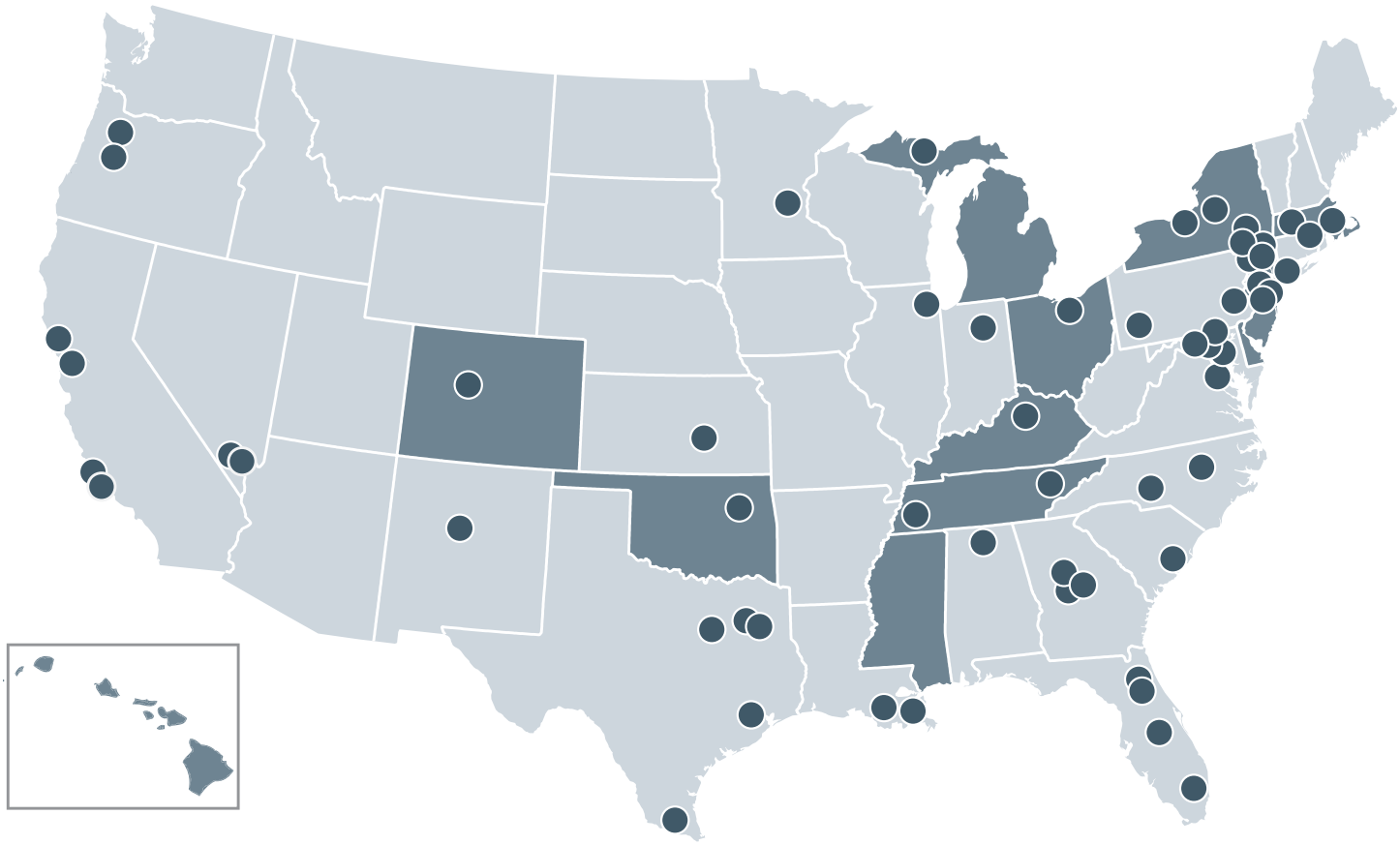
STRATEGIC DATA PROJECT

SDP COLLEGE-GOING DIAGNOSTIC

Wake County Public School System

September 2015



THE STRATEGIC DATA PROJECT (SDP)

Since 2008, SDP has partnered with 75 school districts, charter school networks, state agencies, and nonprofit organizations to bring high-quality research methods and data analysis to bear on strategic management and policy decisions. Our mission is to transform the use of data in education to improve student achievement.

Part of the Center for Education Policy Research at Harvard University, SDP was formed on two fundamental premises:

1. Policy and management decisions can directly influence schools' and teachers' ability to improve student achievement.
2. Valid and reliable data analysis significantly improves the quality of decision making.

SDP's theory of action is that if we are able to bring together the right people, assemble the right data, and perform the right analysis, we can help leaders make better decisions—ultimately improving student achievement significantly.

To make this happen, SDP pursues three strategies:

1. Building a network of top-notch data strategists who serve as fellows for two years with our partners (e.g., school district, charter management organization, nonprofit, or state education agency).
2. Conducting rigorous diagnostic analyses of teacher effectiveness and college-going success using agency data.
3. Disseminating our tools, methods, and lessons learned to the education sector broadly.

The project is supported by the Bill & Melinda Gates Foundation.

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Introduction

Contents

In 2011, the Strategic Data Project (SDP) began a partnership with the Wake County Public School System (WCPSS). As part of this partnership, SDP collaborated with WCPSS to analyze patterns of high school students' on-track status, graduation, college enrollment, and college persistence. This set of high-leverage, policy-relevant analyses constitutes the SDP College-Going Diagnostic.

SDP developed the College-Going Diagnostic in response to the growing body of evidence on the importance of postsecondary education. A few generations ago, a high school diploma was sufficient to ensure the goals of stable employment and financial security. Today it is difficult to reach these goals without postsecondary education, whether in the form of a two- or four-year college degree or a technical program. Research has shown that an individual with a bachelor's degree will earn approximately $844,000 more, on average, over his or her lifetime than an individual with only a high school diploma.[1]

This report presents key findings from the SDP College-Going Diagnostic for WCPSS, using data from students in the 2002–03 through 2012–13 school years. It is organized as follows: Section 1 provides an overview of WCPSS students' educational attainment across the entire college-going pathway—from entering ninth grade through enrollment in a postsecondary institution. Section 2 investigates students' performance during high school, specifically focusing on the connection between ninth-grade performance and graduation outcomes. Section 3 presents high school graduation outcomes across high schools and student background characteristics, such as race and prior achievement. Sections 4 and 5 discuss findings related to college enrollment and persistence, as well as the college choices of highly qualified graduates.

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The College-Going Diagnostic in Wake County

The SDP College-Going Diagnostic was a timely research collaboration in light of both ongoing policy developments in the district as well as more recent changes in leadership and organization at the district level.

For several decades, WCPSS made a public commitment to ensuring equity for all of its students and promising that every child will attend a high-quality school. Yet the county is diverse geographically, with a mix of urban, suburban, and rural areas across its 857 square mile footprint. It also has a racially and economically diverse population. Student enrollment in the district is almost 50% minority, and over 30% of students are eligible for free- and reduced-price lunch benefits.[2] With the stated principle that "maintaining socio-economic balance is fundamental to maintaining high standards and quality in our schools," the district implemented a specific process for assigning students to schools that was designed to ensure that each student has access to the same level of education as the rest.[3] This meant that in order to maintain an optimal demographic mix in each school, students were often assigned to schools far away from their local community.

When WCPSS and SDP began their partnership in 2011, the district's overall achievement levels and graduation rates were notably higher than state averages and had been for several years. Yet there was evidence that persistent achievement gaps existed across student subgroups and across WCPSS's 171 schools, which led to a stagnation of the overall rate. While addressing these student-level achievement gaps was a district priority, the aggregate data that WCPSS collected was not well positioned to determine whether certain schools were better at serving particular types of students or whether some schools were underserving students regardless of their background. The diagnostic analyses enabled the district to investigate college-going outcomes for WCPSS students and to better understand the extent of variation across schools and regions in rates of high school graduation, college enrollment, and college persistence for students with different backgrounds and different levels of academic preparation.

This was important because during this time, a new superintendent took the helm of WCPSS. The diagnostic provided impartial, data-driven information that could be leveraged to gain a clearer understanding of WCPSS's district-wide and school-level performance, to identify specific places that could be analyzed further to better understand that performance, and to build an evidence base for policy and management decisions. For example, findings on the on-track indicator and seamless college enrollment rates were presented to the WCPSS Board of Education in spring 2014. These measures were then incorporated into a "multiple factors index," a district-wide measurement tool that compiles several key outcome metrics, such as the percentage of students currently off-track to graduate, that can be employed to better evaluate the different resources that individual schools may need to improve student achievement.[4]

Moreover, findings from this collaboration influenced the development of and were incorporated into the WCPSS's new strategic plan, "Vision 2020".[5] The superintendent's main priority was to develop a data-driven strategic plan with actions and objectives that could be continuously measured for progress. The diagnostic provided both evidence and an analytical framework to inform the district's ongoing strategic planning and measurement. In particular, the district made a public commitment that "by 2020, WCPSS will annually graduate at least 95% of its students ready for productive citizenship as well as higher education or a career."[6] One of the ways that the district will measure progress is by using updated data within the diagnostic framework to track high school graduation, college enrollment, and the college persistence of recent graduates.

In summary, analyses based on the College-Going Diagnostic will allow for the continual monitoring and improvement of WCPSS outcomes over time. Whether analysts and policymakers track high school and college-going outcomes to develop differentiated interventions, as with the multiple measures index, or the data helps support the overall goals of the strategic plan, these analyses are invaluable tools for the WCPSS as it pursues its goals for student success.

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Key Findings

Section 1. Overall Secondary and Postsecondary Educational Attainment

- Half of WCPSS students who started ninth grade in 2008–09 completed high school on time, seamlessly enrolled in college, and persisted to a second year of college.

Section 2. On Track to High School Graduation

- Over one third of students who started ninth grade in 2009–10 were off track to graduate at some point in high school, and 70% of those students were first off track in ninth grade.
- Among students who were off track at the end of ninth grade in 2009–10, 48% of those students ended up graduating from high school on time.

Section 3. High School Graduation

- On-time graduation rates ranged from 71% to 93% across WCPSS high schools. Overall, the district average of 79% of students entering ninth grade and completing high school within four years compares favorably to the comparable figures for other recent SDP partners.
- On average, high school graduation rates were higher for schools whose students had higher incoming eighth-grade math scores. Nonetheless, some schools with similar average incoming achievement had a higher share of their students graduate in four years than others did.
- Black and Hispanic students in the top half of prior academic achievement are about as likely as similarly achieving White and Asian students to graduate from high school on time, but overall they are much more likely to have entered high school with lower levels of prior achievement and are less likely to graduate on time overall.

Section 4. College Enrollment

- College enrollment rates in the district ranged from under 50% to over 80% across WCPSS high schools. These rates exceeded comparable rates at recent SDP partners.
- Gaps of up to 35 percentage points exist in college enrollment rates across student racial groups, and these are present particularly among students with lower prior academic performance and students eligible for free or reduced-price lunch.
- Eleven percent of students with combined SAT scores of 1550 or higher do not seamlessly enroll in college. Among similarly qualified low-income students, almost 20% do not enroll in college.
- North Carolina State University and Wake Technical Community College were the most widely attended four- and two-year institutions among students who seamlessly enrolled in college.

Section 5. College Persistence

- The range of college persistence rates across Wake County high schools was relatively narrow, but 90% of high school graduates who seamlessly enrolled at four-year institutions persisted to a second year, compared to only 64% who enrolled at two-year institutions.

SDP COLLEGE-GOING DIAGNOSTIC

Secondary and Postsecondary Educational Attainment

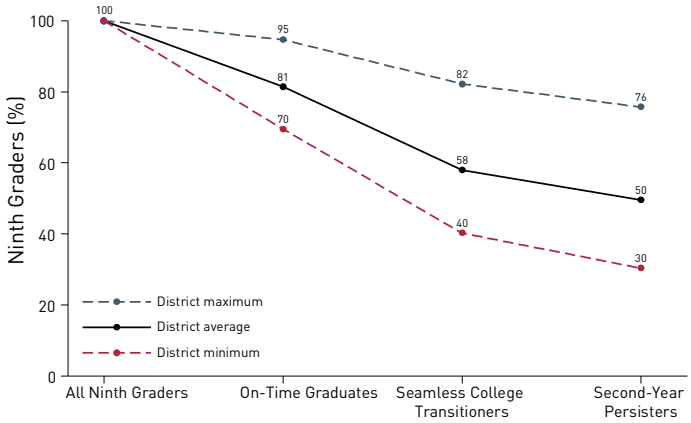
Section 1. Overall Secondary and Postsecondary Educational Attainment of Students

Each step on the road to postsecondary success presents students with obstacles and opportunities to further their education. SDP's college-going pathway tracks cohorts of first-time ninth graders through high school completion, seamless college enrollment, and persistence to the second year of college. By following the same group of ninth graders as they progress along the pathway, these analyses can identify where the biggest drop-off in outcomes occurs and which milestones merit the greatest attention from the district.

This section provides an overview of WCPSS student outcomes across the college-going pathway—from ninth-grade enrollment through second-year college persistence. The analysis tracks the percentage of ninth graders who completed high school on time, enrolled in college seamlessly (that is, the first fall following high school graduation), and persisted to the second year of college. For comparison, benchmarks from other SDP partners are also presented.

Half of WCPSS students who started ninth grade in 2008–09 completed high school on time, seamlessly enrolled in college, and persisted to a second year of college.

Figure 1. Student Progression from Ninth Grade into College by High School (District Average with State and National Benchmarks)



Note. Sample includes 10,699 2008–09 WCPSS first-time ninth graders. Postsecondary enrollment outcomes from NSC-matched records. All other data from WCPSS administrative records. Results exclude students who transferred out of WCPSS. Alternative high schools have been excluded from these analyses.

As shown in Figure 1, for every 100 first-time ninth graders who enrolled in a WCPSS high school in 2008–09, 81 graduated high school within four years, 58 seamlessly transitioned to college, and 50 persisted to the second year of their postsecondary studies. By comparison, for every 100 ninth graders from the 2006–07 entering ninth-grade cohort nationwide, roughly 71 graduated high school within four years, 44 seamlessly enrolled in college, and 34 persisted to their second year.[7]

While rates of high school graduation, college enrollment, and college persistence in Wake County were higher than national benchmarks, there was considerable disparity in students' progress along the educational pipeline across individual district high schools. Out of 100 students at the high school with the highest rates, 95 students graduated on time, 82 seamlessly enrolled in college, and 76 persisted to their second year. At the high schools with the lowest rates, however, 70 students graduated on time, 40 seamlessly transitioned into college, and 30 persisted to the second year of college.

These findings raise two critical questions for WCPSS to consider to better understand its students' current college and career readiness: (1) What are the critical junctures that affect students' success and progress through high school? (2) What factors are associated with students enrolling and persisting in postsecondary education? The remainder of the brief highlights several findings that begin to unpack these questions. Several analyses in this report examine the school-level variation in greater depth and begin to explore possible explanations for the differences observed across high schools.

Section 2. On Track to High School Graduation

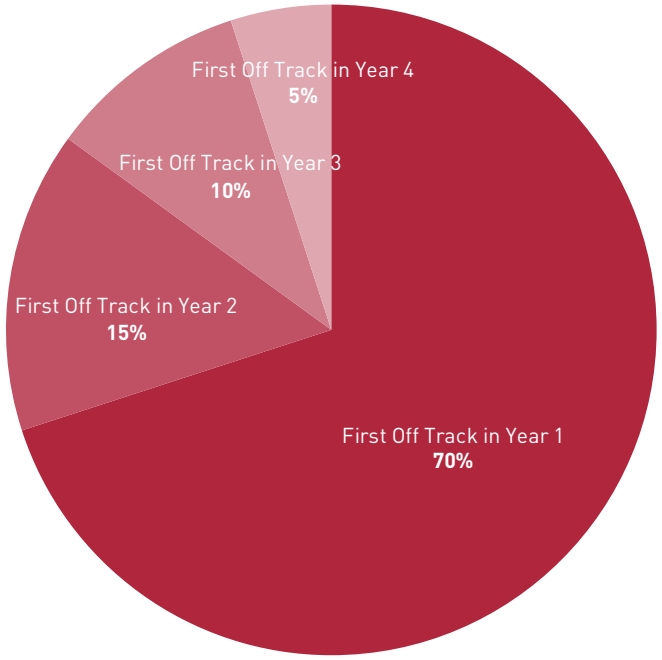
The majority of students who fail to graduate from high school send clear signals of academic disengagement years earlier. Ninth grade, in particular, appears to be a crucial year for high school success.[8] Focusing on student performance in ninth grade is important because it enables the identification of most potential dropouts while still leaving sufficient time to plan and provide additional supports that can increase students' likelihood of graduation. This section of the report examines students' performance during high school in terms of both credit accumulation and high school graduation rates.

To stay on track toward completing high school, students must obtain the recommended number of credits at their high school and pass both math and English during each school year. Among WCPSS students starting ninth grade in the 2009–10 academic year, 36% were off track toward meeting these requirements at some point during high school. As shown in Figure 2, of students who ever were off track, 70% were off track for the first time in ninth grade.

Additional analyses (not shown) found that for students in ninth grade, the number of requirements failed (from not passing math, not passing English, and not earning enough credits) is related to the likelihood of graduating from high school on time. For students who were off track due to missing only one of the three requirements, 71% graduated on time. Students missing two of the three requirements had a 39% on-time graduation rate, and students missing all three requirements at the end of ninth grade had only a 13% on-time graduation rate.

Over one third of students who started ninth grade in 2009–10 were off track to graduate at some point in high school, and 70% of those students were first off track in ninth grade.

Figure 2. Share of Students Off Track for High School Graduation with Earliest Year Off Track



36% of students in on-track sample $n = 3,696$

Note. Sample includes 3,696 2009–10 WCPSS first-time ninth graders who were off track at some point in high school. Transfer students are excluded from the sample. Alternative schools and Wake Early College High School have been excluded from all on-track analyses. All data are from WCPSS administrative records.

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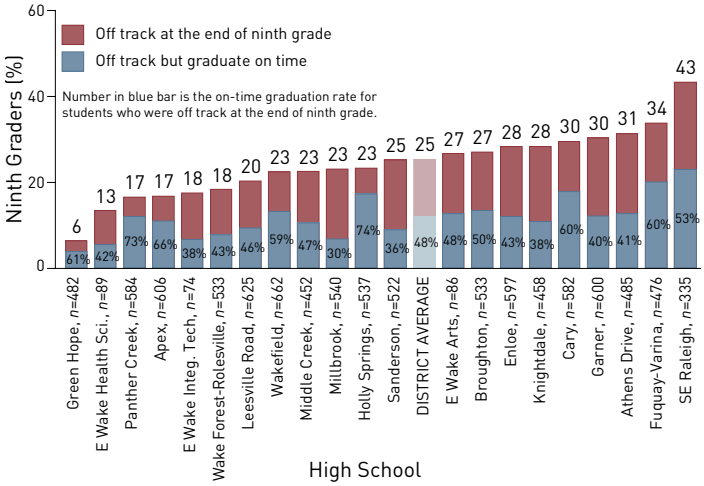
On Track to High School Graduation

Figure 3 represents the share of 2009–10 first-time ninth graders who were off track at the end of ninth grade (total height of bar) and the share of off-track students who recovered and graduated on time (the shaded blue portion and labeled recovery rate within each bar) for each high school in Wake County. On average, for the 25% of high school students in our sample who were off track at the end of their ninth-grade year, 48% recovered and graduated on time. Both off-track rates and recovery rates, however, varied widely across high schools. At Green Hope, only 6% of students were off track at the end of ninth grade compared to 43% of students at Southeast Raleigh. For students who were off-track after ninth grade at Millbrook High, only 30% graduated in four years relative to a high of 74% of these students at Holly Springs. (Please see Appendix A at the end of the document to match abbreviated school names in the figure labels to proper school names for this and subsequent figures.)

Among students off track at the end of ninth grade in 2009–10, 48% of those students ended up graduating from high school on time.

Figure 3. Rates of Recovery to On-Time Graduation for Students off Track at the End of Ninth Grade, by High School



Note. Sample includes 10,198 2009–10 WCPSS first-time ninth graders, 2,586 of whom were off track at the end of ninth grade and 1,234 of whom recovered to graduate within four years. All data are from WCPSS administrative records. Transfer students are excluded from the sample. Heritage and East Wake School of Engineering Systems have been excluded for this analysis. Alternative schools and Wake Early College High School have been excluded from all on-track analyses.

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High School Graduation

Section 3. High School Graduation

High school graduation is a critical stepping stone to both college access and career readiness. Understanding trends and variation in high school graduation rates across schools and student subgroups is an essential first step towards improving the long-term outcomes of WCPSS students. To understand the extent to which individual high schools may differentially influence student trajectories, analyses in this section examine differences in graduation rates across high schools in the district. For more information on definitions of graduation rates, refer to Appendix B.

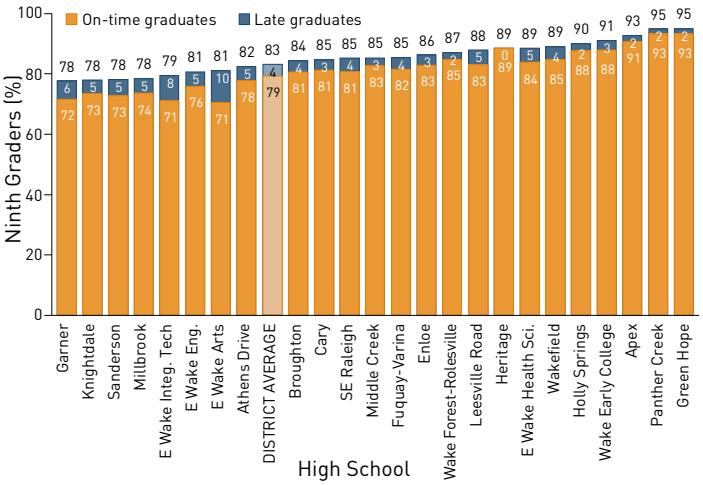
Figure 4 shows the graduation rates of 2006–07 through 2012–13 graduation cohorts at 24 WCPSS high schools, displayed separately for students graduating within four years of beginning ninth grade (on-time graduates) and for students graduating within five years (late graduates). Overall, 79% of these ninth graders graduated high school within four years and another 4% graduated within five years. While 79% of students in the district graduated high school within four years, on-time graduation rates ranged from 70% to 93% across high schools in the district, and the percentage of students graduating in five years ranged from 2% to 13% across high schools. The share of students completing high school within four years compares favorably to the comparable figures at other recent SDP partners, including the Cleveland Metropolitan School District (60%), the state of Delaware (75%), the state of Colorado (76%), and the Pittsburgh Public Schools (66%).[9]

Some of the differences in graduation and college attendance highlighted in Figure 4 may simply be the result of different high schools receiving students with different academic backgrounds. The positive correlation illustrated in Figure 5 shows that, on average across the district, high schools whose students entered with higher levels of prior achievement graduated students at higher rates than schools whose students entered with lower prior performance.

On-time graduation rates ranged from 71% to 93% across WCPSS high schools. Overall, the district average of 79% of students entering ninth grade and completing high school within four years compares favorably to the comparable figures for other recent SDP partners.

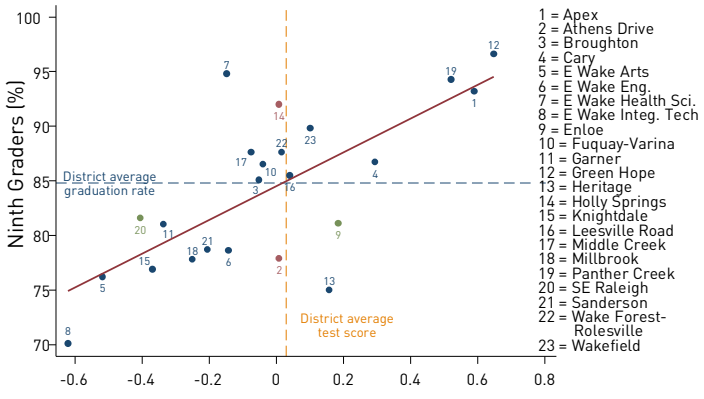
On average, high school graduation rates were higher for schools whose students had higher incoming eighth-grade math scores. Nonetheless, some schools with similar average incoming achievement had a higher share of their students graduate in four years than others did.

Figure 4. High School Graduation Rates by High School



Note. Sample includes 70,879 2003–04 through 2009–10 WCPSS first-time ninth graders. All data from WCPSS administrative records. Alternative high schools have been excluded from these analyses. Five-year graduates of Wake Early College High School are considered on-time graduates for this analysis.

Figure 5. On-Time High School Graduation Rates and Students' Average Eighth-Grade Math Scores, by High School



Average Eighth-Grade Standardized Score from READY Assessment in Math

Note. Sample includes 8,472 2009–10 first-time ninth graders with valid eighth-grade end-of-grade math test scores. Correlation coefficient is 0.71. All data from WCPSS administrative records. Alternative high schools have been excluded from these analyses.

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High School Graduation

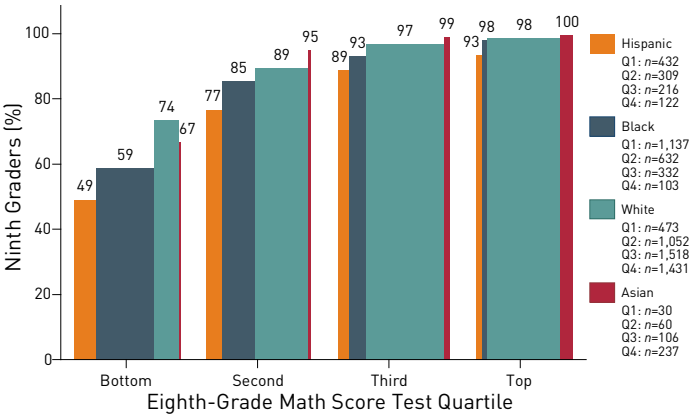
However, differences in average prior student achievement do not explain all of the variation in on-time graduation rates across high schools. Many high schools with similar average incoming eighth-grade math scores had different graduation rates. Students at Athens Drive (2) and Holly Springs (14) had similar eighth-grade scores but substantial differences in their four-year graduation rates (see red highlighted dots in Figure 5). At Southeast Raleigh (20) and Enloe (9), students' average prior test scores differed markedly, yet their on-time graduation rates were nearly identical (green highlighted dots, Figure 5). In each case, there are school-level factors beyond students' prior achievement that influence students' on-time graduation from high school.

Understanding the extent to which high school graduation rates may vary for students with different demographic characteristics can help the district identify potential strategies for supporting these students. To examine these patterns while accounting for differences in prior achievement, Figure 6 divides Hispanic, Black, White, and Asian ninth graders who entered WCPSS high schools in 2009–10 into four quartiles districtwide based on their average test scores on the eighth-grade North Carolina READY end-of-grade assessment in mathematics. In the bottom quartile of prior math achievement, on-time graduation rates ranged from 49% for Hispanic students to 74% for Asian students, a gap of 25 percentage points, and in the second quartile, the gap between Hispanic and White students was 18 percentage points (from 77 to 95). In the top two quartiles, however, the differences between the highest and lowest on-time graduation rates were narrower, with differences of only about 10 percentage points.

At the same time, the composition of students within each quartile also varied, represented by the width of the bars in the Figure. As illustrated by wider green and blue bars in the bottom and second quartiles, there are larger proportions of Hispanic and Black students in the lower quartiles of eighth-grade math achievement while higher proportions of White and Asian students were found in the upper quartiles of prior achievement (illustrated by wider teal and red bars in the third and top quartiles). Thus, Black and Hispanic students in the top half of prior academic achievement are about as likely as similarly achieving White and Asian students to graduate from high school on time, but overall, Black and Hispanic students are much more likely to have entered high school with lower levels of prior achievement and are less likely to graduate from high school on time overall.

Black and Hispanic students in the top half of prior academic achievement are about as likely as similarly achieving White and Asian students to graduate from high school on time, but overall, they are much more likely to have entered high school with lower levels of prior achievement and are less likely to graduate on time overall.

Figure 6. On-Time High School Graduation Rates by Quartile of Prior Academic Achievement and Student Race/Ethnicity



Note. Sample includes 8,190 2009–10 first-time ninth graders from WCPSS high schools with eighth-grade end-of-grade math scores. Bar width is proportional to that bar's overall share of students. All data from district administrative records. Alternative high schools have been excluded from these analyses.

Section 4. College Enrollment

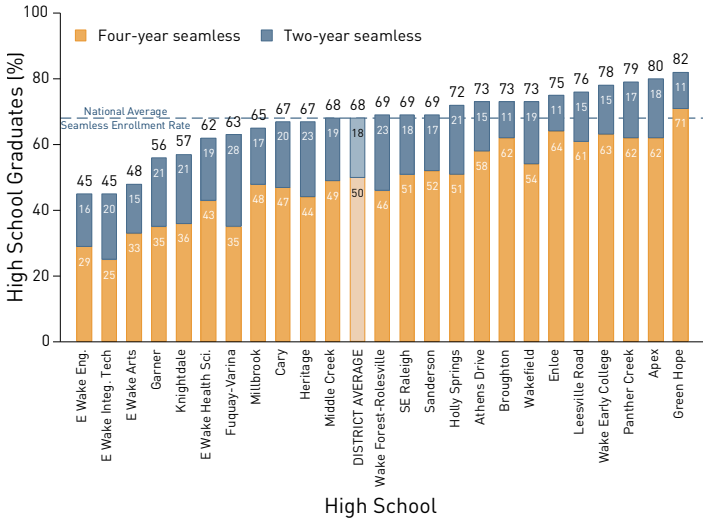
Given the substantial economic and social benefits of a college degree, understanding high schools' role in preparing students for college is essential. Recognizing patterns in college enrollment across high schools and demographic groups can, for example, help school districts and individual high schools to recognize students who may need help navigating the college enrollment process and others who could benefit from assistance identifying the best postsecondary match. This section provides key findings that highlight students' college-going outcomes across high schools in Wake County.

Figure 7 illustrates the seamless college enrollment rates of 2006–07 through 2012–13 graduates from WCPSS high schools, displayed separately for students attending two- and four-year colleges and universities. Figure 7 shows, on average, that two out of three WCPSS students who completed high school in 2013 enrolled in college seamlessly: 50% enrolled at four-year colleges, and an additional 18% of graduates enrolled at two-year colleges. The 68% overall seamless enrollment rate compares favorably to the comparable figures at other recent SDP partners, including the Cleveland Metropolitan School District (49%), the state of Delaware (51%), the state of Colorado (58%), and Pittsburgh Public Schools (52%).[10]

As with on-track status and high school graduation, college enrollment rates in the district varied considerably across high schools. At high schools like Apex, Panther Creek, Green Hope, and Wake Early College High School, around 80% of graduates enrolled in college the fall after high school graduation, and well over half did so at four-year colleges. At the same time, 50–60% of Knightdale, Garner, and East Wake graduates enrolled in college seamlessly, with a larger share of those enrolling pursuing enrollment at two-year colleges.

College enrollment rates in the district ranged from under 50% to over 80% across WCPSS high schools. These rates exceeded comparable rates at recent SDP partners.

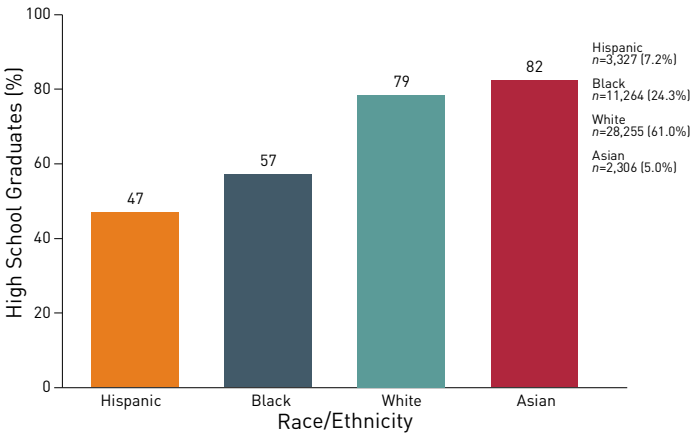
Figure 7. College Enrollment Rates by High School: Seamless Enrollers



Note. Sample includes 59,120 2006–07 through 2012–13 WCPSS graduates from district high schools. Postsecondary enrollment outcomes from NSC records. All other data from administrative records. Alternative high schools have been excluded from these analyses.

Gaps of up to 35 percentage points exist in college enrollment rates across student racial groups, and these are present particularly among students with lower prior academic performance and students eligible for free or reduced-price lunch.

Figure 8. College Enrollment Rates by Race: Seamless Enrollers



Note. Sample includes 46,328 2006–07 through 2012–13 WCPSS graduates from district high schools with eighth-grade end-of-grade math scores. Postsecondary enrollment outcomes from NSC-matched records. All other data from administrative records. Alternative high schools have been excluded from these analyses.

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College Enrollment

Just as students' background characteristics influence their likelihood of graduating from high school, characteristics such as race and academic preparation are also predictive of college enrollment. As shown in Figure 8, gaps of up to 35 percentage points exist across student racial groups, with 47% of Hispanic graduates and 82% of Asian graduates between 2006–07 and 2012–13 enrolling in college the fall after graduation.

Additional analyses (not shown) find that these disparities are also related to differences in students' socioeconomic status and academic achievement prior to starting high school. College enrollment rates for graduates who were never eligible for free or reduced-price lunch (FRPL) in high school range from 74% for Black students to 77% for Hispanic students, 81% for White students, and 86% for Asian students (for a range of 12 percentage points) while college enrollment rates for graduates who were FRPL-eligible at any point range from 34% for Hispanic students to 49% for Black students, 55% for White students, and 73% for Asian students (a range of 39 percentage points). Similarly, college enrollment rates for graduates who were in the top quartile in eighth-grade math scores range from 79% for Hispanic students to 86% for Black students, 87% for Asian students, and 89% for White students (a range of 10 percentage points) while college enrollment rates for graduates in the bottom quartile range from 27% for Hispanic students to 41% for Black students, 50% for White students, and 61% for Asian students (a range of 34 percentage points).

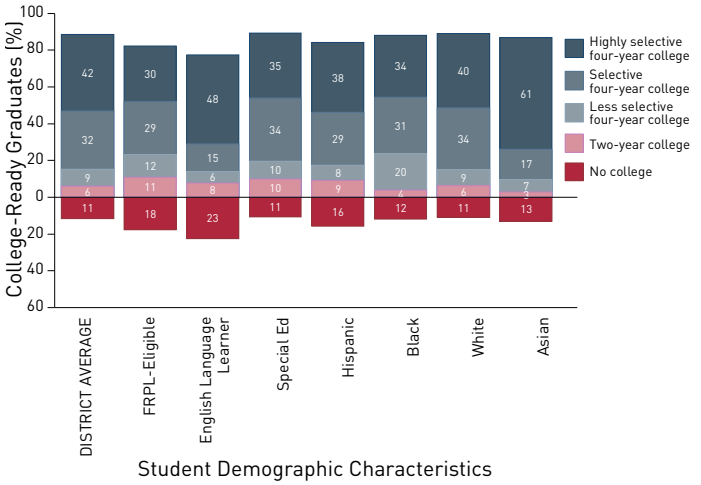
Recent research suggests that students are more likely to complete a postsecondary degree if they attend a college with a level of selectivity well matched to their own academic skill.[11] The analysis in Figure 9 examines the extent to which highly qualified graduates from Wake County enroll in colleges and universities that are appropriately matched with their academic qualifications.

For this analysis, students are considered highly qualified to attend a four-year college or university if they have reached a threshold of 1550 or higher on the combined mathematics, critical reading, and writing sections of the SAT, one measure of appropriate preparation to succeed in a four-year college. Approximately one in three Wake County high school graduates reached this level of preparedness (analysis not shown). Further, the analysis utilizes Barron's college selectivity rankings as a measure of four-year institutions' academic competitiveness. As shown in the far left bar in Figure 9, on average for Wake County, 42% of students who are highly qualified attend four-year colleges and universities in the "highly selective" category, and 32% enroll in institutions in the "selective" category. Nine percent of highly qualified students across the district enroll in "less selective" four-year institutions, 6% enroll in two-year colleges, and 11% do not enroll in any postsecondary institution at all.[12]

These outcomes differed across students' demographic groups. Highly qualified students who were ever eligible for FRPL (18%) or ever had limited English proficiency (23%) were most likely to forego enrollment in any postsecondary institution after graduation. Highly qualified Hispanic students were more likely than others to enroll in two-year institutions (9%), and 6% of Black students enrolled in historically Black colleges and universities (HBCUs) categorized as less selective.

Eleven percent of students with combined SAT scores of 1550 or higher do not seamlessly enroll in college. Among similarly qualified low-income students, almost 20% do not enroll in college.

Figure 9. College Choices of College-Ready Graduates by Student Demographics



Note. Sample includes 17,404 2006–07 through 2012–13 WCPSS college-ready graduates. FRPL-Eligible: 1,454; English Language Learner: 443; Special Ed: 1,432; Hispanic: 566; Black: 1,002; White: 13,921; Asian: 1,481. SAT college-ready graduates are those with a combined SAT score (including writing) of at least 1550. Postsecondary enrollment outcomes from NSC records. All other data from administrative records. Alternative high schools have been excluded from these analyses. Selectivity classified according to 2012 Barron's rankings.

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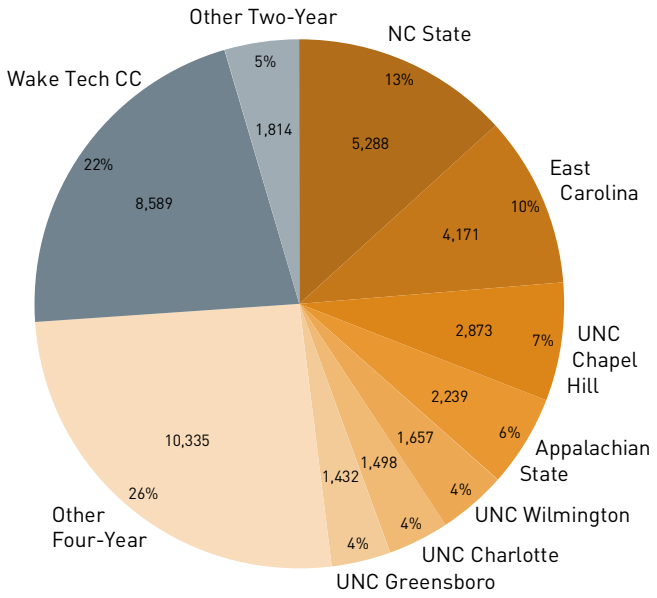
College Enrollment

North Carolina State University and Wake Technical Community College were the most widely attended four- and two-year institutions among students who seamlessly enrolled in college.

Figure 10. Most Commonly Attended Two- and Four-Year Higher Education Institutions Among Seamless Enrollers



Note. Sample includes 2006–07 through 2012–13. Postsecondary enrollment outcomes from NSC-matched records. All other data from WCPSS administrative records. Alternative high schools have been excluded from these analyses.

The majority of WCPSS graduates attended one of only a handful of postsecondary institutions. Figure 10 illustrates the number of WCPSS graduates from 2006–07 through 2012–13 attending various institutions and the share of total graduates those students represent. The Wake Technical Community College campuses were the single largest enroller of WCPSS graduates, with approximately one in five students seamlessly enrolling. Further, of the WCPSS students selecting a two-year institution, over four in five students enrolled at Wake Technical Community College. North Carolina State University was the most widely attended four-year college, receiving about one in seven seamless enrollers. The individual University of North Carolina (UNC) campuses accounted for relatively moderate enrollments each, but combined they accounted for about one in five seamless enrollers. Additionally, one in three Black seamless enrollers in the district enrolled in one of the HBCUs, including North Carolina A&T State University, North Carolina Central University, and Winston-Salem State University, among others (analysis not shown).

College Persistence

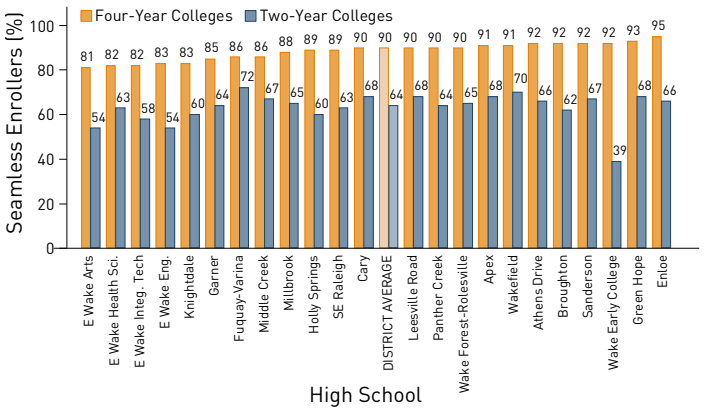
Section 5. College Persistence

For many high school graduates, college enrollment is just the first of many hurdles on the road to postsecondary success. While considerable attention has been paid to challenges related to college preparedness and access, recent conversations have expanded to consider barriers to degree completion. In order to measure WCPSS students' progress toward college degree completion, the last section of this report examines college persistence—that is, the extent to which students who have enrolled in college continue to attend college for a second consecutive year. In particular, analyses in this section rely on data that can directly link students' rates of college persistence back to the WCPSS high school they attended. These linkages enable an investigation into the relationship between students' high school context and their subsequent success in college, and can identify patterns across the district or among different types of high schools that may be useful in developing early warning indicators that can better support students as they transition into postsecondary study.

The range of college persistence rates across Wake County high schools was relatively narrow, but 90% of high school graduates who seamlessly enrolled at four-year institutions persisted to a second year, compared to only 64% who enrolled at two-year institutions.

In comparison to outcomes such as high school graduation and seamless enrollment, where the range between high schools was considerable, the range of college persistence rates for seamless enrollers across WCPSS high schools was relatively narrow. Students' persistence rates at four-year institutions ranged from 81% to 95%, and persistence rates at two-year institutions ranged from 39% to 72% (with all but one above 50%). At the same time, the gap between persistence rates for students attending different types of postsecondary institutions was notable. Overall, 90% of Wake County's seamless enrollers at four-year institutions returned for a second year, compared to only 64% of seamless enrollers attending two-year institutions. The influence of individual high school context on students' likelihood of persisting to the second year likely is muted by other factors including students' prior academic performance, goals, programs of study, and postsecondary institutional settings.

Figure 11. College Persistence Rates by High School, by Type of College: Seamless Enrollers



Note. Sample includes 33,880 2006–07 through 2011–12 high school graduates who seamlessly enrolled in college. Postsecondary enrollment outcomes from NSC-matched records. All other data from district administrative records. Alternative high schools have been excluded from these analyses.

SDP COLLEGE-GOING DIAGNOSTIC

Appendix A: School Names

Figures 3, 4, 5, 7, and 11 feature abbreviations for high school names in the figure labels. This appendix matches abbreviated names to proper school names.

ABBREVIATION	PROPER SCHOOL NAME
Apex	Apex High School
Athens Drive	Athens Drive High School
Broughton	Broughton High School
Cary	Cary High School
E. Wake Arts	East Wake School of Arts, Education, and Global Studies
E. Wake Eng.	East Wake School of Engineering Systems
E. Wake Health Sci.	East Wake High School of Health Science
E. Wake Integ. Tech	East Wake School of Integrated Technology
Enloe	Enloe High School
Fuquay-Varina	Fuquay-Varina High School
Garner	Garner High School
Green Hope	Green Hope High School
Heritage	Heritage High School
Holly Springs	Holly Springs High School
Knightdale	Knightdale High School
Leesville Road	Leesville Road High School
Middle Creek	Middle Creek High School
Millbrook	Millbrook High School
Panther Creek	Panther Creek High School
Sanderson	Sanderson High School
SE Raleigh	Southeast Raleigh High School
Wake Early College	Wake Early College of Health and Sciences
Wakefield	Wakefield High School
Wake Forest-Rolesville	Wake Forest-Rolesville High School

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Appendix B: Definitions

We calculate on-track graduation rates, high school graduation rates, college enrollment rates, and college persistence rates in the following ways.

On Track to Graduation

For some analyses, we categorize students as "on track" or "off track" to high school graduation based on a combination of the cumulative credits they have acquired and their grade level. On-track requirements are created by taking the graduation requirements of each school (in terms of total credits, as well as the number of specific math and ELA credits) and dividing them proportionally across four years. For example a ninth-grader is considered on track to graduation if at the end of the year they have accumulated 25% of the graduation requirements of their school. In most cases this is more restrictive than grade promotion requirements. We restrict the sample to first-time ninth graders in WCPSS who remain enrolled in WCPSS continuously throughout high school. We exclude students who transfer out of the district at any point during high school, whether or not they later return, because we could not track their credit accumulation.

High School Graduation Rate

To calculate the high school graduation rate, we divide the number of high school graduates (those who left the district with a "graduated" withdrawal code) by the number of first-time ninth graders four years earlier. To identify the number of first-time ninth graders four years earlier, we add together two types of students: (1) students enrolled in a WCPSS high school in ninth grade and (2) students enrolled in a different district in ninth grade who transferred into WCPSS at some point during high school.

We exclude students who did not receive a diploma and whose last withdrawal code indicated a transfer out of the district's public school system (i.e., students who attend home school, transfer to a private school or another district, etc.). Students who simply disappear or whose withdrawal code is "unknown" are not considered transfers out of the district and are included in the rate calculation. When calculating a high school graduation rate for a specific school, we assign students to their first high school attended in the district. Calculating school-level rates based on the students that each school first receives addresses concerns of selection bias across schools related to variation in school dismissal policies.

College Enrollment Rate

We define seamless college enrollers as WCPSS graduates who earn regular high school diplomas and enroll in college by October 1 of their graduation year. We also calculate the college enrollment rate for delayed enrollers, defined as WCPSS graduates who enroll in college within two years of high school graduation. For college enrollment analyses, we assign students to their last high school attended in the district. Enrollment data come from the National Student Clearinghouse (NSC).

College Persistence Rate

To calculate college-persistence rates, we determine whether students remain enrolled in any college on October 1 one year following their initial enrollment date. We restrict our sample of students to seamless college enrollers when calculating this rate. Second-year enrollment data also come from NSC.

SDP COLLEGE-GOING DIAGNOSTIC

Endnotes

[1] U.S. Census Bureau. (2011). *Supplementary table 1. Synthetic estimates of work-life earnings and median annual earnings by educational attainment, work experience, and age, 2006–2008* [Data file]. Retrieved from http://www.census.gov/hhes/socdemo/education/data/acs/acs14/tab1.xls

[2] Wake County Public School System. (2013). *Demographics profile: 2012–13*. Retrieved from http://www.wcpss.net/cms/lib/NC01911451/Centricity/Domain/100/book12.pdf

[3] Wake Education Partnership. (2008). *Striking a balance: In support of diversity in the Wake County Public School System.* Retrieved from http://www.wakeed.org/advocacy/publications/

[4] Hui, T.K. (2014, March 31). Raising concerns about creating "separate but equal" schools in Wake County. *The News & Observer.* Retrieved from http://www.newsobserver.com/news/local/education/wake-ed-blog/article10301792.html

[5] Wake County Public School System. (2015). *Strategic plan 2020: Update to the Board of Education.* Retrieved from http://www.wcpss.net/cms/lib/NC01911451/Centricity/Domain/2636/StrategicPlanUpdateJuly21V2.pdf

[6] ibid.

[7] NCHEMS Information Center for Higher Education Policymaking and Analysis. (n.d.) *First-year retention* [data set]. Retrieved from http://www.higheredinfo.org/dbrowser/index.php?measure=92

[8] Heppen, J. B., & Therriault, S. B. (2008). *Developing early warning systems to identify potential high school dropouts.* Washington, DC: National High School Center.

[9] Pittsburgh Public Schools statistic from unpublished analysis done by SDP. Cleveland (2015), Delaware (2014), and Colorado (2014) figures from published diagnostic reports: Strategic Data Project, Center for Education Policy Research at Harvard University. Retrieved from http://sdp.cepr.harvard.edu/diagnostic-research-reports

[10] Ibid.

[11] Light, A., & Strayer, W. (2000). Determinants of college completion: School quality or student ability? *Journal of Human Resources, 35*(2), 299–332.

[12] The selectivity categories used here are based on the 2009 Barron's academic competitiveness rankings. Our highly selective category includes institutions that Barron's assigns as "most competitive" or "highly competitive" (such as North Carolina State University and the University of North Carolina at Chapel Hill); our selective category includes institutions that Barron's assigns as "very competitive" or "competitive" (such as Appalachian State University and the University of North Carolina at Wilmington); and our less selective category includes institutions that Barron's assigns as "less competitive," "non-competitive," or "special" (such as East Carolina University).

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