



HOW MUCH DO OLDER WORKERS VALUE RETIREE HEALTH INSURANCE?

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Abstract

Retiree health insurance (RHI) is increasingly rare, and even government employers – long a bastion for RHI – are cutting back. Little is known about the implications of this retrenchment, and particularly about the value that employees place on RHI. This project estimates older workers' willingness to pay for RHI using a natural experiment in Rhode Island state government that presented workers eligible for retirement with a choice: they could retire by September 30, 2008 and keep the existing generous RHI benefit, or they could retire later and continue accruing pension benefits at the cost of having less generous RHI in the future. The sharp increase in retirements immediately prior to the September 30 deadline, relative to prior year norms, allows us to estimate the relative elasticity of retirement with respect to RHI versus pension benefits. The results show that older state employees are highly sensitive to RHI. Increasing the RHI cut by \$1,000 (in present value terms) caused a 0.6 percentage-point increase in the likelihood of retiring by September 30. In contrast, increasing counterfactual pension wealth by \$1,000 reduced early retirements by 0.3 percentage points, suggesting that older state employees value a marginal dollar of RHI at least twice as much as a marginal dollar of pension benefits. In total, the reform tripled the retirement rate compared to the year prior.

Introduction

Older Americans are increasingly unlikely to receive retiree health insurance (RHI). The share of large employers offering coverage declined from 40 percent in 1999 to 18 percent in 2018, and the existing RHI programs have also become much less generous with rising out-of-pocket costs and deductibles.¹ The remaining RHI programs are concentrated in the public sector. In 2014, virtually all government employers offered RHI, spending about as much on it as on health insurance premiums for active employees.² Yet, even public sector employers are scaling back as they grapple with both rising health costs and underfunded pension systems.

Often lost in the debate around RHI is the value that employees place on these benefits. From the employee's perspective, compensation in the form of health benefits has many advantages. For example, employer contributions to health insurance are generally not subject to income or payroll taxes. Employer plans also have lower prices than individual-market substitutes due to less adverse selection. And the administrative efficiency of a group plan may save workers hours of paperwork and comparison shopping. Thus, compensation in the form of health benefits may be worth more than its dollar cost to employers. On the other hand, of course, getting in-kind benefits is less flexible than cash.³

Yet, relatively few studies estimate workers' willingness-to-pay for RHI. A substantial literature finds that workers retire earlier when they have access to RHI coverage.⁴ However, most of these papers are now quite dated, and only a handful use quasi-experimental variation to consider how workers are willing to trade RHI for other forms of compensation (typically Social Security or pension benefits). Furthermore, the magnitude of workers' willingness-to-pay in these causal papers tends to be quite large. It is not clear whether such large estimates reflect workers' true preferences or are artifacts of specific contexts. These limitations are exemplified by Boyle and Lahey (2010), who examine a 1990s reform to the Veterans Affairs healthcare system; and Wettstein (2020) who focuses on the specific case of prescription drug insurance.

¹ Collins, Bhupal, and Doty (2019) and KFF (2023). Coverage rates after 2018 cannot be compared with earlier years due to survey changes. Coverage rates refer to both public and private employers.

² The Pew Charitable Trusts and the McArthur Foundation (2016). Lutz and Sheiner (2014) point out that fully pre-funding these obligations would require another one percent of revenue dedicated to RHI trust funds.

³ This is an example of the insight in Summers (1989).

⁴ Recent examples in the public sector include Nyce et al. (2013); Fitzpatrick (2014); and Shoven and Slavov (2014). Similar studies in the private sector include: Gustman and Steinmeier (1994); Karoly and Rogowski (1994); Madrian, Burtless, and Gruber (1994); Gruber and Madrian (1995); Rust and Phelan (1997); Rogowski and Karoly (2000); Balu and Gilleskie (2006); Boyle and Lahey (2010); French and Jones (2011); Garthwaite, Gross, and Notowidigdo (2014); and Wettstein (2020).

This paper also takes advantage of quasi-experimental variation in a specific setting, but one that has not been examined in the literature and that has broad relevance to the current RHI landscape: public sector workers.

Specifically, we rely on a natural experiment in Rhode Island that forced state employees to choose between more generous RHI and enhanced pension benefits. In May 2008, active members of the Employees Retirement System of Rhode Island (ERSRI) were suddenly presented with a choice: retire by September 30 (if eligible) and retain the generous RHI promised at hire; or continue working past September 30 and accept a much lower RHI benefit. Since the magnitude of the RHI cut varied across employees, who also typically accrued additional pension wealth by continuing to work, this choice architecture allows us to elicit how older state workers value one dollar of RHI benefits relative to a dollar of pension benefits.

The first step of the analysis identifies two groups of employees: a “treated” group who become eligible to retire between September 30, 2007 and September 30, 2008; as well as a “control” group who become eligible to retire between September 30, 2006 and September 30, 2007 (a year without any RHI or pension reforms). The analysis then compares the share of treated employees who chose to separate by September 30 with the similar share of “control” employees. This exercise reveals the extent of excess retirement due to the RHI reform.

The second step of the analysis uses a two-stage-least-squares (2SLS) regression to obtain employees’ willingness to pay for RHI. The regression includes a variable capturing the present value of RHI gained by separating by September 30 as well as another variable reflecting the present value of pension wealth lost by separating before that date. Instrumenting for RHI gained with an indicator for being in the treated group isolates the causal impact of a dollar of RHI on the probability of separation. Willingness-to-pay is then estimated by comparing this 2SLS coefficient with the comparable estimate for pension benefits (estimated in this study and also drawn from prior literature).

The results show that the older state employees who make up our sample are highly sensitive to RHI. Increasing the severity of the RHI cut by \$1,000 (in present value terms) caused a 0.6 percentage-point increase in the likelihood of retiring by September 30. For context, had all employees worked past September 30, the reform would have reduced their counterfactual RHI wealth by around \$40,000 on average. Hence, the reform caused around 24 percentage-points in

excess retirements among the retirement eligible population – nearly tripling the baseline rate of retirement from the previous year.

In contrast, increasing counterfactual pension wealth by \$1,000 reduced early retirements by only 0.3 percentage points. Hence, the results suggest that older state employees value a marginal dollar of RHI twice as much as a marginal dollar of pension benefits (0.6 vs. 0.3). However, the impact of pension benefits on retirement is not causally estimated here. For robustness, we also benchmark our finding with respect to RHI against prior causal estimates of the elasticity of retirement with regards to pension wealth. This comparison only accentuates the relative value of RHI, implying that older workers value an additional dollar of RHI up to 13 times more than an additional dollar of pension wealth.

This finding corroborates prior studies showing that workers highly value RHI, far above its expected monetary value. Because the current context involves a tradeoff between deferred and life-contingent pension payments, and equally deferred and life-contingent RHI, this discrepancy cannot be explained by issues surrounding time preferences or perceptions of mortality. Of course, one plausible explanation is that public employees are already well insured against longevity risk – with pension wealth worth hundreds of thousands of dollars in addition to Social Security – so they have declining marginal utility from an additional dollar of pension wealth (Fitzpatrick 2015).

Nevertheless, a relatively high willingness-to-pay for RHI has now been found in several different contexts, raising the question of why these benefits are slowly being phased out. In the public sector, the answer is clearly political: RHI benefits have many fewer legal protections than pensions, making them an easy target for cost-cutting (Munnell and Quinby 2012). The answer is much less clear in the private sector; hence, exploring the causes and consequences of these trends are important avenues for future research.

The remainder of this paper proceeds as follows. The second section outlines the natural experiment in Rhode Island, while the third section presents a conceptual model for evaluating workers' valuation of RHI. The fourth section describes the data and methodology used to estimate state workers' willingness to pay for RHI. The fifth section presents results, and the sixth section offers a discussion of both the conceptual and practical implications. The final section concludes.

A Natural Experiment in Rhode Island

Like many other state and local governments, Rhode Island offers deferred compensation to its employees in the form of RHI and DB pension benefits. These programs were significantly underfunded for decades, prompting the state to undertake a series of benefit cuts to curb rapidly rising costs. The first of these reforms took place in 2005, when the state reduced the generosity of its pension for non-vested employees (those with fewer than 10 years of tenure at the time). The second reform – which is the subject of this study – took place in 2008 and focused on RHI rather than pension benefits. The state subsequently cut back its pension system two more times, in 2009 and 2012, ultimately converting to a hybrid retirement plan that pairs a smaller DB benefit with a defined contribution account. These reforms were not all planned out in advance – each one was undertaken as an independent and incremental response to an ongoing funding crunch that began in the early 2000s and grew unexpectedly more acute with the Great Recession.⁵

Within this context, the 2008 reform dramatically reduced the generosity of Rhode Island’s RHI program for state employees. Prior to the reform, the state offered two types of benefits. Tier 1 benefits allowed retirees and their spouses to purchase health insurance at the state’s active group rate, which was substantially less expensive than the retiree rate pool. The Tier 1 subsidy lasted until age 65, at which point retirees were required to enroll in Medicare. Meanwhile, Tier 2 benefits provided these retirees an additional state subsidy of premiums for the life of the retiree (but not their spouse). Specifically, the state would pick up a percentage of the retiree’s premium, with the generosity of the Tier 2 subsidy based on a combination of age and tenure (see Table 1).⁶

The 2008 reform eliminated the Tier 1 benefit and reduced the generosity of the Tier 2 subsidy for most workers. Importantly, the state implemented these changes in such a way that employees suddenly found themselves losing vastly different levels of RHI benefits because of small differences in age and tenure (see Table 1). Additionally, the state allowed workers to keep their pre-reform benefits if they retired from state service by September 30, 2008.

⁵ Quinby assisted a member of Rhode Island State Treasurer Gina Raimondo’s advisory group during the 2012 reform and also served as a member of the State of Rhode Island Pension Advisory Working Group from 2023-2024.

⁶ For Medicare recipients, the state would cover a percentage of the premium for a supplemental Medigap plan.

The structure of this reform effectively asked employees to trade higher lifetime RHI subsidies for future salary and pension accruals in their government jobs.⁷ The pension accruals, in particular, merit discussion. At the time of the RHI reform, Rhode Island’s DB plan provided vested state employees with an annual annuity calculated as a function of the employee’s final tenure and salary at separation:

$$Pension_t = B_{tn,t} \times FAS_t \times tn_t \quad (1)$$

Where FAS_t denotes the employee’s average salary over the past 36 months, tn_t represents his tenure at time t and $B_{tn,t}$ reflects a series of multipliers that determined the replacement rate. These multipliers varied across employees based on their hire date and accrued tenure – those who were not yet vested in 2005 had lower benefits due to the 2005 pension reform (denoted by the retirement system as “Schedule B”); but even for the grandfathered “Schedule A” members, the multiplier varied by tenure. For example, an employee separating in 2008 would earn 1.7 percent per year for the first 10 years of their tenure; 1.9 percent per year for the next 10 years; 3 percent per year for the following 14 years; and 2 percent per year thereafter up to a cap of 80 percent of FAS_t .

Pension benefits commenced no earlier than the employee’s Normal Retirement Age (NRA), which was age 60 for most employees but dropped to any age for employees who had accrued at least 28 years of tenure.⁸ Like most other final-pay DB plans, these provisions created a concave benefit accrual pattern where the present discounted value of lifetime pension wealth was maximized around the employee’s NRA (Coile and Gruber 2007). However, due to the multipliers that mostly increased with tenure, employees were not strongly encouraged to retire at that specific point – many continued to earn modest accruals by working past their NRA. This upward-sloping accrual pattern, even for employees eligible to retire, is what allows us to estimate willingness-to-pay for RHI: employees eligible for retirement may still accrue pension wealth by delaying retirement, but in 2008 would have to trade off such accruals against retaining the more generous pre-reform RHI benefit.

⁷ The state benefits are not earnings-tested, so retirees can always accept another position in the private sector or with another government.

⁸ Once retired, employees’ benefits received a cost-of-living adjustment (COLA) each year. Schedule A members received three percent compounded annually; Schedule B members received inflation capped at three percent. COLAs were always awarded in January.

Conceptual Framework

This section illustrates how Rhode Island's RHI reform could influence an employee's retirement behavior. Consider a worker who is choosing whether to retire from state service at time t with more generous RHI benefits, or keep working and lose those benefits. Denote V^W as his remaining lifetime utility from continuing to work, and V^R as his remaining lifetime utility from retiring. A worker choosing between these two options around the time of the 2008 reform has the value function:

$$V(a_t, HI_t, tn_t, age_t) = \max_{d_t} \begin{cases} V^W(a_t, HI_t = 1, tn_t, age_t), & \text{if } d_t = 0 \\ V^R(a_t, HI_t = 0, tn_t, age_t), & \text{if } d_t = 1 \end{cases} \quad (2)$$

where a_t is his savings, HI_t is the health insurance regime (0=old and 1=new), tn_t is his tenure, age_t is his age, and d_t is a discrete retirement choice. Note that if he chooses to retire from state service, he will be unaffected by the reform ($HI_t = 0$), while if he chooses to work, he will be affected by the reform ($HI_t = 1$). The worker will choose to retire ($d_t = 1$) if and only if $V^R > V^W$.

To better understand his decision, consider the value function if he retires, which is:

$$V^R(a_t, HI_t = 0, tn_t, age_t) = \max_{c_t} \{u(c_t, L) + \beta s_t E[V^R(a_{t+1}, HI_t = 0, tn_{t+1}, age_{t+1})]\} \quad (3)$$

st.

$$c_t + a_{t+1} = a_t + Y(ra_t, w_t, h_t = 0, p_t(tn_t, age_t)) - z(HI_t = 0, age_t)$$

where u is the utility function, c_t is consumption, L is total time endowment, β is a subjective time discount factor, and s_t is a survival probability. $Y(\cdot)$ is post-tax income, which captures capital gains, labor earnings, and pension benefits. Labor earnings are a function of the wage (w_t) and hours of work (h_t), which we assume are zero for simplicity.⁹ Pension benefits are a

⁹ The empirical analysis in the next section will relax this assumption and allow for work after retirement from state employment.

function of tenure (directly and indirectly through their impact on final salary) as well as age.

$z(HI_t, age_t)$ are health insurance expenses where $z(HI_t = 0, age_t) < z(HI_t = 1, age_t)$.¹⁰

Similarly, the value function if he continues to work is:

$$V^W(a_t, HI_t = 1, tn_t, age_t) = \max_{c_t, h_t} \{u(c_t, L - h_t) + \beta s_t E[V(a_{t+1}, HI_{t+1} = 1, tn_{t+1}, age_{t+1})]\} \quad (4)$$

st.

$$c_t + a_{t+1} = a_t + Y(ra_t, w_t, h_t > 0, p_t(tn_t, age_t)),$$

Note that his continuation value, V , implies that he will have to make a retirement decision again next period.

This conceptual framework captures the key trade-offs faced by the worker. On the one hand, he can retire now, enjoying more leisure and facing lower health insurance payments, but also having lower income (both now and in the future due to lower pension benefits). On the other hand, he can continue to work with higher income now and in the future but enjoying less leisure and facing larger health insurance payments down the road.

Data and Methodology

The authors have a longstanding relationship with the Rhode Island Office of the General Treasurer, which provided administrative data for this project.¹¹ Specifically, the analysis relies on a detailed database of personnel records for state employees between 2003 and 2017. For each employee in each year, the records document: first and last name, employment status (active, inactive vested, or retired), employment status last year, date of hire, date of separation, date of benefit claiming (if applicable), years of service, gender, birth year, annual salary, and annual salary last year.¹²

The first step in the analysis is to define a treated group of 456 employees who are actively employed by the state on September 30, 2007 and who reach their NRA sometime

¹⁰ Also for simplicity we assume that workers' only source of RHI benefits is through their state employer. In reality, most older workers would be unlikely to find new jobs with RHI in the private sector, but they might obtain coverage through a spouse. Note, however, that Tier 2 RHI benefits in Rhode Island do not cover spouses.

¹¹ Quinby and Wettstein (2021) used these data to study how pension cuts impact employee retention.

¹² Unfortunately, the employment records made available do not contain an employee-specific numerical identifier that remains constant over time. Hence, the analysis constructed the required identifier based on full name and time-invariant demographic characteristics. A detailed description of the matching procedure is described in Quinby and Wettstein (2021).

between that date and September 30, 2008. These treated employees have a choice to retire from state service with the more generous RHI benefits or to keep working and retire later with less generous benefits. For comparison, the analysis also defines a control group of 472 employees who are actively employed one year prior, on September 30, 2006, and who reach their NRA sometime before September 30, 2007. These control employees make their initial retirement decision without needing to consider any RHI cut. Indeed, since the cut was announced in May of 2008, the control group would not have even known a cut was looming.

To align with the conceptual framework, for each worker in our sample, the next step is to define a variable $V_{i,t}^{RHI}$ that represents the employee's accrued RHI benefits if they end state employment at time t . It is calculated as the present discounted value (PDV) of the lifetime employer RHI subsidy assuming that the employee separates with $tenure = tn_t$ and claims his benefits at the wealth-maximizing date. Similarly, $V_{i,t}^P$ denotes the employee's pension wealth; a detailed description of both calculations is provided in the Appendix.

With these values in hand, it is possible to calculate the counterfactual gain (or loss) in terms of RHI and pension benefits if an employee retires from state service within the first year of observation (by September 30, 2008 for the treated group and September 30, 2007 for the control group). For notational clarity, we define t as elapsed months since the beginning of the observation period for both the treated and control groups; hence $t=1$ denotes September 2007 for the treated group and September 2006 for the control group, and $t=13$ refers to the following September for each group. Similarly, we define $t=pre-reform\ peak$ as the month in which the employee would maximize the combined value of both $V_{i,t}^{RHI}$ and $V_{i,t}^P$ if he were to separate within the first year, and $t=post-reform\ peak$ as the month in which the employee would maximize the combined value of RHI and pension wealth if he were to separate after.

Then, the counterfactual gain/loss in RHI benefits (ΔV_i^{RHI}) can be written as the maximum potential wealth if the employee separates after the first year, minus the maximum potential wealth if he separates within it:¹³

$$\Delta V_i^{RHI} = V_{i,post-reform\ peak}^{RHI} - V_{i,pre-reform\ peak}^{RHI} \quad (5)$$

¹³ This analysis is in the spirit of Coile and Gruber (2007).

The counterfactual gain/loss in pension benefits can be written similarly:

$$\Delta V_i^P = V_{i,post-reform\ peak}^P - V_{i,pre-reform\ peak}^P \quad (6)$$

The final step in the analysis is to determine how workers trade off the changes in the values of RHI and pension benefits when choosing a separation date. To begin, we specify a linear probability model – for the treated and control employees in our sample – of the form:

$$Retire_{i,t<12} = \alpha + \beta_1(\Delta V_i^{RHI}) + \beta_2(\Delta V_i^P) + \beta_3(X_{i,t}) + \varepsilon_{i,t} \quad (7)$$

Each employee is observed once in this regression. $Retire_{i,t<12}$ is a binary variable equal to one if employee i leaves state service within the first year of observation (by definition, before the RHI cut for employees in the treated group). β_1 and β_2 are the coefficients on our two key gain/loss variables. Conceptually, they can be interpreted as the impact of increasing post-reform RHI or pension wealth by \$1,000, holding constant the employee's pre-reform peak. $X_{i,t}$ is a vector of employee characteristics (as of time $t=1$) that could be correlated with ΔV_i^{RHI} and ΔV_i^P , including age (in five-year bins),¹⁴ gender, accrued tenure, the natural log of current salary, and indicators for the category of state employment and whether the employee has Schedule A or Schedule B pension benefits.¹⁵

Comparing the relative magnitudes of β_1 and β_2 answers our question: how do workers value an additional dollar of RHI benefits relative to pension benefits?

$$Value\ of\ RHI\ relative\ to\ pension \equiv \frac{\beta_1}{\beta_2} \quad (8)$$

However, a concern with this semi-structural approach is that workers – particularly unionized state workers – may have already selected or negotiated a favorable compensation package that

¹⁴ Importantly, controlling for employee age not only predicts the level of the RHI cut, but also proxies for Medicare coverage, a universal source of RHI.

¹⁵ Corrections officers and nurses have different pension provisions that are reflected in the pension wealth calculation.

maximizes benefits at their preferred retirement age.¹⁶ In that case, the model in Equation (8) does not reveal how workers would trade off the different forms of deferred compensation if forced to choose. Moreover, the regression does not control for many unobserved factors that might correlate with our variables of interest: workers’ preferences for leisure, their other sources of RHI coverage, expected future earnings both in and out of state government, and retirement benefits that they might be able to obtain in the private sector.¹⁷

To get around these issues, we identify the value of RHI using *only* the reduction in benefits caused by the 2008 reform as an exogenous source of variation. Specifically, we pivot to a two-stage-least-squares (2SLS) regression and instrument for ΔV_i^{RHI} with an indicator for being in the treated group. This alternative approach – which we view as our main specification – yields an estimate of the excess retirements caused by the sudden drop in RHI benefits.

Assuming that those attaining retirement eligibility by September 2008 and those attaining it a year earlier are similar in their preferences for leisure as well as their outside job options, the only difference between them with respect to their retirement decision is that the former group must choose between the enhanced RHI (when retiring early) and increased pension wealth (when retiring later); whereas the control group does not face this tradeoff.

Of course, since we do not have a similar instrument for ΔV_i^P , the coefficient on pension wealth foregone by retiring early should not be interpreted as causal (nor the comparison of β_1 with β_2). To increase confidence in the results, the penultimate section of the paper will benchmark our estimate of β_2 against causal findings from previous literature.¹⁸

¹⁶ This outcome would occur if workers select employers based on the structure of their compensation package or negotiate the package through a strong union (Clemens and Cutler 2014). Although most pension and RHI reforms are legislated with some union input, the Rhode Island reform was primarily motivated by legal and cost concerns rather than worker preferences. Unlike pensions, RHI benefits for current workers are not constitutionally protected and so are easier to cut without legal challenges.

¹⁷ While much of the variation in ΔV_i^{RHI} is due to the 2008 reform, tenure, salary, birth year, and age at separation also drive accrual patterns.

¹⁸ See, for example, Brown (2013); Koedel, Podgursky, and Shi (2013); Fitzpatrick and Lovenheim (2014); Ni and Podgursky (2016); Koedel and Xiang (2017); Morrill and Westall (2019); and Quinby and Wettstein (2021).

Results

Before turning to the main findings, Table 2 compares the treated and control employees along demographic and other characteristics. The hope is that the two groups will look similar along every dimension except for their exposure to the RHI reform. Reassuringly, that assumption appears to bear out: when first observed, in September 2007 and September 2006 respectively, the two groups of workers were age 55 on average, with 24 years of accrued tenure. They were 51 and 58 percent female, respectively, and had an average nominal monthly salary of \$4,696 and \$4,590 (the average salary in the treated group being slightly higher due to inflation).¹⁹

Equally reassuring, the two groups had similar levels of RHI and pension wealth before the 2008 reform. Figure 1 plots the average V_t^{RHI} and V_t^P from month 1 to month 16 for the treated group and month 28 for the control group. Four points stand out. First, pension benefits are a substantially larger share of deferred compensation than RHI – about five times larger, in present value terms, than RHI benefits.

Second, as expected, RHI and pension wealth rise steadily up to the employee’s normal retirement age (all of the employees in our sample hit their normal retirement age sometime during the first 12 months of observation). After that point the rate of new accruals declines, but average accrued wealth continues to rise modestly for up to a year afterwards. As discussed previously, the reduction in lifetime wealth caused by foregoing a few months’ benefits is counterbalanced by pension multipliers that rise with tenure.

Lastly, the 2008 cut to RHI benefits – occurring at month 14 for the treated group and month 25 for the control group – represents a significant loss of wealth. To see this even more clearly, Table 3 documents counterfactual RHI and pension wealth if employees retired from state service pre- and post-reform at the points that would maximize their total deferred compensation in each period. The median treated employee would lose \$37,080 in lifetime RHI benefits by retiring after the reform, about 44 percent of their pre-reform RHI wealth. However, to retain their pre-reform benefits, they must forego \$5,777 in pension accruals. In contrast, the

¹⁹ One key dimension – however – along which the two groups differ is pension benefits: the treated group has a higher share of post-reform Schedule B members because they were hired slightly later, on average. Consequently, Schedule B membership is included as a control in all the regression specifications.

median control employee is indifferent between going or staying; they gain \$2,308 in RHI wealth by staying but must forego \$2,963 in future pension accruals.

Moreover, the averages in Figure 1 hide meaningful heterogeneity across employees. Recall from Table 1 that the magnitude of the RHI cut depended on employees' age and tenure; consequently, for employees in the treated group, the loss in RHI from retiring after the reform ranges from \$126,710 to only \$829 – or 100 percent of benefits (the employee becomes ineligible for any RHI) to only 4 percent (see Table 3). Similarly, the change in pension wealth from waiting to retire ranges from -\$30,035 to \$94,716.

Importantly for our analysis, the older state employees who make up our sample clearly respond to the RHI cut. Figure 2 juxtaposes the share of treated and control employees retiring from state service in each month t against the combined value of $V_t^{RHI} + V_t^P$. The two groups trend very similarly until $t=9$. For the treated group, this corresponds to May 2008, when the RHI reform was announced. Between $t=9$ and $t=13$ (May 1 through September 30) the treated group retires at a much higher rate.

Interestingly, if we follow the control group through 2008, they also appear to respond to the reform; their rate of retirement also spikes in the five months leading up to the reform ($t=21$ through $t=25$). This response is consistent with the “control” group also being treated at this stage: they, too, stand to lose the more generous RHI benefits if they postpone their retirement past September 2008.

Regression Results

To formalize this intuition, Table 4 presents results from the regression in Equation 7.²⁰ The first column reflects a simple Ordinary Least Squares specification, while the second two columns instrument for the dollar change in RHI wealth from delaying retirement (ΔV_i^{RHI}) with being in the treated group. As expected, the first column shows a robust correlation between ΔV_i^{RHI} and the likelihood of retiring within the first year of observation. Specifically, each thousand dollars of RHI benefits gained by retiring after the first year is associated with a 0.4 percentage-point decrease in the likelihood of retiring within the year.

²⁰ Dollar values in this specification are all expressed in nominal terms.

The question is: to what extent does this correlation reflect a causal relationship? To answer that question, the second column shows the first stage of our 2SLS specification. Being in the treated group is strongly predictive of ΔV_i^{RHI} with an F-statistic of 663. The resulting instrumental variables estimator, shown in column three, is very close to the original correlation:²¹ each thousand dollars of RHI gained by retiring after the first year caused a 0.6 percentage-point decrease in the likelihood of retiring (or, more intuitively, each thousand dollars of RHI lost due to the reform caused a 0.6 percentage-point increase in the likelihood of retiring before September 30, 2008). Reassuringly, this estimate is comparable to prior findings from other contexts.²² It is also large in absolute magnitude – given an average RHI cut of around \$40,000 for the treated group, this result indicates that the reform caused around 24 percentage-points in excess retirements – tripling the baseline rate of retirement the year prior (12.3 percent for the first twelve months in the control group).

Of particular interest, older state employees seem to respond much more to the incentives in their RHI plan than to those in their pension. The corresponding coefficient on ΔV_i^P – or pension wealth gained by retiring after the first year – is only 0.3 percentage points. Hence, the employees in our sample appear to value a dollar of RHI wealth twice as much as a dollar of pension wealth.

This seeming preference for RHI could arise for several reasons. Most obviously, Rhode Island’s RHI reform was likely quite salient to employees, and their behavior might reflect resentment for what was perceived as a broken promise as much as their intrinsic valuation of RHI. Yet, prior studies in other contexts have also found that older workers value RHI benefits more than equivalent pension wealth (Wettstein 2020; and Gruber and Madrian 1995).

A second possibility is that the coefficient on our pension variable is incorrectly estimated. As noted above, the 2008 reform did not touch pension benefits so we lack causal identification. To check for this, we benchmark our estimate against several prior studies that estimate the labor supply response of older workers to an increase in peak pension or Social Security benefits. In the state and local sectors, most of these studies focus on teachers. For

²¹ The similarity of the 2SLS and OLS estimates is consistent with the fact that the preponderance of the variance of RHI generosity across individuals in both treatment and control groups is due to the reform itself – i.e., the difference between the two groups – which is what the IV estimate isolates.

²² For example, Wettstein (2020) estimates the labor supply effect of gaining access to prescription drug insurance as a retiree through Medicare Part D; he finds that a \$1,000 increase in the present discounted value of drug coverage subsidies causes a 0.334 percentage-point increase in the likelihood of retiring.

instance, Brown (2013) looks at a benefit enhancement in California that encouraged older teachers to delay retirement and finds that increasing peak pension wealth by an additional \$1,000 caused only a 0.009 percentage-point increase in the likelihood of working an additional year. In contrast, Koedel and Xiang (2017) study a similar reform in Missouri and find that an increase in peak pension wealth of approximately \$1,000 caused a 0.07 percentage-point increase in the one-year retention rate of retirement-eligible teachers.

However, Quinby and Wettstein (2021) show that teachers are much less responsive to pension incentives than other state and local occupations. So for comparability to the current setting, we also look at prior literature estimating the labor supply elasticity with respect to Social Security accruals. Examining older male workers in the 1990s, Coile and Gruber (2007) estimate that a \$1,000 increase in the future Social Security wealth that workers could earn if they worked to their wealth-maximizing date (“peak wealth”) is associated with a roughly 0.04 percentage-point increase in the probability of working an additional year. Meanwhile, Gelber, Isen, and Song (2016) use an exogenous change in the Social Security benefit calculation (the so-called “notch”) to estimate that a \$1,000 increase in current Social Security wealth caused a 0.065-percentage-point increase in the retirement rate.

All of these estimates are substantially smaller than the 0.3 percentage-points found in this paper. Consequently, we recalculate the relative valuation of RHI and pension benefits using the causal estimate for RHI wealth found here and an average of the causal impacts of peak pension wealth found in the studies cited above (0.046 percentage points). This recalculation suggests that older state employees are 13 times more responsive to their RHI incentives than to their pension.

Discussion

The results of this study shed light on long-standing questions about worker compensation, as well as raising new ones. At a basic level, our results confirm the high value that older workers place on RHI relative to pension benefits. This discrepancy cannot be explained by myopia or high discount rates, nor by pessimism regarding longevity (as in O’Dea and Sturrock 2023 and Arapakis and Wettstein 2023a), as such effects would impact both RHI and pension benefits, which are deferred and life-contingent in a similar way.

Instead, RHI and life-contingent pensions can be thought of as insurance against different risks. The former protects against health expense risk, while the latter protects against longevity risk. Our results suggest that workers – at least public-sector ones – are more worried about health-related financial shocks than about outliving their resources. Of course, this is in the context of the state and local sectors, where the marginal dollar of longevity insurance may be of limited worth since so much compensation is already in the form of pension payments (Fitzpatrick 2015).

However, the intuition for this is also quite general: as Arrow (1963) points out, while a pension would only provide consumption while an individual is alive, health insurance provides consumption when an individual is both alive and in a high-health-spending state. Thus, health insurance is better targeted to increasing consumption where marginal utility is high. Recent analysis also shows this holds in the structurally similar context of allocating public funds to Medicare versus Social Security (Einav and Finkelstein 2026).

Consequently, this finding of preferring health in lieu of longevity insurance has now been documented across multiple time periods and in quite disparate contexts; evidence is mounting that older workers simply prefer a promise of health insurance to a deferred cash payment of equivalent value. Which raises the question of why RHI benefits are in decline if workers value them so highly?

In the public sector, the answer is likely political. RHI benefits lack the legislative and constitutional protections typically awarded employee pensions, making them an easy target for cost-cutting (Munnell and Quinby 2012). Yet, state workers' high valuation of RHI has immediate practical implications. Public service provision is labor intensive, with salary and other benefits making up about half of current direct expenditures.²³ The more workers value a dollar of RHI, the less public employers must spend on other forms of compensation (such as salary or pension) to attract and retain them.²⁴ Moreover, it seems likely that recent cuts may have impacted morale, turnover, and the quality of public services – all questions for future research.²⁵

²³ Salaries, social insurance, and required pension contributions were 53 percent of current direct expenditures in 2017, the latest data available (U.S. Census Bureau 2017; and *Public Plans Database* 2024).

²⁴ Maestas et al. (forthcoming).

²⁵ Most of the literature on state and local labor markets considers how defined benefit pensions affect retirement ages. A few studies consider how pension reforms affect retention for mid-career workers and compare the generosity of public sector compensation to otherwise similar workers in the private sector. See Costrell and

Understanding private-sector trends is more complicated. One possibility is that public and private sector workers might have different preferences – particularly since employer-provided retirement plans are already much less generous in the private sector, often even nonexistent.²⁶ Being unwilling (or unable) to trade RHI for deferred retirement benefits, private sector workers might simply prefer cash wages today, the advantages of employer-sponsored health insurance notwithstanding. Hence, exploring the causes and consequences of the decline in RHI is an important avenue for future research.

Conclusion

The financing of public pensions, and the incentives they create for the state and local workforce, have been the subject of much academic and policy interest. Much less studied are the RHI benefits that governments offer to their workers, despite a sea change in both the prevalence and generosity of these plans over the past two decades. This paper fills the gap by using a policy reform in Rhode Island to estimate how much older state workers are willing to pay for RHI.

Specifically, the reform asked retirement-eligible state employees – who were age 55 on average – to choose between retiring immediately with enhanced RHI or continue working and earn additional pension accruals (as well as salary). We find that older state workers value an additional dollar of RHI 2-to-13 times more than an additional dollar of pension benefits, depending on the estimation. This high valuation of RHI is consistent with prior studies comparing workers' relative valuation of Medicare and Social Security benefits and suggests that older workers are more concerned about insuring against future healthcare costs than protecting against longevity risk.

The results have immediate policy implications. In the state and local sectors, governments seeking to reduce the cost of funding employees' retirement benefits often turn first to RHI because it lacks the constitutional and legislative protections typically awarded pension benefits. But, these results instead suggest that governments seeking to reduce expenditures should reallocate their deferred compensation package *toward* RHI.

Podgursky (2009); Munnell et al. (2011); Munnell et al. (2012); Brown (2013); Koedel, Podgursky, and Shi (2013); Fitzpatrick and Lovenheim (2014); Ni and Podgursky (2016); Koedel and Xiang (2017); Morrill and Westall (2019); Quinby (2020); Liu and Aubry (2021); and Quinby and Wettstein (2021).

²⁶ Sabelhaus (2022).

More broadly, the results raise questions about the drivers of private-sector cuts in RHI generosity over the past couple of decades. The reasons may lie in either different preferences of workers across sectors; or, alternatively, in the different tradeoffs these workers face: not between pensions and RHI, but between salary and RHI. It may be that private-sector workers would still prefer cash today over health insurance tomorrow – a question for future research.

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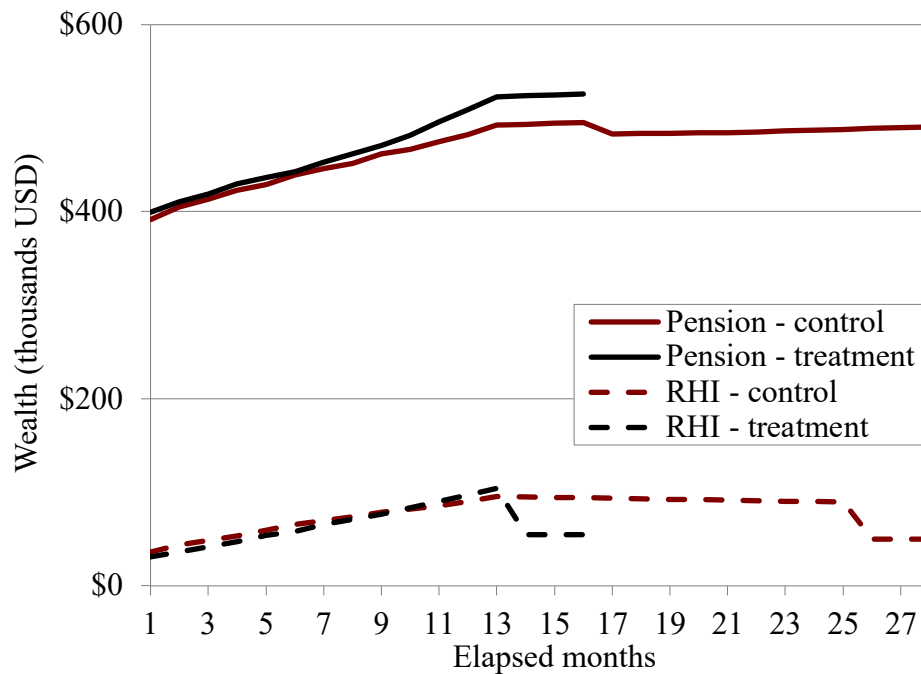
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Figures and Tables

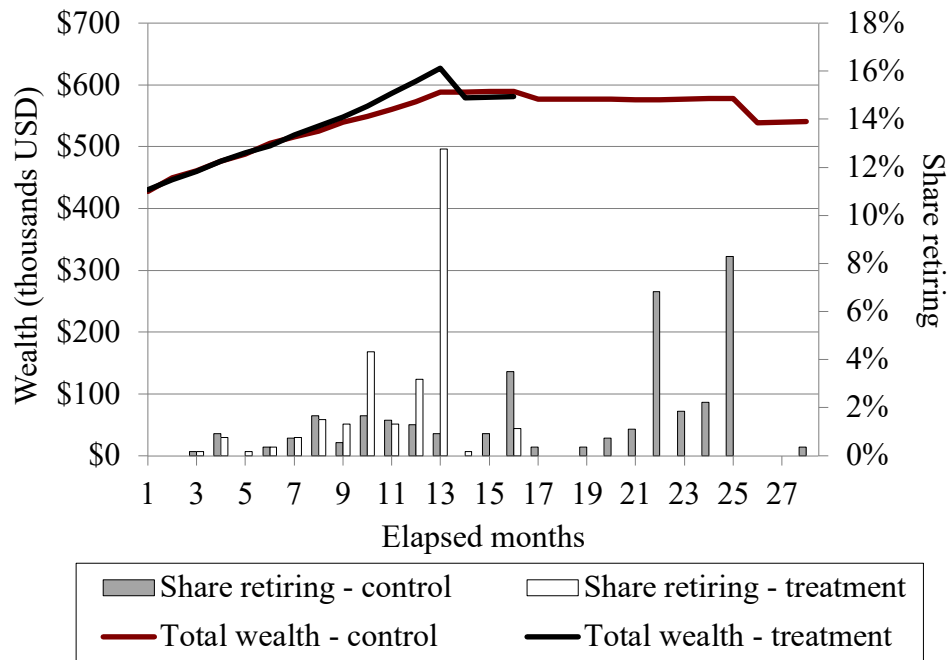
Figure 1. *Present Discounted Value of Accrued Pension and RHI Benefits, by Months Since First Observation and Treated Status*



Note: Months reflect elapsed time since September 2007 for the Treated Group and September 2006 for the Control Group.

Sources: Authors' estimates from data provided by ERSRI (2006-2007) and GRS (2007). See Appendix A for details.

Figure 2. *Present Discounted Value of Total Accrued Benefits and Retirement Rate, by Months Since First Observation and Treated Status*



Note: Months reflect elapsed time since September 2007 for the Treated Group and September 2006 for the Control Group.

Sources: Authors' estimates from data provided by ERSRI (2006-2007) and GRS (2007). See Appendix A for details.

Table 1. *Percentage of RHI Premium Paid by the State Pre- and Post-Reform*

Retiree age	Tenure	Pre-reform	Post-reform	Difference
<60	<28	0%	0%*	0%
<60	28-34	90	80	-10
<60	35+	100	80	-20
60-65	0-9	0	0	0
60-65	10-15	50	0	-50
60-65	16-19	70	0	-70
60-65	20-22	70	80	10
60-65	23-27	80	80	0
60-65	28+	100	80	-20
66+	0-9	0	0	0
66+	10-15	50	0	-50
66+	16-19	70	0	-70
66+	20-27	90	80	-10
66+	28+	100	80	-20

* Under the reform, workers over age 59 with at least 20 years of service get a Tier 2 subsidy of 80 percent.
Source: GRS (2007).

Table 2. *Demographic and Employment Characteristics of the Analysis Sample, 2006-2007*

Variable	Mean	Median	SD	Min	Max
Treated group (N=456)					
Age	54.49	54.00	5.67	44.00	81.00
Female	0.51	1.00	0.50	0.00	1.00
Corrections	0.06	0.00	0.24	0.00	1.00
Nurse	0.02	0.00	0.14	0.00	1.00
Schedule B	0.09	0.00	0.29	0.00	1.00
Tenure	23.76	27.10	5.31	9.01	28.00
Salary	\$4,696	\$4,192	\$1,765	\$540	\$12,730
Control group (N=472)					
Age	54.53	55.00	5.07	45.00	81.00
Female	0.58	1.00	0.49	0.00	1.00
Corrections	0.05	0.00	0.22	0.00	1.00
Nurse	0.03	0.00	0.16	0.00	1.00
Schedule B	0.04	0.00	0.20	0.00	1.00
Tenure	24.12	27.17	4.98	9.35	28.07
Salary	\$4,590	\$4,041	\$1,672	\$708	\$12,272

Note: The treated group is observed in September 2007 while the control group is observed in September 2006.
Source: Authors' calculations from data provided by ERSRI (2006-2007).

Table 3. *Estimated RHI and Pension Wealth for the Analysis Sample*

Variable	Mean	Median	SD	Min	Max
Treated group (N=456)					
Peak Pension, First 12 mo.	\$567,682	\$546,835	\$303,884	\$15,276	\$2,101,084
Peak Pension, 13+ mo.	\$581,554	\$561,959	\$308,216	\$13,033	\$2,195,800
Peak RHI, First 12 mo.	\$107,460	\$107,938	\$47,589	\$8,101	\$195,106
Peak RHI, 13+ mo.	\$59,119	\$67,363	\$17,315	\$0	\$73,194
Δ Peak RHI	-\$48,341	-\$37,081	\$36,704	-\$126,710	\$829
Δ Peak Pension	\$13,873	\$5,777	\$18,170	-\$30,035	\$94,716
Δ Peak RHI %	-39%	-44%	20%	-100%	4%
Δ Peak Pension %	3%	1%	4%	-15%	17%
Control group (N=472)					
Peak Pension, First 12 mo.	\$558,502	\$534,656	\$288,018	\$10,242	\$1,783,427
Peak Pension, 13+ mo.	\$561,552	\$531,913	\$284,927	\$9,830	\$1,760,837
Peak RHI, First 12 mo.	\$100,536	\$95,174	\$42,224	\$7,276	\$181,257
Peak RHI, 13+ mo.	\$95,512	\$91,692	\$43,673	\$6,685	\$174,398
Δ Peak RHI	-\$5,024	-\$2,308	\$7,956	-\$34,215	\$45,805
Δ Peak Pension	\$3,050	\$2,963	\$12,203	-\$35,403	\$89,669
Δ Peak RHI %	-7%	-3%	13%	-57%	49%
Δ Peak Pension %	1%	1%	3%	-4%	22%

Notes: First 12 is the first 12 months from 9/30/2007 to 9/30/2008 for the treatment group and 9/30/2006 to 9/30/2007 for the control group. 13+ is all months after 9/30/2008 or 9/30/2007. The maximum pension and RHI values are at the date that maximizes the sum of these two benefits during the reference period.

Sources: Authors' estimates from data provided by ERSRI (2006-2007) and GRS (2007). See Appendix A for details.

Table 4. *Regression Results for the Impact of Future RHI and Pension Accruals on the Likelihood of Retiring Within Twelve Months*

Variable	Structural	Instrumental variables (2SLS)	
	Retire	Δ Peak RHI (thousands USD)	Retire
Δ Peak RHI (thousands USD)	-0.004*** (0.001)		-0.006*** (0.001)
Δ Peak pension (thousands USD)	-0.002 (0.001)	-0.767*** (0.058)	-0.003** (0.001)
Treated		-34.471*** (1.339)	
Salary (thousands USD)	-0.007 (0.008)	0.929** (0.417)	-0.005 (0.008)
Ages 50-54	0.027 (0.041)	9.492*** (2.131)	0.032 (0.041)
Ages 55-59	0.173*** (0.047)	25.738*** (2.213)	0.199*** (0.049)
Ages 60-64	0.430*** (0.120)	34.969*** (6.073)	0.447*** (0.120)
Ages 65+	0.685*** (0.135)	25.741*** (5.570)	0.688*** (0.135)
Female	0.045 (0.028)	5.265*** (1.318)	0.061** (0.029)
Corrections	-0.085* (0.047)	20.642*** (3.460)	-0.050 (0.049)
Nurse	-0.088 (0.058)	13.890** (6.034)	-0.059 (0.060)
Tenure	0.019*** (0.004)	-1.075*** (0.154)	0.017*** (0.004)
Schedule B	-0.144*** (0.048)	2.346 (3.868)	-0.146*** (0.050)
Constant	-0.422*** (0.114)	-1.773 (4.948)	-0.421*** (0.113)
Observations	928	928	928
R-squared	0.137	0.725	0.131

Notes: Δ Peak RHI and Δ Peak Pension are defined as the difference between their value at the counterfactual total-wealth maximizing separation date in the first 12 months following the reference date and the counterfactual total-wealth maximizing separation date at any later period. All other variables are as of the reference date: September 30, 2006, for the control group and September 30, 2007, for the treatment group. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Sources: Authors' estimates from data provided by ERSRI (2006-2007) and GRS (2007).

Appendix: Methodology for Calculating RHI and Pension Wealth

Throughout the paper, “accrued RHI wealth” ($V_{i,t}^{RHI}$) and “accrued pension wealth” ($V_{i,t}^P$) refer, respectively, to the present discounted value of RHI and pension benefits earned by each employee (i) as of the reference date (t), which in this analysis is measured in month-year pairs. “Peak wealth” denotes the highest level of wealth that an employee could receive from the plan and is associated with optimal separation and claiming dates.

Calculating Accrued RHI Wealth

This study defines RHI benefits as the portion of RHI premiums paid by the employer. State employees in Rhode Island are eligible for RHI provided that they vest in the pension. The dollar value of RHI benefits depends on the premium charged by the plan and the degree to which the state subsidizes the premium.

Recall that retirees under age 65 purchase insurance at the active group rate – with the state covering the difference between the active and retiree rates (the Tier 1 subsidy). In addition, the state covers a further percentage of the active rate based on age and tenure (the Tier 2 subsidy). After age 65, the Tier 1 subsidy ends; retirees are required to enroll in Medicare Part B and a supplemental plan through the state. The Tier 2 subsidy continues, but only for this supplemental plan – meaning that the calculation can ignore Medicare and focus solely on the state-provided insurance.

Hence, the first step in the calculation is to determine the anticipated lifetime stream of total monthly RHI premiums charged by the insurance provider for retired employee i who separates from state service at date t .²⁷ During our analysis period, premiums for a retiree-pool PPO plan are described in the state’s actuarial valuation, varying by gender and age.²⁸ However, since the future trajectory of RHI premiums is uncertain in advance, for any given date t the analysis projects anticipated premiums (at future date y) using the expected growth rate(s) reported in the actuarial valuation.²⁹

$$\text{Retiree Premium}_{i,t,y} = \text{Observed Premium}_{i,t} * \prod_{t+1}^y \text{Premium Growth Rate}_{t,y} \quad (A1)$$

²⁷ The level of the counterfactual future premium does not depend on the employee’s claiming age at this stage.

²⁸ State of Rhode Island Retiree Health Care Benefits Plan (2006-2009).

²⁹ Growth rates are also applied to obtain premiums for reference months without corresponding actuarial valuation reports.

The next step is to calculate the value of the Tier 1 subsidy for retirees under age 65. The active group rate premium is projected using the same methodology as the retiree premium in Equation A1. Historical data on active premiums for state employees in Rhode Island proved difficult to obtain, so the observed active premium at date t is assumed to match the national average among state and local government employers.³⁰ Reassuringly, 2019 premium data, gathered from Rhode Island's employee benefits website, show that this assumption performs well in later years (Quinby and Wettstein 2021). With the premiums in-hand, the Tier 1 subsidy can be calculated as:

$$Tier\ 1\ Subsidy_{i,t,y} = \begin{cases} Retiree\ Premium_{i,t,y} - Active\ Premium_{i,t,y} & \text{if } Age_{i,t,y} < 65 \\ 0 & \text{if } Age_{i,t,y} \geq 65 \end{cases} \quad (A2)$$

The third step is to calculate the dollar value of the Tier 2 subsidy, which stipulates that the state will pick up a fixed percentage of the employee-paid premium for the duration of their retirement. The percentage rate of the Tier 2 subsidy is set by plan provisions and varies based on final tenure at separation and the date at which employees first claim their retirement benefits ($a \geq t$).³¹

$$Tier\ 2\ Subsidy_{i,t,a,y} = \begin{cases} Active\ Premium_{i,t,y} \times Subsidy\ \%_{t,a} & \text{if } Age_{i,t,y} < 65 \\ Retiree\ Premium_{i,t,y} \times Subsidy\ \%_{t,a} & \text{if } Age_{i,t,y} \geq 65 \end{cases} \quad (A3)$$

The last step is to calculate the present value of the stream of future RHI benefits as of the reference date t . Future RHI benefits are adjusted downward for the probability of continued survival and for the employee's personal discount rate.³²

$$V_{i,t,a}^{RHI} = \sum_{y=a}^{\infty} \frac{(Tier\ 1\ Subsidy_{i,t,a,y} + Tier\ 2\ Subsidy_{i,t,a,y}) * Pr\ (Survival)_{i,t,y}}{(1 + \delta_i)^{y-t}} \quad (A4)$$

³⁰ The Kaiser Family Foundation and Health Research and Educational Trust (2006-2009).

³¹ As plan provisions prevent state employees from claiming RHI before they are eligible to claim their pension, this analysis assumes simultaneous claiming.

³² The personal discount rate represents the employee's time value of money and is lower than the sponsor's discount rate used to calculate the value of liabilities in financial statements.

Since the goal of this analysis is to calculate accrued RHI wealth from the perspective of an employee in 2006-07 and 2007-08, economic assumptions were chosen to reflect conditions in those years. Specifically, inflation is 3 percent (consistent with the 2006-2008 actuarial valuation reports); survival probabilities are taken from the 2003 cohort life tables, by gender, adopted by the Social Security Administration; and the nominal discount rate is based on 10-year Treasury bonds, which yielded 5.09 percent in July 2006 and 5 percent in July 2007.

Note that in Equation A4, each employee still has multiple counterfactual values of $V_{i,t,a}^{RHI}$ at time t because the Tier 2 subsidy depends on the claiming age. To reduce the set down to one value per employee at each reference date, the calculation assumes that employees pick a to maximize the combined value of their pension and RHI wealth given their separation date t .

Calculating Accrued Pension Wealth

DB pensions promise an annuity that commences at the employee's claiming date and continues until death. If employee i were to separate from government service at date t , he would be entitled to a future benefit determined by the following formula:

$$Pension_{i,t} = \begin{cases} FAS_{i,t} * tn_{i,t} * B_i * EF_{i,t} & \text{if } tn_{i,t} \geq V \\ 0 & \text{if } tn_{i,t} < V \end{cases} \quad (A5)$$

Where $FAS_{i,t}$ equals the average monthly salary over the last 36 months of employment, $tn_{i,t}$ measures the employee's final tenure at separation, and B_i is a percentage set by plan provisions. Note that an employee's final tenure must at least equal the vesting period (V). Benefits receive an actuarial penalty ($EF_{i,t}$) if claimed before the employee's normal retirement age and are capped at 80 percent of $FAS_{i,t}$ by plan provisions.

In Rhode Island, each year of tenure receives a different multiplier, so that the benefit formula becomes:

$$Pension_{i,t} = \begin{cases} FAS_{i,t} * [\sum_{x=1}^t B_{i,x}] * EF_{i,t} & \text{if } tn_{i,t} \geq V \\ 0 & \text{if } tn_{i,t} < V \end{cases} \quad (A6)$$

In practice, calculating Equation A6 requires projecting each employee's wage profile for the years in which they are not observed in the personnel records. This calculation is done using the wage-growth assumptions from the 2006-2009 pension actuarial valuation reports.³³

Pension wealth is then calculated as the present value of future benefits, which are claimed any time after the plan's early or normal retirement ages (claiming date $a \geq t$) and continue until death.³⁴ Each year, the pension benefit receives an upward cost-of-living-adjustment (COLA) determined by plan provisions, a downward adjustment for the likelihood of continued survival, and a downward adjustment for the worker's personal discount rate:

$$V_{i,t,a}^P = \sum_{y=a}^{\infty} \frac{Pension_{i,t} * COLA_{t,y} * Pr(Survival)_{i,t,y}}{(1+\delta_i)^{y-t}} \quad (A7)$$

The economic assumptions underlying this calculation are set to be consistent with the RHI wealth calculation described above. As before, the analysis further reduces this set down to one value per employee at each reference date by assuming that employees pick a to maximize the combined value of their pension and RHI wealth given their separation date t .

Calculating Peak RHI and Pension Wealth

Peak RHI and pension wealth are defined in this analysis as the values of $V_{i,t}^{RHI}$ and $V_{i,t}^P$ that maximize the combined total of $(V_{i,t}^{RHI} + V_{i,t}^P)$ over the relevant values of t . If accrued RHI and pension wealth were to increase monotonically with tenure, then peak wealth would occur when the employee (having spent the remainder of his life working in government) finally dies. However, accrued benefits typically increase until the employee reaches the claiming age set by plan provisions, at which point accrued wealth slowly begins to decrease because the employee foregoes a year of benefits for each additional year of work.³⁵ Hence, the peak value calculation

³³ Rhode Island's actuaries assume high salary growth in the first few years of tenure, decreasing to 4.5 percent =inflation+1.5 percent over time.

³⁴ Employees are only eligible for early retirement if they achieve specified tenure milestones. Vested employees who are ineligible for early retirement can claim benefits any time after their normal retirement date (age 60 with 10 years of tenure or any age with 28 years of tenure). Employees who are observed working past their normal retirement age are assumed to claim benefits immediately after separation.

³⁵ If the benefit adjustment for early retirement (EF_t) is actuarially fair, then peak wealth is associated with two different claiming ages (early and normal). In Rhode Island, the early retirement adjustment penalizes employees for claiming early.

almost always has a unique solution that yields an optimal level of tenure in government. Ties are arbitrated by taking the lowest level of tenure associated with peak benefit wealth. A few older employees have already worked past their optimal tenure when observed in the personnel records, in which case “peak tenure” equals their current tenure.

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