



# Informal Elderly Caregiving and Time Spent on Leisure: Evidence from Time Use Survey

Magdalena Rokicka<sup>1</sup>  · Olga Zajkowska<sup>2</sup>

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## Abstract

This paper examines the risk of time poverty defined as leisure participation among informal caregivers of adults and older people. We draw on the most recent time use survey conducted in Poland, which incorporated more than 28,000 households in 2013. We assess the extent to which caregivers are more likely to experience shortages of time spent on physical activity, hobbies, and social life. Additional information about respondents' time preferences allows us to examine not only the objective and relative time deficits of caregivers, but also the subjective and expressed ones. We distinguish between co-resident caregivers and those living outside the household of care recipients, simultaneously accounting for the differences between male and female caregivers, as well as care provided during working days (Monday-Friday), and that provided on weekends (Saturday-Sunday). Our results indicate that caregivers for adults are in general more likely to allocate less time to physical activity, hobbies, and their social lives. This effect, however, is observed primarily among co-resident caregivers, both male and female. The leisure time of caregivers is more noticeably affected during weekends than on working days. Concurrently, caregivers are more likely to admit that they wish to spend more time on different forms of leisure activity. This confirms the hypothesis of a trade-off between time allocated to elderly care and that allocated to self-care, which can be detrimental to the health, life satisfaction, and wellbeing of informal caregivers.

**Keywords** Elderly informal care · Leisure · Time poverty · Time use

**JEL Classifications** J14 · J22

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✉ Magdalena Rokicka  
m.rokicka@ibe.edu.pl

Olga Zajkowska  
ozajkowska@wne.uw.edu.pl

Extended author information available on the last page of the article

## Introduction and Motivation

Over the last twenty-five years, average life expectancy in Poland has risen from 66 to 74 years for men, and from 75 to 82 years for women (GUS 2015b). At the same time, due to decreasing fertility and postponed childbearing, the share of people aged 65 and over has increased to 20% of the total population (GUS 2018). The aging of society is becoming a new demographic challenge in Poland, which is exacerbated by the fact that the baby boomer generation is now reaching retirement age. According to European Commission (EC) projections (EC 2018), this trend will continue in the future, so that by 2070, life expectancy at 65—which is the statutory retirement age in Poland—will reach 23 years for Polish males and 26 for females.

Aging itself is not of concern as long as older people remain in good health. However, the risk of physical or neurodegenerative disorders, such as Parkinson's disease (Driver et al. 2009), or dementia (Kiejna et al. 2011), including Alzheimer's disease (Guerreiro and Bras 2015), increases with age. Since 2010, the number of medical consultations provided to older patients has increased by 12.4% in primary healthcare, and by 36% in specialized healthcare (GUS 2016). Moreover, 30% of people aged 65 and over report difficulties in performing everyday activities, and these problems intensify with age, with the share reaching 60% among people aged 80 and over. This leads to higher needs for long-term care, and causes dependency on others. A large proportion of long-term care in Poland is provided by informal caregivers: family members—primarily spouses and children—and in a highly informal manner. Unfortunately, only some of those aged 65 and over who report a reduced degree of functional capacity can rely on relatives, friends, or formalized help, while 45% of them are forced to cope on their own (GUS 2016).

Changing patterns of family cohabitation, the increased participation of women in the labor market, and the migration of younger generations are altering the traditional forms of informal care provision in Poland. This role in the past was predominantly played by daughters or daughters-in-law, living together with their parents or parents-in-law in shared households. Presently, the primary caregiver is most often the spouse, and less frequently a sibling, and only if those primary caregivers die or are unable to provide care, are they replaced by children or sons/daughters-in-law. As a consequence, informal caregivers tend to be older, meaning that the caregiving responsibility constitutes a much heavier burden on them.

Previous empirical studies indicate that providing care may have significant effects on caregivers' quality of life, as it is a stressful experience that may damage the physical and psychological health of the caregiver (Jones and Peters 1992; Aneshensel et al. 1995; Bom et al. 2019). Similar conclusions are drawn in the meta-analysis of the correlates of physical health of informal caregivers by Pinguart and Sörensen (2007), in which they found that informal caregivers are in poorer health both subjectively (self-perceived) and objectively (measured by medication use and other health measures). In a review of the existing findings on the psychological health of caregivers (Pinguart and Sörensen 2003), the same authors concluded that the primary stress factors related to their psychological health included: care recipient behavior, care recipient impairment, and the number of caregiving responsibilities. This results in physical and psychological distress, which is more severe for spouses than for children and sons/daughters-in-law (Pinguart and Sorensen 2011). Interestingly, they also

highlight that caregiving might have positive effects, increasing the feeling of usefulness and life meaningfulness of caregivers. However, this result is not confirmed by other authors who have focused on the threats and negative outcomes (see: Vitaliano et al. 2003; Bauer and Sousa-Poza 2015)).

Reliance on informal care has changed over time, and demographic trends suggest that the demand for informal care will continue to grow, while its availability will not increase fast enough to satisfy demand. In light of these changing circumstances, the issue becomes the concern of social scientists, policy makers, and policy practitioners who focus on specific aspects of informal care. On the micro level, their interest centers on labor market participation (or withdrawal) of caregivers, most of whom are female. The subject of the well-being and health of caregivers has also become widely recognized. In the macro context, the cost of informal care is frequently analyzed, as due to a prospective shortage of informal caregivers, institutional formal care—both publicly and privately funded—might become indispensable. The public healthcare system must address the issues of increased life expectancy, progress in medical procedures, and the growing demand for high-quality elderly care.

This paper focuses on the subject from a micro perspective. It investigates the extent to which informal caregivers experience time scarcity in several domains, including physical activity, hobbies, and participation in social life. We also verify whether there are substantive gender disparities in this respect, and whether the pattern differs for working days and for weekends, as well as exploring whether there are any disparities in use of time between caregivers living inside and outside the households of care recipients. We extend our analysis to investigate whether the reduction in leisure participation by caregivers is voluntary or involuntary.

The remainder of this paper is organized as follows: Second Section briefly describes the conceptual framework and our research questions, referring to previous theoretical and empirical studies; Third Section presents our data and method; Fourth Section describes the results; and Fifth Section summarizes and draws conclusions.

## Theoretical Considerations and Previous Research

Our research is based upon the concept of time poverty. Originally, the term was used to identify households in which availability of time was insufficient to allow an adequate standard of living, and was closely connected to the concept of income poverty (Vickery 1977). Time poverty was used in a slightly different context by Bittman (2004), who defined time poverty in relative terms to overall distribution of leisure time, setting the threshold for Australia at 50% of the median amount of time spent on leisure. In this paper, we rely on the definition used by Goodin et al. (2008): discretionary time is the time over which individuals have ‘autonomous control’ - time that remains after deducting the necessary time in three realms: paid employment, unpaid household labor, and personal care.<sup>1</sup> We specifically focus on the time spent on three activities which constitute different forms of leisure: physical activity, hobbies, and social life.

<sup>1</sup> A broader discussion on the time poverty concept and definitions is discussed broadly by Williams et al. (2016).

As time is a scarce resource—limited daily to twenty-four hours—personal care, household tasks, and securing income might consume the majority of an individual's time budget, leaving little to no time for leisure and rest. Why is this relevant to the discussion around informal caregivers? Evidence suggests that leisure and discretionary time are essential for preserving mental health, and it contributes to coping capacities and stress relief (Coleman and Iso-Ahola 1993; Iwasaki and Mannell 2000; Losada et al. 2010). Moreover, as mentioned by caregivers in personal interviews, these activities are crucial for maintaining self-motivation and relieving the tensions which arise from the caregiving burden (Bedim and Guinan 1996).

We test several hypotheses, beginning with the most general ones.

**Hypothesis 1.** Informal caregivers experience time poverty with respect to leisure.

Due to additional chores and duties, we expect that those providing informal care have less time available for leisure in the form of physical activity, hobbies, and social life. Accounting for limitations in the daily time budget, additional tasks related to caregiving might be conducted in the caregivers' spare time, or in time previously devoted to other activities. Yet, which daily activities the reduction of time occurs is disputable.

Some empirical findings report that informal caregivers experience a reduction in leisure participation due to caregiving responsibilities (White-Means and Chang 1994; Wakui et al. 2012). However, as shown by Miller and Montgomery, who drew on US data, only 50% of informal family caregivers limit their social life or free time, with a similar finding reported in Canada (Dunn and Strain 2001). Additionally, as stated by Zimmer et al. (1997), we must distinguish between reduction and cessation of leisure participation, and account for the heterogeneity of caregivers, their health status, labor market participation, income, and other socio-demographic characteristics.<sup>2</sup>

Therefore, we have extended our research question to verify whether there are any significant gender differences with regard to reduced leisure participation due to informal care. This leads to the second hypothesis:

**Hypothesis 2.** Time use of female caregivers is affected more severely than that of male caregivers.

We suspect that due to traditional gender roles and the gender pay gap, women will assume more responsibilities in caring for frail elderly relatives than men, and will limit the time allocated to their personal needs, including leisure. Caregiving is often recognized as an extension of women's societal roles, whereas for men it often implies an unfamiliar role (Finley 1989; Revenson 1994). Although Finley (1989) did not find any differences in male and female perceptions of their obligations to care for older family members, the latest results have shown a greater burden and more stress experienced by women (Swinkels et al. 2019). Empirical studies also confirm that females more often perform the role of caregivers, both as spouses (Allen et al. 1999), and daughters (Stoller 1983; Pinquart and Sörensen 2006). Additionally, women have more difficulties establishing a balance between caring activities and their discretionary time (Bedim and Guinan 1996). An intriguing observation was made by Bedim and

<sup>2</sup> Caregivers' heterogeneity is discussed in detail by Bom et al. (2019).

Guinan (1996) on the perception of females toward their entitlement to leisure while they act as informal caregivers for family members. Based on qualitative interviews, they distinguished four typologies: (1) women who suppress their desire for leisure; (2) women who would like to have more discretionary time and remain disappointed with the current lack of it, (3) women who have attempted to incorporate caring activities into their leisure planning, or adapted their hobbies to the needs of care recipients, finding alternative solutions; and (4) women who have managed to make time for leisure, with some emotional cost, and personal justification that it is crucial for them to be able to continue caregiving.

**Hypothesis 3.** We expect the pattern of caregivers' leisure participation to differ between working days and weekends.

Due to differences in time patterns between working days (Monday-Friday) and rest days (Saturday-Sunday) (Michelson 2015), primarily due to participation in paid work, we expect that the leisure time of caregivers in comparison to non-caregivers will be more substantially affected during weekends.

We also wish to test the extent to which caring activities differ by co-residence arrangement. We expect that caregivers who are co-resident (those who share households with care recipients) are more substantially affected by their caring responsibilities than those who are non-resident (who provide care during daily visits). Therefore, we have formulated the following hypothesis:

**Hypothesis 4.** Co-resident caregivers experience greater time poverty than non-resident caregivers.

With regard to the changing structure of household composition, the lower share of extended families living together, and the growing number of single-person households, informal care provided by family members residing outside the household is nowadays becoming more widespread. Yet, comparative analyses of time poverty between co-resident and non-resident caregivers are rare, and we were unable to identify studies which focus on this particular research question. Previous research analyzed co-residency of the caregiver and care recipient and household composition, primarily for the evaluation of demand for formal care (Pickard et al. 2000), or in the case of Jutras and Lavoie (1995), for assessment of the psychological effects of informal care.

In the previous research question, we investigate the subjective need of informal caregivers to devote more time to engaging in leisure activities: physical activity, hobbies, and social life.<sup>3</sup> We might think that informal caregivers constitute a selected group, characterized by a lower-than-average need for discretionary time. If this is the case, our analysis of hypotheses 1–4 would be biased. Nevertheless, we can perform cross-validation using information about the respondents' willingness to devote more time to certain forms of leisure. We then formulate the final hypothesis:

<sup>3</sup> In our analysis, we selected only activity types which are proven by research to improve individual well-being (Schmiedeborg and Schröder 2017).

Hypothesis 5. Informal caregivers are more likely than the comparison group to express willingness to spend more time on physical activity, hobbies, and social life.

We expect that due to caring obligations, caregivers are more likely than non-caregivers to express willingness to spend more time on active forms of leisure participation.

## Data and Methods

To address our research questions, we use data from a time use survey. The survey was conducted by Statistics Poland (GUS) between January and December 2013 on a representative sample of Polish households (28209), on the basis of a methodology recommended by the European Statistical Office (EUROSTAT). All members of the selected households aged 10 and over were interviewed twice, once on a working day (Monday-Friday), and again on a weekend (Saturday-Sunday). They were asked to freely describe their twenty-four-hour day divided into ten-minute slots. Additional information was collected, such as descriptions of secondary activities, the places they occurred, and who accompanied them. Apart from the diary, the survey included a household questionnaire, a personal questionnaire, and a weekly work distribution (for more details see: GUS 2015a of Eurostat 2009).

We restricted our sample to respondents aged 15 and over, who had provided information about their socio-economic status, and had completed at least one daily diary. For Hypotheses 1, 2, and 4, our dependent variable is the average daily time (in minutes) spent on specific activities: physical activity, hobbies, and social life. For respondents who completed two diaries, we calculated the average time spent on a given activity over two days, for those who provided information just about one day, during that day. In the sample used for those hypotheses, there are 1682 caregivers, and 37,285 respondents who did not state that they provided care to other adults, which leads to a total of 38,967 (the main characteristics of the sample can be found in Table 1: Descriptive statistics). For the third hypothesis, we distinguished between working days and weekends. There are 38,967 respondents for whom we received information about their time use during a working day, and 24,876 who submitted a time use diary recorded during a weekend.

As physical activity we considered time spent on physical exercise (HETUS 2009, code 61), productive exercise (HETUS 2009, code 62), and sport-related activities (HETUS 2009, code 63). As hobbies, we considered time spent on entertainment and culture (HETUS 2009, code 52), and on arts and hobbies (HETUS 2009, code 71), as well as on unspecified leisure (HETUS 2009, code 998). Social life was defined as socializing with family, visiting and receiving visitors, celebrations, telephone conversations, and ‘other social life’ (HETUS 2009 code 51). We decided to look at these three specific groups of activity, as they represent active forms of leisure, often occur outside of the home, and typically involve contact with others. According to previous findings, participation in hobbies and social interactions has a greater impact on the psychological well-being of adults—regardless of gender, age, or socio-economic status—than passive forms of leisure (Dupuis and Smale 1995). There is also a great deal of

**Table 1** Descriptive statistics

Time spent on:	Care providers ( <i>n</i> = 1682)				Others ( <i>n</i> = 37,285)			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Sport*	17.55	37.95	0	350	26.68	50.44	0	810
Hobby*	2.34	13.18	0	180	4.87	26.05	0	640
Social life	48.87	62.73	0	670	50.84	70.68	0	830
Work time*	103.66	159.42	0	685.71	160.91	179.53	0	960
Age*	55.34	14.47	15	88	48.72	18.08	15	102
Income (level)*	2.63	4.20	0	12	3.97	4.63	0	12
Children aged 0–6*	0.08	0.28	0	1	0.18	0.38	0	1
Education								
Vocational*	0.28	0.45	0	1	0.24	0.43	0	1
Secondary	0.32	0.47	0	1	0.32	0.47	0	1
Tertiary	0.22	0.42	0	1	0.24	0.43	0	1
Town	0.27	0.44	0	1	0.29	0.45	0	1
Women*	0.77	0.42	0	1	0.63	0.48	0	1

Sources: Authors' own calculations based on the Time Use Survey, 2013. \*Significant differences. The reference base category: for education: lower than basic vocational; for town: towns or villages with fewer than 100,000 inhabitants; for women: men

evidence that physical activity serves as an antidepressant, and can protect individuals against the harmful consequences of stress (Salmon 2001).

Our independent variable of interest is a binary one, indicating whether a respondent spent any time on caregiving activities for an older/adult person or not. As care provision, we considered activities such as:

- Physical care of a dependent adult household member (HETUS 2009, code 391);
- Other help to a dependent adult household member (HETUS 2009, code 392);
- Help to a nondependent adult household member (HETUS 2009, code 399);
- Help to an adult from another household (HETUS 2009, code 425).

In Hypothesis 5, our dependent variable is based on the question: “Let’s assume that you can change the way you spend your time. Please tell me if you would like to devote to any of the following areas of life: more time / the same amount of time as now/ less time /hard to say /not applicable”. We used the following categories:

- Physical activity during free time;
- Activities during free time except physical activity, use of a computer, and watching TV (for example: cinema, theatre, hobbies);
- Social life, contact with family and friends, (conversations, meetings).

We created a binary variable, which is assigned the value of one for those who express a desire to spend more time on the activities mentioned above, and zero for all others. We also used control variables such as time spent at work and other socio-economic

characteristics: age, highest level of education attained, household income level, whether the caregiver has children aged 0–6, and type of residence (a dichotomous variable taking the value of one for towns of 100,000 habitants and over, and zero for fewer than 100,000).

To identify the relationship between caregiving and time spent on leisure activities, we use OLS regression<sup>4</sup> to verify Hypotheses 1–4. Due to the dichotomous character of the dependent variable, we applied the Logit model<sup>5</sup> to verify Hypothesis 5. The results of the empirical models are presented in the next section.

## Results

We commence our analysis with a graphic comparison with respect to average time spent on leisure of two groups of interest: those who provide informal care, and those who do not. As shown in Graph 1, caregivers spend less time on physical activity and social life, and the dispersion in this group is lower than in the comparison group. Little time is spent on hobbies on a daily basis, and outliers are much more common among non-caregivers than caregivers.

Although this graphic illustration displays a pattern, it relies only on raw comparison. We might expect that people who care for others have differing characteristics, which drive the differences in the results. Therefore, in order to test our hypothesis, we also control for other socio-economic characteristics in the OLS regression. As shown in the descriptive statistics (presented in Table 1), informal caregivers are, in general, more likely to be women, to spend less time on paid work, to be older and to have lower incomes.

Thus, we conducted a regression analysis, and we present the results of the OLS estimations which control for personal characteristics in Table 2.

After controlling for personal characteristics, we discover the association between caring responsibilities and leisure time only with respect to physical activity and hobbies, while the result for social life is statistically insignificant. Holding other factors constant, a caregiver on average spent nine minutes less on daily physical activity than the comparison group. Although it seems that the difference is minor, it is around one-third of the daily time spent on physical activity by caregivers, which, on a weekly basis, leads to visible disparities. Much less time is spent on hobbies, so the time differences are smaller, yet remain statistically significant, indicating a disadvantage in this respect among caregivers.

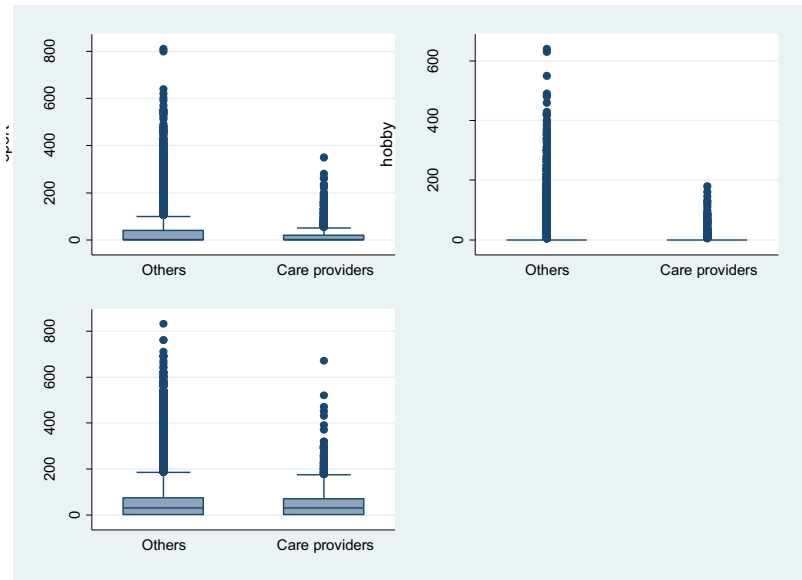
In general, being female reduces the time dedicated to physical activity and other leisure activities. Women on average spent ten minutes less on daily physical activity than men, and the differences in time spent on hobbies and social life are also statistically significant.

This is a useful indicator that gender differences might play a role in time poverty among caregivers. Therefore, we verified whether substantial gender differences exist in our measured effect of care provision on time poverty. Using the same set of control

<sup>4</sup> In line with (Stewart 2013) and (Bauer and Sousa-Poza 2015).

<sup>5</sup> Since we investigate a highly specific and relatively small sub-sample, we estimate the unweighted model in line with (Stewart 2018).





Sources: Authors' own calculations based on the Time Use Survey, 2013.

**Graph 1** Time spent on leisure activities. Sources: Authors' own calculations based on the Time Use Survey, 2013

variables, we ran OLS specifications separately by gender. As other control variables are not of interest to this study, we present the coefficients for a dummy group of informal caregivers.

The results do not seem to concur with our hypothesis. We expected that women would be more substantially affected by care responsibilities than men. However, in absolute terms, men who are caregivers spend on average twelve minutes less per day on physical activity than other men, while the gap for women is smaller, amounting only to eight minutes per day. This can be partly explained by the different distribution of time spent on physical activities by gender (with men spending an average of thirty-one minutes on sport, and women twenty-three minutes, respectively). Yet, even when the relative effect is compared, the reduction of time spent on sport is greater for men than for women. A similar effect is present with respect to social life. On average, men and women tend to spend a similar amount of time (fifty minutes daily) on contacting family and friends, and other social activities. Male caregivers reduce this time by eight minutes, whereas for women, we see no significant effects. This disparity might be explained partially by the difference between activities which are considered part of social life by men and women. If men are more likely to spend time outside the household, and more time with other male friends than family, caring responsibilities might limit their time. For women, however, family visits—including those related to visiting a care recipient—might, in fact, compensate for the limited time spent on social activities outside the household. Another interesting explanation might be the fact that according to the empirical findings, more than 60% of men's leisure time does not

**Table 2** OLS estimates of average time spent on leisure activities

	Sport	Hobby	Social life
Caregiver	-9.254*** (1.237)	-2.106*** (0.638)	-2.467 (1.746)
Work time	-0.322*** (0.023)	-0.064*** (0.012)	-0.371*** (0.033)
Age	-0.133*** (0.016)	-0.104*** (0.008)	-0.440*** (0.022)
Income	0.086 (0.106)	0.040 (0.055)	0.007 (0.150)
Children (aged 0–6)	-6.719*** (0.707)	-3.175*** (0.365)	-15.313*** (0.999)
Vocational	-0.603 (0.784)	-0.280 (0.405)	-4.359*** (1.107)
Secondary	2.610*** (0.753)	1.649*** (0.389)	-3.213** (1.063)
Tertiary	7.565*** (0.851)	4.339*** (0.439)	0.237 (1.202)
Town	3.655*** (0.571)	1.793*** (0.295)	0.969 (0.807)
Women	-10.762*** (0.535)	-2.176*** (0.276)	-2.661*** (0.755)
Constant	43.298*** (1.137)	10.902*** (0.587)	85.429*** (1.605)
<i>N</i>	38,967	38,967	38,967
adj. <i>R</i> <sup>2</sup>	0.027	0.013	0.020

Sources: Authors' own calculations based on the Time Use Survey, 2013. Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The reference base category: for education: lower than basic vocational; for town: towns or villages with fewer than 100,000 inhabitants; for women: men

**Table 3** Time spent on sport, hobby and social life by gender

	MEN			WOMEN		
	Sport	Hobby	Social life	Sport	Hobby	Social life
Caregiver	-12.399*** (3.005)	-2.576 (1.531)	-7.684* (3.753)	-8.224*** (1.245)	-1.955** (0.652)	-0.924 (1.944)
<i>N</i>	14,091	14,091	14,091	24,876	24,876	24,876
adj. <i>R</i> <sup>2</sup>	0.024	0.011	0.022	0.019	0.014	0.020

Sources: Authors' own calculations based on the Time Use Survey, 2013. Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . We also control for: age, income level, having children, education and size of town

involve accompanying activities, while women in general multitask, frequently combining activities such as unpaid housework and leisure (Bittman and Wajcman 2000) (Table 3).

As daily routines differ significantly by the type of day, and time spent on leisure can be longer during weekends than during working days (Shaw 1985), we have also conducted a separate analysis by the type of day (a working day is defined as Monday–Friday, and a weekend is defined as Saturday–Sunday). The results presented below show the effect of caregiving on time spent on physical activity, hobbies, and social life, and by the type of day, followed by day and gender comparison.

When studying different forms of leisure participation, we concluded that time for physical activity and hobbies of informal caregivers is affected more substantially during weekends than during working days, when compared to social life (Table 4). Interestingly, we do not observe significant differences between male and female caregivers in this respect: the direction of the correlation is the same, although male caregivers seem to be affected only in the realm of physical activity, while the time dedicated to hobbies by female caregivers is diminished, as well as time spent on physical activity (Table 5).

The graph below illustrates the size of coefficients for caregivers from the twelve regressions estimated above. One interesting fact is that the time caregivers spent socializing appears to be affected less substantially during the weekend than during working days. One plausible explanation for this was suggested by Bedim and Guinan (1996), who concluded that due to family visits to the care recipient, caregivers' participation in family gatherings also increases, and that has a direct impact on their social lives (Graph 2).

In the next regression, we verify Hypothesis 4, by illustrating the impact of care provision on the time use of caregivers who are co-resident with care recipients and those who are non-resident (Table 6). In line with our expectations, time poverty is predominantly experienced by those providing care to a household member. Only in the case of non-resident female caregivers is their time spent on physical activity reduced due to caring duties. Yet, in other spheres, neither their hobbies nor social life are limited by caregiving. For men, care for a person living outside their household has no impact on their time spent on leisure. Similarly, male co-resident caregivers seem to be more substantially affected by their caregiving responsibilities than female co-

**Table 4** Time spent on sport, hobby and social life by type of day

	Work day			Weekend		
	Sport	Hobby	Social life	Sport	Hobby	Social life
Caregiver	−8.330*** (1.472)	−1.952* (0.760)	−4.194* (2.078)	−11.542*** (1.845)	−2.602** (0.952)	−1.424 (2.605)
<i>N</i>	38,967	38,967	38,967	24,876	24,876	24,876
adj. <i>R</i> <sup>2</sup>	0.026	0.013	0.020	0.019	0.014	0.020

*Sources:* Authors' own calculations based on the Time Use Survey, 2013. Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . We also control for: age, income level, having children, education, gender and size of town

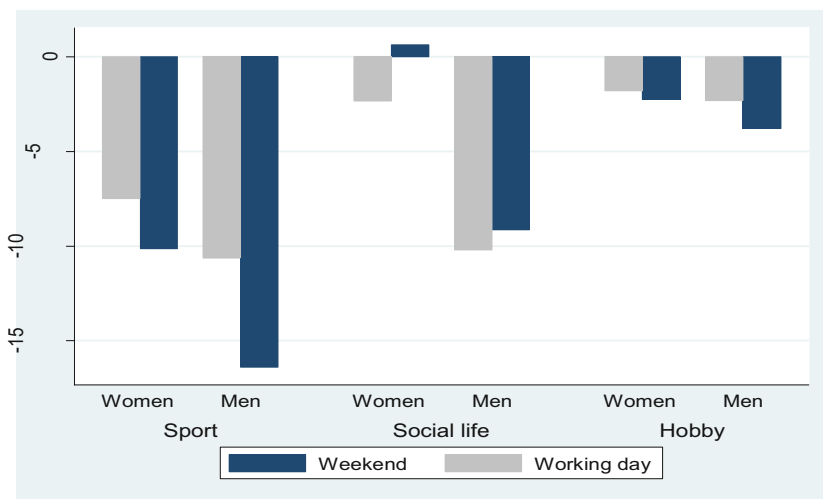
**Table 5** Time spent on sport, hobby and social life during a work day by gender and type of day

	MEN			WOMEN		
	Sport	Hobby	Social life	Sport	Hobby	Social life
Caregiver	Work day					
	-10.648** (3.557)	-2.338 (1.812)	-10.203* (4.441)	-7.531*** (1.485)	-1.825* (0.777)	-2.364 (2.318)
	Weekend					
	-16.430*** (4.666)	-3.803 (2.376)	-9.162 (5.827)	-10.135*** (1.836)	-2.268* (0.961)	0.627 (2.866)
N	14,091	14,091	14,091	24,876	24,876	24,876

Sources: Authors’ own calculations based on the Time Use Survey, 2013. Standard errors in parentheses. \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001. We also control for: age, income level, having children, education, gender and size of town

resident caregivers. Another plausible explanation of this result might be that informal male caregivers spend more time due to lower experience with caregiving, and experience more difficulty multitasking. Therefore, other unpaid household tasks demand more of their time. Also, male caregivers are more often spouses than sons, meaning that on average, they are older than the average caregiver.

All caregivers, regardless of their gender or the type of leisure activity studied, are more likely to admit that they would like to spend more time on physical activity, hobbies, and their social lives. The volume of the effect is similar between male and female caregivers. However, when a distinction is made between co-resident and non-



Sources: Authors’ own calculations based on the Time Use Survey, 2013.

**Graph 2** Comparison of coefficients (OLS) of care givers variable by different type of days and gender. Sources: Authors’ own calculations based on the Time Use Survey, 2013

**Table 6** Time spent on sport, hobbies and social life by gender and type of residence

	MEN			WOMEN		
	Sport	Hobby	Social life	Sport	Hobby	Social life
Inside household	-13.253*** (3.542)	-3.618* (1.805)	-11.230* (4.424)	-8.035*** (1.505)	-2.616*** (0.788)	-3.526 (2.350)
Outside household	-9.956 (5.442)	-0.038 (2.772)	0.547 (6.796)	-7.491*** (2.077)	-0.626 (1.087)	4.824 (3.243)

Sources: Authors' calculations based on the Time Use Survey, 2013. Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . We also control for: age, income level, having children, education and size of town

resident caregivers, only male co-resident caregivers express a need to devote more time to leisure, while the results between co-resident and non-resident female caregivers do not differ significantly.

These results allow us to confirm our hypotheses that time poverty among caregivers is a real issue. It is not merely an effect of different preferences regarding the use of time, but an implicitly stated need. This explains the adverse outcomes on caregivers described in the literature: the physical and mental cost of caregiving, lower life satisfaction, and social exclusion. We claim that leisure is the first area of life sacrificed when the caregiving burden commences. Sleep soon follows, resulting in a higher risk of depression and other health problems, then labor market participation (or withdrawal), which increases the risk of poverty, both contemporarily and in terms of retirement prospects (Tables 7 and 8).

## Summary and Conclusions

On the basis of the Polish time use survey, we have tested several hypotheses on the time poverty of caregivers. Empirical analysis confirms that caregivers are at risk of time poverty, and the effect differs by gender and day type (working days and weekends). Against our expectations, the gender effect does not indicate a clear female disadvantage, and varies by type of leisure. The burden of caregiving is predominantly

**Table 7** Logit results: willingness to spend more time on sport, hobbies and social life

	MEN			WOMEN		
	Sport	Hobby	Social life	Sport	Hobby	Social life
Caregiver	0.294* (0.115)	0.309** (0.116)	0.386*** (0.111)	0.322*** (0.062)	0.364*** (0.062)	0.476*** (0.060)
N	14,077	14,077	14,077	24,857	24,857	24,857

Sources: authors' own calculations based on the Time Use Survey, 2013. Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . We also control for: age, income level, having children, education and size of town

**Table 8** Type of caregivers' residency and willingness to spend more time on leisure

Type of residency:	MEN			WOMEN		
	Sport	Hobby	Social life	Sport	Hobby	Social life
Inside	0.324* (0.136)	0.325* (0.139)	0.464*** (0.131)	0.327*** (0.076)	0.413*** (0.075)	0.579*** (0.072)
Outside	0.186 (0.202)	0.237 (0.204)	0.110 (0.200)	0.313** (0.103)	0.231* (0.104)	0.220* (0.101)

Sources: Authors' own calculations based on the Time Use Survey, 2013. Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . We also control for: age, income level, having children, education and size of town

felt by co-resident informal caregivers, whose time spent on different forms of leisure is reduced. Additional analysis confirms that reductions in leisure time are involuntary, and caregivers wish to dedicate more time to this aspect of their lives.

In contrast to previous studies, which focus entirely on samples of informal caregivers, we had an opportunity to analyze time use among a representative sample of Polish citizens. This has allowed us to identify the objective shortage of time spent on leisure and hobbies among caregivers in comparison to others. Given the differences in the national context and methods of study, it is unviable to compare the outcome of our study with previously reported results. However, we have found that our conclusions align with those for the US and Canada.

Heeding that a reduction in discretionary time might have negative consequences on physical and psychological well-being, as well as on motivation to continue giving care, it is reasonable to conclude that there is a need for public support. Providing support to informal caregivers can also diminish the demand for formal care in nursing homes, and other public long-term care institutions. This indicates that providing support for informal caregivers is a reasonable approach from the perspective of public finance.

Local projects and programs could address this by dedicating relief centers, temporary replacement, or formal provision of adult day care or in-home respite care that allows informal caregivers to take short-term breaks, and reduces the strain on caregiving family members. Support might come in the form of a care allowance or social security benefits, including tax benefits. Some financial benefits can be also granted for adaptations to the home to facilitate care. Moreover, provision of leisure facilities, and their accessibility in local communities can play an important role in enhancing the well-being of caregivers, as shown by Schryer et al. (2016). Effective policies toward informal care should combine different forms of support and intervention, which address the needs of recipients as well as caregivers. As stated recently by the Polish Ombudsman, there is an urgent need for change in this respect. In his communication to the Polish Ministry of Family, Labor and Social Policy, the Ombudsman asserts that: “*there is no systemic approach to the problem of informal caregiving in Poland. Many Poles who take care of elderly or disabled family members are outside of the state benefit system (the access to which is dependent on income). There are no formal regulations enabling family caregivers to access specific training, psychological care, or solutions that make it possible to combine informal care and work.*” (Ombudsman 2019).

Informal care, as a form of unpaid activity, is performed predominantly by older women, and within households with lower income. Previous research reports that female informal caregivers have more health problems, and are more likely to develop symptoms of depression. Concurrently, they do not feel entitled to leisure, which is regarded by the majority of them as a privilege rather than a right. This group should be of particular concern, as due to overstrain, these circumstances have the potential to transform them from caregivers to care recipients.

## Limitations and Further Research

The authors of this study are acutely aware of its limitations. The time use survey was designed to obtain information about general trends of time use, and to represent the entire population of Poland: it does not focus on any specific group, or type of activity, which has resulted in the number of caregivers in our sample being relatively small. In addition, when utilizing such a demanding method of data collection, a time use diary covers just a two-day ‘snapshot’ of a caregiver’s daily activities. Therefore, as the frequency of the caregiving as well as leisure related activities is not known, we cannot exclude the possibility that our results might be over or underestimated. Further research which addresses these limitations could be based on specific data: time use diaries collected among caregivers, and complemented by additional questions about their needs and current access to leisure. Understanding the nature of time poverty among informal caregivers can serve to inform policy responses which address the health and well-being of caregivers.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Informed Consent** Informed consent is ‘Not applicable’ as data used for the research is anonymised, coming from the representative sample of the whole population and obtain from Central Statistical Office in Poland.

**Ethical Treatment of Experimental Subjects (Animal and Human)** ‘Not applicable’.

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**Magdalena Rokicka** economist (PhD, University of Essex), former assistant professor at Educational Research Institute. She specialises in quantitative methods of data analysis. Her research interests include: applied micro-econometric analysis of education, labour market, time use, and gender related issues.

**Olga Zajkowska** graduated from Warsaw University of Life Sciences. She works as assistant professor at University of Warsaw. Her research interests focus on female labour supply, family policy and policy evaluation.

## Affiliations

**Magdalena Rokicka<sup>1</sup> · Olga Zajkowska<sup>2</sup>**

<sup>1</sup> Institute for Educational Research, Górczewska 8, 01-180 Warsaw, Poland

<sup>2</sup> The Faculty of Economic Sciences at the University of Warsaw, Długa 44/50, 00-241 Warsaw, Poland