How Do State Retirement Savings Policies Affect Labor Supply?

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How Do State Retirement Savings Policies Affect Labor Supply? [1]

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Abstract

This study investigates the labor market impacts of state-based Automatic Enrollment IRA (auto-IRA) policies which introduced mandates on employers to offer workplace retirement savings benefits. Using data from the CPS-ASEC covering the period 2010 to 2023, we estimate staggered difference-in-differences models examining the effects of auto-IRA policies on labor supply. Despite the theoretical ambiguity surrounding the impact of Auto-IRAs, we find that state Auto-IRA policies increase the probability of private sector employment by 1.46 percent. Addditionally, we find self-employment drops as large as 14% while earnings remain largely unchanged. Furthermore, we show that these effects prevail across all age groups including younger as well as older adults. Taken together, these findings indicate private pensions (e.g., DC plans and IRAs) provided at the workplace influence workers' labor supply behavior.

Keywords: Auto-IRA, retirement savings, household financial decisions, labor markets

JEL Codes: D14, D21, G41, J22, J26, J32

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1. Introduction

Employer-sponsored retirement plans (ESRPs) are by far the largest vehicle for household retirement savings, yet many workers do not have access to workplace retirement benefits. While Individual Retirement Accounts (IRAs) are available to all workers, previous research shows that take-up rates have remained quite low (Chen and Munnell, 2017; Chen 2025).

To address this issue, states, such as California, Oregon, Illinois, Colorado, and several others have adopted Automatic Enrollment IRA (Auto IRA) policies, under which employers that do not provide workers retirement benefits must offer employees a way to save for retirement.[2] Employers can comply with the policy by either offering a private retirement plan or by enrolling employees in the state-facilitated Auto IRA program, which is also a payroll deducted savings option.[3,4] Like existing automatic-enrollment ESRPs, workers can opt out of either savings option that their employer chooses to offer. However, a large body of evidence from automatic enrollment in ESRPs indicates that a large share of employees continue to participate and, given behavioral inertia, opt-out rates are lower than a rational model would predict (Madrian and Shea, 2001; Beshears et. al. 2010; Goda et. al. 2020; Chalmers et. al. 2021; Beshears et. al. 2022; Debt et. al. 2023).

This paper examines the effect of state Auto IRA policies on labor supply and earnings. More specifically, by investigating three labor market outcomes – private sector employment, self-employment, and earnings – we estimate the extent to which these state policies influence labor markets. In addition, this study explores heterogenous treatment effects over a workers lifecycle by estimating differential policy effects by age. Drawing on prior research which suggests that these retirement savings policies have influenced firm decisions leading to an increase in private retirement plans (Bloomfield et. al., 2024), we consider how workers' benefit valuations impact labor supply and firm wage decisions.

[2] Appendix B provides a detailed timeline of policy and program rollout across states.
[3]Other states are developing similar policies. There are currently 19 states that have taken steps to adopt auto-IRA policies, though most are not yet implemented. The five states we focus on (i.e., Oregon, Illinois, California, Connecticut, and Marryland) account for the vast majority of IRAs opened and assets saved (97%) (Georgetown University, Center for Retirement Initiatives, 2023).
[4]See Bloomfield et. al., 2023 for a review.

We propose a conceptual framework to help analyze expected adjustments in workers' labor supply and firm wages after state retirement savings policies have been implemented. The conceptual framework argues, broadly, that while a standard labor economic model would imply limited (if any) effects of Auto IRA policies on workers' labor supply decisions, an increase in the prevalence of ESRPs and/or behavioral biases could influence workers' labor supply as well as firms' wage decisions. Using data from the Current Population Survey's March supplement – the Annual Social and Economic Survey (CPS-ASEC) – our main results are that state Auto IRA policies are associated with significant increases in private-sector employment. Interestingly, we also find higher private sector employment in accompanied by decline in self-employment and no significant effect on wages. Taken together, these findings indicate state Auto IRA policies not only influence workers' labor supply decisions but also appear to be consistent with (an at least partial) substitution between self- and private employment for workers.

This paper contributes to the literature on fringe benefits and labor market dynamics. While job lock related to private health benefits and Defined Benefit (DB) plans has been investigated (Madrian, 1994; Koedel and Xiang, 2017; Mitchell 1982), there is little if any empirical evidence on how Defined Contribution (DC) retirement plans and IRAs affect worker trajectories. As DC plans increasingly dominate the retirement savings ecosystem, a better understanding of their labor supply and wage implications is crucial.

2. **Policy Background and Conceptual Framework**

Several states have sought to address workers lack of access to retirement savings[5] in the workplace by instituting policies that mandate employers to offer retirement benefits or a similar savings option in the workplace. Between 2018 and 2023, 19 states implemented or passed legislation that requires employers in the state to offer workers a retirement savings option. These

[5] According to some estimates nearly 56 million individuals or close to 47 percent of private sector workers do not have access to a workplace retirement savings option (AARP, 2024). For more information, see:https://www.aarp.org/content/dam/aarp/ppi/topics/work-finances-retirement/financial-security-retirement/2024-payroll-deduction-retirement-fact-sheets/payroll-deduction-retirement-programs-build-economic-security.doi.10.26419-2fppi.00164.001.pdf

policies increase access to retirement savings options for workers through the workplace[6] with the option for workers to opt out at anytime.

We develop a simple model to explain the potential effects of state Auto IRA policies on private sector labor supply, in which a worker's utility function can be expressed as:

$$U(C, L) = C^{\alpha} L^{1-\alpha} \quad (1)$$

where C is Consumption, L is Leisure , and α is the preference for consumption relative to leisure ($0 < \alpha < 1$).

The worker's budget constraint can be expressed as:

$$C + S_v + S_r = w.h + W \quad (2)$$

where S_v is existing retirement savings (including both taxable and tax-qualified savings such as IRAs and 401(s) that existed pre-policy intervention); S_r is additional or new retirement savings that occur in a new workplace retirement plan or IRA (offered in response to the Auto IRA policies) such as contributing to an ESRP or the state-facilitated IRA option. For simplicity, we assume that all employers comply with the policy and there is no non-compliance. Then, $w.h$ is labor income and W is non-labor income.

And,

$$T = h + L \ (3)$$

where T is the total time; h is work hours, and L is leisure time.

The worker maximizes utility subject to their budget and time constraints. The Lagrangian function is specified below:

$$\mathcal{L} = C^{\alpha} L^{1-\alpha} + \lambda(w \cdot h + W - C - S_v - S_r) + \mu(T - h - L) \quad (4)$$

[6] Though employers that choose to offer an employer-sponsored plan would be bound by ERISA non-descrimination rule, many types of workers (e.g., part-time, newly hired, etc.) can be legally excluded from accessing the plan. In contrast, employers have relatively little leeway in excluding these types of workers from participating in the state's auto- IRA program.

For simplicity, we assume that the default contribution rate set by the state-facilited Auto IRA program determines worker contributions to both components of S_r, (i.e., savings into induced retirement plans and Auto IRAs). This leads to the following retirement savings equation:

$$S_r = s_m \cdot w \cdot h \text{ , where } s_m \text{ is the default rate}^7$$

Rearranging Equation (2) and substituting (2) into (4):

$$C + S_v = w \cdot h(1 - s_m) + W \quad (5)$$

And

$$\mathcal{L} = C^{\alpha} L^{1-\alpha} + \lambda(w \cdot h\,(1 - s_m) + W - C - S_v) + \mu(T - h - L) \quad (6)$$

The FOC w.r.t. labor supply (h):

$$\frac{\partial \mathcal{L}}{\partial h} = \lambda(w\,(1 - s_m)) - \mu = 0 \Rightarrow \mu = \lambda w(1 - s_m)$$

From the FOC for C and L, we have:

$$\lambda = \alpha C^{\alpha-1} L^{1-\alpha} \text{ and } \mu = (1 - \alpha) C^{\alpha} L^{-\alpha}$$

Substituting λ and μ into the FOC for h:

$$(1 - \alpha) C^{\alpha} L^{-\alpha} = \alpha C^{\alpha-1} L^{1-\alpha} \cdot w\,(1 - s_m)$$

$$\Rightarrow \frac{C}{L} = \frac{\alpha}{1 - \alpha} w(1 - s_m)$$

Substituting budget and time constraints into the above equation:

$$w \cdot h(1 - s_m) + W - S_v = \frac{\alpha}{1 - \alpha} \cdot w(1 - s_m)(T - h)$$

And solving for h:

$$h = \alpha T - \frac{(1-\alpha)(W - S_v)}{w(1 - s_m)} \quad (7)$$

Equation (7) explains a potential effect of the auto IRA policies on private sector labor supply. In principle, even under the assumption that the nominal wage rate (w) remains unchanged (assume that firms do not pass cost of compliance through wage reduction), state auto-IRA policies can still influence labor supply through an income effect ($\frac{(1-\alpha)(W-S_v)}{w(1-s_m)}$) or a substitution effect ($w(1-s_m)$) as expressed in Equation (7). If the auto IRA policy encourages workers to contribute to newly available workplace savings options (autoIRA programs or ESRPs)[8], then workers' effective wage rate (the take-home wages) - $(w(1-s_m))$[9] would reduce. The lower effective wage rate lowers the opportunity cost of leisure, making leisure more attractive relative to work, and hence, the substitution effect (incentivizing substitution of work with leisure) would cause labor supply to fall. Alternatively, for those with binding liquidity constraints for consumption, the lower effective wage rate could have cause an income effect leading to an increase in labor supply on the intensive margin to maintain the same level of effective wage as in pre-policy period. Therefore, the net effect of the mandate on labor supply is theoretically ambigiuous and depends on the relative dominance of income or substitution effects.

Turning now to potential adjustments in firms' wage decisions in the presence of a retirement benefit mandate. Summers (1989) argues that in competitive labor markets, employers offer non-wage benefits if their value to workers exceeds employers' provision costs. Thus, when firms newly offer benefits, rational workers who value them may disproportionately remain at or sort into such firms and wages may adjust downwards to an equilibrium point where employers' benefit provision costs equal workers' perceived value of them, resulting in a mutually beneficial trade. Conversely, workers who do not value benefits (relative to the reduction in wages) may seek higher wages elsewhere post mandate. Gustman et. al. (1994) augment the standard labor model to explain demand for workplace retirement benefits and consider the desire for tax-preferred savings and economies of scale among other factors that drive firm decisions.

[8] Recent empirical studies show auto-IRA programs significantly increased participation in both IRAs and ESRPs (Dao, 2024; Bloomfield et al., 2024)

[9] We distinguish between the nominal and effective wage rate. We incorporate the effective wage rate in the model because we expect workers to be responsive to firms' wage decisions as opposed to broader macro conditions alone that influence the nominal wage rate.

In theory, Auto IRA policies could induce a passthrough effect wherein firms respond to the policy by passing on some of the compliance (or non-compliance) costs to workers in the form of lower wages (Summer,1989; Gustman et al, 1994). Alternatively, as retirement saving benefits (either via Auto IRAs or ESRPs) become more common among competing employers, frictions to firm wage adjustment could increase. In other words, firms that must compete more aggressively for workers that value retirement benefits may be more inclined to absorb the cost of providing retirement benefits as opposed to passing on those costs to workers through downward wage adjustments. However, to the extent that firms choose to to pass on compliance costs to workers by reducing wages, such within-subject wage effects could be complicated by concurrent changes in employment composition across sector, industry, firm, or job types. Therefore, the direction, magnitude, and composition of the effect of Auto IRA policies on wages is unclear. These considerations suggest the impact of state retirement policy mandates on labor supply and wages are ambiguous and empirical study is needed to identify them.

2. Data and Methods

Data

This study uses data from the Current Population Survey's Annual Social and Economic Component (CPS-ASEC), commonly referred to as the March supplement. The CPS and the CPS-ASEC are nationally representative household-level surveys that collect data on labor market participation and household finances.[10] Our sample consists of individuals between the ages of 18 to 64 years and cover the period from 2009-2022 for wages and from 2010-2023 for labor market outcomes – private sector employment and self-employment .[11] The sample excludes respondents that report attending school and those in active military duty. Table 1 in the appendix provides summary statistics of outcomes for treated (states with an Auto IRA policy) and control states (those without an Auto IRA policy). Both groups are largely similar on key outcome variables.[12]

[10] CPS-ASEC data were obtained from the University of Minnesota's IPUMS website. The CPS is a nationally representative survey conducted by the Department of Labor and the Census Bureau.

[11] As CPS data record income and wages for previous calendar year. We use CPS 2010-2023 to capture wages from 2009 to 2022. Therefore, for wage estimates, CO is not considered as treated state. We examine the outcome "self-employment" to understand to mechanism of the change in private-sector labor supply.

[12] We observe largely similar demographic characteristics between the treatment and control group.

Methods

Our identification strategy leverages the staggered rollout of Auto-IRA policies in California, Oregon, Illinois, Colorada, Connecticut, and Marryland[13] to estimate the effects of state Auto IRA policies on workers' labor supply and firms' wage behavior. We employ a staggered Difference-in-Differences (CSDiD) approach, following Callaway and Sant Anna (2021), which compares outcomes in treated states to those in control states. The CSDiD approach exploits the stagerred introduction of Auto IRA policies across states and over time to reduce potential bias from heterogenous treatment effects. The model is specified as follows:

$$Y_{ist} = \alpha_0 + \alpha_1 AutoIRA_{st} + \alpha_2 \pi_s + \alpha_3 \tau_t + X_{ist}\lambda + e_{ist} \quad (1)$$

where Y_{ist} represents either private-sector employment, self- employment or log of annual wages for individual i in state s at time t. $AutoIRA_{st}$ is an indicator for state s that implements Auto IRA legislation in year t and α_1 is the treatment effect. X_{ist} is a vector of individual-level demographic, job, and family structure characteristics. The model also includes state and year fixed effects ($\pi_s$and τ_t) to capture macro shocks across states and over years. Finally, we adjust the model using sample weights. Standard errors are clustered at the state level.

We verify the identifying assumptions in equation (1) by estimating the following event study models:

$$Y_{ist} = \alpha_0 + \sum_{i=-6}^{-2} \alpha_{1i} AutoIRA_{st} \times 1(t - T_s^*) + \sum_{i=0}^{5} \alpha_{2i} AutoIRA_{st} \times 1(t - T_s^*) + \alpha_3 \pi_s + \alpha_4 \tau_t + X_{ist}\lambda + e_{ist} \quad (2)$$

where α_{1i} and α_{2i} capture the interaction between treatment status and event-year indicators $1(t - T_s^*)$ for pre and post treatment periods, respectively; and i = -1 is the reference year.[14]

[13]See Figure B1 for details about state program registration timelines

[14] Figures A1-3 in Appendix A display event-study graphs for the two main outcomes: private-sector employment and log weekly earnings. We do not observe differences in pre-trends for private-sector employment and weekly earnings.

3. Results

We estimate policy effects on labor market participation and wage outcomes using four distinct samples: the full sample of all workers (aged 18-64), young adult workers (aged 18-25), prime-age workers (aged 25-55), and older workers (aged 55-64). Table 1 presents the main results for private-sector employment, self-employment and earnings for all samples estimated using CSDiD models. Across all samples, we find that the introduction of state auto-IRA policies led to a statistically significant increase in private-sector employment. Interestingly, we also find that state auto-IRA policies are associated with a significant decrease in self-employment and there is no significant influence on workers earnings.

Table 1 presents the estimated policy effect on private-sector employment (Panel A), self-employment (Panel B), and wages (Panel C). Columns (1) shows estimates for the full sample, the remaining columns present estimates from models estimated using the subsample of young adult workers (column 2), prime age workers (column 3), and older workers (column 4). We find that private-sector employment increased by 0.83 percentage points or 1.46 percent (relative to the pre-policy mean) for the full sample (column 1). The effect size is larger for young adults than older adult samples. In states with mandated auto-IRA policies, compared to those without these policies, we find private sector employment increased by 3.5 percentage point (or 5.75 percent) among young adult workers (ages 18 to 25) and 1.7 percentage point (or 3.84 percent) among older workers (those aged between 55 and 65) (column 4). Surprisingly, we find the policy did not have a statistically significant effect on private sector employment among prime age workers. For adults between the ages of 25 and 55, state auto-IRA programs are associated with a 0.4 percentage point growth in private sector employment (column 3), this is a 0.72 percent increase (relative to the pre-policy mean) compared to 5.75 percent and 3.84 percent growth among young adults and older adults, respectively.

Panel B presents results for our second labor market outcome: self-employment. We find that state auto-IRA policies induce a drop in self-employment, these effects are observed across all samples. The reduction ranges from 1.3 percentage points for the full sample to 1.6 percentage points for the samples of young adult worker as well as older workers (column 2 and 4). In addition, in states with the mandates, self-employment declined by 1.2 percentage points for prime age

worker sample (column 3). Relative to the pre-policy means, the decline was the most pronounced among young adult and older workers, with an approximate 64 percent and 13 percent reduction, respectively. For the prime age sample, self-employment dropped by roughly 13 percent (relative to the pre-policy mean).

Turning now to results from estimating the effect of Auto IRA policies on workers wages. We find a marginal drop in wages for the full sample although the effect is not statistically significant. Taken together, we find that while private sector employment increased, self-employment declined indicating a policy induced shift in worker preferences in favor of private firms in states with auto-IRA policies compared to those without these policies. Furthermore, this realignment in workers preferences suggests that, in addition to labor supply, state auto-IRA policies have influenced labor market composition, particularly with respect to private vs self-employment.[15]

Table 1: Effect on Private-Sector Employment, Self-Employment and Wages

	(1)	(2)	(3)	(4)
	Full Sample	Young Adult Sample	Prime Age Sample	Older Adult Sample
	(18-64 years old)	(18-25 years old)	(25-55 years old)	(55-65 years old)
Panel A				
Private-Sector Employment	0.0083***	0.0354***	0.0043	0.0165**
	{0.0034}	{0.0099}	{0.0029}	{0.0068}
Pre-Policy Mean	*0.5673*	*0.6156*	*0.5956*	*0.4294*
N	1,300,666	104,728	966,291	229,647
Panel B				

[15] We test for shifts in labor supply between self-employment and private sector employment (results are in Table 2 in the appendix) and find that the policies led to a statistically significant decline in self-employment. These results suggest that Auto IRA policies influenced sectoral shifts in employment, but further research is needed to understand such inter-sectoral changes in employment better.

Self-Employment	-0.0127***	-0.0163***	-0.0120**	-0.0158**
	{0.0025}	{0.0038}	{0.0020}	{0.0086}
Pre-Policy Mean	*0.0908*	*0.025*	*0.0904*	*0.1238*
N	1,300,666	104,728	966,291	229,647
Panel C				
Annual Wages (log)	-0.0096	0.0279	-0.0067	-0.0757
	{0.0735}	{0.1329}	{0.0616}	{0.0608}
Pre-Policy Mean	*10.50*	*9.20*	*10.60*	*10.79*
N	765,359	67,137	591,401	106,831

Note: Each cell presents coefficients from separate regressions. Wage estimates are in 2023 real dollars, log transformed, and estimated using the subsample of private sector workers. Wage data in the CPS-ASEC is for the previous calendar year because of which our wage data cover the period from 2010 and 2022. All regression models include year and state FEs as well as individual demographic controls. * p<0.10, ** p<0.05, *** p<0.01.

4. Discussion and Conclusion

This study evaluates the effect of state retirement savings policies on labor supply and wages. Using CPS-ASEC data, we estimate the effect of state auto-IRA policies on three key labor market outcomes – private sector employment, self-employment, and wages. We find that state Auto IRA policies are associated with a significant increase in private-sector employment and drop in self-employment while wages remained unaffected. The effects of the policy were experienced more prominently by younger and older workers as opposed to prime age workers. Our findings on heterogenous treatment effects can be explained to the extent that prime age workers may be more likely to be employed in larger firms that offer retierement benefits compared to younger workers that are new entrants and older workers nearing retirement. However, further research is needed to investigate age based differences in labor market participation among different sized firms.

Importantly, our findings are suggestive of a a shift in labor composition between private sector and self-employment. And, despite the increase in private sector labor supply, we find that the policy did not cause a downward adjustment in wages. Our results indicate that policies that make workplace benefits such as retirement benefits ubiquitous have net welfare gains for workers. Private sector workers can benefit from saving for long-term goals with negligible loss in wages.

Given the recency of these state mandates, our estimates should be interpreted as early evidence with opportunities for future research. Specifically, follow-up work should consider additional states as more states adopt auto-IRA legislation. Additionally, analysis using large-scale and longitudinal labor market data may help identify the channels through which the employment and wage effects we observe occur, such as compliance cost incidence on workers and employers, variation in such incidence, changes in worker composition across industry sectors, and other patterns of worker sorting in response to heterogeneous savings and wage preferences.

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APPENDIX A

Table 1: Sample Statistics

	Auto-IRA States		Non-AutoIRA States	
	Mean	SD	Mean	SD
Private Employment	0.5807	0.4935	0.6004	0.4898
Self-Employment	0.0882	0.2836	0.0775	0.2674
Annual Wages (log) in 2023 real dollars	10.52	1.92	10.45	1.9
Demographic Characteristics				
Age	42.155	12.511	42.198	12.715
Female	0.501	0.500	0.507	0.500
Married	0.566	0.500	0.507	0.500
Separated/Divorced/Widowed	0.128	0.334	0.145	0.352
Single	0.305	0.461	0.282	0.450
White	0.757	0.428	0.786	0.410
Black	0.092	0.289	0.133	0.341
Asian	0.112	0.315	0.048	0.215
Other Races	0.038	0.191	0.031	0.173
Hispanic	0.278	0.448	0.149	0.356
Living in metropolitan area	0.861	0.345	0.697	0.459
Less than high school	0.111	0.314	0.086	0.281
HS graduate	0.252	0.434	0.303	0.459
Some college	0.253	0.435	0.265	0.441
College plus	0.383	0.486	0.344	0.475
Immigrant	0.292	0.454	0.176	0.381
Number of children	0.929	1.181	0.895	1.174
Home ownership	0.612	0.487	0.682	0.465
Firm size				
Missing value	0.187	0.390	0.168	0.374
Under 10 employees	0.170	0.376	0.155	0.362
10-49 employees	0.117	0.321	0.117	0.322
50-99 employees	0.061	0.239	0.062	0.241
100-499 employees	0.100	0.299	0.104	0.305
500 plus employees	0.366	0.482	0.394	0.489
N	257,564		1,043,102	

Note: Data comes from the CPS-ASEC 2010-2023. Sample includes individuals that are aged 18-64, not attending school or in active military duty or with a work disability. Treated auto IRA states include OR, CA, IL, CO, CT and MD; non- auto IRA states include all other states. All statistics are adjusted using sample weights.

Table 2: State-Specific Treatment Effects of auto-IRA Policies on Labor Market Outcomes

	Oregon	Illinois	California	Colorado	Connecticut and Maryland
	(1)	(2)	(3)	(4)	(5)
Private-Sector Employment	0.0092***	0.0251***	0.0051	0.0227***	0.0148***
	{0.0023}	{0.0025}	{0.0044}	{0.0027}	{0.0032}
Pre-Policy Mean	0.5507	0.6124	0.5562	0.5957	0.5810
N	1,300,666	1,300,666	1,300,666	1,300,666	1,300,666
Self-Employment	-0.0266***	-0.0077***	-0.0133**	-0.0012	-0.0099*
	{0.0010}	{0.0015}	{0.0028}	{0.0017}	{0.0056}
Pre-Policy Mean	0.1068	0.0714	0.0949	0.1104	0.0769
N	1,300,666	1,300,666	1,300,666	1,300,666	1,300,666
Annual Wages (log)	0.0762***	0.1324***	-0.1179***	--	-0.0658
	{0.0113}	{0.0141}	{0.0104}	--	{0.0719}
Pre-Policy Mean	10.42	10.52	10.46	--	10.62
N	765,359	765,359	765,359		765,359

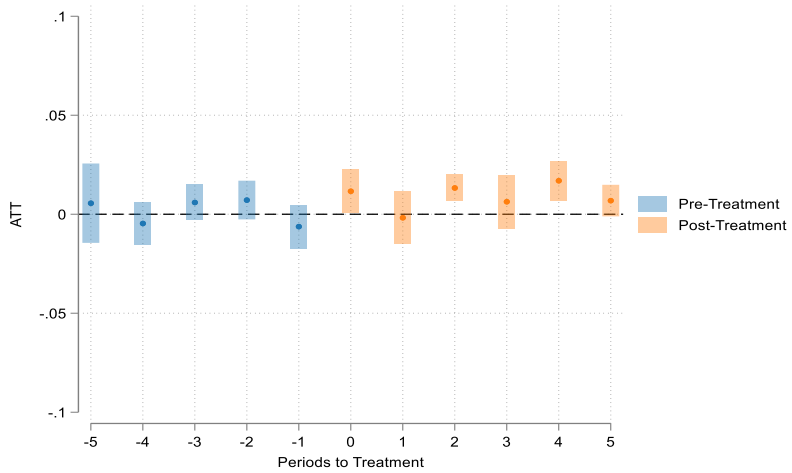
Note: Data comes from the CPS-ASEC 2010-2023. Sample includes individuals that are aged 18-64, not attending school or in active military duty or with a work disability. The treated group is a specific Auto IRA state. The control group includes all other states excluded treated states (OR, IL, CA, CO, CT, and MD). All statistics are adjusted using sample weights. Column 5 presents results from estimates that combine CT and MD because the treatment effect is by year and both states initiated their programs in the same year.

Table 3: Robustness Tests: Treatment Effects of auto-IRA Policies on Labor Market Outcomes

	Full Sample	Young Adult Sample (18-25 years old)	Prime Age Sample (25-55 years old)	Older Adult Sample (55-64 years old)
	(1)	(2)	(3)	(4)
Robustness Test 1: Treated group excludes late adopting states (CO, CT, and MD)				
Private-Sector Employment	0.0075**	0.036	0.0035	0.0144
	{0.0034}	{0.0046}	{0.0586}	{0.0403}
Pre-Policy Mean	0.5670	0.6150	0.5950	0.4290
N	1,234,267	966,291	916,533	217,813
Self-Employment	-0.0132***	-0.0077***	-0.0125	-0.0159
	{0.0027}	{0.0015}	{0.0099}	{0.0114}
Pre-Policy Mean	0.9080	0.0254	0.0904	0.1240
N	1,234,267	966,291	916,533	217,813
Annual Wages (log)	-0.0122	0.026	-0.0076	-0.1073**
	{0.0765}	{0.1413}	{0.0653}	{0.0511}
Pre-Policy Mean	10.00	9.19	11.00	11.00
N	726,712	63,983	561,422	101,307
Robustness Test 2: Alternative Control States				
Private-Sector Employment	0.0059	0.0325	-0.0003	0.0204
	{0.0049}	{0.0360}	{0.0099}	{0.0342}
Pre-Policy Mean	*0.5673*	*0.615*	*0.595*	*0.429*
N	574,082	44,039	427,987	102,056
Self-Employment	-0.0112***	-0.0172***	-0.0125	-0.0156
	{0.0034}	{0.0040}	{0.0099}	{0.0106}
Pre-Policy Mean	*0.0908*	*0.0254*	*0.0904*	*0.1240*
N	574,082	44,039	427,987	102,056
Annual Wages (log)	-0.0071	-0.0316	-0.0058	-0.0472
	{0.0709}	{0.1266}	{0.0550}	{0.0663}
Pre-Policy Mean	*10.50*	*9.20*	*10.60*	*10.79*
N	335,829	28,103	260,432	47,294

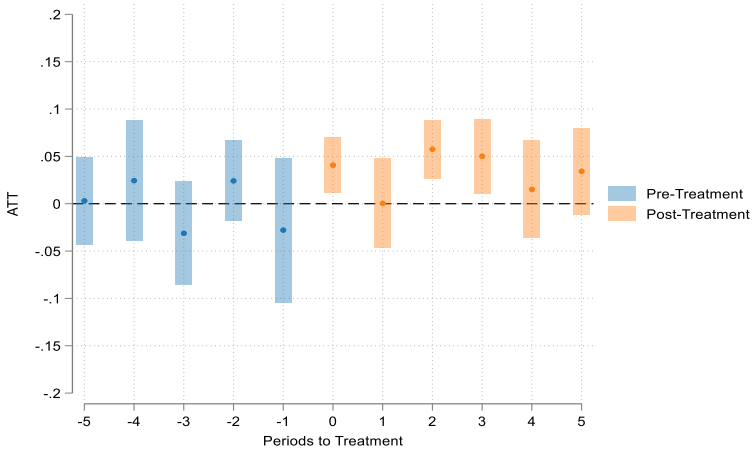
Note: Data comes from the CPS-ASEC 2010-2023. For wages, the data is for period 2009-2022. Sample includes individuals that are aged 18-64, not attending school or in active military duty or with a work disability. All statistics are adjusted using sample weights. The alternative control states include states enacted mandated Auto-IRA programs but not yet implemented, states with other types of retirement plans such as voluntary auto-IRA or market exchanges. These states are CO, DE, HI, NE, NM, NJ, NY, MA, ME, MN, MO, RI, VA, VT and WA.

Figure A1: Event Study for Private-Sector Employment: Full Sample (18-64 years old)



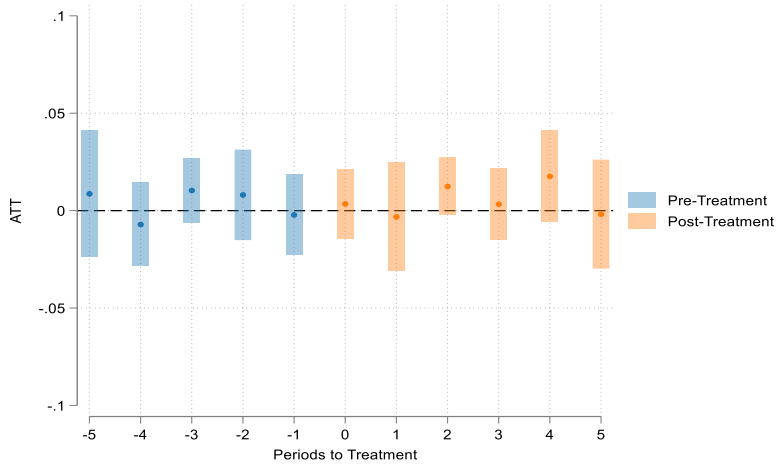
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the full sample (ages 18-64). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A2: Event Study for Private-Sector Employment: Young Adult Sample (18-25 years old)



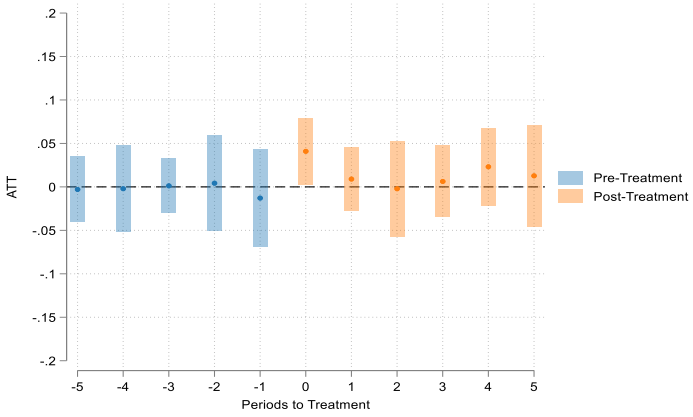
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the young adult subsample (ages 18-25). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A3: Event Study for Private-Sector Employment: Prime Age Sample (25-55 years old)



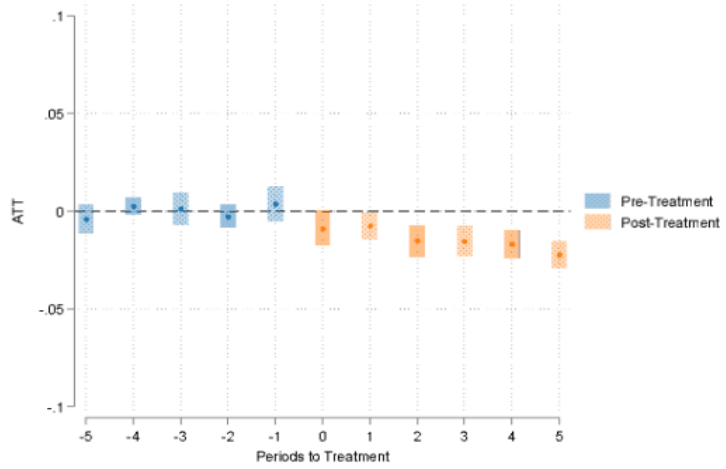
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the prime age sample (ages 25-55). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A4: Event Study for Private-Sector Employment: Older Adult Sample (55-64 years old)



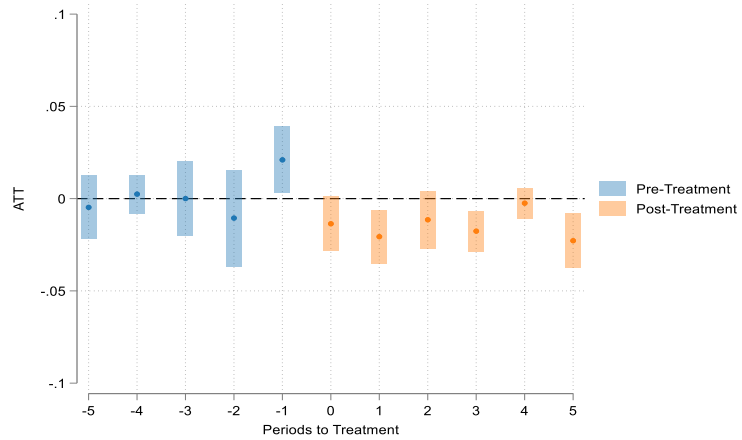
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the older adult subsample (ages 55-64). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A5: Event Study for Self-Employment: Full Sample (18-64 years old)



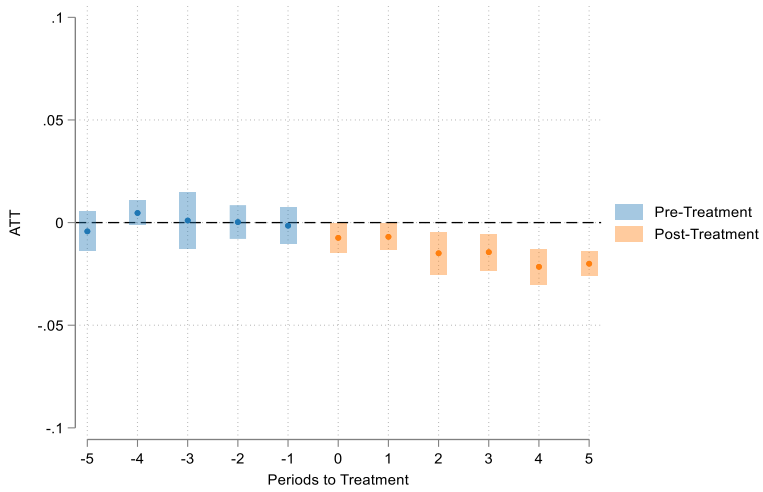
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the full sample (ages 18-64). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A6: Event Study for Self-Employment: Young Adult Sample (18-25 years old)



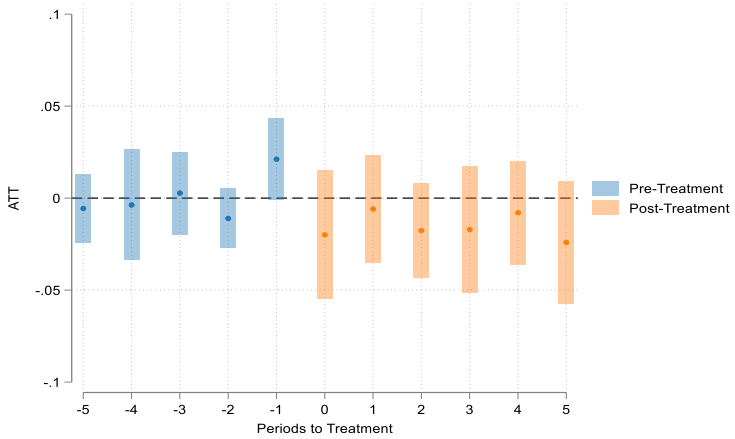
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the young adult subsample (ages 18-25). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A7: Event Study for Self-Employment: Prime Age Sample (25-55 years old)



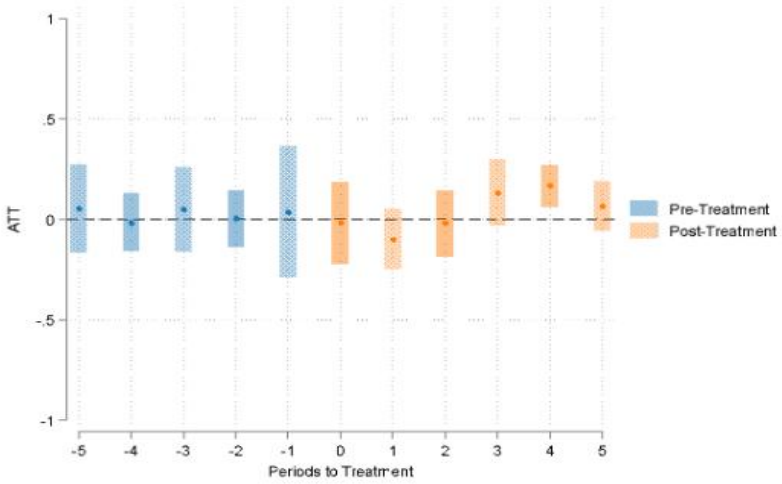
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the prime age sample (ages 25-55). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A8: Event Study for Self-Employment: Older Adult Sample (55-64 years old)



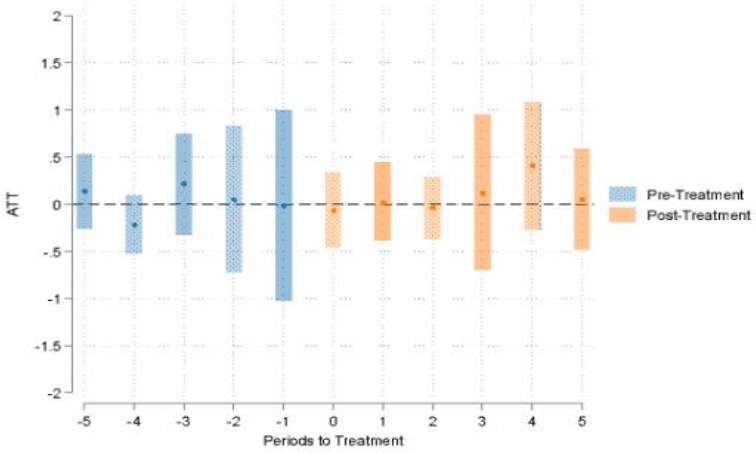
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the older adult subsample (ages 55-64). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A9: Event Study for Log Annual Wages: Full Sample (55-64 years old)



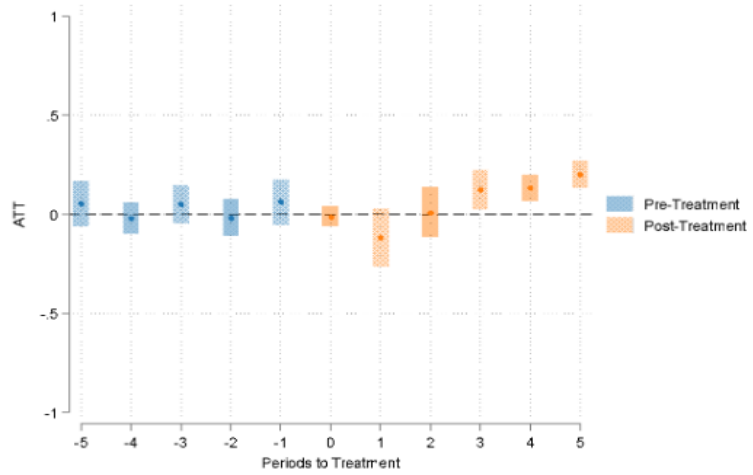
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the full sample (ages 18-64). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A10: Event Study for Log Annual Wages: Young Adult Sample (18-25 years old)



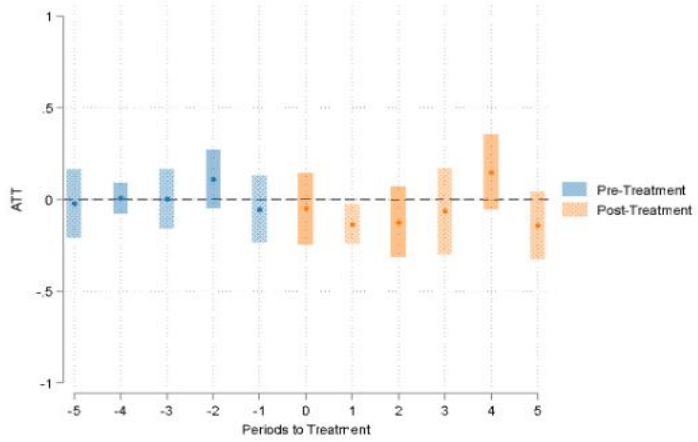
Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the young adult subsample (ages 18-25). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

Figure A11: Event Study for Log Annual Wages: Prime Age Sample (25-55 years old)



Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the prime age sample (ages 25-55). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

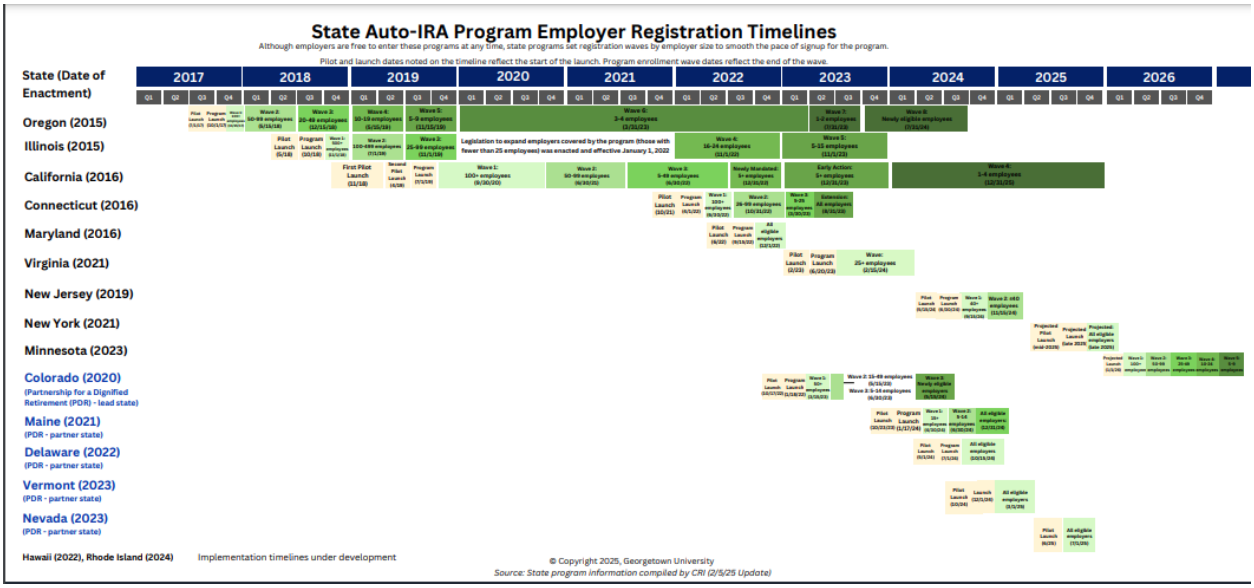
Figure A12: Event Study for Log Annual Wages: Older Adult Sample (55-64 years)



Note: Data are from the CPS-ASEC (2010 to 2023). Sample includes individuals aged 18-64, not attending school or in active military duty or with a work disability. Outcome variable is an indicator if a respondent is working in the private-sector using the older adult subsample (ages 55-64). Each dot displays coefficient β and its 95% confidence interval from event study regressions that include year fixed effects and demographic characteristics (age, gender, marital status, race, Hispanic origin, education, family income categories, family size, living in metropolitan area, immigrant status, indicators for occupations and industries). All estimates are adjusted for sample weights. Standard errors are robust and clustered at the state level.

APPENDIX B

Figure B1. State Auto-IRA Program Registration Timelines



Source: State Programs 2025. Center for Retirement Innitiatives. Gerorgetown University.