Work-Life Conflict in the Intermediate Age Bracket: Trends in Working Hours and Time Spent Caring for Elderly Family Members

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In Japan's super-aging society, there is growing concern due to the fact that the number of intermediate age workers who need to take care of elderly family members has increased rapidly in the last few decades. However, there is limited research investigating the time use of those workers who are giving care to elderly family members. Using Japanese time-use data, this paper investigates how the time use of intermediate age caregivers has evolved in the last few decades. The main findings are as follows. Firstly, according to our estimation, the number of caregivers has increased from 3.56 million people in 1991 to 6.83 million people in 2011. Secondly, contrary to the growing number of caregivers, the time used for giving care has decreased tremendously since 2001. On the other hand, working hours have increased during the same period. Thirdly, using Oaxaca-Blinder decomposition, we tried to investigate the reason for the decrease in time spent giving care to elderly family members. Although the decline in time spent giving care is partially explained by the implementation of the Long-Term Care Insurance Act in 2000, for the most part it remains unexplained.

I. Introduction

Japan is currently encountering a new era as a super-aging society, with over 25% of its total population—in other words, at least one in four people—aged 65 years or older in 2015. In the face of such population aging, Japan is seeking to promote a "society of dynamic engagement of all citizens" (*Ichioku sokatsuyaku shakai*), a society in which anyone with the ability to work has the opportunity to engage in employment, as a means of curbing the decrease in the labor force as far as possible and sustaining the potential for growth. In order to support this, it urgently needs to be ensured that workers who also bear family responsibilities such as caring for elderly family members or raising children are not drawn into the culture of focusing solely on work which has traditionally been prominent in Japanese society, but are able to consider a greater range of options for flexible and diverse ways of working that allow them to balance their work with their private time. This is particularly true in the case of members of the intermediate age bracket (defined here as age 30–59), as they occupy important roles within their places of work as key players who form the core of

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the labor force and managers who are responsible for supervising and training their team members and younger colleagues, while also often tackling a number of responsibilities in their private lives, such as raising children or caring for elderly family members, as a result of increasing trends of later marriage, later childbirth, and population aging.

In Japan, the term "work-life balance" was initially often used specifically to refer to support for working women raising children. However, in recent years the increasing number of both women and men who face conflict between work and care giving for elderly family members has come to be recognized as a social problem, as progressive population aging has led to an increase in the number of people who struggle to balance caring for family members with work commitments. For example, the 2012 Employment Status Survey (Statistics Bureau, Ministry of Internal Affairs and Communications) reveals that as many as 100,000 people each year have to quit their jobs in order to care family members, and there is significant concern regarding the potential rise in the number of such people in the future.

However, as far as the author is aware there is insufficient research using statistical data to ascertain how people facing such work-life conflict actually approach work and daily life. While the numbers of people caring for family members are known, there is only highly limited information available on how much these numbers have increased in comparison with previous years, how much time is required for giving care, and whether such caregiving time has increased over time along with population aging.[1] Research urgently needs to be conducted using statistical data to carefully ascertain the actual circumstances and elucidate what kinds of needs and issues exist, in order to establish the structure that is required to ensure that everyone is able to support the super-aging society. With these challenges in mind, this paper aims to provide basic information on how people in the intermediate age bracket who have responsibilities such as caring for elderly family members and raising children divide their time between work and other daily activities.

In the main body of this paper, Section II will look at the changes regarding people caring for family members over time, including the extent of the increase in the number of people who care for family members and changes in the percentages of people within the intermediate age bracket who care for family members over the past two decades. Section III then ascertains the changes over recent decades in how workers—particularly those in regular employment—in the intermediate age bracket divide time between working and other daily activities. Section IV observes the changes in the time that regular employees spend giving care to family members and how this relates to working hours.

[1] Sugiura and Arayama (2013a, 2013b, 2013c) are good examples of prior research that uses aggregate data to carefully observe the relationship between caregivers and their work. Ministry of Health, Labour and Welfare (2013) is also a valuable study that uses data from commissioned surveys and other sources to provide insights on topics such as the problems of balancing caregiving with work, and information regarding people leaving work to provide care.

II. Trends regarding People Caring for Family Members

1. Changes in the Number of People Caring for Family Members

The Survey on Time Use and Leisure Activities (STULA), conducted by the Statistics Bureau of Japan's Ministry of Internal Affairs and Communications, provides official statistics that allow us to determine the approximate number of people who give care to family members (hereafter "caregivers") in Japan over an extended chronological period. Conducted every five years, it is a major survey under which data is collected from around 200,000 respondents on the way in which they use their time over a single day and their everyday lives in general. This paper uses microdata from the STULA to determine information on the numbers of and trends among caregivers in Japan.

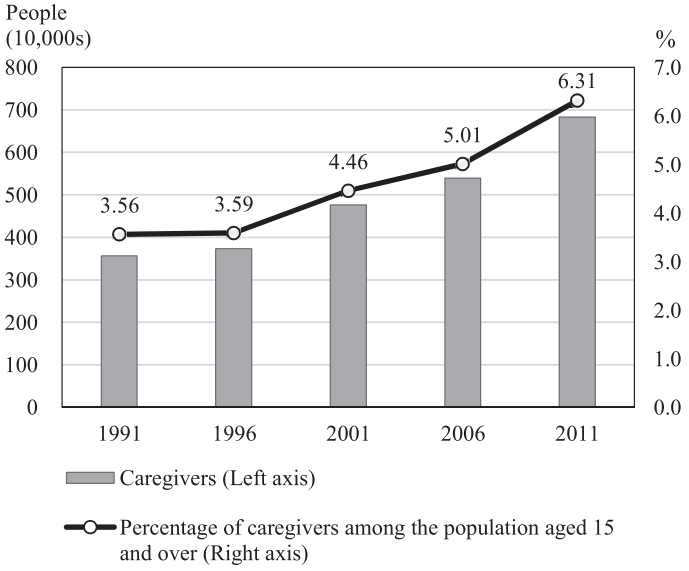
Firstly, let us look at how the number of caregivers has increased over the last twenty years along with the progress of population aging. Since 1991, the STULA has included the question "Do you usually care for a member of your family?" for respondents aged 15 and over.[2] In the STULA, "caring" is defined as "helping in daily activities such as bathing, dressing, going to the toilet, moving around the house, or taking a meal." This definition of "caring" also covers care that is given to people who have not been officially certified as "requiring long-term care" under the Long-Term Care Insurance system (but does not include care given to those who are confined to bed with a temporary illness). It also includes not only care given to family members in the same home, but also care provided to family members who live away from the caregiver. Figure 1 shows the changes in the estimated number of caregivers, calculated using sampling weights for data tabulation attached to each sample of the STULA, and the percentage that caregivers account for within the population aged 15 and over.[3]

Figure 1 shows that in Japan the number of people who care for family members has surged in the last two decades, from 3.57 million people in 1991, to 4.76 million people in 2001, and 6.83 million in 2011. The percentage that caregivers account for within the population aged 15 and over has also risen from 3.56% in 1991, to 4.46% in 2001, and 6.31% in 2011.

Figure 2 shows how the distribution of the ages of the caregivers has shifted as their number has risen sharply over the last twenty years. The figure demonstrates that while in 1991 caregivers under 60 years of age accounted for around 75% of all caregivers, this percentage dropped to around 55% by 2011. On the other hand, the percentage of caregivers

[2] "Usually caring for a member of your family" is defined as "providing care for 30 days or more per year."

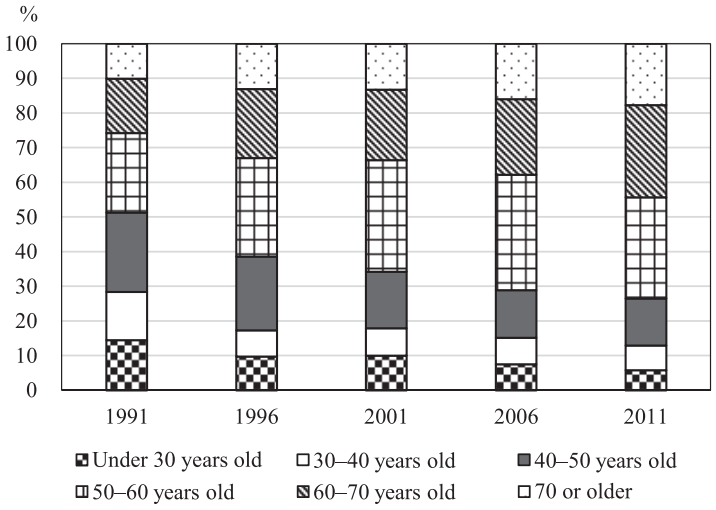
[3] The STULA is a major survey of around 200,000 household members aged 10 and above, for which respondents complete a two-day record of their daily living pattern. The estimated population can be calculated using these samples and the multiplying factors for data tabulation. More specifically, the estimated population is the sum of the sampling weights attached to each sample, divided by seven, the number of days in a week. Genda (2013) provides a detailed account of the methods of calculating the estimated population.



Sources: Microdata from the 1991, 1996, 2001, 2006, and 2011 editions of the *Survey on Time Use and Leisure Activities* (Statistics Bureau, Ministry of Internal Affairs and Communications).

Note: "Caregiver" is defined as those who responded that they "usually care for a member of family." The same applies to all figures and tables hereinafter.

Figure 1. Changes in the Number and Percentage of Caregivers since 1990



Sources: Microdata from the 1991, 1996, 2001, 2006, and 2011 editions of the *Survey on Time Use and Leisure Activities* (Statistics Bureau, Ministry of Internal Affairs and Communications).

Figure 2. Changes in the Percentage of Caregivers by Age Bracket

Table 1. The Percentage of Caregivers in the Population by Age Bracket

(Units: %)

	Male			Female		
	30−39 years old	40−49 years old	50−59 years old	30−39 years old	40−49 years old	50−59 years old
1991	1.73	2.86	3.04	4.38	5.46	7.17
1996	1.24	3.06	4.86	2.39	5.06	8.09
2001	1.38	3.24	5.92	3.01	6.36	10.07
2006	1.59	3.06	6.92	2.82	6.53	11.92
2011	1.72	4.12	9.07	3.82	6.68	16.12

Sources: Microdata from the 1991, 1996, 2001, 2006, and 2011 editions of the *Survey on Time Use and Leisure Activities* (Statistics Bureau, Ministry of Internal Affairs and Communications).

in the 60 years or older age bracket has increased. The fact that almost half of all caregivers are aged 60 or older clearly shows that Japan is now in an age in which the elderly are caring for the elderly. As a result, the percentage that the intermediate age bracket (age 30–59) accounts for within the total number of caregivers has been on the decrease, dropping from 60% in 1991 to around 50% in 2011.

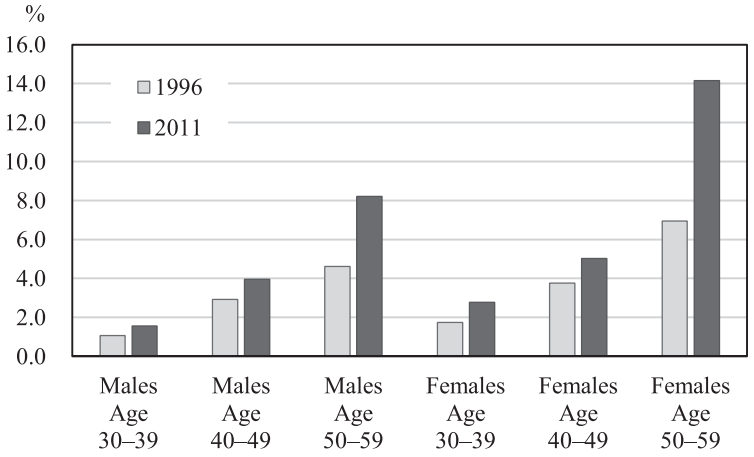
At the same time, while the number of caregivers aged 60 or older is steadily increasing, caregivers in the age group that forms the core of the labor force—namely, the intermediate age bracket—still account for around half of the approximately 6.83 million caregivers in Japan. In 2011 the number of caregivers in the intermediate age bracket was around 3.4 million people, almost the same as the total number of caregivers in 1991.

2. Trends within the Intermediate Age Bracket

The following sections of this paper focus on the intermediate age bracket and the trends regarding caregiving among this age bracket. Firstly, Table 1 shows the percentage of caregivers among the 30–39, 40–49, and 50–59 age brackets respectively.

Table 1 shows that in the 30–39 age bracket the percentage of caregivers has shown slight fluctuations but essentially remained level over the last twenty years, for both males and females. On the other hand, in the 40–49 age bracket the percentage of caregivers has risen gradually. The 50–59 age bracket shows the most marked increase, with the percentage for males rising from 3.04% in 1991 to 9.07% in 2011, and the percentage for females rising from 7.17% in 1991 to 16.12% in 2011. Japan has now reached an age in which one in every ten males aged 50–59 and one in every six females aged 50–59 are caring for family members.

Figure 3 shows the shifts in the percentages of caregivers within the number of people in regular employment, by age bracket and sex. In this figure, changes are given for the period between 1996 and 2011, because the question on employment status that provides information on whether or not respondents are in regular employment was first included in



Sources: Microdata from the 1996 and 2011 editions of the *Survey on Time Use and Leisure Activities* (Statistics Bureau, Ministry of Internal Affairs and Communications).

Figure 3. Changes in the Percentage of Caregivers among Regular Employees by Age Bracket

the STULA in 1996. As in surveys such as the Labour Force Survey (Statistics Bureau, Ministry of Internal Affairs and Communications), the STULA classifies a respondent as a "regular employee" (*seishain*) if their type of employment is referred to as such by their place of employment.

Figure 3 shows that in 2011 the percentages of people caring for family members while in regular employment had reached around 4% for males in the 40–49 age bracket, over 8% for males in the 50–59 age bracket, 5% for females in the 40–49 age bracket, and over 14% for females in the 50–59 age bracket. This reveals notable increases over the last 15 years in the percentages of people giving care while in regular employment, as since 1996 they have risen from 3% for males in the 40–49 age bracket, 5% for males in the 50–59 age bracket, just under 4% for females in the 40–49 age bracket and 7% for females in the 50–59 age bracket. It is also interesting to note that the percentages of caregivers among employed people overall (namely, both regular and non-regular workers) are roughly the same as those for regular employees; in 2011, around 9% of employed males in the 50–59 age bracket, and around 14% of employed females in the 50–59 age bracket were caring for family members.

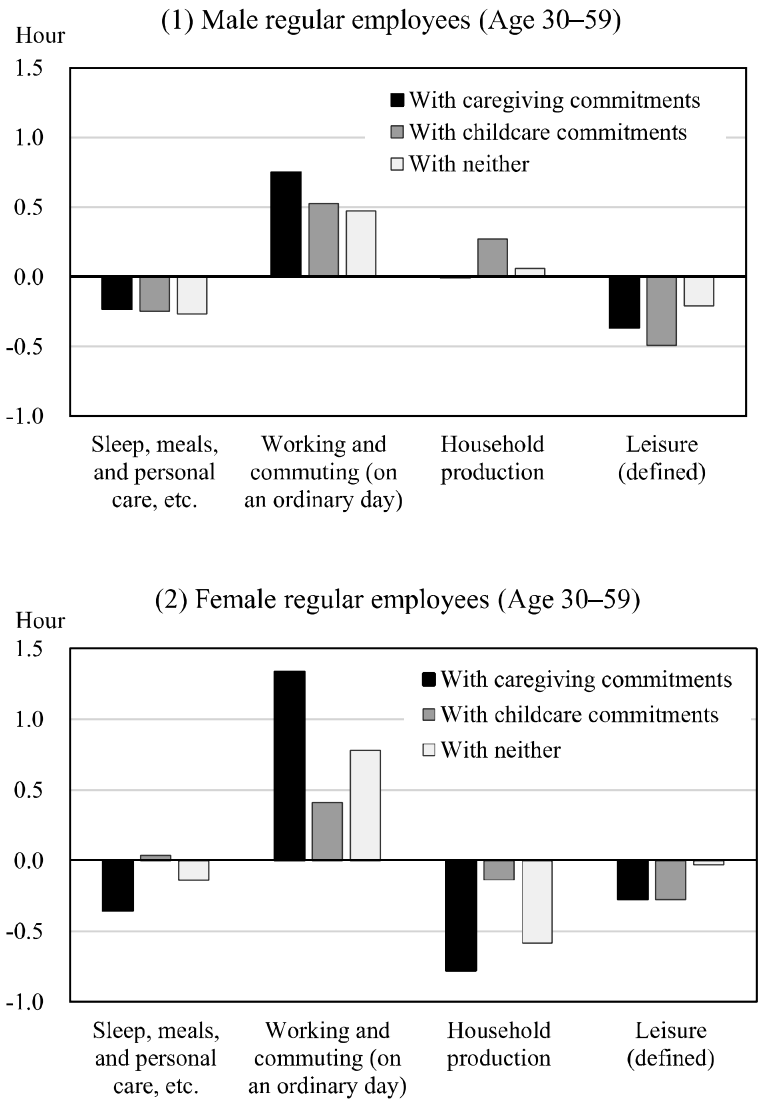
III. Time Use among the Intermediate Age Bracket

While the existence of people in the intermediate-age bracket facing such work-life conflicts is recognized by society, the actual conditions of their lives have not been eluci-

dated using statistics. Taking into consideration the fact that in recent years a growing number of people have weekly days off on days other than Saturday and Sunday, the responses to the STULA question asking respondents to select the type of day for which they were completing the record of their time-use ("response day") were used to focus on respondents' time use on working days. Here, the types of response day were divided into three categories: (i) Day off or vacation, etc., (ii) Special day (A combination of the options "Travel or excursion," "Event, wedding, or funeral," "Business trip or training," "Work at home," "Medical treatment," "Childcare leave, etc.," "Nursing care leave, etc." in the STULA question), (iii) Ordinary day ("Other" in the STULA question). Analysis was then focused on the changes in time use on days in the third category, "ordinary days." For a regular employee, an "ordinary day" would be a day on which they engaged in work as normal—namely not a day off or a day on which they had special plans or commitments.

Figure 4 divides male and female regular employees in the 30–59 age bracket whose response day was an "ordinary day" into three groups—those "with caregiving commitments," those "with childcare commitments," and those "with neither"—and demonstrates how the time spent on daily activities has changed over the 15 years between 1996 and 2011. As mentioned above, the STULA is a survey to investigate how people use their time over the course of each day; for each 15 minute block on the record of time use respondents fill in the activity they engaged in from a list of twenty options, such as "work" or "sleep." Figure 4 demonstrates changes in the use of time, with the activities for which time is used divided into four categories. Firstly, "sleep, meals, and personal care, etc." is the sum of the time spent sleeping, eating meals, and on one's daily personal care, such as taking a bath. While the time spent on these three activities is not time spent being directly productive, it is an intermediate input that is essential for productivity. Secondly, the category "working and commuting" includes both working hours and time spent commuting as here both are treated as time spent working. The third category, "household production," is the sum of time spent on housework, childcare, caring or nursing, and shopping, and the fourth category, "leisure (defined)," is the sum of time spent on "watching television/listening to the radio, etc.," "social life," "rest and relaxation," "sports," "hobbies and amusements," "learning and self-education, etc." and "volunteer activities, etc." The STULA also includes options for time spent "traveling (excluding commuting)," receiving "medical examinations or treatment" (by the respondent themselves), and any "other activities" not covered under those given above, but these are excluded from Figure 4.

Figure 4 (1) shows that although for a number of years importance has been placed on work-life balance and support for coping with nursing or childcare alongside work, the working hours of people in the intermediate age bracket have in fact tended to become longer over the last 15 years. Looking at the changes over the last fifteen years, particularly people caring for family members have seen the greatest increase in the time spent "working and commuting." The time that has been decreased as a result of this increase in working hours is the time spent on "sleep, meals, and personal care, etc.," and the time allocated



Sources: Microdata from the 1996 and 2011 editions of the *Survey on Time Use and Leisure Activities* (Statistics Bureau, Ministry of Internal Affairs and Communications).

Note: "Household production" is the sum of time spent on housework, childcare, caring or nursing, and shopping. "Leisure (in a defined sense)" is the sum of time spent "watching television/listening to the radio, etc.," "social life," "rest and relaxation," "sports," "hobbies and amusements," "learning and self-education, etc." and "volunteer activities, etc."

Figure 4. Changes in Time Use over an Ordinary Day (Between 1996 and 2011)

to “leisure (defined).” There is little change in the time spent on “household production,” although with slight increases among the group of those “with childcare commitments” and the group of those “with neither” caregiving nor childcare commitments.

Looking at the trends for female regular employees in Figure 4 (2), as in the case of males, those caring for family have seen the greatest increase in “working and commuting” time. The fact that “household production” time has decreased across all female age brackets differs from the trend demonstrated among males. However, as the decrease in “household production” time does not cancel out the increase in “working and commuting” time, the time spent on “sleep, meals, and personal care, etc.,” and the “leisure (defined)” time has decreased across almost all groups. This demonstrates that over the past 15 years the ordinary day has become busier for both female and male regular employees.

To summarize the above, for both males and females there has been an increase in working hours on ordinary days, and in the past 15 years this increase has been particularly great for those who are caring for family members. As a result, the difference in working hours between those who care for family and those who do not have such responsibilities is on the decrease. Both males and females are supplementing the extra time needed for working hours on ordinary days by reducing their leisure time, sleep, and other such activities. Furthermore, among women the significant decrease in household production time is also contributing to the increase in working hours.

IV. Caring for Family Members and Work: The Decrease in Caregiving Time

In Section III, we observed that on the whole the number of working hours on ordinary days is increasing for both the group with family responsibilities such as caring for elderly family members and raising children, and the group with no such responsibilities. This suggests a reverse in the trend of promoting work-life balance. However, given that the implementation of the Long-Term Care Insurance system in 2000 has allowed Japan to develop a system by which society as a whole supports the care of older people, the fact that families have assistance with providing care may also be a factor behind this change in time use. Using this hypothesis as a basis, this section focusses in particular on regular employees in the intermediate age bracket who are caring for family members, and looks at how the time that such people spend giving care (“caregiving time”) has changed since 2001, the year after the Long-Term Care Insurance system came into effect.

Table 2 uses data for regular employees in the intermediate age bracket who responded that they were giving care to family members, and shows the changes in the average time spent giving care between 2001, 2006, and 2011. The rows marked “total” show the samples for males or females overall, and the “at home” and “outside home” rows beneath demonstrate the changes in the caregiving time for the sample of those who care for family members “at home,” and the sample of those who provide care to family members

Table 2. Changes in the Average Caregiving Time per Week of Regular Employees (Age 30–59) Caring for Family Members

(Units: Hour)

	2001	2006	2011	2001→2006	2001→2011	Sample size
Male						
Total	2.22	1.24	0.92	-0.99 **	-1.30 **	6295
				(0.18)	(0.18)	
At home	1.71	1.31	0.77	-0.39 +	-0.93 **	3491
				(0.20)	(0.20)	
Outside home	2.89	1.15	1.07	-1.73 **	-1.82 **	2804
				(0.32)	(0.30)	
Without assistance	1.90	1.18	0.86	-0.71 **	-1.04 **	4285
				(0.22)	(0.21)	
With assistance	3.04	1.36	1.10	-1.69 **	-1.94 **	2010
				(0.34)	(0.33)	
Female						
Total	3.11	3.27	2.21	0.16	-0.90 **	4205
				(0.28)	(0.27)	
At home	3.28	2.77	2.37	-0.50	-0.91 **	2197
				(0.33)	(0.33)	
Outside home	2.95	3.82	2.05	0.87 +	-0.90 **	2008
				(0.45)	(0.44)	
Without assistance	2.94	2.99	1.87	0.05	-1.07 **	2945
				(0.33)	(0.33)	
With assistance	3.61	3.97	2.90	0.36	-0.71	1260
				(0.52)	(0.50)	

Note: "At home" and "outside home" figures are the sample that provides care to family "at home," and the sample that provides care to family "outside home" respectively. The "with assistance" and "without assistance" items are samples of those who answered "yes" and those that answered "no" respectively in response to the question "Does anyone other than your household members usually give your family nursing care?" Figures in parentheses are standard errors. +,* and ** indicate that the difference between the two given years has statistical significance at the 10, 5, and 1% levels respectively.

"outside home."[4] Below that, the "with assistance" and "without assistance" items show the caregiving times when respondents are divided into the sample of those who answered "yes" and the sample of those that answered "no" in response to the question "Does anyone other than your household members usually give your family nursing care?". "Nursing care by someone other than your household members" is defined as "care provided by a relative who is not living with you or by a care service provider (for instance, a home care attendant or day care service)," and nursing care includes "care given to people who have not been

[4] The 2011 survey includes questions that divide the nursing care provided outside home into "in the same site as the caregiver's residence, or, in the neighborhood" and "other," but in Table 2 these two groups are combined as the "outside home" sample, in order to make it possible to look at the change chronologically.

officially certified as 'requiring long-term care' under the Long-Term Care Insurance system."

The "2001," "2006," and "2011" columns in Table 2 show the average weekly caregiving time as it was recorded in the survey conducted in each of the years. Firstly, looking at the changes across the totals for males and females, the time spent providing care was around two to three hours per week on average in 2001, and this time has decreased over the last ten years. In the center of the table are the results of a significance test of the differences between 2001 and 2006, and 2001 and 2011. The results demonstrate that the decreases in caregiving time between 2001 and 2011 for both females and males are statistically significant.

Let us look at whether or not such a decrease in caregiving time is related to the fact that with the increasing trend toward nuclear families, there has been an increase in the percentages of people who give care outside home and people who place their relatives in a special nursing home for the aged. Of the regular employees in the intermediate age bracket caring for family members in 2001, 477,000 people (males and females) were giving care at home, and 409,000 were giving care outside home—in other words, more people were giving care "at home" than "outside home" in 2001. This has reversed in the last ten years, and the figures for 2011 demonstrate that the number of people giving care to family members outside home has shown a greater increase, with 561,000 people caring for family members at home and 583,000 people caring for family members outside home. Looking at the change in caregiving time by samples for at home and outside home, caregiving time has decreased over the past decade for both males and females, regardless of whether the care is provided at or outside the caregiver's home.

Let us now look at whether the fact that the implementation of the Long-Term Care Insurance system has increased the number of people who are able to receive assistance from others in giving care is contributing to the decrease in the per capita time spent providing care. Of the regular employees in the intermediate age bracket who are providing nursing care, the percentage of males who responded that they receive some form of assistance from someone outside the household actually decreased from 28.5% in 2001 to 26.4% in 2011. However, there is a difference in the trends for males and females, as in the case of females the percentage of people receiving assistance increased from 25.6% in 2001 to 32.8% in 2011. Potential factors to explain the increase in the percentage of females receiving assistance are a possible increase in the number of males who engage in providing care, a possible increase in the number of people who share the responsibility of providing care with relatives living in another location, and a possible increase in the number of people using Long-Term Care Insurance. Looking at the changes in caregiving time according to whether or not respondents do or do not receive such assistance, in the case of males time spent providing care is decreasing regardless of whether or not there is assistance, while in the case of females the time spent providing care is in fact decreasing for the group that does not receive assistance. These observations seem to suggest that the decrease in care-

giving time is not necessarily entirely due to the impact of the Long-Term Care Insurance system. Incidentally, while the analysis in this paper is focused on people in the intermediate age bracket who are in regular employment, analysis of the data for people not in employment and in other age brackets reveals that caregiving time is decreasing across all age brackets on the whole, regardless of whether respondents are employed or unemployed, and regardless of their employment type or age bracket.

Moreover, it is also important to note the fact that even now, a decade since the Long-Term Care Insurance system came into effect, around 70% of both males and females are giving care to family members without receiving assistance from others. This may be due to the fact that the person they are looking after has not been officially certified as requiring long-term care services, but needs some form of help in their daily life (such as being taken to the hospital for outpatient treatment, or general housework such as putting out the trash, cleaning, laundry, and shopping), or that although the person they are looking after would be eligible for long-term care services, the caregiver is providing care alone due to a lack of knowledge or information. It will also be necessary to pursue initiatives and incorporate the use of other statistics in order to ascertain more information on such people giving care without assistance.

As established early on in this paper, Japan has seen a rapid increase in the number of people caring for family members, but at the same time, as demonstrated in Table 2, the time that such caregivers spend giving care has decreased over the last ten years, regardless of where they give the care or whether or not they receive assistance from others. In order to look a little deeper into the factors behind the decrease in caregiving time, Table 3 and 4 use the samples from 2001 and 2011, and show the results of Oaxaca-Blinder decomposition of the factors for change in caregiving time, by sex. The following explanatory variables were used: age dummy (base = 30–39 age bracket), marital status dummy, interaction term of the marital status dummy and the both partners working dummy, educational level dummy, with child under six years dummy, hospitalization dummy (1 in the case that a member of the household is hospitalized), at home care dummy (1 in the case that care is provided at home), annual household income (the value in real terms calculated by dividing the median of the values for each income level group by the consumer price index [national average]), assistance with providing care from someone outside of the household dummy (1 in the case that assistance is received), and the interaction term of the assistance with providing care dummy and the frequency of assistance (one day a month, two-three days a month, one day a week, two-three days a week, four or more days a week).

Moreover, the time required for care is dependent on the degree to which care is required, but as it is not possible to ascertain this from the STULA, Table 3 and 4 also include as additional variables the percentage of persons officially certified under the Long-Term Care Insurance system as "requiring long-term care" (*yo-kaigo*) among the 65–74 year old and the 75 years and above population, and the percentage of those certified as "requiring support" (*yo-shien*; namely, people for whom the degree of care required is relatively low)

Table 3. Oaxaca-Blinder Decomposition (Average Caregiving Time per Week of Male Regular Employees [Age 30–59] Caring for Family Members)

	Average		Regression coefficient		OB decomposition	
	2011	2001	2011	2001	Explained	Unexplained
Caregiving time (Dependent variable)	0.9324	2.2648	-	-	-0.3375	-0.9948 +
	(0.104)	(0.291)	-	-	(0.452)	(0.508)
Explanatory variables						
Age dummy Age 40−49	0.2864	0.2934	0.1274	1.9344 **	0.0294	-0.5717 *
	(0.452)	(0.455)	(0.218)	(0.675)	(0.026)	(0.224)
Age 50−59	0.5918	0.5699	0.3929	1.0505 +	-0.0127	-0.3595
	(0.492)	(0.495)	(0.243)	(0.591)	(0.017)	(0.346)
Marital status (has partner = 1)	0.7871	0.8268	0.1448	-0.3009	-0.0004	0.3621
	(0.409)	(0.378)	(0.294)	(0.799)	(0.003)	(0.688)
× Both partners work	0.0251	0.0504	-0.3025	-1.9976 **	0.0320 *	0.0413 *
	(0.156)	(0.219)	(0.574)	(0.537)	(0.013)	(0.020)
Education (university graduate = 1)	0.3282	0.2569	0.0745	1.5756 *	0.0656 +	-0.5307 +
	(0.470)	(0.437)	(0.198)	(0.758)	(0.037)	(0.275)
Children (with a child under 6 years old = 1)	0.0488	0.0637	0.3722	-0.0912	0.0003	0.0331
	(0.216)	(0.244)	(0.368)	(0.745)	(0.002)	(0.061)
Hospitalization (member of the household is hospitalized = 1)	0.1367	0.2040	0.5624	1.0899	-0.0506	-0.0783
	(0.344)	(0.403)	(0.543)	(0.928)	(0.037)	(0.160)
At home care (care provided at home = 1)	0.5230	0.5822	-0.3176 +	-1.0552	0.0568 +	0.3809
	(0.500)	(0.493)	(0.182)	(0.662)	(0.034)	(0.360)
Annual household income (value in real terms)	7.4638	7.1302	-0.0714 **	-0.1601 *	-0.0333	0.6769
	(3.552)	(3.653)	(0.026)	(0.072)	(0.023)	(0.589)
Assistance with providing care from someone outside of the household (assistance received = 1)	0.3045	0.3094	-2.3039 *	0.1564	0.0354	-0.6849
	(0.460)	(0.462)	(0.919)	(5.047)	(0.074)	(1.402)
× Frequency of assistance	1.6053	1.5699	0.5064 **	0.2264	-0.0643	0.4094
	(2.468)	(2.406)	(0.193)	(1.001)	(0.096)	(1.441)
Percentage of people certified as requiring long-term care among the 65−74 year old population in the region	4.2308	3.8939	-0.1264	3.7641 **	0.3029 +	-15.4122 **
	(0.599)	(0.524)	(0.351)	(1.429)	(0.173)	(5.751)
Percentage of people certified as requiring long-term care among the 75 years and over population in the region	30.5078	24.3883	0.0747	-0.7016 **	-0.4817	19.7225 **
	(2.604)	(3.119)	(0.078)	(0.208)	(0.552)	(5.539)
Percentage of people certified as requiring support among those aged 65−74 certified as requiring long-term care	28.4091	13.6700	0.0074	0.2925	2.4275 *	-6.1827
	(4.486)	(3.079)	(0.062)	(0.190)	(1.223)	(3.912)
Percentage of people certified as requiring support among those aged 75 and over certified as requiring long-term care	25.0691	13.3620	-0.0015	-0.2195	-2.4267 +	5.2316
	(3.935)	(3.399)	(0.084)	(0.163)	(1.470)	(3.956)
Work time	39.4356	34.8624	-0.0153 **	-0.0546 **	-0.1898 **	1.9614 **
	(35.124)	(33.106)	(0.004)	(0.015)	(0.062)	(0.756)
Household production	2.5180	2.8705	0.1001 *	0.0582	-0.0458	0.0738
	(6.932)	(8.126)	(0.048)	(0.049)	(0.030)	(0.115)
Travelling time	4.2029	5.2590	0.0141	-0.0360	0.0241	0.1613 +
	(8.847)	(10.311)	(0.015)	(0.024)	(0.021)	(0.094)
Shopping time	2.8532	2.1259	0.0594 +	-0.1644 **	-0.0051	0.3324 **
	(6.271)	(4.859)	(0.032)	(0.059)	(0.009)	(0.101)
Childcare time	0.7591	0.5072	-0.0167	-0.0498	-0.0010	0.0124
	(4.975)	(3.770)	(0.017)	(0.046)	(0.003)	(0.018)
Constant term	-	-	-0.2723	6.3017 *		-6.5739 *
	-	-	(1.022)	(2.546)		(2.729)
Sample size	2151	1946	2151	1946		
R2-adj.			0.071	0.090		

Note: Figures in parentheses are standard errors. +,* and ** indicate that the difference between the two given years has statistical significance at the 10, 5, and 1% levels respectively.

Table 4. Oaxaca-Blinder Decomposition (Average Caregiving Time per Week of Female Regular Employees [Age 30–59] Caring for Family Members)

	Average		Regression coefficient		OB decomposition	
	2011	2001	2011	2001	Explained	Unexplained
Caregiving time (Dependent variable)	2.2366	3.0260	-	-	-1.0501	0.2607
	(0.202)	(0.306)	-	-	(0.710)	(0.711)
Explanatory variables						
Age dummy Age 40−49	0.2637	0.3312	1.9123 **	1.6526 *	-0.0139	0.0688
	(0.441)	(0.471)	(0.475)	(0.826)	(0.054)	(0.251)
Age 50−59	0.5973	0.4945	2.0421 **	1.6799 **	0.0891	0.1910
	(0.491)	(0.500)	(0.450)	(0.646)	(0.068)	(0.415)
Marital status (has partner = 1)	0.6678	0.7116	-0.2799	1.0961 *	-0.0251	-0.8460 +
	(0.471)	(0.453)	(0.494)	(0.544)	(0.035)	(0.446)
× Both partners work	0.1110	0.1347	0.8512	0.6355	-0.0207	0.0212
	(0.314)	(0.342)	(0.679)	(1.226)	(0.026)	(0.157)
Education (university graduate = 1)	0.1534	0.1220	1.2319 *	1.9703 *	-0.0246	-0.1165
	(0.361)	(0.327)	(0.592)	(0.921)	(0.039)	(0.171)
Children (with a child under 6 years old = 1)	0.0288	0.0269	-1.1605	2.2536 +	0.0009	-0.0917 *
	(0.167)	(0.162)	(0.802)	(1.238)	(0.009)	(0.042)
Hospitalization (member of the household is hospitalized = 1)	0.1363	0.1632	-0.2935	2.2496 *	-0.0112	-0.3292 *
	(0.343)	(0.370)	(0.503)	(0.945)	(0.019)	(0.140)
At home care (care provided at home = 1)	0.5082	0.5103	-0.3710	1.1945	0.0055	-0.7965 +
	(0.500)	(0.500)	(0.410)	(0.727)	(0.014)	(0.422)
Annual household income (value in real terms)	8.0165	7.1004	-0.0475	-0.1269	-0.1047 +	0.6138
	(4.254)	(4.126)	(0.045)	(0.084)	(0.064)	(0.733)
Assistance with providing care from someone outside of the household (assistance received = 1)	0.3233	0.2773	-6.1259 *	-11.184 **	-0.6987 *	1.5515
	(0.468)	(0.448)	(2.616)	(1.777)	(0.307)	(0.949)
× Frequency of assistance	1.7014	1.4342	1.3492 **	2.2503 **	0.8277 *	-1.4403
	(2.499)	(2.371)	(0.488)	(0.397)	(0.328)	(0.979)
Percentage of people certified as requiring long-term care among the 65−74 year old population in the region	4.2614	3.9226	1.6064 *	-0.9509	0.6048 +	10.0523
	(0.563)	(0.496)	(0.778)	(1.909)	(0.324)	(8.091)
Percentage of people certified as requiring long-term care among the 75 years and over population in the region	30.7665	24.6151	-0.0797	0.2947	-0.6044	-9.0118
	(2.478)	(3.012)	(0.144)	(0.237)	(0.721)	(7.101)
Percentage of people certified as requiring support among those aged 65−74 certified as requiring long-term care	28.6434	13.6606	0.0691	-0.0004	0.3582	1.6647
	(4.385)	(3.145)	(0.105)	(0.189)	(1.251)	(3.895)
Percentage of people certified as requiring support among those aged 75 and over certified as requiring long-term care	25.0653	13.5672	-0.1509	-0.1791	-1.4715	-0.0618
	(3.880)	(3.496)	(0.128)	(0.122)	(1.090)	(3.511)
Work time	31.7481	32.5899	-0.0557 **	-0.0955 **	0.0266	1.7178 +
	(30.271)	(29.489)	(0.010)	(0.022)	(0.121)	(1.026)
Household production	17.7433	18.7452	-0.0097	-0.0581 +	0.0073	0.7089
	(15.788)	(16.220)	(0.016)	(0.031)	(0.020)	(0.502)
Travelling time	4.8580	4.8687	-0.0400 +	-0.0521	0.0238	0.0516
	(9.364)	(9.624)	(0.021)	(0.049)	(0.022)	(0.205)
Shopping time	4.4913	3.8661	-0.0700 *	-0.1257 *	-0.0264	0.1832
	(6.858)	(5.913)	(0.030)	(0.056)	(0.030)	(0.207)
Childcare time					0.0071	0.1107 *
					(0.015)	(0.050)
Constant term	-	-	1.0791	5.0601 *		-3.9811
	-	-	(2.224)	(2.278)		(3.159)
Sample size	1460	1262	1460	1262		
R2-adj.			0.125	0.123		

Note: Figures in parentheses are standard errors. +,* and ** indicate that the difference between the two given years has statistical significance at the 10, 5, and 1% levels respectively.

among those age 65–74 and 75 and above requiring long-term care, based on data from the Status Report on the Long-Term Care Insurance System (Ministry of Health, Labour and Welfare) for 2001 and 2011 by prefecture of residence. The former demonstrates the increase or decrease in the percentage accounted for among older people by those requiring long-term care, and the latter demonstrates the change in the level of the care required by those eligible for care. Looking at the national average, in the last ten years the percentage of people designated as requiring long-term care has increased in both the 65–74 age bracket and the 75 or above age bracket. However, of those people designated as requiring long-term care, the percentage of people designated as requiring support has also increased. Namely, the decade is characterized by the fact while the percentage of people requiring care is on the increase, there is also an increase in the number of people requiring a low level of care.

In order to look at to what extent caregiving time is affected by increase and decrease in other time, "work" time and "household production time"—"housework," "traveling (other than commuting)," "shopping," and "childcare" time—were added to the explanatory variables. The inclusion of "travel" as a variable takes into account the fact that there is an increase in the number of people providing care outside of the home, and therefore there is a possibility that such caregivers may require time to travel to and from the place of residence of the person requiring care, subsequently decreasing the time that can be spent on providing care. Moreover, "shopping" and "housework" time were adopted as explanatory valuables because, as mentioned above, caregivers may be using time to provide support with daily living such as housework and shopping where the person has a relatively less severe condition not designated as requiring long-term care. The inclusion of childcare time takes into account the increase in the number of people who care for elderly family members while also raising children.[5, 6]

Firstly, looking at the "explained" column for males in Table 3 (second column from the right), the decrease in the percentage of people providing care at home, the increase in the percentage of the 65–74 age bracket certified as requiring long-term care, and the increase in the percentage of people certified as "requiring support" among the people in the 65–74 age bracket certified as requiring care, each contribute to the increase in the caregiving time. On the other hand, the increase in the percentage certified as "requiring support" among the people aged 75 and over requiring long-term care is contributing to the decrease in the caregiving time. Namely, the increase in the number of older people in the age 75 and

[5] As time use is decided endogenously, it is necessary to take into consideration the fact that it is not demonstrating a causal link from one or the other, but when the variables regarding these times were excluded the results were hardly affected.

[6] The slight difference in the average values of caregiving time in Table 2 and the average values of caregiving time in Tables 3 and 4 is due to the difference in the number of samples. The number of samples used for the Oaxaca-Blinder decomposition was slightly smaller than those used in Table 2, due to the fact for some of the samples there were no responses for items adopted as explanatory variables, such as education and income.

above age bracket who require some form of care but at a relatively low level is contributing to the decrease in caregiving time. Another factor that is contributing to the decrease in caregiving time is the increase in "work" time over the last ten years. It is not possible to determine here whether this is because people are able to finish providing care in a short amount of time and increase their work hours as a result, or because they have increased their working hours and therefore have to decrease the time they spend providing care. However, at the very least it can be suggested that the relationship between work time and caregiving time is such that as one increases the other will decrease and vice versa.

Looking at the columns of regression coefficients in the center of Table 3, the "shopping time" in 2011 is estimated with a positive sign. This seems to indicate that there are people who provide support by buying and delivering necessary daily items, food, and other items when providing home-visit care to family members outside home. Moreover, the sample for 2011 shows that when there is assistance from someone other than a household member the caregiving time becomes significantly lower. As "someone other than a household member" may include family and relatives who live in another household it is necessary to leave latitude in interpreting the results, but it is possible to make the interpretation that since the introduction of Long-Term Care Insurance system for supporting older people has come to function within society. However, as the percentage of such people who receive assistance from someone other than a member of the household has changed very little in comparison with 2001, it is not possible to explain entirely the decrease in caregiving time over the last decade.

Looking at the data for females in Table 4, the percentage that receive assistance with providing nursing care from persons outside the household has increased over the last ten years, in turn contributing to the decrease in the caregiving time. There was formerly a strong tendency for women to be responsible for providing nursing care, regardless of whether or not they were in employment, but it can be suggested that with the introduction of Long-Term Care Insurance this trend has eased slightly. At the same time, even when there is assistance from someone outside the household, the caregiving time in fact increases along with increase in the frequency that support is provided. This seems to indicate that, as the higher the frequency that support is provided the higher the level of care needed by the person requiring care becomes, it is necessary for the caregiver to also increase the time they spend providing care, even when they receive assistance from others. The data for females also shows that an increase in actual yearly income of a household contributes to a decrease in caregiving time. As with an increase in income it is possible to outsource some of the care, it is possible that the increase in actual income is contributing to the overall decrease in caregiving time.

As described above, while there were certain factors that could be explained, it is not possible to sufficiently explain the substantial decrease in caregiving time overall over the last ten years. Further analysis is required in order to determine the reason for the decrease in caregiving time in recent years, as it will provide significant insights for reviewing the

Long-Term Care Insurance system in order to ensure that the system focusses on providing support to those who really need assistance.

V. Conclusion

In summary, the results of analysis of the STULA showed a sharp increase in the number of people providing care to family members among the total number of people in the intermediate age bracket who are in regular employment, but also a decrease over the last ten years in the time that caregivers spend providing care, regardless of where they give the care and whether or not they receive assistance from others. On the other hand, working hours on ordinary working days are on the increase for both males and females, and the scale of this increase over the last 15 years is particularly significant among those who are providing care to family members. In other words, although the importance of work-life balance and combining nursing care and childcare effectively with work has been emphasized for a number of years, the working hours of both males and females in the intermediate age bracket are in fact on the increase.

While in some cases it is possible to suggest that the decrease in caregiving time is a result of the fact that social support for caregiving has developed with the introduction of Long-Term Care Insurance, there is insufficient explanation for the significant decrease in caregiving time over the last ten years. It is necessary to conduct further analysis in order to ascertain the reason for the decrease in caregiving time in recent years, as it will be important for reviewing the Long-Term Care Insurance system in order to ensure that it focusses on providing support to those who really require assistance.

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