

A Look at the U.S. Welfare Reform Through Time-Use Surveys¹

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Abstract

The passage of the Personal Responsibility and Work Opportunity Reconciliation Act in 1996 marked a significant change in the U.S. welfare system, and many have studied its impacts on welfare caseloads, labor force participation, income and poverty, adult and children well-being, and family structure (Blank, 2002). Time-use surveys have only recently gained importance with the American Time Use Survey (ATUS), a large-sample, year-round, annual survey. This provides a new opportunity to look at the welfare reform, more specifically its impact on the time use of welfare recipients and those who would have been on welfare absent the reform. Only Meyer and Sullivan (2006) have done so using the 1992-1994 National Time-Use Survey and the 2003 ATUS, and they find evidence of an increase in time spent providing child care, associated with declines in non-market work, but not leisure, and a insignificant increase in market work. While Meyer and Sullivan compare single mothers and single mothers with children to married mothers as a way to look at groups likely to be affected by the welfare reform, I use the March Current Population Survey Supplements to fit a model to characterize groups that received welfare assistance prior to the reform. I then assign each individual in the time-use surveys a likelihood of receiving welfare, and use a multiple imputation procedure (Rubin, 1987) to estimate a difference-in-differences model.

I can replicate the Meyer and Sullivan results using the same two surveys, but when I use smaller-scale surveys from the in-between period, a different picture emerges. I now see that market work increased substantially in the late 1990s, but I suspect this is due to the prevailing strong economic conditions. I also do not find evidence of less time spent in non-market work or of more time spent providing child care. It seems as though the increase in time spent working comes primarily from less time in leisure activities, mainly television watching. While I observe more time spent in child care in the ATUS, I also observe an increase in the 1994-1995 EPRI, which renders the overall coefficient on the effect of the welfare reform not significant. This leads me to suspect that if anything, there might be underreporting of child care activities in the NTUS, rather than overreporting in the ATUS, as argued by Egerton et al. (2005) and Aguiar and Hurst (2006). More work is needed to tease out the effect of the economic conditions on the time use of individuals at the bottom of the income and education distribution, more likely to be welfare recipients, and more likely to be affected by the business cycles.

Keywords: welfare reform, time use, ATUS, child care, multiple imputation

JEL code: J22

1 Introduction

In 1996, the United States Congress passed the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), establishing key elements of the welfare reform of the mid 1990s. The Act brought greater program authority to the states, as well as changes in financing—the block grant TANF (Temporary Assistance for Needy Families) replaced the AFDC (Aid to Families with Dependent Children)—and introduced ongoing work requirements, incentives to reduce non-marital births, a five-year maximum time limit, and limits on eligibility for Food Stamps and Supplemental Security Income among certain populations (Blank, 2002). The general idea behind the reform was to give welfare recipients incentives to go back to work, and eventually to get off the welfare rolls. A substantial body of research has been devoted to the study of the welfare reform and its various aspects, documenting among others the sharp fall in welfare receipt and the increase in work.

Up to now however, little has been done to look at the impact of the reform on the way people allocate their time, and more specifically their time outside of the workplace. Given that the bulk of welfare recipients consists of poor single mothers, the changes in time devoted to childcare could influence children well-being, yet little is known about these changes. This is no doubt due to the limited number of large-scale time-use surveys in the United States up to now. A new survey, the American Time Use Survey (ATUS) conducted by the Bureau of Labor Statistics since 2003, fills the void with an annual, year-round, nationally representative survey collecting over 13,000 time diaries each year. This paper combines data from previous smaller-scale time-use surveys conducted by the University of Maryland's Survey Research Center, the National Time Use Survey (NTUS), the Family Interaction, Social Capital, and Trends in Time Use Survey (FISCT),

and the National Survey of Parents (NSP) with the more recent ATUS to track the trends in Americans' time use. Previous work by Aguiar and Hurst (2006) measured the trends in leisure since 1965 for all Americans, but did not focus on the welfare-receiving population. A paper by Meyer and Sullivan (2006) explores the changes in income and consumption before and after the welfare reform using a variety of data sources, including time-use surveys. Meyer and Sullivan used the NTUS and the ATUS as pre- and post-period datasets, respectively, but because the surveys do not contain information on who received welfare, they compare single mothers to single women without children and to married women. They explain that their analysis "focuses on single mother headed families because they constitute a large share of the poor, especially poor children, and because they can be selected based on demographic characteristics rather than being selected on having low values for an outcome of interest, such as income or consumption." They find that "the increase in time spent in market work has been associated with declines in non-market work rather than declines in non-work time. There is evidence of less time spent in food preparation, housework and shopping." Their non-work time category includes child care, and it may be the biggest driver of the increase in non-work time.

My paper improves on Meyer and Sullivan's work by using the Current Population Survey (CPS) March Supplements from the pre-welfare reform period to model the propensity to receive welfare under the old regime, and then estimating a difference-in-differences model to compare the time use of individuals on and off welfare, before and after the reform. A multiple imputation (Rubin, 1987) technique is used to compute the correct standard errors, treating the predicted propensity scores as missing information from the surveys, or non-response. When using the same surveys Meyer and Sullivan used, the NTUS and the ATUS, I ob-

tain similar results, with less time spent in non-market work, more time in child care activities, and an insignificant coefficient for time spent working, whether looking at both sexes together or at women only. Looking at weekdays vs. weekends, I am able to tell that the increase in child care comes from increases over weekdays, and mostly from time spent in basic child care, and to a lesser extent in educational child care, as opposed to recreational child care. The Meyer and Sullivan results break down however when I use additional time-use surveys, smaller-scale surveys conducted between the NTUS and ATUS. Using those, I find an increase in work time for would-be welfare recipients after the reform, mainly driven by an increase in hours worked during the strong economic conditions of the late 1990s. An analysis with CPS data supports this claim. Another interesting result is that there is now no change in non-market work time, and that the increase in time spent in child care is much smaller, and even insignificant for women only. The data show that the increase in time spent providing child care started before the reform, and that if it is due to survey instruments, it would be more because of underreporting in the earlier NTUS rather than because of overreporting in the ATUS.

The remainder of the paper is organized as follows. Section 2 presents the data sources used and some of the data issues that arose during the analysis while Section 3 explains the empirical strategy, including the difference-in-differences and the multiple imputation. Section 4 discusses the findings, and the conclusion appears in Section 5.

2 Data

Five time-use surveys are used in this paper: two phases of the National Time Use Survey (NTUS), the first (and more substantial) wave conducted for the Environmental Protection Agency (EPA) from 1992 to 1994, and the second, conducted for the Electric Power Research Institute (EPRI) in 1994 and 1995; the Family Interaction, Social Capital, and Trends in Time Use (FISCT) survey, in 1998 and 1999, the National Survey of Parents (NSP), in 2000 and 2001, and the American Time Use Survey (ATUS), which started in 2003, and whose 2003 to 2005 data are used here.¹ Table 1 lists these surveys and gives some information about the sample. While the ATUS contains rich and detailed information on demographic and socio-economic indicators, the earlier ones only have more limited information that needs to be worked with. In particular, the NTUS does not contain marital status information, but only variables on household composition that give the number of adults in the household and the age of the youngest kid. Appendix Table A2 contains the summary statistics of the main variables used from the time-use surveys. Note the differences between the NSP and other surveys, the former containing only parents.

The time diaries of the surveys are used to calculate the total number of minutes in a day spent in different time-use categories. The classification used by Aguiar and Hurst (2006) was mostly followed, and Appendix Table A1 shows the different time-use variables and which activities fall into them.² Table 2 and

¹The EPA NTUS data are available on the University of Maryland's Scientific Research on the Internet's website at <http://www.webuse.umd.edu/>. The EPRI NTUS data were kindly provided by Suzanne Bianchi and Sara Raley, and information on the survey can be found in Robinson and Godbey (1999). The FISCT (Robinson, Bianchi and Presser, 2001) and NSP (Bianchi and Robinson, 2005) data are available on the Inter-University Consortium for Political and Social Research's website at <http://www.icpsr.umich.edu/>. The ATUS data are available on the Bureau of Labor Statistics' website at <http://www.bls.gov/tus/>.

²I thank Mark Aguiar and Erik Hurst for making all their codes available on their websites.

Appendix Tables A3, A4, and A5 present the mean time spent in the main time-use activities for the different surveys, first for all days of the week pooled together, and then separately by weekdays and weekends. Once again, the values for the NSP are not quite in line with those from the other surveys, since all respondents are parents. It is important to note that, for all surveys, the activities reported refer to the *primary* activity, that is, the main activity, or the one reported by the respondent. Thus, if somebody is multi-tasking, for example the person is eating in front of the TV, while talking to her spouse and watching over the baby, what will appear in the time-use survey depends on what the respondent mentions as a primary activity—it could be eating, watching TV, child care, or socializing. This poses a problem for the study of certain activities that are more prone to multi-tasking, such as child care and eating. The way different surveys deal with multi-tasking can potentially bias analyses. The only secondary activity collected in the ATUS pertains to child care. Unfortunately, no comparable measures of secondary child care exist in the earlier NTUS, and so the comparison of time spent in secondary child care between the pre- and the post-period is not possible. Additionally, Egerton et al. (2005) and Aguiar and Hurst (2006) document an increase in the reported time in child care between the 1992-1994 NTUS and the 2003 ATUS, arguing that part of the increase might be due to an under-sampling of households with children in the NTUS, or to a change in the coding of activities. Whatever the reason, because my analysis depends on a difference-in-differences framework, my results will only suffer from this possible bias if it affects differentially the population who receives welfare benefits and the one that does not. I will however argue that I too suspect underreporting of child care activities in the NTUS.

The Current Population Survey (CPS) March Supplements, known as the An-

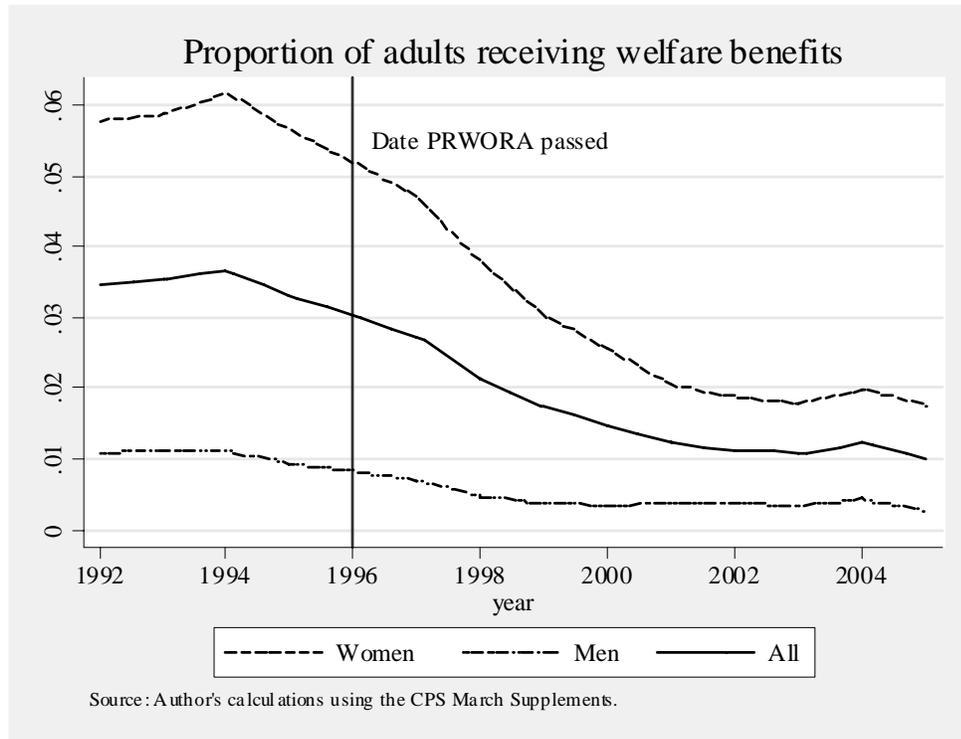


Figure 1: Welfare rolls declined sharply in the 1990s

nual Demographic Files until 2002 and as the Annual Social and Economic Supplement since 2003, are used to model the propensity to receive welfare benefits.³ The Supplements from 1992 to 1995 inclusively are used as the pre-welfare reform data. The welfare recipients are identified as individuals reporting an income from public assistance or welfare. Figure 1 shows the sharp decline of the welfare rolls in the 1990s.

The peak in welfare receipts was in 1994, with just over 6% of women receiving welfare, and just over 1% of men. The mid- to late 1990s saw a big decline in the proportion of adults on the rolls, stabilizing around 2001-2002 to just under 2% for women, and 0.3% for men, cutting the rolls to a third of their 1994 size. Overall, the proportion went from 3.7% in 1994 to 1% in 2005. While the PRWORA

³The data can be downloaded on the NBER's Data Collection webpage at <http://www.nber.org/data/current-population-survey-data.html>.

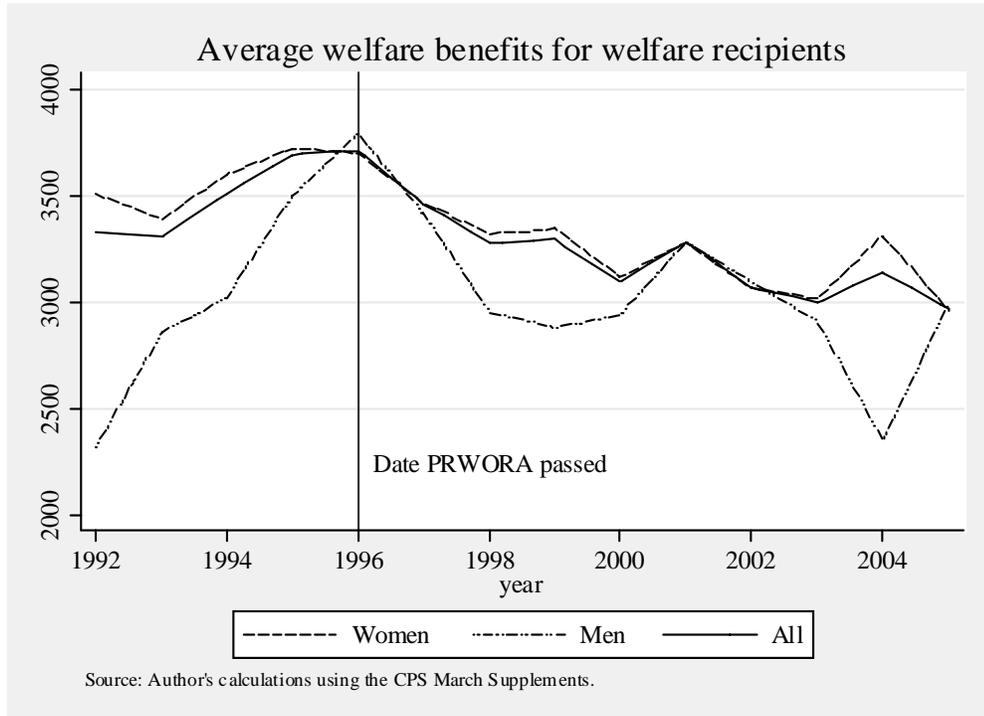


Figure 2: Average welfare benefits peaked in 1996

was only passed in 1996, some of the decline actually started before that date. The welfare rolls fluctuate with the economy, and many states had implemented various waiver programs.

The average welfare benefits peaked in 1996, as shown in Figure 2. They declined from a peak of about \$3,700 for women (slightly more for men) to just under \$3,000 for both men and women in 2005.

3 Empirical Strategy

To look at the impact of the welfare reform, I want to compare welfare recipients from the pre-period to individuals who would have been welfare recipients absent the reform in the post-period. Ideally, I would take a difference-in-differences

approach like this:

$$time_i = \alpha + X_i'\beta + \gamma_1 TREAT + \gamma_2 POST + \gamma_3 TREAT * POST + \varepsilon_i, \quad (1)$$

where γ_3 is the main parameter of interest. The main problem here is about the identification of the treatment: I do not know who in the pre-period dataset received welfare, and I know even less in the post-period who would have received welfare. What can be done to get around the problem is to use the CPS Supplements to model the propensity to receive welfare. I run the following probit regression (with omitted groups being males, whites, high school graduates, and one adult in the household) on the pre-period data (before 1996):

$$\Pr(\text{receiving_welfare}) = \Phi(\beta_p' \mathbf{X}) \quad (2)$$

The results are presented in Table 3. Throughout my analysis, I restrict the sample to individuals aged 18 to 59. I also look at both sexes pooled, and at women only.⁴ As can be expected, being female, black, single, with children, and of low education greatly increases the propensity to receive welfare benefits. The $\hat{\beta}_p$ estimated are used to construct propensity scores for each individual in the time-use surveys, which will serve as the treatment indicator, or propensity of treatment. Because I use a propensity score in my difference-in-differences regression, and not an actual indicator of treatment, additional variation is introduced due to the fact that the values of the score used are not observed, but rather estimated and drawn from a sampling distribution. In order to take into account the

⁴I looked at men separately too, but no interesting differences were found, and unsurprisingly much fewer men are found to be likely to receive benefits, so the results are not reported. Women comprise the majority of welfare recipients, so the analysis focuses on women, and women vs. a comparison group including men.

extra variance that the process brings, a Rubin multiple imputation procedure is used (Rubin, 1987). Once the probit modeling the propensity to receive welfare is estimated, and $\hat{\beta}_p$ and $Var(\hat{\beta}_p)$ are obtained, multiple datasets are constructed, drawing m vectors of β_p from a normal distribution $N(\hat{\beta}_p, Var(\hat{\beta}_p))$, where m is the number of repetitions used. Estimated propensities, or \hat{p} , are computed as $\hat{p}_m = \Phi(\hat{\beta}'_{pm}\mathbf{X})$. Then, the difference-in-differences equations are estimated by ordinary least squares, using the sampling weights, and equation 1 becomes Specification I:

$$time_{im} = \alpha + X'_i\beta + \gamma_1\hat{p}_m + \gamma_2POST + \gamma_3\hat{p}_m * POST + \varepsilon_i \quad (3)$$

Following Rubin (1987), the results from each imputation are combined using the following formulæ, valid for each coefficient but presented here for the coefficient of interest, γ_3 . The estimate of γ_3 is the average of the estimated $\hat{\gamma}_3$:

$$\bar{\gamma}_{3m} = \sum_{l=1}^m \hat{\gamma}_{3*l}/m \quad (4)$$

The variance comes from two parts: first the average of the analytic variances, denoted \bar{U}_m , and second the variance between the estimates, or added variance due to imputation, denoted by B_m . They are computed and combined into the total variance, T_m , using the following formulæ:

$$\bar{U}_m = \sum_{l=1}^m \bar{U}_{*l}/m \quad (5)$$

$$B_m = \sum_{l=1}^m (\hat{\gamma}_{3*l} - \bar{\gamma}_{3m})' (\hat{\gamma}_{3*l} - \bar{\gamma}_{3m}) / (m - 1) \quad (6)$$

$$T_m = \bar{U}_m + \left(1 + \frac{1}{m}\right) B_m \quad (7)$$

To evaluate the extent to which the multiple imputation affects the variability of the results, the relative increase in variance r_m can be calculated as follows:

$$r_m = \left(1 + \frac{1}{m}\right) B_m / \bar{U}_m \quad (8)$$

The r_m are virtually all around 1%, which shows that the increase in variance due to the multiple imputation is minimal. They will not be reported. The following section contains the findings of this study.

4 Findings

Before presenting my findings, I would like to remind the reader of what Meyer and Sullivan (2006) found in their study. They present a difference-in-differences result, comparing the mean time spent in various time uses between the NTUS (1992-1994) and the ATUS (2003), between single mothers and single women without children, and as a comparison, between single women and married mothers. They do not introduce covariates, and they look at hours per week spent (as do Aguiar and Hurst (2006)), which is basically taking the results in minutes, dividing by 60 and multiplying by 7. The only significant changes present evidence of less time spent in non-market work activities, driven by less time shopping and obtaining goods and services, and more time in child care. The coefficients on market work are positive, meaning more work is done after the reform, but the standard errors are too large to reject that they are not equal to zero. The first model I estimate uses only data from the NTUS and ATUS, making it directly comparable with the Meyer and Sullivan model. I run equation 3 using multiple

imputation with 10 repetitions. The results for $\hat{\gamma}_1$, $\hat{\gamma}_2$, and $\hat{\gamma}_3$ are presented in Table 4, on the left for both sexes pooled, and on the right for women only.⁵ The $\hat{\gamma}_3$ coefficients tell us that, post-reform, individuals that were more likely to receive welfare in the pre-period appear to spend significantly less time in non-market work (79 fewer minutes per day, 64 for women), more time in education (34 minutes), less time in leisure (59 minutes for both sexes, mostly driven by the 66 minute drop in TV time; 35 fewer minutes for women, with a 51-minute drop in television watching), less time in religious and civic activities (22 fewer minutes per day, 41 for women), and more time in child care (up to 97 more minutes for both sexes, and 69 minutes for women). The change in market work time is positive, but not significant.

In Table 5, the same results are broken down by weekdays vs. weekends. Only the two time categories that exhibit a change are presented, eating, sleeping and personal care, and child care activities. The $\hat{\gamma}_3$ on sleeping changes dramatically between weekdays and weekends, going from -30 minutes to 138 minutes, driving the similar change in the overall coefficient on eating, sleeping, and personal care. The results for child care show that the 97-minute increase for all days of the week can be decomposed in a 133-minute increase over weekdays and a 14-minute insignificant increase on weekends. Moreover, most of the change comes from an increase in basic child care (feeding, changing diapers), followed by a smaller increase in educational child care. If anything, there appears to be a decline in recreational child care, especially over the weekends (a significant 38 fewer minutes).

⁵In this table, and Tables 5 through 9, each variable represents a separate regression, estimated 10 times according to the multiple imputation procedure. Because total time in a day is fixed at 1,440 minutes, adding up the coefficients in each column (apart for TV which is accounted for in leisure time) gives you zero.

Now using the extra time-use datasets that Meyer and Sullivan did not use, namely the EPRI from 1994 and 1995, the FISCT from 1998 and 1999, and the NSP from 1999 and 2000 (again, see Table 1 for a description of the surveys), I can further pursue the analysis, and ask what happened between the NTUS (1992 to 1994) and the ATUS (2003 to 2005). Two specifications are examined. The first, specification I, corresponds to equation 3, and consists of the same approach as before, but now pooling all the available datasets. The EPRI data are part of the pre-reform, and the FISCT and NSP fall in the post-reform. The second specification allows for a more flexible setup, introducing dummies for each dataset and interactions of the dummies with the \hat{p}_m . The parameters of interest are γ'_3 , γ'_5 , γ'_7 and γ'_9 . The following equation is used to estimate Specification II:

$$time_{im} = \alpha + X'_i\beta + \gamma'_1\hat{p}_m + \gamma'_2EPRI + \gamma'_3\hat{p}_m * EPRI + \gamma'_4FISCT + \gamma'_5\hat{p}_m * FISCT + \gamma'_6NSP + \gamma'_7\hat{p}_m * NSP + \gamma'_8ATUS + \gamma'_9\hat{p}_m * ATUS + \varepsilon_i \quad (9)$$

Tables 6 through 9 present the results from the difference-in-differences estimations from the pooled datasets, with Tables 6 and 7 containing the results for both sexes, and Tables 8 and 9, for women only. In Table 6, $\hat{\gamma}_3$ for time working in Specification I is now 175.3 and significant, compared to an insignificant 26.8 in Table 4. Looking at the γ' s from Specification II, it becomes clear that while time at work has not increased for would-be welfare recipients in the ATUS (coefficient of 3.1, largely insignificant), there is a sharp increase in the 1998-1999 FISCT, and a more modest one in the 1999-2000 NSP. Similar results, while a bit more modest, can be seen for women only in Table 8. Why would the increase be so large in 1998-2000, yet drop afterwards? One likely answer comes from looking at



Figure 3: Unemployment peaked in 1992 and dropped until 2001

the business cycles and the economic conditions of the time. Figure 3 shows how the unemployment rate for the civilian labor force has fluctuated since 1990.

The unemployment rate peaked at above 7.5% during the 1992 recession, then steadily dropped during the expansion time of the late 1990s until the end of 2000, to a low of under 4%, to go back to 6% in 2003, and then back down. The omitted year in both Specifications I and II is 1992, so clearly the baseline was a time of high unemployment and gloomy conditions. The welfare recipients, individuals at the bottom of the distribution in terms of education and wages, are more likely to be affected by the changing economic conditions, so it is therefore unsurprising to see that their time spent at work varies with the business cycles. I can compare the results I find with calculations made using the Current Population Survey, which contains information on hours worked per week. Specifications I and II are

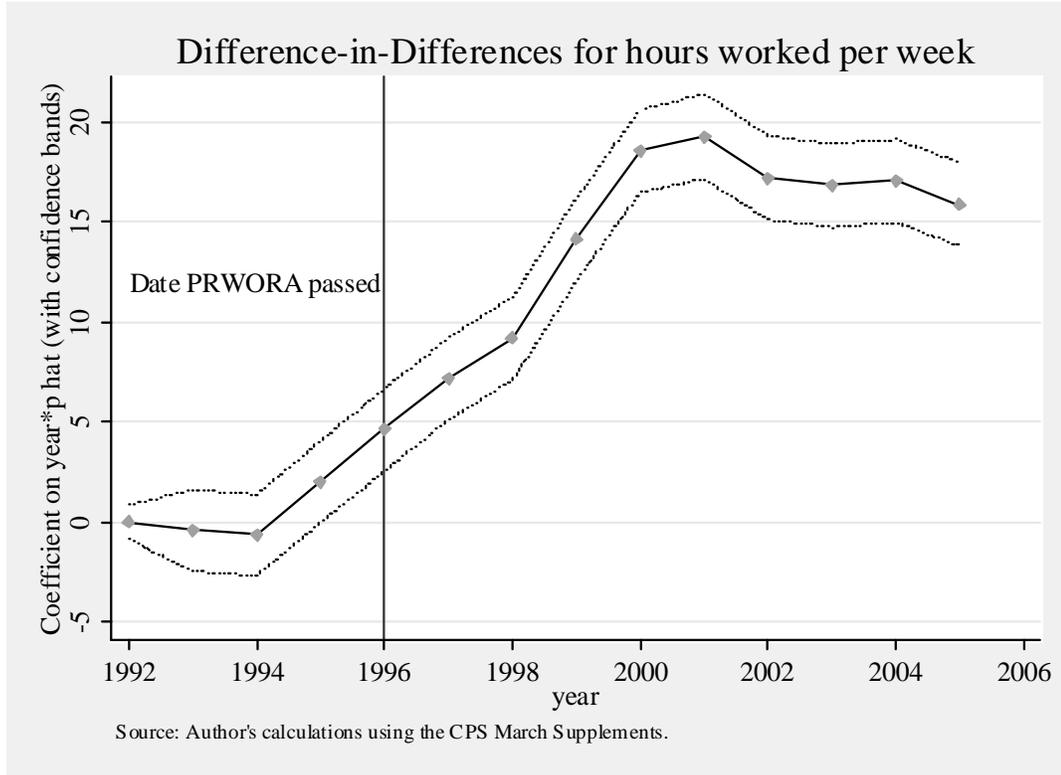


Figure 4: CPS data show an increase in hours worked per week for would-be welfare recipients

estimated using the CPS March Supplements. The coefficient on the interaction of $\hat{p}_m * POST$, $\hat{\gamma}_3$, is a highly significant 13.9 hours per week (11.6 when looking at women only), which corresponds to 119 minutes per day, slightly lower but comparable to the 175 minutes from Table 6. Figure 4 graphs the coefficients on the year dummies interacted with \hat{p}_m , with 1992 taken as a baseline. Until 1995, I can not reject that the coefficients are different from 0 (from 1992), but in 1996 and after, the coefficients are increasing and significant. In fact, Figure 4 mirrors quite well Figure 3, the unemployment rate.

Moving on to other time uses, Table 6 also shows us that now non-market work does not increase (coefficient of 12 extra minutes, but not significant), but that leisure still sees a significant drop (again driven by less TV time), as well as

less time in eating, sleeping, and personal care. The coefficient on child care is still significantly positive, but the effect is more than halved, going from 96.8 to 45.2. Looking at the results for Specification II, we can see that γ'_3 , γ'_5 , γ'_7 and γ'_9 are all significantly positive, which leads me to think that it might not be so much that the ATUS overreports time spent in child care, but rather that the NTUS *underreported* it, at least for people at the bottom of the income and education distributions. Egerton et al. (2005) and Aguiar and Hurst (2006) also argue that the NTUS might underreport child care activities. Even in the EPRI (1994 and 1995) likely welfare recipients spend 75 extra minutes in child care compared to the 1992 to 1994 NTUS. The effect of the welfare reform on time working and in child care is larger on weekdays than on weekends, as the coefficients of Table 7 show. Once again, the increase in weekday child care comes primarily from extra basic child care, and to a lesser extent from some more educational child care. Recreational child care did not move much, and if anything, it decreased over weekends. The weekend coefficients on child care are not significant, but now the ones on eating, sleeping, and personal care are, and show an marked increase in time spent in those activities, largely driven by time spent sleeping.

Tables 8 and 9 present the results from the same regressions, but this time done for women only, which is my preferred specification. The effect of the welfare reform on time at work is now clear: $\hat{\gamma}_3$ in Table 8 is a significant 161.5, driven by the changes in the FISCT and the NSP data, that is, the good economic conditions. As in the analysis for both sexes together, the effect is stronger over the weekdays, when we see a marked decrease in time spent in leisure as well. Contrary to Meyer and Sullivan (2006) however, I find that non-market work does not change much after the reform. The overall coefficient is 4.4 and is not significant. The weekend coefficient for non-market work is marginally significant,

for an increase of 67.5 minutes, but note that this is mainly from the increase in the FISCT, not the ATUS. Another large contrast with Meyer and Sullivan is with time spent providing child care. When I look at women only, the 45-minute increase in child care seen in Table 6 becomes an insignificant 15.5. Even broken down by weekdays vs. weekends, the $\hat{\gamma}_3$ on child care are still not significant. What happens is that again, the individual coefficients for each of the surveys may be positive and significant, but that also includes γ'_3 , the one for EPRI, *before* the welfare reform was implemented. That again leads me to think that either child care did not change because of the welfare reform, or that the NTUS underreports time spent in child care activities, especially in basic child care. Why the NTUS would do that and not the subsequent surveys like the EPRI (which was NTUS Phase II) and the FISCT is not clear, but may be due to an undersampling of household with children, a conclusion argued in Egerton et al. (2005) and Aguiar and Hurst (2006).

5 Conclusion

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 marked the passage of the welfare reform, bringing changes to how the federal and state governments deal with aid to needy families. The PRWORA provided an impetus pushing welfare recipients off of the welfare rolls, and hopefully into the workplace. This study set out to look at the impact of the welfare reform on the way people allocate their time, more specifically on how the changes affected the people that were recipients of welfare benefits prior to the reform. To do so, I first use the Current Population Survey (CPS) to model who was likely to receive welfare before 1996, and then I impute scores to individuals in time-use

datasets. Using a multiple imputation procedure (Rubin, 1987), I then estimate a difference-in-differences model to compare the time use of welfare recipients and non-recipients before and after the reform. When I use only the NTUS (from 1992 to 1994) and the ATUS (from 2003 to 2005), I find results similar to what Meyer and Sullivan (2006) found: less time spent in non-market work, more time spent in child care activities, and a positive but insignificant effect on market work.

Apart from using the CPS to model the propensity to receive benefits, another innovation of my study is to include data from three smaller-scale time-use surveys that were conducted between the NTUS and the ATUS. Using these additional data, the results found with the NTUS and ATUS do not hold anymore. I find evidence of more time spent at work, evidence that is corroborated by the CPS data on hours worked per week. However, the pattern of hours worked closely follows the overall unemployment rate, and I am concerned that what I am picking up is more an effect of the economic conditions on the people at the bottom of the income and education distributions, rather than an effect of the welfare reform measures. Needy families are more affected by the cyclical nature of the economy, and because the welfare reform happened during an expansion time, it is unclear what the exact effect of the reform is. A better understanding of how the time use of poor people is affected by the economic conditions is needed if we want to tease out the effect of the welfare reform. Specifically controlling for the unemployment rate prevailing at the time would be an interesting way to look at it.

When looking only at women, I find no evidence of more or less time spent in child care after the welfare reform. I also do not observe a drop in the time spent in non-market activities. It appears that the increase in time spent working is largely balanced by less time in leisure activities, of which watching television is a substantial component. With regards to child care, when an increase is observed,

it is mainly coming from an increase on weekdays, and in basic child care, as opposed to educational or recreational child care. If anything, I find that likely welfare recipients spent less time playing with their children over the weekends. It would be interesting to find out how welfare reform changed day care support; perhaps welfare recipients being pushed to work also need to deploy more resources to take care of their children, thereby reducing the time spent in leisure activities. It is regrettable that earlier time-use surveys do not provide the same wealth of information on child care as the American Time Use Survey does. With data on secondary child care, the ATUS allows researchers to take a more detailed look at parent-child interactions, which often happen while other activities are going on. Earlier data on time-use simply does not contain information on any aspect of multi-tasking. At the present time, only a few years of the ATUS data are available, but as time goes on, studies up to now impossible or hard to devise will become within our reach.

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Table 1
Time-Use Data Sources

Survey and dates of collection	Sample	Total sample size	Analysis sample size
National Time Use Survey (NTUS), Phase I: conducted for the Environmental Protection Agency (EPA), September 1992 to October 1994	Random-digit telephone survey, one adult selected using the "Next Birthday" method—that is, the person whose birthday was the next to be celebrated was chosen as the respondent. Conducted by the University of Maryland's Survey Research Center, using CATI software.	7,514 adults	5,554
National Time Use Survey (NTUS), Phase II: conducted for the Electric Power Research Institute (EPRI), July 1994 to July 1995	Same as NTUS Phase I	1,200 adults	989
Family Interaction, Social Capital, and Trends in Time Use (FISCT), March 1998 to December 1999	Same as NTUS	1,151 adults	879
National Survey of Parents (NSP), May 1999 to June 2000	Same as NTUS	1,199 parents	996
American Time Use Survey (ATUS), January 2003 to December 2005	Households that have completed their final month in sample for the CPS are randomly selected, then one individual aged 15 or above is randomly selected, to whom a day of the week is randomly assigned. Conducted over the phone by the Bureau of Labor Statistics, using CATI software.	20,720 in 2003, 13,973 in 2004, 13,038 in 2005	34,534 in total

Note: All surveys are nationally representative, except for the NSP whose universe is parents living with at least one of their own children under 18.

Table 2**Summary statistics for time-use variables, NTUS and ATUS, by day of the week**

Variable	NTUS			ATUS		
	all days	weekday	weekend	all days	weekday	weekend
Total market work	282.8 (297.1)	355.9 (294.0)	101.1 (215.5)	274.3 (285.6)	346.4 (282.3)	97.0 (204.7)
Total non-market work	150.6 (172.0)	134.2 (162.1)	191.5 (188.6)	150.3 (160.2)	133.4 (149.5)	191.8 (177.2)
Total child care	24.5 (67.0)	26.7 (68.7)	19.0 (62.0)	44.2 (95.0)	46.4 (96.3)	38.9 (91.6)
Basic child care	17.6 (51.0)	19.9 (54.6)	11.8 (40.3)	29.6 (72.6)	31.3 (73.9)	25.2 (68.9)
Educational child care	2.4 (21.1)	2.7 (20.8)	1.8 (21.9)	5.9 (24.2)	6.9 (25.8)	3.6 (19.4)
Recreational child	4.5 (28.3)	4.2 (24.7)	5.4 (35.8)	8.7 (37.5)	8.2 (34.8)	10.2 (43.4)
Education	22.8 (100.7)	27.9 (112.7)	9.9 (59.2)	19.3 (89.5)	23.0 (98.1)	10.4 (62.9)
Total leisure	313.5 (222.0)	273.8 (206.1)	412.4 (229.2)	285.1 (202.7)	251.8 (187.3)	366.7 (215.6)
TV (part of leisure)	145.2 (149.9)	133.4 (140.1)	174.5 (168.5)	139.8 (147.2)	127.5 (136.5)	170.1 (166.7)
Eating	62.9 (54.2)	58.7 (49.2)	73.1 (63.7)	71.1 (60.9)	67.7 (55.0)	79.4 (72.8)
Sleeping	492.6 (123.5)	478.8 (117.1)	527.0 (132.1)	507.6 (135.5)	488.3 (128.5)	554.9 (140.6)
Personal care	66.8 (77.6)	65.2 (72.9)	70.9 (87.9)	42.1 (39.7)	43.0 (38.6)	39.7 (42.2)
Own medical care	2.8 (22.4)	3.3 (24.5)	1.3 (16.0)	7.8 (52.8)	9.0 (55.4)	4.7 (45.8)
Care for others (not	4.7 (34.9)	4.8 (37.1)	4.4 (28.6)	13.3 (54.2)	12.4 (51.7)	15.5 (59.8)
Religious/civic activities	16.0 (63.5)	10.6 (49.8)	29.4 (87.3)	16.4 (63.0)	10.4 (48.4)	31.2 (87.6)
Other	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	8.6 (40.0)	8.2 (39.4)	9.7 (41.5)
N	5,554	3,755	1,799	34,534	17,031	17,503

Note: See Table A1 for a description of the datasets and their acronyms.

Sampling weights used.

Means are in minutes per day. Standard deviations are in parentheses.

Tables A3, A4 and A5 contain the summary statistics for all datasets and activities.

Table 3**Marginal effects from the probit estimating the propensity to receive welfare benefits**

Variable	Marginal effect (dF/dx)	Robust standard error	Mean of x
Panel A: Both sexes (N = 343,069, Pseudo R-squared = 0.3109)			
Age/100	-0.05166	0.00940	36.7
Age squared/10,000	0.02680	0.01310	1471.0
Female	0.00591	0.00061	0.507
Black	0.02373	0.00110	0.122
Asian	0.00658	0.00137	0.030
Other race	0.00930	0.00136	0.014
Hispanic	0.00292	0.00054	0.096
Elementary	0.01959	0.00140	0.048
Some high school	0.01707	0.00089	0.105
Some college	-0.00577	0.00030	0.284
College	-0.01021	0.00032	0.151
More than college	-0.00949	0.00029	0.069
Two adults	-0.02705	0.00071	0.567
Three or more adults	-0.01850	0.00048	0.304
Children present	0.01056	0.00067	0.506
Female*Children present	0.01511	0.00141	0.274
Urban	-0.00159	0.00039	0.789
Panel B: Women only (N = 177,530, Pseudo R-squared = 0.3159)			
Age/100	-0.12005	0.01950	36.8
Age squared/10,000	0.04760	0.02720	1479.8
Black	0.04245	0.00196	0.131
Asian	0.00381	0.00212	0.031
Other race	0.01614	0.00273	0.013
Hispanic	0.00736	0.00115	0.093
Elementary	0.03853	0.00294	0.043
Some high school	0.03311	0.00178	0.103
Some college	-0.01053	0.00060	0.297
College	-0.01895	0.00061	0.147
More than college	-0.01800	0.00054	0.058
Two adults	-0.05295	0.00138	0.571
Three or more adults	-0.03298	0.00085	0.279
Children present	0.03829	0.00098	0.540
Urban	-0.00246	0.00079	0.789

Notes: Omitted groups are males, whites, high school graduates, with one adult in the household.

Calculations are for all individuals aged 18 to 59, inclusively.

State fixed effects are included but the coefficients are not reported.

Calculated using the CPS March Supplements from 1992 to 1995.

Weighted using the March Supplement individual sampling weights.

Table 4
Difference-in-differences estimations results, NTUS and ATUS

Time use variable (minutes per day)	Both sexes (N = 39,751)			Women only (N = 21,976)		
	γ_1 (p hat)	γ_2 (post)	γ_3 (post*p hat)	γ_1 (p hat)	γ_2 (post)	γ_3 (post*p hat)
Work	29.523 (40.773)	-7.096 (2.919)	26.788 (41.815)	-38.280 (38.870)	3.859 (3.852)	15.602 (38.373)
Non-market work	89.974 (24.908)	-2.851 (1.768)	-79.325 (25.319)	110.621 (26.311)	-9.458 (2.575)	-63.733 (25.690)
Education	-64.522 (14.302)	-3.042 (1.033)	34.061 (14.719)	-62.918 (14.108)	-0.770 (1.357)	33.620 (13.627)
Leisure	-32.021 (31.405)	-24.750 (2.264)	-59.419 (32.217)	-20.271 (29.995)	-31.286 (2.934)	-35.509 (29.231)
TV (part of leisure)	49.437 (22.811)	-3.676 (1.633)	-66.314 (23.388)	14.871 (21.781)	-8.050 (2.145)	-50.956 (21.323)
Eating, sleeping, and personal care	-6.300 (22.420)	-0.275 (1.603)	5.248 (23.003)	-14.053 (21.884)	-7.102 (2.176)	26.161 (21.607)
Child care	-55.688 (11.947)	15.940 (0.854)	96.804 (12.283)	-32.352 (14.138)	19.129 (1.384)	69.276 (13.805)
Own medical care	4.038 (6.261)	4.878 (0.456)	-4.779 (6.482)	2.717 (6.616)	5.726 (0.662)	-9.436 (6.565)
Other care	0.878 (7.147)	9.011 (0.519)	-5.339 (7.381)	10.305 (7.304)	7.863 (0.727)	1.881 (7.222)
Civic and religious	36.270 (9.673)	-0.208 (0.702)	-21.658 (10.014)	43.057 (9.512)	2.624 (0.947)	-41.333 (9.397)
Other	-2.153 (4.401)	8.393 (0.321)	7.619 (4.569)	1.174 (4.581)	9.414 (0.459)	3.471 (4.552)

Notes: Standard errors computed using a Rubin (1987) multiple imputation procedure (with 10 repetitions) are in parentheses. Regressions include controls for age, age squared, sex, race and ethnicity, education, household composition, presence of children, urbanicity, state and day of the week.

Table 5**Difference-in-differences estimations results, NTUS and ATUS, weekdays vs. weekends
Eating, sleeping, and personal care, and child care activities**

Time use variable (minutes per day)	Both sexes		
	γ_3	γ_3	γ_3
	(post*p hat)	(post*p hat)	(post*p hat)
	All days	Weekdays	Weekends
Eating, sleeping, and personal care	5.248 (23.003)	-61.267 (31.029)	146.835 (34.700)
Eating	-25.012 (9.114)	-27.715 (11.761)	-21.333 (15.175)
Sleeping	21.394 (20.250)	-29.872 (27.374)	137.581 (30.529)
Personal care	8.866 (9.518)	-3.680 (12.727)	30.586 (14.769)
Total child care	96.804 (12.283)	133.237 (17.327)	14.473 (16.513)
Basic child care	76.407 (9.604)	94.981 (13.691)	36.211 (12.197)
Educational child care	31.952 (3.646)	39.843 (5.291)	16.796 (4.736)
Recreational child care	-11.555 (5.270)	-1.587 (6.814)	-38.533 (8.608)
N	39,571	20,415	19,156

Notes: Standard errors computed using a Rubin (1987) multiple imputation procedure (with 10 repetitions) are in parentheses.

Regressions include controls for age, age squared, sex, race and ethnicity, education, household composition, presence of children, urbanicity, state and day of the week.

Table 6

Difference-in-differences estimations results, all surveys, all days of the week pooled, both sexes

Time use variable (minutes per day)	Spec. I (eq. 3)	Specification II (equation 9)								
	γ_3 (post*p hat)	γ'_1 (p hat)	γ'_2 (epri)	γ'_3 (epri*p hat)	γ'_4 (fisct)	γ'_5 (fisct* p hat)	γ'_6 (nsp)	γ'_7 (nsp*p hat)	γ'_8 (atus)	γ'_9 (atus*p hat)
Work	175.3 (38.9)	102.5 (55.4)	27.8 (4.4)	-31.8 (68.0)	8.6 (4.4)	258.0 (62.4)	36.0 (4.8)	101.9 (56.2)	1.2 (4.5)	3.1 (64.8)
Non-market work	12.5 (23.8)	16.6 (34.7)	-2.2 (2.7)	-10.1 (41.9)	16.2 (2.7)	-51.1 (38.8)	3.8 (3.0)	49.0 (34.7)	-2.7 (2.8)	-56.1 (40.2)
Education	-21.3 (12.7)	-22.9 (18.1)	0.7 (1.4)	20.8 (22.4)	-3.8 (1.4)	-29.0 (20.1)	-3.6 (1.6)	-11.1 (18.2)	-2.0 (1.5)	31.7 (21.1)
Leisure	-119.5 (30.0)	-89.4 (43.1)	-1.6 (3.4)	-79.9 (52.7)	-33.3 (3.4)	-345.0 (48.3)	-35.3 (3.7)	-121.8 (43.4)	-32.7 (3.5)	-57.7 (50.4)
TV (part of leisure)	-58.7 (20.8)	-2.2 (29.9)	-17.4 (2.4)	-64.4 (36.3)	-38.8 (2.4)	-171.7 (33.3)	-30.5 (2.6)	-63.7 (30.2)	-8.7 (2.4)	-67.8 (34.9)
Eating, sleeping and personal care	-61.6 (21.7)	20.8 (30.9)	-31.5 (2.5)	13.2 (37.7)	-1.8 (2.5)	98.7 (35.0)	-35.4 (2.7)	-65.7 (31.3)	-3.1 (2.5)	18.6 (36.3)
Child care	45.2 (12.5)	-90.7 (18.1)	6.6 (1.4)	75.2 (22.1)	16.4 (1.4)	88.9 (20.1)	28.4 (1.6)	56.5 (18.4)	16.1 (1.5)	102.3 (21.1)
Own medical care	-5.1 (6.1)	-9.9 (8.8)	-0.7 (0.7)	23.4 (10.6)	-0.6 (0.7)	-13.6 (9.7)	2.0 (0.8)	19.3 (8.8)	5.0 (0.7)	-5.1 (10.1)
Other care	-9.1 (5.7)	-2.6 (8.1)	3.8 (0.6)	-6.3 (10.0)	-1.5 (0.6)	3.8 (9.0)	3.4 (0.7)	-15.5 (8.2)	9.7 (0.7)	-9.2 (9.5)
Civic and religious	-11.5 (8.9)	76.3 (12.9)	-3.0 (1.0)	-4.2 (15.7)	-0.2 (1.0)	-10.6 (14.5)	0.6 (1.1)	-12.5 (13.1)	0.0 (1.0)	-35.3 (15.1)
Other	-5.0 (2.6)	-0.7 (3.6)	0.0 (0.3)	-0.4 (4.4)	0.0 (0.3)	-0.2 (4.1)	0.1 (0.3)	-0.2 (3.7)	8.4 (0.3)	7.6 (4.3)

Notes: Standard errors computed using a Rubin (1987) multiple imputation procedure (with 10 repetitions) are in parentheses. Regressions include controls for age, age squared, sex, race and ethnicity, education, household composition, presence of children, state and day of the week. Specification I is equation 3 in the text, specification II is equation 9. N = 42,871

Table 7

Difference-in-differences estimations results, all surveys, weekdays vs. weekends, both sexes

Time use variable (minutes per day)	Weekdays, N = 22,767					Weekends, N = 20,104				
	Spec. I	Specification II				Spec. I	Specification II			
	γ_3 (post*p hat)	γ'_3 (epri*p hat)	γ'_5 (fisc*t p hat)	γ'_7 (nsp*p hat)	γ'_9 (atus*p hat)	γ_3 (post*p hat)	γ'_3 (epri*p hat)	γ'_5 (fisc*t p hat)	γ'_7 (nsp*p hat)	γ'_9 (atus*p hat)
Work	264.6 (57.7)	-37.3 (101.3)	372.7 (91.6)	188.0 (84.5)	-3.5 (95.6)	77.1 (42.0)	-82.2 (74.5)	135.0 (70.1)	-17.9 (60.3)	33.6 (71.6)
Non-market work	-21.2 (32.2)	7.4 (56.1)	-136.7 (50.7)	56.5 (47.2)	-49.8 (53.2)	73.4 (36.2)	-6.9 (64.4)	142.0 (59.7)	76.1 (51.8)	-40.1 (61.8)
Education	-60.2 (19.7)	52.0 (34.4)	-68.8 (31.0)	-30.9 (28.7)	34.8 (32.5)	26.3 (10.8)	-8.6 (19.4)	26.0 (18.1)	14.4 (15.8)	8.7 (18.8)
Leisure	-152.7 (40.3)	-95.3 (70.4)	-377.0 (63.9)	-147.7 (59.2)	-65.0 (67.1)	-90.1 (44.6)	-93.0 (79.3)	-377.2 (74.4)	-115.1 (64.6)	-70.6 (76.3)
TV (part of leisure)	-82.7 (28.4)	-14.1 (48.5)	-205.6 (43.9)	-37.0 (40.5)	-73.5 (46.1)	6.6 (31.6)	-200.8 (55.6)	-146.6 (51.7)	-75.7 (45.0)	-77.6 (53.3)
Eating, sleeping and personal care	-97.7 (30.2)	-45.1 (52.0)	43.2 (47.2)	-152.7 (44.1)	-45.1 (49.5)	-6.5 (30.7)	143.7 (55.1)	208.2 (51.1)	75.1 (44.9)	130.6 (52.6)
Child care	71.5 (18.2)	117.1 (31.5)	140.8 (28.5)	84.7 (26.4)	138.9 (29.7)	5.4 (16.2)	15.6 (29.4)	-34.7 (27.1)	28.6 (23.5)	35.4 (28.0)
Own medical care	8.1 (9.8)	8.0 (16.8)	-21.0 (15.1)	37.6 (14.2)	-19.3 (15.9)	-32.1 (5.0)	58.6 (9.0)	-5.6 (8.0)	0.7 (6.9)	19.1 (8.3)
Other care	0.4 (7.5)	-12.1 (13.0)	9.2 (11.8)	-9.4 (10.9)	-5.0 (12.4)	-26.1 (8.7)	2.1 (15.4)	-8.4 (14.3)	-31.3 (12.4)	-18.2 (14.8)
Civic and religious	-9.1 (9.9)	6.1 (17.3)	38.3 (15.7)	-26.3 (14.3)	1.6 (16.3)	-19.7 (17.0)	-30.1 (30.7)	-84.9 (28.5)	-30.3 (24.6)	-95.6 (29.1)
Other	-3.7 (3.6)	-0.6 (6.2)	-0.7 (5.6)	0.1 (5.2)	12.4 (5.9)	-7.7 (3.6)	0.8 (6.4)	-0.2 (6.0)	-0.4 (5.2)	-3.0 (6.2)

Notes: Standard errors computed using a Rubin (1987) multiple imputation procedure (with 10 repetitions) are in parentheses.

Regressions include controls for age, age squared, sex, race and ethnicity, education, household composition, presence of children, state and day of the week. Specification I is equation 3 in the text, specification II is equation 9.

Table 8

Difference-in-differences estimations results, all surveys, all days of the week pooled, women only

Time use variable (minutes per day)	Spec. I (eq. 3)	Specification II (equation 9)								
	γ_3 (post*p hat)	γ'_1 (p hat)	γ'_2 (epri)	γ'_3 (epri*p hat)	γ'_4 (fisct)	γ'_5 (fisct* p hat)	γ'_6 (nsp)	γ'_7 (nsp*p hat)	γ'_8 (atus)	γ'_9 (atus*p hat)
Work	161.5 (36.0)	-44.0 (53.7)	35.9 (5.8)	-53.7 (63.1)	32.2 (5.9)	168.0 (58.0)	34.4 (6.2)	132.8 (52.1)	8.5 (5.9)	30.2 (59.6)
Non-market work	4.4 (25.2)	112.4 (38.2)	-10.1 (4.1)	25.0 (44.2)	0.6 (4.1)	5.7 (40.6)	3.5 (4.4)	20.8 (36.8)	-9.9 (4.1)	-42.0 (42.0)
Education	-42.9 (12.2)	-18.5 (17.9)	-0.4 (2.0)	50.9 (21.2)	-2.9 (2.0)	-32.6 (19.2)	1.3 (2.1)	-25.6 (17.5)	0.6 (2.0)	26.5 (20.0)
Leisure	-103.9 (27.6)	-81.2 (41.0)	-13.9 (4.5)	-69.7 (48.0)	-29.0 (4.5)	-328.0 (44.7)	-39.2 (4.8)	-95.3 (40.0)	-37.7 (4.5)	-49.0 (45.7)
TV (part of leisure)	-67.9 (19.9)	-55.8 (29.9)	-20.7 (3.2)	-51.9 (34.5)	-22.2 (3.2)	-219.5 (31.9)	-39.7 (3.4)	-28.8 (28.3)	-9.0 (3.2)	-48.2 (32.5)
Eating, sleeping and personal care	-7.7 (20.3)	1.0 (30.1)	-18.9 (3.3)	-10.9 (35.4)	-11.2 (3.3)	129.2 (32.2)	-40.9 (3.5)	-29.2 (29.3)	-8.0 (3.3)	37.7 (33.3)
Child care	15.5 (14.2)	-28.1 (20.7)	9.7 (2.3)	40.7 (25.0)	17.4 (2.3)	61.6 (22.3)	35.8 (2.4)	-2.7 (20.3)	19.8 (2.3)	55.2 (23.2)
Own medical care	-7.2 (7.3)	-17.6 (10.8)	-0.3 (1.2)	19.5 (12.6)	-1.3 (1.2)	-14.0 (11.5)	4.8 (1.3)	7.9 (10.6)	5.8 (1.2)	-7.9 (12.0)
Other care	-7.5 (5.3)	2.3 (7.8)	1.4 (0.9)	3.9 (9.3)	-3.3 (0.9)	6.3 (8.4)	1.7 (0.9)	-7.0 (7.7)	8.5 (0.9)	-2.4 (8.8)
Civic and religious	-7.0 (8.4)	73.5 (12.5)	-3.5 (1.4)	-5.1 (14.7)	-2.5 (1.4)	4.6 (13.5)	-1.5 (1.5)	-2.1 (12.3)	2.9 (1.4)	-51.3 (14.0)
Other	-5.3 (2.6)	0.3 (3.8)	0.1 (0.4)	-0.5 (4.5)	0.0 (0.4)	-0.7 (4.1)	0.0 (0.4)	0.4 (3.7)	9.4 (0.4)	3.1 (4.3)

Notes: Standard errors computed using a Rubin (1987) multiple imputation procedure (with 10 repetitions) are in parentheses. Regressions include controls for age, age squared, race and ethnicity, education, household composition, presence of children, state and day of the week. Specification I is equation 3 in the text, specification II is equation 9. N = 23,826

Table 9

Difference-in-differences estimations results, all surveys, weekdays vs. weekends, women only

Time use variable (minutes per day)	Weekdays, N = 12,664					Weekends, N = 11,162				
	Spec. I	Specification II				Spec. I	Specification II			
	γ_3 (post*p hat)	γ'_3 (epri*p hat)	γ'_5 (fisc*t p hat)	γ'_7 (nsp*p hat)	γ'_9 (atus*p hat)	γ_3 (post*p hat)	γ'_3 (epri*p hat)	γ'_5 (fisc*t p hat)	γ'_7 (nsp*p hat)	γ'_9 (atus*p hat)
Work	235.3 (56.0)	-27.7 (97.6)	308.2 (87.1)	192.8 (81.7)	30.2 (91.1)	40.5 (33.4)	-77.1 (59.3)	-50.7 (56.1)	36.2 (48.5)	47.7 (56.7)
Non-market work	-21.1 (35.0)	89.6 (61.4)	-62.6 (54.5)	48.6 (51.1)	-12.9 (56.9)	67.5 (35.7)	-59.1 (63.9)	178.2 (62.0)	32.5 (51.8)	-76.5 (60.7)
Education	-81.7 (19.0)	86.6 (33.0)	-61.3 (29.0)	-44.8 (27.1)	32.7 (30.3)	11.6 (11.7)	-9.0 (21.0)	11.5 (19.8)	-10.9 (17.2)	5.3 (20.1)
Leisure	-137.7 (37.6)	-118.8 (65.2)	-401.4 (58.4)	-110.7 (54.8)	-79.5 (60.7)	-56.5 (40.4)	14.5 (72.0)	-227.5 (68.1)	-61.0 (58.7)	-4.4 (68.3)
TV (part of leisure)	-78.3 (27.7)	-14.2 (47.6)	-225.4 (42.5)	0.9 (39.7)	-55.7 (44.1)	-39.4 (27.9)	-141.3 (49.7)	-254.8 (46.7)	-38.9 (39.9)	-51.3 (46.7)
Eating, sleeping and personal care	-27.3 (28.5)	-91.8 (48.9)	75.6 (44.0)	-96.5 (41.1)	-10.4 (45.7)	27.5 (28.0)	98.4 (50.0)	221.4 (48.1)	42.7 (40.7)	110.5 (47.6)
Child care	30.7 (20.4)	76.4 (35.6)	101.7 (31.6)	13.1 (29.8)	73.6 (33.0)	-7.9 (17.7)	-18.9 (31.6)	-43.1 (29.6)	-12.4 (25.7)	21.3 (30.0)
Own medical care	1.7 (11.7)	1.6 (20.3)	-25.8 (18.1)	21.5 (17.4)	-23.7 (18.9)	-27.5 (5.5)	48.7 (10.0)	-1.7 (8.9)	-1.1 (7.7)	13.7 (9.1)
Other care	7.8 (7.9)	-19.3 (13.8)	9.2 (12.3)	-2.9 (11.6)	-2.3 (12.9)	-40.0 (6.4)	48.0 (11.3)	-2.2 (10.4)	-13.6 (9.0)	-0.2 (10.6)
Civic and religious	-3.3 (8.8)	4.2 (15.4)	57.5 (13.8)	-22.0 (12.8)	-13.6 (14.3)	-8.0 (16.1)	-46.2 (29.2)	-85.9 (28.4)	-12.3 (23.9)	-115.0 (27.7)
Other	-4.4 (3.8)	-0.7 (6.4)	-1.1 (5.7)	0.8 (5.4)	5.8 (6.0)	-7.2 (3.4)	0.8 (6.0)	0.1 (5.7)	-0.1 (4.9)	-2.6 (5.8)

Notes: Standard errors computed using a Rubin (1987) multiple imputation procedure (with 10 repetitions) are in parentheses.

Regressions include controls for age, age squared, race and ethnicity, education, household composition, presence of children, state and day of the week. Specification I is equation 3 in the text, specification II is equation 9.

Table A1**Time Use Classifications (from Aguiar and Hurst (2006), Table A2)**

Time Use Classification	Examples of Activities Included
Core Market Work	Work for pay, main job (including time spent working at home); Work for pay, other jobs
Total Market Work	Core Market Work plus other work related activities such as: Commuting to/from work; Meals/breaks at work; Searching for a job; Applying for unemployment benefits
Core Non-Market Work	Food preparation; Food presentation; Kitchen/food cleanup; Washing/drying clothes; Ironing; Dusting; Vacuuming; Indoor cleaning; Indoor painting; etc.
Shopping/Obtaining Goods and Services	Grocery shopping; Shopping for other goods; Comparison shopping; Clipping coupons; Going to bank; Going to post office; Meeting with lawyer; Going to veterinarian; etc. (excluding any time spent acquiring medical care)
Total Non-Market Work	Core Non-Market Work plus Shopping/Obtaining Goods and Services, plus all other home production including: Vehicle repair; Outdoor repair; Outdoor painting; Yard work; Pet care; Gardening; etc.
Education	Taking classes for degree; Personal interest courses; Homework for coursework; Research for coursework; etc.
Sleeping	Sleeping; Naps
Personal Care	Grooming; Bathing; Sex; Going to the bathroom; etc. (excluding any time spent on own medical care)
Own Medical Care	Visiting doctor's/dentist's office (including time waiting); Dressing wounds; Taking insulin; etc.
Eating	Eating meals at home; Eating meals away from home; etc.
Primary Child Care	Breast feeding; Rocking a child to sleep; General feeding; Changing diapers; Providing medical care to child; Grooming child; etc.
Educational Child Care	Reading to children; Teaching children; Helping children with homework; Attending meetings at a child's school; etc.
Recreational Child Care	Playing games with children; Playing outdoors with children; Attending a child's sporting event or dance recital; Going to the zoo with children, Taking walks with children; etc.
Sports/Exercise	Playing sports; Attending sporting events; Exercise
TV	Watching television
Entertainment (not TV)	Going to movies and theater; Listening to music; Computer use for leisure
Socializing	Attending/hosting social events; Playing games; Telephone calls
Reading	Reading books, magazines; Personal mail; Personal email
Gardening/Pet care	Caring for lawn, garden, houseplants, and pets
Hobbies	Arts and Crafts; Collecting; Playing musical instrument
Religious/Civic Activities	Religious practice/participation; Fraternal organizations; Volunteer work; Union meetings; AA meetings; etc.

Table A2**Summary statistics for demographic and socio-economic variables, by dataset**

Variable mean (st. deviation)	Dataset									
	NTUS		EPRI		FISCT		NSP		ATUS	
Age	36.8	(10.9)	39.0	(12.1)	37.5	(10.9)	36.4	(8.9)	38.5	(11.7)
Female	0.53	(0.50)	0.51	(0.50)	0.53	(0.50)	0.57	(0.50)	0.51	(0.50)
White	0.80	(0.40)	0.83	(0.38)	0.81	(0.39)	0.74	(0.44)	0.82	(0.38)
Black	0.10	(0.29)	0.11	(0.32)	0.12	(0.33)	0.13	(0.34)	0.12	(0.32)
Asian	0.02	(0.15)	0.01	(0.11)	0.01	(0.10)	0.04	(0.21)	0.03	(0.18)
Other race	0.07	(0.26)	0.03	(0.17)	0.04	(0.20)	0.06	(0.24)	0.02	(0.15)
Hispanic	0.09	(0.29)	0.08	(0.27)	0.07	(0.26)	0.14	(0.34)	0.14	(0.35)
Elementary	0.02	(0.12)	0.03	(0.18)	0.03	(0.16)	0.02	(0.14)	0.04	(0.19)
Some high school	0.06	(0.24)	0.13	(0.33)	0.08	(0.27)	0.12	(0.33)	0.09	(0.29)
High school diploma	0.36	(0.48)	0.35	(0.48)	0.35	(0.48)	0.32	(0.47)	0.31	(0.46)
Some college	0.26	(0.44)	0.27	(0.45)	0.29	(0.46)	0.27	(0.44)	0.19	(0.39)
College diploma	0.18	(0.38)	0.15	(0.36)	0.18	(0.38)	0.14	(0.34)	0.28	(0.45)
More than college	0.12	(0.33)	0.07	(0.25)	0.08	(0.27)	0.11	(0.32)	0.09	(0.29)
One adult in household	0.12	(0.32)	0.12	(0.32)	0.13	(0.34)	0.14	(0.34)	0.14	(0.35)
Two adults in household	0.58	(0.49)	0.61	(0.49)	0.56	(0.50)	0.68	(0.47)	0.57	(0.50)
More than two adults	0.30	(0.46)	0.28	(0.45)	0.30	(0.46)	0.18	(0.39)	0.29	(0.45)
Presence of children	0.40	(0.49)	0.49	(0.50)	0.46	(0.50)	1.00	(0.00)	0.48	(0.50)
Married	.	.	0.61	(0.49)	0.61	(0.49)	0.77	(0.42)	0.58	(0.49)
Divorced	.	.	.	.	0.14	(0.34)	0.13	(0.34)	0.12	(0.32)
Single	.	.	.	.	0.23	(0.42)	0.09	(0.28)	0.29	(0.46)
Urban area	0.84	(0.37)	.	.	.	.	.	.	0.81	(0.39)
N	5,554		989		879		996		34,534	

Note: See Table A1 for a description of the datasets and their acronyms.

Table A3**Summary statistics for time-use variables, by dataset, all days of the week pooled**

Variable	Dataset									
	NTUS		EPRI		FISCT		NSP		ATUS	
Total market work	282.8	(297.1)	291.3	(298.2)	295.6	(295.0)	293.0	(298.8)	274.3	(285.6)
Core market work	254.3	(271.8)	261.3	(271.8)	262.8	(269.8)	250.0	(259.4)	248.8	(264.8)
Total non-market work	150.6	(172.0)	156.2	(175.4)	167.6	(166.4)	179.6	(182.1)	150.3	(160.2)
Core non-market work	68.7	(108.9)	71.0	(115.1)	79.0	(107.7)	84.9	(113.6)	65.9	(100.7)
Shopping & obtaining goods and services	45.5	(87.2)	45.3	(86.2)	49.0	(90.8)	57.3	(99.6)	45.1	(79.2)
Total child care	24.5	(67.0)	34.4	(79.8)	44.8	(89.3)	88.5	(113.8)	44.2	(95.0)
Basic child care	17.6	(51.0)	24.3	(63.0)	30.3	(64.9)	63.9	(94.1)	29.6	(72.6)
Educational child care	2.4	(21.1)	3.0	(17.2)	5.8	(30.3)	12.8	(35.1)	5.9	(24.2)
Recreational child care	4.5	(28.3)	7.0	(31.4)	8.7	(34.6)	11.8	(40.4)	8.7	(37.5)
Education	22.8	(100.7)	22.1	(96.8)	17.4	(81.6)	13.0	(68.9)	19.3	(89.5)
Total leisure	313.5	(222.0)	318.3	(230.4)	269.7	(215.6)	256.3	(206.1)	285.1	(202.7)
Watching TV Entertainment (not TV)	145.2	(149.9)	134.8	(159.5)	103.9	(132.6)	110.0	(133.2)	139.8	(147.2)
Sports/exercise	12.8	(56.7)	10.4	(43.6)	17.4	(57.5)	20.1	(60.8)	18.3	(60.0)
Socializing	27.3	(82.0)	37.2	(99.4)	25.0	(67.8)	21.4	(64.0)	21.2	(67.7)
Reading	72.4	(131.5)	84.6	(139.1)	77.5	(129.4)	69.2	(123.1)	67.0	(115.6)
Hobbies	25.3	(61.8)	23.1	(51.1)	18.9	(50.8)	11.5	(33.2)	18.2	(45.9)
Eating	6.1	(38.2)	6.0	(36.2)	7.8	(45.0)	4.9	(32.5)	1.7	(22.3)
Sleeping	62.9	(54.2)	58.9	(54.2)	68.7	(64.2)	55.1	(51.5)	71.1	(60.9)
Personal care	492.6	(123.5)	477.2	(134.3)	476.4	(122.9)	460.0	(123.0)	507.6	(135.5)
Own medical care	66.8	(77.6)	56.3	(57.2)	77.8	(88.6)	65.5	(72.6)	42.1	(39.7)
Care for others (not child)	2.8	(22.4)	3.4	(22.1)	2.1	(12.4)	6.4	(62.5)	7.8	(52.8)
Religious/civic activities	4.7	(34.9)	8.3	(41.8)	3.2	(21.2)	5.0	(31.5)	13.3	(54.2)
Other	16.0	(63.5)	13.6	(52.2)	16.6	(64.6)	17.7	(65.5)	16.4	(63.0)
N	5,554		989		879		996		34,534	

Note: See Table A1 for a description of the datasets and their acronyms.
 Sampling weights used. Means are in minutes per day.
 Standard deviations are in parentheses, to the right of the means.

Table A4
Summary statistics for time-use variables, by dataset, weekdays only

Variable	Dataset									
	NTUS		EPRI		FISCT		NSP		ATUS	
Total market work	355.9	(294.0)	360.0	(294.8)	371.1	(291.2)	377.7	(292.3)	346.4	(282.3)
Core market work	319.4	(269.4)	322.7	(269.8)	331.9	(267.5)	321.5	(254.6)	314.8	(263.0)
Total non-market work	134.2	(162.1)	138.6	(161.2)	145.8	(154.0)	159.4	(177.8)	133.4	(149.5)
Core non-market work	64.3	(102.3)	68.5	(108.5)	72.3	(101.6)	83.1	(113.2)	61.0	(96.4)
Shopping & obtaining goods and services	39.1	(80.3)	42.8	(86.2)	42.2	(85.9)	49.1	(90.1)	38.7	(69.9)
Total child care	26.7	(68.7)	36.3	(80.9)	46.1	(91.6)	98.3	(115.8)	46.4	(96.3)
Basic child care	19.9	(54.6)	27.4	(68.4)	30.9	(67.2)	71.9	(98.6)	31.3	(73.9)
Educational child care	2.7	(20.8)	3.3	(17.6)	6.8	(30.0)	15.2	(37.9)	6.9	(25.8)
Recreational child care	4.2	(24.7)	5.7	(24.5)	8.4	(33.8)	11.2	(35.4)	8.2	(34.8)
Education	27.9	(112.7)	28.0	(111.0)	23.2	(93.8)	13.9	(69.7)	23.0	(98.1)
Total leisure	273.8	(206.1)	277.5	(212.4)	225.3	(194.4)	209.8	(180.2)	251.8	(187.3)
Watching TV Entertainment (not TV)	133.4	(140.1)	121.5	(151.1)	92.2	(128.1)	98.1	(121.4)	127.5	(136.5)
Sports/exercise	9.8	(49.4)	7.1	(33.8)	14.1	(50.6)	17.2	(58.9)	15.7	(54.8)
Socializing	23.0	(72.9)	29.1	(79.4)	20.7	(59.1)	14.1	(45.9)	18.1	(57.6)
Reading	55.6	(111.6)	70.4	(123.6)	57.0	(102.1)	52.5	(103.8)	53.5	(96.5)
Hobbies	23.8	(59.4)	23.0	(50.4)	17.4	(50.3)	9.6	(30.5)	17.2	(42.4)
Eating	6.0	(38.3)	5.3	(35.6)	4.6	(32.7)	3.7	(28.5)	1.7	(21.9)
Sleeping	58.7	(49.2)	59.4	(56.8)	68.7	(66.6)	49.9	(45.5)	67.7	(55.0)
Personal care	478.8	(117.1)	464.6	(124.5)	464.9	(122.3)	445.3	(114.0)	488.3	(128.5)
Own medical care	65.2	(72.9)	56.1	(54.4)	76.7	(93.7)	63.3	(69.3)	43.0	(38.6)
Care for others (not child)	3.3	(24.5)	4.1	(21.8)	2.3	(12.8)	9.0	(74.3)	9.0	(55.4)
Religious/civic activities	4.8	(37.1)	5.1	(25.5)	3.1	(22.3)	5.1	(34.6)	12.4	(51.7)
Other	10.6	(49.8)	10.1	(43.7)	12.7	(55.2)	8.3	(38.3)	10.4	(48.4)
N	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	8.2	(39.4)
	3,755		698		636		700		17,031	

Note: See Table A1 for a description of the datasets and their acronyms.
 Sampling weights used. Means are in minutes per day.
 Standard deviations are in parentheses, to the right of the means.

Table A5
Summary statistics for time-use variables, by dataset, weekends only

Variable	Dataset									
	NTUS		EPRI		FISCT		NSP		ATUS	
Total market work	101.1	(215.5)	120.7	(230.6)	99.9	(199.8)	91.5	(202.3)	97.0	(204.7)
Core market work	92.5	(201.1)	109.0	(210.3)	83.9	(178.1)	79.8	(179.4)	86.4	(188.2)
Total non-market work	191.5	(188.6)	199.9	(200.1)	223.8	(183.6)	227.4	(183.6)	191.8	(177.2)
Core non-market work	79.5	(123.1)	77.1	(129.9)	96.4	(120.6)	89.4	(114.6)	78.0	(109.6)
Shopping & obtaining goods and services	61.5	(100.6)	51.5	(86.2)	66.5	(100.4)	76.9	(116.9)	60.8	(96.5)
Total child care	19.0	(62.0)	29.4	(76.8)	41.5	(83.2)	65.2	(105.4)	38.9	(91.6)
Basic child care	11.8	(40.3)	16.8	(45.9)	28.7	(58.5)	44.9	(79.4)	25.2	(68.9)
Educational child care	1.8	(21.9)	2.3	(16.2)	3.5	(30.9)	7.2	(26.6)	3.6	(19.4)
Recreational child care	5.4	(35.8)	10.3	(44.0)	9.3	(36.7)	13.0	(50.4)	10.2	(43.4)
Education	9.9	(59.2)	7.2	(42.0)	2.6	(27.8)	10.9	(67.2)	10.4	(62.9)
Total leisure	412.4	(229.2)	419.5	(242.2)	384.7	(225.5)	366.8	(221.6)	366.7	(215.6)
Watching TV Entertainment (not TV)	174.5	(168.5)	167.7	(174.8)	134.0	(139.6)	138.4	(154.3)	170.1	(166.7)
Sports/exercise	20.3	(71.2)	18.6	(60.7)	25.8	(72.0)	27.0	(64.6)	24.6	(70.9)
Socializing	37.9	(100.5)	57.3	(135.0)	36.3	(85.4)	38.8	(91.8)	28.6	(87.4)
Reading	114.1	(164.1)	119.8	(166.7)	130.7	(171.1)	109.0	(153.0)	100.3	(147.6)
Hobbies	29.1	(67.5)	23.4	(53.0)	22.6	(52.1)	16.0	(38.6)	20.7	(53.5)
Eating	6.3	(37.9)	7.8	(37.8)	16.0	(66.5)	7.7	(40.5)	1.9	(23.2)
Sleeping	73.1	(63.7)	57.7	(47.1)	68.7	(57.7)	67.6	(61.8)	79.4	(72.8)
Personal care	527.0	(132.1)	508.5	(151.6)	506.3	(119.9)	494.8	(136.1)	554.9	(140.6)
Own medical care	70.9	(87.9)	56.8	(63.7)	80.8	(74.0)	70.9	(79.8)	39.7	(42.2)
Care for others (not child)	1.3	(16.0)	1.7	(22.8)	1.5	(11.4)	0.1	(1.0)	4.7	(45.8)
Religious/civic activities	4.4	(28.6)	16.1	(66.3)	3.6	(18.2)	5.0	(22.3)	15.5	(59.8)
Other	29.4	(87.3)	22.4	(68.1)	26.7	(83.5)	39.9	(101.7)	31.2	(87.6)
N	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	9.7	(41.5)
	1,799		291		243		296		17,503	

Note: See Table A1 for a description of the datasets and their acronyms.
 Sampling weights used. Means are in minutes per day.
 Standard deviations are in parentheses, to the right of the means.