

Informal Caregiving across the Gendered Life Course for Recent U.S. Cohorts

Erin Ice¹

Department of Sociology, and Population Studies Center,
University of Michigan

¹ Contact: erinice@umich.edu. Paper submission to the European Population Conference, Padova, Italy, June, 2020.

ABSTRACT

While past research has identified gender gaps in time spent in caregiving, that are wide in childbearing years, we know little about how these gaps change across the life course. This study uses the American Time Use Survey (2003-2017) to analyze men and women's time spent in unpaid labor across age for multiple U.S. birth cohorts. The analysis implements a novel marginalized two-part model to estimate caregiving time use for the full population. The findings reveal distinct life course patterns of unpaid labor for men and women where women's time spent in caregiving is most intense during childbearing and working ages, while men's time use is stable age. The analysis will implement a cohort analysis and decomposition to consider if recent cohort's caregiving time use has shifted primarily due to changing characteristics (labor force participation, childbearing, and marriage rates) or changing behavioral patterns (such as the rise of intensive parenting).

While much work has focused on how men and women balance work and family when they have children to care for, there has been less attention to a longer view of care, one that recognizes that adults spend time in various forms of care even when children are not present. Thus, little research has considered how the gender gap in caregiving shifts across the life course, as men and women enter, and exit, key life course institutions such as marriage, childbearing, and paid work.

This paper will consider patterns of caregiving across the gendered life course by asking three main questions. First, is the gender gap for caregiving largest during child-bearing years? Because research has considered time use for certain bounded populations—those with children, those with parents, or those working (Kalil, Ryan, and Corey 2012; Pepin, Sayer, and Casper 2018), we have little insight into the age-related patterns of unpaid labor, and how they shift for men and women across age. Without an analysis of age-based patterns of unpaid labor for men and women, we have little insight into which points in the life course, and the accompanying roles of these points, are key points of gendered practices.

Second, have these age-based patterns of caregiving changed for more recent cohorts? Because recent cohorts have changing timing of marriage, childbearing, and labor force participation, along with changing patterns of “intensive parenting” it is likely that recent cohorts have distinct age-based patterns. Following from the second question, the third question asks about the source of these changing cohort patterns. Are cohort patterns changing due to cohort distinct characteristics (such as rates of marriage, childbearing, and labor force participation) or distinct behavioral patterns (such as the rise of intensive parenting)?

While the focus of the paper is on gendered patterns of care, I consider these patterns by level of educational attainment. Thus, my study focuses on comparing men and women without a

bachelor's degree and men and women with a bachelor's degree. I make this distinction both because of distinct demographic patterns for these educational groups (including patterns of childbearing and marriage timing) and because of distinct cultural patterns of childrearing, where evidence suggests that highly educated parents have increasingly devoted themselves to practices of "intensive parenting" (Kalil et al. 2012; Ramey and Ramey 2009).

This study contributes to a fuller understanding of the gendered dynamics of caregiving across the life course. I analyze time use for adults age 25-80, building on past research which has focused primarily on childbearing ages or working ages. The analysis of life course patterns of unpaid labor for the more complete age range allows for a depiction of the heterogeneity of gendered patterns of unpaid labor across age. In all, this research uses nationally representative, cross sectional data from the 2003-2017 American Time Use Surveys (ATUS) to examine variation in unpaid labor across age 25-80 and cohort for men and women.

Defining Care

In line with the gendered life course perspective, my study follows recent calls for a unified focus on caregiving and unpaid labor, irrespective of whether this is spent with children, adults with disabilities, or the elderly (Folbre and Wright 2012). Care is defined here by activities that allow others to go about their daily lives. Under this perspective, unpaid caregiving should be analyzed as one social process (1) because of the burden it takes off of the state in helping dependents and (2) because different caregiving activities are similar in the emotional and intimate interactions that comprise them (Folbre and Wright 2012; Zelizer 1997). The payoff to a more holistic understanding of informal care is that we can understand the social patterns

that unite caregiving activities, allowing for an understanding of care that persists across the life course and is not concentrated in one age range.

DATA & ANALYSIS

Data

This analysis uses data from the American Time Use Survey (ATUS) (Hofferth, Flood, and Sobek 2018). I pool data from 2003-2017. The ATUS is a nationally representative survey drawn from the Current Population Survey sample. With computer-assisted telephone interviews, respondents are called at random and asked to provide a detailed account of their previous 24 hours. The respondents report their day's activities, including when each activity began and ended, where they were, and who they were with. While panel time-use data would be preferable to understand how unpaid labor burdens change during life course transitions, such data is not available in the U.S. The ATUS, while cross-sectional, is conducted for the full adult population for many years, making it the best option for my research questions. Because I am interested in population-level description, the ATUS is a preferable survey to other surveys that ask about time use, such as the Panel Study of Income Dynamic's time-use supplement or the Health and Retirement Study's caregiving time-use supplements because these studies ask only a subset of the sample and or do not capture full adult population. Moreover, the ATUS's methodology is regarded as the privileged way to collect accurate information on time spent in activities because of its minute-by-minute recounting of the previous day. In this paper I restrict my analyses to ages 25-80, to focus on the adult population after most adults have left full-time education. The final analytic sample has 168,199 observations.

Measures

Outcome variable. I consider all types of care and help provided to household children and adults, and non-household children and adults, as well as travel related to caring.

Key Predictors. I focus on gender, bachelor's degree attainment (following Schneider & Hastings 2017), age, and cohort. I use bachelor's degree attainment as a measure of economic standing for three main reasons. First, the social and economic significance of a bachelor's degree has remained relatively stable across cohorts, though a larger fraction of more recent cohorts have a bachelor's degree (Torche 2011). Second, educational attainment marks economic standing more stably across age than income, which fluctuates, particularly at retirement. Third, those with accumulated resources may select out of labor market participation in order to spend time caring; thus, income may not always be a reliable marker of economic status. I also consider the age of the respondent, reflecting my interest in how unpaid is structured across the life course. I allow the relationship between age and time spent in activities to be curvilinear by including a quadratic term for age. Last, I consider ten-year birth cohorts.

Covariates. I account for if the day of interest was a weekend (Saturday or Sunday), as certain tasks may be concentrated in weekends. Because my analysis pools more than ten years of data, I include a linear term for year of survey to adjust for time trends. I also adjust for racial/ethnic characteristics (non-Hispanic white, non-Hispanic black, Hispanic and other or multiple race/ethnicities) to adjust for shifts in the population composition between 2003 and 2017.

Analytic Approach: Modeling Time Use Data

Time-use data is historically difficult to model, as the distribution of minutes/day in certain activities typically includes a mass of zeros coupled with a right-skewed continuous

distribution (Brown and Dunn 2011; Stewart 2013). To address this mass of zeros, many approaches use OLS regressions but limit their sample to those at risk of certain time use activities to reduce the proportion reporting no time in certain activities (e.g. when studying childcare, analysts restrict the sample to those with children in their household (Schneider, Hastings, and LaBriola 2018). This approach is reasonable when the research question pertains to a certain subpopulation. However, the interest of this paper is to describe housework and caregiving trends for an unconditioned sample, many of whom do not perform any caregiving or housework during the day they report on². Therefore, I'm left with a large portion of the sample with zeros; under this circumstance, OLS produces results that will under predict the true number of zeros and possibly produce biased estimates the average time due to the skewed distribution.

To address this methodological challenge, I study the time spent in unpaid labor in three ways: (1) the probability that subgroups engage in any unpaid labor, (2) the intensity of the time spent in unpaid labor for the subpopulation who spends any time in the activity, and (3) the overall mean that combines the estimates from the first two analyses. I first use logistic regressions to estimate the probability of any time spent in unpaid labor. Then, on the conditioned subset of the data with non-zero time use values, I use linear regression to estimate the average conditional mean time in unpaid labor. Then I implement a marginalized two-part model (MTP) to combine the estimates of the logistic and linear regressions to estimate the marginalized mean across the two models, described below.

² Approaches using Tobit models handle the mass of zeros by assuming that there is an unobserved underlying distribution of time use such that some of the observed zeros are in fact negative values (Brown & Dunn 2011). However, recent tests of the Tobit model are biased, particularly when the proportion of zeros increases in the outcome (Stewart 2013; Brown & Dunn 2011). Thus, the Tobit model does not theoretically fit the structure of time-use data (which cannot be negative), nor does it produce unbiased results.

To calculate the marginalized mean, I use recent methods built off a two-part model. In this approach, there are separate modeling strategies for analyzing the probability of being a positive value and the continuous change in the positive values (Smith et al. 2014, 2017). The MTP allows for the interpretation of covariate effects on the marginal mean instead of on the conditional mean while also capturing the skewness and zero-inflation of much time use data. Because my interest lies in a population-level description of caregiving, the marginalized two-part model is preferable in order to assess the effect of gender, education, and age on the time spent in unpaid labor for the whole population instead of a conditioned subset. The MTP is particularly preferable in cases where a large fraction of the sample has zeros (Smith et al. 2014), as is particularly the case for caregiving.

The MTP model is specified using the linear predictors,

$$\text{logit}(\pi_i) = \alpha_0 + \alpha \mathbf{X}_i$$

$$E(Y_i) = \exp(\beta_0 + \beta \mathbf{X}_i)$$

The MTP reparameterizes the two linear predictors in terms of the unconditional mean and the estimation is fit jointly using maximum likelihood estimation. The method, described in Smith et al. (2014), is reimplemented in R using standard maximum likelihood techniques.

The full draft will include three results sub-sections. In the first section of the results, I will present overall age-based patterns of caregiving for men and women (with and without a Bachelor's degree) using the marginalized two-part model. I run separate models for each subgroup: men with a bachelor's degree, men without a bachelor's degree, women with a bachelor's degree, and women without a bachelor's degree. For all models, I include an interaction between age and cohort, in addition to a squared age term and adjustments for race/ethnicity, year of survey, and a weekend indicator. By including an interaction between age

and cohort, I allow the age-graded patterns of unpaid labor to be distinct for different cohorts. In the second section, I will ask if the age-based patterns are distinct across cohort. I will focus on ten-year age categories, asking if more recent cohorts have increased, or decreased, their time spent in caregiving at that age-range. Finally, in the third section of the paper, I will decompose the observed cohort changes into the contribution of changing characteristics of the more recent cohort (such as changing labor-force participation rates, changing rates of marriage, and changing rates of having children in the household) versus changing behavioral patterns (such as more recent cohorts spending more time with children even if they have the same demographic characteristics).

PRELIMINARY RESULTS

Table 1 shows the weighted description of the sample. About 32% of men and 33% of women have a bachelor’s degree. The average age of men is 50 and of women is 49.

TABLE 1. Description of Key Predictors by Gender, ATUS 2003-2017

	Women		Men	
	Mean	SE	Mean	SE
Bachelor's degree (prop)	0.32	0.002	0.33	0.0022
Age (mean)	50	0.067	48.8	0.076
n	94,943		73,256	

Note: Adjusts for Survey Design

Table 2 shows the weighted estimates of the proportion spending time in care and the average time use for the conditioned subset of the sample with positive values. Less than half of all subgroups spent any time in caregiving activities. A larger fraction of women spend time in care, compared to men (41% of women without a bachelor’s degree and 45% of women with a

bachelor's degree, compared to 29% of men without a bachelor's degree and 34% with a bachelor's degree). Women and men with a bachelor's degree also spend more time in care; for women this difference is about an hour per week and for men it is about thirty minutes per week.

TABLE 2. Caregiving (min/day) descriptive statistics, by gender and educational attainment, ATUS 2003-2017

	Women				Men			
	No BA		BA		No BA		BA	
	Mean	(se)	Mean	(se)	Mean	(se)	Mean	(se)
Any time in care (prop)	0.410	(0.003)	0.447	(0.004)	0.289	(0.003)	0.342	(0.004)
Average time in care for those who spent any time in care	56.747	(0.550)	67.892	(0.790)	33.365	(0.480)	38.037	(0.580)
n	62,999		31,944		46,701		26,555	

Note: Adjusts for Survey Design

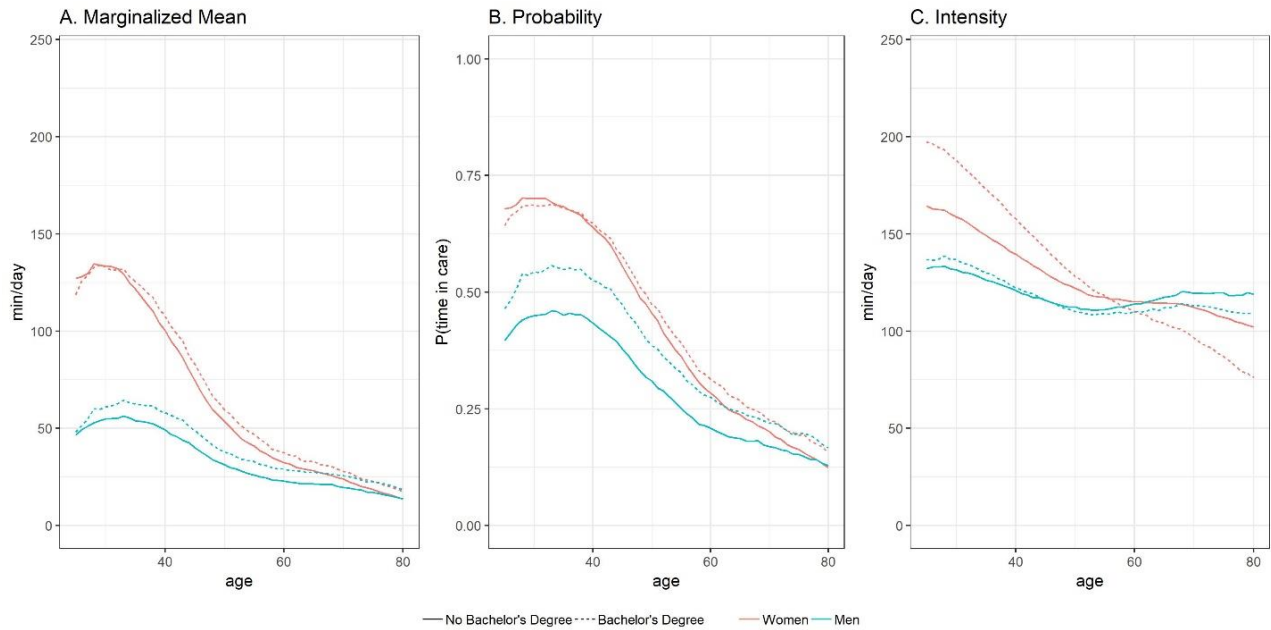
Unpaid Labor Across the Life Course

Next, I analyze regression-adjusted overall time spent in care across age (Figure 1, Panel A); I consider how selection into (Figure 1, Panel B), intensity of (Figure 1, Panel C) care patterns the overall average. The marginalized estimates (Figure 1, Panel A) show that that the gender gap in caregiving time use are widest during childbearing years. Men and women with a bachelor's degree spend more time in care than their less educated counterparts but the difference is minimal.

Panels B and C investigate if these differences originate from selection into or intensity of time spent in care. Overall, men and women in their childbearing years have a higher probability of spending time in care that decreases with age. For women, over 60% spent time in caregiving during childbearing years. The gender difference converges with age. For men, those

with a bachelor's degree consistently have a higher probability of spending time in care while for women the educational difference is negligible.

FIGURE 1. Caregiving time use across the life course, by gender and educational attainment, ATUS, 2003-2017



Note: Estimates adjust for race/ethnicity, year of survey, cohort, weekend, and survey design.

For the subset of the sample who spent any time in care, the age-related patterns are distinct for men and women; where women see decreasing intensity of time spent in care at older ages and men see a stable intensity of time across age. Where there was an education difference in selection into care for men, for those men who are spending time in care, the educational difference is small. In contrast, women's educational difference reverses with age; highly educated women spend much more time in care at younger ages, but by age sixty, this difference is reversed and women without a bachelor's degree spend more time in care.

CONTRIBUTIONS

This paper will analyze patterns of unpaid labor across the life course for recent U.S. birth cohorts. By studying caregiving for an unrestricted, nationally representative sample of U.S. adults, this study extends past research which has focused on certain sub-populations of the U.S., namely working adults and adults with children. This extension allows for a fuller understanding of how men and women spend time care. The findings point to greater heterogeneity in women's time spent in unpaid labor, both across age and across cohorts. Across age, women's time spent in caregiving is concentrated in childbearing years while men have little variation in caregiving time use at different ages; the gender gap in caregiving is large in childbearing years and shrinks with age.

With the consideration of cohort change, this paper will help to understand if the gender gap is widening or narrowing for more recent cohorts. Finally, by decomposing these changes into the contribution of changing characteristics of recent cohorts versus the changing behavioral patterns of recent cohorts, the analysis will help to identify how certain life course institutions—marriage, childbearing, and the labor market—may be exacerbating, or diminishing, gender differences in caregiving.

WORKS CITED

- Brown, Judith E. and Peter K. Dunn. 2011. "Comparisons of Tobit, Linear, and Poisson-Gamma Regression Models: An Application of Time Use Data." *Sociological Methods & Research* 40(3):511–35.
- England, Paula. 2010. "The Gender Revolution: Uneven and Stalled." *Gender and Society* 24(2):149–66.
- Esping-Andersen, Gosta. 2009. *Incomplete Revolution: Adapting Welfare States to Women's New Roles*. Polity.
- Folbre, Nancy and Erik Olin Wright. 2012. "Defining Care." Pp. 1–20 in *For Love and Money: Care provision in the United States*, edited by N. Folbre. Russell Sage Foundation.
- Hofferth, Sandra L., Sarah M. Flood, and Matthew Sobek. 2018. "American Time Use Survey Data Extract Builder: Version 2.7."
- Kalil, Ariel, Rebecca Ryan, and Michael Corey. 2012. "Diverging Destinies: Maternal Education and the Developmental Gradient in Time With Children." *Demography* 49(4):1361–83.
- Pepin, Joanna R., Liana C. Sayer, and Lynne M. Casper. 2018. "Marital Status and Mothers' Time Use: Childcare, Housework, Leisure, and Sleep." *Demography* 55(1):107–33.
- Ramey, Garey and Valerie A. Ramey. 2009. "The Rug Rat Race." *National Bureau of Economic Research Working Paper Series* No. 15284.
- Schneider, Daniel, Orestes P. Hastings, and Joe LaBriola. 2018. "Income Inequality and Class Divides in Parental Investments." *American Sociological Review* 83(3):475–507.
- Smith, Valerie A., Brian Neelon, John S. Preisser, and Matthew L. Maciejewski. 2017. "A Marginalized Two-Part Model for Longitudinal Semicontinuous Data." *Statistical Methods in Medical Research* 26(4):1949–68.
- Smith, Valerie A., John S. Preisser, Brian Neelon, and Matthew L. Maciejewski. 2014. "A Marginalized Two-Part Model for Semicontinuous Data." *Statistics in Medicine* 33(28):4891–4903.
- Stewart, Jay. 2013. "Tobit or Not Tobit?" *Journal of Economic and Social Measurement* 38(3):263–90.
- Torche, Florencia. 2011. "Is a College Degree Still the Great Equalizer? Intergenerational Mobility across Levels of Schooling in the United States." *American Journal of Sociology* 117(3):763–807.
- Zelizer, Viviana A. Rotman. 1997. *The Social Meaning of Money*. Princeton University Press.