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**DOES THE IDENTITY OF LEADERS MATTER FOR  
EDUCATION? EVIDENCE FROM THE FIRST BLACK  
GOVERNOR IN THE US**

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# Does the Identity of Leaders Matter for Education?

## Evidence from the First Black Governor in the US\*

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### Abstract

Can role models from the same group enhance educational outcomes of disadvantaged minority students? We analyze the election of Douglas Wilder in Virginia in 1989, who was the first African American to serve as governor in the US. Results from two difference-in-differences estimations demonstrate increased educational attainment among Blacks in Virginia after that election. Additional survey evidence points to an increase in Black youths' aspirations as one of the mechanisms explaining this effect. Our findings thus suggest that increasing exposure to Black politicians in high-stakes positions might contribute to narrowing the White-Black gap in education in the U.S.

**Keywords:** education; minority; political leaders; aspirations

**JEL Classification Numbers:** I24; D01; O51

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# 1 Introduction

There are well-documented pervasive disparities in schooling attainment and test scores between Whites and Blacks in the US (Jencks and Phillips, 2011; Neal, 2006). These disparities translate into racial inequalities in the labor market. Specifically, significant differences in high school and college graduation rates were wide-spread in the 1980s and 1990s. For instance, the probability of high school graduation for a Black male student at 19 years old in 1982-83 was 13 percentage points (p.p.) lower than for a White male student, while the White-Black gap for female students was 8 p.p. (Neal, 2006). Moreover, historically, the educational gap between Whites and Blacks was widest in Southern states.

One potential explanation for the racial gap in education is the lack of role models for Blacks. It has previously been documented that mentors and instructors, for instance, affect the educational outcomes and occupational choices of young African Americans (Fairlie et al., 2014; Kofoed, 2019). Such mentors and instructors are, however, likely to be perceived by students as being close and belonging to a similar pool of individuals. It remains unclear whether African Americans that reach high-stakes positions, such as politicians in powerful positions, can also contribute to closing the racial gap in education. While these individuals tend to belong to an elite and can be perceived as being more distant from other citizens, they could have a stronger and more wide-spread effect when reaching a highly visible, competitive position.

In this paper, we study the impact of the first Black governor ever elected in the US on the educational outcomes of young African Americans<sup>1</sup> from his state. The first Black person to be elected as a governor in the US was Douglas Wilder, who became governor of the Commonwealth of Virginia in 1990. Being the first, he is likely to have a larger potential effect than subsequent Black governors, especially if other Blacks assume higher-ranked offices in the meantime (such as Barack Obama becoming the US president). Moreover, the election of

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<sup>1</sup>For sake of simplicity, we will use African American and Black interchangeably but note that we exclude Black Hispanics from the analysis.

Douglas Wilder had symbolic importance to the Black community, since he was the first Black governor in a Southern state and Blacks had historically been excluded from politics in the South (Vogl, 2014). Virginia, in particular, was a slave state, and Richmond, its capital, the capital of the Confederacy. Ordinary citizens also identified with Douglas Wilder’s personal story as the grandson of slaves, someone who had suffered from discrimination, particularly during his studies (Jeffries, 2000). His election therefore raised a lot of expectation and hope among the Black community (Jeffries, 2000).

The goals of this paper are twofold. First, we contribute to the literature on the effect of the identity of politicians with an identification strategy based on a historical event. This allows us to study the effect of a powerful leader on a *discriminated minority in a developed country* that, until relatively recently, had few such politicians elected to important positions. Second, we provide evidence of a new channel contributing to closing the racial gap in educational attainment within the US. Exploiting several datasets and our own survey, we study multiple competing mechanisms and provide suggestive evidence of an increase in aspirations among young adults belonging to the governor’s minority group.

There is growing evidence from developing countries showing that the identity of political leaders,<sup>2</sup> such as their gender or ethnicity, matters for the educational outcomes of the group they belong to. In particular, the educational attainment of children and adolescents has been shown to improve after the election of politicians sharing the same identity. Beaman et al. (2012) find that the increase in female representation in India, following the implementation of a system of quotas for women in village councils, positively affected the educational outcomes of girls. Meanwhile, Franck and Rainer (2012) find that political leaders improved primary school attendance, completion and literacy among the groups they belonged to in Sub-Saharan Africa. The available evidence has identified several channels through which politicians from a particular group can affect the educational outcomes of that group. Politi-

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<sup>2</sup>The term identity is widely used in this literature to refer to a salient characteristic of the leaders, such as their religion, gender, ethnicity, or race. More precisely, identity is defined as social categories that are associated with certain behaviors (Akerlof and Kranton, 2000).

cians from a disadvantaged or minority group can foster the aspirations of the group either through policies that make it easier for members of that group to succeed or, more directly, by providing a role model. In their above-mentioned study of girls in India, Beaman et al. (2012) find that the increase in educational outcomes due to council positions being reserved for women could be explained by an increase in aspirations among the girls. Moreover, political leaders can also contribute to changing perceptions about a specific group in the rest of the population, which may reduce discrimination against that group, and directly implement educational or other types of redistributive policies oriented toward their group (Chattopadhyay and Duflo, 2004; Pande, 2003).

Despite a growing amount of evidence on this issue for the developing world, there is little evidence for developed countries. In particular, the potential role of Black politicians in closing the racial gap in education in the US has received little attention.<sup>3</sup> This gap in the literature is possibly explained by the type of identification strategy exploited so far in the research. Most of the literature has relied on one of two strategies to identify the causal effect of the identity of elected leaders on individual outcomes: regression discontinuity designs based on close elections (see, *e.g.*, Ferreira and Gyourko, 2014; Clots-Figueras, 2011, 2012) or quotas (see, *e.g.*, Chattopadhyay and Duflo, 2004; Beaman et al., 2012; Iyer et al., 2012). The use of these two strategies has yielded well-identified estimates of the effect, but it has also restricted the scope of these studies and therefore their external validity. The regression discontinuity design using close elections, for example, is based on strong identifying assumptions that can only be met in specific contexts: one needs many close elections in which at least one candidate has the identity in question. This restricts the analysis to local elections and excludes the study of groups with few representatives. It also requires that the behavior of voters not change with the identity of the candidates, which

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<sup>3</sup>DellaVigna (2010) studies the effect of the election of Obama on the outcomes and perception of potential achievements among African Americans. He finds that the Obama election events did not have significant impacts for Blacks relative to Whites. The only exception is a positive, though weak, effect on the number of applications by African Americans to a top law school. Meanwhile, Logan (2020) finds that exposure to Black politicians during Reconstruction reduced the White-Black literacy gap by 7%.

does not hold in contexts where minority groups are heavily discriminated against, such as Blacks in Southern states in the US (Vogl, 2014). As for the literature using quotas, it has disproportionately relied on the quota system in Indian local elections (Beaman et al., 2012; Chattopadhyay and Duflo, 2004; Iyer et al., 2012). With the exception of Franck and Rainer (2012), the previous literature has therefore focused mostly on local elections, and little is known about the impact of elected candidates from minority groups in high-stakes positions. Whether the two categories of politicians have a similar effect is ambiguous. Local leaders are closer to citizens but also less powerful. On the other hand, since leaders in high-stakes positions have more political power to change policies and more visibility, they might generate a stronger role-model effect. Moreover, most studies to date have been for developing countries, in particular, India. We extend the previous literature by looking at the effect of a high-stakes politician on the educational outcomes among young adults from a disadvantaged minority in a developed country.

We identify the causal effect of the election of Douglas Wilder through a combination of two difference-in-differences regression models, a triple difference, and the synthetic control method. In the first part of the paper, we show how schooling outcomes of young Blacks evolved after Wilder’s election using individual-level data from the US Census and the American Community Survey (ACS). We focus on high school graduation rates. To take into account the fact that any change in the schooling outcomes of young Blacks might be driven by other changes in Virginia at that time, we first apply a difference-in-differences (DD) strategy to compare the evolution of outcomes between Blacks and Whites in Virginia. To control for changes affecting all Blacks in the US, we exploit an alternative difference-in-differences strategy by which we compare Blacks in Virginia to Blacks in other states within the US where Blacks constituted more than 10% of the population in 1990. As additional evidence, we build a synthetic control group with Blacks from the control states and we apply a triple difference strategy (DDD), using both Whites and other states as controls.

Our main estimations show that Governor Wilder’s term in office is related to an increase

of between 1.7 and 3.2 p.p. in the probability of having a high school diploma among young Blacks in Virginia, depending on the specification. These results are robust to alternative regression models and are not driven by pre-existing changes in graduation rates. Similar qualitative results are found using an alternative dataset (*i.e.*, the Current Population Survey (CPS)). Finally, using administrative data from the Common Core of Data (CCD), we also observe a significantly larger graduation rate in counties with a larger share of Blacks after the election of Douglas Wilder. While the census and the CPS provide information on the stock of individuals that have finished high school, the CCD gives information on the flow of graduates in every year. All of our data sources and specifications generate consistent findings that show that the election of Douglas Wilder led to higher educational achievements among young Blacks aged 18 to 20 years old at that time.

In the second part of the paper, we provide evidence on the mechanisms underlying the observed effect. We study the evolution of aspirations, teachers' behavior, and labor market prospects after the election of Douglas Wilder as well as educational policies introduced around that time that could have induced this effect. Our analysis of the aspiration mechanism, which exploits our own survey and data from the Higher Education Research Institute (HERI), consistently suggests an increase in the aspirations of Blacks in Virginia relative to the control groups. We do not find strong support for the other mechanisms although we cannot rule out that part of the effect is explained by a change in teachers' behavior. Responses from our survey point to some improvement in teachers' perception of the respondents' abilities, but the effect is not always statistically significant. Moreover, we do not find any evidence that labor market performance for Blacks in Virginia, as measured by wages and unemployment, improve relative to the control groups after the election of Wilder. Better labor market prospects are therefore not likely to be driving the observed effect. Finally, we consider two educational policies that were implemented around the election of Wilder, that is, a school funding reform and an increase in the compulsory school attendance age. We are also able to conclude that these educational policies alone are unlikely to explain



the differential change that we observe for Blacks, using data on per-pupil spending, our own survey results, an examination of dropout age profiles and timing, and narratives from that time. Overall, the results point to aspirations as the main mechanism at play, which indicates that Douglas Wilder may have acted as a role model for young Blacks in Virginia.

The rest of the paper is organized as follows: Section 2 describes the context of the case study; Section 3 explains the data sources; Section 4 describes the empirical strategy; Section 5 shows the main results; Section 6 explores the potential mechanisms at work; Section 7 presents our conclusions.

## 2 Context

Douglas Wilder is the first African American to have been elected to the position of governor in the US, for the Commonwealth of Virginia.<sup>4</sup> At the time, African Americans were underrepresented in top political positions. For example, in 1990 they accounted for only 5.7% of the seats in the House of Representatives, while representing 12% of the population.<sup>5,6</sup> Historically, the underrepresentation of Blacks in politics has been particularly acute in the South (Vogl, 2014), and Virginia holds a crucial position among Southern states given that it hosted the capital of the Confederacy. Wilder’s election was therefore an important event for the state, with tremendous symbolic importance. In our survey, when asked about the effect of Douglas Wilder in their life, 30% of Black respondents from Virginia mentioned something about the historical relevance of that event.<sup>7</sup> It is worth noting that despite the polls, which predicted a large victory for Wilder, the turnout rate was particularly high for a

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<sup>4</sup>The office of governor had been held once before by a person of African descent, Pinckney Benton Stewart Pinchback in Louisiana in 1872-1873, but he was not elected. Pinchback was lieutenant governor and had to take office during a 15-day period in the transition from the previous governor to the new governor.

<sup>5</sup>Source: [History, Art and Archives website of the US House of Representatives](#).

<sup>6</sup>Nowadays, they amount to 12% of House members, which is about equal to the percentage of Americans who are Black.

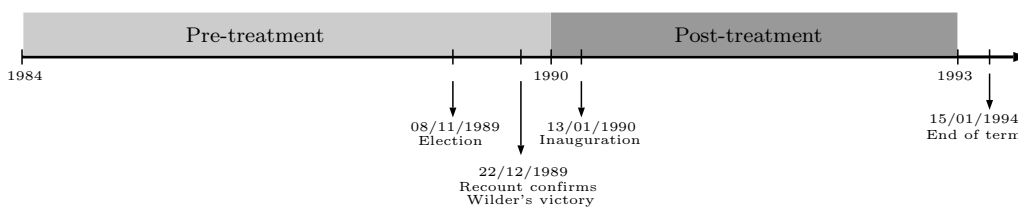
<sup>7</sup>We asked three independent reviewers to code open text responses into different categories, one being called “event”, which includes those responses that refer to the historical relevance of the election. We would include a quote in a specific category when two reviewers had agreed on its categorization. In Appendix A.3, we include all the quotes from Blacks from Virginia classified as referring to the event.

gubernatorial election: 66.7% of the registered voters cast ballots in 1989, whereas only 53% had voted in the election of 1985. The exit polls also show that between 92% and 94% of Black voters voted for Wilder (Traugott and Price, 1992), which reveals a strong collective identity. We further explore his potential as a role model for the Black community in Section 6.1.

Wilder was elected as a Democratic candidate. Given that the previous governor of Virginia was also from the Democratic party, the election of Wilder did not create any political rupture. The electoral law of Virginia forbids incumbent governors from running for re-election, so he did not stand for the 1993 election and was succeeded by a White Republican governor.

Figure 1 shows the timeline of Wilder’s election. He was elected on November 8, 1989. Because the margin of victory was very small (less than 7,000 votes), his opponent asked for a recount; his victory was ultimately confirmed in December 1989. He took office as governor of Virginia on January 13, 1990, and left office on January 15, 1994. For the sake of simplicity, we assume that Wilder’s mandate began at the start of January 1990, and we consider the period from January 1984 to December 1989 as the “pre-treatment” period, with the period from January 1990 to December 1993 being the “post-treatment” period.

Figure 1: Timing of the election in relation to empirical strategy



An interesting feature of Virginia is that governors are particularly powerful, which gives them, among other things, appointment power. Douglas Wilder seems to have used this power in favor of Blacks: 25% of his appointments to state boards and commissions were African Americans, which is quite large when compared to 15% and 10% for his two im-

mediate predecessors. Moreover, he appointed many Black people to significant positions. Notably, two African Americans were appointed to the governor’s cabinet for the first time (as the Secretaries of Education and Administration) (Jeffries, 2000).

## 3 Data

Our analysis relies on several sources of data. A summary table with the definition and data source for all of the variables is provided in Table A.1 of Appendix A.1.

### 3.1 Data on Educational Attainment

We rely on three sources of data to explore the changes in the educational attainment of Blacks after the election of Douglas Wilder: the US Census and the American Community Survey (ACS), the Current Population Survey (CPS), and the Common Core of Data (CCD).

Our main source of data is the US Census and the ACS, downloaded from IPUMS USA (Ruggles et al., 2019). We pool the 5% extract of the 2000 census with the ACS 2005-2009 and 2010-2014 5-year samples, which also represent 5% of the population (hereafter “census data”). We focus on individuals born between 1955 and 1975. This sample gives us 15 years of pre-treatment data, which provides a long span to check for pre-treatment trends (Wolfers, 2006).<sup>8</sup> Our last cohort is from 1975 because that is the last cohort to have turned at least 18 during the governor’s term. We compare the educational attainment of individuals who were between 18 and 20 years old at some point during the term of Douglas Wilder as governor (cohorts born in 1970 or later, hereafter referred to as “post-treatment cohorts”), to that of individuals who were 21 years old or older at the time of the election (cohorts born before 1970, hereafter referred to as “pre-treatment cohorts”) and thus less likely to be affected by

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<sup>8</sup>A large number of pre-intervention periods (relative to the size of the shock) are also needed for the synthetic control method (Abadie et al., 2010).

the election.<sup>9</sup>

The census data have a large sample size, with sampling of the entire US population, including individuals who are not surveyed in other data sources, such as institutionalized people. However, they lack information on when individuals acquired their education. To explore the timing of educational attainment, we rely on the Current Population Survey (CPS) data from 1984 to 1993, downloaded from IPUMS-CPS (King et al., 2010) and the National Bureau of Economics Research (NBER). The CPS is a nationally representative, pooled cross-section that provides monthly individual data on school enrolment and attainment.

Finally, we test the robustness of our results using administrative data from the Common Core of Data (CCD) from the National Center for Education Statistics. The CCD provides school-level data on the number of students enrolled in grade 12 from the Public Elementary/Secondary School Universe Survey Data and school district-level data on the number of graduates from the Local Education Agency (School District) Universe Survey Data. Given that the CCD's data are administrative data, they have the advantage of being exhaustive. However, they also have important limitations. In particular, they do not provide race-specific statistics before 1992. Moreover, they rely on reports filled in by each state, and Virginia did not communicate its enrolment rates for the 1991-92 school year and its graduation rates for the 1990-91 school year. What we can estimate is therefore limited.

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<sup>9</sup>We can use the CPS data to analyze the high school graduation rates of Blacks in Virginia by age for the pre-treatment period (1984-1989). We observe that at our lower bound of 18 years old, the average graduation rate of Blacks in Virginia was only 35.8%, which indicates that few Black students graduate before that age. At the other extreme, the average graduation rate of Blacks aged 20 in Virginia was 74.0%, while that of those aged 21 was 79.6%. This last figure is very close to the average graduation rate of Blacks aged 24 in Virginia for the same period (80.0%). Thus, it seems reasonable to assume that by 21 years old, most young Blacks in Virginia who could potentially receive their high school diploma will have done so. If, instead, the election affected the graduation rate of those aged 21 or older, our results would be downward biased, given that they are considered as pre-treatment cohorts.

## 3.2 Data Sources for Mechanisms

### 3.2.1 Data on Aspirations

To understand whether the aspirations of Black young adults in Virginia increased after the election of Douglas Wilder, we conducted an online survey among respondents from the US who were born between 1970 and 1975.<sup>10</sup> We defined our sample size based on race and the state where respondents attended their senior year of high school.<sup>11</sup> Our final sample consists of 459 respondents: 72 Blacks and 39 Whites who attended senior year in Virginia, and 175 Blacks and 173 Whites who attended senior year in other states. Survey responses were collected between December, 21, 2020, and April 2, 2021, using Qualtrics.

The questionnaire consisted of four modules. The first module asked about demographic characteristics. In the second module, respondents were asked whether they knew who Douglas Wilder was and if so, when he was elected. They were then asked whether he had an impact on their lives and if so, how, allowing for open responses. The last two modules, presented in a randomized order, were, respectively, on Douglas Wilder and the previous governor of Virginia, Gerald Baliles, a White Democrat.<sup>12</sup> These two modules consisted of Likert questions (on a scale of 1 to 7) aimed primarily at understanding the effect of each governor on aspirations. Each of these latter modules also included some questions on teachers' behaviors and the perceived effect of an educational policy in Virginia in 1989, in an attempt to understand the role of other potential mechanisms.

Since minority respondents might have had a tendency to boost their group identity by providing positive answers about the Black governor if they could easily guess the objective of the survey, we took steps to avoid this. The inclusion of questions about the previous

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<sup>10</sup>We did not include cohorts born before 1970, which we use as controls for identifying the main effect on education (see Section 4). The reason for this is that when we study high school graduation rates, people born before 1970 are too old to have been affected and could thus serve as controls. However, they could certainly have experienced an increase in their aspirations after the election of Douglas Wilder and thus are not an ideal control group for that channel.

<sup>11</sup>An additional goal of the survey is to study changes in teachers' behavior after the election. Therefore, by targeting the senior year of high school, we ensure a reasonable number of responses for this channel.

<sup>12</sup>The entire questionnaire can be found in online Appendix A.

governor of Virginia was meant to help reduce experimenter demand effects and curb incentives among minority respondents to provide positive information about a member of their own group just for belonging to it. Moreover, to avoid race priming, we did not explicitly mention race in the survey.

With this survey, we are able to examine the effect of Douglas Wilder on aspirations, as well as other mechanisms that could not be studied with the existing data. Nonetheless, given some limitations of our survey, such as its small sample size and that it is a recall survey, we complement the evidence on aspirations with a nationally representative survey of first-year college students, the CIRP Freshman Survey from the Higher Education Research Institute (HERI), from 1985 to 1993.

### **3.2.2 Data on Other Mechanisms**

In addition to our survey, we make use of several datasets. To test whether there is a change in the returns to education for Blacks, we rely on the CPS data from 1984 to 1993. To test the effect of one education finance policy, we look at data on per-pupil spending from the Government Finances Report of the annual census of governments from 1987 to 1993. Finally, we also exploit the CPS data to analyze the timing of another educational policy and the age groups affected by it, supplementing the question about such policy in our survey.

## **4 Empirical Strategy**

Our identification strategy relies on three sources of variation: race, the state of the event, and age during the governor’s term. We exploit five alternative strategies: that is, two difference-in-differences and a triple difference regression models, the synthetic control method, and an event-study. Each of them combines at least two of these sources of variation. The specification and the results of the triple difference are shown in Appendix B.<sup>13</sup> In all of the

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<sup>13</sup>The results are robust to using the triple difference regression for all outcomes. We focus on the difference-in-differences specifications in the main text because the pre-treatment trends for the triple difference specification are not parallel (see Table B.1 in Appendix B.2).

specifications, the sample is restricted to those who declare themselves as being either White or Black.<sup>14</sup> We also only use states with a Black population of 10% or more in 1990, which yields 20 control states.<sup>15</sup>

## 4.1 Difference-in-differences

The difference-in-differences specifications use two alternative groups as controls for Blacks in Virginia. First, we use Whites in Virginia as controls and compare changes in the high school graduation rates of young Blacks to those of young Whites before and after the election. Using Whites in Virginia as the control group allows us to take into account the fact that any observed change in the educational outcomes of young Blacks might be driven by some trend or other events happening in Virginia.

We estimate the effect with the following basic equation:

$$Y_{it} = \alpha_0 + \alpha_1 Black_i \times Post_t + \alpha_2 Black_i + \alpha_3 Post_t + X_i' \omega + \epsilon_{it} \quad (1)$$

where  $Y_{it}$  is a dummy equal to 1 if individual  $i$  born in year  $t$  has a high school diploma,  $Black_i$  is a dummy equal to 1 for Blacks,  $Post_t$  is a dummy equal to 1 for the post-treatment cohorts, with the post-treatment period covering the term of Douglas Wilder as governor of Virginia (*i.e.*, 1990-1993), and  $X_i$  includes individual covariates.<sup>16</sup> As mentioned in Section 3.1, when using the census data we define the post-treatment cohorts as individuals who

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<sup>14</sup>We exclude Black Hispanics, and individuals from other races due to the small sample size.

<sup>15</sup>The states included as controls are shown in Figure A.1 of Appendix A.1. They are: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Illinois, Louisiana, Maryland, Michigan, Mississippi, Missouri, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Texas. The cut-off at 10% is due to data constraints: given the sample size of the census data, states with a Black population of less than 10% do not have enough observations for Black people without a high school diploma in most cohorts. We run an alternative specification that includes as control states those with a Black population of more than 50,000 according to the 1990 Census. The results of this alternative specification are robust (and available upon request). However, given that the number of observations is small for some state-cohort cells, we prefer the 10% cut-off as a selection criterion.

<sup>16</sup>We control for gender in all specifications and for language spoken at home in some specifications. We exclude controls that could be endogenous to the treatment, such as household size or whether the individual lives alone. However, the results are robust to the inclusion of those controls as well.

were between 18 and 20 years old after the election (*i.e.*, cohorts born between 1970 and 1975),<sup>17</sup> while the pre-treatment cohorts are those who were 21 or older in 1990 and thus likely too old to be affected by the election (*i.e.*, cohorts born between 1955 and 1969).

The coefficient of interest is  $\alpha_1$ , which measures the pre- to post-treatment change in the outcome of Blacks relative to Whites in Virginia. Additional specifications control for year of birth fixed effects and race-specific linear time trends. The standard errors are clustered at the race-year<sup>18</sup> level, which is the level of the variable of interest ( $Black \times Post$ ).

Second, we compare the evolution before and after treatment of Blacks in Virginia relative to Blacks in other states. This alternative strategy controls for any effect that might be common to all Blacks in the US. We estimate the following equation:

$$Y_{ist} = \beta_0 + \beta_1 VA_s \times Post_t + \beta_2 VA_s + \beta_3 Post_t + X'_i \omega + \epsilon_{ist} \quad (2)$$

where  $Y_{ist}$  is a dummy equal to 1 if individual  $i$  born in state  $s$  and year  $t$  has a high school diploma and  $VA_s$  is a dummy that takes a value of 1 if the individual was born in Virginia. The census data provide information on the current state of residence and the state of birth. The state of residence at the specific age of 18-20 is not available, though. We use the state of birth as a proxy because the state of residence at older ages is expected to be endogenous to our treatment.<sup>19</sup> The coefficient of interest is  $\beta_1$ , which measures the pre- to post-treatment change in the outcome of Blacks in Virginia relative to Blacks in the control states. The standard errors are clustered at the state-year level, which is the level of the variable of interest ( $VA \times Post$ ). We also provide confidence intervals computed with the

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<sup>17</sup>Specifically, the post-treatment cohorts include those who were between 18 and 20 years old in 1990 (*i.e.*, cohorts born between 1970 and 1972) or reached the age of 18 after 1990 (*i.e.*, cohorts born between 1973 and 1975). Thus, each post-treatment cohort experienced at least one year of the governor's term in the age range of 18 to 20.

<sup>18</sup>For simplicity, we refer to year of birth as "year".

<sup>19</sup>From the 1990 census, we can observe that the correlation between state of birth and state of residence at 18-20 years old is relatively high (.68) for those who were born in one of the treated or control states. If we include all individuals born in any state within the US the correlation is very similar (correlation coefficient of .69). Moreover, it is unlikely that the selection into migration from and to Virginia changed before and after the election. When we exploit the CPS data in Section 5.4, however, we instead use the state of residence at 18-20 years old.



inference procedure suggested by Conley and Taber (2011). This approach deals with the inference problems arising from the fact that there are few treated clusters (here, only one treated state).<sup>20</sup> Additional specifications control for year of birth fixed effects, state fixed effects, and state-specific linear time trends.

The coefficients of interest in the two strategies described are identified under the parallel trends assumption. The DD strategy for Virginia requires that the high school graduation rates of Blacks and Whites in Virginia would have followed the same trend in the absence of the election. A similar parallel pattern is required for Blacks between Virginia and other states for the DD strategy comparing Blacks across states.

## 4.2 Synthetic Control Method

As a robustness check, we also estimate the effect of the election on Blacks in Virginia using Blacks in other states as controls but we build the control group following the synthetic control method (see Abadie et al., 2010). The goal of this method is to construct a control group as a convex combination of the pool of control states that can better reproduce the counterfactual trajectory in high school graduation that Blacks in Virginia would have followed in the absence of the election. To build the synthetic control, we match the lagged high school graduation rate of Blacks in Virginia as well as the following additional predictors of high school graduation at the state level: the share of Blacks in the population, the unemployment and employment rates among Blacks, the GDP per capita (in log), the student-teacher ratio, and the per-pupil spending (see Table A.1 in Appendix A.1 for a detailed description of the predictors and their sources). For inferential purposes, we apply the method proposed by Abadie et al. (2010) based on placebo tests applied to each state in the donor pool (see Section 5.3).

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<sup>20</sup>This inference procedure cannot be applied to the previous specification because it requires several control groups.

### 4.3 Event-study

Finally, we examine the timing of the change in high school graduation rates with an event-study. The coefficients are allowed to vary by year, with 1989 being the reference year. We estimate the following equation:

$$\begin{aligned}
 Y_{ist} = & \delta_0 + \sum_{t=1984}^{t=1993} (\delta_{1t} Black_i \times VA_s \times Year_t) + \delta_2 Black_i \times VA_s + \sum_{t=1984}^{t=1993} (\delta_{3t} Black_i \times Year_t) + \\
 & + \sum_{t=1984}^{t=1993} (\delta_{4t} VA_s \times Year_t) + \delta_5 Black_i + \sum_{t=1984}^{t=1993} \delta_{6t} Year_t + \delta_7 VA_s + X_i' \phi + v_{ist}
 \end{aligned} \tag{3}$$

This equation is estimated using the CPS data, which provides educational information for each year between 1984 and 1993.  $Year_t$  is therefore a set of dummy variables for each year of the survey. The other variables are defined as above.

## 5 Results on Educational Attainment

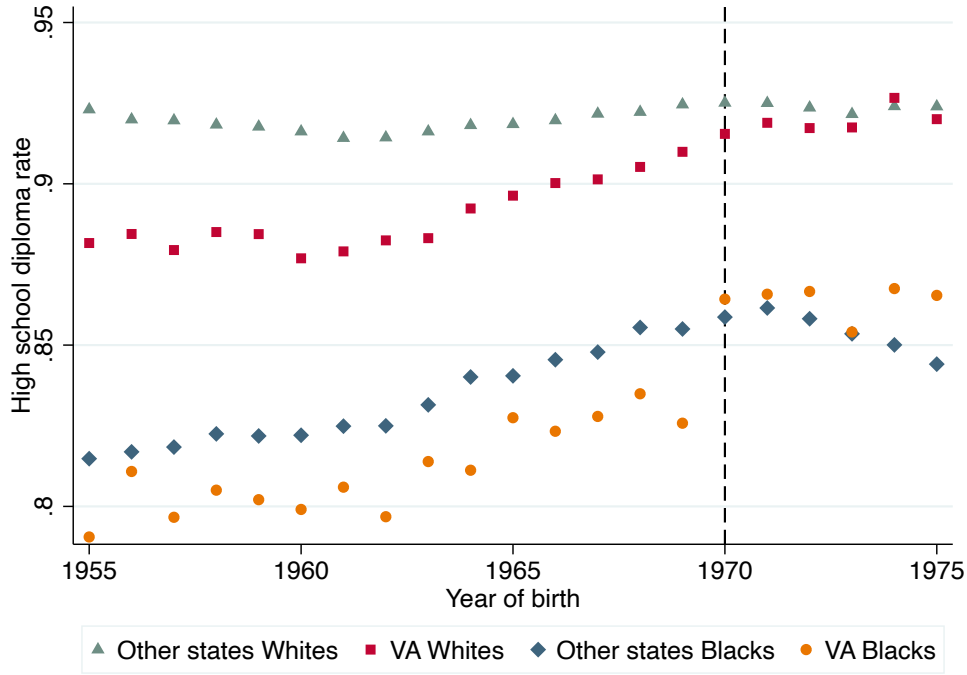
In this section, we present the results on the evolution of the educational outcomes of young Blacks in Virginia before and after Wilder’s election. Section 5.1 shows the evolution of high school diploma attainment for pre- and post-treatment cohorts using the raw census data. Section 5.2 presents the results with the DD specifications. Section 5.3 shows the results using the synthetic control method. Section 5.4 checks the timing of the effect and its robustness using the CPS data. Finally, Section 5.5 checks the robustness of the results using the CCD as an additional alternative dataset.

## 5.1 Descriptive Statistics

We first look at the evolution of high school graduation rates by year of birth for young Blacks born between 1955 and 1975 using the census data. Figure 2 shows the proportion of individuals with a high school diploma by year of birth, state (Virginia vs. control states), and racial group (Blacks vs. Whites). Those born before 1970 were 21 years old or older when Douglas Wilder arrived to power (pre-treatment cohorts), and those born in 1970 or later were 18-20 years old in 1990 or reached the age of 18 during Wilder's term (post-treatment cohorts). While all non-treated groups have a smooth trajectory before and after 1970, we observe a substantial jump in the probability of getting a high school diploma for Blacks in Virginia born in 1970 compared to those who were born before that. The average graduation rate remains at a high level for all post-treatment cohorts. If we focus on Blacks in Virginia, we can see that the jump in 1970 implies an increase in the probability of getting a high school diploma of 4 p.p. for those born in 1970, compared to those born the year before. We find a similar effect when we compare the average graduation rate of post-treatment cohorts of Blacks in Virginia to pre-treatment cohorts in the same category (see Table A.2 in Appendix A.2). Moreover, the raw data indicates that the gap between Blacks in Virginia and Blacks in the control states observed for cohorts born before 1970 disappears for cohorts born in 1970 or later.

The raw data provide suggestive evidence regarding the identifying assumption of the DD. We observe that Whites in Virginia have a rather similar increasing pre-treatment trend to Blacks in Virginia, especially for cohorts born after 1960, which gives support to the assumption that both groups would have had a similar trend after 1990 in the absence of the election (Equation (1)). Similarly, Blacks in other states have a similar pre-treatment trend to Blacks in Virginia, which gives support to the alternative DD specification in Equation (2). We formally compare the pre-treatment trends between Blacks in Virginia and the control groups in the following section.

Figure 2: Governor from minority and high school diploma (raw data)



*Notes:* The graph plots the raw data on the proportion of people with a high school diploma by year of birth, state (Virginia vs. control states), and racial group (Blacks vs. Whites). Data sources: Census 2000 and ACS 2009-2014.

Table A.2 in Appendix A.2 displays additional descriptive statistics. We observe, in particular, that the DD coefficient for the share of Blacks, which compares the proportion of Blacks in Virginia to those in control states before and after 1970, is statistically different from zero. Specifically, the pre- to post-treatment change in the share of Blacks in Virginia relative to the control states is -4 p.p. If there is some selection associated with this decrease, such as selective migration or a decrease in the number of children among Black families, this could bias the treatment effect on high school diploma. However, Figure A.2 in Appendix A.2 shows no discontinuity in the share of Blacks in Virginia or control states around 1970 but rather a smooth decrease in Virginia from 1966 and a smooth increase in the remaining states during the whole period. Thus, the jump observed for high school graduation rates in 1970 in Virginia is unlikely to have been driven by this.

## 5.2 Difference-in-differences

### 5.2.1 Identifying Assumption

In this section, we examine whether the pre-election trends are similar between each alternative treatment and control group. Table 1 reports the pre-treatment trends for the cohorts born between 1955 and 1969. Column 1 shows the pre-treatment trends for Blacks compared to Whites (DD specification for Virginia) and Column 2 shows the pre-treatment trends for Blacks in Virginia relative to Blacks in other states (DD specification for Blacks). The results of both DD specifications indicate that we cannot reject that the trends for treated and control cohorts were similar before the event. The coefficients on the interaction term between Blacks and the linear trend ( $Black \times Year\ trend$  in Column 1) and Virginia and the linear trend ( $VA \times Year\ trend$  in Column 2) are very close to zero and not statistically significant. These results support the use of both DD strategies for understanding the changes in schooling outcomes of young Blacks during Wilder’s term.

### 5.2.2 Estimation Results

We now examine the change in the educational outcomes of Blacks with both DD strategies under different specifications. Columns 1-4 in Table 2 compare the difference in high school graduation rates between Blacks who were 21 or older in 1990 in Virginia and Blacks who were 20 years old or younger in 1990 to the same difference for Whites in the same state. The coefficient on Treated is  $Black \times Post$ . In Columns 5-8 the pre- to post-treatment difference in high school graduation rates for Blacks in Virginia is compared to the same difference for Blacks in other states. The coefficient on Treated is  $VA \times Post$ .

The basic specification in Column 1 shows that Blacks born in 1970 or later in Virginia had a significant increase in their probability of getting a high school diploma relative to Whites. Controlling for time effects that are common across groups by including year dummies does not affect the results (Column 2). Column 3 shows the results when a different

Table 1: Test for parallel trend before treatment (difference-in-differences)

Dependent variable:	High school diploma	
	DD Virginia (1)	DD Blacks (2)
VA $\times$ Year trend		-0.000 (0.001)
VA		-0.015* (0.008)
Black $\times$ Year trend	0.001 (0.001)	
Black	-0.086*** (0.008)	
Year trend	0.002*** (0.000)	0.003*** (0.000)
Constant	0.864*** (0.004)	0.793*** (0.006)
Observations	175375	799047
$R^2$	0.011	0.001

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The sample is composed of individuals born between 1955 and 1969. The standard errors are clustered at the race-year level in Column 1 and at the state-year level in Column 2. Data sources: Census 2000 and ACS 2009-2014.

time trend for Blacks and Whites is additionally allowed. The estimated coefficient is only slightly lower than the previous ones. Finally, the specification in Column 4 controls for the language spoken at home as a proxy for the social context when growing up. These results confirm our previous findings using raw data: there is a significant reduction in the White-Black gap in high school graduation rates for post-treatment cohorts. The magnitude of the coefficient implies an increase in the probability among Blacks of getting a high school diploma of around 2 p.p.

The results are quite similar for the alternative DD specification in Columns 5-8, which compares Blacks across states. The estimates are very close to each other across specifications and imply an effect of 3 p.p. The most conservative specification among the two DD specifications (Column 3) implies that the probability of getting a high school diploma increases by at least 1.7 p.p. among Blacks.

Table 2: Governor from minority and high school diploma (difference-in-differences)

Dep. variable:	High school diploma							
	DD: Blacks vs Whites in Virginia Treated: Black $\times$ Post				DD: Blacks in VA vs control states Treated: VA $\times$ Post			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated	0.023*** (0.005)	0.023*** (0.002)	0.017*** (0.004)	0.023*** (0.002)	0.031*** (0.005) [.006,.05]	0.031*** (0.003) [.006,.05]	0.030*** (0.004) [.024,.036]	0.032*** (0.003) [.007,.05]
Black	-0.080*** (0.004)	-0.080*** (0.001)	-1.204* (0.597)	-0.080*** (0.001)				
Post	0.030*** (0.003)				0.023*** (0.003)			
VA					-0.021*** (0.004)			
Observations	232,181	232,181	232,181	232,181	1,071,425	1,071,425	1,071,425	1,071,425
$R^2$	0.018	0.018	0.018	0.019	0.005	0.009	0.010	0.009
Year dummies	No	Yes	Yes	Yes	No	Yes	Yes	Yes
State dummies	No	No	No	No	No	Yes	Yes	Yes
Race time trends	No	No	Yes	No	No	No	No	No
State time trends	No	No	No	No	No	No	Yes	No
Extra control	No	No	No	Yes	No	No	No	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The sample is composed of individuals born between 1955 and 1975. The *Post* indicator refers to individuals born between 1970 and 1975. The standard errors, clustered at the race-year level in Columns 1-4 and at the state-year level in Columns 5-8, are reported in parentheses. The Conley and Taber (2011) 90% confidence intervals are reported in square brackets. All specifications include gender as a control variable. The extra control is the language spoken at home, which takes a value of 1 if the language is not English. Data sources: Census 2000 and ACS 2009-2014.

The inference procedure of Conley and Taber (2011) requires numerous control groups and can only be used with the specification in Columns 5-8, in which Blacks in Virginia are compared to Blacks in other states. The confidence intervals reported in square brackets confirm that the estimated effect is significantly different from zero for all specifications.

The presence of serial correlation in our outcome may downward bias the standard errors. To address this, we further estimate the effect by following a very simple procedure as suggested by Bertrand et al. (2004) that gets rid of the time dimension by averaging the data in two periods (before and after the election). We follow this procedure for the DD specification for Blacks in Virginia versus Blacks in other states.<sup>21</sup> The results are still

<sup>21</sup>We proceed as follows: regress  $Y_{ist}$  on individual covariates (*i.e.*, gender), average the residuals into two periods (before and after the election) and estimate the treatment effect on this aggregated data.

significant at 99% and of very similar magnitude, showing an effect of around 3 p.p. (see Table A.4 in Appendix A.4).

Finally, we also check whether the small drop in high school graduation rates that we observe for Blacks born in 1969 in Virginia in Figure 2 could be driving our results. Table A.5 in Appendix A.4 shows that the results are robust to the exclusion of individuals born in 1969. Our results are also robust to using the triple difference specification as shown in Table B.2 of Appendix B.3.

### 5.3 Synthetic Control Method

We further estimate the causal effect of the election by building a synthetic counterfactual for high school graduation of Blacks in Virginia using a pool of control states. We build the synthetic control as the convex combination of those states among the 20 control states that better match the pre-treatment predictors of high school graduation of Blacks in Virginia. Table A.6 in Appendix A.4 compares the pre-treatment mean of the predictor variables, including the lagged high school graduation rates of Blacks, between Virginia, the synthetic group, and the average of the 20 states in the donor pool. We observe that most variable means are relatively close between Virginia and the synthetic group. Moreover, for most variables except GDP per capita and the student-teacher ratio, the synthetic control performs better than the average of the 20 states in the donor pool.<sup>22</sup> In particular, Blacks from cohorts born before 1970 in the average of the 20 control states have a higher high school graduation rate than those in the synthetic control. Table A.7 in Appendix A.4 shows the composition of the synthetic group. We note here that the synthetic Virginia is composed of two states: Florida (81%) and Georgia (19%).

Figure 3a shows the evolution of high school graduation rates for Blacks in Virginia and the synthetic control for cohorts born between 1955 and 1975. Virginia corresponds to the black line. Results show that the synthetic control performs well in approximating the

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<sup>22</sup>Our results indicate that both GDP per capita and in particular the student-teacher ratio have a low predicting power for the graduation rate of Blacks born before 1970 in Virginia.

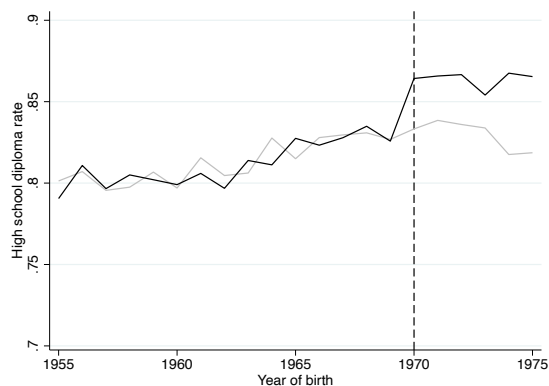


trajectory in high school graduation of Blacks in Virginia for cohorts born before 1970 (*i.e.*, our pre-treatment cohorts), which provides support for the use of the synthetic group as a counterfactual. Moreover, for cohorts born in 1970 or later, the graduation rates of Blacks in Virginia become and remain significantly higher than in the synthetic group.

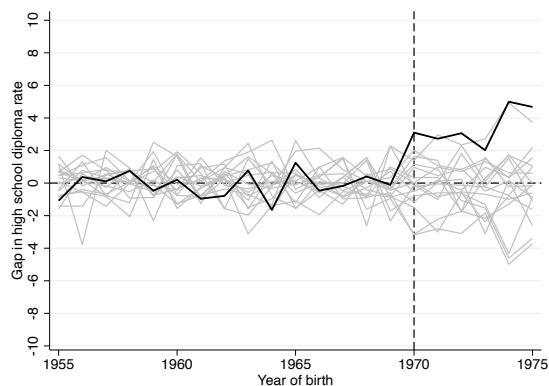
The black line in Figure 3b displays the gap in high school graduation rates between Virginia and its synthetic group by cohort. We can easily see that the gap oscillates around zero for pre-treatment cohorts and jumps to around 3 p.p. in 1970, continuing to remain high for all post-treatment cohorts. Results suggest that the estimated increase in high school graduation rates among Blacks in Virginia for cohorts born between 1970 and 1975 is on average 3.4 p.p., which represents an increase of approximately 4%. This result reinforces what we have already seen for Blacks with the DD strategy in the previous section.

Figure 3: Synthetic control method - Blacks in Virginia versus Blacks in other states

(a) Virginia and synthetic control - levels.



(b) Virginia and placebo states - gaps.



*Notes:* In both panels, the black line corresponds to Virginia. In panel a) the synthetic group is composed of Florida (81%) and Georgia (19%). Panel b) plots the gap in high school graduation rates between each state in the donor pool and its corresponding synthetic control. It excludes the District of Columbia, Delaware, and Mississippi, all of which have a pre-treatment mean squared prediction error (MSPE) more than 5 times the MSPE of Virginia. The main sources of data are the 2000 Census and ACS 2009-2014, but the predictors come from various sources (see Table A.1).

Figure 3b also displays the results of the inference method suggested by Abadie et al. (2010). We run 20 placebo tests as follows: each test assigns the treatment to one of the states in the donor pool, including Virginia among the control states, and builds a corresponding synthetic group for each state. The gray lines in Figure 3b show the gap in

high school graduation rates of Blacks between each placebo state and its corresponding synthetic control. In order to consider placebo states with a reasonable fit, we exclude from this figure any state that has a pre-treatment mean squared prediction error (MSPE) more than 5 times the MSPE of Virginia (see Abadie et al., 2010).<sup>23</sup> This filter removes the District of Columbia, Delaware, and Mississippi, leaving 17 placebo states.<sup>24</sup>

We can see that the effect found in Virginia (the black line in Figure 3b) after 1970 is unusually large relative to the gaps in the placebo states. Given that there are 18 states in total, the probability of randomly finding an effect of the magnitude of the effect found in Virginia is 5.6%, which is only slightly larger than the standard significance level. Finally, we further evaluate the magnitude of the effect in Virginia relative to the gaps in the placebo states by plotting the ratios of post- to pre-treatment MSPE for each state (see Figure A.3b in Appendix A.4). We see that Virginia has the highest ratio among all the placebo states. Given that there are 21 states in total, the probability of randomly finding such a large ratio among all states is almost 5%.

## 5.4 Event-study with CPS Data

The above-mentioned results using the census data show an increase in the probability of having a high school diploma for cohorts of Blacks who were between 18 and 20 years old when Douglas Wilder arrived to power or reached the age of 18 during his term. However, the census data do not provide the year at which individuals received their high school diploma. The CPS data, on the other hand, which provide educational information for each year between 1984 and 1993, allow us to understand whether the increase in the probability of having a high school diploma among Blacks in Virginia truly follows the arrival of Douglas Wilder to power. Figure 4 plots coefficients  $\delta_{1t}$ ,  $\delta_{3t}$ ,  $\delta_{4t}$ , and  $\delta_{6t}$  of Equation (3). Given the

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<sup>23</sup>The MSPE measures the average of the squared errors between the rates of high school graduation in the treated state and their respective synthetic control over the pre-treatment period.

<sup>24</sup>Figure A.3a in Appendix A.4 displays all the placebo states. We can see that there are several states with gaps that significantly differ from zero in the pre-treatment period. The gap for Virginia after 1970 is still among the largest ones.

much smaller sample size of the CPS, the coefficients are less precise than with the census data. However, the results show that there is an increase in the probability of having a high school diploma among 18- to 20-year-old Blacks in Virginia in 1990, the year Douglas Wilder arrived to power.<sup>25</sup> By contrast, we do not observe any increase in the probability of having a high school diploma for Blacks in other states or for Whites in Virginia or in other states in the same period. These additional results are qualitatively in line with our earlier findings using the census data and highlight that the timing of the increase that we observe for Blacks in Virginia coincides with Douglas Wilder’s election.

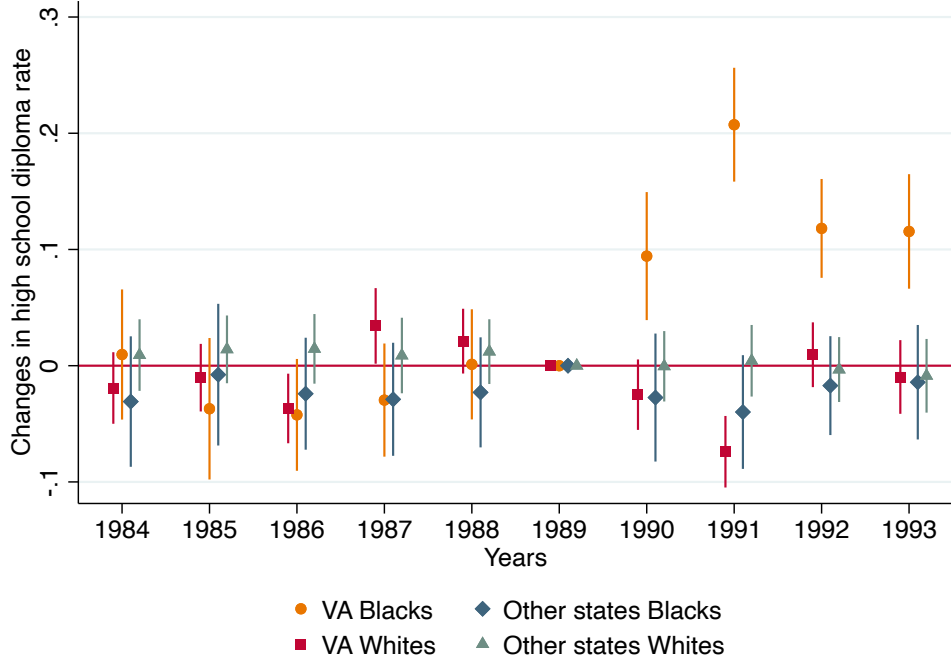
## 5.5 Common Core of Data

We further test the robustness of the results using a third source of data, the Common Core of Data (CCD), which are administrative data providing the rates of high school graduation in each school district. As explained in Section 3, the CCD do not provide graduation rates by race prior to 1992, so we are only able to check whether there was a higher increase in the graduation rates of counties with a higher proportion of Blacks. We build graduation rates at the school district level by aggregating the number of students enrolled in grade 12 and matching it to the number of graduates. We obtain graduation rates for the 1986-87, 1987-88, 1988-89, 1989-90, and 1992-93 school years. Since the number of graduates is measured at the end of the school year, we classify the first three school years as pre-treatment graduation rates (before the election) and school years 1989-90 and 1992-93 as post-treatment years (after the election). We then estimate whether there was a higher increase in graduation

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<sup>25</sup>The magnitude of the effect for the post-treatment years ranges between 10 p.p. to 20 p.p., which is considerably larger than with the census data. This discrepancy could be due to several factors beyond the small sample size of the CPS. First, the sample of individuals is different in the two datasets: the CPS does not include institutionalized persons, such as inmates in prisons or mental institutions. Second, the census data provide information on recalled highest educational attainment, which may be less accurate than current educational attainment as provided by the CPS. Third, the econometric specification is not exactly the same: with the census data, we can only control for year-of-birth dummies, but not for year dummies. Finally, we cannot see in the census data which year individuals received their high school diploma. Thus, individuals aged 18-20 in 1990-1993 who received their high school diploma after the age of 20 are classified as having a high school diploma in the census data specification but marked as not having one in the CPS specification.

Figure 4: Governor from minority and high school diploma (yearly estimates; triple difference; CPS data)



*Notes:* The graph plots the coefficients estimated following the specification of Equation (3), allowing the coefficients to vary by year. The sample is composed of individuals aged 18-20. Standard errors are clustered at the state-year level. The vertical bars indicate the 95% confidence interval; the horizontal axis indicates the year at which individuals are surveyed; the vertical axis indicates the changes in high school graduation rates with respect to the baseline year (*i.e.*, 1989). Data source: CPS basic, 1984-1993.

rates in counties with a higher share of Blacks.<sup>26</sup>

Results are displayed in Table 3 and show that, in Virginia, graduation rates were higher in counties with a higher proportion of Blacks after the election of Douglas Wilder. These results are in line with those using the CPS and census data. We test the robustness of these results by including the control states. Those results, reported in Table B.3 of Appendix B.3, are similar: we do not observe any differential increase in graduation rates for counties with a higher share of Blacks relative to the control states.

<sup>26</sup>The proportion of Blacks per county is computed using the 1990 census data downloaded from the Census Bureau website: <https://www2.census.gov/programs-surveys/popest/tables/1990-2000/counties/asrh/>. A county is usually larger than a school district.

Table 3: Governor from minority and graduation rate (difference-in-differences; Common Core of Data)

Dep. variable:	Share of graduates		
	(1)	(2)	(3)
Post $\times$ Share Blacks	0.031* (0.014)	0.030* (0.014)	0.031* (0.013)
Post	-0.015* (0.006)		
School district dummy	Yes	Yes	Yes
Year dummies	No	Yes	Yes
School district controls	No	No	Yes
Observations	659	659	528
$R^2$	0.634	0.654	0.735

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Standard errors are clustered at the year level. The sample is restricted to Virginia. Column 3 additionally controls for the number of individuals enrolled in grade 12 at the beginning of the school year (in log) and the number of teachers in the school district (in log), information for which is only available up to 1989-90. Data sources: Common Core of Data, Public Elementary/Secondary School Universe Survey, and Local Education Agency Universe Survey.

## 6 Mechanisms

In the previous section, we showed that there was a significant increase in the probability of graduating from high school for young Blacks in Virginia relative to the control groups after Wilder’s election. In this section, we explore the key mechanisms that might explain this increase. Section 6.1 analyzes whether the aspirations of young Blacks in Virginia also increased during the post-treatment period. Section 6.2 analyzes competing mechanisms. Section 6.2.1 studies whether there were changes in perceived teachers’ behavior. Section 6.2.2 studies the evolution of expected returns to education for Black young adults by looking at contemporary labor market outcomes. Section 6.2.3 examines whether the effects could be driven by changes in educational policies.

## 6.1 Aspirations

We first explore whether the aspirations and self-efficacy beliefs of Black students improved after the election of the first Black governor of the US. Previous literature from psychology shows that adults who act as role models for adolescents can foster their self-efficacy beliefs, that is, beliefs in one's own ability to achieve a goal (Zimmerman, 2000). In turn, self-beliefs are highly correlated with academic performance (Pajares and Urdan, 2006). Populations that suffer from negative stereotypes with respect to their performance, such as African American students, tend to have lower self-beliefs, and interventions aimed at improving their self-beliefs can improve their educational outcomes (Cohen et al., 2009). With respect to role models, the economic literature has mostly focused on the identity of professors and has shown that these authority figures influence the educational aspirations and outcomes of students sharing their identity (Bettinger and Long, 2005; Fairlie et al., 2014). The size of the estimated effect in this literature is usually quite large.<sup>27</sup>

Could the improved educational outcomes of young Blacks after 1989 come from an improvement in their aspirations and self-efficacy beliefs following Wilder's election? As underlined in Sections 1 and 2, the election of Wilder had symbolic significance due to several factors. He was the first Black governor ever elected in the US, and as such his election raised a lot of attention. The fact that Virginia used to be the capital of the Confederacy and a very active state in slave trade reinforced the symbolism. Moreover, Wilder was "a grandson of slaves"<sup>28</sup> who grew up in a poor family and suffered from discrimination. He had to leave Virginia to study law because Blacks were forbidden from studying at Virginia law schools.<sup>29</sup> All these characteristics led the journalist David Lerman from the Newport News newspaper *Daily Press* to call him "a superstar role model for many Black Virginians."<sup>30</sup>

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<sup>27</sup>Fairlie et al. (2014), for example, find that African Americans taught by an African American instructor reduce their dropout rates by 26.6% with respect to the average pre-treatment dropout rates (authors' calculations based on the results presented in the paper).

<sup>28</sup>Quote from the national newspaper *USA Today*, "Historic Gains for Blacks," November 8, 1989.

<sup>29</sup>Source: Virginia Union University online Library.

<sup>30</sup>*Daily Press*, September 5, 1994.

### 6.1.1 Own Survey

To study the potential role of aspirations, we begin by using our own survey, which contains several questions related to this channel. Given that the survey only includes post-treatment cohorts, we run two simple differences comparing Blacks from Virginia to either Whites in Virginia or Blacks in control states. Additionally, we run a difference-in-differences regression that compares the Black-White difference in Virginia to that of the control states. We provide these latter results in Appendix A.4.

First, we explore whether survey respondents believed that Douglas Wilder had a positive impact on their life. Table 4 shows whether Blacks in Virginia were more likely relative to the control groups (either Whites in Virginia or Blacks in control states) to reply that Douglas Wilder had a positive effect on their life. The dependent variable takes a value of 1 if respondents answered that the governor had a positive impact on their life and 0 if the governor either did not have any effect or had a negative effect. Results show that Blacks in Virginia were between 31 pp. and 39 pp. more likely to state that they were positively affected by Douglas Wilder than the control groups.<sup>31</sup>

Table 4: Governor from minority and positive effect on life (simple difference)

Dep. variable:	Positive effect on life	
	D: Blacks vs. Whites in VA (1)	D: Blacks in VA vs. in control states (2)
VA		0.390*** (0.061)
Black	0.313*** (0.088)	
Observations	111	247
$R^2$	0.240	0.220

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors. All specifications include individual gender and age as control variables. The first column compares Blacks and Whites in Virginia. The second column compares the responses for Blacks in Virginia to those of Blacks in the control states. Data source: Own survey.

<sup>31</sup>Results are very similar for the difference-in-differences estimation (see Table A.10 in Appendix A.4).

Next, we explore how respondents believe they have been affected by the governor. For this, we analyze the open responses from those who stated that they were either positively or negatively affected by the governor. As already mentioned, we asked three independent reviewers to code the responses into different categories, one being aspirations/role model.<sup>32</sup> This category is aimed at capturing responses that mentioned, for instance, that the election of the governor encouraged them to work harder or inspired them or that he was a role model. We classify a quote as referring to aspirations if two out of three reviewers tagged it in this category. Given the survey sample size, the number of quotes is limited. However, we observe that only Black respondents mentioned that Douglas Wilder had an effect on their aspirations. Moreover, 34% (13 out of 38) of the open responses from Black Virginians refer to an increase in aspirations or identify the governor as a role model, whereas the percentage among Blacks in control states is less than half of this (5 out of 31, that is, 16%). In Appendix A.3, we include all the quotes classified as referring to aspirations from Blacks from Virginia. It is worth noting that open responses were collected before the respondents faced any of the explicit questions on aspirations, which we study next.

The rest of the questionnaire consisted of a set of Likert questions on a scale of 1 to 7 (endpoints: 1 = Strongly disagree, 7 = Strongly agree). For ease of interpretation, we transform all Likert questions into dummy variables that take a value of 1 if respondents somehow agree, agree, or strongly agree with the question.<sup>33</sup> The first column in Table 5 shows that Blacks in Virginia were around 30 p.p more likely than the control groups to state that after the election, they believed that they could earn more in the future. The answers to this question could reflect a change in aspirations, but could also reflect an increase in labor market opportunities for the group in question. However, our analysis of the changes in labor market outcomes, explained in Section 6.2.2, does not support this alternative interpretation.

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<sup>32</sup>The other categories were event (already explained in Section 2), policies, and other. The second one includes those responses that highlight the work done by Douglas Wilder as governor, and the third one includes the remaining quotes that did not fit into any of these categories.

<sup>33</sup>The results are qualitatively similar if we instead exploit the entire scale of the variable and run an ordered logit (see Table A.11 in Appendix A.4).



Columns 2 to 4 of Table 5 show the results for three Likert questions that proxy for aspirations. Respondents were asked whether they believed that Douglas Wilder was a role model for them, whether he made them realize that a better life was possible, and whether he made them realize that if they worked more they could achieve more. Finally, using a simple average, we aggregate the three questions on aspirations in an index (see Column 5). Results are similar across these variables: Blacks in Virginia were around 30 p.p. more likely to agree with these questions than the control groups. When we analyze these same questions for the previous White governor in Virginia, we observe that Blacks in Virginia were less likely to believe that he increased their aspirations or was a role model (see Table A.12 in Appendix A.4). These results are consistent with a change in the reference point for Black Virginians, who may rate the former governor lower as compared to Douglas Wilder. Altogether, these results provide suggestive evidence that aspirations among Blacks in Virginia belonging to post-treatment cohorts might have increased after the election and are then a plausible driver of the observed increase in educational attainment.

Table 5: Governor from minority and aspirations (simple difference)

Dep. variable:	Perceived future earnings  (1)	Aspirations			Index  (5)
		Role model  (2)	Better life possible  (3)	Work more, achieve more  (4)	
<i>Panel A. D: Blacks vs. Whites in Virginia</i>					
Black	0.293*** (0.090)	0.315*** (0.093)	0.298*** (0.093)	0.296*** (0.092)	0.303*** (0.084)
Observations	111	111	111	111	111
$R^2$	0.105	0.141	0.132	0.165	0.173
<i>Panel B. D: Blacks in Virginia vs. in control states</i>					
VA	0.274*** (0.068)	0.316*** (0.069)	0.295*** (0.068)	0.299*** (0.067)	0.303*** (0.059)
Observations	247	247	247	247	247
$R^2$	0.118	0.119	0.102	0.132	0.138
State dummies	Yes	Yes	Yes	Yes	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors. All specifications include individual gender and age and the order of the governor modules as control variables. Data source: Own survey.

### 6.1.2 Freshman Survey

To complement the evidence on aspiration from our own survey, we exploit a nationally representative survey of first-year college students, the CIRP Freshman Survey from the Higher Education Research Institute (HERI) from 1985 to 1993, which includes questions on self-efficacy beliefs and aspirations. Specifically, we look at how self-rated *academic ability* (self-efficacy belief) and *drive to achieve* (aspiration) of Blacks changed after the election of Douglas Wilder relative to Whites and to other states. These are both categorical variables that take values from 1 to 5. Higher values imply higher self-rated ability or drive to achieve. Table A.9 in Appendix A.4 shows that the pre-treatment trends are parallel for drive to achieve for all identification strategies (Columns 1 and 2) as well as for academic ability (Columns 3 and 4).

Given that college students are a self-selected population, the Freshman Survey sample is quite likely different from the census sample from which the main results derive. Table A.3 in Appendix A.2 displays descriptive statistics for the Freshman Survey sample. We observe that this sample presents some specific characteristics. First, as expected, Blacks are less represented in the freshman sample than in the census for all states, but this is particularly true in the control states. Second, there are considerably more Black women in the Freshman Survey than in the census for all states. Moreover, Blacks from Virginia in the freshman sample appear to have less-educated mothers than in other states, although the difference decreases over time.

Given the characteristics of the sample, the results reported in Table 6 should only be considered as suggestive evidence. However, they show that Black first-year college students tend to rate their academic ability and their drive to achieve higher after 1990 (although not always significantly). These results provide additional evidence that the increase in high school graduation rates for Black students after 1990 may have been partially due to an

Table 6: Governor from minority and aspirations (difference-in-differences; ordered logit)

	DD: Blacks vs. Whites in Virginia Treated: Black $\times$ Post			DD: Blacks in VA vs. in control states Treated: VA $\times$ Post		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A. Dependent variable: Academic ability</i>						
Treated	0.461*** (0.084)	0.409*** (0.081)	0.118 (0.103)	0.214*** (0.074)	0.170*** (0.051)	0.231** (0.107)
Black	-0.219*** (0.073)	-0.197*** (0.056)	-147.323*** (39.275)			
Post	-0.276*** (0.073)			-0.025 (0.049)		
VA				-0.085 (0.055)		
Observations	50,462	50,462	50,462	92,465	92,465	92,465
Pseudo $R^2$	0.220	0.221	0.221	0.147	0.152	0.153
<i>Panel B: Dependent variable: Drive to achieve</i>						
Treated	0.218** (0.103)	0.200*** (0.075)	0.216 (0.132)	0.072 (0.080)	0.044 (0.053)	0.176** (0.075)
Black	0.629*** (0.085)	0.624*** (0.038)	8.857 (57.114)			
Post	0.118* (0.062)			0.246*** (0.037)		
VA				-0.046 (0.048)		
Observations	50,409	50,409	50,409	92,240	92,240	92,240
Pseudo $R^2$	0.052	0.052	0.052	0.040	0.043	0.043
Year dummies	No	Yes	Yes	No	Yes	Yes
State dummies	No	No	No	No	Yes	Yes
Race time trends	No	No	Yes	No	No	No
State time trends	No	No	No	No	No	Yes

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The reported coefficients are in log-odd units. The standard errors, clustered at the race-year level in Columns 1-3 and at the state-year level in Columns 4-6, are reported in parentheses. All specifications include individual gender, age, average grade in high school, and mother's and father's education as control variables. Data source: CIRP Freshman Survey, 1985-1993.

improvement in their self-efficacy beliefs at that time.<sup>34</sup>

<sup>34</sup>Results based on the DDD strategy are qualitatively similar to the ones found here (see Table B.4 in Appendix B.3).

## 6.2 Competing Mechanisms

### 6.2.1 Perceived Teachers' Behavior

It might be expected that teachers' attitudes towards Black students changed following the election of Douglas Wilder. We can to some extent study this mechanism with our own survey, which includes three questions about perceived changes in teachers' behavior after the election. We asked individuals whether they believed that after the election, teachers' perceptions of the respondents' abilities improved, that teachers had helped them graduate from high school, or that teachers had become more lenient when grading their work. Table 7 displays the results for these questions,<sup>35</sup> along with an index linearly combining the three dummy variables. We observe that most of the estimates are not statistically significant and are of small magnitude. Post-treated Blacks in Virginia were more likely to state that teachers' perceptions of the respondents' abilities improved after the election, relative to the control groups. If we focus on the index, we see that the effects are only statistically significant (at the 90% confidence level) when we compare Blacks from Virginia to Blacks from the control states. For this specification, Blacks from Virginia were 8.3 p.p more likely to agree that teachers favorably changed their behavior after the election. The results are qualitatively similar when exploiting the entire scale of the variable using an ordered logit (see Table A.13 in Appendix A.4). If we compare these results with the survey answers on aspirations, we observe that the effects on teacher behavior are considerably smaller and less consistent in terms of significance and sign.

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<sup>35</sup>Again, the dependent variables are dummy variables that take a value of 1 if respondents somehow agree, agree, or strongly agree with the question.

Table 7: Governor from minority and teacher behavior (simple difference)

Dep. variable:	Teachers			
	Perception of ability (1)	Help to graduate (2)	Grading leniency (3)	Index (4)
<i>Panel A. D: Blacks vs. Whites in Virginia</i>				
Black	0.137 (0.091)	0.088 (0.084)	-0.058 (0.074)	0.056 (0.073)
Observations	111	111	111	111
$R^2$	0.056	0.129	0.115	0.096
<i>Panel B. D: Blacks in Virginia vs. in control states</i>				
VA	0.142** (0.065)	0.105* (0.060)	0.002 (0.047)	0.083* (0.049)
Observations	247	247	247	247
$R^2$	0.057	0.070	0.035	0.059
State dummies	Yes	Yes	Yes	Yes

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors. All specifications include individual gender, age, and the order of the governor modules as control variables. Data source: Own survey.

## 6.2.2 Labor Market Outcomes

We now test whether labor market outcomes could also explain part of the increase in schooling we observed. Better labor market conditions for Black adults, such as higher wages and a lower unemployment rate, could foster schooling among young Blacks. In other words, Blacks could be responding to an increase in the returns to schooling specific to their group.<sup>36</sup> We estimate Equations (1) and (2) as before to test whether the labor market outcomes of Black adults in Virginia improved during Wilder’s term. We focus on young adults aged 25 to 35 since they are a plausible reference group for the young students in high school<sup>37</sup> and look at their self-reported wages and unemployment status using the CPS data. To test whether young Blacks were only responding to an increase in the returns to

<sup>36</sup>Aneja and Avenancio-Leon (2019) indeed find that Black political empowerment through the 1965 Voting Rights Act led to a decrease in the Black-White earning gap. They favor an explanation based on a change in political incentives, but they cannot reject that it may also have been related to an increase in the number of Black elected officials.

<sup>37</sup>We estimate the same regression for a set of different age groups. No improvement on labor market conditions is found for any group. Results are available upon request.

high school graduation, we run the same specification for young adults who have graduated from high school. Those results are similar to the ones presented here.<sup>38</sup>

Table 8: Governor from minority and labor market outcomes for young adults (25-35 years old) (difference-in-differences)

	DD: Blacks vs. Whites in Virginia Treated: Black $\times$ Post				DD: Blacks in VA vs. in control states Treated: VA $\times$ Post			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A. Dependent variable: Wages</i>								
Treated	-0.064 (0.073)	-0.066 (0.058)	0.111 (0.083)	-0.068 (0.060)	0.010 (0.068)	0.016 (0.058)	0.119 (0.076)	0.021 (0.058)
Observations	3,405	3,405	3,405	3,405	17,580	17,580	17,580	17,580
$R^2$	0.052	0.055	0.055	0.079	0.016	0.040	0.043	0.055
<i>Panel B. Dependent variable: Unemployment</i>								
Treated	-0.009 (0.009)	-0.009** (0.004)	-0.010 (0.007)	-0.009** (0.004)	0.005 (0.010)	0.003 (0.006)	-0.005 (0.012)	0.003 (0.006)
Observations	39,516	39,516	39,516	39,516	220,265	220,265	220,265	220,265
$R^2$	0.020	0.021	0.021	0.024	0.003	0.015	0.017	0.021
Year dummies	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Race time trends	No	No	Yes	No	No	No	No	No
State dummies	No	No	No	No	No	Yes	Yes	Yes
State time trends	No	No	No	No	No	No	Yes	No
Extra control	No	No	No	Yes	No	No	No	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The standard errors are clustered at the race-year level in Columns 1-4 and at the state-year level in Columns 5-8. All specifications include individual gender and age. The extra control is household size. Data sources: CPS basic and ASEC, 1984-1993.

Results in Table 8 show that the labor market conditions for young Black adults, as measured by wages and unemployment, did not improve during Wilder's term. The coefficients are close to zero and not statistically significant in most specifications for both wages and unemployment.<sup>39</sup> Improvements in labor market prospects among Black Virginians are therefore unlikely to be the main drivers behind the increase in educational achievement that we observed.

<sup>38</sup>Results are available upon request.

<sup>39</sup>Table B.5 in Appendix B.3 shows the results with the DDD strategy. Most estimates are not statistically significant and small.

### 6.2.3 Educational Policies

Finally, the changes in educational outcomes that we observed could also be explained by educational policies introduced in Virginia immediately before or during the governor's term of office. Two major educational policies were introduced there in 1988-89 and 1990: a school funding reform and an increase in the compulsory school attendance age. To the best of our knowledge, these two policies are the only ones that could have affected the educational attainment of young Blacks during that period in Virginia. We consider these two policies successively.

#### *The school funding reform*

A legislative school funding reform took effect in Virginia in the 1988-89 school year. Virginia had long suffered from a very unequal distribution of school funding, and the objective of the reform was to distribute resources more equally across districts. This reform might have affected the educational outcomes of Blacks relative to Whites if counties with a larger share of Blacks in the population had a larger increase in resources relative to other counties.<sup>40</sup> However, this reform does not seem to have solved what was called at that time the "disparity problem". According to Delja (2004) "the new formula had as many problems as the old one". The new allocation of school funds across school districts was in fact considered so unequal that in 1992 a coalition of district superintendents and school boards filed a lawsuit against the Commonwealth of Virginia (*i.e.*, *Reid Scott v. Commonwealth of Virginia*). The judge in charge of the complaint ruled against the plaintiffs on the ground that "the Virginia Constitution does not now mandate equality of funding for school districts in Virginia" (Delja, 2004).

Available data from the census of governments on per-pupil spending at the county level before and after the school funding reform confirm that counties with more Blacks do not

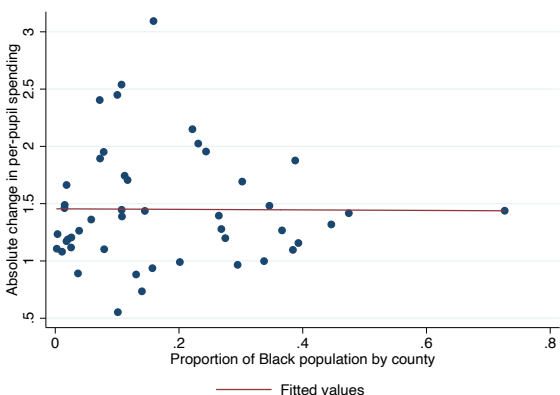
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<sup>40</sup>Figure A.4 and Table A.8 in Appendix A.4 show that per-pupil spending in Virginia did not increase at a higher rate after the reform.

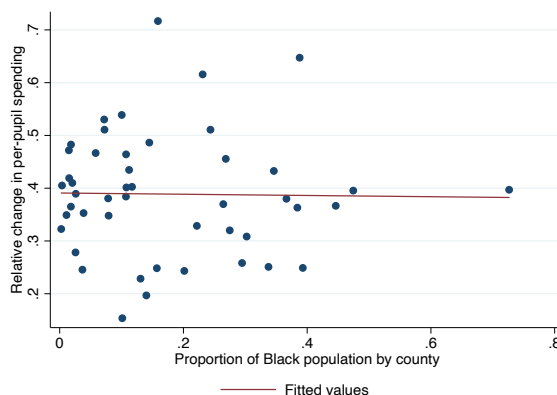
seem to have benefited more from the school funding reform. Figures 5a and 5b plot county-level changes between 1987 and 1992<sup>41</sup> in per-pupil spending in absolute and relative terms against the share of Black population in a county in 1990. There is no correlation between the change in per-pupil spending and the share of Black population by county.<sup>42</sup> This absence of correlation along with the anecdotal evidence highlight that the school funding reform of 1988-89 is unlikely to explain the increase in the educational outcomes of Blacks after the election of Wilder.<sup>43</sup>

Figure 5: Change in per-pupil spending between 1987 and 1992

(a) Absolute change in per-pupil spending



(b) Relative change in per-pupil spending



*Notes:* The graphs plot the changes in per-pupil spending between 1897 and 1992 in Virginia as a function of the proportion of Blacks by county, where each dot represents a county. The number of observations is 47 counties. Data sources: Census of Governments, 1987 and 1992 and Census 1990.

### *Compulsory school attendance age*

The second educational reform that we study is a change in the compulsory school attendance age in Virginia. In July 1990, the Commonwealth of Virginia raised the compulsory school attendance age from 17 to 18 years old. While the new compulsory schooling law

<sup>41</sup>Data at the county level in the census of governments is only available every five years.

<sup>42</sup>The absence of correlation is robust to the exclusion of the furthest point on the right.

<sup>43</sup>School funding reforms create incentives for households to sort themselves across districts, and this in turn affects school revenues through property values (Biasi, 2019). Thus, the share of Blacks in a county, and more specifically the composition by county, could be affected by such a reform. Biasi (2019) finds evidence in favour of household sorting for a large set of school funding reforms in the US, but the magnitude of this effect does not seem to be very large. On average, the in-migration and out-migration rates of counties with a reform increase by 0.13 and 0.14 p.p. relative to counties without a reform. Moreover, the difference in in-migration rates between counties with and without a reform is only statistically different from zero in the year of the reform. Thus, we find it unlikely that the sorting effect would invalidate the argument above.



applied to everybody in Virginia, it may have had a differential impact on Blacks relative to Whites given that Blacks had, on average, a lower attainment rate prior to the reform (see Table A.2 in Appendix A.2).

To study the potential effect of this policy on our results, we first obtain some insights from the literature on the impact of compulsory attendance laws in the US. Two particular findings from that literature are relevant for our case. First, previous studies find no impact from such laws on the educational attainment of Blacks in the US (Lleras-Muney, 2002; Stephens and Yang, 2014). Second, the compliance rate with the law has been shown to be low (Oreopoulos, 2006). While these findings are not directly applicable to our context, since they use data from the first half of the 20<sup>th</sup> century, they are in line with anecdotal evidence from Virginia suggesting that the law did not have much effect. The *Richmond Times-Dispatch*, for example, wrote in 1990 that “a new law requiring Virginia youngsters to stay in school until age 18 is apparently having little effect on truants”.<sup>44</sup> A search about this law in a newspapers database also did not highlight important media coverage.<sup>45</sup>

Second, to obtain further insights on the effect of this policy we exploit our own survey. We asked respondents of any race who attended their senior year of high school in Virginia, whether the increase in the compulsory school attendance age changed their educational attainment. This question allows us to obtain insights on the perceived relevance of this policy among Black Virginians. We can then compare the results by race (see Table 9). We can see that the coefficient for Blacks is not statistically significant. Blacks relative to Whites from Virginia do not believe that the change in school attendance age had a significant impact on their schooling. This is consistent with the rest of the evidence gathered in this section and suggests that this policy channel is unlikely to explain the observed effect on high school graduation.

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<sup>44</sup>“Truancy Law Apparently Not Effective,” *Richmond Times-Dispatch*, November 28, 1990.

<sup>45</sup>We searched for the occurrence of the words “compulsory attendance” in 1989 and 1990 in 141 newspapers distributed in Virginia using the NewsLibrary.com database. The search returned 51 occurrences of the term. Similarly, a search for “truancy law” returned only 20 occurrences. In contrast, a word search for “Douglas Wilder” returned 7,607 articles over the same period and a combined search for “Douglas Wilder” and “first Black governor” returned 1,100 articles.

Table 9: Perceived effect of change in compulsory school attendance age on educational attainment

Black	0.033 (0.093)
Observations	111
$R^2$	0.062

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors. The specification compares Blacks and Whites in Virginia, and includes gender and age as control variables. Data source: Own survey.

Finally, we can obtain further insights from the data and timing of events to determine whether this particular reform in Virginia is - as the literature, anecdotal evidence and our own survey seem to suggest - unlikely to have significantly affected the school outcomes of Blacks. First, we look at timing and age group of Blacks affected by the increase in educational attainment and compare it to timing and age group of individuals affected by the compulsory school age reform. The increase in educational attainment concerns 18- to 20-year-old Blacks, and, as shown in Figure 4, it begins in 1990. In comparison, the compulsory schooling reform takes place in mid-1990 and only concerns those aged 17. More precisely, the timing of the reform implies that the new law was binding from the 1990-91 academic year, which means that any effect on high school graduation would be expected only as of late May or early June 1991 (at the end of the school year). In terms of age groups, the reform is only binding for anyone who drops out at age 17. Thus, those who are already aged 18 or older in 1990 cannot be affected by the change.<sup>46</sup>

Accordingly, the timing of events as well as the age group affected by them both suggest that, while the increase in high school graduation rates from 1991 onward could be partly related to the compulsory school age reform, it is highly unlikely that the increase that we

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<sup>46</sup>Those individuals aged 18 that we observe in the second half of 1990 in the CPS might turn 18 after July, when the new law was to take effect. Thus, the new schooling law could force them to stay in school for some months. However, it is unlikely that those extra months would lead them to graduate from high school in the first semester of the 1990-91 school year.

observe in 1990 was driven by this reform. Those for whom we observe an increase, 18- to 20-year-old Black youths, were too old to have been affected by this change in law.

However, those aged 18 to 20 from 1991 onward, who turned 18 after July 1990, could be affected by the compulsory attendance law. In particular, the reform would lead the compliers within that age group to stay in school longer (at least until they reach 18). This extra time in school, in turn, decreases their cost of getting their high school diploma. For this channel to explain our results, we should observe a decrease in dropouts among Blacks aged 17 in Virginia compared to the control groups. In other words, we should observe that a larger fraction of Blacks relative to the control groups were kept in school by the law. To explore this, we look at the evolution of dropout rates by age. The CPS has information about dropout for students age 16 and older. We can therefore study the dropout rates of those who were (potentially) directly affected by the compulsory schooling reform (the 16-17 age group),<sup>47</sup> as well as those who were too old to be affected (the 18-20 age group). Following Equations (1) and (2), we check whether dropout rates among Blacks in these two age groups relative to Whites in Virginia and Blacks in other states decreased after the reform.

As evident from Table 10, there is no decrease in dropout rates among 16- to 17-year-olds after 1990 when comparing Blacks and Whites in Virginia. When Blacks in other states are used as the control group, the decrease in dropout rates for Blacks in Virginia in that age group is significant, but is much smaller than for the 18-20 age group.<sup>48</sup> The 18- to 20-year-old population, for which we find a consistently significant decrease in dropout rates after 1990, was, as mentioned, too old to be affected by the policy for each year after treatment. These results thus provide additional evidence that the observed improvement in school outcomes for Blacks after 1990 is unlikely to have been driven primarily by the compulsory

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<sup>47</sup>Although they were not directly affected by the reform, we include the 16-year-old group to get a sufficiently large sample size.

<sup>48</sup>Table B.6 in Appendix B.3 shows the results using the DDD strategy. These are not statistically significant and very small for the 16-17 age group, but much larger and statistically significant in most specifications for the 18-20 age group.

school age reform.

Table 10: Dropout rates for the 16-17 and 18-20 age groups (difference-in-differences)

Dep. variable:	Dropout							
	DD: Blacks vs. Whites in Virginia Treated: Black $\times$ Post				DD: Blacks in VA vs. in control states Treated: VA $\times$ Post			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A. Age group: 16-17</i>								
Treated	0.006 (0.005)	0.006 (0.005)	-0.001 (0.007)	0.006 (0.005)	-0.020** (0.008)	-0.025*** (0.009)	-0.031*** (0.010)	-0.026*** (0.009)
Observations	2,588	2,588	2,588	2,588	20,982	20,982	20,982	20,982
$R^2$	0.017	0.018	0.018	0.018	0.008	0.014	0.017	0.016
<i>Panel B. Age group: 18-20</i>								
Treated	-0.131*** (0.023)	-0.130*** (0.020)	-0.052 (0.037)	-0.131*** (0.020)	-0.125*** (0.024)	-0.126*** (0.023)	-0.049 (0.041)	-0.131*** (0.024)
Observations	3,353	3,353	3,353	3,353	28,392	28,392	28,392	28,392
$R^2$	0.011	0.012	0.014	0.012	0.005	0.012	0.013	0.018
Year dummies	No	Yes	Yes	Yes	No	Yes	Yes	Yes
State dummies	No	No	No	No	No	Yes	Yes	Yes
Race time trends	No	No	Yes	No	No	No	No	No
State time trends	No	No	No	No	No	No	Yes	No
Extra control	No	No	No	Yes	No	No	No	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The standard errors are clustered at the race-year level in Columns 1-4 and at the state-year level in Columns 5-8. Each specification includes age, gender, and month of survey as controls. Each specification in Panel A additionally includes a dummy variable indicating whether the individual has reached the legal age to drop out from school. The extra control in Columns 4 and 8 is household size. Data sources: NBER-CPS, 1984-1988, and IPUMS-CPS, 1989-1993.

## 7 Concluding Remarks

This paper studies the effect of the election of the first Black governor in the US on educational outcomes of young Blacks from the same state. That election in Virginia was a major event for the Black community there, and we can thus expect it to have had significant effects among Blacks. We focus our analysis on young Blacks and study the evolution of their high school graduation rates after the election relative to those of Whites in the state and to those of Blacks in other states as controls. Our results point to a sizeable increase in high school graduation rates among 18- to 20-year-old Blacks. Interestingly, the increase

does not seem to be fully explained by the main changes in educational policies at the time, nor can it be explained by an increase in the returns to schooling for Blacks. We cannot rule out that part of the effect is explained by a change in teachers' behavior. However, our results provide support for the existence of an effect channeled through an increase in the aspirations of Black students. These results suggest that the first elected Black governor in the US may have acted as a role model for young Blacks in Virginia, which indicates that increasing the exposure of disadvantaged groups to successful individuals belonging to the same group can foster their educational attainment.

## References

- Abadie, Alberto, Alexis Diamond, and Jens Hainmueller**, “Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California’s Tobacco Control Program,” *Journal of the American Statistical Association*, June 2010, *105* (490), 493–505.
- Akerlof, George A. and Rachel E. Kranton**, “Economics and Identity,” *Quarterly Journal of Economics*, August 2000, *115* (3), 715–753.
- Aneja, Abhay P. and Carlos F. Avenancio-Leon**, “The Effect of Political Power on Labor Market Inequality: Evidence from the 1965 Voting Rights Act,” *Unpublished manuscript*, 2019.
- Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova**, “Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India,” *Science*, 2012, *335* (6068), 582–586.
- Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan**, “How Much Should We Trust Differences-in-Differences Estimates?,” *The Quarterly Journal of Economics*, 2004, *119* (1), 249–275.
- Bettinger, Eric P. and Bridget Terry Long**, “Do Faculty Serve as Role Models? The Impact of Instructor Gender on Female Students,” *The American Economic Review*, 2005, *95* (2), 152–157.
- Biasi, Barbara**, “School Finance Equalization Increases Intergenerational Mobility: Evidence from a Simulated-Instruments Approach,” NBER Working Paper No. W25600, National Bureau of Economic Research, Cambridge, MA 2019.
- Chattopadhyay, Raghendra and Esther Duflo**, “Women as Policy Makers: Evidence from a Randomized Policy Experiment in India,” *Econometrica*, September 2004, *72* (5), 1409–1443.

- Clots-Figueras, Irma**, “Women in Politics,” *Journal of Public Economics*, August 2011, 95 (7-8), 664–690.
- , “Are Female Leaders Good for Education? Evidence from India,” *American Economic Journal: Applied Economics*, 2012, 4 (1), 212–244.
- Cohen, Geoffrey L., Julio Garcia, Valerie Purdie-Vaughns, Nancy Apfel, and Patricia Brzustoski**, “Recursive Processes in Self-Affirmation: Intervening to Close the Minority Achievement Gap,” *Science*, 2009, 324 (5925), 400–403.
- Conley, Timothy G. and Christopher R. Taber**, “Inference with Difference in Differences with a Small Number of Policy Changes,” *The Review of Economics and Statistics*, 2011, 93 (1), 113–125.
- Delja, Ashley McDonald**, “Across four Aprils: School finance litigation in Virginia,” *BYU Educ. & LJ*, 2004, p. 191.
- DellaVigna, Stefano**, “The Obama Effect on Economic Outcomes: Evidence from Event Studies,” Unpublished manuscript 2010.
- Fairlie, Robert W., Florian Hoffmann, and Philip Oreopoulos**, “A Community College Instructor Like Me: Race and Ethnicity Interactions in the Classroom,” *American Economic Review*, 2014, 104 (8), 2567–2591.
- Ferreira, Fernando and Joseph Gyourko**, “Does Gender Matter for Political Leadership? The Case of U.S. Mayors,” *Journal of Public Economics*, April 2014, 112, 24–39.
- Franck, Raphaël and Ilia Rainer**, “Does the Leader’s Ethnicity Matter? Ethnic Favoritism, Education, and Health in Sub-Saharan Africa,” *American Political Science Review*, May 2012, 106 (2), 294–325.

- Iyer, Lakshmi, Anandi Mani, Prachi Mishra, and Petia Topalova**, “The Power of Political Voice: Women’s Political Representation and Crime in India,” *American Economic Journal: Applied Economics*, 2012, 4 (4), 165–193.
- Jeffries, Judson L.**, *Virginia’s Native Son: The Election and Administration of Governor L. Douglas Wilder*, Purdue University Press, 2000.
- Jencks, Christopher and Meredith Phillips**, *The Black-White Test Score Gap*, Brookings Institution Press, 2011.
- King, Miriam, Steven Ruggles, J. Trent Alexander, Sarah Flood, Katie Genadek, Matthew B. Schroeder, Brandon Trampe, and Rebecca Vick**, *Integrated Public Use Microdata Series, Current Population Survey: Version 3.0. [machine-readable database]*, Minneapolis: University of Minnesota., 2010.
- Kofoed, Michael S.**, “The Effect of Same-Gender or Same-Race Role Models on Occupation Choice: Evidence from Randomly Assigned Mentors at West Point,” *Journal of Human Resources*, 2019, 54 (2), 430–467.
- Lleras-Muney, Adriana**, “Were Compulsory Attendance and Child Labor Laws Effective? An Analysis from 1915 to 1939,” *The Journal of Law and Economics*, 2002, 45 (2), 401–435.
- Logan, Trevon D.**, “Do Black Politicians Matter? Evidence from Reconstruction,” *The Journal of Economic History*, March 2020, 80 (1), 1–37.
- Neal, Derek**, “Why Has Black–White Skill Convergence Stopped?,” in “Handbook of the Economics of Education,” Vol. 1, Elsevier, 2006, pp. 511–576.
- Oreopoulos, Philip**, “Estimating Average and Local Average Treatment Effects of Education When Compulsory Schooling Laws Really Matter,” *American Economic Review*, 2006, 96 (1), 152–175.



- Pajares, Frank and Timothy C. Urdan**, *Self-Efficacy Beliefs of Adolescents*, IAP, 2006.
- Pande, Rohini**, “Can Mandated Political Representation Increase Policy Influence for Disadvantaged Minorities? Theory and Evidence from India,” *American Economic Review*, 2003, *93* (4), 1132–1151.
- Ruggles, Steven, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek**, *IPUMS USA: Version 9.0 [dataset]*. Minneapolis, MN: IPUMS, 2019. <https://doi.org/10.18128/D010.V9.0>, Minneapolis: University of Minnesota., 2019.
- Stephens, Melvin and Dou-Yan Yang**, “Compulsory Education and the Benefits of Schooling,” *American Economic Review*, June 2014, *104* (6), 1777–1792.
- Traugott, Michael W. and Vincent Price**, “A Review: Exit Polls in the 1989 Virginia Gubernatorial Race: Where Did They Go Wrong?,” *The Public Opinion Quarterly*, 1992, *56* (2), 245–253.
- Vogl, Tom S.**, “Race and the Politics of Close Elections,” *Journal of Public Economics*, January 2014, *109*, 101–113.
- Wolfers, Justin**, “Did Unilateral Divorce Laws Raise Divorce Rates? A Reconciliation and New Results,” *American Economic Review*, December 2006, *96* (5), 1802–1820.
- Zimmerman, Barry J.**, “Self-Efficacy: An Essential Motive to Learn,” *Contemporary Educational Psychology*, January 2000, *25* (1), 82–91.

# Appendices

## Appendix A Definitions and Additional Results

### A.1 Definition of Variables and Identification Strategy

Table A.1: Definition of variables

Variable	Dataset	Definition
<b>Educational outcomes:</b>		
High school diploma	Census data & CPS	Dummy 1 if individual has graduated from high school
High school graduation rate	CCD	Graduation rates at the school district level: ratio of the number of high school graduates to the number of students enrolled in grade 12
Dropout	CPS	Dummy 1 if individual aged 16-20 is not attending school
<b>General impact of Douglas Wilder (DW):</b>		
Positive effect on life	Own survey	Dummy 1 if respondent answers that the election of DW had a positive impact on her life
Perceived future earnings	Own survey	Dummy 1 if respondent somehow agrees, agrees or strongly agrees (from Likert question with a 7-point scale) with the fact that DW becoming governor improved her perceptions of how much she could earn in the future
<b>Aspirations:</b>		
Role model	Own survey	Dummy 1 if respondent somehow agrees, agrees, or strongly agrees (from Likert question with a 7-point scale) with the fact that DW was a role model for her and her family
Better life possible	Own survey	Dummy 1 if respondent somehow agrees, agrees, or strongly agrees (from Likert question with a 7-point scale) with the fact that DW becoming governor helped her realize that a better life was possible
Work more, achieve more	Own survey	Dummy 1 if respondent somehow agrees, agrees, or strongly agrees (from Likert question with a 7-point scale) with the fact that DW becoming governor helped her realize that if she exerts more effort she can achieve more

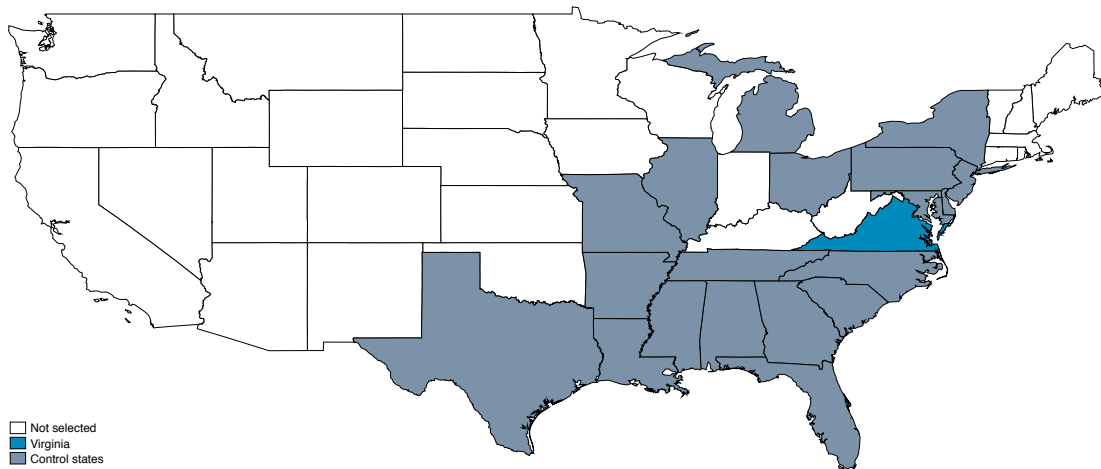
Table A.1: (continued)

Variable	Dataset	Definition
Index	Own survey	Average of the three aspiration variables described above
Academic ability	Freshman Survey	Self-rated academic ability (values 1 to 5; higher values represent a higher self-rate)
Drive to achieve	Freshman Survey	Self-rated drive to achieve (values 1 to 5; higher values represent a higher self-rate)
<b>Teachers' behavior:</b>		
Perception ability	Own survey	Dummy 1 if respondent somehow agrees, agrees, or strongly agrees (from Likert question with a 7-point scale) with the fact that after the election of DW, her high school teachers' perception of her ability improved
Help to graduate	Own survey	Dummy 1 if respondent somehow agrees, agrees, or strongly agrees (from Likert question with a 7-point scale) with the fact that after the election of DW, her high school teachers exerted more effort and that helped her graduate from high school
Grading leniency	Own survey	Dummy 1 if respondent somehow agrees, agrees, or strongly agrees (from Likert question with a 7-point scale) with the fact that after the election of DW, her high school teachers became more lenient when grading her work
Index	Own survey	Average of the three teacher behavior variables described above
<b>Labor market outcomes:</b>		
Wages	CPS ASEC	Average pre-tax wages and salary income for individuals aged 25-35 (per hour, in log)
Unemployment	CPS	Unemployment rate for individuals aged 25-35
<b>School finances:</b>		
Per-pupil spending	Government finances report	Current per-pupil spending adjusted for inflation (1982-1984 = 100)
<b>Compulsory attendance:</b>		
Perceived effect of change	Own survey	Dummy 1 if respondent answers that the raising of the compulsory school attendance age from 17 to 18 years old in 1989 affected her school level

Table A.1: (continued)

Variable	Dataset	Definition
<b>Predictors of high school graduation - synthetic control method:</b>		
Share of Blacks	CPS	Averaged over 1977-1989
GDP per capita (in log)	Bureau of Economic Analysis	Measured in 1997 dollars and averaged over 1977-1989
Unemployment	CPS	Unemployment rate among Blacks averaged over 1977-1989
Employment	CPS	Employment rate among Blacks averaged over 1977-1989
Per-pupil spending	Government finances report	Current per-pupil spending corrected for inflation (1982-1984 = 100) and averaged over 1987-1989
Student-teacher ratio	CCD	Total number of students over total number of teachers averaged over 1986-1989
Lagged high school graduation	census data	High school graduation rate among Blacks averaged over three sub-groups of pre-treatment cohorts: 1955-1961, 1962-1966, and 1967-1969

Figure A.1: Control states



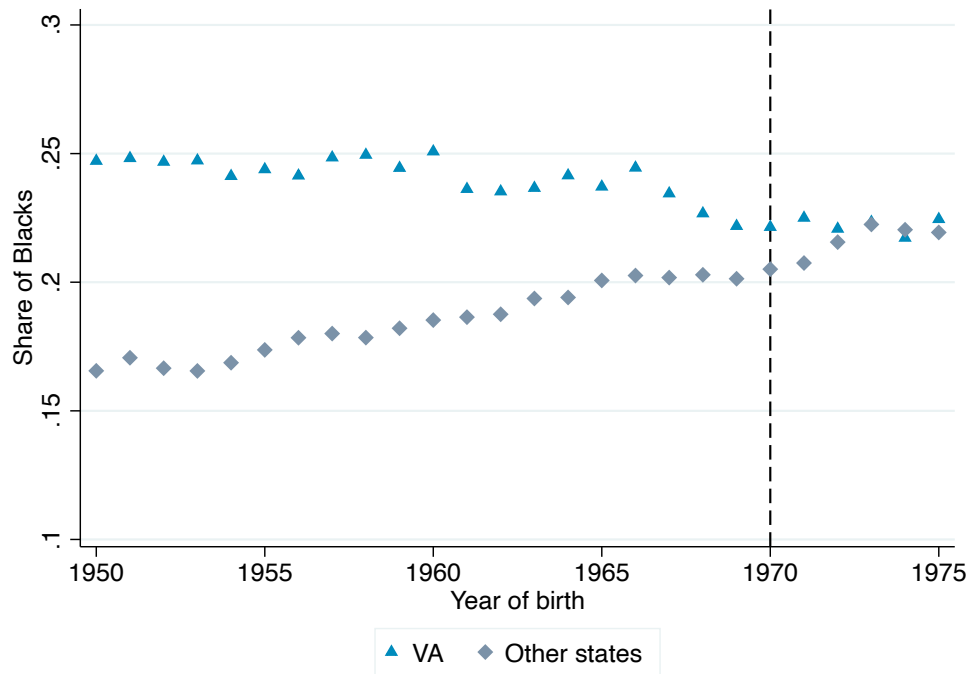
## A.2 Data

Table A.2: Descriptive statistics - cohorts born between 1955 and 1975 (census data sample)

	Virginia		Control states		DD	p-value DD
	Post = 0	Post = 1	Post = 0	Post = 1		
<i>High school diploma</i>						
All	0.87	0.91	0.90	0.91		
White	0.89	0.92	0.92	0.92		
Black	0.81	0.86	0.83	0.85	0.03	0.00
Gap (Whites-Blacks)	-0.08	-0.05	-0.08	-0.06	0.01	0.09
<i>Gender (1 = woman)</i>						
All	0.51	0.51	0.51	0.50		
White	0.50	0.50	0.50	0.50		
Black	0.53	0.53	0.54	0.53	0.00	0.70
<i>Race (1 = Black)</i>						
	0.24	0.22	0.19	0.21	-0.04	0.00
<i>Age</i>						
All	44.41	33.95	44.49	33.93		
White	44.40	33.95	44.54	33.94		
Black	44.47	33.95	44.26	33.89	-0.16	0.02
<i>Language spoken at home (1 = not English)</i>						
All	0.02	0.02	0.03	0.03		
White	0.02	0.02	0.03	0.03		
Black	0.02	0.02	0.02	0.03	-0.01	0.00
Observations	175,375	56,806	4,741,040	1,463,793		

*Notes:* The Column labelled DD shows the estimates of pre- to post-treatment change in Virginia relative to the control states using an equation similar to Equation (2) but without control variables and without clustering the standard errors. Data sources: Census 2000 and ACS 2009-2014.

Figure A.2: Evolution of the share of Blacks in Virginia and control states (raw data)



Notes: The graph plots the share of Blacks by year of birth and state (Virginia vs. control states). Data sources: Census 2000 and ACS 2009-2014.

Table A.3: Descriptive statistics - Freshman Survey sample

	Virginia		Control states	
	Post = 0	Post = 1	Post = 0	Post = 1
<i>Gender (1 = woman)</i>				
All	0.50	0.55	0.53	0.54
White	0.48	0.54	0.52	0.53
Black	0.56	0.57	0.60	0.60
<i>Race (1 = Black)</i>				
	0.23	0.19	0.13	0.15
<i>Age</i>				
All	18.23	18.15	18.20	18.24
White	18.19	18.13	18.19	18.24
Black	18.36	18.24	18.23	18.26
<i>Mother's education = high school diploma</i>				
All	0.27	0.24	0.34	0.31
White	0.25	0.23	0.34	0.31
Black	0.35	0.31	0.31	0.29
<i>Mother's education = college degree</i>				
All	0.24	0.27	0.20	0.22
White	0.27	0.29	0.21	0.23
Black	0.11	0.16	0.14	0.18
Observations	32,911	23,655	597,437	426,927

Data source: CIRP Freshman Survey, 1984-1993.

### A.3 Quotes from Survey on Changes in Aspirations

We present here two categories of open answers from our own survey on how Douglas Wilder affected the life of Black respondents from Virginia. We first present those quotes that refer to the relevance of the historic event; then we present the quotes that refer to role model or aspirations. We present the text in its original form, without corrections. For the aspirations category, we have highlighted in bold the phrases that clearly relate to aspirations or role model.

Quotes classified under event category:

*“It was a good win for the African American race.”*

*“First African-American governor in the state. Just gave me a feel-good feeling. How is that not positive.”*

*“He was the first black governor of Virginia”*

*“He was a black governor”*

*“By Him being a African American Achiever & Va first Black Governor!”*

*“If I’m not mistaken, I believe he was the first black governor of Virginia.”*

*“He was as far as I remember Virginia’s first black governor.”*

*“First Black Governor is pretty impressive.”*

*“First African American elected as Governor of VA. It was a big deal”*

*“He was the first elected African American governor. So there was pride in my high school during this time.”*

*“It was history made so it was a pivotal moment not only in the black community but for others in the state of Virginia.”*



Quotes classified under aspirations category:

**“Encourage to work harder”**

*“First black governor of VA. It was positive to **see someone like me in this position**”.*

*“He was the first African American to become governor in Virginia. Which **gave me something to aspire**”.*

*“He was the first elected African American governor. So there was **pride in my high school during this time**.”*

*“I had a black leader in my state.”*

*“It showed me **if I work hard I can achieve my dreams and aspirations**.”*

*“It was a first for African American. It was a time I was in high school so hearing that **it gave us hope**”*

*“Let me know that **anything is possible**”*

**“Role model as first African American Governor”**

*“Seeing a black person as a Governor means a then 17 year old me **could be anything I worked towards**”*

**“Showed that us African Americans can and will achieve!”**

*“We got to see the first black governor of Virginia. It let other black people see someone getting a higher position.”*

*“When he was elected he was the first black man to be elected as governor in Virginia as a kid growing up in the 80s and early 90s that was very huge for me”*

*“You got to see a black person get a higher position. **This paves the way for other black people to get higher positions**.”*

## A.4 Additional Tables and Figures

Table A.4: Governor from minority and educational outcomes. (aggregated data; pre- and post-election)

Dep. variable:	High school diploma DD Blacks
VA $\times$ Post	0.032*** (0.007)
Black	
VA	-0.024*** (0.005)
Post	0.022*** (0.007)
Constant	-0.069*** (0.005)
Observations	42
$R^2$	0.272

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors. Data sources: Census 2000 and ACS 2009-2014.

Table A.5: Governor from minority and educational outcomes. (difference-in-differences; without individuals born in 1969; census data)

Dep. variable:	High school diploma							
	DD: Blacks vs Whites in Virginia Treated: Black $\times$ Post				DD: Blacks in VA vs control states Treated: VA $\times$ Post			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated	0.023*** (0.005)	0.023*** (0.002)	0.014*** (0.003)	0.023*** (0.002)	0.030*** (0.005) [.005,.05]	0.031*** (0.003) [.005,.05]	0.028*** (0.005) [.022,.033]	0.031*** (0.003) [.005,.05]
Black	-0.079*** (0.004)	-0.079*** (0.001)	-1.686*** (0.555)	-0.079*** (0.001)				
Post	0.032*** (0.003)				0.024*** (0.003)			
VA					-0.021*** (0.004)			
Observations	222,051	222,051	222,051	222,051	1,025,542	1,025,542	1,025,542	1,025,542
$R^2$	0.018	0.018	0.018	0.019	0.005	0.009	0.010	0.009
Year dummies	No	Yes	Yes	Yes	No	Yes	Yes	Yes
State dummies	No	No	No	No	No	Yes	Yes	Yes
Race time trends	No	No	Yes	No	No	No	No	No
State time trends	No	No	No	No	No	No	Yes	No
Extra control	No	No	No	Yes	No	No	No	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The sample is composed of individuals born between 1955 and 1975, excluding those born in 1969. The *Post* indicator refers to individuals born between 1970 and 1975. The standard errors, clustered at the race-year level in Columns 1-4 and at the state-year level in Columns 5-8, are reported in parentheses. The Conley and Taber (2011) 90% confidence intervals are reported in square brackets. All specifications include gender as a control variable. The extra control is the language spoken at home, which takes a value of 1 if it is not English. Data sources: Census 2000 and ACS 2009-2014.

Table A.6: Synthetic control method - high school diploma predictor means

Variables	Virginia	Synthetic	Average of 20 control states
Share of blacks	0.21	0.23	0.24
GDP per capita (log)	10.06	9.93	10.03
Unemployment	0.13	0.15	0.18
Employment	0.65	0.62	0.57
Student-teacher ratio	16.28	17.50	17.09
Per-pupil spending	3,316.51	3,345.40	3,368.53
High school diploma (average 1955-1961)	0.80	0.80	0.82
High school diploma (average 1962-1966)	0.81	0.82	0.84
High school diploma (average 1967-1969)	0.83	0.83	0.85

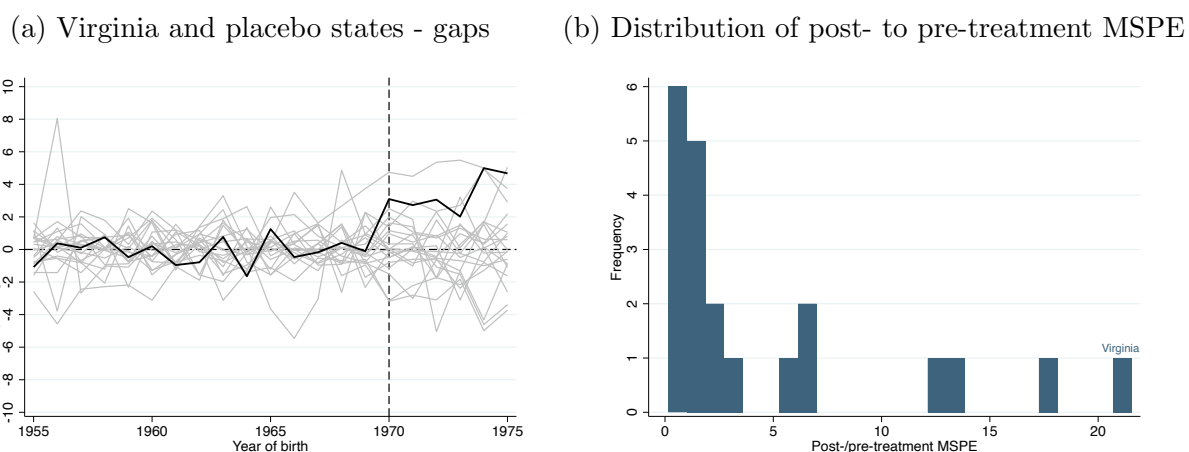
Data sources: Census 2000 and ACS 2009-2014 (main source). Predictors come from various sources (see Table A.1).

Table A.7: Synthetic control method - state weights for synthetic control

Donor pool	Weight
Alabama	0.00
Arkansas	0.00
Delaware	0.00
District of Columbia	0.00
Florida	0.81
Georgia	0.19
Illinois	0.00
Louisiana	0.00
Maryland	0.00
Michigan	0.00
Mississippi	0.00
Missouri	0.00
New Jersey	0.00
New York	0.00
North Carolina	0.00
Ohio	0.00
Pennsylvania	0.00
South Carolina	0.00
Tennessee	0.00
Texas	0.00

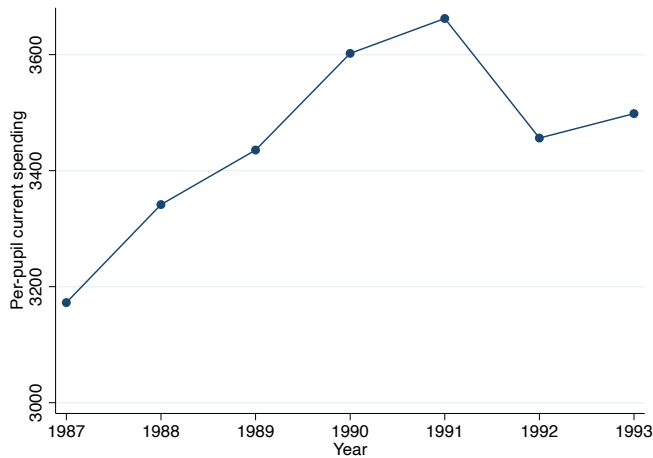
Data sources: Census 2000 and ACS 2009-2014 (main source). Predictors come from various sources (see Table A.1).

Figure A.3: Synthetic control method - additional results



Notes: Panel (a) plots the gap in high school graduation rates between the 21 states of the sample and their corresponding synthetic controls. Virginia is in black and the control states are in grey. Panel (b) reports the frequency of the post- to pre-treatment MSPE ratio for the 21 states in the sample. Data sources: Census 2000 and ACS 2009-2014 (main source). Predictors come from various sources (see Table A.1).

Figure A.4: Evolution of per-pupil spending in Virginia, 1987-1993



*Notes figure:* 1987 corresponds to the 1986-87 school year.

Table A.8: Changes in per-pupil spending (difference-in-differences)

Dep. variable:	Current per-pupil spending		
	(1)	(2)	(3)
VA × Years 89-93	22.05 (865.27)	22.05 (131.82)	122.15 (130.59)
VA × Years 90-93	14.35 (790.16)	14.35 (120.35)	152.40 (145.85)
VA × Years 91-93	-41.97 (791.52)	-41.97 (120.29)	-72.87 (146.46)
Mean DV pre 1988-89	2,683	2,683	2,683
Observations	147	147	147

*Notes table:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The sample includes Virginia and the 20 control states as illustrated in Figure A.1. Each coefficient comes from a different regression. The first line compares the period from 1986-87 to 1987-88 with that from 1988-89 to 1992-93. The second line compares the period from 1986-87 to 1988-89 to the period from 1989-90 to 1992-93 and the third line compares the period from 1986-87 to 1989-90 to the period from 1990-91 to 1992-93.

*Notes (common):* Per-pupil spending corresponds to current operation expenditure, payments made by the state government on behalf of school systems, and transfers made by school systems into their own retirement funds. The amounts are in dollars, adjusted for inflation, using the annual average of the CPI for all urban consumers from the Bureau of Labor Statistics. Data source: Government finances report of the annual Census of Governments, 1987-1993.

Table A.9: Test for parallel trend before treatment - aspirations

Dependent variable:	Drive to achieve		Academic ability	
	DD Virginia (1)	DD Blacks (2)	DD Virginia (3)	DD Blacks (4)
Black $\times$ Year trend	0.048 (0.092)		0.030 (0.059)	
VA $\times$ Year trend		-0.121 (0.089)		-0.039 (0.055)
Black	-1.543*** (0.488)		-0.134 (0.307)	
VA		0.058 (0.471)		-0.119 (0.280)
Year trend	-0.134*** (0.026)	0.034 (0.028)	-0.023 (0.017)	0.046*** (0.017)
Observations	27,653	48,215	27,607	48,071
Pseudo $R^2$	0.035	0.002	0.000	0.001

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The standard errors are clustered at the race-year level in Column 1 and 3 and at the state-year level in Columns 2 and 4. Data source: CIRP Freshman Survey, 1985-1989.

Table A.10: Governor from minority and multiple outcomes from own survey (difference-in-differences)

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A. Effect on life and aspirations</i>						
Dep. variable:	Positive effect on life	Perceived future earnings	Aspirations			
			Role model	Better life possible	Work more, achieve more	Index
Black × VA	0.296*** (0.094)	0.300*** (0.096)	0.304*** (0.100)	0.283*** (0.102)	0.233** (0.102)	0.274*** (0.092)
Black	0.042 (0.036)	0.018 (0.042)	0.043 (0.043)	0.032 (0.046)	0.075 (0.046)	0.050 (0.041)
Observations	459	459	459	459	459	459
$R^2$	0.229	0.161	0.173	0.143	0.155	0.178
State dummies	Yes	Yes	Yes	Yes	Yes	Yes
<i>Panel B. Effect on teachers' behavior</i>						
Dep. variable:			Teachers			
			Perception of ability	Help to graduate	Grading leniency	Index
Black × VA			0.151 (0.096)	0.116 (0.092)	0.017 (0.084)	0.095 (0.081)
Black			0.004 (0.043)	-0.017 (0.041)	-0.054 (0.040)	-0.022 (0.037)
Observations			459	459	459	459
$R^2$			0.106	0.135	0.086	0.119
State dummies			Yes	Yes	Yes	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors. All specifications include individual gender and age as control variables. Each column in panel A corresponds to a regression with a different dependent variable related to either the governor's effect on the respondent's life (Column 1), on their perceived future earnings (Column 2), or on aspirations (Columns 3 to 6). Columns 3 to 6 in panel B correspond to a regression with a different dependent variable related to perceived teachers' behavior. All estimates come from a difference-in-differences specification that compares the gap between Blacks and Whites in Virginia to that in the control states. Data source: Own survey.

Table A.11: Governor from minority and aspirations (simple difference and difference-in-differences; ordered logit)

Dep. variable:	Perceived future earnings (1)	Aspirations		
		Role model (2)	Better life possible (3)	Work more, achieve more (4)
<i>Panel A. D: Blacks vs. Whites in Virginia</i>				
Black	1.049*** (0.379)	1.209*** (0.381)	1.188*** (0.377)	1.138*** (0.387)
Observations	111	111	111	111
$R^2$	0.040	0.050	0.050	0.059
<i>Panel B. D: Blacks in Virginia vs. in control states</i>				
VA	0.934*** (0.290)	1.255*** (0.306)	1.153*** (0.276)	1.074*** (0.273)
Observations	247	247	247	247
$R^2$	0.032	0.039	0.036	0.039
<i>Panel C. DD: Black-White gap in Virginia vs. in control states</i>				
Black $\times$ VA	1.404*** (0.465)	1.660*** (0.478)	1.402*** (0.443)	1.301*** (0.467)
Observations	459	459	459	459
$R^2$	0.048	0.048	0.049	0.049
State dummies	Yes	Yes	Yes	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The reported coefficients are in log-odd units. Robust standard errors. All specifications include individual gender, age, and the order of the governor modules as control variables. Data source: Own survey.



Table A.12: Previous White governor and aspirations (simple difference and difference-in-differences)

Dep. variable:	Perceived future earnings (1)	Aspirations			
		Role model (2)	Better life possible (3)	Work more, achieve more (4)	Index (5)
<i>Panel A. D: Blacks vs. Whites in Virginia</i>					
Black	-0.100 (0.067)	-0.192** (0.077)	-0.202** (0.080)	-0.124 (0.078)	-0.173** (0.072)
Observations	111	111	111	111	111
$R^2$	0.163	0.190	0.184	0.157	0.201
<i>Panel B. D: Blacks in Virginia vs. in control states</i>					
VA	-0.112*** (0.042)	-0.085** (0.040)	-0.070* (0.041)	-0.068 (0.044)	-0.074** (0.034)
Observations	247	247	247	247	247
$R^2$	0.085	0.077	0.053	0.053	0.071
<i>Panel C. DD: Black-White gap in Virginia vs. in control states</i>					
Black $\times$ VA	-0.100 (0.079)	-0.149* (0.084)	-0.164* (0.088)	-0.120 (0.086)	-0.144* (0.080)
Observations	459	459	459	459	459
$R^2$	0.114	0.127		0.079	
State dummies	Yes	Yes	Yes	Yes	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors. All specifications include individual gender, age, and the order of the governor modules as control variables. Data source: Own survey.

Table A.13: Governor from minority and teachers' behavior (simple difference and difference-in-differences; ordered logit)

Dep. variable:	Teachers		
	Perception of ability (1)	Help to graduate (2)	Grading leniency (3)
<i>Panel A. D: Blacks vs. Whites in Virginia</i>			
Black	0.469 (0.388)	0.508 (0.400)	-0.127 (0.408)
Observations	111	111	111
$R^2$	0.022	0.033	0.027
<i>Panel B. D: Blacks in Virginia vs. in control states</i>			
VA	0.607** (0.262)	0.365 (0.277)	-0.199 (0.265)
Observations	247	247	247
$R^2$	0.020	0.020	0.009
<i>Panel C. DD: Black-White gap in Virginia vs. in control states</i>			
Black $\times$ VA	0.860* (0.463)	0.870* (0.493)	0.581 (0.456)
Observations	459	459	459
$R^2$	0.034	0.044	0.035
State dummies	Yes	Yes	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The reported coefficients are in log-odd units. Robust standard errors. All specifications include individual gender, age, and the order of the governor modules as control variables. Data source: Own survey.

## Appendix B Triple Difference

### B.1 Specification

In the triple difference identification strategy, both Whites and other states are used as controls. We estimate the following equation:

$$Y_{ist} = \gamma_0 + \gamma_1 Black_i \times VA_s \times Post_t + \gamma_2 Black_i \times VA_s + \gamma_3 Black_i \times Post_t + \gamma_4 VA_s \times Post_t + \gamma_5 Black_i + \gamma_6 Post_t + \gamma_7 VA_s + X'_i \eta + \zeta_{ist} \quad (\text{B.1})$$

where the variables are defined as in Section 4.1. The coefficient of interest is  $\gamma_1$ , which indicates the change in outcomes for Blacks relative to Whites after 1990 in Virginia relative to the control states.

The standard errors are clustered at the state-year level,<sup>49</sup> and we also provide confidence intervals based on the inference procedure from Conley and Taber (2011). Further specifications control for state and year of birth fixed effects (or state-race, year-race, and state-year fixed effects) as well as race-/state-specific linear time trends.

### B.2 Identifying Assumption

To understand whether the parallel trend assumption required for identification is respected, we check whether Blacks relative to Whites in Virginia had a differential trend pre-treatment compared to Blacks relative to Whites in the control states. Table B.1 shows the results for high school graduation rates (Column 1) and aspirations from the Freshman Survey (Columns 2 and 3). The coefficient on *Black*  $\times$  *VA*  $\times$  *Year trend* in Column 1 is very small but statistically different from zero, which indicates that the assumption is likely to be violated. This result is in line with what we observe from the raw data in Figure 2, which shows a much flatter pre-treatment trend for Whites in other states than for the rest of the groups.

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<sup>49</sup>While the variable of interest (*Black*  $\times$  *VA*  $\times$  *Post*) is at the state-race-year level, state-year clustering is more conservative because it allows for any correlation within a state-year cell. However, clustering at the state-race-year level yields similar results (results available upon request).

Table B.1: Test for parallel trend before treatment (triple difference)

Estimation method:	OLS		Ordered logit	
	High school diploma	Drive to achieve	Academic ability	
Dependent variable:	(1)	(2)	(3)	
Black $\times$ VA $\times$ Year trend	-0.002*** (0.001)	0.003 (0.106)	0.009 (0.052)	
Black $\times$ Year trend	0.003*** (0.000)	0.046 (0.028)	0.021 (0.018)	
VA $\times$ Year trend	0.002*** (0.001)	-0.123*** (0.031)	-0.050** (0.020)	
Black $\times$ VA	0.039*** (0.008)	-0.482 (0.552)	-0.259 (0.267)	
VA	-0.053*** (0.007)	0.539*** (0.127)	0.136 (0.094)	
Black	-0.124*** (0.005)	-1.067*** (0.116)	0.125* (0.071)	
Year trend	0.000 (0.000)	-0.012 (0.016)	0.027** (0.012)	
Observations	4,916,415	511,814	511,092	
$R^2$	0.014			
Pseudo $R^2$		0.012	0.001	

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The reported coefficients in Columns 2 and 3 are in log-odd units. The sample in Column 1 is composed of individuals born between 1955 and 1969. Columns 2 and 3 contain information prior to 1990. The standard errors are clustered at the state-year level. Data sources: Census 2000 and ACS 2009-2014, and CIRP Freshman Survey, 1985-1989.

For aspirations as measured in the Freshman Survey, the coefficients on *Black*  $\times$  *VA*  $\times$  *Year trend* in Columns 2 and 3 are not statistically significant, which support the parallel-trend assumption of the triple difference regression model for these variables.

## B.3 Results

### B.3.1 Education

Table B.2: Governor from minority and high school diploma (triple difference)

Dep. variable:	High school diploma				
	(1)	(2)	(3)	(4)	(5)
Black $\times$ VA $\times$ Post	0.006 (0.004) [-.034,.027]	0.009** (0.004) [-.012,.022]	0.012*** (0.003) [.003,.024]	0.026*** (0.004) [.022,.029]	0.012*** (0.003) [.003,.024]
Black $\times$ VA	0.009*** (0.002)				
Black $\times$ Post	0.018*** (0.003)				
VA $\times$ Post	0.025*** (0.004)	0.023*** (0.002)			
Black	-0.088*** (0.002)	-0.067*** (0.004)			
VA	-0.030*** (0.003)				
Post	0.005* (0.003)				
Observations	6,437,014	6,437,014	6,437,014	6,437,014	6,437,014
$R^2$	0.015	0.023	0.023	0.023	0.023
State dummies	No	Yes	No	No	No
Year dummies	No	Yes	No	No	No
Black-state dummies	No	Yes	Yes	Yes	Yes
Black-year dummies	No	Yes	Yes	Yes	Yes
State-year dummies	No	No	Yes	Yes	Yes
Time trends	No	No	No	Yes	No
Extra control	No	No	No	No	Yes

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The sample is composed of individuals born between 1955 and 1975. The standard errors, clustered at the state-year level, are reported in parentheses. The Conley and Taber (2011) 90% confidence intervals are reported in square brackets. Control variables are defined as in Table 2. Data sources: Census 2000 and ACS 2009-2014.

Table B.3: Governor from minority and graduation rate (triple difference; Common Core of Data)

Dep. variable:	Share of graduates				
	(1)	(2)	(3)	(4)	(5)
Share Blacks $\times$ VA $\times$ Post	0.032** (0.013)	0.032** (0.015)	0.033** (0.015)	0.061*** (0.014)	0.047*** (0.014)
Share Blacks $\times$ VA	-0.003 (0.008)	-0.003 (0.008)			
Share Blacks $\times$ Post	-0.002 (0.004)				
Post	-0.011* (0.006)				
Observations	30,128	30,128	30,128	30,128	21,260
$R^2$	0.595	0.598	0.654	0.657	0.760
School district dummy	Yes	Yes	Yes	Yes	Yes
Year dummies	No	Yes	No	No	No
Black $\times$ year	No	Yes	Yes	Yes	Yes
State-year dummies	No	No	Yes	Yes	Yes
Time trends	No	No	No	Yes	Yes
School district controls	No	No	No	No	Yes

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The standard errors are clustered at the state-year level. Information about the share of graduates is at the school district level and is available for the 1986-87, 1987-88, 1988-89, 1989-90, and 1992-93 school years. *Share Blacks* is a continuous variable that indicates the share of Blacks in each county. *VA* is a dummy variable that indicates if the school district is in Virginia. *Post* is a dummy variable equal to 1 for the 1989-90 and 1992-93 school years. Column 5 additionally controls for the number of individuals enrolled in grade 12 at the beginning of the school year (in log) and the number of teachers in the school district (in log), information about which is only available up to 1989-90. Data sources: Common Core of Data, Public Elementary/Secondary School Universe Survey, and Local Education Agency (School District) Universe Survey.

### B.3.2 Mechanisms

Table B.4: Governor from minority and aspirations (triple difference; ordered logit)

	(1)	(2)	(3)	(4)
<i>Panel A. Dependent variable: Academic ability</i>				
Black $\times$ VA $\times$ Post	0.373*** (0.089)	0.314*** (0.056)	0.303*** (0.066)	0.175* (0.106)
Black $\times$ Post	0.087* (0.051)			
Observations	945,290	945,290	945,290	945,290
Pseudo $R^2$	0.206	0.210	0.211	0.211
<i>Panel B. Dependent variable: Drive to achieve</i>				
Black $\times$ VA $\times$ Post	0.146* (0.084)	0.117* (0.066)	0.092 (0.069)	0.169 (0.120)
Black $\times$ Post	0.070* (0.041)			
Observations	944,247	944,247	944,247	944,247
Pseudo $R^2$	0.050	0.053	0.053	0.053
Year dummies	No	Yes	No	No
State dummies	No	Yes	No	No
Black-state dummies	No	Yes	Yes	Yes
Black-year dummies	No	Yes	Yes	Yes
Time trends	No	No	No	Yes
State-year dummies	No	No	Yes	Yes

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The reported coefficients are in log-odd units. The standard errors are clustered at the state-year level. All specifications include individual gender, age, average grade in high school, and mother's and father's education level as control variables. Data source: CIRP Freshman Survey, 1985-1993.

Table B.5: Governor from minority and labor market outcomes for young adults (25-35 years old) (triple difference)

	(1)	(2)	(3)	(4)	(5)
<i>Panel A. Dependent variable: Wages</i>					
Black $\times$ VA $\times$ Post	-0.050 (0.070)	-0.045 (0.060)	-0.033 (0.060)	0.071 (0.087)	-0.026 (0.061)
Observations	110,188	110,188	110,188	110,188	110,188
$R^2$	0.059	0.076	0.079	0.079	0.098
<i>Panel B. Dependent variable: Unemployment</i>					
Black $\times$ VA $\times$ Post	0.001 (0.007)	-0.000 (0.006)	-0.001 (0.006)	-0.020** (0.009)	-0.001 (0.006)
Observations	1,340,836	1,340,836	1,340,836	1,340,836	1,340,836
$R^2$	0.017	0.023	0.024	0.024	0.027
State dummies	No	Yes	No	No	No
Year dummies	No	Yes	No	No	No
Black-state dummies	No	Yes	Yes	Yes	Yes
Black-year dummies	No	Yes	Yes	Yes	Yes
State-year dummies	No	No	Yes	Yes	Yes
Time trends	No	No	No	Yes	No
Extra control	No	No	No	No	Yes

Notes: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The standard errors are clustered at the state-year level. All specifications include individual gender and age. The extra control is household size. Data sources: CPS basic and ASEC, 1984-1993.



Table B.6: Dropout rates for 16-17 and 18-20 age groups (triple difference)

Dep. variable:	Dropout				
	(1)	(2)	(3)	(4)	(5)
<i>Panel A. Age group: 16-17</i>					
Black $\times$ VA $\times$ Post	-0.005 (0.011)	-0.006 (0.010)	-0.007 (0.010)	0.002 (0.013)	-0.007 (0.010)
Observations	90,322	90,322	90,322	90,322	90,322
$R^2$	0.008	0.017	0.020	0.021	0.020
<i>Panel B. Age group: 18-20</i>					
Black $\times$ VA $\times$ Post	-0.145*** (0.027)	-0.148*** (0.027)	-0.152*** (0.028)	-0.072 (0.053)	-0.153*** (0.028)
Observations	130,160	130,160	130,160	130,160	130,160
$R^2$	0.007	0.017	0.019	0.019	0.019
State dummies	No	Yes	No	No	No
Year dummies	No	Yes	No	No	No
Black-state dummies	No	Yes	Yes	Yes	Yes
Black-year dummies	No	Yes	Yes	Yes	Yes
State-year dummies	No	No	Yes	Yes	Yes
Time trends	No	No	No	Yes	No
Extra control	No	No	No	No	Yes

*Notes:* \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The standard errors are clustered at the state-year level. Every specification includes age, gender, and month of survey as controls, as well as a dummy variable indicating whether the individual has reached the legal age to dropout from school. The extra control in Column 5 is household size. Data sources: NBER-CPS, 1984-1988, and IPUMS-CPS, 1989-1993.