Teacher Salaries and Racial Inequality in Educational Attainment in the Mid-Century South

Elizabeth U. Cascio
Ethan G. Lewis

Dartmouth College and NBER*

August 8, 2023

Abstract

In the late 1930s, the NAACP launched a campaign to equalize Black and white teacher salaries in the *de jure* segregated schools of the American South. We estimate the effect of teacher pay on educational attainment exploiting variation in Black salary gains over time across southern counties with different Black enrollment shares, and across states by whether subsequent policy reinforced or resisted court rulings favorable to the NAACP. Using newly collected county panel data, we find that Black teacher salary gains contributed to the large reductions in racial inequality in school enrollment and grade progression in the South at mid-century.

* Mailing address: Department of Economics, Dartmouth College, 6106 Rockefeller Center, Hanover, NH 03755-6016. Email addresses: elizabeth.u.cascio@dartmouth.edu, ethan.g.lewis@dartmouth.edu. For their comments and suggestions, we are grateful to Josh Angrist, David Card, Janet Currie, Claudia Goldin, Larry Katz, Thomas Lemieux, Bob Margo, Lowell Taylor, participants at DaveFest 2022: A Conference in Honor of David Card, and seminar participants at Harvard University, Northeastern University, Brigham Young University, Miami University, the 2023 NBER DAE spring program meeting, and the 2023 SOLE Annual Meeting. We also thank Andrew Ahn, Paul Cornell, Margaret Doyle, and Catalina Garcia Valenzuela for outstanding research assistance; Nina Ham, Lewis McMillan, and Jack Poss for contributions to the data collection for this project; David Card for sharing school resource data from his 1992 papers with Alan Krueger; and Celeste Carruthers and Marianne Wanamaker for sharing details of their data collection. This work has been supported by Grant # 2105-32644 from the Russell Sage Foundation. Any opinions expressed are those of the principal investigators alone and should not be construed as representing the opinions of the Foundation.

I. Introduction

From the end of Reconstruction to the mid-20th century, *de jure* segregation characterized essentially all aspects of southern life. "Separate but equal" facilities were deemed constitutional by the U.S. Supreme Court in *Plessy v. Ferguson* (1896), but equality in general – and specifically as it applied to public education – was a slippery concept. For the first decades of the 20th century, glaring inequality in the resources available to Black and white public schools was in fact the norm (Margo, 1990), despite the efforts of northern philanthropists (Donohue, Heckman, and Todd, 2002; Aaronson and Mazumder, 2011; Carruthers and Wanamaker, 2013).

Several forces converged in the late 1930s and early 1940s to prompt a shift toward racial equality in school resources. This paper focuses on the NAACP's campaign to force teacher salary equalization through the courts, along with downstream changes in state policy. Sharp increases in the average salaries of southern Black teachers at mid-century, both in absolute terms and relative to their white counterparts, make a strong *prima facie* case for the efficacy of the NAACP's efforts. Using cross-state variation in first filing dates of NAACP cases, Donohue, Heckman, and Todd (2002) concluded that NAACP litigation was an important driver of these changes, as well as of the relatively large improvements in pupil-teacher ratios and term lengths in southern Black schools in the 1940s and 1950s (Appendix Figure 1).

This paper begins by re-examining these findings using newly digitized, county-level data on school resources by race spanning the 1930s through the 1950s. We focus on six southern states that accounted for most of the (still limited number of) NAACP teacher salary cases. Our empirical approach is founded on an observation by contemporaries (Bond, 1934; Johnson, 1941; Myrdal, 1944), replicated in our data: in the pre-campaign era, Black teachers in school districts (and counties) with higher Black student representation suffered a wage penalty,

while white teachers reaped a pay premium. Black disenfranchisement was arguably at the heart of this phenomenon. Electoral devices put in place at the turn of the century and still on the books in the 1930s left southern Black citizens with limited political recourse when white school leaders redirected state aid for their children to white schools. The higher the ratio of Black to white enrollment, the more funds per white child there were to be diverted (Margo, 1990).

Nothing about the NAACP campaign itself would have directly changed this practice. Even as Thurgood Marshall tried these cases in federal court, the southern Black population remained disenfranchised, and favorable rulings only bound litigated districts. However, possibly incentivized by the threat of further litigation – or worse, a legal challenge to the dual system itself – some state governments followed NAACP victories with policy changes that made expropriation much more difficult. We show that in states that "reinforced" favorable NAACP rulings by adopting minimum teacher salary schedules based on training and experience only, the larger wage penalty suffered by Black teachers in counties with higher Black enrollment shares was eliminated by the 1950s. But in "resistant" states, where case law supported continued discrimination against Black teachers through the use of scores on the National Teacher Examination in new salary schedules, the salary gradient in Black share remained.

In the second part of the paper, we estimate the effect of teacher pay on educational attainment, exploiting variation in Black salary gains over time across counties with varying Black shares and across states by whether subsequent policy reinforced or resisted court rulings favorable to the NAACP. This analysis builds on the seminal work of Card and Krueger (1992a, 1992b), who used state panel variation at mid-century to estimate the effect of school resources on educational attainment, earnings, and the return to schooling.[1] Looking within states, we

[1] Card and Krueger (1992a) showed that racial convergence in pupil-teacher ratios could explain in full the narrowing of the Black-white gap in educational attainment across cohorts of southern-born men born 1910 and

sidestep biases from unobserved state-by-time varying determinants of educational attainment. Using resistant states as a comparison group, we account for the possibility that Black children in counties with higher Black enrollment shares may have seen larger improvements in educational attainment even absent Black teacher pay increases, due to the expansion of high schools (Goldin, 1998; Goldin and Katz, 1999, 2008), World War II (Margo, 1990), or other factors.

Our conclusions are nuanced. Application of this triple-difference approach to county tabulations from the 1940 and 1960 Censuses suggests that Black teacher pay increases did not raise the rate at which Black 18-to-19-year-olds completed 12 years of schooling or remained enrolled in school. However, analyzing annual data on enrollment by grade for four states, we find that raises for Black teachers promoted continued school enrollment for Black children at younger ages, particularly in transitioning through the middle grades. This may register in cohort average years of schooling – an attainment outcome not available to us but used by Card and Krueger (1992a). While effects of raises for Black teachers on Black attainment were limited, impacts on Black-white attainment *gaps* were more substantial, implying negative spillovers on white students. This finding aligns with the proposed causal mechanism: meeting new salary mandates for Black teachers would have required drawing down revenues that would have otherwise been available for white schools. Supporting this interpretation, we present suggestive evidence that Black teacher salary gains slowed growth in white school resources.[2]

This paper makes several contributions. First, we illustrate the local incidence of teacher salary policy at mid-century that has to date only been evaluated at the state level in panel data (Donohue, Heckman, and Todd, 2002) and at the county level in the cross-section (Card,

---

1949, and a quarter of inter-cohort convergence in Black relative earnings. (See also Card and Krueger (1996).) Also using state-by-cohort variation, Card and Krueger (1992b) found that reductions in pupil-teacher ratios and increases in teacher pay were associated with increased earnings and educational attainment among white men born across the U.S. between 1920 and 1949.

[2] Baker (2019a) also suggests that the incidence of school budgetary shocks fell on white schools during this period.

Domnisoru, and Taylor, 2022). Our findings reinforce prior conclusions (e.g., Donohue, Heckman, and Todd, 2002; Tushnet, 1987) that external pressure from the NAACP promoted equalization before federal intervention in the mid-1960s finally brought *de jure* school segregation to an end (Boozer, Krueger, and Wolkon, 1992; Ashenfelter, Collins, and Yoon, 2006; Cascio et al., 2010) and re-enfranchised southern Blacks (Cascio and Washington, 2014). However, our analysis suggests NAACP intervention alone was not enough to close racial gaps in teacher salaries. Like Card, Domnisoru, and Taylor (2022), we show the critical role of minimum salary schedules in teacher wage determination in the mid-century South.[3]

Second, we add to the literature pioneered by Card and Krueger (1992a, 1992b) that has estimated the relationship between school spending and outcomes beyond test scores. Previous studies exploiting court-ordered and legislative shifts in state funding formulas in the 1970s, 1980s, and 1990s have shown that exposure to higher school spending can have meaningful effects on later-life outcomes, like educational attainment and earnings (Jackson, Johnson, and Persico, 2016; Rothstein and Schanzenbach, 2022).[4] By drawing quasi-experimental variation from an earlier historical episode in county panel data, we complement recent work by Card, Domnisoru, and Taylor (2022) on the role of teacher salaries in intergenerational mobility, based on a cross-section of counties in 1940.[5] Estimating the downstream impacts of school resource shocks in the 1940s and 1950s, we start to fill a temporal gap in this literature.

[3] Our identification thus comes from the timing of an event with potential widespread effects (NAACP litigation) in conjunction with state policy. The same is true in Chay (1998), which uses variation in the timing of a federal law (the Equal Employment Opportunity Act of 1972) and state policy (fair employment practice laws) to estimate the effects of federal civil rights protections on Black labor market outcomes.

[4] Card and Payne (2002), LaFortune, Rothstein, and Schanzenbach (2018), and Brunner, Hyman, and Ju (2020) estimate test score impacts of state school finance reforms, and Guryan (2001), Clark (2003), and Hyman (2017) focus on school finance reforms in specific states. Cascio, Gordon, and Reber (2013) exploit shocks to federal aid.

[5] We also complement earlier studies linking 1940 Census outcomes to school resource exposure earlier in life (Aaronson and Mazumder, 2011; Carruthers and Wanamaker, 2017a, 2017b; Baker, 2019b). Orazem (1987) and Margo (1990) use within-state variation to estimate effects of school resources in the early 20th century South on earlier life outcomes.

II. Data

II.A. Sources and Key Variables

Our analysis requires panel data on average teacher salaries, other school resource measures, and educational outcomes by race at the local level. We rely on data for counties because school district data are not consistently available for all states of interest. This is not a great limitation: counties in our data typically have only one or two school districts.[6]

We digitized the school resource data from statistical tables in annual reports of state school boards or superintendents in six former Confederate states – Alabama, Florida, Louisiana, South Carolina, Tennessee, and Virginia.[7] In each of these states, at least one school district was subject to NAACP teacher salary litigation in a federal court, and indeed these six states account for 24 of the 28 cases the NAACP pursued in the Old South, as shown in Figure 1 (see also Appendix Table 1). The available data for these states are annual and span at least the 1932-33 to 1959-60 school years. With a few exceptions, all variables are our original data collection.[8] Data for all states except South Carolina are reported for school districts and aggregated to the county level in the states where county and school district boundaries do not coincide.

We digitized several variables reported separately by race in these reports – average teacher salaries or spending on teacher salaries (depending on the state), teacher counts, and fall enrollment. Each of these variables was given for all six states, though some stopped publishing teacher salaries by race in years following the 1954 *Brown v. Board of Education* decision.[9,10]

---

[6] County and school district boundaries coincide in Florida and Virginia and nearly coincide in Louisiana. In Alabama and Tennessee, there are typically only one to two school districts per county.
[7] We also collected data for four of the five remaining states of the Old South: Arkansas, Georgia, Mississippi, and North Carolina. Online Appendix A describes why the data from these states are insufficient for this analysis.
[8] For Alabama, Louisiana, South Carolina, and Tennessee, we took 1930s values for some variables from the county panel data in Carruthers and Wanamaker (2019). See Online Appendix A for more details.
[9] Reporting of teacher salary data by race ends in 1955-56 in Florida and in 1956-57 in Louisiana. We impute real teacher salaries later in the decade using the observation in the county from the latest possible year.

We also gathered available data on term length as well as state and local school revenues, which together comprise most of available funding for all schools in a district.[11] From this information, we calculate the key school resource variables for our analysis – average annual teacher salaries, pupil-teacher ratios, per-pupil spending on teacher salaries, and term lengths, all by race – as well as per-pupil state and local revenue. We also compute a key treatment variable – Black share in enrollment in 1939-40, the school year before the first successful NAACP case was tried in any analysis state (Figure 1).[12]

For four states – Alabama, Florida, South Carolina, and Tennessee – the annual reports also give enrollment by grade on an annual basis, by county (or district) and race.[13] With these variables, we construct race-specific grade $g-1$ to g progression rates, as grade g enrollment in school year t divided by grade $g-1$ enrollment in school year $t-1$. By focusing on grade-to-next-grade progression rates, we maximize the number of pre-NAACP litigation observations and minimize contamination from inter-county migration over time. Because school systems were expanding to include high school grades over the period of study, and grade progression rates are undefined when grade $g-1$ enrollment is zero, we limit this analysis to grades $g \leq 9$.[14] We consider the share of all enrolled students in grades 9 through 12 as an alternative outcome.

---

[10] In the decade after *Brown*, the only policy lever to desegregate schools was to sue individual school districts. No districts in Alabama, Louisiana, and South Carolina had any Black children attending school with white children by 1959-60. For the remaining states, the number of districts with any desegregation by 1959-60 was limited (e.g., one in Florida, four in Tennessee, and six in Virginia), amounted to few Black children attending white schools, and was almost entirely court-ordered (Southern Education Reporting Service, 1960). Racially identifiable schools did not begin to disappear in the South until the mid-1960s (Boozer, Krueger, and Wolkon, 1992; Cascio et al., 2008, 2010).
[11] Term length is unavailable for Virginia, and Louisiana, Florida, and Tennessee ceased reporting it in 1953-54, 1954-55, and 1958-59, respectively. We impute missing values with the last available county observation. Revenues by source are also unavailable for Louisiana after 1939-40 due to the low quality of available scans.
[12] Our estimates are very similar if we use Black share in the population of 6- to 17-year-olds in the 1940 Census.
[13] There are no grade-specific enrollment data by race and county for Virginia. These data do exist for Louisiana, but only starting in 1940-41, rendering them unusable in our analysis.
[14] We winsorized grade progression rates at a value of two and the share of total enrollment in grades 9 through 12 at 0.4. Our analysis of grade progression builds on Reber (2010), who focused on progression from 8th grade to later grades (e.g., grades 11 or 12) in Louisiana parishes in a later period.

A benefit of these outcomes is that they are observed annually, and so can be analyzed using similar econometric specifications as the school resource variables. But they cover only four of our six analysis states. We therefore turn to county-level data from the Census of Population, specifically race-specific shares of 18- and 19-year-olds who were either enrolled in school or had completed 12 years of schooling as of the Census, by county of residence. The underlying Census tabulations for 1960 were purchased for an earlier project and have been used in prior papers (e.g., Cascio, Gordon, and Reber, 2013). We created comparable shares for 1940 from the full-count Census (Ruggles et al., 2021). For expository ease, we refer to this variable as an "enrollment rate," but note that non-enrollees with 12 years of completed schooling make up more of this share for 19-year-olds in both 1940 and 1960, and more of this share for both age groups in 1960, once high schools were common.[15]

We also calculate several county characteristics using the 1940 full-count Census (Ruggles et al., 2021) – the share of enrolled 6- to 17-year-olds in 9th to 12th grade (a proxy for baseline high school penetration) and the share of enrolled 6- to 17-year-olds in 1st grade (a proxy for baseline prevalence of one-room schoolhouses), separately by race. Published Census tabulations (Haines and ICPSR, 2010) provide the 1939 share of crop value in harvested cotton, which we intend to capture how the 1950s mechanization of cotton (Alston and Ferrie, 1999) may have affected local economies and the return to schooling, and the fraction of a county's land in farming in 1940, a predictor of both structural transformation and World War II mobilization rates (Acemoglu, Autor, and Lyle, 2004). We draw data on the presence of a Black

[15] See Appendix Table 2. Note that 12-year school completion is not equivalent to high school completion. Also, grade progression and enrollment rates do not perfectly predict educational attainment in adulthood. However, exposure to better paid teachers is well-measured in these outcomes: teenagers residing in a county likely went to school there. Measures of attainment while young may also be less mismeasured than schooling reports later in life. For example, using high school completion data gathered from state administrative reports, Goldin (1998) shows that the retrospective reports of educational attainment in the 1940 Census overstate high school completion rates, with the degree of overstatement growing in age, but high school completion is not overstated among young people.

college in a county and the vote share for Strom Thurmond in the 1948 Presidential election – proxies for political activism – from Matthews and Prothro (1963).

II.B. Descriptive Statistics

Table 1 gives means [standard deviations] of school resource variables (Panel A), grade progression rates (Panel B), and enrollment rates (Panel C), by race, in 1939-40 – before the NAACP had brought a salary case in federal court in any Southern state (Figure 1) – and 1959-60 – the end of our analysis period. We also present the Black-white difference in each variable, and the change over time (standard errors clustered on county). Estimates give equal weight to each state, and within states, equal weight to each county.[16]

Consistent with trends in the South more generally (Appendix Figure 1), average salaries more than tripled in real terms (2018 dollars) over this 20-year period for Black teachers and nearly doubled for white teachers. By 1959-60, the Black-white teacher salary gap had essentially been eliminated, having narrowed by 61 log points over the prior two decades. While pupil-teacher ratios fell for Black and white children alike – and more so for Black children – narrowing of the Black-white gap in real per-pupil spending on teacher salaries between 1939-40 and 1959-60 was explained much more by relative salary gains for Black teachers than by relative declines in Black class sizes. Term lengths for Black children increased in relative and absolute terms as well.

Grade progression rates improved over the 1940s and 1950s, too, and much more so for Black students. This was particularly the case in grades that were initially bottlenecks on progression. For example, at the beginning of our study period, it was common for a child to be in 1st grade for two or more years (Collins and Margo, 2006). In 1939-40, the 1st to 2nd grade

[16] That is, we weight by $\frac{1}{N_s}$, where N_s is the number of counties in state s in the estimation sample. Appendix Table 3 describes how we arrived at our analysis sample of 421 counties.

progression rate for Black children was only 0.49, suggesting that only about half of a Black 1st grade class continued to 2nd grade the next year; for whites, it was 0.75. But by 1959-60, the Black 1st to 2nd grade progression rate stood at 0.84, only 0.09 points behind the white rate. Gains in Black progression through the middle grades were also relatively large. For instance, between 1939-40 and 1959-60, the Black 6th to 7th grade progression rate increased from 0.81 to 0.98, more than halving the Black-white gap at the start of the period. Black enrollment rates as observed in both the administrative data and the Census also rose in both absolute and relative terms between 1940 and 1960.

The first column of Table 2 shows means [standard deviations] of initial Black enrollment share and other county characteristics for the sample overall. In the average county, Black students accounted for 32% of public elementary and secondary enrollment, farming took up about half the land, cotton comprised 22% of crop value, and 43% of votes cast in the 1948 Presidential election were for segregationist Strom Thurmond. Consistent with the statistics calculated from administrative data in Table 1 Panel B, the Black 6- to 17-year-olds enrolled as of spring 1940 were substantially more likely to be in 1st grade and less likely to be in 9th through 12th grade than enrolled white 6- to 17-year-olds.

III. Research Design

Our research design exploits variation in Black teacher salaries over time (before and after NAACP litigation), across counties with different pre-litigation Black enrollment shares, and across states adopting different types of minimum teacher salary schedules after NAACP litigation. Why should this variation predict increases in Black teacher salaries? And why might it be unrelated to other drivers of change in educational attainment at mid-century?

A. Historical Background

A relationship between Black enrollment share and school finance in the South has deep historical roots. Between 1890 and 1910, essentially all southern states passed suffrage restrictions designed to ensure one-party, white rule (Kousser, 1974). While these devices certainly disenfranchised some white men, the impacts on Black male suffrage – compounded by intimidation, violence, and fraud – were profound.[17] The erosion of Black male voting rights coincided with a striking decline in resources devoted to Black schools: the typical southern state went from near racial equality in per-pupil school spending to a large Black deficit; in some cases, Black school spending fell even as spending on white schools skyrocketed.[18]

Racial inequality is thought to have emerged through two funding mechanisms – new local (property and other) tax revenues that were largely directed toward white schools, and the expropriation of state aid for Black education by white school leaders politically unaccountable to local Black populations (Margo, 1990). While admissions of expropriation were egregious,[19] we can move beyond anecdotes: the expropriation hypothesis implies not just a Black-white school spending gap on average, but also a within-state relationship between the size of the gap and local Black enrollment share. Intuitively, where Black children represented a higher share of the enrolled population, there was more state education aid for white school leaders to capture.[20]

[17] What political power Black men enjoyed during Reconstruction rapidly eroded as primary elections were limited to whites, poll taxes disproportionately drove Black men from the ballot box, and literacy tests allowed local registrars wide latitude to deny the franchise based on skin color (Keyssar, 2000).
[18] While this correlation does not necessarily imply a causal relationship, several studies have found that exogenous shocks to Black political power affected the provision of local public goods over this period (Naidu, 2012), as well as during Reconstruction (Logan, 2020) and in the 1960s and beyond (Cascio and Washington, 2014).
[19] Margo (1990) provides several quotes. For example, one school superintendent said: "We have twice as many colored children of school age as we have white, and we use their money. Colored children are mighty profitable to us" (Washburne, 1942, p. 115). Another superintendent from Louisiana noted, "…the Negro educables… bring into the parish from the state school fund $20,000 more than is now expended for Negro education" (Foote and Robertson, 1926, p. 21). Yet another said, "…the principal population is colored, and the whites … have all the money they want to run the white schools" (State of Louisiana, 1908, p. 60).
[20] The relationship between Black-white gaps in school spending and Black share was described by contemporaries, including Horace Mann Bond (1934), Charles Johnson (1941), and Gunnar Myrdal (1944). It has also been demonstrated in modern empirical work using historical data outside that used in this study (e.g., Margo, 1990; Reber, 2010, 2011; Cascio, Gordon, and Reber, 2013; Cascio and Washington, 2014).

Figure 2 Panel A shows a binned scatterplot of this relationship in our data during the 1939-40 school year, after adjusting for state effects. Supporting the expropriation hypothesis, counties with higher Black enrollment shares had larger Black-white gaps in per-pupil teacher salary spending. However, the combination of a negative slope for Black spending and a positive slope for white spending cannot be explained by a simple expropriation story alone.[21] In Online Appendix B, we show that it can be rationalized by higher Black share counties having lower average per-pupil local revenues (Figure 2 Panel B) and/or higher expropriation rates.

The NAACP's teacher salary equalization campaign had the potential to limit the funds available for expropriation and thus to weaken the relationships between Black share and per-pupil spending. The NAACP ultimately supported few lawsuits (Murray, 1949; Figure 1), and the declaratory judgments and injunctions in these cases would have only bound litigated districts. However, a central hope was that one or two favorably decided lawsuits would incentivize more widespread equalization in a state.[22] This could have come from "voluntary" compliance, as school districts attempted to forestall racial integration of schools. But statewide minimum teacher salary schedules were the primary vehicle for equalization: they were highly predictive of Black teacher salaries at this time (Card, Domnisoru, and Taylor, 2022) and had to be followed for school districts to receive the state education aid on which they heavily relied.[23]

In five of the six analysis states, new statewide minimum teacher salary schedules were adopted by six years after the earliest NAACP litigation in a federal court.[24] Whereas minimum salary schedules almost always varied explicitly by race in the South circa 1940 (Card,

[21] With state tax revenue distributed on a per-capita basis, fixed per-pupil local revenue, and a constant expropriation rate across districts, in theory per-pupil school spending should have been positively related to Black share for whites but unrelated to Black share for Blacks. See Online Appendix B.
[22] See Kluger (1975), Tushnet (1987), and Beezer (1986) for discussions of the NAACP equalization campaign.
[23] The campaign in fact initially sought changes to statewide minimum teacher salary schedules through state courts (Marshall, 1947). This approach proved ineffectual, prompting the NAACP to shift toward litigation on a district basis through federal courts and arguments regarding equal protection and due process under the 14th Amendment.
[24] Online Appendix C provides details on the salary schedules, all of which persisted through the late 1950s.

Domnisoru, and Taylor, 2022), the new schedules did not. For example, the new schedules in four states – Alabama (1946-47), Louisiana (1948-49), Tennessee (1947-48), and Virginia (1946-47) – were based on teacher training and experience only. Under new schedules like this (if binding), there would thus have been pay differences between Black and white teachers only if these teacher characteristics varied by race. Moreover, Black average teacher salaries would have been related to Black enrollment share only insofar as were these characteristics.[25]

On the other hand, despite being race-neutral on their face, new minimum salary schedules in South Carolina (statewide, adopted 1945-46) and Florida (large urban school systems) "institutionalized new, more legally defensible forms of discrimination" (Baker, 1995; p. 49) against Black teachers. Court rulings in these states upheld the constitutionality of "merit" pay plans that in addition to training and experience incorporated performance on the National Teacher Examination (NTE).[26] The NTE was a standardized test that had no proven association with effective teaching but a track record of lower scores among Black teachers. Under these new schedules, there thus would have continued to be differences in the pay of Black and white teachers with the same education and experience. Moreover, if Black test scores declined in Black share – certainly a possibility after generations of relatively poorly-funded Black schools – Black average teacher salaries could have remained negatively related to Black share as well.

B. Implications

The two types of post-litigation minimum teacher salary schedules had different implications for the relationship between Black enrollment share and per-pupil spending on

[25] Our calculations from the 1940 full-count Census (Ruggles et al. 2021) yield no significant relationships between Black enrollment share and Black teacher age or educational attainment. See Online Appendix B.
[26] Relevant cases were *Turner v. Keefe* (Florida, 1942), *Reynolds v. Board of Public Instruction for Dade County* (Florida, 1942), and *Thompson v. Gibbs* (South Carolina, 1943). On the other hand, a case filed in federal district court in Georgia in 1943 and decided in 1948, *Davis v. Cook* (Atlanta School Board) established that merit pay systems with subjective components that disproportionately disadvantaged Black teachers in practice constituted racial discrimination (Beezer, 1986; Donohue, Heckman, and Todd, 2002). Unfortuntately, Georgia cannot be included in the analysis due to data limitations.

teacher salaries. In states that "reinforced" NAACP victories with new pay scales based on experience and education only (Alabama, Louisiana, Tennessee, Virginia), the negative relationship between Black enrollment share and Black teacher salaries (and Black teacher salary spending) should have flattened. However, this was less the case in "resistant" states (Florida, South Carolina), where use of the NTE left the door open to lower pay for Black teachers. Our analysis begins by showing that the gradient of Black teacher salaries in Black enrollment share became shallower over time in reinforcing states, but not resistant states.

We then use the relatively large improvement in Black teacher salaries in counties with higher Black shares in reinforcing states to identify the effect of Black teacher pay on Black educational attainment. Whether a state was reinforcing or resistant was largely a matter of historical accident – a function of the types of cases brought in a state and the evolution of case law. Still, the average county in a reinforcing state was a bit different from the average county in a resistant state, as shown in Table 2. To bolster this empirical approach, we therefore show that counties with higher Black shares in reinforcing states did not experience relatively large changes over time in other school inputs that could have directly affected Black educational attainment. Further, controlling for other predictors of trends in Black attainment and teacher salaries in this triple-difference framework does not substantively change our conclusions.

The two types of post-litigation minimum teacher salary schedules also had different implications for *white* school resources and educational outcomes, by way of school finance spillovers. In reinforcing states, more funding would have been needed to "level up" Black teacher salaries when Black enrollment share was higher. While substantial, new state revenues may not have been quite enough: though increases in overall state aid were on average large enough to cover new salary expenses (Appendix Table 4), some of this marginal state funding

was for other uses, like new buildings and transportation. Moreover, though states distributed this marginal state aid progressively, the Black share gradient of per-pupil state revenue increased by less than the Black share gradient of per-pupil salary spending in reinforcing states (Appendix Table 5). As a result, the higher Black share counties of reinforcing states would have been under more pressure to fund Black teacher raises out of existing state revenue that would have otherwise gone to white schools. Effects here need not (and, as we will show, do not) load onto white teacher salaries: resources may have been moved from other uses.

IV. Salary Intervention, Teacher Salaries, and Other School Resources

IV.A. Effects on Black Teacher Salaries

We begin by testing for sharp changes over time in the gradient of Black average teacher salaries in pre-litigation (1939-40) Black enrollment share. The solid dots in Appendix Figure 2 Panel A plot slopes from bivariate regressions of log Black average teacher salaries on initial Black enrollment share by event year, limiting attention to reinforcing states. We define event year as year t minus the filing year of the first successful NAACP case in state s, t_s^* (see Figure 1 and Appendix Table 1). Regressions are weighted by $1/N_s$, where N_s represents the number of counties in state s in our estimation sample. As above, salaries are in real 2018 dollars.

Like in the binned scatterplot in Figure 2 Panel A, the slopes from these bivariate regressions are negative in the pre-litigation period, i.e., Black average teacher salaries in reinforcing states were lower in counties with higher Black enrollment shares. While there was some early post-litigation moderation of the gradient of Black teacher salaries in Black enrollment share,[27] schedule changes appear to have been important for equalizing Black teacher

[27] The 1944 *Annual Report* for Louisiana (for 1943-44) noted that "strenuous effort is being made to improve the salaries of Negro teachers" in school systems besides New Orleans (State Department of Education of Louisiana, 1944, p. 47). Between 1941 and 1945, following the 1940 U.S. Circuit Court of Appeals decision in *Alston v. Norfolk School Board* but before the adoption of a statewide minimum teacher salary schedule, the Virginia

salaries across the state: the rate of increase in the gradient accelerated six years after the filing date, when all four reinforcing states had new statewide minimum salary schedules in place. A decade out from NAACP intervention, Black teachers in counties with higher Black enrollment shares no longer suffered a wage penalty in these states.

We test for statistically significant changes in the slope over time by estimating:

$$x_{c(s),t} = \delta_{c(s)} + \gamma_{st} + \sum_{j \neq -1} \theta_j D_{st}^{j} B_{c(s)}^{0} + u_{c(s),t}, \quad (1)$$

where $x_{c(s),t}$ is log (Black) average teacher salary in county c in state s in the school year that starts the fall of year t, $B_{c(s)}^{0}$ is baseline (1939-40) county Black enrollment share in county c, the $D_{st}^{j} = 1[t - t_s^* = j]$ are event year indicators, and $\delta_{c(s)}$ and γ_{st} are county and state-by-year fixed effects. θ_j represents the predicted change in the Black share gradient between event year j and the year prior to the NAACP filing year.[28] While increases in the slope on Black share between event years -1 and 0 to 2 are not significant for reinforcing states (solid dots in Figure 3 Panel A), they are in all subsequent years (capped vertical lines give 95% confidence intervals). By contrast, there are no significant slope differences between the year prior and any earlier years, suggesting a causal effect of the campaign and adoption of new statewide minimum salary schedules; the pre-trend event-study coefficients are jointly insignificant (p=0.74).

To summarize these estimates, the first row and column of Table 3 Panel A gives the coefficient on $D_{st}^{5+} B_{c(s)}^{0}$ from the following difference-in-differences model for reinforcing states:

$$x_{c(s),t} = \delta_{c(s)} + \gamma_{st} + \theta_{0-4} D_{st}^{0-4} B_{c(s)}^{0} + \theta_{5+} D_{st}^{5+} B_{c(s)}^{0} + \varepsilon_{c(s),t}, \quad (2)$$

Department of Education also "made considerable progress toward equalizing the salaries of white and Negro teachers" (Ellis, Smith, and Watkins, 1969; p. 1302).

[28] This is the stacked version of a state-level model, with event-study coefficients restricted to be the same across states. We use the weights earlier described and cluster standard errors on county. We censor event year at -9 and 16 and include the corresponding event year-by-Black share indicators as regression controls. We do not present these coefficients in Figure 3 since the state composition is different than for event years -8 through 15.

where D_{st}^{0-4} is an indicator for the first 5 years after NAACP litigation, and D_{st}^{5+} is an indicator for all subsequent post-litigation years, when new statewide minimum salary schedules would have been in effect.[29] The estimate of the longer-term effect, θ_{5+}, implies that, for each 10 percentage point (p.p.) increase in baseline Black enrollment share, the average salary of Black teachers increased by 4.6 log points more over the longer term. For the average county in a reinforcing state (Black share=29.3%), the model thus predicts a 13.4 log point increase in Black teacher salaries – about 10% of the overall growth in Black teacher salaries in these states over this period. Thus, much of the substantial growth in Black teacher salaries over the 1940s and 1950s (Table 1 Panel A) was shared across counties.

The Black teacher salary findings for resistant states are quite different. The relationship between Black enrollment share and Black teacher salaries in these states was also negative in the pre-litigation period,[30] but it initially got significantly more negative, not less, after the first successful NAACP case was filed (hollow dots in Panel A of Appendix Figure 2 and Figure 3). Though the gradient eventually reverted to pre-litigation levels, it did not flatten significantly: the longer-term difference-in-differences estimate (row 1 of Table 3 Panel A column 2) is small and not statistically significant (coef. (s.e.) = 0.015 (0.073)). This finding is in line with expectations: minimum salary schedules that used the NTE provided a means to continue paying Black teachers less than similarly qualified white teachers.

Differences in the estimates for Black teacher salaries between reinforcing and resistant estimates are statistically significant. This can be seen in the triple-difference coefficient estimates in the third column of Table 3 Panel A, i.e., estimates of $\tilde{\theta}_{5+}$ from the model:

[29] This regression also includes interactions between $B_{c(s)}^{0}$ and the indicators for the first (-9) and last (16) event years, to ensure that θ_{0-4} and θ_{5+} are identified off a balanced sample of states. All county characteristics interacted with θ_{0-4} and θ_{5+} in robustness checks are also interacted with the -9 and 16 event year indicators.
[30] For most pre-period event years, the slope on Black share is significantly less negative for resistant states.

(3) $$x_{c(s),t} = \delta_{c(s)} + \gamma_{st} + \left(\theta_{0-4} + \tilde{\theta}_{0-4}T_s\right)D_{st}^{0-4}B_{c(s)}^{0} + \left(\theta_{5+} + \tilde{\theta}_{5+}T_s\right)D_{st}^{5+}B_{c(s)}^{0} + \varepsilon_{c(s),t},$$

where T_s is an indicator for reinforcing states. For every 10 p.p. increase in baseline Black enrollment share, Black teacher salaries increased over the longer term by 4.4 log points more (coef. (s.e.) = 0.442 (0.093)) in reinforcing states than resistant states. Figure 4 Panel A presents the difference in event-study estimates, or estimates of the $\tilde{\theta}_j$'s in the model:

(4) $$x_{c(s),t} = \delta_{c(s)} + \gamma_{st} + \sum_{j\neq -1} D_{st}^{j}B_{c(s)}^{0}\left(\theta_j + \tilde{\theta}_j T_s\right) + u_{c(s),t}.$$

The reinforcing-resistant difference in the change in the relationship between Black share and Black teacher salaries appears to have been unanticipated based on pre-litigation trends (p=0.14).

IV.B. Interpretation

Do our estimates isolate the downstream impacts of the NAACP salary equalization campaign on Black teacher salaries? There were certainly other factors contributing to increases in Black teacher salaries in the 1940s and 1950s. For example, high schools weren't really established for Black children in the South until starting in the 1940s (Goldin, 1998; Goldin and Katz, 1999, 2008), and the schools that Black children attended also consolidated over the period of interest. Teachers in high schools and larger schools may have had higher salaries. Salary increases for Black teachers would have also been a way to address the widespread shortages of teachers during World War II (Margo, 1990); they may also reflect broader structural changes in the Southern economy in the mid-20th century.

While these factors may have had different effects on Black teacher salaries across counties with different Black enrollment shares, we have less reason to expect those effects also to have differed between reinforcing and resistant states. After all, reinforcing and resistant states have significant common support in Black enrollment share and other characteristics (Table 2). Still, it is worthwhile to explore alternative explanations.

We do so first by estimating the triple-difference models for two other school inputs – Black pupil-teacher ratios and term lengths. If Black high school expansion or school consolidation were driving force the Black teacher salary estimates, we should see evidence in these non-salary school resources that were more favorable in larger schools and high schools. The solid squares in Figure 4 Panel B represent the difference in event-study coefficient estimates between reinforcing and resistant states for the natural log Black pupil-teacher ratios. The third column of Table 3 Panel B (row 1) gives the longer-term triple-difference estimates. Those estimates are very small and not statistically significant (coef. (s.e.) = -0.011 (0.088)), showing that the entire effect on Black per-pupil teacher salary spending (Panel C) is explained by the impact on Black average teacher salaries. The longer-term triple-difference estimate for term length (Panel D) is positive but not statistically significant (coef. (s.e.) = 0.056 (0.075)); the x's in Figure 4 Panel B plot the event-study estimates.[31,32]

We also explored the sensitivity of the triple-difference estimates to controls for proxies for high school expansion and school consolidation. For this, we interact the 1940 Census-based measures of high school penetration and school size (see Section II and Table 2) with D_{st}^{0-4} and D_{st}^{5+} – the two post-litigation indicators included in the triple-difference model (equation (3)). The estimates are shown in Table 3 column 4. These controls barely change the estimates and don't add much explanatory power, suggesting that the triple-difference approach effectively accounts for the Black teacher salary effects of other schooling changes over the period.

[31] Panel A of each of Appendix Figures 3, 4, and 5 gives estimates of (1) for Black pupil-teacher ratios, per-pupil spending on teacher salaries, and term lengths, respectively.

[32] White school boards thus do not appear to have diverted funds from *Black* schools to meet Black salary mandates. Black school spending may have already been as low as it could be without inviting legal scrutiny or a loss in Black labor. Relatedly, Baker (2019a) shows that shocks to school budgets in early 20th century Georgia reduced white but not Black school spending. These shocks lowered white attainment and earnings in adulthood (Baker, 2019b).

The final column in Table 3 adds more controls to equation (3) – interactions between D_{st}^{0-4} and D_{st}^{5+} and the remaining county characteristics in Table 2 – the 1940 share of land in farming, the 1939 share of crop value in cotton, the presence of a Black college, and vote share for Strom Thurmond in the 1948 Presidential election. These controls have a larger effect on the Black teacher salary estimates. The control coefficients (not shown) imply significantly larger increases in teacher salaries in counties that initially had more land in farming and more farmland devoted to harvested cotton. These controls may remove biases from across-the-board wage increases as local economies transitioned from agriculture intensive in Black labor.[33] Still, the triple-difference estimate remains substantial and statistically significant.

IV.C. Spillover Effects on White School Resources

The NAACP campaign explicitly targeted Black teacher salaries, and we have shown that subsequent changes to state minimum teacher salary schedules were important for Black teacher wage growth through the late 1950s. However, resources in white schools should have been affected as well: state aid that might have otherwise been diverted to white schools would have no longer been available for expropriation, as school districts used that aid to comply with new minimum salary mandates for Black teachers. Resources available for white schools should have thus declined relative to a counterfactual that allowed for continued discrimination.

We can test for this in our three school resource measures for white schools – average teacher salaries, pupil-teacher ratios, and term lengths. The second row of Table 3 Panel A shows the longer-term difference-in-differences and triple-difference estimates from equations (2) and (3) for white teacher salaries. The positive relationship between pre-campaign Black enrollment share and the natural log of white teacher salaries in reinforcing states (Appendix

[33] It would be useful to estimate these models for local wage and salary income more generally. However, this is not possible: too few counties are identified in 1960 public-use Census microdata for the estimates to be informative.

Figure 2 Panel B) did significantly diminish after NAACP litigation, but the effects are similarly sized and statistically indistinguishable across reinforcing and resistant states (coef. (s.e.) = 0.042 (0.075); column 3). This suggests that white teachers in higher Black share counties of reinforcing states were not penalized beyond what would have been expected based on their higher average salaries at the outset. On the other hand, white class sizes fell less quickly (Panel B) and white term lengths rose less quickly (Panel D) in the higher Black share counties of reinforcing states. The estimate for pupil-teacher ratios is not significantly larger than in resistant states (coef. (s.e.) = 0.080 (0.064); column 3), but for term length it is significant in the specification with full controls (coef. (s.e.) = -0.05 (0.022); column 5).[34]

V. Black Teacher Salaries and Educational Outcomes

V.A. Effects on Black Education Outcomes

We begin our analysis of educational outcomes by focusing on Black children, whose classroom experiences would have been directly affected by pay raises for Black teachers. We lack sufficient data to provide direct evidence on whether any positive effects are explained by improved productivity or effort of existing teachers, or by replacement of lower-quality teachers with higher-quality ones. However, an auxiliary analysis of Census microdata for the six analysis states (Ruggles et al., 2021) suggests that turnover could have been important. While the average age of Black teachers increased somewhat between 1940 and 1960, their average educational attainment increased a great deal, both overall and relative to whites (Appendix Table 6).[35]

[34] Estimates of the event-study coefficients from model (1) are shown in Panel B of Appendix Figures 3 through 5 and Appendix Figure 6. Estimates of the difference in event-study coefficients are given in Appendix Figure 7. These findings are less compelling than for Black school resources, suggesting some caution in interpretation.

[35] We would ideally be able to test whether increases in Black average teacher salaries predict improvements in Black teacher age, educational attainment, or other characteristics using our research design. Unfortunately, such an exercise is precluded by a lack of consistent data on teacher characteristics in the state annual reports and incomplete release of county of residence in the 1960 public-use Census microdata.

Figure 5 Panel A plots the difference in event-study estimates for Black grade progression rates from 1st to 2nd grade and 6th to 7th grade – two transitions that were relatively rare for Black children in the late 1930s (Table 1 Panel B). Because grade progression rates are noisier outcomes than teacher salaries, we modified equation (4) to include dummies for event year bins, rather than single event years. In estimating this model, we implicitly assume teacher salaries have only a contemporaneous effect on grade progression; that is, we assume that the grade $g-1$ to g progression rate in year t, $y^{g}_{c(s),t}$, is affected only by average teacher salaries in t, $x_{c(s),t}$, not also average teacher salaries in prior years while a cohort was in school. Below, we formalize this assumption through two-stage least squares (2SLS) regression.

The figure provides some suggestion of an impact for Black progression from 6th to 7th grade, but not 1st to 2nd grade. In Figure 6 Panel A, we plot the longer-term triple-difference estimates grade by grade, replacing $x_{c(s),t}$ in equation (3) with $y^{g}_{c(s),t}$; this is the reduced-form coefficient on the instrument in the 2SLS model estimated below.[36] We present estimates from this model both without additional controls (solid dots, to match Figure 5) and with the controls included in the Table 3 column 5 (hollow dots). The baseline estimate for Black 6th to 7th grade progression is positive and statistically significant. The estimates for 8th to 9th grade progression are of a similar magnitude, but less precise; the estimates for 4th to 5th grade progression are marginally significant but smaller. In general, any positive impacts appear concentrated in middle grades, particularly in the transition from elementary to middle school.

The first eight columns of Table 4 present 2SLS estimates of the effect of log Black average teacher salary on Black progression rates, again grade by grade. The model of interest is:

$$y^{g}_{c(s),t} = \tau^{g}_{c(s)} + \mu^{g}_{st} + \beta^{g} x_{c(s),t} + \alpha^{g\prime} w_{c(s),t} + \epsilon^{g}_{c(s),t}, \tag{5}$$

[36] Appendix Figure 8 gives difference in event-study coefficients for all grade progression rates. First-stage and reduced-form coefficients on the excluded instrument are presented in Appendix Table 7.

where $w_{c(s),t}$ represents a vector of controls. The 2SLS estimates come from a just-identified model, where the only excluded instrument is $D_{st}^{5+}B_{c(s)}^{0}T_s$; all other interactions (including $D_{st}^{0-4}B_{c(s)}^{0}T_s$) enter directly, in $w_{c(s),t}$.[37] A benefit of this approach is that it only uses variation from when new minimum teacher salary schedules were in place in all states. The table also presents OLS estimates of the β^g's in equation (5) for comparison. The OLS estimates rely on panel variation in teacher salaries, like in Card and Krueger (1992a, 1992b).

The implied effects are substantial for some grades. For example, the 2SLS estimates imply that every 1% increase in Black teacher salaries raised Black 6th to 7th grade progression by 0.38 to 0.39 percentage points and Black 4th to 5th grade progression by 0.17 to 0.19 percentage points. Applying these effect sizes to the full change in Black teacher salaries between 1939-40 and 1959-60, we more than explain the changes in Black grade progression over this period. However, this is not a reasonable exercise since our identifying variation – deriving from within-state changes across counties due to NAACP litigation and subsequent changes to minimum teacher salary schedules – can explain only 10% of this change. If we instead apply the effect sizes to this part of Black teacher salary growth (13.4 log points), we can explain between 25% and 30% of changes in Black progression across these grades.

The OLS estimates follow a similar pattern as the 2SLS ones, with larger, positive, and statistically significant effects in the middle grades. However, they are less than half as large as 2SLS. Counties experiencing larger increases in Black teacher salaries may have had other, unobserved characteristics that worked against improving Black grade progression rates, leading to downward bias in OLS. On the other hand, changes in Black teacher salaries induced by NAACP litigation and subsequent changes to minimum teacher salary schedules may have had a

[37] An alternative approach is to use both $D_{st}^{0-4}B_{c(s)}^{0}T_s$ and $D_{st}^{5+}B_{c(s)}^{0}T_s$ as excluded instruments. These 2SLS estimates (Appendix Table 8) are substantively similar but less precise, owing to a weaker first stage.

particularly large impact on Black grade progression, so that the 2SLS estimates represent a local average treatment effect (LATE) (Imbens and Angrist, 1994). The identifying variation in the 2SLS model does derive from counties where initial Black grade progression rates were relatively low and marginal returns to resource improvements arguably relatively high.[38]

A limitation of grade progression rates as outcomes is that they do not speak to how Black teacher raises may have affected Black progress through high school. For this, we first turn to an alternative outcome observable in the administrative data – the share of all Black students enrolled in grades 9 through 12. While positive, the 2SLS estimates for this outcome are not significant (Table 4 column 10). The event-study estimates in Figure 5 Panel B give an indication of why: the pre-trend coefficient is positive and large, even if not significant.

The remaining column of the table presents estimates for the Census-based enrollment rate, measured at ages 18-19. Unlike the administrative data, the Census data are available only in 1940 and 1960. To accommodate this, we focus on a "long" triple difference, where the excluded instrument for $x_{c(s),t}$ in equation (5) is $D_t^{1960} B_{c(s)}^0 T_s$, with D_t^{1960} being an indicator variable for observation in 1960. We change all other references to D_{st}^{5+} in equation (3) accordingly, replacing D_{st}^{5+} with D_t^{1960}. Instead of regressing on contemporaneous Black teacher salaries, we also use Black teacher salaries averaged over the years in which a cohort would have been ages 15 to 18, incorporating the idea that there may be lingering effects of teacher salaries in past years on current enrollment.

The 2SLS estimates are largely uninformative. The OLS estimates are, however, positive, statistically significant, and statistically indistinguishable from 2SLS. Taking the OLS point estimates at face value, we would conclude that Black teacher salary variation induced by the

[38] While the difference could also reflect attenuation bias in OLS from measurement error, we anticipate that average teacher salaries are well measured in the administrative data.

combination of NAACP litigation and non-discriminatory teacher salary schedules can explain only a small share (about 5%) of the rise in Black enrollment rates between 1940 and 1960.[39]

B. Effects on White Education Outcomes and the Black-White Outcome Gap

Though the effects of Black teacher pay increases on Black educational outcomes appear to have been somewhat limited, impacts on the Black-white *gap* in educational outcomes were more substantial.[40] In the Online Appendix, we show that raises for Black teachers slowed growth in white educational attainment: while typically not statistically significant, the estimates for white educational outcomes are consistently negative.[41] This aligns with our suggestive findings (Section IV) that resources available to white schools declined, as white school leaders changed how resources were allocated to meet Black teacher pay mandates.

Figure 7 presents the reinforcing-resistant difference in event-study coefficient estimates for Black-white gaps in grade progression and enrollment rates; there are no pre-trends. Figure 6 Panel B gives the reduced-form triple-difference coefficient estimates. These estimates are more positive and more likely to be statistically significant than for Blacks. The 2SLS estimates, shown in Table 5, imply that pay raises for Black teachers significantly reduced Black-white differences in 1st to 2nd grade progression, 4th to 5 grade progression, and 6th to 7th grade progression. Based on the estimates with additional controls (Panel B), we would conclude that Black teacher salary gains can explain 32% of the reduction in the Black-white gap in 1st to 2nd grade progression over the 1940s and 1950s, and closer to 90% of the reductions for 4th to 5th and

[39] We also estimated these models using a dependent variable that keeps the same values as the original for cohorts observed in 1960 but assign cohorts observed in 1940 the population share either enrolled or with 9 or more (rather than 12 or more) years of schooling. This variable may better reflect the distribution of educational attainment in the South at this time (Card, Domnisoru, and Taylor, 2022). 2SLS estimates using this outcome continue to be noisy zeros for Black attainment but are slightly more precise for the Black-white attainment gap. See Appendix Table 9.
[40] We would arrive at similar 2SLS estimates if we considered the treatment to be the Black-white teacher salary gap rather than Black average teacher salary: there is a null effect of the instrument on white teacher salaries (Table 3).
[41] See Appendix Table 10 for the 2SLS and OLS estimates of the β^g's in equation (5) for white grade progression and school enrollment rates and Appendix Figures 8 and 9 for the event-study and reduced-form plots.

6th to 7th grades. The 2SLS estimates for enrollment rates are less precise but also suggest that increases in Black teacher salaries narrowed Black-white gaps – by 24% for the administrative measure and 61% for the Census measure.

C. Comparison to Card and Krueger

Taken together, our findings imply that Black teacher salary gains can explain more of the reductions in Black-white attainment *gaps* than absolute Black attainment gains over the 1940s and 1950s. These effects may have been apparent in years of completed schooling, but unlike Card and Krueger (1992a, 1992b), we do not observe this outcome. Despite this, our analysis has offered two innovations over their analysis of the relationship between Black-white gaps in school quality and education (Card and Kreuger, 1992a): (1) the use of county (rather than state) panel data; and (2) estimation based on policy variation in one school resource measure – teacher salaries. Focusing on teacher salaries, however, we have not yet touched on how pupil-teacher ratios or term lengths relate to educational attainment in our data.

We do so in Table 6, using the outcome measure closest to that in Card and Krueger (1992a) – the Black-white gap in the age 18-19 enrollment rate, calculated from the Census.[42] Like Card and Krueger (1992a), in the model with state and cohort fixed effects (column 1) we find evidence of a strong negative correlation between race gaps in pupil-teacher ratios and enrollment rates (Panel B). We also see as strong a correlation between race gaps in log teacher salaries and enrollment rates (Panel A), and coefficients on both the Black-white gap in log teacher salaries and pupil-teacher ratios remain significant when estimated simultaneously (Panel C) or alongside the coefficient on the race gap in term length (Panel D). However, once we control for county fixed effects (column 2) or add state-by-cohort fixed effects (column 3), only

[42] We limit attention to counties in the five states where all three resource measures are observed – Alabama, Florida, Louisiana, South Carolina, and Tennessee. Estimates based on the full sample of states are quantitatively quite similar. See Appendix Table 11.

the coefficient on teacher salary remains statistically significant. County level data may offer useful variation with which to identify the effects of teacher salaries.

VI. Conclusion

Rapid increases in educational expenditure occurred in the South starting in the 1940s, when the salaries of Black teachers were leveled up to white teacher salaries. Our first goal in this paper has been to examine the contribution of the NAACP's teacher salary equalization campaign to this convergence, using newly digitized county panel data. The second has been to use the results of this analysis to revisit the pioneering work of Card and Krueger (1992a) on school quality and educational attainment using a novel research design.

We find that the effects of the NAACP's campaign were heterogeneous, dependent on subsequent state policy. In states that followed successful NAACP lawsuits by introducing minimum teacher salary schedules based on minimal criteria like experience and education, the relatively large wage penalty historically suffered by Black teachers in counties with higher Black enrollment shares disappeared by the late 1950s. That penalty however remained in states that instead followed NAACP litigation by adopting salary schedules that incorporated a standardized test, the NTE, as a measure of teaching efficacy. By showing that the campaign was itself not enough to equalize teacher salaries, we offer a more nuanced interpretation of the NAACP's efforts than Donohue, Heckman, and Todd (2002). Like Card, Domnisoru, and Taylor, 2022), we also show the importance of salary schedules to teacher pay during this era.

Using variation in Black salary gains over time across counties with different Black enrollment shares, and across states by whether later minimum salary schedules allowed for continued discrimination against Black teachers, we then estimate the effect of teacher pay on educational attainment. We find that improvements in Black teacher salaries at mid-century

modestly raised rates of Black progression through the middle grades. However, there were more substantial effects on racial inequality in grade progression and school enrollment throughout childhood and adolescence, due to negative spillovers of Black teacher pay raises on white educational attainment. We present suggestive evidence of declines in white school resources: to finance raises for Black teachers, white school leaders may have needed to draw on revenues they would have otherwise used for white schools.

Our analysis has limitations. Unlike Card and Krueger (1992a, 1992b), we do not observe adult educational attainment, but rather measures of educational progress and enrollment during school age. Implementing our research design has also required high-frequency, county-level data on school resources and educational outcomes, which were available only for a limited set of southern states. The state administrative data has also not allowed us to observe total school spending by race, leaving us limited scope to identify specific white school resources that were cut in response to Black teacher raises. We also lacked the data to examine changes in the characteristics of Black teachers beyond their salaries.

Our analysis nevertheless offers directions for future research. At base, the Black teacher salary increases studied here represented a massive transfer to individuals of one race working in one occupation in one region of the country – all over a short period of time. This not only shocked schooling experiences, but also the resources available in some households, possibly affecting children's human capital accumulation outside of school. It may have also affected the balance of bargaining power within some households and changed incentives to pursue higher education among potential future teachers. Future research might consider these issues.

References

Aaronson, Daniel and Bhashkar Mazumder. 2011. "The Impact of Rosenwald Schools on Black Achievement." *Journal of Political Economy* 119(5): 821-888.

Acemoglu, Daron, David Autor, and David Lyle. 2004. "Women, War, and Wages: The Effect of Female Labor Supply on the Wage Structure at Midcentury." *Journal of Political Economy* 112(3): 497-551.

Ashenfelter, Orley, William J. Collins, and Albert Yoon. 2006. "Evaluating the Role of Brown v. Board of Education in School Equalization, Desegregation, and the Income of African Americans." *American Law and Economics Review* 8(2): 213-248.

Baker, Richard B. 2019a. "Finding the Fat: the Relative Impact of Budget Fluctuations on African-American Schools." *Explorations in Economic History* 72: 93-113.

Baker, Richard B. 2019b. "School Resources and Labor Market Outcomes Evidence from Early Twentieth Century Georgia." *Economics of Education Review* 70: 35-47.

Baker, Scott. 1995. "Testing Equality: The National Teacher Examination and the NAACP's Legal Campaign to Equalize Teachers' Salaries in the South, 1936-63." *History of Education Quarterly* 35(1): 49-64.

Beezer, Bruce. 1986. "Black Teachers' Salaries and the Federal Courts Before Brown V. Board of Education: One Beginning for Equity." *The Journal of Negro Education* 55(2): 200-213.

Bond, Horace Mann. 1934. *The Education of the Negro in the American Social Order.* New York, NY: Octagon Books.

Boozer, Michael, Alan B. Krueger and Shari Wolkon. 1992. "Race and School Quality Since Brown vs. Board of Education." *Brookings Papers on Economic Activity: Microeconomics*, 269-326.

Brunner, Eric, Joshua Hyman, and Andrew Ju. 2020. "School Finance Reforms, Teachers' Unions, and the Allocation of School Resources." *Review of Economics and Statistics* 102(3): 473-489.

Card, David and Alan B. Krueger. 1992a. "School Quality and Black-White Relative Earnings: A Direct Assessment." *The Quarterly Journal of Economics* 107(1): 151-200.

Card, David and Alan B. Krueger. 1992b. "Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States." *The Journal of Political Economy* 100(1): 1-40.

Card, David and Alan B. Krueger. 1996. "School Resources and Student Outcomes: An Overview of the Literature and New Evidence from North and South Carolina." *Journal of Economic Perspectives* 10(4): 31-50.

Card, David, Ciprian Domnisoru, and Lowell Taylor. 2022. "The Intergenerational Transmission of Human Capital: Evidence from the Golden Age of Upward Mobility." *Journal of Labor Economics* 40(S1): S39-S95.

Card, David and A. Abigail Payne. 2002. "School finance reform, the distribution of school spending, and the distribution of student test scores." *Journal of Public Economics* 83: 49-82.

Carruthers, Celeste and Marianne Wanamaker. 2013. "Closing the gap? The effect of private philanthropy on the provision of African-American schooling in the U.S. south." *Journal of Public Economics* 101: 53-67.

Carruthers, Celeste and Marianne Wanamaker. 2017a. "Separate and Unequal in the Labor Market: Human Capital and the Jim Crow Wage Gap." *Journal of Labor Economics* 35(3): 655-696.

Carruthers, Celeste and Marianne Wanamaker. 2017b. "Returns to School Resources in the Jim Crow South." *Explorations in Economic History* 64: 104-110.

Carruthers, Celeste and Marianne Wanamaker. 2019. "County-level school enrollment and resources in ten segregated Southern states, 1910-1940." Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2019-05-06. https://doi.org/10.3886/E109625V1

Cascio, Elizabeth U., Nora Gordon, Ethan Lewis, and Sarah Reber. 2008. "From *Brown* to Busing." *Journal of Urban Economics* 64(2): 296-325.

Cascio, Elizabeth U., Nora Gordon, Ethan Lewis, and Sarah Reber. 2010. "Paying for Progress: Conditional Grants and the Desegregation of Southern Schools." *The Quarterly Journal of Economics* 125(1): 445-482.

Cascio, Elizabeth U., Nora Gordon, and Sarah Reber. 2013. "Local Responses to Federal Grants: Evidence from the Introduction of Title I in the South." *American Economic Journal: Economic Policy* 5(3): 126-159.

Cascio, Elizabeth U. and Ebonya Washington. 2014. "Valuing the Vote: The Redistribution of Voting Rights and State Funds Following the Voting Rights Act of 1965." *The Quarterly Journal of Economics* 129(1): 379-433.

Chay, Kenneth. 1998. "The Impact of Federal Civil Rights Policy on Black Economic Progress: Evidence from the Equal Employment Opportunity Act of 1972." *ILR Review* 51(4): 608-632.

Clark, Melissa. 2003. "Education Reform, Redistribution, and Student Achievement: Evidence From the Kentucky Education Reform Act." https://www.mathematica-mpr.com/-/media/publications/pdfs/education/edreform_wp.pdf.

Collins, William J. and Robert A. 2006. "Historical Perspectives on Racial Differences in Schooling in the United States." In Handbook of the Economics of Education, Volume 1, Ed. Eric Hanushek and Finis Welch (Amsterdam: North Holland), pp.108-154.

Donohue, John J. III, James J. Heckman and Petra E. Todd. 2002. "The Schooling of Southern Blacks: The Roles of Legal Activism and Private Philanthropy, 1910-1960." *The Quarterly Journal of Economics* 117(1): 225-268.

Ellis, Fendall R., Harry L. Smith, and C.J. Watkins. 1969. "Virginia." In *Education in the States: Historical Development and Outlook*, Ed. Jim B. Pearson and Edgar Fuller (Washington, D.C.: National Education Association of the United States), pp. 1287-1316.

Foote, John McFarland and Minns Sledge Robertson. 1926. *The public schools of East Feliciana Parish*. Baton Rouge: Louisiana Department of Education.

Goldin, Claudia. 1998. "America's Graduation from High School: The Evolution and Spread of Secondary Schooling in the Twentieth Century." *The Journal of Economic History* 58(2): 345-374.

Goldin, Claudia and Lawrence Katz. 1999. "Human Capital and Social Capital: The Rise of Secondary Schooling in America, 1910-1940." *Journal of Interdisciplinary History* 29(4): 683-723.

Goldin, Claudia and Lawrence F. Katz. 2008. *The Race Between Education and Technology*. Cambridge, MA: Belknap.

Guryan, Jonathan. 2001. "Does Money Matter? Regression-Discontinuity Estimates from Education Finance Reform in Massachusetts." NBER Working Paper 8269.

Haines, Michael R., and Inter-university Consortium for Political and Social Research. Historical, Demographic, Economic, and Social Data: The United States, 1790-2002. Inter-university Consortium for Political and Social Research [distributor], 2010-05-21. https://doi.org/10.3886/ICPSR02896.v3

Hyman, Joshua. 2017. "Does Money Matter in the Long Run? Effects of School Spending on Educational Attainment." *American Economic Journal: Economic Policy* 9(4): 256–80.

Imbens, Guido W. and Joshua Angrist. 1994. "Identification and Estimation of Local Average Treatment Effects." *Econometrics* 62: 467-475.

Jackson, C. Kirabo, Rucker Johnson, and Claudia Persico. 2016. "The Effects of School Spending on Education and Economic Outcomes: Evidence from School Finance Reforms." *The Quarterly Journal of Economics* 131(1): 157-218.

Johnson, Charles S. 1941. *Statistical Atlas of Southern Counties*. Chapel Hill: University of North Carolina Press.

Keyssar, Alexander. 2000. *The Right to Vote: The Contested History of Democracy in the United States*. New York: Basic Books.

Kluger, Richard. 1975. *Simple Justice: The History of Brown v. Board of Education and Black America's Struggle for Equality*. New York: Alfred A. Knopf.

Kousser, J. Morgan. 1974. *The Shaping of Southern Politics: Suffrage Restriction and the Establishment of the One-Party South, 1880–1910*. New Haven, CT: Yale University Press.

LaFortune, Julien, Jesse Rothstein, and Diane Schanzenbach. 2018. "School Finance Reform and the Distribution of Student Achievement." *American Economic Journal: Applied Economics* 10(2): 1-26.

Logan, Trevon D. 2020. "Do Black Politicians Matter? Evidence from Reconstruction." *The Journal of Economic History* 80(1): 1-37.

Margo, Robert A. 1990. *Race and Schooling in the South, 1880-1950: An Economic History*. Chicago, IL: University of Chicago Press.

Margo, Robert A. 1991. "Segregated Schools and the Mobility Hypothesis: A Model of Local Government Discrimination." *The Quarterly Journal of Economics* 106(1): 61-73.

Marshall, Thurgood. 1947. "Teachers' Salary Cases." In *The Negro Handbook, 1946-47* (ed. Florence Murray), pp. 40-50. New York, NY: A.A. Wynn.

Matthews, Donald R., and James W. Prothro, "Social and Economic Factors and Negro Voter Registration in the South," American Political Science Review, 57, no. 1 (1963), 24-44.

Murray, Florence. 1949. "Teachers' Salary Cases." In *The Negro Handbook* (ed. Florence Murray), pp. 62-63. New York, NY: The MacMillan Company.

Myrdal, Gunnar. 1944. *An American Dilemma: The Negro Problem and Modern Democracy*. New York, NY: Harper and Row.

Naidu, Suresh. 2012. "Suffrage, Schooling, and Sorting in the Post-Bellum U.S. South." NBER Working Paper 18129.

National Education Association. 1968. *State Minimum-Salary Laws for Teachers, 1968-69*.

Public-School Salaries Series. Research Report 1968-R15. Washington, D.C.: NEA Research Division.

Orazem, Peter F. 1987. "Black-White Differences in Schooling Investment and Human Capital Production in Segregated Schools." *American Economic Review* 77(4): 714-723.

Reber, Sarah. 2010. "Desegregation and Educational Attainment for Blacks." *The Journal of Human Resources* 45(4): 893-914.

Reber, Sarah. 2011. "From Separate and Unequal to Integrated and Equal? School Desegregation and School Finance in Louisiana." *The Review of Economics and Statistics* 93(2): 404-415.

Rothstein, Jesse, and Diane Schanzenbach. 2022. "Does Money Still Matter? Attainment and Earnings Effects of Post-1990 School Finance Reforms." *Journal of Labor Economics* S141-S178.

Ruggles, Steven, Sarah Flood, Sophia Foster, Ronald Goeken, Jose Pacas, Megan Schouweiler and Matthew Sobek. *IPUMS USA: Version 11.0* [dataset]. Minneapolis, MN: IPUMS, 2021. https://doi.org/10.18128/D010.V11.0

Southern Education Reporting Service. 1960. *A Statistical Summary, State-by-State, of Segregation-Desegregation Activity Affecting Southern Schools from 1954 to Present, Together with Pertinent Data on Enrollment Teacher Pay, Etc*. Fifth printing. Nashville, TN: Southern Education Reporting Service.

State Department of Education of Louisiana. 1941. *Ninety-First Annual Report for the Session 1939-40.* Baton Rouge, LA: State Superintendent of Public Education. [Bulletin No. 448]

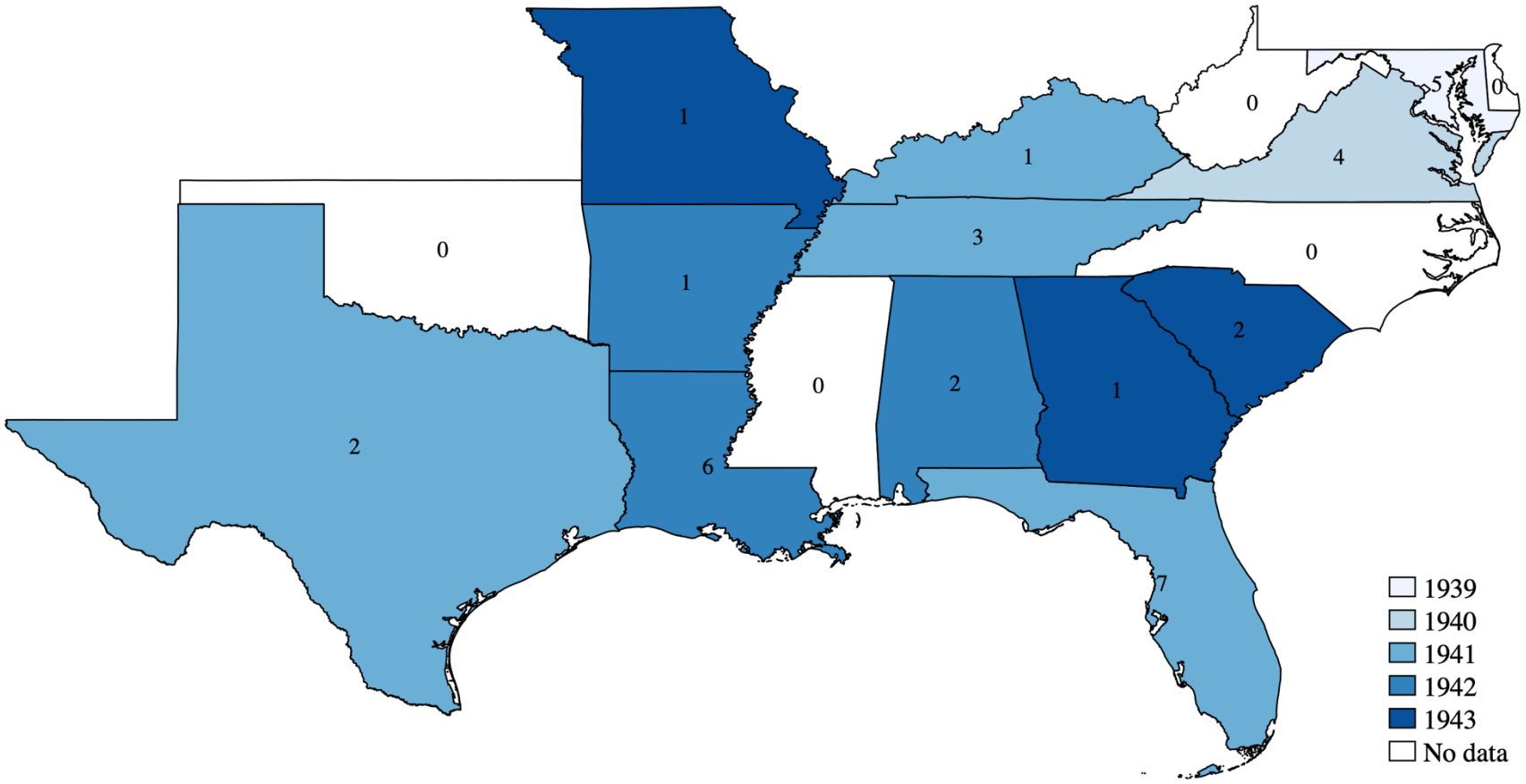
State Department of Education of Louisiana. 1944. *Ninety-Fifth Annual Report for the Session 1943-44.* Baton Rouge, LA: State Superintendent of Education. [Bulletin No. 543]

State of Louisiana. 1908. *Proceedings of the Conference of Parish Superintendents of Public Education*. (Supplement to the Biennial Report of 1906-1907). Baton Rouge, LA: The Daily State Publishing Company, State Printing.

Tushnet, Mark. 1987. *The NAACP's Legal Strategy Against Segregated Education, 1925-1950*. Chapel Hill, NC: University of North Carolina Press.

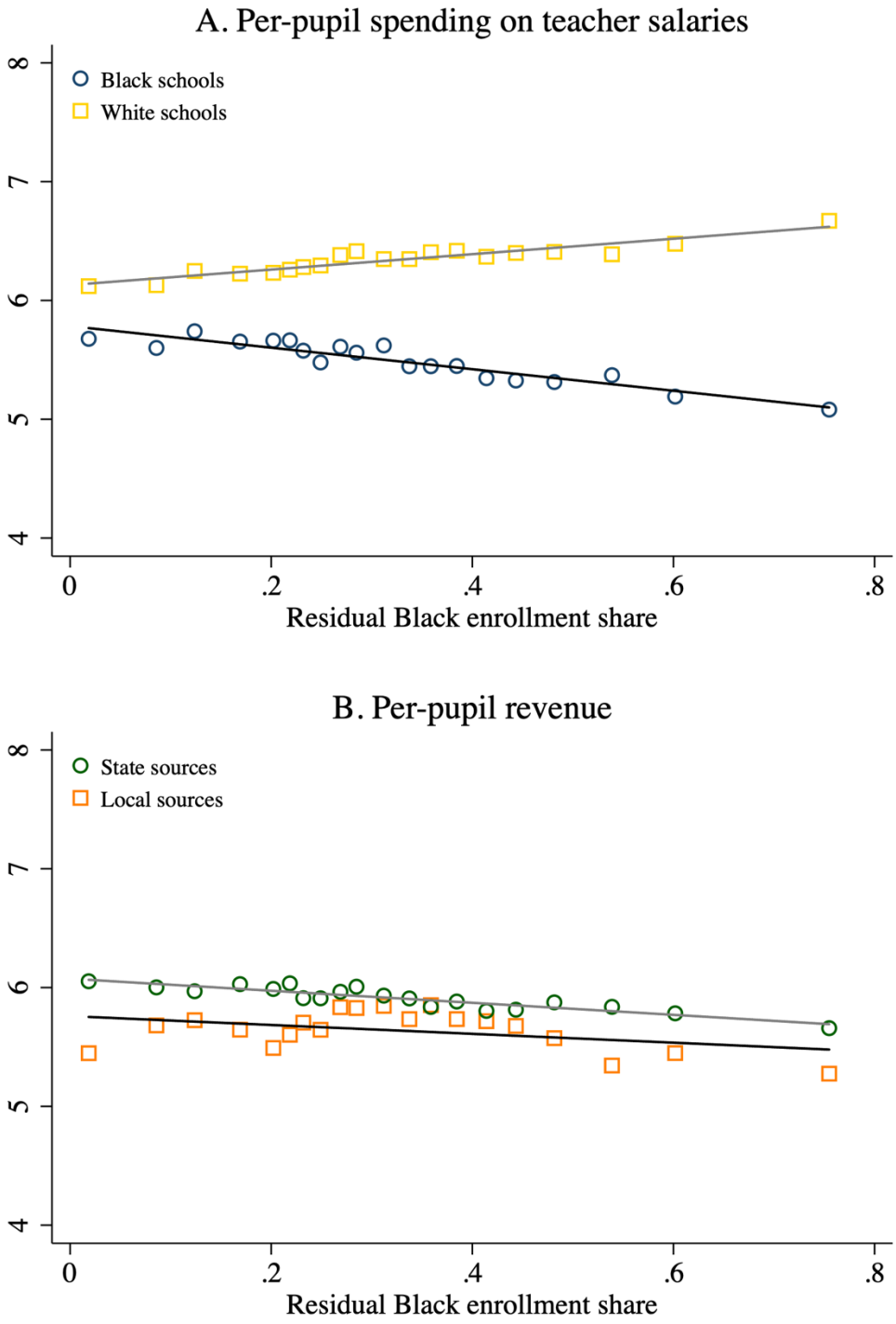
Washburne, Carleton. 1942. *Louisiana Looks at its Schools: A Summary Report of the Louisiana Educational Survey*. Baton Rouge: Louisiana Educational Survey Commission.

Figure 1. Filing Year of 1st NAACP Teacher Salary Equalization Case and Number of Cases, by State: Southern and Border Region



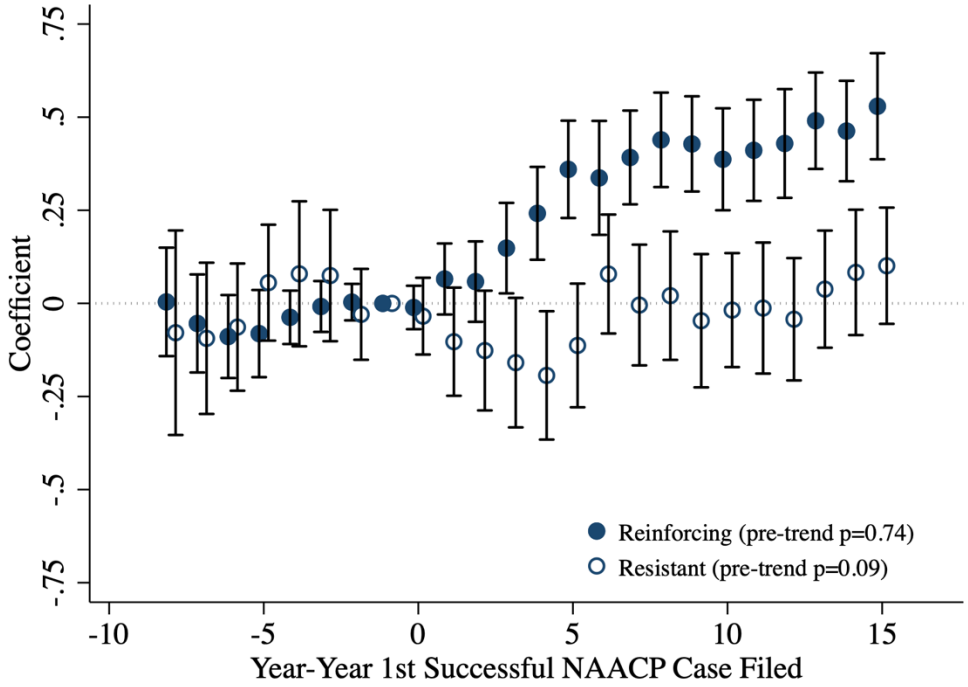
Source: Marshall (1947), Murray (1949).
Note: Case counts include cases brought with the assistance of the NAACP in state or federal court, regardless of their disposition. The first successful case is the first case successfully litigated in a federal court. See Appendix Table 1 for more details.

Figure 2. Relationship between Black Enrollment Share and Per-Pupil School Spending and Revenue, 1939-40



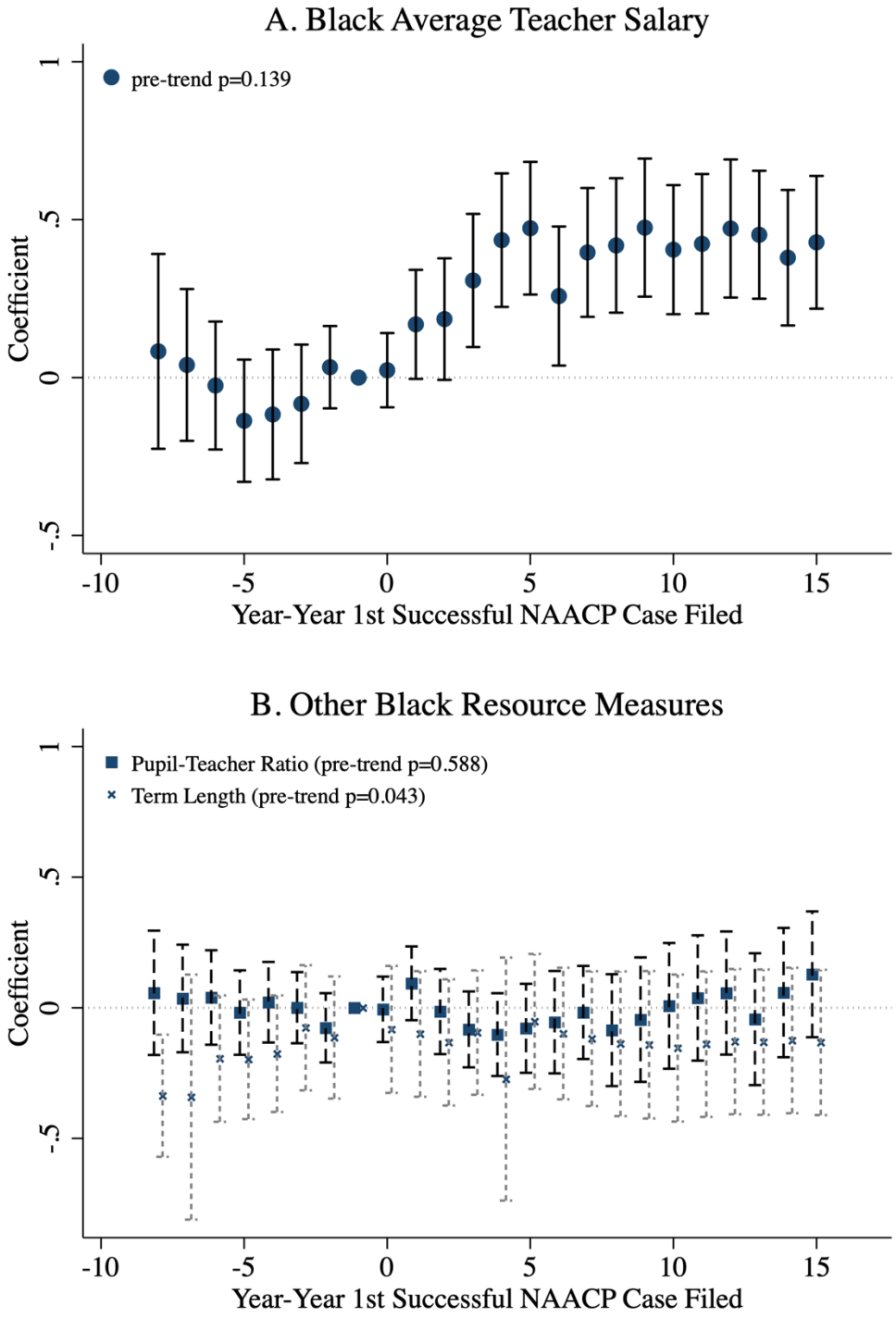
Source: Administrative reports from AL, FL, LA, SC, TN, and VA. See Online Appendix A.
Note: Figures are binned scatterplots of residual per-pupil spending on teacher salaries by race (Panel A) and residual per-pupil revenue by source (Panel B) against residual 1939-40 Black enrollment share. Underlying regressions include state fixed effects. The unit of observation is a county, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample. The x- and y-axes are rescaled to reflect (weighted) mean values of the variables.

Figure 3. Event-Study Estimates for Black Average Teacher Salary, by Type of Minimum Salary Schedule after NAACP Litigation



Source: Administrative reports from AL, FL, LA, SC, TN, and VA. See Online Appendix A.
Note: Dependent variable is the natural log of Black average teacher salary. Dots represent estimates of the event-study coefficients (on $D_{st}^{j}B_{c(s)}^{0}$) from equation (1); capped vertical lines represent 95% confidence intervals. Standard errors are clustered on county. The unit of observation is a county-year, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample. "Reinforcing" states (AL, LA, TN, VA) adopted minimum teacher salary schedules based on training and experience only. Minimum teacher salary schedules in "resistant" states (FL, SC) also incorporated performance on the National Teacher Examination.

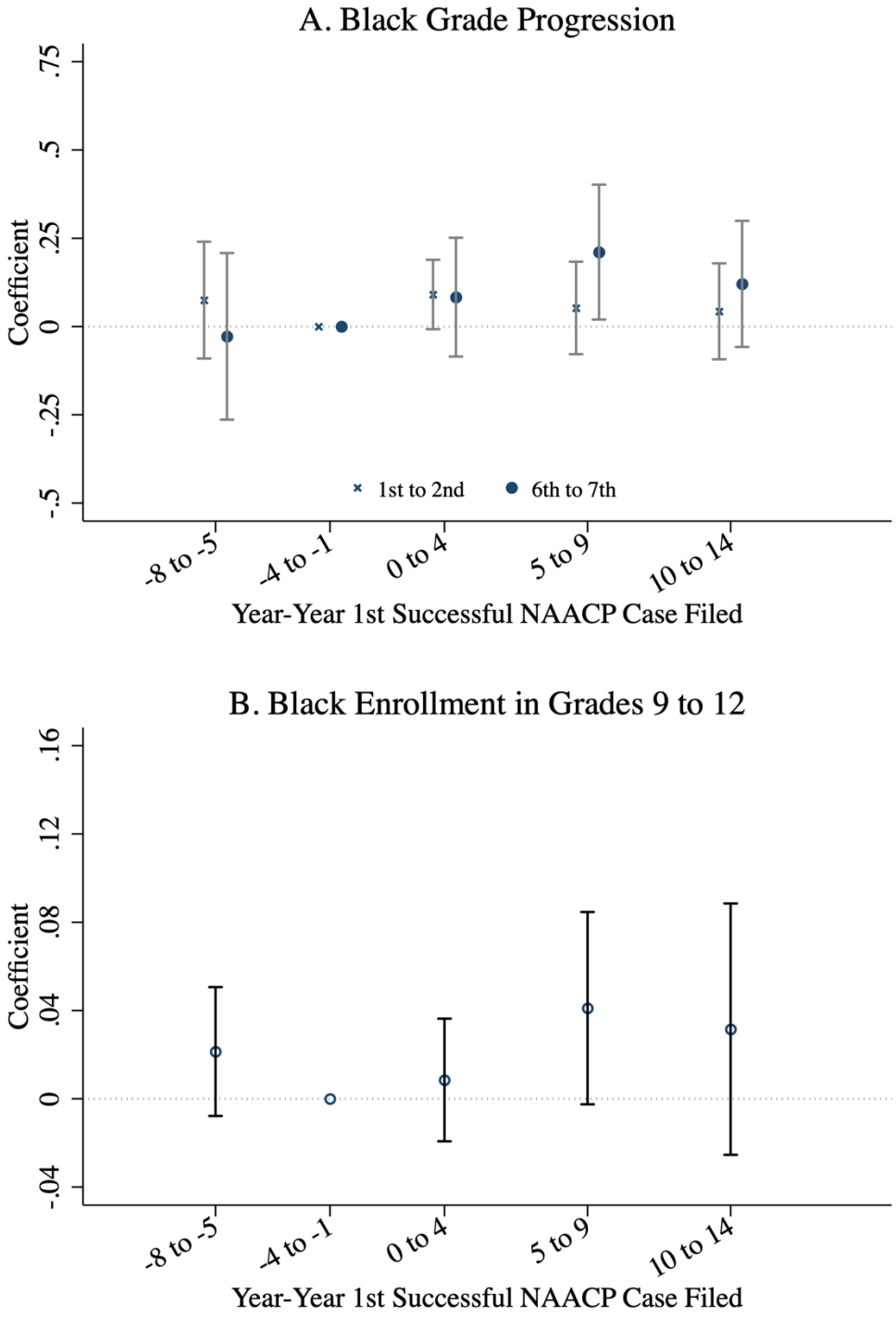
Figure 4. Reinforcing-Resistant Difference in Event-Study Estimates for Black School Resources



Source: Administrative reports from AL, FL, LA, SC, TN, and VA. Data on term length not available for VA. See Online Appendix A.

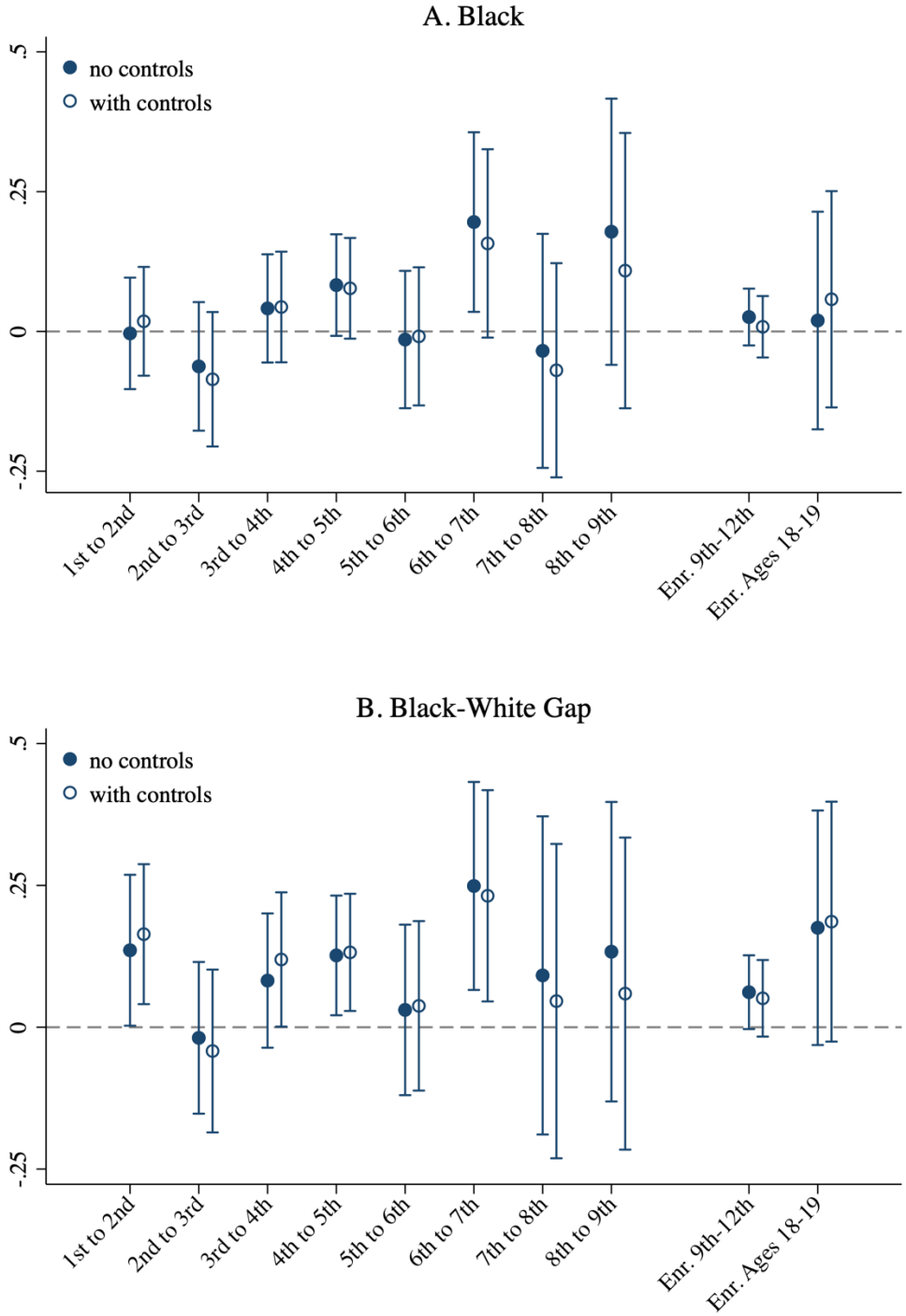
Note: Dependent variables are logged. Dots represent estimates of the reinforcing-resistant difference in event-study coefficients (on $D_{st}^{j}B_{c(s)}^{0}T_s$) from equation (4); capped vertical lines represent 95% confidence intervals. Standard errors are clustered on county. The unit of observation is a county-year, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample. "Reinforcing" states (AL, LA, TN, VA) adopted minimum teacher salary schedules based on training and experience only. Minimum teacher salary schedules in "resistant" states (FL, SC) also incorporated performance on the National Teacher Examination.

Figure 5. Reinforcing-Resistant Difference in Event-Study Estimates for Black Grade Progression and Enrollment Rates



Source: Administrative reports from AL, FL, SC, and TN. See Online Appendix A.
Note: Dots represent estimates of the reinforcing-resistant difference in event-study coefficients (on $D_{st}^{j}B_{c(s)}^{0}T_s$) from a binned version of equation (4); capped vertical lines represent 95% confidence intervals. Standard errors are clustered on county. The unit of observation is a county-year, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample. "Reinforcing" states (AL, TN) adopted minimum teacher salary schedules based on training and experience only. Minimum teacher salary schedules in "resistant" states (FL, SC) also incorporated performance on the National Teacher Examination.

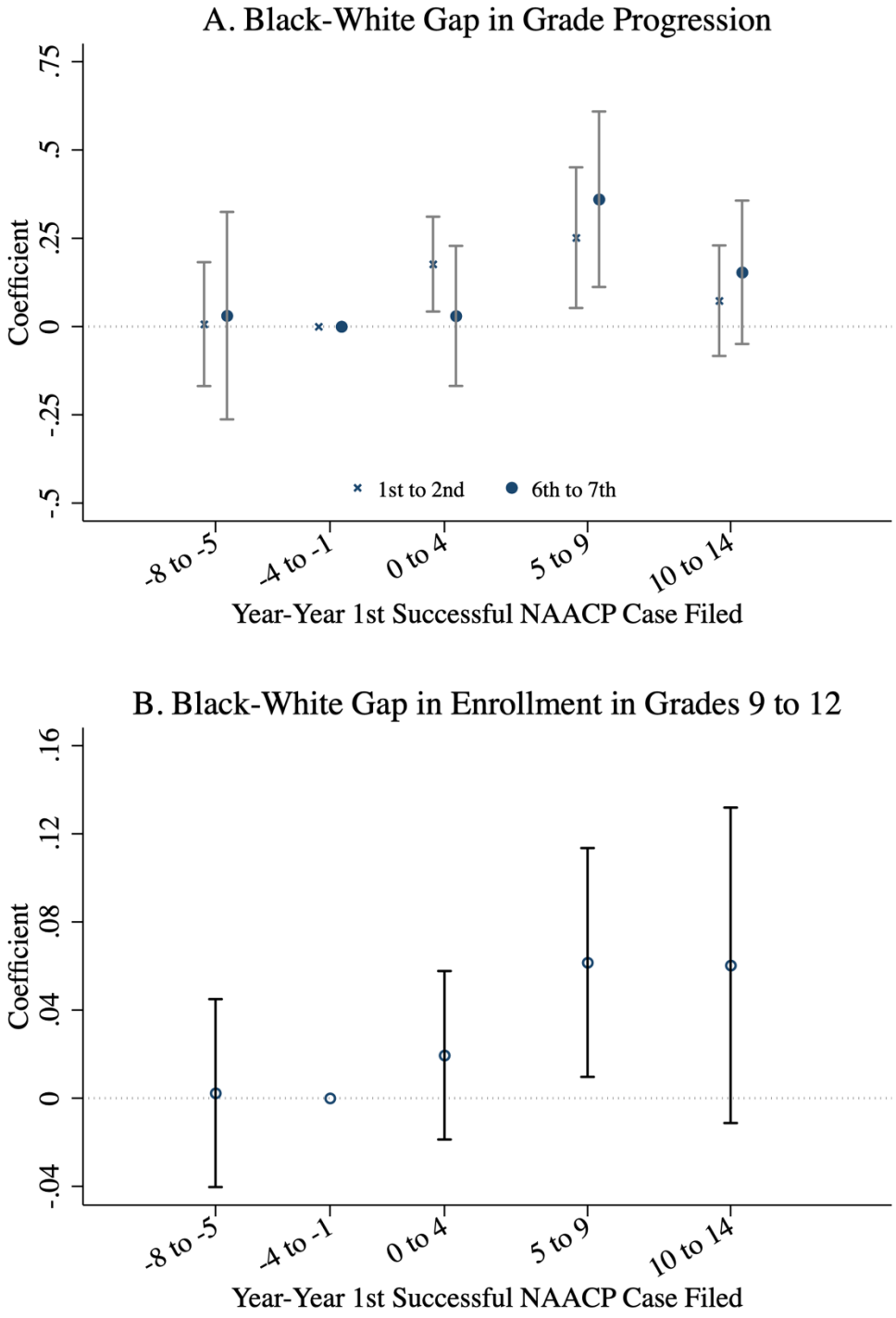
Figure 6. Triple-Difference Estimates for Grade Progression and Enrollment Rates



Source: Administrative reports from AL, FL, SC, and TN [grade progression rates and 9th-12th grade enrollment rate] and Census data for AL, FL, LA, SC, TN, and VA (Ruggles et al., 2021) [ages 18-19 enrollment]. See Online Appendix A.

Note: For all outcomes besides ages 18-19 enrollment, dots represent estimates of the coefficient on $D_{st}^{5+}B_{c(s)}^{0}T_s$ in equation (3); for ages 18-19 enrollment, dots represent the coefficient on $D_t^{1960}B_{c(s)}^{0}T_s$ in a version of (3) modified for the Census data (see text). Capped vertical lines represent 95% confidence intervals. Standard errors are clustered on county. The unit of observation is a county-year, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample. Controls are the variables listed in Table 2 interacted with indicators for event years -9 and below, 0-4, 5-15, and 16 and above.

Figure 7. Reinforcing-Resistant Difference in Event-Study Estimates for Black-White Gaps in Grade Progression and Enrollment Rates



Source: Administrative reports from AL, FL, SC, and TN. See Online Appendix A.
Note: Dots represent estimates of the reinforcing-resistant difference in event-study coefficients (on $D_{st}^{j}B_{c(s)}^{0}T_s$) from a binned version of equation (4); capped vertical lines represent 95% confidence intervals. Standard errors are clustered on county. The unit of observation is a county-year, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample. "Reinforcing" states (AL, TN) adopted minimum teacher salary schedules based on training and experience only. Minimum teacher salary schedules in "resistant" states (FL, SC) also incorporated performance on the National Teacher Examination.

Table 1. School Resources and Educational Attainment Before and After NAACP Litigation: Six Southern States

	Black			White			Black-White Difference[a]		
	Mean [s.d.]		Change	Mean [s.d.]		Change	Mean [s.d.]		Change
	1939-40	1959-60	(s.e.)	1939-40	1959-60	(s.e.)	1939-40	1959-60	(s.e.)
				A. School resource measures					
Average teacher salary	8,890	32,563	23,673	16,447	34,046	17,599	-0.65	-0.04	0.61
	[3,151]	[6,116]	(307)	[3,515]	[9,995]	(474)	[0.36]	[0.15]	(0.02)
Pupil-teacher ratio	36	29	-7.3	29	26	-2.6	0.20	0.07	-0.13
	[9]	[5]	(0.4)	[4]	[3]	(0.2)	[0.32]	[0.24]	(0.01)
Per-pupil spending	273	1,179	906	590	1,308	717	-0.85	-0.11	0.74
on teacher salaries	[159]	[357]	(17)	[196]	[468]	(23)	[0.59]	[0.30]	(0.02)
Term length (days)	152	178	26.1	168	179	10.8	-0.10	0.00	0.10
	[15]	[3]	(0.9)	[11]	[2]	(0.6)	[0.11]	[0.01]	(0.01)
				B. Grade progression rates[b]					
1st to 2nd grade	0.49	0.84	0.35	0.75	0.93	0.18	-0.25	-0.09	0.17
	[0.15]	[0.16]	(0.01)	[0.14]	[0.08]	(0.01)	[0.17]	[0.16]	(0.01)
2nd to 3rd grade	0.96	0.97	0.01	0.99	0.99	0.00	-0.03	-0.02	0.01
	[0.17]	[0.13]	(0.01)	[0.07]	[0.06]	(0.01)	[0.19]	[0.15]	(0.02)
3rd to 4th grade	0.92	0.96	0.04	0.98	0.99	0.01	-0.06	-0.03	0.03
	[0.14]	[0.12]	(0.01)	[0.07]	[0.06]	(0.01)	[0.15]	[0.13]	(0.01)
4th to 5th grade	0.87	0.97	0.10	0.94	0.99	0.04	-0.07	-0.02	0.05
	[0.15]	[0.10]	(0.01)	[0.06]	[0.06]	(0.01)	[0.17]	[0.11]	(0.01)
5th to 6th grade	0.85	0.95	0.11	0.92	0.99	0.07	-0.08	-0.04	0.04
	[0.17]	[0.10]	(0.01)	[0.05]	[0.05]	(0.01)	[0.18]	[0.11]	(0.01)
6th to 7th grade	0.81	0.98	0.17	0.92	1.01	0.09	-0.11	-0.04	0.08
	[0.20]	[0.11]	(0.02)	[0.10]	[0.07]	(0.01)	[0.22]	[0.12]	(0.02)
7th to 8th grade	0.75	0.90	0.15	0.91	0.94	0.03	-0.16	-0.04	0.13
	[0.25]	[0.12]	(0.02)	[0.16]	[0.09]	(0.02)	[0.31]	[0.14]	(0.03)
8th to 9th grade	0.72	0.87	0.15	0.87	0.92	0.06	-0.15	-0.05	0.09
	[0.34]	[0.27]	(0.02)	[0.12]	[0.08]	(0.01)	[0.33]	[0.27]	(0.02)
				C. Enrollment rates[b]					
Share enr. 9th-12th	0.07	0.19	0.12	0.19	0.24	0.05	-0.12	-0.05	0.07
	[0.06]	[0.06]	(0.00)	[0.05]	[0.03]	(0.00)	[0.07]	[0.06]	(0.01)
Share enr. ages 18-19	0.24	0.55	0.31	0.46	0.65	0.19	-0.23	-0.10	0.13
	[0.14]	[0.22]	(0.01)	[0.13]	[0.16]	(0.01)	[0.15]	[0.23]	(0.01)

Source: Administrative reports for AL, FL, SC, and TN [grade progression rates and 9^{th}-12^{th} grade enrollment rate] and Census data for AL, FL, LA, SC, TN, and VA (Ruggles et al., 2021) [ages 18-19 enrollment]. See Online Appendix A.
Notes: Unless otherwise noted, the sample includes 421 counties. Statistics are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample. Monetary values in real 2018 dollars, inflated using the CPI-U. [a] Panel A is difference in natural logarithms of underlying variables. [b] Samples in Panel B and Panel C (share enr. 9^{th}-12^{th}) consist of 244 counties.

Table 2. County Characteristics: Six Southern States

	Mean [s.d.]			Reinforcing-Resistant
	All	Reinforcing: AL, LA, TN, VA	Resistant: FL, SC	(s.e.)
Black share in enr. 1939-40	0.323 [0.210]	0.293 [0.215]	0.383 [0.185]	-0.090 (0.024)
9th-12th gr. share in enr. Black, 1940	0.052 [0.037]	0.054 [0.042]	0.049 [0.022]	0.006 (0.003)
9th-12th gr. share in enr. White, 1940	0.160 [0.063]	0.156 [0.073]	0.170 [0.035]	-0.015 (0.006)
1st gr. share in enr. Black, 1940	0.263 [0.093]	0.269 [0.109]	0.250 [0.047]	0.020 (0.008)
1st gr. share in enr. White, 1940	0.170 [0.052]	0.174 [0.061]	0.162 [0.024]	0.012 (0.005)
Black college (=1)	0.08 [0.28]	0.07 [0.25]	0.11 [0.32]	-0.05 (0.04)
Cotton share in crop value, 1939	0.22 [0.24]	0.21 [0.23]	0.23 [0.24]	-0.03 (0.03)
Farm share in land 1940	0.52 [0.25]	0.56 [0.25]	0.43 [0.24]	0.13 (0.03)
% Vote for Thurmond, 1948	43.2 [32.8]	40.6 [33.2]	48.4 [31.5]	-7.8 (4.0)
N (counties)	421	324	97	421

Sources: State administrative reports [Black share in enrollment]; full-count 1940 Census (Ruggles et al., 2021) [9th-12th and 1st grade shares in enrollment], Matthews and Prothro (1963) [Black college and Thurmond vote share], and Haines and ICPSR (2010) [farm variables].
Notes: The six southern states are Alabama, Florida, Louisiana, South Carolina, Tennessee, and Virginia. Statistics are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample.

Table 3. NAACP Litigation, State Policy, and School Resources by Race: Difference-in-Differences and Triple-Difference Estimates

		Coef. (s.e.) on Black Share x 5+ Years Post Litigation		Difference in Coefs. (s.e.): Reinforcing - Resistant		
		Reinforcing: AL, LA, TN, VA	Resistant: FL, SC	No Add'l Controls	With Schooling Controls[a]	With All Controls[b]
		(1)	(2)	(3)	(4)	(5)
				A. ln(Average Teacher Salary)		
Black		0.457	0.015	0.442	0.446	0.323
		(0.059)	(0.073)	(0.093)	(0.092)	(0.095)
	R^2			*0.947*	*0.949*	*0.950*
White		-0.154	-0.196	0.042	0.044	-0.018
		(0.032)	(0.069)	(0.075)	(0.069)	(0.067)
	R^2			*0.924*	*0.927*	*0.930*
				B. ln(Pupil-Teacher Ratio)		
Black		-0.146	-0.135	-0.011	-0.008	-0.024
		(0.046)	(0.076)	(0.088)	(0.088)	(0.096)
	R^2			*0.765*	*0.766*	*0.768*
White		0.161	0.081	0.080	0.083	0.075
		(0.036)	(0.053)	(0.064)	(0.063)	(0.062)
	R^2			*0.722*	*0.724*	*0.726*
				C. ln(Per-Pupil Teacher Salary Spending)		
Black		0.605	0.146	0.458	0.459	0.352
		(0.075)	(0.103)	(0.127)	(0.126)	(0.126)
	R^2			*0.950*	*0.951*	*0.952*
White		-0.316	-0.279	-0.038	-0.038	-0.093
		(0.039)	(0.075)	(0.085)	(0.079)	(0.082)
	R^2			*0.920*	*0.923*	*0.925*
				D. ln(Term Length)		
Black		0.187	0.131	0.056	0.060	0.032
		(0.039)	(0.064)	(0.075)	(0.069)	(0.067)
	R^2			*0.752*	*0.763*	*0.766*
White		-0.091	-0.058	-0.034	-0.034	-0.050
		(0.014)	(0.019)	(0.023)	(0.022)	(0.022)
	R^2			*0.676*	*0.681*	*0.686*
N (county x year): A,B,C		9,558	2,776	12,334	12,334	12,334
N (county x year): D		6,161	2,776	8,937	8,937	8,937

Source: Administrative reports from AL, FL, LA, SC, TN, and VA. Data on term length not available for VA. See Online Appendix A.

Notes: Columns 1 and 2 give estimates of θ_{5+} in equation (2). Columns 3 to 5 give estimates of $\tilde{\theta}_{5+}$ in equation (3). All regressions include state-by-year fixed effects, county fixed effects, and interactions between 1939-40 Black enrollment share and indicators for event years -9 and below, 0-4, 5-15, and 16 and above. The regressions in columns 3 to 5 also include triple interactions between Black share, these event-year indicators, and an indicator for reinforcing state. Standard errors are clustered on county, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample. [a] Interactions between event-year indicators and race-specific shares of grades 1 and 9-12 enrollment in 1940. [b] Interactions between event-time indicators and all county characteristics in Table 2.

Table 4. Impacts of Black Teacher Salaries on Black Grade Progression and Enrollment Rates

	Black grade progression from:								Black enrollment rate:	
	1st to 2nd	2nd to 3rd	3rd to 4th	4th to 5th	5th to 6th	6th to 7th	7th to 8th	8th to 9th	Grades 9-12	Ages 18-19
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
					A. No Additional Controls					
2SLS	-0.007	-0.126	0.083	0.167	-0.029	0.392	-0.069	0.369	0.052	0.044
	(0.100)	(0.126)	(0.100)	(0.095)	(0.124)	(0.161)	(0.214)	(0.243)	(0.050)	(0.218)
F-stat	17.8	17.8	17.7	17.7	17.7	17.9	17.8	17.2	17.8	16.7
OLS	0.014	-0.000	0.003	0.042	-0.015	0.091	0.070	0.145	0.033	0.130
	(0.015)	(0.018)	(0.021)	(0.017)	(0.019)	(0.021)	(0.028)	(0.039)	(0.006)	(0.041)
					B. With County Characteristic x Event Year Interactions					
2SLS	0.044	-0.209	0.107	0.188	-0.021	0.381	-0.167	0.273	0.020	0.178
	(0.119)	(0.169)	(0.127)	(0.114)	(0.151)	(0.200)	(0.245)	(0.301)	(0.066)	(0.302)
F-stat	13.1	13.1	13.0	13.1	13.1	13.3	13.2	12.6	13.1	8.7
OLS	0.013	-0.003	-0.001	0.030	-0.021	0.072	0.053	0.118	0.030	0.132
	(0.015)	(0.018)	(0.020)	(0.017)	(0.021)	(0.021)	(0.028)	(0.039)	(0.006)	(0.046)
N (county x year)	6,844	6,838	6,840	6,838	6,836	6,831	6,796	6,748	7,024	1,655

Sources: Administrative reports from AL, FL, SC, and TN [columns 1 to 9] and the Census for AL, FL, LA, SC, TN, and VA (Ruggles et al., 2021) [column 10]. See Online Appendix A.
Notes: Dependent variables are listed in column headers. 2SLS estimates instrument for the natural log of real Black average teacher salary (2018 dollars) using the triple interaction between 1939-40 Black enrollment share, the indicator for event years 5-15, and an indicator for reinforcing state. All regressions in columns 1-9 include controls for state-by-year fixed effects, county fixed effects, interactions between 1939-40 Black enrollment share and indicators for event years -9 and below, 0-4, 5-15, and 16 and above, and the triple interactions between 1939-40 Black enrollment share, indicators for event years -9 and below, 0-4, and 16 and above, and the indicator for reinforcing state. Regressions in Panel B of columns 1-9 also include controls for interactions between the county characteristics in Table 2 and indicators for all event years (-9 and below, 0-4, 5-15, and 16 and above). 2SLS estimates in column 10 instrument for the natural log of real Black average teacher salary (2018 dollars) using the triple interaction between 1939-40 Black enrollment share, the indicator for 1960, and an indicator for reinforcing state. All regressions in column 10 include controls for state-by-year fixed effects, county fixed effects, and the interaction between 1939-40 Black enrollment share and the indicator for 1960. Regressions in Panel B of column 10 also include controls for interactions between the county characteristics in Table 2 and the indicator for 1960. Standard errors are clustered on county, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample.

Table 5. Impacts of Black Teacher Salaries on Black-White Gaps in Grade Progression and Enrollment Rates

	Black-white gap in grade progression from:								Black-white enr. rate gap:	
	1st to 2nd	2nd to 3rd	3rd to 4th	4th to 5th	5th to 6th	6th to 7th	7th to 8th	8th to 9th	Grades 9-12	Ages 18-19
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
					A. No Additional Controls					
2SLS	0.273	-0.038	0.166	0.255	0.062	0.499	0.183	0.276	0.125	0.394
	(0.156)	(0.137)	(0.131)	(0.116)	(0.150)	(0.182)	(0.283)	(0.261)	(0.066)	(0.262)
F-stat	17.8	17.8	17.7	17.7	17.7	17.9	17.8	17.2	17.8	16.7
OLS	0.003	0.000	-0.005	0.052	-0.010	0.077	0.057	0.156	0.026	0.055
	(0.016)	(0.019)	(0.022)	(0.018)	(0.022)	(0.022)	(0.029)	(0.042)	(0.007)	(0.043)
					B. With County Characteristic x Event Year Interactions					
2SLS	0.401	-0.102	0.292	0.323	0.092	0.560	0.111	0.149	0.125	0.577
	(0.198)	(0.184)	(0.175)	(0.144)	(0.180)	(0.226)	(0.334)	(0.334)	(0.079)	(0.395)
F-stat	13.1	13.1	13.0	13.1	13.1	13.3	13.2	12.6	13.1	8.7
OLS	0.008	-0.006	-0.003	0.044	-0.013	0.061	0.039	0.139	0.028	0.062
	(0.015)	(0.019)	(0.021)	(0.019)	(0.023)	(0.022)	(0.029)	(0.042)	(0.007)	(0.050)
N (county x year)	6,844	6,838	6,840	6,838	6,836	6,831	6,796	6,748	7,024	1,655

Sources: Administrative reports from AL, FL, SC, and TN [columns 1 to 9] and the Census for AL, FL, LA, SC, TN, and VA (Ruggles et al., 2021) [column 10]. See Online Appendix A.
Notes: Dependent variables are listed in column headers. 2SLS estimates instrument for the natural log of real Black average teacher salary (2018 dollars) using the triple interaction between 1939-40 Black enrollment share, the indicator for event years 5-15, and an indicator for reinforcing state. All regressions in columns 1-9 include controls for state-by-year fixed effects, county fixed effects, interactions between 1939-40 Black enrollment share and indicators for event years -9 and below, 0-4, 5-15, and 16 and above, and the triple interactions between 1939-40 Black enrollment share, indicators for event years -9 and below, 0-4, and 16 and above, and the indicator for reinforcing state. Regressions in Panel B of columns 1-9 also include controls for interactions between the county characteristics in Table 2 and indicators for all event years (-9 and below, 0-4, 5-15, and 16 and above). 2SLS estimates in column 10 instrument for the natural log of real Black average teacher salary (2018 dollars) using the triple interaction between 1939-40 Black enrollment share, the indicator for 1960, and an indicator for reinforcing state. All regressions in column 10 include controls for state-by-year fixed effects, county fixed effects, and the interaction between 1939-40 Black enrollment share and the indicator for 1960. Regressions in Panel B of column 10 also include controls for interactions between the county characteristics in Table 2 and the indicator for 1960. Standard errors are clustered on county, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample.

Table 6. The Effect of School Resources on the Black-White Gap in Education: Estimates Using County Panel Data

		State + cohort fixed effects	County + cohort fixed effects	Cnty + st x cohort fixed effects
		(1)	(2)	(3)
			A. Teacher Salary	
Log teacher wage gap		0.201	0.144	0.115
		(0.028)	(0.038)	(0.048)
	R^2	0.256	0.565	0.578
			B. Pupil-Teacher Ratio	
Pupil-teacher ratio gap		-0.629	-0.293	-0.245
(divided by 100)		(0.089)	(0.162)	(0.151)
	R^2	*0.256*	*0.554*	*0.577*
			C. Teacher Salary + Pupil-Teacher Ratio	
Log teacher wage gap		0.140	0.136	0.103
		(0.030)	(0.040)	(0.050)
Pupil-teacher ratio gap		-0.435	-0.090	-0.192
(divided by 100)		(0.100)	(0.162)	(0.156)
	R^2	*0.274*	*0.565*	*0.580*
			D. Teacher Salary, Pupil-Teacher Ratio, and Term Length	
Log teacher wage gap		0.140	0.125	0.088
		(0.038)	(0.053)	(0.059)
Pupil-teacher ratio gap		-0.435	-0.083	-0.176
(divided by 100)		(0.100)	(0.162)	(0.156)
Term length gap		-0.001	0.030	0.057
(divided by 100)		(0.055)	(0.072)	(0.085)
	R^2	*0.274*	*0.565*	*0.580*
N (county x cohort)		1,203	1,203	1,203

Sources: Census tabulations for AL, FL, LA, SC, and TN (Ruggles et al., 2021).
Notes: The dependent variable is the ages 18-19 enrollment rate. All coefficients are estimated using OLS. Standard errors are clustered on county, and regressions are weighted by $1/N_s$, where N_s is the number of counties in state s in the estimation sample.