Labor Supply and Well-being among Older Adults: The Separate Effects of Pension Access and Statutory Retirement Age*

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Abstract

We provide new evidence on how labor supply and well-being among older individuals change in response to statutory retirement ages and pension access. On average, we find a strong reduction in labor supply at the extensive margin upon reaching the minimum retirement age (MRA) and the maximum re-employment age (REA). We show that both supply- (reference points) and demand-side (employer demand) factors contribute to the declined employment at these statutory retirement ages. We also find a reduction in full-time working status (intensive margin) upon reaching the pension eligibility age (PEA), suggesting that access to pension wealth (liquidity effect) also affects the labor supply of older workers. After separating workers by their pension wealth, we find that the effect at the MRA is mainly driven by high wealth individuals, while the effect at the REA is equally driven by all groups. At the PEA, however, people with low pension wealth reduce labor supply, while people with high pension wealth only reduce working hours. Although most people experience a household income reduction at both retirement ages, only the low wealth group are unable to smooth their consumption. Together the results suggest that policies increasing the statutory retirement age, while maintaining the pension access age, may raise older worker's labor supply without negatively affecting their welfare.

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1 Introduction

Nearly all advanced and some emerging economies are facing aging populations. For instance, the US Census Bureau (2018) projects that, by 2034, the number of adults aged 65 and over will outnumber the number of children under 18 in the US. By 2060, the share of adults who are at least 65 years old is projected to reach 23.4 percent, up from 15.2 percent in 2016. In other economies, particularly in Asia, populations are aging more quickly, with the share of adults aged 65 and over projected to reach 33.7 percent in East Asia by 2060 (US Census Bureau, 2022). One way to maintain the sustainable financing for the social security system in an ageing society is to increase the labor supply of older individuals. By exploiting the unique institutional setting in Singapore, which provides a natural experiment to investigate the effects of different retirement and pension policies, this paper examines the separate impact of these policies on labor supply at older ages.

It is well documented that there is a reduction in labor supply at the statutory retirement age. However, the extent to which this pattern is driven by financial incentives, individuals' reference point, and employers' labor demand is less clear. In most countries, the statutory retirement age and the pension access age are the same. Therefore, the change at the statutory retirement age coincides with the change in financial incentives. This makes it difficult to tease out the distinct effects of pension access and statutory retirement age on labor market decision-making, which is important for policy making. In this paper, we exploit a unique policy design in Singapore to disentangle the role of liquidity, reference points and labor demand on the labor supply of older workers. In addition, we examine the household financial conditions and consumption associated with the changes in labor supply among older adults.

A unique feature of Singapore's social security system is that the statutory retirement age is different from the pension access age. Specifically, an older individual in Singapore would first reach the minimum retirement age (MRA)[1]. Before reaching the MRA, an employer cannot dismiss any employee just because of her age. After reaching the MRA, since 2012, according to the Employment and Re-employment Act, employers must offer re-employment contracts to their eligible employees. Otherwise, a compensation is required to be paid to dismissed employees. Subsequently, an individual would reach the pension eligibility age (PEA), which is 65 for most

[1]The MRA was 62 between 1999 and 2022 and was subsequently raised to 63 in 2023.

birth cohorts in our study sample. Upon reaching the PEA, one can receive tax-free monthly pension payouts, based on a defined contribution pension scheme. Afterwards, an individual would reach the maximum re-employment age, after which employers are no longer obligated to provide a re-employment contract to eligible employees.

Given such a policy design, we investigate how labor supply and the associated well-being change in response to pension access and the statutory retirement age at the above-mentioned three critical ages: the MRA, the PEA, and the REA. By studying behavioral change across the PEA, we show how liquidity access affects labor supply and well-being of older Singaporeans. Also, by examining behavioral change across the MRA and the REA, we show the impacts of the reference point and demand-side barriers. Our main analysis focuses on men. While women are also likely to be affected by liquidity access, the reference point and demand-side factors, their labor supply is also likely complicated by omitted factors such as intra-household bargaining and care-giving. For this reason, we only present women's results in Appendix Figures A1–A3 and Table A1.

Our data consist of a nationally representative monthly panel of adults aged 50 and over in Singapore: the Singapore Life Panel (SLP). The SLP collects information on labor supply, household finance, consumption, wealth measures, and demographic characteristics. Given the clear age cutoffs of different policies and high frequency of the SLP, our main empirical strategy is a regression discontinuity design (RDD) at different age cutoffs. In addition, we fielded supplemental questions to better understand the mechanisms at each age.

At the aggregate level, we find that the employment rate decreases by 1.8 percentage points (pp) (3%) among men after reaching the MRA. Along with the decrease in the employment rate, retirement rate increases by 1.4 pp (8%); but in the meantime, the unemployment rate also increases by 1.1 pp (12%), suggesting some of the job separations are involuntary. In addition, household income decreases by 4.4% and household savings decrease by 5.4%, in line with the exits from employment. As for the PEA, we find a reduction in working hours (3%). Additionally, we find a reduction in self-employment rate (6%). Finally, upon hitting the REA, we find that the employment rate among men decreases by 3.4 pp (8%), the likelihood of full-time working status decreases by 4.1 pp (7%), and the retirement rate increases by 3.2 pp (8%). Similar to the MRA, household income further decreases by 6% after reaching the REA.

To better understand the mechanisms behind the change in labor supply and associated well-

being, and to assess the unequal impacts on different wealth groups, we conduct heterogeneity analyses based on an individual's pension wealth. Specifically, we split individuals into low, medium, and high pension wealth groups, depending on their pension balance. Upon pension access, two factors related to the liquidity effect are at play: treatment intensity (how much pension wealth is accessed) and liquidity constraints. For low-wealth men, the effect is ambiguous due to both the low treatment intensity and high liquidity constraints. For medium- and high-wealth men, however, only treatment intensity matters because they are less likely to be liquidity constrained. For the MRA, we expect it to serve as a reference point to retire and/or reflect employers' demand for older workers' labor. However, we suspect the reference point is only relevant for people with sufficient retirement savings. In addition, we suspect that high-wealth men may be most affected by demand-side barriers at the MRA due to their high wages. As for the REA, we expect the reference point to play a weaker role as it is less widely known.[2] Most impact should come from the employer side as employers are no longer obligated to provide work contracts, and the effect should be similar across wealth groups as age is the only mattering factor.

We find that upon reaching the MRA, only men with the medium- and high-pension wealth reduce their labor supply, which is consistent with our hypothesis that the reference point only matters for people with adequate retirement savings. Moreover, the reduction in labor supply among high-wealth men greatly outweighs that of medium-wealth men. However, almost half of the reduction in labor supply among high-wealth men is involuntary, as evidenced by the big increase in the unemployment rate. This suggests that the demand-side barriers affect the high-wealth men the most. Upon the PEA, we find that low-wealth men reduce labor supply, consistent with the liquidity constraint hypothesis. In the meantime, high-wealth men also reduce labor supply, but mainly at the intensive margin. Finally, at the REA, we find that all wealth groups respond similarly by reducing labor supply at both the extensive and the intensive margin. Along with the drop in labor supply, we find a income reduction for medium- and high-wealth group upon turning both the MRA and the REA. We find a similar reduction in income for low-wealth men as well at the REA. However, while medium- and high-wealth group maintain a smooth consumption, men with low-wealth pension wealth experience consumption reduction at both the MRA and the REA.

[2]In our supplemental question, only 20% of the respondents know the correct REA, while 74% know the correct MRA.

Our findings demonstrate that a stand-alone retirement age can shape people's reference point, but only people with adequate retirement savings respond to it. Liquidity effect due to pension access reduces labor supply of both low-wealth and high-wealth men but via different mechanisms: the release of liquidity constraint for the former and the access to substantial monthly payouts for the latter. Finally, we find that labor supply reduces the most after the REA, and the effect is equally distributed across different income groups, likely due to the employer-side barriers. Policymakers who are interested in extending working years of older adults may consider providing and increasing the re-employment age, as it can protect those who want to work longer.

Our paper contributes to two strands of literature. First, we add evidence on the mechanisms affecting the timing of retirement. We are able to investigate the separate effects of pension access and statutory retirement ages on retirement. Moreover, we are able to tease out the liquidity effect from wealth and substitution effects at pension access, and we quantify the relative importance of the reference point, demand-side barriers, and liquidity effects. Existing studies have shown separately that pension access (Brown 2013; Staubli and Zweimüller 2013; Manoli and Weber 2016; Geyer and Welteke 2019; Giesecke and Jäger 2021), the reference point (Hairault et al. 2010; Behaghel and Blau 2012; Cribb et al. 2016; Lalive et al. 2020; Seibold 2021; Gruber et al. 2022), and demand-side factors (Ameriks et al. 2020; Deshpande et al. 2021) can reduce labor supply. In our context, with a defined-contribution pension scheme and two separate statutory retirement ages, we find that the biggest reduction in labor supply is in response to the REA, second by the MRA, and the least response is upon pension access, suggesting that both employer demand and reference points play a larger role than liquidity effects on labor supply among older adults.

Second, we contribute to the literature on labor supply at older ages and the associated well-being (French 2005; Maestas 2010; Blundell et al. 2016*a*,*b*; Clark and Newhouse 2021). Along with the reduction in labor supply, we find a decrease in household income among older men after reaching the statutory retirement ages. However, people with adequate retirement savings are able to smooth consumption, but low-income people reduce consumption after reaching these retirement ages.

The rest of the paper proceeds as follows. In Section 2, we describe the pension and retirement policies in Singapore. Section 3 presents the data and our main empirical strategy used to test our hypotheses. Section 4 examines the regression results. Lastly, Section 5 concludes the paper.

2 Policy

2.1 Singapore's Pension System

Singapore's pension system relies on the Central Provident Fund (CPF), a mandatory savings program. An employee and her employer contribute 17% and 20% of her salary (up to S$6,000) to her CPF account by age 55, respectively. The contribution rates gradually reduce with an employee's age. For those over the age of 70, the contribution rate by employers is 7.5%, and the contribution rate by employees is only 5%. Table A2 shows the contribution rates by employers and employees and the allocation rates to different CPF accounts by an employee's age.

The contributions into one's CPF are split into three accounts with different allocation rates before one turns age 55: Ordinary Account (OA) for housing, insurance, and investment, Special Account (SA) for retirement funding and retirement-related financial products, and Medisave Account (MA) for hospitalizations and approved health insurance.[3] Interest rates vary across accounts and ages. The interest rate for an OA is 2.5%, and the interest rate for the other accounts is 4%.

At age 55, the Retirement Account (RA) is established for the retirement purpose, and the government sets three cutoffs for the RA balance to ensure retirement preparedness among the older adults: (1) Basic Retirement Sum (BRS), (2) Full Retirement Sum (FRS), and (3) Enhanced Retirement Sum (ERS). Upon turning 55, individuals' money from OA and SA will be transferred to the RA, up to the FRS. People and their family members can also top up their RA, up to the ERS. Table 1 shows the thresholds for different years (birth cohorts).

Table 1: Retirement Account Cutoffs

55th birthday in the year	BRS	FRS (2×BRS)	ERS (3×BRS)
2015	S$77,500	S$155,000	S$232,500
2016	S$80,500	S$161,000	S$241,500
2017	S$83,000	S$166,000	S$249,000
2018	S$85,500	S$171,000	S$256,500
2019	S$88,000	S$176,000	S$264,000
2020	S$90,500	S$181,000	S$271,500
2021	S$93,000	S$186,000	S$279,000

[3]Self-employed people are only required to deposit funds into their MA, although they can also voluntarily deposit funds into their OA and SA. Deposits to the CPF are tax-exempt, up to 37% of assessable income or the CPF Annual Limit of $37,740. https://www.cpf.gov.sg/member/growing-your-savings/cpf-contributions/saving-as-a-self-employed-person

These thresholds are tied to the monthly payouts a person can receive when she reaches the PEA.[4]. For example, Table 2 shows the estimated monthly payouts and CPF balance at age 65 for those who turn 55 in 2021, based on their CPF balance at age 55. According to Ng et al. (2019), the amount a Singaporean needs for a basic standard of living upon retirement is nearly S$1,400 per month. This suggests that only those with CPF balances above the FRS can retire without worrying about financial conditions.[5]

Table 2: Estimated CPF RSS/ CPF LIFE Payouts

CPF balance at age 55	CPF balance at age 65	Estimated monthly payout
S$35,500	S$60,000	S$350-S$370
S$60,000	S$97,300	S$540-S$570
S$93,000 (BRS)	S$145,200	S$770-S$830
S$120,000	S$184,400	S$960-S$1,030
S$186,000 (FRS)	S$280,200	S$1,430-S$1,530
S$200,000	S$300,600	S$1,520-S$1,640
S$279,000 (ERS)	S$415,300	S$2,080-S$2,230

Notes: These monthly payouts are estimates based on the CPF LIFE Standard Plan, for members who turn 65 in 2031, computed as of 2021. Payouts may also be adjusted to account for long-term changes in interest rates or life expectancy. Such adjustments (if any) are expected to be small and gradual.

The CPF Retirement Sum Scheme (RSS) provides Singaporeans with a monthly income to support a basic standard of living during their retirement, from the PEA up to the age of 90. The CPF RSS is the main retirement payout plan for Singaporeans who were born before 1958. Under this scheme, an individual's monthly payout amount depends on how much she has left in her CPF RA and the payout becomes 0 when the RA balance runs out. Given Singapore's rising average life expectancy, the CPF RSS was replaced by the CPF Lifelong Income For the Elderly (LIFE) in 2009, which provides a monthly payout for life instead of up to age 90. One's RA balance will be deducted at age 65 to be used as the premium for one's CPF LIFE. Singaporeans or permanent residents who were born in 1958 or after and have at least S$60,000 in their RA 6 months before they reach 65 are automatically placed into the CPF LIFE. For older cohorts who

[4]Note that while the PEA is the eligibility age for pension access, individuals can choose not to begin pension access at this juncture. An individual can postpone her access to pension up to 70. For each year of postponement, monthly payouts will increase by up to 7%.

[5]For those aged 65 and above with very low CPF balances (below S$140,000 at age 55) due to low lifetime labor income, the Silver Support Scheme (SSS) provides a quarterly cash supplement of S$180–S$900. The interested reader can refer to the Appendix Table A3 for more details.

are not automatically placed into CPF LIFE, they can apply to join any time between their PEA and when they turn 80. Otherwise, they remain on the RSS. For individuals born in 1954 or after, the PEA is 65 years old. For older cohorts, the PEA varies between 60 and 64. Table 3 shows the different PEAs for different birth cohorts. In our analysis sample, most people's PEA is 65 (born in 1954–1958) and for others it is 64 (born in 1952–1953).

2.2 Retirement and Re-employment Act

The MRA in Singapore stood at 62 from 1999 to June 2022. After the MRA, employers are obliged to offer re-employment contracts to their current employees up to the REA.[6] There have been a few changes to the REA and MRA over time. Initially, the REA was 65, but it was raised to age 67 from July 2017. The REA was revised again in 2020, and on 1 July 2022, the MRA and REA were raised to 63 and 68, respectively.

Table 3: MRA, PEA and REA for different birth cohorts

Birth cohort	MRA	PEA	REA
1950 Oct – 1951	62	63	65
1952 Jan – 1952 Jun	62	64	65
1952 Jul – 1953	62	64	67
1954 – 1955 Jun	62	65	67
1955 Jul – 1960 Jun	62	65	68
1960 Jul –	63	65	68

Compared to the MRA, the SLP respondents are not as aware of the REA.[7] While 74% of our respondents know the relevant MRA for their cohort, most get their REA wrong. Table 4 shows the legal REA and the SLP respondents' perceived REA by birth cohort. At best, only 22% of them provide the correct answer. As such, we suspect that the reference point might play a weaker role at the REA as most people are not well-aware of it.

[6]The Retirement and Re-employment Act, came into force in 2012, requires employers to re-employ older workers up to the REA if the employee i) is a citizen or permanent resident, ii) has worked for the employer for at least 3 years before turning 62, iii) is medically fit, and iv) has satisfactory work performance. If not, an employer must offer the dismissed employee a compensation package which is about equivalent to the employee's three months of salary. https://www.mom.gov.sg/employment-practices/re-employment.

[7]We fielded the relevant questions in the January 2022 survey.

Table 4: Legal and Perceived REA among the SLP Respondents

	Answer (percentage)								N
Birth cohort and REA	62	63	64	65	66	67	68	Don't Know	
1951 Jan-Jun (REA 65)	3.42	0.85	0	**22.22**	1.71	15.38	15.38	41.03	117
1952 Jul-1953 (REA 67)	7.55	1.18	0.47	19.1	0.71	**12.5**	15.33	43.16	424
1954-1955 Jun (REA 67)	8.24	0.75	1.12	17.79	1.5	**17.42**	17.42	35.77	534
1955 Jul-1956 (REA 68)	7.8	0.54	0.73	20.15	2	14.7	**16.15**	37.93	551

Notes: The first column shows the statutory REA for different birth cohorts, and the second to the ninth columns show the distribution of perceived REA in percentage by each birth cohort. N represents the total number of survey respondents in each birth cohort.

3 Data and Empirical Strategy

3.1 Data and Sample

The Singapore Life Panel (SLP) is a monthly survey that began in August 2015. It includes a nationally representative sample of Singaporeans aged 50 and over, and it is conducted online. About 8,000 people are followed every month, and the annual attrition rates are less than 10%. We keep Singaporeans and permanent residents for analyses because foreigners do not have a CPF account. We use the monthly data from September 2015 up to February 2023.[8] We examine older adults' labor supply, household income, household savings, and household consumption across three age cutoffs: the MRA, the PEA, and the MRA. For each age cutoff, we keep observations up to 24 months on either side of it.

3.2 Conceptual Framework

We have the following hypotheses regarding the impacts of pension access and the statutory retirement age on older adults' labor supply and well-being and how they differ by an individual's wealth.

Hypothesis 1: Since pension access at the PEA is a positive liquidity shock, we expect a reduction in the labor supply. There are two mechanisms at play: i) treatment intensity (how much pension wealth is accessed) and ii) liquidity constraints. For men with low pension wealth, the

[8] We drop August 2015 because the survey is incomplete in this month.

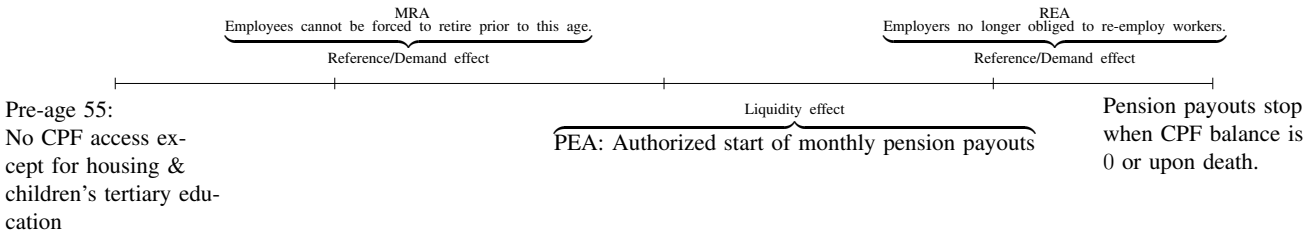

Figure 1: Timeline and Mechanisms of Pension Access and the Retirement Policy

effect on labor supply is ambiguous. On the one hand, they are the most liquidity constrained, and thus they might have the strongest response to a positive liquidity shock. On the other hand, the treatment intensity is relatively low, and thus the behavioral response is likely to be small as well. For men with medium and high pension wealth, they are less likely to be liquidity constrained, which means that any significant effect is likely due to pension wealth access (i.e., large treatment intensity).

Hypothesis 2: Since the MRA and the REA do not affect liquidity but are associated with the relaxed obligations of employers and an anchoring point for some workers, we expect both statutory retirement ages to i) reflect employers' demand for older workers' labor and ii) serve as a reference point for retirement. However, due to the lack of awareness of the REA, we suspect the reference point plays a weaker role at the REA. We expect the reference point to be only relevant for individuals with adequate retirement savings. This is because individuals with a low CPF balance do not have enough retirement funds to retire and are hence unable to do so at the MRA, even if it serves as a retirement reference point. In addition, we expect the demand-side shocks at the MRA to be smaller for individuals with a low CPF balance, as their jobs are less likely to be protected by the anti-age discrimination rule due to shorter employment contracts and other qualifications. Conversely, at the REA, we expect the impact to be similar across wealth groups since employers' obligations become null at this age, irrespective of any employee's contract.

Figure 1 illustrates the timeline of the key pension and retirement policy ages, as well as the hypothesized mechanisms at each age.

3.3 Empirical Strategy

We start with a simple RDD:

$$y_i = \rho_0 + \rho_p f(age_i - c) + \tau T_i + \gamma X_i + \epsilon_i, \tag{1}$$

where y_i represents an individual i's labor market outcomes, household income, household savings, and household consumption. T_i is a dummy equal to 1 if a CPF member i has hit the threshold age. Our parameter of interest is τ. Term $(age - c)$ refers to the distance (in months) from the relevant cutoff age c. We allow $f(age - c)$ to vary on either side of c. X_{it} includes individuals' control variables, such as race, marital status, the number of children, education level, year fixed effects, month fixed effects, and birth cohort fixed effects.[9] Standard errors are clustered at the age-in-month level. Due to the narrow bandwidth ([-24,24]), our main specification uses the linear control of $(age - c)$, following Kim et al. (2022). In addition, we carry out several robustness checks: (1) limiting the sample to those who appear on both sides of the age cutoffs, (2) using the second order polynomial of $(age - c)$ to control for changes in outcomes along with age-in-month, (3) donut-hole estimation by excluding one, two, and three months close to the age cutoffs.

In addition, to better understand the mechanisms behind the change in labor supply at different age cutoffs, we explore the heterogeneous effects by individuals' pension wealth, i.e., CPF balance. We divide people into low, medium, and high CPF balance groups. Our classification is based on S$60,000 and the FRS, as the former number is the automatic enrollment threshold for the CPF LIFE (pension) and the latter number indicates adequate retirement savings. Table 5 summarizes the CPF categorization criteria at different age cutoffs. Our classification is based on the BRS for age 55, S$60,000 for the MRA and the PEA (i.e. the CPF LIFE automatic enrollment threshold) and the FRS, as specified by the government. Table 5 summarizes the CPF categorization criteria for the three age groups.

For the PEA cutoff, the low-wealth group consists of those whose CPF balance falls below S$60,000 at the PEA and whose CPF balance therefore falls short of automatic eligibility for CPF LIFE. The medium-wealth group includes those whose CPF LIFE is between S$60,000 and the

[9] As shown by Figures A4–A6 and Table A4, balance checks are mostly passed at each age cutoff. However, there are small differences of several variables across the PEA and the REA. Therefore, we include control variables in our main specification.

Table 5: Wealth Categorization According to CPF Balance

	Low	Medium	High
MRA	$<$ S$60,000*	S$60,000*$\leq$CPF $<$ FRS*	$\geq$ FRS*
PEA	$<$ S$60,000	S$60,000$\leq$CPF $<$ FRS**	$\geq$ FRS**
REA	$<$ S$60,000**	60,000**$\leq$CPF $<$ FRS***	$\geq$ FRS***

Notes: The table shows how respondents are categorized according to their CPF balance for each age cutoff. S$60,000 is the minimum CPF balance at the PEA to be automatically enrolled in the CPF LIFE. S$60,000* refers to the discounted value at age 62, subject to compound interest. S$60,000** refers to the projected value at REA, subject to compound interest. FRS*/FRS**/FRS*** refers to the projected FRS for respondents' birth cohorts at age 55, subject to compound interest up to the MRA/PEA/REA.

compounded FRS.[10] While this middle group automatically qualifies for lifelong pension payouts under the CPF LIFE, their payouts alone would be insufficient for a basic retirement lifestyle. Lastly, the high-wealth group includes those whose CPF balance exceeds the compounded FRS at the PEA.

We adopt similar CPF wealth classifications for individuals at the MRA (REA). We discount (project) S$60,000 by three (two) years using the interest rates for the CPF RA, and similarly we project the FRS value at the MRA (REA) based on the FRS at age 55 and the corresponding compound interest rates. Like for the PEA, these categories can be seen as proxies for the retirement adequacy levels of individuals at the MRA (REA).

3.4 Summary Statistics

Table 6 shows the summary statistics of men at the three age cutoffs (MRA, PEA, and REA). The labor force participation rate of men in their 60s is high in Singapore. At the MRA, the labor force participation rate is nearly 0.8 for men. It decreases to nearly 0.7 at the PEA and further decreases to 0.58 around the REA. Among the people in the labor force, most of them are employed and work full-time. About 11–14% of the older men are self-employed, and the unemployment rate is stable across ages at about 8–9%. The retirement rate of men in Singapore increases from 17% at the MRA to 38% at the REA.[11] Household monthly income decreases from 5,735 to 4,391 from

[10] Since an individual's CPF balance left in her retirement account after age 55 is subject to compound annual interest, the compounded FRS refers to the FRS compounded from age 55 up until the PEA at the applicable interest rates.

[11] For people who are not in the labor force, their status includes retirement, disability, homemaker, and other. Since statuses other than retirement only account for a small proportion of men out of the labor force, we do not consider them in our analysis.

the MRA to the REA, and household total consumption also decreases from 3,250 to 2,784. The average CPF balance is over 160,000 at the MRA and the PEA, and it declines to about 146,000 at the REA. About 90% of the sample are Chinese and married. About 44% of them have tertiary education, and less than 20% have primary education only.

4 Results

4.1 Aggregate Effects at Different Age Cutoffs

Figures 2–4 show the evolution of average outcomes for selected labor market variables, household income, household savings, and household consumption for men within a bandwidth of 24 months on either side of the three age cutoffs. From these raw scatter plots, discontinuities can already be observed at different age cutoffs for several labor market outcomes and household financial conditions. Discontinuities are mostly evident at the MRA and the REA, with immediate drops in labor supply and household income at these age thresholds.

Table 6: Summary Statistics

	MRA	PEA	REA
In labor force	0.79	0.69	0.58
	(0.41)	(0.46)	(0.49)
Employed	0.58	0.50	0.42
	(0.49)	(0.50)	(0.49)
Self-employed	0.14	0.14	0.11
	(0.35)	(0.34)	(0.32)
Full-time	0.74	0.66	0.61
	(0.44)	(0.47)	(0.49)
Unemployed	0.09	0.08	0.08
	(0.28)	(0.27)	(0.27)
Retired	0.17	0.27	0.38
	(0.37)	(0.44)	(0.49)
Household monthly income	5,735	5,042	4,391
	(5,924)	(5,446)	(4,688)
Household monthly savings	2,028	1,688	1,233
	(4,900)	(4,655)	(4,044)
Household total consumption	3,250	2,943	2,784
	(3,573)	(3,182)	(3,164)
Household basic consumption	2,674	2,447	2,315
	(2,971)	(2,660)	(2,663)
Household food consumption	732	728	708
	(565)	(562)	(540)
Chinese	0.88	0.89	0.90
	(0.32)	(0.32)	(0.30)
Malay	0.05	0.04	0.04
	(0.22)	(0.20)	(0.18)
Indian	0.05	0.05	0.05
	(0.21)	(0.22)	(0.22)
Other race	0.02	0.02	0.01
	(0.14)	(0.14)	(0.12)
Married	0.90	0.91	0.91
	(0.31)	(0.29)	(0.29)
Number of living children	4.00	4.09	4.14
	(1.22)	(1.23)	(1.22)
Primary education	0.17	0.19	0.18
	(0.38)	(0.39)	(0.39)
Secondary education	0.39	0.38	0.38
	(0.49)	(0.48)	(0.49)
Tertiary education	0.43	0.44	0.44
	(0.50)	(0.50)	(0.50)
CPF balance	161,163	164,370	145,937
	(190,634)	(195,992)	(184,249)
N	52105	43731	28988

Notes: This table shows the mean and standard deviation (in parentheses) of the outcome variables for the male samples at three age cutoffs. The employment status variables are dummies, while the expenditure and wealth variables are in 2019 Singapore dollars. Basic consumption is the total monthly consumption minus leisure spending, charity/religious spending, cash gifts, and other ad hoc spending. Full-time work status is conditional on working.

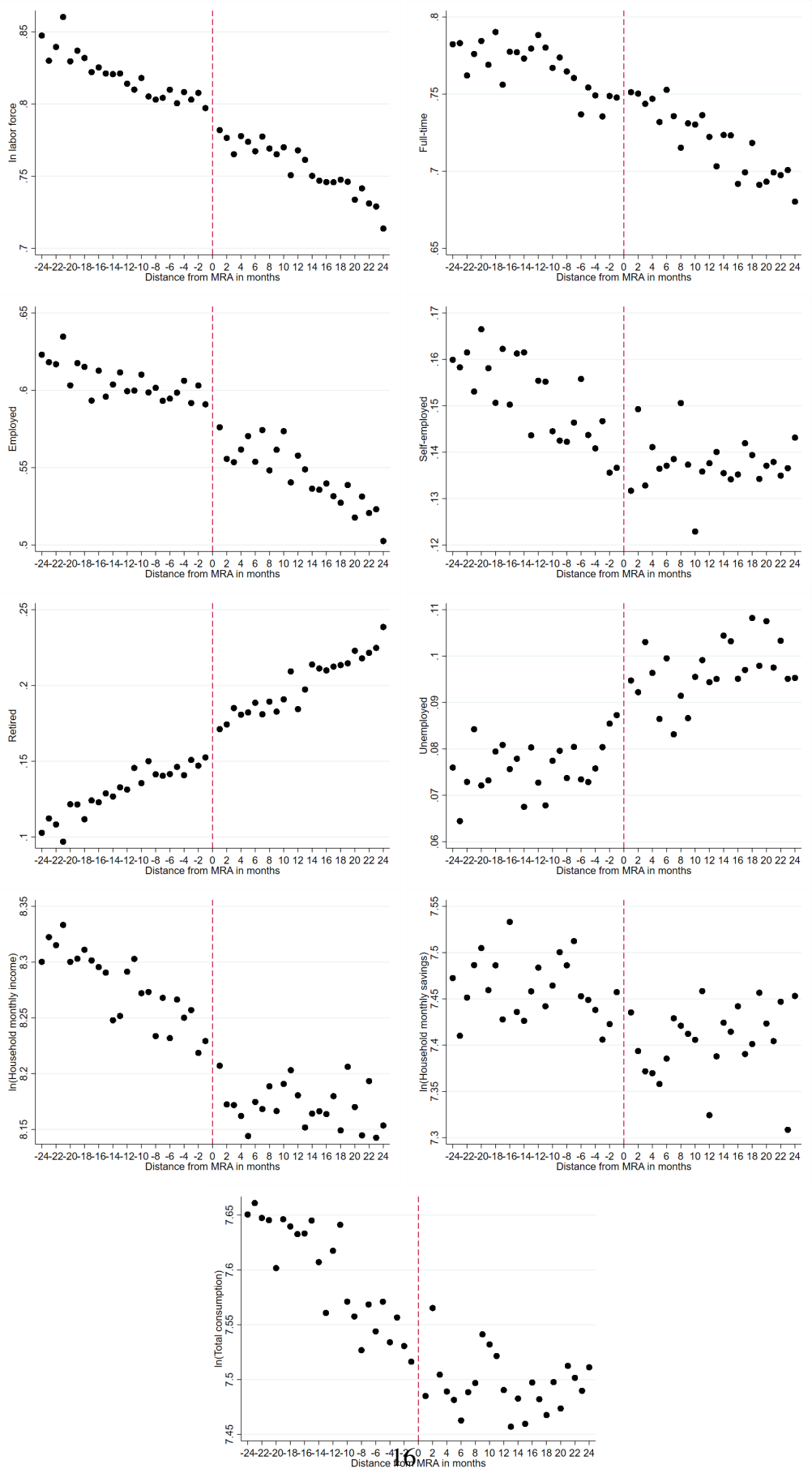

Figure 2: Labor Market Outcomes and Household Finance around the MRA for Men

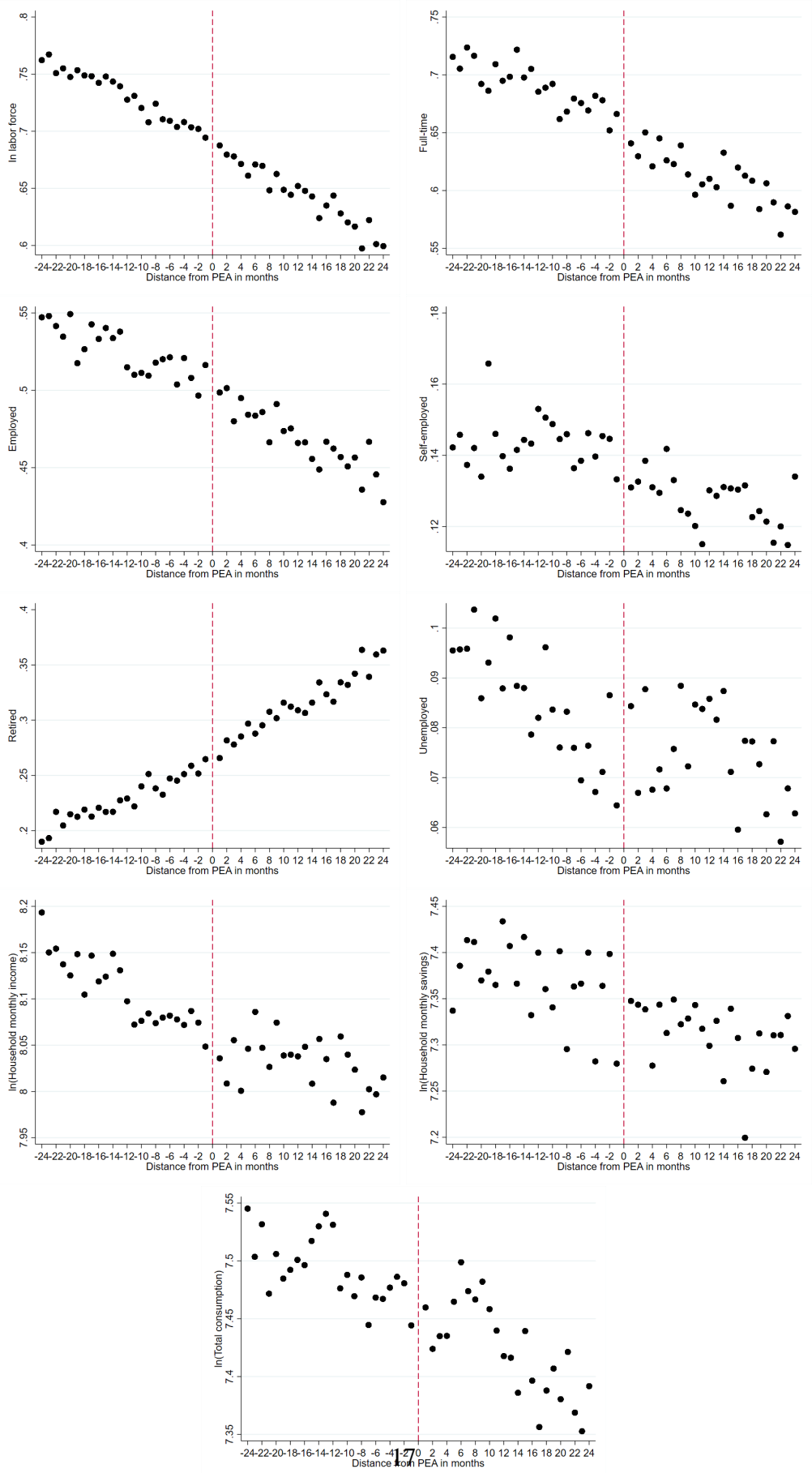

Figure 3: Labor Market Outcomes and Household Finance around the PEA for Men

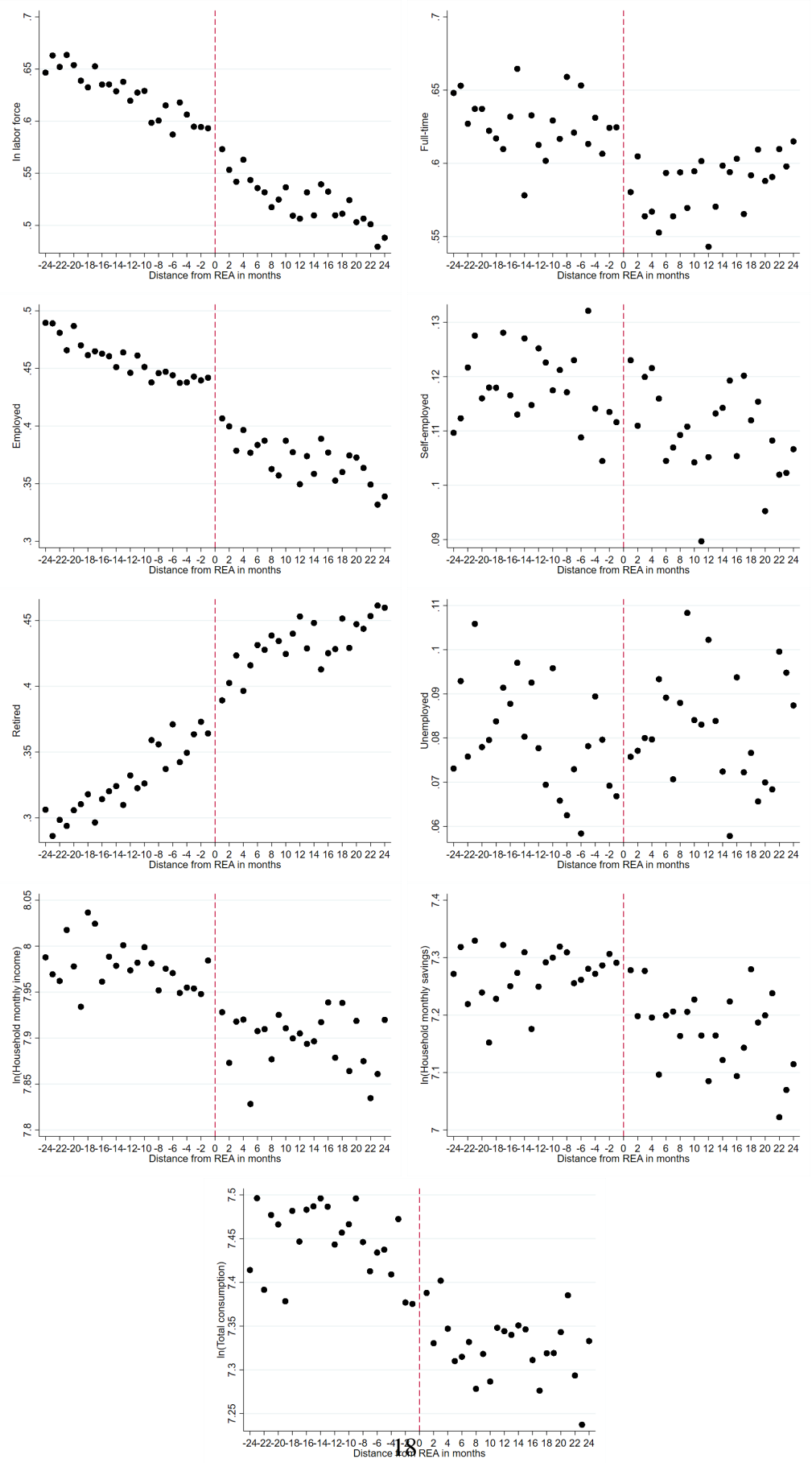

Figure 4: Labor Market Outcomes and Household Finance around the REA for Men

Table 7 shows the aggregate results for all men in our sample. At the MRA, we observe a reduction in labor supply at the extensive margin. The labor force participation rate decreases by 1.1 pp (1.4%), driven by the decline in the employment rate (1.8 pp, 3.1%). However, along with the increase in the retirement rate of 1.4 pp (8.2%), there is also an increase in the unemployment rate of 1.1 pp (12.2%). The increase in the unemployment suggests that part of the job separations at the MRA are involuntary that is driven by employers' factors. To assess whether the MRA serves as a reference point, we added a supplemental question in the SLP about individuals' ideal retirement age. In the absence of the statutory retirement age or pension access ages, it is plausible that individuals will choose ages in multiples of fives or tens as their ideal retirement age, if any. If the MRA is indeed a reference point, then we should observe a disproportionate share of individuals citing the MRA as the ideal retirement age. Figure 5 confirms our prior. From the figure, it is clear that, aside from some bunching at ages 55, 60, 65, 70, and 75, the next most preferred retirement age is the MRA at 62. In the next section, we explore this mechanism further with the heterogeneity analysis, as our hypothesis is that the reference point should be more salient for people with better retirement adequacy. Along with the decline in labor supply, household income decreases by 4.4% and household savings decrease by 5%.

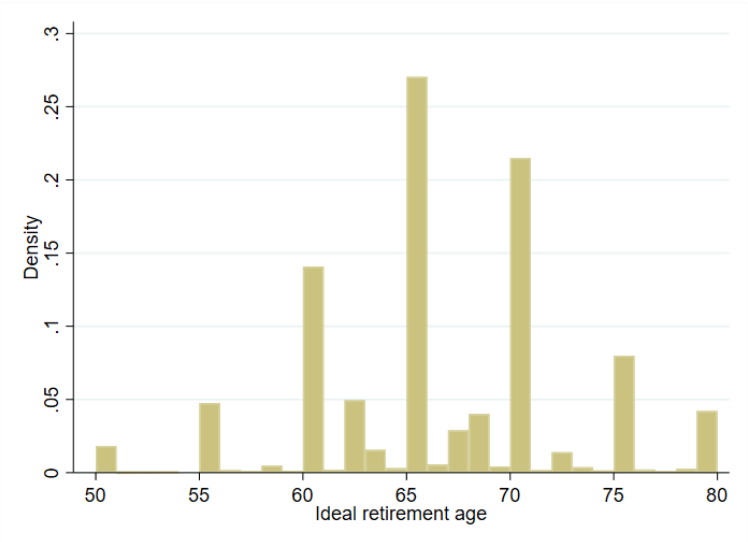

Figure 5: Ideal retirement ages of all men

Notes: The histogram shows the distribution of preferred retirement age among male SLP respondents. The MRA is 62. We fielded the survey question in November 2021.

At the PEA, we mainly find a reduction in the intensive margin. We find that the full time

Table 7: RDD Estimates of τ around Age Cutoffs – All Men

	MRA	PEA	REA
	Labor market outcomes		
In labor force	-0.011***	-0.007**	-0.032***
	(0.004)	(0.004)	(0.007)
Employed	-0.018***	-0.005	-0.034***
	(0.005)	(0.005)	(0.005)
Self-employed	-0.001	-0.008**	-0.000
	(0.004)	(0.003)	(0.004)
Full-time	0.007	-0.017***	-0.041***
	(0.005)	(0.006)	(0.010)
Unemployed	0.011***	0.011**	0.008
	(0.004)	(0.005)	(0.006)
Retired	0.014***	0.010**	0.032***
	(0.003)	(0.004)	(0.007)
	Household finance and consumption		
ln(Household monthly income)	-0.044***	0.001	-0.060***
	0.010	(0.012)	(0.015)
ln(Household monthly savings)	-0.054***	-0.005	-0.037
	(0.017)	(0.025)	(0.026)
ln(Household total consumption)	-0.007	0.016	-0.035
	(0.014)	(0.013)	(0.021)
ln(Household basic consumption)	-0.008	0.008	-0.039*
	(0.013)	(0.013)	(0.019)
ln(Household food consumption)	-0.005	0.009	-0.023
	(0.019)	(0.014)	(0.021)
N	52105	43731	28988

Notes: Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**} p < 0.05,^{***} p < 0.01$.

working status decreases by 1.7 pp (2.6%). In addition, some of the self-employed men decide to retire at the PEA. We find that the self-employment rate decreases by 0.8 pp (5.7%) after people are eligible for pension access.

At the REA, we find a reduction in labor supply at both the extensive and intensive margin, and the effect size is bigger than that at both the MRA and the PEA. Specifically, we find that the labor force participation rate decreases by 3.2 pp (5.5%), driven by the decline in the employment rate (3.4 pp, 8.1%), similar to the MRA. As a result, the retirement rate increases by 3.2 pp (8.4%). In addition, the full time working status also decreases by 4.1 pp (6.7%). While unemployment rises at the REA by 0.8 pp, this is not statistically significant. Since some workers who are involuntarily separated from their jobs at the REA may exit the labor force instead of declaring unemployment, we consider that the estimated effect on unemployment is a lower bound measure of demand-side factors. Lastly, along with the reduction in labor supply, household income decreases by 6%. However, unlike the MRA, we do not find a significant reduction in household savings, likely due to the reduction in consumption (weakly significant).

Tables A5–A9 show results from our robustness checks. Limiting the sample to those who appear at least once on both sides of the age cutoffs in Table A5, we find that the effect sizes are similar. The significance levels hold, except for the PEA, where the changes in labor force participation rate and unemployment rate are only weakly significant. Table A6 shows the results with the second-order polynomial of $(age - c)$. The results are still similar for the MRA and the REA. However, we no longer find any significant results of labor supply at the PEA. Tables A7–A9 show the donut-hole estimations by excluding one, two, and three months on either side of each age cutoff. The results are also generally robust. In particular, the decrease in household consumption after the REA becomes more significant when we use the donut-hole estimations. Overall, the robustness checks suggest that the results mostly hold even with alternative specifications.

4.2 Heterogeneous Effects by Pension Wealth

While we have so far explored the aggregate effects of pension access and the statutory retirement ages on older men, it is important to examine the heterogeneous effects across income/wealth groups, since we expect each group to be impacted differently. Moreover, by examining the distinct

responses of each group at each age cutoff, we can better understand the mechanisms behind the change in the labor supply. We divide older men into three groups based on their pension wealth, which is tied to their lifelong earnings. Generally speaking, the low-wealth group is most likely to be liquidity-constrained and have inadequate retirement funds; the high-wealth group is likely to have sufficient retirement savings; and the medium-wealth group lies in between. Tables 8, 9, and 10 show the estimates of τ for men with low, medium, and high pension wealth (CPF balance), respectively.

Table 8 shows the results for low-wealth men at each age cutoff. As expected, men with low pension wealth have little change in labor supply at the MRA. Firstly, they do not have sufficient retirement savings, so that they are less likely to respond to the reference point. Moreover, they are less likely to meet the eligibility requirement of re-employment, so there is little change from the demand side for their job types. However, we find that low-wealth men reduce their consumption after turning the MRA. At the PEA, we find a reduction in labor supply, among both the employed and self-employed people, suggesting that some low-wealth men reduce labor supply when their liquidity constraints are relaxed. Lastly, at the REA, we find that low-wealth men reduce labor supply at both the extensive and intensive margin, more so than at the MRA or PEA. Along with the reduction in labor supply, household income decreases by 5.9%, while consumption declines as well.

Table 9 shows that men with medium pension wealth reduce their employment and increasingly retire after reaching the MRA, suggesting that some of them do respond to the reference point. Although we find a decline in their household income, they weakly increase their consumption by saving less. At the PEA, we do not find any change in labor supply, household financial conditions, or consumption among the medium wealth men, indicating that they do not respond to the pension access. At the REA, like the low-wealth men, the medium-wealth men also reduce labor supply at both the extensive and intensive margin, more so than at the MRA and PEA. Along with the reduction in labor supply, household income decreases by 7.6%, but they are able to smooth their consumption.

Finally, Table 10 shows the regression results for high pension wealth men. Unlike the low- and the medium-wealth men, we find that men with high CPF balance reduce their labor supply at all ages, and the change at the MRA is the biggest. At the MRA, we find a big reduction in

Table 8: RDD Estimates of τ around Age Cutoffs – Low CPF Balance Men

	MRA	PEA	REA
	Labor market outcomes		
In labor force	0.008	-0.014**	-0.031***
	0.007	(0.005)	(0.009)
Employed	0.012	-0.018**	-0.034***
	(0.009)	(0.009)	(0.010)
Self-employed	-0.006	-0.017**	0.001
	(0.009)	(0.007)	(0.008)
Full-time	0.039**	-0.020	-0.045**
	(0.015)	(0.014)	(0.017)
Unemployed	0.003	0.030***	0.009
	(0.005)	(0.006)	(0.010)
Retired	-0.001	0.017**	0.028***
	(0.007)	(0.006)	(0.009)
	Household finance and consumption		
ln(Household monthly income)	-0.020	-0.009	-0.059**
	(0.016)	(0.019)	(0.025)
ln(Household monthly savings)	0.011	-0.010	0.012
	(0.027)	(0.034)	(0.050)
ln(Household total consumption)	-0.066**	0.054	-0.072*
	(0.029)	(0.035)	(0.041)
ln(Household basic consumption)	-0.059**	0.053	-0.087**
	(0.028)	(0.035)	(0.039)
ln(Household food consumption)	-0.042	0.02	-0.045
	(0.036)	(0.032)	(0.039)
N	18175	15948	11454

Notes: Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table 9: RDD Estimates of τ around Age Cutoffs – Meidum CPF Balance Men

	MRA	PEA	REA
	Labor market outcomes		
In labor force	-0.010	-0.001	-0.033***
	(0.006)	(0.006)	(0.011)
Employed	-0.017**	0.001	-0.045***
	(0.007)	(0.007)	(0.011)
Self-employed	0.002	0.007	0.007
	(0.004)	(0.005)	(0.005)
Full-time	-0.006	0.003	-0.046***
	(0.008)	(0.010)	(0.013)
Unemployed	0.008	-0.011	0.017**
	(0.005)	(0.007)	(0.008)
Retired	0.013**	0.005	0.031**
	(0.006)	(0.007)	(0.013)
	Household finance and consumption		
ln(Household monthly income)	-0.044***	-0.006	-0.076**
	(0.015)	(0.018)	(0.029)
ln(Household monthly savings)	-0.088***	-0.001	-0.079*
	(0.027)	(0.036)	(0.046)
ln(Household total consumption)	0.026*	0.014	-0.039
	(0.014)	(0.019)	(0.024)
ln(Household basic consumption)	0.028*	-0.003	-0.028
	(0.014)	(0.018)	(0.025)
ln(Household food consumption)	0.002	-0.013	0.007
	(0.018)	(0.02)	(0.035)
N	26047	16241	8691

Notes: Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table 10: RDD Estimates of τ around Age Cutoffs – High CPF Balance Men

	MRA	PEA	REA
	Labor market outcomes		
In labor force	-0.045***	-0.009	-0.039***
	(0.012)	0.010	(0.012)
Employed	-0.079***	0.001	-0.032***
	(0.008)	(0.010)	(0.010)
Self-employed	0.006	-0.016**	-0.005
	(0.008)	(0.008)	(0.007)
Full-time	0.004	-0.056***	-0.045**
	(0.012)	(0.015)	(0.020)
Unemployed	0.042***	0.012	-0.004
	(0.008)	(0.008)	(0.009)
Retired	0.040***	0.008	0.043***
	0.010	(0.011)	(0.011)
	Household finance and consumption		
ln(Household monthly income)	-0.088***	0.016	-0.066**
	(0.025)	(0.024)	(0.033)
ln(Household monthly savings)	-0.063	-0.015	-0.077
	(0.038)	(0.044)	(0.047)
ln(Household total consumption)	0.036	-0.017	0.006
	(0.022)	(0.019)	(0.022)
ln(Household basic consumption)	0.016	-0.026	0.001
	(0.024)	(0.022)	(0.024)
ln(Household food consumption)	0.086**	0.041*	-0.039
	(0.037)	(0.021)	(0.029)
N	7883	11542	8843

Notes: Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

the employment rate (7.9 pp). However, at least half of this reduction is involuntary, as the unemployment rate increases by 4.2 pp, while the retirement rate only increases by 4 pp. This suggests that although some high-income people anchor their reference point at the MRA for retirement, at least half of the dismissed high-income employees face demand-side barriers to be re-employed. Along with the big change in labor supply at the MRA, their household income decreases by 8.8%. However, they do not reduce their consumption and if anything, they increase their food consumption by 8.6%. At the PEA, the response is weaker. High-wealth men mainly reduce their working hours, but self-employed high-wealth men decrease their labor supply by quitting the labor force. At the REA, similar to both the low-wealth and the medium-wealth men, high-wealth men also reduce their supply at both the extensive and intensive margin, along with a 6.6% reduction in household income.

In short, the heterogeneity analysis results support our hypothesis that reference point plays a role at the MRA but is only salient for people with adequate retirement savings. Moreover, high income men are most negatively affected by demand-side factors at the MRA. At the PEA, liquidity effect plays a role, but the response is slightly different among low-wealth and high-wealth men. The former reduce labor supply at the extensive margin, while the later reduce labor supply at the intensive margin. Additionally, we find that the self-employed people respond most to pension access. At the REA, all wealth groups are almost equally affected with similar reductions in labor supply and household income. However, while medium- and high-wealth men can maintain their consumption level, we find a decrease in consumption among low-wealth men at both statutory retirement ages.

5 Conclusion

In this paper, we examine how older adults' labor market decision making and the associated household financial conditions and consumption are affected separately by pension access and statutory retirement ages in the Singapore context. We find that the statutory retirement ages play a bigger role in affecting the labor supply among older men. Considering the magnitudes, turning the REA leads to the biggest reduction in labor supply, followed by the MRA. While the response when people become eligible for pension payouts is the least.

Examining the heterogeneous effects by individuals' pension wealth level, we find that all groups respond similarly at the REA by reducing their labor supply at both the extensive and intensive margin. However, low-wealth men respond the most to the positive liquidity shock due to pension access. Although high-wealth men also respond to the positive liquidity shock, they only reduce working hours. In addition, reference points play a role but only among those men with sufficient retirement savings. Regarding the demand-side barriers, we show that high-income men are most badly influenced.

Our findings demonstrate that to increase labor supply of older adults, providing and extending a maximum re-employment age can be effective, and it would equally benefit all wealth groups. Increasing the minimum retirement age would benefit high-income people the most, as they are most negatively affected by the relaxed obligations of employers. While pension access plays a smaller role in affecting labor supply, household financial conditions, and consumption under the defined contribution scheme, it is likely to be essential for low-wealth people to maintain their consumption level, as we observe a consumption reduction among low-wealth men after reaching both statutory retirement ages but not upon pension access.

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Appendix: Additional Figures and Tables

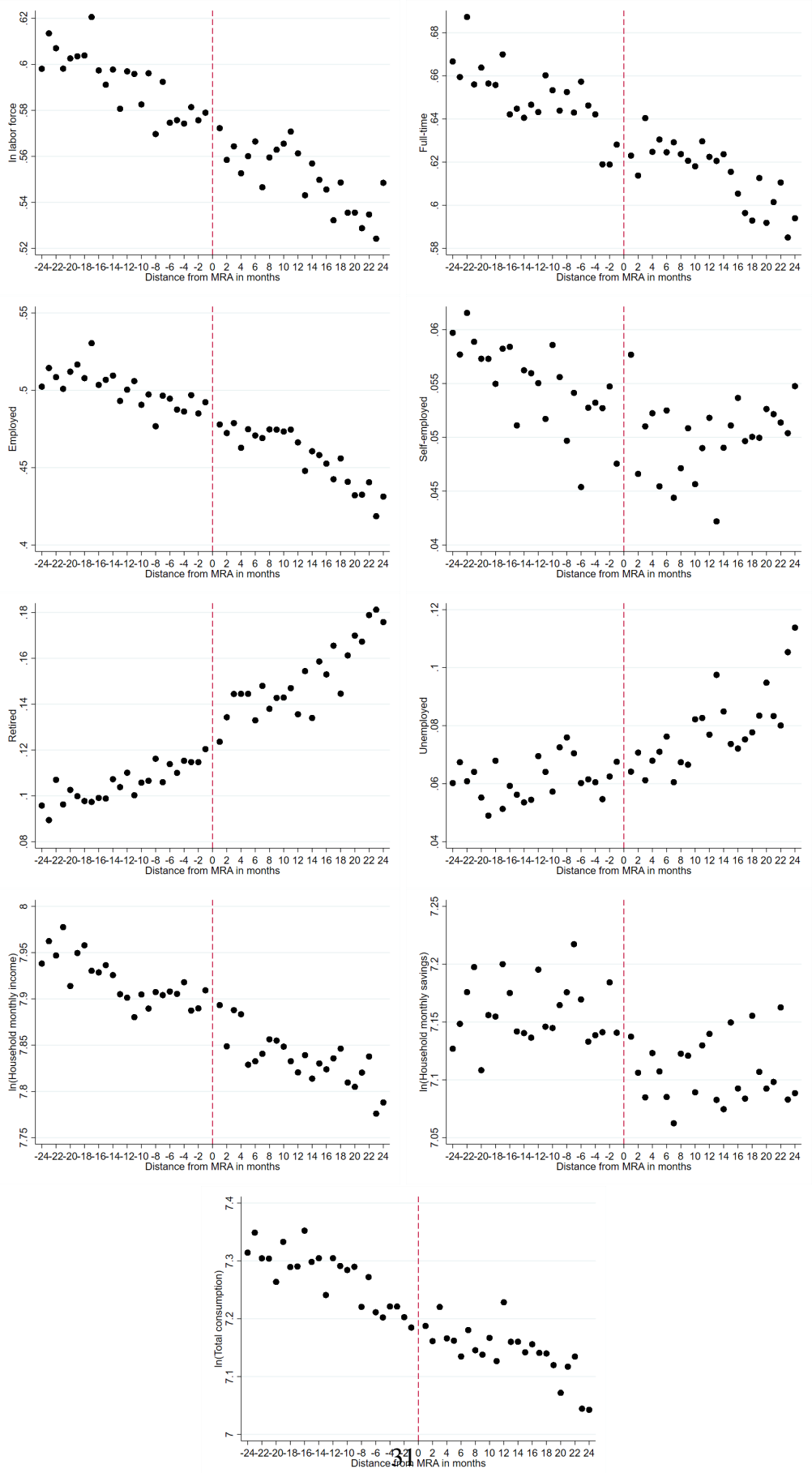

Figure A1: Labor Market Outcomes and Household Finance around the MRA for Women

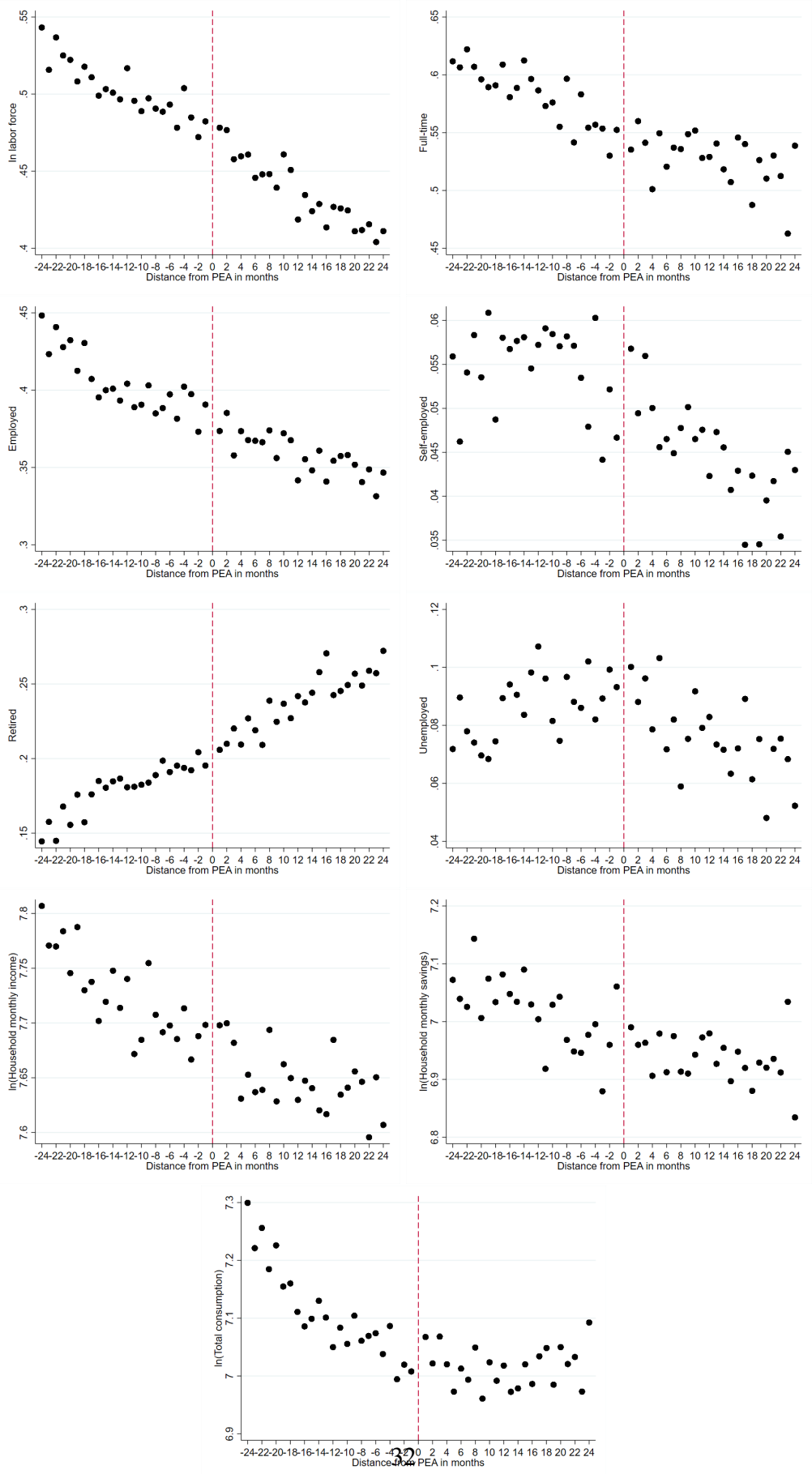

Figure A2: Labor Market Outcomes and Household Finance around the PEA for Women

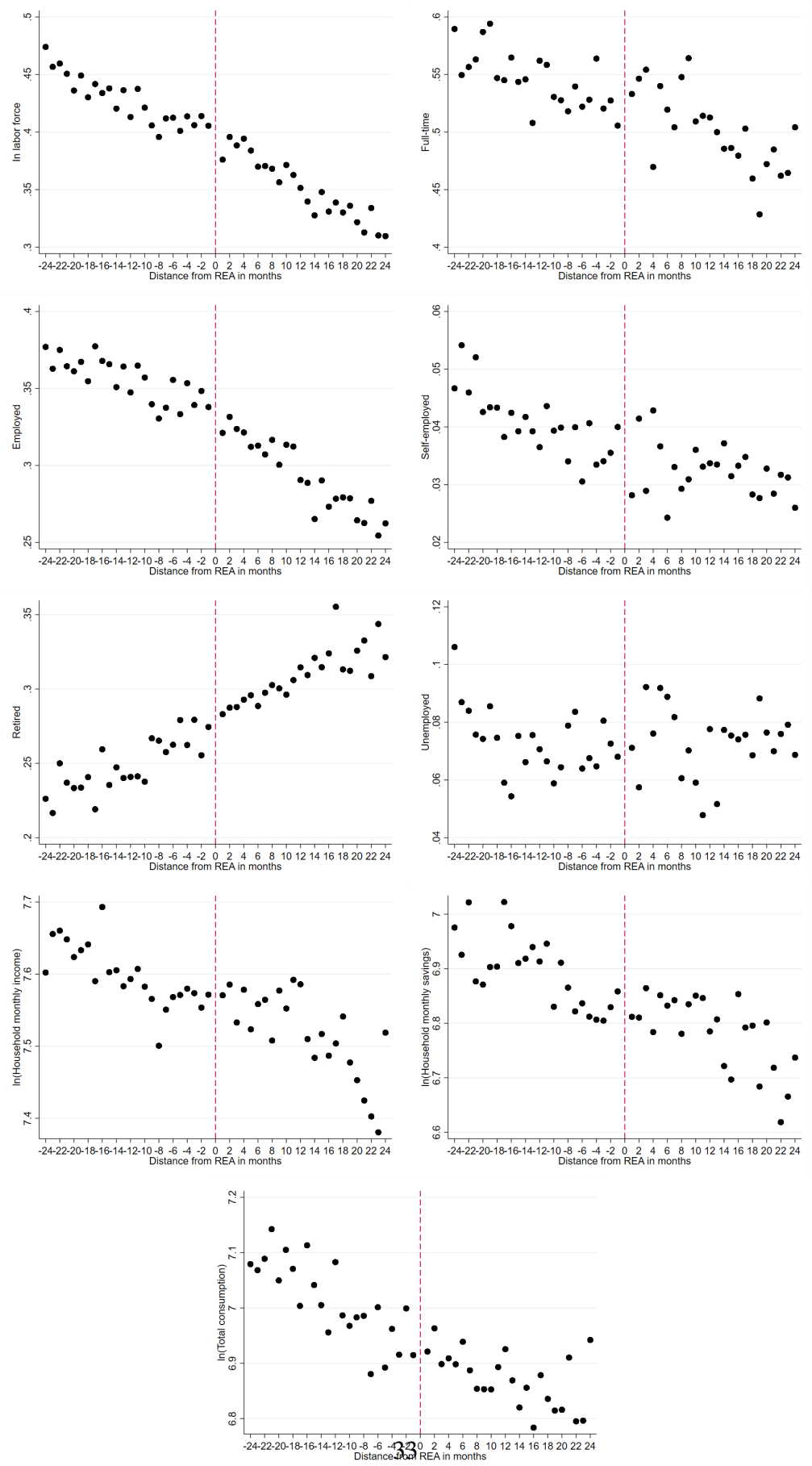

Figure A3: Labor Market Outcomes and Household Finance around the REA for Women

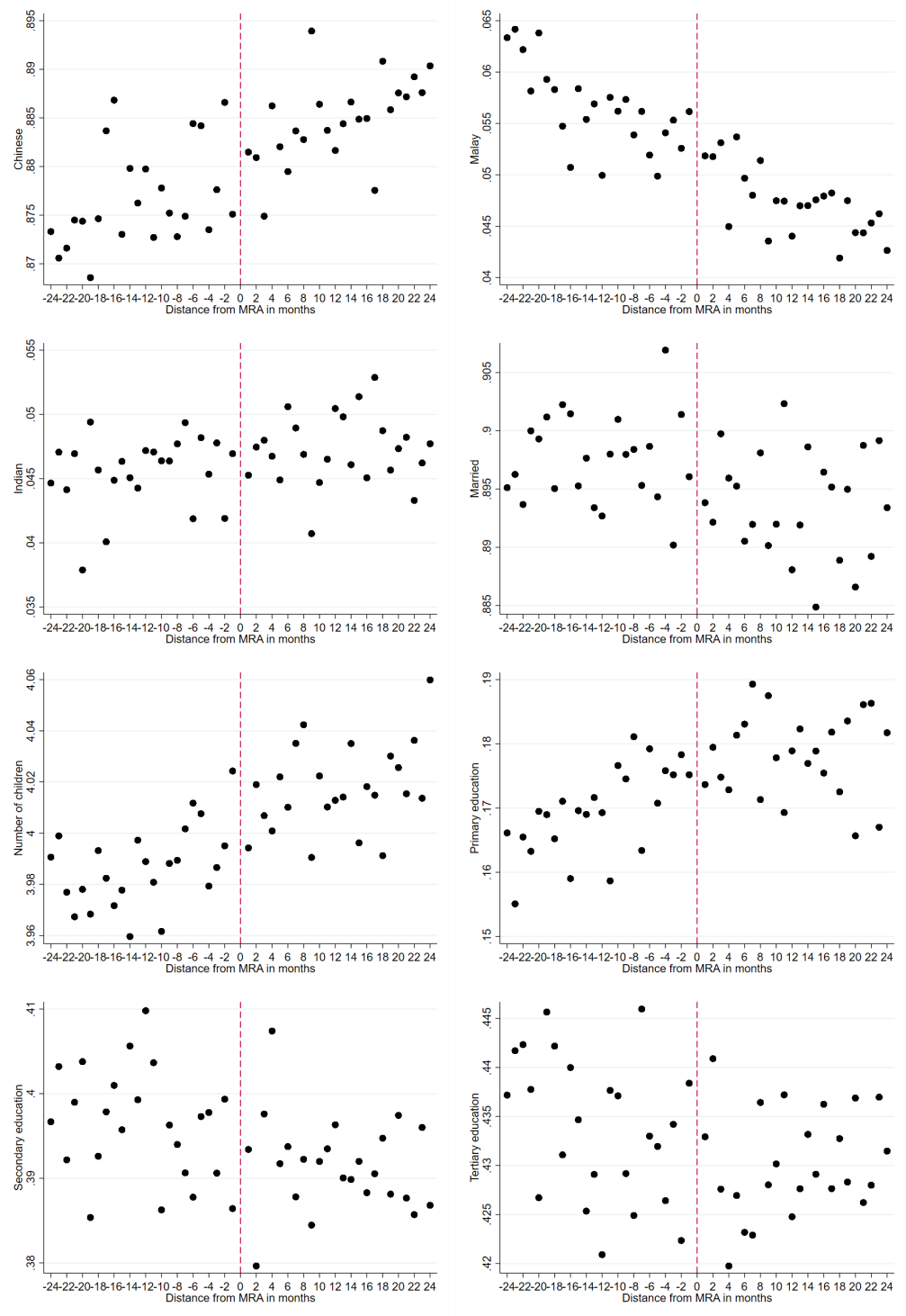

Figure A4: Balance Checks around the MRA for Men

Notes: The scatter plots show the average of demographic characteristics in each age-in-month.

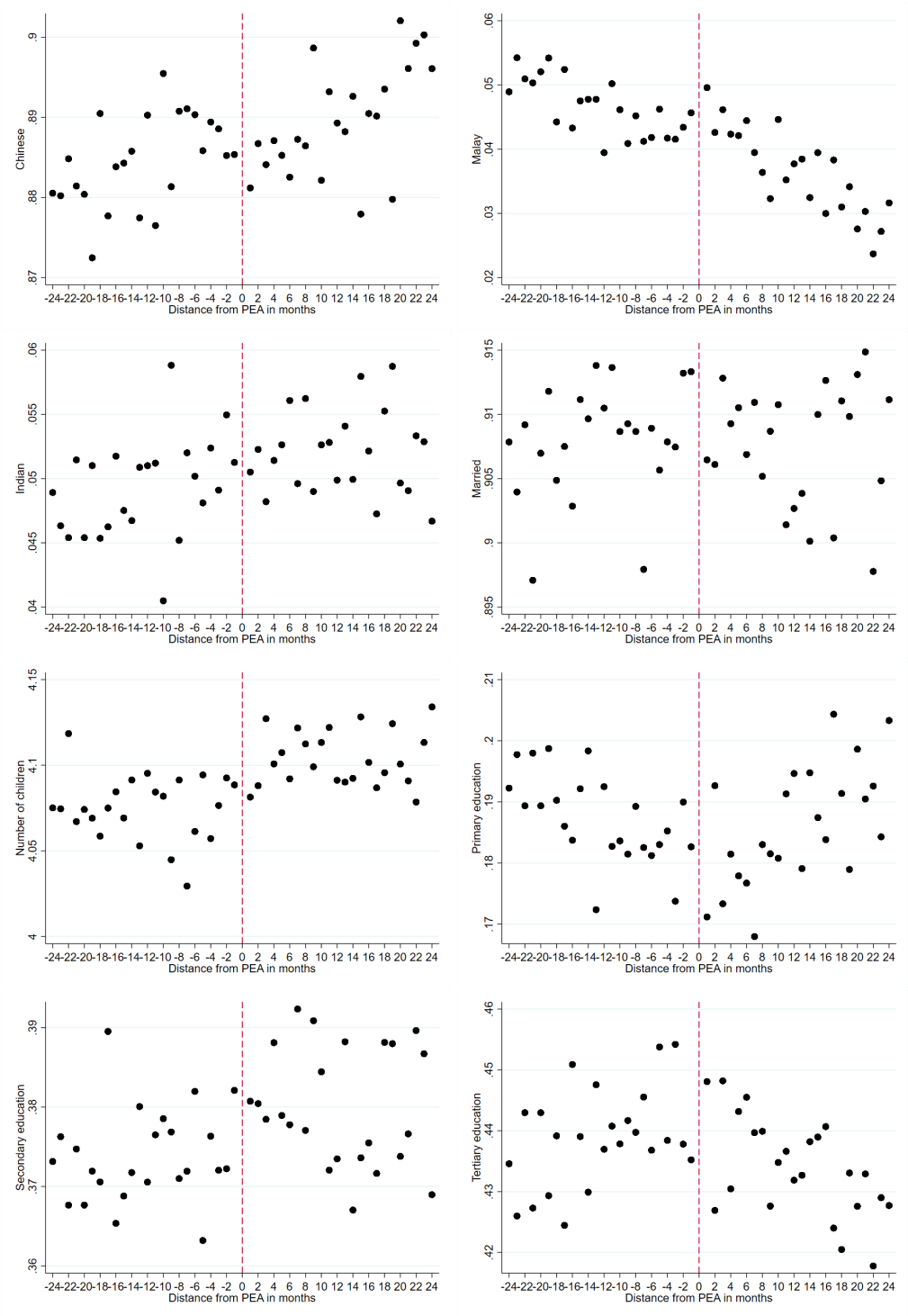

Figure A5: Balance Checks around the PEA for Men

Notes: The scatter plots show the average of demographic characteristics in each age-in-month.

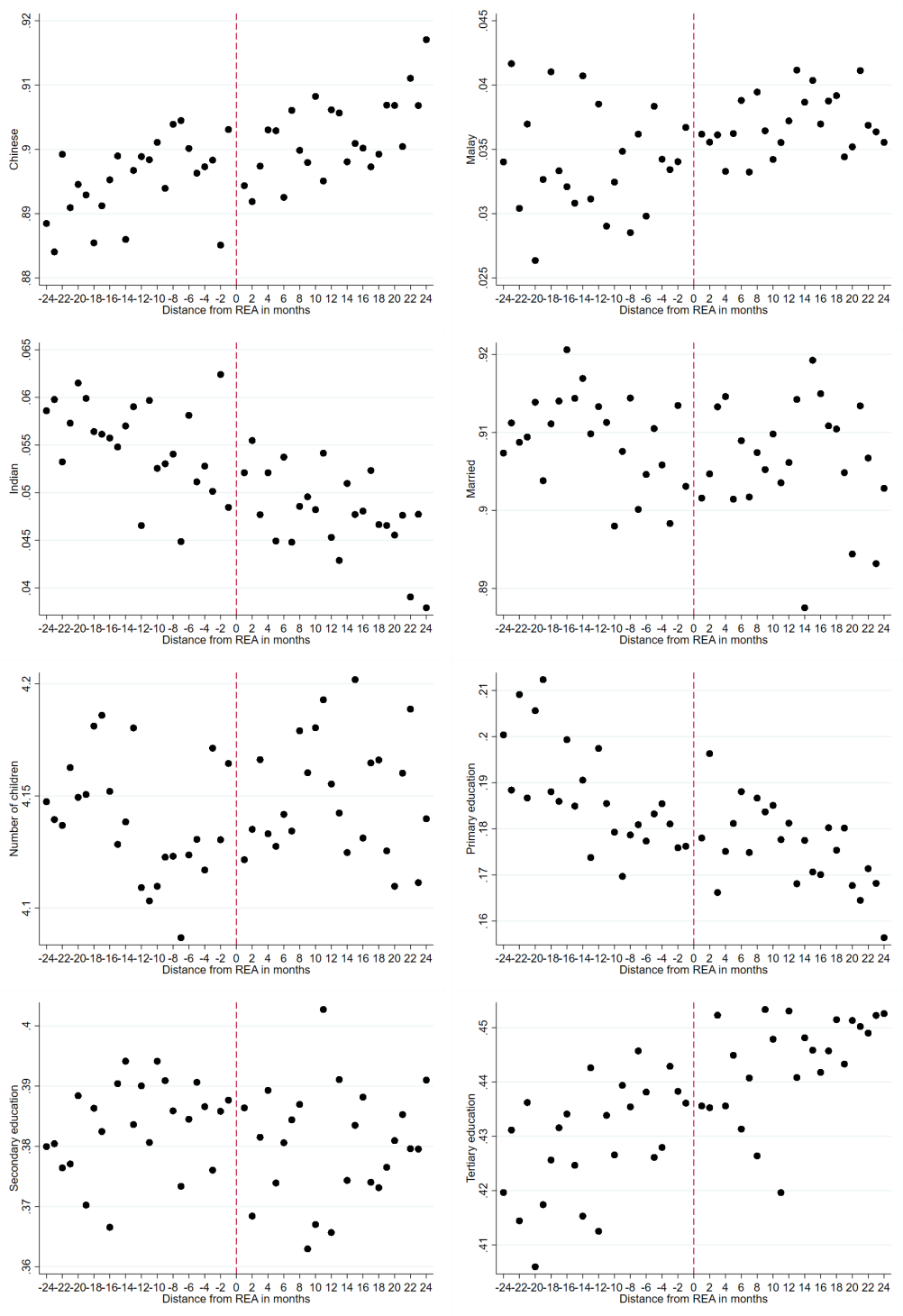

Figure A6: Balance Checks around the REA for Men

Table A1: RDD Estimates of τ around Age Cutoffs – Women

Women	MRA	PEA	REA
	labor market outcomes		
In labor force	0.001	-0.013***	-0.007
	(0.005)	(0.005)	(0.006)
Employed	0.002	-0.006	-0.010*
	(0.004)	(0.005)	(0.005)
Self-employed	-0.000	-0.002	0.000
	(0.002)	(0.003)	(0.003)
Full-time	0.004	0.004	0.028*
	(0.006)	(0.010)	(0.015)
Unemployed	-0.002	-0.006	0.008
	(0.004)	(0.006)	(0.007)
Retired	0.008**	0.007	0.007
	(0.004)	(0.004)	(0.005)
	Household finance and consumption		
ln(Household monthly income)	-0.003	0.002	0.020
	(0.009)	0.010	(0.014)
ln(Household monthly savings)	-0.043***	-0.004	0.020
	(0.015)	(0.024)	(0.023)
ln(Household total consumption)	-0.005	0.035**	0.033
	(0.013)	(0.017)	(0.027)
ln(Household basic consumption)	-0.001	0.038**	0.038
	(0.013)	(0.017)	(0.025)
ln(Household food consumption)	0.009	0.037	0.025
	(0.013)	(0.022)	(0.024)
N	56276	47269	30290

Notes: Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**} p < 0.05,^{***} p < 0.01$.

Table A2: CPF Contribution and Allocation Rates

Age	Employer	Employee	OA	SA	MA
20–35	17%	20%	23%	6%	8%
36–45	17%	20%	21%	7%	9%
46–50	17%	20%	19%	8%	10%
51–55	17%	20%	15%	11.5%	10.5%
56–60	13%	13%	12%	3.5%	10.5%
61–65	9%	3.5%	2.5%	3.5%	10.5%
Above 65	7.5%	1%	1%	3.5%	10.5%

Notes: Employer refers to the contribution rate by employers; Employee refers to the contribution rate by employees. The percentage is with respect to an employee's salary with a cap that varies across years. OA, SA, and MA refer to the allocation rate of CPF into each account, respectively.

Table A3: Silver Support Scheme Payout

HDB flat type	Payout per quarter	
	Household earns $\leq$ S$1,300 per person	Household earns S$1,301–S$1,800 per person
1-room and 2-room	S$900	S$450
3-room	S$720	S$360
4-room	S$540	S$270
5-room (live in, but not owned)	S$360	S$180

Notes: HDB refers to the public housing program in Singapore, where Singaporeans and Singapore permanent residents can buy highly-subsidized housing provided by the government. Room includes living room and bedrooms.

Table A4: Balance Checks

Men	MRA	PEA	REA
Chinese	0.000	-0.007***	-0.004
	(0.003)	(0.002)	(0.003)
Malay	-0.000	0.005***	0.002
	(0.002)	(0.002)	(0.001)
Indian	0.000	0.000	0.000
	(0.001)	(0.002)	(0.003)
Other race	-0.000	0.001	0.002
	(0.001)	(0.001)	(0.001)
Married	-0.003	-0.002	0.002
	(0.002)	(0.002)	(0.003)
Number of children	0.007	0.028**	0.021
	(0.009)	(0.011)	(0.014)
Primary education	0.001	-0.004	0.011**
	(0.003)	(0.004)	(0.005)
Secondary education	-0.000	0.007**	-0.008*
	(0.004)	(0.003)	(0.004)
Tertiary education	-0.001	-0.002	-0.003
	(0.004)	(0.005)	(0.004)
N	52105	43731	28988

Notes: Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table A5: RDD Estimates of τ around Age Cutoffs – Sample Appearing on Both Sides

Men	MRA	PEA	REA
	labor market outcomes		
In labor force	-0.013***	-0.007*	-0.029***
	(0.004)	(0.004)	(0.007)
Employed	-0.016***	-0.004	-0.030***
	(0.005)	(0.005)	(0.005)
Self-employed	-0.003	-0.009**	-0.001
	(0.004)	(0.003)	(0.004)
Full-time	0.007	-0.014**	-0.039***
	(0.005)	(0.006)	(0.010)
Unemployed	0.009**	0.010*	0.007
	(0.004)	(0.005)	(0.006)
Retired	0.018***	0.009**	0.029***
	(0.003)	(0.004)	(0.007)
	Household finance and consumption		
ln(Household monthly income)	-0.036***	0.020*	-0.048***
	(0.009)	(0.012)	(0.012)
ln(Household monthly savings)	-0.068***	-0.020	-0.038*
	(0.015)	(0.022)	(0.020)
ln(Household total consumption)	0.019*	-0.007	-0.021*
	(0.011)	(0.009)	(0.012)
ln(Household basic consumption)	0.013	-0.012	-0.017
	(0.011)	(0.011)	(0.012)
ln(Household food consumption)	0.011	-0.005	-0.018
	(0.01)	(0.009)	(0.013)
N	50766	42584	28428

Notes: This table keeps the sample who appear at least once on both sides of an age cutoff. Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**} p < 0.05,^{***} p < 0.01$.

Table A6: RDD Estimates of τ around Age Cutoffs – Polynomial Order of Two

Men	MRA	PEA	REA
	labor market outcomes		
In labor force	-0.023***	-0.005	-0.022***
	(0.005)	(0.004)	(0.008)
Employed	-0.032***	-0.006	-0.044***
	(0.008)	(0.007)	(0.007)
Self-employed	0.002	-0.003	0.013**
	(0.006)	(0.004)	(0.005)
Full-time	0.021***	-0.013	-0.045***
	(0.007)	(0.009)	(0.014)
Unemployed	0.011**	0.006	0.015**
	(0.005)	(0.008)	(0.007)
Retired	0.023***	0.009	0.020**
	(0.004)	(0.006)	(0.009)
	Household finance and consumption		
ln(Household monthly income)	-0.051***	-0.029**	-0.052**
	(0.017)	(0.014)	(0.023)
ln(Household monthly savings)	-0.049*	0.050	-0.084**
	(0.025)	(0.040)	(0.039)
ln(Household total consumption)	0.006	0.003	0.003
	(0.022)	(0.017)	(0.026)
ln(Household basic consumption)	0.007	0.000	-0.006
	(0.022)	(0.017)	(0.027)
ln(Household food consumption)	-0.043*	-0.008	-0.018
	(0.022)	(0.017)	(0.027)
N	52105	43731	28988

Notes: Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**} p < 0.05,^{***} p < 0.01$.

Table A7: RDD Estimates of τ around Age Cutoffs – One-month Donut Hole

Men	MRA	PEA	REA
	labor market outcomes		
In labor force	-0.011**	-0.010**	-0.036***
	(0.005)	(0.004)	(0.007)
Employed	-0.020***	-0.004	-0.035***
	(0.006)	(0.006)	(0.006)
Self-employed	-0.000	-0.010***	-0.003
	(0.004)	(0.004)	(0.005)
Full-time	0.007	-0.016**	-0.041***
	(0.006)	(0.007)	(0.013)
Unemployed	0.012***	0.008	0.008
	(0.004)	(0.006)	(0.007)
Retired	0.015***	0.014***	0.036***
	(0.004)	(0.004)	(0.008)
	Household finance and consumption		
ln(Household monthly income)	-0.051***	0.003	-0.065***
	(0.011)	(0.014)	(0.016)
ln(Household monthly savings)	-0.061***	-0.024	-0.045
	(0.020)	(0.026)	(0.028)
ln(Household total consumption)	-0.005	0.017	-0.046*
	(0.015)	(0.016)	(0.024)
ln(Household basic consumption)	-0.006	0.006	-0.050**
	(0.015)	(0.016)	(0.022)
ln(Household food consumption)	-0.000	0.01	-0.031
	(0.022)	(0.017)	(0.025)
N	49697	41589	27616

Notes: We exclude observations within one month on either side of each age cutoff. Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table A8: RDD Estimates of τ around Age Cutoffs – Two-month Donut Hole

Men	MRA	PEA	REA
	labor market outcomes		
In labor force	-0.009*	-0.010**	-0.037***
	(0.005)	(0.005)	(0.008)
Employed	-0.015**	-0.008	-0.036***
	(0.007)	(0.006)	(0.006)
Self-employed	-0.005	-0.010**	-0.003
	(0.003)	(0.004)	(0.006)
Full-time	0.005	-0.016*	-0.050***
	(0.007)	(0.008)	(0.014)
Unemployed	0.014***	0.014**	0.010
	(0.004)	(0.006)	(0.008)
Retired	0.014***	0.012**	0.041***
	(0.004)	(0.005)	(0.009)
	Household finance and consumption		
ln(Household monthly income)	-0.052***	0.012	-0.065***
	(0.012)	(0.016)	(0.018)
ln(Household monthly savings)	-0.062**	-0.025	-0.036
	(0.023)	(0.027)	(0.033)
ln(Household total consumption)	-0.016	0.029	-0.059**
	(0.013)	(0.018)	(0.025)
ln(Household basic consumption)	-0.017	0.016	-0.059**
	(0.014)	(0.018)	(0.023)
ln(Household food consumption)	0.005	0.015	-0.03
	(0.025)	(0.020)	(0.024)
N	47321	39519	26208

Notes: We exclude observations within two months on either side of each age cutoff. Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table A9: RDD Estimates of τ around Age Cutoffs – Three-month Donut Hole

Men	MRA	PEA	REA
	labor market outcomes		
In labor force	-0.005	-0.010*	-0.037***
	(0.005)	(0.005)	(0.010)
Employed	-0.012*	-0.006	-0.034***
	(0.006)	(0.007)	(0.008)
Self-employed	-0.003	-0.010**	-0.007
	(0.004)	(0.005)	(0.006)
Full-time	0.001	-0.018*	-0.054***
	(0.008)	0.010	(0.015)
Unemployed	0.012***	0.010*	0.012
	(0.004)	(0.006)	(0.010)
Retired	0.012**	0.015***	0.041***
	(0.005)	(0.006)	(0.011)
	Household finance and consumption		
ln(Household monthly income)	-0.043***	0.022	-0.069***
	(0.013)	(0.019)	(0.022)
ln(Household monthly savings)	-0.062**	-0.028	-0.047
	(0.026)	(0.033)	(0.036)
ln(Household total consumption)	-0.013	0.045**	-0.061**
	(0.015)	(0.018)	(0.024)
ln(Household basic consumption)	-0.014	0.031*	-0.055**
	(0.016)	(0.018)	(0.023)
ln(Household food consumption)	0.02	0.024	-0.025
	(0.029)	(0.022)	(0.029)
N	44961	37485	24798

Notes: We exclude observations within three months on either side of each age cutoff. Full-time is conditional on working. Standard errors are clustered at age-in-month level and are shown in parentheses. $^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.