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Labor Supply Response to Income Tax Information: Divergence between Stated and Revealed Preferences*

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Abstract

Complex tax incentives, such as means-tested tax transfers, are known to distort labor supply decisions (Chetty and Saez, 2013). This study conducts a randomized experiment to examine whether providing information about income taxation induces individuals to change their labor supply. The results show that tax information provision increases *stated* annual earnings by an average of 0.9%, and raises the probability of planning to earn above the threshold by 4.3%. However, this increase in stated intentions does not translate into *actual* labor supply, as revealed by the end-of-year follow-up survey. The findings suggest that while information can correct misconceptions and shift intentions, entrenched behavioral norms tied to institutional thresholds, together with psychological frictions, may limit the effectiveness of such interventions in changing actual behavior.

JEL Classification: D83; H24; J22; J16

Keywords: female labor supply; income tax; information provision; tax incentive; tax misperceptions

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1 Introduction

Previous studies have highlighted a puzzling gap between providing information and changing behavior in labor supply decisions. Even when individuals are given accurate, personalized information about complex tax-benefit rules, the anticipated increase in labor supply often fails to materialize. For instance, Chetty and Saez (2013) conducted a randomized experiment among Earned Income Tax Credit (EITC) recipients in the United States and found no significant effect of information provision on participants' subsequent earnings. This suggests that misinformation or lack of knowledge is not the sole reason for subdued labor supply responses; other factors — such as behavioral inertia or the perceived disutility of additional work — might also impede adjustment. A similar pattern appears in Japan, where many secondary earners (often married women in part-time jobs) deliberately cap their annual earnings at the well-known 1.03 million yen threshold to avoid triggering income tax and social insurance premiums (Kondo and Fukai, 2023). This behavior creates a pronounced clustering of earnings just below the threshold and a sharp drop just above it, even though the immediate tax cost of slightly exceeding the 1.03 million yen limit is relatively small. The persistence of this "1.03 million yen barrier" indicates that simply clarifying the true incentives may not automatically induce higher labor supply; in other words, "the same pattern observed with the EITC in the US appears to be playing out in Japan," underscoring the value of analyzing the Japanese case to determine whether better information can effectively change work behavior under such threshold-based systems.

This study examines whether providing accurate tax information to secondary earners influences their labor supply decisions in the context of Japan's 1.03 million yen earnings threshold. We conduct a randomized information provision experiment on a sample of 1,006 married women whose expected earnings in the baseline year fall below the threshold. Participants in the treatment group are informed that the income tax owed when earning 1.2 million yen is only 8,500 yen—a value that is frequently overestimated. The study addresses three questions. First, does the intervention affect stated labor supply intentions, such as expected hours worked or earnings in the current year? Second, are the effects heterogeneous with respect to individuals' initial forecast errors, particularly among those who substantially overestimate the tax burden? Third, and most critically, do these changes in stated preferences translate into higher realized labor supply over the subsequent year?

We present three findings. First, the information intervention significantly increases stated annual earnings by 0.9% and raises the probability of planning to earn above the 1.03 million yen threshold by 4.3%. This result suggests that correcting misconceptions about the tax burden encourages individuals to revise their labor supply intentions upward. Second, the effect is more pronounced among younger respondents with large forecast errors, consistent with the interpretation that younger individuals may face fewer physical or household constraints in adjusting work effort. This heterogeneity may highlight the role of perceived disutility and health-related limitations in shaping responsiveness to information. Third, and most importantly, we find no evidence that the intervention increases revealed labor supply as measured at the beginning of the following year. Despite the shift in stated intentions, realized earnings and working hours remain statistically indistinguishable between treat-

ment and control groups. This divergence between intention and behavior mirrors prior findings in the literature, including Chetty and Saez (2013), and underscores the persistence of psychological frictions that may limit the effectiveness of information-based policies.

This paper makes two main contributions to the literature. First, this paper is among the first to examine how tax information affects both stated intentions and revealed labor supply behavior. While prior studies primarily investigate revealed behavioral responses to tax incentives (Bhargava and Manoli, 2015; Chetty and Saez, 2013; Kostøl and Myhre, 2021; Liebman and Luttmer, 2015; Nyman et al., 2023), we explicitly compare stated intentions, elicited prior to decision-making, with actual labor market outcomes. We show that while individuals often overestimate marginal tax burdens and revise their intentions upon receiving accurate information, such updates do not necessarily translate into behavioral change. This distinction clarifies the difference between belief correction and behavioral response, and provides a more sophisticated perspective on the literature regarding tax misperceptions.

Second, our study contributes to a growing body of research emphasizing the psychological frictions that limit the effectiveness of information-based interventions. As tax systems become increasingly complex, individuals often rely on simplified mental models rather than fully understanding the actual structure of the system (Blaufus et al., 2022; Gideon, 2017; Rees-Jones and Taubinsky, 2020; Saez, 2010). Specifically, Ballard and Gupta (2018) find that individuals tend to systematically overestimate their average income tax rate, which may discourage labor supply decisions. The behavioral economics studies further suggest that cognitive and emotional limitations may prevent individuals from rationally weighing the costs and benefits of understanding tax systems and taking action (Bhargava and Manoli, 2015; Chetty et al., 2013). Even when misperceptions are corrected, behavioral change may still be impeded by psychological barriers such as psychological aversion to complexity or inattention (Benzarti, 2020; Bertrand et al., 2006; Karlan et al., 2016). Allcott and Rogers (2014) further show that the behavioral effects of information provision tend to fade over time, implying that temporary increases in salience do not necessarily lead to lasting behavioral adjustments. Taken together, these findings highlight how psychological frictions can pose substantial obstacles to both immediate and persistent behavioral responses even when accurate information is clearly communicated. Our results therefore suggest that while information provision can improve beliefs and stated intentions, deeper psychological frictions may ultimately constrain its impact on actual behavior.

The remainder of the paper is organized as follows. Section 2 provides an overview of Japan's income tax and social insurance systems, with a focus on the 1.03 million yen threshold. Section 3 describes the design of the randomized controlled trial, including the sampling strategy, information intervention, and outcome measures. Section 4 presents the results of the experiment, analyzing both stated labor supply intentions and revealed labor supply behavior. Section 5 discusses the implications of the findings, particularly the divergence between stated intentions and actual behavior, and explores potential mechanisms underlying this pattern. Finally, Section 6 concludes with a summary of the main findings and their relevance for policy design in the context of complex tax systems.

2 Overview of Japan's Tax and Social Insurance Systems

2.1 Taxation of Individual Income

Individual income taxation in Japan is based on a progressive tax system, ensuring that higher income levels are subject to higher tax rates.[1] Key features of the individual income tax system include progressive tax rates, deductions and exemptions. Income is divided into brackets, with tax rates ranging from 5% for the lowest bracket to 45% for the highest bracket. This structure ensures that those with higher incomes contribute a larger share of their earnings in taxes. Taxpayers can reduce their taxable income through various deductions, such as basic exemption (a standard exemption available to all taxpayers) and exemption for dependents (for individuals supporting dependents such as children or elderly family members). The combination of progressive taxation and various deductions ensures a degree of equity in the system, while also influencing labor supply decisions as well as financial planning.

Among the deductions available to households, the spousal deduction is closely linked to the well-known 1.03 million yen ceiling. This threshold is widely recognized as the upper limit of annual earnings for a spouse to be treated as a dependent for income tax purposes, and it plays a central role in shaping labor supply decisions of secondary earners in Japan. Under the tax system in place as of 2024, a dependent spouse is defined as an individual whose annual earnings do not exceed 1.03 million yen. If earnings remain below this threshold, the primary earner (typically the husband) can claim the spousal deduction, which reduces the household's taxable income.

Importantly, however, exceeding the 1.03 million yen threshold does not immediately eliminate all tax benefits. Even after the spouse's earnings exceed 1.03 million yen, the special spousal deduction applies. Under the 2024 tax schedule, this special deduction is identical in amount to the standard spousal deduction up to an earnings level of 1.5 million yen, and then it is gradually phased out as earnings increase beyond this level. As a result, the marginal tax burden associated with increasing earnings just above 1.03 million yen is very small. In particular, the change corresponds only to the application of the lowest marginal income tax rate (5%), implying that the effective tax penalty for crossing the threshold is limited. For example, increasing earnings from 1.03 to 1.2 million yen raises income tax liability by only about 8,500 yen. Despite this, many individuals perceive the 1.03 million yen threshold as a strict cutoff, leading to substantial bunching just below the threshold, as shown in Figure 1. This sharp behavioral response is disproportionate to the actual financial incentive. This pattern suggests that individuals respond to perceived thresholds rather than actual marginal incentives, highlighting the role of misperceptions in shaping labor supply decisions.

[1] The national income tax is levied on various sources of income, including employment income, business income, rental income, and capital gains. See https://www.nta.go.jp/english/taxes/individual/index.htm for more details.

2.2 Social Insurance System

It is important to distinguish the income tax threshold from the social insurance threshold. In Japan, exceeding the 1.03 million yen threshold has no direct effect on eligibility for social insurance coverage. Instead, a separate and more consequential threshold exists at approximately 1.3 million yen. Under the social insurance system in place as of 2024, a spouse whose annual earnings remain below 1.3 million yen is generally eligible to be covered as a dependent under their partner's health insurance and pension schemes.[2] In this case, the dependent spouse is exempt from paying their own health insurance premiums and pension contributions, which are instead covered through the partner's insurance plan. Once annual earnings exceed this threshold, individuals are typically required to enroll in social insurance on their own and pay substantial premiums, which can amount to approximately 300,000 yen per year. This creates a much larger financial discontinuity than the income tax threshold at 1.03 million yen. Although these two thresholds are institutionally distinct, individuals may not fully distinguish between them in practice. In particular, some secondary earners may perceive the 1.03 million yen threshold as being associated with social insurance contributions, even though such contributions only arise at higher income levels. This potential confusion may contribute to the pronounced bunching observed at 1.03 million yen.

2.3 Resident tax

Resident tax is levied by municipalities and prefectures and is divided into two components: a per-capita levy and an income levy. As for the per-capita levy, it is imposed as a fixed amount, and although the threshold varies across municipalities, it is generally set between annual earnings of 0.96 and 1.00 million yen. As for the income levy, it is applied at a flat rate of 10 percent on taxable income once annual earnings exceed 1.00 million yen. This is levied in addition to the per-capita levy.

Because resident tax is assessed on the previous year's income and collected in the following fiscal year, it does not impose an immediate burden on current-year earnings. Nevertheless, individuals may adjust their working hours during the current year in anticipation of higher tax payments in the following year.

Previous studies show that, among married women, less pronounced discontinuity is observed in the earnings distribution at the resident tax threshold (around 1.00 million yen), whereas a pronounced discontinuity appears at 1.03 million yen, where the income tax becomes applicable (Kondo and Fukai, 2023). This contrast suggests that behavioral responses are stronger at more salient or widely recognized thresholds.

Moreover, because the threshold for the per-capita levy differs across municipalities, providing accurate information would require treatment messages tailored to each locality. For this reason, implementing an information provision experiment on resident tax would require coordination with

[2]Depending on firm size, weekly working hours, and monthly wages, individuals may still be required to enroll in social insurance even if their annual earnings are below 1.3 million yen.

local governments and is beyond the scope of this study.

The combination of progressive income taxes, mandatory social insurance, and resident tax contributions ensures a degree of income redistribution in Japan. However, this system also introduces complexities that may affect individual labor supply decisions. For instance, high marginal tax rates and contribution burdens at certain income thresholds can act as disincentives to work additional hours or seek higher-paying jobs. Moreover, the exemption for spouse and related policies may encourage part-time work among secondary earners, often women.

In Japan, complex tax and social insurance rules, particularly the spousal tax deduction threshold around 1.03 million yen, have been shown to influence labor supply decisions of secondary earners (Abe, 2009; Kondo and Fukai, 2023; Yokoyama, 2018). Many married women, who constitute the majority of secondary earners, appear to limit their annual income to remain below this threshold, possibly reflecting concerns about potential reductions in household net income.

Although surpassing the 1.03 million yen threshold leads to only a modest increase in tax liability and does not immediately require enrollment in social insurance, individuals may perceive the associated financial cost to be larger than it actually is. Consistent with this interpretation, prior studies document that individuals often misperceive tax and benefit schedules and may overestimate marginal burdens (Ballard and Gupta, 2018; Feldman et al., 2016; Saez et al., 2012; Stantcheva, 2021). As a result, behavioral responses around the threshold may be stronger than would be predicted based solely on actual financial incentives. This pattern is consistent with the presence of psychological frictions and incomplete understanding of the tax system, which can affect labor supply decisions (Chetty, 2012; Chetty and Saez, 2013). These mechanisms may contribute to observed bunching behavior and, more broadly, to labor supply patterns among secondary earners (Akabayashi, 2006).

A similar mechanism has been discussed in the context of the EITC in the United States. Although the EITC is designed to encourage labor supply, its nonlinear and complex structure is often misunderstood by recipients. Chetty and Saez (2013) show that individuals may misperceive the incentive structure of the program, leading to distorted earnings responses.

These findings suggest that in both Japan and the United States, individuals may respond not only to actual financial incentives but also to perceived incentives shaped by complexity and misperceptions. This highlights the broader importance of information frictions in understanding labor supply behavior under tax and transfer systems.

3 RCT Design

In this section, we describe the overall design of our experiment, which consists of two parts: the main survey (1st wave) and a follow-up survey (2nd wave). The purpose of the main survey is to collect information on respondents' baseline characteristics, including demographics and earnings, and to examine whether the provision of tax information affects stated labor outcomes such as expected

annual earnings and hours worked. The follow-up survey collects information on realized labor outcomes and assesses the persistence of the treatment effects over time. The full instructions for both surveys are provided in Appendix A.

3.1 1st wave

We conducted an information provision experiment using an online survey platform between August 16 and 23, 2024, targeting a sample of 1,006 women. Before the main survey, we carried out a pre-screening process to select respondents who met all of the following criteria: (i) married women working part-time; (ii) annual earnings no greater than 1.03 million yen in 2023; (iii) expected annual earnings no greater than 1.03 million yen in 2024; and (iv) actively adjusting their working hours to remain below the 1.03 million yen threshold. Conditions (ii) and (iii) were assessed through direct income questions, while condition (iv) was confirmed using two screening questions (BQ.6 and BQ.7 in Appendix A.1): whether the respondent had adjusted working hours or days in 2023 to keep annual earnings below 1.03 million yen, and whether the respondent had adjusted or intended to adjust working hours in 2024 for the same purpose. This screening ensures that our sample consists exclusively of individuals who report deliberately adjusting their working hours to remain below the 1.03 million yen threshold. Those who did not report such adjustment were excluded at the pre-screening stage. At the recruitment stage, prior to the application of the four pre-screening criteria, the age distribution of respondents was matched to that of the Japanese female population aged 25 to 64. Table B.1 in Appendix B compares the age distribution of our final analysis sample with that of the target population—married women working part-time with annual earnings below 1.0 million yen who report adjusting their working hours, based on the Employment Status Survey (Statistics Bureau of Japan, 2022). This suggests that, despite the recruitment stage being matched to the overall female population, the age distribution of our final analysis sample closely resembles that of the target population, reducing concerns that the sampling procedure materially distorts the composition of the sample.[3]

Step 1: Eliciting annual earnings and hours worked in the previous year We first asked about respondents' annual earnings and average hourly wages in the previous year. Respondents were instructed to report their total annual earnings and average hourly wage in 2023. Using this information, we imputed total hours worked in 2023 by dividing earnings by hourly wage. We also asked respondents to report their expected hourly wage for the current year.

Step 2: Information provision After collecting information on annual earnings and wages, we presented the following hypothetical question:

[3] As with many online panel surveys, caution is warranted when interpreting the external validity of the findings. However, the age distribution of our final analysis sample is broadly similar to that of the relevant target population.

"Please think about how much you will have to pay in income tax if you earn 1.20 million yen this year."

This question is designed to capture respondents' prior beliefs about the income tax amount they expect to pay.[4] We then informed the treatment group of the correct answer by presenting the following message:

"If your annual income is 1.20 million yen, the amount of income tax you will have to pay is 8,500 yen."

This information was provided immediately after respondents reported their beliefs, ensuring that any subsequent changes in stated labor supply expectations reflect the causal impact of correcting misperceptions.[5] The control group, by contrast, did not receive any information at this stage.

Step 3: Eliciting expected annual earnings and expected hours worked in this year We then asked respondents to report their expected annual earnings for the current year. We calculated expected hours worked by dividing expected earnings by the expected hourly wage. To examine whether the provision of information leads to an increase in expected earnings or expected hours worked, we subsequently asked a series of questions on baseline characteristics, including demographics and household composition, which are later used as control variables in the analysis.

3.2 2nd wave

We conducted a follow-up survey in February 2025 to examine whether the labor supply intentions stated immediately after the information intervention were reflected in actual behavior over time. This follow-up is essential for evaluating the persistence of treatment effects by comparing stated labor supply, reported in the first wave, with revealed labor supply, measured based on respondents' realized earnings and hours worked for the full year of 2024. The second wave allows us to determine whether individuals not only intend to increase their labor supply following the intervention but also act upon that intention in practice.

The second-wave survey collected data on annual earnings and hourly wages for 2024, as well as whether respondents adjusted their working hours to remain below the 1.03 million yen threshold.

[4] Figure 2 illustrates the distribution of expected income tax payments when annual income is 1.2 million yen, based on survey responses. The figure reveals that many respondents failed to estimate the correct tax amount of 8,500 yen, with a tendency among some respondents to overestimate their tax amount.

[5] We deliberately restrict the informational treatment to a single, well-defined fact about income tax for two reasons. First, the 1.03 million yen threshold is the most salient focal point in the earnings distribution of part-time married women in Japan, as documented in Figure 1. The 1.03 million yen threshold corresponds to the point at which income tax liability begins to apply, and Saez (2010) shows that such thresholds—where income taxation first becomes applicable—tend to elicit much sharper behavioral responses than higher kink points within a complex tax schedule. Second, the social insurance and resident tax thresholds are heterogeneous across individuals—the social insurance threshold depends on firm size, weekly working hours, and monthly wages, and the per-capita resident tax threshold varies across municipalities (see Section 2)—making it infeasible to design a single, uniform informational message about these thresholds.

We also asked about the reasons behind such adjustments, household-level income shocks, intra-household decision-making regarding labor supply, and expectations for future earnings under a hypothetical policy scenario.

Social desirability bias A potential limitation of our survey design is the presence of social desirability bias in self-reported responses. Social desirability bias refers to the tendency of respondents to provide answers that are perceived as socially acceptable or normatively appropriate, rather than reflecting their true preferences or intentions (e.g., Fisher, 1993; Krumpal, 2013). In our setting, this concern may arise at multiple stages. First, in the pre-screening questions, respondents were explicitly asked whether they adjusted their labor supply to remain below the 1.03 million yen threshold. This may have made the purpose of the survey salient and influenced subsequent responses. Second, respondents in the treatment group were informed about the relatively small tax burden at 1.2 million yen and were immediately asked about their expected earnings. This sequence may have implicitly encouraged some respondents to report higher intended earnings, potentially anchoring their responses around the presented value. As a result, part of the observed increase in stated labor supply may reflect a reporting bias rather than a genuine revision of underlying intentions. However, our main conclusions rely on the divergence between stated and realized outcomes, which suggests that such responses do not translate into actual behavior. Therefore, while we cannot fully rule out the presence of social desirability bias, it is unlikely to overturn our central finding that information provision affects stated intentions but not realized labor supply.

4 From Stated to Revealed Labor Supply: Effects of Information Provision

4.1 Effects of Information Provision on Stated Labor Supply

4.1.1 Average Treatment Effects on Stated Labor Supply

Does the provision of information about complex income tax incentives alter stated labor supply? If individuals overestimate their income tax liability, providing accurate and salient information may encourage them to increase their working hours beyond the 1.03 million yen threshold.

Table 1 presents descriptive statistics for key outcome variables in 2023 (pre-treatment) and 2024 (post-treatment), separately for the control and treatment groups.[6] While there were no notable differences in baseline outcomes such as earnings or hours worked in 2023, the two groups diverged in 2024 following the information intervention. In particular, the average expected annual earnings in

[6]We restrict the analysis to respondents whose expected annual earnings are at least 0.9 million yen, in order to focus on those whose earnings are close to the 1.03 million yen threshold. The top and bottom 0.1% of hourly wages in calendar year 2023 are excluded as outliers.

2024 are higher in the treatment group by 1.12 ten thousand yen, and average expected hours worked increase by approximately 17.7 hours compared to the control group. Although modest in magnitude, these differences are statistically significant and consistent with the hypothesis that tax information influences individuals' stated labor supply decisions. In addition, Figure 3 provides a visual illustration of this pattern. When plotting prior earnings in 2023 against posterior expected earnings in 2024, the treatment group exhibits a noticeably steeper slope than the control group. This divergence in slopes suggests that the information intervention amplifies the responsiveness of expected earnings to prior earnings, providing suggestive visual evidence of the treatment effect.[7]

We next turn to a regression-based approach to formally evaluate the average treatment effects, while controlling for individual characteristics.[8] To estimate the effects of information provision on stated labor supply, we use the following estimation equation:

$$Y_j^{2024} = \alpha \times Y_j^{2023} + \beta \times D_j^{\mathrm{T}} + \mathbf{X}\gamma + \varepsilon_j, \tag{1}$$

where Y_j^{2024} denotes the expected outcome for individual j in 2024, and Y_j^{2023} denotes the actual outcome for individual j in 2023. D_j^{T} is a treatment dummy equal to one for individuals in the treatment group and zero otherwise. We consider two main outcome variables as Y_j^{2024}: (1) the log of the respondent's expected annual earnings in 2024, and (2) a binary indicator equal to one if the respondent's expected earnings in 2024 exceeds 1.03 million yen, and zero otherwise. The vector $\mathbf{X}$ includes control variables such as age, educational attainment, number of children in the household, firm size, area of residence, household income, and changes in hourly wages. It also incorporates behavioral attributes, including loss aversion and gender norms.[9]

[7]Figures B.4 and B.5 in Appendix B present the distribution of annual earnings and hourly wages across three stages: realized earnings in 2023 (Panel A in Figure B.4), expected earnings in 2024 elicited in the first wave (Panel B in Figure B.4), and realized earnings in 2024 obtained from the follow-up survey (Panel C in Figure B.4). In Panel (A), which shows realized earnings in 2023, we observe bunching around salient thresholds, particularly near 1.0 million yen. However, the distribution is not concentrated at a single point; instead, earnings are dispersed over a range from approximately 0.95 to 1.03 million yen, suggesting that while some respondents adjust their earnings toward focal thresholds, there remains substantial variation in baseline income. Although some degree of rounding in reported earnings cannot be ruled out, the dispersion of the distribution suggests that responses are not concentrated at focal values such as exactly 1.0 million yen. Panel (B) illustrates expected earnings for 2024. Compared to Panel (A), the distribution for the treatment group appears to shift slightly to the right, with a less pronounced mass at exactly 1.0 million yen. In addition, there is an increase in the number of respondents who report expected earnings above the 1.03 million yen threshold, consistent with the interpretation that the information treatment induces upward revisions in stated labor supply. Finally, Panel (C) presents realized earnings in 2024 based on the follow-up survey. The distribution exhibits greater dispersion compared to expected earnings, indicating that realized outcomes are not tightly clustered around focal points. Notably, there is an increase in the mass of observations above the 1.03 million yen threshold, suggesting that a subset of respondents did in fact increase their earnings beyond the threshold. At the same time, the dispersion highlights the gap between stated intentions and realized behavior, consistent with our main findings. In addition, since hours worked are imputed from earnings and hourly wages, we interpret earnings-based measures as our primary outcomes, while hours worked is used as a supplementary measure.

[8]A balance test for the covariates used in the regression is presented in Table B.2, and we did not find any statistically significant differences between the treatment and control groups.

[9]Gender norms are measured based on responses to Question 8 in Appendix A: *"Please indicate your level of agreement with the following statement: 'Men should be more responsible for work outside the home, and women should be more*

Columns (1) and (2) of Table 2 report the estimation results. The coefficients on D^{T} are significantly positive, indicating that information provision increases expected earnings by approximately 0.9% and raises the probability of planning to earn above the 1.03 million yen threshold by 4.3%. Column (3) of Table 2 shows the robustness of the main results using expected hours worked as an alternative outcome variable. The coefficient on D^{T} remains positive and statistically significant, indicating that the information intervention also increases expected hours worked. These findings suggest that individuals revise their labor supply intentions upward in response to receiving accurate information about their income tax burden.

4.1.2 Positive Association between Forecast Errors and Stated Labor Supply

To further examine the effects of information provision, we incorporate forecast errors for income tax into the estimating equation:

$$Y_j^{2024} = \alpha \times Y_j^{2023} + \beta \times D_j^{\mathrm{T}} + \gamma \times FE_j^2 + \delta \times D_j^{\mathrm{T}} \times FE_j^2 + \mathbf{X}\psi + \varepsilon_j, \tag{2}$$

where FE_j^2 denoted the square of the forecast error of the individual j between the amount of tax paid (8,500 yen) and the expected value. It is also 0 if the expected value is less than or equal to 8,500 yen.[10] The choice of a quadratic functional form follows a standard assumption in the forecasting literature, in which agents are modeled as minimizing the expected squared forecast error (Andrade and Le Bihan, 2013; Patton and Timmermann, 2010). This formulation captures the idea that the scope for belief revision—and thus the responsiveness of stated labor supply—is increasing in the magnitude of the initial misperception, with greater weight placed on respondents whose initial beliefs deviate substantially from the true tax burden. We focus on the coefficient δ. A positive δ indicates that the effects of information provision are stronger when an individual overestimates their income tax liability.

Columns (4) and (5) of Table 2 present the estimation results for the effects of forecast errors. First, the coefficients for D^T remain significantly positive, indicating that information provision increases the expected earnings and raises the probability of planning to earn above the 1.03 million yen threshold. These results are consistent with those in Columns (1) and (2). Second, the coefficients for $D^T \times FE^2$ are positive but statistically insignificant. This suggests that information provision does not have stronger effects when individuals overestimate their income tax liability.

Who is most affected by the provision of information? One plausible explanation for the observed heterogeneity in responsiveness is that older individuals may be less likely to revise their stated labor

responsible for housework."'

[10] Respondents whose initial belief was at most 8,500 yen (i.e., underestimators) are coded as $FE_j^2 = 0$ because updating their beliefs upward would, if anything, work in the opposite direction by raising their perceived tax burden and thus lowering their willingness to work. Imposing a single quadratic relationship across both subgroups would therefore conflate two effects of opposite signs. As Figure 2 shows, a non-negligible share of respondents underestimated the tax burden, which implies that the interaction term $D^T \times FE_j^2$ identifies the differential effect among overestimators only, while the main effect D^T captures the average treatment effect across both subgroups.

supply upward due to anticipated constraints—such as poor health, limited job flexibility, or caregiving responsibilities. While our outcome variables are based on self-reported expectations rather than realized behavior, such expectations may still reflect individuals' internal assessments of their capacity to adjust work effort in response to new information. Existing empirical evidence is broadly consistent with this interpretation: Blundell et al. (2023) find that health deterioration explains a substantial portion of the employment decline between ages 50 and 70, particularly among less-educated individuals. Similarly, Maestas et al. (2024) report that the onset of informal caregiving responsibilities leads to significant reductions in labor supply among midlife and older women. These findings suggest that some older individuals might perceive the cost of increasing work hours—whether due to health, caregiving, or workplace constraints—as too high to act upon updated tax information. By contrast, younger individuals may feel more able—or at least perceive themselves as more able—to translate corrected beliefs into labor supply intentions.

To test for this heterogeneity, Columns (7) and (8) of Table 2 report estimation results from specifications that interact the treatment indicator with age and the (squared) forecast error.[11] Consistent with the hypothesis discussed above, we find that the effect of information provision on expected labor supply is particularly strong among younger respondents who had initially overestimated their income tax liability.[12] The interaction terms are positive and statistically significant, indicating that age may play an important role in moderating how individuals respond to corrective tax information.

4.2 Effects of Information Provision on Revealed Labor Supply

4.2.1 Average Treatment Effects on Revealed Labor Supply

While information provision significantly influenced individuals' stated labor supply intentions, it remains an open question whether these effects persist in actual labor supply behavior. To address this, we re-estimate Equation (1) and Equation (2) by replacing the dependent variable with realized outcomes in 2024.

Table 3 presents the estimation results from the follow-up survey. The dependent variable in Columns (1) and (4) is the log of realized annual earnings in 2024, and the dependent variable in Columns (2) and (5) is a binary indicator equal to one if the respondent's realized earnings in 2024 exceed 1.03 million yen, and zero otherwise. The dependent variable in Columns (3) and (6) is the log of realized hours worked in 2024. The vector $\mathbf{X}$ includes control variables collected in the main survey, such as age, educational attainment, number of children in the household, firm size, area of residence, household income, changes in hourly wages, loss aversion, and gender norms.

In Columns (1) and (2), the coefficients on D^T are statistically insignificant for both earnings and the probability of earning above the 1.03 million yen threshold across all specifications. Similarly, in

[11] We create a dummy variable, $D^{under\ 40}$, which takes the value of one if individual j is under the age of 40, and zero otherwise.

[12] Columns (6) and (9) of Table 2 report the corresponding results for hours worked, without and with the age interaction, respectively. The estimates are qualitatively consistent with those for annual earnings in both specifications.

Columns (4) and (5), the coefficients for $D^T \times FE^2$ are also statistically insignificant. The results for hours worked, reported in Columns (3) and (6), are likewise statistically insignificant, indicating no detectable effect of the treatment on labor input. These findings suggest that, unlike the positive effects observed on stated intentions, the treatment had no discernible impact on realized labor supply outcomes.[13]

4.2.2 Effects of Information Provision on Changes in Realized Labor Supply

The specification in the previous subsection controls for baseline outcomes and can be interpreted as capturing conditional changes in labor supply. An alternative and more direct approach is to examine within-individual changes over time. In particular, we examine whether the information intervention affected the change in realized labor supply between 2023 and 2024.

To address this, we estimate the following specification:

$$\log\left(\frac{Y_{j,2024}^{\text{Revealed}}}{Y_{j,2023}^{\text{Revealed}}}\right) = \beta \cdot D_j^T + \mathbf{X}\gamma + \varepsilon_{\mathbf{j}}, \tag{3}$$

where $Y_{j,t}^{\text{Revealed}}$ denotes the realized labor supply of individual j in year t, and D_j^T is a treatment indicator equal to one for individuals in the treatment group and zero otherwise. The vector $\mathbf{X}$ includes the same set of control variables as in the previous specifications.

This specification focuses on the log change in realized labor supply between 2023 and 2024 and provides a transparent test of whether the information intervention induced any behavioral adjustment over time.

Table 4 reports the estimation results. Focusing on Column (1), which uses annual earnings as the primary outcome, the coefficient on the treatment indicator is small and statistically insignificant. This indicates that the information intervention did not lead to any measurable change in realized earnings between 2023 and 2024. This finding provides further evidence that the intervention did not induce behavioral adjustment in actual labor supply.[14]

Taken together with the results in the previous subsection, these findings provide consistent evidence that, although the information intervention affects stated labor supply immediately after treatment, it does not translate into actual behavioral change. Even when focusing on within-individual

[13]The signs of the treatment coefficients in Table 3, although uniformly statistically insignificant, are uniformly negative. Given that none of the coefficients reach conventional levels of significance, we caution against interpreting these point estimates as evidence of a true negative effect of the intervention; the limited sample size in the second wave (N = 341) means that we cannot distinguish a true null effect from a small underlying effect masked by noise. One possible interpretation is that the intervention was insufficient to offset the strong pre-existing salience associated with the 1.03 million yen threshold. Because many respondents had already adjusted their labor supply around this institutional focal point prior to the intervention, correcting misperceptions about the marginal income tax burden alone may have had limited influence on subsequent realized behavior. In this sense, the small negative point estimates may reflect the persistence of threshold-centered adjustment behavior rather than a meaningful negative treatment effect.

[14]The corresponding results for hours worked are reported in Column (2). The estimated coefficient is likewise small and statistically insignificant, indicating no detectable effect of the intervention on changes in working hours.

changes over time, we find no evidence of a treatment effect on realized labor supply.

4.2.3 Robustness Check: Sample Attrition

One potential concern with these results is sample attrition between the first and second waves. As shown in Table B.3 in Appendix B, we do not find systematic differences in attrition rates between the treatment and control groups, although younger respondents are somewhat more likely to drop out of the follow-up survey.[15] In addition, Table B.4 in Appendix B reports the balance test for the subsample that participated in the second wave. The results indicate that attrition rates do not differ systematically between the treatment and control groups. However, the composition of the remaining sample is not fully random: respondents who are younger or less loss-averse are more likely to drop out of the follow-up survey.

To address this potential source of selection bias, we re-estimate the main specifications using inverse probability weighting (IPW), which adjusts for differential attrition based on observable characteristics.[16] Table 5 reports the IPW-adjusted estimates, where the dependent variables are the realized outcomes in 2024. The results indicate that both the average treatment effects on realized outcomes and the gap between stated and realized labor supply remain essentially unchanged, reinforcing the robustness of our main conclusions.

5 Discussion

The discrepancy between stated and revealed labor supply responses indicates that while the provision of accurate tax information can shift individuals' intentions, such stated intentions do not necessarily translate into actual behavior. Several factors may contribute to this gap. First, the salience of the information may have decayed over time, reducing its influence on year-end outcomes. Second, entrenched behavioral norms or inertia may lead respondents to revert to prior habits, despite updated beliefs. Third, labor demand-side constraints, such as employer incentives to limit working hours, may impede behavioral change even when individuals' intentions have shifted.

Regarding the first factor, empirical studies have shown that the effects of tax information provision on labor supply are not always sustained over time (Chetty and Saez, 2013; Nyman et al., 2023). Chetty et al. (2013) also demonstrate that the impact of the EITC varies greatly depending on regional differences in knowledge. This suggests that not only one-off information provision, but also

[15] Table B.3 reports regression results where a dummy variable (equal to one if the respondent attrited from the follow-up survey and zero otherwise) is used as the dependent variable. We regress this attrition dummy on the treatment indicator and individual covariates using both OLS and Probit models.

[16] We implement IPW in two steps. First, we estimate the probability of remaining in the sample by regressing a dummy variable for follow-up participation (1 if the respondent remained, 0 otherwise) on the treatment indicator and baseline covariates, using OLS and Probit models. Second, the inverse of each respondent's predicted probability of participation is assigned as a weight in the outcome regressions, so that observations with a lower likelihood of remaining in the sample receive greater weight.

the broader diffusion of knowledge through daily interactions and community networks, may be necessary for persistent effects. More broadly, research in behavioral economics suggests that one-time interventions face inherent limitations in producing lasting behavioral change. Allcott and Rogers (2014) demonstrate that behavioral interventions such as energy-saving messages produce immediate effects that decay rapidly between reports, suggesting that such interventions act partly as temporary cues rather than permanent information updates. In our setting, the tax information provided in the first wave may have similarly functioned as a transient cue that faded before respondents made their year-end labor supply decisions. DellaVigna and Malmendier (2006) further show that individuals often overestimate their future self-control and fail to follow through on their stated intentions, a pattern consistent with our finding that treated respondents revised their earnings expectations upward but did not ultimately change their behavior. These findings suggest that a one-time provision of information may be insufficient to disrupt long-standing behavioral routines and norms.

A direct test of these mechanisms, however, is constrained by a limitation in our experimental design: in the second wave, we did not re-elicit respondents' beliefs about the income tax burden at 1.2 million yen. As a result, the null effect on revealed labor supply is consistent with two distinct interpretations that we cannot empirically distinguish. On the one hand, treated respondents' beliefs may have remained updated throughout the year, but behavioral inertia or other psychological frictions prevented these revised beliefs from translating into changes in actual labor supply. On the other hand, the salience of the corrected information may have decayed over the course of the year, and treated respondents' beliefs may have reverted to their pre-treatment state by the time year-end labor supply decisions were made; in this case, behavior would not have changed because beliefs themselves had reverted. Both interpretations are consistent with our data, and distinguishing between them would require additional belief elicitations in subsequent waves. Whether persistent belief updates fail to translate into behavior, or whether beliefs themselves decay over time, thus remains an open question for future research.

Another possible explanation for the lack of persistent behavioral change lies in the inertia of work patterns and lifestyle choices that have been shaped by long-standing institutional thresholds in the tax and social security system. For example, for married women who have historically adjusted their labor supply in response to spousal tax deductions and social insurance contribution thresholds, the income ceilings—such as the 1.03 million yen cutoff—may have become not merely legal benchmarks but also entrenched behavioral anchors. Even when these individuals are informed that the actual financial loss from exceeding the threshold is small, they may find it difficult to abandon their established working patterns.

Table 6 illustrates the persistence of these entrenched behavioral patterns: among respondents who adjusted their working hours, social insurance considerations were cited by 47.8% of the control group and 49.7% of the treatment group, while the tax burden was cited by 37.8% and 36.0%, respectively.[17]

[17] In the second wave of the survey, we additionally elicited respondents' reasons for adjusting their labor supply. The reasons for adjusting correspond to the response options in Question 4A of the follow-up survey (see Appendix A.3).

Importantly, despite the treatment group's upward revision of stated labor supply, the proportion citing these institutional reasons at year-end was nearly identical across the treatment and control groups. This suggests that while the information intervention succeeded in shifting intentions, it did not weaken the hold of institutional thresholds on actual adjustment behavior. Kodama et al. (2025) offer a complementary perspective, finding that among female part-time workers who adjust their working hours in the income ranges most affected by tax and social insurance thresholds, a larger share report having income targets—specific earnings levels they aim to reach in order to meet household economic needs—than those who cite tax and social insurance considerations as their primary reason for adjustment. This implies that individuals' labor supply decisions may be guided not only by financial incentives but also by entrenched reference points tied to the tax and social insurance system, which a one-time information intervention was insufficient to override.[18]

Labor demand-side factors may also play a role. In Japan, the threshold for mandatory social insurance enrollment changes depending on firm size, but generally, employees earning over 1.06 million yen must join the system. Since social insurance premiums are shared by both employers and employees, firms may have incentives to limit workers' hours to avoid additional costs. Evidence from Korea shows that employers sometimes reduce working hours to avoid social insurance contributions (Kim et al., 2023).

In summary, while information provision can correct misconceptions and shift stated intentions in the short term, persistent changes in labor supply may require addressing deeper behavioral habits, workplace practices, and broader dissemination of knowledge within communities.

6 Conclusion

This study investigates whether providing accurate information about complex tax incentives can influence labor supply decisions among secondary earners in Japan. Using a randomized controlled trial, we find that information provision significantly increases stated annual earnings by 0.9% and raises the probability of planning to earn above the 1.03 million yen threshold by 4.3%. The effect is particularly pronounced among younger individuals who initially overestimated their tax burden. However, our follow-up survey reveals that these changes in stated intentions do not translate into actual behavior: revealed labor supply at year-end does not significantly differ between the treatment and control groups.

[18] A further interpretation, raised by the design of our intervention itself, is that the income tax threshold may not be the binding constraint for many respondents. As shown above, approximately half of respondents in both groups cite social insurance contributions rather than income tax as the primary reason for adjusting their working hours, suggesting that the relevant threshold for behavioral adjustment may be the social insurance threshold (around 1.06 or 1.3 million yen) rather than the 1.03 million yen income tax threshold. If this is the case, correcting misperceptions about the income tax burden alone may be insufficient to alter behavior, even if the intervention successfully shifts beliefs and stated intentions. This interpretation does not invalidate the divergence we document between stated and revealed preferences; rather, it complements the previous explanations by suggesting that the limited reach of the informational treatment may itself be one of the channels through which the divergence arises.

Our analysis points to several factors that may explain this divergence. Table 6 shows that among respondents who adjusted their working hours, approximately 50% cited social insurance considerations and around 40% cited the tax burden as primary reasons, with virtually no difference between the treatment and control groups. This suggests that institutional thresholds have become entrenched behavioral anchors that a one-time information intervention is insufficient to override. In addition, labor demand-side constraints—such as employers' incentives to limit workers' hours to avoid social insurance costs—may further impede behavioral change even when individuals' intentions have shifted.

Our findings suggest that while correcting misconceptions about tax incentives can shift short-term intentions, overcoming deeper behavioral and structural barriers is necessary to achieve sustained changes in labor supply. Although information provision can help improve individuals' understanding of the true financial implications of exceeding the 1.03 million yen threshold, this alone is insufficient to produce lasting behavioral change. As our follow-up survey reveals, respondents in both the treatment and control groups cited social insurance and tax-related thresholds as primary reasons for adjusting their earnings at similar rates, suggesting that institutional reference points remain deeply entrenched even after intentions have been updated. This finding is consistent with Chetty et al. (2013), who document that regional variation in EITC knowledge, accumulated through prolonged local experience rather than discrete informational events, drives differences in earnings responses. Policymakers aiming to encourage workforce participation among secondary earners should therefore consider not only repeated and socially embedded channels of information dissemination, but also comprehensive reform of the institutional thresholds—including the social insurance thresholds at 1.06 and 1.3 million yen—that serve as behavioral anchors. Ultimately, a multifaceted approach that combines sustained information provision with structural reform of both tax and social insurance systems is likely to be more effective in promoting lasting increases in labor supply.

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Table 1: Basic statistics of a randomized controlled trial

	(1) Control	(2) Treatment	(3) Difference (2) − (1)
Panel A: Pre-treatment (2023)			
Annual earnings (ten thousand yen)	98.24	98.43	0.19
	[3.90]	[3.80]	(0.28)
Hours worked (per year)	905.51	910.33	4.82
	[120.19]	[120.19]	(8.90)
Hourly wages (yen)	1,108.83	1,108.92	0.10
	[200.90]	[245.48]	(16.63)
Observations	376	356	
Panel B: Stated labor supply (2024, 1st wave)			
Annual earnings (ten thousand yen)	99.01	100.13	1.12**
	[4.97]	[7.42]	(0.47)
Hours worked (per year)	897.59	915.27	17.68*
	[126.69]	[134.63]	(9.67)
Hourly wages (yen)	1,139.23	1,122.80	−16.43
	[318.66]	[257.48]	(21.36)
Respondents who earn more than 1.03M yen (%)	3.72	7.58	3.86**
	[18.96]	[26.51]	(1.71)
Observations	376	356	
Panel C: Revealed labor supply (2024, 2nd wave)			
Annual earnings (ten thousand yen)	98.78	97.14	−1.65
	[13.88]	[16.34]	(1.69)
Hours worked (per year)	891.79	884.41	−7.38
	[161.13]	[172.26]	(18.13)
Hourly wages (yen)	1,131.44	1,113.80	−17.85
	[206.60]	[177.54]	(20.81)
Respondents who earn more than 1.03M yen (%)	16.11	10.56	−5.55
	[36.87]	[30.82]	(3.70)
Observations	180	161	

Note: Standard deviations in brackets. Standard errors of differences in parentheses. We use the subsample of respondents whose expected annual earnings are at least 0.9 million yen, in order to focus on those whose earnings are close to the 1.03 million yen threshold. The top and bottom 0.1% of hourly wages in calendar year 2023 are excluded as outliers. Panel C is a restricted sample of respondents earning 0.9 million yen or above per year. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers. $^{**}p < 0.05$; $^{*}p < 0.1$.

Table 2: Does information provision change stated labor supply? (1st wave)

	(1) Annual earnings in 2024	(2) $D^{1.03M}$	(3) Hours worked in 2024	(4) Annual earnings in 2024	(5) $D^{1.03M}$	(6) Hours worked in 2024	(7) Annual earnings in 2024	(8) $D^{1.03M}$	(9) Hours worked in 2024
D^T	0.009**	0.043**	0.012**	0.008*	0.036*	0.012**	0.008**	0.035*	0.012**
	(0.004)	(0.017)	(0.005)	(0.004)	(0.019)	(0.006)	(0.004)	(0.020)	(0.006)
FE^2				−0.000	−0.003	−0.001	−0.000	−0.003	−0.001
				(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)
$D^T \times FE^2$				0.001	0.004	−0.000	−0.000	−0.002	−0.001
				(0.001)	(0.006)	(0.001)	(0.001)	(0.003)	(0.001)
$D^{under\ 40}$							0.007	0.021	0.004
							(0.007)	(0.034)	(0.008)
$D^T \times D^{under\ 40}$							0.002	0.016	0.001
							(0.015)	(0.056)	(0.016)
$FE^2 \times D^{under\ 40}$							0.000	−0.004	0.000
							(0.002)	(0.006)	(0.002)
$D^T \times FE^2 \times D^{under\ 40}$							0.005**	0.039***	0.006**
							(0.002)	(0.011)	(0.003)
Annual earnings in 2023	0.752***	0.480**		0.751***	0.474**		0.753***	0.498***	
	(0.047)	(0.194)		(0.047)	(0.195)		(0.047)	(0.192)	
Hours worked in 2023			0.865***			0.865***			0.866***
			(0.082)			(0.082)			(0.081)
Constant	1.162***	−2.037**	0.938*	1.167***	−2.004**	0.939*	1.140***	−2.208**	0.917
	(0.221)	(0.919)	(0.559)	(0.222)	(0.924)	(0.558)	(0.218)	(0.895)	(0.558)
Control variables	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	732	732	732	732	732	732	732	732	732

Note: We show the estimation results from Equation (1) and Equation (2). The dependent variable in the *Annual earnings in 2024* columns is the log of expected annual earnings in 2024; $D^{1.03M}$ represents a dummy equal to one if expected earnings in 2024 exceeds 1.03 million yen, and zero otherwise. The dependent variable in the *Hours worked in 2024* columns is the log of expected hours worked in 2024. D^T is a dummy variable equal to one for individuals in the treatment group and zero otherwise. FE_j^2 is the square of the forecast error of individual j between the actual tax amount (8,500 yen) and the expected value; it equals zero if the expected value is less than or equal to 8,500 yen. $D^{under\ 40}$ is a dummy variable equal to one if individual j is under the age of 40, and zero otherwise. *Annual earnings in 2023* and *Hours worked in 2023* are the actual values in 2023, expressed in logarithms. Columns (7)–(9) replace age category dummies with $D^{under\ 40}$. Control variables include educational attainment, number of children, firm size, area of residence, household income, change in hourly wages, loss aversion, and gender norms. We use the subsample of respondents earning 0.9 million yen or above per year. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers. ***p<0.01; **p<0.05; *p<0.1. Robust standard errors are in parentheses.

Table 3: Does information provision change revealed labor supply? (2nd wave)

	(1) Annual earnings in 2024	(2) $D^{1.03M}$	(3) Hours worked in 2024	(4) Annual earnings in 2024	(5) $D^{1.03M}$	(6) Hours worked in 2024
D^T	−0.025	−0.038	−0.022	−0.016	−0.046	−0.011
	(0.020)	(0.037)	(0.021)	(0.021)	(0.042)	(0.022)
FE^2				0.000	−0.005	−0.000
				(0.002)	(0.005)	(0.002)
$D^T \times FE^2$				−0.005	0.004	−0.006
				(0.009)	(0.010)	(0.009)
Annual earnings in 2023	0.977***	1.902***		1.002***	1.882***	
	(0.228)	(0.445)		(0.219)	(0.447)	
Hours worked in 2023			0.865***			0.862***
			(0.118)			(0.118)
Constant	0.078	−8.446***	0.905	−0.068	−8.389***	0.898
	(1.075)	(2.070)	(0.820)	(1.026)	(2.079)	(0.819)
Control variables	✓	✓	✓	✓	✓	✓
Observations	341	341	341	341	341	341

Note: We show the estimation results from Equation (1) and Equation (2). The dependent variable in the *Annual earnings in 2024* columns is the log of realized annual earnings in 2024; the dependent variable in the *Hours worked in 2024* columns is the log of realized hours worked in 2024. $D^{1.03M}$ represents a dummy equal to one if realized earnings in 2024 exceed 1.03 million yen, and zero otherwise. D^T is a dummy variable equal to one for individuals in the treatment group and zero otherwise. FE_j^2 is the square of the forecast error of individual j between the actual tax amount (8,500 yen) and the expected value; it equals zero if the expected value is less than or equal to 8,500 yen. *Annual earnings in 2023* and *Hours worked in 2023* are the actual values in 2023, expressed in logarithms. Control variables include age, educational attainment, number of children in the household, firm size, area of residence, household income, change in hourly wages, loss aversion, and gender norms. We use the subsample of respondents earning 0.9 million yen or above per year. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers. ***p<0.01; **p<0.05; *p<0.1. Robust standard errors are in parentheses.

Table 4: Effects of information provision on year-on-year changes in realized Labor Supply (2nd wave)

	(1) Annual earnings	(2) Hours worked
D^T	−0.015	−0.004
	(0.016)	(0.021)
Constant	−0.043	−0.018
	(0.123)	(0.119)
Control variables	✓	✓
Observations	341	341

Note: We show the estimation results from Equation (3). The dependent variable in Column (1) is the year-on-year percentage change in realized annual earnings between 2023 and 2024. The dependent variable in Column (2) is the year-on-year percentage change in realized hours worked between 2023 and 2024. D^T is a dummy variable equal to one for individuals in the treatment group and zero otherwise. Control variables include age, educational attainment, number of children in the household, firm size, area of residence, household income, change in hourly wages, loss aversion, gender norms, and FE_j^2. Results are estimated using ordinary least squares (OLS). We use the subsample of respondents earning 0.9 million yen or above per year. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Robust standard errors in parentheses.

Table 5: Robustness check: Effects of information provision on realized labor supply using inverse probability weighting (IPW) (2nd wave)

	(1) Annual earnings in 2024	(2) $D^{1.03M}$	(3) Hours worked in 2024	(4) Annual earnings in 2024	(5) $D^{1.03M}$	(6) Hours worked in 2024
D^T	−0.035	−0.047	−0.032	−0.020	−0.048	−0.017
	(0.021)	(0.036)	(0.022)	(0.020)	(0.040)	(0.021)
FE^2				−0.000	−0.005	−0.001
				(0.002)	(0.005)	(0.002)
$D^T \times FE^2$				−0.009	0.001	−0.009
				(0.010)	(0.010)	(0.010)
Annual earnings in 2023	1.037***	2.028***		1.080***	2.024***	
	(0.255)	(0.435)		(0.239)	(0.438)	
Hours worked in 2023			0.877***			0.873***
			(0.109)			(0.109)
Constant	−0.187	−9.053***	0.836	−0.432	−9.081***	0.819
	(1.196)	(2.019)	(0.765)	(1.108)	(2.032)	(0.758)
Control variables	✓	✓	✓	✓	✓	✓
Observations	341	341	341	341	341	341

Note: We show the estimation results from Equation (1) and Equation (2). Results are estimated using inverse probability weighting (IPW). The IPW adjusts for potential selection bias due to attrition between the 1st and 2nd wave surveys: each respondent is weighted by the inverse of their estimated probability of remaining in the sample, where the probability is estimated using baseline covariates and the treatment indicator. The dependent variable in the *Annual earnings in 2024* columns is the log of realized annual earnings in 2024; the dependent variable in the *Hours worked in 2024* columns is the log of realized hours worked in 2024. $D^{1.03M}$ represents a dummy equal to one if realized earnings in 2024 exceed 1.03 million yen, and zero otherwise. D^T is a dummy variable equal to one for individuals in the treatment group and zero otherwise. FE_j^2 is the square of the forecast error of individual j between the actual tax amount (8,500 yen) and the expected value; it equals zero if the expected value is less than or equal to 8,500 yen. *Annual earnings in 2023* and *Hours worked in 2023* are the actual values in 2023, expressed in logarithms. Control variables include age, educational attainment, number of children in the household, firm size, area of residence, household income, change in hourly wages, loss aversion, and gender norms. We use the subsample of respondents earning 0.9 million yen or above per year. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers. ***p<0.01; **p<0.05; *p<0.1. Robust standard errors are in parentheses.

Table 6: Reasons for adjusting working hours in 2024 (2nd wave)

	(1) Control $[N = 180]$ (%)	(2) Treatment $[N = 161]$ (%)	(3) Difference (2) − (1)
Social insurance	47.8	49.7	1.9
Tax burden (income tax, etc.)	37.8	36.0	−1.8
Spouse allowance	12.2	11.8	−0.4
Personal time	8.3	13.0	4.7
Housework/caregiving/childcare	4.4	12.4	8.0
Employer request	4.4	3.1	−1.3
Other	0.6	0.6	0.0

Note: This table reports the proportion of respondents who selected each reason for adjusting their working hours to remain below the 1.03 million yen threshold in 2024, separately by treatment status. The reasons correspond to the response options in Question 4A of the follow-up survey (see Appendix A.3). N denotes the total number of respondents in each group, including those who did not adjust their working hours. Respondents who reported no adjustment account for 36.1% of the control group and 32.9% of the treatment group (difference insignificant, $p = 0.537$). Respondents could select up to three reasons. We use the subsample of respondents with annual earnings of 0.9 million yen or above per year. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers.

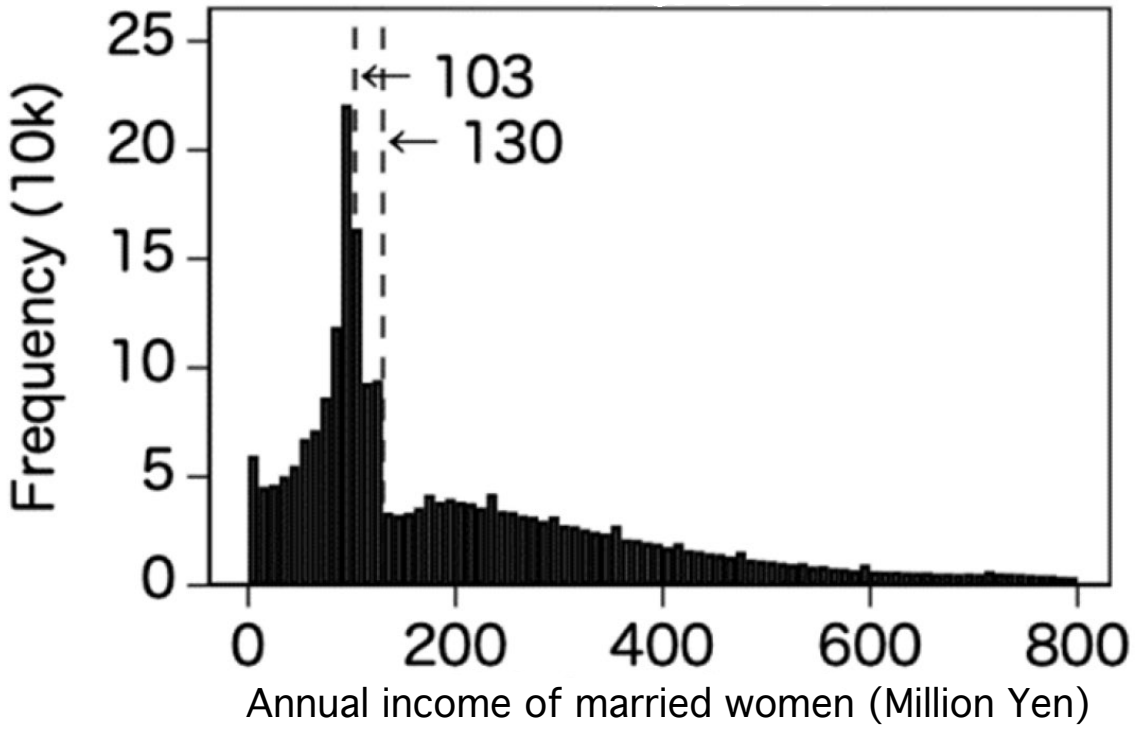

Figure 1: 1.03 million yen ceiling: annual income of married women

Source: Reproduced from Kondo and Fukai (2023). The dashed lines indicate the 1.03 million yen income tax threshold and the 1.3 million yen social insurance threshold.

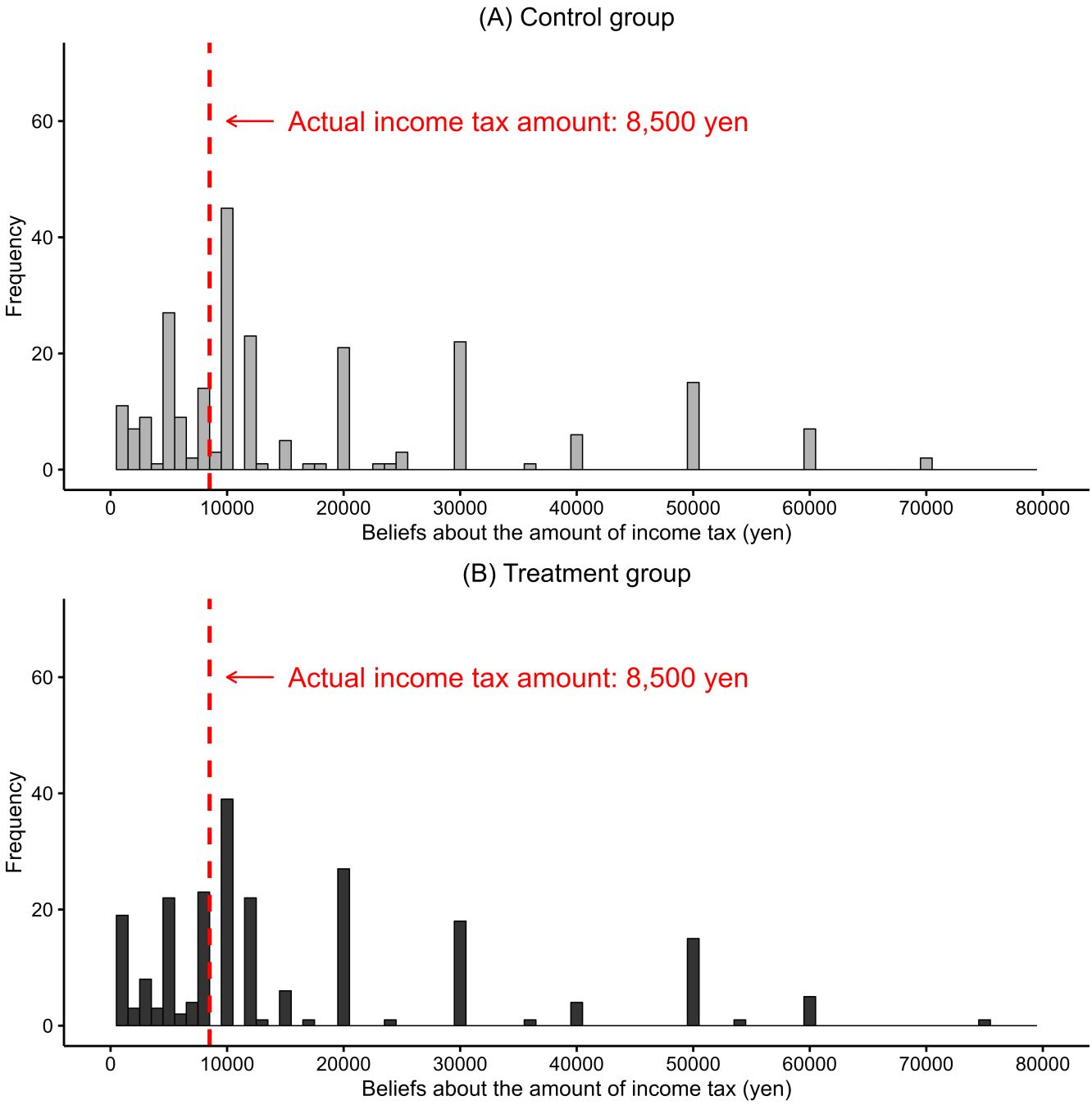

Figure 2: Distribution of beliefs about income tax at 1.2 million yen by treatment status

Note: This figure shows the distribution of beliefs about the income tax amount at 1.2 million yen of annual earnings, separately for the control group (Panel A) and the treatment group (Panel B). The vertical dashed line indicates the actual income tax amount at 1.2 million yen, which is 8,500 yen.

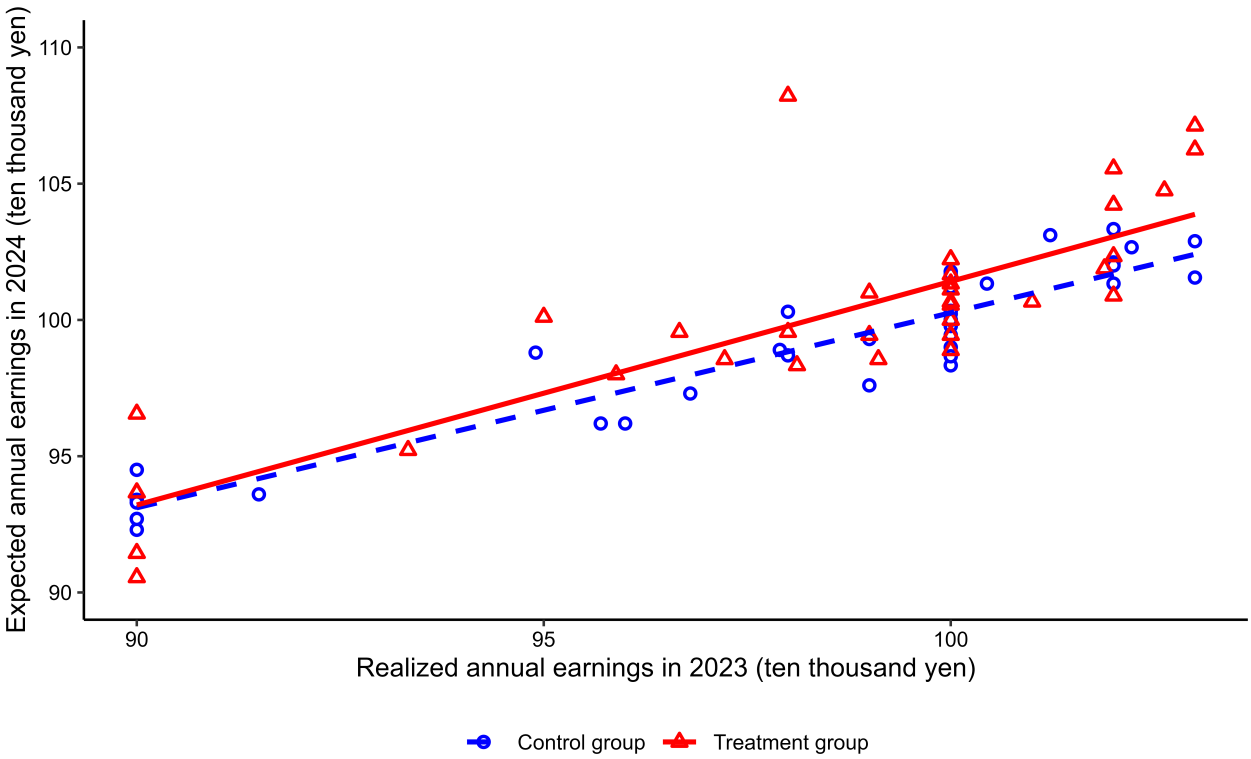

Figure 3: Treatment effects on stated annual earnings

Note: This figure shows binscatters of expected annual earnings in 2024 against realized annual earnings in 2023. The horizontal axis shows realized annual earnings in 2023, and the vertical axis shows expected annual earnings in 2024 elicited in the 1st-wave survey. Fitted lines are estimated separately for the control group (dashed) and the treatment group (solid). To formally test the difference in slopes between the two groups, we estimate the following specification:

$$Y_j^{2024} = \alpha + \beta \times Y_j^{2023} + \gamma \times D_j^T + \theta \times \left(D_j^T \times Y_j^{2023}\right) + \varepsilon_j,$$

where Y_j^{2024} is the log of expected annual earnings in 2024 for individual j, Y_j^{2023} is the log of realized annual earnings in 2023, and D_j^T is a dummy variable equal to one for individuals in the treatment group and zero otherwise. The estimated interaction coefficient is $\hat{\theta} = 0.152$ (SE = 0.078), which is statistically significant at the 10% level, indicating that the treatment group exhibits a steeper slope than the control group.

Appendix

A Questionnaire

We conducted an information provision experiment using an online survey platform between August 16 and 23, 2024, targeting a sample of 1,006 women. The age distribution of the sample was representative of the Japanese population, ranging from 25 to 64 years old.

A.1 Pre-screening Survey

We conducted a pre-screening before implementing the main survey. In the pre-screening, we selected respondents who are married women, part-time workers, with annual earnings not more than 1.03 million yen in 2023, and whose expected annual earnings in 2024 are not more than 1.03 million yen. The age distribution was representative of Japan's demographics, ranging from 25 to 64 years old. The following are the English translations of the survey questions.

BQ.1. Please indicate your gender.

(1) Male

(2) Female

(3) Prefer not to answer

BQ.2. Please enter your age.

_____

BQ.3. Please indicate where you live.

(1) Hokkaido

(2) Aomori

$\sim$

(47) Okinawa

(99) Other

BQ.4. Are you married?

(1) Yes

(2) No

BQ.5. Please indicate your occupation.

(1) Company employee / officer
(2) Self-employed
(3) Professionals (doctors, lawyers, hairdressers, designers, etc.)
(4) Civil servant
(5) Student
(6) Housewife / househusband
(7) Part-time worker
(8) Unemployed / retired
(9) Others

BQ.6. In the last year (Jan-Dec 2023), did you adjust your working hours or days so that your annual earnings did not exceed 1.03 million yen?

(1) Yes, I did
(2) No, I did not

BQ.7. Have you adjusted (or do you intend to adjust) your working hours and days so that your annual earnings do not exceed 1.03 million yen in this year?

(1) Yes, I have (and will)
(2) No, I have not (and will not)

A.2 1st-wave survey

After completing the screening process, eligible participants proceeded to the main survey. The following are the English translations of the survey questions.

Q.1. Approximately how much were your annual earnings in last year (Jan-Dec 2023)? Please enter your annual earnings before deductions for taxes and social insurance.

Annual earnings: _____ ten thousand yen

Q.2. How much was your hourly wage in last year (Jan-Dec 2023)?

Hourly payment : _____ yen

Q.3. How much is your expected hourly wage in this year (Jan-Dec 2024)?

Hourly payment : _____ yen

Q.4. Please think about how much you will have to pay in income tax if you earn 1.20 million yen this year. The Exemption for persons with disabilities is assumed not to apply here.

Income tax amount : _____ yen

Q.5T. ONLY TREATMENT GROUP: If your annual income is 1.20 million yen, the amount of income tax you will have to pay is 8,500 yen. Approximately how much do you expect to earn from your main job this year (Jan-Dec 2024)?

Expected annual income: _____ ten thousand yen

Q.5C. ONLY CONTROL GROUP: Approximately how much do you expect to earn from your main job this year (Jan-Dec 2024)?

Expected annual income: _____ ten thousand yen

Q.6. Which of the following is the total number of employees across the companies in which you usually work?

(1) 1-50 employees
(2) 51-100 employees
(3) 101-500 employees
(4) More than 500 employees

Q.7. Assume that you know there is a 50% chance of losing ¥100,000 on a given day. You can take out insurance to cover this amount in case of loss. If an insurance policy is sold as listed below, would you purchase it? You may choose Option "A", to purchase the insurance, or Option "B", not to purchase the insurance. Please indicate which option you prefer for each of the nine insurance prices.

Price of the insurance	Which ONE do you prefer? (X ONE Box For EACH Row)	
	Option "A" (purchase the insurance)	Option "B" (NOT purchase the insurance)
¥1,000	1 ☐	2 ☐
¥5,000	1 ☐	2 ☐
¥10,000	1 ☐	2 ☐
¥15,000	1 ☐	2 ☐
¥20,000	1 ☐	2 ☐
¥30,000	1 ☐	2 ☐
¥40,000	1 ☐	2 ☐
¥45,000	1 ☐	2 ☐
¥50,000	1 ☐	2 ☐

Q.8. Please indicate your level of agreement with the following statement.

"Men should be more responsible for work outside the home, and women should be more responsible for housework."

(1) Agree
(2) Somewhat agree
(3) Somewhat disagree
(4) Disagree

Q.9. Please indicate your educational background.

(1) Primary and secondary school graduates
(2) High school graduate
(3) Technical college graduate
(4) Vocational school graduate
(5) Junior college graduate
(6) University graduate
(7) Graduate-school graduate

Q.10. Please indicate the number of children (please only indicate the number of children currently living with you). Please do not include adult children.

(1) 1 child
(2) 2 children
(3) 3 children

(4) 4 or more children

(5) No children

A.3 2nd-wave survey for a follow-up

We conducted a follow-up survey in February 2025 to examine whether the labor supply intentions stated immediately after the information intervention were reflected in actual behavior over time. A total of 536 respondents participated in the follow-up survey. The following are the English translations of the survey questions.

Q.1. Approximately how much were your annual earnings in last year (Jan–Dec 2024)? If you have a withholding record, please enter the ”income payment” amount as your gross income. If you have multiple withholding records, please enter the combined total.

Annual income: _____ ten thousand yen

Q.2. How much was your hourly wage in last year (Jan-Dec 2024)?

Hourly payment: _____ yen

Q.3. In the last year (Jan-Dec 2024), did you adjust your working hours or days so that your annual earnings did not exceed 1.03 million yen?

(1) Yes, I did

(2) No, I did not

[For respondents who answered “Yes, I did” in Q.3]

Q.4A. I would like to ask those who answered “Yes, I did” in the previous question: Why did you adjust your working hours or days? (select up to three)

(1) To avoid social insurance premium payments

(2) Because tax burden such as income tax would increase if excluded from tax deductions

(3) Because the employer requested work hour adjustment

(4) To secure personal time

(5) To secure time for housework, caregiving, or childcare

(6) To maintain eligibility for the company’s spouse allowance

(7) Other

[For respondents who answered “No, I did not” in Q.3]

Q.4B. In 2024, was there a significant decrease in your household income due to your husband’s job switch or unemployment?

(1) Yes, there was

(2) No, there wasn’t

Q.5. How do you and your spouse discuss and decide about your work style and annual income?

(1) Decided by my husband without particular discussion

(2) Decided by myself without particular discussion

(3) Discussed together, but mostly followed my husband’s opinion

(4) Discussed together, but mostly followed my opinion

(5) Discussed together and reached a mutual agreement

(6) We don’t particularly discuss these matters

(7) Other

Q.6. Please enter the age of your youngest child.

(1) _____

(2) No children.

Q.7. How much is your expected hourly wage in this year (Jan-Dec 2025)?

Hourly payment: _____ yen

Q.8. Approximately how much do you expect to earn from your main job this year (Jan-Dec 2025)?

Expected annual earnings: _____ ten thousand yen

Q.9. If the income tax exemption were to be increased to 1.23 million yen, how would you expect your annual income for this year (Jan-Dec 2025) to change at this point in time?

(1) I will increase

(2) I will keep the current level

(3) I will decrease

Q.10. I would like to ask those who answered “I will increase” in the previous question. If the income tax exemption were to be increased to 1.23 million yen, approximately how much do you expect to earn from your main job this year (Jan-Dec 2025)?

Expected annual earnings: _____ ten thousand yen

B Tables and Figures

Table B.1: Sample characteristics: Age distribution in the analysis sample and target population

	Analysis sample		Target population	
Age group	N	Share (%)	N (thousand)	Share (%)
25–29	19	2.60	51.5	3.07
30–34	41	5.60	109.6	6.54
35–39	73	9.97	191.3	11.42
40–44	107	14.62	270.0	16.12
45–49	152	20.77	320.0	19.10
50–54	160	21.86	328.8	19.63
55–59	110	15.03	223.9	13.37
60–64	70	9.56	179.9	10.74
Total	732	100	1,675	100

Note: The analysis sample (N = 732) consists of respondents whose expected annual earnings are at least 0.9 million yen, with the top and bottom 0.1% of hourly wages in 2023 excluded as outliers. The target population is constructed from the Employment Status Survey (Statistics Bureau of Japan, 2022), restricted to women who are currently married, employed part-time as non-regular workers, with annual earnings below 1.0 million yen, and who report adjusting their working hours to keep their earnings below institutional thresholds. Both distributions are restricted to women aged 25–64.

Table B.2: Balance test (1st wave)

	(1) Control [N = 376]	(2) Treatment [N = 356]	(3) Difference (2) − (1)
Age	48.16	47.79	−0.36
			(0.65)
High education	0.22	0.24	0.02
			(0.03)
Firm size	2.40	2.45	0.05
			(0.10)
FE^2	1.65	1.49	−0.16
			(0.26)
Loss aversion	−0.07	0.05	0.12
			(0.07)
Gender norm	2.99	3.01	0.02
			(0.06)
Household income	575.66	606.32	30.66
			(18.07)
Number of children	1.11	1.08	−0.03
			(0.08)

Note: This table reports the balance test of the covariates included. All variables are based on the results of the 1st wave survey. Age is the age of the respondent. High education is a dummy variable that takes one if the respondent has a university degree or higher. Firm size is the number of employees in the respondent's workplace, where 1 is 1-50 employees, 2 is 51-100 employees, 3 is 101-500 employees, and 4 is more than 500 employees. FE^2 is the square of the forecast error of individual between the actual tax amount (8,500 yen) and the expected value; it equals zero if the expected value is less than or equal to 8,500 yen. Loss aversion is the standardized value of the loss aversion measure. Gender norm takes 1 when respondents agree, takes 2 when they somewhat agree, and takes 3 when they somewhat disagree, and takes 4 when they disagree with the gender norm that "Men should be more responsible for work outside the home, and women should be more responsible for housework", respectively. Household income is the total annual income of the respondent's household. Number of children is the number of children living with the respondent. We use the subsample of respondents earning 0.9 million yen or above per year. Standard errors are in parentheses. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers.

Table B.3: Likelihood of attrition in the follow-up survey

	(1) OLS $D^{\text{Attrition}}$	(2) Probit $D^{\text{Attrition}}$
D^T	-0.021	-0.086
	(0.037)	(0.157)
Age	0.007^{***}	0.031^{***}
	(0.002)	(0.010)
High education	-0.072	-0.299
	(0.046)	(0.192)
Firm size	0.024	0.101
	(0.015)	(0.062)
Household income	-0.022	-0.092
	(0.017)	(0.071)
Loss aversion	0.013	0.056
	(0.020)	(0.083)
Gender norm	-0.028	-0.115
	(0.022)	(0.094)
Number of children	0.025	0.104
	(0.019)	(0.082)
Constant	0.325^{**}	-0.729
	(0.165)	(0.698)
Observations	732	732

Note: The dependent variable $D^{\text{Attrition}}$ equals one if the respondent dropped out of the follow-up survey and zero otherwise. This table reports the balance test of the covariates included. All variables are based on the results of the 1st wave survey. Age is the age of the respondent. High education is a dummy variable that takes one if the respondent has a university degree or higher. Firm size is the number of employees in the respondent's workplace, where 1 is 1-50 employees, 2 is 51-100 employees, 3 is 101-500 employees, and 4 is more than 500 employees. Loss aversion is the standardized value of the loss aversion measure. Gender norm takes 1 when respondents agree, takes 2 when they somewhat agree, and takes 3 when they somewhat disagree, and takes 4 when they disagree with the gender norm that "Men should be more responsible for work outside the home, and women should be more responsible for housework", respectively. Household income is the total annual income of the respondent's household. Number of children is the number of children living with the respondent. We use the subsample of respondents earning 0.9 million yen or above per year. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers. Robust standard errors are in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

Table B.4: Balance test (2nd wave)

	(1) Control [N = 180]	(2) Treatment [N = 161]	(3) Difference (2) − (1)
Age	50.18	48.57	-1.61^{*}
			(0.89)
High education	0.18	0.24	0.06
			(0.04)
Firm size	2.41	2.57	0.17
			(0.14)
FE^2	1.88	1.61	−0.27
			(0.41)
Loss aversion	−0.09	0.18	0.27^{**}
			(0.11)
Gender norm	2.93	3.06	0.13
			(0.09)
Household income	566.94	597.52	30.57
			(25.88)
Number of children	1.08	1.13	0.05
			(0.11)

Note: This table reports the balance test of the covariates included. All variables are based on the results of the 2nd wave survey and include only respondents who participated in the follow-up survey. Age is the age of the respondent. High education is a dummy variable that takes one if the respondent has a university degree or higher. Firm size is the number of employees in the respondent's workplace, where 1 is 1-50 employees, 2 is 51-100 employees, 3 is 101-500 employees, and 4 is more than 500 employees. FE^2 is the square of the forecast error of individual between the actual tax amount (8,500 yen) and the expected value; it equals zero if the expected value is less than or equal to 8,500 yen. Loss aversion is the standardized value of the loss aversion measure. Gender norm takes 1 when respondents agree, takes 2 when they somewhat agree, and takes 3 when they somewhat disagree, and takes 4 when they disagree with the gender norm that "Men should be more responsible for work outside the home, and women should be more responsible for housework", respectively. Household income is the total annual income of the respondent's household. Number of children is the number of children living with the respondent. We use the subsample of respondents earning 0.9 million yen or above per year. The top and bottom 0.1% of hourly wages in 2023 are removed as outliers. Standard errors are in parentheses. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

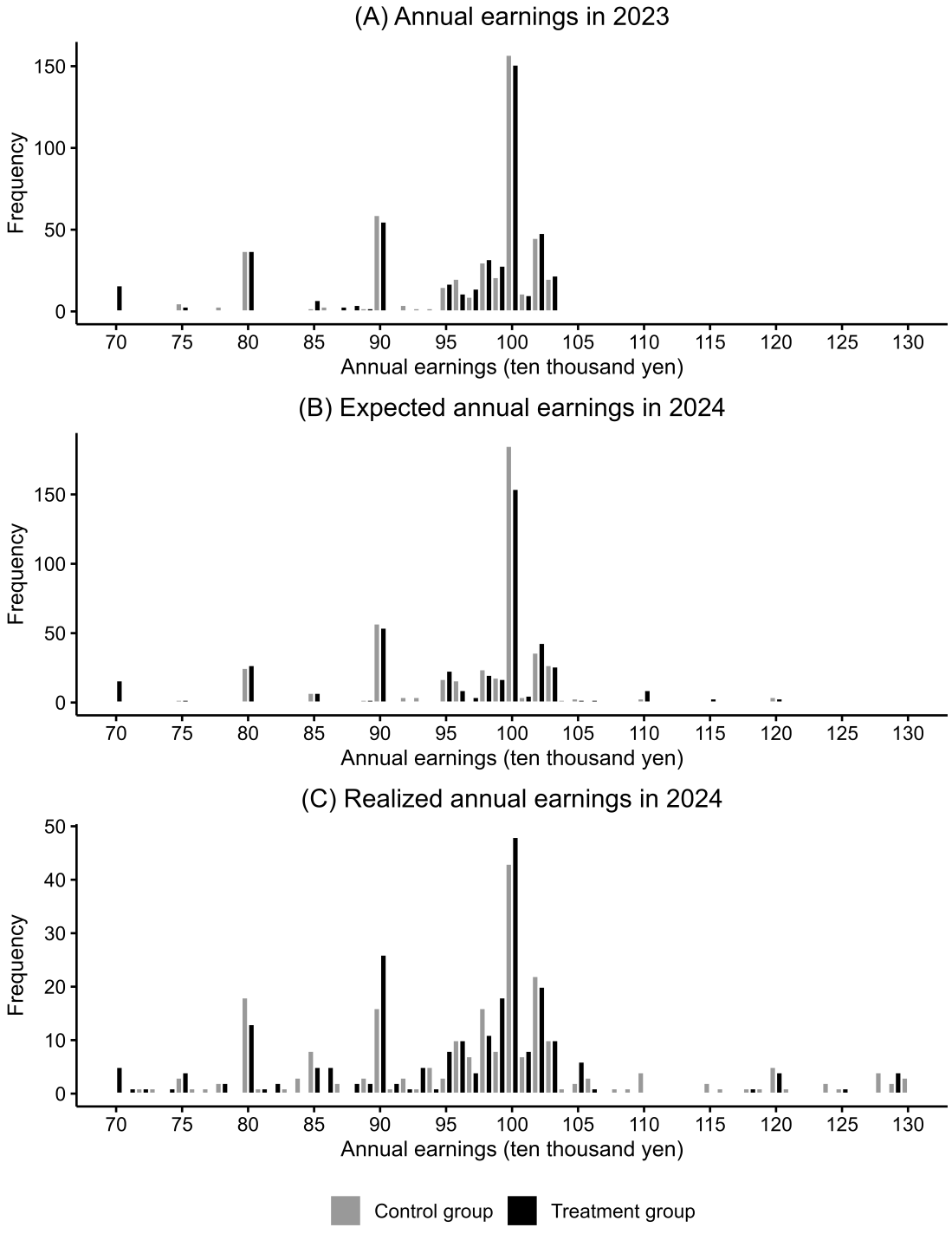

Figure B.4: Histograms of annual earnings by treatment status

Note: This figure shows histograms of annual earnings separately for the control group (light) and the treatment group (dark). Panel (A) shows realized annual earnings in 2023 (pre-treatment). Panel (B) shows expected annual earnings in 2024 elicited in the 1st-wave survey. Panel (C) shows realized annual earnings in 2024 obtained from the 2nd-wave survey.

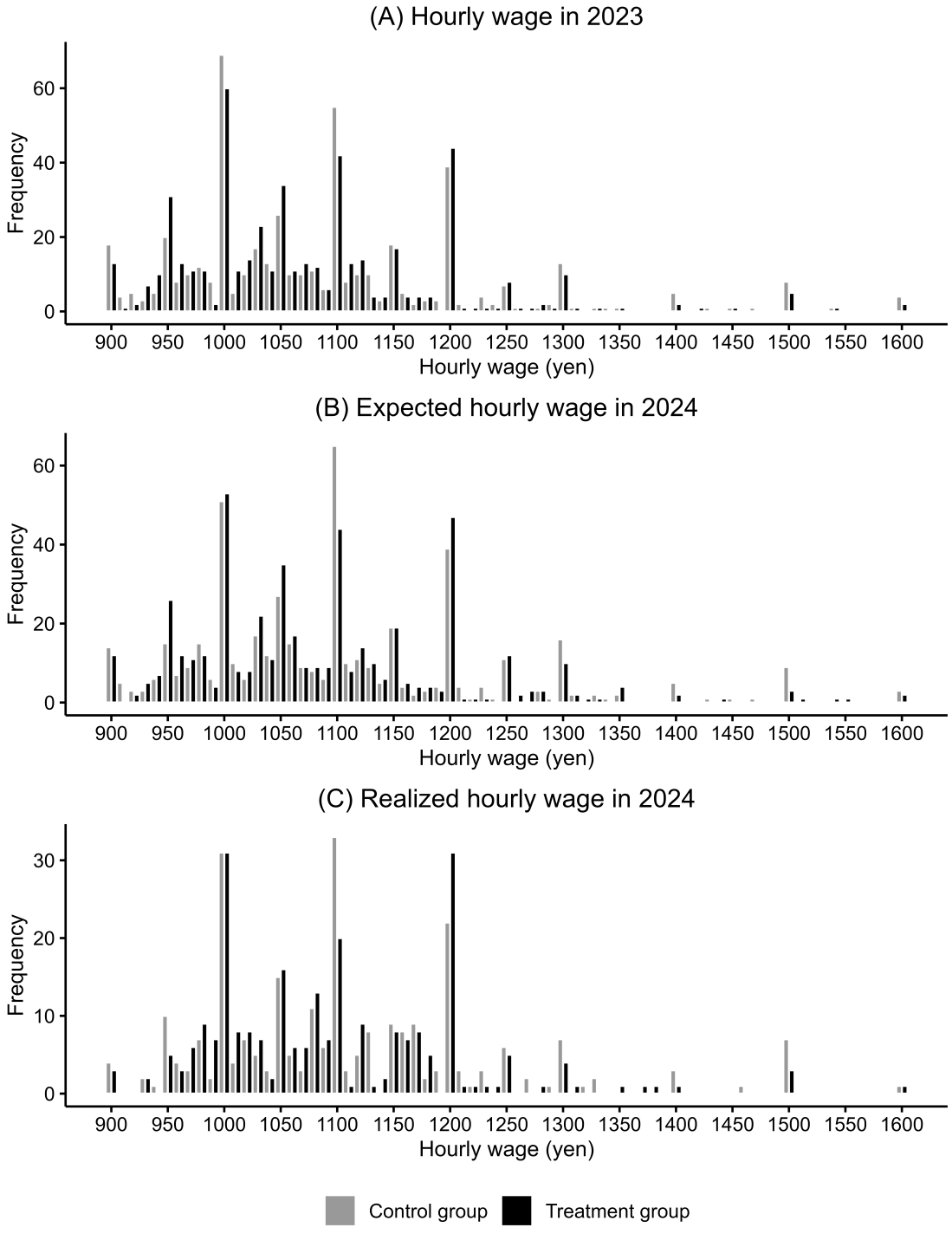

Figure B.5: Histograms of hourly wage by treatment status

Note: This figure shows histograms of hourly wage separately for the control group (light) and the treatment group (dark). Panel (A) shows realized hourly wage in 2023 (pre-treatment). Panel (B) shows expected hourly wage in 2024 elicited in the 1st-wave survey. Panel (C) shows realized hourly wage in 2024 obtained from the 2nd-wave survey.