

The Great Recession and Married Parents' Use of Time

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Abstract

This paper describes the time spent by married fathers and mothers in home production and child-care over the period 2003-2011 in the American Time Use Survey ($n = 37,228$). The recession increased the likelihood that fathers participated in both home production and child-care. However, it decreased the amount of fathers' time in home production among participants. This had the overall effect of lowering the amount of fathers' time in home production in the recession by about 35 minutes per week. Fathers who participated in child-care spent the same amount of time doing so before and during the recession. Thus the recession had the overall effect of increasing the amount of time fathers spend in child-care by about 30 minutes per week. The recession did not change the likelihood that mothers participated in home production or child-care, but it decreased the number of minutes spent in home production among mothers who participated at all. The results are not sensitive to the inclusion of family socioeconomic characteristics but they do vary by parents' education level.

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Introduction

The global economic downturn, sparked by bursting of the U.S. housing bubble and the ensuing crisis in the financial sector, produced a lengthy list of casualties. Indeed, scholars have suggested that the “Great Recession” (which officially lasted from December 2007 through June 2009) may have affected more families than any since the Great Depression (Rose & Winship, 2009). Employment levels dropped more severely compared to any other recession in the past 50 years (Greenstone & Looney, 2010). The unemployment rate rose to 10% at the end of 2009, up from 5% in 2007 (Bureau of Labor Statistics, 2011). In 2011, real median household income was 8.1 percent lower than in 2007 (DeNavas-Walt, Proctor, & Smith, 2012). The collapse of the housing market in early 2006 (which preceded the spike in unemployment) led to unprecedented losses in home equity and extremely high rates of foreclosures (Ellen & Dastrup, 2012).

Emerging evidence also suggests that the recession affected family life and health, though the impacts noted thus far are modest in magnitude. The recession altered family structure by lowering the fertility rate and by increasing the share of multigenerational living arrangements (Morgan, Cumberworth, & Wimer, 2011). For 25 to 44 year olds, the recession appears to have induced a modest uptick in the rate of serious psychological distress (Burgard, 2013). Attitudes too have been affected. For instance, the share of Americans lacking confidence in banks and financial institutions increased sharply from 15% in 2006 to almost 45% in 2010 (Kenworthy & Owens, 2011).

Although the Great Recession is officially over, its effects will be felt for years to come. An obvious question of interest is how family life and children’s development will be affected.

However, many such effects may take years to unfold, and only in the long-term may it be possible to understand these potential effects.

The multiplicity of changes in employment, housing, wealth, fertility, living arrangements, psychological distress, and attitudes induced by the Great Recession, however, may have immediate impacts on the organization and patterns of family life, including how parents spend their time at home and with their children. Parental time investments are an important determinant of children's development (Price, 2008). The study of changes in parental time use not only helps us to understand the recession's more immediate effects on the behavior and well-being of households but also offers a window on understanding the potential impacts on children's development that may unfold in the future.

There is ample reason to be concerned about the impact of economic downturns on family life and on parental and child wellbeing. Nevertheless, if the Great Recession induced positive changes in time caring for children or other types of home production, the long-run impacts of the Great Recession on child development could be less concerning for researchers and families in society. This paper relies on data from the American Time Use Survey (ATUS) to answer this question. The ATUS is an annual time use survey that asks thousands of respondents to recall every minute of a single day. Because ATUS data allow us to measure time before the recession and after its onset, it provides a unique opportunity to understand the potential impacts of the Great Recession on parental time use and hence, family life.

Our descriptive analysis presents changes over time in married parents' use of time from 2003-2011. We compare trends for mothers versus fathers in married parent families and focus on time use in home production and child care. Parents' time in home production and child care are the arenas that are likely the most relevant for children's well-being and development. We

focus on mothers and fathers separately as there is reason to suspect that they will respond differently to changing time use opportunities. Moreover, we study *married* mothers and fathers to try to gain some insight into the within-family time use dynamics that may be changing over the business cycle.¹ Our analytic approach decomposes changes in time use into an extensive and an intensive margin.

We find that the recession increased the likelihood that fathers participated in both home production and child-care. However, it decreased the amount of fathers' time in home production among participants. This had the overall effect of lowering the amount of fathers' time in home production in the recession by about 35 minutes per week. Fathers who participated in child-care spent the same amount of time doing so before and during the recession. Thus the recession had the overall effect of increasing the amount of time fathers spend in child-care by about 30 minutes per week. The recession did not change the likelihood that mothers participated in home production or child-care, but it decreased the number of minutes spent in home production among mothers who participated at all. The results are not sensitive to the inclusion of family socioeconomic characteristics but they do vary by parents' education level.

Background

One obvious mechanism through which the recession might affect time use is through the reallocation of an individual's time in the labor market to time in home production and childcare. Two studies examine this phenomenon. Burda and Hamermesh (2010), analyzing pre-recession data from the ATUS and three other countries, found that the unemployed spent almost all of their free time in leisure and personal maintenance and that, in cross-sectional perspective, they do no more home production than their employed counterparts. However, using the 2003-2006 ATUS, the authors found that when unemployment suddenly rose, individuals shifted their time

¹ The limitation of this approach is that married fathers and mothers in the ATUS are not married to one another.

in work for pay to time in household production to a substantial degree. They conclude that roughly 75 percent of foregone market work hours are allocated to home production. Burda and Hamermesh (2010), however, did not distinguish parents from other demographic groups and did not examine time with children, per se. Aguiar, Hurst, and Karabarbounis (2013) adopt a different analytic approach with the ATUS and conclude that only 30 percent of foregone market work hours are allocated to home production and only another 5 percent to increased child-care. Instead, they conclude, the bulk of foregone market work time is allocated to leisure.

Men and women appear to use time during unemployment differently. Theory from sociology and behavioral economics suggests that gender identity shapes these behavior choices. According to these theories, unemployed men are less willing to take on household and childcare activities in order to salve a diminished sense of themselves as economic breadwinners (Akerlof & Kranton, 2000; Bittman, England, Folbre, Sayer, & Matheson, 2003; Brines, 1994; Greenstein, 2000). It is possible that norms of gender identity and caregiving have shifted as ever-increasing numbers of fathers lost jobs during the Great Recession. Unemployed fathers may be more willing to invest in household and childcare activities when more of their peers are also doing so. Aguiar et al. (2013) find that women spend more of their recession-induced reduced market work hours in core home production activities (e.g., cooking, cleaning, laundry) whereas for men a larger fraction of foregone market work hours are allocated to TV watching and education. Aguiar et al. do not explore such differences for mothers and fathers. Pailhe and Solaz (2008), using French time use data, show that unemployed fathers are less likely than unemployed mothers to reallocate time to parental tasks.

Changes in parental time use during the recession need not arise exclusively from changes in parents' own employment experiences. Morrill and Pabilonia (2012) used the ATUS

2003-2010 to show an increase in fathers' time alone with children resulting from higher state-level unemployment rates in the recession. But they could not explain this increase with parents' own employment experiences. Smaller family sizes arising from decreases in fertility might lower the demand for parents' time in home production and thereby increase time with children. Conversely, parents who are worried or distressed as a result of the recession may spend less time in home production or with their children, perhaps because they do not enjoy doing so.

Real or perceived changes in family economic stability or an increased focus on saving could induce families to invest more of their own time in home production (versus paying for someone else to do it). Parents' time with children could rise if lower-cost "family" activities replace potentially more expensive activities that parents or children do alone. These changes need not arise from changes in parents' employment experiences. Morrill and Pabilonia (2012) showed that parents' joint time with their spouse increased sharply at high levels of state unemployment during the recession, lending some support to the idea that "family time" increased in the recession. But again these results are not driven by changes in parents' own employment experiences. Parents in the recession might also decide to increase their enriching time investments in children over concerns about bolstering their children's skills for a more challenging future labor market (Mendenhall, Kalil, Spindel, & Hart, 2008).

Our paper builds on the descriptive results presented in Aguiar et al. (2013) and Morrill and Pabilonia (2012). We add one additional year of data (2011) to their analysis and provide a more detailed descriptive portrait of changing patterns of time use since 2003. We use a sample of respondents that is similar to Morrill and Pabilonia (2012) (i.e., married parents) but, in contrast to that paper, we examine time in home production in addition to time with children.

In contrast to others' analyses of time use and macroeconomic conditions, a novel aspect of our work is our examination of changes in time use arising from changes in the share of mothers or fathers participating at all in these activities or from changes in the intensity of time spent in these activities among those who do any (i.e., the extensive and intensive margins). This is important because the recession could affect one or both of these margins and they could also change in different directions.

Finally, we explore whether the recession affected time use differently for parents with different education levels. More educated parents, compared to their less-educated peers, spend more time with their children (Guryan, Hurst, & Kearney, 2008; Kalil, Ryan, & Corey, 2013) and also have less traditional gender role attitudes. The latter is correlated with higher levels of time on home production for men (Bianchi, Milkie, Sayer, & Robinson, 2000). It is therefore possible that patterns of time use in home production and child care changed differently for these two groups over this period.

Method

Sample

Data for this paper are drawn from the 2003-2011 panels of the American Time Use Survey (ATUS). The ATUS, sponsored by the Bureau of Labor Statistics and conducted by the Census Bureau, is a nationally representative sample of residents at least 15 years of age living in non-institutionalized civilian households. It is the first federally administered, continuous survey on time use in the U.S. and is designed to measure how people allocate their time among daily activities.

Respondents are a stratified random sample of households that have completed the eighth and final month of their interview for the Current Population Survey. The ATUS interviews one

person per household and collects one time diary for that respondent. Respondents describe what they did on their diary day (the day before the interview) beginning at 4:00am and continuing through 4:00am of the interview day. For each activity, the ATUS collects a verbatim description of the activity, as well as information on the location of the activity; also noted is information regarding who was with the respondent when the activity took place. The activities are coded into over 400 detailed activity codes. The ATUS also contains labor force information that is comparable to the CPS, including the respondent's employment status and usual hours worked per week, as well as demographic and household information.

To create the analytic sample, individuals were first selected if they had both a spouse and at least one child under the age of 18 present in the household. Then individuals who were either retired or disabled were removed from the sample. Once missing data on controls and time use are taken into account, the final analysis sample is 37,228 married fathers (n=17,448) and mothers (n=19,780) (not married to each other). Fifty-nine percent of the sample was interviewed in the "pre-recession period" (prior to December 2007).

Dependent Variables

The amount of time spent doing household tasks and with children is obtained from the activity files and is measured continuously in minutes. Household tasks include those that are "interior", "exterior", and "management" derived from the broad household activities category. "Interior" household tasks include minutes spent doing housework (interior cleaning, laundry, sewing, and storing household items); food and drink preparation, presentation, and clean-up; and interior maintenance. "Exterior" household tasks include minutes spent on exterior maintenance and repair; lawn, garden, and houseplants; vehicle repair and maintenance (done by self); and appliances and tools (including set-up, repair, and maintenance by self).

“Management” tasks include general household activities such as financial management, household organization and planning, and home security.

Interactive time with children includes time spent in basic care (physical care, looking after children, and caring for and helping children), play (playing with children-not sports, arts and crafts, and playing sports), teaching (reading to/with children, helping/teaching children-not related to education, activities related to children’s education, talking/listening to children), and management (attending children’s events, picking-up/dropping-off children, activities related to children’s health, organization/planning, and travel related to caring for/helping children).

Independent Variables

Economic Period. The economic periods represented in the data include both the pre-recession period (January 2003 – November 2007) and the recession/recovery period (December 2007 – December 2011). Our regression analysis includes year fixed effects to account for time use over the nine-year period (2003 is omitted).

Basic controls. All multivariate analyses control for a set of respondent and time diary characteristics. Respondent characteristics include age, race, and educational attainment of the respondent from the Respondent data file. Age is a continuous measure. Race is measured with four mutually exclusive variables indicating whether the respondent is white non-Hispanic, black non-Hispanic, Hispanic, and of other racial group (white is the omitted group). Educational attainment is measured with six variables representing less than a high school diploma, high school diploma, some college, an associates degree, a college degree, and more than a four-year degree (high school diploma is the omitted group). The analyses also control for a set of time diary characteristics of the survey obtained from the Respondent data file. These include dummy

variables for the time diary's completion on a weekend day or a holiday (weekday survey and non-holiday survey are the omitted groups). Finally, survey month indicators are included.

Endogenous regressors. We also estimate a model that includes a set of control variables that may be endogenous to time use including respondent, spouse, and household characteristics. We include the employment status of the husbands and wives obtained from the ATUS Respondent data file. Respondents are categorized as employed full-time, part-time, unemployed, or out of the labor force; spouses are categorized as employed full-time, part-time, unemployed, or employed but hours employed vary between full-time and part-time. Household characteristics include the household income as well as information on children in the household. Household income is collected in the CPS dataset and is a categorical variable representing the combined income of all family members over the last 12 months. We collapse this into a dichotomous variable representing whether or not the total family income is less than the 2000 median household income for a married couple family (\$59,343). We also include information on the number of children in the household between birth and age five, between six and ten, and over 11; as well as a continuous variable representing the age of the youngest child in the household. The purpose of running this regression is to see whether any effect of the recession on parents' time use can be explained by characteristics we can observe in the data that may themselves arise from the recession, including own and spouse's employment, family income, and number of children.

Subgroup tests. We estimate a model to test the sensitivity of our main findings to the educational attainment of the respondent. Specifically, we test the main analysis for respondents at two different levels of education: college graduate versus not a college graduate.

Regression Analyses

Our regression model is designed to understand differences in time use over time. To do this, we use a zero-inflated negative binomial regression (ZINB), a joint model that has a two-part likelihood and estimates two regressions; namely (1) a binary model (logit) to estimate the likelihood of not participating in the activity and, (2) a count model (negative binomial) to model the number of minutes spent in the activity. The binary model assumes that the zero outcome (zero minutes in a specific activity) is due to two possible processes: that the respondent never does the activity, in which case the only possible outcome is a zero; or that the respondent simply did not do the activity on the day they were interviewed.

This modeling strategy is preferred to ordinary least squares (OLS), which does not account for the censoring in time use data (the high number of zeroes). Further, ZINB is preferred to the Tobit model, which, while it does account for censoring, assumes that there is a latent variable (desired time use) underlying the observed dependent variable (actual time use). In a Tobit model this latent variable could take on a value less than zero, which is impossible with respect to time use.

The ZINB models were run using STATA 12 MP. Our tables present coefficients from the two components of the ZINB: the logit model representing the extensive margin and the negative binomial model representing the intensive margin.

We also present these coefficients in figures that highlight three measures that can be calculated following the ZINB estimation. First, we present the likelihood a respondent does not take part in an activity at all, calculated from the logistic component of the ZINB [$\text{prob}(\text{zero})$]. Next, we present the predicted number of minutes spent doing the activity, among those who did it at all; this is calculated from the negative binomial component of the regression as [$\text{expected}(\text{count})$]. Finally, we present the combination of both regressions that represents the

average number of minutes weighted by the probability of doing the activity. This latter information is computed as follows: $[1 - p(\text{zero})] * \text{expected}(\text{count})$ where $p(\text{zero})$ is the probability that the respondent does not do the activity from the logit and $\text{expected}(\text{count})$ is the expected number of minutes from the negative binomial. To calculate these three measures we use the MARGINS command in STATA.

Results

Sample Description

Table 1 presents weighted descriptive statistics for father and mother respondents separately. On average fathers are 40 years old and mothers are 38. The majority of the sample is white and has more than a high school diploma. The majority of fathers (both father respondents and spouses of mother respondents) are employed full-time, and most of the households have incomes above the median. The average age of the youngest child in the household is almost seven, and most time diaries were administered during the week.

Table 2 presents the weighted averages of the two time use categories, for fathers and mothers separately and by economic period. For parsimony in this table we collapse the years into two economic periods: pre-recession and recession. The top panel shows the percentage of parents in each period who reported doing the activity at all. The middle panel reports the average duration in minutes of the activity, including those with zeroes. Finally, the bottom panel of Table 2 shows the unadjusted amount of time spent in various activities (in minutes) only for those who reported doing the activity.

Most fathers and mothers spend at least some time in household activities and with children, although mothers are much more likely than fathers to spend any time in these activities. The share of fathers who spends any time in household activities and child care is

slightly higher during the recession, whereas the share of mothers who does so is constant over time. The middle and bottom panels of Table 2 present the average number of minutes spent in household activities and with children (unconditional and conditional respectively). Although mothers spend more time in each of these activities compared to fathers, the direction of change during the recession goes in the opposite direction for fathers versus mothers.

Regression Analyses

Tables 3 and 4 present the results from the ZINB regressions (for fathers and mothers respectively). Results in the extensive margin column represent the coefficients from the logit component of the ZINB whereas the intensive margin column represents the negative binomial component. Recall here that our analytic approach is to include a series of year dummies with 2003 omitted. Thus, each year dummy represents a value relative to 2003.

First, we see that fathers in 2010 are more likely to participate in home production (at all) than were fathers in 2003. However, of those fathers who participate in any home production, the number of minutes they participate in all years in the recession period (2007-2009) is on average less than comparable fathers who participated in 2003. In other words, the recession appears to have induced the “marginal father” to spend some time (versus no time) but did not induce high time use fathers to participate nor did it increase the average amount of time spent among those who would spend any time at all. The models including the endogenous controls illustrate the same relationships suggesting a limited role of these controls in explaining the results. This suggests that the results are not being driven by the respondents’ own employment status or that of his/her spouse or family income or size.

Second, the recession years (2007-2011) also had the effect of increasing the probability that fathers spend at least some time in childcare. In this case, “recession year”

fathers who spend any time at all in childcare do not differ in the number of minutes they spend relative to comparable fathers in the pre-recession period.

Figures 1 and 2 present regression-adjusted probabilities and minutes over time that are calculated following the ZINB analysis and that represent the “average” father in the data (40 years old, white, high school education, time diary conducted on a weekday and non-holiday). Figure 1 shows the predicted probability that the respondent does the activity [1-probability(zero)] and illustrates the increasing likelihood of fathers’ participation in the recession years. Figure 2 shows the predicted number of minutes spent doing the activity among those who did it at all (conditional) and the predicted minutes (average) spent in each of the years weighted by the probability of spending any time in that activity. Here, we see that the average time spent by fathers in household activities is lower in the recession years than in the pre-recession years. Specifically, fathers’ average time in housework dropped about 5 minutes per day from 2006 to 2009. However, as noted in Table 2, this result is driven by two phenomena that operate in opposing directions. This fact illustrates the importance of showing the changes in time use along both the extensive and intensive margins.

Figures 3 and 4 present the predicted estimates for father’s time with children. Unlike household activities, the recession had the effect of increasing the total average number of minutes fathers spent on childcare. Specifically, fathers’ average time in childcare increased by about 4 minutes per day from 2006 to 2009. As noted, this effect was driven entirely by an increase in the number of fathers who spent any time at all in childcare.

The results for mothers take on a different pattern. First, the recession did not change the probability a mother does any household chores, but it decreased the number of minutes spent on household chores among those who did any. Although the fathers and mothers are not married to

each other in this sample, these findings suggest that mothers may have decreased the amount of time they spent in household activities in the recession as more fathers started spending at least some time in such activities.

The recession also had very little effect on the likelihood of mothers' spending any time with children or on the amount of time spent among those who did any. However, as Table 4 shows, the year 2011 appears to be an outlier in this pattern and could suggest a lagged effect in which mothers in the "post-recession" or "recovery" period are less likely to participate in any childcare in a way that responds to fathers' increasing likelihood of participating in childcare in the recession years. As in the analysis for fathers, the results for mothers are similar across the two different specifications (with and without endogenous regressors).

Subgroup Tests

Table 5 presents the results for fathers stratified by educational attainment. Findings suggest that non-college-educated fathers are driving the increasing participation of fathers in home production in the recession. In contrast, the increased likelihood of spending any time with children in the recession is more pronounced for college-educated fathers. To put these findings for the extensive margin into meaningful terms, Figures 5 and 6 present the predicted probabilities of engaging in the activity by fathers' educational attainment. Figure 5 shows a small but positive change from 2007 to 2010 in the probability of doing household activities for non-college-educated fathers. The 3-percentage point change over these years represents an increase of about 4%. In results not shown but mirroring the pattern for fathers, the diminishing time in home production among mothers is more apparent among less-educated mothers.

In contrast, Figure 6 shows that only college-educated fathers have a higher probability of spending time with children in the recession years whereas less-educated fathers demonstrate a

lower probability of this outcome in the recession years. Specifically, Figure 6 shows a small but positive change from 2007 to 2010 in the probability of spending time with children for college-educated fathers. The 4-percentage point change over these years represents an increase of about 6%.

Conclusion

This paper examined changes in parents' time in home production and child-care time during the period 2003–2011, a period characterized by substantial changes in the macroeconomy. We found changes in time devoted to home production and child-care. These changes were more pronounced for fathers than for mothers and the nature of the change differed by parents' education. The nature of the change further differed between the extensive and intensive time use margin, illustrating the importance of examining both dimensions of time use. However, neither the respondent nor the spouse employment experiences explained the recession-induced changes in parents' time use, a pattern of results similar to the ones report by Morrill and Pabilonia (2012). This suggests that aspects of the recession that are not captured by observable measures of employment status or family income may be driving these results. Unfortunately the ATUS data contain no information on potentially relevant factors such as individual attitudes, perceptions, or expectations.

Fathers who participate in home production in the recession do so at a less intensive level relative to their pre-recession counterparts. This finding was driven by the experiences of less-educated fathers. This may reflect the gender identity theories discussed in Akerlof and Kranton (2000). That is, the recession might have induced the most “reluctant” fathers into this activity, i.e., those less-educated fathers who would have been the least likely to spend time on home production had the recession not induced them into doing so. Although the drop in the average

number of home production minutes per day (5) is not dramatic, the recession can be characterized as having decreased the amount of time that fathers spend in home production, on average, by over half an hour per week. Further, though the mothers and fathers in the ATUS are not married to one another, we see an offsetting pattern of time use in home production for less-educated mothers. As more fathers do some home production, mothers decrease the intensity of their time in home production. Unfortunately we do not know the one-for-one tradeoff between fathers and mothers in the same family.

The increase in father time with children for college-educated fathers suggests a different set of precipitating events. The evidence that highly-educated fathers show a pattern of increased investments in children is consistent with an “investments in the future” perspective. Perhaps anxiety about poor future prospects for their children is the catalyst for increasing fathers’ engagement with their children, especially in a demographic group (the college-educated) that may better understand the relationship between parental time investments and children’s attainments. Although the increase in the number of minutes per day (4) is not especially large itself, the recession can be characterized as having increased the amount of time that fathers spend with children by about half an hour per week.

It is important to bear in mind that these results are for the aggregate populations and thus may mask impacts for families who have actually experienced job losses, foreclosures, income shocks, or other serious recessionary events. Understanding the impacts on parental time at the individual level for families experiencing these events is an important task for future research. Equally important is to understand the welfare implications for children and families of these recession-induced changes in parents’ time use.

Table 1
Weighted Descriptive Statistics of Independent Variables

	Fathers Mean or % (SD)	Mothers Mean or % (SD)
Pre-recession (January 2003- November 2007)	55.21%	55.71%
Recession/Recovery (December 2007-December 2011)	44.79%	44.29%
<u>Basic Controls</u>		
Age	40.43 (9.20)	38.32 (8.88)
White	66.45%	67.65%
Black	7.84%	7.00%
Hispanic	19.04%	18.31%
Other race	6.67%	7.04%
Less than HS	13.05%	11.05%
High School	28.88%	26.84%
Some college	14.82%	15.51%
Associates degree	8.65%	10.51%
College graduate	21.39%	24.59%
More than college	13.20%	11.49%
Holiday	1.80%	1.76%
Weekend	28.68%	28.40%
<u>Endogenous Controls</u>		
Employed fulltime	83.24%	43.22%
Employed parttime	4.41%	19.90%
Employed hours vary	3.77%	2.85%
Unemployed	3.88%	4.59%
OLF	4.63%	29.44%
Spouse employed fulltime	43.13%	80.95%
Spouse employed parttime	18.93%	4.17%
Spouse unemployed	36.07%	10.60%
Spouse employed varied	1.87%	4.29%
Income (<2000 median)	48.98%	49.52%
Number of children in HH (age <=5)	.69 (.82)	.68 (.82)
Number of children in HH (age 6-10)	.56 (.73)	.55 (.73)
Number of children in HH (age >=11)	.72 (.85)	.72 (.85)
Age of youngest child in HH	6.69 (5.28)	6.68 (5.27)
Unweighted n	17,448	19,780

Table 2

Weighted Descriptive Statistics of Time Use by Respondent Gender and Economic Period

	Household Activities		Time with Children	
	<u>Mean or %</u>	<u>SD</u>	<u>Mean or %</u>	<u>SD</u>
<u>Spent any time (Percent non-zero)</u>				
Father pre-recession (Jan 2003-Nov 2007)	67.31%	---	53.26%	---
Father recession (Dec 2007-Dec 2011)	68.83%	---	54.37%	---
Mother pre-recession (Jan 2003-Nov 2007)	92.33%	---	76.62%	---
Mother recession (Dec 2007-Dec 2011)	92.03%	---	76.37%	---
<u>Average duration in minutes (includes zeroes)</u>				
Father pre-recession (Jan 2003-Nov 2007)	80.83	121.60	49.63	85.75
Father recession (Dec 2007-Dec 2011)	82.82	121.39	53.33	91.90
Mother pre-recession (Jan 2003-Nov 2007)	165.99	143.42	104.13	121.66
Mother recession (Dec 2007-Dec 2011)	159.59	141.82	102.28	118.95
<u>Average duration in minutes (conditional on participation)</u>				
Father pre-recession (Jan 2003-Nov 2007)	120.09	131.35	93.18	98.73
Father recession (Dec 2007-Dec 2011)	120.32	129.98	98.07	105.56
Mother pre-recession (Jan 2003-Nov 2007)	179.77	140.71	135.91	122.47
Mother recession (Dec 2007-Dec 2011)	173.41	139.49	133.93	119.53

Table 3
ZINB Regressions for Fathers

	Household Activities				Time with Children			
	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)
2003	---	---	---	---	---	---	---	---
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
2004	-0.039	0.964	-0.025	0.969	-0.047	0.998	-0.021	0.983
	(0.066)	(0.033)	(0.067)	(0.033)	(0.063)	(0.040)	(0.066)	(0.038)
2005	-0.006	0.955	0.001	0.969	-0.046	1.008	-0.065	1.002
	(0.066)	(0.033)	(0.067)	(0.033)	(0.063)	(0.040)	(0.067)	(0.039)
2006	-0.103	0.971	-0.088	0.981	-0.101	0.979	-0.091	0.969
	(0.067)	(0.033)	(0.068)	(0.033)	(0.064)	(0.039)	(0.067)	(0.037)
2007	-0.081	0.929*	-0.068	0.949	-0.160*	0.957	-0.150*	0.954
	(0.068)	(0.032)	(0.069)	(0.033)	(0.065)	(0.039)	(0.068)	(0.037)
2008	-0.105	0.916*	-0.087	0.920*	-0.197**	0.961	-0.167*	0.967
	(0.068)	(0.032)	(0.069)	(0.032)	(0.065)	(0.039)	(0.068)	(0.037)
2009	-0.131	0.896**	-0.114	0.889***	-0.115	1.053	-0.096	1.040
	(0.069)	(0.031)	(0.070)	(0.031)	(0.065)	(0.043)	(0.068)	(0.041)
2010	-0.164*	0.956	-0.172*	0.931*	-0.152*	1.033	-0.146*	1.022
	(0.069)	(0.033)	(0.071)	(0.032)	(0.065)	(0.042)	(0.069)	(0.041)
2011	-0.087	0.967	0.005	0.965	-0.152*	1.001	-0.034	0.966
	(0.070)	(0.035)	(0.074)	(0.035)	(0.067)	(0.042)	(0.073)	(0.040)
Survey month dummies	Y	Y	Y	Y	Y	Y	Y	Y
Basic controls	Y	Y	Y	Y	Y	Y	Y	Y
Endogenous controls	N	N	Y	Y	N	N	Y	Y

Note: *** $p < .001$, ** $p < .01$, * $p < .05$. Logit coefficients are reported for the extensive margin and incidence rate ratios (IRR) are reported for the intensive margins. Basic controls include respondent age, race, education, and time diary characteristics (weekday/weekend and holiday). Endogenous controls include respondent employment, spouse employment, income, and number and age of children in household.

Table 4
ZINB Regressions for Mothers

	<u>Household Activities</u>				<u>Time with Children</u>			
	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)
2003	---	---	---	---	---	---	---	---
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
2004	-0.017	0.991	-0.005	0.991	0.057	1.018	0.076	1.016
	(0.107)	(0.023)	(0.108)	(0.023)	(0.071)	(0.030)	(0.075)	(0.027)
2005	-0.033	0.998	-0.028	0.996	-0.076	0.985	-0.045	0.986
	(0.107)	(0.023)	(0.107)	(0.023)	(0.072)	(0.028)	(0.077)	(0.026)
2006	-0.019	0.988	-0.012	0.990	0.103	0.980	0.131	0.973
	(0.105)	(0.023)	(0.106)	(0.022)	(0.070)	(0.028)	(0.074)	(0.026)
2007	0.030	0.986	0.039	0.992	0.030	1.001	0.067	0.981
	(0.108)	(0.023)	(0.108)	(0.023)	(0.073)	(0.029)	(0.078)	(0.027)
2008	0.121	0.959	0.120	0.973	-0.066	0.969	-0.006	0.998
	(0.105)	(0.023)	(0.106)	(0.023)	(0.073)	(0.028)	(0.078)	(0.027)
2009	-0.023	0.942*	-0.027	0.947*	-0.058	1.003	-0.031	1.019
	(0.109)	(0.022)	(0.110)	(0.022)	(0.073)	(0.029)	(0.079)	(0.028)
2010	0.091	0.955*	0.019	0.952*	0.029	0.985	0.007	0.991
	(0.106)	(0.023)	(0.108)	(0.023)	(0.072)	(0.029)	(0.079)	(0.027)
2011	0.037	0.951*	0.133	0.961	0.113	0.975	0.274**	0.967
	(0.112)	(0.024)	(0.118)	(0.024)	(0.076)	(0.030)	(0.084)	(0.029)
Survey month dummies	Y	Y	Y	Y	Y	Y	Y	Y
Basic controls	Y	Y	Y	Y	Y	Y	Y	Y
Endogenous controls	N	N	Y	Y	N	N	Y	Y
Ln(alpha)	-0.452***		-0.493***		-0.212***		-.373***	
n	19,780		19,780		19,780		19,780	

Note: *** $p < .001$, ** $p < .01$, * $p < .05$. Logit coefficients are reported for the extensive margin and incidence rate ratios (IRR) are reported for the intensive margins. Basic controls include respondent age, race, education, and time diary characteristics (weekday/weekend and holiday). Endogenous controls include respondent employment, spouse employment, income, and number and age of children in household.

Table 5

ZINB Regressions for Fathers; By Educational Attainment

	Household Activities				Time with Children			
	Less than College		College Graduate		Less than College		College Graduate	
	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)	Extensive Pr(Min=0)	Intensive (Min Min>0)
2003	---	---	---	---	---	---	---	---
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
2004	-0.031	0.926	-0.069	1.021	-0.047	-0.091	-0.002	0.959
	(0.083)	(0.043)	(0.110)	(0.051)	(0.063)	(0.079)	(0.103)	(0.053)
2005	0.035	0.979	-0.118	0.929	-0.046	-0.074	-0.036	1.085
	(0.083)	(0.046)	(0.110)	(0.046)	(0.063)	(0.080)	(0.103)	(0.059)
2006	-0.109	0.947	-0.107	1.000	-0.101	-0.096	-0.141	0.984
	(0.085)	(0.044)	(0.109)	(0.050)	(0.064)	(0.081)	(0.103)	(0.053)
2007	-0.031	0.921	-0.171	0.933	-0.160*	-0.260	-0.019	1.004
	(0.086)	(0.044)	(0.113)	(0.047)	(0.065)	(0.082)	(0.104)	(0.056)
2008	-0.069	0.901*	-0.187	0.940	-0.197**	-0.213	-0.201*	0.990
	(0.086)	(0.043)	(0.112)	(0.047)	(0.065)	(0.082)	(0.105)	(0.054)
2009	-0.155	0.836*	-0.131	0.979	-0.115	-0.091	-0.206*	1.107
	(0.089)	(0.040)	(0.111)	(0.049)	(0.065)	(0.083)	(0.105)	(0.060)
2010	-0.176*	0.943	-0.172	0.964	-0.152	-0.138	-0.214*	1.046
	(0.088)	(0.044)	(0.111)	(0.048)	(0.065)	(0.082)	(0.105)	(0.057)
2011	-0.139	0.931	-0.029	1.014	-0.152	-0.152	-0.182	1.016
	(0.090)	(0.045)	(0.114)	(0.053)	(0.067)	(0.085)	(0.109)	(0.057)
Ln(alpha)	-0.008		-0.181***		0.078***		-.133***	
n	10,259		7,189		10,259		7,189	

Note: *** $p < .001$, ** $p < .01$, * $p < .05$. Logit coefficients are reported for the extensive margin and incidence rate ratios (IRR) are reported for the intensive margins. Regressions control for respondent age, race, time diary characteristics (weekday/weekend and holiday), and survey month fixed effects.

Figure 1
Predicted Probability of Doing Housework for Fathers

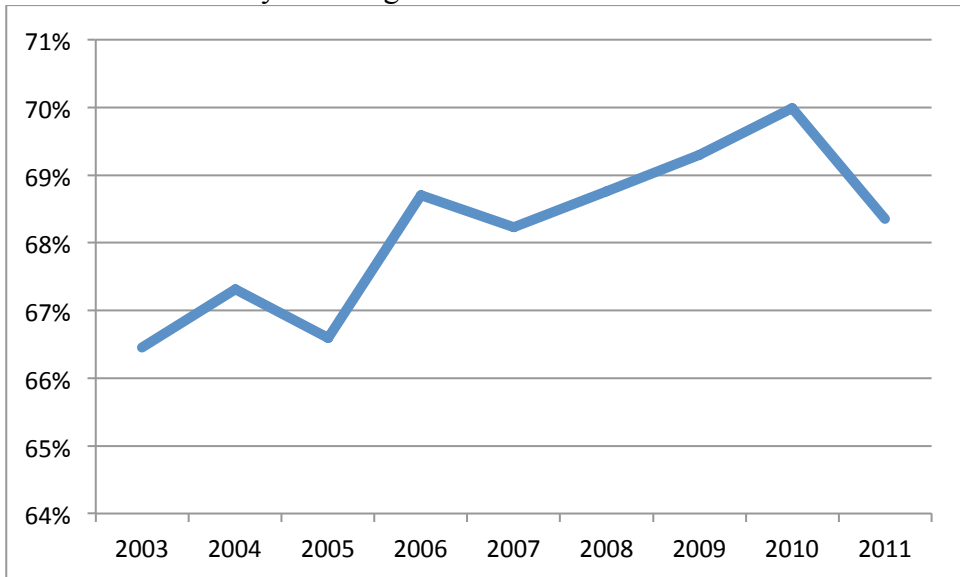


Figure 2
Conditional Minutes and Average Minutes of Housework for Fathers

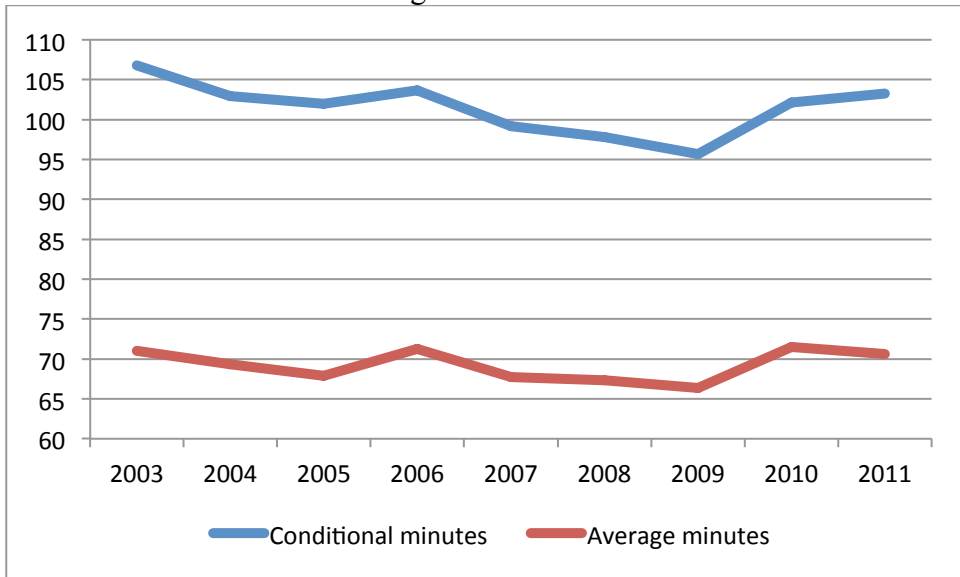


Figure 3
 Predicted Probability of Spending Time with Children for Fathers

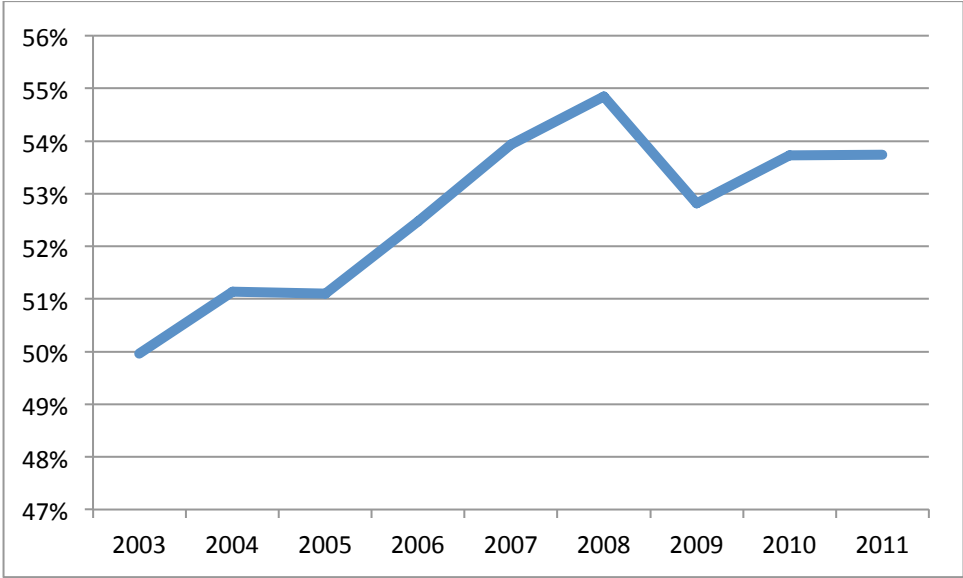


Figure 4
 Conditional Minutes and Average Minutes of Time with Children for Fathers

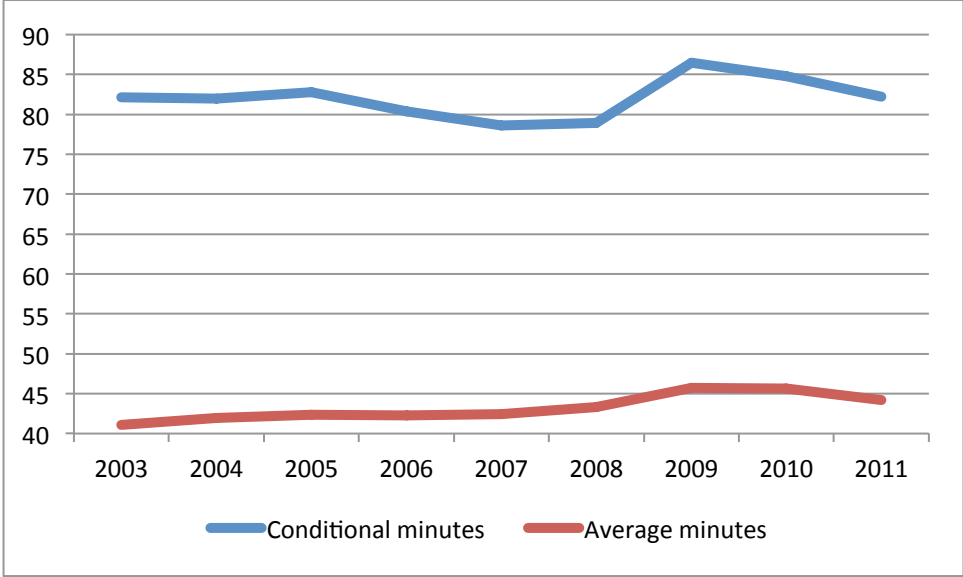


Figure 5
 Predicted Probability of Doing Housework for Fathers by Educational Attainment

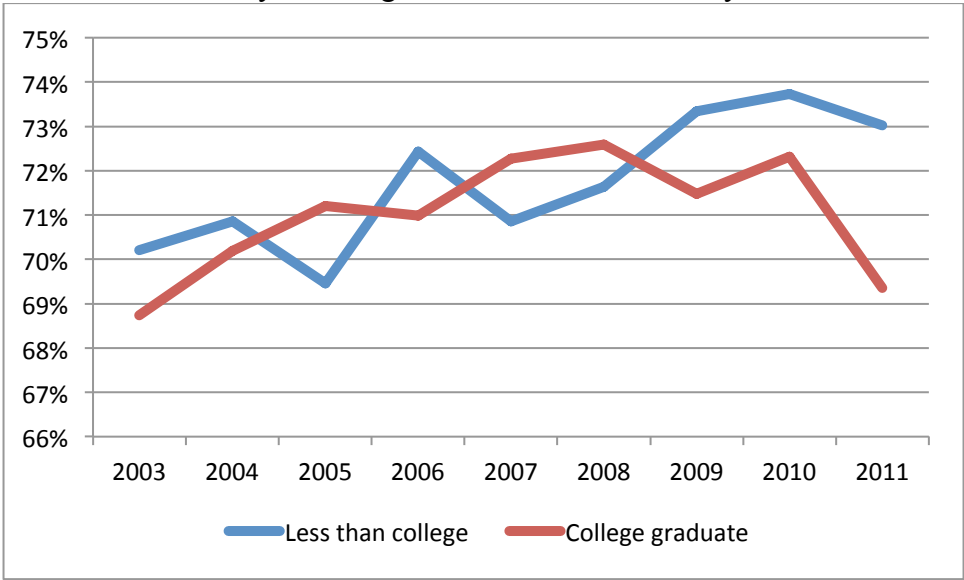
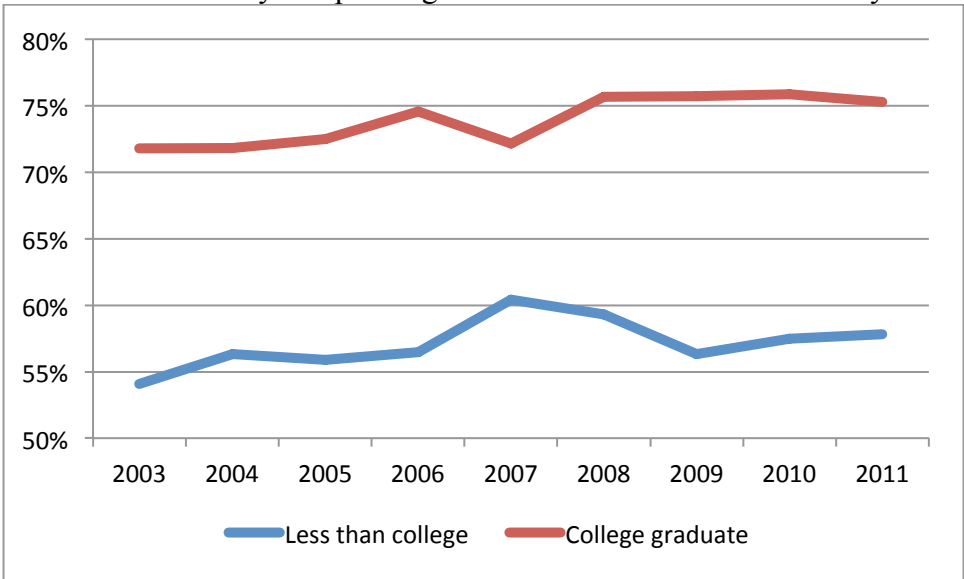


Figure 6
 Predicted Probability of Spending Time with Children for Fathers by Educational Attainment



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