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Time Use of Mothers in the United States

Recent Evidence from the American Time Use Survey

Work-life balance. The time crunch. The second shift. These phrases are mentioned widely in the popular media, but until recently any informative discussion about them was limited because so little was known about time use of parents in the United States. With the inauguration of the annual American Time Use Survey (ATUS) in 2003, we now have insight into how parents actually spend their time. Our focus is particularly on mothers of children age 12 or younger, as they are the most susceptible to time crunch and circus-worthy juggling acts.

We analyze these new time-diary data in our book, *Time Use of Mothers in the United States: Recent Evidence from the American Time Use Survey*, which will be published later this year by the W.E. Upjohn Institute for Employment Research. Although each one of us faces the time constraint imposed by the 24-hour day, mothers face particular time trade-offs when providing care for their children as a part of their daily lives. Knowledge of time use patterns in U.S. households will have important implications for employers, who may better understand the ways in which parents balance work and family, and can inform public policy on a variety of issues such as social security, health care, elder care, tax reform, and educational policy (see, for example, Apps [2005] and Smeeding and Marchand [2004]).

The ATUS Data

ATUS provides large sample sizes and a full set of demographic characteristics, allowing social science researchers a better view of U.S. time use than has ever been available. The ATUS sample is a subsample of individuals taken from the outgoing rotation group of the Current Population Survey (CPS), and thus is a nationally representative sample. The linkage with the CPS provides substantial additional information on respondents and their households. Although sample sizes have been reduced since the 2003 inaugural survey, each year's sample size is substantial and we, like many other researchers, combine years to produce even larger samples. The book analyzes data from 2003 to 2006.

The ATUS survey collects a single 24-hour diary per selected household. A day of the week and an adult (a household member above 15 years of age) are randomly selected per household. Weekend days are oversampled so that approximately one-half of the diary days reflect weekend time use. Activities reported by the individuals in the time-diary surveys are categorized into 17 broad categories containing more than 300 different detailed time categories.

We collapse these detailed categories into five composite categories: 1) Paid work, 2) Child caregiving, 3) Home production, 4) Leisure, and 5) Other. The Other category includes mainly sleeping and personal care but also education and unpaid work investments. We believe that these five aggregate categories are a substantial improvement from the classical labor/leisure dichotomy, as they represent fundamentally different uses of time, each bringing utility and disutility into the time use decision-making process in distinctive ways. Additionally, our empirical work provides further justification for aggregating time in this manner, particularly with respect to characterizing child caregiving as separate from both leisure and home production.

Our book describes in detail the categorization of time into caregiving time because this delineation required

particular thought. We focus our research on primary time use; that is, the activity that the individual reports as the primary one in which she was engaged. However, ATUS permits caregiving to be reported as a secondary activity; for example, perhaps the mother is cleaning the house while also keeping a close eye on her toddler. Additionally, ATUS collects information about who is in the room with the survey respondent, thus permitting even a tertiary form of care to be incorporated in the analyses. In our descriptive look at mothers' caregiving time, we present all three measures of caregiving, but in our multivariate analysis we focus on primary caregiving for simplicity and due to the accounting difficulties that arise in double-counting time.

A Portrait of Mothers' Time Use

In this article we focus simply on a broad overview of weekday versus weekend time use, considering the differences on the diary day between mothers working for pay and those not, and also the differences between married and single mothers. Figures 1 and 2 divide mothers' time into five major activities for weekday and weekend days. First, note that mothers of children under age 13 do appear to sleep more on weekends, supporting the notion that weekends are more restful days for mothers. On weekdays, mothers spend about 10 percent of their time in child caregiving activities, 19 percent in leisure, 14 percent on home production, and 16 percent on employment.

Weekends differ, with work time reduced substantially and leisure time increased. But clearly weekends are also days to be engaged productively in the home: home production time increases from 14 percent on weekdays to 18 percent on weekends. Finally and most importantly, note that primary child caregiving actually decreases on the weekend, despite the fact that children are out of school and most mothers are not working for pay. This is why we consider caregiving reported by the mother as a primary activity: it is possible that on the weekends, because mothers' household production increases, they transfer some caregiving from primary to secondary care and also that fathers and older siblings take responsibility for some of the caregiving time.

Figure 1 Weekday Time Use of Mothers with Children under Age 13

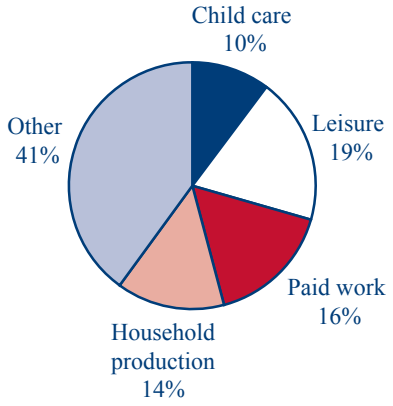
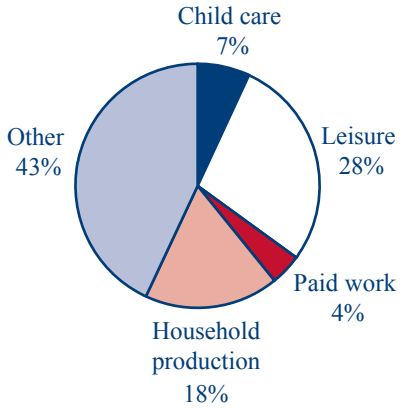


Figure 2 Weekend Time Use of Mothers with Children under Age 13



Turning now to the role that paid work plays in maternal time use, Figures 3 and 4 present the breakdown of time activities just on weekdays for both mothers working for pay and mothers not working for pay. Note that here we are selecting just those employed mothers working eight or more hours on their weekday diary day versus those mothers who report themselves as not employed. Our findings show that time spent in paid employment is associated with a reduction in primary child caregiving time. Full-time employed mothers devote 3 percent of their time to primary caregiving on the typical weekday compared to 9 percent for nonemployed mothers. Additionally, mothers engaged in paid work have substantially less time for leisure as well as less time devoted to the Other category (most notably, sleep).

Married mothers spend more time on child caregiving than single mothers on both weekdays and weekends. This statement is also true when we compare married and single mothers by the age of their youngest child. For example, married mothers of preschoolers spend 196 minutes on caregiving on weekdays and 137 minutes on the weekend. Single mothers of preschoolers spend 165 minutes on caregiving on weekdays and 117 minutes on the weekend.

Our book also provides a comparison between mothers' and fathers' time use. Interestingly, total work (defined as the

Figure 3 Weekday Time Use of Employed Mothers with Children under Age 13 Who Had 8+ Hours of Paid Work on Diary Day

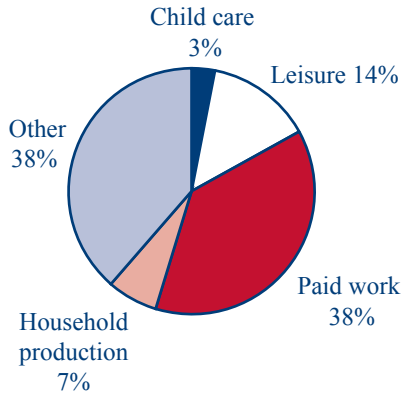
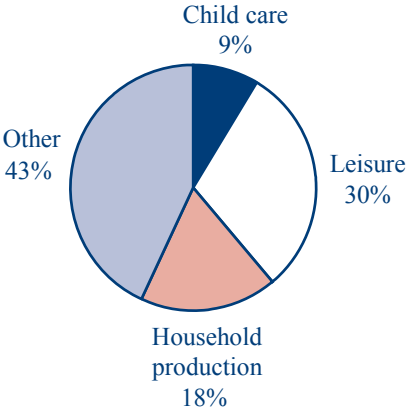


Figure 4 Weekday Time Use of Non-employed Mothers with Children under Age 13



sum of paid work, child care, and home production) is nearly identical across mothers and fathers (see, for example, Burda, Hamermesh, and Weil [2008]).

Multivariate Analyses of the Determinants of Mothers' Caregiving Time

Descriptions of mothers' time use as summarized above are limited by their lack of the imposition of the ceteris paribus assumption common in economics. For an understanding that can lead to prediction, when we note differences between two groups in one specific factor, we want to hold everything else equal in the analysis. For example, perhaps mothers engaged in paid work devote less time to child caregiving only because their children are older. A multivariate statistical strategy can impose this ceteris paribus assumption, leading to more meaningful conclusions regarding time use. Chapters 3, 4, and 5 in the book describe formal economic models and provide evidence using appropriate multiple regression techniques to examine the factors important to maternal time.

In Chapter 3, we begin our rigorous statistical modeling with a focus on mothers' time devoted to four activities: 1) paid work, 2) caregiving, 3) household production, and 4) leisure. The goal of this chapter is to delve further into the nature of child caregiving to determine if it behaves more like household production or leisure. This is important because economic modeling relies on an assumption regarding the source of an activity's utility: is it in the doing of the activity (process utility) or in the outcome of the activity (outcome utility)? Typically, we assume that leisure provides direct process utility while household production provides mostly outcome utility. Where child caregiving lies on this utility spectrum is the empirical question we seek to answer.

Using our multiple regression approach, we examine the importance of economic, demographic, and spatial factors to the mother's choice of four time uses. The economic factors we include are the mother's wage and the price of child care. Demographic factors relating to the individual mother include variables such as age, education, and a set of 0–1 dummy variables indicating race and ethnicity. We also include a variety of demographic factors relating to the mother's family status (most importantly, marital status), the number of children in various age categories, and four spatial controls (urban/south residence, season of time diary, and year of ATUS survey).

Using the resulting coefficients, we estimate market wage and child care price elasticities for each of four general categories of time utilization, thereby providing for both absolute and relative interpretations. A wage elasticity measures the percentage change in minutes arising from a given percentage change in the wage. Our estimated wage elasticities are shown in Figures 5 and 6. Note that the first bar in each of the two figures signifies a hypothetical 10 percent increase in the wage and the following four bars exhibit the corresponding increase or decrease in time uses. For example, as can be seen in the second bar in Figure 5, a 10 percent increase in the wage is associated with a 3 percent increase in child caregiving time.

Overall, we find that all four time uses of mothers are sensitive to wages, ceteris paribus. Most interestingly, we find that higher-wage mothers devote more time to caregiving both on weekdays and weekend days. Additionally, on weekdays, paid work time also responds positively to higher wages, while leisure time and home production time are reduced by higher wages. Full results from the estimation are presented and discussed in the book, providing strong evidence that child caregiving time is distinct from household production and leisure time.

In Chapter 4, we delve deeper into mothers' time use to discern the role that husbands' economic factors play in three aggregate categories of mothers' nonpaid time: 1) caregiving, 2) household production, and 3) leisure. The husband's economic factors we focus on are the relative wage (i.e., the wife's wage relative to the husband's wage), the husband's paid weekly work hours, and the husband's time in the same activity. We propose two different statistical strategies to estimate the value of the husband's time in the same activity, as ATUS provides only one time diary per household. Regardless of the methodology, the primary finding of this chapter is that husbands' economic factors play little if any role in mothers' time use.

In Chapter 3 of the book described above, one of the four aggregate time categories considered was employment time on the diary day. In Chapter 4, employment time again played a role, but it was weekly employment time that was posited to affect the allocation of daily time for child caregiving, home

Figure 5 Weekday Wage Elasticities of Time Use: The Effect of a 10% Increase in Hourly Wage Rate

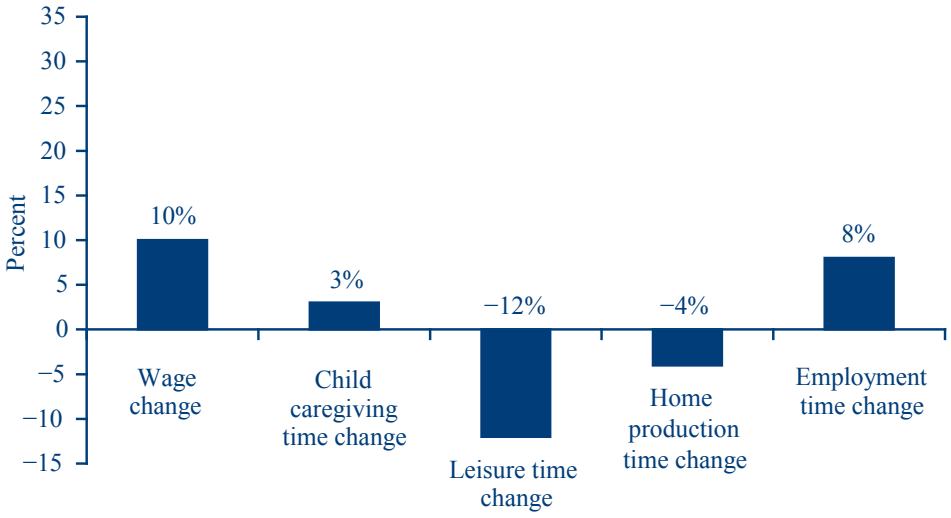
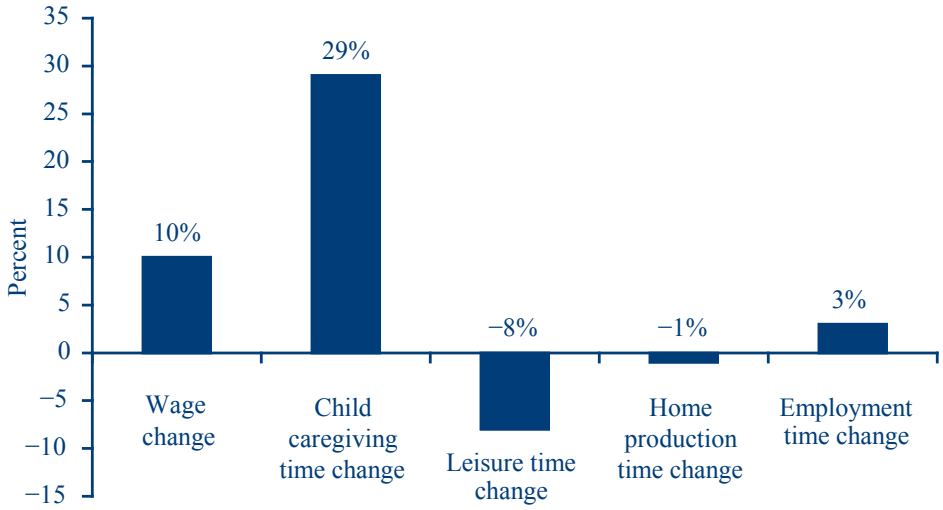


Figure 6 Weekend Wage Elasticities of Time Use: The Effect of a 10% Increase in Hourly Wage Rate



production, and leisure. In the final empirical chapter of the book we think again about employment time's effect on caregiving, but here our concern is how the time of day of paid work affects a mother's allocation of time to child caregiving. Time of day of employment is expected to affect time spent on caregiving because both caregiving and employment have a typical daily time rhythm.

Our descriptive analysis reveals that employed mothers with children under age 13 on weekdays who work any nonstandard hours (hours outside the 8 a.m. to 6 p.m. range) record 31 fewer minutes of caregiving on the diary day, which is accounted for by 9 fewer minutes in the early morning, 12 minutes fewer during the middle of the day, and 11 minutes fewer in the evening. Thus there is not a tremendous difference in time devoted to caregiving between mothers working standard hours and mothers working any nonstandard hours. Our multivariate analysis shows that, in general, demographic differences matter more for mothers who work standard hours only. For example, having young school-age children increases the caregiving time of standard hours working mothers by about 30 minutes but has no effect on the caregiving time of mothers working any nonstandard hours. In addition, the effect of child care prices on caregiving time is significant only for those mothers working standard hours. This makes sense given that most paid child care is available only during standard work hours.

Conclusion

Perhaps the most noteworthy finding of our research to date is the estimated positive relationship between the mother's wage and her primary child caregiving time. As was hypothesized more than 35 years ago by Hill and Stafford (1974), high-wage mothers spend more time with their children due to the investment component of primary caregiving time. Specifically, higher-wage mothers seem to recognize more the value of quality time with children in the development of their personal and human capital, and thus are more willing to make this time sacrifice. In fact, it may not be viewed as a sacrifice at all.

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Notes

1. The ages of the children certainly play a role in mothers' time use and the differences between weekday and weekend time use. This is discussed in detail in the book.
2. In fact, detailed figures from our book suggest that this is, in part, true.
3. See Kimmel and Connelly (2007) for earlier findings from this research, using the 2003 and 2004 ATUS.
4. Note that the mother's wage is instrumented and there are actually two prices of child care, one for care for prekindergarten-age children and one for school-age children.
5. See Connelly and Kimmel (forthcoming).
6. Information for these first two spousal economic factors is available in the CPS data file accompanying the ATUS time-diary data. However, information for the third factor is not available and must be instrumented via complex econometric methodologies.

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