The Responsibilities of Parental Childcare: Evidence from the American Time Use Survey

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Abstract

This paper provides quantitative evidence that supervisory constraints represent a significant component of the temporal costs of children. Our analysis of pooled data from the American Time Use Survey (ATUS) from 2004-2019 focuses on an underutilized question that asks respondents when children under the age of 13 were "in their care." We show that reported "in-your-care" time is significantly higher than both active care time and time in which parents report the co-presence of children, and that it is strongly and inversely related to maternal time in paid employment. This finding has significant implications for estimates of the effect of childcare responsibilities on maternal labor supply.

Keywords: Childcare, Time Use, Maternal Employment, American Time Use Survey
JEL Classification D1 · J12 · J1

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In her classic treatise on the *Economics of Household Production*, published in 1934, Margaret Reid emphasized the diffuse character of maternal responsibility: "Even though she may not be on active duty, evidence of her labor is about her. She is continually on call. Much so-called leisure has a 'string attached'" (1934:319). Almost 90 years later, the complexity of family childcare provision is still reflected in nuances of survey terminology. Even within the relatively narrow field of research based on time-use diaries, childcare is often broken down into three different categories: Active childcare typically involves interaction with children. Supervisory care (sometimes termed passive, or on-call care) reflects responsibilities rather than activities. Social time with children is defined by physical co-presence of a parent and child (Budig & Folbre, 2004; Folbre et al., 2005; Kendig & Bianchi 2008; Milkie et al., 2021).

Considerable research explores the impact of different types of care on child outcomes (Kalenkoski & Foster, 2008; Hisen & Felfe, 2014; Fomby & Musick, 2018). However, their impact on the time constraints and concomitant costs of parenthood remains largely unexplored. "Supervisory care" for children refers to responsibilities that do not involve direct interaction (such as feeding or bathing or reading aloud), specific managerial activities (such as arranging for non-household childcare, making doctors' appointments, speaking with teachers, etc.) and do not require parent-child co-presence. It involves both vigilance and readiness to provide active care if needed. These responsibilities limit opportunities for parental (particularly maternal) employment (Bianchi et al., 2005, p.25).

The American Time Use Survey (ATUS) asks parents living with a child younger than 13 when such a child was "in your care" during the previous 24 hours (not including time that the

reporting adult and/or all children were asleep). We consider responses to this question as a useful, though imperfect, proxy for supervisory responsibilities, and argue that it should, like parent-child co-presence, be seen as part of the "parenting package" (Fomby & Musick, 2018; Milkie, 2022). Economists have not always acknowledged this category of childcare (see, for instance, Guryan et al., 2008). We argue that quantitative analysis of it helps explain both constraints on maternal employment and the impact of childcare and school closures.

Our review of previous research on the measurement of parental time use sets the stage for a detailed analysis of pooled data from the 2004-2019 American Time Use Survey (ATUS). Descriptive results, tempograms, and multivariate analysis support our argument that supervisory care time should be considered an important component of the costs of raising children. In a future extension we plan to update the sample to 2021 and also to compare results from a special ATUS module on working at home for pay in 2017/18 with monthly data collected in 2020 for mothers who reported working at home for pay.

BACKGROUND

Active care time is the focus of most time diary-based surveys, which generally ask respondents, "what were you *doing*?" at specific times during the preceding day. Parenting time in the U.S. is typically defined in terms of time spent in activities that "explicitly focus on the child while the child is present"—physical care such as feeding, bathing, and developmental interactions (Prickett & Augustine, 2021, p.7). This category of childcare is particularly relevant to analysis of the effects of intensive parenting on child outcomes. However, the need to provide supervision (and to be available if active care is required) also deserves attention, because it imposes particularly significant and somewhat inflexible temporal demands on parents.

While only 14 states in the U.S. have established specific laws or guidelines regarding the minimum age at which a child may be left at home alone, surveys indicate that most social workers, as well as the public, agree that children under the age of 13 should not be left alone for any significant period of time (Jennissen et al., 2018). Parents found violating this standard are liable to charges of child neglect, which can result in loss of parental custody. For instance, in early 2021, an Illinois teacher notified authorities that a 7-year-old boy she was teaching online had been left alone by his mother (along with a 3-year-old brother) for several hours resulting from the mother's employment-related travel. Although the children came to no harm, they were remanded to protective custody (Fabbre, 2021). In 2020, pandemic-related childcare center and school closures contributed to significant declines in maternal labor force participation (Heggeness, 2020). Yet as later discussion will show, average levels of active maternal childcare were no higher in 2020 than in comparable months of 2019 or 2017-18. By contrast, mothers reported significant increases in time that children were "in their care."

The temporal significance of supervisory constraints has been underestimated partly because it is difficult to measure. Most surveys aiming to capture background responsibility as a secondary activity (one conducted at the same time as a primary activity) have fallen short because responsibility for children does not necessarily require "activity" (UN Women, 2021; Folbre, 2022). For this reason, the ATUS question regarding time children were "in your care" represents a particularly valuable feature of its survey design.

Why Supervisory Constraints Matter

While family responsibility for young children spans every single hour of the 24-hour day, not all such responsibility imposes costly constraints. Most adults sleep at home whether or not they are responsible for a young child, and many young children sleep through much of the

night. However, the need to supervise young children, especially (though not exclusively) during waking hours limits participation in paid employment and often channels mothers into poorly paid jobs. Very young children are particularly needy, but even those between the ages of 6 and 12 typically leave school well before 4PM, an hour or more before the typical paid workday ends.

Even in surveys that collect data on secondary activities, questions such as "what else were you *doing* at the same time?" prime respondents to recall specific activities, not background responsibilities. The distinction between primary and secondary activities is typically based on the amount of attention required. Time-diary surveys that ask respondents to list secondary activities commonly elicit responses such as "listening to the radio" or "watching television" or no responses at all, and seldom capture supervisory care for children unless they include a specific prompt directing respondents to list it (Folbre and Yoon, 2007; UN Women, 2021).

Levels of activity do not necessarily dictate time allocation, because of opportunities for joint production and supervision. A mother who is unable to participate in paid employment because of supervisory responsibilities probably devotes more time to unpaid domestic services because she is confined to the home, even if her child is watching television or napping. Parental responsibility for supervision reduces the opportunity costs of domestic tasks that are compatible with background oversight. If someone must stay home regardless, they might as well do the laundry, prepare meals, and wash dishes.

Supervisory constraints for young children drive some dual-earner couples into shift work or asynchronous schedules (Presser, 1988, 1994). The growing number of jobs with unpredictable work hours have made it more difficult for parents to schedule out-of-

home childcare (Harkness et al., 2020). Low-income mothers appear less likely to take advantage of center-based childcare in part because they are typically employed for irregular hours (Pilarz et al., 2019). The greater need for non-parental childcare driven by nonstandard work schedules is largely concentrated among minority and immigrant low-wage workers and single mothers (Presser, 2003; Lambert, 2020).

While active childcare also constrains participation in paid employment, the overall number of hours devoted to it is relatively low. For many years, mothers in the U.S. have averaged less than two hours a day and fathers less than one hour a day on primary childcare activities (Robinson & Godbey 1997, Bianchi, 2000; Bianchi et al., 2006; Folbre, 2008; Gupta et al., 2021). Analysis of pooled ATUS data from 2003-2004 found that only 86% of mothers of household children under 13 (and 62% of fathers) reported active childcare on the diary day, compared to 98% of mothers (and 93% of fathers) reporting children "in their care." Over this period mothers averaged 2.4 hours and fathers 1.2 hours of active care compared to 6.8 hours and 4.6 hours, respectively, of children "in their care" (Stewart and Allard 2016:149). Our analysis updates and refines this comparison.

Types of childcare vary with both the age and number of children. Mothers' time devoted to physical childcare is high when children are very young (0-2) and shifts to developmental activities as children become toddlers (Bianchi et al., 2006; Folbre & Yoon, 2007). As children age, supervisory time does not decline as steeply as active childcare, although it enjoys greater economies of scale (it takes less time to supervise three children under the age of 13 than to provide active care for each of them). Sequence, timing, and substitutability also matter. Some types of active childcare—such as feeding children—cannot be postponed. However,

developmental activities such as reading out loud can be scheduled at times that do not interfere with standard employment.

Historical data on time use in the U.S. suggest that time devoted to active childcare has increased since the 1960s even as mothers' hours of paid employment have gone up (Sandberg & Hofferth, 2001). Employed mothers in the U.S. tend to spend less time on leisure time, housework, and sleep than their counterparts outside employment, compensating for a decline in time with children by increasing interaction with them (Sayer et al., 2004). However, little is known about trends in supervisory time, largely unmeasured before 2003 (Bianchi et al., 2005). It seems likely that it has declined more than active childcare time in response to increases in maternal employment.

The elasticity of time devoted to active childcare with respect to hours of maternal employment is surprisingly low, though estimates vary according to methods and model specifications. One early analysis based on an Ordinary Least Squares (OLS) regression found that an additional hour of paid work for a mother resulted in only a three-minute decrease in active childcare per day (Zick & Bryant 1996). Bianchi (2000) notes that although non-employed mothers spend about twice as much time at home as employed mothers, most of the additional time is spent cooking and doing housework rather than in active childcare. In their analysis of data from the ATUS 2003-2018, Gupta et al. (2021) report results from an OLS regression showing that an additional hour of employment on a weekday was associated with a less than two-minute reduction in (active) maternal childcare.

Reinforcing earlier findings, Kimmel and Connelly (2007) argue that hours of maternal employment reduce minutes of active childcare far less than minutes of housework because mothers place a higher priority on the former. They also note that mothers probably derive more

intrinsic satisfaction from active childcare than from housework. However, their analysis explicitly excludes "activities where children are present, but caregiving is not reported as the primary activity," leaving open the possibility that mothers accommodate employment by reducing both supervisory care and social time with children (Kimmel & Connelly, 2007, p.672). This effect is consistent with hypothesized tradeoffs between "quantity" and "quality" of parental childcare (Hsin & Felfe, 2014).

Definitions and Measurement of Supervisory Time

Many early efforts to look beyond active childcare utilized the term "passive care." The Australian Time Use Survey of 1997 was explicitly designed to capture passive care as a secondary activity, with specific prompts encouraging to respondents to report it. Analysis of this data has consistently shown much higher levels of childcare time than any other nationally representative survey (Ironmonger, 2004, 2007; Folbre, 2022). Comparison of reported time in childcare from surveys in Canada, the United Kingdom, Australia, and the U.S. reveals considerable sensitivity to survey wording (Folbre & Yoon, 2007).

Use of stylized questions such as "How much time did you spend engaging in childcare the previous week?" consistently yields higher estimates than time diaries based on filling in activities during discrete time periods the previous day. This discrepancy has often been attributed to imperfect recall and/or social desirability bias. However, it may also reflect a broader interpretation of the question that elicits reporting of constraints (Budig and Folbre, 2004; UN Women, 2021). In 2017, the U.S. Panel Study of Income Dynamics (PSID) added several stylized questions regarding unpaid work, asking respondents how much time they spent in the last week "caring for and looking after children." While most reports of time allocation to unpaid work in the PSID are consistent with calculations based on the ATUS, the childcare

estimates are much higher, *unless* in-your-care time is added to active care time (Insolera et al., 2019).[1]

Parent/child co-presence is another important dimension of parental engagement because it affords opportunities for attachment, socialization, and learning as well as supervision. The ratio of active care to parent/child co-presence time in the U.S. varies significantly by gender, race/ethnicity, and class (Suh, 2014; Milkie, 2022; Milkie & Wray, 2019). However, estimates of co-presence are sensitive to spatial definitions: the ATUS defines co-presence as "in the same room." As a result, young children napping or watching television elsewhere in the household or playing in the backyard are not reported as co-present. The ATUS in-your-care question, by contrast, imposes no spatial criterion. It is asked of adults co-residing with a child under the age of 13 after the regular time diary is administered, yet also tied to specific primary activities and time slots. Time in which the respondent and/or all household children are asleep is excluded from tabulation. The Bureau of Labor Statistics reports the results as "secondary childcare."

The in-your-care question was extensively field-tested and holds up well to empirical assessment (Stewart & Allard, 2016). Yet few researchers have devoted close attention to it, perhaps because of concerns about its interpretation or lack of comparability with earlier time-use surveys. Others note that it performs a different function than active childcare, which is certainly true. (Gupta et al., 2021). The effects of the Covid-19 pandemic demonstrate active care and supervisory care are differentially affected by exogenous shocks to family care provision. The ATUS survey was suspended from mid-March to mid-May 2020 because of the pandemic. However, a recent Bureau of Labor Statistics report compares time on active childcare and in-your-care time between May-December of 2019 and the same months in 2020. Despite school and childcare center closures and a significant increase in paid employment at home, the average

amount of time devoted to active childcare declined, partly because of a reduction in time transporting children to and from activities outside the home.[2] By contrast, average "in-your-care" time increased by one hour per day. Similar results have been reported for the UK.[3] A closer look at the relationship between in-your-care time, parent-child co-presence, active childcare, and employment outside the home promises some important insights into the temporal constraints imposed by parenthood in general and motherhood in particular.

DATA AND VARIABLES

We use pooled data from the American Time Use Survey (ATUS) for the years 2004-2019.[4] The ATUS is an ongoing nationally representative survey that has been conducted monthly by the U.S. Bureau of the Census for the U.S. Bureau of Labor Statistics since January 2003. Respondents are randomly selected individuals from households that have completed their participation in the Current Population Survey (CPS), representative of the U.S. civilian non-institutional population ages 15 and over. Respondents are asked to list demographic characteristics of household members such as gender, age, and the relationships to the respondent, and labor force information for the respondent and their household members including spouse/cohabiting partner. We delete observations with allocated data or with inconsistent demographic information between the CPS and ATUS surveys.

ATUS respondents are asked to sequentially report their primary activities during the 24-hour period from 4:00 AM the day before the interview to 4:00 AM of the day of the interview. For each reported activity, the interviewer asks how long the activity lasted, who was in the room or accompanied the respondent during the activity, and where the activity took place. We limit our sample to mothers and fathers (ages 18 and over) living with at least one household child under the age of 13.[5] The pooled data set provides an ample sample size of 22,820 fathers and

32,619 mothers. We use the ATUS final weights, reweighted separately for our subgroups (mothers and fathers) for day-of-week representation.

The ATUS specifically asks respondents living in a household with a child under the age of 13 "whether a child under the age of 13 was in your care" while they were engaged in other activities. The question covers only the period between when the first child under age 13 woke up and the last child under age 13 went to bed on a diary day and is restricted to time that the respondent was awake. It includes time that children were napping during the day. Attention to overlaps between active care and supervisory care and among different care providers is necessary to analyze impact. The ATUS also asks if there was another person "in the same room" when the activity was being conducted. Multiple individuals, including adults and children, could be listed. There is considerable overlap between in-your-care time and co-presence of parents and children. To avoid double-counting, we include separate tabulations of parent-child copresence time only when it does not overlap with in-your-care time.

Since we are particularly interested in the relationship between maternal employment and childcare responsibilities, our multivariate analysis focuses on differences among mothers living in a household with at least one child under 13. Our dependent variables are minutes devoted on a diary day to two different categories of childcare—active care and in-your-care. Active childcare includes physical care, feeding children, helping and teaching, talking and reading, indoor and outdoor play, and medical care for children, managing phone calls for children, as well as travel related to childcare and attending children's sports or art events (See Appendix Table A for specific codes).

Our key independent variable is reported minutes of paid employment on the diary day. Other independent variables that we expect to be significant include childcare categories include

education (coded into four categories: less than high school, high school graduate only, some college education, and college graduate and beyond with less than high school as the reference group), and race/ethnicity (defined by four categories: Hispanic, non-Hispanic White, non-Hispanic Black, and other, with non-Hispanic White as the reference group).

Marital status is also relevant. All never-married, divorced or separated, or widowed mothers are treated as single mothers. Cohabiting mothers and fathers are included in "married/cohabiting" category. The regression models also include two different sets of control variables measuring characteristics of other coresident adults. Coresident adult (female or male) is defined as a person who is neither a child nor a partner of a mother or father but rather another nonnuclear household member, such as a parent, sibling, or other relative living in the same household. Quartiles of household income are included as a dummy variable.

Our specification also controls for aspects of the diary relevant to time of week and of year, using indicator variables for year, weekend, and months of the year, to account for differences in school and vacation schedules. A dummy variable for whether the respondent resides in a metropolitan area is also included; while metropolitan mothers are more likely to engage in paid employment, they also enjoy greater access to formal childcare services

ANALYTICAL PLAN

Actual supervisory constraints cannot be measured directly and are partially endogenous. Mothers of young children who are employed full-time are not representative of all mothers because, by definition, they have found a way around such constraints, either by assistance from kin or purchased/publicly provided childcare. Mothers who are not employed may spend more time with children in their care due to preferences, rather than constraints. Since reported time use in activities, must by definition, add up to 24 hours in a day, individual time devoted to

active childcare and to employment are necessarily related. As noted earlier, however, tradeoffs between these two uses of time are slim. Note that supervisory care is not mathematically constrained in the same way—while it is bounded between 0 and waking hours, it can be combined with any number of activities, including paid employment conducted at home. Causal inference is beyond our scope here. Our goal is simply to provide the best possible empirical picture of the relationship between the "parenting package" and maternal employment.

Our descriptive analysis clarifies overlaps, tabulates the frequency with which another parent was present when the other parent reported a child in their care, and includes a tempogram illustrating differences in timing of different types of care over an average day for a particularly salient comparison. We focus on mothers and fathers co-residing with children under age 13, with special attention to two age groups (parents living with children under age 5, but no older children, and those living with children ages 5-12, but none younger), and two household-structure subgroups (married or cohabiting adults in households with no other adults or older children, and single parents with no other coresident older child or adult). Our multivariate analysis focuses more narrowly on the allocation of maternal time, applying a Seemingly Unrelated Regressions (SUR) model that allows for the codependence of different uses of time on the diary day and resulting correlation of error terms between the two equations, offering greater efficiency than OLS estimates.

We first test three general hypotheses:

Hypothesis 1: Parental in-your-care time is quantitatively greater than active care time, extends well beyond parental co-presence with children, and varies distinctively by number and age of children and time of day.

Hypothesis 2: Mothers are more likely than fathers to provide both active childcare and in-your-care time without another spouse present, an indicator of supervisory constraint.

Hypothesis 3: Parental in-your-care time overlaps with both leisure and unpaid housework activities in ways relevant to assessment of the quality of leisure and the replacement cost valuation of unpaid housework.

With this background, we examine the relationship between types of childcare, household characteristics, and maternal employment:

Hypothesis 4: Daily minutes of maternal employment are more strongly and negatively associated with maternal in-your-care time than with maternal active childcare.

Hypothesis 5: Variables indicative of relative economic and social advantage and commitment to "intensive parenting," such White Non-Hispanic, level of education, quartile of household income, and residence in a metropolitan area are negatively associated with in-your-care time and positively associated with active childcare.

RESULTS

Table 1 presents the characteristics of the sample used in this analysis, which includes mothers and fathers 18 and over who reside with at least one child under 13 years of age. A total of 55,439 parents are included in the pooled sample, with an average age of 36.4 and an average of 2.1 children. About 60.4% are White, non-Hispanic, 10.6% Black, non-Hispanic, and 21.9% Hispanic. About 35.6% have a college degree or higher. Not surprisingly, mothers are more likely than fathers of coresident children to report being out of the labor force (28.6% compared

to 4.9%), and if employed, their usual hours of weekly employment are lower (21.7 compared to 37.4).

We define the temporal dimension of the "parenting package" as the sum of active childcare, in-your-care time that does not overlap with active childcare, and co-presence that does not overlap with either active childcare or in-your-care. The averages reported in Table 2, reported both separately and non-overlapping, show how we prioritize overlaps: active childcare preempts other labels, and in-your-care time preempts co-presence. The results support Hypothesis 1, showing that active childcare is small relative to in-your-care time, which also exceeds time in which a parent and child were co-present. Our estimates of the parenting package sum to 6.02 hours per day per father and 8.75 per mother in households with any child under 13 (Row 8, Table 2)—far greater than their averages of active care—1.23 and 2.35, respectively (Row 1, Table 2).

The average time a parent devotes to children is higher for households that include only children 0-4, at 8.04 compared to 6.70 hours per day in those that include only children 5-12. Children 5-12 seem to require less active care, but only slightly less in-your-care time, despite longer hours spent out-of-home in school, perhaps because they spend far less time sleeping than younger children. One relevant factor is the greater amount of time children 0-4 spend sleeping, which is excluded from in-your-care time. Still, the average ratio of active care to non-overlapping in-your-care time is lower for both mothers and fathers in households with children The pattern is similar for active childcare relative to the sum of non-overlapping in-your-care plus non-overlapping co-presence time.

Table 1
Characteristics of Parents in Households with Any Child Under 13 *(pooled data, 2004-2019, means, CPI-U adjusted household income, 2019=100)*

	Any child under 13			Any children 0-4, none older			Any child 5-12, none younger		
	All	Fathers	Mothers	All	Fathers	Mothers	All	Fathers	Mothers
Total sample size	55,439	22,820	32,619	14,335	6,038	8,297	28,256	11,439	16,817
Age	36.4	38.0	34.9*	31.0	32.8	29.7*	40.4	42.0	39.1*
Single	14.2%	5.5%	21.3%*	14.6%	5.3%	22.1%	15.8%	7.0%	22.9%*
Age of youngest child	4.9	4.9	4.9*	1.4	1.4	1.4	8.2	8.2	8.2
Number of children	2.1	2.1	2.1	1.5	1.5	1.5	2.05	2.08	2.04*
Race/Ethnicity									
White (non-Hispanic)	60.4%	62.6%	58.6%	62.8%	65.0%	61.1%	61.0%	62.7%	59.6%
Black (non-Hispanic)	10.6%	8.5%	12.3%	9.6%	7.5%	11.3%	11.3%	9.1%	13.0%
Hispanic	21.9%	21.7%	22.1%	19.6%	19.0%	20.0%	21.0%	21.5%	20.6%
Other (non-Hispanic)	7.1%	7.1%	7.0%	8.0%	8.4%	7.6%	6.7%	6.7%	6.8%
Education									
Less than high school	12.8%	12.9%	12.1%	10.7%	10.8%	10.5%	12.4%	12.7%	1.9%
High school graduate	27.8%	28.2%	25.7%	26.7%	27.0%	24.9%	28.8%	29.3%	25.7%
Some college, no degree	23.4%	22.8%	26.6%	23.9%	23.6%	26.1%	23.5%	22.8%	27.7%
College graduate or more	35.8%	35.9%	35.4%	38.5%	38.5%	38.3%	35.1%	35.0%	35.5%
Employment									
Usual hours per week	35.0	37.4	21.7*	34.7	37.2	20.3	35.4	37.3	24.6
Employed full-time	63.3%	85.7%	45.1%	62.0%	85.2%	43.4%	66.2%	85.5%	50.5%
Employed part-time	13.5%	5.5%	20.1%	13.0%	6.6%	18.2%	14.1%	4.8%	21.7%
Unemployed	5.2%	3.8%	6.2%	6.4%	4.3%	8.0%	4.7%	3.6%	5.5%
Not in the labor force	18.0%	4.9%	28.6%	18.5%	3.8%	30.4%	15.0%	5.9%	22.3%
Median household income	70,402	79,140	61,243*	69,748	74,437	62,511*	72,895	83,229	65,542*

Note: * indicates significant difference between fathers and mothers at p<.01.

Table 2
Average Duration, Overlaps, and Ratios of Childcare and Copresence of Parents and Children (mothers and fathers in households with a child under 13, in hours per day, 2004-2019).

	Any child under 13			Any children 0-4, none older			Any child 5-12, none younger		
	All	Fathers	Mothers	All	Fathers	Mothers	All	Fathers	Mothers
Subtotals									
1. Active childcare	1.85	1.23	2.35	2.37	1.60	2.98	1.32	0.90	1.65
2. In-your-care time	7.67	6.07	8.98	8.30	6.30	9.90	6.80	5.68	7.70
3. Co-presence of parent with child	5.90	4.68	6.87	6.70	5.18	7.93	4.85	4.07	5.48
Subtotals, eliminating overlaps									
4. Active childcare	1.85	1.23	2.35	2.37	1.60	2.98	1.32	0.90	1.65
5. In-your-care time, not overlapping active care	5.40	4.42	6.18	5.35	4.20	6.28	5.12	4.38	5.70
6. In-your-care time not overlapping active care or co-presence	1.70	1.47	1.90	1.45	1.20	1.63	1.88	1.67	2.05
7. Co-presence not overlapping active care or in-your-care time	.28	.37	.22	.32	.42	.23	.27	.32	.22
Total Non-Overlapping									
Active plus in-your-care plus co-presence of parent with child (4+5+7)	7.53	6.02	8.75	8.04	6.22	9.50	6.70	5.60	7.57

Fathers provide relatively more assistance with less intense forms of childcare. While they report about 52% of the average amount of active childcare that mothers do, their relative contribution to in-your-care time is higher, especially in households with older children—4.42 hours compared to 6.18 or about 72% of what mothers provide (See Row 5, Table 2). The

category of co-presence time in which children were not reported in-your-care is the only one in which fathers report more average time than mothers.

This overview provides descriptive support for Hypothesis 1 and justifies our emphasis on the first two categories of the parenting package, active care and in-your-care time. However, it raises the question of overlaps between paternal and maternal care. Most childcare activities are performed by one parent at a time, even if another parent is present. However, in-your-care may be simultaneously reported by more than one parent or another adult. This cannot be directly examined, since the ATUS only samples one person per household. However, attention to the "who with" variable makes it possible to determine how much time mothers report fathers present when they have children in-their-care, compared to the time that fathers report mothers present under the same circumstances. This comparison is relevant to supervisory constraints, since, in principle, only one parent (or other adult) need be available. However, it cannot be determined whether another parent (or adult) was present in another room of the household.

As Table 3 shows, mothers are more likely to provide care—whether active or in-your-care—without a father present than vice versa. About 77% of the active childcare they provided was "solo," compared to 58% for fathers. The gender differences here are slightly lower for older than for younger children. In-your-care time was less likely to be solo than active care, but here too mothers were more likely than fathers to be alone with children, 56% to 37%. Interestingly, non-overlapping co-presence of fathers and children was solo only 18% of the time, though higher for older than younger children.

These descriptive results provide support for Hypothesis 2 but imply that a simple tally of in-your-care time may overstate supervisory constraints, since the time that mothers and fathers

Table 3. *Percent of Parental Child-Care and Co-Presence with Children with No Other Adult Present ("Solo") (ATUS 2004-2019)*

	Any child under 13	Child 0-4, none older	Child 5-12, none younger
	% Solo	% Solo	% Solo
Fathers			
Active childcare	58%	52%	65%
In-your-care time, not overlapping active care	37%	31%	41%
Co-presence, not overlapping active care or in-your-care time	18%	12%	21%
Mothers			
Active childcare	77%	72%	80%
In-your-care time, not overlapping active care	56%	53%	57%
Co-presence, not overlapping active care or in-your-care time	50%	50%	46%

report in married or cohabiting households may partially overlap (though one wonders which parent was providing the bulk of actual supervision).

Table 4 shows that in-your-care time often overlaps with leisure and unpaid housework activities, regardless of child age. While such proportions are similar for both mothers and fathers (75% for fathers with children under 13 vs. 76% for mothers with children under 13), the distribution between housework and leisure varies by gender. For instance, about 51% of in-your-care time overlaps with leisure activities for fathers, compared to 38% for mothers. On the other hand, about 25% of in-your-care time overlaps with housework for fathers, compared to 38% for mothers.

These descriptive results are consistent with Hypothesis 3, suggesting that supervisory responsibilities often complicate primary activities like housework and leisure. Unless leisure activities are intended to include children, the quality of leisure could be negatively affected. This finding has implications for replacement cost of valuation of unpaid household services that are combined with supervisory care, suggesting that it has a higher value than performance of unpaid housework services alone.

Hours of employment outside the home (especially on the diary day) have noticeable effects on the composition of childcare time as indicated in Table 5. Since magnitudes of in-your-care time are greater, absolute declines are greater. Mothers working part-time on the diary day report 2.50 hours of active care, compared to 3.13 among mothers not in paid employment, a difference of .63 hours or about -20%. The decrease is even greater between mothers working part-time and full-time. Full-time working mothers report 0.98 fewer hours of active childcare or about 39% fewer compared to part-time working mothers. Mothers employed part-time on the diary day (less than 7 hours) average 5.32 hours compared to 7.85 for mothers not in paid employment, a difference of 2.53 hours, or -32%. Full-time employment on the diary day has even more dramatic effects, reducing in-your-care time more than active care in both absolute terms (2.83 compared to 1.52 hours) and percentage terms (about -47% compared to -39%.

These descriptive results are consistent with Hypothesis 4: hours of maternal employment are associated with lower levels of in-your-care time. This effect is dramatized by a comparison of tempograms: graphical depictions of the percentage of respondents engaging in activities in a specific period on the diary day. Two extremes are pictured: married mothers with at least one child under 5 who are not in paid employment and single mothers with at least one child under 5 employed full-time (both groups are restricted to households with no older children or other

Table 4.
Percent of Parental In-Your-Care Time Overlaps with Leisure and Unpaid Housework Activities (ATUS 2004-2019)

	Any child under 13	Child 0-4, none older	Child 5-12, none younger
Fathers			
In-your-care time overlapping with unpaid housework	25%	25%	24%
In-your-care time, overlapping with leisure	51%	50%	52%
In-your-care time, overlapping with either leisure or unpaid housework	75%	75%	76%
Mothers			
In-your-care time, overlapping with unpaid housework	38%	37%	36%
In-your-care time, overlapping with leisure	38%	38%	40%
In-your-care time, overlapping with leisure and unpaid housework	76%	75%	76%

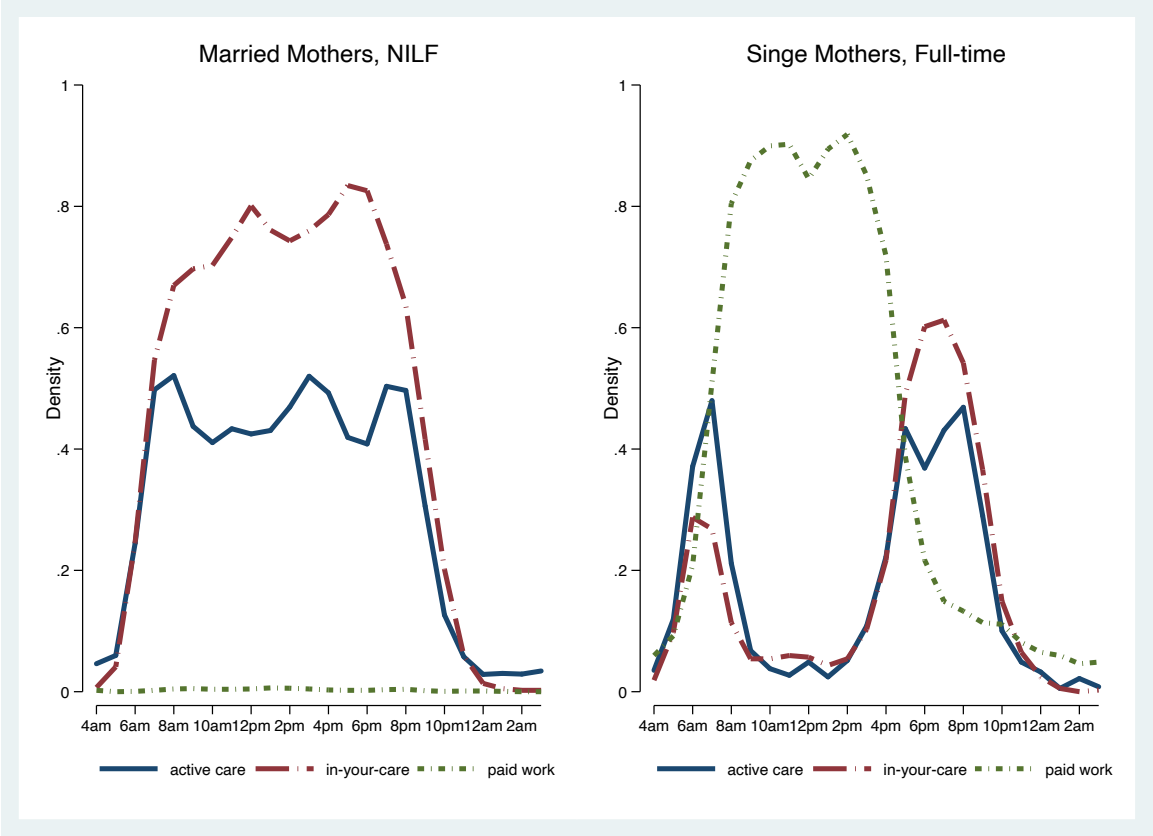
Table 5
Average Maternal Time in Active Childcare and In-your Care, by Employment Characteristics, Mothers in Households with at Least One Child under 13, 2004-2019 (hours per day)

Employment Status	Average active childcare	% Difference from previous row	Average in-your-care time not overlapped with active care	% Difference from previous row
Not in paid labor force	3.13		7.85	
Employed part-time (less than 7 hours on a diary day)	2.50	-20%	5.32	-32%
Employed full-time (7 hours or more on a diary day)	1.52	-39%	2.83	-46%

household adults). Among the married mothers who are not employed both active care and in-your-care time increase sharply in the early morning, level off slightly after 8AM and decline around 8 PM. During these twelve hours average in-your-care time consistently exceeds average active childcare time.

Among single mothers with at least one child under 5 who are employed full-time, participation in both types of childcare drops sharply after 8 AM and begins to rise around 2 PM, in a mirror image of participation in employment. Apparently, many single mothers working hours or more arrange to end paid employment in the early afternoon. Between about 4 PM and 7 PM both types of care increase sharply, in-your-care more than active care.

Figure 1.
Percentage of Mothers Not in Labor Force (NILF) and Single Mothers Employed Full Time with at Least One Child Under 5 Participating in Employment, Active Childcare and In-Your-Care on Diary Day



Multivariate analysis offers a more complete picture of the relationship between maternal employment, active childcare, and in-your-care time. Table 6 presents Seemingly Unrelated Regression (SUR) results for two dependent variables: maternal time devoted to active care and to in-your-care time on the diary day. The most striking result emerges from comparison of relationships between minutes of paid employment on the diary day and the two categories of childcare, both of which are statistically significant. An additional minute of paid employment is associated with a much larger reduction of in-your-care time than active care, -.48 compared to -.18. We regard the absolute reduction as more relevant indicator of the relevance of non-parental childcare than the percentage reduction.

Table 6. *Seemingly Unrelated Regression (SUR) Analysis of Relationships Between Active Childcare, In-Your-Care Time, and Paid Work Minutes on Diary Day for Mothers in Households with at Least One Child Under 13, ATUS 2004-2019 (minutes per day)*

Variables	Active Childcare		In-Your-Care	
	Coefficient	Standard Error	Coefficient	Standard Error
Paid work (Minutes on diary day)	-0.18***	(0.00)	-0.48***	(0.01)
Age	0.88	(0.60)	1.69	(1.00)
Age squared	-0.03***	(0.01)	-0.02	(0.01)
Married	3.67*	(1.71)	36.72***	(2.86)
Race (base: White Non-Hispanic)				
Black, non-Hispanic	-27.65***	(2.20)	-19.93***	(3.67)
Hispanic	-21.65***	(1.86)	19.25***	(3.09)
Other, non-Hispanic	-5.69*	(2.64)	4.15	(4.41)
Education (Base: Less than High school)				
High school graduate	13.36***	(2.40)	-9.12*	(4.00)
Some college	16.44***	(2.50)	-17.54***	(4.16)
College or more	39.70***	(2.67)	-23.141***	(4.45)
CPS-adjusted household income (Base: Below 25% of median)				
Household income 25-50% of median	0.77	(1.83)	3.91	(3.05)
Household income 50-75% of median	5.57**	(2.08)	0.08	(3.46)
Household income 75% or more of median	11.43***	(2.32)	-15.79***	(3.87)
Metropolitan residence	10.89***	(1.75)	-14.89***	(2.93)
Number of children 0-4	27.95***	(0.92)	18.33***	(1.53)
Number of children 5-12	0.18	(1.00)	2.57	(1.67)
Additional adult (other than spouse)	-5.24***	(1.36)	-13.66***	(2.26)
Weekend	-69.91***	(1.52)	103.84***	(2.54)
Months (Base: September)				
January	-11.69***	(3.15)	19.79***	(5.25)
February	-7.68*	(3.31)	0.71	(5.52)
March	-9.64**	(3.27)	1.15	(5.46)
April	-5.03	(3.23)	6.96	(5.37)
May	2.22	(3.19)	8.19	(5.33)
June	-29.45***	(3.27)	42.09***	(5.45)
July	-31.63***	(3.22)	56.12***	(5.37)
August	-22.30***	(3.21)	49.74***	(5.35)
October	-3.59	(3.21)	0.47	(5.36)
November	-5.10	(3.23)	10.99*	(5.39)
December	-22.34***	(3.23)	32.09***	(5.40)
Constant	155.81***	(10.86)	353.43***	(18.11)
N	32619			
R^2	0.22		0.35	

Note: No restriction on the number of household adults is applied. * p<0.05, ** p<0.01, and *** p<0.001

While age effects are small and not generally significant, being married is associated with a large and significant increase in in-your-care time compared to active care (36.72 compared to 3.67). This may be indicative of the greater time constraints facing single mothers as well as the more social character of in-your-care time provided by married mothers. Most coefficients on variables that are indicators of relative economic and social advantage indicate positive and significant relationships with active care, and negative and significant relationships with in-your-care time.

Levels of education are consistently related with higher levels of active care and lower levels of in-your-care time; the effects are greatest for mothers who have graduated from college or more: they spend almost 40 minutes more per day in active childcare than a mother with less than a high school degree, and 23 minutes less in-your-care time. Having a household income in the top quartile is associated with a higher level of active care and a lower level of in-your-care time. Living in a metropolitan area—where women's employment, earnings, and access to childcare are all generally higher—shows a similar contrast. These results are consistent with a high income elasticity of demand for active care (which includes "developmental" care).

Controlling for household income, the effects of race and ethnicity are more ambiguous. Black, non-Hispanic mothers spend relatively less time in active care and in-your-care time than White non-Hispanic mothers, while Hispanic mothers report more in-your-care time. In the next iteration of this paper, we will explore interaction effects in more detail.

Coefficients for household composition have the expected signs and magnitudes. The number of children ages 0-4 is more positively related to both uses of maternal time than the number ages 5-12. The presence of an additional adult (other than spouse) in the household is associated with about 14 fewer minutes of maternal in-your-care time and 5 fewer minutes of

active care. Weekends are associated with a reduction of almost 70 minutes a day in active care and an increase of almost 104 minutes of in-your-care time. Similarly, summer months of school vacation (June, July, and August) are associated with lower levels of daily active care and higher levels of in-your-care time. As participation in childcare and school activities goes down, parents spend less time readying and transporting children but more time supervising them.

CONCLUSION

This analysis of ATUS-based insights into the parenting package shows that trade-offs between parenting and paid employment are much greater for in-your-care time than for active care. It shows that several different dimensions of social and economic advantage, including education, race/ethnicity, metropolitan residence, and household income are associated with significant differences in the ratio of active to in-your-care time. These results are consistent with preliminary assessments of the effect of Covid-19 pandemic, an exogenous shock that increased average provision of in-your-care time relative to active childcare. These patterns are also relevant to consideration of overall care quality, especially since the developmental value of in-your-care and social time with children has often been ignored (Milkie, 2022).

Several caveats are in order. Maternal in-your-care time is an imperfect measure of supervisory constraints; it may not all be socially necessary since another parent or household adult may also present either in the same room or elsewhere in the home. Furthermore, mothers may have options for reducing supervisory responsibilities that they choose not to exercise, because they enjoy having children in their care. Nonetheless, both legal and normative pressures for maternal supervision as well as active care of young children are salient; they help explain slow growth in maternal labor force participation over the past two decades as well as abrupt drops in this participation induced by school and childcare closures (Heggeness, 2021).

More attention should be devoted to the ways in which survey respondents, as well as academic researchers, interpret the difference between active care and in-your-care time. Some activities coded as active care, such as transporting children to childcare or school are not necessarily any more interactive than watching videos together in the same room. Some activities that are not coded as care, such as eating dinner together (whether at a home or restaurant) may involve considerable, if intermittent demands for parental discipline and oversight. Highly educated and affluent parents may be more likely than other parents to label their time with children active care. The developmental value of informal social interaction and co-presence may be underestimated by highly educated and relatively affluent researchers who are unaware of their own biases (Milkie, 2022).

The implications of combining supervisory care with other productive activities clearly require serious consideration. It is efficient for parents to combine supervisory care with more active tasks, or does this combination increase stress and lower productivity? The recent growth in paid work-from-home among many managers and professionals who have increased opportunities to work remotely increases the urgency of this question. Its answer probably depends on the likelihood of being interrupted by young children's frequent demands for short episodes of active care. Current time-diary methods are not well-suited to explore this issue, which require the kind of nuanced qualitative research that could inform improvements in survey design.

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Appendix Table A. Complete American Time Use Survey Codes for Different Types of Time

Categories	Code	ATUS Description
Active Childcare	03-01	Caring For and Helping Household Members: Caring for and helping household children
	03-02	Caring For and Helping Household Members: Activities related to household children's education
	03-03	Caring For and Helping Household Members: Activities related to household children's health
	03-99	Caring For and Helping Household Members: Caring for and helping household members, n.e.c.
	04-01	Caring For and Helping Non-household Members: Caring for and helping non-household children
	04-02	Caring For and Helping Non-household Members: Activities related to non-household children's education
	04-03	Caring For and Helping Non-household Members: Activities related to non-household children's health
	08-01	Professional and Personal Care Services: Childcare services
	16-01-07	Telephone Calls: Telephone calls to/from paid child or adult care providers
	18-03-81	Traveling: Travel related to caring for and helping household children
	18-04-81	Traveling: Travel related to caring for and helping non-household children
In-your-care Time		Yes to questions asking "Were your children under 13 in your care?" TUCC codes under activity file are used for analysis.
Parent-Child Co-Presence		Yes to questions asking "Were you with a child during an activity?" TERRP codes under "Who with" file are used for analysis.

Note: n.e. .

Notes

[1] We are exploring comparisons between the PSID and the ATUS further in a separate paper. Our preliminary empirical analysis confirms the observation made by Insolera et al. concerning comparability of childcare measures.

[2] BLS. 2021. U.S. Bureau of Labor Statistics News Release, American Time Use Survey-May to December 2019 and 2020 Results, accessed online September 19, 2021 at https://www.bls.gov/news.release/pdf/atus.pdf

[3] An analysis of a sequence of small-scale time use surveys in the U.K. that span Covid-19 related shutdowns shows that reported parental time in the presence of children increased significantly with sequestration, while time reported as active childcare actually declined (Foliano and Sullivan 2022).

[4] We exclude data from 2003 because in that year the in-your-care question did not distinguish between household and non-household children. We pool data for the period 2004-2019 in order to ensure a generous sample size both for this analysis and to lay the foundation for more disaggregated future analysis. Average time devoted to active childcare and in-your care time varied relatively little over this period and shows no strong time trend.

[5] Sample size for each year is as follows: 6,328 in 2003, 4,113 in 2004, 4,270 in 2005, 4,232 in 2006, 3,882 in 2007, 3,952 in 2008, 4,031 in 2009, 3,973 in 2010, 3,623 in 2011, 3,588 in 2012, 3,216 in 2013, 3,248 in 2014, 2,991 in 2015, 2,848 in 2016, 2,721 in 2017, 2,445 in 2018, and 2,306 in 2019.