Long-term Care in Japan*

Rong Fu, Waseda University

Toshiaki Iizuka, The University of Tokyo

Haruko Noguchi, Waseda University

August 30, 2023

* We wish to extend our gratitude for the support rendered to this research. Partial funding has been generously provided by the Ministry of Education, Culture, Sports, Science, and Technology in Japan (Grant No.: 22H00067; PI; Haruko Noguchi). We also acknowledge the Ministry of Health, Labour, and Welfare (MHLW) for granting authorization to utilize data identified as 1124-3, effective as of November 24, 2022. Additionally, our study draws upon the resources of the Japanese Study of Aging and Retirement (JSTAR), a collaborative effort between the Research Institute of Economy, Trade and Industry (RIETI), Hitotsubashi University, and the University of Tokyo. The RIETI has granted us permission to access data categorized under JSTAR No.353, with effect from August 9, 2022. Our research adheres to the ethical guidelines outlined by the Waseda University Ethics Review Committee. In accordance with their determination, this study has been deemed exempt from ethical review (Approval No.: 2022-HN025; Date of Approval: August 3, 2022).

Populations in developed countries are aging increasingly, with Japan aging the fastest. As shown in Figure 1, in 1990, approximately 12 percent of Japanese people were 65 years or above (65+), nearly the same as in the United States but far lower than the other developed countries such as the United Kingdom (Tamiya et al., 2011). However, with reduced birth rates and improved life expectancy, the percentage of the 65+ population has increased to 28.4 percent in 2019 and is expected to rise to 37.7 percent by 2050 (Cabinet Office, 2020a). Furthermore, as shown in Figure 2, the fastest-growing segment of the older population in Japan is the oldest-old (i.e., people aged 85 years or above [85+]). In 1990, fewer than eight percent of the 65+ population was aged 85+; this figure is predicted to increase to more than 25 percent by 2050. Because of its demographic position, Japan's experience with social security systems provides critical lessons for policymakers in other societies that may soon confront comparable difficulties.

[Figure 1]

[Figure 2]

A particular concern of growth in the older population is the increased need for long-term care. Family members account for the majority of caregivers of older people in Japan (Ministry of Health, Labour and Welfare (MHLW), 2014). However, informal care has been declining because of demographic trends, such as smaller family sizes, lower fertility rates, increased mobility of younger generations, and a higher proportion of labor force participation among women, considered primary family caregivers earlier. Therefore, for a long time, concern for older people with long-term care needs has been at the center of welfare policy initiatives in Japan. In 1963, the government began providing limited long-term care services coverage. The economic boom of the 1970s enabled the government to make bold policy decisions: eliminating copayments for all healthcare-related services for the elderly. The zero-price policy immediately caused a societal problem known as "social hospitalization." To avoid paying for long-term care after discharge, older people chose to stay (live) in hospitals, regardless of whether they had relevant medical care needs. Apart from soaring public health spending, one serious socioeconomic consequence of social hospitalization is the inability to accept urgent medical care demands owing to a scarcity of hospital beds, which has a knock-on impact on emergency medical services, resulting in "emergency refugees." To alleviate these issues, the government

expanded the senior welfare plan for long-term care in the late 1980s to double institutional beds and provide more extensive home care services. However, given the post-crisis economic stagnation of the 1990s, such a generous plan created significant issues, the two primary ones being increasing public long-term care spending and unclear eligibility and coverage standards (Tamiya et al., 2011). To address these issues, the government finally proposed in the 1990s a stand-alone social insurance framework for long-term care, known as public long-term care insurance (LTCI).

With the implementation of LTCI in 2000, Japan was one of the first countries to develop public insurance schemes for long-term care. LTCI is mandatory insurance that offers universal coverage for institutional care (i.e., public nursing homes) and home or community-based care, with clear eligibility standards for each type of care. Since the official purpose of LTCI is to help older people in need of long-term care to "maintain dignity and an independent daily life routine according to each person's level of abilities (Ministry of Justice, 1997)," its emphasis is on home- and community-based care rather than institutional care. The LTCI was deemed successful in supporting older people's independent lives with dignity and relieving family caregivers of care duties (Tamiya et al., 2011). However, the LTCI did not successfully restrict relevant public spending because it is a pay-as-you-go program. Indeed, a surge in demand for long-term care has posed significant financial strain on the system. During the first five years of LTCI, public spending increased far faster than predicted, from 3.6 to 6.4 trillion JPY (Fu et al., 2017). Consequently, several reforms have been proposed to limit public long-term care costs since 2006 (Fu et al., 2017). The reforms were generally towards a lower level of coverage based on the need for care or the affordability of older people.

This paper presents an overview of long-term care in Japan. Most of the statistics are calculated using the Comprehensive Survey of Living Conditions (CSLC), a nationally representative repeated cross-sectional survey of Japan's non-institutionalized population. It includes four questionnaires that collect detailed information on a respondent's health status, household structure, income level, and long-term care utilization. If necessary, we supplement the CSLC with additional data sources, such as the Japanese Study of Aging and Retirement (JSTAR).

As in the other chapters, we begin by exploring the correlation between functional limitations and financial well-being in the older Japanese population. Functional limitations are assessed using limitations of activities of daily living (ADLs) and instrumental ADLs (IADLs). We then discuss the supply and finance of the long-term care system in Japan, emphasizing LTCI. Furthermore, we compare the incidence of formal vs. informal care and institutional vs. home care among the elderly based on their age and number of limitations and characterize the workforce in Japan's long-term care industry. Finally, we estimate the total cost of formal and informal long-term care in Japan.

Part I: Aging, Disability, and Well-Being

Sample and Definitions

The core data for this paper are from the CSLC. Since 1986, the MHLW has performed CSLC every three years. Each survey year, 600-800 thousand people, selected at random, are surveyed with health and household questionnaires. The income questionnaire randomly selects ten percent of the whole sample to gather income information, while the long-term care questionnaire targets 5,000-6,000 individuals with care requirements from the whole sample to obtain information on long-term care use. We use data from the 2016 CSLC and limit our analyses to respondents aged 65+.

In the CSLC, we can identify primary informal caregivers for the 65+ respondents who receive care from co-residing family members. This feature of the CSLC enables us to obtain precise information on informal caregivers' health and socioeconomic status. However, the CSLC has some limitations. First, since the CSLC exclusively covers non-institutionalized populations, our statistics do not include information on older people who live in nursing homes. Furthermore, to reduce the load on interviewers and respondents, households selected for the income questionnaire are not sampled for the LTC questionnaire and vice versa. Therefore, there is no overlap between the samples of income and LTC questionnaires, and we cannot measure the income and LTC information of a single respondent. Finally, the definition of ADL in the CSLC is not perfectly comparable to that in other countries because it includes limitations with IADLs. The ADL index ranges from 0 to 5 and represents the number of limitations with (1)

daily activities (dressing, bathing, eating, going to bed), (2) going outside, (3) working, (4) sports, and (5) others, where (2)–(5) correspond to IADLs. Due to this data limitation, the number of limitations with ADLs in Japan, the critical measure of older people's health in the analyses, may also reflect limitations with IADLs.

We also use the 2009 JSTAR to improve the comparability of ADLs and IADLs across countries.[1] The ADL and IADL indices in the JSTAR are strictly comparable to those in other countries. The ADL index includes six categories: walking across the room, dressing, bathing, eating, going to bed, and using the toilet. The IADL index includes 11 categories: going out alone by bus or train; shopping for groceries; boiling water with a kettle; managing money; filling out pension forms; reading newspapers, books, or magazines; being interested in articles and programs about health; visiting friends or sick persons; communicating with young people; using a telephone and taking medications. Despite its strict comparability, the 2009 JSTAR has two key issues that prevent it from being referred to as core data. First, all 2009 JSTAR respondents are under 85; therefore, statistics for the 85+ group are unavailable for our analyses. Second, the JSTAR does not represent Japan's population because it includes only seven of its 1,718 municipalities. In the rest of the chapter, we supplement the CSLC statistics with JSTAR whenever possible and focus on the CSLC statistics unless otherwise specified.

[Table 1]

Table 1 depicts the distribution of limitations with ADLs and IADLs according to age. More than 75 percent of the 65+ population in Japan has no limitations with ADLs or IADLs; about 13 percent of the sample has no limitations with ADLs but at least one limitation with IADLs; and approximately 11 percent of the sample has at least one limitation with ADLs. The oldest-old are less healthy: around 56 percent have no limitations with ADLs or IADLs, approximately 16 percent have no ADL limitations but one or more IADL limitations, and about 30 percent have one or more ADL limitations. It is essential to emphasize that the statistics from CSLC and JSTAR are comparable, lending credibility to international comparisons based on the definitions of limitations in the CSLC.

[1] The 2009 JSTAR is the most recent survey year that collects information on ADLs and IADLs.

Well-being

[Table 2]

Table 2 further shows the relationship between the degree of limitations and physical/mental health among older people in Japan. A good or better self-reported health status is used to measure physical health. An indicator of being satisfied or very satisfied with life among retired people and Kessler 6 (K6) scores (Kessler et al., 2003) are used to measure mental health.[2] A higher K6 score indicates poor mental health. Around 26 percent of the 65+ population reports good or better health. For the oldest-old, the share drops to 16 percent. For those with three or more limitations,[3] the share notably declines to 5-6 percent. The proportion of good or better health in Japan is significantly lower than in other countries. In fact, Japanese individuals may be reluctant to express positive opinions, which may result in an underestimation of their health. A study reveals that despite Japanese people having better population health than their Korean counterparts, their self-reported health is inferior (Park and Lee, 2013). Regardless of age or degree of limitations, the share of older people who are satisfied with life after retirement remains stable at around 4-6 percent, which is significantly lower than in other countries. The average K6 score for older people is around 3 points, lower than the 5-point cutoff for depressive symptoms (Kessler et al., 2003). The score increases to around 6 points for those with three or more limitations, indicating that limitations associate negatively with mental health.

[Table 3]

[2] K6 involves six questions about person's emotional state during the past 30 days; (1) about how often did you feel nervous?; (2) about how often did you feel hopeless?; (3) about how often did you feel restless or fidgety?; (4) how often did you feel so depressed that nothing could cheer you up?; (5) about how often did you feel that everything was an effort?; and (6) about how often did you feel worthless? Each question is scored from 0 (None of the time) to 4 (All of the time). Scores of the 6 questions are then summed, yielding a minimum score of 0 and a maximum score of 24. The higher the score, the poorer the mental health.

[3] Given that the definition of ADL/IADL in CSLC differs from that in other countries, we select the number of ADLs that corresponds most precisely to 3+ limitations in JSTAR. In particular, we determine the proportion of the JSTAR sample with 3+ limitations (approximately 9 percent) and use it as a cutoff in CSLC to represent the closest proportion of the elderly population. Due to the fact that JSTAR has no respondents aged 85+, we utilize the 9 percent cutoff for both the 65+ and 85+ groups in CSLC. Notable is that this cutoff for the 85+ age group may underestimate the real proportion of the oldest-old with 3+ limitations.

We then examine how the financial status of the older population changes as the number of limitations with ADLs/IADLs increases. Table 3 shows the distribution of income and wealth in the older population. We use the post-tax household income and wealth recorded in the CSLC's income questionnaire, which is normalized to the measures based on the OECD equivalent scale.

The income distribution is skewed, with the mean value being higher than the median. The wealth distribution is far more skewed than the income distribution, with the mean wealth being twice as high as the median. Skewness is generally more noticeable in the oldest-old people. Interestingly, the oldest-old are, on average, being more affluent than the overall 65+ population, may indicate a selection for more affluent older people who survive to age 85. Table 4 depicts the distributions based on the number of limitations with ADLs and IADLs.

[Table 4]

In contrast to countries such as the United States, the relationship between older people's ADL/IADL limitations and their financial situation in Japan is moderate and not obviously negative. The income distribution is relatively stable across the degree of limitations. For example, approximately 17 percent of older adults free of limitations have less than the median income. This proportion rises to 24 and 21 percent for those with one and two ADL limitations, respectively, which then reduces to 19 percent for those with more than three ADL limitations. The share of older people in the top income category remains stable at around 11-16 percent, regardless of the number of limitations. Similarly, the wealth distribution also changes little with the degree of limitation.

The lack of changes may be driven by a trend in Japan in which frail older people are more likely to live with their families. Although the proportion of older people living with a child has decreased over the last several decades, coresidence with children is still higher in Japan than in other developed countries (Cabinet Office, 2020b).[4] Some studies discovered that poor or fragile

[4] Since 1980, this survey has been conducted every five years by the Cabinet Office in Japan for people aged 60 and over living in Japan and other developed countries. The survey in 2020 was conducted in four countries: Japan, the United States, Germany, and Sweden. In each country, approximately 2,500 persons 60+ were randomly selected, and in each country, approximately 1,000 persons responded. According to this survey, the proportion of coresidence with children in Japan is 36.2 percent, while it is 12.2 percent, 8.1 percent, and 2.9 percent for the United States, Germany and Sweden, respectively. https://www8.cao.go.jp/kourei/ishiki/r02/gaiyo/pdf/s2-1.pdf (Acessed September 30, 2020).

health caused by a variety of factors would trigger a shift in living arrangements among older Japanese people from single or couple households to living with families, especially children (Brown et al., 2002; Johar et al., 2015; Oshio and Kan, 2018). Regarding the mechanism behind the high likelihood of living with children among older Japanese people, much research has been conducted from the perspectives of bequest motivations and altruism, albeit the results have not yet proven conclusive (Johar, 2010; Niimi, 2016; Horioka, 2021). Regardless of the mechanism, consequently, the weak relationship between limitations with ADLs and household income (wealth) may be attributable to such changes in living arrangements among older people, which may safeguard older people from suffering serious financial difficulties.

Furthermore, the LTCI reimburses high-cost long-term care expenses when the recipients' total monthly payment exceeds the maximum amount to be borne.[5] The CSLC included the amounts of such reimbursement to respondents as a part of income, alongside social security benefits (i.e., public assistance, support benefits for pensioners, and maternity and child allowances). Therefore, the generous coverage of LTCI could be a factor in the moderate correlation between ADL limitations and income (wealth). Finally, the moderate-income gradient might result from selection bias, as the CSLC does not sample institutionalized individuals. This selection might lessen the income gradient if institutionalized seniors tend to have lower incomes than their community-dwelling peers. A few studies examine the difference in income between elderly people living in nursing homes and receiving care at home, utilizing small samples collected from specific municipalities (Izumida, 2008; Akiyama et al., 2015). According to these studies, a smaller proportion of people with high income utilize institutional care than those with low income.[6] However, the studies utilize administrative data from rural and

[5] The maximum amount depends on the household's annual income. The maximum amount a user is required to pay is 14,100 JPY, 93,000 JPY, and 44,400 JPY per month for annual household income of more than 11.6 million JPY, 7.7-11.6 million JPY, and less than 7.7 million JPY, respectively. If all household members are exempt from local government tax, the cap is set between 15,000-24,500 JPY, and 15,000 JPY for households receiving public assistance.

[6] For example, using long-term care claims data for 4,099 individuals aged 65 and above in a municipality in the Hokkaido prefecture in 2007-2009, Akiyama et al. (2015) found that 2.8% of those in high-income brackets with 2 million JPY or more per year (n=1,606) are institutionalized, whereas 4.6% of those in low-income brackets with 0.8 million JPY or less per year (n=1,601) are in a nursing home. Likewise, Izumida (2008) discovered that 12.3% of high-income persons (n=261) are in a nursing home, whereas 22.9% of low-income people (n=395) are institutionalized, based on comparable data from 7.312 individuals in a municipality in the western region of Japan in 2005. Despite the fact that the definitions of income groups and institutionalization rates vary across

small-population cities, which unfortunately do not necessarily give nationally representative evidence. For instance, the number of private nursing homes has been rapidly increasing in Japan,[7] and approximately 43 percent of them are located in metropolitan areas like *Kanto* (Suburbs of Tokyo) and *Kansai* (Suburbs of Osaka) (MHLW, 2022b).

Furthermore, the admission fees vary widely across private nursing homes; some are opulent and prohibitively expensive, allowing only the wealthy to reside there. To gain an accurate picture of the characteristics of the older population residing in nursing homes, it is necessary to undertake a nationally representative survey of this population.

In summary, older Japanese people have a relatively low degree of limitations that do not significantly correlate with financial difficulties. This moderate correlation may be due to Japan's universal coverage of its public long-term care system. Section II introduces the system in depth.

Part II: Long-Term Care System in Japan

[Figure 3]

[Figure 4]

Total long-term care spending in Japan has risen over the last two decades, from around 0.7 percent of the GDP in 2000 to more than two percent in 2019 (Figure 3). Compared to concurrent healthcare spending, long-term care spending has increased from negligible in 2000 to approximately one-third of total healthcare spending in 2019 (MHLW, 2019). Indeed, the long-term care system has become essential to Japan's social security system. Figure 4 shows the financial methods of the long-term care system. Out-of-pocket payments fund approximately 7.7 percent of the costs. The remainder is funded with public resources. Since the system is run as public insurance, the insurance premium covers half of the remaining costs (46.2 percent of the total costs). The central government, prefecture, and municipality each contribute 23.1 percent,

municipalities, we observed that older individuals with greater incomes are less likely to reside in nursing homes based on these past studies.

[7] According to the Morioka (2020), the number of private nursing homes increases from 949 in 2000 when the LTCI was introduced to 14,118 in 2019. Consequently, the number of old persons living in private nursing home increases from 66,495 in 2000 to 539,995 in 2019.

11.5 percent, and 11.5 percent of the total costs. Given that the long-term care system is designed and managed solely by the government and that the private long-term care market is insignificant in Japan, the following two sections will focus on LTCI details.

Public Long-Term Care Insurance

[Figure 5]

When LTCI was introduced in 2000, it was viewed as a solution to the dramatic increase in the number of older people in need of long-term care. As of January 2015, it has provided services to over five million people aged 65+, about 17 percent of this population. Figure 5 shows the overall structure of LTCI. The LTCI is mandatory insurance: all Japanese citizens aged 40 and over (40+) are required to enroll and are classified as either primary (aged 65+) or secondary insureds (aged 40-64). They pay their municipal monthly premiums through deductions or individual collections. Municipalities, as insurers, are responsible for managing LTCI budgets, administering demand-based eligibility tests, and appointing long-term care business operators (Fu and Noguchi, 2019).

When primary insureds are aware of their care requirements, they should apply for long-term care eligibility by taking an eligibility test administered by the municipality of residence (Step 1 in Figure 5). Secondary insureds can apply for the test if they require care due to aging-related diagnoses.[8] This test is divided into two parts: an interview based on a 74-item questionnaire on physical and mental functions and a final decision by the Long-Term Care Needs Certification Committee. In the first stage, an investigator (a municipality official specializing in the eligibility test) organizes an interview with an applicant who self-reports needing care. This interview is commonly held at the applicant's residence and conducted in the presence of a relative. The interview is based on a questionnaire in which all items are designed to measure one of five health-related functions: (1) physical function, (2) living function, (3)

[8] Aging-related diagnoses are cancer (limited to those that physicians have determined, based on generally accepted medical knowledge, to have led to a condition from which recovery is unlikely), rheumatoid arthritis, amyotrophic lateral sclerosis, ossification of posterior longitudinal ligament, osteoporosis with fracture, dementia in primary age, progressive supranuclear palsy, basal ganglia degeneration, Parkinson's disease-related disorders, spinocerebellar degeneration, spinal canal stenosis, progeria, multiple system atrophy, diabetic neuropathy, diabetic nephropathy and diabetic retinopathy, cerebrovascular disease, arteriosclerosis obliterans chronic obstructive pulmonary disease, and osteoarthritis with significant deformity of bilateral knee or hip joints.

cognitive function, (4) behavioral disorders, and (5) the ability to adapt to social life. Notably, the interview does not include a means test. Table 5 summarizes the items of each of the functions. Each item is a multiple-choice question. The investigator circles the answer closest to the status quo.

[Table 5]

After all the items are checked, a software package generates a hypothetical care time the applicant needs (Table 6). The hypothetical care time is derived by statistical analyses using a sample of 3,500 randomly selected older people who are institutionalized, for which the types of service and corresponding service times are thoroughly documented over 48 hours. By aggregating hypothetical care times across all categories, the package provides a standardized care time (Table 7) for the applicant, which is used to assign the applicant to a care level.

[Table 6]

[Table 7]

There are seven care levels. Each care level indicates the degree of limitation with ADLs/IADLs. Specifically, "Support-required Level (SL) 1" applies to recipients living independently but requiring help with IADL, and "SL2" denotes those requiring more assistance than "SL1" recipients who might deteriorate to "Care-required Level (CL) 1." "CL1" recipients need more assistance in terms of IADL than "SL" recipients need. "CL2" recipients have additional needs with ADL above "CL1" recipients. "CL3" recipients require more services than those in "CL2" and, thus, need total care. "CL4" recipients fulfill all the requirements mentioned above and function poorly in terms of ADL. "CL5" recipients find it impossible to live without care and have more substantial ADL needs than "CL4" recipients. Each care level is set with a monthly cap up to which the eligible insured can use services.[9]

This preliminary assigned care level is then checked by committee members using a protocol issued by the central government. With careful judgment, the committee officially assigns a care level to the insured individual and notifies him (Step 2 in Figure 5). The care level is not permanent; it is assigned a valid period (commonly six–24 months). Eligible insured

[9] The monthly caps are 50,320 JPY (SL1), 105,310 JPY (SL2), 167,650 JPY (CL1), 197,050 JPY (CL2), 270,480 JPY (CL3), 309,380 JPY (CL4), and 362,170 JPY (CL5).

individuals should renew their eligibility based on their expiration date. Based on their care levels, eligible insured individuals should make plans to use long-term care services (Step 3 in Figure 5). They may construct these plans on their own or with the help of their families, but care managers are more likely to assist them in deciding on a care plan. Some care managers work for municipally designated community care centers, while others work for nonprofit or for-profit service providers. Care managers should provide detailed information on long-term care services while making plans with the eligible insured individual and, if necessary, make reservations for services (Step 4 in Figure 5). Based on the care plans, insured individuals can contract with any service suppliers to use the services.[10]Although eligible insured individuals can choose home care or institutional care, they are encouraged to use home care services until they reach a high level of care. Furthermore, only in-kind services are available to eligible insureds; a cash allowance is not allowed. As illustrated in Figure 6, the share of home care-related spending has steadily increased since the LTCI's outset, accounting for 67 percent of the total long-term care spending in 2018.

[Figure 6]

Eligible insured individuals should copay ten percent of their services (Steps 5-6 in Figure 5). Two coinsurance rate reforms were implemented to cope with the rapidly rising public spending on long-term care services. Since August 2015, eligible insured individuals should copay 20 percent of the long-term care services if their incomes are comparable to the current workforce. Since August 2018, those with annual incomes greater than 4.63 million JPY (3.4 million JPY for a single household) should copay 30 percent of services used among insured individuals with 20 percent coinsurance.

Private Insurance

In Japan, several for-profit insurance companies provide private long-term care insurance.[11] In contrast to the public LTCI, payments for private insurance are made in cash. The

[10] The majority of services are offered to primary insureds. According to a 2016 MHLW report on LTCI, the care expenditures for secondary insureds represented only 2 percent of overall costs.

[11] As of 2010, 22 insurance companies out of 47 members of the Life Insurance Association of Japan and 25 members of the General Insurance Association of Japan offer long-term care insurance, and only 9 companies sell long-term care insurance as a stand-alone product (Matsuyoshi, 2010).

services covered by private insurance plans vary among the insurance companies and the specific contracts, with potential copayments, transportation costs for medical visits, and additional expenses like diapers, meals, and utilities while institutionalized, and housekeeping services not covered by the public LTCI. According to the National Survey on Life Insurance [12], approximately 16.7 percent of Japanese households have private insurance for long-term care services (Life Insurance Culture Foundation, 2021). However, the role of private long-term care insurance is small and only covers approximately 0.1 percent of the overall long-term care spending (Yong et al., 2011). The reasons behind this discrepancy are multi-fold. Firstly, it is surprising to see that households with relatively young heads (aged 30-64) are more likely to opt for private insurance than those with older heads (aged 65 and above), with 20 percent of the former group enrolled compared to just nine percent of the latter group (Life Insurance Culture Foundation, 2021). This low demand for private insurance among older people may be due to insurance companies limiting enrollment to certain age groups or charging high premiums for those over 70 who are at higher risk of needing long-term care. Secondly, the percentage of users surpassing the maximum amount of LTCI benefits that may be reimbursed in cash by private insurance is 2.3 percent on average, and even for "CL5" users, who have the greatest need for long-term care, the rate is only approximately five percent (MHLW, 2017). In conclusion, the large disparity between the share of spending that comes from private insurance and the enrollment rate can be attributed to the mismatch between the age of the currently insured and their needs for services, as well as the higher maximum amounts of LTCI benefits than those needed to meet the demand for essential care.

Long-Term Care Receipt

[Table 8]

Table 8 shows the proportion of the older population who receives home care based on the number of limitations with ADLs or IADLs. This table focuses on home care (both formal and informal) because individual-level data containing ADL information for institutional care are

[12] The National Survey on Life Insurance is conducted by the Life Insurance Culture Foundation every three years, starting in 1965. The survey selects households with two or more family members using a stratified two-stage random sampling method from 400 locations across Japan, with a sample size of approximately 4,000 households (Life Insurance Culture Foundation, 2021).

unavailable. Approximately 11 percent of the 65+ population receive formal or informal home care. For the oldest-old, the proportion is more than three times (around 36 percent). As the limitations increase, so does share. Approximately 54 percent of those aged 65+ with three or more limitations receive care, and 68 percent of the oldest-old do. It is worth noting that the proportion of elderly Japanese receiving care is generally lower compared to the United States and Europe, which may be due to differences in the measurement of limitations, with the CSLC scale less indicative of severe disability compared to the HRS/SHARE scale.

[Figure 7]

Figure 7 shows the proportion of the population according to the type of care they received. The populations in public nursing homes are calculated based on a governmental report summary of the 2016 Survey of Long-Term Care Service Facilities (MHLW, 2016).[13] [14] The populations receiving home help are calculated based on the CSLC household questionnaire. "Formal home care" denotes respondents who use formal home care services; "informal care" denotes respondents receiving informal care from family members, and "both formal and informal care" denotes respondents receiving both formal and informal care. Seventeen percent and 21 percent of the 65+ population receive only formal and informal home care, respectively, and the majority (46 percent) receive both formal and informal home care. Approximately 16 percent of the population resides in nursing homes. For the oldest-old, the share receiving only informal care reduces to 15 percent, and the share living in nursing homes increases to 22 percent.

[Figure 8]

Figure 8 further shows how the type of care received varies by the degree of limitations. This figure again focuses on home care because individual-level data containing ADL information for institutional care are unavailable. The use of informal and formal home care increases with the degree of limitations in older people, with a substantial increase at one or more ADL limitations. The pattern is consistent among the oldest-old. Given Japan's universal

[13] According to the report, there were 886,000 people of age 65+ and 573,000 people of age 85+ living in public nursing homes.

[14] Please note that the data presented in Figure 7 only pertains to residents of public nursing homes and does not include residents of private nursing homes. As a result, the total number of nursing home residents is likely underestimated.

long-term care coverage, it is natural for older people to seek assistance from both their families and formal long-term care workers as their limitations increase.

[Table 9]

The distribution of the daily care hours received by the type of care is presented in Table 9. In the CSLC long-term care questionnaire, care hours are the hours of home care that a needy older person receives from his or her primary caregiver. Primary caregivers can be either formal care workers or informal caregivers, and thus, the care they provide can be either formal home care or informal care, assisting with either ADL or IADL limitations or both. Formal home care is either at-home or community-based and includes home visits, daycare, short-stay services, group-home services, and small-scale multi-function care. The daily hours of care are measured by a categorical variable, ranging from "receiving care only when needed" to "receiving full-day care." Around 20 percent of older people, regardless of age, receive care all day long, and approximately 40 percent receive care only when needed. Distribution varies depending on the type of care received. Older people are most likely to receive informal care only when needed (44 percent for 65+ and 42 percent for 85+). In comparison, they are most likely to receive full-day formal care (28 percent for 65+ and 36 percent for 85+). Furthermore, more than 40 percent of older people report "others" for the number of hours of formal care received. This finding suggests that measuring the *daily* hours (or intensity) of formal care received is difficult.

Formal Long-Term Care Supply

Formal long-term care consists of institutional care and home care. Institutional care includes both public and private nursing homes. Public nursing homes are run by not-for-profit organizations, including social welfare corporations and municipalities, and the government regulates the fees and types of services provided. Private companies, including for-profit corporations, run private nursing homes, and the services and fees vary among nursing homes. LTCI covers long-term care services, rent, and food for daily living in public nursing homes. On the other hand, daily living expenses in private nursing homes, such as rent, management fees, meals, and utilities, are not covered by LTCI and must be paid out of pocket by the residents. However, the long-term care provided in both types of facilities is covered by the LTCI and is referred to as formal *home* care.

There are three types of public nursing homes in Japan: nursing homes for the elderly ("*Tokuyo*" in Japanese), geriatric health services facilities ("*Roken*" in Japanese), and sanatoriums for medical and nursing care ("*Kaigo-Ryoyou*" in Japanese). *Tokuyo* provides physical care and daily living assistance; residents often have intense care needs and are expected to stay for the rest of their lives once enrolled. The average length of stay was 1,405 days in 2016 (Japan Association of Geriatric Health Services Facilities, 2016). *Roken* is designed to serve as a transitional facility between hospitals and homes to reintegrate seniors into their communities. The standard period of stay is three months; however, it can be extended if required. The average length of hospital stay in 2016 was 311 days. *Kaigo-Ryoyou* provides comprehensive medical treatment and long-term care. *Kaigo-Ryoyou* is intended to avoid "social hospitalization." The average length of stay in *Kaigo-Ryoyou* in 2016 was 483 days. *Kaigo-Ryoyou* was abolished at the end of fiscal year 2017 (i.e., March 2018), replaced by *Kaigo-Iryoin* that was launched in April 2018. *Kaigo-Iryoin* provides physical and daily living assistance for old persons requiring long-term medical care, such as routine medical management, end-of-life care, and terminal care. The features of *Kaigo-Iryoin* are well-staffed with medical personnel like physicians and nurses, the provision of a wide range of medical care, and the long-term institutionalization to be permitted.

Private nursing homes are classified into two types based on how long-term care services are provided. One type is assisted living condominiums, which are operated with on-site medical care and long-term care specialists and thus provide long-term care within the facility. The other is retirement homes for independent older people or those with relatively minor care needs, of which the main purpose is to support residents' daily lives.[15] Because we lack relevant data or statistics, particularly on private nursing home residents and workers, we concentrate on formal care in public nursing homes throughout this section.

[Table 10]

[15] Except for a few facilities called “certified facilities” which meet the standards of the Long-Term Care Insurance Law (standards for personnel, equipment, and operation) by the MHLW, private nursing homes are under the jurisdiction of the Ministry of Land, Infrastructure and Transport (MLIT), , rather than the MHLW. Furthermore, the assisted living condominiums provide the long-term care service fee in the usage fee, whereas the retirement homes outsource long-term care services to an outside provider, incurring an additional fee for the residents.

Table 10 shows the number of nursing homes, beds, and occupancy rates for public and private nursing homes. There are over 12 thousand public nursing homes, with a total capacity of approximately 884 thousand beds. There are approximately 830 thousand residents in public nursing homes, accounting for nearly 94 percent of the capacity. The number of public beds per person aged 65+ is 0.026. The number of private nursing homes is roughly equal to that of public nursing homes; however, the capacity of private nursing homes is significantly lower. Accordingly, there are only 0.013 private beds per person aged 65+.

[Table 11]

Table 11 shows the geographical variations in public nursing home occupancies for the three types of public homes. The occupancy rate of nursing homes for the elderly varies slightly across prefectures, ranging from 95 percent to 99 percent. Enrollment in any public nursing home in Japan seems highly competitive. The most significant variation is in sanatoriums for medical and nursing care, where occupancy rates range from 64 percent to 99 percent. The number of beds per 100 people aged 65+ also varies across prefectures, ranging from 2.1 to 4.5.

As previously stated, formal home care can be either at-home or community-based, including home visits, daycare, short-stay, group-home, and small-scale multi-function care. For both at-home and community-based care, two types of care are provided: long-term care benefit services for older persons with serious care needs and preventive care for those with relatively minor care needs.[16] There were approximately 247 thousand formal home care providers in 2020; around 30 percent were run by nonprofit organizations such as social welfare corporations or medical corporations, and the remainder were run by for-profit companies (MHLW, 2020a). Providers are free to enter and exit the long-term care market to some extent,[17] and the same as for medical care, the prices for long-term care services are controlled by the government under the LTCI and are reviewed every three years. Conclusively, this "*decentralized yet centralized*"

[16] For independent old persons or those with relatively minor care needs, comprehensive services are provided, such as health promotion and senior citizen salons run by residents for the purpose of prevention. In principle, comprehensive services ("*Sogo-Jigyo*") are also partially covered by the LTCI, but they are initiated by the municipality.

[17] The term "to some extent" refers to the fact that providers must meet personnel, equipment, and operational standards and be certified by the local government (prefectures or municipalities) in order for long-term care services to be covered by LTCI.

system would lead to disparities in the provision and capacity of formal home care across regions (Shimizutani, 2014).

The Japanese government just started a full-scale discussion on evaluating the quality of care. Although the LTC Law requires facilities and care providers to report accidents to municipalities, they are not obligated to publicize the number of accidents. Therefore, the MHLW does not have a complete picture of accidents involving long-term care services. For example, of the 276 long-term care accidents reported by the Consumer Affairs Agency to the MHLW in 2014-2017, the most common type of accident is falls, tumbles, and slips (181 cases, 65.6 percent), followed by aspiration, ingestion, and engulfment (36 cases, 13 percent). In terms of the type of at-home care, daycare services account for 20 cases (7.2 percent of the total) and short-stay services for 254 cases (92 percent) (Care Work Foundation, 2018). This is likely to be the tip of the iceberg, and the actual situation needs to be addressed as soon as possible.

[Figure 9]

[Figure 10]

Figure 9 depicts the staffing divisions by different skill levels at the three types of public nursing homes based on qualifications. They are classified as registered nurses, vocational nurses, care workers, social workers, and aids.[18] Aids are likely to be the least skilled workers, while registered nurses and care workers are the most skilled. We do not have data on formal home-care workers. Registered nurses make up four percent of nursing home workers, care workers make up 34 percent, and aids make up 57 percent. The proportion of registered nurses increases fourfold to approximately 19 percent in sanatoriums for medical and nursing care, where both comprehensive medical treatments and long-term care are provided, while the percentages of care workers and aids decrease to about 19 percent and 38 percent, respectively. Figure 10 shows the procedures for obtaining certificates for formal care workers in Japan. A care worker's license can be obtained using one of three methods. All participants must pass both practical training and written tests.

[Table 12]

[18] As postgraduate training, aides are employed in nursing homes without the national certification for formal care workers.

Formal care workers' wages and salaries are largely unchanged by their qualifications (see Table 12). Registered nurses in nursing homes earn 1,432 JPY per hour and 268 thousand JPY per month. Nursing home aides earn a comparable hourly wage of 1,001 JPY and a monthly salary of 212 thousand JPY. Registered nurses and aid for home care services earn slightly lower wages and salaries than those in nursing homes. Formal care workers earn less than the average hourly and monthly salaries across occupations and industries. Indeed, the hourly wage for care workers is slightly higher than the minimum wage of 901 JPY per hour and roughly equal to the average income for high school graduates.

Who are the Caregivers?

[Table 13]

Informal caregivers also perform a significant portion of care duties in addition to formal care workers. Table 13 shows the numbers of formal and informal caregivers in Japan. The number of formal caregivers is derived from the Summary of Survey of Institutions and Establishments for Long-Term Care (MHLW, 2016). Kawagoe (2021) estimated the number of informal caregivers. In 2016, there were approximately one million formal care workers, accounting for 2.9 people out of 100 aged 65+. There were approximately seven million informal caregivers, seven times as many formal caregivers, accounting for 20 people per 100 people aged 65+.

[Figure 11]

Figure 11 shows the gender, age, and education distribution of formal and informal caregivers in Japan. As in other countries, formal care workers are overwhelmingly female (84 percent). Informal caregivers have a similar but less significant gender skew, with 67 percent female. Formal care workers are mostly in their working years, with 75 percent under 60 years. On the other hand, informal caregivers are often older than 60 years (64 percent). Given Japan's super-aged society, it is common for older people to receive care from other older family members. This situation is known as "*Rou-Rou Kaigo*" in Japanese. Most formal care workers have a high school diploma or equivalent, with 23 percent having some college education and 14 percent having a college degree or higher. Only 3 percent do not have a high school diploma. Formal care workers appear to have a higher degree of education than the general Japanese

female population.[19] As an illustration, in 2010, approximately 9 percent of Japanese women did not have a high school diploma, which was three times the rate of formal care workers (Statistics Bureau of Japan, 2010).

The high level of education among formal care workers might be due to the requirements by care service providers and local governments. Providers typically prefer to hire workers with higher levels of education and training since providing care for the elderly and disabled can be demanding and requires specialized knowledge and skills. This trend might also reflect the growing importance of human resources development in the long-term care sector, as Japan faces an aging population and a shortage of care workers. Additionally, higher education levels among care workers might be related to the increasing professionalization of care work as Japan moves towards a more formal, regulated, and structured long-term care system. Despite their generally strong educational backgrounds, formal care workers tend to be underpaid (see Table 12). The less-educated population usually provides informal care. One-fifth of the informal caregivers do not have a high school diploma. Less educated family members in Japan seem more inclined to provide informal care (Tokunaga and Hashimoto, 2017; Kumagai, 2017).

[Figure 12]

Figure 12 details the relationship between informal caregivers and their care recipients. Spouses provide 32 percent of informal care, followed by daughters (21 percent) and sons (17 percent). Compared to other countries, recipients' parents provide a notably larger proportion of informal care (11 percent).[20]

Part III: The Cost of Long-Term Care

[Table 14]

[19] We compare the education level of formal care workers to that of the female population because women make up the large majority of care workers.

[20] The distribution of the caregiver-recipient relationship may deviate from the true distribution because the sample contains only co-residing caregivers.

Figure 3 shows that total spending on long-term care has grown steadily over the past two decades. Table 14 provides more details on spending on institutional and home-care services. In 2016, there were approximately 1.25 million nursing home residents, costing 3,275 billion JPY. Home care spending can be divided into community-based and at-home care. In 2016, around 1.1 million and 3.7 million people received community-based and at-home care, respectively, with total spending of 1,596 and 4,100 billion JPY. As shown in Figure 6, spending on home care services is twice that of institutional care, reflecting the government's intention to keep care needy older people at home rather than institutionalizing them.

[Table 15]

However, focusing on the total spending of formal care overlooks the significance of the informal care provided by family members. As shown in Table 13, the number of informal caregivers in Japan is approximately seven times that of formal caregivers. Ignoring the hidden costs of informal caregiving can lead to erroneous policy decisions. In this section, we use models from the United States chapter to assess the value of informal caregiving in Japan (Table 15). Using the 2016 CSLC, we estimate the cost of care provided by informal caregivers based on two Methods. Method-I considers the price of informal care to be a caregiver's predicted wage if he or she is working and zero otherwise. Method II substitutes the wage of nursing aid for home care services (990 JPY) for the price of informal care provided by non-working caregivers (see Table 12).

Specifically, we use the income questionnaire of the CSLC and calculate the caregiver's probability of working and the wage conditional on work for each of the caregiver groups identified by caregivers' residence (regional level),[21] age (10-year-band), education, gender, and marital status (married, single, divorced, widowed). The valuation based on Method-I is calculated by multiplying the probability of working (45.8%) by the predicted wage (1,635 JPY) and by the annual hours of informal care provided (8.24 billion hours). The annual hours of informal care were calculated based on the LTC questionnaire of the CLSC, which records daily hours of care received (see Table 9). We recoded the categories care hours as follows: 16 hours for "full day" care, 8 hours for "half day," 2.5 hours for "2-3 hours," and 0.5 hours for "only

[21] There are nine regions in Japan: Hokkaido, Tohoku, Kanto, Chubu, Kinki/Kansai, Chugoku, Shikoku, Kyushu (including Okinawa).

when needed" or "others." The annual hours of care were then calculated by multiplying the daily hours by 365. Since the LTC and income questionnaires cover two distinct respondent groups, we cannot determine the care hours provided by caregivers who responded to the income questionnaire. Alternatively, we first calculate a mean hour of care for each caregiver group in the LTC questionnaire identified by the same set of characteristics listed above and then assign the mean hours to the caregivers in the income questionnaires with the same characteristics. Furthermore, we scale up the value of care and the hours of care by 10 to account for the fact that the income questionnaire covers around ten percent of the entire CSLC sample.

Method-I values informal caregiving at 2,935 billion JPY per year. Alternatively, the Method-II valuation is derived by adding Method-I valuation and the product of annual caregiving hours (8.24 billion hours), the probability of not working (54.2% = 100% – 45.8%), and nursing aid salary (990 JPY). Method-II values informal caregiving at 6,646 billion JPY per year.

[Table 16]

Table 16 combines informal caregiving values with the total spending on formal care (see Table 14). We further split the spending on formal care into public and private sources (i.e., out-of-pocket payments).[22] With Method I, around 30 percent of Japan's overall long-term care expenditures are borne by private sources; with Method II, this proportion rises to 47 percent.[23] In either case, however, long-term care in Japan relies more on public spending.

Part IV: Conclusions

[22] Although the copayment rate for formal services is 10 percent, it may not indicate the actual out-of-pocket payment due to the stop loss setting. We thus use the 7.7 percent of the "real" copayment rate in 2016 that the MHLW reports to determine the private costs of nursing homes, community-based care, and home care, respectively (https://www.mhlw.go.jp/file/05-Shingikai-12601000-Seisakutoukatsukan-Sanjikanshitsu_Shakaihoshoutantou/0000140158.pdf , accessed November 2, 2022).

[23] Based on Method I, out of the total costs of 11,906 billion JPY, 3,626 billion JPY was covered by private sources, which roughly corresponds to 30 percent. Based on Method II, out of the total costs of 15,617 billion JPY, 7,337 billion JPY was covered by private sources, which roughly corresponds to 47 percent.

This paper provides an overview of long-term care in Japan, including a detailed description of the characteristics of elderly individuals with care needs, a comprehensive introduction to the public LTCI, and an estimate of the cost of long-term care in Japan.

The elderly population in Japan, like in other countries, is continuously growing, with a sharp rise in those aged 85 and older. This demographic shift highlights increased limitations in ADLs and IADLs, leading to a growing demand for long-term care. However, compared to other countries, the elderly population in Japan with care needs has some unique characteristics. For instance, there appears to be no clear correlation between the economic well-being of the elderly population and the limitations reported. Specifically, the proportions of low/high income categories do not increase/decrease monotonically with the number of limitations. Meanwhile, the psychological well-being of the elderly population in Japan appears to be notably worse than in other countries, regardless of the limitations reported.

To cope with the demographic shift and the rising need for long-term care, a public LTCI system in Japan was established in 2000 as a mandatory social insurance program for people aged 40 and older. The program provides a comprehensive range of long-term care services for elderly individuals who need assistance with ADLs. The services can be provided in the home, community-based facilities, or institutional care settings. The program is funded through taxes and premiums that individuals and their employers pay. Eligible individuals receive benefits based on their assessed care needs and are assigned a care level with associated copayments for services. The program aims to ensure that elderly individuals can age in place and receive necessary care as the official purpose was to assist old persons who need care "to maintain dignity and an independent daily life routine according to each person's own level of abilities" (MHLW, 1997). However, virtually, two of the other significant goals of the system are to separate long-term care needs from medical care needs and contain medical care spending by moving older people who stay in the hospital for a long time to long-term care facilities or homes (Campbell, 2002). The program also helps informal caregivers relieve family caregivers' burdens and prevent them from quitting their job due to care responsibilities (Tsutsui and Muramatsu, 2007).

However, this generous system confronts the fundamental challenge of sustainability both financially and in terms of human resources. Given the ever-increasing cost of long-term care as

the population ages and the stagnating public resources that may be used to fund LTCI, it is essential to form a financially balanced system. Various discussions are ongoing in the Social Security Council and others, with the majority concentrating on changing to services that can be provided at relatively low cost, increasing the copayments for receiving long-term care services, and raising coinsurance premium rates, among specific cohorts of recipients (e.g., affluent and low-care-need cohorts). Specifically, for those with minor care needs, the LTCI program shifts to a service provider focused on prevention by utilizing volunteers and other resources in the community; in 2018, the copayment ratio for receiving long-term care was raised from 10% to 30% for elderly persons with incomes equal to people in the working-age (MHLW, 2022c). Then, the Social Security Council is finally considering a long-postponed debate to raise LTCI premiums for the elderly with high incomes (Social Security Council/Long-Term Care Subcommittee, 2022).

On the other hand, some argue that the eligible age for LTCI should be lowered to under 40 (e.g., 20) years old, but there is strong opposition to this view. With the working-age population expected to decline rapidly and the number of social security beneficiaries tapering off, careful discussion is needed on requiring young people with relatively low wages to bear additional premium burdens. In Japan, welfare services for the disabled and the elderly are differentiated by age, with those between the ages of 18 and 65 being covered by the Act on Providing Comprehensive Support for the Daily Life and Life in Society of Persons with Disabilities, and those aged 65 and older requiring long-term care being treated by the LTCI Act (MHLW, 2022a). If the eligible age for LTCI were to be lowered to 20 years old, there would be a contradiction in the LTCI system's requirement of "aging-related diagnoses." In addition, while the LTIC is, in principle, based on social insurance and requires beneficiaries to pay out-of-pocket for the welfare services for the disabled, which is funded by general taxes, support groups for the disabled are vehemently opposed to any increase in copayment for services provided. In other words, lowering the eligibility age for insurance premiums of LTCI would require the harmonization of these two acts, which have different financial structures.

The shortage of social security bearers and human resources to support needy care is another major issue of LTCI, given the consistent decline in working-age individuals and socioeconomic disparities among regions. Promoting labor force participation and innovation is necessary to

safeguard human resources and boost productivity in the long-term care industry. The importance of compensating formal care workers, adopting robotics, obtaining and training human resources ranging from young people to energetic older people, admitting foreign care workers, and lowering administrative duties has been emphasized in various discussions. For example, Eggleston et al. (2021) find that robot adoption reduces care workers' and nurses' burden of care in nursing homes in Japan. Further, efforts are underway to apply artificial intelligence and deep learning methods to long-term care plans for older people, which are expected to reduce the administrative workload of care managers (Saint-Care Holding Corporation, 2017). Furthermore, as of 2021, the LTCI claims data of all service users are merged with the Long-Term Care Information System For Evidence (LIFE) to construct a system with both the physical and cognitive functions and the content of the care the users received. Once such a comprehensive information system is established, it will be possible to implement "evidence-based long-term care" based on cost-effectiveness analysis (MHLW, 2020b).

Japan's LTCI is continuously striving to improve to solve the problems faced. The procedure can be a good lesson to countries seeking to develop a public insurance system for long-term care and those experiencing similar challenges in their public insurance systems.

References

Akiyama, N., Shiroiwa, T., Fukuda, T., Murashima S. (2015). About factors relating to the admission of the elderly with nursing care needs certification – Utilization of the receipt data from medical care and nursing care (in Japanese). Journal of the Japan Society for Healthcare Administration, 52(2), 79-86. https://doi.org/10.11303/jsha.52.79

Brown, J.W., Liang, J., Krause, N., Akiyama, H., Sugisawa, H., Fukaya, T. (2002). Transitions in Living Arrangements Among Elders in Japan: Does Health Make a Difference? The Journals of Gerontology: Series B, 57B(4), S209–S220. https://doi.org/10.1093/geronb/57.4.S209

Cabinet Office. (2020a). *2020 White Book of the Ageing Society*. https://www8.cao.go.jp/kourei/whitepaper/w-2020/html/zenbun/s1_1_1.html (Acessed September 30, 2022)

Cabinet Office. (2020b). The 9th International Comparative Survey on the Lives and Attitudes of the Elderly in 2020 (Executive Summary) (in Japanese). https://www8.cao.go.jp/kourei/ishiki/r02/gaiyo/pdf_indexg.html (Accessed September 30, 2022)

Care Work Foundation. (2018). Survey on the prevention of accidents related to the use of long-term care services - FY2021 Research Grant for Health Promotion Program for the Elderly by the MHLW (in Japanese). http://www.kaigo-center.or.jp/report/pdf/h30_kaigojiko_houkoku_20180402.pdf (Acessed September 30, 2022)

Campbell, J.C. (2002) How policies differ: long-term care insurance in Japan and Germany. In: Luetzeler R, Conrad H, eds. Aging and social policy: a German-Japanese comparison. Munich: Iudicium, 2002.

Eggleston, K., Lee, Y.S., Iizuka, T. (2021). Robots and labor in the service sector: evidence from nursing homes. NBER Working Paper 28322. http://www.nber.org/papers/w28322 (Accessed: September 30, 2022)

Fu, R., Noguchi, H., Kawamura, A., Takahashi, H., & Tamiya, N. (2017). Spillover effect of Japanese long-term care insurance as an employment promotion policy for family caregivers. *Journal of Health Economics*, *56*. https://doi.org/10.1016/j.jhealeco.2017.09.011

Fu, R., & Noguchi, H. (2019). Moral hazard under zero price policy: Evidence from Japanese long-term care claims data. *The European Journal of Health Economics*, *20*, 785-799.

Horioka, C.Y. (2021). Is the selfish life-cycle model more applicable in Japan and, if so, why? A literature survey. Review of Economics of the Household, 19, 157–187. https://link.springer.com/article/10.1007/s11150-020-09511-0

Izumida, N. (2008). Effect of income difference to the use of the long-term care services (in Japanese). Journal of social security research / National Institute of Population and Social Security Research, 43(4), 327-342.

Japan Association of Geriatric Health Services Facilities (2016). Long-Term Care Insurance and Nursing Homes. https://www.roken.or.jp/about_roken/kaigo (Accessed September 11, 2022)

Johar, M., Maruyama, S., Nakamura, S. (2010). Transition to Parent-Child Coresidence: Parental Needs and the Strategic Bequest Motive. Australian School of Business Research Paper No. 2010 ECON 05. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1549550 (Accessed September 30, 2022)

Johar, M., Maruyama, S., Nakamura, S. (2015). Reciprocity in the Formation of Intergenerational Coresidence. Journal of Family and Economic Issues, 36, 192–209. https://link.springer.com/article/10.1007/s10834-013-9387-7

Kawagoe M. (2021) Facts about informal caregiving. https://www.spu.ac.jp/Portals/0/News%20file/sangaku/kenkyu/マネジメント支援部門/第4回_20211201_家族介護の現状.pdf. (Accessed September 13, 2022)

Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., ... & Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. Archives of general psychiatry, 60(2), 184-189.

Kumagai, N. (2017). Distinct impacts of high intensity caregiving on caregivers' mental health and continuation of caregiving. Health Economics Review, 7, Article number: 15. https://doi.org/10.1186/s13561-017-0151-9.

Life Insurance Culture Foundation. (2021). the National Survey on Life Insurance (in Japanese). https://www.jili.or.jp/research/report/8361.html (accessed January 24, 2023)

Matsuyoshi, N. (2010). Current Status of Private Long-Term Care Insurance (in Japanese). Kyosai Soken Report, No112. https://www.jkri.or.jp/PDF/2010/Rep112kyosai2.pdf (accessed January 24, 2023)

Ministry of Justice. (1997) Ministry of Justice. Long-term Care Insurance Act (Kaigo hoken hō) 1997. https://www.japaneselawtranslation.go.jp/ja/laws/view/3807 (Accessed September 30, 2022).

Ministry of Health, Labour and Welfare (MHLW). (2014). Results of the Comprehensive survey of living Conditions FY 2013. In *Ministry of Health, Labour, and Welfare*.

Ministry of Health, Labour and Welfare (MHLW). (2016) Overview of the 2016 Survey of Long-Term Care Service Facilities and Establishments. https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/service16/index.html (Accessed September 12, 2022)

Ministry of Health, Labour and Welfare (MHLW). (2017) Long-term care claims data. https://www.mhlw.go.jp/file/05-Shingikai-12601000-Seisakutoukatsukan-Sanjikanshitsu_Shakaihoshoutantou/0000175118.pdf (accessed: January 25, 2023)

Ministry of Health, Labour and Welfare (MHLW). (2019) About the healthcare spending in 2019. https://www.mhlw.go.jp/toukei/saikin/hw/k-iryohi/19/dl/data.pdf (Accessed September 11, 2022)

Ministry of Health, Labour and Welfare (MHLW). (2020a) Overview of the 2020 Survey of Long-Term Care Service Facilities and Establishments. https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/service20/index.html (Accessed September 12, 2022)

Ministry of Health, Labour and Welfare (MHLW). (2020b)「10th Expert Committee on Provision of Information on Certification of Needs for Long-Term Care and Receipts for Long-Term Care - (Ref.3) Future Schedule for Consolidation of Medical and Long-Term Care Data, etc. (in Japanese)」https://www.mhlw.go.jp/content/12301000/000670766.pdf (Accessed: September 30, 2022)

Ministry of Health, Labour and Welfare (MHLW). (2022a) Overview of Disability Welfare Services. https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/hukushi_kaigo/shougaishahukushi/service/naiyou.html (Accessed: November 4, 2022)

Ministry of Health, Labour and Welfare (MHLW). (2022b) Survey of Social Welfare Institutions, Table # H01K. https://www.e-stat.go.jp (Accessed January 24, 2023).

Ministry of Health, Labour and Welfare (MHLW). (2022c) About the Long0term Care System in Japan, https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/hukushi_kaigo/kaigo_koureisha/gaiyo/index.html (Accessed July 20, 2023)

Morioka, N. (2020) Future direction of housing for old people and role of referral agencies (in Japanese). Mimeo for the seminar for elderly housing placement agencies. https://www.yurokyo.or.jp/contents/pdf/3026-1 (accessed January 23, 2023)

Niimi, Y. (2016) The "Costs" of informal care: an analysis of the impact of elderly care on caregivers' subjective well-being in Japan. Review of Economics of the Household, 14, 779–810. https://link.springer.com/article/10.1007/s11150-016-9333-1

Oshio, T., Kan, M. (2018). Impact of parents' need for care on middle-aged women's lifestyle and psychological distress: evidence from a nationwide longitudinal survey in Japan. Health and Quality of Life Outcomes, 16, Article number: 63. https://link.springer.com/article/10.1186/s12955-018-0890-2

Park, J. H., Lee, K. S. (2013). Self-rated health and its determinants in Japan and South Korea. Public Health, 127(9), 834-843.

Saint-Care Holding Corporation. (2017). Research on the Possibilities and Challenges of Introducing Artificial Intelligence in the Formulation of Care Plans to Promote Independence Support-FY2017 Research Grant for Health Promotion Program for the Elderly by the MHLW (in Japanese).

https://www.mhlw.go.jp/file/06-Seisakujouhou-12300000-Roukenkyoku/7_senntokea_2.pdf (Accessed: September 30, 2022)

Shimizutani, S. (2014). The Future of Long-term Care in Japan, Asia-Pacific Review, 21(1), 88-119. https://doi.org/10.1080/13439006.2014.925199.

Social Security Council/Long-Term Care Subcommittee. (2022) Benefits and Burden (in Japanese). https://www.mhlw.go.jp/stf/newpage_28740.html

Statistics Bureau of Japan. (2010) Summary of 2010 Census (in Japanese) https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&toukei=00200521&tstat=000001039448&cycle=0&tclass1=000001059198&tclass2=000001062444&stat_infid=000023595642&tclass3val=0 (Accessed: January 13, 2023)

Tamiya, N., Noguchi, H., Nishi, A., Reich, M. R., Ikegami, N., Hashimoto, H., Shibuya, K., Kawachi, I., & Campbell, J. C. (2011). Population ageing and well-being: lessons from Japan's long-term care insurance policy. *The Lancet*, *378*(9797), 1183–1192. https://doi.org/10.1016/S0140-6736(11)61176-8

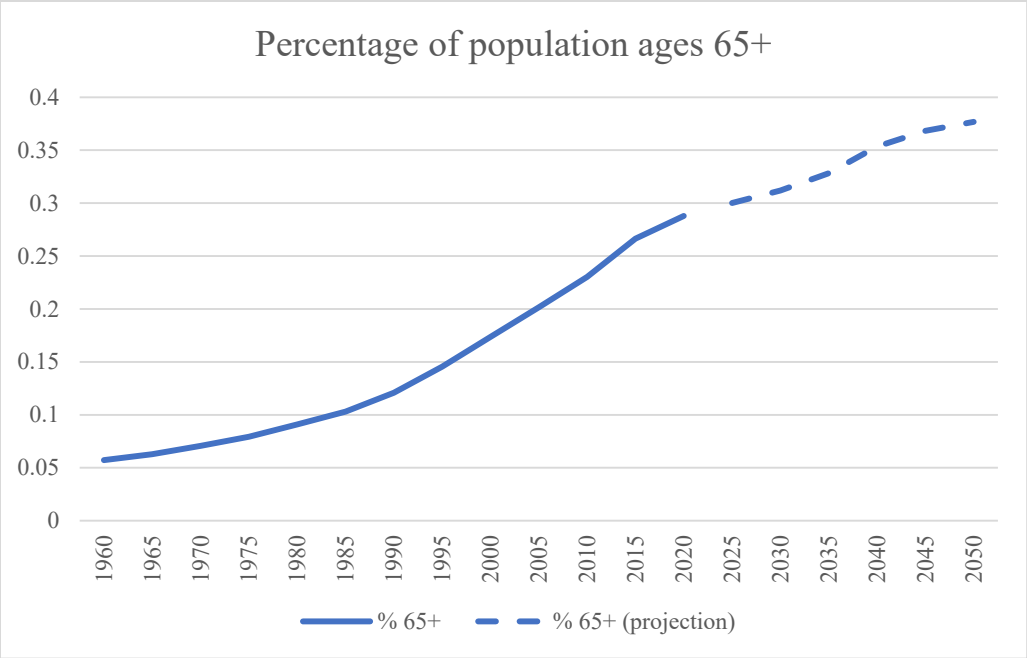
Tokunaga, M., Hashimoto, H. (2017). The socioeconomic within-gender gap in informal caregiving among middle-aged women: Evidence from a Japanese nationwide survey. Social Science & Medicine, 173, 48-53. https://doi.org/10.1016/j.socscimed.2016.11.037

Tsutsui T, Muramatsu N. (2007). Japan's universal long term care system reform of 2005: containing costs and realizing a long-term vision. Journal of American Geriatrics Society, 55, 1458–63. https://doi.org/10.1111/j.1532-5415.2007.01281.x

Yong, V., Saito, Y., Yong, V., & Saito, Y. (2011). National Long-Term Care Insurance Policy in Japan a Decade after Implementation: Some Lessons for Aging Countries. *Ageing International 2011 37:3*, *37*(3), 271–284. https://doi.org/10.1007/S12126-011-9109-0

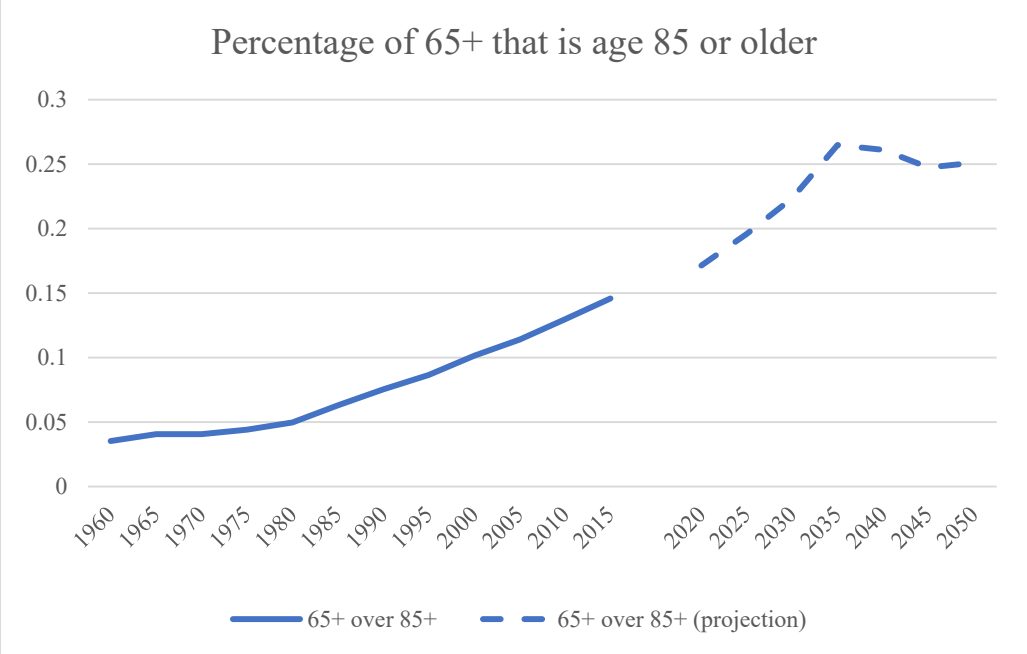
Figure 1: Percentage of the population ages 65 or older

Japan, 1960-2050



Source: OECD Stat. https://stats.oecd.org/Index.aspx?DataSetCode=POPPROJ#

Figure 2: Percentage of 65+ population that is age 85 or older.
Japan, 1960-2050.



Source: OECD Stat. https://stats.oecd.org/Index.aspx?DataSetCode=POPPROJ#

Table 1: Share with ADLs by Age
Japan, 2016.

	65+		85+
	CSLC	**JSTAR (appendix)**	**CSLC**
0 ADLs & 0 IADLs	0.757	0.787	0.556
0 ADLs & 1+ IADLs	0.132	0.183	0.156
1 ADL	0.043	0.010	0.109
2 ADLs	0.027	0.006	0.072
3 ADLs	0.019	0.005	0.045
4 ADLs	0.019	0.002	0.049
5 ADLs	0.003	0.005	0.010
6 ADLs		0.003	
Observations	*169,273*	*2,070*	*23,399*

Notes: Data were from the Comprehensive Survey of Living Conditions (CSLC, 2016) and the 2009 Japanese Study of Aging and Retirement (JSTAR, 2009). Individuals in the nursing homes were not sampled. Respondent weights are used for all calculations. In CSLC, the definition of ADL differs from that in other countries, which includes limitations from IADLs. The ADL index runs from 0 to 5 and is the number of limitations from (1) daily activities (dressing, bathing, eating, going to bed), (2) going outside, (3) working, (4) sports, and (5) others. IDALs include limitations (2) to (5). Owing to this data limitation, IADLs were included when calculating the proportion of 2+ ADLs. In JSTAR, individuals are aged between 52 and 79 years, and those in nursing homes were not sampled. Because all individuals in the 2009 JSTAR were younger than 85 years old, statistics for the 85+ cohort were not available. Respondent weights are used for all calculations. It is worth noting that the 2009 JSTAR is not a representative population because it covers only seven of Japan's 1,718 municipalities. ADLs included walking across the room, dressing, bathing, eating, going to bed, and using the toilet. IADLs include going out alone by bus or train; shopping for groceries; boiling water with a kettle; managing money; filling out pension forms; reading newspapers, books, or magazines; being interested in articles and programs about health; visiting friends or sick persons; communicating with young people; using a telephone; and taking medications.

Table 2: Well-Being for those 65+ and 85+ by ADL Limitations.
Japan. 2016.

	65+	**65+ with 3+ Lims**	**85+**	**85+ with 3+ Lims**
Self-Report of Health – Good or better*	0.26	0.05	0.16	0.06
Life Satisfaction – satisfied or very satisfied**	0.04	0.05	0.06	0.06
Kessler 6 Scores (0-24)*	2.97	6.12	3.89	6.03
*Observations**	*156,626*	*17,841*	*19,678*	5,140
*Observations***	*20,038*	*2,144*	*2,703*	*594*

Notes: Data are from the Comprehensive Survey of Living Conditions (CSLC, 2016), health questionnaire (*), and income questionnaire (**). Individuals in the nursing homes were not sampled. Respondent weights are used for all calculations. Given that the definition of ADL/IADL in CSLC differs from that in other countries, we select the number of ADLs that corresponds most precisely to 3+ limitations in JSTAR. In particular, we determine the proportion of the JSTAR sample with 3+ limitations (approximately 9 percent) and use it as a cutoff in CSLC to represent the closest proportion of the elderly population. Due to the fact that JSTAR has no respondents aged 85+, we utilize the 9 percent cutoff for both the 65+ and 85+ groups in CSLC. This cutoff for the 85+ age group may underestimate the proportion of the oldest-old with 3+ limitations. Self-reported health is a five-category indicator that ranges from very bad, bad, neutral, good, and very good (*). We focus on the 65+ population who are not working or looking for employment to assess retirement satisfaction, and we utilize a life satisfaction indicator with five categories: very unsatisfied, unsatisfied, neutral, satisfied, and very satisfied (**). We utilize the Kessler Psychological Distress Scale (K6) (Kessler et al., 2003) (*). The K6 involves six questions about a person's emotional state during the past 30 days: (1) How often did you feel nervous? (2) How often did you feel hopeless? (3) How often did you feel restless or fidged? (4) How often did you feel so depressed that nothing could cheer you up? (5) How often did you feel everything was an effort?; and (6) How often did you feel worthless? Each question was scored from 0 (none of the time) to 4 (all of the time). The scores of the six questions were then summed, yielding a minimum score of 0 and a maximum score of 24. The higher the score, the poorer the mental health, and a score greater than five indicates stress.

Table 3: Income and Wealth Distribution
Japan, 2016.

	Income		Wealth	
	65+	85+	65+	85+
5th Percentile	80	71	0	0
10th Percentile	112	102	0	0
25th Percentile	195	184	80	102
50th Percentile	309	310	510	510
75th Percentile	488	511	1529	1835
90th Percentile	751	824	3187	3752
95th Percentile	987	1121	5098	5108
Mean	408	426	1206	1335
Observations	*20,038*	*2,073*	*18,961*	*2,554*

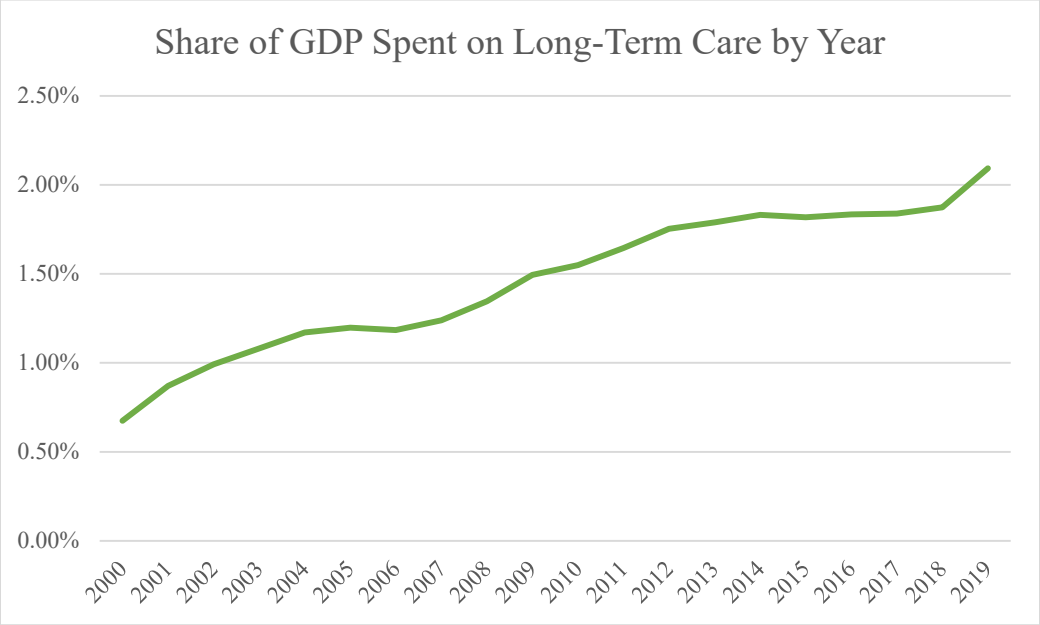
Notes: The percentiles of income and wealth were calculated using the Comprehensive Survey of Living Conditions income questionnaire (CSLC, 2016). Individuals in the nursing homes were not sampled. Respondent weights are used for all calculations. Income and wealth are post-tax adjusted according to the OECD-modified scale and aggregated at the household level. Wealth is aggregated at the household level. All estimates were reported at 10,000 JPY in 2019.

Table 4: Income and Wealth Distribution by Limitations for 65+ Population
Japan, 2016

	0 ADLs & 0 IADLs	0 ADLs & 1+ IADLs	1 ADL	2 ADLs	3+ ADLs	Fraction of full Sample
Panel 1: Income						
<50% Median HH Income	0.170	0.181	0.240	0.210	0.188	0.177
50-100% Median HH Income	0.320	0.338	0.319	0.344	0.333	0.323
100-150% Median HH Income	0.230	0.224	0.190	0.236	0.218	0.227
150-200% Median HH Income	0.122	0.110	0.099	0.099	0.122	0.118
200%+ Median HH Income	0.159	0.148	0.152	0.112	0.139	0.155
Fraction of full Sample	0.757	0.134	0.045	0.029	0.036	
Observations	*15,099*	*2,698*	*905*	*598*	*738*	*20,038*
Panel 2: Wealth						
<50% Median HH Wealth	0.364	0.346	0.418	0.357	0.348	0.363
50-100% Median HH Wealth	0.099	0.097	0.114	0.091	0.100	0.099
100-150% Median HH Wealth	0.115	0.116	0.122	0.106	0.127	0.115
150-200% Median HH Wealth	0.041	0.054	0.040	0.053	0.047	0.043
200%+ Median HH Wealth	0.381	0.388	0.307	0.395	0.379	0.379
Fraction of full Sample	0.755	0.135	0.046	0.029	0.036	
Observations	*15,099*	*2,698*	*905*	*598*	*738*	*20,038*

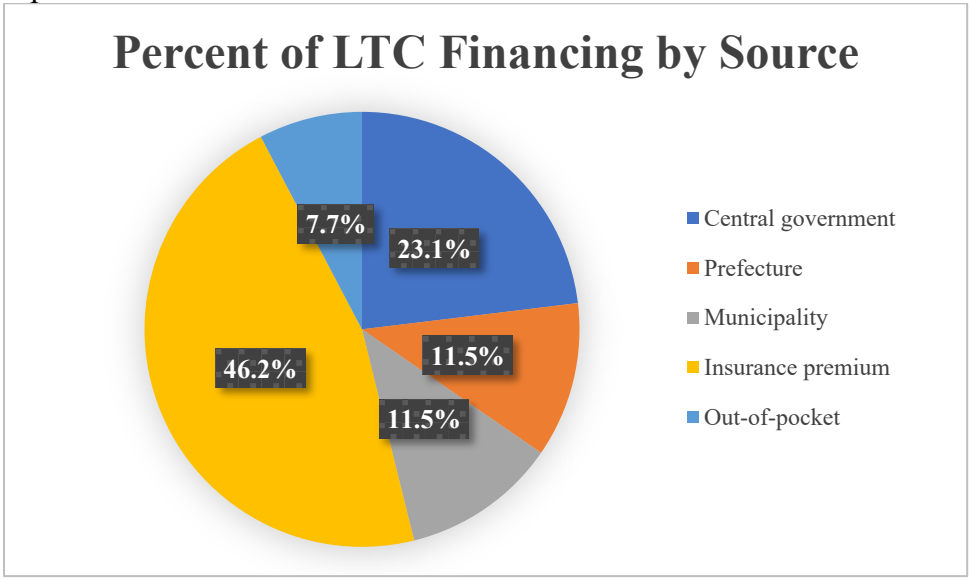
Notes: Data were obtained from the Comprehensive Survey of Living Conditions (CSLC, 2016) health and income questionnaires. Individuals in the nursing homes were not sampled. Respondent weights are used for all calculations. The definition of ADL in the CSLC differs from that in other countries, which includes limitations of IADLs. The ADL index runs from 0 to 5 and is the number of limitations from (1) daily activities (dressing, bathing, eating, going to bed), (2) going outside, (3) working, (4) sports, and (5) others. IDALs include limitations (2) to (5). Owing to this data limitation, IDALs were included when calculating the proportion of 2+ ADLs. Household income is the total family members' individual income, adjusted according to the OECD-modified scale. The sample's median household income was roughly 3.10 million JPY in 2019, and the median wealth was 500 million JPY in 2019.

Figure 3: Share of GDP spent on long-term care
Japan 2000-2019



Source: Long-term care spending is taken from the MHLW (2019) White book. https://www.mhlw.go.jp/wp/hakusyo/kousei/19-2/dl/10.pdf. The GDP is taken from the Cabinet Office (2020a) National Accounts for 2019. https://www.esri.cao.go.jp/jp/sna/data/data_list/kakuhou/files/2019/2019_kaku_top.html

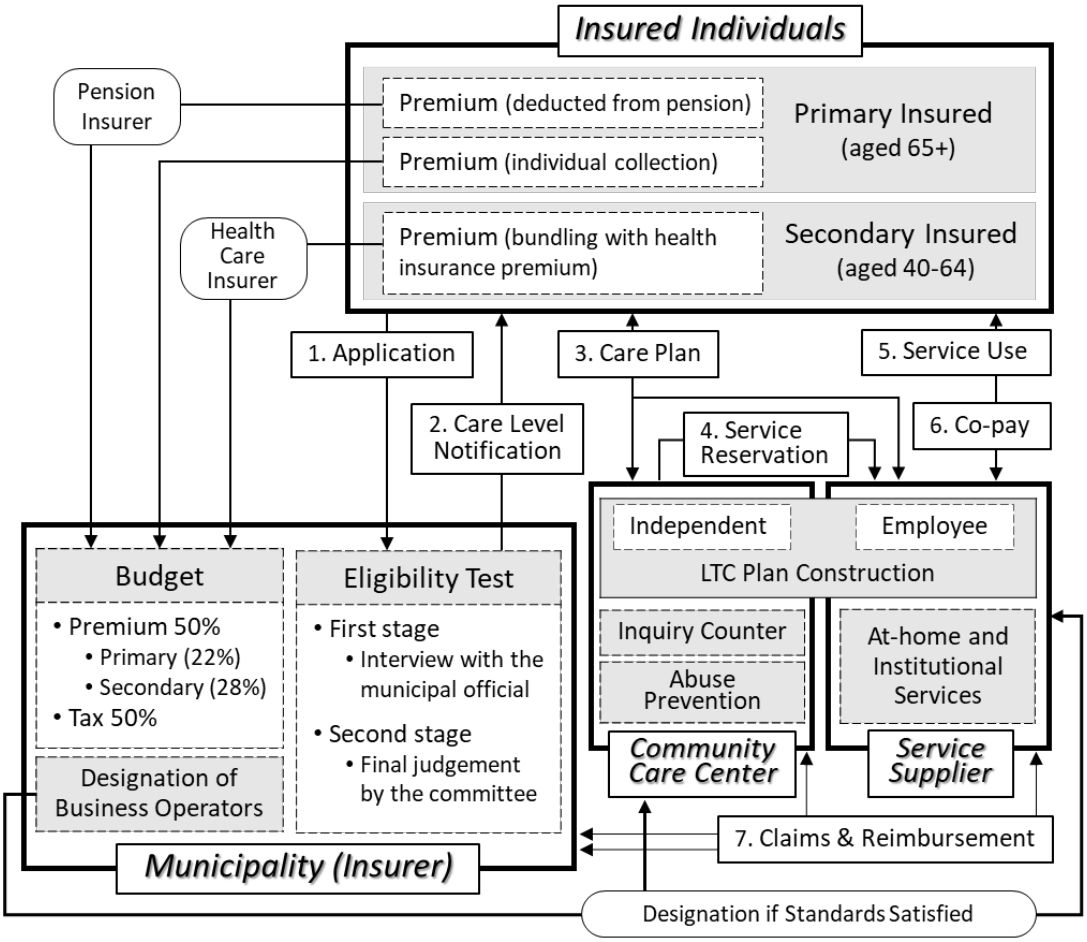
Figure 4: Percent of LTC Financing by Source
Japan 2019



Source: Cabinet Office, 2019. https://www5.cao.go.jp/keizai-shimon/kaigi/special/reform/wg1/310328/shiryou2-2.pdf Although the copayment rate for formal services is 10 percent, it may not indicate the actual out-of-pocket payment due to the stop loss setting. We thus use the 7.7 percent of the "real" copayment rate in 2016 that the MHLW reports determining the private costs of nursing homes, community-based care, and home care, respectively (https://www.mhlw.go.jp/file/05-Shingikai-12601000-

Seisakutoukatsukan-Sanjikanshitsu_Shakaihoshoutantou/0000140158.pdf, accessed November 2, 2022) **Error! Hyperlink reference not valid.**

Figure 5. Structure of Japan's public long-term care insurance.



Source: Fu R. and Noguchi (2019). Moral hazard under a zero-price policy: Evidence from Japanese long-term care claims data. European Journal of Health Economics 20(6), 785-799.

Table 5: Contents of the first-stage eligibility test.

Function	Item
Physical Function	Q1-1 Experiencing paralysis
	Q1-2 Experiencing contracture
	Q1-3 Able to roll over
	Q1-4 Able to rise from bed
	Q1-5 Able to keep seated
	Q1-6 Able to keep an upright position on both feet
	Q1-7 Able to walk
	Q1-8 Able to stand up
	Q1-9 Able to keep an upright position on one foot
	Q1-10 Able to wash one's body
	Q1-11 Able to cut nails
	Q1-12 Vision level
	Q1-13 Hearing level
Living Function	Q2-1 Able to travel using devices
	Q2-2 Able to move from one place to another
	Q2-3 Able to swallow
	Q2-4 Able to eat a meal
	Q2-5 Able to urinate
	Q2-6 Able to defecate
	Q2-7 Able to perform oral hygiene
	Q2-8 Able to wash face
	Q2-9 Able to comb
	Q2-10 Able to wear clothes
	Q2-11 Able to wear pants
	Q2-12 Frequency of going outdoors
Cognitive Function	Q3-1 Communication level
	Q3-2 Understanding of daily routines
	Q3-3 Remembers birthdate
	Q3-4 Remembers a short-term memory
	Q3-5 Remembers his/her own name
	Q3-6 Is aware of the current season
	Q3-7 Is aware of the current location
	Q3-8 Loitering around
	Q3-9 Not able to return home after going out
Behavioral Disorders	Q4-1 Persecution complex
	Q4-2 Keeps talking
	Q4-3 Emotionally unstable
	Q4-4 Unable to distinguish daytime and nighttime
	Q4-5 Talks about the same topic repeatedly
	Q4-6 Shouts
	Q4-7 Resist's care
	Q4-8 Has anxiety
Ability to Adopt to Social Life	Q5-1 Able to take medicine
	Q5-2 Able to manage money
	Q5-3 Able to make decisions in daily life
	Q5-4 Unable to get involved in the community
	Q5-5 Able to go shopping
	Q5-6 Able to cook

Notes: Edited from Fu, R., & Noguchi, H. (2019). Moral hazard under zero price policy: Evidence from Japanese long-term care claims data. The European Journal of Health Economics, 20(6), 785-799.

Table 6: Hypothetical care times regarding categories of assistance

Category of Assistance	**Hypothetical Care Time Range (Minutes)**
Eating	1.1-71.4
Mobility	0.4-21.4
Toilet	0.2-28.0
Hygiene	1.2-24.3
Housework	0.4-11.3
Dementia	5.8-21.2re
Exercise	0.5-15.4
Medical care	1.0-37.2
Standardized Care Time	**10.6-230.6**

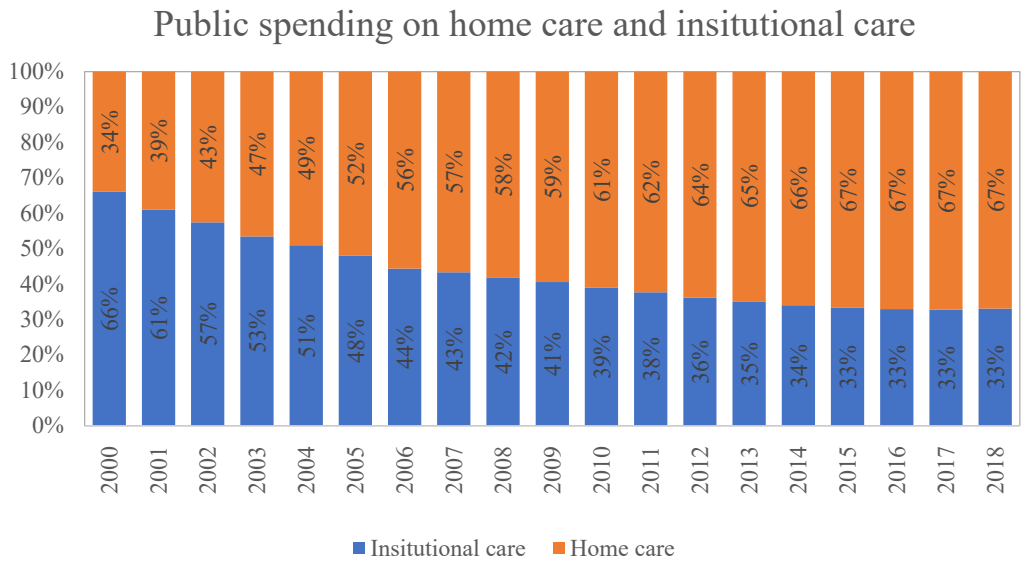
Notes: Edited from Fu, R., & Noguchi, H. (2019). Moral hazard under zero price policy: Evidence from Japanese long-term care claims data. The European Journal of Health Economics, 20(6), 785-799.

Care Level	**Standardized Care Time (Minutes)**
Support required level 1 (SL1)	25.0-31.9
Support required level 2 (SL2)	32.0-49.9
Care level 1 (CL1)	32.0-49.9
Care level 2 (CL2)	50.0-69.9
Care level 3 (CL3)	70.0-89.9
Care level 4 (CL4)	90.0-109.9
Care level 5 (CL5)	110.0-

Table 7: Care levels corresponding to standardized care times.

Note: Edited from Fu, R., & Noguchi, H. (2019). Moral hazard under zero price policy: Evidence from Japanese long-term care claims data. The European Journal of Health Economics, 20(6), 785-799. The standardized care times for support required level 2 and care level 1 are identical, although those certified to care level 1 have worse cognitive functions.

Figure 6: Public spending on institutional care has been gradually replaced by spending on community-based care.
Japan. 2000-2018.



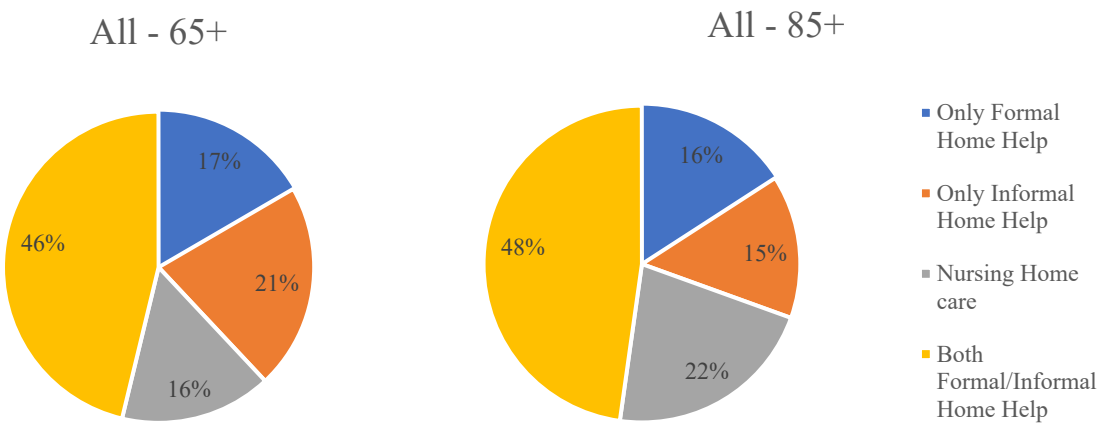
Source: Ministry of Health, Labor, and Welfare (2000-2019) Long-term Care Insurance Status Report. https://www.e-stat.go.jp/stat-search/files?page=1&toukei=00450351&tstat=000001031648&cycle=8. The shares were calculated by annual public spending on home and institutional care. Home care is defined as either at-home or community-based care and includes home-visit services, daycare services, short-stay services, group-home services, and small-scale multi-function care services.

Table 8: Home Care by Age and ADL
Japan, 2016

	65+	85+
All	0.106	0.363
0 ADLs, 1+ IADL	0.148	0.363
1 ADL	0.410	0.641
2 ADL	0.474	0.682
3+ ADL	0.539	0.680
Observations	*169,273*	*23,399*

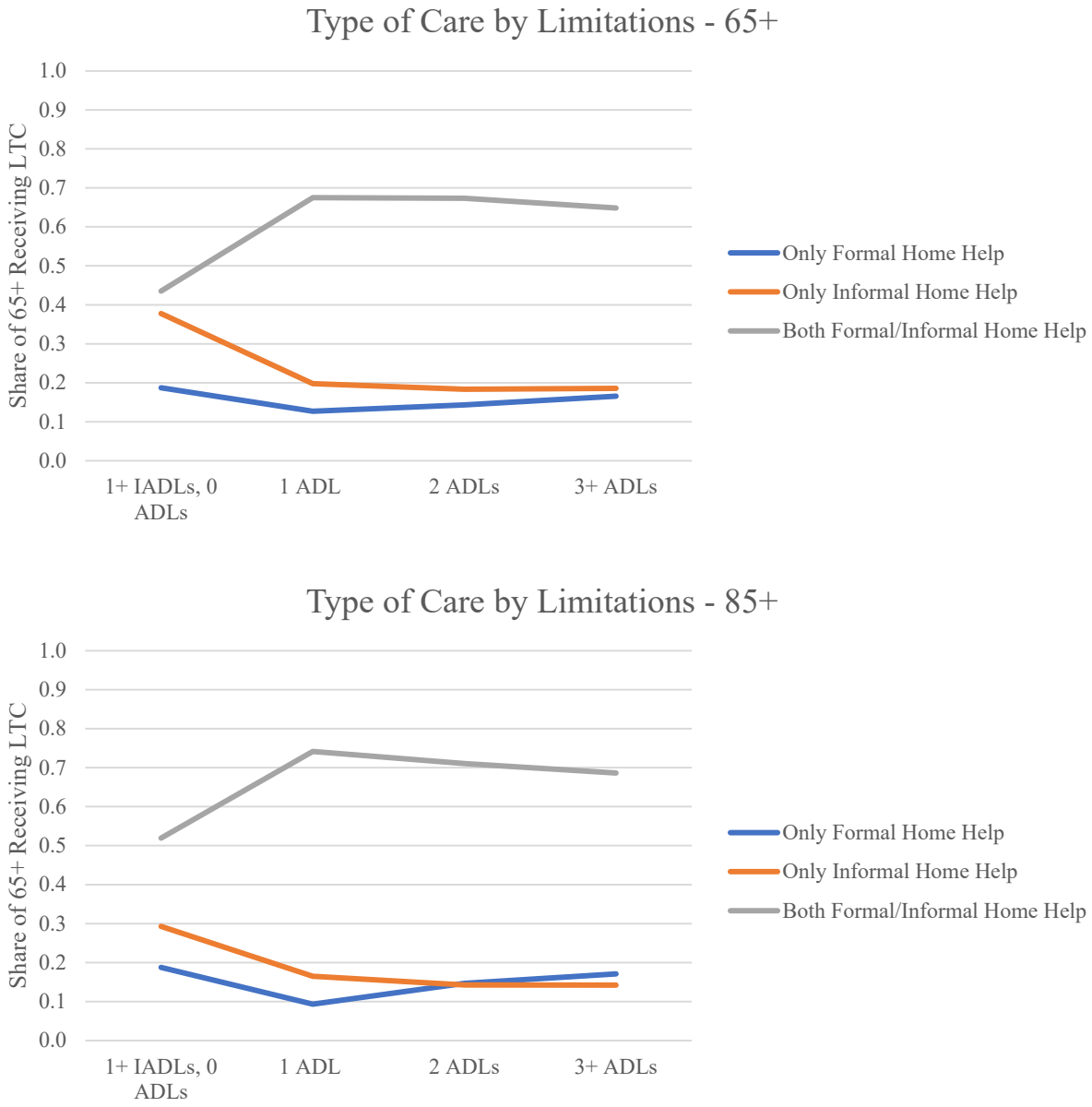
Notes: Data are from the Comprehensive Survey of Living Conditions (CSLC, 2016), Health and Household Questionnaires. Individuals in the nursing homes were not sampled. Respondent weights are used for all calculations. In CSLC, the definition of ADL differs from that in other countries, which includes limitations from IADLs. The ADL index runs from 0 to 5 and is the number of limitations from (1) daily activities (dressing, bathing, eating, going to bed), (2) going outside, (3) working, (4) sports, and (5) others. IDALs include limitations (2) to (5). Owing to this data limitation, IDALs were included when calculating the proportion of 2+ ADLs. The indicator of any care takes the value of one if home-dwelling elderly people in need of care receive assistance from either family members or formal care providers. Respondent weights are used for all calculations.

Figure 7: Type of Care Received by Age.
Japan, 2016



Notes: Populations in nursing homes were calculated from the Summary of the 2016 Survey of Long-Term Care Service Facilities, https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/service16. The populations receiving home help were calculated based on the Comprehensive Survey of Living Conditions (CSLC, 2016) household questionnaire. Individuals in the nursing homes were not sampled. Respondent weights are used for calculations using CSLC. "Formal care" denotes respondents who are eligible to use formal care services; "Informal care" denotes respondents receiving informal care from family members; "both from formal and informal care" denotes respondents receiving both formal and informal care.

Figure 8: Type of Care Received by Age and Limitations.
Japan, 2016.



Notes: Data were obtained from the Comprehensive Survey of Living Conditions (CSLC, 2016) household questionnaire. Individuals in the nursing homes were not sampled. Respondent weights are used for all calculations. "Formal care" denotes respondents who are eligible to use formal care services; "Informal care" denotes respondents receiving informal care from family members; "both from formal and informal care" denotes respondents receiving both formal and informal care. The definition of ADL in the CSLC differs from that in other countries, which includes limitations of IADLs. The ADL index runs from 0 to 5 and is the number of limitations from (1) daily activities (dressing, bathing, eating, going to bed), (2) going outside, (3) working, (4) sports, and (5) others. IDALs include limitations (2) to (5). Owing to this data limitation, IDALs were included when calculating the proportion of 2+ ADLs.

Table 9: Distribution of Hours Received by Type

	65+			85+		
	All	Formal	Informal	All	Formal	Informal
Full day	0.20	0.28	0.21	0.21	0.36	0.19
Half day	0.10	0.06	0.11	0.11	0.07	0.13
2-3 hours	0.11	0.10	0.12	0.14	0.10	0.15
Only when needed	0.39	0.14	0.44	0.38	0.13	0.42
Others	0.19	0.41	0.12	0.16	0.35	0.11
Observations	*6,052*	*649*	*4,644*	*3,032*	*290*	*2,385*

Notes: Data were obtained from the Comprehensive Survey of Living Conditions (CSLC, 2016) LTC questionnaire. Individuals in the nursing homes were not sampled. Respondent weights are used for all calculations. Care hours were home care received. Home care is defined as either at-home or community-based care and includes home-visit services, daycare services, short-stay services, group-home services, and small-scale multi-function care services. Formal care is defined as receiving formal long-term care from service providers, and informal care is defined as receiving care from family members. Daily hours of care are measured by a categorical variable ranging from "receiving care only when needed" to "receiving care during the full day."

Table 10: Absolute number of nursing homes, beds, and occupancy rate. Japan. 2016.

	Japan, 2016	
	Public	Private
Nursing homes	12,235	11,739
Beds	883,845	457,918
Nursing home residents	829,387	-
Occupancy rate	93.84%	-
Pop 65+	34,590,611	34,590,611
Beds per pop 65+	0.026	0.013
Pop 85+	5,201,991	5,201,991
Beds per pop 85+	0.170	0.088

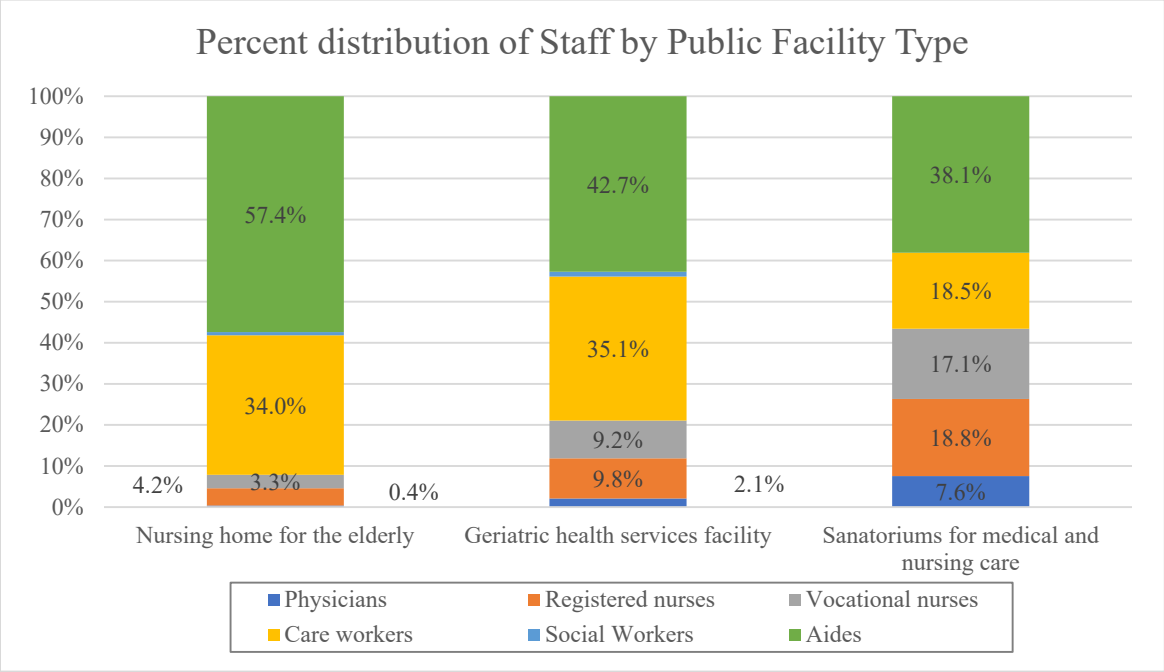
*Source: Data on nursing homes are from the Report on the State of Nursing Homes in Japan by the Ministry of Health, Labour, and Welfare (2017),*https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/service16/index.html*. The number of public nursing homes is the aggregate of special nursing homes for the elderly ("Tokuyo" in Japanese), geriatric health services facilities ("Roken" in Japanese), and sanatoriums for medical and nursing care ("Kaigo-Ryoyou" in Japanese). The numbers of 65+ and 85+ populations were obtained from the Population Projection by the Statistics Bureau of Japan, https://www.stat.go.jp/data/jinsui/2016np/index.html.*

Table 11: Distribution of public nursing homes occupancy rate and beds across prefectures. Japan, 2015 and 2011

Percentile	Occupancy rate (%), 2015				Nursing home beds per one hundred 65+, 2008
	Nursing home for the elderly	Geriatric health services facility	Sanatoriums for medical and nursing care	Total	
5%	95.9	83.9	68.1	92.3	2.44
10%	96.5	85.4	72.5	92.5	2.64
20%	96.8	87.0	78.0	93.0	2.90
30%	97.2	88.1	83.5	93.5	3.10
40%	97.3	88.6	85.7	94.0	3.19
50%	97.5	89.5	87.5	94.2	3.25
60%	97.9	90.1	88.5	94.4	3.33
70%	98.1	90.8	89.8	94.6	3.52
80%	98.3	92.1	91.9	94.8	3.63
90%	98.5	92.5	93.6	95.6	3.85
95%	98.6	93.1	94.4	96.0	3.95
Min	95.0	82.0	64.1	91.5	2.16
Max	98.9	94.0	98.8	97.2	4.41

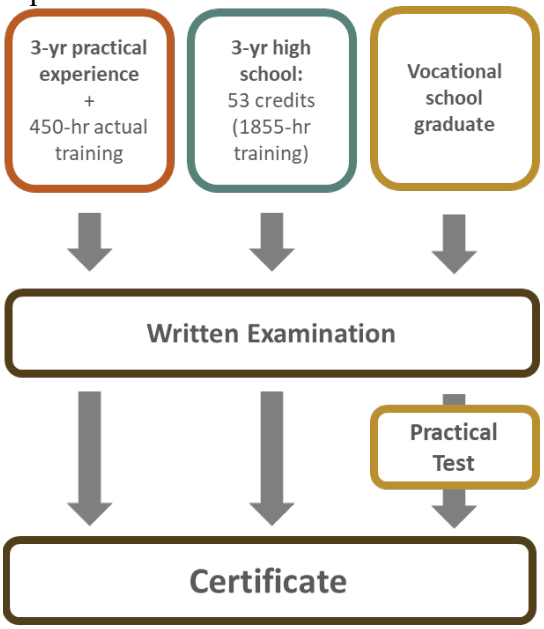
Notes: Data on the occupancy rate are from the Survey of Institutions and Establishments for Long-term Care by the Ministry of Health, Labour, and Welfare (2015) https://www.e-stat.go.jp/stat-search/files?page=1&toukei=00450042. The percentiles are calculated using facility-level information on the quota and number of recipients in the facilities. Nursing home bed data was obtained from the same survey conducted in 2011.

Figure 9: Percent distribution of nurses, aides, and social workers at care facilities. Japan, 2016



Source: MHLW (2016) Summary of Survey of Institutions and Establishments for Long-term Care. https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/service16/dl/kekka-gaiyou_06.pdf The three types of care facilities belong to a public nursing home.

Figure 10: Training requirements for formal care workers. Japan.



Source: created by the authors based on a report from https://kaigobatake.jp/column/kaigofukushishi.php

Table 12: Pay for full-time care workers at nursing facilities and in-home health care. Japan, 2019

Industry	Occupation titles	Mean hourly wage	Monthly mean wage
Nursing Care Facilities	(1) Registered Nurses	1,432	267,553
	(2) Nursing aids, orderlies, and psychiatric aides	1,001	212,455
	(3) Medical and health services managers	1,291	246,373
	All occupations in nursing care facilities industry	1,185	231,135
Home Health Care Services	(1) Registered Nurses	1,431	257,612
	(2) Nursing aids, orderlies, and psychiatric aides	990	204,468
	(3) Medical and health services managers	1,184	224,613
	All occupations in home healthcare services industry	1,111	221,239
All industries and occupations		1,272	307,700
National Minimum Wages		901	
High School Degree			267,600
Junior College Degree			283,200
College Degree			372,600

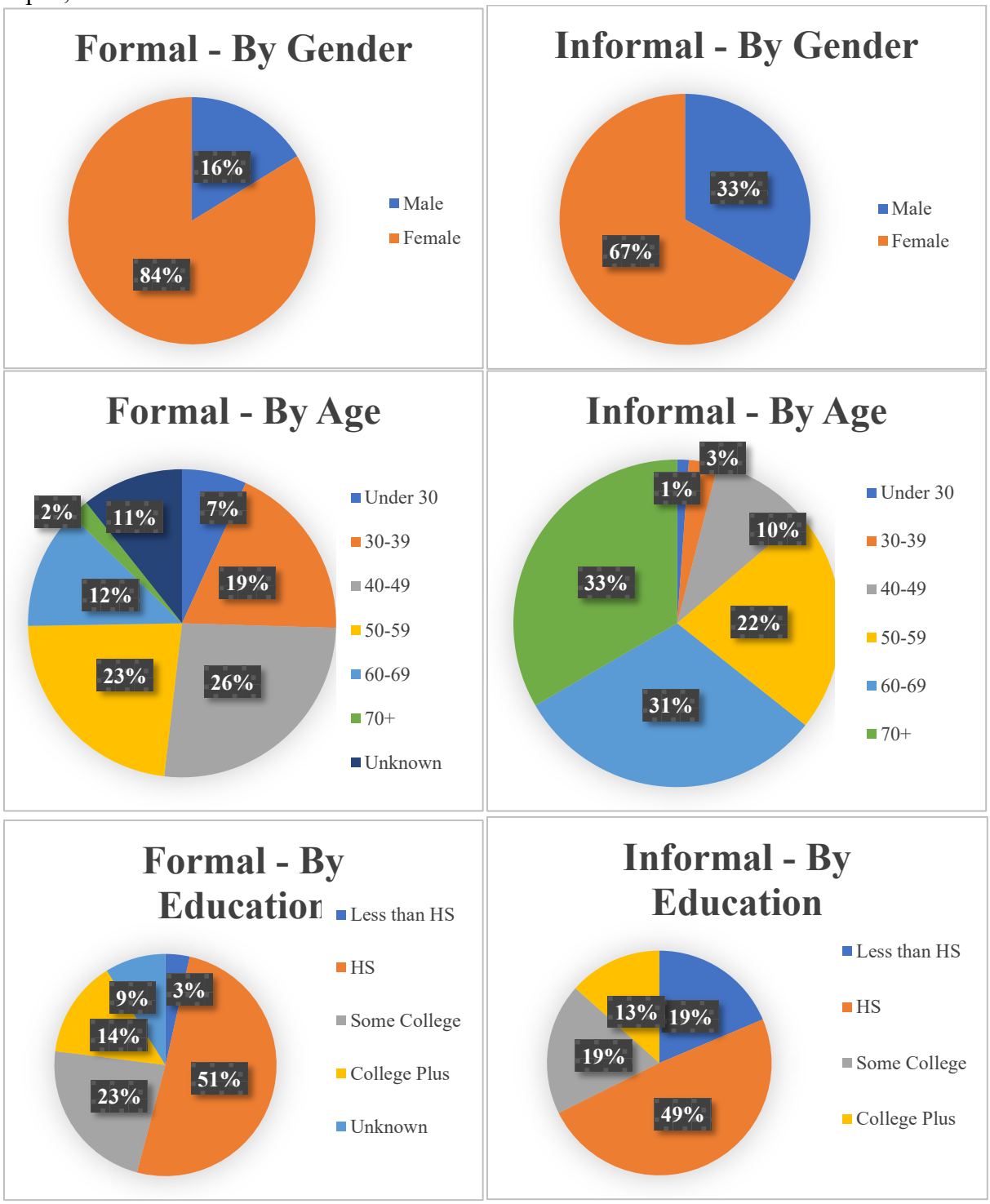
Notes: Data were obtained from the Survey of Nursing Care Work Conditions (2020). The information on care workers at nursing home facilities is from link1; the information on home care workers is from link2; the information on average monthly and hourly salary for all industries and occupations is from link3 and link4; the information on national minimum wages is from link5; the information on monthly salary by education is from link6. All values are in 2019 JPY.

Table 13: Care Provision by Formal and Informal Caregivers

	Japan, 2016
Formal care workers	1,012,082
Relative to 65+ Population	0.029
Relative to 18-64 Population	0.014
Informal caregivers	6,990,000
Relative to 65+ Population	0.202
Relative to 18-64 Population	0.096
All caregivers	8,002,082
Relative to 65+ Population	0.231
Relative to 18-64 Population	0.110

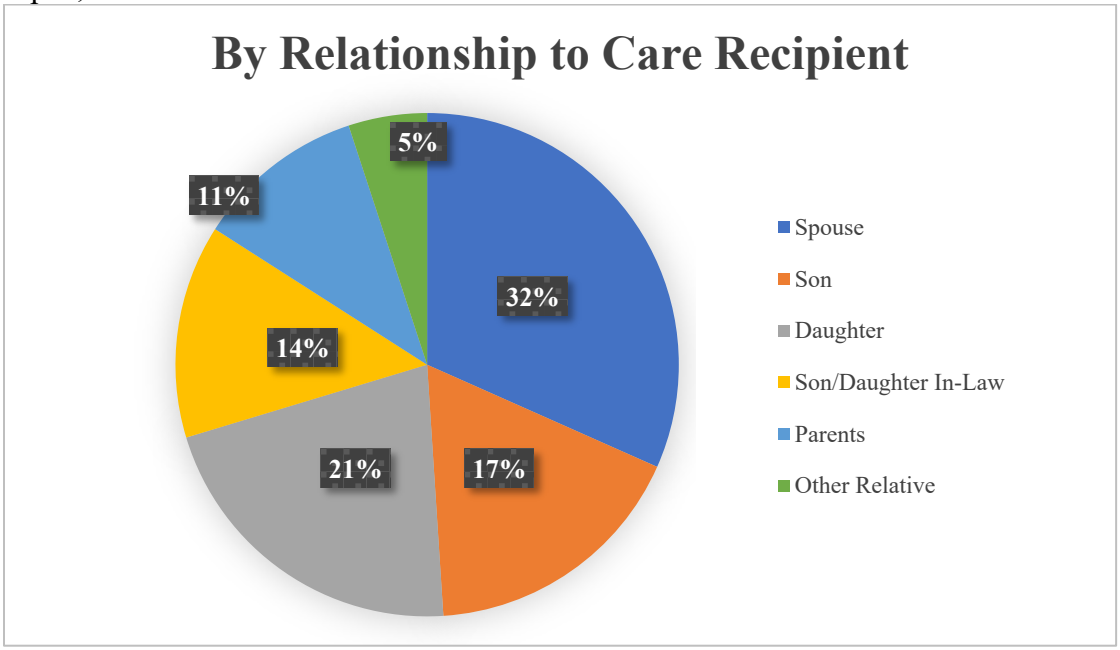
Notes: The number of formal helpers is from the Summary of Survey of Institutions and Establishments for Long-term Care by the Ministry of Health, Labour, and Welfare (2016) https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/service19/dl/kekka-gaiyou_2.pdf. The number of informal caregivers is from a report "about informal caregiving" by Masahiro Kawagoe at Saitama Prefectural University Research and Development Center, Community Care Management Support Division https://www.spu.ac.jp/Portals/0/News%20file/sangaku/kenkyu/マネジメント支援部門/第4回_20211201_家族介護の現状.pdf. The statistics are aggregated at the population level; therefore, we cannot provide numbers separately for the 65+ and 85+ populations.

Figure 11: Demographic composition of home care workers.
Japan, 2019



Notes: Data on formal care workers are from the Report on the Results of the 2019 Survey on Employment Status and Attitudes of Nursing Care Workers. http://www.kaigo-center.or.jp/report/pdf/2020r02_chousa_roudousha_chousahyou.pdf Data on informal caregivers are from the Comprehensive Survey of Living Conditions (CSLC, 2016). An informal caregiver is defined as a family member who is the main caregiver of a co-residing care-needy elderly person.

Figure 12: Informal Caregivers by Relationship to Care Recipient.
Japan, 2016.



Notes: Data are from the Comprehensive Survey of Living Conditions (CSLC 2016). An informal caregiver is defined as a family member who is the main caregiver of a co-residing care-needy elderly person.

Table 14: Formal care costs, annual
Japan, 2016

Types	Number of users	Total spending (billion JPY)
Institutional care: nursing homes	1,250,700	3,275
Home care: community-based care	1,119,300	1,596
Home care: at-home care	3,735,200	4,100

Notes: The number of users and spending on formal care are from the Long-Term Care Insurance Status Report by the Ministry of Health, Labour, and Welfare, 2016. Number of users: https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/kyufu/16/dl/02.pdf. *Total spending and spending per user: https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/kyufu/16/dl/03.pdf. The total spending was reported in billion JPY in 2019.*

Table 15: Informal Care Valuation
Japan, 2016.

	I	II
Valuation (billions of JPY)	2,935	6,646
Total Hours Informal Help (billions)	8.24	8.24
Probability of Working	0.458	0.458
Predicted Wage * Probability of Working	516	
Predicted Wage if Working (JPY)	1635	
Observations	*2,638*	*2,638*

Notes: Data are from the Comprehensive Survey of Living Conditions (CSLC, 2016) and household and income questionnaires. Individuals in the nursing homes were not sampled. Respondent weights are used for all calculations. Informal caregivers were identified using a question to each recipient in the household questionnaire "Please report the household-member identification number of your main caregiver living with you," and cross-referenced the number to that of all household members of this recipient to identify the caregiver. The income of informal caregivers was obtained from the income questionnaire. Column I values predicted working hours at the predicted wage and non-working hours at 0. Column II values predicted working hours at the predicted wage. They predicted non-working hours at the mean hourly wage for home-care nursing assistants, orderlies, and psychiatric aides (990 JPY, see Table 9). Valuations are made at the caregiver level, with predicted wages and probabilities of work calculated based on nine regions, six age groups, four education groups, sex, and marital status. Hourly wages were top-coded at 10,000 JPY. Valuations and hours are in billions, with all JPY amounts to 2019 JPY.

Table 16: Total Costs by Type of Care and Source
Japan, 2016.

Care Type	Source	Cost I (billion, JPY)	Cost II (billion, JPY)
Nursing Home	Public	3,023	3,023
	Private	252	252
	All	3,275	3,275
Community-based care	Public	1,473	1,473
	Private	123	123
	All	1,596	1,596
Home Care	Public	3,785	3,785
	Private	316	316
	All	4,100	4,100
Informal Care	Private	2,935	6,646
Total	Public	8,280	8,280
	Private	3,626	7,337
	All	11,906	15,617

Japan, 2016 (%GDP)

Care Type	Source	Cost I (%GDP)	Cost II (%GDP)
Nursing Home	Public	0.54%	0.54%
	Private	0.05%	0.05%
	All	0.59%	0.59%
Community-based care	Public	0.27%	0.27%
	Private	0.02%	0.02%
	All	0.29%	0.29%
Home Care	Public	0.68%	0.68%
	Private	0.06%	0.06%
	All	0.74%	0.74%
Informal Care	Private	0.53%	1.20%
Total	Public	1.49%	1.49%
	Private	0.65%	1.32%
	All	2.15%	2.81%

Notes: Total spending on formal care (nursing home, community-based care, and home care) is taken from the Long-Term Care Insurance Status Report by the Ministry of Health, Labour, and Welfare, 2016 https://www.mhlw.go.jp/toukei/saikin/hw/kaigo/kyufu/16/dl/03.pdf. Although the copayment rate for formal services is 10 percent, it may not indicate the out-of-pocket payment due to the stop loss setting. We thus use the 7.7 percent of the "real" copayment rate in 2016 that the MHLW reports determining the private costs of nursing homes, community-based care, and home care, respectively (https://www.mhlw.go.jp/file/05-Shingikai-12601000-Seisakutoukatsukan-Sanjikanshitsu_Shakaihoshoutantou/0000140158.pdf, accessed November 2, 2022). The informal care costs are from Table 15. The costs are billions, with all JPY amounts in 2019 JPY. The GDP in 2016 was 544,365 billion JPY.