Retiree Health Insurance for Public School Employees: Does it Affect Retirement and Mobility?

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Abstract: Despite the widespread provision of retiree health insurance for public sector workers, little attention has been paid to its effects on employee mobility and retirement. This is in stark contrast to the large literature on health-insurance-induced "job-lock" in the private sector. In this paper, I use the introduction of retiree health insurance for public school employees in combination with administrative data on their retirement and mobility to identify the effects of retiree health insurance. As expected, the availability of health insurance for older workers that is not contingent on employment allows employees to retire earlier (rather than waiting for Medicare-eligibility) and increases job-to-job transitions.

KEYWORDS: Retirement, Health Insurance, Public Sector Employment, Teacher Labor Supply
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I. Introduction

In the U.S., as in many other OECD countries, public sector pension funds are severely underfunded.[1] At the same time, the funds set aside to pay for the health insurance promised to retired state and local government employees, like teachers, represent an even smaller fraction of the estimated future health care liabilities than pension funds do pension liabilities (Clark and Morrill 2010). While the promised pension benefits to public employees are considered constitutionally protected in many states, retiree health insurance is not. Therefore, facing considerable deficits and a poor economic climate, state and local governments may soon decide to discontinue, significantly scale back or otherwise alter retiree health insurance programs for their employees.

Economic theory would predict that the offer of retirement-contingent health insurance to public sector employees would decrease public sector employment of older workers for two reasons. First, there is an income effect of subsidized health insurance that discourages work. Second, health insurance that is tied to retirement from the public employer does not preclude employment in the private sector; the reduction of "job-lock" may lead employees to retire from the public sector but continue to work elsewhere. This option may be particularly attractive to older workers if private sector jobs offer more flexible hours than public employers. In addition to effects on retirement, retiree health insurance may have effects on mobility of public employees. For example, the offer of retiree health insurance that is not connected to employment with a particular employer, like an individual school district, may allow employees

[1] Novy-Marx and Rauh (2009) estimate U.S. public pension funds are $3 trillion underfunded. For information on OECD public pensions, see http://www.oecd.org/finance/private-pensions/47827915.pdf.

to search for another employer that will provide better more generous other benefits to employees.

However, there has been relatively little research into the magnitude of any effects of retiree health insurance on *public sector* employment. Research on similar programs, e.g. Medicare, COBRA and the Veterans Affairs insurance expansion, provides some indication (Gustman and Steinmeir, 1994; Karoly and Rogowski, 1994; Madrian, 1994; Gruber and Madrian, 1995; Lumstaine, Stock and Wise, 1996; Rust and Phelan, 1997; Blau and Gilleskie, 2001, 2006, 2008; Johnson et al. 2003; Boyle and Lahey, 2010; Robinson and Clark, 2010; Strumpf, 2010; French and Jones, 2011; Coe et al., 2013; Martin and Woodbury, 2013; Nyce et al., 2013). This literature has generally shown that health insurance available for retirement-aged individuals induces retirement, though the magnitudes of the effects vary across settings.[2] Yet, this work has focused on *private sector* employees. Differences between both public employee retiree health insurance plans and the other types of insurance studied and public and private employees suggest the effects of retiree health insurance may be different across the public and private sectors. For example, research has shown that public sector employees are particularly responsive to the nonlinearities in their pension benefits (Costrell and Podursky 2009; Brown 2010; Koedel et al. 2013; Grissom et al. 2013a; Grissom et al. 2013b) and are more knowledgeable about their retirement benefits (DeArmond and Goldhaber 2010) than their counterparts in the private sector.

[2] Evidence from Medicare on labor supply of older Americans is limited, likely in part due to the fact that it is difficult to disentangle the eligibility for Medicare from the eligibility for Social Security and other retirement contingent programs for which people become eligible at age 65. Some existing studies generally overcome this problem using identification assumptions based on functional form and find positive effects (Rust and Phelan, 1997; Johnson et al. 2003; French and Jones, 2008; Blau and Gilleskie, 2008). An exception is recent work by Coe et al. (2013) who use the decoupling of Medicare and Social Security eligibility that resulted from the increase in the full retirement age for collecting Social Security benefits in a differences-in-differences strategy. They find that Medicare eligibility increases retirement at age 65 by 2.6 percentage points. Similarly, Gruber and Madrian (1995) find that continuation-of-coverage mandates for employees ages 55 to 64 increase retirements.

More recently, two studies have focused specifically on the effects of retiree health insurance one the labor supply of public sector retirees. Leiserson (2013) uses administrative data on public bureaucrats in Pennsylvania to investigate how employee exit responds to retiree health insurance eligibility. He leverages both the inherent variation caused by standing eligibility requirements for pensions and the retiree health insurance program and a natural experiment caused by an increase in the service requirement for retiree health insurance eligibility (but not pension eligibility) from 15 to 20 years. Shoven and Slavov (2013) use data on all federal, state and local government employees from the Health and Retirement Study coupled with data on retiree health insurance availability and generosity to determine the effects of retiree health insurance on the labor supply of older workers, i.e. those between 58 and 64. Both studies find that the availability of health insurance that is not contingent on public sector employment increases the likelihood that employees will be either out of the labor force or at least no longer working at their public employer.

The current study contributes to this emerging literature because, as described below, I use administrative data on the single largest group of public sector workers, namely, teachers and other public school employees.[3] I also leverage a natural experiment different in nature than those used by Leiserson and Shoven and Slavov. Its counterfactual is a world without retiree health insurance in the public sector. Also, similar to the other studies, the nature of my data allow me to pay careful attention to other endogenous factors that may be driving retirement, e.g. pension eligibility and generosity. Moreover, the weakness of my study – my use of data and identifying variation from the early 1980s – does not plague the other studies. As such, the

[3] The BLS reports that in May of 2013, there were 19,100,000 state and local government workers, 53 percent of which were education related employees. http://www.bls.gov/news.release/empsit.t17.htm

findings of all three studies can be combined to more fully understand the relationship between retiree health insurance and public sector employee labor supply.

To be more specific, in this paper, I provide direct evidence about how public sector retiree health insurance availability affects the labor supply of public employees by examining the introduction of retiree health insurance for public school employees in Illinois. Today, former employees of Illinois Public Schools (IPS) who receive retirement benefits from the Illinois Teacher Retirement System (TRS) can participate in a health insurance plan called the Teachers Retirement Insurance Program. The state legislators introduced this retiree health insurance program for teachers and other public school employees, which I call TRHIP, in January of 1980 and permitted the first enrollments on July 1, 1980.[4] At the time, premiums for enrollees were 50 percent subsidized. In order to enroll, former IPS employees needed to be receiving retirement benefits from the TRS and have at least 8 years of creditable service with the TRS.

Using administrative data from IPS, I use a differences-in-differences framework to compare the labor supply of teachers old enough and with enough accumulated experience to be eligible for TRHIP to those who were ineligible (because they were too young or had too little experience to be eligible for retirement benefits and THRIP) just before and after the TRHIP was introduced. The identifying assumption is that there were no other policies or environmental factors that disproportionately affected the labor supply of teachers eligible for THRIP. Importantly, using historical TRS documents, I can confirm there were no concurrent policy

[4] The name Teachers Retirement Insurance Program was introduced in 1995 when the state created the Teachers' Health Insurance Security Fund as an agency (separate from the pension fund) responsible for collecting state, district and employee contributions, managing the investment of funds and providing payment for the healthcare received by members. Before that, the retiree health insurance program was managed by the TRS and generically called the retiree health insurance program. For consistency, and to distinguish it from the program available only after 1995, I will refer to the program as the TRHIP throughout the paper.

changes by the Illinois TRS related to either pension benefit size or eligibility. To further support the identification assumption, I examine pre-treatment trends in labor supply of the eligible and ineligible groups of public school employees and find no differences.

The main outcome of interest is the retirement from the IPS system. I find that eligibility for retirement-contingent health insurance induces a clear shift in the age profile of retirement for public school employees. Before retiree health insurance is introduced, the exit rate of employees from IPS is highest at age 65, when eligibility for Medicare begins. After TRHIP is introduced, the exit rate at age 65 decreases 40 percent, from 0.51 to 0.29. At the same time, exit rates when employees first become eligible for retirement benefits at age 55 were just 0.054 before the TRHIP was introduced. Afterwards, the exit rate at this age, which now determines not just eligibility for retirement benefits but also retiree health insurance, jumps to 0.098, an increase of 81 percent. Relatedly, while pension-eligibility decreases job-to-job transitions, retiree health insurance eligibility increases mobility to the point where eligible older works are no less likely than ineligible older workers to switch employers.

In Section II, I provide an overview of the Illinois teacher pension and retiree health insurance programs as they exist today, and their historical genesis. I describe the data in Section III and the empirical methodology in Section IV. I present results in Section V before concluding with a brief discussion in Section VI. Implications for employees and governments today are discussed, including how the current underfunding of both pension systems and retiree health care systems may be affected.

II. Illinois Teacher Retiree Health Insurance Program

Today, former employees of IPS who receive retirement benefits from the Illinois TRS can participate in a health insurance plan officially called the Teachers Retirement Insurance Program (TRIP). For retired employees enrolled in the managed care plan, the monthly premium is $203 if the retiree is under age 65 and $80.23 if the retiree is age 65 or older and enrolled in Medicare as the primary insurer. Premiums are higher in the alternative Teachers' Choice Health Plan. Notably, unlike Medicare, the TRHIP program covers dependents, though premiums for dependents are more expensive than premiums for retired employees. Currently, there is no annual or lifetime limit on the coverage in any plan offered by the Illinois TRHIP, making it more generous than Medicare. In the managed care program, there is no annual deductible, though there are copayments for certain services, e.g. $20 for a physician's visit. The out-of-pocket maximum is $3,000. The Teachers' Choice Health Plan has a $500 deductible, but only a $1,200 out-of-pocket maximum for in-network services.

As mentioned in the introduction, in order to enroll in the TRHIP, former IPS employees must be receiving retirement benefits from the TRS and have at least 8 years of creditable service with the TRS. Eligibility for retirement benefits from TRS is determined by an employee's age and years of creditable service in IPS.[5] An employee is eligible to receive a full retirement benefit when she is age 55 with at least 35 years of experience, age 60 with at least 10 years of experience, or age 62 with at least five years of experience. During the period studied, employees who had accumulated up to one-half a year of sick leave could count this as creditable service. Additionally, throughout this period, employees could retire at age 55 with just 20 years of experience and receive an actuarially discounted annuity.

[5] Creditable service can also be earned in Chicago Public Schools or other state employers that have reciprocal arrangements with IPS. Also, employees can pay a fee to have some service credited for time spent teaching in private schools, time in the military, maternity leave, etc.

The state legislators introduced the health insurance program for retired teachers in January of 1980. The first enrollments were on July 1, 1980. At the time, premiums for enrollees were 50 percent subsidized such that the annuitant's monthly premium cost was $81.70 for people under age 65 and $29.21 for people age 65 and older.[6] The annual deductible was $847 and $7,056 for people on Medicare and those under age 65, respectively. After this deductible was met, all allowable expenses were covered. Initially, and until 1995, the retiree health insurance program was part of the TRS, so the subsidy was financed by funds in the pension system, which were comprised of state appropriations, employee contributions and investment returns.

In the absence of retiree health insurance, the single largest insurance provider for public school retirees was Medicare. In 1980, Medicare consisted of hospital insurance and medical insurance.[7] For people ages 65 and older who have worked at least 10 years (40 quarters) in jobs that were subject to Medicare FICA taxes, Medicare hospital insurance is free, and was at the time of TRHIP introduction. The same is true if one's spouse worked at least 10 years in a job covered by Medicare taxes. IPS teachers did not pay Medicare taxes on their earnings until after 1986, and even then Medicare taxes were levied only on teachers newly hired by a district. Therefore, even once employees were 65, unless they were eligible for the free hospital insurance through their spouse's work credit, many IPS employees paid a hospital insurance premium. In 2012, the premium for the hospital insurance was scaled based on the amount of FICA covered work history; the highest premium was $451 per month. In addition, all Medicare

[6] Premiums and deductibles from 1980 have been converted to $2013. If retirees were Medicare eligible, the teacher retiree health insurance program only paid for the balance of covered expenses minus any Medicare coverage, regardless of the person's actual participation in Medicare.
[7] Medicare Advantage was introduced in 1997 and the prescription drug component of Medicare was passed into law in 2003.

enrollees pay a premium for the medical insurance coverage. In 2012, the base premium was $99.90 a month, but the premium increased with a beneficiary's earnings.

In contrast, IPS employees younger than age 65 would have had one of five options for obtaining health insurance. The first would be to remain employed and receive health insurance through an employer. Since all school districts provide employee health insurance and tenure rules protect the most senior teachers from termination of employment, continuing insurance coverage in this manner would have been at the discretion of the employee. A second way for IPS employees to obtain health insurance was through their spouse. Given that, during the period studied, most of the employees in my sample were female and likely secondary breadwinners, this may have been a viable alternative to continued employment until Medicare eligibility. Third, it may have been the case that individual school districts allowed former employees to continue participation in the district's employee health insurance plan after leaving employment with the district. Fourth, retiring employees could have purchased their own health insurance, either through COBRA or the private market. Finally, Medicare ineligible retirees could have gone without any health insurance.

Unfortunately, available data do not allow me to say much about the pre-THRIP insurance coverage of IPS workers.[8] However, some evidence can be gleaned from the pre-TRHIP retirement behavior of IPS employees. In Panel 1 of Figure 1, I plot retirement rates of IPS employees by age from the period before the TRHIP became available (1971 to 1979, the dashed blue line). There are noticeable increases in retirement behavior that correspond to the eligibility for pension benefits that some employees obtain at age 55 and age 60. But, by far the

[8] At the time of introducing the retiree health insurance program, the TRS conducted a survey of a randomly selected subset of its members to gather information about their insurance coverage that could be used in shaping the policy offered by TRS. Unfortunately, according to correspondence with TRS representatives, the results of this survey cannot be found.

most notable spike in the retirement of IPS employees occurs at age 65 and 66.[9] In fact, the retirement rate at age 65 is at least twice as large as the retirement rate for employees of any other age before age 65. Based on this figure, it is clear that eligibility for Medicare is a strong factor determining retirement behavior before retiree health insurance is introduced.

Additional evidence comes from tabulations of health insurance coverage reported in the Current Population Survey. In Figure 2, I present information about the fraction of teachers in Illinois who obtained health insurance coverage through their employer. I report this information for the period from 1980 to 1985 separately for teachers ages 40 to 54 and 55 or older.[10] Over this period, nearly all people aged 40 to 54 in Illinois who classify themselves as teachers were covered by group health insurance from their employer, former employer or spousal employment. The same is true for teachers ages 55 and older in 1982 onwards. However, in 1980 and 1981, just 50 to 60 percent of the retirement eligible teachers (those ages 55 and older) are covered by employer or spousal health insurance. Unfortunately, this evidence is limited in scope because of small sample sizes, ambiguity of survey questions and changes in survey wording over time, but it provides a hint that retiree health insurance increased coverage available to retired teachers. [11]

III. Data

[9] Age is recorded only in years (rather than exact date of birth). This means some employees appear to retire at an age a year older than they truly do.
[10] Unfortunately, the survey only began including questions about health insurance in 1980.
[11] For example, in 1986 all teachers in Illinois ages 65 and older are classified as enrolled in Medicare, while before 65, there is variation in the fraction of these teachers reporting Medicare enrollment. This suggests the Census changed either the wording of the question or the nature of the coding in 1986, perhaps to classify all people with Medicare and group coverage as covered by Medicare. This is one reason I limit this exploratory analysis to the period before 1986.

The main sources of data are IPS administrative files called the Teacher Service Record (TSR) for 1970-1971 to 1991-1992 school years.[12] (For the rest of the paper, I will refer to school-years by their spring year.) Each observation in the data contains information about an employee's service in a particular year including her experience, salary, position (teacher, principal, etc.) and main assignment (math, reading, special education, etc.) at a school. I omit the 3 percent of employees who work at vocational schools, schools in prisons, special education cooperatives, etc. Employee records for Chicago are only available beginning in 1979, so I drop employees of Chicago public schools from the analysis. Therefore, my results may not be representative of employees of public schools in extremely large cities.

An employee is eligible for the retiree health insurance with TRHIP when she leaves employment in IPS and begins collecting retirement benefits. The focus here is the effect this eligibility for retiree health insurance has on employee labor supply, namely on an employees' decision to stop working in IPS. Therefore, I use termination of employment with IPS as the dependent variable. In other words, the dependent variable is a dichotomous variable equal to one if the employee permanently discontinues employment with IPS after year t and 0 otherwise. I refer to this exit behavior as retirement, though it may not be synonymous with complete exit of the labor force if public school employees become employed elsewhere, e.g. the private sector, after discontinuing employment with IPS.

Other covariates of interest include years of experience, educational attainment, position (or title) and main employee assignment. For an employee's years of experience, I use only the years of service accrued in IPS, which does not include service in public schools that are outside

[12] The TSR continues collecting data after 1992, which is what allows me to define exit between 1992 and 1993. I use only the data from 1971 to 1992 because a large early retirement incentive for employees of the IPS was introduced in 1993 and led to a large number of retirements.

of Illinois or reciprocal service earned in other Illinois public employee retirement systems or private schools. While the former does not count as creditable service in the TRS system, the latter does. Not observing this information means there is measurement error in my controls for pension and TRHIP eligibility. To the extent that accrued experience in IPS does not capture the full credited experience with TRS, I will be underestimating some employees' creditable experience.[13] As such, I will be classifying some employees as ineligible who are actually eligible. This will lead me to underestimate the effects of both pension and TRHIP eligibility.

Educational attainment falls into one of four mutually exclusive categories: Bachelors degree, Masters degree, Doctorate, or other (including RN degrees and special certificates). I group employees into nine distinct position categories: superintendent, principal, dean, administrative staff, teacher, special education teacher or specialist, health related staff, other staff, and final category for those employees whose position information is missing in the data. I group teaching assignment categories in the following way: English as a second language, foreign languages, sciences, reading, social sciences, math, teachers in self-contained classrooms, other assignments, and a final category for employees whose assignment is unknown or missing in the data. Finally, I also include a measure of the employee's annual salary in IPS, which I convert to $2012.

To the TSR administrative files, I add information on the age of employees from administrative files obtained from the TRS.[14] Unfortunately, the two systems do not have a common identifier. However, both systems do record information on an employee's name, years of service and most recent employer. As such, I can use this information to match across the two

[13] Using data on a subset of TRS members, I found that 28 percent had some additional purchased or reciprocal service. The average amount of additional service among purchasers was 3.6 years.
[14] For the sake of simplicity of presentation, I top-code age at 75.

datasets. This match is imperfect for three reasons. First, many employees who do not vest are not included in the TRS files. Therefore, I am less likely to find age information for employees with very few years of service in IPS. Second, employees with work experience at another public employer in the state that has a reciprocal arrangement with IPS, e.g. the Chicago Teacher Pension Fund, can choose to retire in the other system and have their IPS service count towards calculation of their retirement benefit. The employees that do this are those with the majority of their years of service with another employer and so are also disproportionately those with little experience in IPS. Finally, the match based on name does not work well for employees who change their name, e.g. when they marry.

Using the information available, I am unable to find age information for 23 percent of observations or 102, 221 employees. The majority of the unmatched employees, 88 percent, are those that accrue 5 years of experience or less. I assign unmatched employees the modal age of other employees who have the same amount of service accrued and the same first year of employment as other employees in their county. To be clear, this will lead to measurement error. Because the employees with imputed age information are disproportionately those with the least amount of experience and among those with observable age information the employees with the least amount of experience are more likely to be beginning career employees, the procedure systematically assigns relatively young ages to those observations with missing age information. As such, some teachers who are retirement benefit and TRHIP eligible in my data will not appear to be so, which should attenuate the estimated effects of these programs.

Notably, although pension-eligible individuals are less likely to have imputed age information for the reasons just described, the pension- and TRHIP-eligible are no more or less likely to have imputed age information than employees who are only pension-eligible. In other

words, the probability of missing age information is not correlated with the timing of retiree health insurance introduction. To be sure the results are not sensitive to the imputation of missing age information, in Section V, I also conduct the analysis using only data for which true age information is available and only data on employees with at least 6 years of experience. The results change little with these alternative samples.

In Table 1, I present summary statistic information for the 2,129,191 IPS employee-year observations in the data. Seven percent of employees leave IPS each year, on average. The average age over the period from 1971 to 1992 was 39. The mean experience in IPS of the employees in my sample is 12 years and the average salary is $55,709. Fifty-six percent of employees hold Bachelor's degrees and 43 percent Master's degrees. The remaining employees are about equally likely to either hold a doctorate or some other degree. The vast majority of the employees in the sample are teachers (77 percent) or special education teachers and specialists (9 percent). Five percent are superintendents, principals or deans. Another 9 percent of employees are staff. The assignments of teachers are also detailed in the table. Self-contained teachers comprise one quarter of the sample, and math and reading teachers are another 13 percent. The 19 percent of the sample that has an unknown main assignment classification is largely made up of administrators and staff without instructional duties.

IV. Difference-In-Differences Strategy

In order to identify the effects of availability of retiree health insurance on the labor supply of experienced public employees, I make use of the fact that the eligibility for TRHIP was determined by an employee's age and experience. Note that this is true for two reasons. First, in order to collect the retiree health insurance an employee must be collecting a pension benefit

from TRS and pension-benefit-eligibility is determined only by age and years of service. Second, even among the pension eligible, those with 8 years of service or more are explicitly eligible for retiree health insurance, while those with less than 8 years of experience are not. Therefore, I use a difference-in-differences strategy that compares exit behavior of pension-eligible employees with at least 8 years of service before and after they were also eligible for TRHIP to that of observationally equivalent employees with less than 8 years of service before and after TRHIP introduction.

The value of TRHIP is determined by the availability of alternative forms of insurance, most notably Medicare, and eligibility for Medicare is determined by age. In the pre-TRHIP period, if an employee did not have access to insurance through her spouse or to retiree insurance through her school district of employment, waiting until age 65 to retire allowed employees to avoid paying the high costs of privately insuring themselves or forgoing insurance. After TRHIP introduction, there was no longer a need to delay retirement until age 65 for the sake of insurance alone. Instead, employees were eligible for retiree health insurance any time after they reached age 55 and met the requirements for pension benefit collection. Therefore, I examine how the effects of TRHIP introduction on retirement behavior vary by the age of employees.

To determine the effects of TRHIP on public employee retirement, I estimate the following equation, equation (1):

$$Y_{idt} = \alpha + \sum_{age} \pi^{age} Eligible_{idt} + \sum_{age} \beta^{age} EligibleXPost_{idt} + \gamma X_{idt} + \delta^{exp} + \varphi^{age} + \theta_{dt} + \varepsilon_{idt} .$$

The outcome measure, Y_{idt}, is a dichotomous variable with a value of one if the teacher i in district *d* exits IPS after school-year *t* and zero otherwise. The vector X includes measures of teacher and district characteristics that vary over time, including measures of employee's educational attainment, position in the school (e.g. principal, teacher, staff, etc.), subject matter

of specialization, and salary as described in the previous section. There is a full set of district-by-year fixed effects, θ_{dt}, which capture any district-year-specific shocks to employee labor supply across districts, such as those resulting from changing macroeconomic conditions. Standard errors are clustered at the experience-level to account for any serial correlation in the error terms within employees of similar experience.[15]

The variable $Eligible_{idt}$ is a dummy variable indicating that teacher *i* employed at district *d* is eligible for a full retirement benefits and has at least 8 years of service in year *t*. The variable $EligibleXPost_{idt}$ is a dummy variable indicating that teacher *i* employed at district *d* is eligible for full retirement benefits has at least 8 years of service in year *t* and that the observation occurs after TRHIP was introduced, i.e. post-1979. Both of these variables measuring eligibility for TRHIP are interacted with age-category or age-specific fixed effects (depending on the specification) allowing me to obtain coefficient estimates of the age-related effects of full-retirement-benefit-eligibility and THRIP-eligibility on retirement behavior, π^{age} and β^{age} , respectively. The model also includes age fixed effects. Therefore, the effects of pension-eligibility on the retirement of employees by age, π^{age}, are identified by the differences in retirement behavior across individuals of the different ages who have the same amounts of accrued service, e.g. the 59 year old with 30 years of experience who is ineligible as compared to the 60 year old with 30 years of experience who is eligible. (Recall that I have also included experience fixed effects, thereby controlling for average differences in retirement propensity throughout the career-cycle.) The effects of retiree health insurance eligibility, β^{age} , are identified off of differences between the retirement behavior of different age employees with the same experience levels before and after July 1980, the point when TRHIP was introduced. The

[15] I have also conducted the analyses with standard errors clustered at the level of employees' age or at the district level. The results are similar to those reported and available from the author upon request.

underlying assumption in using this identification strategy is that there were no other concurrent policy or environmental changes that would have affected pension-eligible employees with at least 8 years of service differently than other ineligible employees of the similar age and experience.

One limitation of much of the existing literature is the lack of data or identifying variation that allows for distinction between eligibility for retiree health insurance and eligibility for pension benefits. During the time period I study, the eligibility for and generosity of full-pension-benefits did not change. As such, the employees in the pre-period that I classify as those who would have been eligible for the TRHIP had it existed are those eligible for full pension benefits.[16] Comparing their retirement behavior to the behavior of full-pension and TRHIP eligible employees in the post-TRHIP introduction period allows me to disentangle the effects of pension benefit eligibility from TRHIP eligibility. The fact that the TRHIP was a newly introduced program means the counterfacutal in this setting is a world with pensions, but no insurance. Therefore, the effects of TRHIP I estimate may not be the same as introducing TRHIP for people who are not pension-eligible.

V. Effects of Retiree Health Insurance Availability on Retirement Behavior

V.i. Graphical Evidence

Before turning to the difference-in-difference estimates of the effects of TRHIP on employee exit, it is helpful to look at the raw data for evidence of an effect. As described, in Panel A of Figure 1 the dashed line presents information on the retirement rates of public school employees by age before retiree health insurance was provided by the state. There are local

[16] Note that while, by definition, all employees eligible for TRHIP are also eligible for pension benefits, not all employees eligible for pension benefits are eligible for TRHIP. Specifically, a former IPS employee with between 5 and 7 years of service is eligible for a retirement benefit, but cannot participate in the retiree health insurance program.

peaks at the places where pension eligibility broadens, ages 55 and 60, and a rather large global peak in retirement rates at age 65 and 66, when an employee becomes eligible for Medicare.

The solid line in the figure traces retirement rates for public school employees by age in the period after TRHIP is introduced. Notice that the retirement rate increases at the age when employees first become eligible for either retiree health insurance or a pension, i.e. age 55, but the rate of retirement at age 65 decreases significantly. This is suggestive that public school employees change their labor supply decisions in response to the availability of retiree health insurance by retiring earlier than they otherwise would have. Employees whose labor supply is elastic with respect to the availability of retiree health insurance retire when it becomes available to them, e.g. at age 55 if they have accrued enough experience. The retirement rates at older ages are no longer as sensitive to the Medicare eligibility because only those employees who have a strong attachment to the labor force (and whose labor supply is therefore less responsive to health insurance availability) remain employed until reaching these older ages.

Because TRHIP was introduced at a point in time, not for a particular cohort, many public school employees may not have been eligible for TRHIP at the same time they became eligible for their pension. This is because many employees may have already passed the age and years-of-service combination when they first became eligible for a pension before 1980. (For example, consider the 60 year old person with 12 years of experience in 1978.) For these constrained employees, the shifting forward of retirement rates with retiree health insurance eligibility in Figure 1 will be an underestimate of the true shift in retirement rates had they always had access to retiree health insurance.

Therefore, in Figure 1, Panel B, I plot exit rates of three groups of employees by their age in 1980. First is the solid line, indicating the retirement rates of employees by age before the TRHIP is introduced. (This is the same as the dashed blue line in Panel A.) Second, I have split the retirement rates after the program into two groups: those who were ages 54 and younger before TRHIP was introduced (and could therefore completely adjust their retirement decision to its availability) and those who were 55 or older when TRHIP was introduced (and may therefore have been limited in terms of their behavioral adjustment). The line with smaller dashes traces exit rates of the former, and the line with longer dashes traces those for the latter. As would be expected, the retirement of employees who are younger when the program is introduced has

more time to adjust and there is a larger response (i.e. smoothing) of their labor supply across ages.

V.ii. Difference-in-Difference Estimates

As indicated in the descriptive tabulations of exit rates with age before and after TRHIP presented in Figure 1, the difference-in-difference estimates also show that exit of public school employees is responsive to the incentives of both the pension and retiree health insurance systems. This can been seen in Table 2, where I report the difference-in-difference estimates of the effects of pension-eligibility and TRHIP-eligibility for different age groups. Here, I have separately estimated the effects of eligibility for employees who are 55 to 59, 60 to 64, and 65 and older.[17] Across the four columns in the table, estimates are reported for specifications that include different sets of fixed effects. In the first column, the model includes only year, age and years-of-service fixed effects. In the second and third columns, I add first age-by-year and then years-of-service-by-year fixed effects. Finally, in the fourth column, I include both age-by-year and then years-of-service-by-year fixed effects.

Looking across the columns in the table, a few patterns emerge. First, public school employees' retirement is responsive to the nonlinearities in their pension-benefit-accrual formula. For example, employees ages 60 to 64 who are pension-eligible are 7 percentage points more likely to retire than 60 to 64 year olds who are not pension-eligible. Given that the exit rate of 60 to 64 year olds who are pension ineligible is 0.14, this represents a 50 percent increase. Somewhat surprisingly, the 55 to 59 year olds who are pension-eligible are slightly less likely than their pension ineligible counterparts to exit. Given that this group has accumulated a large amount of experience at a young age, they likely have strong labor force attachment. However, this estimate becomes closer to zero and is not consistently statistically significant across the specifications, indicating that the effects of pension eligibility are negligible for this group. Perhaps this is due to the fact that so few 55 to 59 year olds have obtained the 35 years of experience necessary to be eligible for a full pension, rendering it hard to identify an effect.

[17] The relevant rules governing eligibility could allow for meaningful differences in retirement behavior at the following ages: 55, 60 and 62 (because of the rules determining eligibility for full pension benefits) and 65 (because of eligibility for Medicare). In the data, there is little difference in retirement propensities for people ages 60-61 and those ages 62-64, so I group these ages together. Later, I present age-specific effects.

At the same time, pension-eligible employees who are 65 or older, and therefore eligible for Medicare, are 29 percentage points more likely to exit than employees their age who are pension ineligible.[18] Since there is no discrete change in pension-eligibility at age 65, the increased likelihood of retirement for those 65 and older can be attributed entirely to their eligibility for Medicare. Clearly, health insurance eligibility was a key factor in the retirement decisions of public school employees even before their employer offered a retiree health insurance program.

Turning to the effects of TRHIP-eligibility, the coefficient estimates of the effect for 55 to 59 year olds is positive, but not consistently statistically significant across the specifications reported in Table 2. The coefficient estimates of the effect of TRHIP-eligibility on the retirement of 60 to 64 year olds is quite close to zero and rarely statistically significant. The employees most affected by the introduction of TRHIP were those ages 65 and older who were pension eligible. For these employees, TRHIP-eligibility results in a 22 percentage point decrease in the propensity to retire. Recall that employees 65 and older who are pension-eligible are 29 percentage points more likely to retire than those who are pension-ineligible. The combination of eligibility for both pension benefits and health insurance before age 65 renders 65 a less salient age for retirement, which can be seen from the fact that the eligible employees of this age are just as likely as their same-age counterparts who are ineligible for either pension or retiree health insurance benefits to retire. Said differently, once TRHIP is introduced, pension-eligible employees are much less likely to wait until after age 65 to retire.[19]

V.iii. Estimated Effects of TRHIP Using Different Samples

There may be concern that early career employees do not make the best comparison group for employees that are further into their careers. For one thing, last-in-first-out rules make it likely that any cyclical variation in labor supply will necessarily disproportionately affect teachers with limited experience. Moreover, the labor supply patterns of women have changed greatly over the last 50 years such that the employment decisions of 30 year olds in 1980 may

[18] Notably, pension ineligible 65 year olds are 8 percentage points more likely than pension ineligible 64 year olds to exit. This is calculated as the difference between the estimates of the age-specific fixed effects for 64 and 65 year olds from the specification in Column 1 of Table 2.

[19] The importance of age 65 for pension ineligible employees remains the same before and after TRHIP introduction, as indicated by little change in the difference between the estimates of age-specific fixed effects for 64 and 65 year olds over time. Results not reported here, but available from the author upon request.

not adequately compare to those aged 50 at the same time even if the two groups have similar public school experience profiles. Although the age, experience, age-by-year and experience-by-year fixed effects included in previous specifications used should help control for these types of differences, for even more evidence that these effects are not driven by spurious relationships between age or experience and exit decisions, I now estimate the effects of the program using more tightly defined comparison groups.

First, in Table 3, I use only observations for public school employees ages 50 and older. Then, in Table 4, I include only observations for employees with at least 6 years of employment in IPS. The format of these tables is identical to that of Table 2. Notably, the pattern and size of the estimates is nearly identical to the pattern and size of the estimates in Table 2 as well. All of the estimates in Tables 2, 3 and 4 are statistically indistinguishable from one another (i.e. their 95 percent confidence intervals overlap). This instills confidence that the estimated effects of pension- and TRHIP-eligibility are not generated by the choice of sample. Furthermore, since most of the employees missing age information have less than 6 years of service, the similarity of results in Tables 2 and 4 instills confidence that the age-imputation algorithm is not driving my results.

To be even more assured that the age-imputation algorithm is not driving my results, in Table 5, I present estimates where I limit the analysis sample to those public school employees for whom age information is available (and not imputed). Here again, the estimated relationships between pension and TRHIP eligibility across all three age groups are statistically indistinguishable from those when I use the entire sample of employees. Across all of the specifications and all of the samples used, it is clear that TRHIP-eligibility decreases the propensity of teachers to retire at age 65.

V.iv. Age-specific Estimates of the Effects of Retiree Health Insurance

Thus far, when investigating the effects of pension- and TRHIP-eligibility, I have focused on three age groups: employees ages 55 to 59, 60 to 64 and 65 or older. It may be the case, however, that within these age ranges there are differential responses to the offer of a pension or retiree health insurance, in part because the eligibility for these programs changes with age. To determine if this is the case, I estimate equation (1) with year-of-age-specific fixed effects in place of the age-group fixed effects. The results of this estimation are presented in Figure 3. For

simplicity, I have plotted only the coefficient estimates of the responsiveness of employee exit to pension eligibility (solid black line) and to the eligibility for TRHIP and a pension (dashed grey line), by age. The asterisks next to each age indicate whether the coefficient estimate for the effect of TRHIP-eligibility, that is the vertical difference between the two lines, is statistically different from zero.

The results in the figure confirm the descriptive information provided in Figure 1. Most strikingly, there is a large statistically significant difference between the retirement rates of employees over age 65 who are eligible for either pensions and TRHIP or pensions alone. There is also a small, but statistically significant, increase in retirement at ages 55 and 56 because of the TRHIP eligibility. From this evidence, we can conclude that employees are shifting their retirement forward in their careers based on their eligibility for health insurance that is not contingent on their employment.

V.v. Event Study-Style Estimates of the Effects of Retiree Health Insurance

The difference-in-difference estimates show that the retirement of public school employees is sensitive to their retiree health insurance eligibility. The underlying assumption with the identification strategy used is that there were no other changes to the pension system or other relevant factors that would have affected the retirement behavior of eligible employees differently than that of ineligible employees. To find support for this assumption, I estimate equation (1) using the measure of pension-eligibility interacted with dummy variables for each year relative to TRHIP introduction. These eligibility related distributed leads and lags are then interacted with age-specific fixed effects to determine if there is any time-pattern to the retirement of pension-eligible employees of each age that predates the introduction of TRHIP.

The results of this event-study-style analysis are presented in Figure 3. For the sake of brevity, I present only the estimates for employees ages 55, 65 and 75 in Panels A, B and C, respectively. In each figure, the coefficient estimates are delineated with a solid line and the 95 percent confidence intervals are indicated with the dashed lines. The estimates in Panel A suggest that there were neither pretreatment trends nor TRHIP-related changes in the retirement behavior of pension-eligible 55 year olds. Generally, the retirement rates of pension-eligible 55 year olds are similar to that of pension-ineligible 55 year olds.

In Panel B, the elevated exit rates for pension-eligible 65 year olds before TRHIP was introduced are evident from the statistically significant pre-treatment coefficient estimates that hover between 20 and 40 percentage points. Importantly, although there is a difference in the level, there is no pre-treatment trend in the retirement rate of pension-eligible 65 year olds evident in the Figure. After TRHIP was introduced, the exit rates of pension-eligible employees aged 65 begins to trend downwards, though not for a couple of years. This delay is likely due to the fact that employees had been optimizing before TRHIP was introduced and therefore may have found it difficult to immediately adjust. For example, consider an employee who was 64 in the year TRHIP insurance was introduced. If she had been planning to retire at 65, the year after TRHIP was introduced, she is likely to still do so.

Finally, the retirement rates of pension-eligible 75 year olds are also elevated in the pre-TRHIP period. On average they are approximately 30 percentage points more likely to retire than their ineligible counterparts, though it should be noted that there are very few pension-ineligible 75 year olds, which makes the estimates in Panel C noisy. As in the previous panels, the estimates in Panel C show no evidence of a trend in exit rates of pension-eligible employees relative to their pension-ineligible counterparts that pre-dates the TRHIP introduction. The evidence in these figures supports the underlying assumption in my use of a differences-in-differences framework to estimate the effects of retiree health insurance availability on employee exit.

V.vi. Effects of Retiree Health Insurance on the Labor Supply of Working Employees

By breaking the link between a particular job and the future health insurance benefits it promises, the introduction of retiree health insurance for all public school employees may free employees to search for alternative employers who will provide better benefits to current employees. To see if this is the case, in Table 6, I present difference-in-difference estimates of the effects of TRHIP on employee movement across districts. Here, the dependent variable takes on a value of one if the employee moves from one district to another in the following year and zero otherwise. Notice from the results in the table that pension eligibility reduces turnover, which may be driven by pension-eligible workers who are unsatisfied at their positions being able to retire with a pension rather than move across districts. TRHIP-eligibility, on the other hand, increases the likelihood that older employees find jobs with another district. The increased

mobility may be driven by a desire to increase salary, which will factor into the generosity of the pension benefit, or by a desire to find more pleasant working conditions.

In results not reported here, I also examine the effects of pension- and retiree health insurance-eligibility on the propensity of older workers to be employed part-time within the IPS system. The estimated relationship between pension-eligibility and part-time work is small in magnitude and not statistically significant for any of the three age groups. This is also true of the estimated relationship between retiree health insurance-eligibility and part-time work for the two older groups. However, 55 to 59 year olds are 25 percent less likely to work part-time if they are eligible for retiree health insurance. Since there are rules restricting part-time work while a former employee collects retirement benefits, perhaps the availability of retirement-contingent health insurance induces these younger eligible workers to retire rather than work part-time. Of interest for future research is whether employees who retire from IPS continue working either full- or part-time in the private sector, a question that is not answerable with the current data.

VI. Conclusion

The evidence presented above shows that the labor supply of public school employees in Illinois was responsive to the introduction of a retiree health insurance program. Most notably, the retiree health insurance program served to move forward the timing of job separations for older workers. Although still a salient age for retirement, after retiree health insurance becomes available, many fewer employees wait until age 65 to retire, likely because of the availability of non-employment-contingent insurance at an earlier age. Similarly, retiree health insurance leads more employees retire at the earliest age at which they gain eligibility for retiree health insurance. Meanwhile, there is evidence that employee mobility increases because of retiree health insurance availability, particularly the mobility of the most senior public school employees.

The sensitivity of the retirement behavior of older teachers to the provision of retiree health insurance has many implications for public school employees and government funding. First, the retiree health insurance programs have an effect on the pension funding since workers with retiree health insurance are retiring earlier and therefore likely receive lower benefits but for a longer period of time than they otherwise would have in the absence of retiree health insurance. In the IPS setting studied here, older employees (those 50 or older) retire about two years earlier

when retiree health insurance is offered than they did before the insurance. This leads them to retire with a salary that is about $1,000 lower and to an overall present discounted value savings to the pension fund of about $800.[20]

Second, because retiree health insurance programs in the public sector usually are not constitutionally protected in the same way pensions are, the programs may become less generous, be dissolved, or be replaced by other forms of insurance. If either happens, the labor supply of older public school employees will be affected. This will have productivity effects that will depend on the quality of older versus younger employees.[21] In addition, it will have effects on local and state budgets due to changes in both the wage bill and pension bills for public employees. The effects of changes in retiree health insurance will depend on the counterfactual environment, which, due to changes embedded in the Affordable Care Act, is likely to be different in the future than it is now or was in the early 1980s. Regardless, there are likely to be some labor supply effects of changing public sector employee access to retiree health insurance that will in turn have effects on public sector budgets and liability funding.[22]

[20] Based on calculations using average real salaries in the data, a three percent discount rate and a known date of death at age 86.

[21] The question of the relative quality of senior- versus early-career teachers is an open question in the literature (Wiswall, 2011; Rivkin, Hanushek and Kain, 2005; Rockoff, 2004).

[22] Specifically, even without employer provided retiree health insurance, many public sector retirees will be able to purchase health insurance at full-price in the health care exchange markets. Since these markets will be priced based on the participation of both young, relatively inexpensive to insure and older, more costly to insure people, the market prices for insurance will be lower than if purchased on the current private market. However, even before retiree health insurance was introduced, many public school teachers had the option to purchase insurance through their former employer, pricing in which is akin to the pricing in the mixed market exchanges.

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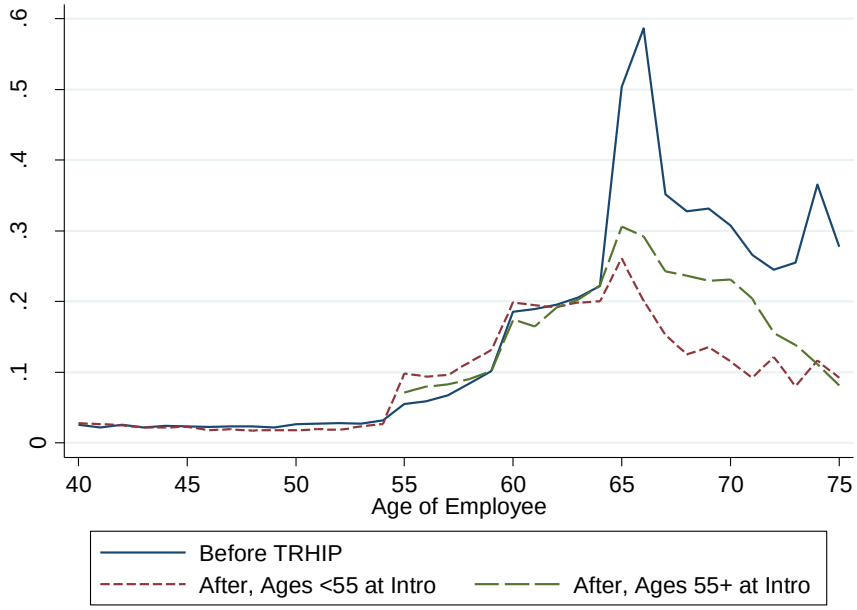
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Figure 1. Retirement Rates of IPS Employees by Age and Existence of TRHIP

Panel A.

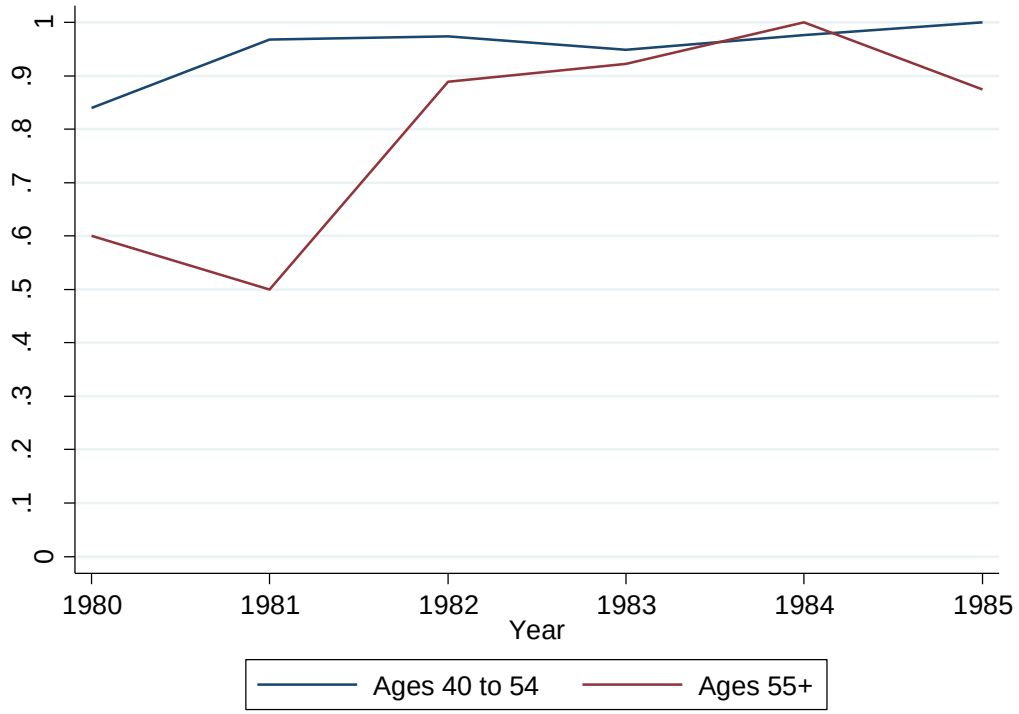


Panel B.



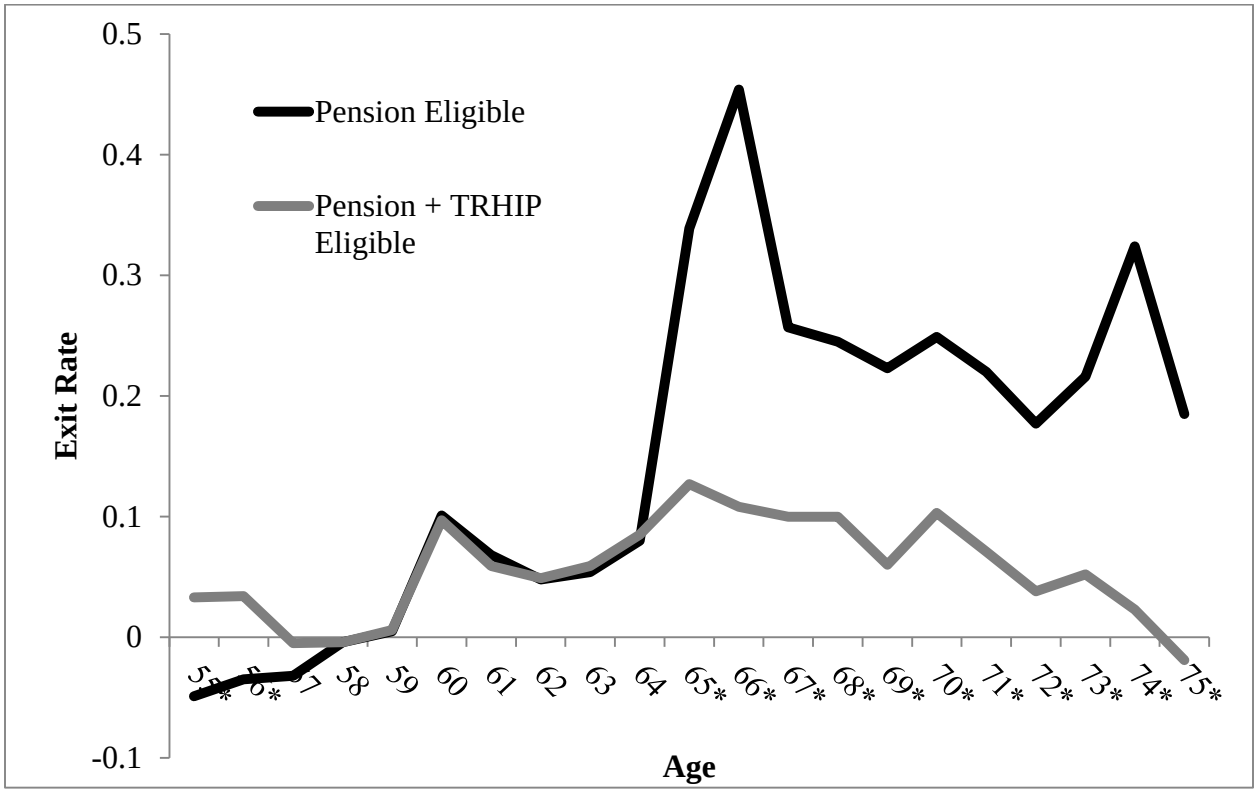
Note: Based on author's calculations using TRS and TSR data on employees of IPS schools from 1971 to 1992. The 'before TRHIP' period covers 1971 to 1979 and the 'after THRIP' period covers 1980 to 1992. Only employees ages 40 and older are included in the calculation of exit rates. The exit rate plotted on the vertical axis represents the rate at which employees of each age leave the sample between school year t and t+1.

Figure 2. Group Insurance Coverage Rates for Illinois Teachers, 1980-1985, by Age, from the Current Population Survey



Notes: Based on the author's calculations using the Current Population Survey, 1980-1985.

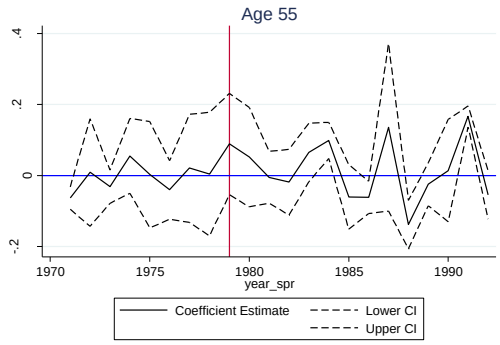
Figure 3. Estimates of the Effects of TRHIP across Employees of Different Ages



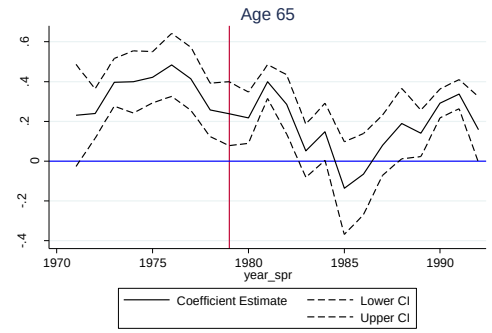
Note: Based on author's calculations using TRS and TSR data on employees of IPS schools from 1971 to 1992. The 'before TRHIP' period covers 1971 to 1979 and the 'after THRIP' period covers 1980 to 1992. Only employees ages 40 and older are included in the calculation of exit rates. The exit rate plotted on the vertical axis represents the rate at which employees of each age leave the sample between school year t and t+1. The solid black line presents difference-in-difference estimates of the effects of pension eligibility at each age on the horizontal axis from a specification that includes age-by-year, experience-by-year and district fixed effects, as well as other available information on employee characteristics. The solid grey line presents age-specific difference-in-difference estimates of the effects of retiree health insurance eligibility on retirement rates from the same specification.

Figure 4. Estimates of the Event Study Estimates of the Effects of TRHIP on Teacher Exit

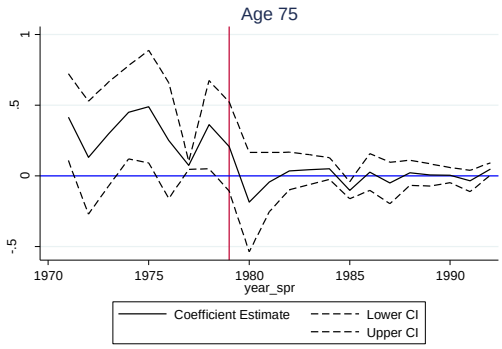
Panel A. Age 55



Panel B. Age 65



Panel C. Age 75



Note: Based on author's calculations using TRS and TSR data on employees of IPS schools or older from 1971 to 1992. The vertical line represents the last period before TRHIP introduction. Only employees ages 50 and older are included in the calculation of exit rates. The exit rate plotted on the vertical axis represents the rate at which employees of each age leave the sample between school year t and t+1. Coefficients and confidence intervals plotted are from an event-style model where eligibility for pensions and retiree health insurance is interacted with age-by-year specific dummies. Also included in the specifications are experience-by-year and district fixed effects, as well as controls for employee characteristics.

Table 1. Descriptive Characteristics of IPS Employees

	Mean	Standard Deviation
Exit	0.071	0.256
Age	39	11
Experience	12	8
Salary (thousands $2013)	55.709	18.789
Other Degree	0.008	0.089
BA Degree	0.555	0.497
MA Degree	0.427	0.495
PhD Degree	0.010	0.101
Position Held by Employee		
Superintendents	0.015	0.121
Principals	0.037	0.188
Deans	0.003	0.058
Administrative Staff	0.009	0.094
Teachers	0.766	0.424
Special Education Position	0.089	0.285
Health Staff	0.041	0.198
Other Staff	0.040	0.196
Main Assignment of Teachers		
ESL	0.003	0.056
Foreign Language	0.019	0.135
Science	0.047	0.211
Reading	0.092	0.289
Social Science	0.023	0.151
Math	0.044	0.206
Self-Contained Classroom	0.250	0.433
Other	0.331	0.471
Unknown	0.191	0.393
Number of Observations	2,129,191	

Note: Based on author's calculations using TRS and TSR data on employees of IPS schools from 1971 to 1992.

Table 2. Difference-in-Difference Estimates of the Effects of TRHIP on IPS Employee Retirement

	(1)	(2)	(3)	(4)
Pension Eligibility, Ages 55 to 59	-0.041**	-0.018	-0.023	-0.009
	(0.015)	(0.016)	(0.016)	(0.017)
Pension Eligibility, Ages 60 to 64	0.069***	0.067***	0.074***	0.068***
	(0.007)	(0.007)	(0.007)	(0.006)
Pension Eligibility, Ages 65+	0.291***	0.288***	0.296***	0.287***
	(0.017)	(0.019)	(0.018)	(0.019)
TRHIP Eligibility, Ages 55 to 59	0.063***	0.029**	0.037***	0.014
	(0.011)	(0.011)	(0.012)	(0.012)
TRHIP Eligibility, Ages 60 to 64	0.008	0.013*	0.000	0.011
	(0.005)	(0.007)	(0.004)	(0.008)
TRHIP Eligibility, Ages 65+	-0.218***	-0.223***	-0.227***	-0.223***
	(0.011)	(0.017)	(0.011)	(0.018)
Age FE	Y	Y	Y	Y
Experience FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Age x Year FE		Y		Y
Experience by Year FE			Y	Y
Number of Observations	2,129,191			

Note: Based on author's calculations using TRS and TSR data on employees of IPS schools from 1971 to 1992. Estimates presented are from a differences-in-differences specification in which eligibility for pensions and retiree health insurance are interacted with age-group fixed effects. The specification includes controls for employee characteristics and district fixed effects as well as the other fixed effects indicated by the column notes.

Table 3. Difference-in-Difference Estimates of the Effects of TRHIP on IPS Employee Retirement, for Employees Ages 50 and Older

	(1)	(2)	(3)	(4)
Pension Eligibility, Ages 55 to 59	-0.023	-0.009	-0.005	0.007
	(0.016)	(0.016)	(0.016)	(0.017)
Pension Eligibility, Ages 60 to 64	0.086***	0.080***	0.090***	0.085***
	(0.009)	(0.008)	(0.009)	(0.009)
Pension Eligibility, Ages 65+	0.320***	0.309***	0.324***	0.313***
	(0.021)	(0.022)	(0.021)	(0.023)
TRHIP Eligibility, Ages 55 to 59	0.051***	0.028**	0.022*	0.004
	(0.011)	(0.012)	(0.012)	(0.012)
TRHIP Eligibility, Ages 60 to 64	-0.004	0.009	-0.011**	-0.000
	(0.005)	(0.007)	(0.004)	(0.007)
TRHIP Eligibility, Ages 65+	-0.231***	-0.225***	-0.239***	-0.233***
	(0.011)	(0.017)	(0.012)	(0.019)
Age FE	Y	Y	Y	Y
Experience FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Age x Year FE		Y		Y
Experience by Year FE			Y	Y
Number of Observations		424,010		

Note: Based on author's calculations using TRS and TSR data on employees of IPS schools from 1971 to 1992. Only employees ages 50 an older are included in the analysis sample. Estimates presented are from a differences-in-differences specification in which eligibility for pensions and retiree health insurance are interacted with age-group fixed effects. The specification includes controls for employee characteristics and district fixed effects as well as the other fixed effects indicated by the column notes.

Table 4. Difference-in-Difference Estimates of the Effects of TRHIP on IPS Employee Retirement, Only for Teachers with at least Six Years of Service

	(1)	(2)	(3)	(4)
Pension Eligibility, Ages 55 to 59	-0.038**	-0.018	-0.024	-0.009
	(0.015)	(0.016)	(0.016)	(0.017)
Pension Eligibility, Ages 60 to 64	0.079***	0.075***	0.081***	0.072***
	(0.009)	(0.008)	(0.008)	(0.007)
Pension Eligibility, Ages 65+	0.288***	0.253***	0.292***	0.252***
	(0.017)	(0.020)	(0.017)	(0.020)
TRHIP Eligibility, Ages 55 to 59	0.058***	0.027**	0.037***	0.013
	(0.011)	(0.012)	(0.012)	(0.012)
TRHIP Eligibility, Ages 60 to 64	0.004	0.015	-0.000	0.020*
	(0.005)	(0.010)	(0.004)	(0.010)
TRHIP Eligibility, Ages 65+	-0.219***	-0.175***	-0.224***	-0.173***
	(0.011)	(0.014)	(0.011)	(0.015)
Age FE	Y	Y	Y	Y
Experience FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Age x Year FE		Y		Y
Experience by Year FE			Y	Y
Number of Observations	1,555,929			

Note: Based on author's calculations using TRS and TSR data on employees of IPS schools from 1971 to 1992. Only employees with five or more years of service are included in the analysis sample. Estimates presented are from a differences-in-differences specification in which eligibility for pensions and retiree health insurance are interacted with age-group fixed effects. The specification includes controls for employee characteristics and district fixed effects as well as the other fixed effects indicated by the column notes.

Table 5. Difference-in-Difference Estimates of the Effects of TRHIP on IPS Employee Retirement, Only for Teachers with Non-imputed Age Data

	(1)	(2)	(3)	(4)
Pension Eligibility, Ages 55 to 59	-0.037**	-0.018	-0.022	-0.008
	(0.014)	(0.015)	(0.015)	(0.016)
Pension Eligibility, Ages 60 to 64	0.080***	0.076***	0.082***	0.072***
	(0.008)	(0.008)	(0.008)	(0.008)
Pension Eligibility, Ages 65+	0.309***	0.304***	0.314***	0.300***
	(0.020)	(0.022)	(0.021)	(0.021)
TRHIP Eligibility, Ages 55 to 59	0.062***	0.034***	0.037***	0.016
	(0.011)	(0.012)	(0.013)	(0.013)
TRHIP Eligibility, Ages 60 to 64	0.003	0.013*	-0.002	0.017**
	(0.005)	(0.007)	(0.005)	(0.007)
TRHIP Eligibility, Ages 65+	-0.230***	-0.233***	-0.237***	-0.226***
	(0.013)	(0.017)	(0.013)	(0.017)
Age FE	Y	Y	Y	Y
Experience FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Age x Year FE		Y		Y
Experience by Year FE			Y	Y
Number of Observations	1,628,700			

Note: Based on author's calculations using TRS and TSR data on employees of IPS schools from 1971 to 1992. Estimates presented are from a differences-in-differences specification in which eligibility for pensions and retiree health insurance are interacted with age-group fixed effects. The specification includes controls for employee characteristics and district fixed effects as well as the other fixed effects indicated by the column notes.

Table 6. Difference-in-Difference Estimates of the Effects of TRHIP on IPS Employee Movement Across Districts

	(1)	(2)	(3)	(4)
Pension Eligibility, Ages 55 to 59	-0.012*	-0.009	-0.012*	-0.007
	(0.006)	(0.006)	(0.006)	(0.006)
Pension Eligibility, Ages 60 to 64	-0.026***	-0.022***	-0.030***	-0.030***
	(0.004)	(0.006)	(0.005)	(0.006)
Pension Eligibility, Ages 65+	-0.071***	-0.093***	-0.073***	-0.102***
	(0.005)	(0.010)	(0.006)	(0.010)
TRHIP Eligibility, Ages 55 to 59	0.017***	0.015***	0.018***	0.012*
	(0.006)	(0.005)	(0.006)	(0.006)
TRHIP Eligibility, Ages 60 to 64	0.023***	0.016*	0.029***	0.029***
	(0.003)	(0.009)	(0.002)	(0.008)
TRHIP Eligibility, Ages 65+	0.071***	0.089***	0.076***	0.104***
	(0.004)	(0.010)	(0.004)	(0.011)
Age FE	Y	Y	Y	Y
Experience FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Age x Year FE		Y		Y
Experience by Year FE			Y	Y
Number of Observations	2,129,191			

Note: Based on author's calculations using TRS and TSR data on employees of IPS schools from 1971 to 1992. Estimates presented are from a differences-in-differences specification in which eligibility for pensions and retiree health insurance are interacted with age-group fixed effects. The specification includes controls for employee characteristics and district fixed effects as well as the other fixed effects indicated by the column notes.