

What explains the rapid increase in childcare time:
A discussion of Gary Ramey and Valerie A. Ramey's "The Rug Rat Race"

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Gary Ramey and Valerie Ramey identify the important fact that time spent in child care, after remaining stable for decades, rose dramatically during the 1990s and reached a plateau in the 2000s. As Ramey and Ramey document, these changes are large by any metric, comparable to the decline in hours worked during the current recession. Moreover, this increase in childcare time was uneven: college-educated mothers' childcare time grew by nine hours per week, while less-educated mothers' time grew by five hours per week.

Ramey and Ramey argue that the only viable explanation for the relative growth among well-educated parents is a college rug rat race. Demographic pressures and increasing returns to higher education in the 1990s squeezed college-educated parents, whose children had in the past been virtually guaranteed a seat at institutions of higher learning. Competition for increasingly scarce slots drove parents to ever higher levels of childcare as they attempt to separate their own children from the pack.

This is a creative explanation that resonates with many contemporary accounts of parenthood and higher education. If correct, the college rug rat race has stark policy implications: the relative growth in childcare time does nothing to improve well being; it is the result of parents hoping to transfer college surplus from other children to their own. This wasteful activity potentially comes at an enormous cost. Ramey and Ramey estimate that the rise in childcare represents \$300 billion in foregone wages.

To assess the social value of this \$300 billion increase in childcare it is useful to consider the types of explanations that might have generated it. We posit three categories of explanations with different implications for social welfare: rug rat races, investment-based, and consumption-

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based. If the explanation for the rise in childcare hours is due exclusively to a rug rat race—which need not necessarily derive from college competition—the additional time spent in childcare is wasteful.² Investment-based explanations suggest that the increase in childcare is generating valuable returns for the next generation. Parents may be increasingly eager to invest in their children because of perceived increases in labor market returns to cognitive and non-cognitive skills. While socially beneficial, investment-based explanations mean that college-educated parent's children, advantaged to begin with, will enjoy even greater levels of human capital than their peers and thus the rising gap in childcare hours by education may portend widening inequality. Consumption explanations are more benign, suggesting that the relative rise in childcare among the well-educated is no more alarming than a relative rise in expenditures on cars or computers would be. Instead, childcare-as-consumption points to other possible causes for the rug rat race, for example changes in the structure of American families and the rise of hedonic marriages (Stevenson and Wolfers, 2007; Stevenson and Wolfers, 2008).

In this discussion, we first offer some comments on Ramey and Ramey's evidence for the rug rat race as a driver of the increase in time spent in childcare. We show that, quantitatively, their evidence suggests the rug rat race can account for at most a modest fraction of the rise in childcare time. We then present evidence on the importance of investment and consumption activities in the rise of childcare time.

Ramey and Ramey present an impressively broad array of evidence for the rug rat race. First, they show that the time series on high school cohort size and college competitiveness, matches the time series on childcare during the 1990s. Second, they point to the large rise in time spent transporting children and caring for older children. Third, they compare trends by race and nationality. Finally, they use cross-sectional evidence from college competitiveness across states to demonstrate that for college-educated mothers spend more time on childcare when college competition is greater.

Taken together this evidence suggests that increases in college competitiveness are playing a role in the rise in childcare, but there are some important caveats to note about their evidence. First, while the childcare and cohort crowding time series match nicely in the 1990s, the two series are negatively correlated between 1965 and 1985, during which time childcare was

² Ramey and Ramey note that parents may under invest in children in the absence of rug rat races if investment in children generates positive externalities. In this case, rug rat races may operate like a Pigouvian tax, correcting the underinvestment, and therefore be socially efficient.

flat and graduation rates rose and then declined. Overall the correlation between the size of the graduating cohort and the difference between childcare time among college-educated and less well-educated mothers during the period Ramey and Ramey are studying is -0.06.

The second piece of evidence concerns relative changes in the components of childcare time, and the importance of time spent in transportation. Ramey and Ramey emphasize that the rug rat race explains the rise in the differential trend between college and less-educated parents, and that an important component of the increase in the differential is “time spend on older children...transporting them to their activities” (p.1). However, we find that the increase in the differential trend occurred more steeply among mothers with young children than mothers without young children and the increase in time spent in transportation occurred nearly equally for college and less-educated parents.

To assess the role of older children and travel time in the rise in the differential trend for educated and less-educated mothers, we re-estimate Ramey and Ramey’s basic regression in two ways. First, we exclude time spent on travel. We plot the college*year interactions estimated from this exercise in figure 1, along with the original coefficients. The two patterns are very similar, and the regression results suggest that travel time may explain around 15 percent of the relative rise. Increases in travel and chauffeuring children constitute about 10 percent of the overall rise in childcare, but this increase in chauffeuring is unlikely to be a direct result of an increase in college competitiveness. In particular, parents chauffeuring children is not directly observable to colleges and parents with a high value of time could simply make other transportation arrangements—hiring a driver or sending their child by taxi. Yet many parents have stated that such outsourcing would generate scowls and disapproval from other parents.³ This social pressure for “home-made” transportation may reflect a “rat race”, but not a college-centric one.

In Figure 2 we re-estimate Ramey and Ramey’s basic regression separately for mothers with children younger than five-years-old and mothers without young children (but with older children in the home). College-educated mothers with young children experienced a much sharper increase in child care time: the educational differential in childcare time rose by 2.25

³ Valerie Ramey argued this during the discussion at Brookings. Judith Warner (2005) has also pointed to how mothers’ judge and ostracize each other.

hours for these mothers compared to 0.02 hours for mothers without young children.⁴ This comparison suggests that college competition may not be responsible for a large share of the rise in childcare time.

Ramey and Ramey's third line of evidence comes from comparing trends in the United States to those seen in Canada and comparing trends in the United States for blacks and whites. Ramey and Ramey show that while there has been a similar upward trend in Canadian parents time spent in childcare among those without a college degree, there has been no increase among college-educated mothers. The Canadian data illustrates robustness of the upward trend in childcare documented by Ramey and Ramey. Canadian parents, like American parents, are now spending several more hours a week interacting with their children. However, the college-gap in childcare is more difficult to interpret. Prior to the rise in childcare in the 1990s, the gap in hours spent in childcare between college and non-college mothers was less than an hour in the United States, while it was over 7 hours in Canada. The gap has since widened in the United States to around 5 hours, while it has fallen in Canada to around 3 hours. Ramey and Ramey point to the fact that the gap widened in the US, but not in Canada as evidence of an increase in college competition in the United States. However, this explanation does little to help us understand why the educational gap shrunk in Canada or why it was so much bigger in Canada to begin with.

Finally, Ramey and Ramey offer evidence for the rug rat race by examining the relationship between state-level college competitiveness and parental childcare time in 2004. It shows, as their model predicts, that well-educated parents provide more child care in more competitive states, but so do less well-educated parents. The coefficients on childcare time are similar for well-educated and less well-educated parents, judging by statistical or economic significance. These findings suggest that college competitiveness does potentially drive parental time in childcare, but they offer inconclusive evidence as to whether college competitiveness impacts college-educated parents' behavior differently.

Their cross-state evidence provides a useful benchmark for assessing the magnitude of the relationship between competitiveness and time spent in childcare. We extend their results to assess how much of an increase in childcare time is implied given the increase in college

⁴ These differentials are the rise in the difference in childcare time for college-educated versus less educated mothers between the periods 1965-1993 and 1995-2007, adjusting for age, for parents with and without young children.

competitiveness that has occurred nationally. Figure 3 replicates Ramey and Ramey's figure 13, with three additional points. The first is the national level of college competitiveness in 2004, which we estimate by taking a population-weighted average of state competitiveness. The second is the national level of college competitiveness in 1992, estimated similarly using state-level data from by Bound, Hershbein, and Long (2009). The third point shows what the level of competitiveness would have had to be in order to explain the difference in childcare time between 1992 and 2004 for college-educated mothers. Bound, Hershbein and Long's index of college competitiveness implies an increase in competitiveness of 0.25 between 1992 and 2004, applying this increase to Ramey and Ramey's cross sectional results implies that college-educated mothers' childcare time should have risen by about half an hour per week.

In sum, the college rug rat race is a potential source of the increase in childcare time both relatively and absolutely, however, it appears able to explain only a modest share of the rise. We now turn to considering investment and consumption based explanations.

Some of the most productive investments parents make in their children occur at young ages, as parents lay the foundation for future learning by inculcating strong habits and cognitive skills in their children. Since parental time is an essential input to these investments, and since the returns to cognitive skills have risen over the 1990s (Cunha and Heckman, 2008), increases in parental investment in children could be an important part of the relative and absolute rise in childcare time.

Indeed, most of the relative increase in childcare time has been concentrated among families with young children, as figure 3 shows. To further investigate time spent on young children, we study trends in breastfeeding, which likely represents an investment and certainly does not contribute (directly) to college success.

In its 1988-1991, 1991-1994, and 2005-2006 waves, the National Health and Nutrition Examination Survey (NHANES) asked respondents about whether the youngest child in the household was breastfed. We study the percent of children that were ever breastfed and that were breastfed through six months of age, by the education of the mother. Table 1 shows that between the late 1980s and early 1990s, college-educated moms were increasingly likely to breastfeed their children and the gap between college and non-college educated parents widened and then narrowed between 1991-1994 and 2005-6. The same is true for the percent still breastfeeding at six months. At 6 months, children of college-educated moms born in the early 1990s were 50%

more likely to be receiving breast milk compared to the previous decade and more than half of all college-educated moms were still breastfeeding.

Could the rise in breastfeeding reflect a broader emphasis on childcare? If breastfeeding requires little effort, then trends in breastfeeding might not reveal much about overall attitudes towards childcare, whereas if breastfeeding is time-intensive, then an increase in breastfeeding might indeed reflect an increased parental emphasis on childcare. Surprisingly little data exist on the time cost of breastfeeding. To estimate this cost, we ran a survey⁵ and advertised it on the website facebook.com and the New York Times' blog Freakonomics. The survey generated 1835 responses. In no sense are these data representative of the general population, but they provide rough evidence on time spent breastfeeding.

We measured breastfeeding rates and intensity over time by asking about the breastfeeding of the latest child and noting when she was born. As in the NHANES, breastfeeding rates have increased over time; more interestingly, so has breastfeeding intensity, which we report in table 2. Mothers spend a considerable amount of time breastfeeding, well over two hours per *day*. Breastfeeding thus requires an enormous time commitment; parents who breastfeed may be more likely to spend a great deal of time on other childcare activities as the child ages. These results hint at a the potential for a cohort-based explanation for the rise in childcare time, since college-educated mothers of infants in the early 1990s were the first wave of parents to experience the rise in childcare time and these mothers may have developed habits from their time-intensive breast feeding activity. If such a habit-formation cohort-based model explains the trends identified by Ramey and Ramey there is a clear prediction for the future: we should see a narrowing of the gap in time spent in childcare by parental education over the next decade since the breastfeeding differential has narrowed in recent years.

To understand the rise in breastfeeding better, we asked mothers why they breastfed. The most common response was for the health of the baby – 96% of mothers chose it. Another 62% said that they breastfed to improve their baby's intelligence. These answers clearly indicate an investment motive for breastfeeding, but breastfeeding also has a consumption component: two-thirds of mothers breastfed to bond with their infant and nearly half breastfed for enjoyment.

⁵ The survey can be seen (and taken) here: http://wharton.qualtrics.com/SE?SID=SV_e2NOBSudMtPELFW&SVID=Prod. We used responses collected between 3/12/2010 and 3/17/2010.

Even if the absolute and relative rise in childcare time is not investment, it need not be wasteful if parents enjoy the time they spend with their children, that is if the increase in childcare time represents consumption. We present two pieces of evidence which point to the importance of consumption motives in explaining the absolute and relative rise in childcare time: first, changes in time spent in play account for a non-negligible fraction of the absolute and relative rise in childcare time; and second, college-educated parents spend relatively more time on childcare with their spouses. The increasing importance of childcare as a source of consumption is consistent with both the rise of hedonic marriage among college-educated couples and the apparent geographic dispersion in children's college going.

Ramey and Ramey note that parents enjoy playing with their children and that increases in this activity may be indicative of rising consumption. "Play with children," they write, "has always ranked highly in terms of enjoyment" (p. 18). Their table 3 shows that after excluding play time, the relative differential remains large, but has fallen by about a quarter, suggesting that time on play accounts for an important fraction of the overall relative rise in childcare time. In fact, play time accounts for about a quarter of the overall rise as well as the relative rise.

The second piece of evidence supporting a consumption-based explanation is that college-educated parents spend a great deal of childcare time together, relative to less well-educated parents.⁶ The 2003-2007 ATUS allows researchers to identify with whom the respondent performs a given activity, and we use this information to count up the hours of childcare time. If the rise in childcare time is due to college preparation, then we would not expect well-educated spouses to spend childcare time together, but if the rise in childcare time is about enjoying family time, then we might well expect well-educated parents to engage in childcare time simultaneously.

College-educated mothers spend much more time in childcare with their spouse than less well-educated mothers, and college-educated fathers spend somewhat more time with their spouse. We regress childcare time with spouse against education indicators and Ramey and Ramey's age dummies, and give the results in table 3, which shows that college-educated parents spend 4.8 hours of childcare time with their spouse, as opposed to 2.7 hours for less well-educated parents. College-educated mothers spend 2.6 more hours with their spouse and college-

⁶ We look at the difference at a point in time, rather than changes in this difference, because older surveys lack the "with whom" data necessary to see whether parents spend their childcare time together.

educated fathers spend 1.6 more hours. These differences are large, equal to nearly half the relative rise in childcare time.

Isen and Stevenson (2010) discuss the rise of “hedonic marriages” and the fall of “productive marriages,” particularly among well-educated couples. Whereas a traditional view of marriage emphasizes the gains from specialization in the production of children and household goods (Becker, 1981), hedonic marriages generate marital surplus in the form of complementarities in consumption: spouses enjoy spending time with each other. To the extent that spouses enjoy spending time in childcare with each other, the rise in hedonic marriage can explain a substantial fraction of the relative rise in childcare time. Since colleges don’t observe how many parents are engaged in these activities with children it is unlikely that college competition is driving the increase in joint parenting time. These results are only suggestive, however, because we do not know how time spent in childcare with one’s spouse has trended over time.

An additional potential explanation for why parents—particularly college-educated parents—may be spending more time with their children comes from the distance that kids going to college travel. The kids of college-educated parents are more likely to travel long distances to college. Table 4 shows that the distance traveled to college rises steeply with the education of the parents. In response, these parents may spend more time with them, either to make up for lost time in the future or to build a relationship with their child, to ensure that she comes home for visits. While we unfortunately don’t have any data on changes in the distance traveled to college over time, Caroline Hoxby (2009) has argued that college has become more of a national market and thus kids, particularly those of college-educated parents, may be increasingly like to go far away.

In sum, Ramey and Ramey find an important shift in parents’ time allocation. Their preferred explanation for this shift, the college rug rat race, can explain only part of this shift. We propose a taxonomy of explanations, each of which is consistent with at least some of the rise in childcare time; a key priority for future work is to distinguish among these explanations. The difficulty in explaining the rise in childcare time is that it happened so suddenly; driving forces like college competitiveness, the rise of hedonic marriage, and the increasing importance of cognitive and non-cognitive skills all have been gradual changes (Hoxby, 2009; Cunha and Heckman, 2008). The sudden rise in child care time suggests a tipping dynamic. This might arise

because the value of childcare time depends on what other children are doing. If every child can play in the park, then no parent need closely watch her own child, because of safety in numbers.⁷ But if other children are with their parents, then no parent can unilaterally send her child to the park unattended. As parents grow increasingly vigilant, the equilibrium level of childcare could shift rapidly upward. If tipping dynamics are important, then any of the possible driving forces could be important in explain the growth in childcare time.

⁷ Chris Sims pointed this out at the conference discussion.

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Tables and Figures

Table 1: Breastfeeding, by year and education

	% Ever breastfed			% breastfed, six months		
	88-91	91-94	05-06	88-91	91-94	05-06
High School	0.37	0.35	0.61	0.44	0.38	0.44
College	0.74	0.86	0.88	0.43	0.64	0.61
Difference	0.37	0.51	0.27	-0.01	0.26	0.17
SE (Diff)	(0.05)**	(0.04)**	(0.04)**	(0.07)**	(0.06)**	(0.05)**

Notes: Estimated using the 1988-1994 and 2005-2006 waves of the NHANES, restricted to female respondents with non-missing information. All numbers adjust for differences in the age distribution of college and less well-educated women. ***: Significant at the .01 level.

Table 2: Mean hours per day breastfeeding, by period of child's birth

	Pre 1980	1980s	1990s	2000-2005	2006-2010
HS or less	1.3 (0.4)	1.7 (0.4)	2.8 (0.5)	3 (0.5)	3 (0.3)
BA/BS	2.5 (0.5)	2.6 (0.3)	2.9 (0.2)	2.7 (0.2)	3 (0.1)
masters	2.9 (0.5)	2.6 (0.3)	2.5 (0.2)	2.6 (0.2)	2.9 (0.1)
Prof/PhD	2.3 (0.4)	2.6 (0.3)	2.2 (0.2)	2.6 (0.2)	3.1 (0.1)

Notes: Authors calculations based on data obtained via online polling. Standard errors in parentheses.

Table 3: Hours of childcare time spent with spouse with week, regression adjusted

	College-educated parents	Less well-educated parents	SE (difference)
All parents	4.6	2.5	0.1**
Mothers	5.8	3.3	0.1**
Fathers	3.0	1.5	0.1**

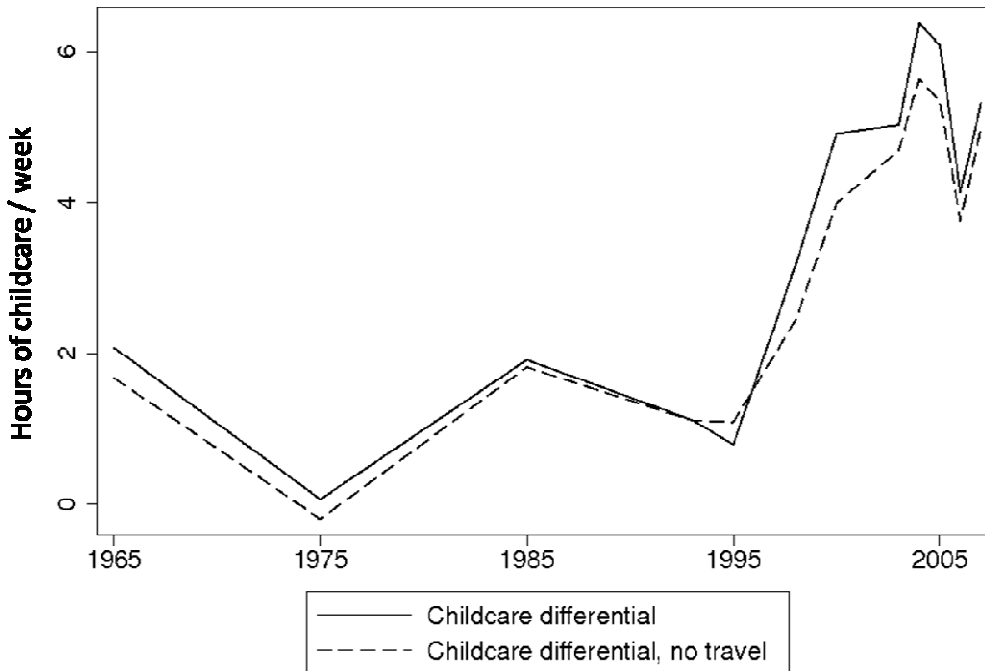
Notes: estimated using the 2003-2007 ATUS, restricted to non-student respondents aged 18-64 with a child younger than 18 present. We regress the number of hours of childcare time per week against indicators for Ramey and Ramey's age categories, as well as for college attainment. **: Significant at the 0.01 level.

Table 4: Distance to college, by education status

Parental Education	Median Distance to College
Less than High School	28 miles
High School	68 miles
College	102 miles
Graduate/Professional degree	130 miles

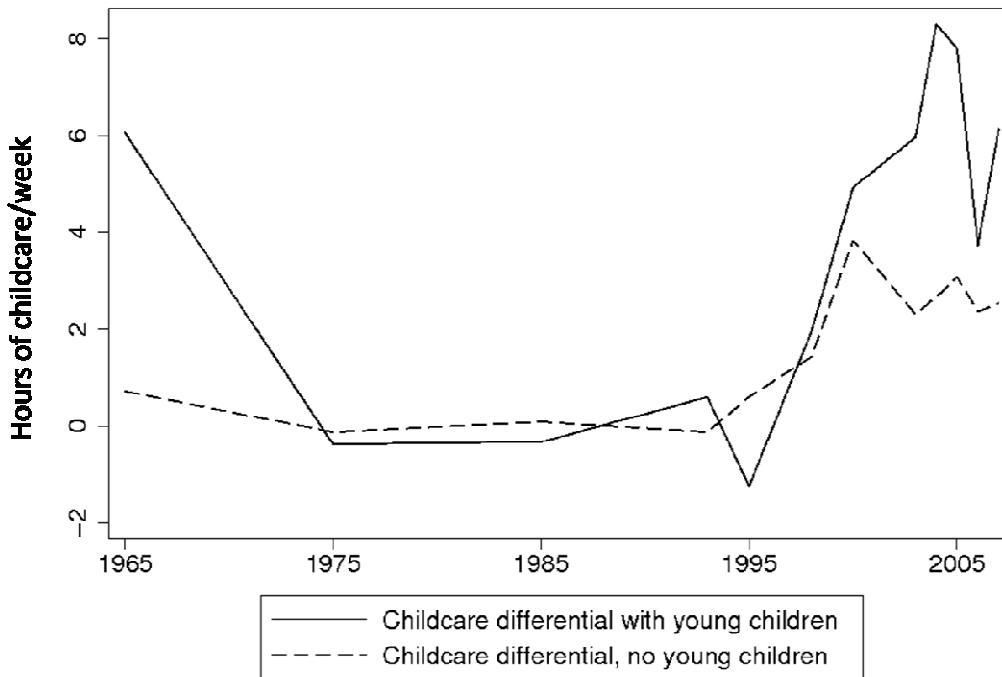
Source: Mattern and Wyatt (2009)

Figure 1: Childcare time differential, including and excluding travel time



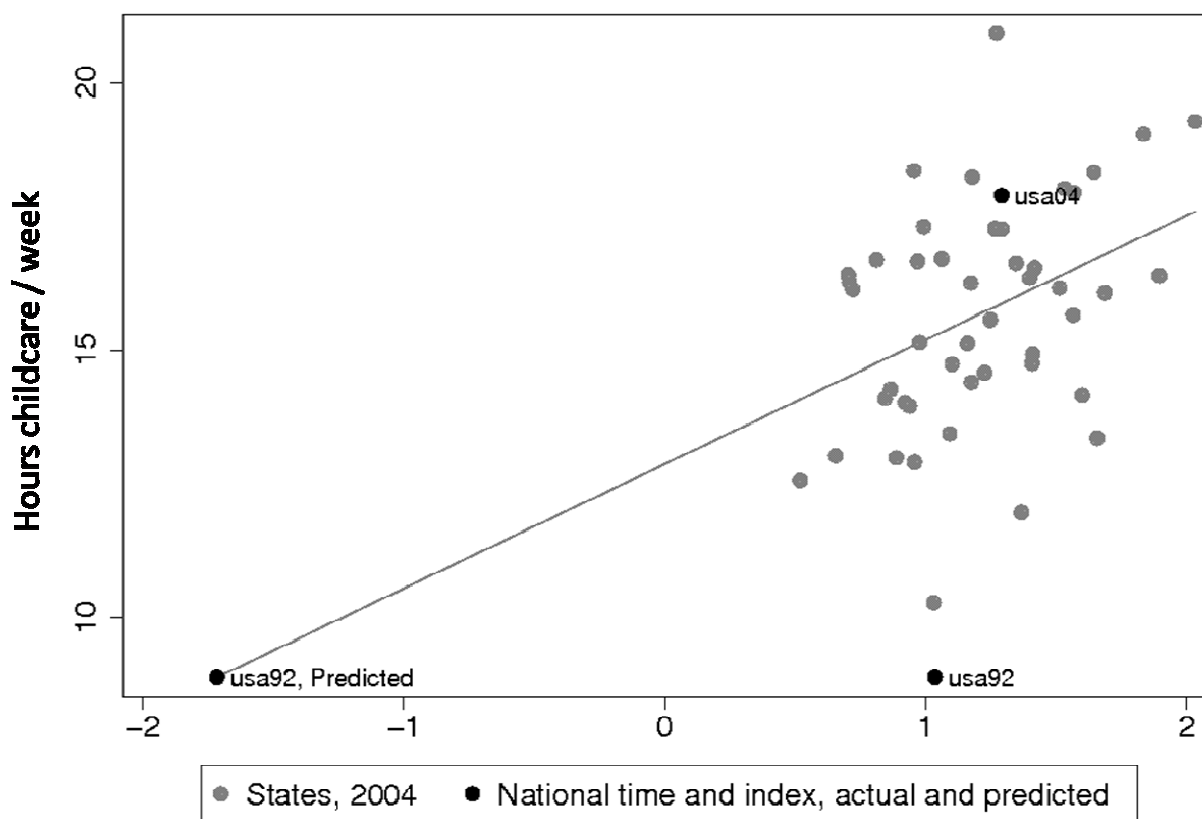
Notes: We estimate Ramey and Ramey's descriptive model, by sex of parent, where the measure of childcare includes and excludes travel-related childcare time using their sample. We plot the coefficients on the year*college dummy.

Figure 2: Child care time differential, by presence of young child



Notes: We estimate Ramey and Ramey's descriptive model, by sex of parent and age of youngest child, using their sample. We plot the coefficients on the year*college dummy.

Figure 3 College competitiveness and childcare time, among college-educated mothers



Notes: Figure 13 of Ramey and Ramey, plus competitiveness index from Bound, Hershbein and Long (2009).