-45, and their potential matches). Columns 4-6 describe parents and non-parents in the merged pseudo-panel.

Table 3: PSID Summary Statistics

	Whole Sample			Time Use Sample		
	Has Child	No Child	Total	Has Child	No Child	Total
Female	52.31	51.87	52.21	52.86	52.41	52.82
Never Married	48.52	24.24	43.18	50.36	28.10	48.24
White	43.71	67.47	48.94	42.75	63.74	44.75
Education						
High School or Less	62.01	46.26	57.73	60.97	44.69	58.99
Some College	7.39	7.38	7.39	7.59	6.72	7.49
Bachelors	23.20	32.24	25.66	23.04	32.08	24.15
Graduate	7.40	14.12	9.23	8.39	16.51	9.38
Age (Mean)	33.91	27.47	32.49	35.98	28.85	35.30
Age at First Birth (Mean)	26.05	30.40	27.01	26.21	30.35	26.60
Observations	28,941	8,171	37,112	16,810	1,765	18,575

Notes: PSID 2003-2023. Columns 1-3 describe the whole PSID sample from 2003-2023. Columns 4-6 describe the sample from 2017-2023 who report their time use.

Table 4: Pseudo-Event Study on Time Use of Women Relative to Men

	(1) Paid Work	(2) Child Care	(3) House Work	(4) Leisure	(5) Sleep
t-5	0.149	-0.002	-0.176	-0.189	-0.339**
	(0.211)	(0.033)	(0.127)	(0.206)	(0.171)
t-4	-0.276	-0.030	0.003	0.020	-0.126
	(0.216)	(0.031)	(0.092)	(0.195)	(0.158)
t-3	-0.105	-0.009	-0.013	-0.106	-0.105
	(0.200)	(0.026)	(0.086)	(0.184)	(0.144)
t-2	-0.246	0.020	-0.018	0.245	-0.078
	(0.202)	(0.024)	(0.089)	(0.180)	(0.142)
t-1	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
t=0	-1.970***	1.571***	0.504***	0.394*	0.133
	(0.310)	(0.167)	(0.129)	(0.226)	(0.180)
t+1	-1.397***	1.399***	0.406***	-0.254	0.322**
	(0.298)	(0.139)	(0.127)	(0.207)	(0.164)
t+2	-1.314***	1.029***	0.560***	-0.104	0.189
	(0.338)	(0.163)	(0.156)	(0.241)	(0.206)
t+3	-1.538***	0.979***	0.549***	0.253	0.162
	(0.327)	(0.149)	(0.149)	(0.255)	(0.174)
t+4	-1.366***	0.856***	0.654***	-0.142	0.321*
	(0.321)	(0.143)	(0.151)	(0.226)	(0.175)
t+5	-1.564***	0.951***	0.807***	0.070	0.127
	(0.336)	(0.133)	(0.161)	(0.247)	(0.187)
Mean	3.66	0.06	1.54	6.89	9.08
N	49325	49325	49325	49325	49325

Notes: Pseudo-event study on the time use of women relative to men using a pseudo panel from the ATUS 2003-2023 of parents and non-parents merged on age and year of birth of their first child, sex (male/female), education level (up to high school, some college, bachelors, graduate), marital status (ever married), race (white/non-white). Standard errors clustered at the individual level (sex, year at birth, age at birth, observation number).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Pseudo-Event Study of Time Use by Men

	(1) Paid Work	(2) Child Care	(3) House Work	(4) Leisure	(5) Sleep
t-5	-0.728***	0.007	0.027	0.099	0.097
	(0.157)	(0.021)	(0.104)	(0.162)	(0.145)
t-4	-0.386**	0.018	-0.161**	0.028	0.042
	(0.172)	(0.020)	(0.069)	(0.149)	(0.121)
t-3	-0.271*	-0.007	-0.104*	0.271*	-0.011
	(0.157)	(0.016)	(0.063)	(0.144)	(0.109)
t-2	0.007	-0.012	0.013	-0.113	-0.042
	(0.155)	(0.016)	(0.061)	(0.139)	(0.113)
t-1	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
t=0	1.185***	1.732***	-0.097	-1.742***	-0.667***
	(0.236)	(0.112)	(0.089)	(0.166)	(0.143)
t+1	1.258***	1.497***	-0.074	-1.594***	-0.703***
	(0.224)	(0.087)	(0.085)	(0.161)	(0.124)
t+2	1.331***	1.458***	0.055	-1.526***	-0.908***
	(0.262)	(0.113)	(0.105)	(0.175)	(0.148)
t+3	1.055***	1.512***	0.116	-1.689***	-0.593***
	(0.265)	(0.098)	(0.104)	(0.191)	(0.140)
t+4	1.165***	1.447***	0.135	-1.518***	-0.693***
	(0.245)	(0.089)	(0.106)	(0.175)	(0.130)
t+5	1.034***	1.221***	0.231**	-1.566***	-0.548***
	(0.269)	(0.078)	(0.113)	(0.197)	(0.143)
Constant	3.587***	0.081**	1.323***	7.302***	9.290***
	(0.171)	(0.039)	(0.067)	(0.140)	(0.112)
Mean	4.21	0.04	1.38	7.03	8.86
N	21894	21894	21894	21894	21894

Notes: Pseudo-event study on the time use of men using a pseudo panel from the ATUS 2003-2023 of parents and non-parents merged on age and year of birth of their first child, education level (up to high school, some college, bachelors, graduate), marital status (ever married), race (white/non-white). Standard errors clustered at the individual level (sex, year at birth, age at birth, observation number).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Pseudo-Event Study of Time Use by Women

	(1) Paid Work	(2) Child Care	(3) House Work	(4) Leisure	(5) Sleep
t-5	-0.579***	0.004	-0.150**	-0.090	-0.241***
	(0.141)	(0.025)	(0.073)	(0.127)	(0.091)
t-4	-0.662***	-0.013	-0.159***	0.048	-0.084
	(0.131)	(0.024)	(0.061)	(0.126)	(0.101)
t-3	-0.376***	-0.016	-0.117**	0.165	-0.117
	(0.124)	(0.021)	(0.059)	(0.115)	(0.093)
t-2	-0.240*	0.008	-0.005	0.132	-0.120
	(0.130)	(0.019)	(0.065)	(0.114)	(0.086)
t-1	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)
t=0	-0.785***	3.303***	0.408***	-1.348***	-0.534***
	(0.201)	(0.124)	(0.094)	(0.154)	(0.109)
t+1	-0.139	2.896***	0.332***	-1.848***	-0.381***
	(0.197)	(0.108)	(0.095)	(0.130)	(0.108)
t+2	0.017	2.487***	0.616***	-1.631***	-0.719***
	(0.214)	(0.117)	(0.115)	(0.166)	(0.143)
t+3	-0.483**	2.491***	0.665***	-1.437***	-0.431***
	(0.192)	(0.112)	(0.106)	(0.168)	(0.103)
t+4	-0.201	2.303***	0.789***	-1.660***	-0.372***
	(0.207)	(0.112)	(0.108)	(0.143)	(0.118)
t+5	-0.530***	2.172***	1.038***	-1.496***	-0.422***
	(0.202)	(0.108)	(0.114)	(0.149)	(0.121)
Constant	2.335***	0.404***	2.044***	6.876***	9.582***
	(0.141)	(0.055)	(0.076)	(0.120)	(0.086)
Mean	3.23	0.07	1.67	6.78	9.26
N	27431	27431	27431	27431	27431

Notes: Pseudo-event study on the time use of women using a pseudo panel from the ATUS 2003-2023 of parents and non-parents merged on age and year of birth of their first child, education level (up to high school, some college, bachelors, graduate), marital status (ever married), race (white/non-white). Standard errors clustered at the individual level (sex, year at birth, age at birth, observation number).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Pseudo Event Study of Secondary Time on Childcare by Women Relative to Men

	(1) Paid Work	(2) House Work	(3) Leisure	(4) All Secondary
t-5	0.016	0.037*	-0.024	0.127
	(0.010)	(0.022)	(0.064)	(0.099)
t-4	0.012	-0.005	-0.042	-0.023
	(0.007)	(0.024)	(0.056)	(0.082)
t-3	0.005	0.014	0.011	0.038
	(0.006)	(0.019)	(0.055)	(0.083)
t-2	0.016	0.043**	0.046	0.178**
	(0.014)	(0.018)	(0.043)	(0.080)
t-1	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
t=0	-0.053	0.969***	0.994***	2.721***
	(0.064)	(0.090)	(0.184)	(0.265)
t+1	0.147	0.761***	0.470***	1.833***
	(0.094)	(0.095)	(0.148)	(0.283)
t+2	0.062	0.926***	0.518***	2.047***
	(0.055)	(0.121)	(0.160)	(0.287)
t+3	-0.017	0.818***	0.653***	1.962***
	(0.044)	(0.107)	(0.188)	(0.283)
t+4	0.143	0.884***	0.287*	1.859***
	(0.087)	(0.114)	(0.165)	(0.289)
t+5	0.038	1.008***	0.450**	1.990***
	(0.049)	(0.121)	(0.185)	(0.303)
Mean	0.00	0.03	0.09	0.18
N	49325	49325	49325	49325

Notes: Pseudo-event study on the secondary time use of women relative to men on childcare during some other primary activity using a pseudo panel from the ATUS 2003-2023 of parents and non-parents merged on age and year of birth of their first child, education level (up to high school, some college, bachelors, graduate), marital status (ever married), race (white/non-white). Standard errors clustered at the individual level (sex, year at birth, age at birth, observation number).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Pseudo Event Study of Secondary Time on Childcare by Men

	(1) Paid Work	(2) House Work	(3) Leisure	(4) All Secondary
t-5	-0.00717*	-0.0168	0.0672	0.0736
	(0.00419)	(0.0125)	(0.0483)	(0.0669)
t-4	-0.00822**	-0.00871	0.0274	0.0523
	(0.00371)	(0.0188)	(0.0422)	(0.0609)
t-3	-0.00556*	0.00287	0.0212	0.0618
	(0.00309)	(0.0122)	(0.0371)	(0.0568)
t-2	-0.00434*	-0.0165*	-0.0387	-0.0658*
	(0.00259)	(0.00863)	(0.0267)	(0.0390)
t-1	0	0	0	0
	(.)	(.)	(.)	(.)
t=0	0.207***	0.554***	1.959***	3.978***
	(0.0524)	(0.0513)	(0.121)	(0.186)
t+1	0.133***	0.653***	1.798***	4.167***
	(0.0434)	(0.0593)	(0.113)	(0.206)
t+2	0.0975***	0.688***	1.806***	4.006***
	(0.0374)	(0.0766)	(0.111)	(0.205)
t+3	0.103***	0.785***	1.814***	4.217***
	(0.0352)	(0.0712)	(0.131)	(0.212)
t+4	0.182***	0.781***	2.024***	4.404***
	(0.0498)	(0.0721)	(0.123)	(0.208)
t+5	0.0955***	0.851***	1.951***	4.449***
	(0.0316)	(0.0749)	(0.143)	(0.232)
Constant	-0.0320	0.0548*	0.232***	0.308***
	(0.0199)	(0.0301)	(0.0604)	(0.0997)
Mean	0	0.0200	0.0600	0.110
N	21894	21894	21894	21894

Notes: Pseudo-event study on the secondary time use of men on childcare during some other primary activity using a pseudo panel from the ATUS 2003-2023 of parents and non-parents merged on age and year of birth of their first child, education level (up to high school, some college, bachelors, graduate), marital status (ever married), race (white/non-white). Standard errors clustered at the individual level (sex, year at birth, age at birth, observation number).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Pseudo Event Study of Secondary Time on Childcare by Women

	(1) Paid Work	(2) House Work	(3) Leisure	(4) All Secondary
t-5	0.00856	0.0200	0.0433	0.201***
	(0.00923)	(0.0178)	(0.0427)	(0.0725)
t-4	0.00366	-0.0135	-0.0151	0.0294
	(0.00621)	(0.0149)	(0.0364)	(0.0547)
t-3	-0.000277	0.0166	0.0325	0.0996
	(0.00479)	(0.0148)	(0.0409)	(0.0609)
t-2	0.0112	0.0269*	0.00686	0.112
	(0.0139)	(0.0162)	(0.0338)	(0.0704)
t-1	0	0	0	0
	(.)	(.)	(.)	(.)
t=0	0.154***	1.523***	2.953***	6.699***
	(0.0368)	(0.0735)	(0.138)	(0.190)
t+1	0.279***	1.414***	2.268***	6.000***
	(0.0837)	(0.0744)	(0.0968)	(0.194)
t+2	0.160***	1.614***	2.323***	6.053***
	(0.0404)	(0.0934)	(0.116)	(0.200)
t+3	0.0863***	1.603***	2.466***	6.180***
	(0.0269)	(0.0800)	(0.134)	(0.187)
t+4	0.324***	1.665***	2.310***	6.264***
	(0.0712)	(0.0889)	(0.110)	(0.201)
t+5	0.133***	1.859***	2.402***	6.439***
	(0.0376)	(0.0949)	(0.117)	(0.195)
Constant	-0.0199	0.328***	0.108*	0.648***
	(0.0316)	(0.0449)	(0.0599)	(0.109)
Mean	0	0.0400	0.110	0.240
N	27431	27431	27431	27431

Notes: Pseudo-event study on the secondary time use of women on childcare during some other primary activity using a pseudo panel from the ATUS 2003-2023 of parents and non-parents merged on age and year of birth of their first child, education level (up to high school, some college, bachelors, graduate), marital status (ever married), race (white/non-white). Standard errors clustered at the individual level (sex, year at birth, age at birth, observation number).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: PSID Event Study Time Use of Women Relative to Men

	(1) Paid Work	(2) Child Care	(3) House Work	(4) Leisure
t-5	0.110	-0.069	-0.226***	-0.545
	(0.185)	(0.386)	(0.085)	(0.397)
t-4	-0.118	0.086	-0.081	-0.246
	(0.165)	(0.201)	(0.076)	(0.362)
t-3	0.071	0.078	-0.084	0.385
	(0.142)	(0.207)	(0.070)	(0.276)
t-2	-0.061	0.149	0.038	-0.052
	(0.148)	(0.162)	(0.072)	(0.260)
t-1	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
t=0	-0.605***	1.950***	0.503***	0.047
	(0.136)	(0.427)	(0.082)	(0.221)
t+1	-1.248***	3.342***	0.897***	0.051
	(0.137)	(0.409)	(0.090)	(0.177)
t+2	-1.520***	3.197***	0.868***	-0.041
	(0.157)	(0.381)	(0.092)	(0.220)
t+3	-1.615***	3.172***	1.081***	-0.034
	(0.166)	(0.417)	(0.106)	(0.208)
t+4	-1.550***	3.326***	1.066***	0.085
	(0.179)	(0.401)	(0.109)	(0.201)
t+5	-1.560***	2.968***	1.097***	0.089
	(0.189)	(0.418)	(0.106)	(0.191)
Mean	5.60	0.24	1.23	1.97
N	15955	4607	15875	5010

Notes: Event study on the time use of women relative to men before and after first birth using PSID 2017-2023 data. Controls are included for differences in education level (5 categories), marital status (2 categories), region (4 categories) and race (2 categories), as well as year and age at the time of survey. Standard errors clustered at the individual level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: PSID Event Study Time Use of Men

	(1) Paid Work	(2) Child Care	(3) House Work	(4) Leisure
t-5	0.037	0.106	0.041	0.365
	(0.142)	(0.180)	(0.064)	(0.337)
t-4	0.146	-0.107	-0.065	0.248
	(0.130)	(0.111)	(0.054)	(0.320)
t-3	-0.040	-0.093	0.049	-0.236
	(0.111)	(0.114)	(0.050)	(0.147)
t-2	0.156	-0.089	-0.031	0.243
	(0.114)	(0.112)	(0.052)	(0.197)
t-1	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
t=0	0.212**	2.310***	0.044	-0.008
	(0.103)	(0.238)	(0.052)	(0.157)
t+1	0.289***	3.535***	0.139***	-0.278**
	(0.100)	(0.236)	(0.050)	(0.121)
t+2	0.226**	3.542***	0.086	-0.044
	(0.113)	(0.215)	(0.057)	(0.158)
t+3	0.095	3.764***	0.211***	-0.225
	(0.117)	(0.231)	(0.057)	(0.143)
t+4	0.176	3.562***	0.135**	-0.332**
	(0.129)	(0.248)	(0.062)	(0.146)
t+5	-0.033	3.493***	0.145**	-0.437***
	(0.135)	(0.239)	(0.063)	(0.140)
Constant	5.084***	-0.358	1.510***	2.469***
	(0.207)	(0.445)	(0.134)	(0.353)
Mean	5.94	0.27	1.05	2.01
N	8204	2460	8167	2595

Notes: Event study on the time use of men before and after first birth using PSID 2017-2023 data. Controls are included for differences in education level (5 categories), marital status (2 categories), region (4 categories) and race (2 categories), as well as year and age at the time of survey. Standard errors clustered at the individual level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: PSID Event Study Time Use of Women

	(1) Paid Work	(2) Child Care	(3) House Work	(4) Leisure
t-5	0.147	0.038	-0.185***	-0.180
	(0.119)	(0.342)	(0.056)	(0.209)
t-4	0.028	-0.021	-0.147***	0.002
	(0.103)	(0.168)	(0.053)	(0.168)
t-3	0.031	-0.015	-0.035	0.148
	(0.089)	(0.173)	(0.049)	(0.233)
t-2	0.096	0.060	0.007	0.191
	(0.095)	(0.117)	(0.049)	(0.170)
t-1	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
t=0	-0.393***	4.260***	0.547***	0.038
	(0.089)	(0.355)	(0.064)	(0.157)
t+1	-0.959***	6.877***	1.036***	-0.227*
	(0.094)	(0.334)	(0.075)	(0.129)
t+2	-1.294***	6.739***	0.954***	-0.085
	(0.108)	(0.314)	(0.072)	(0.153)
t+3	-1.520***	6.935***	1.293***	-0.259*
	(0.118)	(0.348)	(0.090)	(0.152)
t+4	-1.374***	6.888***	1.200***	-0.246*
	(0.125)	(0.315)	(0.090)	(0.138)
t+5	-1.593***	6.461***	1.242***	-0.348***
	(0.133)	(0.343)	(0.086)	(0.130)
Constant	4.409***	-0.432	1.550***	1.667***
	(0.239)	(0.586)	(0.168)	(0.245)
Mean	5.26	0.21	1.40	1.94
N	7751	2147	7708	2415

Notes: Event study on the time use of women before and after first birth using PSID 2017-2023 data. Controls are included for differences in education level (5 categories), marital status (2 categories), region (4 categories) and race (2 categories), as well as year and age at the time of survey. Standard errors clustered at the individual level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

References

State Paid Family Leave Laws Across the U.S. URL https://bipartisanpolicy.org/explainer/state-paid-family-leave-laws-across-the-u-s/.

A. Adams, K. Hara, K. Milland, and C. Callison-Burch. The gender wage gap in an online labor market: The cost of interruptions. *Review of Economics and Statistics*, 107(1):55–64, 2025.

S. Aguilar-Gomez, E. O. Arceo-Gomez, and E. De la Cruz Toledo. Inside the black box of child penalties: Unpaid work and household structure. *Journal of Development Economics*, 178: 103554, 2026.

M. E. Andresen and E. Nix. You can't force me into caregiving: Paternity leave and the child penalty. *The Economic Journal*, page ueaf057, 2025.

G. Anstreicher and J. Venator. To grandmother's house we go: Informal childcare and female labor mobility. Technical report, Working paper, 2024.

S. M. Bianchi. Family change and time allocation in american families. *The ANNALS of the American Academy of Political and Social Science*, 638(1):21–44, 2011.

R. Blundell, M. C. Dias, C. Meghir, and J. Shaw. Female labor supply, human capital, and welfare reform. *Econometrica*, 84(5):1705–1753, 2016. doi: 10.3982/ECTA11576.

M. J. Budig and P. England. The wage penalty for motherhood. *American Sociological Review*, pages 204–225, 2001.

T. Buser and N. Peter. Multitasking. *Experimental economics*, 15(4):641–655, 2012.

K. K. Charles, J. Guryan, and J. Pan. The effects of sexism on american women: The role of norms versus discrimination. *Journal of Human Resources*, 60(3):693–742, 2025.

P. Cortes and J. Pan. Children and the remaining gender gaps in the labor market. Technical report, National Bureau of Economic Research, 2020.

L. Craig and J. Brown. The multitasking parent: Time penalties, dimensions, and gender differences. In *The economics of multitasking*, pages 33–59. Springer, 2016.

P. England, J. Bearak, M. J. Budig, and M. J. Hodges. Do highly paid, highly skilled women experience the largest motherhood penalty? *American sociological review*, 81(6):1161–1189, 2016.

M. Gangl and A. Ziefle. Motherhood, labor force behavior, and women's careers: An empirical assessment of the wage penalty for motherhood in britain, germany, and the united states. *Demography*, 46:341–369, 2009.

L. A. Gennetian and C. Rodrigues. Mothers' and fathers' time spent with children in the us: Variations by race/ethnicity within income from 2003 to 2013. *Journal of Economics, Race, and Policy*, 4(1):34–46, 2021.

C. Goldin and J. Mitchell. The new life cycle of women's employment: Disappearing humps, sagging middles, expanding tops. *Journal of Economic Perspectives*, 31(1):161–82, 2017.

N. Guo and A. Xie. Childbirth and welfare inequality: The role of bargaining power and intra-household allocation. 2024.

J. Guryan, E. Hurst, and M. Kearney. Parental education and parental time with children. *Journal of Economic perspectives*, 22(3):23–46, 2008.

A. Kalil, R. Ryan, and M. Corey. Diverging destinies: Maternal education and the developmental gradient in time with children. *Demography*, 49(4):1361–1383, 2012.

J. Kimmel and R. Connelly. Mothers' time choices: Caregiving, leisure, home production, and paid work. *Journal of Human resources*, 42(3):643–681, 2007.

H. Kleven. The geography of child penalties and gender norms: A pseudo-event study approach. *Working Paper Series*, (30176), June 2022. doi: 10.3386/w30176. URL http://www.nber.org/papers/w30176.

H. Kleven, C. Landais, J. Posch, A. Steinhauer, and J. Zweimüller. Child Penalties across Countries: Evidence and Explanations. *AEA Papers and Proceedings*, 109:122–126, 2019a. ISSN 2574-0768. doi: 10.1257/pandp.20191078.

H. Kleven, C. Landais, and J. E. Søgaard. Children and gender inequality: Evidence from Denmark. *American Economic Journal: Applied Economics*, 11(4):181–209, 2019b. ISSN 19457790. doi: 10.1257/app.20180010.

P. Koopmans, M. van Lent, and J. Been. Child penalties and the gender gap in home production and the labor market. Technical report, IZA Discussion Papers, 2024.

T. Laun and J. Wallenius. Having it all? employment, earnings, and children. *Scandanavian Journal of Economics*, 123(1):353–381, 2021. doi: {10.1111/sjoe.123456}.

S. Offer and B. Schneider. Revisiting the gender gap in time-use patterns: Multitasking and well-being among mothers and fathers in dual-earner families. *American sociological review*, 76(6): 809–833, 2011.

J. R. Pepin, L. C. Sayer, and L. M. Casper. Marital status and mothers' time use: Childcare, housework, leisure, and sleep. *Demography*, 55(1):107–133, 2018.

L. C. Sayer, A. H. Gauthier, and F. F. Furstenberg Jr. Educational differences in parents' time with children: Cross-national variations. *Journal of marriage and family*, 66(5):1152–1169, 2004.