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**The Undoing of Desegregation:
School Segregation in the Era
of School Choice and Color-
Blind Jurisprudence**

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Abstract

The decades-long resistance to federally imposed school desegregation entered a new phase at the turn of the new century, when federal courts adopted a color-blind approach in judging local school districts' assignment plans. Using data from one of the first states to come under this dictum, we examine the ways in which households and policymakers took actions that reduced the amount of interracial contact in K-12 schools across counties in North Carolina between 1998 and 2016. We divide these reductions in interracial contact into portions due to the private school and charter school sectors, the existence of multiple school districts, and racial disparities between schools within districts and sectors. For most counties, the last of these proves to be the biggest, though in some counties private schools, charter schools, or multiple districts played a deciding role. In addition, we decompose segregation in metropolitan areas, finding that more than half can be attributed to racial disparities inside school districts. We also measure segregation by economic status, finding that it, like racial segregation, increased in the largest urban counties, but elsewhere changed little over the period.

Keywords:

School segregation
Race and education
Charter schools

I. Introduction

Two massive forces hit American schools in the second half of the 20th century. One was the federal judiciary's abolition of state-sponsored racial segregation. In the span of a decade (roughly 1965 to 1975), public schools in the South and elsewhere were forced to implement previously unimaginable degrees of racial desegregation. This federal effort culminated in two unanimous decisions, one in 1968 putting an end to districts' remaining racially separate schools, and the other in 1971 upholding busing as a tool to achieve racially balanced schools.¹ The second force was the steady decline in the share of non-Hispanic white students, a trend that has continued apace into the present century. Owing to the demographics of aging, birth rates, and immigration, the share of 5-17 year-olds in the country who were white and not Hispanic (hereafter, simply white) declined from 75% in 1980, to 62% in 2000, and to 51% in 2018 (NCES, *Digest of Education Statistics 2020*, Table 101.20). Correspondingly, the share of all other students (nonwhite) increased.

Seemingly, these two forces should have increased the nonwhite shares of students in schools attended by successive cohorts of white students. But that did not happen. Although on average white students did indeed experience increases in exposure to nonwhite classmates, those increases were smaller than the increase in the overall nonwhite share. Why? Because public policies and private behavior intervened, effectively thwarting some of the upward pressure of demographic forces on interracial contact. One such policy was a turnabout in the stance taken by federal courts. After bringing about impressive increases in interracial contact during the 1960s and 1970s, federal courts over time stopped pressing local districts to strive for racial balance and, guided by an emerging color-blind attitude to school desegregation,

¹ *Green v. County School Board of New Kent County (Virginia)* 391, U.S. 430 (1968); *Swann v. Charlotte-Mecklenburg Board of Education*, 402 U.S. 1 (1971).

eventually barred even voluntary programs designed to integrate schools.² As a result of these rulings, school districts previously under the watchful eye of federal courts were now left largely to their own devices to decide how segregated their schools would be.³

Accordingly, schools in the U.S. have tended to experience increases in measured segregation (measured by racial imbalance), even as residential segregation has been declining broadly in urban areas (Cutler, Glaser and Vigdor 1999). Indeed, most recent research on national trends in school segregation has documented persistence, if not increases, in school segregation measured in terms of imbalance (e.g., Reardon and Yun 2003; Clotfelter 2004; Clotfelter, Ladd, and Vigdor 2006; Reardon et al. 2012; Fiel 2013; Stroub and Richards 2013; Davis, Bhatt and Schwartz 2013; Clotfelter, Ladd and Vigdor 2013; Reardon and Owens 2014; Owens, Reardon and Jencks 2016; Reardon 2016).⁴

Our aim in this paper is to unpack the different mechanisms that have blunted the effects on white students of the rising nonwhite share in the school-aged population. Using data for a single state, we decompose the reduction in interracial contact that can be attributed to racial imbalances between schools and between districts, as well as those attributable to the charter school and private school sectors. In so doing, we add to the existing research on school segregation in several ways. First, we are able to identify the separate contributions of these

² The Supreme Court later codified this prohibition in the 2007 decision *Parents Involved in Community Schools v. Seattle School District No. 1*, a decision in which Chief Justice John Roberts declared sardonically, “The way to stop discrimination on the basis of race is to stop discriminating on the basis of race.” (551 U.S. 701, 748 (2007)). Schools in North Carolina fell under this new color-blind judicial approach earlier than 2007, owing to decisions made by the Fourth Circuit Court of Appeals. For discussion of this approach, see Boger (2000) or King and Smith (2011, p. 194).

³ As we stress below, districts were by no means masters of their fates, however, given the existence of charter schools and private schools, among other things.

⁴ Research on North Carolina, covering urban and rural counties, showed a significant increase in public school segregation between 1995 and 2001, followed by a decade with nearly no change. Studies focusing on measures of interracial contact in schools rather than imbalance, not surprisingly, do show a trend over time, owing to the rising nonwhite share of the nation’s students. As illustration, according to Frankenberg et al. (2019, p. 26), the share of Black public school students who attended 90-100% nonwhite schools has risen from 32% in 1988 to 40% in 2016, with practically identical proportions for Hispanic students. Although they are a useful reflection of the experiences of students, measures such as these are affected by the overall racial mix of students. In the present study, we follow the practice of most social science studies and use an index that measures imbalance. As we will show, our measure makes a clear distinction between exposure and imbalance.

various mechanisms using a straightforward algebraic decomposition. Second, as a component of this decomposition, we are able to measure the importance of private school enrollment, a contribution that has not been possible in most studies, which rely entirely on data for public schools. Third, we examine the experience of rural as well as urban communities. While most studies of school segregation focus on districts in metropolitan areas, to our knowledge only Logan and Burdick-Will (2017) have looked specifically at school segregation in rural communities.⁵

Our data are publicly available enrollment data for North Carolina, which was among the first states to come under the federal courts' application of color-blind jurisprudence to desegregation efforts. In addition, it has witnessed significant immigration, earning it attention as a "New Destination" state. Between 1990 and 2010, while the foreign-born population in the U.S. doubled, it increased six-fold in North Carolina (Portes and Rumbaut 2014, Table 9). Using enrollment data for public and private schools, we measure changes in school segregation following the shift in judicial attitude. We also compare levels of segregation across counties whose demographic makeups and recent histories differ markedly from one another. By focusing on one large state with multiple and varied urban and regional areas, we are able to examine patterns of school segregation in some detail, citing specific examples to illustrate broader patterns. We employ data that cover K-12 students in both public and private schools spanning the years 1997/98 and 2015/16 (hereafter simply 1998 and 2016). Over this period the Hispanic share of all students in the state rose from 3% to 16%. The state provides a promising policy arena for identifying the separate contributions of various mechanisms, including charter schools, to overall segregation. North Carolina has enthusiastically embraced charter schools, but

⁵ Although considerable attention has in recent years turned to the growing economic and social disparities between the nation's urban and rural communities, and substantial research has examined the residential segregation of Hispanic households (Crowley, Lichter and Turner 2015; Lichter, Parisi and Taquino 2016 and 2018; Garcia and Schmalzbauer 2017; and Lee, Iceland, Farrell and Sharp 2017), little attention has been given to patterns of school segregation in rural areas.

some recent research suggests that charter schools may be aggravating racial segregation (Frankenberg, Siegel-Hawley and Wang 2011; Logan and Burdick-Will 2016; Ladd, Clotfelter and Holbein 2017) as well as segregation by economic background (Marcotte and Dalane, 2019).

The next two sections of the paper briefly describe the policy and demographic contexts relevant to school enrollments in the state. Section IV describes the basic measures of interracial contact and segregation we employ and presents some descriptive statistics for the state. In section V we decompose this basic measure to highlight the role played by charter schools, private schools, and racial disparities between and within established school districts. In section VI we apply this decomposition to metropolitan areas in the state. In section VII we compare separate indices measuring segregation between white and Black students and between white and Hispanic students, respectively. Section VIII summarizes the findings and discusses some of the policy implications.

II. Policy Levers

Public policies have the potential to affect the racial segregation of schools directly in at least four ways: through their effects on school assignments, consolidation (or deconsolidation) of school districts, charter schools, and private schools. North Carolina offers examples of all four.

Student assignments to schools. One of the basic responsibilities of local school boards is to establish rules by which students may choose or be assigned to schools. Indeed, it was the racially discriminatory exercise of this responsibility that caused federal courts to oversee local school boards after the *Brown* decision in 1954. But after a remarkably brief period during the 1960s and 1970s during which federal courts ordered and enforced student assignment plans that achieved astonishing degrees of interracial contact in public schools, the federal courts began to back-pedal away from active intervention in the student assignment decisions of school boards. Beginning in the new millennium, federal courts handed down several decisions that prohibited

any student assignment based on race, even if part of a plan designed to foster racially balanced schools. One of these decisions struck down the proactive racial balancing practiced by the Charlotte-Mecklenburg school district, making it possible for the district in 2002 to replace a student assignment plan using magnet schools and racial quotas with one emphasizing neighborhood schools.⁶ Confirming the fears that this new judicial stance would increase racial imbalance, measured racial segregation in Charlotte-Mecklenburg public schools jumped markedly, as we show below.⁷ One prominent exception to the move toward neighborhood schools was Wake County, which managed to skirt the Court’s ban on using race as an assignment criterion by balancing schools according to socioeconomic status and achievement (Grant 2009; Kahlenberg 2012).

Today local school boards, virtually freed from interference by federal courts, are back on their own when it comes to student assignments. But theirs is not an easy job. Although these elected leaders typically have the legal power to do so, they cannot simply mandate that all the schools under their control become racially balanced overnight. If they were to do that, many parents who objected to the transfers that would have to be required could move or enroll their children in a charter school or a private school. Indeed, parent groups held up that option as a not-so-subtle threat when they urged the Charlotte-Mecklenburg school board in 2017 not to let a push for racial balance undermine parents’ right to send their children to neighborhood schools.⁸ So school boards must weigh their instincts to foster racial integration, whatever those might be,

⁶ *Belk v. Charlotte-Mecklenburg Bd of Educ*, 211 F. 3d 853 (4th Cir. 2000). One opponent of the change stated, “We have guaranteed convenience for the most able and the most advantaged in our community.” My Worst Fear was Realized,” *Educate!*, November 13, 2003, p. 2. A similar choice plan was implemented in Forsyth County (Winston-Salem) in the late 1990s, producing a similar move to neighborhood schools there as well. See Arika Herron, “Student-Assignment Plan Leaves Some Schools Overcrowded, Others Underutilized,” *Winston-Salem Journal*, January 11, 2014.

⁷ See Table 3.

⁸ Mickelson et al (2018); One speaker at a school board meeting stated, “If diversity becomes the driving force and boundaries are changed dramatically, everybody with affluence will choose to go outside CMS.” Ann D. Helms, CMS Boundary Study Moves Ahead, with Timing and Other Big Questions up in the Air, *Charlotte Observer*, January 24, 2017; <https://www.charlotteobserver.com/news/local/education/your-schools-blog/article128565474.html> 5/25/19.

against the fear, real or imagined, that actions aimed to integrate schools will drive some parents away.

A recent proposal by one advocacy group in North Carolina aims to put pressure on local school boards to create more racially balanced schools by publicizing public schools that do not reflect the overall county-wide racial mix.⁹ The proposed legislation would require the calculation for each school in a county a “disproportionality index,” showing how far that school diverged from the county’s overall racial composition, calculations that would be included in the accountability reports now issued each year by the state. To facilitate interpretation of the ratings, the legislation suggests arbitrary cutoffs for grouping schools on the basis of this index, ranging from Proportional (less than 10) to Highly Disproportional (50 or more).¹⁰ Whether such reporting – public shaming, perhaps – would influence the decisions of school board members or the choices of voters in school board elections remains uncertain, of course, as is the chance such a law would actually be adopted.

District consolidation (or deconsolidation). Empirical studies of American school segregation clearly document that racial disparities between neighboring school districts can be a major source of school segregation. But, like other states in the South and West, North Carolina presents a counter-example to the jurisdictional balkanization that infects the urban areas of the North and Midwest, for it has been North Carolina’s longstanding policy to consolidate school districts. From 167 separate school districts in the 1960s, the state – sometimes via direct intervention by the legislature itself – had by 1998 managed to trim the number of districts to 117. By 2016 the number had fallen to 115, most of which are county-wide. For a state with a

⁹ The organization is the North Carolina Justice Center, <https://www.ncjustice.org/>.

¹⁰ This disproportionality index is a modified dissimilarity index. Its value ranges from 0, for the case of a school whose racial mix exactly matched that of the county at large, to 100, for the case of a school that enrolled students from only one racial group. See North Carolina Justice Center (2019) for draft bill. See Orfield, Ee, and Coughlan (2017, p. 42) for a detailed description of the index. In section VIII, we present illustrative calculations using this proposal’s measure for one county.

population of 10 million, this is a remarkably small number. Compare, for example, New Jersey, with a smaller population, which had 602 districts in 2014 (Governing the States and Localities, n.d.). Because of this preponderance of county-wide districts, North Carolina features many fewer of the sharp racial disparities so prevalent in those balkanized urban areas.¹¹

There is currently a push, however, to reverse this pro-consolidation policy. Community leaders in large districts, notably Charlotte-Mecklenburg and Wake County, have called on the state legislature to allow such large county districts to be divided once again.¹² Although a legislative study committee empaneled to examine the question issued no recommendation related to the desirability of smaller districts, its report did nothing to quell the push for deconsolidation (North Carolina Legislature 2018).¹³

Charter schools. A third set of policies with likely effects on segregation are those related to charter schools. In North Carolina, the legislature has exclusive authority over charter schools. The state legislature sets a maximum number of charter schools, if any, and establishes any constraints under which those schools can operate, and the State Board of Education is the sole authorizer of charter schools. First authorized in 1996, these schools increased in number, soon reaching the legislated maximum of 100. That cap was lifted in 2011, and the number quickly rose, topping 170 by 2018.¹⁴

Skeptics of charter schools have long feared that these schools would become a vehicle for segregation. That fear spurred much of the opposition to charter schools when the state

¹¹ In North Carolina, districts within the same county can consolidate by mutual agreement or they can be forced to consolidate by the board of county commissioners or by the state legislature (Burnette 2016, pp. 17-18).

¹² One of these proposals, for example, would split the Charlotte-Mecklenburg district into three new independent districts. Ann D. Helms, "Matthews Mayor: It's Time to Explore a Suburban Split from CMS," *Charlotte Observer*, February 24, 2016; <https://www.charlotteobserver.com/news/local/education/article62279447.html> 5/25/19

¹³ On a seemingly unrelated question, the committee noted its belief that smaller schools work better than larger ones despite the lack of evidence on the question. See also Keung Hui, "NC Lawmakers Will Consider Dividing School Districts, Including Wake County," *Raleigh News and Observer*, February 13, 2018.

¹⁴ Stancill, J., Bonner, L., & Raynor, D. (2017, October 9). How are Charter Schools Different? Here are the Basics. *News and Observer*. <http://www.newsobserver.com/news/local/education/article177834016.html>, 5/31/18.

legislature debated and passed its originating charter school legislation. To guard against that possibility, North Carolina put into its original enabling legislation in 1996 not only a prohibition against demonstrably discriminatory practices but also an admonition that charter schools “shall reasonably reflect” the racial and ethnic composition of their surrounding areas. The state legislature softened this language in 2013, however, requiring only that charter schools “shall make efforts for the population of the school to reasonably reflect” the surrounding area (Ladd, Clotfelter and Holbein 2017, p. 538).¹⁵ This softening accompanied the state’s removal of the cap on the total number of charter schools allowed to operate. Coincident with these changes was an increase in the number of charter schools with predominantly white or nonwhite enrollments (80% or more white or nonwhite) (Ladd, Clotfelter and Holbein 2017, p. 543). Most recently, worries that charter schools might aggravate segregation were surely aroused by a bill debated and passed by the state legislature in 2018 that gave permission to four predominantly white towns within Mecklenburg County to open up charter schools catering to their own residents.¹⁶

Private schools. A fourth state policy with the potential to influence school segregation is government support for private schools. As of 2015, 19 states, including North Carolina, had set up programs to give tax breaks or vouchers to students attending private schools using public funds (Southern Education Foundation 2016, p. 2). The North Carolina Opportunity Scholarship Act, enacted in 2013, provides state-funded tuition scholarships up to \$4,200 for first-time

¹⁵ One of the sponsors of the original charter school law in the state legislature, Wib Gulley, expressed his disappointment about the weakening of that requirement: “It was a key provision that was meant to ensure that the charter schools didn’t segregate in some way and did not take only students from wealthy families and that kind of thing,” “If that’s the result even for one school, it is an undermining of the fundamental intent of the law. It perverts the premise of charter schools in a way that we never wanted and that both houses of the legislature voted to say would not happen.” Jane Stancill and David Raynor, “Why NC Charter Schools are Richer and Whiter,” *Raleigh News and Observer*, October 10, 2017.

¹⁶ This was HB 514, a bill that passed in June 2018. Morrill, J. (2016, June 6). Controversial NC Charter Bill Approved. Now, These Four Towns Could Open Schools. *Charlotte Observer*; Morrill, J., & Doss Helm, A. (2018, May 29). Controversial NC Town Charter Schools are Closer to Reality. And Impact is ‘Monumental. *Charlotte Observer*. The towns mentioned as wanting to start such schools in Mecklenburg County, and their nonwhite percentages in 2017, were: Matthews (19%), Mint Hill (25%), Huntersville (19%), and Cornelius (16%). Statistical Atlas, Race and Ethnicity in Mecklenburg County, NC <https://statisticalatlas.com/county/North-Carolina/Mecklenburg-County/Race-and-Ethnicity>, 5/31/18.

private school students from moderate and low-income families.¹⁷ (In 2017 the maximum family income to be eligible was \$45,510.)¹⁸ There have also been proposals at the federal level to subsidize private school attendance (Southern Education Foundation 2016, p. 2). Considering the prominent role private schools have historically played in efforts of white families to avoid desegregated schools (Clotfelter 1976), it is not far-fetched to worry that such subsidies for private schooling could aggravate racial segregation. We are interested, therefore, in tracking recent enrollment trends in North Carolina private schools, whether or not that enrollment is currently funded by vouchers.

III. Demographic Context

North Carolina's K-12 enrollment is large, rapidly growing, and diverse. As shown in the first three columns of Table 1, enrollment in public and private schools increased over this period from 1.3 million in 1998 to 1.6 million in 2016, a rate of little more than 1% a year. Among its 100 counties are highly urbanized counties as well as rural counties containing only a few traffic lights. Unlike rural counties in most of the country, which are predominantly white (Logan and Burdick-Will 2017, p. 215), rural counties in North Carolina represent a wide range of racial compositions, with Black students disproportionately represented in those in the northeastern part of the state and underrepresented in the mountains to the west. The state's two most populous counties, Mecklenburg and Wake (home to Charlotte and Raleigh, respectively) accounted for more than a fifth of all students in 2016, and the five largest counties accounted for more than a third. We divided the state's remaining counties between urban and rural, based on each county's share of residents living in urban areas¹⁹ in 2000.¹⁹ We report statistics for all of these remaining

¹⁷ Doss, H. A., "Praying for options: Religious schools dominate NC voucher program," *Charlotte Observer*, April 8, 2018. In 2015/16 3,237 of the 3,460 students who received these scholarships went to religious schools.

¹⁸ Keung, H., "Vouchers allow low-income families to attend private schools, but cost is still a challenge," *Raleigh News and Observer*, August 2, 2017. <http://www.charlotteobserver.com/news/local/education/article70759617.html> 2/8/18

¹⁹ U.S. Census Bureau, *Census of Population and Housing, 2000*.

counties, and then again counting only those with at least 4% nonwhite enrollment in 1998.²⁰ As a group, rural counties showed the slowest growth in enrollments over this period.

The last six columns document enrollment changes in charter schools and private schools. Enrollment in charter schools increased markedly, their share increasing across the board and rising as a share of all students in the state from 0.4 % to 4.9%. The share of students enrolled in a private school went the other direction, declining over all from 5.8% to 5.0%.

[Table 1 about here]

Three important demographic facts are important for understanding the patterns and trends in the schools of North Carolina: substantial racial and ethnic diversity, rapid growth in the number of Hispanic students, and steady but uneven urbanization. In 2016 slightly more than half of North Carolina's K-12 students were white and not Hispanic (hereafter, simply white). Non-Hispanic Black (hereafter, simply Black) students made up 29% of total enrollment, Hispanic students 16%, and Asian and Native American students together made up about 4.5% of the total.²¹ Over the 18-year period between 1998 and 2016, the marked decline in the share of white students was mirrored by an almost identical increase in the share of Hispanic students. While the absolute number of white students declined by 3% over the period, the number of Hispanic students increased *seven-fold*. Asian students remained a small portion of North Carolina's rural and small urban communities, but their numbers grew rapidly in the state's largest urban areas. There are relatively few Native Americans in the state, but their shares were significant in several of the state's counties.²²

²⁰ Taken as a group, the 10 counties dropped from the analysis because their nonwhite shares of students were less than 4% accounted for only 33,000 students, or about 2% of total state enrollment, in 2016.

²¹ See Appendix Table A4 for details on the racial and ethnic composition of students over time across the state.

²² Native Americans were concentrated in two clusters of counties. In the far west of the state, in an around the Cherokee Indian Reservation, the share of students who were Native American in 2016 exceeded 15% in two counties. Towards the east, where the unrecognized Lumbee tribe is concentrated, three counties had a tenth or more of their students classified as Native American. For county designations and detailed racial and ethnic breakdowns by county, see Appendix Table A1.

To illustrate how the racial/ethnic diversity arrays itself geographically, the maps in Figure 1 shows the concentration of Black and Hispanic students by county in 1998 and 2016. The figure’s first two maps show for 1998 and 2016 the concentration of Black students, with counties divided into three groups. These two maps show that Black students were concentrated in the middle and eastern sections of the state. In contrast to the stability of these racial patterns, the story was altogether different for Hispanic students. The rapid growth in their numbers was the result of an influx of immigrants into the state, attracted by job openings in industries such as meat processing, construction, landscaping, and personal services.²³ This influx increased Hispanic shares in most counties, and their numbers in every single one. This growth was especially concentrated in a handful of destination counties, where the concentration of Hispanic students skyrocketed.²⁴ The two maps for Hispanic students in Figure 1, using different percentage categories from those used for Black students, show the astonishing demographic transformation of the state’s schools between 1998 and 2016. In 1998 the Hispanic share of all K-12 students exceeded 5% in fewer than ten of the state’s 100 counties; by 2016, that was true in more than 90% of the counties.

[Figure 1 about here]

IV. Measuring Segregation

Basic to our analysis is the concept of segregation – the uneven distribution of students by racial/ethnic group across schools in an area (in our case, a county). The most commonly used index used by social scientists is the dissimilarity index, defined as:

$$D = 0.5 * \sum_j \left| \frac{N_j}{N} - \frac{W_j}{W} \right| \quad (1)$$

where N_j and W_j are the number of nonwhite and white students, respectively, in school j and N

²³ For discussion of industries that have attracted Hispanic immigrants, see, for example, Griffith (1995), Wahl, Breckenridge and Gunkel (2007), Parado and Kandel (2008), and Crowley, Lichter and Turner (2015).

²⁴ By 2016 Hispanic students accounted for more than 30% of total enrollment in Duplin, Greene, Lee, Montgomery, and Sampson, all counties in the southern part of the piedmont or coastal plain.

and W are the total number of each group in the county.²⁵ This index ranges from zero, where every school has the same racial composition, to one, where every school's enrollment is either entirely white or entirely nonwhite. The numerical value of the dissimilarity index corresponds to the proportion of students of one racial group who would have to change schools in order for all schools to be racially balanced.

Although we include measures based on this index in this paper, we devote more attention to a lesser known index, which is better suited for documenting how various aspects of the contemporary educational scene create segregation by reducing interracial exposure. This index, devised in the 1950's and later employed by James Coleman (Coleman et al. 1975), measures the proportional gap between *actual* and the *maximum possible* extent of interracial contact between two groups of students, where interracial contact is measured by the average exposure rate of white to nonwhite students.²⁶ Where students are classified as white or nonwhite, this average exposure rate (E_{wn}) is defined as the share of nonwhite students who are enrolled in the school of the average white student, or, equivalently, the probability that a nonwhite student will be in the school of a randomly selected white student.²⁷ This average exposure rate ranges from a minimum of zero, for the case in which no school contains both types of students, to a maximum of P_n , the overall proportion of nonwhite students in the county. If all schools were precisely racially balanced, E_{wn} would exactly equal P_n , its maximum possible value.

The Coleman index of segregation is then the proportional gap between the maximum

²⁵ Both of the principal measures of segregation we use are designed to be applied to situations with just two groups. In the social science literature, the two most commonly used dichotomies are white/nonwhite and white/Black. In the present paper, we use mainly the former, on the basis that Hispanic and most nonwhite groups have been sufficiently "racialized" that the generalized dichotomy captures the most important single division relevant to contemporary American life. See Gans (1999) for a supporting argument.

²⁶ This index, originally referred to as a corrected exposure rate and later as the V index, is discussed in Bell (1954), Becker (1978), and James and Taeuber (1985).

²⁷ In the sociology literature, this exposure rate is commonly denoted ${}_wP^*_n$. In Coleman et al. (1975, p. 35, n. 5), it is denoted by s , as in ${}_wS_n$.

(P_n) and actual (E_{wn}) values of the exposure rate:

$$S_{wn} = (P_n - E_{wn})/P_n \quad (2)$$

Like the dissimilarity index, its smallest value is zero (which signifies no segregation, or exact racial balance, since $E_{wn} = P_n$), and its maximum value is one, which signifies complete segregation where interracial exposure is zero ($E_{wn} = 0$).²⁸ Because it uses each county's overall racial composition as the statistical reference point, this index, like the dissimilarity index, is independent of a county's racial makeup.

We also calculate a multi-group measure of imbalance, the Theil entropy index (Theil and Finezza 1971). To calculate it, students in each county are classified according to four racial/ethnic groups (g). The index is:

$$H = \sum_j \frac{t_j(F-F_j)}{F} \quad (3)$$

where t_j is school j 's proportion of county enrollment. F_j and F are defined as:

$$F_j = \sum_g p_{gj} \ln\left(\frac{1}{p_{gj}}\right), \text{ and} \quad (4)$$

$$F = \sum_g p_g \ln\left(\frac{1}{p_g}\right) \quad (5)$$

where p_{gj} is the proportion of school j 's enrollment belonging to group g , and p_g is the proportion of the county's enrollment belonging to group g . We divide students into four groups: white, Black, Hispanic, and others. Like the dissimilarity index, the entropy index H has a maximum value of 1, indicating schools that are completely separated by race, and a minimum value of 0, indicating racially balanced schools. Note that the index F represents a measure of racial/ethnic diversity in a county, with higher values constituting higher diversity.²⁹

²⁸ To illustrate how S_{wn} is calculated, consider a county where 40% of students are nonwhite. If white students on average attend schools in which the proportion of nonwhite students is just 30%, the segregation index would equal 0.25 (= (0.40-0.30)/0.40). In other words, the gap between the actual and the maximum exposure rate is 25%.

²⁹ The maximum value of F with four groups would be 1.39, in which each group would have 0.25 of a county's enrollment, thus $p_g = 0.25$.

As a measure of segregation, the Coleman index has two attractive features. First, as we explain below, it allows researchers to identify and separately measure the contributions to overall segregation of different segregative instruments, such as private schools. We discuss this decomposition below. The second attractive feature of the Coleman index is that it makes explicit the ironclad dependence of interracial contact on two things: a county's racial mix of students and the segregation of its schools. Given the racial mix of its students, segregating students is the only way a county can reduce the average interracial contact of students across schools. To visualize this dependence, Figure 2 shows bars for every county. The light-colored portion of every bar corresponds to the actual average exposure rate of white to nonwhite students, and the entire bar corresponds to the nonwhite share in the county. The difference between these two proportions, shown by the black portion of each bar, shows the extent to which segregation has reduced exposure from its maximum (which would have occurred if schools had been racially balanced). The segregation index is equal to the proportional reduction – the black portion as a share of the entire bar.

[Figure 2 about here.]

At the top of the figure are the counties with the highest nonwhite shares of students. More than a third of the counties had nonwhite majorities. These were the counties where segregation tended to reduce by the biggest proportions white students' exposure to nonwhite students. Three of the counties with the biggest reductions were Bertie, Halifax, and Mecklenburg. As we describe below, each of these counties featured a different institutional path to reducing interracial contact. By contrast, counties in the bottom third of the figure, where nonwhite students make up much smaller shares, the segregation gaps tend to be considerably smaller, in both absolute and relative terms. Indeed, it is an established feature of indices of segregation, including the dissimilarity index, to be unreliable or biased when the minority

group's share is very small.³⁰ We therefore omit from our analysis counties that had nonwhite shares less than 4% in 1998.

Table 2 summarizes, in its first three columns, our calculations of school segregation in the state's K-12 schools using Coleman's index. For the state as a whole, the enrollment-weighted-average white/nonwhite segregation increased, from 0.16 in 1998 to 0.19 in 2006 and then remained constant through 2016. This jump in segregation between 1998 and 2006 was driven entirely by urban counties, most notably by Mecklenburg, Forsyth, and Wake. Among them, the biggest increase, from 0.21 to 0.38, occurred in Mecklenburg County. Once the celebrated symbol of cross-town busing for racial balance, the district drastically altered its approach to student assignment after the Fourth Circuit Court of Appeals released it from previous desegregation orders. In addition, Wake County (home to Raleigh) saw its index increase from 0.09 to 0.15, reflecting that district's easing of a policy of balancing schools by socioeconomic status, and in Forsyth (home to Winston-Salem) saw its index rise from 0.21 to 0.32. In contrast to the largest urban counties, rural counties on average experienced almost no change in white/nonwhite segregation. Rural counties also registered slightly smaller levels of segregation than did urban counties, though this difference could arise due to a mechanical bias in measuring segregation.³¹

³⁰ Previous research has established that the dissimilarity index is subject to upward bias when the proportion of minority individuals is very low or when the units of grouping are small, and this bias applies as well to other widely-used measures of imbalance. As explained in studies such as Allen et al. (2015) and Mazza (2017), the problem arises because small enumeration units will simply by chance tend to differ in composition, a tendency that will be more pronounced with a very small minority group. Among the methods proposed to correct the bias are Monte Carlo simulations that allow actual distributions to be compared to those generated randomly. According to Mazza (2017, p. 31), "Most of the methods proposed use computation-intensive techniques that have the drawback of introducing complexity and substantial computational burdens." As an alternative, many studies have resorted to various rule-of-thumb remedies, such as excluding cities or districts with tiny proportions of the minority group of interest, an approach we adopt here.

³¹ This form of mechanical bias (sometimes called the "spatial scale effect") is the tendency wherein measured segregation tends to be lower when enumeration units are larger. If schools of a given level tend to have more or less the same size everywhere, a school in a county with a small population will tend to enroll a larger share of all the county's students than would a school in a populous county. Due to the spatial scale effect, this tendency would reduce measured segregation indices in less populous counties. Since rural counties do tend to have fewer students, the effect would be to produce lower indices for rural counties. See Wong(2003), who describes the spatial scale effect as a manifestation of the more general "modified areal unit problem."

[Table 2 about here]

For comparison, Table 2 also presents calculations based on three other imbalance measures of school segregation: the dissimilarity index, the entropy index, and a measure of economic segregation. Like the Coleman index, the dissimilarity index indicates imbalance between white and nonwhite students; it closely mirrors the patterns traced by the Coleman index, albeit with higher numeric values. For the 90 counties included in the analysis, the correlation between it and the Coleman index is 0.93. The multi-group entropy index is also highly correlated with the Coleman measure ($r = 0.93$).

Table 2's next trio of columns traces changes in economic segregation. We use the dissimilarity index to compare enrollment patterns for public school students eligible for free lunch (available only through 2014) to the enrollment patterns for all other students.³² Because virtually no free lunch data were available for charter schools before 2014, we calculated indices for the three years just for traditional public schools (TPS). These indices display a pattern of changes that largely mirrors the changes in white/nonwhite dissimilarity. Both measures showed sharp increases from 1998 to 2014 in Mecklenburg and Forsyth, the two counties that got rid of their racial balance desegregation plans. In addition, both measures indicate declines in segregation in the smaller urban counties and the rural counties. The only noticeable difference was in Wake; whereas its white/nonwhite segregation increased, economic segregation was level over the period, a likely result of that county's effort to balance schools by socioeconomic status. Taken together, these patterns of economic segregation echo the findings of Owens, Reardon and Jencks (2016), who report increases in economic segregation between 1998 and 2012 in the nation's largest school districts. In the remainder of the state, however, our measure of economic

³² Eligibility for free lunch is set at 130% of the poverty rate (Federal Register 2017). Due to a change in the program, comparable data were not available for 2015/16. For schools with missing free lunch data, we used data from an adjacent year (1999, 2005, or 2013) to estimate the proportion of students eligible for free lunch. If such a replacement could not be found, the school was omitted from all years of the analysis.

segregation remained steady or declined.

For 2014 we calculated a separate set of dissimilarity indices including charter schools, for which free lunch data were available for that year. This addition of charter schools increased the calculated degree of economic segregation across the board, suggesting that charter schools are associated not only with greater racial segregation, but also higher levels of economic segregation. To round out our comparisons, we also calculated one more set of dissimilarity indices for 2014, this one including private schools as well as public schools of both types. Lacking any data on free lunch eligibility for private schools, we made the simplifying assumption that private schools enrolled no free lunch students at all, an assumption that is inaccurate, of course, to the extent that private schools enroll low-income students. As might be expected, adding private schools in this manner led to yet higher calculated economic segregation.

With the exception of two large urban counties that threw off the constraints of past desegregation suits, the trend in segregation across the state was rather flat, if not declining – but certainly not sharply increasing. In the nearly 60 rural counties, the average degree of school segregation was lower at the end of our period than it had been at the beginning, no matter which measure is used. And across most of the urban counties in the state, segregation stayed more or less the same over the period. Stasis, not dramatic change, best describes this period.

V. The Mechanisms for Undoing Desegregation

The counties in North Carolina provide illuminating examples of four different institutional mechanisms through which the increases in interracial contact achieved through federal desegregation orders are being silently undone, albeit incompletely, with each mechanism reducing interracial contact by creating racial disparities across the schools in a given geographic unit, such as a county. These four institutional drivers of segregation are private schools, charter schools, balkanized school districts, and differences between schools within

public school districts and within the charter school or private school sectors.³³

As a way of quantifying the importance of each of these four institutional mechanisms, we take advantage of the easy divisibility of the Coleman segregation index to identify the racial disparities attributable to each of these mechanisms. We do this by dividing the gap between the maximum possible exposure rate of white to nonwhite students (P_n) and the actual interracial exposure (E_{wn}) into four additive components, those associated with the private school sector, the charter school sector, multiple districts, and differences across schools within districts or sectors.³⁴ To illustrate how this decomposition works, consider the contribution of private schools. We ask, how much would interracial exposure decline compared to complete racial balance if every private school had the same racial mix of students as the average across all private schools and every public school similarly reflected the racial mix of the public school population? Thus, we are measuring the reduction in average exposure between our core counterfactual scenario (racial balance across all schools) and an alternative scenario (private schools all having one uniform racial composition and all public schools having another one). Next we allow charter schools and traditional public schools to differ in racial composition and re-calculate the resulting (typically smaller) exposure rate. And so on.

Table 3 presents this decomposition for several counties that illustrate contrasting institutional infrastructures that create racial disparities between schools, thus contributing to segregation. In the first group of counties – all of them in the state’s northeast corner – private schools served as the principal mechanism for achieving its 2016 level of segregation. In Bertie County, a small rural county where 74% of all students were Black, its two, nearly all-white

³³ A fifth mechanism for reducing interracial contact in schools is segregation that occurs inside of schools, across classrooms. We are not able to measure the effects of this mechanism in the present paper because we do not have classroom-level data. See Clotfelter, Ladd, and Turaeva (2020) for an analysis of classroom-level segregation in public schools.

³⁴ This decomposition is explained in more detail in Appendix AB, and calculations based on it are presented by county in Appendix Table A2. For previous studies that decompose school segregation, see, for example, Clotfelter (2004) or Fiel (2013).

private schools enrolled more than 40% of all the county's white students. Although white and Black students were quite evenly spread out in the county's nine public schools, these private schools created enough racial disparity to produce a segregation index of 0.38. Our decomposition reveals that 0.36 of this total segregation index can be attributed to the difference in the racial composition of that one private school and the racial composition of the county's public schools. Similar situations occurred in nearby Northampton and Hertford Counties. In Northampton, two private schools enrolled 23% of all the county's white students; otherwise, the county's public schools were racially quite evenly balanced among themselves. In that county the racial gap between private and public schools accounted for 0.19 of the county's overall 0.21 segregation. In Hertford, where 77% of students were Black, the county's one private school once again enrolled nearly a quarter of all white students. The public-private gap in Hertford accounted for 0.15 of the county's 0.17 overall segregation.

[Table 3 about here.]

As a methodological aside, our calculations make clear a shortcoming of the many studies of schools segregation that do not include private school enrollments. Consider Bertie County. Judging only on the basis of public school enrollments, its schools would appear to be nearly entirely integrated, with a Coleman segregation index of 0.04. But counting its two predominantly white private schools renders a starkly different verdict, a Coleman index of 0.38.³⁵ As a way of assessing how big a difference it makes to include data on private schools in the overall measure of segregation, we calculated dissimilarity indices by county for 2016 using only data for public schools. The result was an average segregation rate for the state of 0.17 rather than 0.19.³⁶ In a word, private schools remain a principal instrument for segregation, so it

³⁵ Authors' calculations. Without private schools, the average exposure rate of white to nonwhite students was 0.82, close to the overall nonwhite proportion of 0.85.

³⁶ Detailed calculated indices without data on private schools available from authors upon request.

is clearly useful to have enrollment data on them.

The second important instrument for segregating white from nonwhite students was charter schools, and in several counties they played a major role. In Vance County, where 60% of students were Black, 26% white, and 13% Hispanic, two charter schools enrolled a total of 23% of all white students, and its two private schools enrolled another 13%. Of the county's overall 0.26 segregation index, therefore, the racial distinctiveness of charter schools accounted for more than half (0.14), and private schools accounted for an additional 0.09. Charter schools also became the principal avenue for school segregation in rural northeast Martin County, where 48% of students were Black, 44% were white, and 7% were Hispanic. More than a quarter of white students were in the county's two charter schools, leaving them 84% white. The county's remaining white students were spread relatively evenly across the county's other 10 traditional public schools. As in Vance County, the racial disparity between the two predominantly white charter schools and the county's other public schools accounted for 0.11 of the county's total 0.21 segregation. A third county, featuring both charter schools and private schools as significant contributors to segregation, was urbanized Durham County, where charter schools accounted for 0.07 and private schools for another 0.11 of the county's total 0.27 index of segregation.

A third mechanism that played a part in producing segregation in a few counties was the one most commonly observed in the racially balkanized metropolitan areas of the U.S. Northeast and Midwest: disparities between school districts within a county. Despite North Carolina's decades-long push to consolidate its school districts, the few counties where racially distinct city districts remain show the power of this kind of legacy. Two North Carolina counties stand out as prime examples on this account.³⁷ One is Davidson, a county in the state's piedmont, which is home to two city districts and a larger, mostly rural and white county district. Of that county's

³⁷ For a list of independent city school districts in the state, see Appendix Table A1 in Clotfelter, Ladd and Vigdor (2003).

overall segregation index of 0.32, the racial disparities among these three separate districts accounted for the bulk (0.29). Another county whose high degree of segregation arises from independent and racially disparate districts is Halifax. Its Roanoke Rapids city district enrolled more than 90% of the county's white students, leaving the county district and diminutive Weldon city district as nearly all-black. A third example shown in Table 4 is Randolph, where a significant divergence in racial mix between its Asheboro city district and the county district accounted for 0.11 of the county's overall segregation index of 0.18.

By far the biggest contributor to segregation in North Carolina's counties was differences among individual schools within public school districts and within the charter and private school sectors. This component of segregation was largest in Mecklenburg, Union, and Alamance. The Charlotte-Mecklenburg Schools, with more than 100 traditional public schools serving students spread out over a land area of 524 square miles, had switched its method of student assignment in the fall of 2002, after the Fourth Circuit Court of Appeals had freed it in 1999 from its previous mandate to maintain a modicum of racial balance.³⁸ White/nonwhite segregation across traditional public schools in the district increased from 0.20 in 2001 to 0.33 in 2006 (Clotfelter, Ladd and Vigdor, 2008, Table 2, p. 68). Close behind was Union County, home of many suburbs of nearby Charlotte, and Alamance, an urbanized piedmont county that has experienced a rapid increase in Hispanic enrollments.

To show patterns in the importance of these four components of school segregation, Table 4 presents weighted averages based on 2016 segregation in the same format as other summary tables. For the state as a whole, differences in racial composition within districts and sectors explain the bulk of total segregation, accounting for 0.13 of the total 0.19 overall index. Racial disparities associated with private schools, charter schools and separate districts

³⁸ *Capacchione v. Charlotte-Mecklenburg Schools*, 57 F. Supp. 2d 228 (W.D.N.C. 1999); see Clotfelter, Ladd and Vigdor (2008, p. 50) for a description of the changes in Charlotte-Mecklenburg.

accounted for 0.03, 0.02, and 0.01, respectively. The first two instruments were more important in urban than rural counties, but the third had its biggest impact in a handful of rural counties. Among the five largest counties, Mecklenburg led in the importance to its segregation of private schools and charter schools. (As noted elsewhere, Mecklenburg had 25 charter schools in 2016, providing plenty of latitude for racial disparities to arise.) Finally, the table reveals that neither private schools nor charter schools played a large role in creating segregation in the state's rural counties.

[Table 4 about here.]

Another way of seeing the role of charter schools and private schools in facilitating segregation is to examine their importance in providing predominately white school environments. Owing to the steady increase in the share nonwhite students in the state, predominantly white schools have become increasingly uncommon. As shown in Table 5, the percentage of white students in the state who attended a school with 80% or more white students declined over time, from 46% in 1998 to 27% in 2016. In 1998 charter schools accounted for virtually none of the students attending predominantly white schools, but by 2016 charter schools were home to 9% of such students. The share of white students in predominantly white schools who went to private schools also increased from 17% to 20%. Over this period, therefore, charter schools, and to a lesser extent private schools, assumed a bigger role in providing an avenue for white students to remain in largely white schools.

[Table 5 about here.]

VI. Segregation in Metropolitan Areas

Because most of the focus of American research and policy interest related to school desegregation has focused on metropolitan areas, we apply the same decomposition used above to school segregation for North Carolina's metropolitan areas. If these metro areas tracked the experience of most metro areas in the United States, we would expect to see that the bulk of

segregation would arise as much or more from racial disparities *between* school districts as *within* them (Clotfelter 2004). Such between-district disparities are especially significant in Northeastern and Midwestern metropolitan areas. As shown in Clotfelter (2004) and subsequent studies, as desegregation efforts reduced racial imbalances within school districts, white families gravitated toward predominantly white suburban districts, thus undoing some of the aggregate impact of desegregation efforts. In states where school districts tend to cover large areas, such as North Carolina, there is less scope for this kind of between-district segregation.

To compare segregation levels in North Carolina to those in metropolitan areas elsewhere and to assess how important between-district disparities are in North Carolina, we examine metropolitan-level school segregation in the state's metropolitan areas that consist of more than one county. We apply the same white/nonwhite measure of segregation as before, but to the schools in the portion of the entire metropolitan area located within the state, not just those in a single county. Overall metropolitan area segregation will be higher in areas where the composition of counties within the area differ one from another more than where they are similar. We employ the same method as above to decompose total white/nonwhite segregation into four additive parts.

Table 6 shows the resulting calculations for the state's 11 metropolitan areas. In 2016 the most segregated metropolitan areas were Charlotte (with a white/nonwhite segregation index of 0.33), Winston-Salem (0.32), Greensboro (0.31), and Durham (0.28). These had also been the most segregated metro areas in 1998. These measured segregation indices for North Carolina areas are well below some of those in the rest of the country. As documented in Clotfelter (2004), calculations for the year 2000 using the same Coleman segregation index revealed that the metro areas with the highest white/nonwhite segregation indices were in Detroit (0.63), Monroe, LA (0.59), Cleveland (0.59), Birmingham (0.58), and Gary-Hammond (0.58) (Clotfelter 2004, p. 62). In 2000 the average among smaller metropolitan areas, a better reference group for

North Carolina's metro areas, was 0.265, a value well above the average of North Carolina areas in 1998 and also above, but by less, the 0.24 average in 2016 (Clotfelter 2004, p. 73).

[Table 6 about here]

Between 1998 and 2016, segregation increased in eight of the 11 metro areas, notably in Charlotte (0.25 to 0.33) and Winston-Salem (0.25 to 0.32). The increases in these two areas were primarily the result of higher within-district segregation – the component of segregation most closely linked to the federal courts' rejection of efforts to achieve racial balance after 2000. In contrast, Durham's increase from 0.23 to 0.28 was due entirely to charter schools. But Durham was exceptional. Along with Greensboro, it shared the distinction that within-district (and sector) segregation was *not* the primary source of metropolitan school segregation. Across the 11 metropolitan areas in 2016, within-district disparities explain more than half of overall segregation (0.14), followed by the between-district disparities (0.06). Racial disparities introduced by private schools (0.03) and charter schools (0.02) account for the rest. Added together, the disparities associated with private schools and charter schools in 2016 accounted for sizable degrees of segregation in several areas, notably Durham (0.10), Charlotte (0.06), and Rocky Mount (0.06). Regarding the increase in average metropolitan-level segregation between 1998 and 2016 for all 11 metro areas, 0.19 to 0.24, part was due to charter schools and part was due to increased segregation within districts.

VII. White/Black and White/Hispanic Segregation

To this point, we have based our measures of racial/ethnic segregation exclusively on the white/nonwhite patterns across schools, for two reasons. First, since previous researchers have often employed this definition of racial segregation, using it here makes comparisons to previous findings, such as the ones discussed in the previous section, straightforward. Second, we believe that among the possible two-way divisions that could be employed, that between whites and nonwhites remains the most illuminating single one, for it sets apart the racial group that has

historically had the most political and economic power to influence the school assignment of its children.

But, in keeping with a number of previous studies, we also calculated analogous segregation indices, using the dissimilarity index, based on analogous ethno-racial dichotomies, namely, Black/non-Black and Hispanic/non-Hispanic.³⁹ The very different histories of African Americans and Latinos in the United States and in North Carolina provide compelling reasons to examine separately segregation as it relates to these two groups, as we do in Table 7. The first pair of columns simply repeat the values for white/nonwhite dissimilarity, shown in Table 2, and the following two pairs of columns show the corresponding indices for the other two dichotomies.

These comparisons show that white students are more segregated from nonwhite students than are Black from non-Black or Hispanic from non-Hispanic students. This inequality holds true for every county or group shown in 2016 and for all but Wake and rural counties in 2006. The magnitudes of the difference are in most cases small, but the consistency of this finding is striking. A second generalization is that, especially in the five largest counties, Black students are now more segregated from students in other racial groups than are Hispanic students from others. Finally, the decline in Hispanic/Non-Hispanic segregation over this decade was not limited to urban areas in that we see a similar decline in this measure for rural areas. These differences may suggest that, despite their recent emergence as a sizable ethnic group, Hispanic assimilation has been rapid. We note, though, other related research (Clotfelter et al., 2020) documents that Hispanic students in North Carolina are more segregated within schools than are Black students. Hence the differences shown here between Black and Hispanic segregation across schools clearly do not represent the fully story.

³⁹ See, for example, Frey and Farley (1996)'s study of residential segregation.

[Table 7 about here]

VIII. Conclusion

Racial segregation in schools is a subject of perennial interest and importance.

Segregated schools undermine social cohesion and are often associated with racial disparities in access to school resources. Our aims in this paper are to describe patterns and trends of racial segregation in North Carolina and to document the mechanisms that contributed to racial imbalance across the state's counties.

Using administrative data on K-12 enrollments in public and private schools, we measure racial segregation in North Carolina in 1998, 2006, and 2016. As a state to study, North Carolina offers several advantages. It is large and its population is diverse, with this diversity manifesting itself with geographical starkness across counties that range from entirely rural to highly urbanized. We use as a measure of segregation an index that reflects the degree of racial imbalance in the schools located within a geographical area (Coleman et al., 1975). Most of our calculations use counties as the geographical reference, implicitly measuring the degree to which schools within a county differ in racial composition from that of the county's enrollment as a whole. We also measure segregation by economic status. We do not examine segregation that may occur within schools.

Over the 18 years covered by our study, North Carolina witnessed three noteworthy changes with the potential to have significant effects on school segregation. First, a large influx of immigrant and first-generation Hispanic students enrolled in schools across the state, boosting the Hispanic share from 3% in 1998 to 16% in 2016. Second, federal courts removed any pressure remaining from the days of aggressive desegregation orders on local districts to advance racial balance in schools. This opened the door for local school boards, most famously the one in Charlotte, to rewrite their school assignment rules to make it easier for parents to send their children to more segregated neighborhood schools. Third, the state legislature embraced and

expanded the state's vast array of charter schools. Over the period we studied, the share of students attending charter schools rose from less than 1% to nearly 5%. Unlike charter schools in most of the country (Logan and Burdick-Will, 2017, p. 214), those in North Carolina were not just a big city phenomenon; they also cropped up in small towns and rural counties. Over time the state relaxed the original requirement that its charter schools be racially representative of their locales, allowing them in more than a few instances to become the racially distinct schools that critics originally feared they would become.

We find that racial segregation rose in North Carolina between 1998 and 2006, reflecting the new color-blind attitude of federal courts, after which it remained level or declined slightly in the following decade. The increase was mainly confined to urban areas, where segregation increased on average by more than a third.⁴⁰ An index of economic imbalance, however, reveals one interesting distinction: it fell between 1998 and 2006, and then increased over the ensuing decade, suggesting that the Great Recession could have had a hand in the recent rise in economic segregation. Viewing the degree of racial segregation across the state's counties highlights one unmistakable pattern: segregation tends to be higher in urban counties and those with higher shares of nonwhite students.

We decompose segregation into four additive components. In most counties, the most consequential of these was intra-district/intra-sector racial disparities across schools. However, in a few counties the primary instrument for obtaining the observed segregation was one of the other three available: the existence of the charter or private school sector or multiple school districts.

Among the state's 13 metropolitan areas, segregation increased in nine. By way of comparison to other metropolitan areas in the country, those in North Carolina registered a lower

⁴⁰ Similar patterns and trends show up if indices other than our preferred index are used, including the dissimilarity and entropy indices.

average level of segregation in 1998 (0.20) than that for smaller metropolitan areas in the U.S. in 2000 (0.265) (Clotfelter 2004, p. 73). The feature that accounts for the state’s lower levels of metropolitan segregation is the large size of most districts. In the few areas where counties are split into multiple districts, segregation tends to be higher.

Although our aim in this paper is to describe rather than explain patterns and trends in school segregation, it is fitting to recall that policy, along with demographic forces and household decisions, will continue to influence school segregation. Among the policies we discuss above is one that might profitably be illuminated by way of illustration. The proposal to publicize the extent of racial imbalance in counties comes with it a specific “disproportionality index” that would be used to measure the degree of imbalance across schools.⁴¹ To illustrate how this might work in practice, we have calculated the index for an illustrative county, Chatham, a racially diverse county that has seen a rapid increase in Hispanic enrollment. Table 8 shows the enrollments by race of all the public schools (including charter schools) in that county. Across the county’s 20 public schools, this index ranged from a low of 3, for SAGE Academy, whose racial and ethnic mix almost exactly matched the county’s, to a high of 50, for the overwhelmingly Hispanic Virginia Cross Elementary School. Applying the proposed legislation’s suggested cutoffs, we have noted the rating that each school would receive, ranging from Proportional (less than 10) to Highly Disproportional (50 or more). As we note above, there is no research to date to suggest how a policy such as this might affect the decisions of school boards, state legislators, or voters, but it seems a worthy topic of future research.

[Table 8 about here.]

Public policy retains the potential to influence school segregation, even in the new era of federal benign neglect. In its state-enforced form, racial segregation was banished in 1954, but in

⁴¹ North Carolina Justice Center (2019).

its modern-day *de facto* form, it continues to exert many of its past baleful influences. One hopeful point on which to conclude is to keep in mind the potential for integrated schools that is the unintended consequence of having so many county-wide school districts, as North Carolina and many other states in the South and West have. Although school segregation might be locked in for much of the balkanized metropolitan areas of the North and Midwest, it need not everywhere be so. Instead of balkanized districts, the chief threats to integrated schools in states like North Carolina will be charter schools, private schools, and efforts to reverse the long trend toward district consolidation.

Appendix A: Decomposition of Segregation

We decompose the Coleman index of white/nonwhite segregation into four additive parts.

The first of these uses the racial disparity between the population of students attending private schools and the population of students attending public schools to measure the contribution of that private/public racial disparity to overall segregation in a county's schools. Thus it measures the contribution of private schools, by comparing a hypothetical situation in which all schools in the county were racially balanced with one where just the public schools were racially balanced and private schools had their actual enrollments. If private schools are whiter on average than public schools, whites' average exposure to nonwhites would fall, creating imbalance. The difference in segregation between those two hypothetical situations is the portion of segregation in the county that can be attributed to private schools.

In a similar fashion, we identify portions of the gap between actual and maximum exposure to the racial gap between charter schools and traditional public schools. If, like private schools, charter schools as a whole differ from the racial mix of traditional public schools (TPS), this disparity is used to calculate the portion of overall segregation attributable to this charter/TPS racial gap. Note that our method of calculation captures the effect on overall segregation of any racial disparity between charter schools *as a whole* and traditional public schools. To the extent that there are predominantly white or nonwhite charter schools, that contribution is reflected in the fourth component, the between-school component, described below.

The third component is that which results from racial disparities among different school districts in a county, if more than one district exists, and the remaining component of overall segregation is that which arises because of racial disparities between schools within school

districts, between charter schools, and between private schools.⁴²

Formally, we divide the gap between the maximum and the actual exposure of white to nonwhite students as follows:

$$P_n - E_{wn} = (P_n - E_{wn}^*) + (E_{wn}^* - E_{wn}^{**}) + (E_{wn}^{**} - E_{wn}^{***}) + (E_{wn}^{***} - E_{wn}),$$

where each of the terms with asterisks are the interracial exposure rates calculated for a series of three hypothetical scenarios, each one adding another source of racial disparities. These hypothetical exposure rates are defined as: 1) the exposure rate that we would obtain if every public school reflected the overall racial composition of public schools and every private school reflected the overall racial composition of all private schools (E_{wn}^*); 2) the exposure rate that we would obtain if all traditional public schools and all charter schools were similarly balanced within those two sectors (E_{wn}^{**}); and 3) the exposure rate that we would obtain if every traditional public school within each district in the county were balanced with that district's racial composition (E_{wn}^{***}). Dividing both sides of the above equation by P_n yields:

$$\begin{aligned} (P_n - E_{wn}) / P_n &= S_{wn} \\ &= (P_n - E_{wn}^*) / P_n + (E_{wn}^* - E_{wn}^{**}) / P_n + (E_{wn}^{**} - E_{wn}^{***}) / P_n + (E_{wn}^{***} - E_{wn}) / P_n . \end{aligned}$$

Thus total school segregation is decomposed into four parts, those attributable to racial disparities between private and public schools, between charter and traditional public schools, between separate school districts when they exist, and between schools within districts or sectors:

$$S_{wn} = S_{wn} (\text{pub/priv}) + S_{wn} (\text{charter/TPS}) + S_{wn} (\text{bet. districts}) + S_{wn} (\text{w/in districts, sectors})$$

⁴² For previous studies that decompose school segregation, see, for example, Clotfelter (2004) or Field (2013).

References

- Allen, Rebecca et al. 2015. "More Reliable Inference for the Dissimilarity Index of Segregation," *Econometrics Journal* 18 (February), 40-66.
- Barnette, Leslie H. 2016. *A Case Study of the Consolidation of Five North Carolina School Districts: Motivation, Processes, and Impact*. Doctoral dissertation, Appalachian State University, December.
- Becker, Henry Jay. 1978. "The Measurement of Segregation: The Dissimilarity Index and Coleman's Segregation Index Compared," Report #265, Johns Hopkins Center for Social Organization of Schools (November).
- Bell, Wendell. 1953. "A Probability Model for the Measurement of Ecological Segregation," *Social Forces* 32 (1953), 357-364.
- Boger, John Charles. 2000. "Willful Colorblindness: The New Racial Piety and the Resegregation of Public Schools." *North Carolina Law Review* 78: 1719-96.
- Burdick-Will, Julia and John R. Logan. 2017. "Schools at the Rural-Urban Boundary –Blurring the Divide?" *Annals of the American Academy of Political and Social Science* 672, 1: 185-201.
- Clotfelter, Charles T. 1976, "School Desegregation, 'Tipping' and Private School Enrollment." *Journal of Human Resources*, 22, 29-50.
- Clotfelter, Charles T. 2004. Private Schools, Segregation, and the Southern States. *Peabody Journal of Education*, 79(2), 74-97.
- Clotfelter, Charles T., "Spatial Rearrangement and the Tiebout Hypothesis: The Case of School Desegregation," *Southern Economic Journal* 42 (October 1975), 263-271.
- Clotfelter, Charles T. 2004. *After Brown: The Rise and Retreat of School Desegregation*. Princeton: Princeton University Press.
- Clotfelter, Charles T., Helen F. Ladd, and Jacob L. Vigdor. 2003, May. "Segregation and Resegregation in North Carolina's Public School Classrooms." *North Carolina Law Review*, 81, 1463-1511.
- Clotfelter, Charles T., Helen F. Ladd, and Jacob L. Vigdor. 2005. "Who Teaches Whom? Race and the Distribution of Novice Teachers." *Economics of Education Review*, 24, 377-392.
- Clotfelter, Charles T., Helen F. Ladd, and Jacob L. Vigdor. 2006. "Federal Oversight, Local Control, and the Specter of 'Resegregation' in Southern Schools," *American Law and Economics Review* 8, (Summer), 1-43.
- Clotfelter, Charles T., Helen F. Ladd, Jacob L. Vigdor and Justin Wheeler. 2007. "High Poverty Schools and the Distribution of Teachers and Principals," *North Carolina Law Review* (June), 1345-1379.

- Clotfelter, Charles T., Helen F. Ladd, and Jacob L. Vigdor 2008, Fall. "School Segregation under Color-blind Jurisprudence: The Case of North Carolina." *Virginia Journal of Social Policy & the Law*, 16, 46-86.
- Clotfelter, Charles T., Helen F. Ladd, and Jacob L. Vigdor. 2013, January. "Racial and Economic Diversity in North Carolina's Schools: An Update." *Sanford School Working Paper SAN13-03*.
- Coleman, James S., Sara D. Kelly, and John A. Moore. 1975. *Trends in School Segregation, 1968-1973*. Washington, D.C.: Urban Institute, August.
<https://files.eric.ed.gov/fulltext/ED117252.pdf> 2/25/19.
- Crowley, Martha, Daniel T. Lichter, and Richard N. Turner. 2015. "Diverging Fortunes? Economic Well-Being of Latinos and African Americans in New Rural Destinations." *Social Science Research* 51:77-92.
- Cutler, D. M., Glaeser, E. L., & Vigdor, J. L. (1999). The rise and decline of the American ghetto. *Journal of Political Economy*, 107(3), 455-506.
- Davis, D., Bhatt, R., & Schwartz, K. 2013. "School Segregation in the Era of Accountability." *Social Currents*, 2, 239-259.
- Federal Register. 2017, April 10. U.S. Department of Agriculture, Child Nutrition Program: Income Eligibility Guidelines. 82(67). Retrieved 12 13, 2017, from
<https://www.gpo.gov/fdsys/pkg/FR-2017-04-10/pdf/2017-07043.pdf>
- Fiel, Jeremy. 2013. "Decomposing School Resegregation: Social Closure, Racial Imbalance, and Racial Isolation," *American Sociological Review* 78, 828-848.
- Frankenberg, E., Siegel-Hawley, G., & Wang, J. 2011. "Choice without Equity: Charter School Segregation." *Education Policy Analysis Archives*, 19(1).
- Frankenberg, Erica, Jongyeon Ee, Jennifer B. Ayscue, and Gary Orfield. 2019. *Harming our Common Future: America's Segregated Schools 65 Years after Brown* (Los Angeles: The Civil Rights Project, May 10).
- Frey, W. H., & Farley, R. 1996. "Latino, Asian, and Black Segregation in U.S. Metropolitan Areas: Are Multiethnic Metros Different?" *Demography*, 33, 35-50.
- Gans, Herbert J. 1999. "The Possibility of a New Racial Hierarchy in the Twenty-First Century United States," in M. Lamont (ed), *The Cultural Territories of Race* (University of Chicago Press), pp. 371-90.
- García, Angela S., and Leah Schmalzbauer. 2017. "Placing Assimilation Theory: Mexican Immigrants in Urban and Rural America." *The Annals of the American Academy of Political and Social Science* 2017.
- Governing the States and Localities. (n.d.). Retrieved 05 31, 2018, from Total School Districts,

Student Enrollment by State and Metro Area: <http://www.governing.com/gov-data/education-data/school-district-totals-average-enrollment-statistics-for-states-metro-areas.html>

- Grant, Gerald. 2009. *Hope and Despair in the American City: Why There are No Bad Schools in Raleigh*. Cambridge, MA: Harvard University Press.
- Griffith, David. 1995. "Hay Trabajo: Poultry Processing, Rural Industrialization, and the Latinization of Low-Wage Labor," in Donald D. Stull, Michael J. Broadway, and David Griffith (eds.), *Any Way You Cut It: Meat Processing and Small-Town America*. Lawrence: University Press of Kansas.
- James, David R. and Karl E. Taeuber. 1985. "Measures of Segregation," *Sociological Methodology* 15, 1-32.
- Johnson, Rucker C. 2015. "Long-Run Impacts of School Desegregation and School Quality on Adult Attainments," NBER Working Paper 16664, August.
- Kahlenberg, Richard D. (ed.). 2012. *The Future of School Integration: Socioeconomic Diversity as an Educational Reform Strategy* (New York: Century Foundation).
- King, Desmond S. and Rogers M. Smith. 2011. *Still a House Divided: Race and Politics in Obama's America*. Princeton: Princeton University Press.
- Ladd, Helen F., Clotfelter, Charles T., & Holbein, John B. 2017, Fall. "The Growing Segmentation of the Charter School Sector in North Carolina." *Education, Finance and Policy*, 12, 536-563.
- Ladd, Helen F., Clotfelter, Charles T., & Turaeva, Mavzuna R. 2018. "Choosing Charter Schools in North Carolina: What Do Parents Value?" *CALDER Working Paper*.
- Lee, Barrett A., John Iceland, Chad R. Farrell and Gregory Sharp. 2017. "Ethnoracial Diversity Across the Rural-Urban Continuum." *The Annals of the American Academy of Political and Social Science* 672(1):26-45.
- Lichter, Daniel T., Parisi, D., Taquino, M.C., 2016. "Emerging Patterns of Hispanic Residential Segregation: Lessons from Rural and Small-Town America." *Rural Sociology* 81, 483-518.
- Lichter, Daniel T., Domenico Parisi, and Michael C. Taquino. 2018. "White Integration or Segregation? The Racial and Ethnic Transformation of Rural and Small Town America." *City & Community* 17(3); 7
- Logan, John R. and Julia Burdick-Will. 2017. "School Segregation and Disparities in Urban, Suburban, and Rural Areas" *Annals of the American Academy of Political and Social Science* 672:185-201.

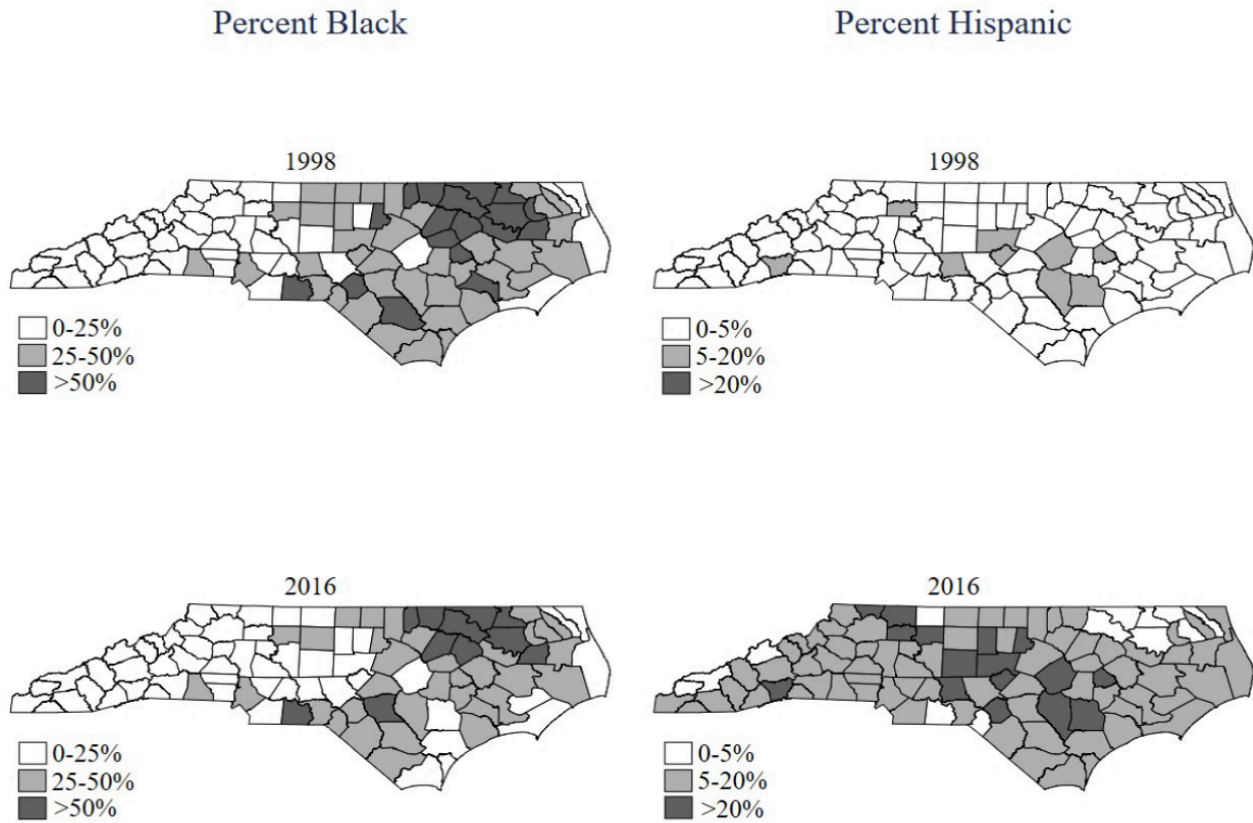
- Logan, John R., Elisabeta Minca and Sinem Adar. 2012. "The Geography of Inequality: Why Separate Means Unequal in American Public Schools." *Sociology of Education* 85 (3): 287-301.
- Logan, John R., and Julia Burdick-Will. 2016. "School Segregation, Charter Schools, and Access to Quality Education." *Journal of Urban Affairs* 38 (3): 323-43.
- Macartney, H., & Singleton, J. D. 2017, July. "School Boards and Student Segregation." *NBER Working Paper 23619*.
- Marcotte, D. E., and Dalane, K. (2019). Socioeconomic Segregation and School Choice in American Public Schools. *Educational Researcher*, 48(8), 493-503.
- Mazza, Angelo. 2017. "Dealing with the Bias of the Dissimilarity Index of Segregation." *Revista Italiana di Economia Demografia e Statistica* 71, 25-34.
- Mickelson, Roslyn Arlin, Jason Giersch, Amy Hawn Nelson and Martha Cecilia Bottia. 2018. "Do Charter Schools Undermine Efforts to Create Racially and Socioeconomically Diverse Public Schools?" in Iris C. Rotberg and Joshua L. Glazer (eds.) *Choosing Charters: Better Schools or More Segregation?* New York: Teachers College Press.
- North Carolina Justice Center. 2019. "An Act to Incorporate Measures of Segregation into State Accountability Models," unpublished draft bill, May 2019.
- Nordstrom, Kris. 2018. *Stymied by Segregation: How Integration Can Transform North Carolina Schools and the Lives of Its Students*. Raleigh: North Carolina Justice Center.
- North Carolina Legislature. 2018. *Report of the Joint Legislative Study Committee on the Division of Local School Administrative Units* (2017) (April 11).
<https://ncleg.net/documentsites/committees/bcci-6701/Final%20Report%20of%20the%20Jt%20Leg%20Study%20Committee%20on%20Division%20of%20Local%20School%20Admin%20Units.pdf>, 6/13/18
- Orfield, Gary. 2001, July. *Schools More Separate: Consequences of a Decade of Resegregation*. UCLA Civil Rights Project. Retrieved 05 24, 2018, from
<https://civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity/schools-more-separate-consequences-of-a-decade-of-resegregation/orfield-schools-more-separate-2001.pdf>
- Orfield, Gary, Jongyeon Ee, and Ryan Coughlan. 2017. *New Jersey's Segregated Schools: Trends and Paths Forward*. Los Angeles: UCLA Civil Rights Project.
<https://www.civilrightsproject.ucla.edu/research/k-12-education/integration-and-diversity/new-jerseys-segregated-schools-trends-and-paths-forward/New-Jersey-report-final-110917.pdf> 5/21/19.
- Orfield, Gary, Jongyeon, E., Frankenberg, E., & Siegel-Hawley, G. 2016, May. *Brown at 62: School Segregation by Race, Poverty and State*. Civil Rights Project.
<https://www.civilrightsproject.ucla.edu/research/k-12-education/integration-and->

- Owens, Ann, Sean F. Reardon and Christopher Jencks, C. 2016. "Income Segregation Between Schools and Schools Districts." *American Education Research Journal*, 53(4), 1159-1197.
- Parrado, Emilio A. and William Kandel. 2008. "New Hispanic Migrant Destination: A Tale of Two Industries," in Douglas S. Massey (ed.), *New Faces in New Places: The Changing Geography of American Immigration*. New York: Russell Sage Foundation.
- Portes, A., & Rumbaut, R. G. 2014. *Immigrant America: A Portrait*. Oakland: University of California Press.
- Reardon, Sean F. 2016. "School Segregation and Racial Academic Achievement Gaps," *The Russell Sage Foundation Journal of the Social Sciences* 2 (September), 34-57.
- Reardon, Sean F., John T. Yun. 2003. "Integrating Neighborhoods, Segregating Schools: the Retreat from School Desegregation in the South, 1990-2000," *N.C. Law Review*, 81, p. 1563-1596.
- Reardon, Sean F., Tej Grwal, E., Kalogrides, D., & Greenberg, E. 2012, Fall. Brown Fades: The End of Court-Ordered School Desegregation and the Resegregation of American Public Schools." *Journal of Policy Analysis and Management*, 31, 876-904.
- Reardon, Sean F. and Ann Owens. 2014. "60 Years After *Brown*: Trends and Consequences of School Segregation," *Annual Review of Sociology* 40, 199-218.
- Southern Education Foundation. 2016. *Race and Ethnicity in a New Era of Public Funding of Private Schools: Private School Enrollment in the South and the Nation*. (Atlanta: Southern Education Foundation).
- Stroub, K. J., & Richards, M. P. 2013, June. "From Resegregation to Reintegration: Trends in the Racial/Ethnic Segregation of Metropolitan Public Schools, 1993-2009." *American Education Research Journal*, 50, 497-531.
- Theil, Henri and Anthony J. . 1971. "A Note on the Measurement of Racial Integration of Schools by Means of Informational Concepts." *Journal of Mathematical Sociology* 1: 187-94.
- U.S. Department of Education, National Center for Education Statistics, *Overview of Public Elementary and Secondary Schools and Districts: School Year 1999-2000*, September 2001; <https://nces.ed.gov/pubs2001/overview/table05.asp> 1/9/19.
- Wahl, Ana-Maria Gonzalez, R. Saylor Breckenridge, and Steven E. Gunkel. 2007. "Latinos Residential Segregation and Spatial Assimilation in Micropolitan Areas: Exploring the American Dilemma on a New Frontier." *Social Science Research* 36:995-1020.
- Wong, David W.S. 2003. "Spatial Decomposition of Segregation Indices: A Framework Toward

Measuring Segregation at Multiple Levels,” *Geographical Analysis* 35 (July), 179-1294.

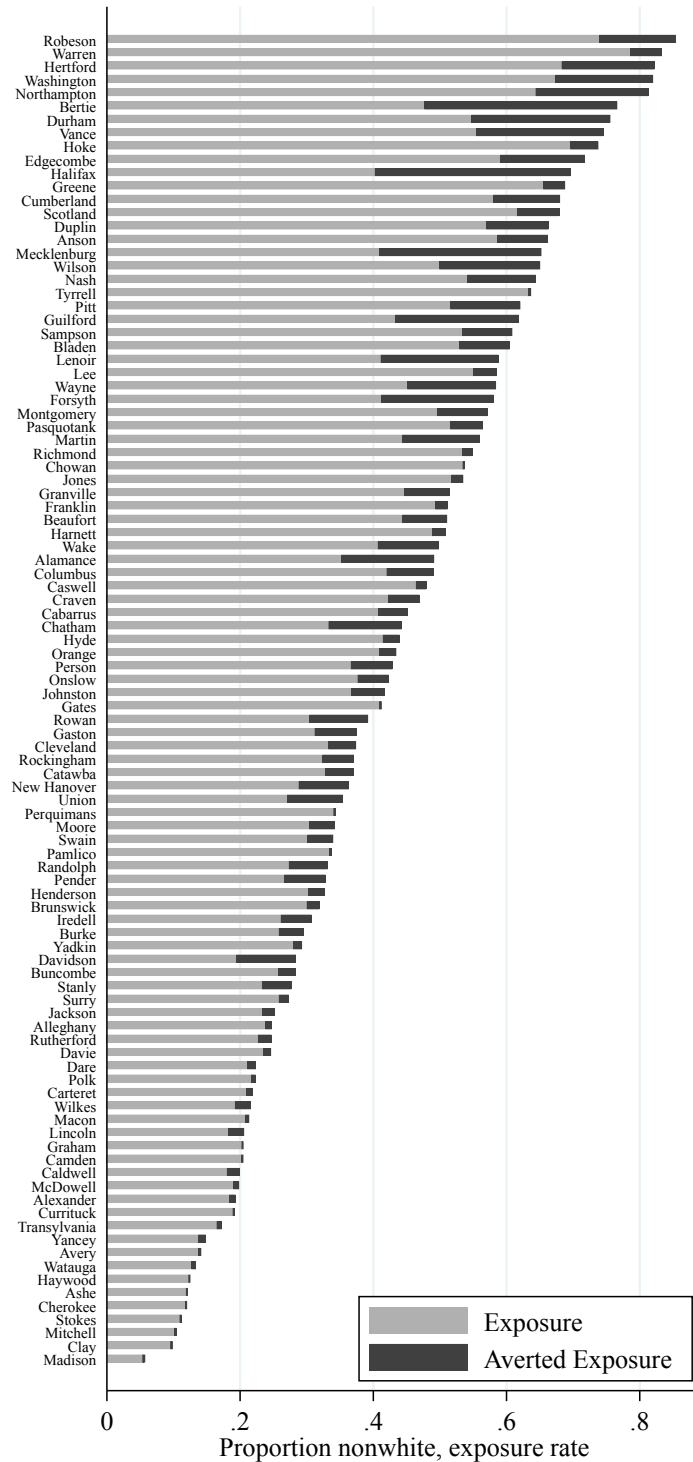
Figures and Tables

Figure 1. Counties in North Carolina by Percent Black or Hispanic, 2006 & 2016



Notes: The two maps for percent Black designate counties where the percentage of students who were Black was less than 25%, 25-50%, and more than 50%, respectively, in 1998 and 2016. The two maps for percent Hispanic designate counties where the percentage of students who were Hispanic was less than 5%, 5-20%, and more than 20%, respectively, in 1998 and 2016. Groups include lower bound.

Figure 2. Percent Nonwhite and Actual Exposure of White to Nonwhite Students, NC Counties, 2016



Notes: The length of each bar corresponds to the proportion of a county’s students who were nonwhite (Pn), and the length of the light portion is the exposure rate of white to nonwhite students (Ewn), as defined in the text. The Coleman index of segregation is equal to the portion of the entire bar taken up by the dark portion (Pn - Ewn), which is the portion of exposure that was precluded as a consequence of segregation.

Table 1. Distribution of North Carolina K-12 Students by School Type and County or County Group, 1998, 2006, and 2016

Region	Total enrollment			Traditional public school			Charter			Private		
	1998	2006	2016	1998	2006	2016	1998	2006	2016	1998	2006	2016
State of North Carolina	1,310,089	1,493,354	1,622,407	93.8	92.9	90.1	0.4	1.8	4.9	5.8	5.2	5.0
Five largest counties												
Mecklenburg (Charlotte)	110,115	141,556	174,614	87.2	87.6	83.7	0.1	2.1	7.4	12.8	10.3	8.8
Wake (Raleigh)	97,830	137,226	183,289	91.7	88.2	86.0	0.6	3.7	5.8	7.7	8.1	8.3
Guilford (Greensboro)	65,168	76,236	84,613	91.9	90.4	86.5	0.0	1.9	6.3	8.1	7.7	7.2
Cumberland (Fayetteville)	54,143	56,520	54,955	94.2	94.1	93.1	0.0	0.1	2.0	5.8	5.7	4.9
Forsyth (Winston-Salem)	49,376	57,658	60,554	87.1	88.3	89.4	1.6	3.3	4.7	11.3	8.5	5.9
Other urban counties (N=28)	483,192	540,063	582,459	93.4	93.1	90.3	0.5	1.8	4.7	6.2	5.1	5.1
Rural counties (N=67)	450,265	484,095	481,923	97.3	96.4	94.1	0.2	1.3	4.1	2.5	2.2	1.8
Included other urban counties (N=27)	475,369	531,930	573,863	93.3	93.1	90.2	0.5	1.8	4.7	6.2	5.1	5.1
Included rural counties (N=58)	424,825	458,586	457,440	97.2	96.4	94.0	0.2	1.4	4.3	2.5	2.3	1.8

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; authors' calculations.

Notes: Measures display proportion of category enrollments by sector. Included other urban/rural counties are those counties which had nonwhite student populations greater than or equal to 4% of the total student population in 1998. Urban counties are those where at least half of the total population lived in urban areas in 2000.

Table 2. Segregation in North Carolina Schools, Selected Counties and Divisions: Alternative Measures

Region	White/Nonwhite Coleman (a)			Dissimilarity index (b)			Entropy index (c)			Economic dissimilarity (d)*				
	1998	2006	2016	1998	2006	2016	1998	2006	2016	TPS 1998	TPS 2006	TPS 2014	All public 2014	All schools 2014
State of North Carolina (N=90)	0.16	0.19	0.19	0.34	0.37	0.36	0.14	0.15	0.13	0.31	0.29	0.31	0.32	0.35
Five largest counties														
Mecklenburg	0.21	0.38	0.37	0.38	0.56	0.58	0.16	0.24	0.23	0.36	0.44	0.47	0.48	0.53
Wake	0.09	0.15	0.18	0.26	0.31	0.34	0.09	0.12	0.15	0.33	0.27	0.31	0.33	0.37
Guilford	0.30	0.33	0.30	0.47	0.47	0.48	0.22	0.22	0.18	0.41	0.40	0.42	0.44	0.47
Cumberland	0.15	0.17	0.15	0.33	0.36	0.35	0.10	0.11	0.09	0.28	0.25	0.29	0.30	0.34
Forsyth	0.21	0.32	0.29	0.37	0.49	0.47	0.18	0.22	0.18	0.33	0.43	0.45	0.46	0.49
Included other urban counties (N=27)	0.15	0.17	0.16	0.34	0.35	0.33	0.14	0.13	0.12	0.31	0.27	0.29	0.30	0.33
Included rural counties (N=58)	0.14	0.14	0.13	0.33	0.32	0.29	0.13	0.12	0.10	0.27	0.23	0.23	0.25	0.27

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; authors' calculations.

*Comparable data on free lunch eligibility in 2016 not available. See text.

Note: Segregation indices for the state and county groups are weighted averages of county statistics, where weights are county enrollments. Urban counties are those where at least half of the population lived in urban areas in 2000. State measures include counties which had nonwhite student populations greater than or equal to 4% of the total student population in 1998.

a) White/nonwhite Coleman index. See text, equation (2).

b) See text, equation (1).

c) See text.

d) See text.

TPS is traditional public schools. All public include charter schools and TPS. All schools include public and private schools.

Table 3. Noteworthy Examples of Four Segregation-Serving Instruments, 2016

County and prominent instrument	Reduced exposure due to racial disparities between...				Total proportional reduction in exposure (a)
	Private and public sectors	Charter and TPS sectors	School districts	Schools within districts or sectors	
<i>Private schools prominent</i>					
Bertie	0.36	0.00	0.00	0.02	0.38
Northampton	0.19	0.00	0.00	0.02	0.21
Hertford	0.15	0.00	0.00	0.02	0.17
<i>Charter schools prominent</i>					
Vance	0.09	0.14	0.00	0.03	0.26
Martin	0.00	0.12	0.00	0.09	0.21
Durham	0.11	0.07	0.00	0.09	0.28
<i>Multiple districts prominent</i>					
Davidson	0.01	0.00	0.29	0.02	0.32
Halifax	0.04	0.01	0.37	0.01	0.42
Randolph	0.01	0.01	0.11	0.05	0.18
<i>Within-districts and sectors prominent</i>					
Mecklenburg	0.08	0.05	0.00	0.24	0.37
Union	0.00	0.00	0.00	0.23	0.24
Alamance	0.03	0.03	0.00	0.22	0.28

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; authors' calculations. See Appendix Table A3 and text.

Notes: Counties with the largest component in each category are shown. a) Equal to the Coleman index. The Coleman index gives the proportional gap between actual exposure of white to nonwhite students and the theoretical maximum exposure (the nonwhite percentage of all students in a county), $S_{wn} = (P_n - E_{wn}) / P_n$, where E_{wn} is the share of nonwhite students who are enrolled in the school of the average white student. This gap is decomposed into the four components shown. See Appendix B for a fuller description of the decomposition. TPS refers to traditional public schools.

Table 4. Coleman Index of White/Nonwhite Segregation Decomposed, by Segregation-Serving Instrument, 2015-2016

Region	Actual	Public/ Private	TPS/ Charter	Between districts	Within Districts and Sectors
State of North Carolina (N=90)	0.19	0.03	0.02	0.01	0.13
Five largest counties					
Mecklenburg	0.37	0.08	0.05	0.00	0.24
Wake	0.18	0.04	0.02	0.00	0.12
Guilford	0.30	0.06	0.03	0.00	0.21
Cumberland	0.15	0.03	0.00	0.00	0.12
Forsyth	0.29	0.04	0.03	0.00	0.22
Included other urban counties (N=27)	0.16	0.03	0.01	0.00	0.12
Included rural counties (N=58)	0.13	0.01	0.01	0.03	0.07

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; authors' calculations.

Notes: Indices for the state and county groups are weighted averages of county statistics where weights are county enrollments. State measures include counties which had nonwhite student populations greater than or equal to 4% of the total student population in 1998. The Coleman index gives the proportional gap between actual exposure of white to nonwhite students and the theoretical maximum exposure (the nonwhite percentage of all students in a county). This gap is decomposed into the four components shown. See Appendix B for a fuller description of the decomposition.

Table 5. White Students Enrolled in Schools 80% or Greater White

	1998	2006	2016
White students in 80%+ schools	391,950	345,888	224,726
As a percentage of all white students	46.3	39.8	27.1
Percentage of these students attending			
Traditional public schools	83.1	79.2	70.9
Charter schools	0.3	3.2	9.1
Private schools	16.5	17.6	20.0
Total	100	100	100

Source: NCES Common Core of Data, Private School Universe; authors' calculations.

Table 6. White/Nonwhite Segregation in 11 Metropolitan Areas, 1997/1998 and 2015/2016

Metro Area	1997/98					2015/16				
	Total	Public/ private	TPS/ charter	Between TPS districts	Within districts and sectors	Total	Public/ private	TPS/ charter	Between TPS districts	Within districts and sectors
Asheville	0.17	0.00	0.00	0.11	0.05	0.11	0.01	0.00	0.04	0.06
Charlotte-Gastonia-Rock Hill	0.25	0.04	0.00	0.08	0.12	0.33	0.04	0.02	0.08	0.19
Durham-Chapel Hill	0.23	0.04	0.01	0.10	0.08	0.28	0.04	0.06	0.11	0.08
Fayetteville	0.15	0.03	0.00	0.01	0.12	0.14	0.02	0.00	0.00	0.11
Greensboro-High Point	0.30	0.03	0.00	0.08	0.19	0.31	0.03	0.02	0.09	0.16
Greenville	0.11	0.06	0.00	0.00	0.05	0.16	0.05	0.00	0.00	0.10
Hickory-Lenoir-Morganton	0.12	0.01	0.01	0.05	0.05	0.13	0.01	0.00	0.05	0.08
Raleigh-Cary	0.10	0.02	0.00	0.00	0.06	0.17	0.03	0.02	0.01	0.12
Rocky Mount	0.20	0.06	0.00	0.00	0.13	0.17	0.05	0.01	0.00	0.11
Wilmington	0.09	0.02	0.00	0.00	0.07	0.17	0.01	0.01	0.00	0.14
Winston-Salem	0.25	0.03	0.01	0.09	0.12	0.32	0.02	0.02	0.11	0.17
Weighted Average	0.19	0.03	0.00	0.06	0.11	0.24	0.03	0.02	0.06	0.14
As % of total	100	15.9	1.3	28.8	54.1	100	12.5	8.1	22.8	56.6

Source: National Center for Education Statistics, Common Core Data; authors' calculations.

Note: Metro areas, their component NC counties, and districts other than county districts are listed below:

Metro Area Name	Component NC counties (and districts other than county)
Asheville	Buncombe (Asheville City Schools); Haywood; Henderson; Madison
Charlotte-Concord-Gastonia	Anson; Cabarrus (Kannapolis City Schools); Gaston; Mecklenburg*; Union
Durham-Chapel Hill	Chatham; Durham; Orange (Chapel Hill-Carrboro City Schools); Person
Fayetteville	Cumberland; Hoke
Greensboro-High Point	Guilford; Randolph; Rockingham
Greenville	Greene; Pitt
Hickory-Lenoir-Morganton	Alexander; Burke; Caldwell; Catawba (Newton Conover City Schools, Newton Conover City Schools)
Raleigh-Cary	Franklin; Johnston; Wake
Rocky Mount	Edgecombe (Nash-Rocky Mount Schools); Nash
Wilmington	Brunswick; New Hanover; Pender
Winston-Salem	Davie; Forsyth*** ; Stokes; Yadkin

* Name of the county-wide district is Charlotte-Mecklenburg Schools

** Name of the county-wide district is Elizabeth City-Pasquotank Public Schools

*** Name of the county-wide district is Winston Salem/Forsyth County Schools

Table 7. Dissimilarity Indices, Three Racial/Ethnic Dichotomies, 2005/2006 and 2015/2016

Region	White/ Nonwhite		Black/ Nonblack		Hispanic/ Nonhispanic	
	2006	2016	2006	2016	2006	2016
State of NC (N=90)	0.37	0.36	0.35	0.31	0.33	0.30
Five largest counties						
Mecklenburg	0.56	0.58	0.47	0.42	0.40	0.40
Wake	0.31	0.34	0.32	0.32	0.30	0.29
Guilford	0.47	0.48	0.43	0.36	0.33	0.30
Cumberland	0.36	0.35	0.35	0.31	0.17	0.12
Forsyth	0.49	0.47	0.42	0.31	0.40	0.38
Included other urban (N=27)						
	0.35	0.33	0.34	0.30	0.34	0.30
Included rural (N=58)						
	0.32	0.29	0.31	0.28	0.32	0.27

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; author's calculations.

Note: Segregation indices for the state and county groups are weighted averages of county statistics where weights are county enrollments. State measures include counties which had nonwhite student populations greater than or equal to 4% of the total student population in 1998. County designation for region and rural/urban are shown in Appendix Table A1. For consistency with NC enrollment data prior to 2010, for 2015/2016 Black and Multiracial students are grouped together in Black category, and Asian and Pacific Islander students are grouped together in the Asian category.

Table 8. Applying a "Disproportionality Score" to Public Schools in Chatham County, NC, 2016

School name	Type	Enrollment by race/ethnicity, 2015/2016						Disproportionality Score and Rating	
		American Indian	Asian	Hispanic	Black	White	Total	Score	Rating
SAGE Academy	TPS	0	0	13	9	28	50	3	Highly Proportional
North Chatham Elementary	TPS	3	6	195	52	314	570	7	Highly Proportional
Margaret B. Pollard Middle	TPS	3	11	124	79	403	620	11	Proportional
Moncure School	TPS	2	1	53	58	195	309	11	Proportional
Northwood High	TPS	4	17	196	239	870	1,326	13	Proportional
Horton Middle	TPS	0	10	55	93	225	383	13	Proportional
Pittsboro Elementary	TPS	0	9	71	130	292	502	14	Proportional
Bonlee School	TPS	0	0	55	34	238	327	17	Proportional
Perry W Harrison Elementary	TPS	5	14	79	91	494	683	18	Proportional
Chatham Central High	TPS	0	2	38	57	289	386	20	Proportional
Silk Hope School	TPS	0	4	56	38	299	397	20	Proportional
J S Waters School	TPS	1	1	15	56	197	270	23	Proportional
Chatham Charter	Charter	0	0	23	90	419	532	25	Somewhat Disproportional
Willow Oak Montessori	Charter	0	3	7	18	121	149	27	Somewhat Disproportional
Jordan Matthews High	TPS	0	8	398	135	218	759	27	Somewhat Disproportional
Woods Charter	Charter	4	18	23	43	415	503	30	Somewhat Disproportional
Bennett School	TPS	0	1	19	3	203	226	35	Somewhat Disproportional
Siler City Elementary	TPS	0	5	466	130	133	734	38	Somewhat Disproportional
Chatham Middle	TPS	1	4	385	95	70	555	43	Somewhat Disproportional
Virginia Cross Elementary	TPS	3	3	439	110	38	593	50	Highly Disproportional
Group's share county-wide		0.3%	1.2%	27.4%	15.8%	55.3%	100.0%		

Source: National Center for Education Statistics; authors' calculations.

Note: Disproportionality score is the dissimilarity index between each school's racial composition and the county-wide composition, based on Orfield, Ee and Coughlan (2017, p. 42). Designations are taken from proposed legislation, "An Act to Incorporate Measures of Segregation into State Accountability Models," 2019. They correspond to disproportionality scores as follows: Less than 10: Highly Proportional; 10 less than 25: Proportional; 25 less than 50: Somewhat Disproportional; 50 or more: Highly Disproportional.

Appendix A1. Enrollment and Racial Composition by County, 1997/98, 2005/06 and 2015/16

County	Urban/ rural	Enrollment			Percentage white			Percentage black			Percentage Hispanic		
		1997/98	2005/06	2015/16	1997/98	2005/06	2015/16	1997/98	2005/06	2015/16	1997/98	2005/06	2015/16
North Carolina		1,310,089	1,493,354	1,622,407	64.7	58.1	51.1	29.6	30.3	28.7	2.6	8.1	15.7
Alamance	Urban	20,691	24,340	26,197	68.8	59.8	50.9	25.6	24.7	24.5	4.3	13.8	22.7
Alexander	Rural	5,277	5,753	5,084	89.3	85.1	80.7	6.6	6.5	8.0	1.4	5.4	9.3
Alleghany	Rural	1,483	1,611	1,528	96.3	87.9	75.3	1.5	2.4	2.6	2.1	9.6	21.5
Anson	Rural	4,538	4,261	3,434	34.9	33.0	33.8	63.5	62.8	60.2	0.4	1.6	4.0
Ashe	Rural	3,381	3,349	3,175	98.3	93.6	87.9	0.7	1.9	1.6	0.8	3.9	9.9
Avery	Rural	2,611	2,510	2,498	98.2	93.6	85.8	1.2	1.3	2.2	0.5	4.4	11.1
Beaufort	Rural	8,139	7,891	7,488	56.6	55.6	48.9	41.5	37.1	35.5	1.5	7.0	15.1
Bertie	Rural	4,372	3,835	3,051	27.2	24.1	23.4	72.2	74.3	73.5	0.3	0.9	2.2
Bladen	Rural	5,877	5,772	5,141	46.9	42.7	39.5	50.9	49.0	41.2	1.3	6.9	17.2
Brunswick	Rural	9,961	12,390	13,982	72.5	71.6	68.1	25.1	22.0	18.6	1.5	5.3	11.7
Buncombe	Urban	31,855	32,663	34,197	86.2	79.6	71.7	11.0	13.0	13.2	1.6	5.7	13.0
Burke	Urban	14,122	14,998	13,175	81.8	77.1	70.5	7.6	9.2	9.6	2.0	5.2	13.4
Cabarrus	Urban	22,412	30,576	40,792	80.1	68.9	54.8	16.0	19.5	24.8	2.6	9.7	16.1
Caldwell	Urban	12,564	13,332	12,320	90.3	85.1	80.1	8.1	9.2	9.4	0.9	4.5	9.7
Camden	Rural	1,225	1,798	1,860	77.5	82.3	79.6	21.9	16.1	15.8	0.0	0.8	2.8
Carteret	Urban	9,046	9,136	9,003	86.1	84.7	78.1	12.0	11.0	11.9	1.0	2.9	8.3
Caswell	Rural	3,640	3,335	2,767	53.4	53.2	52.1	45.4	42.4	40.4	1.1	3.9	7.0
Catawba	Urban	23,221	25,861	25,343	79.6	70.2	62.9	12.4	13.9	13.8	2.7	9.0	17.3
Chatham	Rural	6,945	8,116	9,993	66.1	59.7	55.8	26.4	20.5	15.6	6.6	19.1	27.1
Cherokee	Rural	3,688	3,953	3,716	94.1	92.7	88.0	2.6	3.4	4.6	1.0	1.6	5.1
Chowan	Rural	2,631	2,554	2,142	47.0	50.2	46.4	52.2	47.3	46.6	0.6	2.2	6.3
Clay	Rural	1,287	1,323	1,419	98.2	97.9	90.3	0.9	1.1	2.5	0.2	0.4	6.2
Cleveland	Rural	16,933	17,404	16,095	68.2	66.5	62.6	30.1	30.0	31.1	0.8	2.5	5.5
Columbus	Rural	10,911	10,219	9,576	52.9	51.3	51.0	42.0	40.0	35.3	1.1	4.1	9.3
Craven	Urban	15,723	15,966	15,165	62.0	60.2	53.1	34.7	33.8	32.8	2.2	4.5	9.5
Cumberland	Urban	54,143	56,520	54,955	47.1	40.5	32.0	44.9	49.4	51.7	4.7	6.3	12.2
Currituck	Rural	3,017	4,070	4,071	86.4	86.6	80.8	12.3	10.5	13.3	0.9	2.2	5.1
Dare	Urban	4,528	5,065	5,167	93.3	87.9	77.6	5.0	5.3	6.5	1.3	5.8	14.7
Davidson	Rural	24,191	26,229	26,229	83.8	77.9	71.6	12.8	13.2	13.0	1.8	7.2	13.2
Davie	Rural	5,296	6,542	6,396	87.4	81.9	75.3	10.3	9.5	10.7	1.6	7.9	12.8
Duplin	Rural	8,583	9,098	10,190	51.8	42.2	33.7	37.5	32.4	25.0	10.5	25.0	40.0
Durham	Urban	33,309	36,083	44,353	40.5	28.1	24.4	54.1	56.6	47.6	2.9	12.7	24.8
Edgecombe	Urban	10,056	9,834	8,613	39.0	29.7	28.2	58.3	65.1	63.0	2.4	4.8	8.4
Forsyth	Urban	49,376	57,658	60,554	60.8	51.0	41.9	34.5	34.6	31.8	3.5	12.6	23.4
Franklin	Rural	7,187	8,401	8,857	55.2	53.5	48.9	41.9	37.0	33.5	2.3	8.7	16.5
Gaston	Urban	33,672	35,416	36,750	79.3	71.9	62.5	18.2	20.9	24.6	1.0	5.6	11.1
Gates	Rural	2,021	2,050	1,655	53.3	57.6	58.9	46.2	40.6	38.7	0.3	1.4	1.8
Graham	Rural	1,228	1,266	1,238	87.1	87.4	79.6	0.2	1.3	0.9	0.1	0.6	3.3
Granville	Rural	7,940	8,846	8,851	54.6	53.0	48.6	42.7	39.5	35.4	2.1	6.6	14.9
Greene	Rural	3,198	3,392	3,247	42.9	36.1	31.2	50.6	47.6	38.3	6.3	16.2	30.2
Guilford	Urban	65,168	76,236	84,613	57.2	47.2	38.2	37.4	41.7	42.2	1.7	6.4	13.2
Halifax	Rural	11,754	10,069	7,087	31.7	32.8	30.4	63.6	62.6	61.9	0.6	1.2	4.1
Harnett	Rural	15,479	18,567	21,218	64.0	56.8	49.1	30.6	31.7	29.9	3.9	9.8	18.9
Haywood	Urban	7,823	8,133	8,596	96.2	93.5	87.5	2.0	2.4	3.0	1.2	3.0	8.0
Henderson	Urban	12,089	13,583	14,233	88.1	78.4	67.3	5.7	7.6	8.1	5.2	12.5	22.8
Hertford	Rural	4,821	4,160	3,251	27.0	23.6	17.8	71.7	74.1	77.2	0.2	1.2	3.4
Hoke	Rural	5,956	7,217	8,161	32.5	29.3	26.2	50.1	45.5	42.1	2.5	10.2	21.3
Hyde	Rural	824	689	658	53.9	50.5	56.1	44.9	39.6	25.1	1.2	9.9	18.8
Iredell	Urban	19,808	26,832	31,652	76.2	74.3	69.3	20.1	16.8	16.7	1.7	6.3	10.9
Jackson	Rural	3,919	3,968	4,058	88.7	83.1	74.9	1.4	2.4	4.0	1.1	3.6	12.1
Johnston	Rural	18,585	27,831	35,993	71.3	64.5	58.2	22.5	21.8	19.0	5.5	12.9	21.6
Jones	Rural	1,618	1,436	1,170	44.1	41.2	46.5	53.8	54.5	43.1	1.7	3.9	10.0
Lee	Urban	9,250	10,118	10,868	61.6	51.0	41.5	27.2	26.4	24.8	9.8	21.3	32.1
Lenoir	Urban	11,640	11,409	10,315	49.4	45.1	41.2	47.6	48.2	46.2	2.4	5.7	11.5
Lincoln	Rural	10,155	12,804	13,590	85.6	81.4	79.4	10.0	9.4	9.2	3.8	8.5	10.4
Macon	Rural	4,082	4,385	4,502	97.4	90.9	78.6	1.1	2.2	3.0	0.7	5.6	17.0
Madison	Rural	2,559	2,621	2,453	98.7	96.6	94.5	0.3	1.0	1.4	0.5	1.9	3.6
Martin	Rural	5,069	4,393	3,938	41.4	42.6	44.0	57.0	54.2	48.3	1.1	2.7	7.0
McDowell	Rural	6,576	6,622	6,365	92.4	86.7	80.1	4.5	4.7	6.1	0.9	6.6	12.3
Mecklenburg	Urban	110,115	141,556	174,614	55.5	42.6	34.8	37.5	42.2	39.7	2.7	10.8	19.3
Mitchell	Rural	2,414	2,266	1,873	97.9	93.9	89.6	0.3	0.7	1.2	1.7	5.0	8.1
Montgomery	Rural	4,476	4,663	4,227	57.2	48.8	42.8	30.2	26.7	22.1	9.6	21.8	33.0
Moore	Rural	11,513	13,268	14,363	70.3	68.9	65.8	25.0	22.6	19.6	3.2	6.7	12.0

Nash	Urban	17,950	18,150	17,254	45.8	42.8	35.6	50.2	49.0	50.5	2.8	6.4	12.0
New Hanover	Urban	23,903	26,805	29,380	70.4	67.1	63.7	27.2	27.2	23.1	1.0	4.0	11.2
Northampton	Rural	4,142	3,904	3,401	22.7	22.6	18.7	76.7	76.2	76.7	0.4	1.0	3.5
Onslow	Urban	22,194	23,518	26,857	66.6	62.2	57.7	26.5	29.7	26.9	3.9	5.7	13.2
Orange	Urban	15,620	19,138	20,841	73.5	65.3	56.5	20.1	19.5	17.4	2.3	7.6	16.6
Pamlico	Rural	2,119	2,008	1,830	65.3	68.7	66.2	32.5	27.5	24.3	1.3	2.7	8.5
Pasquotank	Urban	6,661	6,619	6,267	51.4	50.2	43.5	46.5	47.2	48.4	0.9	1.8	6.8
Pender	Rural	6,119	7,408	9,191	62.8	66.8	67.2	34.4	25.5	18.6	2.6	7.3	13.2
Perquimans	Rural	2,033	1,817	1,744	56.5	61.8	65.8	42.6	35.6	30.4	0.6	1.6	3.3
Person	Rural	5,846	6,375	5,831	61.6	58.3	57.2	36.0	36.9	34.2	1.7	3.8	7.8
Pitt	Urban	21,351	23,538	25,446	49.8	43.7	37.9	47.5	49.7	49.5	1.7	5.2	10.8
Polk	Rural	2,293	2,674	2,289	87.1	81.9	77.7	9.1	10.5	9.7	3.2	7.1	12.2
Randolph	Rural	21,030	24,033	23,704	86.8	77.2	66.9	7.7	8.7	9.4	4.3	12.6	21.8
Richmond	Urban	8,518	8,661	7,762	55.4	49.6	45.1	41.1	40.9	39.8	1.4	4.9	10.7
Robeson	Rural	24,658	24,984	24,912	24.0	19.7	14.6	30.4	30.1	28.2	1.5	6.6	14.7
Rockingham	Rural	15,250	15,187	13,397	71.8	67.3	62.9	25.5	26.7	23.5	2.1	5.3	12.6
Rowan	Urban	21,107	22,283	21,942	74.4	68.3	60.8	21.8	22.8	21.5	2.2	7.3	16.0
Rutherford	Rural	10,570	10,815	10,490	82.0	78.9	75.3	16.6	17.0	17.0	1.1	3.6	6.6
Sampson	Rural	10,461	11,307	12,388	52.8	45.6	39.1	37.5	33.8	26.9	7.4	18.4	32.2
Scotland	Rural	7,354	7,512	6,257	43.4	37.2	32.1	46.4	47.8	48.1	0.3	1.2	2.8
Stanly	Rural	9,860	9,941	9,356	78.1	75.5	72.3	16.6	15.9	16.1	1.3	4.2	8.0
Stokes	Rural	7,188	7,670	6,456	91.7	91.0	88.8	6.2	6.6	5.9	1.8	1.9	4.5
Surry	Rural	11,280	12,170	11,906	88.8	80.3	72.7	5.9	6.3	5.9	4.7	12.3	20.8
Swain	Rural	1,678	2,080	2,304	77.5	73.2	66.0	0.5	1.5	5.1	1.4	2.5	4.6
Transylvania	Rural	4,071	4,065	3,872	92.2	87.3	82.8	6.7	9.4	9.6	0.6	2.2	6.3
Tyrrell	Rural	795	644	595	49.7	46.1	36.3	48.9	41.8	42.2	0.8	11.6	18.0
Union	Urban	20,638	33,462	45,041	76.9	72.8	64.6	19.2	16.5	15.5	3.0	9.4	16.4
Vance	Rural	8,524	8,815	8,181	37.4	27.8	25.5	60.2	64.5	60.0	1.9	7.2	13.3
Wake	Urban	97,830	137,226	183,289	68.3	58.0	50.2	25.6	28.7	25.7	2.5	8.5	16.1
Warren	Rural	3,598	3,074	2,538	28.0	17.6	16.7	66.3	70.8	64.9	1.0	3.0	6.9
Washington	Rural	2,749	2,306	1,623	30.6	21.9	18.0	68.2	74.6	73.6	1.0	3.2	7.8
Watauga	Rural	5,120	4,743	4,759	97.2	93.7	86.6	1.5	2.9	3.9	0.7	2.3	7.9
Wayne	Urban	20,894	20,915	21,001	53.8	48.9	41.6	41.8	41.3	37.3	3.2	8.6	19.3
Wilkes	Rural	10,077	10,703	10,396	91.4	86.1	78.4	5.7	6.5	7.4	2.4	6.7	13.4
Wilson	Urban	12,547	13,629	13,929	42.3	38.1	34.9	53.1	51.2	45.4	4.0	9.6	18.2
Yadkin	Rural	5,587	6,232	5,637	88.6	80.3	70.7	4.6	5.2	5.1	6.5	14.0	23.3
Yancey	Rural	2,503	2,701	2,276	96.8	91.5	85.1	1.2	1.7	2.0	1.7	6.0	12.4

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; authors' calculations.

Note: For consistency with NC enrollment data prior to 2010, for 2015/16 black and multiracial students are grouped together in black category, and Asian and Pacific Islander students are grouped together in Asian category. Urban counties are those where at least half of the population lived in urban areas in 2000. State measures include counties which had nonwhite student populations greater than or equal to 4% of the total student population in 1998.

Appendix A2. Segregation by County, Four Measures, 1997/98, 2005/06 and 2015/16

County	Coleman index			Dissimilarity index			Entropy index			Economic dissimilarity		
	1998	2006	2016	1998	2006	2016	1998	2006	2016	1998	2006	2014
Alamance	0.16	0.27	0.28	0.36	0.46	0.48	0.12	0.17	0.16	0.31	0.36	0.38
Alexander	0.07	0.06	0.05	0.25	0.20	0.22	0.10	0.07	0.05	0.28	0.19	0.18
Alleghany	0.00	0.01	0.04	0.11	0.15	0.22	0.03	0.02	0.04	0.16	0.12	0.20
Anson	0.09	0.12	0.11	0.20	0.27	0.30	0.08	0.10	0.08	0.22	0.22	0.20
Ashe	0.00	0.01	0.01	0.25	0.22	0.16	0.05	0.03	0.02	0.17	0.12	0.12
Avery	0.04	0.05	0.03	0.40	0.30	0.21	0.15	0.12	0.05	0.13	0.19	0.17
Beaufort	0.13	0.14	0.13	0.28	0.31	0.27	0.11	0.11	0.08	0.23	0.23	0.20
Bertie	0.36	0.48	0.38	0.47	0.56	0.46	0.29	0.36	0.27	0.18	0.20	0.22
Bladen	0.14	0.13	0.12	0.33	0.32	0.29	0.11	0.10	0.09	0.26	0.14	0.19
Brunswick	0.03	0.06	0.06	0.16	0.24	0.21	0.03	0.06	0.05	0.24	0.17	0.17
Buncombe	0.19	0.15	0.09	0.46	0.36	0.28	0.20	0.14	0.09	0.30	0.23	0.21
Burke	0.07	0.07	0.13	0.26	0.26	0.27	0.10	0.10	0.12	0.25	0.14	0.18
Cabarrus	0.07	0.09	0.10	0.29	0.28	0.25	0.07	0.07	0.08	0.27	0.30	0.35
Caldwell	0.18	0.14	0.10	0.51	0.41	0.31	0.24	0.15	0.09	0.26	0.23	0.21
Camden	0.01	0.00	0.00	0.07	0.06	0.06	0.01	0.00	0.01	0.11	0.07	0.10
Carteret	0.05	0.05	0.04	0.26	0.26	0.21	0.08	0.07	0.05	0.22	0.19	0.23
Caswell	0.05	0.02	0.03	0.15	0.09	0.12	0.04	0.02	0.03	0.19	0.09	0.14
Catawba	0.11	0.12	0.12	0.33	0.31	0.29	0.10	0.10	0.08	0.31	0.25	0.21
Chatham	0.11	0.23	0.25	0.28	0.39	0.41	0.10	0.19	0.17	0.27	0.37	0.38
Cherokee	0.02	0.02	0.01	0.27	0.24	0.14	0.08	0.05	0.04	0.23	0.13	0.14
Chowan	0.08	0.01	0.00	0.21	0.04	0.04	0.06	0.01	0.00	0.22	0.13	0.09
Clay	0.00	0.00	0.00	0.14	0.15	0.08	0.02	0.03	0.01	0.21	0.08	0.10
Cleveland	0.10	0.11	0.11	0.27	0.27	0.27	0.08	0.08	0.08	0.26	0.19	0.19
Columbus	0.14	0.15	0.14	0.29	0.31	0.32	0.15	0.15	0.12	0.24	0.17	0.23
Craven	0.06	0.09	0.10	0.18	0.21	0.22	0.06	0.08	0.07	0.23	0.24	0.26
Cumberland	0.15	0.17	0.15	0.33	0.36	0.35	0.10	0.11	0.09	0.28	0.25	0.29
Currituck	0.02	0.00	0.01	0.15	0.06	0.12	0.03	0.01	0.02	0.14	0.22	0.24
Dare	0.04	0.07	0.06	0.32	0.33	0.25	0.09	0.09	0.05	0.20	0.28	0.20
Davidson	0.39	0.42	0.32	0.71	0.65	0.50	0.34	0.28	0.19	0.45	0.39	0.33
Davie	0.04	0.06	0.04	0.24	0.26	0.21	0.07	0.06	0.04	0.33	0.28	0.27
Duplin	0.14	0.17	0.14	0.33	0.36	0.33	0.12	0.13	0.10	0.24	0.26	0.21
Durham	0.22	0.25	0.28	0.38	0.46	0.48	0.17	0.18	0.17	0.41	0.31	0.30
Edgecombe	0.16	0.18	0.18	0.31	0.40	0.43	0.14	0.16	0.15	0.21	0.20	0.24
Forsyth	0.21	0.32	0.29	0.37	0.49	0.47	0.18	0.22	0.18	0.33	0.43	0.45
Franklin	0.07	0.06	0.04	0.24	0.20	0.13	0.05	0.04	0.03	0.28	0.19	0.20
Gaston	0.14	0.18	0.17	0.36	0.37	0.35	0.13	0.14	0.11	0.43	0.28	0.32
Gates	0.01	0.00	0.00	0.07	0.02	0.02	0.01	0.01	0.00	0.16	0.12	0.09
Graham	0.01	0.00	0.01	0.11	0.03	0.09	0.01	0.00	0.01	0.21	0.12	0.05
Granville	0.13	0.10	0.13	0.31	0.27	0.32	0.09	0.06	0.09	0.25	0.21	0.25
Greene	0.10	0.07	0.05	0.15	0.14	0.09	0.08	0.05	0.03	0.21	0.29	0.11
Guilford	0.30	0.33	0.30	0.47	0.47	0.48	0.22	0.22	0.18	0.41	0.40	0.42
Halifax	0.60	0.62	0.42	0.77	0.80	0.69	0.48	0.49	0.33	0.43	0.40	0.38
Harnett	0.05	0.04	0.04	0.16	0.14	0.14	0.05	0.05	0.04	0.20	0.18	0.19
Haywood	0.02	0.01	0.01	0.21	0.15	0.12	0.08	0.04	0.02	0.18	0.16	0.16
Henderson	0.10	0.08	0.08	0.32	0.25	0.23	0.13	0.08	0.07	0.30	0.27	0.28
Hertford	0.25	0.30	0.17	0.32	0.38	0.26	0.19	0.21	0.10	0.18	0.16	0.15
Hoke	0.11	0.07	0.06	0.25	0.26	0.21	0.09	0.10	0.06	0.24	0.18	0.20
Hyde	0.11	0.10	0.06	0.22	0.25	0.18	0.15	0.12	0.14	0.30	0.28	0.53
Iredell	0.13	0.16	0.15	0.34	0.35	0.32	0.11	0.12	0.11	0.27	0.34	0.36
Jackson	0.19	0.15	0.07	0.42	0.32	0.23	0.21	0.16	0.09	0.21	0.15	0.11

Johnston	0.09	0.11	0.12	0.28	0.29	0.26	0.07	0.07	0.08	0.30	0.34	0.34
Jones	0.04	0.07	0.03	0.14	0.19	0.13	0.04	0.06	0.03	0.22	0.09	0.10
Lee	0.09	0.08	0.06	0.22	0.20	0.17	0.07	0.05	0.05	0.24	0.22	0.21
Lenoir	0.35	0.35	0.30	0.51	0.52	0.46	0.29	0.30	0.25	0.37	0.24	0.28
Lincoln	0.08	0.14	0.11	0.35	0.39	0.32	0.09	0.12	0.08	0.24	0.29	0.31
Macon	0.01	0.02	0.03	0.17	0.16	0.17	0.08	0.03	0.03	0.23	0.17	0.17
Madison	0.01	0.01	0.00	0.36	0.16	0.05	0.12	0.04	0.03	0.23	0.12	0.11
Martin	0.16	0.22	0.21	0.32	0.40	0.37	0.12	0.15	0.14	0.25	0.23	0.27
McDowell	0.04	0.04	0.04	0.23	0.20	0.17	0.08	0.07	0.04	0.29	0.18	0.14
Mecklenburg	0.21	0.38	0.37	0.38	0.56	0.58	0.16	0.24	0.23	0.36	0.44	0.47
Mitchell	0.01	0.03	0.03	0.28	0.32	0.26	0.09	0.07	0.05	0.25	0.09	0.14
Montgomery	0.09	0.10	0.13	0.22	0.26	0.33	0.11	0.15	0.14	0.19	0.29	0.27
Moore	0.09	0.11	0.11	0.28	0.29	0.27	0.11	0.12	0.10	0.31	0.28	0.29
Nash	0.22	0.13	0.16	0.37	0.27	0.32	0.20	0.14	0.15	0.33	0.20	0.20
New Hanover	0.11	0.16	0.21	0.28	0.36	0.37	0.09	0.12	0.15	0.36	0.30	0.35
Northampton	0.29	0.35	0.21	0.47	0.49	0.29	0.26	0.30	0.14	0.22	0.19	0.14
Onslow	0.12	0.11	0.11	0.31	0.30	0.28	0.08	0.07	0.07	0.25	0.18	0.17
Orange	0.03	0.05	0.06	0.14	0.19	0.18	0.06	0.07	0.09	0.26	0.22	0.21
Pamlico	0.02	0.03	0.01	0.10	0.13	0.10	0.02	0.05	0.02	0.19	0.16	0.11
Pasquotank	0.09	0.10	0.09	0.22	0.21	0.22	0.07	0.07	0.06	0.44	0.17	0.20
Pender	0.10	0.13	0.19	0.29	0.33	0.43	0.07	0.10	0.14	0.20	0.28	0.36
Perquimans	0.01	0.00	0.00	0.05	0.06	0.04	0.01	0.01	0.01	0.13	0.07	0.08
Person	0.09	0.12	0.14	0.22	0.24	0.32	0.07	0.09	0.09	0.28	0.22	0.21
Pitt	0.11	0.15	0.17	0.24	0.29	0.33	0.10	0.12	0.13	0.23	0.29	0.30
Polk	0.02	0.04	0.03	0.14	0.21	0.16	0.04	0.04	0.03	0.26	0.15	0.17
Randolph	0.10	0.16	0.18	0.40	0.39	0.37	0.13	0.13	0.12	0.29	0.23	0.21
Richmond	0.04	0.05	0.03	0.13	0.14	0.11	0.04	0.05	0.03	0.23	0.09	0.20
Robeson	0.26	0.19	0.13	0.53	0.50	0.45	0.24	0.22	0.19	0.26	0.14	0.22
Rockingham	0.10	0.13	0.13	0.29	0.30	0.29	0.09	0.10	0.09	0.27	0.21	0.24
Rowan	0.23	0.24	0.22	0.49	0.46	0.41	0.20	0.18	0.15	0.33	0.24	0.24
Rutherford	0.14	0.09	0.08	0.36	0.27	0.23	0.14	0.09	0.07	0.27	0.17	0.16
Sampson	0.09	0.12	0.12	0.25	0.26	0.28	0.09	0.09	0.08	0.23	0.16	0.29
Scotland	0.07	0.11	0.09	0.19	0.23	0.23	0.06	0.08	0.06	0.28	0.21	0.17
Stanly	0.16	0.15	0.16	0.38	0.37	0.35	0.16	0.15	0.14	0.28	0.27	0.24
Stokes	0.05	0.04	0.02	0.31	0.27	0.17	0.12	0.08	0.04	0.29	0.16	0.14
Surry	0.04	0.05	0.05	0.26	0.23	0.22	0.10	0.07	0.07	0.24	0.19	0.20
Swain	0.08	0.08	0.11	0.28	0.23	0.23	0.08	0.06	0.10	0.18	0.10	0.06
Transylvania	0.04	0.04	0.04	0.31	0.27	0.25	0.11	0.08	0.07	0.28	0.23	0.14
Tyrrell	0.00	0.01	0.01	0.01	0.07	0.07	0.00	0.01	0.01	0.28	0.17	0.18
Union	0.27	0.28	0.24	0.51	0.44	0.39	0.21	0.19	0.16	0.41	0.46	0.49
Vance	0.19	0.15	0.26	0.30	0.27	0.39	0.16	0.12	0.16	0.31	0.16	0.22
Wake	0.09	0.15	0.18	0.26	0.31	0.34	0.09	0.12	0.15	0.33	0.27	0.31
Warren	0.29	0.02	0.06	0.37	0.12	0.27	0.21	0.15	0.15	0.23	0.22	0.26
Washington	0.04	0.04	0.18	0.16	0.16	0.46	0.03	0.05	0.14	0.21	0.13	0.27
Watauga	0.02	0.04	0.05	0.30	0.29	0.27	0.09	0.07	0.06	0.25	0.27	0.15
Wayne	0.32	0.26	0.23	0.46	0.40	0.42	0.25	0.22	0.19	0.38	0.34	0.30
Wilkes	0.12	0.13	0.11	0.53	0.41	0.33	0.19	0.13	0.09	0.24	0.17	0.16
Wilson	0.13	0.21	0.23	0.30	0.38	0.38	0.10	0.17	0.15	0.25	0.30	0.30
Yadkin	0.03	0.05	0.05	0.23	0.22	0.20	0.08	0.07	0.04	0.30	0.18	0.20
Yancey	0.01	0.05	0.08	0.22	0.28	0.32	0.07	0.07	0.09	0.21	0.16	0.14

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; authors' calculations.

Notes: Urban counties are those where at least half of the population lived in urban areas in 2000. State measures include counties which had nonwhite student populations greater than or equal to 4% of the total student population in 1998.

Economic dissimilarity measures presented for traditional public schools only.

Table A3. White-Nonwhite Segregation Index Decomposition in NC Schools by County, 1998 and 2016

County	1998					2016					
	Actual	Public/Private	TPS/Charter	Between TPS districts	Within Districts and Sectors	Actual	Public/Private	TPS/Charter	Between TPS districts	Within Districts and Sectors	Actual (excluding private schools)
Alamance	0.16	0.02	0.00	0.00	0.14	0.28	0.03	0.03	0.00	0.22	0.27
Alexander	0.07	0.00	0.00	0.00	0.07	0.05	0.00	0.00	0.00	0.05	0.05
Alleghany	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.03	0.03
Anson	0.09	0.00	0.00	0.00	0.09	0.11	0.00	0.00	0.00	0.11	0.11
Ashe	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01
Avery	0.04	0.00	0.03	0.00	0.01	0.03	0.00	0.00	0.00	0.03	0.03
Beaufort	0.13	0.04	0.00	0.00	0.09	0.13	0.01	0.03	0.00	0.10	0.12
Bertie	0.36	0.31	0.00	0.00	0.06	0.38	0.36	0.00	0.00	0.02	0.04
Bladen	0.14	0.01	0.00	0.00	0.14	0.12	0.04	0.01	0.00	0.08	0.08
Brunswick	0.03	0.00	0.00	0.00	0.03	0.06	0.01	0.00	0.00	0.05	0.05
Buncombe	0.19	0.01	0.00	0.14	0.04	0.09	0.02	0.01	0.01	0.06	0.08
Burke	0.07	0.00	0.00	0.00	0.07	0.13	0.00	0.00	0.00	0.12	0.13
Cabarrus	0.07	0.01	0.00	0.03	0.03	0.10	0.02	0.01	0.02	0.06	0.08
Caldwell	0.18	0.02	0.05	0.00	0.11	0.10	0.00	0.00	0.00	0.09	0.09
Camden	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Carteret	0.05	0.00	0.00	0.00	0.05	0.04	0.00	0.00	0.00	0.04	0.04
Caswell	0.05	0.01	0.00	0.00	0.04	0.03	0.00	0.00	0.00	0.03	0.03
Catawba	0.11	0.01	0.00	0.07	0.03	0.12	0.02	0.00	0.04	0.06	0.10
Chatham	0.11	0.00	0.00	0.00	0.11	0.25	0.01	0.04	0.00	0.21	0.24
Cherokee	0.02	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.01	0.01
Chowan	0.08	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Clay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cleveland	0.10	0.00	0.00	0.07	0.03	0.11	0.00	0.00	0.00	0.10	0.11
Columbus	0.14	0.04	0.00	0.00	0.10	0.14	0.01	0.02	0.01	0.11	0.14
Craven	0.06	0.02	0.00	0.00	0.05	0.10	0.03	0.00	0.00	0.07	0.07
Cumberland	0.15	0.03	0.00	0.00	0.12	0.15	0.03	0.00	0.00	0.12	0.13
Currituck	0.02	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.01	0.01
Dare	0.04	0.00	0.00	0.00	0.04	0.06	0.00	0.00	0.00	0.06	0.06
Davidson	0.39	0.00	0.00	0.38	0.01	0.32	0.01	0.00	0.29	0.02	0.32
Davie	0.04	0.00	0.00	0.00	0.03	0.04	0.00	0.00	0.00	0.04	0.04
Duplin	0.14	0.01	0.00	0.00	0.13	0.14	0.01	0.00	0.00	0.13	0.13
Durham	0.22	0.10	0.00	0.00	0.11	0.28	0.11	0.07	0.00	0.09	0.21
Edgecombe	0.16	0.08	0.00	0.00	0.08	0.18	0.00	0.03	0.06	0.09	0.18
Forsyth	0.21	0.06	0.01	0.00	0.14	0.29	0.04	0.03	0.00	0.22	0.27
Franklin	0.07	0.00	0.00	0.00	0.07	0.04	0.00	0.01	0.00	0.02	0.04
Gaston	0.14	0.02	0.00	0.00	0.12	0.17	0.01	0.00	0.00	0.15	0.16
Gates	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Graham	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01
Granville	0.13	0.03	0.00	0.00	0.09	0.13	0.00	0.03	0.00	0.10	0.13
Greene	0.10	0.09	0.00	0.00	0.00	0.05	0.04	0.00	0.00	0.00	0.00
Guilford	0.30	0.05	0.00	0.00	0.25	0.30	0.06	0.03	0.00	0.21	0.27
Halifax	0.60	0.15	0.00	0.44	0.01	0.42	0.04	0.01	0.37	0.01	0.41
Harnett	0.05	0.01	0.00	0.00	0.04	0.04	0.01	0.00	0.00	0.03	0.03
Haywood	0.02	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.01	0.01
Henderson	0.10	0.00	0.00	0.00	0.10	0.08	0.00	0.00	0.00	0.07	0.08
Hertford	0.25	0.23	0.00	0.00	0.01	0.17	0.15	0.00	0.00	0.02	0.02
Hoke	0.11	0.00	0.00	0.00	0.11	0.06	0.00	0.00	0.00	0.06	0.06
Hyde	0.11	0.00	0.00	0.00	0.11	0.06	0.04	0.00	0.00	0.02	0.02
Iredell	0.13	0.01	0.00	0.00	0.12	0.15	0.01	0.02	0.00	0.12	0.14
Jackson	0.19	0.00	0.00	0.00	0.18	0.07	0.00	0.00	0.00	0.06	0.07
Johnston	0.09	0.00	0.00	0.00	0.09	0.12	0.00	0.00	0.00	0.11	0.12
Jones	0.04	0.00	0.00	0.00	0.04	0.03	0.00	0.00	0.00	0.03	0.03
Lee	0.09	0.04	0.00	0.00	0.06	0.06	0.03	0.00	0.00	0.03	0.03
Lenoir	0.35	0.09	0.01	0.00	0.25	0.30	0.11	0.01	0.00	0.18	0.23
Lincoln	0.08	0.00	0.00	0.00	0.08	0.11	0.00	0.00	0.00	0.11	0.11
Macon	0.01	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.02	0.02
Madison	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Martin	0.16	0.00	0.00	0.00	0.16	0.21	0.00	0.12	0.00	0.09	0.21
McDowell	0.04	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.04	0.04
Mecklenburg	0.21	0.08	0.00	0.00	0.13	0.37	0.08	0.05	0.00	0.24	0.34
Mitchell	0.01	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.03	0.03
Montgomery	0.09	0.01	0.00	0.00	0.07	0.13	0.03	0.00	0.00	0.11	0.11
Moore	0.09	0.02	0.00	0.00	0.08	0.11	0.01	0.00	0.00	0.10	0.11
Nash	0.22	0.06	0.00	0.00	0.16	0.16	0.07	0.01	0.00	0.08	0.10

New Hanover	0.11	0.03	0.00	0.00	0.08	0.21	0.02	0.01	0.00	0.17	0.19
Northampton	0.29	0.17	0.00	0.00	0.12	0.21	0.19	0.00	0.00	0.02	0.02
Onslow	0.12	0.01	0.00	0.00	0.11	0.11	0.01	0.00	0.00	0.10	0.10
Orange	0.03	0.02	0.00	0.00	0.01	0.06	0.01	0.01	0.01	0.03	0.04
Pamlico	0.02	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01
Pasquotank	0.09	0.04	0.00	0.00	0.05	0.09	0.03	0.00	0.00	0.05	0.06
Pender	0.10	0.00	0.00	0.00	0.10	0.19	0.00	0.00	0.00	0.19	0.19
Perquimans	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Person	0.09	0.01	0.00	0.00	0.09	0.14	0.01	0.06	0.00	0.08	0.14
Pitt	0.11	0.06	0.00	0.00	0.05	0.17	0.05	0.00	0.00	0.12	0.13
Polk	0.02	0.00	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.03	0.03
Randolph	0.10	0.00	0.00	0.05	0.04	0.18	0.01	0.01	0.11	0.05	0.17
Richmond	0.04	0.01	0.00	0.00	0.03	0.03	0.01	0.00	0.00	0.02	0.02
Robeson	0.26	0.04	0.00	0.00	0.22	0.13	0.00	0.02	0.01	0.10	0.13
Rockingham	0.10	0.01	0.00	0.00	0.10	0.13	0.01	0.00	0.00	0.11	0.12
Rowan	0.23	0.01	0.00	0.00	0.22	0.22	0.01	0.00	0.01	0.21	0.22
Rutherford	0.14	0.00	0.00	0.00	0.14	0.08	0.00	0.01	0.00	0.07	0.08
Sampson	0.09	0.03	0.00	0.01	0.06	0.12	0.05	0.00	0.01	0.06	0.08
Scotland	0.07	0.01	0.00	0.00	0.06	0.09	0.04	0.00	0.00	0.06	0.06
Stanly	0.16	0.00	0.00	0.00	0.16	0.16	0.01	0.01	0.00	0.14	0.15
Stokes	0.05	0.00	0.00	0.00	0.05	0.02	0.00	0.00	0.00	0.02	0.02
Surry	0.04	0.00	0.00	0.01	0.03	0.05	0.00	0.01	0.00	0.04	0.05
Swain	0.08	0.00	0.00	0.00	0.08	0.11	0.05	0.01	0.00	0.06	0.07
Transylvania	0.04	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.04	0.04
Tyrrell	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01
Union	0.27	0.01	0.00	0.00	0.27	0.24	0.00	0.00	0.00	0.23	0.24
Vance	0.19	0.10	0.00	0.00	0.09	0.26	0.09	0.14	0.00	0.03	0.19
Wake	0.09	0.03	0.00	0.00	0.06	0.18	0.04	0.02	0.00	0.12	0.16
Warren	0.29	0.28	0.00	0.00	0.01	0.06	0.00	0.01	0.00	0.05	0.06
Washington	0.04	0.00	0.00	0.00	0.04	0.18	0.00	0.00	0.00	0.18	0.18
Watauga	0.02	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.00	0.04	0.05
Wayne	0.32	0.04	0.00	0.00	0.28	0.23	0.04	0.02	0.00	0.16	0.20
Wilkes	0.12	0.00	0.00	0.00	0.12	0.11	0.00	0.00	0.00	0.10	0.11
Wilson	0.13	0.04	0.01	0.00	0.08	0.23	0.10	0.03	0.00	0.10	0.15
Yadkin	0.03	0.00	0.00	0.00	0.03	0.05	0.00	0.00	0.00	0.04	0.04
Yancey	0.01	0.00	0.00	0.00	0.01	0.08	0.00	0.00	0.00	0.07	0.08

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; authors' calculations.

Appendix Table A4. Racial/Ethnic Distribution of North Carolina K-12 Students by County or County Groups, 1998, 2006, and 2016

Region	White			Black			Hispanic			Asian			American Indian		
	1998	2006	2014	1998	2006	2014	1998	2006	2014	1998	2006	2014	1998	2006	2014
State of NC (N=90)	63.8	57.3	50.4	30.4	31.0	29.3	2.7	8.2	15.8	1.6	2.1	3.3	1.5	1.5	1.3
Five largest counties															
Mecklenburg	55.5	42.6	34.8	37.5	42.2	39.7	2.7	10.8	19.3	3.8	3.9	5.8	0.4	0.6	0.4
Wake	68.3	58.0	50.2	25.6	28.7	25.7	2.5	8.5	16.1	3.3	4.4	7.8	0.2	0.3	0.3
Guilford	57.2	47.2	38.2	37.4	41.7	42.2	1.7	6.4	13.2	3.1	4.2	6.0	0.6	0.5	0.4
Cumberland	47.1	40.5	32.0	44.9	49.4	51.7	4.7	6.3	12.2	1.7	1.9	2.5	1.5	1.9	1.7
Forsyth	60.8	51.0	41.9	34.5	34.6	31.8	3.5	12.6	23.4	1.0	1.5	2.6	0.2	0.3	0.2
Included other urban counties (N=27)	67.8	62.0	54.9	27.8	27.9	26.8	2.5	7.7	15.4	1.6	2.0	2.6	0.3	0.4	0.3
Included rural counties (N=58)	64.0	60.8	56.4	29.1	27.2	24.4	2.6	7.7	14.8	0.6	0.7	0.9	3.6	3.6	3.5
State of NC (all 100 counties)	64.7	58.1	51.1	29.6	30.3	28.7	2.6	8.1	15.7	1.6	2.1	3.2	1.5	1.4	1.3

Source: National Center for Education Statistics, Common Core of Data, Private School Universe; authors' calculations.

Notes: For consistency with NC enrollment data prior to 2010, for 2015/16 black and multiracial students are grouped together in black category, and Asian and Pacific Islander students are grouped together in Asian category. Urban counties are those where at least half of the population lived in urban areas in 2000. State measures include counties which had nonwhite student populations greater than or equal to 4% of the total student population in 1998.