

# New Evidence on Self-Employment and Workplace Flexibility for US Mothers

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## Abstract

Mothers of young children often reduce their labor supply to manage household responsibilities. Workplace flexibility is an important determinant of these labor supply decisions that have lasting implications for future labor force participation and earnings. This paper provides new evidence that self-employment is a work option that mothers use to gain flexibility along multiple dimensions while maintaining labor force participation. First, I demonstrate that young children have a positive effect on self-employment propensity that is both statistically and economically significant using data from the Survey of Income and Program Participation. The results imply that the self-employment rate among women with a two year old child is 11-16 percent higher due to the birth of that child. Second, I show that self-employed women appear to have more flexibility in their work location, hours, and schedule than wage and salary women using data from the American Time Use Survey. My findings suggest that self-employment itself allows women to spend more time with their children even while working the same number of hours. These results contribute to a deeper understanding of the varied work decisions women with young children make, which will inform policies related to child care, workplace flexibility, and programs to promote self-employment.

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# 1 Introduction

Between 1980 and 2010, American women with children increased their labor force participation by 14 percentage points.<sup>1</sup> While this increase is impressive, many mothers today still take time off work or decrease their hours when they have children.<sup>2</sup> Among women who continue to work, over half say that managing family and work responsibilities is “somewhat or very difficult”.<sup>3</sup> One important determinant of mothers’ labor force participation decisions is workplace flexibility. A recent Pew Foundation survey found that over 70% of working mothers say having a flexible work schedule is extremely important to them (Parker and Wang (2013)).

This paper uses a nationally representative panel dataset to provide new evidence on mothers’ use of self-employment as a more flexible work environment. Previous research has found that self-employment rates are higher among women with children and conjectured that flexibility is an important explanation for this pattern (Wellington (2006), Hundley (2000)). The self-employed are more likely to be able to work from home, choose the number of hours they work and decide when to work those hours (Devine (2001)).

My paper makes three primary contributions to the existing literature. First, I use a large panel dataset, which allows me to control for unobserved time invariant differences across individuals that could drive both self-employment behavior and fertility. Previous work using cross sectional datasets or two year panel datasets could not rule out that the positive correlation between self-employment and children is because women who have a preference for self-employment also have stronger preferences for children. Second, my analysis traces out the relationship between self-employment behavior and the age of a woman’s youngest child. While previous work has documented a positive correlation between children and female self-employment, showing self-employment propensities by the age of the youngest child provides further evidence that self-employment is associated with time periods when children require a large amount of care, suggesting that self-employment provides flexibility to provide that care. Third, I investigate whether the relationship between self-employment and the age of the youngest child has changed between 1984 and 2012. As previously mentioned, mothers were increasing their labor force participation during this time period.

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<sup>1</sup>The BLS Labor Force Statistics from the Current Population Survey reports 70.8% of women with children under 18 worked in 2010 compared to 56.6% in 1980.

<sup>2</sup>Byker (2012) documents that 15-20 percent of women decrease their hours worked after having their first child. This pattern persists between 1980 and 2010.

<sup>3</sup>The Pew Research Center conducted a survey on work and family in 2012; see Parker and Wang (2013) for details.

This expansion changed the composition of employed women so it is possible that self-employment rates and patterns would have changed over that time period.

In order to shed light on how self-employment provides flexibility, I use detailed time diaries to document differences in time use by self-employment status. I analyze both mean differences in the number of minutes spent in various activities and the differences that remain after controlling for some observed demographic variables and the number of hours worked. While the mean differences describe how the self-employed allocate their time differently, the differences with controls offer evidence that self-employment itself allows women to structure their time differently. This analysis uses cross sectional data so women in the two types of employment may still vary on unobserved dimensions that are driving both their employment and time use choices. However, time use differences that remain after controlling for observed factors and the number of hours worked suggest that self-employment itself facilitates spending more time with children or on housework by changing the opportunity cost of combining these activities with work.

I use the Survey of Income and Program Participation (SIPP) to estimate the relationship between self-employment and the age of a woman's youngest child. I find that it exhibits a positive inverted U shaped relationship that is strongest when the youngest child is two. My results provide evidence that self-employment is associated with time periods when children require a large amount of care, suggesting that self-employment offers flexibility to more easily provide that care. I find no evidence that the relationship has changed between the late 1980s and early 2010s, and the estimates are robust to a variety of sample restrictions and weighting schemes. The estimated relationship implies that youngest children two or three years of age have the largest positive effect on self-employment propensity. This effect is statistically and economically significant. Women whose youngest child is two years old have predicted self-employment rates that are 11-16 percent higher than their predicted rates without their youngest child. The effect of young children on self-employment is particularly strong for married women. While self-employment offers flexibility, it also entails many costs. Married women may have access to spousal health insurance. They may also have a higher tolerance for the income risk of being self-employed because their households often have two incomes. In addition, married women might have greater access to startup capital, which could make transitioning to self-employment easier.

The increase in self-employment rates among women with young children contrasts starkly with their decrease in labor force participation. These patterns suggest that self-employment provides an opportunity to combine work and family in a way that wage and

salary employment does not. I use the American Time Use Survey (ATUS) to investigate the mechanisms through which self-employment might be more compatible with household responsibilities. Compared with women working in wage and salary positions, I find that self-employed women tend to work fewer hours, are more likely to work from home, and spend more time as the primary caretaker of their children. My results are consistent with previous work that has suggested that many women become self-employed to manage family responsibilities (Hundley (2000), Gurley-Calvez et al. (2009), Fairlie and Robb (2009)). I find self-employed women with young children spend an extra two hours per day with their children after conditioning on hours worked and demographic characteristics. These results provide suggestive evidence that self-employment allows women to structure their time differently and offer context for the observed relationship between self-employment and the presence of young children.

Overall, my findings suggest that self-employment provides a flexible alternative to wage and salary employment for women with young children and provide a deeper understanding of labor supply decisions during an important time in women's working lives. There is evidence that the gender wage gap in the U.S. grows between ages 30 and 35 when women are more likely than men to decrease their labor supply (Bertrand et al. (2010), Goldin (2014), Guvenen et al. (2014)).<sup>4</sup> These reductions in labor supply result in many women having less work experience than their male counterparts, which hurts their future employment prospects. Additionally for many women, having children coincides with the time period when they are building their careers, meaning that time taken off can have an especially large negative impact on their future earning potential. American women's reduction in labor supply also has implications for the economy as a whole. Women have invested heavily in education, and their employment is important for economic growth (Cohn (2014), Goldin (1995)).

This paper documents self-employment as an employment alternative that allows mothers of young children to manage their household responsibilities while continuing to work. If this work experience maintains and develops women's human capital, it could lead to higher future earnings and ease future transitions into wage and salary employment. By increasing women's total work experience, self-employment might help address the remaining gender wage gap. It is also possible, however, that this experience is not as valuable to future employers and could lead women to have lower earning potential than if they remained in

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<sup>4</sup>These papers study highly educated, high earning individuals. Bertrand et al. (2010) focuses on MBAs, Goldin (2014) studies the 40 highest earnings occupations, and Guvenen et al. (2014) study the top 1% of earners. For these women their prime childbearing ages are between 30 and 35.

wage and salary employment.

The remainder of the paper is organized as follows. In section 2, I provide a short background on women’s self-employment in the US and I discuss the previous literature on female self-employment and the labor supply of mothers in section 3. In section 4, I describe my two data sources: the SIPP and the ATUS. In section 5, I outline my empirical strategy for estimating the relationship between having young children and self-employment. I also describe my analysis on time use differences between self-employed women and wage and salary workers. I present my results in section 6 and section 7 concludes.

## 2 Female Self-Employment Background

Female self-employment rates in the US increased sharply from 4 percent to around 7 percent during the 1970s and 1980s and have remained between 7 percent and 8 percent since 1990 (Roche (2014), Devine (1994)).<sup>5</sup> Table 1 lists the top occupations among self-employed women over time. In general the self-employed are overrepresented in service occupations, administrative positions, and sales. There are a large number of self-employed women working in relatively low skilled occupations including as hairdressers, childcare workers, and housekeepers, as well as many self-employed women working in high skilled occupations such as physicians, lawyers, and management analysts.

Roche (2014) provides a recent update on the demographic composition of the female self-employed that largely matches what previous literature has documented. Using CPS data for 2012, she finds that self-employment rates are increasing in age from around 1.3% for 20-24 year olds to 16% for women over 65. Black women have particularly low self-employment rates at 3.5% compared to 7.5% among White women. Self-employment is more common among those who are married or divorced and among those with children. There is not a strong relationship between education level and self-employment rates with the exception of women with professional degrees who have much higher self-employment rates than other groups, and women without high school degrees who have relatively lower rates. Evidence from the Census 5% samples, shown in table 2, suggests that self-employment rates show a U-shaped pattern with spousal income. Women with the lowest earning husbands and the highest earning husbands generally have the highest self-employment rates.

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<sup>5</sup>Self-employment rates are generally defined as the percent of employed individuals who are self-employed.

### 3 Previous Literature

This paper adds to an existing literature on the motivations of self-employed women by offering additional evidence that children influence mothers' self-employment behavior. The majority of these papers use comparisons between men and women to argue that women are more likely than men to become self-employed to manage their family responsibilities. Dawson et al. (2009) analyzes responses to a large U.K. employment survey and finds that 22% of self-employed women say family responsibilities are a major reason for becoming self-employed compared to only 2% of men.<sup>6</sup> Hundley (2000) uses cross sections from the NLSY72 and PSID to examine the relationship between demographic characteristics and self-employment propensity and earnings. He finds that female self-employment is positively associated with marriage, larger families, and spousal income but that male self-employment is not. He also finds that self-employed women do more housework and have lower earnings when they are married and have large families. He concludes that self-employed men and women specialize in work and home production respectively. Using more recent data, Gurley-Calvez et al. (2009) analyze American Time Use Surveys to compare time use by sex and self-employment status. They conclude that self-employed women spend more time caring for children and less time working than men and women working in wage and salary positions. My results are consistent with these previous findings, but use better data and an improved empirical strategy.

My paper highlights the contrast between the patterns of self-employment rates and labor force participation rates among mothers of young kids contributing to a relatively large literature documenting and assessing the impact of American women's decrease in labor supply after they have children. A recent paper by Byker (2012) uses the SIPP to demonstrate that women of all education levels reduce their labor supply after having a child in a pattern that has been remarkably consistent since 1984. Bertrand et al. (2010) analyze the career trajectories of women with MBAs from a top business school and find that 15 years after graduation women with children work 24% fewer hours than men and have eight months less actual experience. They argue that these differences explain a large part of the gender gap in wages and that this gap originates during the prime childbearing ages. Interestingly, they find very small differences in earnings between women without children and men. Similarly, Black et al. (2008), find that differences in college majors and actual work experience explain a large proportion of the gender wage gap commonly observed in

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<sup>6</sup>Data come from the United Kingdom Quarterly Labour Force Survey 1999-2001.

cross sectional studies. These papers provide evidence that temporary reductions in labor supply are likely contributors to the gender wage gap. As Figure 6 shows, reductions in labor supply associated with children are often temporary. Women whose youngest child is 14-17 years of age are as likely to be working as women who have no children under the age of 18.

Another portion of the literature on female labor supply focuses on estimating the earnings penalties associated with taking time out of the labor force. Taking time off results in lower levels of experience, but it can also result in large earnings penalties that are unrelated to the amount of time the woman spends out the labor force. Goldin and Katz (2011) find that women with MBAs who have career interruptions see a 41% reduction in their pay that is unrelated to the length of time taken off. Goldin (2014) suggests that non-linearity in the relationship between experience and earnings in certain professions can explain why a small amount of time out of the labor force can result in such a large difference in earnings. If women take time off when they otherwise would be earning key promotions that further their careers, their earnings may never recover. Hotchkiss and Pitts (2003) find that women who have career interruptions have earnings that follow a process that provides much smaller returns to experience than the process for women who are continually employed. They find a 23% wage differential between women who they characterize as continuous workers and those they characterize as intermittent workers. Around 90% of that wage differential is explained by differences in the wage equation coefficients rather than differences in the women's characteristics. These results are concerning because they imply that women who take time off are not experiencing the same gains to experience as women who remain in continuous employment. If self-employment allows women to avoid taking time out of the labor force, it might help them avoid suffering large earnings penalties.

This paper focuses on flexibility as a reason why self-employment is attractive to mothers. There are a few recent papers that examine the role of workplace flexibility in determining female labor supply. Herr and Wolfram (2012) examine Harvard undergraduates 10 and 15 years after graduation and find that women in flexible jobs are 5-6 percentage points more likely to stay in the labor force after having children.<sup>7</sup> Goldin (2014) provides evidence that flexible occupations have the smallest gender wage gaps.<sup>8</sup> She argues that this is because women do not have to take time off to have children in those occupations. My paper contributes to this literature by providing additional evidence that workplace flexibility

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<sup>7</sup>One difficulty in doing this type of study is in defining flexibility. These authors assign a flexibility measure based on the percentage of childless women working part-time in a similar job.

<sup>8</sup>Her measure of flexibility is based on characteristics of the occupation. She considers positions that have workers who are more substitutable for one another to be more flexible.

matters for mothers' labor supply decisions.

## 4 Data

The analyses in this paper use two main data sources: the Survey of Income and Program Participation (SIPP) and the American Time Use Survey (ATUS). The SIPP is a longitudinal survey that has been conducted by the Bureau of Labor Statistics since 1984. Its large sample size and panel structure make it an ideal data source for studying self-employment behavior. My analysis requires a relatively large sample of individuals because only around 5% of women between the ages of 18 and 55 are self-employed. The panel design allows me to control for time invariant unobservable characteristics that influence self-employment behavior. In contrast, the ATUS is a cross sectional dataset that also has a considerable sample size. This survey includes detailed time diaries, which allow me to document the nature of the flexibility provided by self-employment.

### 4.1 Survey of Income and Program Participation (SIPP)

The SIPP provides information on respondents at a monthly level for 3-5 years depending on the panel year of the survey.<sup>9</sup> My analysis uses the combined 1984-1986 panels, the 1996 panel and the 2008 panel. I select these time periods to compare three snapshots roughly a decade apart in order to investigate changes in self-employment behavior over time. The lengths of the panels vary. The 1984-1986, 1996, and 2008 panels cover the periods of June 1983 to March 1988, December 1995 to February 2000, and May 2009 to July 2013, respectively.

The main results in the paper focus on the sample of women who are 18 to 55 years of age during the first wave of each survey. Limiting the sample to women 55 and under avoids picking up self-employment as partial retirement and focuses the analysis on my population of interest since the majority of women above age 55 do not have young children at home.<sup>10</sup> The key variables for this paper include information on women's employment, fertility history, and demographic information. Women are considered to have worked in a month if they had a paid job at any point during the month even if they were absent from that job due to maternity leave or vacation.<sup>11</sup> Women are considered self-employed if they

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<sup>9</sup>See [www.census.gov/sipp/](http://www.census.gov/sipp/) for documentation and more information about the survey.

<sup>10</sup>See Karoly and Zissimopoulos (2004) for evidence on self-employment as partial retirement.

<sup>11</sup>Paid jobs include the self-employed so all individuals who are self-employed are also considered working.



owned a business that month and worked more hours at the business than at any other job. I determine the number of children a woman has by assigning children to mothers using the relational identification variables within the family. Demographic variables of interest include race, age, education level, and marital status.

It is important to weight the observations in the SIPP to make the sample nationally representative. The weights account for attrition, the method of selecting respondents, and the over-sampling of low-income individuals. The SIPP includes monthly weights for each individual-month observation as well as overall longitudinal panel weights for each individual. Only individuals who participate in every month of the survey have positive values of the panel weights. Because using the final panel weights severely decreases the sample size, I present my main results using the monthly weights in the final period that a woman is observed.<sup>12</sup> I show estimates of my main specification using the final panel weights and the unweighted results as a robustness check, and the results are qualitatively similar.

Table 3 presents sample means of key variables for the three panels. Some of the biggest changes across the cohorts are an increase in the percentage of women working, an increase in education level, an increase in the percentage of the sample who identify as Hispanic, and a decrease in the percentage of the sample who are married. A little under half of the sample have children under 18. Women with children are relatively more likely to be married and self-employed and less likely to be working relative to the full sample.

## 4.2 American Time Use Survey (ATUS)

In order to characterize the flexibility associated with self-employment, I use time diaries from the ATUS to analyze differences between women who are self-employed and those who work in wage and salary employment. The ATUS selects individuals who are in their final month of the Current Population Survey and asks them to record their activities for a 24 hour period. The survey is representative of the US population and includes information about respondents' employment and demographics. I consider individuals to be self-employed if they indicate that they are self-employed in their main job. The time diaries provide information on the type of activity, the length of its duration, its location, and who else is present during the activity. My analysis uses the years 2003-2012 of the AUTC and includes

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<sup>12</sup>Technically, these are not the correct weights to use because they overweight individuals who are similar to those who leave the sample. Other authors have used the monthly weights from the first period of observation, but these would overweight individuals who have similar characteristics to those who remain in the sample. See Lavelle and Smock (2012) as an example of a paper using the baseline monthly weights and Byker (2012) and Kim (2015) as examples that use the final monthly weights.

women ages 18 to 55.

Table 4 shows summary statistics for the full ATUS sample and for the subset of women who have children under six years of age. Overall, women with young children are less likely to work and if they do work they spend less time per day on work related activities. Not surprisingly, women with children under six spend more time caring for children. They spend an average of 2.5 hours per day on direct childcare tasks such as changing diapers, reading to children and helping with homework and 5 hours per day as the primary supervisor of their children.

## 5 Empirical Strategy

To investigate the relationship between self-employment and the presence of young children, I use the SIPP to estimate a linear probability model predicting self-employment status as a function of the age of a woman’s youngest child. I include individual fixed effects, which control for women’s time invariant unobserved traits. These include a woman’s preference for autonomy, risk tolerance, opportunities for self-employment within her trained industry or occupation, her underlying skill in self-employment, her preferences for children and housework, and her preference for work.

Specifically, I estimate regressions of the following form:

$$Y_{ijt} = \beta_0 + \beta X_{ijt} + \sum_{a=1}^{11} D_{ijt}^a \delta_a + \alpha_i + \gamma_t + \epsilon_{ijt}$$

The dependent variable  $Y_{ijt}$  is an indicator for the self-employment status of woman  $i$  in month  $j$  in year  $t$ . The vector  $X_{ijt}$  is a vector of covariates that includes indicators for whether the individual is married, an indicator for having two, three, or four or more children, the age of the woman, and the squared age of the woman. I control for year fixed effects in  $\gamma_t$  and individual fixed effects in  $\alpha_i$ .<sup>13</sup> The vector of indicators for the age of the youngest child,  $D_{ijt}^a$ , includes indicators for each age 0 through 8, an indicator for having a youngest child between the ages of 9 and 13, and an indicator for having a youngest child aged 14 to 17. The coefficients of interest are the  $\delta_a$ s, which estimate the effect of the age of the youngest child on the probability of being self-employed.

The impact of the age of the youngest child on self-employment is separately identified from the impact of the number of children by differences within women over time in the age

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<sup>13</sup>The estimates and standard errors are nearly identical with the inclusion of month fixed effects.

of their youngest child. The identifying assumption is that there are no unobserved factors changing over the panel time frame that affect both the propensity to be self-employed and the age of a woman's youngest child. The fixed effects specification controls for time invariant differences in women's entrepreneurial drive and skill as well as their overall preferences for children, however, there are other factors that could drive both self-employment behavior and fertility. For example, a positive income shock could encourage women to become self-employed and to have additional children due to an increased sense of financial security. Additionally, it is difficult to determine whether having young children drives women to become self-employed or whether self-employment lowers the opportunity cost to having children and induces women to have another child. For these reasons, I interpret my results as descriptive evidence on the relationship between self-employment and the presence of young children.

To allow for differences across panels in the relationship between self-employment and the explanatory variables, I estimate separate regression for each panel. When I examine differences by education level and marital status, I pool the panels together to increase the precision of the estimates. This form is less flexible because it forces the relationship between the explanatory variables and self-employment propensity to be constant over time, however, my results suggest that the relationship has not changed appreciably over this time period.

To provide a deeper understanding of the flexibility self-employment can provide, I use the ATUS to examine differences in time use between women in self-employment and those in wage and salary employment. First, I compare the distributions of daily and weekly hours worked between the two groups to look for differences in the selected number of hours worked. Then I examine the mean differences in specific types of time use across women who are self-employed and those who are not. For these comparisons, I focus on employed women with at least one child under the age of 18. These differences show the time allocation decisions of individuals conditional only on their choice to be self-employed or not and describe the average differences in behavior between all women who work in wage and salary positions and all women who work in self-employment.

While these mean comparisons are suggestive of differences in the ease of combining work with other activities, self-employed women differ along a number of observable dimensions that could also be explaining differences in time allocations. Self-employed women tend to be older, are more likely to be white and married. By controlling for factors such as age, education level, number of children, hours worked, and marital status, I am better able to isolate the time differences attributable to the ability to structure time differently

in self-employment. In interpreting the results, it is important to note that the controls, in particular the number of hours usually worked, are in some sense controlling for part of the effect of interest. One way that self-employment provides flexibility is allowing women to choose the number of hours they work. The multivariate regressions are useful though because they show that women who are similar on observed dimensions still spend their time differently if they are self-employed. This is further evidence that self-employment has a work environment that differs from wage and salary employment in ways that allow mothers to spend more time with their children. These results, however, are still considered descriptive because women who become self-employed may differ along unobserved dimensions that are also impacting their time use.

In order to control for these characteristics, I use multivariate regressions to predict the amount of time individuals spend per day doing certain activities as a function of their self-employment status. The regressions follow this form:

$$Y_i = \beta_0 + \beta X_i + \delta \mathbb{1}self\_emp_i + \nu_i$$

The outcome variable is the number of minutes spent in an activity per day, and the coefficient of interest is  $\delta$ , which describes on average how self-employed individuals differ in their time use controlling for a vector of covariates  $X_i$ . All regressions include indicators for race, education level, marital status, employment status, and the month, year, and day of week of the survey. Regressions also control for the usual number of hours worked and quadratics in mothers' age and the number of children. Self-employed mothers on average work fewer hours than wage and salary employed mothers. I control for hours worked in order to see whether self-employment itself appears to offer a different way of combining work and home life conditional on the same number of hours of work.

I select measures of time use that represent some of the potential benefits to self-employment for mothers of young children. The outcomes of interest for both the mean comparisons and the multivariate regressions are the time spent actively caring for children, supervising children, working while supervising children, sleeping, doing housework, and the time spent in leisure activities. The ATUS distinguishes between childcare and the supervision of children. Childcare includes activities like reading to a child, helping a child with homework, feeding a child or changing a diaper. Supervising children also includes time that the individual may be doing another primary activity, but he or she is responsible for watching the child.<sup>14</sup> Supervision is only recorded for children under the age of 13. Leisure

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<sup>14</sup>Generally childcare is a subset of supervision, however, there are categories of childcare including waiting

activities include all time categorized as socializing, relaxing and leisure, sports, exercise, and recreation and talking on the phone to relatives or friends.<sup>15</sup> I also examine three other types of outcomes: the percentage working only from home, and the percentage of working minutes completed at home.

## 6 Results and Discussion

### 6.1 Self-Employment and Motherhood

I find a consistent inverted U shaped relationship between self-employment status and the age of a woman's youngest child across the three SIPP panels. All else equal, women are most likely to be self-employed when their youngest child is between the ages of two and four. The main regression results are shown in Table 5. The coefficients are generally consistent with previous research. The coefficients in Table 5 suggest that self-employment rates rise with age at a decreasing rate. This result is well established in the literature, but is perhaps slightly more difficult to estimate in this case because of the short panel with fixed effects.<sup>16</sup> Similarly the effect of being married is not comparable to the same coefficient in a cross sectional regression because it is only identified from changes in marital status within the panel. Previous research consistently finds a positive association between being married and self-employed (Evans and Leighton (1989), Devine (2001), Hipple (2010)).

My estimates suggest that having one or two children is generally associated with higher rates of self-employment than having no kids. The effect of the third, fourth and higher parity births is less consistent across the panels, although many of the coefficients are not precisely estimated.

Figure 1 plots the coefficients on the age of the youngest child indicators for the three different SIPP panels. The inverted U shaped pattern implies that having a preschool aged child is associated with higher self-employment rates. This pattern is present in all three panels. The peak impact occurs when the youngest child is either two or three years of age. These coefficients represent small absolute changes in the self-employment propensity, but very large percentage changes. Since only 5% of women aged 18 to 55 are self-employed,

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to pick up children, attending school conferences, and organizing and planning for children that would not be included in supervision time. Additionally, childcare activities for children over the age of 13 would not be included in supervision time.

<sup>15</sup>Leisure does not include religious activities, volunteering, or any type of shopping.

<sup>16</sup>In the fixed effects model, the age coefficients are identified by changes in age within the panel time frame because the fixed effects capture the effect of the average age of the individual during the panel.

a one percentage point increase in self-employment represents a 20 percent increase in self-employment.

I describe the magnitude of the effects using two measures. First, I compute the percentage change in self-employment propensity associated with having a youngest child of age two relative to the predicted self-employment rate for individuals with no children under 18. For example, in 1996, having one child who is two years of age is associated with a 1.30 percentage point increase in the self-employment rate. The model predicted self-employment rate among individuals who have no children is 4.93%. Then the 1.30 percentage point increase represents a 26.4% increase in the self-employment propensity. The percentage changes for the 1984-1986 and 2008 panels are of a similar magnitude and are reported in Table 6. An alternative measure of the effect is to calculate how the predicted self-employment rate of women whose youngest child is two years of age would change if they had not had that youngest child. This effect can be thought of as the marginal effect of the last child. In the 2008 panel, the predicted self-employment rate among women whose youngest child is two years of age is 6.59%. The adjusted predicted value without the youngest child is 5.67%. The extra child raised the predicted self-employment rate by 16 percent. Table 6 shows the percentage changes for all three panels, which range from 11-16 percent.

As Table 6 shows, both measures of the effect imply relatively large increases in self-employment rates associated with having a young child. I prefer the second measure because it describes the marginal effect of the youngest child among women who have children. Overall, having a youngest child who is two years old is associated with a 11-16% increase in the probability of being self-employment. The overall effect of having children on self-employment propensity is likely higher than this estimate because many women with a two year old child also have an older child who also raises their probability of being self-employed.<sup>17</sup>

As previously mentioned, using the monthly weight from the last observation may overstate the influence of individuals who are similar to those who leave the sample. As a robustness check, I re-estimate the same regressions using the full panel weights, which exist only for individuals who were interviewed in every month of the panel. I also re-estimate the analysis on the unweighted sample to examine the effect that weights are having on the estimates.

Figures 2 and 3 display the coefficients of interest from the full panel weighted and

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<sup>17</sup>The majority of the coefficients on the age of the youngest child are positive so it is likely that older children may also increase self-employment rates.

unweighted regressions respectively. The full panel weighted regression results generally show a stronger positive relationship between having a young child and the self-employment propensity. The point estimates for the 2008 panel are much larger, but not outside the confidence interval of the original estimates.<sup>18</sup> Comparing the main results in Figure 1 to the unweighted results shows that weighting the 1984-1986 panels slightly increases the estimated impact of having a youngest child of age two, but doesn't change the estimates much. The estimates for the 1996 panel are essentially unchanged, but using monthly weights increases the size of the effect for the 2008 panel. However, the unweighted estimates are well within the confidence interval of the main estimates.

My main results are qualitatively consistent with both the unweighted and panel weighted regressions. The presence of young children is associated with higher self-employment rates in all three figures. The weighting choice matters much more for the 2008 panel than the other two, but the lack of precision in the estimates implies that neither the panel weighted nor the unweighted estimates are outside the original confidence interval of effects. My general findings are robust both to including all women who are ever in the survey rather than only those who are selected in the first wave and to limiting the sample to women who are in the survey for at least two years.<sup>19</sup>

Next I examine whether the relationship between self-employment and the presence of young children varies by the mothers' education level and marital status. I pool all of the panels together to increase the precision of the estimates because I am estimating the model on subsets of the original sample. There are a number of reasons to believe that education level and marital status might affect self-employment behavior. Women with higher levels of education often have more flexibility in their wage and salary positions so they might not exhibit the same patterns of self-employment with respect to the age of their youngest child.<sup>20</sup> Although there is not a strong relationship between self-employment rates and education levels, it might be the case that women with more education have an easier time becoming self-employed because they have greater access to capital and husbands who are also more educated. Married women may be able to use their spouse's health insurance and be more willing to take on the risk associated with self-employment if they have a

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<sup>18</sup>The 2008 panel goes through 2013, but the sample size interviewed in 2013 was limited due to the government shutdown. Estimates use the most recently released 2012 longitudinal panel weights. Additionally the 2008 panel is 2 years longer than the other panels so we might expect greater differences between the monthly weights and longitudinal weights with a longer panel.

<sup>19</sup>These results are available from the author upon request.

<sup>20</sup>See Table 1 in of Economic Advisors (2014), which shows that 55% of women with a bachelor's degree or higher than schedule flexibility compared to 38% of women with less than a high school education.

second household income. Empirically self-employment earnings have higher variance both between individuals and within individuals across time (Hamilton (2000), Rosen and Willen (2002)). Many new businesses fail and some require taking on debt to start so researchers have generally considered self-employment more risky than wage and salary employment.

Figure 4 plots the coefficients from a regression including women with at least a bachelor's degree and one that includes women with less than a bachelor's degree. Having a youngest child of age two is associated with a 1.5 percentage point increase in self-employment propensity for women with bachelor's degrees compared to a 1.2 percentage point increase for women with less than a bachelor's degree. The point estimate on each age indicator is higher for women with more education suggesting that young children raise self-employment rates more for more educated women. In percentage terms, however, the impacts are similar because women with bachelor's degrees do have slightly higher rates of self-employment than women without bachelor's degrees. Figure 5 shows the results from a regression that includes women who are married during the entire survey and one that includes only women who are single during the entire survey. These results suggest that married women are more likely than single women to become self-employed when they have young children at home. Although the coefficients from the single women regression are not statistically different from zero, they follow the same inverted U shaped pattern as the main results.

The positive relationship between having young children and self-employment contrasts sharply with the well-known pattern that women with young children are less likely to work (e.g. Byker (2012)). I show the negative relationship between working and having children, for women in my sample, by estimating the same regression specification but with working status as the dependent variable. My definition of working requires the respondent to have worked for pay at some point during the previous month.<sup>21</sup> Figure 6 plots the coefficients on the age of the youngest child for these regressions. Women from the 1984-1986 and 1996 panels who have a newborn are 17 percentage points less likely to work than women without a child under 18. The decline in employment is slightly less in the 2008 panel at around 13 percentage points, but it is still large. All panels show the same pattern, that women are more likely to work as their youngest child gets older. The stark contrast between Figures 1 and 6 suggests that self-employment provides a work environment that is compatible with having young children in ways that other employment alternatives do not. The positive relationship between self-employment and having young children is not conditional on employment. The

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<sup>21</sup>This definition is not the same as labor force participation since I do not include women who were unemployed but looking for work during the previous month as working.



coefficients in Figure 1 imply that even though women leave the labor force when they have children there must be more women entering self-employment than leaving. Self-employment is different from wage and salary work along a variety of different dimensions. Many of the self-employed can choose their work location, the number of hours they work, and when they work those hours. These aspects might be relatively more important for women with small children.

## 6.2 Flexibility and Self-Employment

Using the ATUS, I compare women who work in wage and salary employment with the self-employed focusing on differences in time use and work location. These comparisons provide evidence of how self-employment allows women to combine caring for family with work.

Self-employed women work fewer hours on average than women in wage and salary employment, but the distribution of their hours worked has a much higher variance. Figures 7 and 8 display women's weekly and daily hours worked in self-employment and wage and salary employment. While those in wage and salary employment tend to work 40 hours per week or 8 hours per day, the self-employed do not have hours clustered at a traditional full time work week. A particularly large share of self-employed women works less than 30 hours per week and fewer than 6 hours per day.

One aspect of flexibility provided by self-employment might be the ability to choose a lower number of hours of work than is available in wage and salary work. Altonji and Paxson (1992) find evidence that women switch jobs in order to reduce their hours when they have children, which is consistent with an inability to fully adjust their hours within their current job. Herr and Wolfram (2012) and Goldin (2014) suggest that some positions might require a commitment to a minimum numbers of weekly hours. These minimum hours requirements can cause women to leave the labor force if their desired hours are less than the minimum threshold. Blau and Kahn (2013) suggest that one reason the U.S. female labor force participation rate has declined relative to other countries is because other countries have policies that provide part-time work and forbid discrimination against part-time workers. A 2012 Pew study found that 47% of mothers thought working part-time would be ideal, but only 19% actually worked part time (Parker and Wang (2013)). This mismatch suggests that either suitable part time-work is not available or is not affordable for American mothers. Self-employment may be a way for women to work part-time when part-time work is unavailable in wage and salary employment.

### 6.2.1 Differences in Time Use Between Self-employed and Wage and Salary Workers: Mean Comparisons

Table 7 displays the coefficient on the self-employment indicator from bivariate regressions predicting a variety of outcomes. These regressions include only women who are working, so the coefficient can be interpreted as the difference in means between women in wage and salary employment and women in self-employment. The self-employed spend on average 43 fewer minutes on work per day than the wage and salary employed. There are also large time differences in the number of minutes spent supervising children. Self-employed women with children under six spend over two additional hours per day supervising their kids compared to women in wage and salary employment. Interestingly, it appears that self-employed women multi-task by spending 40 more minutes per day working while supervising their children. On average the self-employed spend 40 more minutes per day on housework, but they spend around the same time sleeping and in leisure as wage and salary workers. They are 21 percentage points more likely to work from home and on average do 38 percent more of their work at home.

Self-employed mothers spend more time per day in childcare tasks. In order to test whether the self-employed allocate time within childcare differently, I follow Aguiar and Hurst (2007) and use the detailed ATUS activity codes to categorize childcare activities into three types: primary, educational, and recreational. Primary childcare tasks can be thought of as addressing children's basic needs while educational activities include reading to children or helping them with their homework and recreational activities include playing games or attending sporting events. Table 8 shows that self-employed mothers on average spend more time in all three activities. The self-employed spend more time in educational childcare activities in particular; they spend on average around 50% more time per day in these activities than wage and salary employed mothers. This additional time could have positive effects on their children's later life outcomes. The fact that self-employed women spend more time across all three types of childcare activities could be driven by both lower opportunity costs for providing care in self-employment as well as selection into self-employment among women who want to spend more time caring for children and the household.

Overall, the mean comparisons suggest that self-employment allows women to work entirely from home or at least complete more hours of work at home. This may be what allows self-employed women with young children to spend an extra hour per day working while supervising their children and an extra two hours per day supervising their children.

### 6.2.2 Differences in Time Use Between Self-employed and Wage and Salary Workers: Multivariate Regressions

While the mean differences in time use suggest that self-employed women spend more time with their children and are more likely to work from home, it is possible that part of this difference is explained by differences in observed traits. For example, if women who are more educated invest more time in their children and are more likely to be self-employed, then part of the difference could be explained by education level.<sup>22</sup> The coefficients on the self-employment indicator from the time use regressions with controls are shown in Table 9. These values can be interpreted as the difference in the outcome associated with being self-employed relative to working in a wage and salary position conditional on all covariates.

The number of minutes spent supervising children and the time spent working while supervising children remains larger for the self-employed. Self-employed women with young children spend an additional 106 minutes per day supervising their children and over an extra hour per day working while supervising their children relative to women in wage and salary employment. Importantly these effects are conditional on the number of hours worked so they do not reflect a reduction in work to spend more time caring for children.

After controlling for covariates, the self-employed and the wage and salary employed spend similar amounts of time on childcare and breaking down the childcare time by primary, educational and recreational show no statistically significant differences by self-employment status (see Appendix table A2). The large differences in time spent with children appears to occur through extra time spent supervising children while doing another primary activity.

Controlling for covariates has little impact on the percentage of work hours completed at home or the percent of individuals who work exclusively from home. The ability to work from home while self-employed appears to exist for women regardless of marital status and education level. Self-employed women do spend more time on housework than women in wage and salary work, but controlling for covariates accounts for half of the difference in means.

Comparing self-employed women and women in wage and salary positions in the ATUS provides evidence that self-employment offers flexibility in the number of hours worked and in work location. Women with young children who are self-employed spend significantly more time supervising their children. Although on average self-employed women work fewer hours, the difference in time spent with their children cannot be explained by a reduction in

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<sup>22</sup>See Guryan et al. (2008) for evidence of a positive relationship between time spent with children and the mother's education level.

the number of hours worked. Interestingly, self-employed women appear to “multi-task” by working while supervising their children.

Many self-employed mothers operate family daycares and therefore almost by definition are able to spend time with their children while working and work from home (Connelly (1992)). Appendix table A3 and table A4 show the time use analyses for women who do not work in childcare. There is little change in effect of self-employment on working from home, but there is a 15%-20% reduction in the extra minutes the self-employed spend supervising their children and a 30% reduction in the number of minutes they spend working while supervising their children. The coefficients remain statistically significant and economically important suggesting that the estimated effect is not only explained by women becoming childcare providers.

## 7 Conclusion

This paper provides new evidence on the self-employment motivations and behavior of American mothers. By using an improved empirical strategy and better data, I estimate the relationship between self-employment propensity and the age of a woman’s youngest child. My fixed effects specification rules out the explanation that women who like children also have a preference for being self-employed that is unrelated to the presence of their children. By investigating both mean differences and differences after controlling for covariates in time use, I show both evidence of selection into self-employment along observed dimensions and suggestive evidence that self-employment itself allows women to structure their time differently.

Taken together the evidence from the SIPP and ATUS suggest that mothers become self-employed to both care for and spend more time with their children and to a lesser extent to spend more time maintaining their home. The results from the SIPP imply that self-employment is associated with the presence of young children. While there are a variety of reasons that women may decide to become self-employed, this particular pattern is consistent with self-employment providing a way for mothers to balance work and household responsibilities. It is difficult to think of an alternative explanation for this specific inverted U shaped pattern. The effect is greatest when children require the most care at home and declines after children are school aged. In addition, some women may feel that there is no affordable or acceptable substitute for the childcare they provide. For these women, self-employment may offer an alternative work option that allows them to work while investing

in their children.

The time use tabulations from the ATUS show large differences in the time spent supervising children between self-employed women and women who work in wage and salary positions. These differences persist even after controlling for a variety of covariates and are strongest for women with a child under six years of age. The size of these differences imply a 34% increase in supervision time among self-employed mothers with a child under 6. It is interesting that after controlling for covariates, there is no difference in time spent completing childcare tasks between self-employed women and women in wage and salary work. Childcare activities include helping with homework, changing diapers, and reading to children. The large difference in time use that remains after controlling for covariates is in time spent supervising children. The distinction is important because childcare, as defined here, includes activities that would be thought to directly impact children's development and well being. My results suggest that observed characteristics can explain differences across employment types in time spent on these activities. The extra time spent as a supervisor of their children could allow self-employed mothers to save money on paid day care services. Indeed Laughlin (2013) find that in 2011, 28% of preschool aged children with self-employed mothers are taken care of by their mothers while their mothers were working compared to 5% of children with mothers who work in wage and salary positions.

One important question this study does not address is whether women are choosing self-employment because it is an ideal means of combining work and family life or whether women become self-employed because they are unable to find flexible employment in the wage and salary sector. While self-employment has many attractive attributes, it also has many associated costs.<sup>23</sup> Hamilton (2000) finds that the self-employed earn 35% less than equivalent wage and salary workers. Starting a business includes fixed costs of time and money and is often a risky source of income. It is also unclear how self-employment experience is valued in the wage and salary sector. It is possible that self-employment maintains and further develops women's human capital making them more valuable future employees. On the other hand, employers may feel that self-employment experience is difficult to value relative to wage and salary employment, which could result in lower future earnings for women who become self-employed.

Future research should focus on how this self-employment experience translates into future earnings in order to understand the role of self-employment in the gender wage gap. This research would help us understand whether mothers would be better served by policies

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<sup>23</sup>See Pugsley (2011) for estimates of the non-pecuniary benefits of self-employment.

that promote female self-employment or policies that enhance workplace flexibility within wage and salary employment.

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## **8 Tables and Figures**

**Table 1.** Top Occupations Among Self-Employed Women Over Time

<b>All Women</b>							
<b>1980</b>		<b>1990</b>		<b>2000</b>		<b>2012</b>	
Managers	10.4	Childcare Worker	12.5	Childcare Workers	11.8	Childcare Workers	7.7
Hairdressers	9.3	Hairdresser	7.1	Hairdressers	6.6	Hairdressers	6.5
Sales Supervisors	7.5	Sales Supervisor	5.7	Housekeepers	5.7	Housekeepers	4.9
Childcare Workers	6.4	Managers	4.5	Sales Supervisors	4.5	Real Estate Agents	4.8
Farmers	5.8	Bookkeepers	4.3	Real Estate Agents	3.4	Secretaries	4.1
Bookkeepers	5.3	Farmers	4.0	Bookkeepers	3.1	Sales Supervisor	4.0
Real Estate Agents	3.8	Real Estate Agents	4.0	Salesperson	2.9	Bookkeepers	3.1
Secretaries	3.5	Secretaries	3.1	Secretaries	2.7	Managers	2.7
Other Teachers	3.4	Salesperson	2.7	Farmers and Ranchers	2.7	Designers	2.5
Salesperson	3.1	Designers	2.5	Designers	2.4	Other Teachers	2.5
Door to Door Sales	2.6	Janitors	2.5	Other Teachers	2.0	Salesperson	2.2
Designers	2.0	Other Teachers	2.2	Accountants	1.6	Accountants	2.0
	63.1		55.1		49.5		46.9
<b>Women with Bachelor's Degree</b>							
<b>1980</b>		<b>1990</b>		<b>2000</b>		<b>2012</b>	
Other Teachers	8.8	Managers	5.6	Lawyers	4.7	Real Estate Agents	5.4
Physicians	8.3	Other Teachers	5.3	Other Teachers	4.4	Other Teachers	4.9
Managers	6.9	Real Estate Agents	5.1	Designers	4.2	Designers	4.0
Lawyers	6.9	Sales Supervisors	5.1	Real Estate Agents	4.0	Accountants	4.0
Psychologists	5.3	Childcare Workers	4.4	Sales Supervisors	3.9	Lawyers	3.9
Sales Supervisors	4.3	Designers	4.3	Childcare Workers	3.9	Sales Supervisor	3.5
Artists	3.9	Lawyers	3.9	Accountants	3.7	Management Analysts	3.3
Real Estate Agents	3.8	Psychologists	3.6	Management Analysts	3.4	Physicians/Surgeons	3.2
Authors	3.6	Physicians	3.5	Psychologists	3.0	Managers	3.1
Designers	2.9	Artists	3.0	Physicians and Surgeons	2.9	Childcare Workers	3.1
Farmers	2.0	Accountants	2.9	Writers and Authors	2.6	Psychologists	2.7
Management Analysts	2.0	Bookkeepers	2.6	Salesperson	2.5	Secretaries	2.1
	58.7		49.2		43.0		43.2

**Notes:** 1980, 1990, and 2000 data come from the Census 5% sample and 2012 data come from the ACS. Data were downloaded from IPUMS and estimates include all self-employed women ages 18-65 and are weighted using person weights.

**Table 2.** Self-Employment Rates of Married Women by Spousal Income Quintile

Spousal Income Quintile	All Women			Employed Women		
	1980	1990	2000	1980	1990	2000
1	4.6	5.8	6.2	7.0	8.0	8.2
2	3.5	5.3	6.0	5.6	7.3	7.7
3	3.2	5.5	6.0	4.6	6.9	7.3
4	3.4	6.0	6.5	5.0	7.4	7.8
5	4.5	7.8	8.3	7.6	10.5	10.7
All	3.8	6.3	6.8	5.9	8.3	8.5

**Notes:** 1980, 1990, and 2000 data come from the Census 5% sample. Spousal income is defined as the total household income less the woman's total personal pre-tax income. Data were downloaded from IPUMS and estimates include all married women ages 18-65 and are weighted using person weights.

**Table 3.** SIPP Summary Statistics

	1984-1986 Pooled Panels	1996 Panel	2008 Panel
<b>All Women</b>			
Age	34.0	35.4	36.1
<b>Percent of Sample:</b>			
Married	62.4	58.3	53.7
With Children Under 18	46.7	44.6	41.5
Working	64.0	70.0	68.2
Self-Employed	5.0	5.4	4.9
White Non-Hispanic	77.4	69.1	61.8
Black	12.9	14.3	13.8
Hispanic	6.6	11.8	16.0
High School or Less	59.8	42.8	28.3
With Associates Degree/Some College	22.2	33.2	38.9
With Bachelor's Degree or Higher	17.9	24.0	32.8
Number of Observations	32,389	26,318	27,069
<b>Women with Children Under 18</b>			
Age	34.0	34.8	36.0
Age of Youngest Child	6.8	6.6	6.6
<b>Percent of Sample:</b>			
Married	77.1	72.2	68.4
Working	57.3	66.1	65.4
Self-Employed	5.5	5.7	5.3
White Non-Hispanic	74.6	62.3	57.4
Black	14.2	15.6	14.3
Hispanic	8.0	14.4	20.2
High School or Less	65.1	47.2	31.7
With Associates Degree/Some College	19.9	32.3	38.3
With Bachelor's Degree or Higher	15.0	20.5	30.0
Number of Observations	16,856	13,585	13,423

**Notes:** The sample includes women ages 18-55 who are present during the first wave of the survey. Summary statistics are weighted using the monthly weight from each woman's final observation, but the number of observations are unweighted.

**Table 4.** American Time Use Survey Summary Statistics

	Women with Children Under 18	Women with Children Under 6
Age	35.5	31.7
<b>Percent of Sample:</b>		
Married	69.5	73.8
Working	66.4	59.7
Self-Employed	5.6	4.7
White-Non-Hispanic	61.2	57.0
Black	13.7	13.8
Hispanic	19.8	23.5
High School or Less	42.7	43.7
Associates Degree or Some College	28.9	26.6
Bachelor's Degree or Higher	28.4	29.7
<b>Average Number of Weekday Hours:</b>		
Working if Employed	7.3	7.2
Childcare if Children Under 13	1.9	2.5
Supervising Children if Children Under 13	4.3	5.0
Leisure	3.5	3.3
Sleeping	8.3	8.5
Housework	2.3	2.3
Number of Observations	31,855	14,834

**Notes:** The sample includes women ages 18-55 in the ATUS 2003-2012 dataset with at least one child under 18. Summary statistics are weighted using the survey person weight, but the number of observations are unweighted.

**Table 5.** Self-Employment Propensity

Dependent Variable: Self-Employment Status			
	1984-1986 Pooled Panels	1996 Panel	2008 Panel
Married	0.617** (0.297)	0.479 (0.320)	0.315 (0.325)
Age	0.394** (0.159)	0.333** (0.164)	0.471*** (0.156)
Age Squared	-0.006*** (0.002)	-0.004** (0.002)	-0.006*** (0.002)
Indicator for 2 Children	0.313 (0.266)	0.207 (0.350)	0.353 (0.327)
Indicator for 3 Children	-0.379 (0.447)	-0.576 (0.611)	1.033** (0.525)
Indicator for 4 or More Children	-1.221** (0.576)	-0.592 (1.000)	0.496 (1.018)
Youngest Child Indicators:			
Age 0	0.286 (0.333)	0.689 (0.435)	0.323 (0.549)
Age 1	0.849** (0.384)	1.140** (0.487)	0.615 (0.597)
Age 2	1.325*** (0.419)	1.300** (0.516)	1.262** (0.584)
Age 3	1.057** (0.437)	1.329** (0.521)	1.275** (0.575)
Age 4	0.694 (0.464)	1.068** (0.540)	1.263** (0.568)
Age 5	0.790 (0.485)	1.039* (0.558)	1.050* (0.579)
Age 6	0.810 (0.512)	0.853 (0.548)	0.586 (0.577)
Age 7	0.511 (0.521)	0.421 (0.543)	0.659 (0.565)
Age 8	0.213 (0.489)	0.593 (0.533)	0.304 (0.539)
Aged 9-13	0.475 (0.443)	0.417 (0.478)	0.189 (0.473)
Aged 14-17	0.507 (0.366)	0.190 (0.386)	-0.209 (0.338)
Mean Self-Employment Rate	5.0	5.4	4.9
Observations	32,336	26,318	27,069

**Notes:** Regressions predict self-employment status and include year fixed effects and individual fixed effects. Coefficients are multiplied by 100 for ease of interpretation. The sample includes women ages 18-55 who are present in wave 1 of the panel, and the results are weighted by the monthly weight of the woman's final observation. Separate regressions are run for the 1984-1986 pooled data, the 1996 panel, and the 2008 panel. Standard errors are clustered at the individual level. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 6.** Magnitude of Effects

	1984-1986 Pooled Panels	1996 Panel	2008 Panel
<b>Predicted Self-Employment Rate:</b>			
Women with No Children Under 18	4.21	4.93	4.57
Adding Coefficient for Youngest Child of Two	5.54	6.23	5.83
Percentage Change	31.6	26.4	27.6
<b>Predicted Self-Employment Rate:</b>			
Women with Youngest Child of Two	6.36	6.41	6.59
Without their Youngest Child of Two	5.52	5.76	5.67
Percentage Change	15.2	11.3	16.2

**Notes:** Predicted self-employment rates use fixed effect regressions described in Table 5. The first row is the predicted self-employment rate for women without children under 18. The second row adds the coefficient for a youngest child of two to the first row and the third row is the implied percentage change associated with having a child who is two years of age. The fourth row is the predicted self-employment rate among women whose youngest child is two years of age. The fifth row is the predicted self-employment rate if those women had not had their youngest two year old child. The sixth and final row is the percentage change in the predicted self-employment rate associated with the two year old youngest child.

**Table 7.** Differences in Time Use Associated with Self-Employment: Mean Comparisons

Dependent Variable	Sample	
	Women with Children Under 18	Women with Children Under 6
<b>Minutes Spent On:</b>		
Work	-43.3 (7.2)	-59.8 (10.5)
Childcare	17.7 (3.1)	27.6 (5.8)
Supervising Children Under 13	75.3 (8.3)	123.7 (12.9)
Working while Supervising Children Under 13	39.7 (3.9)	59.6 (7.1)
Leisure	-7.0 (4.4)	-1.5 (6.7)
Sleeping	-4.0 (3.5)	-0.1 (5.7)
Housework	39.3 (4.3)	39.7 (5.8)
Percentage Working from Home	21.1 (1.2)	20.0 (1.8)
Percentage of Work Done at Home	38.4 (1.2)	37.6 (1.8)

**Notes:** The sample for column 1 includes women ages 18-55 in the ATUS 2003-2012 who are employed and have at least one child under the age of 18. Column 2 restricts the sample to women with a child under the age of 6. Both columns only include weekday observations. Regressions include only a constant and a self-employment indicator term. Coefficients reported represent the difference in means between individuals who are self-employed and individuals in wage and salary employment.



**Table 8.** Differences in Childcare Types Associated with Self-Employment: Mean Comparisons

Dependent Variable	Sample	
	Women with Children Under 18	Women with Children Under 6
<b>Minutes Spent On:</b>		
Primary Childcare	7.9 (2.3)	15.2 (4.5)
Mean Primary Childcare	44.2	75.5
Educational Childcare	6.4 (1.1)	6.6 (1.9)
Mean Educational Childcare	12.6	11.3
Recreational Childcare	3.4 (1.4)	5.8 (2.9)
Mean Recreational Childcare	18.0	31.5

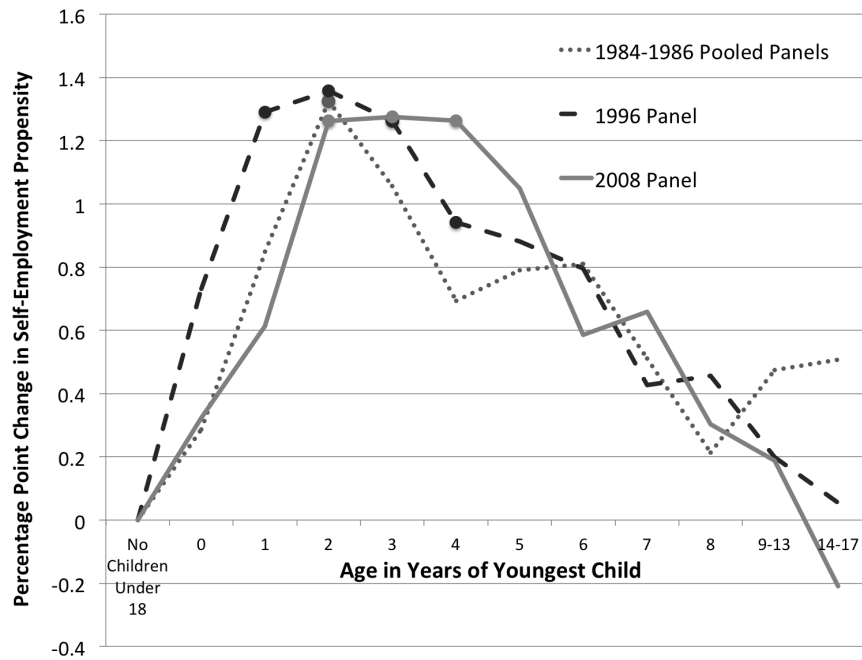
**Notes:** The sample for column 1 includes women ages 18-55 in the ATUS 2003-2012 who are employed and have at least one child under the age of 18. Column 2 restricts the sample to women with a child under the age of 6. Both columns only include weekday observations. Regressions include only a constant and a self-employment indicator term. Coefficients reported represent the difference in means between individuals who are self-employed and individuals in wage and salary employment.

**Table 9.** Differences in Time Use Associated with Self-Employment: Multivariate Regressions

Dependent Variable	Sample	
	Women with Children Under 18	Women with Children Under 6
<b>Minutes Spent On:</b>		
Childcare	5.3 (3.0)	5.2 (5.6)
Supervising Children Under 13	56.4 (7.6)	105.5 (12.7)
Working while Supervising Children Under 13	43.5 (4.3)	67.1 (8.0)
Leisure	-5.3 (4.3)	1.4 (6.4)
Sleeping	3.0 (3.3)	6.6 (5.4)
Housework	17.7 (4.0)	19.8 (5.6)
Percentage Working from Home	21.1 (1.3)	20.3 (2.0)
Percentage of Work Done at Home	34.8 (1.6)	33.1 (2.6)

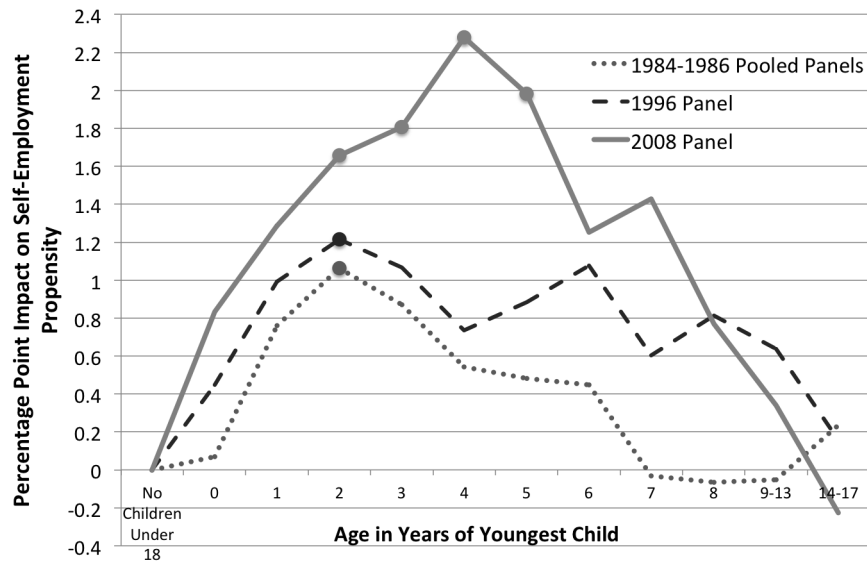
**Notes:** The sample for column 1 includes women ages 18-55 in the ATUS 2003-2012. In column 2, the sample is restricted to women with a child under the age of 6. Regressions include controls for respondents' education, race, age, number of children, hours worked, employment status and a self-employment indicator. Coefficients reported represent the effect of being self-employed relative to working in a wage and salary position.

**Figure 1.** Female Self-Employment Rates and the Age of the Youngest Child; SIPP Wave 1 Respondents Using Final Month Weights



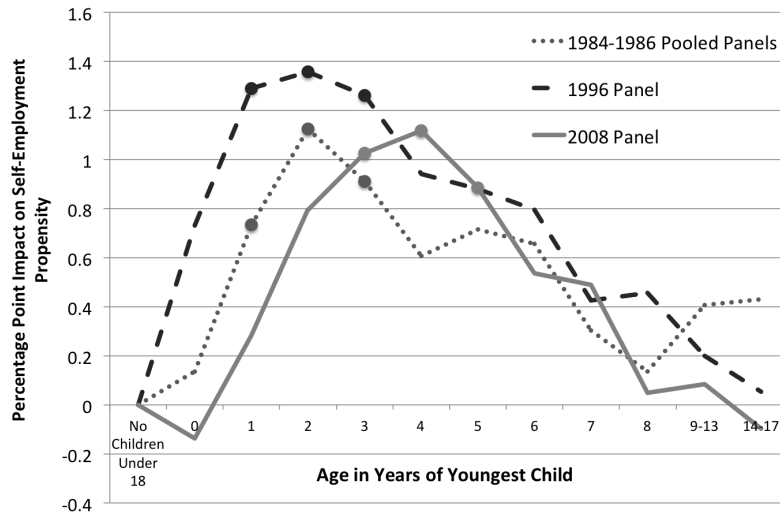
**Notes:** The three lines are plots of the coefficients on the age of the youngest child from regressions using different SIPP panels. The regressions predict self-employment status controlling for age, marital status, number of children, and fixed effects with standard errors clustered at the individual level. The markers denote statistical significance at the 5% level. The estimation sample includes women ages 18-55 during the first wave of each SIPP panel. Observations are weighted using the monthly weight from the individual's final month in the survey.

**Figure 2.** Female Self-Employment Rates and the Age of the Youngest Child; SIPP Full Panel Respondents Using Final Panel Weights



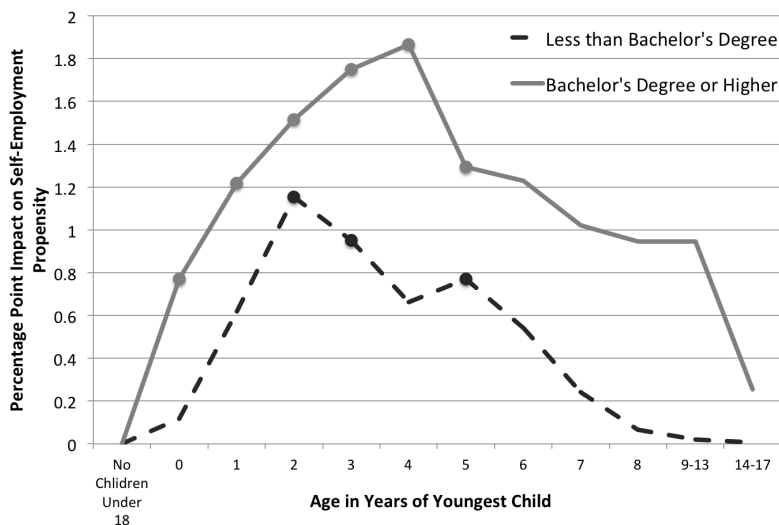
**Notes:** The three lines are plots of the coefficients on the age of the youngest child from regressions using different SIPP panels. The regressions predict self-employment status controlling for age, marital status, number of children, and fixed effects with standard errors clustered at the individual level. The markers denote statistical significance at the 5% level. The estimation sample includes women ages 18-55 during the first wave of each SIPP panel who are observed during every month of the survey. Observations are weighted using the final panel weight for the individual, with the exception of the 2008 panel which uses the 2012 longitudinal weights, which are the most recent weights available.

**Figure 3.** Female Self-Employment Rates and the Age of the Youngest Child; SIPP Wave 1 Respondents Unweighted



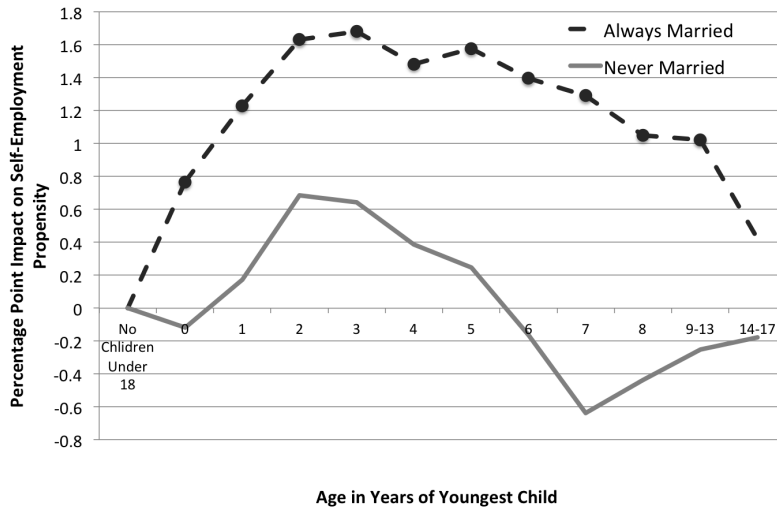
**Notes:** The three lines are plots of the coefficients on the age of the youngest child from regressions using different SIPP panels. The regressions predict self-employment status controlling for age, marital status, number of children, and fixed effects with standard errors clustered at the individual level. The markers denote statistical significance at the 5% level. The estimation sample includes women ages 18-55 during the first wave of each SIPP panel. Observations are unweighted.

**Figure 4.** Female Self-Employment Rates and the Age of the Youngest Child; Pooled SIPP Panels Using Final Month Weights; By Education Level



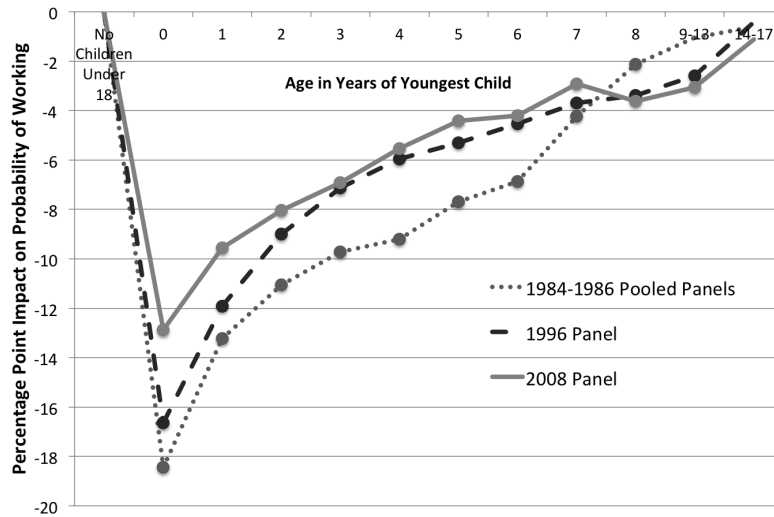
**Notes:** The two lines are plots of the coefficients on the age of the youngest child from regressions on the sample of women with at least a bachelor's degree and women without a bachelor's degree. The regressions predict self-employment status controlling for age, marital status, number of children, and fixed effects with standard errors clustered at the individual level. The markers denote statistical significance at the 5% level. The estimation sample pools all SIPP panels together and includes women ages 18-55 during the first wave of a SIPP panel. Observations are weighted using the monthly weight from the individual's final month of the survey.

**Figure 5.** Female Self-Employment Rates and the Age of the Youngest Child; Pooled SIPP Panels Using Final Month Weights; By Marital Status



**Notes:** The two lines are plots of the coefficients on the age of the youngest child from regressions on the sample of women who are married throughout the entire survey and women who are single throughout the entire survey. The regressions predict self-employment status controlling for age, marital status, number of children, and fixed effects with standard errors clustered at the individual level. The markers denote statistical significance at the 5% level. The estimation sample pools all SIPP panels together and includes women ages 18-55 during the first wave of a SIPP panel. Observations are weighted using the monthly weight from the individual's final month of the survey.

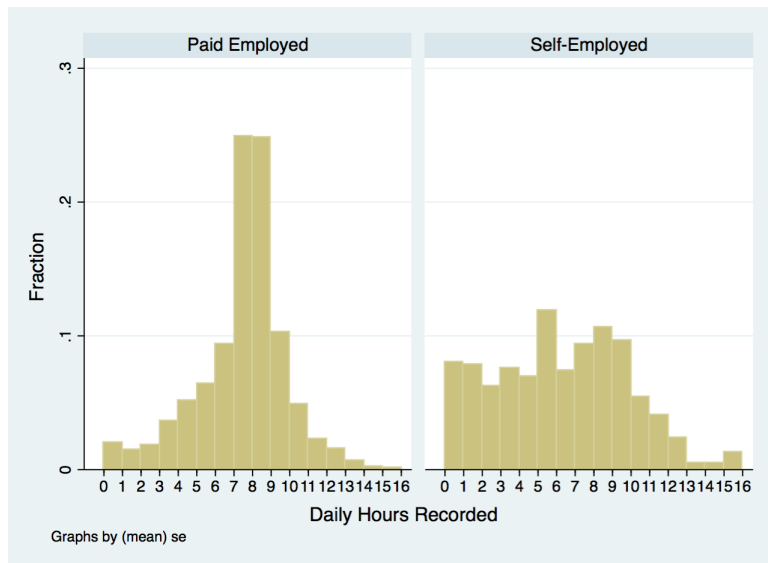
**Figure 6.** Percentage of Women Working by the Age of the Youngest Child; SIPP Wave 1 Respondents Using Final Month Weights



**Notes:** The three lines are plots of the coefficients on the age of the youngest child from regressions using different SIPP panels. The regressions predict working status controlling for age, marital status, number of children, and fixed effects with standard errors clustered at the individual level. The markers denote statistical significance at the 5% level. The estimation sample includes women ages 18-55 during the first wave of each SIPP panel. Observations are weighted using the monthly weight from the individual's final month in the survey.

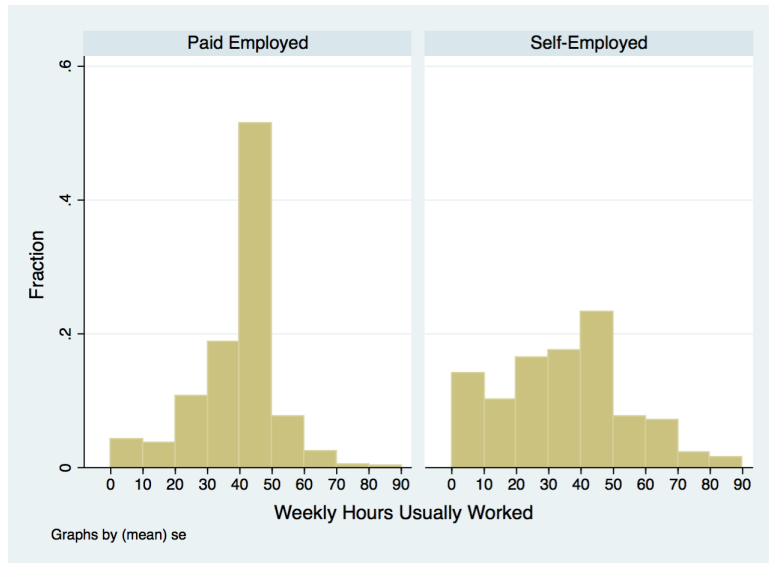


**Figure 7.** Weekday Daily Hours Worked By Self-Employment Status; Working Mothers from ATUS



**Notes:** These histograms show the daily hours recorded as working in the ATUS for employed women with children under the age of 18 who were interviewed on a weekday and worked at least one minute that day. The observations are weighted using the ATUS person weights. Observations are top coded at 16 hours. Self-employment status is determined according to the main job of the individual.

**Figure 8.** Usual Weekly Hours Worked By Self-Employment Status; Working Mothers from ATUS



**Notes:** These histograms show the usual weekly hours worked in the ATUS for employed women with children under the age of 18 who were interviewed on a weekday and worked at least one minute that day. These data come from the respondents' answer to a question about usual hours worked and not directly from the time diary data. The observations are weighted using the ATUS person weights. Observations are top coded at 90 hours per week. Self-employment status is determined according to the main job of the individual.

## A Appendix

**Table A1.** Differences in Time Use Associated with Self-Employment: Multivariate Regressions

Time Spent in Activity	ATUS Two Digit Code	Women Children Under 6		Men Children Under 6	
		Mean	Multi- variate	Mean	Multi- variate
Personal Care	1	-10.1	-0.9	8.0	12.0*
Household Activities	2	39.7*	18.8*	1.3	-4.4
Caring for and Helping Household Members	3	28.8*	6.3	6.2	3
Caring for and Helping Nonhousehold Mem- bers	4	-0.4	-0.2	-0.2	-0.01
Work and Work-Related Activities	5	-59.8*	-17.2	1.8	3.2
Education	6	-5.9*	-5.4*	-2.6*	-0.9
Consumer Purchases	7	-1.1	-3.7	-5.6*	-5.3*
Professional and Personal Care Services	8	1.5	1.2	-0.7	-0.8
Household Services	9	-0.03	-0.2	0.2	0.2
Government Services and Civic Obligations	10	-0.3*	-0.2*	-0.04	0.07
Eating and Drinking	11	4.6*	0.4	-0.3	-1.5
Socializing, Relaxing and Leisure	12	-4.9	-1	-12.5	-8.8
Sports, Exercise & Recreation	13	3.5	2.6	2.7	2.9
Religious and Spiritual Activities	14	5.2*	4.5*	4.1*	3.5*
Volunteer Activities	15	2.3	-0.3	2.4	1.5
Telephone Calls	16	1.4	1.5	-0.06	0.02
Traveling	18	-7.4*	-8.2*	-2.5	-2.6

**Notes:** The sample for column 1 includes women ages 18-55 in the ATUS 2003-2012. In column 2, the sample is restricted to women with a child under the age of 6. Regressions include controls for respondents' education, race, age, number of children, hours worked, employment status and a self-employment indicator. Coefficients reported represent the effect of being self-employed relative to working in a wage and salary position.

**Table A2.** Differences in Childcare Types Associated with Self-Employment: Multivariate Regressions

Dependent Variable	Sample	
	Women with Children Under 18	Women with Children Under 6
<b>Minutes Spent On:</b>		
Primary Childcare	2.3 (1.3)	4.8 (4.6)
Mean Primary Childcare	44.2	75.5
Educational Childcare	1.1 (0.6)	1.6 (1.7)
Mean Educational Childcare	12.6	11.3
Recreational Childcare	0.8 (0.8)	-1.2 (2.8)
Mean Recreational Childcare	18.0	31.5

**Notes:** Regressions include controls for respondents' education, race, age, number of children, hours worked, employment status and a self-employment indicator. Coefficients reported represent the effect of being self-employed relative to working in a wage and salary position.

**Table A3.** Differences in Time Use Associated with Self-Employment Excluding Childcare Workers: Mean Comparisons

Dependent Variable	Sample	
	Women with Children Under 18	Women with Children Under 6
<b>Minutes Spent On:</b>		
Work	-55.1 (7.3)	-73.9 (10.6)
Childcare	20.3 (3.1)	31.4 (6.2)
Supervising Children Under 13	63.8 (8.3)	104.8 (13.0)
Working while Supervising Children Under 13	27.8 (3.2)	40.2 (5.8)
Leisure	-6.4 (4.7)	-2.0 (7.2)
Sleeping	-1.7 (3.6)	2.8 (5.7)
Housework	41.5 (4.5)	39.7 (5.8)
Percentage Working from Home	19.4 (1.3)	18.7 (1.9)
Percentage of Work Done at Home	36.2 (1.7)	35.3 (2.6)

**Notes:** The sample for column 1 includes women ages 18-55 in the ATUS 2003-2012 who are employed, but are not childcare workers, and have at least one child under the age of 18. Column 2 restricts the sample to women with a child under the age of 6. Both columns only include weekday observations. Regressions include only a constant and a self-employment indicator term. Coefficients reported represent the difference in means between individuals who are self-employed and individuals in wage and salary employment.

**Table A4.** Differences in Time Use Associated with Self-Employment Excluding Childcare Workers: Multivariate Regressions

Dependent Variable	Sample	
	Women with Children Under 18	Women with Children Under 6
<b>Minutes Spent On:</b>		
Childcare	6.3 (3.1)	6.2 (6.1)
Supervising Children Under 13	44.5 (7.5)	82.3 (12.3)
Working while Supervising Children Under 13	30.2 (3.5)	45.2 (6.7)
Leisure	-5.4 (4.6)	0.1 (7.0)
Sleeping	5.8 (3.5)	9.0 (5.5)
Housework	18.2 (4.3)	21.9 (6.0)
Percentage Working from Home	19.0 (1.3)	18.8 (2.1)
Percentage of Work Done at Home	31.5 (1.7)	29.5 (2.6)

**Notes:** The sample for column 1 includes women ages 18-55 in the ATUS 2003-2012 who are not employed in childcare professions. In column 2, the sample is restricted to women with a child under the age of 6. Regressions include controls for respondents' education, race, age, number of children, hours worked, employment status and a self-employment indicator. Coefficients reported represent the effect of being self-employed relative to working in a wage and salary position.