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## Retirees Return to Work: How a North Carolina Policy Helped Staff High-Need Schools

*Rachel Jarrold-Grapes\**

Federal Trade Commission  
United States



*Patten Priestley Mahler*

Centre College  
United States

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**Abstract:** Teacher vacancies have been a long-standing issue in U.S. public schools, only made worse by the COVID-19 pandemic. Vacancies tend to be concentrated in high-poverty, high-minority schools and hard-to-staff subjects like special education and STEM. States have implemented various policies to decrease turnover, including offering teachers bonuses and salary increases. We study one of these policies, a return-to-work policy in North Carolina from 1999-2009, that allowed retired teachers to return to work full-time, earning both their full-time salary and pension benefits concurrently—often resulting in as much as 50% more income than a typical full-time teacher. We document policy take-up and characterize which teachers returned and what

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\* The views expressed in this article are those of the authors. They do not necessarily reflect those of the Federal Trade Commission or any individual Commissioner.

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schools hired them. The main take-away is that retirees indeed returned under this policy and that high-need schools were disproportionately the ones that hired them.

**Keywords:** teacher shortage; teacher retirement; disadvantaged schools

### **Los jubilados regresan al trabajo: Cómo una política de Carolina del Norte ayudó a dotar de personal a las escuelas más necesitadas**

**Resumen:** Las vacantes de docentes han sido un problema de larga data en las escuelas públicas de EE.UU., que solo empeoró con la pandemia de COVID-19. Las vacantes tienden a concentrarse en escuelas con alta pobreza y minorías y en materias en las que es difícil dotar de personal, como educación especial y STEM. Los estados han implementado varias políticas para reducir la rotación, incluida la oferta de bonificaciones a los maestros y aumentos salariales. Estudiamos una de estas políticas, una política de regreso al trabajo en Carolina del Norte de 1999 a 2009, que permitió a los maestros jubilados regresar a trabajar a tiempo completo, ganando simultáneamente su salario de tiempo completo y sus beneficios de pensión, lo que a menudo resultó en como hasta un 50% más de ingresos que un profesor típico de tiempo completo. Documentamos la adopción de políticas y caracterizamos qué docentes regresaron y qué escuelas los contrataron. La principal conclusión es que los jubilados efectivamente regresaron bajo esta política y que las escuelas con grandes necesidades fueron desproporcionadamente las que los contrataron.

**Palabras clave:** escasez de docentes; jubilación docente; escuelas desfavorecidas

### **Aposentados voltam ao trabalho: Como uma política da Carolina do Norte ajudou a equipar escolas de alta necessidade**

**Resumo:** As vagas para professores têm sido um problema de longa data nas escolas públicas dos EUA, apenas agravadas pela pandemia da COVID-19. As vagas tendem a concentrar-se em escolas de alta pobreza e minorias e em disciplinas difíceis de encontrar, como educação especial e STEM. Os estados implementaram várias políticas para diminuir a rotatividade, incluindo a oferta de bônus aos professores e aumentos salariais. Estudamos uma dessas políticas, uma política de retorno ao trabalho na Carolina do Norte de 1999 a 2009, que permitiu que professores aposentados voltassem ao trabalho em tempo integral, ganhando simultaneamente o salário de tempo integral e os benefícios de pensão - muitas vezes resultando em como até 50% mais renda do que um professor típico em tempo integral. Documentamos a adoção de políticas e caracterizamos quais professores retornaram e quais escolas os contrataram. A principal conclusão é que os reformados regressaram de facto ao abrigo desta política e que as escolas de alta necessidade foram desproporcionalmente as que os contrataram.

**Palavras-chave:** escassez de professores; aposentadoria de professores; escolas desfavorecidas

## **Retirees Return to Work: How a North Carolina Policy Helped Staff High-Need Schools**

Schools have had trouble finding and retaining teachers for several decades, and the COVID-19 pandemic has exacerbated this problem. Schwartz and Diliberti (2022) surveyed over 350 district leaders from the American School District Panel about teacher and staff needs in the fall of 2021. Two-thirds of the leaders said the pandemic led to vacancies in the 2021-2022 school year. A year later, in October 2022, the School Pulse Panel from the National Center for Education

Statistics (NCES) found that the average public school in the United States had two teacher vacancies (NCES, 2022).

Importantly, both of these sources document that vacancies are not distributed evenly across schools, but are more likely in high-poverty, high-minority, and urban schools (Schwartz & Diliberti, 2022). The School Pulse Panel showed that 57% of schools in high-poverty neighborhoods had at least one vacancy compared to 41% of schools in low-poverty neighborhoods. In addition, 60% of schools with a high-minority student population had at least one vacancy compared to 32% of schools with a low-minority student population (NCES, 2022).<sup>1</sup>

Not only are teacher vacancies concentrated in high-poverty, high-minority schools, but they are also concentrated in hard-to-staff subjects like math, science, and special education. Goldhaber and Gratz (2021) describe job postings in Washington state during the fall of 2021. They find that most job postings are for substitutes and special education teachers, and that there are generally more teaching vacancies, especially for special education and ELL teachers, in high-poverty districts. At a national level, in the fall of 2022, 41 U.S. states reported vacancies in special education, 34 in science, 32 in math, and over 20 in at least one of language arts, world languages, ESL, health and physical fitness, career and technical education, and arts and music education (U.S. Department of Education, 2022).

Given that teacher vacancies tend to be highly localized (e.g., to a specific state, school-type, and/or subject-type), states have enacted a wide range of policies to address them. In 2017, the National Council on Teacher Quality documented that 23 states offered higher salaries to teachers in high-need schools; 15 states offered more pay to those who teach in a shortage subject area (National Council on Teacher Quality, 2017). For example, Denver Public Schools gives teachers annual bonuses if they teach hard-to-staff subjects or in Title I schools; the D.C. IMPACT program gives bonuses to highly effective teachers to incentivize retention, especially in high-poverty schools (Denver Public Schools, 2019; District of Columbia Public Schools, 2019). In this paper, we analyze a policy in North Carolina that incentivized retired teachers to fill vacancies by coming back to full-time work while continuing to receive their pension annuity.

In 1999, North Carolina implemented a return-to-work (RTW) policy to combat a potential sharp decline of teachers in the labor market caused by the possible retirement of the large cohort of Baby Boomers. Before the policy, and after it expired in 2009, retired teachers could only return part-time with a salary cap of at most half of their full-time salary while still collecting their pension benefits. The policy raised this salary cap and allowed retirees to earn their full-time salary while still collecting their pension. We document policy take-up and hiring patterns during the policy period.

Our analysis addresses three questions. First, we ask whether retirees returned to work during the RTW policy. Second, we describe characteristics of the returning retirees, including their demographics, qualifications, and teaching assignment. Third, we describe characteristics of the schools where these retirees were hired, including the schools' grade range, urbanicity, and demographics of the students served. We focus specifically on where schools fit in the distribution of economically disadvantaged and Black students.

We find that as many as 2% of full-time teachers were RTW retirees during the policy period, and 35% of those who were eligible to retire in the previous year returned to teach full-time the next. These statistics indicate a meaningful take-up of this policy.

We find that RTW teachers are less likely to be White and more likely to be Black than other full-time teachers. It is unclear whether RTW teachers are more or less qualified than their non-RTW colleagues. RTW teachers are *less* qualified in terms of where they went to school (college competitiveness) but *more* qualified in terms of their degree level (bachelors, masters, etc.).

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<sup>1</sup> “High-minority” and “low-minority” are defined as 75% minority and below 25% minority, respectively.

Unsurprisingly, retirees have more years of experience than non-RTW teachers. Additionally, RTW teachers are more likely to teach communication and math classes, but less likely to teach classes with no specific discipline (elementary classes).

In terms of which schools hired RTW teachers, 54% of RTW teachers return to the school they retired from. Compared to non-RTW teachers, RTW teachers are more likely to teach in middle and high schools and less likely to teach in elementary schools. We also observe that RTW teachers are more likely to teach in rural schools and town/suburban schools, and less likely to teach in city schools. Additionally, and perhaps most importantly, a disproportionate number of schools with many economically disadvantaged or Black students hired RTW teachers. In other words, our evidence suggests these teachers helped fill vacancies at high-need schools, schools where there are generally more teacher vacancies.

While this policy ended over a decade ago, it is still relevant to study for three reasons. First, vacancies still exist, both nationally as we previously discussed, and in North Carolina. Nguyen et al. (2022) calculate that North Carolina had about 1,700 vacancies in teaching positions in the 2021-2022 school year—a significant number of vacancies relative to the number of students in the state. Second, North Carolina adopted a new version of the RTW policy from 2019 through 2021 and lawmakers introduced a bill in March 2023 that would bring the policy back until 2027.<sup>2</sup> Third, retired teachers are being incentivized back to work in other states. New Jersey Senate Bill 3685, passed in January of 2022, allowed teachers and other professional staff to return after retirement and earn both their full-time salary and their pension benefits for a 2-year period. This policy targeted schools in “critical need” of teachers. Thus, the introduction or re-introduction of policies similar to RTW are on policymakers’ minds.

The rest of the paper is organized as follows. In the next section, we discuss the related literature. Then we describe the RTW policy in more detail. We then describe our data and methods, followed by our results. Finally, we provide a discussion and conclusion.

## Literature Review

Economics literature documents teacher vacancies in economically disadvantaged schools, rural schools, and hard-to-staff subject areas. Garcia and Weiss (2020) describe how high-poverty schools have higher attrition and turnover than low-poverty schools. Goldhaber, Krieg et al. (2015) and Cowan, Goldhaber, Hayes, and Theobald (2016) show that vacancies exist in STEM and special education. Ingersoll (2003) and Goldhaber and Gratz (2021) find that vacancies are primarily in rural areas as opposed to cities, suburbs, and towns.

The literature also shows that there is a lack of *high-quality* teachers in high-need schools. Empirical economics research suggests that, in the absence of differential pay, teachers sort across schools such that teachers with more qualifications (e.g., experience, National Board Certified Teachers) teach more affluent, higher performing students and less qualified teachers are disproportionately matched with more economically disadvantaged students who are traditionally lower performing (Clotfelter et al., 2005; Garcia & Weiss, 2019; Goldhaber et al., 2007; Lankford et al., 2002). Ingersoll (2004) concludes that staffing issues in high-poverty schools are not due to the lack of overall teacher labor supply, but rather that these schools have trouble retaining the teachers they hire. Hanushek et al. (2004) show that teachers with more experience generally migrate from schools with lower student achievement, which are typically those with higher need, to schools with

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<sup>2</sup> We do not assess the newer versions of the policy because of data availability and because it significantly overlaps with the COVID-19 pandemic.

higher student achievement. They estimate that experienced teachers would need a 40% salary increase to stay in a large urban district instead of moving to a small suburban district.

There are several potential reasons why it is difficult for high-need schools to keep their teachers. Garcia and Weiss (2020) highlight a few possibilities. They show that teachers in high-poverty schools make less than their peers in low-poverty schools. They also find that more teachers in high-poverty schools report more threats to their physical safety, fewer supportive relationships, and less classroom autonomy than those in low-poverty schools. Finally, they find that teachers who quit are more likely to be those who did not receive training, professional support, or mentorship while teaching—all things a high-poverty school is less able to provide.

States and districts have implemented a variety of policies to persuade teachers to stay, especially teachers in high-need schools and hard-to-staff subjects. Previous literature suggests that increasing teacher pay in high-need and low-performing schools or giving bonuses to teachers of hard-to-staff subjects increases teacher retention in these high-demand areas. For example, Clotfelter, Glennie et al. (2008) study a policy North Carolina adopted in the early-2000s that gave annual bonuses of \$1,800 to math, science, and special education teachers working in low-performing, high-poverty schools. They find that there is less turnover, especially for experienced teachers, with this bonus program in place. Cowan and Goldhaber (2018) examine a policy in Washington state, the Challenging Schools Bonus, which gave \$5,000 bonuses to teachers who received their National Board Certification and worked in schools with a high proportion of kids receiving free or reduced-price lunches. They find that, in schools eligible for the policy, more teachers with the certification were hired, more current teachers received their certification, and more teachers with the certification kept teaching in those schools (less turnover). Other papers examine teacher retention policies (Adnot et al., 2017; Clotfelter et al., 2011; Dee & Wyckoff, 2015; Feng & Sass, 2018; Glazerman et al., 2013; Morgan et al., 2023; Springer et al., 2016; Steele et al., 2010).

A couple of papers examine policies specifically related to experienced teachers and retirees. Using data from Tennessee, Ni et al. (2022) find that high-quality teachers are less likely to retire than low-quality teachers at the same age and experience levels. Teacher quality is determined by classroom evaluations, student test-score growth as measured by value added, and student achievement. They simulate how high- and low- quality teachers would react to different pension changes, including late-career bonuses. They find that bonuses given to high-quality teachers in high-poverty schools would incentivize these teachers to postpone retirement, which would benefit high-need students at a relatively low cost. Kim et al. (2021) simulate the effects of late-career bonuses and deferred retirement plans on teacher retirement decisions. Their findings suggest that both policies would increase the number of years senior teachers work. The authors argue that the benefits of delayed retirement outweigh the costs if these teachers teach STEM classes or in low-performing schools.

We contribute to the literature by studying a different policy aimed at filling teacher vacancies. Instead of getting senior teachers to stay by offering bonuses and deferred retirement plans, the RTW policy targets teachers who have *already* retired and incentivizes them to return. In effect, RTW expands the reserve pool of teachers who can fill the vacancies that are not filled by new or non-retired teachers. While the policy was not wholly targeting high-need schools and hard-to-staff subjects, we show that RTW disproportionately filled these positions.

## Return-to-Work Policy

North Carolina implemented a RTW policy in 1999 to combat a potential sharp decline of teachers caused by the possible retirement of the large cohort of Baby Boomers. Before and after

RTW, retired teachers could not continue collecting their pension benefits and return to full-time teaching positions. Without the RTW policy, if retired teachers returned to full-time teaching, their pension benefits and health insurance coverage from the retirement system would be suspended. Before, during, and after RTW, retirees could return to a part-time position and keep collecting health and retirement benefits as long as their earnings did not exceed a cap of half of their previous full-time salary. RTW raised this salary cap by allowing retirees to receive both their full-time salary and pension benefits concurrently. This made it much more attractive for retirees to return to full-time employment.

The RTW policy was originally set to expire in 2003 but was extended multiple times until it ultimately expired in the fall of 2009. During this time, the policy underwent several revisions. For example, during the first year of the policy, teachers were required to return to low-performing schools where their subject matter expertise (based on certification) was needed. They were also only allowed to return as interim instructors or substitutes, not permanent teachers. These restrictions were lifted in June of 2000.<sup>3</sup>

Between 1999 and 2009, RTW was the only policy in place that changed the incentives for retired teachers to return to work. Due to data limitations (we cannot distinguish retired teachers from non-retired teachers when RTW was not in place), we cannot say whether this policy incentivized more retirees to return to the workforce, but we can say that this policy enabled a new incentive structure where retirees would be paid a full-time salary plus their retirement annuity, which could have resulted in 50% more income than either a full-time salary alone or a part-time salary plus retirement annuity (which were their options without RTW).

## Data

We use statewide administrative data from the North Carolina Education Research Data Center (NCERDC). We primarily use data from two dimensions of this very rich dataset. The first is data on teachers, which includes demographic characteristics, information on their education (including the selectivity of their colleges based on the Barron's Admissions Competitiveness Index and the highest degree they earned), their years of teaching experience, their teaching assignment, and snapshots of their pay each year. Importantly, the pay data includes budget codes that allow us to identify if they were a retiree who returned during the policy period ("RTW teachers"). The data only list teachers who are employed in a given year, meaning whether a teacher retires can only be imprecisely inferred by the teacher's absence in the data; we avoid the measurement error associated with this inference by only relying on a teacher's retirement eligibility and the RTW budget code for our analysis. We limit our sample to full-time teachers, since they are the ones who can be influenced by the policy.<sup>4</sup> The second is data on schools from the Common Core of Data (CCD). School characteristics include type (elementary, middle, high), student characteristics (percentages of minority and economically disadvantaged students), and urbanicity (rural, town/suburban, city).

Our sample includes almost 169,000 teachers in 2,900 schools between 1999 and 2009. About 3,500 teachers (2.1%) in our sample returned to work during the policy and over 1,500 (52%) schools hired at least one of them.

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<sup>3</sup> Information about the policy is found in North Carolina General Assembly Legislation: [S.L. 1998-212](#), S.L. 1998-217, S.L. 2000-67, S.L. 2001-424, S.L. 2002-126, S.L. 2004-124, S.L. 2005-144, S.L. 2005-276, S.L. 2005-345, S.L. 2007-145, [S.L. 2007-326](#).

<sup>4</sup> Retirees can return to part-time teaching before, during, and after RTW. We cannot tell whether part-time workers are returning retirees (drawing their pension simultaneously) or have not retired.

## Methods

To address our first research question of RTW take-up, we calculate the proportion of the full-time teacher workforce who are RTW teachers; this gives us an idea of how much this policy impacted the available workforce as a whole. We also look at RTW take-up as a proportion of the pool of retired teachers. As previously mentioned, we cannot tell from the data whether a teacher retires at the end of the school year, but we can tell whether they are retirement eligible. A teacher is eligible for retirement if she is 65 years old with 5 years of service (i.e., has been a member of the Teachers' and State Employees' Retirement System for 5 years), 60 years old with 25 years of service, or is any age with 30 years of service. We calculate the proportion of retirement-eligible teachers in each year who return the next year as RTW teachers.

To address our second research question on the characteristics of RTW teachers, we use the linear regression model below to estimate the effect of RTW status on teacher demographics, qualifications, and the subjects taught. We estimate separate models for each characteristic.

$$\text{Characteristic}_{it} = \beta_0 + \beta_1 \text{RTW}_{it} + \alpha_t + \varepsilon_{it} \quad (1)$$

Most characteristics we are interested in are binary variables (e.g., a teacher is female or not, a teacher teaches math or not, etc.), but some are in years or percentages (e.g., years of experience). The *RTW* variable is equal to one for individuals (indexed with *i*) who are RTW teachers in year *t* and zero otherwise.  $\beta_1$  is our parameter of interest. The term  $\alpha_t$  is a year fixed effect, which controls for changes across time that could impact the composition of the RTW teacher workforce or evolving school needs. We have included all the policy years, 1999-2009, in these regressions.  $\varepsilon_{it}$  is a random teacher-by-year error term.<sup>5</sup>

To address our third research question on the characteristics of schools RTW teachers returned to, we first identify how many RTW teachers went back to the school they taught at prior to retirement and how many went to a different school. We then use the regression model in equation (1) to estimate the effect of being a RTW teacher on school characteristics like school level and urbanicity. Instead of working with a school-level sample to define these variables, we use our teacher-level sample to characterize whether each teacher worked in an elementary, middle, or high school, or a school that is in a city, suburb or town, or rural area, and the student body.

Additionally, we further examine what the student body looks like in the schools that hired RTW teachers. Since previous literature suggests that teacher vacancies are concentrated in schools with many high-need students, we focus our analysis on student economic disadvantage and minority status, which are generally indicative of need. We look at quartiles to give us a better idea of the nonlinear distributional effects of the policy that would not be captured with averages. Specifically, we calculate quartiles of the percentages of economically disadvantaged and Black students in a school-by-year dataset that covers all the policy years. We identify the school's quartile for each school that hired a RTW teacher, enabling us to determine how many RTW teachers taught in schools within each quartile. This tells us the distribution of RTW teachers across schools with varying degrees of economic disadvantage and minority student populations.

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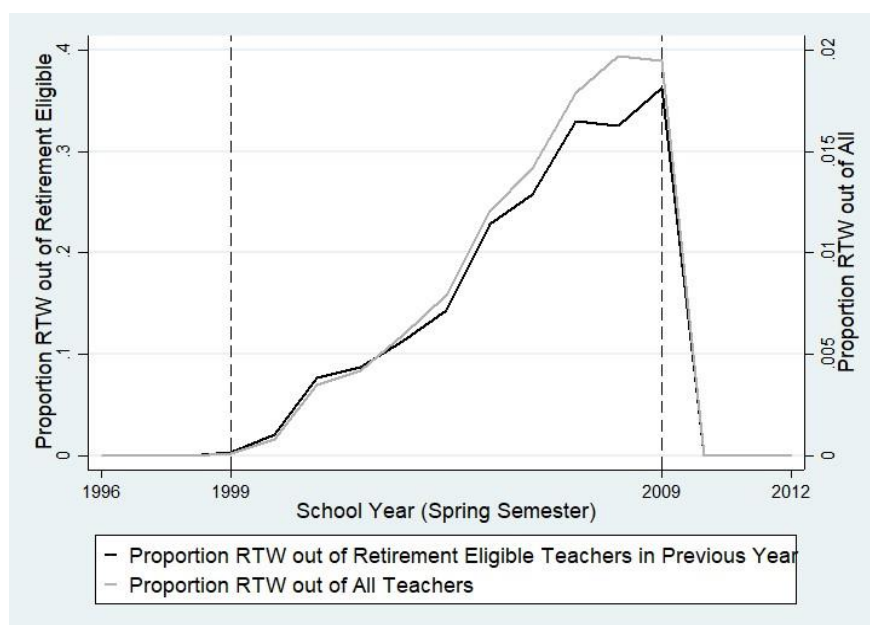
<sup>5</sup> We also ran regressions with district fixed effects to take into account the localized nature of teacher labor markets. Most of the coefficients were close to or somewhat smaller than those from equation (1). Coefficients on school locality (city, town/suburb, rural) were smaller and no longer statistically significant with district fixed effects because school locality does not tend to vary within districts.

## Results

With respect to our first research question, Figure 1 shows that the policy is associated with a significant number of retired teachers working full-time. The gray line is the proportion of RTW teachers out of all teachers for each year between 1996 and 2012. It steadily increases and peaks just under 2% in 2008. The black line shows RTW take-up relative to the number of teachers who were eligible for retirement in the prior year. This second measure (black line) is zero before the policy begins in 1999 and increases throughout the policy period until 2009, when just over 35% of previously retirement eligible teachers return to full-time work the following year. The number of RTW teachers drops to zero in 2010 corresponding with the expiration of the policy.<sup>6</sup>

**Figure 1**

*Policy Take-Up*



*Notes:* This figure shows the proportion of RTW out of retirement eligible teachers in the previous year (left y-axis, black line) and the proportion of RTW out of all fulltime teachers (right y-axis, gray line) from 1996 through 2012. A retirement eligible teacher is someone who is (a) 65 years old with 5 years of membership service, (b) 60 years old with 25 years of service, or (c) 30 years of service at any age. The years on the x-axis correspond to the spring semester of the school year. The first and last years of the policy, 1999 and 2009, are denoted by the vertical dashed lines.

With respect to our second question, Table 1 shows the results from the estimation of equation (1), describing how RTW teachers are similar to or different from non-RTW teachers over this time period. Each row in the table corresponds to a different regression. The coefficients in column (1) are generally interpreted as the difference in the probability that a RTW teacher has a certain characteristic compared to a non-RTW teacher. Most of these are statistically significant due to the large number (more than 800,000) of teacher-year observations.

<sup>6</sup> We identify RTW teachers based on their budget codes. While teachers are no longer marked as RTW in the budget codes after the policy ends, there are some who keep working full time. Less than a quarter of RTW teachers keep working in 2010, and even fewer remain in 2011 and 2012.



**Table 1***Regressions with Teacher Characteristics*

	Coefficient on RTW	Standard Error	Number of Observations
	(1)	(2)	(3)
<i>Teacher Demographics</i>			
Female	-0.002	0.0024	888,500
White	-0.096***	0.0022	888,498
Black	0.087***	0.0021	888,498
Other Race	0.010***	0.0008	888,498
<i>Teacher Qualifications</i>			
Less Competitive College	0.093***	0.0029	927,456
Competitive College	-0.00002	0.0030	927,456
More Competitive College	-0.093***	0.0021	927,456
No Advanced Degree	-0.079***	0.0029	927,456
Experience (in the Fall)	16.5***	0.0569	927,456
<i>Teaching Assignment</i>			
No Discipline	-0.052***	0.0028	807,156
Communication	0.023***	0.0020	807,156
Math	0.046***	0.0016	807,156
Science	0.002*	0.0014	807,156
Social Studies	0.008***	0.0014	807,156
Arts	-0.028***	0.0014	807,156
Vocation	0.001	0.0014	807,156
Special Education	-0.011***	0.0011	807,156
ESL	-0.003***	0.0004	807,156
Other	-0.001	0.0017	807,156

*Notes:* This table shows results from separate linear regressions of each characteristic on a binary variable for whether a teacher is RTW or not. Each regression includes year fixed effects. Regression coefficients are in column (1), standard errors in column (2), and the number of teacher-year observations in column (3). The stars in column (1) indicate statistical significance (\*10%, \*\*5%, \*\*\*1%).

RTW teachers are 9.6 percentage points less likely to be White than non-RTW teachers. They are 8.7 percentage points more likely to be Black and 1 percentage point more likely to be another race. There is no statistical difference between RTW and non-RTW teachers in terms of gender.

Looking at teacher qualifications, if we only consider where they went to college, it appears that RTW teachers are not the most qualified teachers. RTW teachers are 9.3 percentage points less likely to have attended a highly competitive college according to the Barron's Admissions Competitiveness Index. In contrast, if we consider their degree level, it appears that RTW teachers are more qualified than non-RTW teachers. Compared to non-RTW teachers, RTW teachers are 7.9 percentage points less likely to have no more education than a bachelor's degree; or, said differently,

more likely to have more education. In addition, RTW teachers have 16.5 more years of experience than non-RTW teachers—perhaps not surprising given they had to retire before they could qualify to return during the policy.

In addition to their demographics and qualifications, we also observe their teaching assignments. RTW teachers are 2.3 percentage points more likely to teach communication classes and 4.6 percentage points more likely to teach math classes compared to non-RTW teachers. They are also slightly more likely to teach science and social studies. RTW teachers are less likely than non-RTW teachers to teach classes with no specific discipline, which are primarily elementary school classes that include all subjects, art classes, special education classes, and ESL classes. All of these differences are pretty small. The largest difference is no discipline, where RTW teachers are 5.2 percentage points less likely to teach classes with no specific discipline.

With respect to our third research question, Table 2 shows the ways in which schools that hire RTW teachers are different from those that do not. Like the teaching assignments suggest, RTW teachers are 4.8 percentage points less likely to work in elementary schools. They are 1.1 and 3.7 percentage points more likely to teach in middle and high schools than non-RTW teachers, respectively. We also observe that RTW teachers are 3.8 percentage points more likely to teach in rural schools, 2.4 percentage points more likely to teach in town and suburban schools, and 6.3 percentage points less likely to teach in city schools compared to non-RTW teachers.

**Table 2**

*Regressions with School Characteristics*

	Coefficient on RTW	Standard Error	Number of Observations
	(1)	(2)	(3)
Elementary	-0.048***	0.0031	807,156
Middle	0.011***	0.0027	807,156
High	0.037***	0.0028	807,156
Rural	0.038***	0.0030	899,252
Town/Suburb	0.024***	0.0028	899,252
City	-0.063***	0.0027	899,252
Percent Economically Disadvantaged	3.71***	0.1209	897,435
Percent Black	4.86***	0.1412	899,252

*Notes:* This table shows results from separate linear regressions of each characteristic on a binary variable for whether a teacher is RTW or not. Each regression includes year fixed effects. Regression coefficients are in column (1), standard errors in column (2), and the number of teacher-year observations in column (3). The stars in column (1) indicate statistical significance (\*10%, \*\*5%, \*\*\*1%).

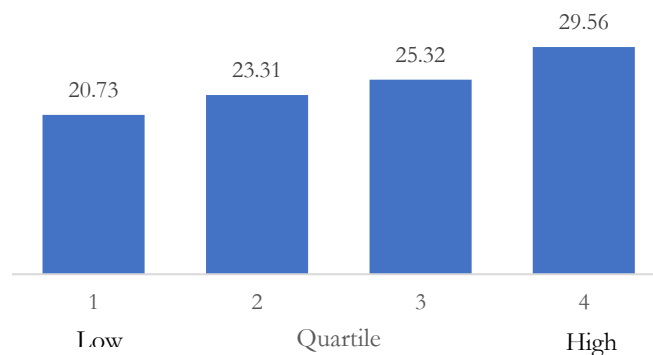
We also find that RTW teachers work with more economically disadvantaged and Black students than non-RTW teachers. Compared to schools where non-RTW teachers work, RTW teachers work in schools with 3.71 percentage points more economically disadvantaged students and 4.86 percentage points more Black students. Given these differences, and that the literature suggests that schools at the upper end of the poverty and minority distributions have more teacher vacancies, we delve deeper into how RTW teachers sort across schools.

Figure 2 shows the distribution of RTW teachers across schools with different levels of economically disadvantaged students (Panel A) and Black students (Panel B). Each column in these graphs represents the percentage of RTW teachers who taught in schools in the given quartile.

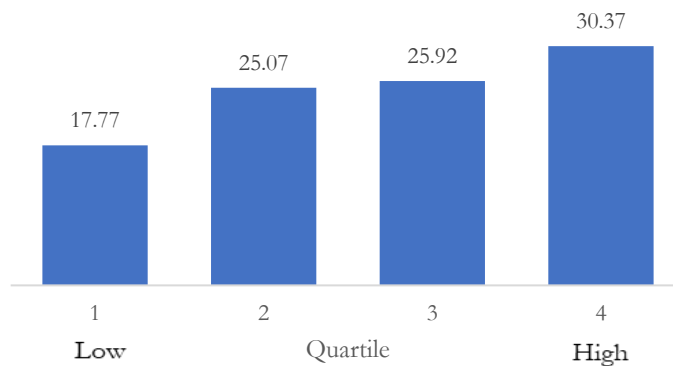
Quartile 1 includes schools with the fewest economically disadvantaged or Black students while quartile 4 includes schools with the most. Panel A shows that 30% of RTW teachers taught in schools in the top quartile of the percent of economically disadvantaged students, while 21% taught in schools in the bottom quartile. This difference is statistically significant at the 1% level. Similarly, panel B shows that 30% of RTW teachers taught in schools in the fourth quartile of the percent of Black students, while just 18% taught in schools in the first quartile. This difference is also statistically significant. To put these findings another way, RTW teachers were disproportionately hired by schools with more traditionally high-need students, schools where there are generally more teacher vacancies and fewer highly qualified teachers.

**Figure 2**

*Distribution of RTW Teachers Across Schools with Different Levels of Economically Disadvantaged or Black Students*



Panel A: Percent of RTW Teachers by Quartile of School Percent Economically Disadvantaged



Panel B: Percent of RTW Teachers by Quartile of School Percent Black

*Notes:* This figure shows the percentage of RTW teachers in each quartile of the percentage of economically disadvantaged (Panel A) or Black (Panel B) students in schools. Quartiles are calculated in a school-by-year level dataset that includes 1999-2009. Only the first year a RTW teacher comes back to work is used to group her into a quartile. The percentages across quartiles may sum to just shy of 100% due to some schools missing data on the percentage of economically disadvantaged or Black students.

We check the robustness of our results to a couple different things. First, given how we calculate quartiles, it is possible for schools to fall in different quartiles over time. To make sure that the differences in the number of RTW teachers across quartiles is not being driven by schools changing quartiles, we hold constant the school's percentage of economically disadvantaged or Black students at the 1999 level and repeat our analysis. The numbers change somewhat in magnitude, but the takeaway stays the same. Second, 54% of RTW teachers returned to the same school where they taught prior to retirement while 46% went to different schools. It could be that the schools in the top quartiles simply had a lot of teachers close to retirement who chose to return to their same school. We test for this by looking at the percentage of teachers eligible for retirement in each school in these quartiles. We find that 5%–6% of teachers in each quartile of either the percentage of economically disadvantaged or the percentage of Black students are eligible for retirement, leading us to conclude that our results are not being driven by differences in the number of retirement-eligible teachers across schools but instead by hiring behavior.

## Discussion and Conclusion

The key takeaway from our analysis is that retired teachers took up the North Carolina RTW policy and many went back to work in high-need schools. There are a few things policymakers may be interested in or should keep in mind when interpreting our results. First, data limitations prevent us from answering certain questions. For instance, it would be helpful to know how many vacancies would have been left unfilled had the RTW policy not been enacted, but we do not have data on vacancies or hiring.<sup>7</sup> Thus, we do not know the degree to which the RTW policy offset vacancies. We do know that many Baby Boomer teachers, who made up a disproportionate amount of the workforce, were likely to retire at this time, and some came back during the policy period.

Another data limitation is that we do not know who would have taught in place of RTW teachers or whether some of these retirees would have come back full-time (without receipt of their retirement annuity) or part-time absent the policy. We cannot easily infer a counterfactual because RTW teachers were not randomly assigned to classrooms, the structure of the policy does not provide a natural experiment for us to exploit, and retired teachers are not identified in the data unless they return under the policy. This makes it difficult for us to get an estimate of the potential benefits of the policy (e.g., the effect of RTW teachers on student achievement, the effect of RTW on retiree employment) and conduct a full cost-benefit analysis.

Even though we cannot fully document the benefits of RTW, we would like to refute a common misconception about its cost. Because retirees would receive both a full-time salary and their pension benefit, does this make them more expensive than a novice teacher? If a novice teacher was hired, the school district would indeed pay the novice a lower salary plus health benefits, but the state would still be paying the RTW teacher's annuity and health benefits even if he or she were not working. Thus, the cost of hiring a RTW teacher rather than a novice teacher is the difference between the two teachers' salaries minus the amount that would have been paid for the novice's health benefits. This is indeed costlier than hiring just the novice teacher, but once one recognizes not to count the retiree's annuity and health benefits as a cost, it may be less costly than it appears at first glance. Further, to some degree, this higher cost could be mitigated by the fact that

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<sup>7</sup> Bleiberg and Kraft (2022) describe how difficult it is to truly estimate shortages because there is no system for gathering good data on employment, vacancies, and turnover for teachers and education staff.

more experienced teachers are generally more effective than novices.<sup>8</sup> Over time, both the cost differential and quality differential would decline as the novice teacher gains experience and salary increases. If instead the district hired a highly experienced teacher in place of a RTW teacher, the salaries and experience would be closer to equal and the difference in cost and quality would be much lower.

Second, the policy may have unintended consequences. We think carefully about potential incentives embedded in the policy, one of which is that it may induce teachers to retire earlier than they would have otherwise just to return and reap the policy's benefits. We do not formally test whether this occurred, but based on how teacher pension plans work in North Carolina, we think this kind of double-dipping behavior was unlikely. North Carolina teachers are incentivized to retire at a relatively young age because of the state's defined-benefit (DB) retirement plan. Like we described before, those who are 65 years old with 5 years of membership service (i.e., 5 years with the Teachers' and State Employees' Retirement System), 60 years old with 25 years of service, or those with 30 years of service (at any age) could receive their full pension benefits immediately upon retirement (Folwell & Toole, 2017). If they retired without meeting these requirements, they would receive a reduced pension or have to wait before payments start, decreasing the incentive to retire. Once eligible for full benefits, the opportunity cost of working increases due to forgoing pension benefits, increasing the incentive to retire (Costrell & Podgursky, 2009). This structure both compels teachers to stay until they are eligible for full benefits and pushes them to leave after they become eligible (Costrell & McGee, 2010).

Figure 3 shows the distribution of teacher experience for all full-time teachers in Panel A. After about 30 years of experience, the number of teachers in the workforce declines dramatically, right in line with the pension plan cutoff. Panel B of the same figure shows the experience distribution of RTW teachers. While there are some RTW teachers with less than 30 years of experience, the majority have 30–40 years of experience. This suggests that RTW teachers are not retiring early to take advantage of the policy, but that they are instead responding to the incentives in the retirement plan. Understanding early retirement behavior in the face of policies like RTW is a promising area of future research.

Finally, while data limitations do not allow us to directly address the RTW policy adopted by North Carolina from July 2019 through June 2021, or the one proposed by lawmakers in March 2023,<sup>9</sup> we think our results can shed some light on the potential effects of these policies given their similarities to the one we study. Like the one we examine, the recent versions allow retired teachers to return to work full-time and collect both retirement benefits and earn a full-time salary. One difference is that the new policies require teachers to return to low-performing, high-need schools. Our results suggest that retired teachers would be hired at high-need schools even without this stipulation, and thus targeting these schools is perhaps unnecessary and to the detriment of other schools with vacancies; however, if the policy were put in place permanently, the likelihood of teachers retiring to return could increase and school hiring behavior could change.

Overall, given our findings and the continued prevalence of teacher vacancies, these new return-to-work policies are a promising avenue for equipping high-need schools with tools to attract highly qualified teachers to the labor pool. As more policies are brought online, it will be important to conduct a full cost-benefit analysis to see their effects on student learning.

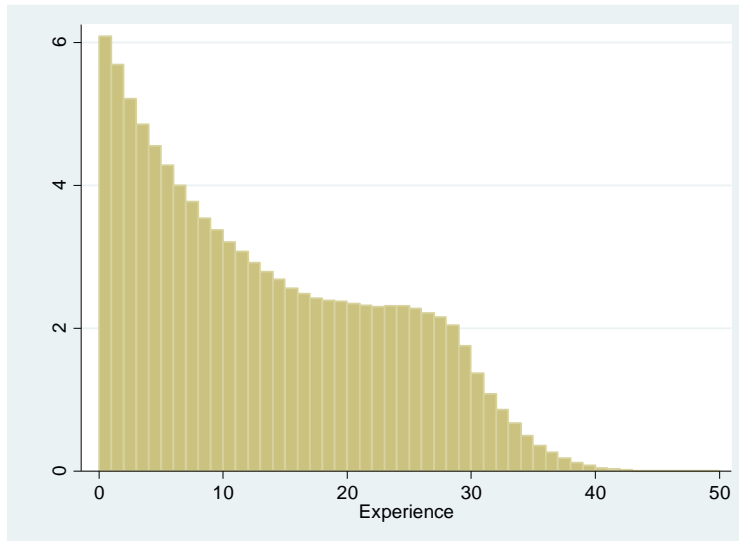
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<sup>8</sup> There is clear evidence that experienced teachers are more effective than novices. The evidence on whether experience gained after the first five years leads to additional improvement in effectiveness is mixed. See Rockoff (2004); Rivkin et al. (2005); Harris & Sass (2011); Wiswall (2013); and Papay & Kraft (2015).

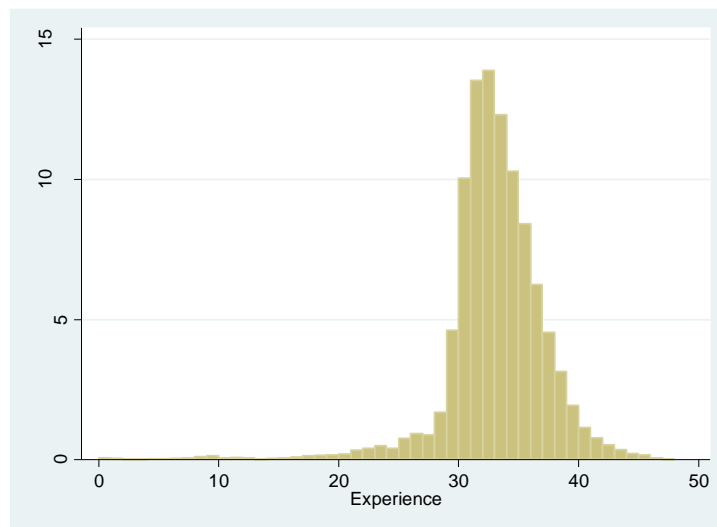
<sup>9</sup> See [S.L. 2019-110](#) and [S.B. 2023-187](#) for more details.

**Figure 3**

*Histograms of Teacher Experience*



Panel A: All Teachers



Panel B: RTW Teachers

*Notes:* This figure shows histograms of teacher experience, i.e., the percentage of all teachers (Panel A) and RTW teachers (Panel B) with different years of experience. Each histogram includes only full-time teachers between 1999-2009.

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## About the Authors

### Rachel Jarrold-Grapes

Federal Trade Commission

[rjarroldgrapes@ftc.gov](mailto:rjarroldgrapes@ftc.gov)

Rachel is a staff economist in antitrust at the Federal Trade Commission. She has a PhD in economics from Syracuse University. She studies state policy changes, like marijuana legalization and pension reform, and their impacts on students.

### Patten Priestley Mahler

Centre College

[patten.mahler@centre.edu](mailto:patten.mahler@centre.edu)

Patten is an associate professor of economics and business at Centre College. She has a PhD in economics from the University of Virginia. She teaches courses in microeconomics and her research focuses on teacher labor markets and early childhood education.

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