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Small Benefit Cuts and Earnings Responses: Evidence from Japan's public assistance reform[1]

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Abstract

This paper examines how a modest reduction in benefit generosity affects recorded earnings among public assistance recipients in Japan. I use the 2013–2015 revision of the livelihood assistance standard, which reduced benefit standards differently across grade-area categories. The main analysis compares Grade-2 Area-1, where the standard declined by about 2 %, with Grade-2 Area-2, where it remained largely unchanged. Using individual-level administrative data from "the Survey on Public Assistance Recipients", I estimate an event-study difference-in-differences model for single male recipients in their forties and fifties classified as "other households." The results provide limited evidence of a broad or persistent increase in recorded earnings in the main sample. However, among recipients with zero recorded earnings before the reform, earnings increased in some post-reform years, with the largest estimate around ¥4,000 per month. This amount is interpreted as a small adjustment through very short-term or occasional work rather than a transition into stable employment. In contrast, recipients who already had earnings before the reform show no clear increase. These findings suggest that small benefit reductions may induce limited compensatory earnings among non-working recipients, but they do not appear to generate substantial or sustained increases in labor supply.

Keywords: public assistance, welfare, labor supply
JEL classification: H53, I38, J22

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1. Introduction

Means-tested transfer programs protect households with limited resources, but they also shape the incentives recipients face when deciding whether and how much to work. In standard labor supply models, a reduction in transfer generosity lowers nonlabor income and may encourage additional earnings. In means-tested programs, however, additional earnings often lead to benefit reductions, so not all earnings gains translate into higher disposable income. Earnings disregards and benefit phase-out rules therefore determine the extent to which increased earnings raise recipients' effective income. The size and location of the response, however, are ultimately empirical questions. They depend on the magnitude of the benefit change, the structure of earnings disregards, the implicit marginal tax schedule, and recipients' ability to adjust earnings while remaining eligible for support.

This paper studies this margin in the context of Japan's Public Assistance program. The program is a last-resort, means-tested safety net that guarantees a statutory minimum standard of living. Benefits are calculated as the difference between minimum living expenses and household income, so increases in earnings generally reduce benefit payments. At the same time, the program includes an earnings disregard: under the post-August 2013 schedule, monthly earnings up to ¥15,200 are fully disregarded, while earnings above that threshold are largely offset by benefit reductions. This institutional structure creates a specific prediction. A modest reduction in benefit standards may generate small compensatory earnings responses, especially among recipients with no prior earnings, for whom a limited amount of work below the disregard threshold can increase disposable income relatively directly.

The empirical setting is the 2013–2015 revision of Japan's livelihood assistance standard. The reform changed benefit standards across grade-area categories, which are institutional classifications used to set region-specific minimum living expenses. Because these changes differed across grade areas, they provide variation in the size of benefit reductions among recipients subject to the same national Public Assistance rules. The main analysis focuses on single male recipients in their forties and fifties who belong to "other households." In Public Assistance statistics, "other households" refer to households that are not classified as elderly households, single-mother households, disabled households, or sick/injured households. This sample is useful for three reasons. First, household type, household size, and age bracket are fixed by construction, so mechanical changes in the livelihood assistance standard are primarily determined by grade area and year. Second, the sample focuses on a group for whom earnings adjustment is more plausible than for elderly, disabled, sick/injured, or single-mother households,

while excluding recipients with major health-related work limitations and those living in institutions. Third, other households in their forties and fifties are a category in which the number of Public Assistance recipients increased substantially during the economic downturn, making them an important group for studying earnings responses among recipients who entered or remained on assistance while retaining some potential attachment to work.

The main comparison is between Grade-2 Area-1 and Grade-2 Area-2. Grade areas are institutional regional categories used to set livelihood assistance standards in a way that reflects differences in living costs across regions; the system consists of six categories, with Areas 1 and 2 established within each of Grades 1 through 3. Grade-2 Area-1 and Grade-2 Area-2 are adjacent categories within this system and experienced different changes in livelihood assistance standards during the reform. In the main sample, the standard in Grade-2 Area-1 declined by about 2.4%, or roughly ¥1,800 per month, relative to Grade-2 Area-2, where the standard was approximately unchanged. This comparison is chosen because it holds fixed the relevant household and age schedule while comparing two nearby regional categories within the same national program. In contrast, comparisons involving Grade-1 areas are more likely to combine the reform with larger differences in urbanicity, labor-market conditions, and baseline earnings, while Grade-3 comparisons involve benefit increases and more distant regional categories. The Grade-2 comparison therefore provides the most informative setting for studying whether a modest relative reduction in guaranteed income is followed by a change in recorded earnings among current recipients.

The analysis uses individual-level administrative records from the Ministry of Health, Labour and Welfare's Survey on Public Assistance Recipients. This survey covers only individuals currently receiving Public Assistance and records household characteristics, benefit receipt, and earned income. Because earned income is measured in July, the 2013 observation precedes the August 2013 implementation of both the livelihood assistance revision and the nationwide reform of the basic earnings disregard, and is used as the pre-reform reference period. I estimate an event-study difference-in-differences specification comparing Grade-2 Area-1 with Grade-2 Area-2, including individual and year fixed effects. The identifying variation comes from differential changes in livelihood assistance standards across grade areas. The maintained assumption is that, absent the relative reduction in livelihood assistance standards, recorded July earnings in the two Grade-2 categories would have followed similar paths. However, because the pre-reform period is limited to two years, 2012 and 2013, it is difficult to evaluate this assumption fully through a conventional pre-trend test. The design is

therefore interpreted as evidence from an institutionally close comparison rather than as a sharp quasi-experiment.

The paper's contribution is to identify a behavioral margin that is not well captured in existing studies of welfare incentives. Much of the international literature studies larger benefit changes, eligibility thresholds, time limits, unemployment benefits, refugee benefits, minimum-income schemes, or guaranteed income programs, often using sharp discontinuities or major reforms to identify effects on employment and earnings (Danziger et al., 1981; Moffitt, 1992, 2002; Lemieux and Milligan, 2008; Bargain and Doorley, 2011; Farber and Valletta, 2015; Borjas, 2016; Bergolo and Cruces, 2021; Bargain and Jonassen, 2024; Dustmann et al., 2024; Grossmann et al., 2024; Maitino et al., 2024; Vivalt et al., 2024). This paper studies a different question: whether a small reduction in guaranteed income within a gap-filling assistance program induces recipients to generate small amounts of recorded earnings while remaining on the program. This is a policy-relevant margin because many changes to safety-net programs are incremental rather than large, and because responses at the bottom of the earnings distribution may occur through occasional or low-intensity work rather than through stable employment or program exit.

The paper also contributes to the Japanese literature on Public Assistance and work-related outcomes. Earlier work examines regional differences in Public Assistance standards, employment among single-mother households, welfare termination, and employment-support programs (Tamada and Ohtake, 2004; Abe and Tamada, 2007; Tamada, 2007; Michinaka, 2009; Yuzawa and Fujiwara, 2009; Komamura et al., 2011; Shikata and Tanaka, 2011; Shikata, 2013; Yamada and Komamura, 2018; Matsumoto, 2022; Yugami et al., 2024; Matsumoto, 2025). More recent studies use administrative data and quasi-experimental variation to study related reforms. Hayashi (2023) examines the 2013 reform of the basic earnings disregard and finds modest changes in the earnings distribution but no clear evidence that the reform changed the level of earned income. This paper differs by focusing on benefit reductions under the 2013–2015 revision of the livelihood assistance standard, restricting the main sample so that the relevant household and age schedules are fixed, and testing whether earnings responses are concentrated along the extensive margin rather than the intensive margin: that is, whether the reform primarily induces recipients with zero pre-reform earnings to record positive earnings, rather than increasing earnings among recipients who were already working. Thus, the paper complements existing work by examining the low-earnings compensatory margin generated by a modest reduction in guaranteed income, rather than the effect of an earnings disregard reform or a large benefit increase.

The results show that the average effect is limited, while the recorded earnings response is concentrated among recipients who had no earnings before the reform. In the main sample, recorded July earnings sometimes increase in Grade-2 Area-1 relative to Grade-2 Area-2 after the reform, but this result is not robust. By contrast, among recipients whose recorded earnings were zero in July 2013, there is a statistically significant increase in earnings. For this group, the peak increase is about ¥4,000 per month, which is below the ¥15,200 disregard threshold and amounts to less than roughly one day of casual work. In contrast, there is no clear evidence of an increase among recipients who already had earnings before the reform. This heterogeneity is consistent with the institutional prediction that a benefit cut is more likely to generate small recorded earnings among recipients who can earn below the disregard threshold. As a supplementary analysis, I find no statistically significant increase in exits from Public Assistance records.

The remainder of the paper proceeds as follows. Section 2 describes Japan's Public Assistance system and the 2013–2015 revision of the livelihood assistance standard. Section 3 discusses the theoretical predictions. Section 4 describes the data and sample construction. Section 5 presents the empirical strategy. Section 6 reports the results and robustness checks. Section 7 concludes.

2. Institutional Background

2.1. Objectives and Administration of Public Assistance

Japan's Public Assistance program is legally grounded in the Public Assistance Act enacted in 1950. The program aims both to guarantee a minimum standard of living and to promote self-reliance. Public Assistance is designed to supplement individuals' own efforts and available resources. Accordingly, applicants are required to utilize available resources, including assets, work capacity, and support from legally responsible relatives, when such resources exist.

Benefits are provided to eligible households based on an application submitted by a household in need, after the welfare office conducts a strict means test. Applications are, in principle, filed with the welfare office at the municipal level that has jurisdiction over the applicant's place of residence. Thus, while the statutory program is nationally uniform, administration is carried out by municipalities.

2.2. Trends in Receipt and Household Types

Public Assistance receipt has increased over the long run since the mid-1990s. After reaching a low of approximately 0.58 million recipient households in FY1992, the

monthly average number of recipient households rose to about 1.64 million in FY2023. The recipiency rate (recipients divided by the total population) also increased from a low of 0.7% in 1995 to 1.6% in FY2023. Zhou and Suzuki (2012) argue that growth in Public Assistance receipt likely reflects a combination of cyclical factors (the downturn following the Global Financial Crisis), structural factors (population aging, rising divorce rates, and the expansion of nonregular employment), and institutional factors (changes in program operation during periods of deteriorating labor market conditions).

This paper focuses on household types closely linked to labor market behavior. Figure 1 plots trends in the number of recipient households by household type. While elderly households, households with disabilities, and households with illness account for a large share throughout the period, the category of "other households" increased sharply after the Global Financial Crisis in autumn 2008. In official statistics, "other households" is a residual category that does not fall into the major classifications (single-mother, elderly, disabled, or ill) and thus includes a group with relatively high work capacity (i.e., for whom employment is more plausibly expected). The expansion of this category increases the policy relevance of evaluating how Public Assistance affects work and earnings.

Figure 2 presents trends by age group within "other households." The share of recipients in their 20s and 30s is smaller than that of recipients in their 40s and 50s; in levels, recipient counts are higher in older age groups. Recipient counts also rise markedly during the Global Financial Crisis. Importantly, even after macroeconomic conditions improved, the number of recipients in "other households" did not fully return to its pre-crisis level, consistent with Zhou and Suzuki's (2012) conjecture that operational changes at the time may have contributed to persistence in receipt.

A further feature in Japan is the changing gender composition within "other households." Figure 3 shows trends by gender. While gender differences were relatively small prior to the Global Financial Crisis, the increase after 2009 is larger among men, widening the gender gap. These patterns suggest that, after the Global Financial Crisis, relatively work-capable men affected by the downturn may have entered Public Assistance, which is consistent with the paper's focus on work-capable recipients.

2.3. Program Design and Work Incentives

Public Assistance has long been argued to embed a "poverty trap," in the sense that it may weaken work incentives and thereby prolong receipt. This concern arises because benefits are determined as minimum living expenses (the statutory standard) minus household income. When income increases during receipt, benefits decline, which can

result in only a limited increase in disposable income and thereby reduce incentives to raise earnings through work.

When income is earned through work, earnings disregards apply. The key disregard is the basic disregard ("kiso kojo"). Prior to July 2013, the implicit marginal tax rate was zero for monthly earnings up to ¥8,340, while earnings above ¥8,340 faced extremely high implicit marginal tax rates (83%–93%; Hashimoto, 2006). From August 2013 onward, the system was revised uniformly nationwide: the implicit marginal tax rate is zero for monthly earnings up to ¥15,200, and 90% above that threshold. Given the high implicit marginal tax rate over a wide earnings range, disposable income can increase only modestly even when recipients work while remaining on Public Assistance.

Recipients' work decisions may also depend on the level of the minimum living expenses standard. Minimum living expenses consist of eight types of assistance: livelihood, housing, education, medical, long-term care, childbirth, occupational assistance, and funeral assistance. Some components, such as medical and long-term care assistance, are provided in kind, whereas the remaining components are, in principle, paid in cash. Livelihood assistance is provided to most recipients and covers general consumption needs, including supplements that address special needs for groups such as single-mother households and persons with disabilities. For "other households," the main benefit components are typically livelihood assistance, housing assistance, and medical assistance. Because housing assistance is paid based on actual rent and medical assistance is provided in kind, the benefit that recipients effectively receive as flexible cash is, in substantive terms, primarily livelihood assistance.

The standard amount of livelihood assistance is determined by household members' ages and place of residence, with regional differences embedded through the grade-area classification system described in Section 2.4. Age categories are 0–2, 3–5, 6–11, 12–19, 20–40, 41–59, 60–69, and 70+. The livelihood assistance amount is calculated by summing Type 1 standard amounts across household members (Appendix Table A.1(i)), multiplying the sum by a household-size-specific equivalence scale (a decreasing rate; Appendix Table A.1(ii)), and adding the Type 2 standard amount determined by household size (Appendix Table A.1(iii)). Consequently, even for single-person households, the livelihood assistance amount can change mechanically when a recipient crosses an age-category threshold (e.g., from age 40 to 41).

2.4. Grade-Area Classification System: Institutionalizing Regional Variation

Japan's Public Assistance system incorporates a grade-area classification scheme designed to guarantee a nationally balanced minimum standard of living while taking into

account regional differences in living conditions and price levels. Under this scheme, municipalities are classified into six categories—Grade-1 Area-1, Grade-1 Area-2, Grade-2 Area-1, Grade-2 Area-2, Grade-3 Area-1, and Grade-3 Area-2—and standard benefit amounts, including livelihood assistance, are set separately by area category (Table 1). In general, Grade-1 Area-1, which has the highest benefit standard, includes Tokyo's special wards and other major metropolitan municipalities, whereas Grade-3 Area-2, which has the lowest standard, consists mainly of smaller rural municipalities.

The legal basis of the grade-area classification system lies in the principle that benefit standards should be determined in light of actual living conditions in each region. The system initially consisted of three categories—Grade-1, Grade-2, and Grade-3—but a 1987 revision subdivided each into two, creating the current six-category structure. At that time, large-scale reassignment of designated areas was avoided to prevent abrupt changes in Public Assistance standards.[2]

Although the method used to determine differences in benefit levels across grade areas was adjusted in 2013 and again in 2018, the grade-area designations themselves were not changed. Accordingly, apart from exceptional cases such as municipal mergers,[3] municipalities' assigned grade areas have remained broadly fixed over a long period. This institutional stability implies that, for the purposes of this paper, regional differences in benefit standards can be treated as a stable institutional feature. At the same time, such stability suggests that the current grade-area classifications may still reflect historical regional conditions and may not always align fully with present-day local living conditions in some areas.

2.5. Revision of the Livelihood Assistance Standard

Since 1984, the livelihood assistance standard has been set under the Level Balance Method, a framework intended to adjust benefit levels so as to maintain balance with consumption levels among general households. At the same time, the possibility that the livelihood assistance standard may exceed consumption levels of low-income nonrecipient households has remained a persistent policy and social concern.

In this context, the revision implemented during 2013–2015 is central to this paper. Beginning in August 2013, the government revised the livelihood assistance

[2] This description draws on the MHLW website, "On the Review of the Grade-Area Classification in Public Assistance Standards" (December 6, 2021) (https://www.mhlw.go.jp/content/12002000/000865549.pdf).

[3] When municipalities merge, if a municipality with a higher grade-area classification (and thus a higher benefit standard) merges with one with a lower classification, the merged municipality is assigned the higher grade-area classification. As a result, the Public Assistance standard is raised in areas that had previously been assigned the lower grade-area classification (Yugami et al., 2024). During the sample period examined in this paper, one such case was the April 2014 merger between Tochigi City and Iwafune Town, which resulted in an upward reclassification of the grade-area standard. Recipients residing in these municipalities are excluded from the analysis sample.

standard based on (i) adjustments reflecting declines in prices and (ii) corrections to divergences in living-cost levels relative to low-income nonrecipient households. The revision included cuts of up to 10% for some households, with an average reduction of approximately 6.5%.[4] The reform was widely perceived to have substantial effects on recipient households and prompted lawsuits across the country opposing the reductions. To mitigate abrupt impacts, the cuts were phased in gradually over roughly three years as a transitional measure.

Regarding the litigation, the Supreme Court decision in June 2025 revoked the benefit reductions attributable to the component that relied solely on the rate of price change, deeming that portion unlawful. By contrast, it upheld the divergence-correction component as lawful, recognizing a reasonable relationship with statistical evidence. Thus, the revision to the livelihood assistance standard is both a salient social controversy concerning the legality and legitimacy of program operation and a policy shock that can be used to assess behavioral responses among recipients. The purpose of this paper is not to assess the normative validity of the revision itself, but rather to identify how this policy shock affected recipients' work behavior in practice.

Figure 4-1 shows the livelihood assistance standard by grade-area category for single recipients aged 41–59 classified as "other households," measured in July of each year (consistent with the July timing of the data used below). In practice, the increase in livelihood assistance observed from 2013 to 2014 in Grade-2 Area-2, Grade-3 Area-1, and Grade-3 Area-2 reflects adjustments associated with the consumption tax increase. Figure 4-1 reveals two broad groups: (i) Grade-1 Area-1, Grade-1 Area-2, and Grade-2 Area-1 exhibit declines, whereas (ii) Grade-2 Area-2, Grade-3 Area-1, and Grade-3 Area-2 exhibit increases. Figure 4-2 reports changes relative to 2012. In the first group, the largest decline is about 2.4% in Grade-2 Area-1, whereas the second group, especially Grade-3 Area-2, experiences increases exceeding 2.4%. For Grade-2 Area-2, the net change is a very small increase of less than 0.3%, implying an almost flat trajectory. Several previous studies exploit large discontinuities at age thresholds or major policy reforms, with benefit changes that are considerably larger in magnitude. Examples include a 55% increase at the age-25 threshold in Denmark, a 175% increase at the age-30 threshold in Quebec, and roughly a 40% reduction in Danish refugee benefits. Although the reduction in Public Assistance benefits in Japan received substantial public attention, the size of the shock in the present setting is only about a 2% benefit cut, which is modest relative to these other policy shocks.

[4] This description also draws on the MHLW website, "On the Revision of the Public Assistance System." (https://www.mhlw.go.jp/stf/shingi/2r9852000002udvb-att/2r9852000002uf0t.pdf)

In sum, although the revision was implemented nationwide, the direction and magnitude of changes in the livelihood assistance standard varied across grade-area categories and household attributes. This pattern likely reflects the combination of price-related adjustments, which pushed standards downward, and balancing adjustments across attributes and regions, which could either raise or lower standards. In the empirical analysis, the mechanically determined standard changes by grade-area category and household attribute provide a key source of variation for identifying how changes in benefit levels affect recipients' earnings behavior.

3. Predicted Labor Supply Responses to Changes in Benefit Levels

As in prior work (e.g., Bargain and Jonassen, 2024), the theoretical framework of this study is a static rather than a dynamic model of labor supply. Public Assistance receipt begins only after a strict means test, under which asset holdings are typically extremely limited, and benefit levels are set to guarantee a minimum standard of living. Recipients therefore make consumption decisions under tight within-period budget constraints and have limited scope to smooth consumption across periods through asset holdings. In this institutional setting, it is natural to model responses to changes in benefit levels as contemporaneous adjustments in work choices.

Figure 5 illustrates the budget constraint and the labor–leisure choice before and after a reduction in Public Assistance benefits. In practice, the revision also coincided with a change in the basic disregard. To simplify the discussion, however, this section focuses only on the effect of the reduction in benefit levels.

In Figure 5, the horizontal axis measures leisure consumed, and the vertical axis measures total consumption (income) under the Public Assistance system. In the absence of Public Assistance, the budget constraint is the straight line AB, with a slope equal to the individual wage rate (W). Under Public Assistance, before the benefit cut, the budget constraint is given by the piecewise-linear schedule ACDEB. Here, AC represents the guaranteed minimum living standard. The kink at point D is where the implicit marginal tax rate changes (from 0% to 90% in the post–August 2013 regime), and point E denotes the point at which the individual exits Public Assistance.[5] In a simple static labor supply model, the individual maximizes utility subject to this budget set. Conditional on supplying positive labor, the optimum may lie at points such as C or D. Theoretically, recipients may bunch around kink points (Saez, 2010; Hayashi, 2023). If the offered wage

[5] Strictly speaking, exiting Public Assistance entails new liabilities, such as taxes and social insurance contributions. As a result, near the eligibility cutoff, the level of consumption may be higher when an individual remains eligible for Public Assistance than when the individual becomes ineligible. For simplicity, Figure 5 abstracts from this complication.

is below the reservation wage, nonparticipation—corresponding to point C, with maximum leisure and zero hours of work—is optimal.

When the livelihood assistance level is reduced, the budget constraint shifts inward to AFGHB. In this case, AF represents the new minimum living standard. As is well known from the traditional analysis of income-maintenance programs, a reduction in Public Assistance benefits is predicted to increase labor supply. In the example shown in Figure 5, an individual who initially chooses point C, corresponding to zero hours of work, may, after the benefit cut, choose point G, working while remaining on Public Assistance, or point I, exiting Public Assistance. It is also possible, however, that the individual does not change hours or chooses a point along FG or GH.

In particular, the movement from point C to point G is especially plausible because it occurs within the range in which the implicit marginal tax rate is zero. In this range, additional earnings are fully disregarded and therefore translate relatively directly into higher disposable income. The work incentive is thus stronger for recipients who initially have zero earnings than for those who are already working above the disregard threshold. This is an extensive-margin response.

Moreover, an individual who initially chooses point D, working while on Public Assistance, may, after the cut, choose point I, exiting Public Assistance, although the individual may instead keep hours unchanged or choose a point along GH. This corresponds to an intensive-margin response.

Thus, a reduction in the livelihood assistance level is predicted to increase both earned income and the probability of exiting Public Assistance. Put differently, the theoretical prediction is that benefit generosity and employment are negatively related.

4. Data

This study uses individual-level microdata from the Ministry of Health, Labour and Welfare (MHLW) Survey on Public Assistance Recipients. As described in Section 4.2, the data are cleaned and checked for internal consistency prior to estimation. The survey is a general statistical survey conducted under Japan's Statistics Act and has been implemented annually since 2012. Survey forms are collected through welfare offices nationwide and contain information on recipients' characteristics, benefit receipt, and income. Because the data are based on administrative records, measures of receipt status and income are recorded with relatively high precision; for example, earned income is observed in units of one yen. The same data source has been used in recent studies such as Hayashi (2023), Yuda (2023), and Matsumoto (2025).

4.1. Data Structure and Unit of Observation

The survey is conducted once per year and collects both stock information as of July 31 (e.g., household composition and benefit types received) and flow information for July (e.g., earned income). Thus, when the same individual continues to receive Public Assistance for multiple years, annual records can be linked to construct panel data for continuing recipients. In this study, microdata that contain information on all household members are used to track changes in employment-related outcomes at the individual level.

The data have two important limitations. First, because the survey covers only individuals who are receiving Public Assistance at the time of the survey, individuals who exit the program are no longer observed in subsequent years. The panel constructed in this study is therefore conditional on continued receipt, and post-exit outcomes cannot be tracked. Second, individual identifiers are assigned at the welfare-office level. If a recipient moves to a different welfare-office jurisdiction or exits Public Assistance and later re-enters the program, the same person may be recorded under a different identifier.

These issues are unlikely to be quantitatively large. Relocation by Public Assistance recipients is generally approved only under limited circumstances, such as medical necessity or evacuation from domestic violence, and is not easily authorized. Moreover, because the primary analysis focuses on single men in their 40s and 50s without health problems, such circumstances are likely to be relatively uncommon in the main sample. It is therefore unlikely that recipients systematically relocate to municipalities where benefit reductions are smaller.[6] Re-entry into the program also appears to be relatively uncommon: among "other households," the share of households with prior experience of Public Assistance receipt is 19.6%.[7] These considerations suggest that the influence of such issues on the analysis is likely to be limited.

For these reasons, the linked panel constructed from annual records is unbalanced, with observation length varying across individuals. I use the unbalanced panel as the baseline sample to retain as much information as possible. However, because the survey observes only individuals receiving Public Assistance at the time of the survey, attrition mainly reflects exit from the program. If such exit is systematically related to benefit changes, the estimates may partly reflect changes in sample composition rather than behavioral responses within a fixed population.

As a robustness check, I also estimate the models using a balanced panel restricted to individuals observed continuously over a fixed period. This examines

[6] According to the Public Assistance Handbook.
[7] https://www.mhlw.go.jp/content/12002000/000865549.pdf

whether the results are sensitive to differences in observation length and changes in sample composition. However, the balanced panel does not address the absence of post-exit outcomes; by construction, it excludes individuals who leave Public Assistance during the analysis period and therefore conditions more strongly on continued receipt.

Thus, both sets of estimates should be interpreted as effects for recipients who remain observed in the Public Assistance data, rather than as effects on labor-market outcomes after program exit.

4.2. Data Cleaning and Consistency Checks

Some records raise concerns about internal consistency. For example, although grade-area category changes should typically accompany a change in welfare-office jurisdiction (and thus a new identifier), a small number of cases show grade-area changes while the identifier remains unchanged. In addition, when annual records are linked by identifier, age should generally increase by one year between survey waves; however, some observations violate this pattern. These inconsistencies may reflect data-entry errors or linkage issues. Identifiers with clear contradictions in basic attributes such as age trajectories and grade-area classification are therefore excluded, ensuring the internal consistency of the analysis sample.

I also exclude individuals with non-labor income other than earned income. Such income is likely to include private transfers from relatives or other sources. Under the Public Assistance system, private transfers are fully counted as income, so an additional yen of transfer income reduces Public Assistance benefits by one yen. As a result, there is little financial incentive for relatives or others to provide such transfers while the recipient remains on Public Assistance. Consistent with this institutional feature, individuals with non-labor income account for less than 10 % of the main sample. Therefore, excluding these observations is unlikely to have a large effect on the analysis, while it helps focus the sample on recipients whose observed income changes mainly reflect labor-supply behavior.

4.3. Definition of the Analysis Sample

Because the purpose of this study is to estimate how revisions in the livelihood assistance standard affect work behavior, the analysis focuses on groups with relatively high work capacity. The primary analysis sample consists of recipients in single-person households classified as “other households.” Given discussions that Public Assistance receipt among work-capable men increased after the Global Financial Crisis, the paper reports and interprets results primarily for men.

A further concern is that benefit amounts can change mechanically with age because livelihood assistance schedules are defined over age brackets. The relevant age categories for benefit calculation are 0–2, 3–5, 6–11, 12–19, 20–40, 41–59, 60–69, and 70+ (see Appendix Table A.1). For instance, moving from age 40 to 41 can mechanically change the standard. To avoid confounding from such age-threshold changes, and consistent with the focus on men in their 40s and 50s, the primary sample is restricted to ages 41–59.

As robustness checks, results are also reported for alternative samples. First, the same design is estimated for an analogous female sample. Second, for single-mother households, benefit standards can vary mechanically with household composition and children's number and ages. To reduce heterogeneity in household structure as much as possible, the sample is restricted to two-person households consisting of one mother and one child. The sample is further restricted to cases in which the child has reached school age (corresponding to elementary, junior high, or high school ages). Children's age categories are constructed consistently using the statistical age definition based on the start of the fiscal year (e.g., age as of April 1). Under this convention, age 18 corresponds to an age at which the child has already graduated from high school. To account for mechanical variation in standards, four specifications are estimated, defined by the mother's age category (20–40 vs. 41–59) and the child's age category (6–11 vs. 12–17). In addition, because some high-school-age children may earn labor income through part-time work, households including a child with positive earned income are excluded from the sample.

Finally, to exclude recipients whose labor supply is extremely constrained, individuals assessed as being in poor health are dropped, and the sample is restricted to recipients living in the community (i.e., not residing in institutions). This restriction improves the interpretability of the estimated effects as behavioral responses among recipients for whom labor supply adjustment is feasible.

4.4. Definition of Key Variables

The primary outcome is earned income, observed in units of one yen.[8] Because the panel tracks only individuals receiving Public Assistance, disappearance from the panel can be treated as an exit from Public Assistance in an observational sense. However, exit reasons are not well identified. While terminations occurring in July are observed, most reasons

[8] I also conduct an analysis using a positive earnings indicator as the outcome variable. The results are somewhat less likely to be statistically significant than those obtained when using the amount of earned income as the outcome, but they do not differ substantially overall. See footnote 17 for details.

are coded as "other," making the substantive reason largely unknown. It is therefore inappropriate to equate panel attrition with self-sufficiency through employment.

Indeed, according to MHLW published statistics, among single-person "other households," only about one-third of terminations are attributed to increases in earned income. Fujiwara and Yuzawa (2010) also note that termination reasons can include "moving out," "voluntary withdrawal," "arrest/detention," and "non-compliance with guidance/instructions," among others, and thus do not necessarily imply employment-based independence.

Given these considerations, the main analysis uses earned income as the outcome.[9] As a supplementary analysis, an "exit from Public Assistance" dummy is defined in the year prior to panel attrition (i.e., the last observed year before the individual disappears). Restricting attention to the group for which employment-based exit is comparatively plausible, single men aged 41–59 in "other households," the paper provides suggestive evidence on whether benefit reductions affected the probability of exit, which may include employment-based independence.

5. Empirical Strategy

5.1. Identification: Event-Study Difference-in-Differences Using Grade-Area Variation

This study exploits variation in the 2013–2015 revision of Japan's livelihood assistance standard across grade-area categories. Although the revision was implemented under the same national Public Assistance program, the direction and magnitude of changes in benefit standards differed by grade area. The analysis uses this institutional variation to examine whether a relative reduction in guaranteed income was followed by changes in recipients' recorded earnings.

The main comparison is between Grade-2 Area-1 and Grade-2 Area-2. Grade-2 Area-2 is used as the control group because its livelihood assistance standard was approximately unchanged over the analysis period. Grade-2 Area-1 is used as the primary treatment group because it is adjacent to Grade-2 Area-2 in the grade-area classification and experienced a relative decline in the livelihood assistance standard. In the main sample, the standard in Grade-2 Area-1 declined by about 2.4%, or roughly ¥1,800 per month, relative to Grade-2 Area-2. The main estimand is therefore whether this modest

[9] Ideally, hours worked would be used as the outcome in light of the labor-supply framework. However, the data do not report hours worked. As a supplementary check, I proxy monthly hours worked by dividing earned income by the applicable minimum wage. Because not all Public Assistance recipients are paid at the minimum wage, this proxy should be interpreted with caution. The results are qualitatively similar to those obtained using earned income as the main outcome.

relative reduction in benefit standards increased recipients' earned income.

This comparison is chosen to reduce concerns that the estimated effects reflect broader differences in local economic conditions rather than the reform itself. Comparisons involving Grade-1 areas are more likely to combine the reform with larger differences in urbanicity, labor-market conditions, and baseline earnings. Comparisons involving Grade-3 areas are also less central to the main hypothesis because some of these areas experienced relative benefit increases. Estimates using alternative grade areas are therefore reported as robustness checks.

The empirical specification is an event-study difference-in-differences design with individual fixed effects. This framework has two advantages. First, it allows pre-reform dynamics to be examined directly, providing a check on whether the treatment and control groups followed similar trends before the reform. Second, because the benefit revision was phased in over roughly three years, the event-study specification allows the analysis to trace dynamic responses and examine whether any earnings response emerged immediately or with a lag.

5.2. Study Period and Policy Timing

Individual-level records from the Survey on Public Assistance Recipients are available from 2012 onward. The analysis uses data from 2012 through 2018. This period captures the effects of the 2013–2015 revision while avoiding later policy changes as much as possible. In particular, another revision, including benefit increases, was implemented in October 2018 and may confound the identification of the policy shock studied here. Because the survey is conducted in July each year, the 2018 survey is still included.

5.3. Estimation Model

The following individual fixed-effects event-study difference-in-differences model is estimated:

$$Y_{it} = \alpha_i + \lambda_t + \sum_{k \in K, k \neq 0} \beta_k \left(D_i \times 1[t - 2013 = k]\right) + \gamma' X_{it} + \varepsilon_{it}, \quad (1)$$

Here, Y_{it} denotes either individual i's earned income in year t, measured in units of 10,000 yen, or an exit dummy. D_i is an indicator equal to one for the treatment group and zero for the control group. In the main specification, the treatment group is Grade-2 Area-1 and the control group is Grade-2 Area-2. The term $1[t - 2013 = k]$ is an event-time indicator, where $k < 0$ denotes pre-reform years and $k > 0$ denotes post-reform years. The year 2013, immediately before the reform is reflected in the July-

based survey, is omitted as the reference category.

The individual fixed effect α_i absorbs time-invariant individual characteristics, while the year fixed effect λ_t absorbs shocks common to all recipients, such as aggregate economic conditions and nationwide institutional changes. X_{it} is a vector of time-varying controls, and ε_{it} is an error term.

The coefficients of interest are β_k. Pre-reform estimates provide evidence on whether the treatment and control groups exhibited differential trends before the reform. Post-reform estimates indicate whether the relative reduction in benefit standards was followed by changes in earned income or exit from Public Assistance, and how these effects evolved over time. When alternative treatment groups with relative benefit increases are used in robustness checks, the interpretation of the coefficients is reversed.

Because welfare offices serve as the administrative interface for Public Assistance recipients and may share unobserved local features, standard errors are clustered at the welfare-office level. Heteroskedasticity-robust clustered standard errors are reported. In the figures, points represent event-study estimates and error bars indicate 95% confidence intervals.

5.4. Control Variables and External Data

The control vector X_{it} includes policy-related factors and local labor market conditions that may affect earned income, insofar as they are observable in the data. Specifically, the analysis uses: (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year.

The employment readiness support program provides long-term and comprehensive assistance for Public Assistance recipients who face difficulties entering regular employment immediately, ranging from rebuilding daily routines to improving social adaptation and the basic capabilities required for work. It is an optional program under the legal framework of self-reliance support for the needy, under which three-quarters of the program cost is borne by the central government, while implementation is left to local governments. Because participation is not mandatory, individual-level participation cannot be observed in the data. Nevertheless, municipalities that implement the program may be more effective in promoting employment (Matsumoto, 2022). Data on the employment readiness support program are obtained from the MHLW website,

"Municipal Assistance Achievements, etc."[10]

Data on minimum wages are obtained from the MHLW website, "National List of Minimum Wages by Region."[11]

Ideally, local prices would be controlled for using municipality-level price indices, but such data are not available. Instead, prefecture-level price indices and population density per habitable land area are used, both of which are employed by the Social Security Council of the MHLW as proxies for municipal price levels when discussing Public Assistance standards.[12] The Council also refers to unemployment rates, but because annual municipality-level panel data on unemployment are unavailable, the job openings-to-applicants ratio is used instead as an indicator of macroeconomic and local labor demand conditions.

For local prices, prefecture-level data from the Retail Price Survey (Structural Section), published on e-Stat by the Statistics Bureau, are used, and the composite index excluding rent is included as a control variable.[13] This index is normalized so that the national average in 2020 equals 100. Data on habitable land area are taken from the System of Social and Demographic Statistics on e-Stat,[14] and population data are taken from the Basic Resident Register-based Survey of Population, Population Dynamics and Households, also available on e-Stat.[15] Based on these data, population density per habitable land area is calculated as population divided by habitable land area, and its logarithm is used in the analysis. The job openings-to-applicants ratio is constructed from July data for each year at the Public Employment Security Office ("Hello Work") level, obtained by application to the Employment Policy Division of the Employment Security Bureau, MHLW.

5.5. Descriptive Statistics

Appendix Table A.2 reports descriptive statistics by grade area for recipients aged 41–59 in single-person "other households." There is little variation across grade areas in the exit dummy or age. By contrast, Grade-1 Area-1 and Grade-1 Area-2, which correspond primarily to large metropolitan areas in Japan, exhibit generally higher levels of employment income, the welfare-office employment readiness program dummy, the log

[10] Because "Municipal Assistance Achievements, etc." is not available for 2015, the 2016 value is used as a proxy (https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000059401_00004.html).
[11] https://www.mhlw.go.jp/content/11200000/001309125.pdf
[12] https://www.mhlw.go.jp/content/12002000/001022409.pdf
[13] https://www.stat.go.jp/data/kouri/kouzou/index.html
[14] https://www.e-stat.go.jp/stat-search/files?page=1&toukei=00200502
[15] https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&toukei=00200241&tstat=000001039591&cycle=7&tclass1=000001039601&tclass2val=0

of the minimum wage, the price level, the log of population density in habitable land, and the job openings-to-applicants ratio than the other grade areas. The remaining grade areas are relatively similar to one another. For reference, Figure 6 plots trends in employment income by grade area and shows that Grade-1 Area-1 has the highest level, with employment income tending to be somewhat higher in more urban grade areas.

Table 2 presents a more detailed balance table for the main comparison in this study, between Grade-2 Area-1 and Grade-2 Area-2, as of 2013, immediately before the policy change. The balance tests indicate that the two groups are not identical in terms of observed characteristics. In particular, the standardized differences are relatively large for the price level, log population density per habitable land area, and the job openings-to-applicants ratio. Such differences are not surprising, since grade-area classifications are institutional categories intended to reflect regional living conditions. Accordingly, the identifying assumption is not that the treatment and control groups are identical in levels, but that, after conditioning on individual fixed effects and time-varying regional factors, their earned income would have followed parallel trends in the absence of the reform.

In addition, Figure 7 plots the distribution of monthly earned income below ¥100,000. The figure shows that recipients with zero earned income account for a disproportionately large share of the sample. Because this mass at zero makes it difficult to see the distribution among those with positive earnings, the figure also presents the distribution excluding recipients with zero earned income. As discussed by Hayashi (2023), the earnings disregard threshold increased around the 2013 reform, expanding the range over which the implicit marginal tax rate is zero. Consistent with this institutional change, the distribution appears to shift slightly around the new threshold after the reform. However, the change is very small overall, and the distribution of positive earned income remains largely stable before and after the reform.

5.6. Addressing the Concurrent Revision of the Earnings Disregard

One potential concern is that even small differences in the pre-reform distribution of earned income across grade areas may partly capture the effects of the revision to the earnings disregard, rather than changes in the livelihood assistance standard itself.[16] This concern is particularly relevant because the disregard reform

[16] Another policy change implemented around the same period was the introduction of the Employment Independence Benefit (Shuro Jiritsu Kyufukin) on July 1, 2014. The objectives of this program were twofold: (1) to strengthen incentives for public assistance recipients to exit welfare through employment, and (2) to support recipients' living conditions immediately after exit, when they may face unstable circumstances due to tax and social insurance premium burdens, thereby preventing re-entry into public assistance. However, according to materials from the Ministry of Health, Labour and Welfare, 95.5% of recipients were unaware of the Employment Independence

changed the earnings range over which the implicit marginal tax rate is zero. To address this issue, Section 6.5 separately examines extensive-margin and intensive-margin responses. In particular, the extensive-margin analysis restricts the sample to recipients with zero earned income before the reform. By conditioning on individuals who were initially at the same point in the earned-income distribution, this analysis removes pre-existing differences in positive earnings distributions across grade areas and helps isolate responses to the relative change in the livelihood assistance standard from responses mechanically related to the revision of the earnings disregard.[17]

6. Results and Discussion

6.1. Baseline Results: Effects of the Livelihood Assistance Cut for Single Men Aged 41–59

Figure 8 reports the event-study DID estimates for the main analysis sample: single male recipients aged 41–59 classified as "other households." The treatment group is Grade-2 Area-1, and the control group is Grade-2 Area-2. The outcome is recorded earned income in July. As discussed above, the livelihood assistance standard in Grade-2 Area-1 declined by approximately 2.4%, or about ¥1,800 per month, relative to Grade-2 Area-2, where the standard was approximately unchanged. The purpose of this analysis is therefore to examine whether this modest relative reduction in guaranteed income was followed by changes in recorded earnings among current Public Assistance recipients.

Figure 8(i) reports the estimates using the unbalanced panel, while Figure 8(ii) reports the estimates restricted to the balanced panel. In both panels, each point represents an event-study coefficient, and the error bars indicate 95% confidence intervals. Standard errors are clustered at the welfare-office level. All estimates are reported in Appendix

Benefit until they received an explanation from a welfare office. In addition, 80.7% learned about the program only in the month before benefit termination, in the month of termination, or after termination (https://www.mhlw.go.jp/file/05-Shingikai-12601000-Seisakutoukatsukan-Sanjikanshitsu_Shakaihoshoutantou/0000176355.pdf). These figures indicate that most recipients were not aware of the program in advance. Therefore, while the program may have played some role in supporting recipients immediately after exit and preventing re-entry into public assistance, it is unlikely to have functioned effectively as an ex ante incentive to leave public assistance through employment. Moreover, the Employment Independence Benefit was introduced uniformly nationwide, rather than being implemented only in specific regions or among particular groups of recipients. For this reason, it is unlikely that this policy change substantially biases the estimates in this study, which are based on comparisons across regions and recipient groups. Taken together, because the program was largely unknown to recipients in advance and was introduced uniformly nationwide, it is unlikely to constitute a major confounding factor in this study. Accordingly, this study does not explicitly account for the effects of the Employment Independence Benefit.

[17] When the analysis is restricted to individuals whose earned income was zero only in 2013, the estimates may partly capture mean reversion or a natural recovery from temporary non-employment. As an additional check, I therefore also conduct an analysis restricted to individuals whose earned income was zero in both 2012 and 2013. Compared with the main results presented in Section 6.5, the estimates are somewhat more likely to be statistically significant, and the coefficient size is slightly larger, reaching approximately ¥4,500 per month at its maximum. However, the overall direction of the results remains largely unchanged. This suggests that the main findings are unlikely to be driven primarily by mean reversion or natural recovery from temporary non-employment.

Table A.3.

Before turning to the post-reform estimates, I first examine pre-reform trends. Using 2013 as the reference year, the coefficient for 2012 is not statistically significant. Thus, at least within the observable pre-reform period, there is no clear evidence of differential trends between Grade-2 Area-1 and Grade-2 Area-2. However, because the available pre-reform period is limited to 2012 and 2013, this provides only a limited check of the parallel-trends assumption.

Turning to the post-reform estimates, the unbalanced-panel results in Figure 8(i) show positive coefficients in some post-reform years, with the largest estimate around ¥3,200 per month. However, the pattern is not fully robust across years and sample constructions. In the balanced-panel results in Figure 8(ii), precision declines because the sample is restricted to individuals observed continuously over the analysis period, and the estimates are less stable. Taken together, these results suggest that recorded earnings may have increased in Grade-2 Area-1 relative to Grade-2 Area-2 after the reform, but the average effect in the main sample should be interpreted cautiously.

6.2. Robustness Checks: Heterogeneity Across Groups and Alternative Samples

Robustness results are reported in the Appendix figures. Appendix Figure A.1 shows estimates for single women defined analogously to the main sample. For single women, none of the estimates are statistically significant.

Appendix Figures A.2.1 and A.2.2 report results for mothers in single-mother households, using a definition designed to limit heterogeneity in household structure: two-person households consisting of one mother and one child. After re-estimating the models, none of the estimates for these single-mother household samples are statistically significant.

Appendix Figure A.3 expands the analysis to a younger age group, aged 20–40. In this age range as well, there is no statistically significant effect.

Taken together, these robustness checks provide no clear evidence that the modest reduction in the livelihood assistance standard increased recorded earned income among single women, single-mother households, or younger recipients. This pattern differs from prior studies showing that changes in benefit generosity can affect employment or income among relatively work-capable young single adults and single-parent households. The modest reduction in Public Assistance benefits examined in this paper does not generate statistically significant earnings responses, at least in these alternative samples. This suggests that earnings responses to benefit reductions are not broadly observed among all recipients, but may differ depending on recipient

characteristics.

6.3. Alternative Comparisons Using Other Grade Areas as Treatment Groups

Appendix Figures A.4.1 and A.4.2 keep the control group fixed at Grade-2 Area-2 and replace the treatment group with other grade areas.

When Grade-1 Area-1 or Grade-1 Area-2 is used as the treatment group, the post-reform estimates are all positive, although statistically significant results are limited to some years. However, the pre-reform estimate is negative and statistically significant only in the comparison using Grade-1 Area-1 as the treatment group. In the comparison using Grade-1 Area-2 as the treatment group, there is no statistically significant pre-reform difference, and no clear concern about differential pre-trends is observed. Therefore, the results for Grade-1 Area-1 should be interpreted with caution, whereas the results for Grade-1 Area-2 can be viewed as supplementary evidence consistent with the main analysis.

Grade-3 Area-1 and Grade-3 Area-2 experienced increases in the livelihood assistance standard relative to Grade-2 Area-2. If an income effect dominates, one might expect post-policy estimates to be negative (i.e., higher benefits reducing earned income). In the results, however, estimates are not statistically significant in any year. Thus, within the scope of this study, there is no clear evidence that small benefit increases reduced earned income.

6.4. Exit from Public Assistance

Appendix Figure A.5 replaces the outcome variable with a dummy for exit from Public Assistance and estimates a linear probability model. This exercise is only suggestive, because the survey cannot track individuals after exit and exit reasons are imperfectly identified. The estimates are not statistically significant in any year. Under the data structure available here, there is therefore no clear evidence that benefit cuts increased the probability of terminating receipt (exiting Public Assistance).

6.5. Extensive-Margin Versus Intensive-Margin Responses

The average effects in the main sample are limited, but the earnings response may differ depending on recipients' pre-reform earnings status. In particular, the structure of the earnings disregard implies that a modest reduction in benefit standards may be more likely to generate small earnings responses among recipients with no prior earnings, for whom earnings below the disregard threshold can increase disposable income relatively directly. This section therefore examines whether the change in recorded earnings is

driven by the emergence of earnings among recipients with no pre-reform earnings, that is, the extensive margin, or by higher earnings among recipients who were already working before the reform, that is, the intensive margin. To do so, I split the sample according to whether recorded earned income in July 2013 was zero or positive.[18][19]

Figure 9 reports the estimates for recipients whose recorded earned income was zero in July 2013. The post-reform estimates are generally positive and statistically significant in some post-reform years. The peak increase is about ¥4,000 per month, which is below the post-reform earnings disregard threshold of ¥15,200 and amounts to less than roughly one day of casual work. However, by 2018, five years after the policy implementation, the estimate is no longer statistically significant. This result suggests that the reduction in livelihood assistance standards may have temporarily induced small amounts of recorded earnings among recipients with no pre-reform earnings.

Figure 10 reports the estimates for recipients who already had recorded earned income in July 2013. In this subsample, there is no statistically significant increase in earned income after the reform. Thus, there is no clear evidence that the reduction in livelihood assistance standards increased earnings among recipients who were already working before the reform.

Taken together, these results suggest that the earnings response to the modest reduction in livelihood assistance standards is concentrated along the extensive margin. A benefit reduction of about ¥1,800 per month, or roughly 2.4% of minimum living expenses, appears to have encouraged recipients with no pre-reform earnings to generate small amounts of recorded earnings, while there is no evidence of additional earnings growth among those who already had earnings before the reform.

6.6. Summary and Discussion

Taken together, the results suggest that a modest reduction in the livelihood assistance standard may increase recorded earnings for some recipients, but the effect is limited. Among single men aged 41–59 classified as "other households," the post-reform estimates are positive in some years, with the largest increase reaching about ¥3,200 per month. However, the estimates are not statistically significant in all years, and they are

[18] For reference, I also conducted an alternative split based not simply on whether recipients were working in 2013, but on whether their earned income in 2013 fell in the range of ¥0–¥15,200 or was at least ¥15,200. The results are essentially unchanged from those obtained when the sample is divided by whether recipients were working in 2013.

[19] If the results are interpreted as an extensive-margin response, it is also natural to consider using a positive earnings indicator as the outcome variable. As a supplementary check, I therefore estimate the same specification using a positive earnings indicator as the outcome. The results are somewhat less likely to be statistically significant than those obtained using the amount of earned income as the outcome, but they do not differ substantially overall. In terms of coefficient magnitudes, the estimates imply that the reduction in livelihood assistance standards increased employment participation by up to about 5 percentage points.

no longer significant in 2018. The result should therefore be interpreted as a small and temporary earnings response rather than a persistent increase in labor supply.

A clearer pattern emerges when the sample is divided by pre-reform earnings status. Among recipients whose recorded earnings were zero in July 2013, earnings increase in some post-reform years. The largest increase is about ¥4,000 per month, which is below the post-reform earnings disregard threshold of ¥15,200 and amounts to less than roughly one day of casual work. However, this effect is also no longer statistically significant in 2018. By contrast, there is no clear evidence of an increase among recipients who already had recorded earnings before the reform.

This heterogeneity is consistent with the nonlinear budget set created by the earnings disregard. Under the post-reform schedule, monthly earnings up to ¥15,200 are fully disregarded, so additional earnings within this range translate relatively directly into higher disposable income. For recipients who already had earnings, by contrast, much of any additional income may be offset by benefit reductions, weakening incentives to increase earnings further. The results therefore point to a small compensatory response at the bottom of the earnings distribution, rather than a large shift toward stable work or exit from Public Assistance.

The robustness and heterogeneity analyses show no statistically significant increase in recorded earnings among single women, single-mother households, or younger recipients. This suggests that earnings responses to benefit reductions are not broadly observed among all recipients and may differ depending on recipient characteristics. In addition, comparisons involving grade areas where benefit standards increased show no statistically significant negative effects on recorded earnings. Overall, the findings suggest that a modest reduction in guaranteed income may induce small and temporary recorded earnings only among recipients with no pre-reform earnings.

7. Conclusion

This paper uses the 2013–2015 downward revision of the livelihood assistance standard in Japan's Public Assistance program as a policy shock and examines how reduced benefit generosity affects recipients' recorded earnings and exit from Public Assistance. Under Public Assistance, benefits are calculated as the shortfall between minimum living expenses and household income. As a result, additional earnings generally reduce benefit payments, and the extent to which higher earnings translate into higher disposable income depends on the earnings disregard and the implicit marginal tax schedule.

The empirical analysis exploits variation in changes in the livelihood assistance standard across grade-area categories. The main event-study difference-in-differences

specification compares Grade-2 Area-1, where the standard declined by about 2%, with Grade-2 Area-2, where the standard was approximately unchanged. The main analysis sample consists of single men aged 41–59 classified as "other households," a group for whom earnings adjustment is relatively plausible. In the Appendix, I also examine single women, mothers in single-mother households, younger recipients, alternative grade-area comparisons, and exits from Public Assistance.

The main findings can be summarized in three points. First, in the main sample, recorded earnings increased in some post-reform years, but the effects are not consistently statistically significant and are difficult to interpret as a persistent increase in labor supply. Second, and more importantly, the earnings response is concentrated among recipients with zero pre-reform earnings; even at its largest, the increase is about ¥4,000 per month, a small amount within the earnings-disregard range. By contrast, there is no clear increase among recipients who already had earnings before the reform. Third, additional analyses for single women, single-mother households, younger recipients, alternative grade-area comparisons, and exits from Public Assistance do not substantially alter the main conclusions.

Taken together, the results suggest that a modest reduction in the livelihood assistance standard did not generate broad or persistent increases in earned income in the observed recipient sample. Instead, it may have induced a small compensatory earnings response at the bottom of the earnings distribution among recipients with no pre-reform earnings. Compared with prior studies that examine large benefit changes or sharp eligibility discontinuities, the policy variation studied here is small. Even so, the results suggest that such a small change can generate a limited behavioral response in the form of very low recorded earnings below the disregard threshold. At the same time, because the magnitude is less than roughly one day of casual work, it should be understood as a limited adjustment rather than a substantial movement toward stable employment or exit from Public Assistance.

This interpretation is consistent with the institutional structure of the earnings disregard. Under the post-reform schedule, monthly earnings up to ¥15,200 are fully disregarded, so small amounts of earnings within this range translate relatively directly into higher disposable income. By contrast, additional earnings above this range are more likely to be offset by reductions in benefits, which may weaken incentives to increase earnings further.

These findings have two policy implications. First, benefit reductions alone have clear limits as an employment-promotion tool within a gap-filling assistance program. If the goal is to encourage sustained work, policy designs that reduce effective marginal tax

rates and allow recipients to retain a larger share of additional earnings may be important. Second, because earnings responses may differ by recipient characteristics and pre-reform work status, policy design should account for heterogeneity among Public Assistance recipients rather than treating them as a homogeneous group.

This study has several limitations. First, because the data do not track individuals after they leave Public Assistance, the analysis cannot evaluate post-exit employment, income, or longer-term independence. Second, the mechanisms underlying heterogeneity by age, gender, and household type remain only partially understood. For example, the data used here do not include information on educational attainment, work history, health status beyond administrative household classification, or local job opportunities. Further analysis using richer data would be useful for understanding which recipients are able to respond to changes in benefit generosity through recorded earnings.

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Table 1. Examples of Municipalities by Grade-Area Classification

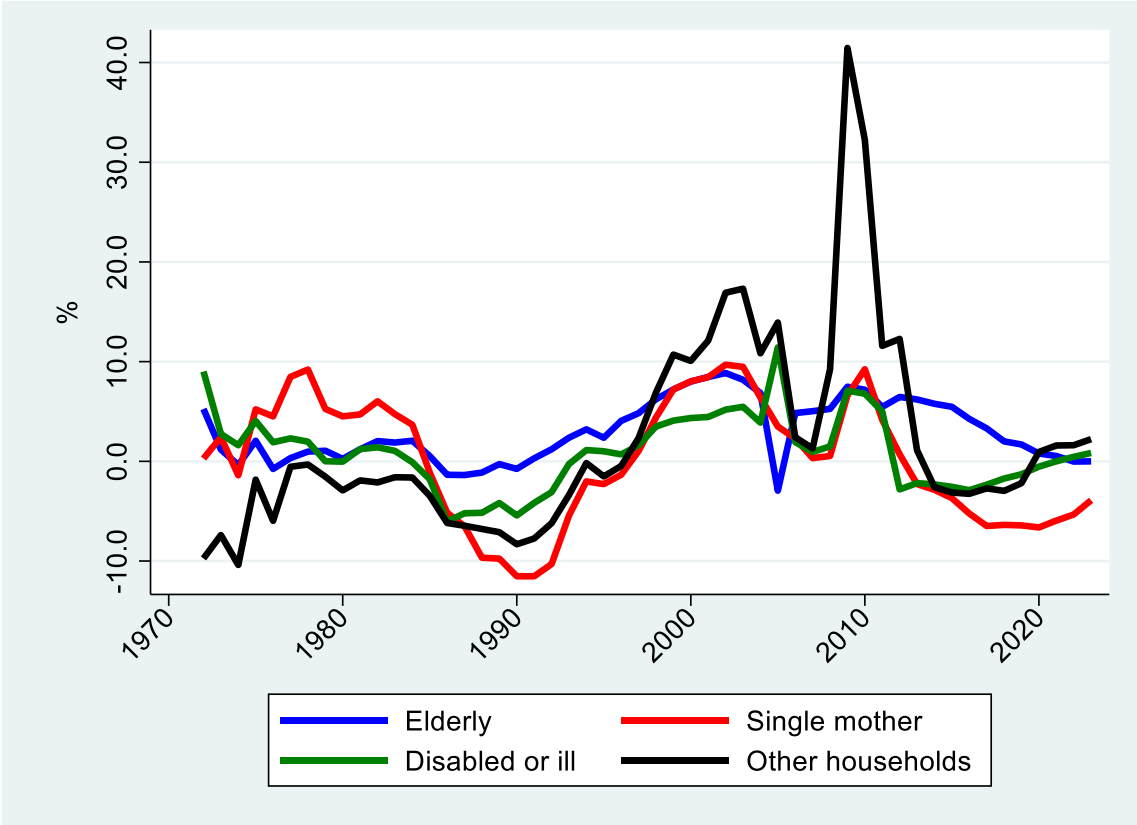
Grade-Area Classification	Example of Municipality
Grade-1 Area-1	Special wards of Tokyo, Yokohama City, Osaka City, etc.
Grade-1 Area-2	Sapporo City, Chiba City, Fukuoka City, etc.
Grade-2 Area-1	Kanazawa City, Shizuoka City, Kochi City, etc.
Grade-2 Area-2	Nagaoka City, Mishima City, Sasebo City, etc.
Grade-3 Area-1	Hirosaki City, Fukuchiyama City, Imabari City, etc.
Grade-3 Area-2	Yuki City, Sasayama City, Uwajima City, etc.; some towns and villages are also included.

Note: Prepared with reference to the MHLW website, "Regional Differences in the Public Assistance System" (https://www.mhlw.go.jp/stf/shingi/2r9852000001h27t-att/2r9852000001h2a6.pdf).

Table 2. Descriptive Statistics for Single Recipients Aged 41–59 in "Other Households," 2013

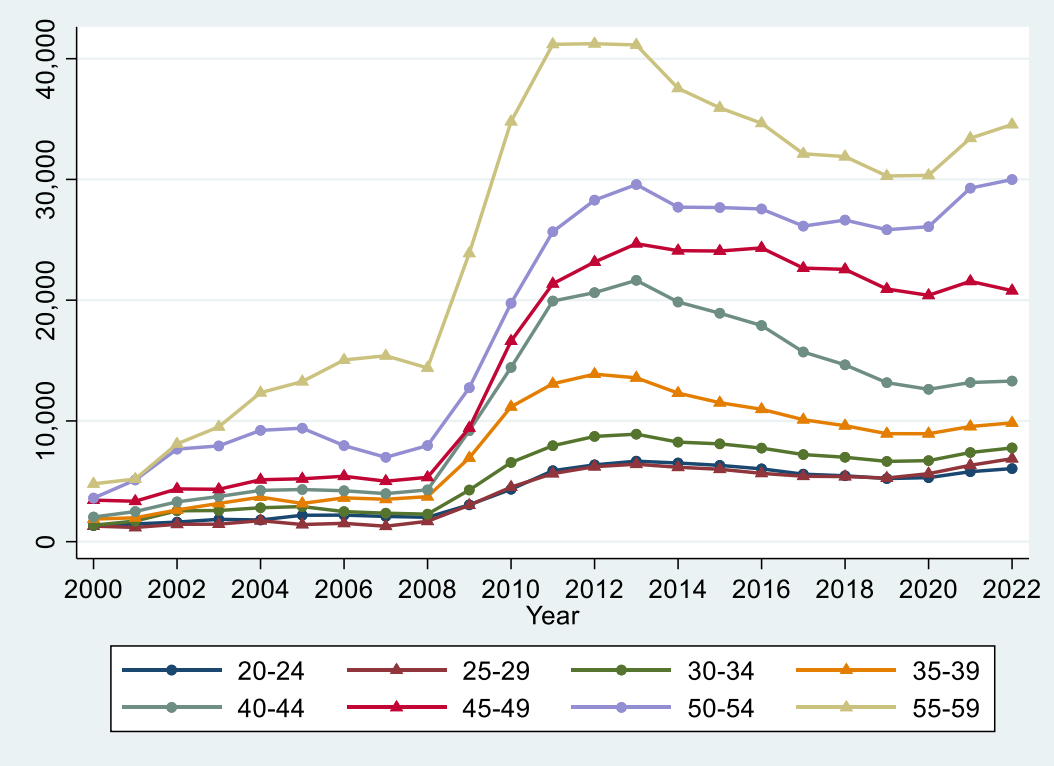
Variable	Grade-2 Area-1		Grade-2 Area-2		Difference	Std. diff.	p-value
	Mean	SD	Mean	SD			
Employment income	0.94	2.69	0.75	2.37	0.19	0.08	0
Exit dummy	0.35	0.48	0.36	0.48	-0.01	-0.01	0.51
Age	52.01	5.38	52.54	5.28	-0.52	-0.1	0
Welfare office employment readiness program dummy	0.03	0.16	0.02	0.15	0.01	0.03	0.16
Log minimum wage	6.56	0.07	6.56	0.04	0	-0.07	0.01
Price level	93.06	1.04	92.44	0.8	0.62	0.67	0
Log population density (habitable land)	7.63	0.64	7.33	0.65	0.31	0.48	0
Job openings-to-applicants ratio	0.89	0.26	0.81	0.3	0.07	0.26	0
N	11,619		2,491				

Figure 1. Year-on-Year Growth Rate (%) in the Number of Public Assistance Recipient Households, by Household Type



Note: The vertical axis shows the number of households receiving Public Assistance in the current year divided by the number in the previous year.
Source: MHLW, *Survey on Public Assistance Recipients* (https://www.e-stat.go.jp/stat-search/files?page=1&toukei=00450312&result_page=1).

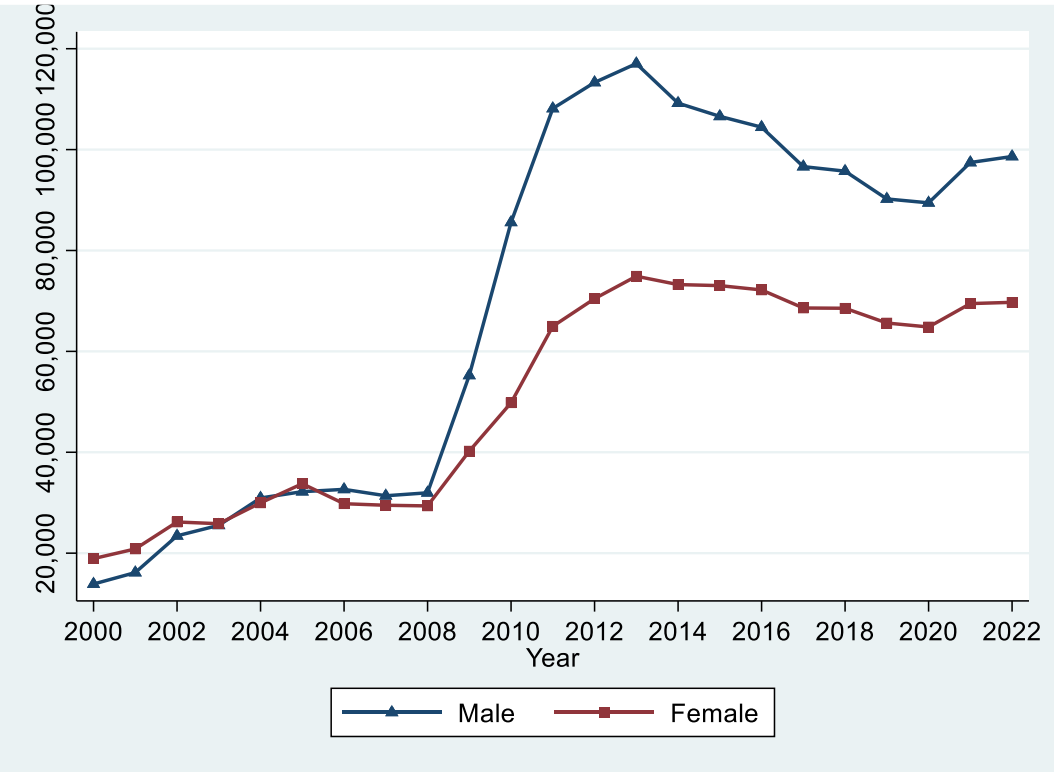
Figure 2. Trends in the Number of Public Assistance Recipients in "Other Households," by Age Group



Note: For example, "20–24" indicates the number of Public Assistance recipients aged 20 to 24.

Source: MHLW, *Survey on Public Assistance Recipients* (https://www.e-stat.go.jp/stat-search/files?page=1&toukei=00450312&result_page=1)

Figure 3. Trends in Public Assistance Recipients in “Other Households,” by Gender



Source: MHLW, *Survey on Public Assistance Recipients* (https://www.e-stat.go.jp/stat-search/files?page=1&toukei=00450312&result_page=1).

Figure 4. Trends in the Livelihood Assistance Standard (Single Recipients in "Other Households," Aged 41–59)

Figure 4-1. Levels (Yen)

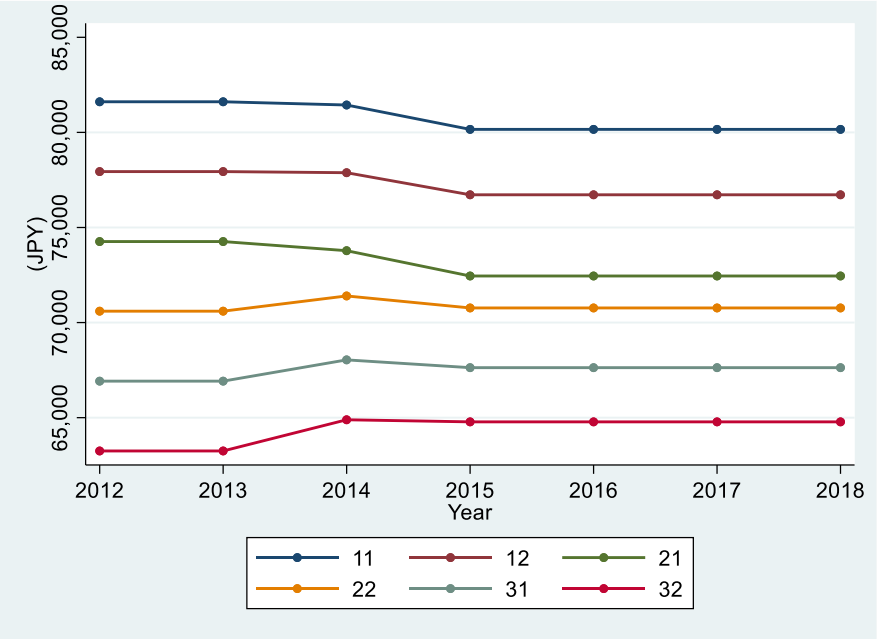
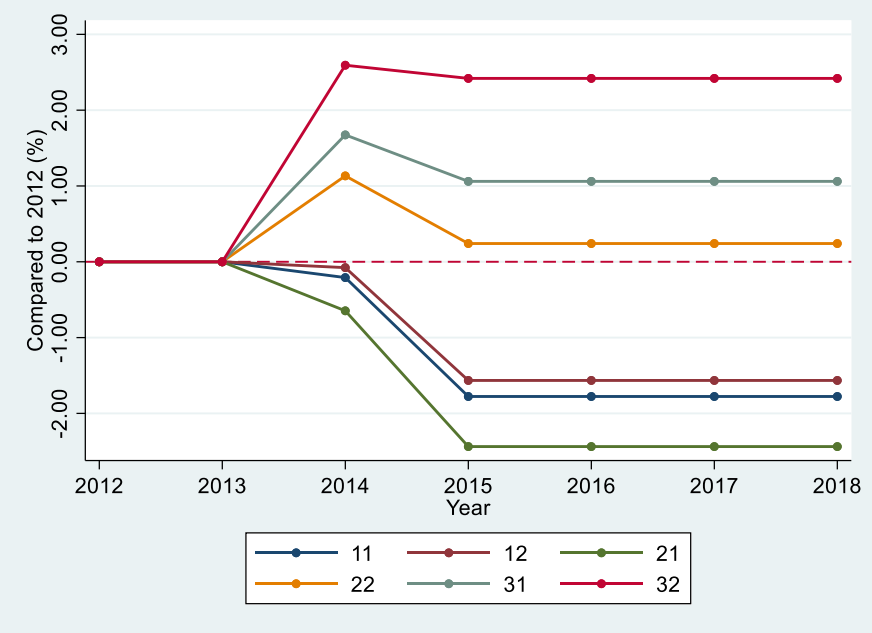
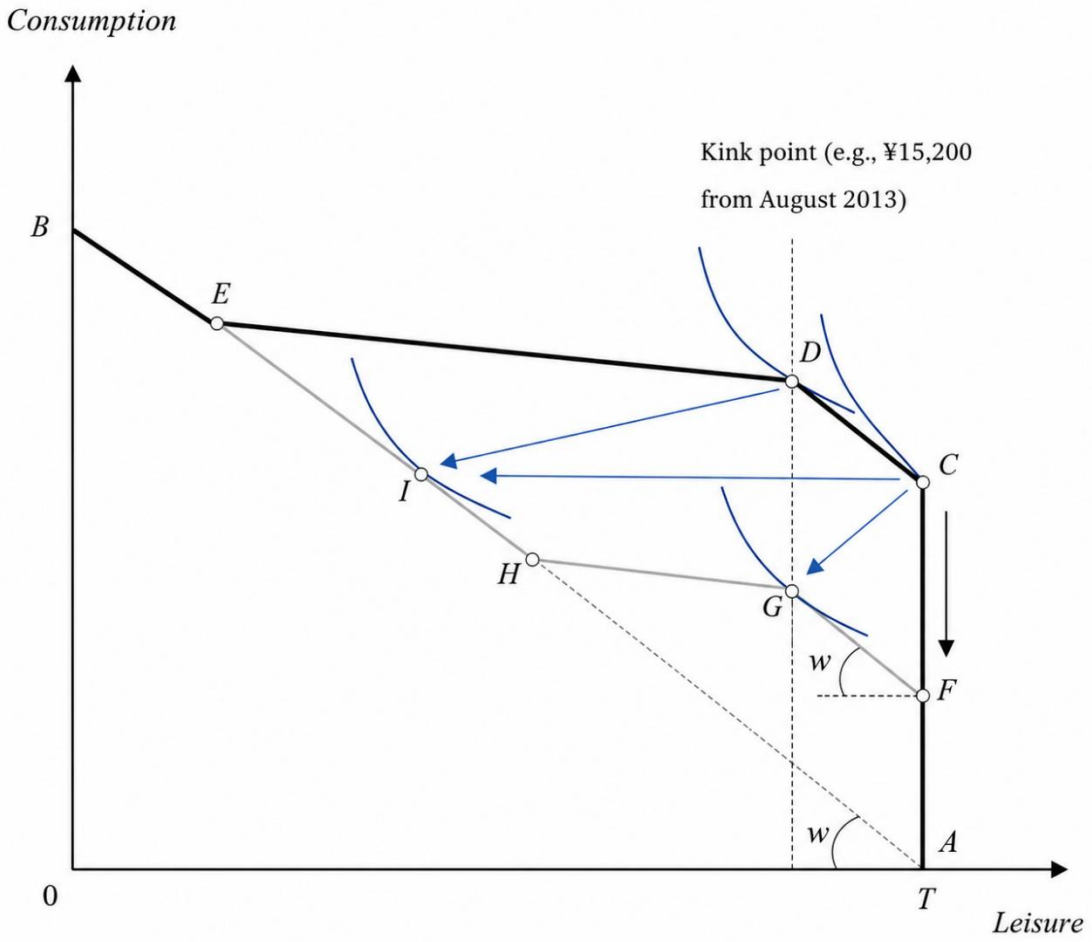


Figure 4-2. Cumulative Percentage Change Relative to 2012



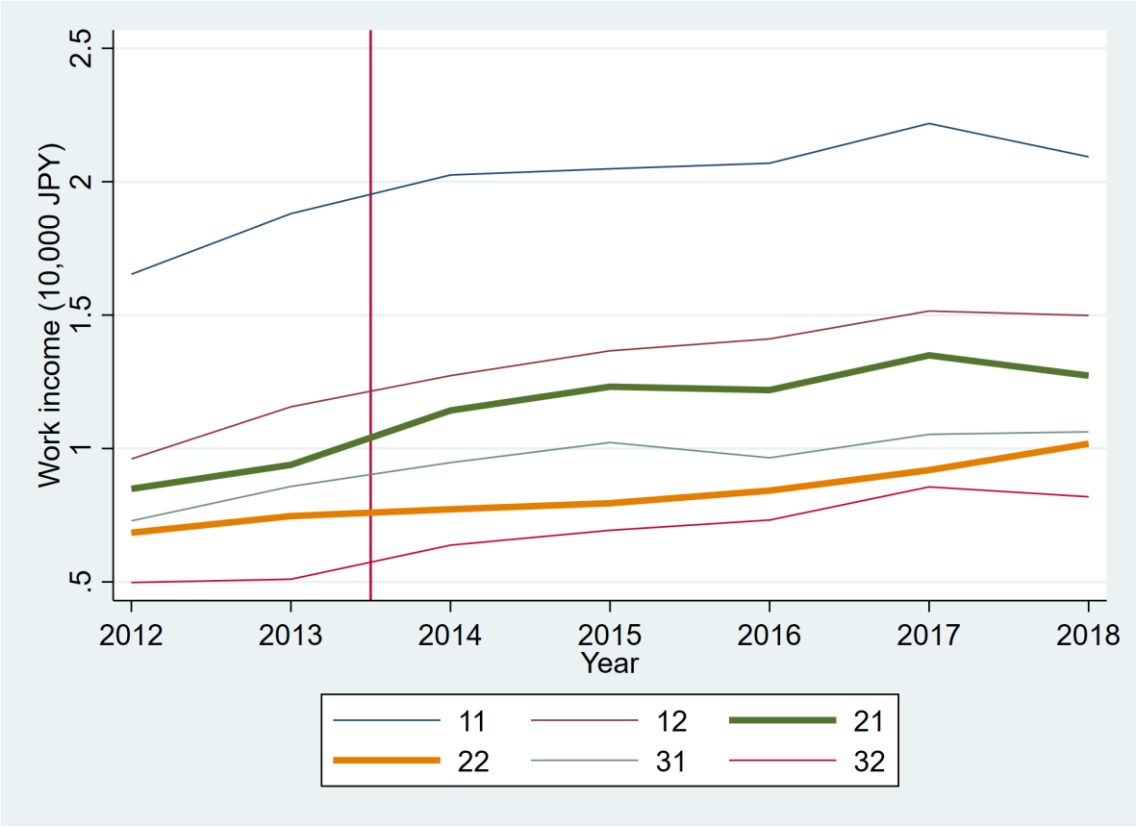
Note: For example, "11" denotes Grade-1 Area-1.
Source: The livelihood assistance standard is measured as of July 31 in each year. Compiled by the author based on information from the MHLW website (https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/hukushi_kaigo/seikatsuhogo/seikatuhogo/index.html)

Figure 5. Income–Leisure Response to a Reduction in Livelihood Assistance Benefits



Note: For earned income between ¥0 and ¥15,200 (under the post–August 2013 schedule), the implicit marginal tax rate is 0%. For income above ¥15,200, the implicit marginal tax rate is 90%. T denotes total available time. The thick black line shows the budget constraint faced by Public Assistance recipients before the reduction in the livelihood assistance standard, and AC denotes the minimum living expenses level. The thick light-gray line shows the budget constraint after the reduction, and AF denotes the minimum living expenses level. Strictly speaking, exiting Public Assistance entails new liabilities such as taxes and social insurance contributions. As a result, near the eligibility threshold (for example, around points E and H), the level of consumption may be higher when an individual remains eligible for Public Assistance than when the individual becomes ineligible. For simplicity, Figure 5 abstracts from this complication. The figure is the author's illustration based on Yugami et al. (2017) and Hayashi (2023).

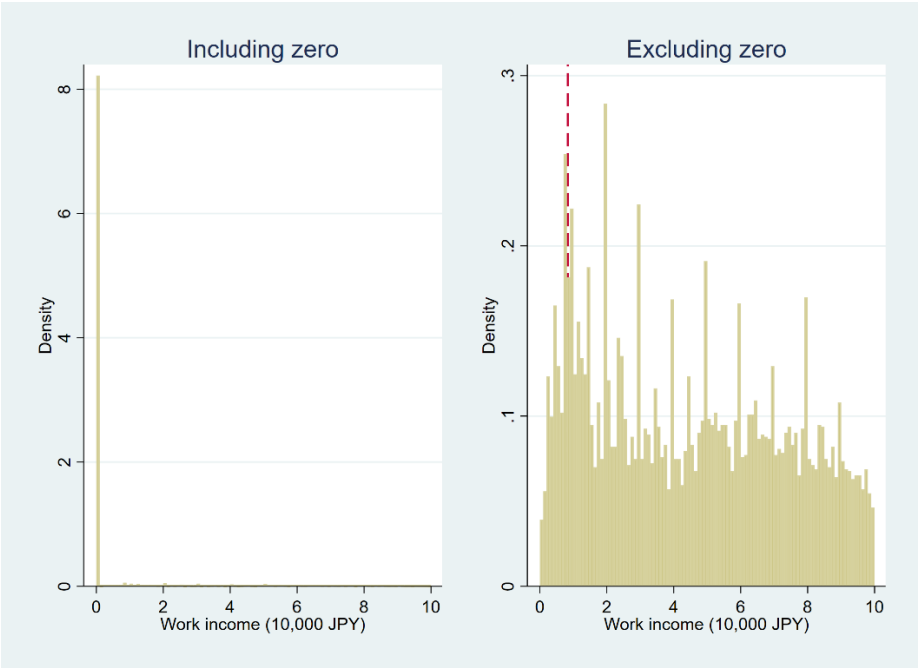
Figure 6. Trends in Employment Income (Outcome Variable): Comparison Across All Grade-Area Categories Among Single Men Aged 41–59 in “Other Households”



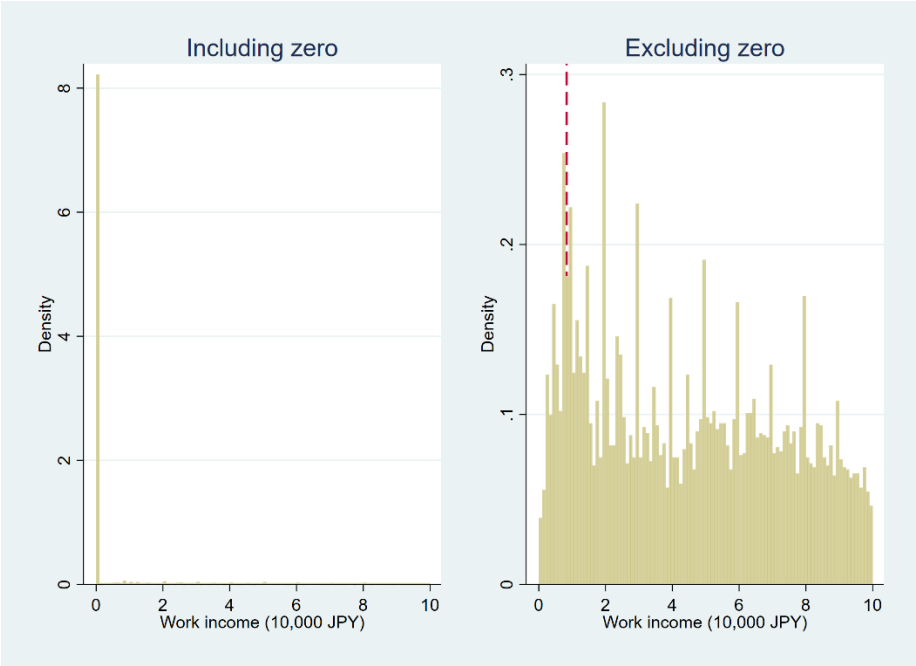
Note: For example, “11” denotes Grade-1 Area-1.

Figure 7. Histogram of Earned Income (Monthly Earned Income Less than ¥100,000)

(i) Before 2013: zero implicit marginal tax rate up to ¥8,340



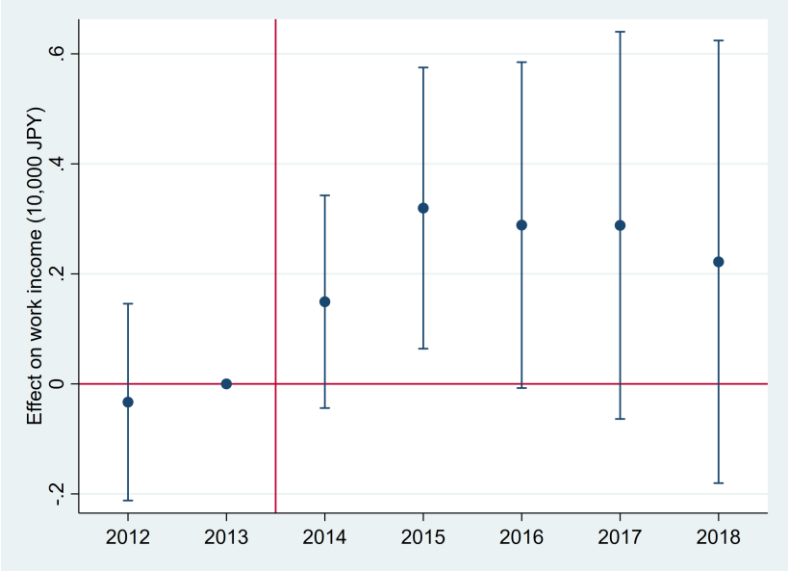
(ii) After 2013: zero implicit marginal tax rate up to ¥15,200



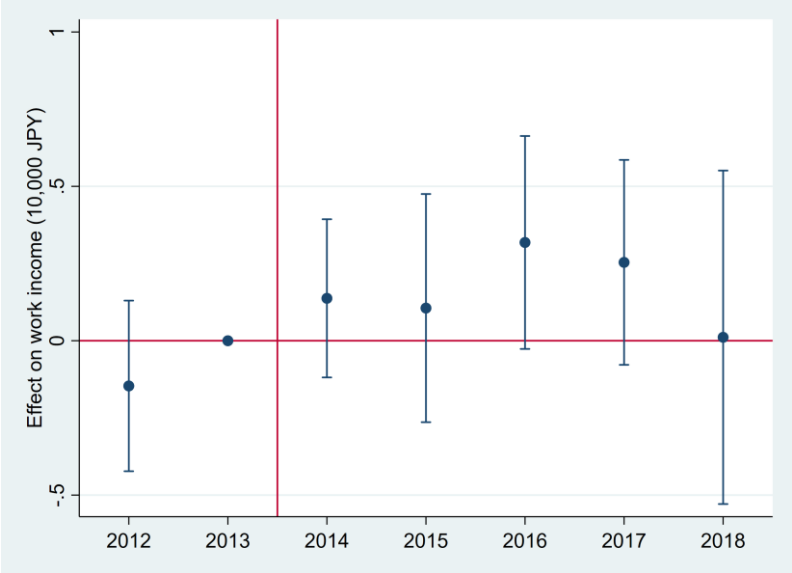
Note: The red dashed line indicates the earnings threshold up to which earned income is fully disregarded, corresponding to a zero implicit marginal tax rate.

Figure 8. Effect of the Livelihood Assistance Cut on Earned Income Among Single Men Aged 41–59 in "Other Households" (Grade-2 Area-1 vs. Grade-2 Area-2)

(i) Unbalanced Panel



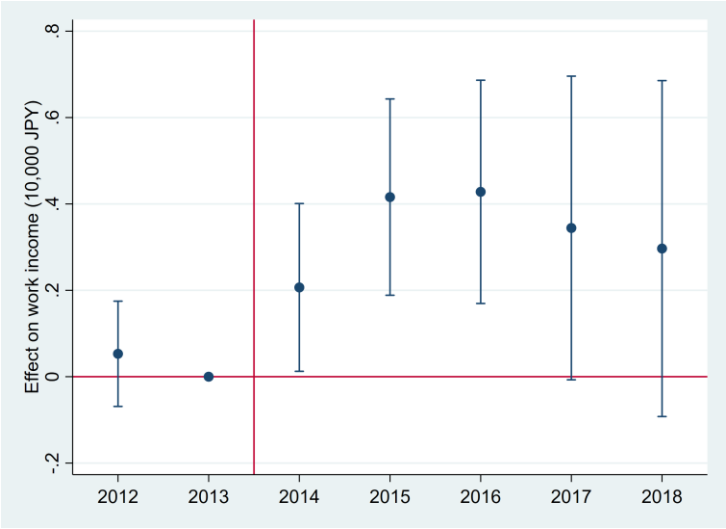
(ii) Balanced Panel



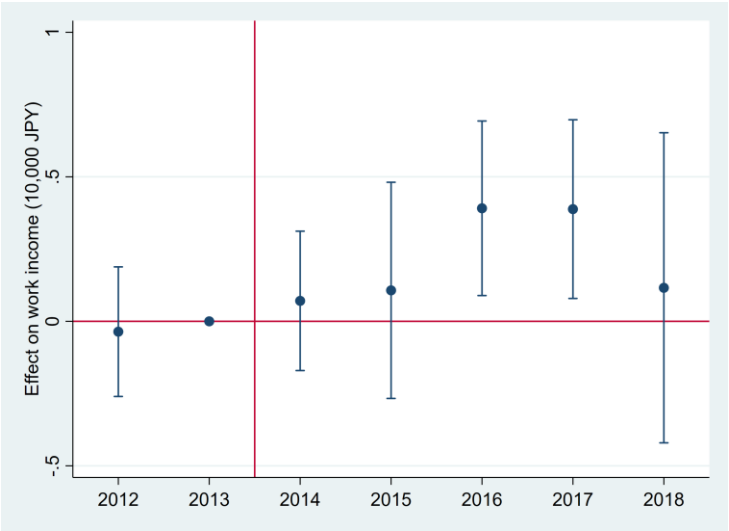
Note: This figure is based on estimates from the following model: $Y_{it} = \alpha_i + \lambda_t + \sum_{k \in \mathcal{K}, k \neq 0} \beta_k \, (D_i \times 1[t - 2013 = k] + \gamma' X_{it} + \varepsilon_{it}$. Here, Y_{it} denotes recipient i's earned income (in units of 10,000 yen) in year t. α_i and λ_t are individual and year fixed effects, respectively. D_i is an indicator equal to 0 for Grade-2 Area-2 and 1 for Grade-2 Area-1. The control vector X_{it} includes (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year. The plotted values are normalized to 2013 and correspond to the event-time coefficients β_k. Error bars indicate 95% confidence intervals.

Figure 9. Effect of the Livelihood Assistance Cut on Earned Income Among Single Men Aged 41–59 in "Other Households" with Zero Earned Income in 2013 (Grade-2 Area-1 vs. Grade-2 Area-2)

(i) Unbalanced Panel



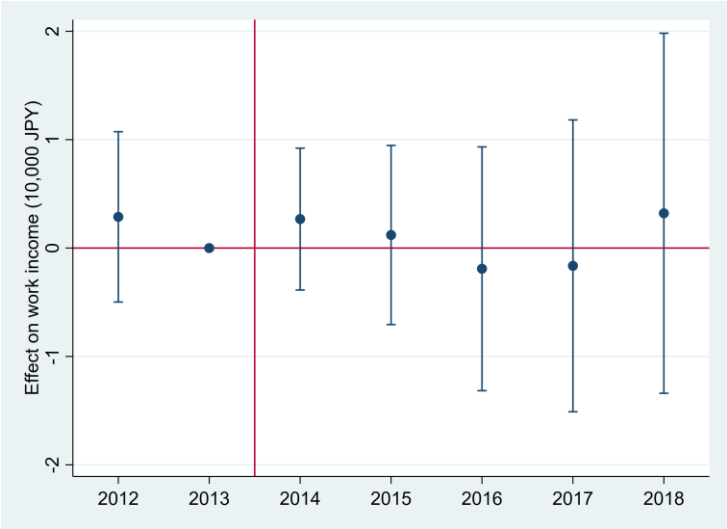
(ii) Balanced Panel



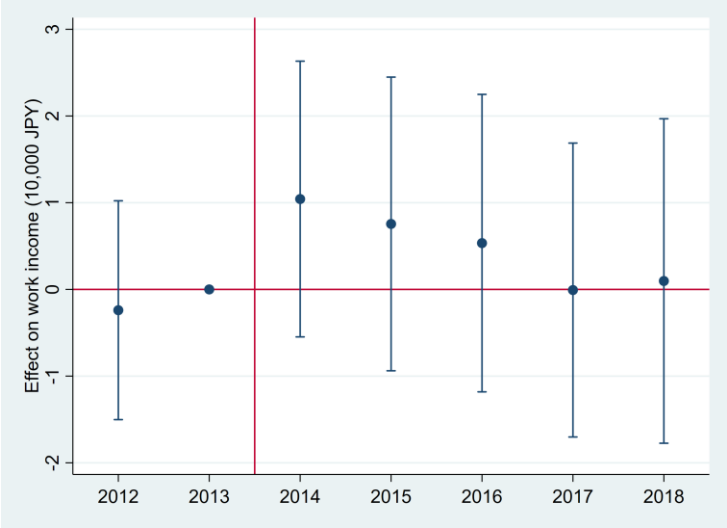
Note: This figure is based on estimates from the following model: $Y_{it} = \alpha_i + \lambda_t + \sum_{k \in \mathcal{K}, k \neq 0} \beta_k \, (D_i \times 1[t - 2013 = k] + \gamma' X_{it} + \varepsilon_{it}$. Here, Y_{it} denotes recipient i's earned income (in units of 10,000 yen) in year t. α_i and λ_t are individual and year fixed effects, respectively. D_i is an indicator equal to 0 for Grade-2 Area-2 and 1 for Grade-2 Area-1. The control vector X_{it} includes (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year. The plotted values are normalized to 2013 and correspond to the event-time coefficients β_k. Error bars indicate 95% confidence intervals.

Figure 10. Effect of the Livelihood Assistance Cut on Earned Income Among Single Men Aged 41–59 in "Other Households" with Positive Earned Income in 2013 (Grade-2 Area-1 vs. Grade-2 Area-2)

(i) Unbalanced Panel



(ii) Balanced Panel



Note: This figure is based on estimates from the following model: $Y_{it} = \alpha_i + \lambda_t + \sum_{k \in \mathcal{K}, k \neq 0} \beta_k \, (D_i \times 1[t - 2013 = k] + \gamma' X_{it} + \varepsilon_{it}$. Here, Y_{it} denotes recipient i's earned income (in units of 10,000 yen) in year t. α_i and λ_t are individual and year fixed effects, respectively. D_i is an indicator equal to 0 for Grade-2 Area-2 and 1 for Grade-2 Area-1. The control vector X_{it} includes (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year. The plotted values are normalized to 2013 and correspond to the event-time coefficients β_k. Error bars indicate 95% confidence intervals.

Appendix

Table A.1. Example of the 2012 Public Assistance Standard Calculation

(i) Livelihood Assistance Standard (Type 1)

Age	Grade-1 Area-1	Grade-1 Area-2	Grade-2 Area-1	Grade-2 Area-2	Grade-3 Area-1	Grade-3 Area-2
0～2	20,900	19,960	19,020	18,080	17,140	16,200
3～5	26,350	25,160	23,980	22,790	21,610	20,420
6～11	34,070	32,540	31,000	29,470	27,940	26,400
12～19	42,080	40,190	38,290	36,400	34,510	32,610
20～40	40,270	38,460	36,650	34,830	33,020	31,210
41～59	38,180	36,460	34,740	33,030	31,310	29,590
60～69	36,100	34,480	32,850	31,230	29,600	27,980
70～	32,340	31,120	29,430	28,300	26,520	25,510

(ii) Equivalence Scale (Decreasing Rate)

	Grade-1 Area-1	Grade-1 Area-2	Grade-2 Area-1	Grade-2 Area-2	Grade-3 Area-1	Grade-3 Area-2
One person	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Two people	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Three people	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Four people	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Five people	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000

(iii) Livelihood Assistance Standard (Type 2)

	Grade-1 Area-1	Grade-1 Area-2	Grade-2 Area-1	Grade-2 Area-2	Grade-3 Area-1	Grade-3 Area-2
One person	43,430	41,480	39,520	37,570	35,610	33,660
Two people	48,070	45,910	43,740	41,580	39,420	37,250
Three people	53,290	50,890	48,490	46,100	43,700	41,300
Four people	55,160	52,680	50,200	47,710	45,230	42,750
Five people	55,600	53,120	50,600	48,110	45,590	43,110

Note: The livelihood assistance amount is calculated by summing the Type 1 standard amounts for all household members, multiplying the sum by the equivalence scale (decreasing rate) determined by household size, and adding the Type 2 standard amount corresponding to household size. Therefore, in analyses of single-person households, the livelihood assistance amount can change mechanically when the recipient's age crosses an age-category threshold (e.g., from age 40 to 41). Source: MHLW website.

Table A.2. Descriptive Statistics by Grade Area for Single Recipients in "Other Households," Aged 41–59

	Grade-1 Area-1		Grade-1 Area-2		Grade-2 Area-1		Grade-2 Area-2		Grade-3 Area-1		Grade-3 Area-2	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Employment income	1.99	3.98	1.31	3.20	1.13	2.93	0.82	2.44	0.94	2.55	0.67	2.07
Exit dummy	0.32	0.47	0.35	0.48	0.30	0.46	0.30	0.46	0.32	0.47	0.30	0.46
Age	51.49	5.37	51.64	5.37	51.95	5.33	52.46	5.20	52.62	5.17	53.13	5.10
Welfare office employment readiness program dummy	0.58	0.49	0.52	0.50	0.38	0.49	0.22	0.41	0.21	0.41	0.32	0.47
Log minimum wage	6.75	0.07	6.65	0.08	6.60	0.08	6.60	0.06	6.59	0.07	6.56	0.07
Price level	98.22	2.41	96.37	3.09	95.98	2.57	95.20	2.64	95.80	2.61	95.64	2.56
Log population density (habitable land)	9.27	0.43	8.47	0.53	7.67	0.64	7.39	0.60	6.74	0.77	6.16	0.72
Job openings-to-applicants ratio	1.46	1.13	1.30	0.61	1.15	0.40	1.08	0.46	1.10	0.45	0.99	0.38
Number of observations	194,761		77,710		76,247		15,580		39,504		19,007	
Number of IDs	91,879		40,258		36,071		7,362		19,247		9,177	
Number of welfare offices	288		196		320		122		574		403	
Years of observation	7		7		7		7		7		7	

Table A.3. Regression Results

	Figure 8 (i)	Figure 8 (ii)	Figure 9 (i)	Figure 9 (ii)	Figure 10 (i)	Figure 10 (ii)
Treat*Year2012	-0.0331	-0.146	0.0530	-0.0359	0.288	-0.240
	[0.0913]	[0.141]	[0.0622]	[0.114]	[0.401]	[0.644]
Treat*Year2014	0.149	0.137	0.207**	0.0708	0.267	1.042
	[0.0986]	[0.131]	[0.0991]	[0.123]	[0.334]	[0.811]
Treat*Year2015	0.320**	0.106	0.416***	0.107	0.121	0.755
	[0.130]	[0.189]	[0.116]	[0.191]	[0.422]	[0.864]
Treat*Year2016	0.289*	0.318*	0.428***	0.391**	-0.191	0.534
	[0.151]	[0.176]	[0.132]	[0.154]	[0.574]	[0.875]
Treat*Year2017	0.288	0.254	0.344*	0.388**	-0.164	-0.00724
	[0.180]	[0.169]	[0.179]	[0.158]	[0.687]	[0.865]
Treat*Year2018	0.222	0.0111	0.297	0.116	0.321	0.0972
	[0.205]	[0.276]	[0.198]	[0.274]	[0.848]	[0.955]
Welfare office employment readiness program dummy	-0.0366	0.0468	-0.00474	0.0172	0.0876	0.191
	[0.0545]	[0.0642]	[0.0584]	[0.0690]	[0.166]	[0.225]
Log minimum wage	9.807	-16.09	5.664	-10.24	-6.549	-33.24
	[8.185]	[10.66]	[7.857]	[11.06]	[24.03]	[32.24]
Price level	0.0164	0.0801**	0.0272*	0.0668**	0.00172	0.158
	[0.0191]	[0.0402]	[0.0141]	[0.0314]	[0.0696]	[0.141]
Log population density (habitable land)	0.148	0.118	0.0785	0.0859	-0.00440	-0.0332
	[0.107]	[0.198]	[0.170]	[0.126]	[0.556]	[0.970]
Job openings-to-applicants ratio	-0.200	-0.649*	-0.498**	-0.711**	-0.0490	-0.574
	[0.227]	[0.366]	[0.230]	[0.304]	[0.662]	[1.073]
Constant	-66.03	98.30	-39.84	60.79	48.09	208.1
	[53.52]	[69.33]	[51.48]	[72.59]	[156.7]	[208.5]
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	91,827	7,938	37,965	6,633	7,812	1,305
Adjusted R-squared	0.548	0.604	0.242	0.411	0.585	0.595

Table A.3. Regression Results (continued)

	Figure A.1 (i)	Figure A.1 (ii)	Figure A.2.1	Figure A.2.1	Figure A.2.2	Figure A.2.2	Figure A.3 (i)	Figure A.3 (ii)
Treat*Year2012	-0.0962	-0.591*	-0.626	0.678	-0.0261	0.150	-0.00882	-0.279
	[0.128]	[0.327]	[0.740]	[0.722]	[0.856]	[0.352]	[0.294]	[0.313]
Treat*Year2014	-0.0531	-0.176	-0.703	0.643	0.0747	-0.146	-0.0533	-0.425
	[0.143]	[0.294]	[0.693]	[0.895]	[0.639]	[0.457]	[0.270]	[0.509]
Treat*Year2015	0.0971	-0.354	-0.0762	-0.390	-0.637	-0.0718	0.0507	-0.132
	[0.153]	[0.350]	[0.901]	[1.379]	[0.868]	[0.560]	[0.326]	[0.492]
Treat*Year2016	-0.0476	-0.240	-0.704	-0.568	0.279	0.282	-0.149	-0.185
	[0.187]	[0.330]	[1.170]	[1.538]	[0.945]	[0.554]	[0.364]	[0.549]
Treat*Year2017	0.0344	-0.545	-0.257	-0.556	-0.475	0.0856	0.224	0.361
	[0.199]	[0.430]	[1.069]	[2.101]	[1.087]	[0.576]	[0.397]	[0.696]
Treat*Year2018	-0.112	-0.162	-0.923	-0.225	-0.197	-0.130	-0.167	0.0276
	[0.244]	[0.381]	[1.580]	[1.988]	[1.256]	[0.716]	[0.430]	[0.751]
Welfare office employment readiness program dummy	-7.63e-05	0.120	-0.308	-0.0184	-0.0669	0.0255	-0.0865	0.0382
	[0.0660]	[0.172]	[0.346]	[0.439]	[0.279]	[0.249]	[0.182]	[0.307]
Log minimum wage	11.89	-26.31	-32.71	13.40	-0.0145	20.02	-2.554	-12.80
	[11.45]	[23.66]	[38.88]	[43.88]	[44.88]	[22.06]	[20.33]	[28.16]
Price level	-0.0178	0.0326	0.182	0.0583	0.132	0.00169	0.00700	0.108*
	[0.0334]	[0.0690]	[0.130]	[0.129]	[0.116]	[0.0704]	[0.0560]	[0.0569]
Log population density (habitable land)	-0.0748	-0.0190	-2.373	0.0905	-0.194	-1.158	0.356	-0.0579
	[0.101]	[0.488]	[2.412]	[1.101]	[2.342]	[1.133]	[0.487]	[0.925]
Job openings-to-applicants ratio	-0.0607	-0.0385	0.247	0.196	-0.255	-0.205	-0.115	1.545*
	[0.237]	[0.395]	[0.882]	[1.308]	[0.814]	[0.477]	[0.425]	[0.906]
Constant	-73.69	171.5	218.4	-91.49	-7.827	-119.5	14.22	73.48
	[74.62]	[152.0]	[253.3]	[285.0]	[294.4]	[143.0]	[134.3]	[184.4]
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,982	2,979	5,126	2,967	3,735	10,521	18,311	977
Adjusted R-squared	0.715	0.762	0.638	0.716	0.725	0.758	0.479	0.492

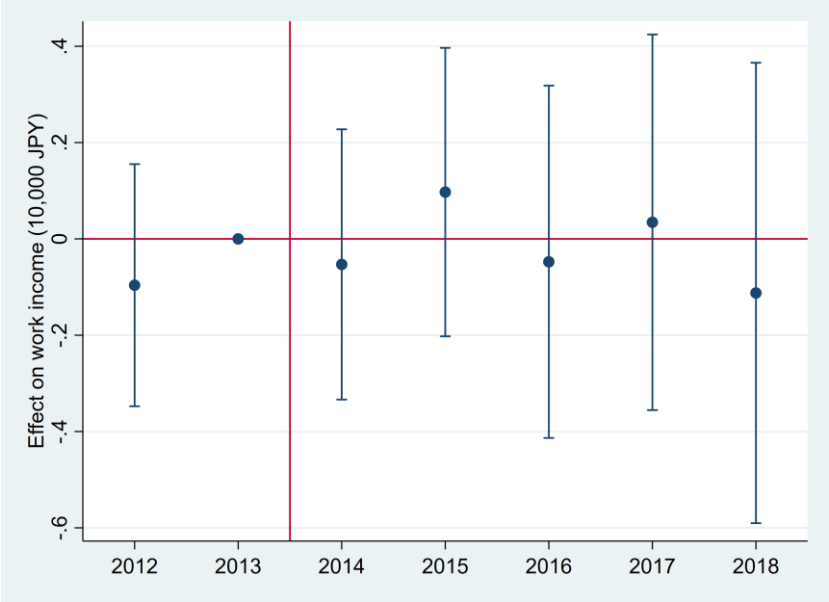
Table A.3. Regression Results (continued)

	Figure A.4.1 (i)	Figure A.4.1 (i)	Figure A.4.1 (ii)	Figure A.4.1 (ii)	Figure A.4.2 (i)	Figure A.4.2 (i)	Figure A.4.2 (ii)	Figure A.4.2 (ii)	Figure A.5
Treat*Year2012	-0.368***	-0.115	-0.407**	-0.129	-0.0441	-0.0162	0.0732	-0.00363	-0.0138
	[0.120]	[0.101]	[0.185]	[0.160]	[0.0980]	[0.125]	[0.0968]	[0.130]	[0.0805]
Treat*Year2014	0.145	0.183*	0.165	0.135	0.103	0.0187	0.0278	0.143	0.0226
	[0.105]	[0.102]	[0.139]	[0.166]	[0.103]	[0.163]	[0.100]	[0.156]	[0.0621]
Treat*Year2015	0.290**	0.320**	0.218	0.0378	0.0907	-0.107	0.0750	-0.0568	0.0180
	[0.127]	[0.124]	[0.190]	[0.218]	[0.122]	[0.206]	[0.128]	[0.198]	[0.103]
Treat*Year2016	0.370**	0.318*	0.413**	0.215	0.0207	0.0904	0.0710	0.251	0.0594
	[0.146]	[0.167]	[0.187]	[0.216]	[0.155]	[0.170]	[0.155]	[0.193]	[0.0871]
Treat*Year2017	0.421**	0.386**	0.442**	0.263	0.0156	0.136	0.0841	0.120	0.0212
	[0.168]	[0.195]	[0.182]	[0.213]	[0.181]	[0.176]	[0.189]	[0.181]	[0.100]
Treat*Year2018	0.390**	0.347	0.190	0.119	-0.0388	-0.192	-0.0436	-0.177	0.0253
	[0.187]	[0.230]	[0.268]	[0.312]	[0.205]	[0.275]	[0.205]	[0.282]	[0.105]
Welfare office employment readiness program dummy	-0.0934**	-0.0647	0.0587	0.0477	0.0773	-0.0850	-0.0226	-0.0457	-0.177***
	[0.0464]	[0.0469]	[0.0825]	[0.103]	[0.0717]	[0.0997]	[0.0663]	[0.0838]	[0.0444]
Log minimum wage	13.70	-3.567	3.470	-11.55	7.838	-10.46	13.42	9.444	2.438
	[8.315]	[10.27]	[11.14]	[13.62]	[10.12]	[12.25]	[15.42]	[13.62]	[5.507]
Price level	0.0533	-0.00678	0.0840	0.00586	0.00866	-0.0262	-0.0190	-0.0316	0.00816
	[0.0396]	[0.0266]	[0.0719]	[0.0443]	[0.0224]	[0.0335]	[0.0218]	[0.0304]	[0.0155]
Log population density (habitable land)	-0.172	0.253	0.693**	0.567	0.00651	-0.212	0.0643	0.0780	-0.121**
	[0.398]	[0.217]	[0.351]	[0.381]	[0.196]	[0.462]	[0.121]	[0.261]	[0.0563]
Job openings-to-applicants ratio	-0.0243	0.131	0.0953	0.0138	0.0346	-0.00294	0.0970	-0.136	0.0215
	[0.0852]	[0.182]	[0.0902]	[0.284]	[0.117]	[0.168]	[0.198]	[0.296]	[0.101]
Constant	-93.57*	22.82	-36.13	71.71	-51.53	72.84	-85.93	-58.80	-15.64
	[56.49]	[68.12]	[75.85]	[91.66]	[66.44]	[80.96]	[100.6]	[89.52]	[35.27]
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	210,341	93,290	18,900	5,328	55,084	4,563	34,587	2,674	91,827
Adjusted R-squared	0.575	0.562	0.618	0.545	0.530	0.511	0.555	0.584	0.434

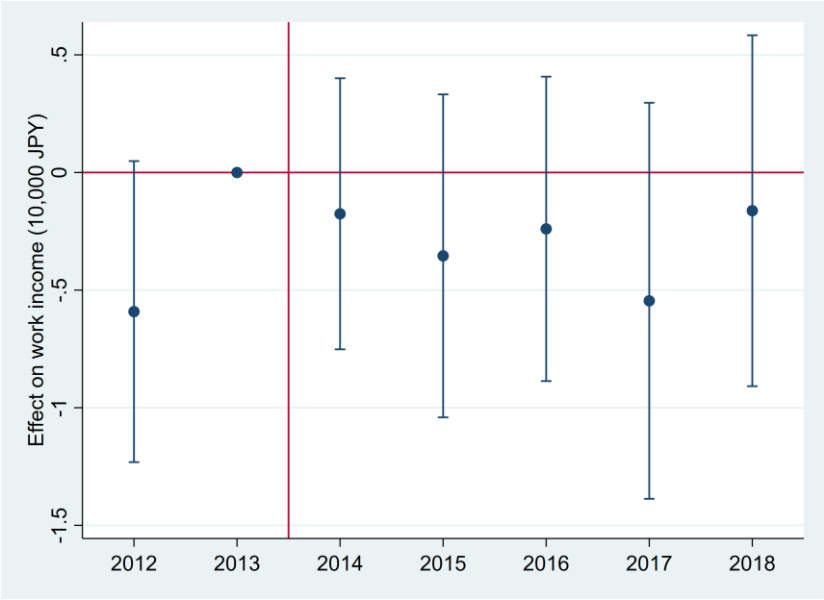
Notes: The dependent variable is an exit from Public Assistance dummy in Figure A.5 and earned income (in units of 10,000 yen) in all other figures. Standard errors clustered at the welfare-office level are reported in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure A.1. Effect of the Livelihood Assistance Cut on Earned Income Among Single Women Aged 41–59 in "Other Households" (Grade-2 Area-1 vs. Grade-2 Area-2)

(i) Unbalanced Panel



(ii) Balanced Panel



Note: This figure is based on estimates from the following model: $Y_{it} = \alpha_i + \lambda_t + \sum_{k \in \mathcal{K}, k \neq 0} \beta_k \, (D_i \times 1[t - 2013 = k] + \gamma' X_{it} + \varepsilon_{it}$. Here, Y_{it} denotes recipient i's earned income (in units of 10,000 yen) in year t. α_i and λ_t are individual and year fixed effects, respectively. D_i is an indicator equal to 0 for Grade-2 Area-2 and 1 for Grade-2 Area-1. The control vector X_{it} includes (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year. The plotted values are normalized to 2013 and correspond to the event-time coefficients β_k. Error bars indicate 95% confidence intervals.

Figure A.2.1. Effects for Mothers in Single-Mother Households: Mother Aged 20–40, One Child of Elementary- or Junior-High-School Age: Unbalanced Panel

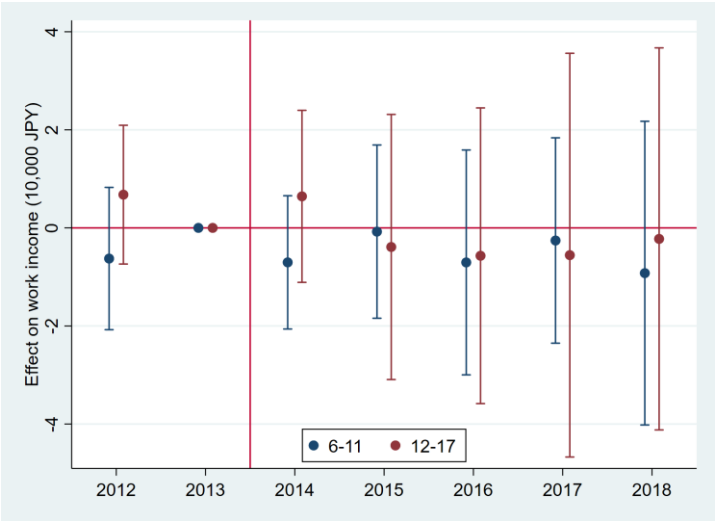
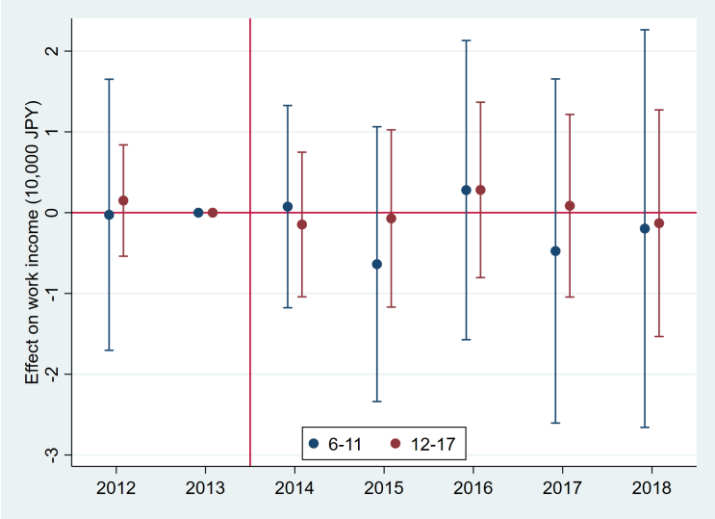


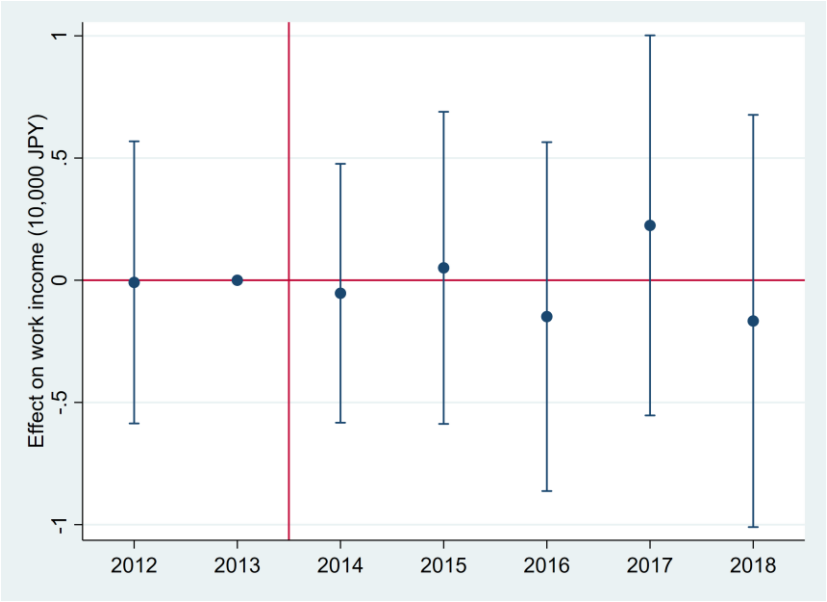
Figure A.2.2. Effects for Mothers in Single-Mother Households: Mother Aged 41–59, One Child of Elementary- or Junior-High-School Age: Unbalanced Panel



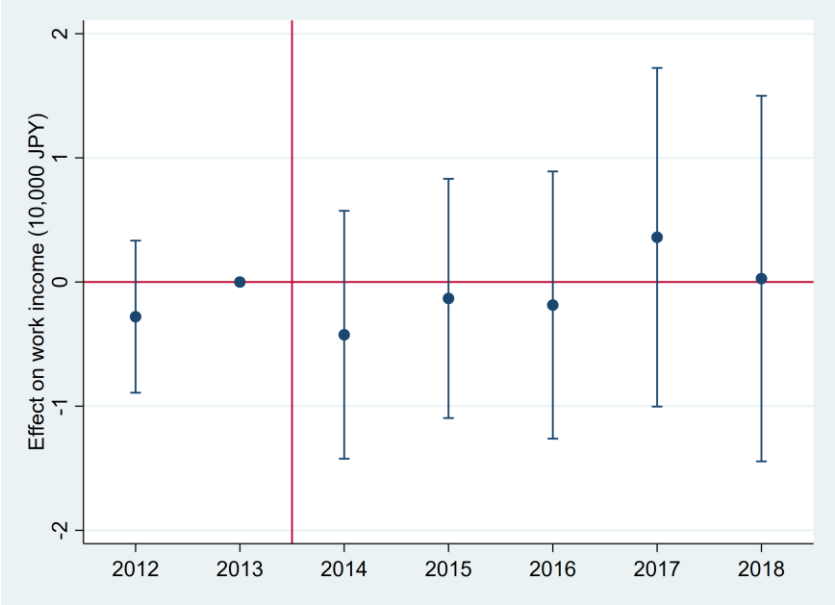
Note: This figure is based on estimates from the following model: $Y_{it} = \alpha_i + \lambda_t + \sum_{k \in \mathcal{K}, k \neq 0} \beta_k \, (D_i \times 1[t - 2013 = k] + \gamma' X_{it} + \varepsilon_{it}$. Here, Y_{it} denotes recipient i's earned income (in units of 10,000 yen) in year t. α_i and λ_t are individual and year fixed effects, respectively. D_i is an indicator that equals 0 for Grade-2 Area-2 and 1 for Grade-2 Area-1. The control vector X_{it} includes (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year. The plotted values are normalized to 2013 and correspond to the event-time coefficients β_k. Error bars indicate 95% confidence intervals. In the figure, "6–11" denotes the child age category corresponding to elementary school age in Japan, while "12–17" denotes the age category corresponding to junior high and high school age. Within each of these age categories, the Public Assistance benefit amount is the same.

Figure A.3. Effect of the Livelihood Assistance Cut on Earned Income Among Single Men Aged 20–40 in "Other Households" (Grade-2 Area-1 vs. Grade-2 Area-2)

(i) Unbalanced Panel



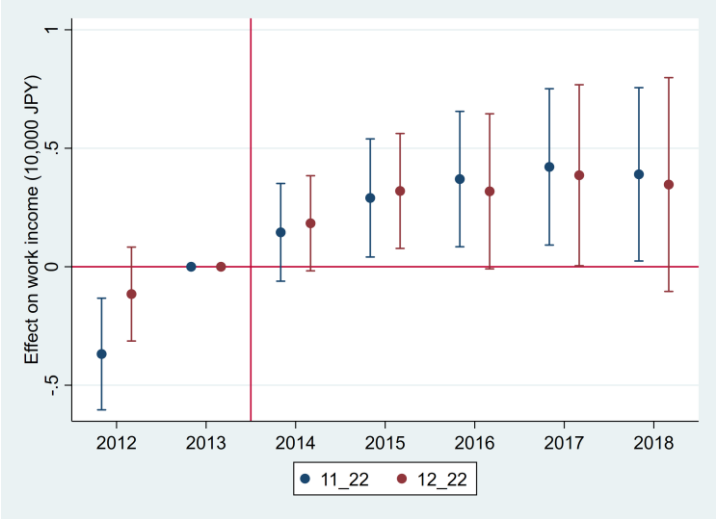
(ii) Balanced Panel



Note: This figure is based on estimates from the following model: $Y_{it} = \alpha_i + \lambda_t + \sum_{k \in \mathcal{K}, k \neq 0} \beta_k \, (D_i \times 1[t - 2013 = k] + \gamma' X_{it} + \varepsilon_{it}$. Here, Y_{it} denotes recipient i's earned income (in units of 10,000 yen) in year t. α_i and λ_t are individual and year fixed effects, respectively. D_i is an indicator equal to 0 for Grade-2 Area-2 and 1 for Grade-2 Area-1. The control vector X_{it} includes (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year. The plotted values are normalized to 2013 and correspond to the event-time coefficients β_k. Error bars indicate 95% confidence intervals.

Figure A.4.1. Effect of the Livelihood Assistance Cut on Earned Income Among Single Men Aged 41–59 in "Other Households" (Grade-1 Area-1 vs. Grade-2 Area-2; Grade-1 Area-2 vs. Grade-2 Area-2)

(i) Unbalanced Panel



(ii) Balanced Panel

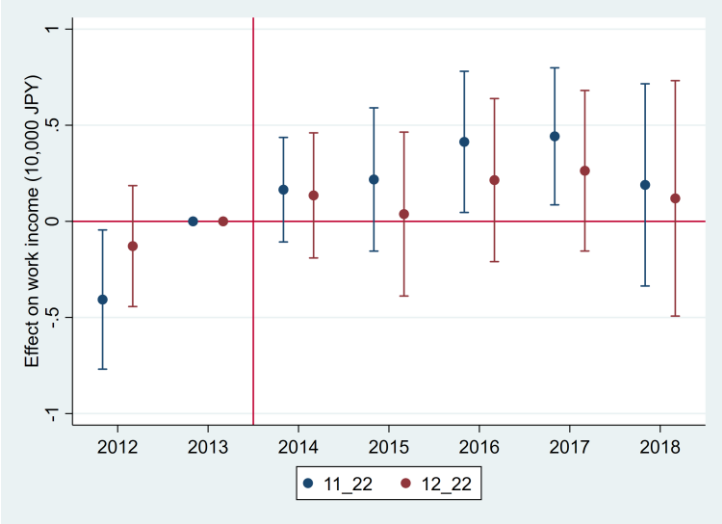
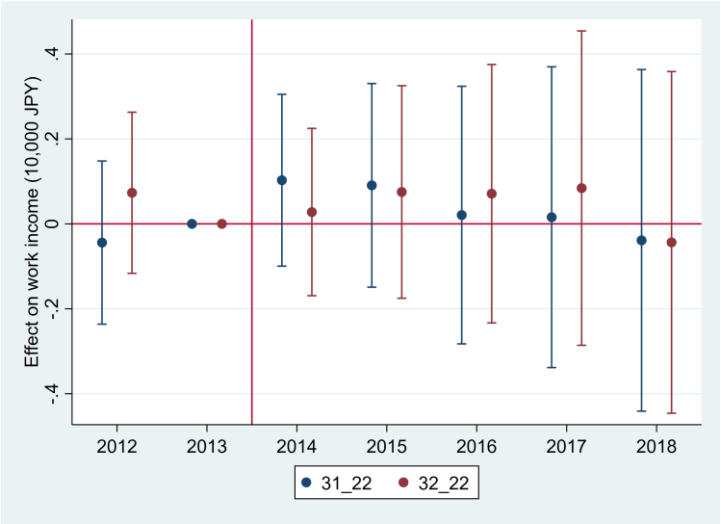
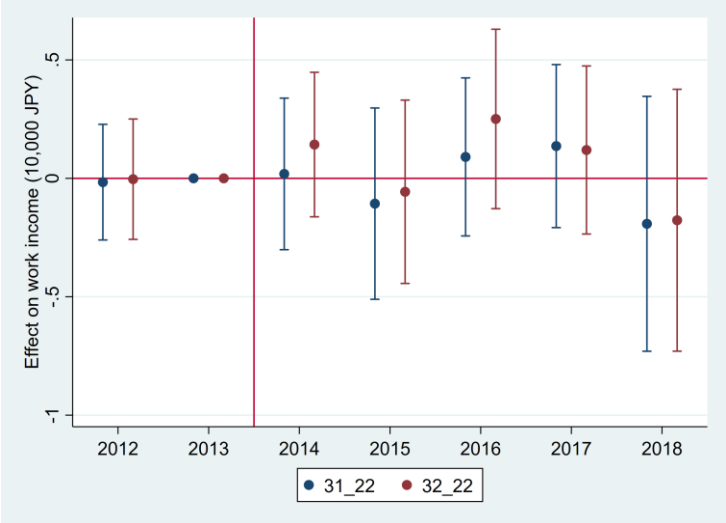


Figure A.4.2. Effect of the Livelihood Assistance Increase on Earned Income Among Single Men Aged 41–59 in "Other Households" (Grade-3 Area-1 vs. Grade-2 Area-2; Grade-3 Area-2 vs. Grade-2 Area-2)

(i) Unbalanced Panel

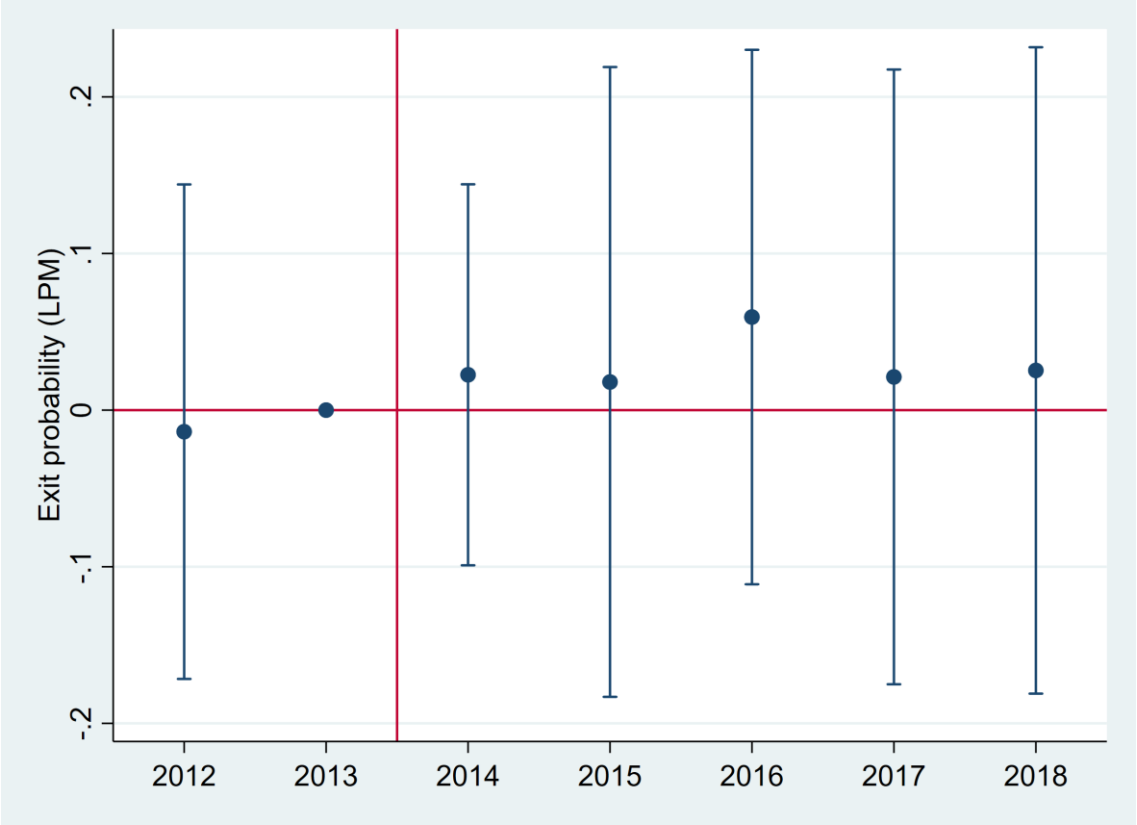


(ii) Balanced Panel



Note: This figure is based on estimates from the following model: $Y_{it} = \alpha_i + \lambda_t + \sum_{k \in \mathcal{K}, k \neq 0} \beta_k \, (D_i \times 1[t - 2013 = k] + \gamma' X_{it} + \varepsilon_{it}$. Here, Y_{it} denotes recipient i's earned income (in units of 10,000 yen) in year t. α_i and λ_t are individual and year fixed effects, respectively. D_i is a treatment indicator that equals one for the relevant treatment grade-area category and zero for Grade-2 Area-2. The treatment group is Grade-2 Area-1 in the baseline specification and Grade-1 Area-1, Grade-1 Area-2, Grade-3 Area-1, or Grade-3 Area-2 in the alternative comparisons. The control vector X_{it} includes (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year. The plotted values are normalized to 2013 and correspond to the event-time coefficients β_k. Error bars indicate 95% confidence intervals. For example, a label such as "11_22" indicates the comparison between Grade-1 Area-1 and Grade-2 Area-2.

Figure A.5. Effect of the Livelihood Assistance Cut on Exit from Public Assistance among Single Men Aged 41–59 in "Other Households" (Grade-2 Area-1 vs. Grade-2 Area-2): Unbalanced Panel



Note: This figure is based on estimates from the following model: $Y_{it} = \alpha_i + \lambda_t + \sum_{k \in \mathcal{K}, k \neq 0} \beta_k \, (D_i \times 1[t - 2013 = k] + \gamma' X_{it} + \varepsilon_{it}$. Here, Y_{it} denotes a dummy variable equal to one if the recipient exits Public Assistance in year t. D_i is an indicator equal to 0 for Grade-2 Area-2 and 1 for Grade-2 Area-1. The control vector X_{it} includes (1) an indicator for whether an employment readiness support program is implemented, (2) the log of the region-specific minimum wage, (3) a prefecture-level price index, (4) the log of population density per habitable land area, and (5) the job openings-to-applicants ratio at the Public Employment Security Office level, measured in July of each year. The plotted values are normalized to 2013 and correspond to the event-time coefficients β_k. Error bars indicate 95% confidence intervals.