Caregiving time costs and trade-offs: Gender differences in Sweden, the UK, and Canada

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\section*{ABSTRACT}

Population ageing is putting pressure on pension systems and health care services, creating an imperative to extend working lives. At the same time, policy makers throughout Europe and North America are trying to expand the use of home care over institutional services. Thus, the number of people combining caregiving responsibilities with paid work is growing. We investigate the conflicts that arise from this by exploring the time costs of unpaid care and how caregiving time is traded off against time in paid work and leisure in three distinct policy contexts. We analyze how these tradeoffs differ for men and women (age 50–74), using time diary data from Sweden, the UK and Canada from 2000 to 2015. Results show that women provide more unpaid care in each country, but the impact of unpaid care on labor supply is similar for male and female caregivers. Caregivers in the UK and Canada, particularly those involved in intensive caregiving, reduce paid work in order to provide unpaid care. Caregivers in Sweden do not trade off time in paid work with time in caregiving, but they have less leisure time. Our findings support the idea that the more extensive social infrastructure for caring in Sweden may diminish the labor market effects of unpaid care, but highlight that throughout contexts, intensive caregivers make important labor and leisure tradeoffs. Respite care and financial support policies are important for caregivers who are decreasing labor and leisure time to provide unpaid care.

\section*{1. Introduction}

In most OECD countries, population ageing is putting pressure on pension systems as well as health and caring services, motivating polices that extend working lives of the employed. Alongside this, there is an increased emphasis on care provision in the home, creating greater demand for informal care services (OECD, 2017). International evidence has highlighted the tradeoffs between employment and informal care provision among older adults. This literature indicates that there is a substitution between care provision and labor supply, especially with respect to intensive caregiving (Spiess & Schneider, 2003; Lilly, Laporte, & Coyle, 2007; Bolin, Lindgren, & Lundborg, 2008; Jacobs et al., 2013; Van Houtven, Coe, & Skira, 2013). This substitution effect is often cited as a contributor to differences in men’s and women’s labor market outcomes, as women disproportionately tend to take on caregiving roles over the life course (Ferrant, Pesando, & Nowacka, 2014). There is, however, little research exploring how this substitution effect may differ for men versus women across policy contexts. This is an important evidence gap because different policy contexts may have distinct impacts on the time tradeoffs of caregivers, with implications for their health and economic outcomes and the gender gaps in such outcomes. Here, we investigate the time-related conflicts that arise from competing labor and caregiving demands for older adult men and women across three policy contexts: Sweden, the UK, and Canada.

While the demographic context for caregiving is similar across Europe and North America, these three countries provide unique contexts with respect to welfare state regime types and gender equality (Bettio & Plantenga, 2004; Esping-Andersen, 1999; Simonazzi, 2009). Sweden and its Nordic neighbors were early adopters of gender-neutral policies and the dual-earner/dual-carer model. This model eases work-family conflicts through leave programs with income replacement, family income support, and publicly provided care facilities and services. Other welfare state types, particularly the Anglo-Saxon model, are more selective and less oriented towards reducing gender inequalities, resulting in a stricter gender division of labor, with lower levels of female labor force participation and less involvement of men in unpaid domestic activities (Neilson & Stanfors, 2014).

Against this backdrop, the present study investigates the time-related...
conflicts that arise from men and women being challenged by both caregiving responsibilities and labor market participation. In addition to focusing on different policy contexts, we build on existing literature by exploring a broader spectrum of time tradeoff activities for caregivers, including time spent in paid work, routine housework, and leisure. This gives a more nuanced understanding of the types of time tradeoffs individuals with caregiving duties make across different contexts. Specifically, we ask: 1) Who cares? 2) How large are the gender gaps with respect to unpaid care? 3) To what extent is time in caregiving traded off against time in other activities among men and women, and how does caregiving intensity factor into this?

1.1. Theoretical considerations

Our research is guided by economic time allocation theory, which posits that individuals with family and household responsibilities must trade off among three uses of time: paid work, leisure, and home care (Becker, 1965; Graham & Green, 1984; Gronau, 1977). Time allocation models consider decisions on labor supply and care to be interrelated because they compete for the caregiver’s time (limited to 24 h per day).

What the best choice is depends on context and changes with economic conditions (e.g., relative earnings or transfers) and the life cycle (Becker & Ghez, 1975). Thus, how men and women with caregiving responsibilities allocate their time between paid work, caregiving, and other activities depends on options which vary according to individual, household and contextual factors. Individuals are assumed to rationally choose the optimal amount of time for different activities and the resources they need to maximize their utility (cf. Becker, 1981). The model predicts that individuals allocate their time so that an extra hour on work (on the margin) renders the same utility irrespective of whether it is spent in paid work, leisure or home care. All else equal, an increase in the marginal utility of paid work leads to a reduction of leisure time and unpaid work, and vice versa. Gender differences and gendered impacts of caregiving responsibilities are predicted to be in line with economic theories of specialization and bargaining (Becker, 1981; Lundberg & Pollak, 1996).

The typically higher male wage makes men specialize in paid work and women specialize in unpaid work, of which routine housework and care for others make up considerable portions (Becker, 1985), and thus, the tradeoff between caregiving and other activities will be gendered. Welfare state arrangements can impact the costs, conflicts, and tradeoffs related to decisions on caring and labor supply as well as the degree of gender inequality associated with regime type (Esping-Andersen, 1990). We have chosen to focus on Sweden because it is representative of the Social Democratic Model, and on the UK and Canada because they are examples of Anglo-Saxon liberal welfare state models from both Europe and North America with varied levels and types of caregiver supports.

The countries investigated possess distinguishable macro-level policy mixes, especially considering the generosity and design of policies that reconcile work-family conflicts. In Social Democratic countries, the state is the main provider of general and universal welfare (Esping-Andersen, 1990). These countries ease work-family conflicts across the life cycle through leave programs with high levels of income replacement, reduced working hours for caregivers, family income support, and publicly provided care facilities for children and the elderly (Betto & Plantenga, 2004). In Liberal countries, state provision of welfare is more limited than in Social Democratic countries, social rights are modest with strict entitlement rules, and market dependence is high. Liberal welfare states are more committed to male breadwinning, resulting in lower labor force participation among women, and less involvement of men in unpaid domestic activities. Market dependence, however, supports both men’s and women’s labor force participation, but the lack of state support to families puts gender equality to a test when it comes to caregiving. Given these differences, care for the disabled and elderly is considered to be a public responsibility, limiting family responsibilities in the Social-Democratic welfare states. Meanwhile, market mechanisms are primarily used in the Liberal welfare states, and the role of family is more extensive, comparatively.

1.2. Previous research

The literature aimed at understanding the caring contribution of older adults is growing (Bauer & Sousa-Poza, 2015; Carmichael & Ercolani, 2014, 2016). The tradeoff between employment and caregiving is supported by international evidence illustrating the substitution between care provision and labor supply (Johnson & Lo Sasso, 2000, 2006; Bolin et al., 2008; Lilly et al., 2007; Spiess & Schneider, 2003). Recent research indicates that caregiving intensity (i.e., the amount of time spent on unpaid care) can significantly impact the employment of working-aged caregivers (Heitmuller, 2007; Lilly, Laporte, & Coyle, 2010; Van Houtven et al., 2013) and older caregivers (Jacobs, Van Houtven, Laporte, & Coyle, 2017; Van Houtven et al., 2013). This tradeoff regarding time allocation is determined by personal characteristics, family situation, and institutional context (Arber & Ginn, 1997; Viachantoni, 2010). It is also determined by gender segregation in the labor market, with women earning lower wages and being over-represented in jobs with flexible work schemes (e.g., part-time) that better enable them to take on caregiving responsibilities (Carmichael & Charles, 1998, 2003; Carmichael, Charles, & Hulme, 2010; Sarkisian & Gerstel, 2004).

A handful of studies have explored the differential impact of caregiving on men’s and women’s employment. In Canada, Lilly et al. (2010) found a similar impact of intensive caregiving for men and women. In the UK, Carmichael and Charles (2003) had similar findings for men and women providing at least 10 h of care per week, but found divergent explanations for this negative association. They concluded that for women, the association was due to a dominant substitution effect (i.e., women substituting unpaid for paid care), while for men the association was due to an indirect effect of a lower ability to earn. In the case of the US, Van Houtven et al. (2013) found no effect of caregiving on men’s work hours, while female caregivers who remained employed reduced their paid work by 3-10 h per week.

Previous research has focused on the tradeoff between caregiving and paid work, ignoring the tradeoff with other activities. We found no studies exploring gender differences in the time allocation decisions of caregivers across different policy contexts addressing time costs and tradeoffs. Time use research suggests, however, that the gender division of labor is trending towards gender convergence across developed nations (Gershuny, 2000), with Social Democratic countries trending towards a faster convergence than Liberal countries (cf. Kan, Sullivan & Gershuny, 2011).

1.3. National context

Table 1 lists country-specific indicators that describe caregiving contextual factors during our study period. The demographic context for caregiving is similar across all three countries, including trends of longer life expectancy, large shares of the population past retirement age (65+), and high dependency ratios. 65 is the common statutory retirement age. Sweden has the largest share of the population aged 65 and older, and the highest dependency burden. The challenge of an ageing population is met by different levels of public expenditures on health and caring services. Sweden has the highest level of spending on policies supporting caregivers as a proportion of its GDP (26.7% in 2015). This partly stems from Sweden’s provision of needs-based cash allowances, which are available to both caregivers and care recipients and are equivalent to the hourly pay received by regular home helpers (Colombo et al., 2011). The UK spends comparatively less of its GDP (21.5%) on caregiver benefits, but it does provide a means tested allowance to individuals providing at least 35 h of weekly care and offers a personal health budget to those in need (Carers UK, 2019). Canada, meanwhile, spends a smaller proportion of its GDP on caregiver benefits (17.2%),
Table 1
Caregiving context for Sweden, the UK, and Canada.

|                          | Sweden 2000 | Sweden 2010 | Sweden 2015 | UK 2000 | UK 2010 | UK 2015 | Canada 2000 | Canada 2010 | Canada 2015 |
|--------------------------|-------------|-------------|-------------|---------|---------|---------|-------------|-------------|-------------|
| Life expectancy (e0) men | 77.4        | 79.6        | 80.4        | 75.5    | 78.6    | 79.2    | 76.3        | 78.8        | 79.6        |
| Life expectancy (e0) women | 82.0        | 83.6        | 84.1        | 80.3    | 82.6    | 82.8    | 81.7        | 83.2        | 83.8        |
| Share of population age 65 and older | 17.3 | 18.3 | 19.8 | 15.8 | 15.9 | 18.0 | 12.6 | 14.2 | 15.9 |
| Dependency ratio population age 0-14 + 65 and older/15-64 | 55.5 | 53.6 | 57.1 | 53.5 | 50.9 | 54.0 | 46.5 | 44.2 | 46.6 |
| Public expenditure on health care as % of GDP | 7.4 | 8.5 | 11.0 | 6.0 | 8.5 | 9.9 | 8.3 | 10.6 | 10.4 |
| Public expenditure on caring benefits in cash, services, and tax breaks as % of GDP | 26.8 | 26.3 | 26.7 | 17.7 | 22.8 | 21.5 | 15.8 | 17.5 | 17.2 |
| Share of elderly in care facilities | 7.7 | 5.4 | 4.5 | 4.2 | 6.9 | na | 4.1 | 4.0 | 3.8 |
| Beds in nursing and care facilities per 1,000 population aged 65 and older | 98.5 | 78.8 | 65.5 | 57.7 | 51.6 | 47.6 | 56.5 | 54.1 | 48.5 |
| Global Gender Gap Index | na | 0.802 | 0.823 | na | 0.746 | 0.760 | Na | 0.737 | 0.740 |
| GGI rank | na | 4 | 4 | na | 15 | 18 | Na | 20 | 30 |
| LFP women aged 25-64 | 81.3 | 82.6 | 85.4 | 69.5 | 72.4 | 74.9 | 72.2 | 76.5 | 76.3 |
| LFP men aged 25-64 | 86.8 | 89.6 | 90.7 | 86.2 | 86.5 | 87.2 | 86.0 | 85.5 | 86.0 |
| LFP women aged 55-64 | 65.9 | 70.4 | 75.7 | 42.5 | 50.6 | 57.1 | 41.4 | 56.5 | 59.0 |
| LFP men aged 55-64 | 72.6 | 79.4 | 82.0 | 63.2 | 69.3 | 71.1 | 60.7 | 68.0 | 70.7 |
| Women’s share of part-time employment | 72.9 | 63.0 | 60.7 | 80.2 | 75.0 | 73.7 | 69.1 | 67.6 | 66.4 |
| PT employment as % of women’s total employment | 21.4 | 19.4 | 18.0 | 40.7 | 39.3 | 37.7 | 27.2 | 27.7 | 26.4 |

Footnotes:
1. OECD Family Database.
2. OECD Stat. Extracts http://stats.oecd.org/
3. Dataset: Historical population data and projections (1950–2050).
4. 2015 Joint OECD, EUROSTAT and WHO Health Accounts SHA Questionnaires (JHAQ) http://stats.oecd.org/Index.aspx?DataSetCode=SHA.
5. OECD Social Expenditure Database (SOCX) http://stats.oecd.org/Index.aspx?datasetcode=SOCX AGG#.
6. OECD Stat. Extracts http://stats.oecd.org/
7. Dataset: Long-term care resources and utilisation.
8. Source: Statistics Canada, CANSIM Tables 107–5504.
9. World Economic Forum (2010) Global Gender Gap Report.
10. OECD Dataset: LFS by sex and age http://stats.oecd.org/viewhtml.aspx?datasetcode=LFS_SEXAGE_R#.
11. OCED Incidence of FTPT employment - common definition http://stats.oecd.org/Index.aspx?DatasetCode=FTPTC_I#.
12. Source: OECD Incidence of FTPT employment - common definition http://stats.oecd.org/Index.aspx?DataSetCode=FTPTC_I#.

and public supports for caregivers are primarily in the form of tax credits and paid and unpaid leave (Coyte & McKeever, 2001). Financial assistance for caregivers providing assistance to the critically ill or end-of-life care is available through Canada’s Employment Insurance system (Government of Canada, 2019). In 2010, a larger share of the elderly was in care facilities (public and private) in Canada and the UK than in Sweden, which experienced a large shift towards in-home caregiving in that country (SWETUS 2000/01, 2010/11), the UK 2014 (UKTUS), and Canada (GSS Cycle 24–2010). Merits of the time diary methodology include that it does not suffer from recall bias. Studies show that time use data is more accurate than retrospective surveys, especially concerning paid work (Robinson & Bostrom, 1994). Time use data feature less heaping since activities are recorded in 10-min intervals. The data feature similar numbers of observations across months and day of the week-intensive care; however, we hypothesize that the higher female labor force participation in Sweden will increase women’s bargaining power, leading men to increase their inputs within the domestic sphere, including unpaid caregiving. Countervailing factors such as low shares of elderly in care facilities, low employment among (older) women, taxation disincentives, and norms of unpaid family-based caregiving suggest that caregiving responsibilities may impact women more than men across the other contexts compared to Sweden. Given trends towards a more gender-equal division of labor (i.e., less specialization) being more prominent in Social Democratic countries than in Liberal countries, we anticipate that our study population will still exhibit gender differences, but that these differences will be smaller in Sweden, comparatively. We expect caregiving responsibilities, particularly intensive caregiving, to affect the tradeoff between activities. We hypothesize that caregiving will strengthen a traditional division of labor in the UK and Canada, more than in Sweden, due to the UK and Canada’s relatively stronger emphasis on male breadwinning and their lower female labor force participation.

2. Methods

2.1. Data

We use data from four waves of time diary surveys from Sweden (SWETUS 2000/01 & 2010/11), the UK 2014–2015 (UKTUS), and Canada (GSS Cycle 24–2010). Merits of the time diary methodology include that it does not suffer from recall bias. Studies show that time use data is more accurate than retrospective surveys, especially concerning paid work (Robinson & Bostrom, 1994). Time use data feature less heaping since activities are recorded in 10-min intervals. The data feature similar numbers of observations across months and day of the week-intensive care; however, we hypothesize that the higher female labor force participation in Sweden will increase women’s bargaining power, leading men to increase their inputs within the domestic sphere, including unpaid caregiving. Countervailing factors such as low shares of elderly in care facilities, low employment among (older) women, taxation disincentives, and norms of unpaid family-based caregiving suggest that caregiving responsibilities may impact women more than men across the other contexts compared to Sweden. Given trends towards a more gender-equal division of labor (i.e., less specialization) being more prominent in Social Democratic countries than in Liberal countries, we anticipate that our study population will still exhibit gender differences, but that these differences will be smaller in Sweden, comparatively. We expect caregiving responsibilities, particularly intensive caregiving, to affect the tradeoff between activities. We hypothesize that caregiving will strengthen a traditional division of labor in the UK and Canada, more than in Sweden, due to the UK and Canada’s relatively stronger emphasis on male breadwinning and their lower female labor force participation.

1.4. Hypotheses

We expect that women are more likely to be caregivers than men across each context studied. We also expect women to provide more time-intensive care; however, we hypothesize that the higher female labor force participation in Sweden will increase women’s bargaining power, leading men to increase their inputs within the domestic sphere, including unpaid caregiving. Countervailing factors such as low shares of elderly in care facilities, low employment among (older) women, taxation disincentives, and norms of unpaid family-based caregiving suggest that caregiving responsibilities may impact women more than men across the other contexts compared to Sweden. Given trends towards a more gender-equal division of labor (i.e., less specialization) being more prominent in Social Democratic countries than in Liberal countries, we anticipate that our study population will still exhibit gender differences, but that these differences will be smaller in Sweden, comparatively. We expect caregiving responsibilities, particularly intensive caregiving, to affect the tradeoff between activities. We hypothesize that caregiving will strengthen a traditional division of labor in the UK and Canada, more than in Sweden, due to the UK and Canada’s relatively stronger emphasis on male breadwinning and their lower female labor force participation.

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week to account for seasonal and day-typical effects. Each sample is nationally representative, and includes weights to control for over- and under-sampling of certain population groups. The UK survey was taken at the household level, whereas the Sweden and Canada surveys were at the individual level. We consider both weekday and weekend entries because they feature different time allocation patterns and conflicts and tradeoffs are most salient during weekdays among the working-age population. We control for these differences by including a dummy for weekend day. The multivariate results typically have a man, not providing unpaid care, during a weekday as reference. We restrict our sample to persons aged 50–74 with 1,440 min of daily activity recorded. We choose ages 50–74 because we want to focus on older working-age men and women and those who potentially could be working with postponed retirement. We also choose ages 50–74 because they are typically not ailing from many of the age-related conditions that occur later in life. Though most men and women in this age category do not have young children at home to care for, many face caregiving responsibilities for other adults, particularly parents, which may interfere with work and other activities. Finally, men and women at these ages are not as involved in spousal caregiving as older age groups. Our total sample size is 17,224 observations (10,014 on weekdays and 7,210 on weekends).

2.2. Analytic strategy

Our analyses focus on gender differences in caregiving and the way gender, either in itself or in connection with caregiver status/caregiving intensity, affects a number of activities simultaneously. This contrasts with other works that have only focused on one type of time use in isolation (e.g., caregiving, paid work, housework). We believe our approach is better than such a narrow focus, which obscures that the major consequence of gender and caregiver status/caregiving intensity is how time is allocated across various activities. Moreover, the full-day approach enables us to test more hypotheses of relevance. We also improve on previous research by estimating both gender-specific regressions, and including women and men in the same models, using interactions to provide a more robust statistical test of gender differences.

We estimate gender gaps in caregiving and analyze how time in caregiving is traded off against time in other activities using multivariate regression models. We estimate OLS models predicting individuals’ time in different activities. Because of the high frequency of zeros in the data (i.e., no time allocated to the activity under consideration), Tobit estimates may be an alternative (Foster & Kalenkoski, 2013; Stewart, 2013). These are, however, generally similar to OLS estimates, suggesting that the latter are robust in cases with a high number of zeros in the data. In addition, the underlying process producing the zeros is important for the presence of estimation biases. If no time is spent on a particular activity on a diary day, it could be because the individual never spends any time in the activity or that there exists some kind of fixed cost in spending time on the activity, implying that some days, time is spent on the activity and other days not. According to simulations, OLS is the most robust method in handling differences in the assumptions about the processes generating zeros. This, together with ease of interpretation of results, led us to choose OLS. OLS results are easily interpretable in minutes, which is more straightforward than dealing with latent dependent variables as in the case of Tobit. We also believe that zero minutes performing an activity represents real behavior. For robustness, we estimated our analyses using the Tobit, but it did not alter our results in any meaningful way (results are available from authors upon request). We account for survey design (stratified random sample) by using individual sampling weights.

2.3. Variables

Our outcome variables are minutes reported per day in unpaid caregiving, paid work, routine housework, and leisure as primary activities, all of which we anticipate to differ in their relation with caregiver status/intensity. Our main independent variables are gender and caregiver status/intensity. We interact these variables to test whether the association between caregiving and time spent in other activities differs significantly by gender.

Caregiving time includes care provision to other adults (relationship to the person unknown), in and outside the household. We define high-intensity caregivers as those who provide at least 90 min of caregiving daily. We selected this cut-off based on prior work that has shown labor market effects of intensive caregiving for those providing at least 10 h of weekly care (Carmichael & Charles, 2003, 2003; Lilly et al., 2007, 2010; Van Houtven et al., 2013). Paid work is the daily minutes spent performing work for pay outside or within the home. For both caregiving and paid work, we exclude commuting time to avoid overstating time for those who do little of these activities. Routine housework includes daily tasks such as cooking/washing, cleaning, laundry, shopping, and domestic travel (for performing these duties). Individual leisure time includes indoor and outdoor sporting and leisure activities (e.g., walking, cycling, exercise), outings such as attending cinema, sporting events, theatre, or other public events, social meetings with friends, artistic or music activities, crafts and hobbies, and restaurant visits (excluding television viewing). Control variables include: age, education, and work status. We prefer a parsimonious model specification due to endogeneity issues relating to caregiving, household type, and time allocation. For example, we do not include income because it is highly endogenous with time use. In our sensitivity analysis, we re-estimate all models with income included as a regressor and note that it does not affect the results. For the descriptive analysis we, however, also explore family status, household type, and income. Variables are described in Table 2.

3. Results

3.1. Descriptive analysis

The descriptive overview in Table 2 highlights that women are more likely to provide unpaid care to other adults than men in all three contexts, though the differences are much larger in the UK and Canada. The majority of caregivers are identified as low-intensity caregivers, though Canada features a much higher share of high-intensity caregivers. Few caregivers are single. In Sweden, the majority of caregivers live as a couple. Co-residence, potentially with a person needing care, is more common among caregivers in the UK and especially in Canada. Most caregivers in Sweden are employed, primarily working full-time, but a much larger share of caregivers in the UK and Canada are not involved in paid work. The caregiver sample possesses certain characteristics which differ from the total sample: in Sweden caregivers are younger, more have secondary education, but higher household income. In the UK, caregivers are older, more educated, yet with lower household income, than the total sample. In Canada, caregivers are younger than the overall sample, yet more educated and with lower household income, as in the UK.

3.2. Multivariate analysis

We performed logistic regressions to see whether controlling for individual and household characteristics altered our descriptive findings regarding gender and caregiver status. The results in Table 3 confirm that women are significantly more likely to be caregivers than men in the UK and in Canada. In Sweden, gender is not significantly associated with being a caregiver, net of other factors. For Sweden, the results indicate that part-time work is positively associated with caregiver status. In the UK, part-time work and not working are positively associated with caregiver status. In Canada, not working is significant and positively related to being a caregiver, compared to working full time. Because work status is correlated with gender and caregiver status, we
that part-time work is how caregivers in Sweden accommodate intensive caregiving responsibilities, while intensive caregivers are more likely to perform such caregiving in Canada. They also indicate that part-time work is how caregivers in Sweden accommodate intensive caregiving responsibilities, while intensive caregivers are more likely to not work in the UK.

Table 2 establishes gender differences in time allocation in line with expectations. Men consistently perform more paid work and women do more housework, but have less leisure. Gender differences are statistically significant for all activities except for caregiving, which is only significant in one case (UK weekends). Because only a small share of the population provide care during the diary day, these gender gaps are usually small and insignificant. Supplementary information show that, conditional on performing any caregiving during the day (i.e. t>0), women perform more caregiving than men in Sweden, but not in Canada or the UK. Weekdays are more gendered than weekends when it comes to paid work, though weekends are more gendered when it comes to leisure. Gender differences in paid work are similar across each country, but in housework and leisure, such differences are generally smaller in Sweden than in the UK, and Canada, which is mainly explained by differences in men’s and women’s participation in said activities. (Results available from authors upon request.) Of note, while women generally performed relatively more caregiving than men, the absolute differences expressed in minutes are small. There is almost no gender gap in caregiving to other adults; on average, men and women performed similar amounts of caregiving across the contexts studied.

The gender gaps quoted above are generally reduced, yet remarkably stable regarding pattern, when standardized (see Table 4, panel B). Quite surprisingly, the gender gaps in leisure become more salient by adding controls. The result is distinctly increased gender gaps throughout the week.

To address the extent to which time in caregiving is traded off against time in other activities, Table 5 presents OLS estimates of the association between caregiver status and time use for men and women in Sweden, the UK and Canada. We pool weekdays and weekend days and control for weekend days in the regressions. Moreover, the coefficients for caregiver represent the base association for men and the interaction coefficients represent the additional impact for women. In Sweden, women performed less paid work, more routine housework, and had less leisure than men. We find no evidence that men or women with caregiving responsibilities in Sweden work less than those with no such responsibilities. Caregiving responsibilities are associated with men’s and women’s housework (positively) and leisure (negatively). No interaction effect for any of the main activities of interest was significant, indicating that being a woman with caregiving responsibilities was not significantly different than being a male caregiver. Thus, there were no real gender differences in time allocation stemming from being a caregiver in Sweden.

In the UK, women performed less paid work, more routine housework and they also had less leisure than men (Table 5, panel B). Compared to the Swedish estimates, the magnitude of the UK gender differences (estimated in minutes) are generally stronger. There were significant negative associations between caregiving and paid work for men and women, and positive associations with time devoted to housework. Caregivers also experienced less leisure than non-caregivers. Similar to the case of Sweden, there is no evidence of gendered caregiving impacts in the UK. However, it is worth noting that men’s paid work is affected by caregiving in the UK. As in Sweden, there are gender differences in time allocation, but these differences are not related to caregiving responsibilities.

In Canada, we also find that women do less paid work and leisure activities than men, and perform more housework (see Table 5, panel C). As in the UK, we find that caregivers trade off a considerable amount of time in paid work compared to those without caregiving responsibilities. We find suggestive evidence of tradeoffs with leisure, but we do not find any caregiving tradeoffs concerning routine housework, which is a truly feminine activity among those aged 50–74 in Canada. There are no statistically significant gender interaction effects in Canada concerning paid work, housework or leisure, illustrating that despite large gender differences in time allocation, caregiving responsibilities did not additionally impact women’s time use.

Turning to the intensity of caregiving, which may impact time allocation more than caregiver status per se, we examine another dimension of caregiving responsibilities which may interact more with gender, especially in contexts less oriented at gender equality and work-family support. Table 6 presents OLS estimates of the association between caregiver intensity and everyday time use comparable to those in Table 5. For Sweden (Table 6, panel A), we find that men with low-intensity caregiving duties do more routine housework and have less leisure than men without caregiving responsibilities. Men with high-intensity caregiving duties devote less time to paid work and leisure, compared to men who are not caregivers. There are no significant

Table 4 establishes gender differences in time allocation stemming from being a caregiver in Sweden.
interaction effects of gender and caregiving intensity, confirming that men and women are similarly affected by not only caregiving responsibilities, but also by caregiving intensity. This suggests that both men and women are pressurized by caregiving responsibilities in contemporary Sweden, especially when working, and that the main tradeoff is taking place through reduced paid work and especially leisure time. In the UK, having low intensity caregiving demands is associated with increased housework, and reduced leisure, throughout the week. Similar to Sweden, high intensity caregiving demands are associated with reduced paid work for men and women, because there are no additional caregiving impacts for women. Again, there are significant gender differences, but both men’s and women’s time allocation decisions were significantly associated with their caregiving responsibilities and their time intensity in similar ways in the UK. In Canada, the significant negative association between caregiving and paid work applies to both men and women with low and high intensity caregiving demands. Among low intensity caregivers, this impact is not significant for those in employment, indicating that having less labor market attachment is positively associated with providing care. Men’s housework is not associated with caregiving. High intensity caregivers in Canada forfeit leisure time. Like in the other countries, we find no significant gender differences with respect to caregiving impacts, though there are real gender differences in time allocation to begin with.

3.3. Sensitivity analysis

For sensitivity analysis, we re-estimate all regressions, but include a household income categorical variable to determine whether any results are sensitive to the inclusion of this variable (i.e., driven by economic incentives or income constraints). If gender differences remain after controls for income, and within subgroups defined by caregiving intensity, this provides indirect evidence that time use is cultural rather than reflecting economic incentives/constraints. Across the board, the results are unaffected by the income inclusion, as most coefficients remain largely unaltered. This robustness exercise reveals that gender differences in caregiving responsibilities across multiple activities are not explained or driven by economic incentives or income constraints to any significant degree for Sweden, the UK or Canada, but instead, are likely behavioral or culturally determined.

Note: Models also included controls for education and, in the case of Sweden, survey year. Coefficients are expressed as odds ratios. 95% confidence intervals in parentheses. \( p < .10, ^* p < .05, ^** p < .01, ^*** p < .001. \)

Source: See Table 2.
We also re-estimate our entire study on two sub-samples, the first being those who are in employment at the time of survey only, and secondly, on those aged 50–64 exclusively. In general, most results are unaffected, with the exception of the paid work raw and standardized paid work gender gaps increasing in the UK. This exercise reduces our sample sizes (and number of caregivers), making multivariate estimates less reliable, but it did not alter the coefficients of interest in any meaningful way.

4. Discussion

This paper contributes to the literature on gender disparities in unpaid caregiving, during a period where population ageing is placing

| Table 5 | Interaction between having caregiving responsibilities and gender on everyday time use in different activities, those aged 50–74. |
|---------|-------------------------------------------------------------------------------------------------------------|
|         | A. Sweden                                                                                                  |
|         | Paid work                                                                                                  |
|         | (all)                                                                                                      |
|         | Paid work                                                                                                  |
|         | (employed only)                                                                                            |
|         | Routine                                                                                                     |
|         | housework                                                                                                  |
|         | Leisure                                                                                                    |
| Gender  | Man (Ref)                                                                                                  |
| Woman   | -33.9*** (7.46)                                                                                             |
|         | -31.9*** (5.27)                                                                                             |
|         | 61.9*** (2.91)                                                                                              |
|         | -34.5*** (5.28)                                                                                             |
| Caregiver status |                                                                                                           |
| Not caregiver (Ref) |                                                                                                           |
| Caregiver | -1.0 (24.64)                                                                                               |
|         | 29.6* (10.96)                                                                                               |
|         | -48.2** (18.13)                                                                                            |
| Interaction |                                           |
| gender* caregiver status |                                                                                                           |
| R²      | 0.29                                                                                                       |
| N       | 5,288                                                                                                      |
| B. UK   | Paid work                                                                                                  |
| (all)   | Paid work (employed only)                                                                                 |
|         | Routine                                                                                                     |
|         | housework                                                                                                  |
|         | Leisure                                                                                                    |
| Gender  | Man (Ref)                                                                                                  |
| Woman   | -48.8*** (6.66)                                                                                             |
|         | -46.0*** (10.26)                                                                                            |
|         | 74.2*** (2.93)                                                                                              |
|         | -70.8*** (5.49)                                                                                            |
| Caregiver status |                                                                                                           |
| Not caregiver (Ref) |                                                                                                           |
| Caregiver | -33.2 (32.73)                                                                                              |
|         | 35.9*** (9.72)                                                                                              |
|         | -51.0** (17.42)                                                                                            |
| Interaction |                                           |
| gender* caregiver status |                                                                                                           |
| R²      | 0.21                                                                                                       |
| N       | 5,507                                                                                                      |
| C. Canada | Paid work                                                                                                  |
| (all)   | Paid work (employed only)                                                                                 |
|         | Routine                                                                                                     |
|         | housework                                                                                                  |
|         | Leisure                                                                                                    |
| Gender  | Man (Ref)                                                                                                  |
| Woman   | -44.7*** (7.63)                                                                                             |
|         | -42.7*** (10.43)                                                                                            |
|         | 80.9*** (3.56)                                                                                              |
|         | -50.2*** (6.48)                                                                                             |
| Caregiver status |                                                                                                           |
| Not caregiver (Ref) |                                                                                                           |
| Caregiver | -102.9** (28.04)                                                                                            |
|         | 2.9 (12.66)                                                                                                 |
|         | -51.6** (26.85)                                                                                            |
| Interaction |                                           |
| gender* caregiver status |                                                                                                           |
| R²      | 0.21                                                                                                       |
| N       | 5,507                                                                                                      |

Note: OLS (weighted) models included same controls as in Table 3, though, in the case of paid work, work status was not included. \( p < .10, * p < .05, ** p < .01 \) ***p < .001.

Source: See Table 2.

| Table 6 | Interaction between caregiving intensity and gender on everyday time use in different activities, those aged 50–74. |
|---------|-------------------------------------------------------------------------------------------------------------|
|         | A. Sweden                                                                                                  |
|         | Paid work                                                                                                  |
|         | (all)                                                                                                      |
|         | Paid work (employed only)                                                                                 |
|         | Routine                                                                                                     |
|         | housework                                                                                                  |
|         | Leisure                                                                                                    |
| Gender  | Man (Ref)                                                                                                  |
| Woman   | -33.9*** (7.46)                                                                                             |
|         | -31.9*** (5.27)                                                                                             |
|         | 61.9*** (2.91)                                                                                              |
|         | -34.5*** (5.28)                                                                                            |
| Caregiving intensity |                                                                                                           |
| No caregiving (Ref) |                                                                                                           |
| Low intensity |                                                                                                           |
| R²      | 0.26                                                                                                       |
| N       | 6,429                                                                                                      |
| B. UK   | Paid work                                                                                                  |
| (all)   | Paid work (employed only)                                                                                 |
|         | Routine                                                                                                     |
|         | housework                                                                                                  |
|         | Leisure                                                                                                    |
| Gender  | Man (Ref)                                                                                                  |
| Woman   | -44.7*** (7.63)                                                                                             |
|         | -42.7*** (10.43)                                                                                            |
|         | 80.9*** (3.56)                                                                                              |
|         | -50.2*** (6.48)                                                                                            |
| Caregiving intensity |                                                                                                           |
| No caregiving (Ref) |                                                                                                           |
| Low intensity |                                                                                                           |
| R²      | 0.21                                                                                                       |
| N       | 5,507                                                                                                      |

Note: OLS (weighted) models included same controls as in Table 3, though, in the case of paid work, work status was not included. \( p < .10, * p < .05, ** p < .01 \) ***p < .001.

Source: See Table 2.
pressure on pension systems, as well as health and caring services. Our case study takes a cross-country comparative approach, examining Sweden (2000/1 and 2010/11), the UK in 2014/15, and Canada in 2010, using comparable time use surveys and focusing on the population aged 50–74. Our aim was to measure gender gaps relating to caregiving (including intensity), and to determine the extent to which caregiving time is traded off against other activities for men and women. Our analyses focused on gender disparities in caregiving and the way gender, either in itself or in connection with caregiver/caregiving intensity status, is associated with a number of activities simultaneously. This contrasts with previous work that has only focused on one type of time use in isolation (e.g. caregiving, paid work, or housework). We believe our approach improves on previous research with a narrower focus, which obscures that the major consequence of gender and caregiver status/caregiving intensity is how time is allocated across various activities. We also improve on previous research by both estimating gender-specific regressions and including women and men in the same models, using interactions to provide a more robust statistical test of gender differences.

Our examination of who provides care shows that, controlling for other factors, women are more likely to be caregivers in the UK and Canada, but this is not the case in Sweden. This is in line with our hypothesis that gender differences in caregiving would be smaller in Sweden. We found work status to be significantly associated with caregiver status, but a different pattern emerges between countries. In Sweden, part-time work is more strongly associated with caregiving, whereas in the UK, caregiving is associated with both part-time work and not working. For Canada, the association applies exclusively to not working, indicating different degrees of work-family compatibility. This is also an indication that older workers in Sweden have greater access to flexible (and reduced) work hour arrangements.

With respect to gender differences in time use, we found that, in line with expectations, men do more paid work than women, while women devoted more time to caregiving and housework. Weekdays tended to be more gendered than weekends. There were some contextual differences when it came to time tradeoffs between caregiving and other activities though. In Sweden, we found no evidence that male caregivers did less paid work than non-caregiving men. In the UK and Canada, however, male caregivers spent less time in paid work than did comparable men who were not caregivers. In line with previous literature looking at high-intensity caregivers (e.g., Lilly et al., 2007; Van Houtven et al., 2013), we saw tradeoffs with paid work for high-intensity caregivers in all countries. These intensive caregivers provided unpaid care through varying tradeoffs with time spent in paid work and leisure. Intensive caregiving was negatively associated with everyday leisure time in Sweden, the UK and Canada. These findings could indicate that individuals in the UK and Canada have less flexibility in terms of the type and timing of the unpaid care provided, forcing them to take time off of paid work to provide this care. Additional supports in Sweden, through public paid care for instance, could enable greater flexibility in terms of when unpaid care is provided. In each context, intensive unpaid care was being traded off with leisure time with potential risk for caregiver burnout and overall reduced wellbeing among caregivers who both work and provide unpaid care. In Sweden, especially, where time in paid work was not decreasing as a result of non-intensive caregiving, this caregiving-leisure tradeoff highlights the importance of respite policies to support caregivers and decrease potential caregiver burnout.

There was no evidence of a gendered effect of caregiving on time traded off with other activities in any country. This indicates that holding all other factors constant, both men and women experience similar tradeoffs with respect to time spent in caregiving, in line with earlier findings from Canada (Lilly et al., 2007) and the UK (Carmichael et al. 2010), although exceptions exist.

It is important to take into consideration study limitations when interpreting our findings. One limitation is the potential endogeneity between caregiver status and time spent in paid work. Some have found that an assumption of exogeneity underestimates the effect of unpaid care on labor supply (Crespo, 2006), while others find the opposite (Heitmueller, 2007). In instances where there is an overestimation of this effect, it has been found to be minimal for higher intensity caregivers (Heitmueller, 2007). As such, any bias introduced by this assumption of exogeneity is likely to be minimal in our regressions which control for caregiving intensity. We make no attempts to infer causality from our regression models, however. We also note that potentially different definitions of caregiving between the surveys may have made our results less comparable across contexts. Another important consideration is our inability to control for access to paid formal care services, which can be a substitute for some types of informal care (Van Houtven & Norton, 2004). Broadly, these services were expected to be more accessible in the Swedish context, but we were unable to control for these factors at the individual level.

5. Conclusion

Policy context appears to play a role in the time tradeoffs of non-intensive caregivers, with caregivers in Sweden experiencing fewer tradeoffs with paid work and leisure. However, regardless of context, both male and female intensive caregivers made significant labor market and leisure tradeoffs. Tradeoffs with leisure should not be ignored, but demand further investigation because they likely have health implications, especially for women. These findings highlight the importance of considering targeted support policies – financial, respite, and training supports, as well as increased access to paid care – for intensive caregivers across all contexts. As populations age, policy makers should understand and factor in the opportunity costs of intensive informal care provision if they plan to rely on a shrinking supply of caregivers to meet a growing demand for home care.

Ethics approval

Ethics approval not required for the present research.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ssmph.2019.100501.

References

Arber, S., & Ginn, J. (1997). Informal care-givers for the elderly people. In C. Ungerson, & M. Kember (Eds.), Women and social policy: A reader. London: Macmillan.
Bauer, J. M., & Sousa-Poza, A. (2015). Impacts of informal caregiving on caregiver employment, health and family. Journal of Population Ageing, 8(3), 113–145.
Becker, G. S. (1965). A theory of the allocation of time. Economic Journal, 75(309), 493–515.
Becker, G. S. (1981). Altruism in the family and selfishness in the market place. Econometrica, 48(189), 1–15.
Becker, G. S. (1985). Human capital, effort, and the sexual division of labor. Journal of Labor Economics, S23–558.
Becker, G. S., & Ghez, G. (1975). The allocation of time and goods over the life-cycle. New York: Columbia University Press.
Bettio, F., & Plantenga, J. (2004). Comparing care regimes in Europe. Feminist Economics, 10(1), 85–113.
Bolin, K., Lindgren, B., & Lundborg, P. (2008). Your next of kin or your own career? Caring and working among the 50- of Europe. Journal of Health Economics, 27(3), 716–738.
Careers UK. (2019). Factsheet: Carer’s allowance. London, England: Careers UK. https://www.careersuk.org/images/Factsheets/Carer_Allowance_April_2019.pdf. (Accessed 10 March 2019).
Carmichael, F., & Charles, S. (1998). The labor market costs of community care. Journal of Health Economics, 17(6), 747–765.
