THE EVOLUTION OF 401(K) BALANCES UNDER AUTOMATIC ENROLLMENT

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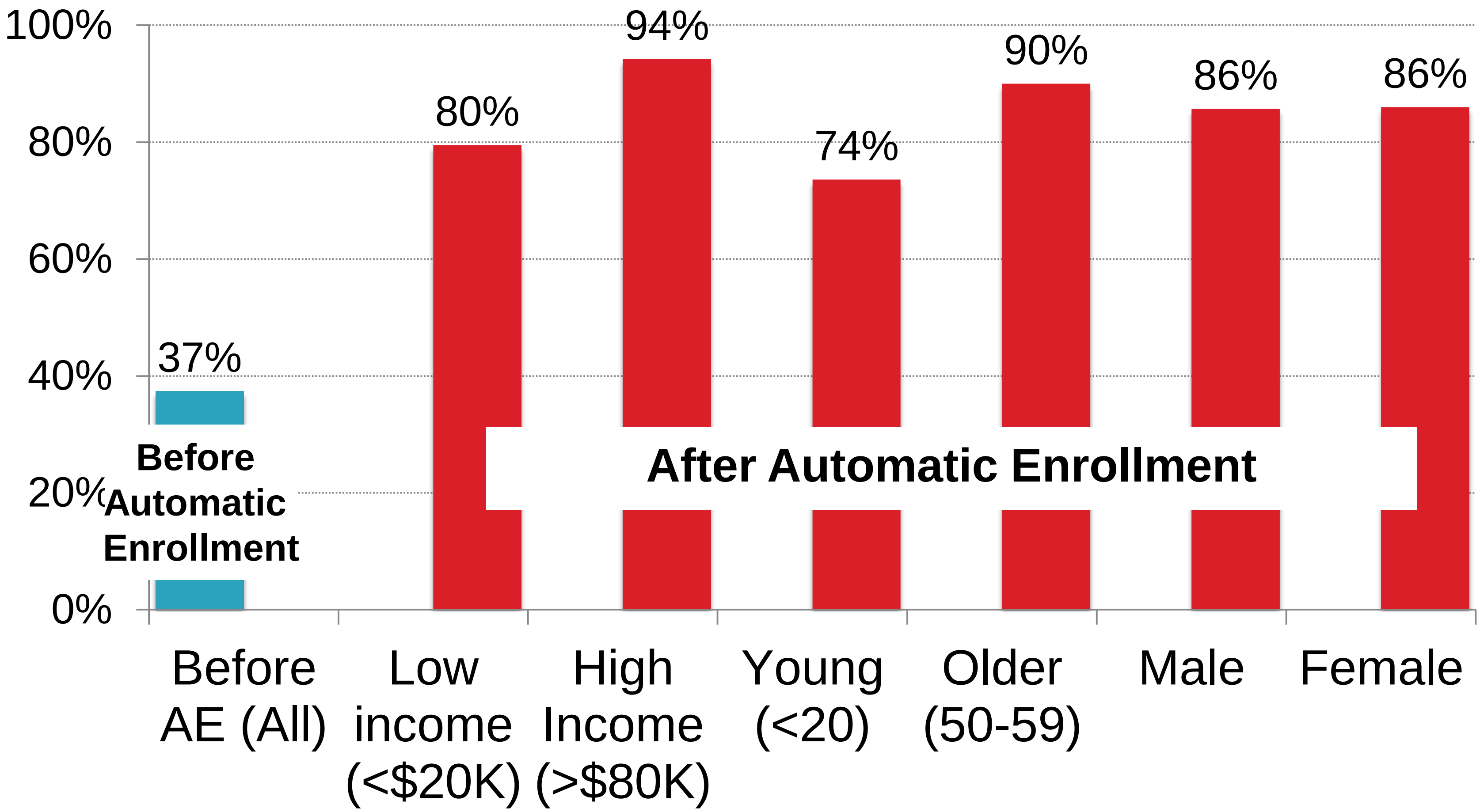
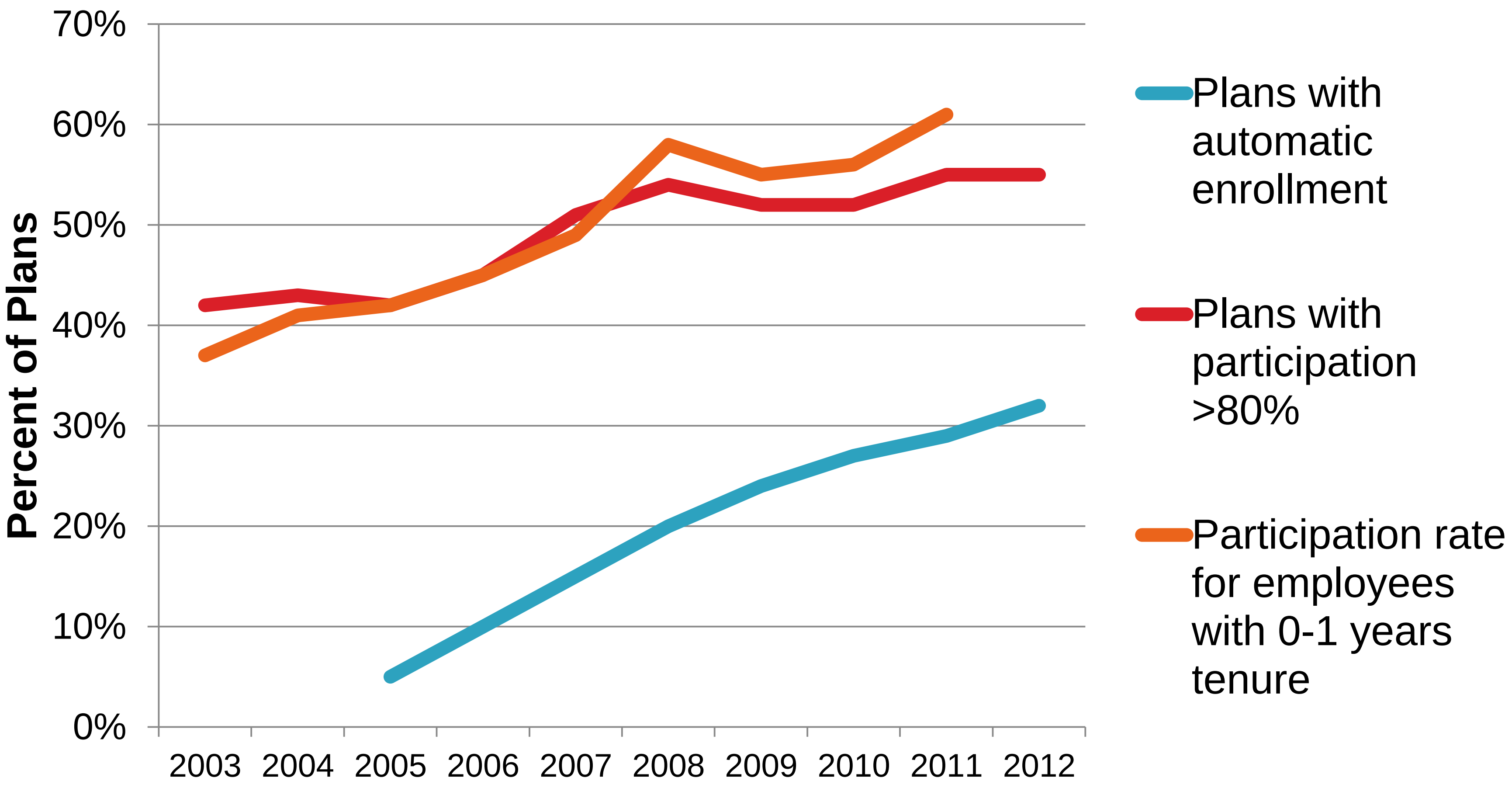
Savings Plan Participation and Automatic Enrollment



Source: Madrian (2001)

Automatic Enrollment Has Dramatically Increased Savings Plan Participation in the US

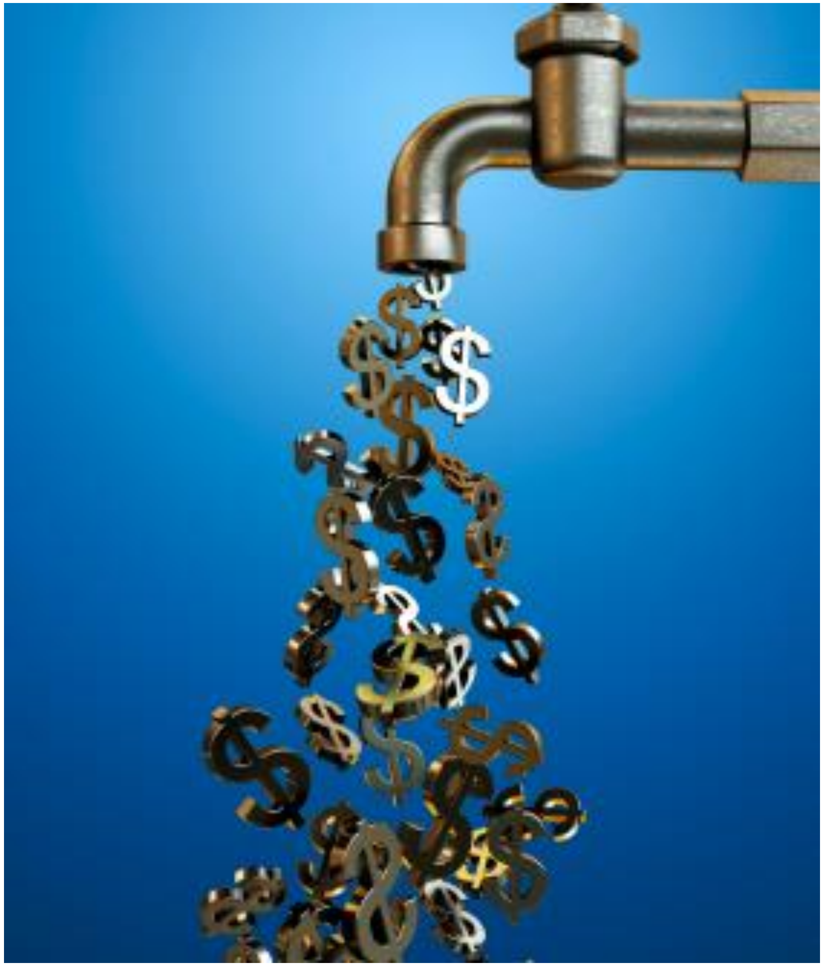


Source: Vanguard, “How America Saves: 2013”

Automatic Enrollment is Dramatically Increasing Savings Plan Participation in the UK

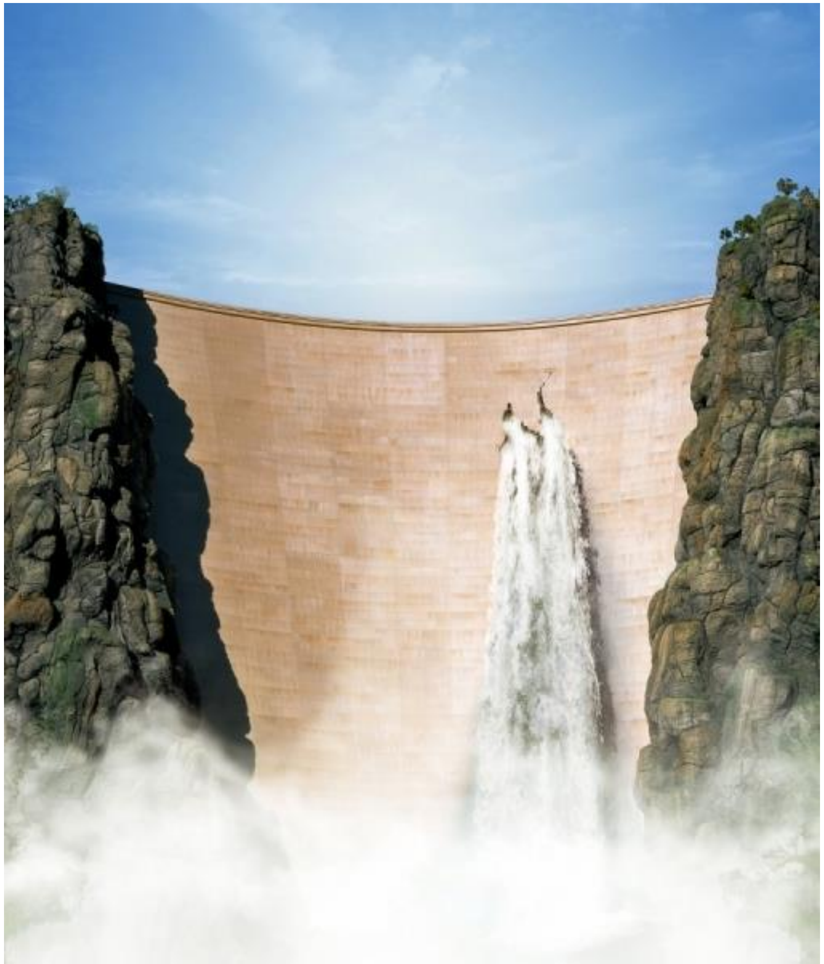
- Mandatory automatic enrollment being phased in from 2012-2017 by firm size
- To date, opt-out rate of ***only 9-10%***
- ~20 percentage point increase in workplace savings plan participation from 2012-2014

Pre-Retirement Liquidity in Defined Contribution Savings Plans in the U.S.



- Loans
  - Most 401(k) plans allow
- Penalized withdrawals
  - 10% tax penalty
- Penalty-free withdrawals
  - More options for this in an IRA than a 401(k)
  - Depends on how you

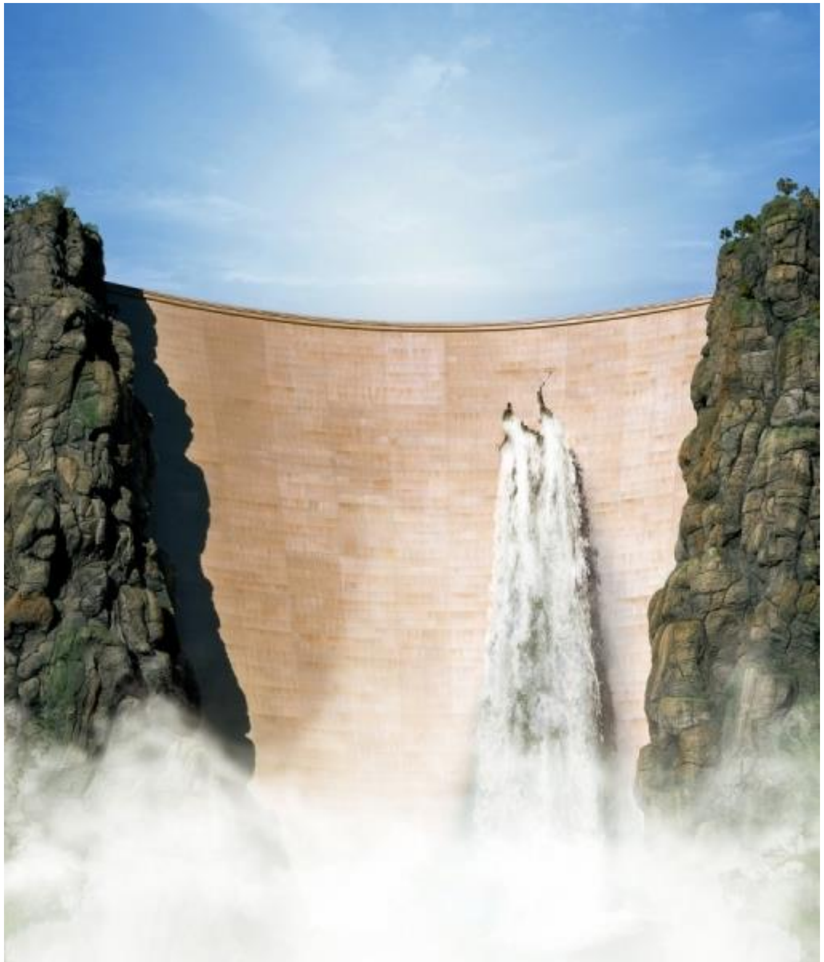
Is This Even Relevant? How Much Leakage Is There?



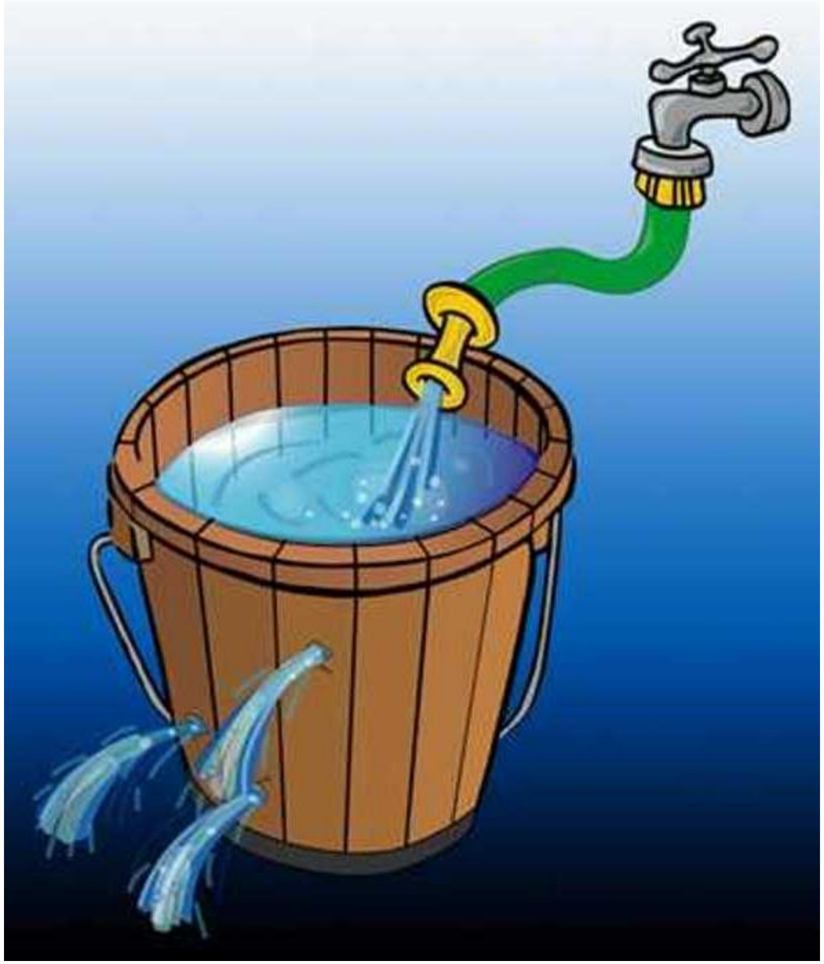
Is This Even Relevant? How Much Leakage Is There?

- For every $2 that flows into the US retirement savings system…

- …almost $1 leaks out



Research Question



Question

To what extent does leakage out of the retirement system offset the positive impact of automatic enrollment on savings plan participation and average contribution rates?

Main Findings

- Comparing employees hired before vs. after automatic enrollment at a large U.S. company:
  - **Contributions:** Average 401(k) contribution rates are higher every month of tenure after automatic enrollment (through 8 years after hire)
  - **Leakage:** Cumulative loans and withdrawals are also higher after automatic enrollment (by 4 percentage points of average salary 8 years after hire)
  - **Net effect:** increase in retirement savings after automatic enrollment of 5 percentage points of average salary at 8 years after hire

Data

- Source: administrative data for the 401(k) plan of a large U.S. employer in the financial services industry
  - Implemented automatic enrollment July 1, 2005
- Data
  - Year-end data on 401(k) balances and loan activity
  - Monthly data on 401(k) contribution rates
  - Daily data on withdrawals and distributions

Methodology

- Compare outcomes for employees hired one year before automatic enrollment and one year after automatic enrollment at a given level tenure
- Look at outcomes at the end of calendar years
- Define tenure 1 as the first year-end when all employees in that cohort have been hired
  - Pre-AE: on January 1, 2006
  - Post AE: on January 1, 2007
- Main outcomes measured at tenure
  - Pre-AE: on January 1, 2013
  - Post-AE: on January 1, 2014

Methodology

- Start with actual balances in the plan
- Add back in imputed balances rolled out of the plan and into another qualified plan
  - Impute the value assuming realized return on age appropriate lifecycle fund after rollover
- Adjust for differences in realized returns for the pre-AE and post-AE cohorts over time

Methodology

- Adjust for differences in realized returns for the pre-AE and post-AE cohorts over time
  - Use monthly contributions to estimate balances before any leakage, holding returns fixed across cohorts
    - Apply the time series of lifecycle returns for the pre-AE cohort to both the pre-AE and post-AE cohorts
  - Calculate the actual leakage rate for each employee
    - Sum of withdrawals not rolled into another qualified plan plus outstanding loan balances divided by the sum of total balances plus all withdrawals
  - Apply this leakage rate to the balances imputed when returns are held fixed across cohorts

Plan Overview

- Automatic Enrollment:
  - Implemented: July 1, 2005
  - Default contribution rate: 2% (before-tax) rate after
  - Default asset allocation: Balanced mutual fund
- Eligibility:
  - Pre-AE: 3 months if working >20 hours per week
  - Post-AE: Immediate for all employees
- Match: 100% match on first 4% of contributions

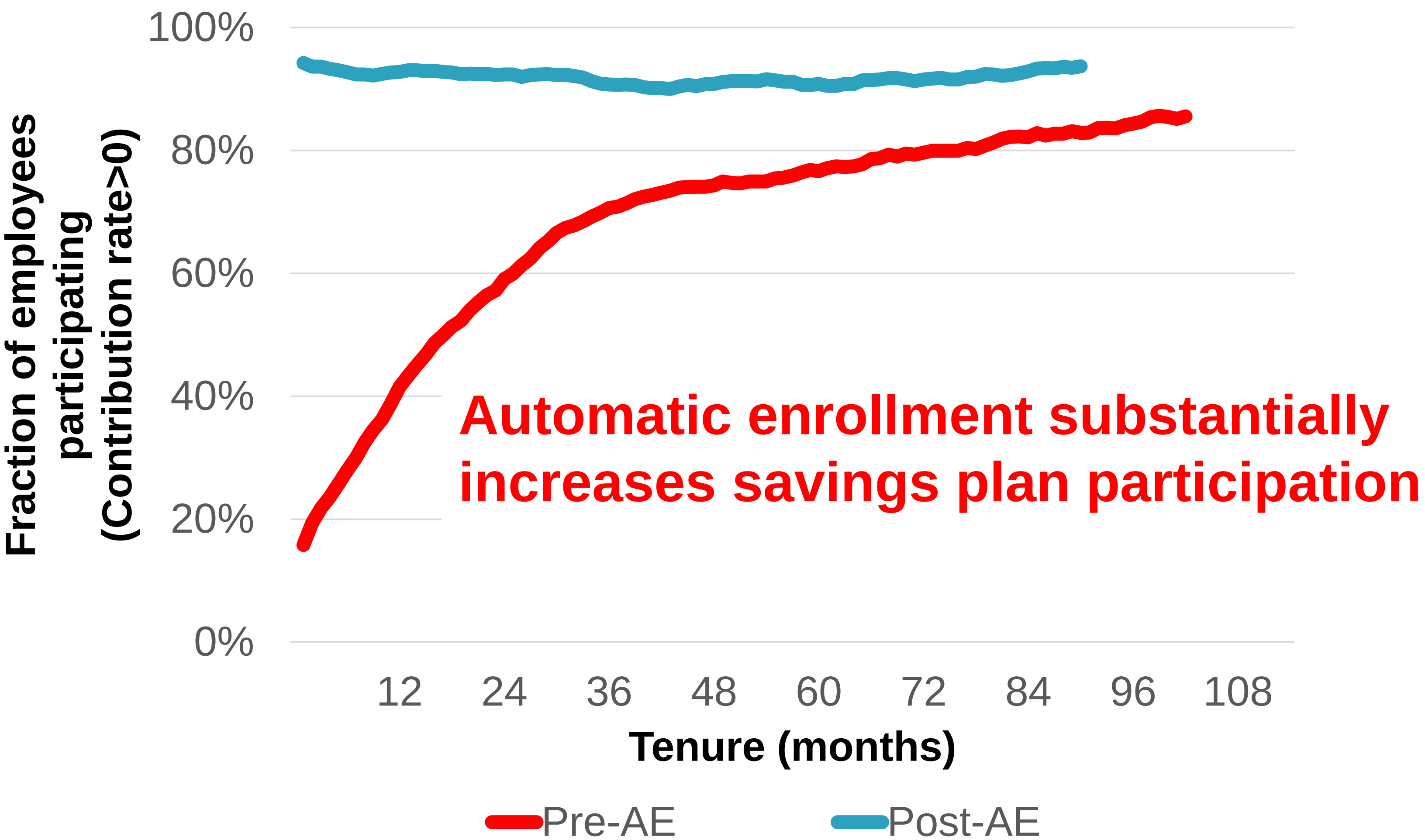
Plan Withdrawal and Loan Provisions

- In-Service withdrawals:
  - Age-based and hardship withdrawals from any account
  - Non-hardship withdrawals from some accounts
- Post-separation distribution default:
  - Balances <$1k: cash distribution
  - $1K<balances<$5k: rollover to IRA
  - Balances >$5k: money retained in plan
- Loans
  - At most two outstanding loans
  - Minimum loan amount of $1,000

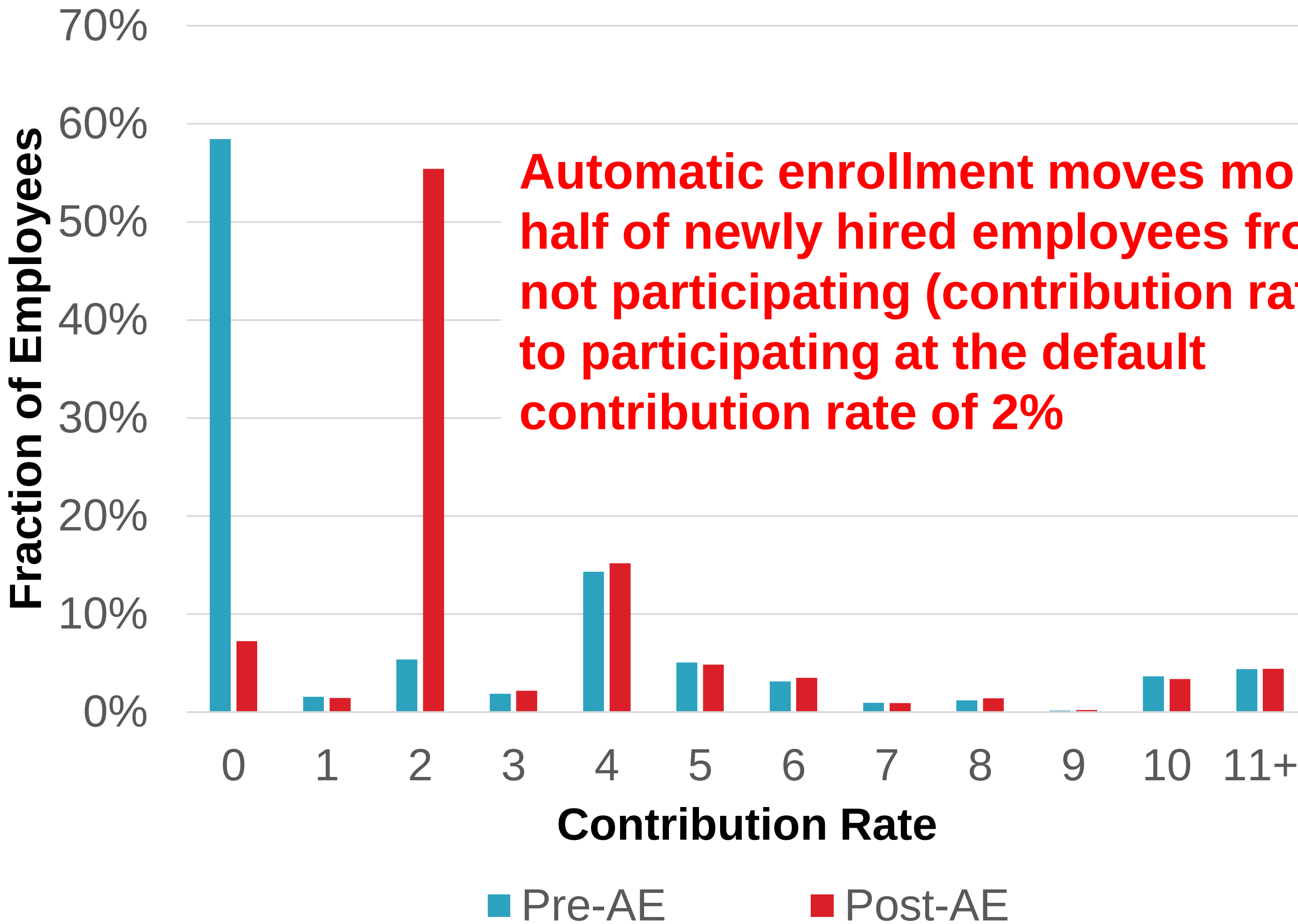
Comparing the Pre-AE and Post-AE Cohorts

	Pre-AE	Post-AE
Percent female	60.6%	61.9%
Age	31.3	31.3
Starting Salary ($2004)	$29,815	$29,483
Percent employed eight years after hire	18.3%	19.6%
Percent ever contributed while employed	57.9%	98.0%
Sample size	N=5,871	N=6,002

The Impact of Automatic Enrollment on Savings Plan Participation

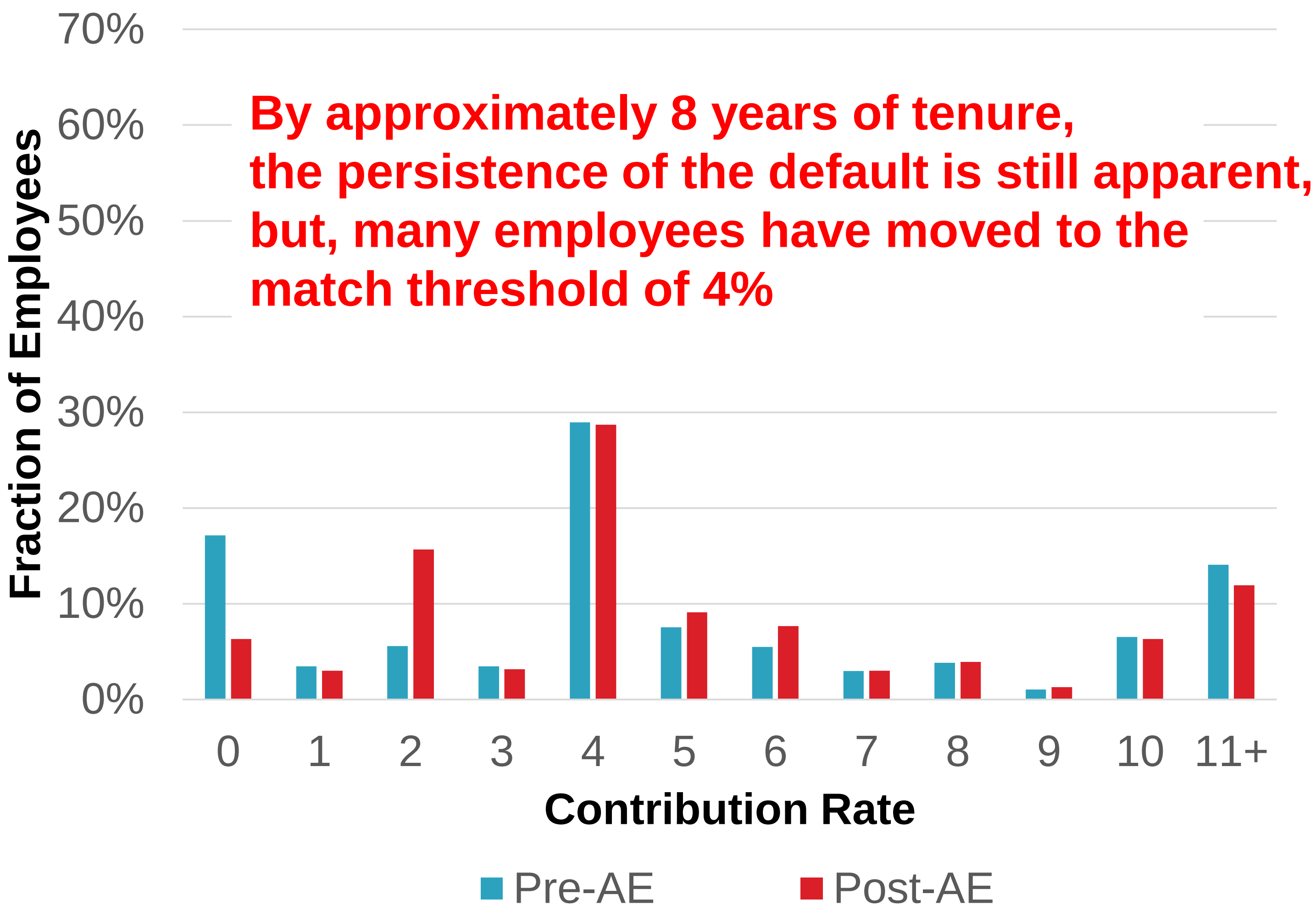


The Impact of Automatic Enrollment on Savings Plan Contribution Rates (at 12 months)

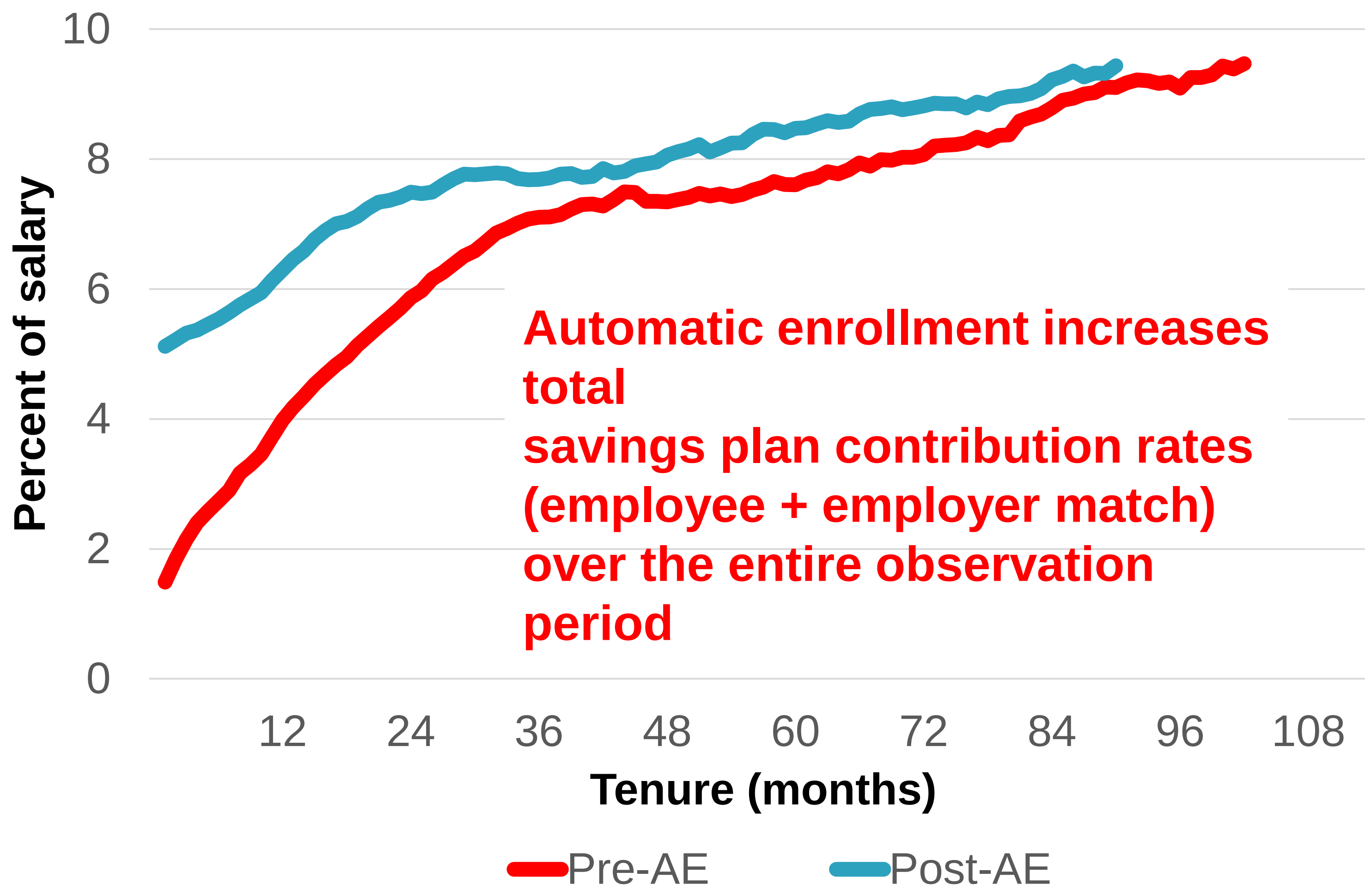


Automatic enrollment moves more than half of newly hired employees from not participating (contribution rate=0) to participating at the default contribution rate of 2%

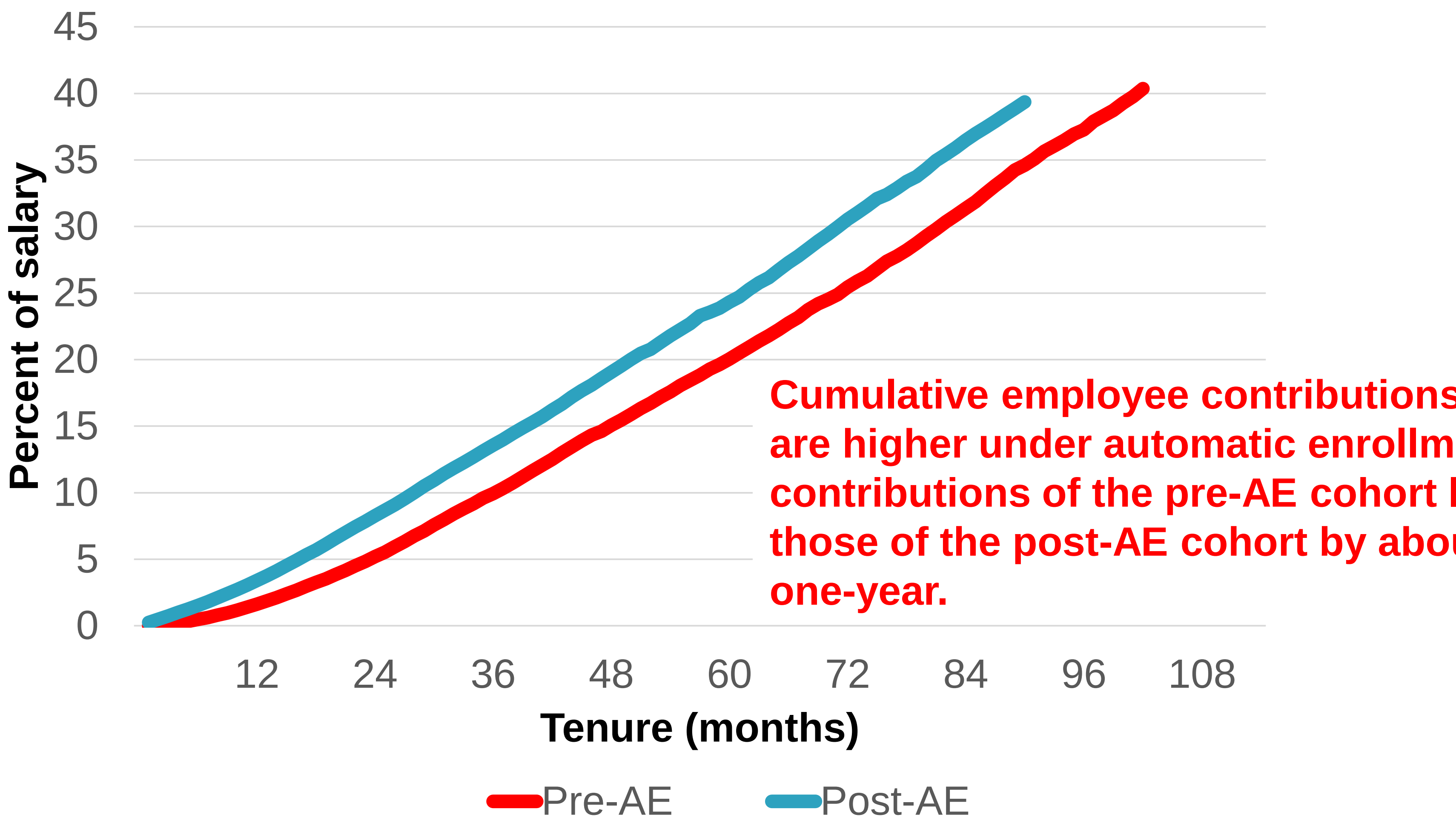
The Impact of Automatic Enrollment on Savings Plan Contribution Rates (at 90 months)



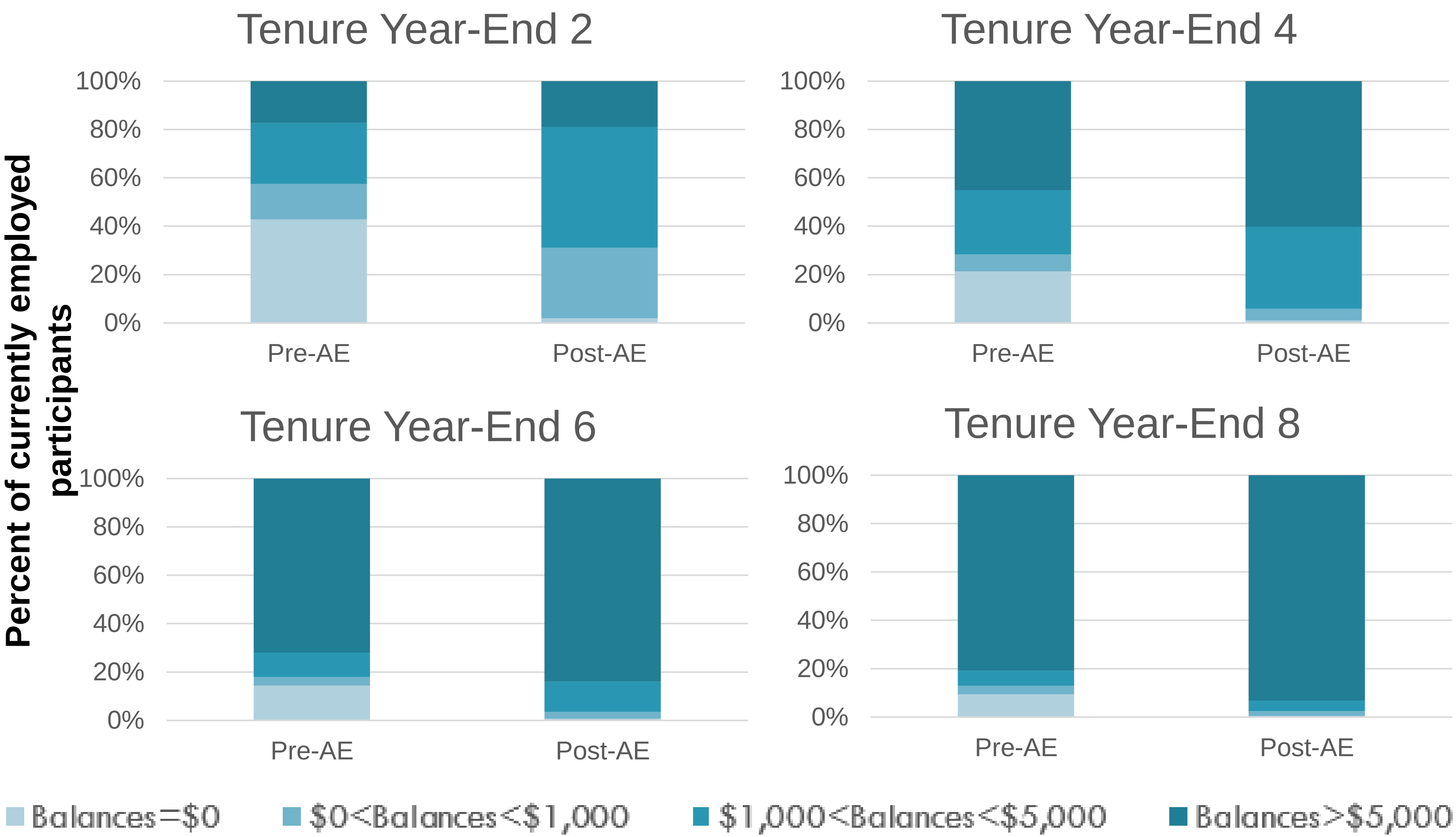
The Impact of Automatic Enrollment on Plan Savings Rates (including the employer match)



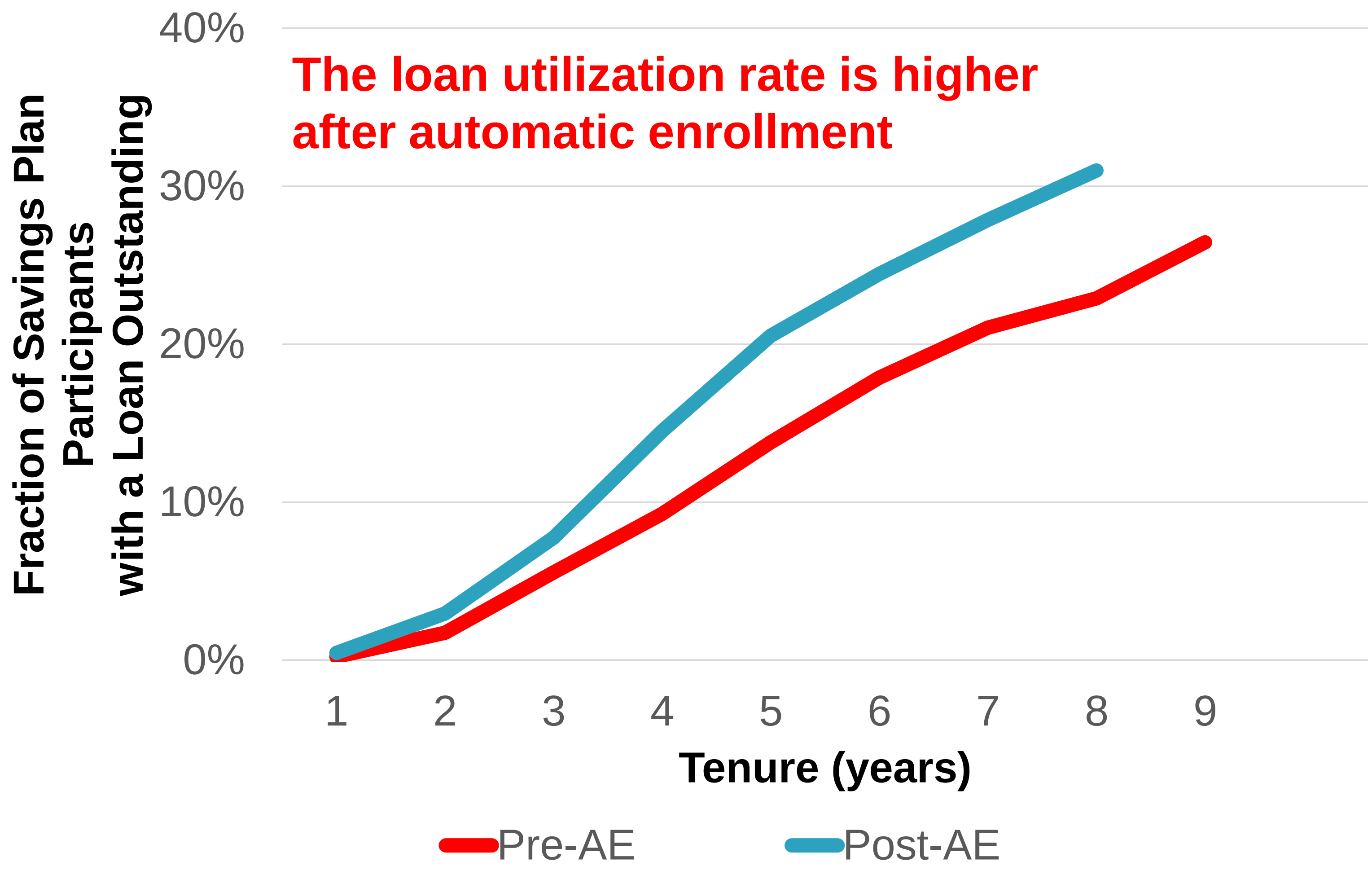
The Impact of Automatic Enrollment on Cumulative Employee Contributions to the plan



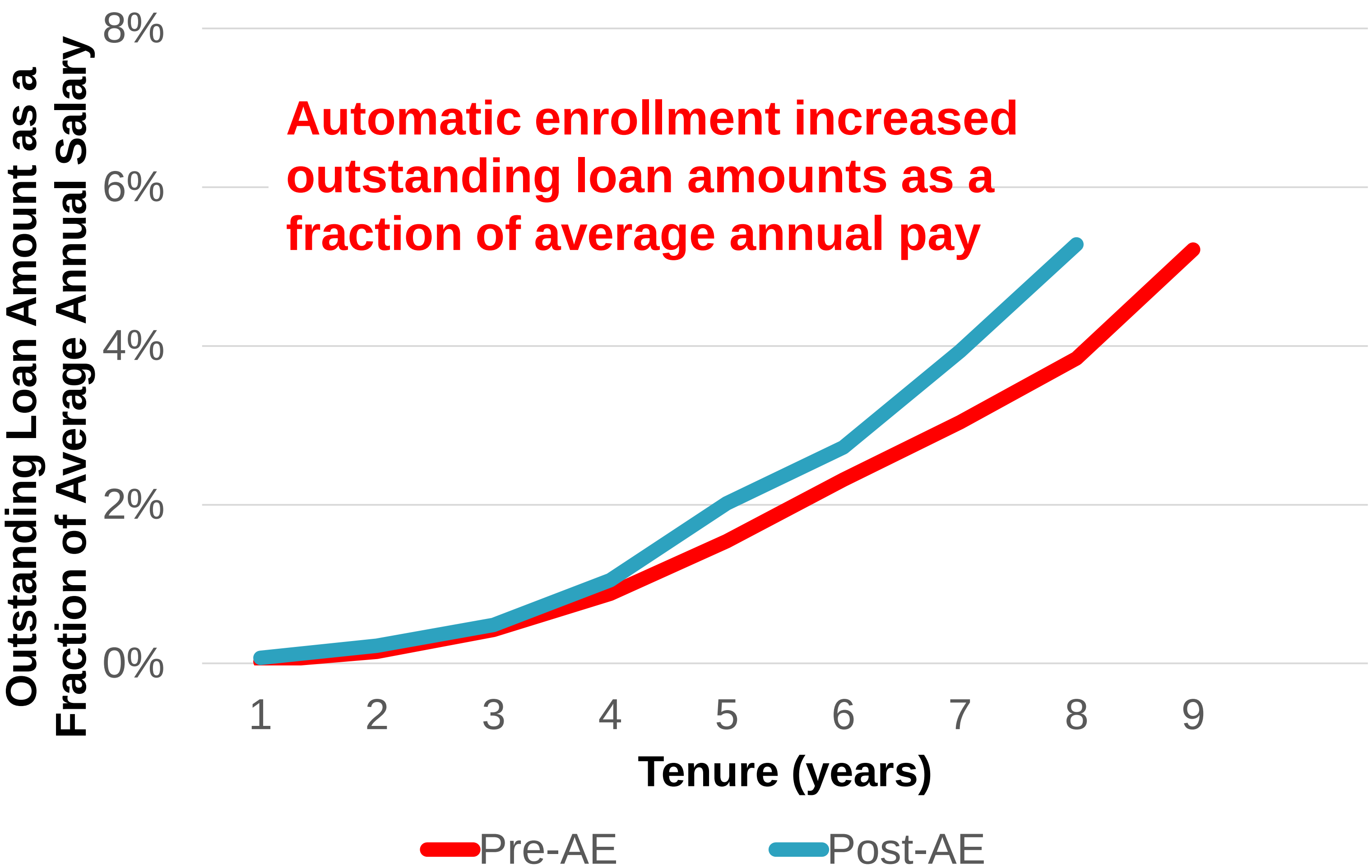
The Impact of Automatic Enrollment on Year-End Plan Balances (continually employed)



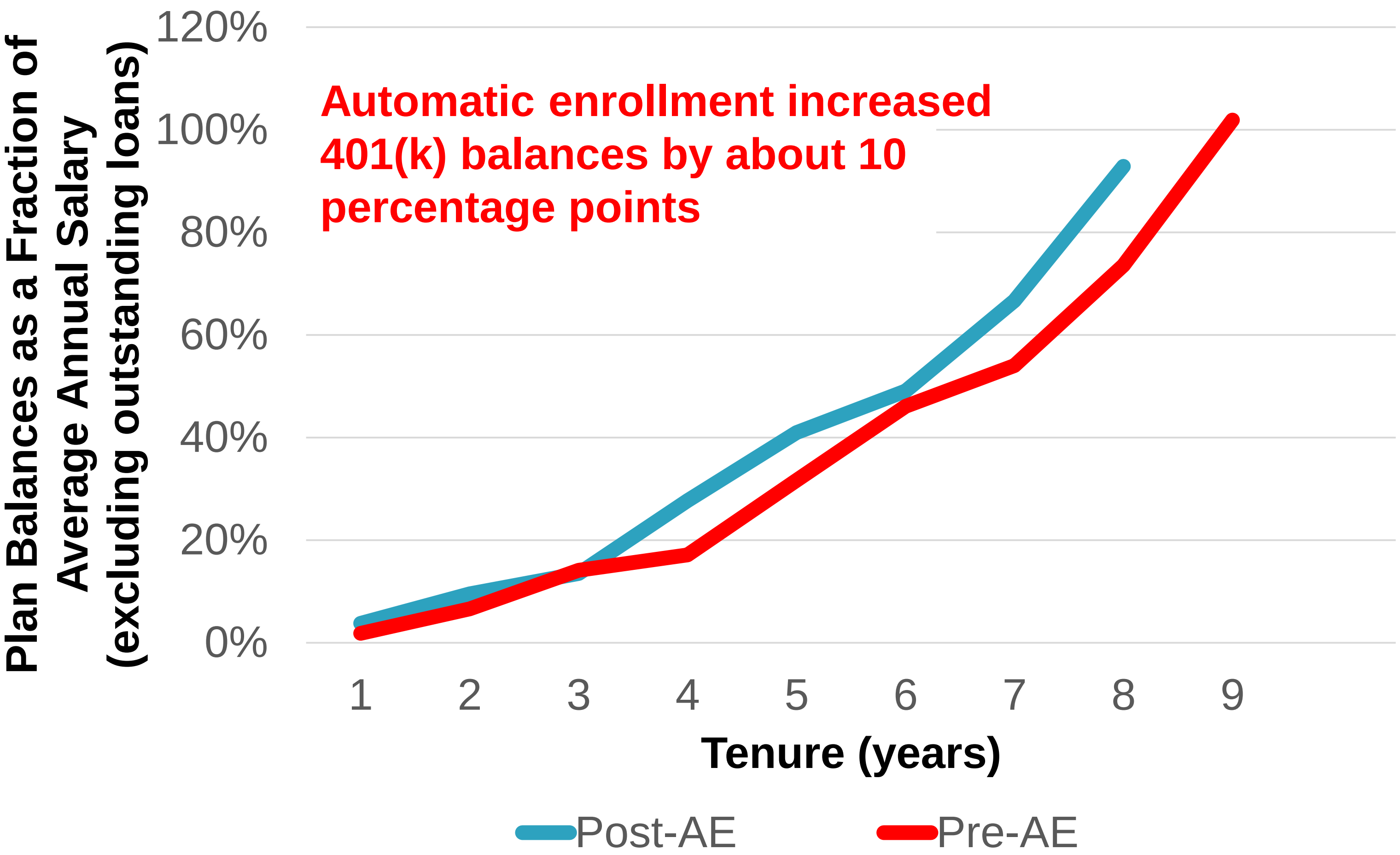
The Impact of Automatic Enrollment on 401(k) Loan Utilization



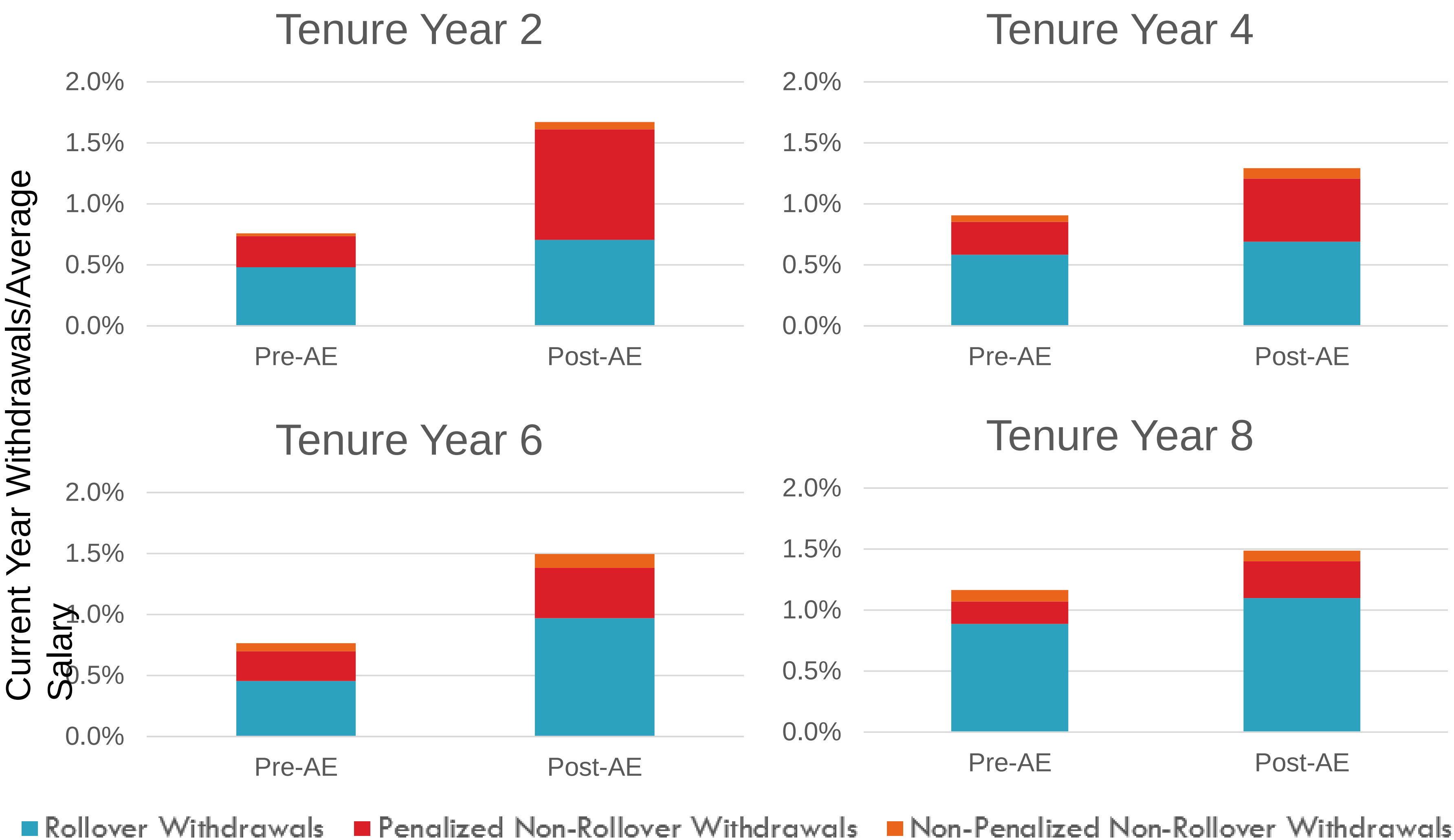
The Impact of Automatic Enrollment on Loan Balances as a Fraction of Salary



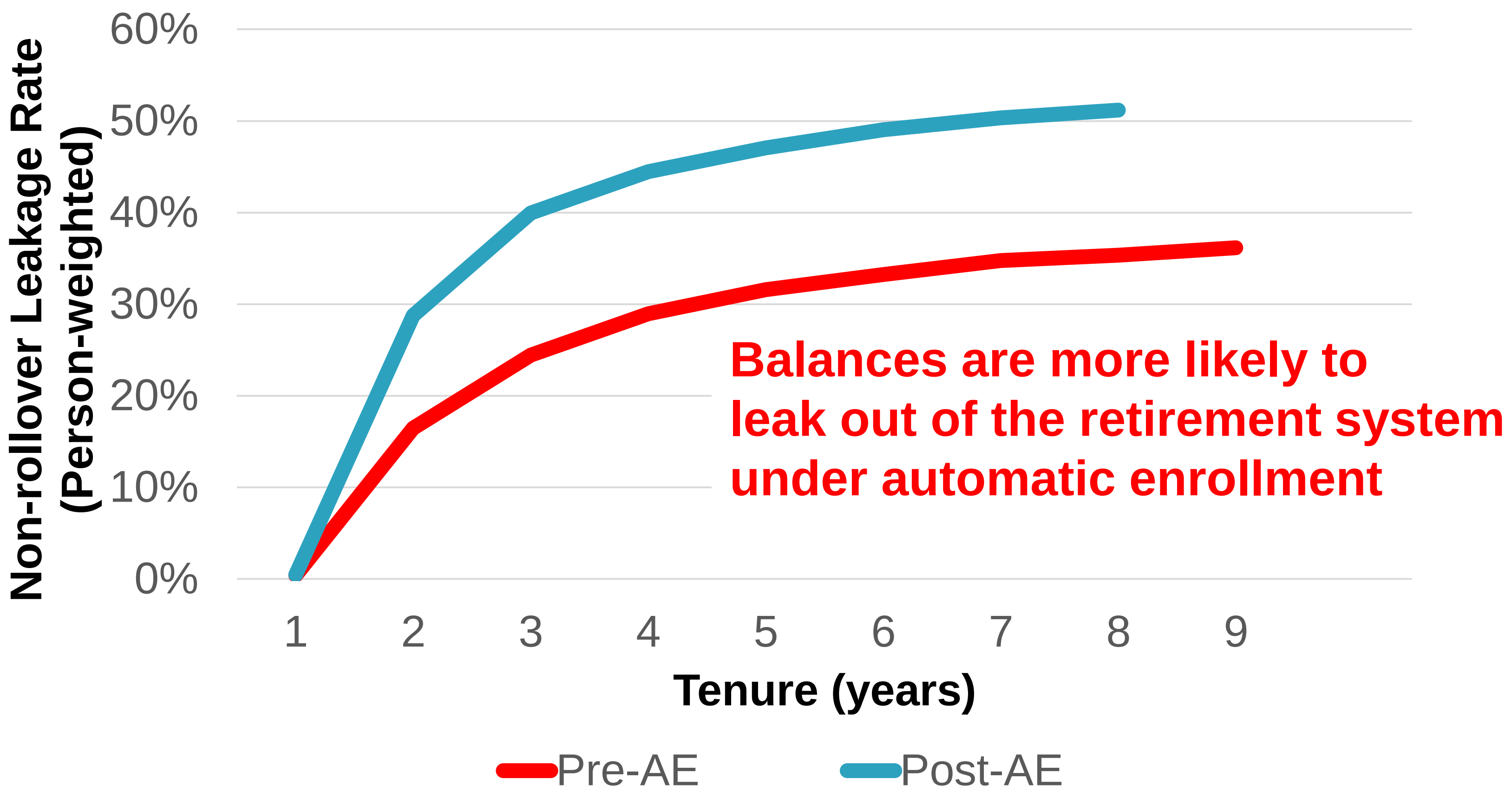
The Impact of Automatic Enrollment on Plan Balances Relative to Average Salary (continually employed)



The Impact of Automatic Enrollment on Annual Withdrawals (all hires)

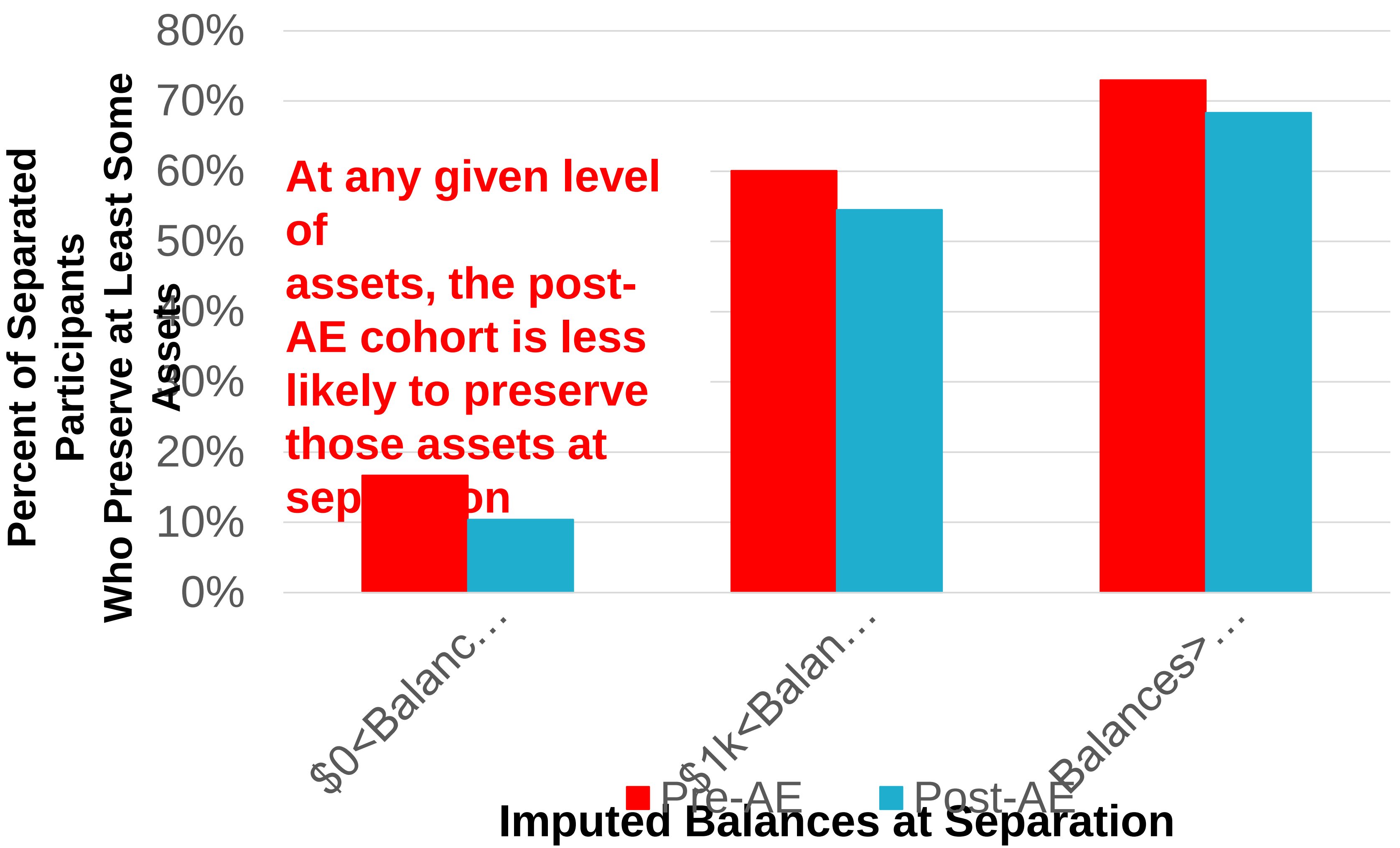


The Impact of Automatic Enrollment on Leakage as a Fraction of Balances (all hires)



Non-rollover leakage rate = (Non-rollover withdrawals + Outstanding loans) / (Total withdrawals + Balar
where the value of total balances includes the value of outstanding loans

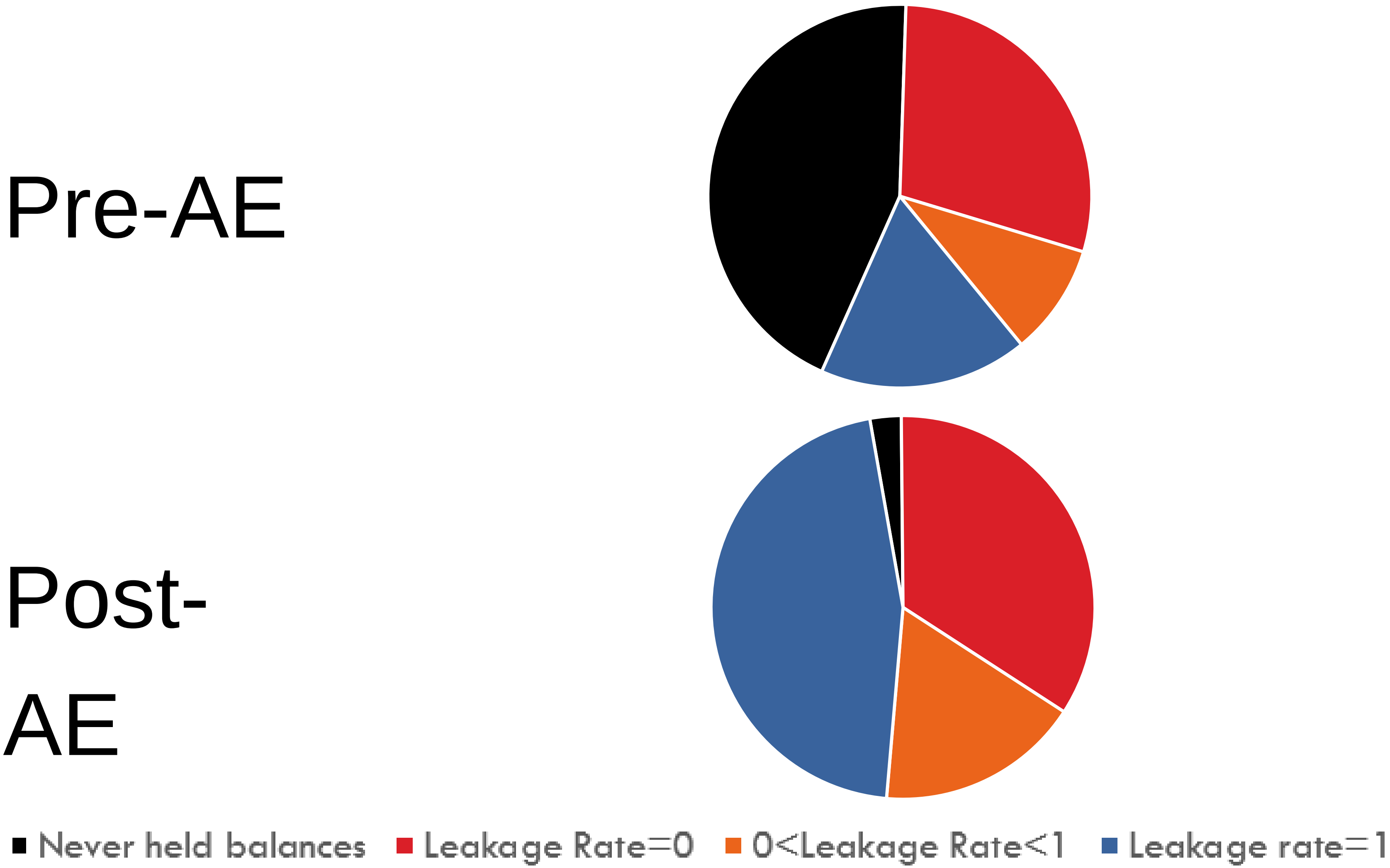
The Impact of Automatic Enrollment on Preserving Assets at Termination by Inferred Balances at Separation



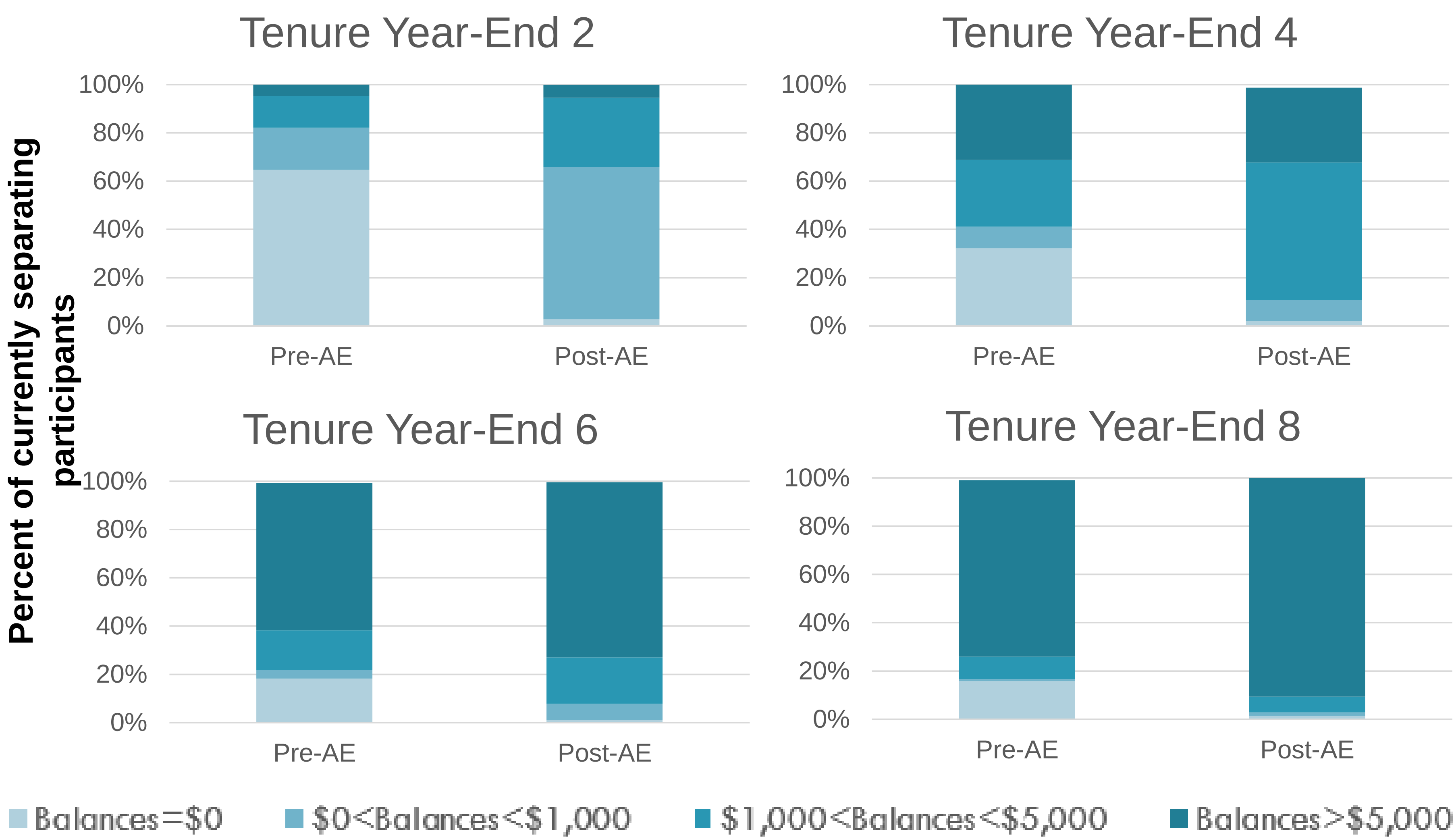
The Impact of Automatic Enrollment on Leakage as a Fraction of Balances 8 years after hire (all hires)

Pre-AE

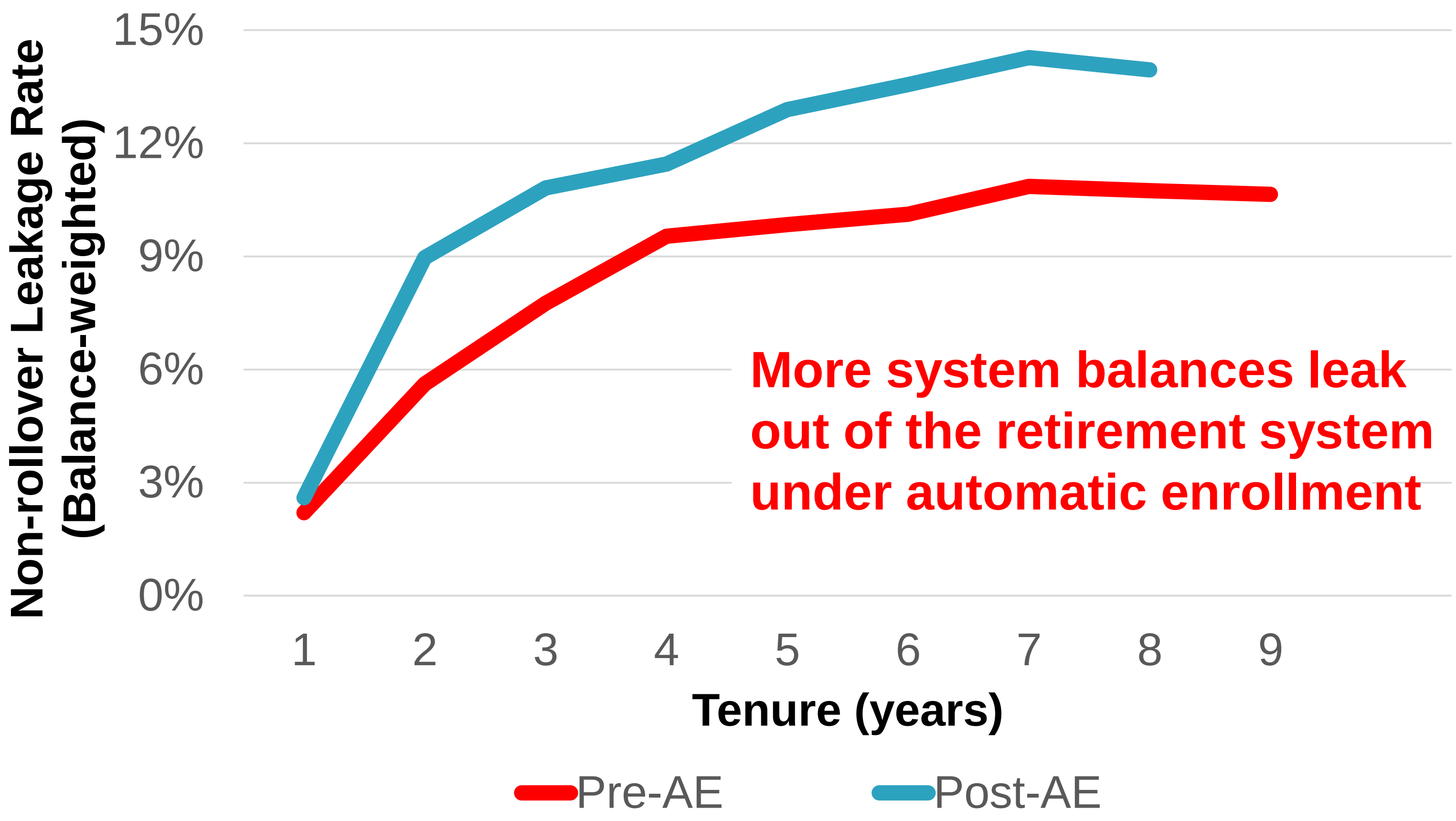
Post-AE



The Impact of Automatic Enrollment on Imputed Balances at Separation

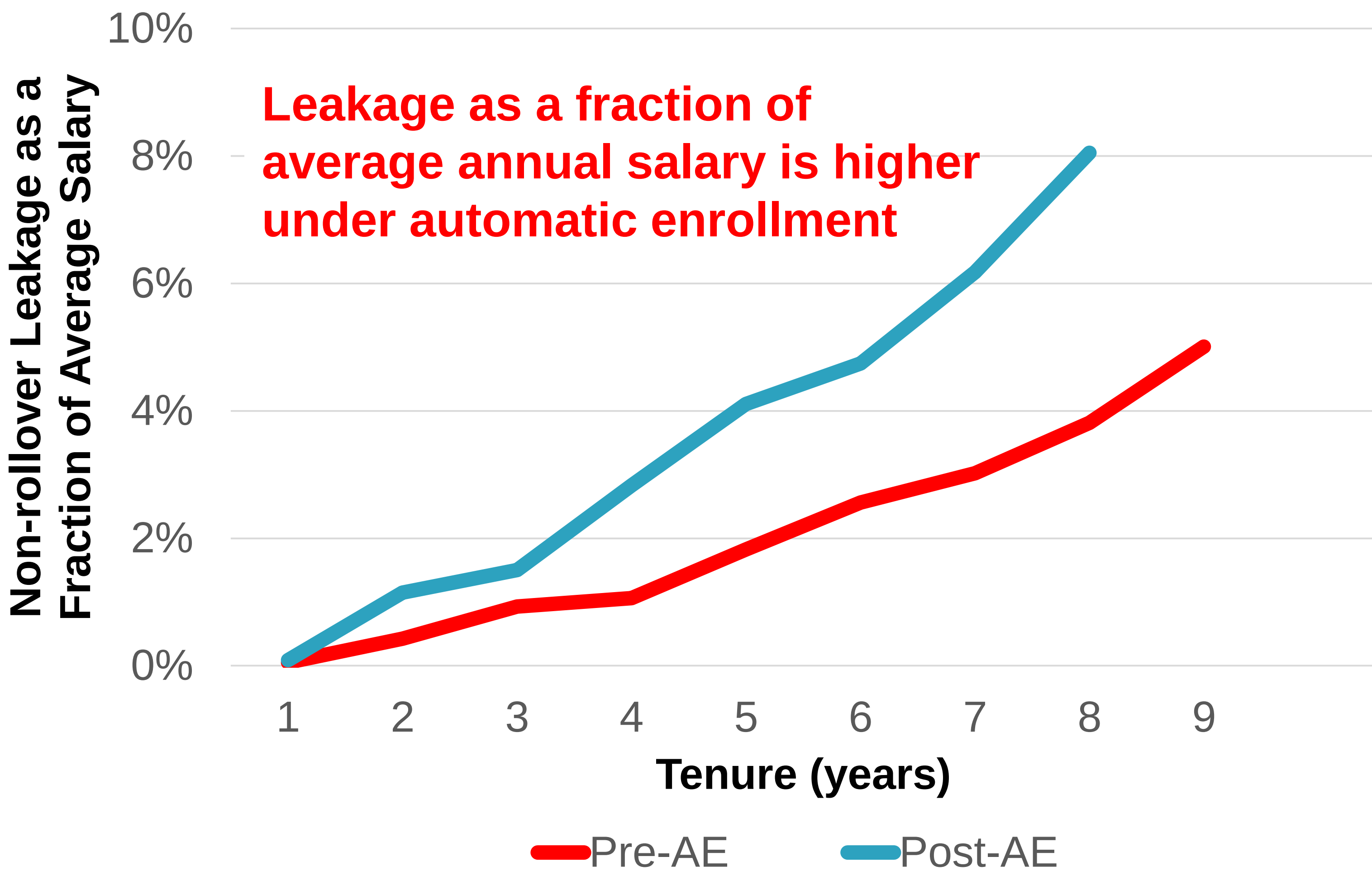


The Impact of Automatic Enrollment on Leakage as a Fraction of Balances (all hires, balance-weighted)

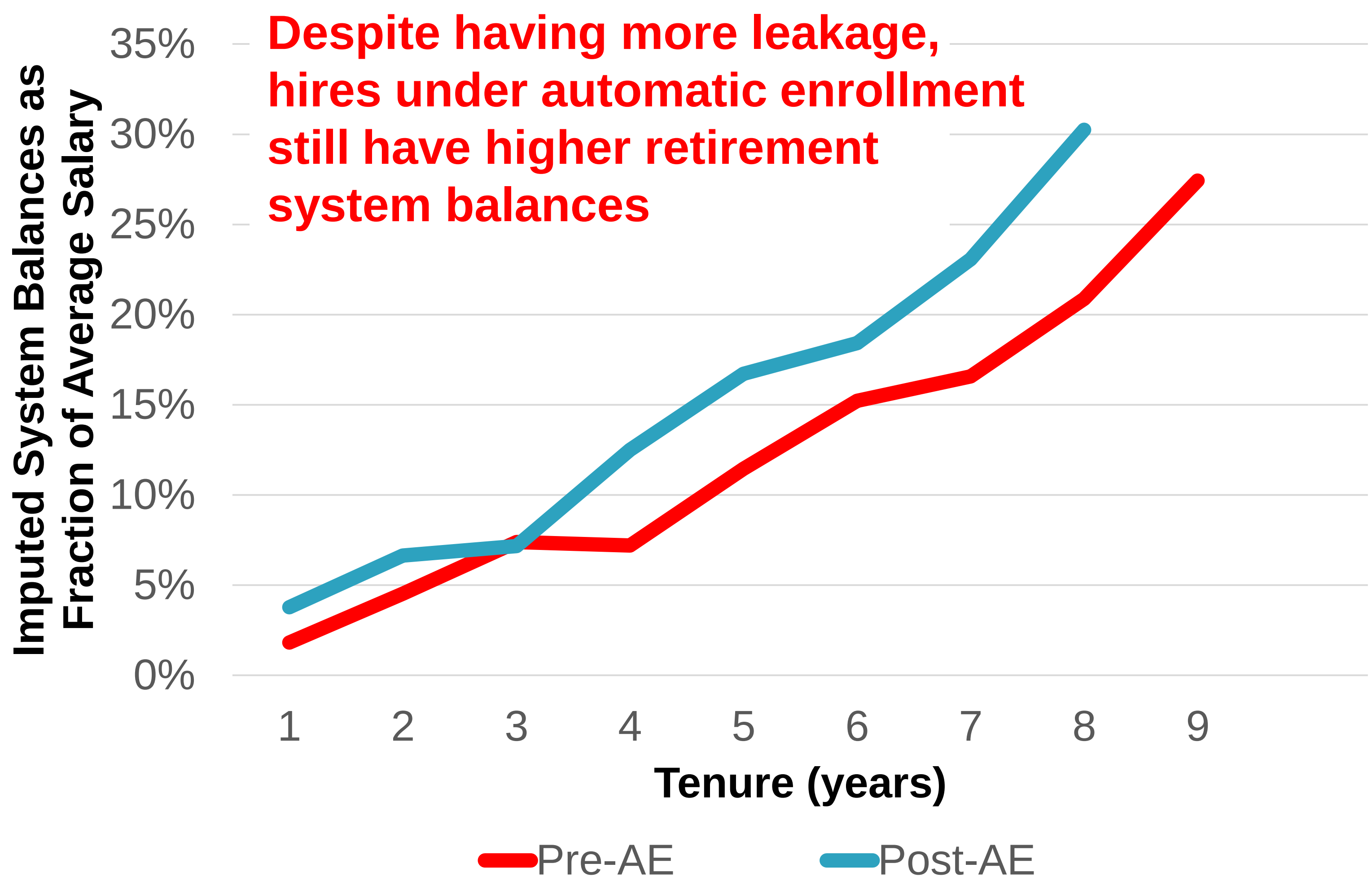


Non-rollover leakage rate = (Non-rollover withdrawals + Outstanding loans) / (Total withdrawals + Balar
where the value of total balances includes the value of outstanding loans

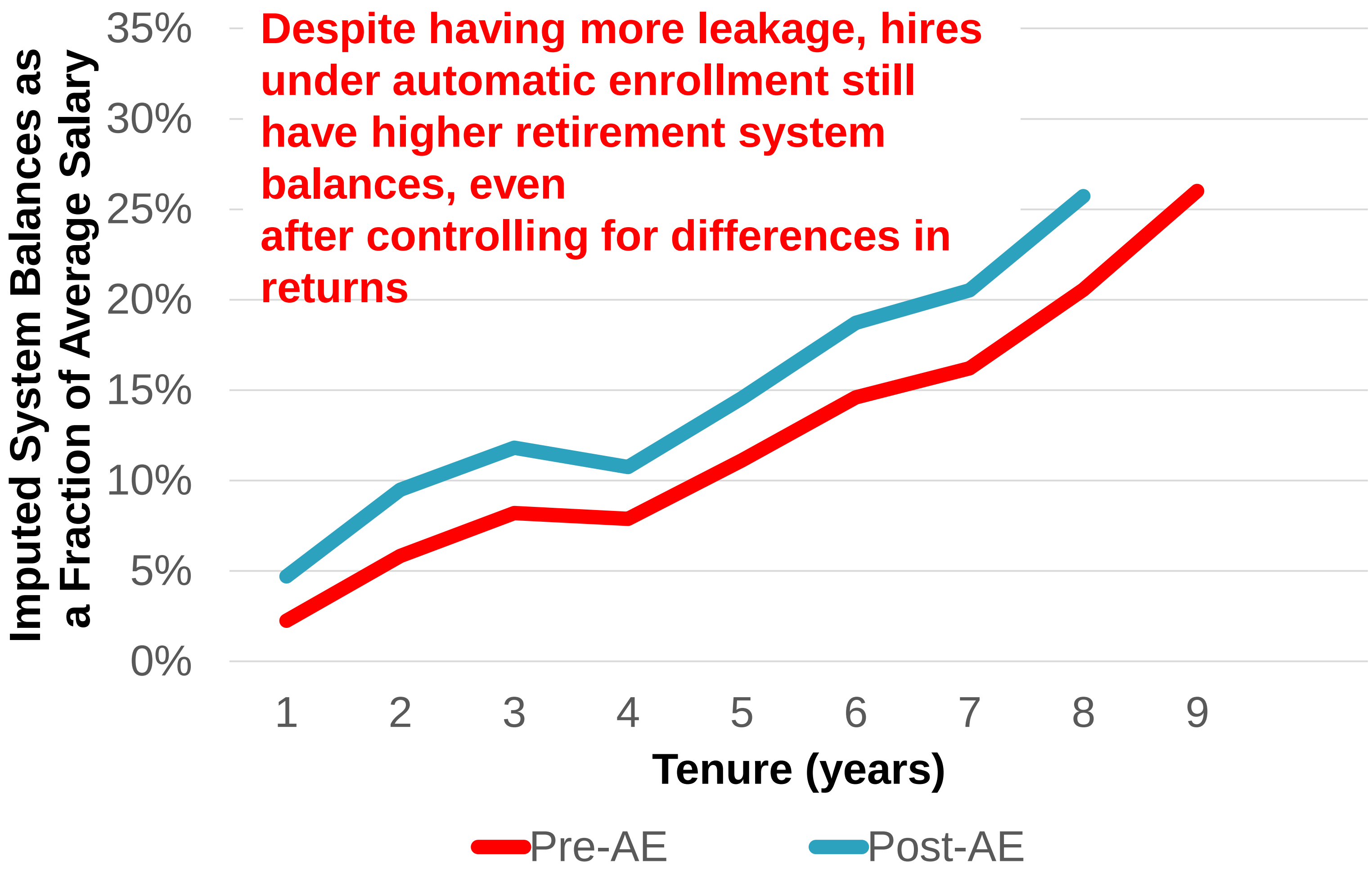
The Impact of Automatic Enrollment on Leakage Relative to Average Salary (all hires)



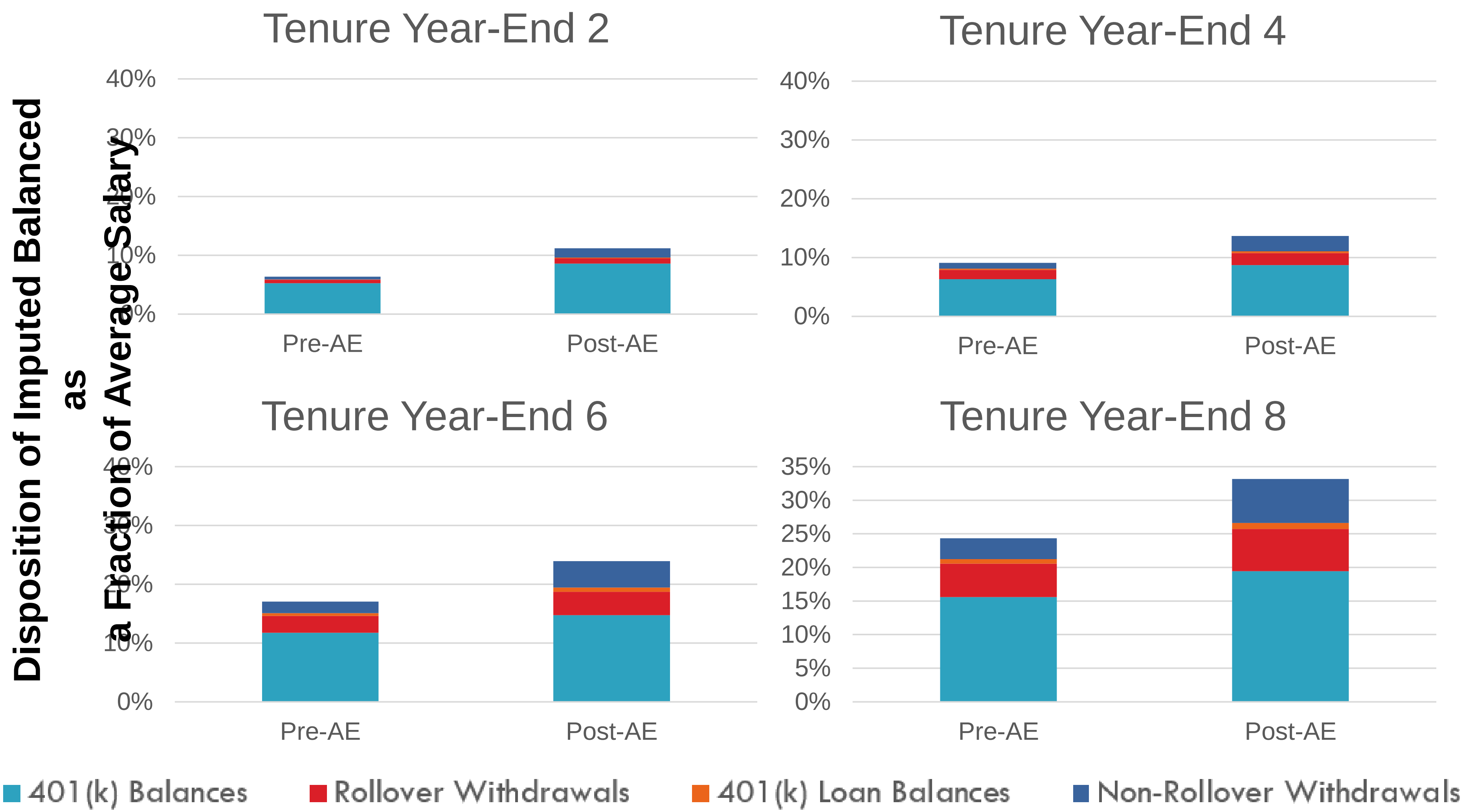
The Impact of Automatic Enrollment on Qualified System Balances Relative to Average Salary (all hires)



The Impact of Automatic Enrollment on Qualified System Balances Relative to Average Salary (all hires, controlling for returns)



Where do Contributions End Up? (all hires, controlling for returns)



Conclusions

- Comparing employees hired before vs. after automatic enrollment at a large U.S. company eight years after hire:
  - Imputed retirement plan accumulations before accounting for leakage are higher after automatic enrollment (by 9 percentage points of average salary)
  - Cumulative loans and withdrawals are higher after automatic enrollment (by 4 percentage points of average salary)
  - Net effect is an increase in retirement savings after automatic enrollment (by 5 percentage points of average salary)
- **Future Research**: to what extent are the wealth accumulation effects of automatic enrollment offset by increased consumer debt?