What's Happening

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Advanced course completion in magnet and comprehensive high schools: A study in Nevada's Clark County School District

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Key findings

This study of 2011 and 2012 graduates from Nevada's Clark County School District found that for students with similar prior academic achievement, graduates of magnet high schools are more likely than graduates of comprehensive high schools to complete an honors English language arts course. However, graduates of magnet high schools are no more likely than graduates of comprehensive high schools to complete an honors math course. The type of high school attended contributed to the likelihood of completing an Advanced Placement (AP) English language arts or AP math course, but the likelihood also depended on students' prior achievement. The relationship between prior achievement and likelihood of completing an AP English language arts or AP math course was stronger for graduates of comprehensive high schools than for graduates of magnet schools.

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Summary

This study explores whether, for students with similar prior achievement, the type of high school attended (magnet or comprehensive) is related to the likelihood of having completed an advanced course. In addition, the study examines the relationship between prior achievement and the likelihood of completing an advanced course and whether the relationship differs between the two types of high schools. Completion was considered for four advanced courses: honors English language arts, honors math, Advanced Placement (AP) English language arts, and AP math. Prior achievement was measured using scores on Nevada's standardized assessment. The study was undertaken in partnership with Nevada's Clark County School District, which—like a number of districts—assumes that exposure to rigorous advanced coursework benefits all students and leads to greater college success (U.S. Department of Education, 2004).

In Clark County School District the probability of completing at least one advanced course is greater for graduates of magnet high schools than for graduates of comprehensive high schools (Rice, Huang, Lash, & Peterson, 2012). Although this may be because graduates of magnet schools have a higher overall achievement level than graduates of comprehensive schools (see, for example, Ballou, Goldring, & Liu, 2006), district staff have speculated that other factors might also contribute to the disparity, such as greater resources and support available to students in magnet schools.

The study found that graduates of magnet high schools are more likely than graduates of comprehensive high schools to complete an honors English language arts course, after students' prior academic achievement is accounted for. However, graduates of magnet schools are no more likely than graduates of comprehensive schools to complete an honors math course. The type of high school attended contributed to the likelihood of completing an AP English language arts or AP math course, but the likelihood also depended on students' prior achievement. The relationship between prior achievement and likelihood of completing an AP English language arts or AP math course was stronger for graduates of comprehensive high schools than for graduates of magnet schools.

The study was not designed to determine the causes of differences in the likelihood of completing an advanced course. However, the findings raise the possibility that some aspect of magnet schools, other than the achievement levels of students who attend them, increases the likelihood that students will complete an advanced course.

A reasonable next step for the district would be to examine factors that could explain these differences. One possibility is to examine whether magnet high schools in Clark County School District use specific strategies to recruit students into advanced courses and to support students who enroll in them.

Contents

Summary i

Why this study? 1

What the study examined 3

What the study found 4

Among students with similar prior achievement, graduates of magnet high schools are more likely than graduates of comprehensive high schools to complete an honors English language arts course; the strength of the relationship between school type and likelihood of completing an honors English language arts course did not differ by students' prior reading achievement 4

Among students with similar prior achievement, graduates of magnet high schools are no more likely than graduates of comprehensive high schools to complete an honors math course; the strength of the relationship between school type and likelihood of completing an honors math course did not vary based on students' prior achievement 5

School type contributes to the likelihood of completing an Advanced Placement English language arts course, but the degree of its contribution depends on students' prior achievement 6

School type contributes to the likelihood of completing an Advanced Placement math course, but the degree of its contribution depends on students' prior achievement 7

Findings were not influenced by student demographic characteristics 7

Implications of the study findings 8

Limitations of the study 9

Appendix A. Analytic methods A-1

Appendix B. Logistic regression solutions for fixed effects B-1

Appendix C. Distribution of graduates from magnet and comprehensive high schools C-1

Appendix D. Supplemental analyses: Analytic methods and logistic regression solutions for fixed effects D-1

Notes Notes-1

References Ref-1

Boxes

1 Clark County School District's desire to increase students' completion of advanced courses 1

2 Key terms 2

3 The study sample 4

Figures

1 After students' prior achievement on the grade 8 Criterion-Referenced Test in reading is accounted for, graduates of magnet high schools have a statistically significant higher likelihood of completing an honors English language arts course than graduates of comprehensive high schools, 2011 and 2012 5

2 After students' prior achievement on the grade 8 Criterion-Referenced Test in math is accounted for, graduates of magnet schools do not have a statistically significantly higher likelihood of completing an honors math course than graduates of comprehensive schools, 2011 and 2012 6

3 School type contributes significantly to the likelihood of completing an Advanced Placement English language arts course, but completing the course also depends on students' prior achievement on the grade 8 Criterion-Referenced Test in reading, 2011 and 2012 7

4 School type contributes significantly to the likelihood of completing an Advanced Placement math course, but completing the course also depends on students' prior achievement on the grade 8 Criterion-Referenced Test in math, 2011 and 2012 8

C1 Distribution of graduates from magnet and comprehensive high schools by scale score on the grade 8 Criterion-Referenced Test in reading, 2011 and 2012 C-1

C2 Distribution of graduates from magnet and comprehensive high schools by scale score on the grade 8 Criterion-Referenced Test in math, 2011 and 2012 C-2

Tables

B1 Logistic regression predicting the likelihood (log-odds ratio) of completing at least one advanced English language arts course as a function of achievement on the grade 8 Criterion-Referenced Test in reading and type of school B-1

B2 Logistic regression predicting the likelihood (log-odds ratio) of completing at least one advanced math course as a function of achievement on the grade 8 Criterion-Referenced Test in math and school type B-2

B3 Logistic regression predicting the likelihood (log-odds ratio) of completing at least one advanced English language arts course as a function of achievement on the grade 8 Criterion-Referenced Test in reading, school type, and the interaction of grade 8 reading achievement and school type B-2

B4 Logistic regression predicting the likelihood (log-odds ratio) of completing at least one advanced math course as a function of achievement on the grade 8 Criterion-Referenced Test in math, school type, and the interaction of grade 8 math achievement and school type B-3

D1 Differences in student demographic characteristics and prior achievement by type of high school, 2011 and 2012 D-1

D2 Logistic regression (log-odds ratios) predicting the likelihood of completing at least one advanced English language arts course, with covariates, 2011 and 2012 D-3

D3 Logistic regression (log-odds ratios) predicting the likelihood of completing at least one advanced math course, with covariates, 2011 and 2012 D-4

Why this study?

Because an academically rigorous high school experience strongly predicts success in college, including graduation with a bachelor's degree (Adelman, 2006; Klepfer & Hull, 2012; Long, Iatarola, & Conger, 2009; box 1), Nevada's Clark County School District wants more of its high school students to complete advanced coursework (Clark County School District, 2014a). Only about 75 percent of its 2011 and 2012 high school graduates completed at least one honors course in any subject, and 32 percent completed at least one Advanced Placement (AP) course, though rates varied widely across the district's 57 high schools. The share of students at each of the 57 high schools in the district completing at least one honors course ranged from 55 percent to 100 percent, and the share completing at least one AP course ranged from 2 percent to 70 percent (Rice, 2012).

In Clark County School District, graduates of magnet schools have a higher probability of completing at least one advanced course than graduates of comprehensive high schools (see box 2 for definitions of key terms in this report). Among 2011 and 2012 graduates, 69 percent of graduates of magnet schools completed an honors English language

Box 1. Clark County School District's desire to increase students' completion of advanced courses

An academically rigorous high school experience is a strong predictor of success in college, including graduating with a bachelor's degree (Adelman, 2006; Klepfer & Hull, 2012; Long et al., 2009). Research on the relationship between having a rigorous high school experience and graduating from college has focused on Advanced Placement (AP) courses. Some studies have found that students who completed AP courses, irrespective of performance, had better postsecondary outcomes (Dougherty, Mellor, & Jian, 2005; Geiser & Santelices, 2004; Jackson, 2010), while other studies did not find those results (Klopfenstein & Thomas, 2005, 2009).

Many districts have aimed to increase the number of students who participate in advanced courses as part of a larger strategy to increase education equity for traditionally underserved students and to better prepare all students for college (College Board, 2000; Lichten, 2010; U.S. Department of Education, 2000). These efforts include placing students in advanced courses even if they are not among the highest achieving students (U.S. Department of Education, 2004). Some argue that this strategy will dilute course quality (Lichten, 2010) or that not all students are prepared for the rigor of these courses (Dougherty & Mellor, 2009), particularly courses with more demanding math and science content (Wainer, 2011).

Clark County School District—which is the nation's fifth largest district and serves more than 300,000 students in the Las Vegas, Nevada, area (U.S. Department of Education, 2013)—has made it a priority to increase both its high school graduation rates and the college readiness of its graduates (Clark County School District, 2014a). As part of its effort to ensure college readiness, the district is trying to increase the proportion of high school students who complete an honors or AP course, especially in English language arts and math, by the time they graduate.

To increase the number of AP courses offered in several schools with large proportions of low-income or racial/ethnic minority students, Clark County School District has acquired funding from the National Governors Association and the federal Advanced Placement Incentive Program. During the past several summers, the district sent a group of high school teachers to Nevada's Silver Star Institute, where they received professional development training for instructing AP courses (Clark County School District, 2014a).

Box 2. Key terms

Advanced courses. In Clark County School District, Advanced Placement, honors, or International Baccalaureate courses. Four advanced courses were considered in this study: honors English language arts, honors math, Advanced Placement English language arts, and Advanced Placement math. The International Baccalaureate program was found in only one high school, so International Baccalaureate courses were not a suitable outcome to include in the study

Advanced Placement course. A college-level course in high school. Students who perform well on the course examination often receive college course credit.

Comprehensive high schools. High schools that do not have a specialized magnet program and do not specialize in serving students who have special needs or who otherwise require an alternative educational setting.

Honors course. A course in high school that is considered more academically challenging than a typical course in a given topic and that is intended to assist students in preparation for college entrance exams.

Magnet high schools. High schools in which all students participate in a magnet program (also called full magnet schools). Magnet schools originated in the late 1960s as a strategy to racially integrate school districts by offering special instruction at certain schools that would draw students from throughout the district and create relatively diverse student bodies (U.S. Department of Education, 2008). The federal government still views magnet schools as an important means of diversifying schools (Elementary and Secondary Education Act, Section 5301(a)(1)-(4)(C)). In Clark County School District, magnet schools exist to "improve student achievement, promote diversity, and create an awareness of career opportunities relative to the fields of study in which students may be interested" (Clark County School District, 2014b, p. 1). Both nationally (U.S. Department of Education, 2000) and in Clark County School District, magnet school admission policies vary, with some allowing open admissions and others setting skills-based criteria. The skills-based admissions criteria for Clark County School District magnet schools vary considerably, with some schools using English language arts and math achievement, some (such as art-focused magnet schools) using fine arts skills, and others using some combination of other criteria.

arts course, compared with 51 percent of graduates of comprehensive high schools, and 60 percent of graduates of magnet schools completed an honors math course, compared with 44 percent of graduates of comprehensive high schools (Rice et al., 2012).

These disparities may be partly explained by differences in students' prior academic achievement (for example, Ballou et al., 2006). However, Clark County School District educators speculated that other factors might contribute as well, namely, differences in the resources and supports available to students in the different types of high schools. For example, students in magnet schools might have more resources to support them in their coursework, including resources from the school, community, or family, or even personal resources (for example, motivation or persistence). Course completion could place greater demands on the individual student's background knowledge and academic skills in schools with fewer resources than in magnet schools.

If a difference in available resources between the two school types contributes to the disparities in advanced course completion, the type of school (magnet or comprehensive)

attended would help predict the likelihood of a student's completing advanced courses. The district might then explore whether that school type has practices or policies to help students take and complete advanced coursework that could be adopted by other schools to support their own students in advanced coursework.

No known published research has addressed whether the relationship between students' prior achievement and students' likelihood of completing an advanced course differs by type of high school. Wainer (2011) discussed how policymakers can make better informed decisions about who will likely benefit the most from AP courses by exploring the relationship of students' prior achievement to the likelihood of passing AP exams. However, that study did not examine whether the relationship differed by school type.

What the study examined

If a difference in available resources between magnet and comprehensive schools contributes to the disparities in advanced course completion, the type of school attended would help predict the likelihood of a student's completing advanced courses

This study examined the relationship between the type of high school attended and advanced course completion using data from the two most recent cohorts of Clark County School District high school graduates for which advanced course completion information was available (2011 and 2012). The study does not attempt to discover the causes of any relationships.

The study addresses two research questions:[1]

- Is there a relationship between the type of high school (magnet or comprehensive) attended and the likelihood of having completed an advanced course, after students' prior achievement is accounted for?[2]
- Does the strength of the relationship between the type of high school (magnet or comprehensive) attended and the likelihood of having completed an advanced course differ by students' prior achievement?

To answer the research questions, the study team conducted a series of logistic regressions estimating the relationship between the type of high school attended and the probability of completing an advanced course during high school, after students' prior academic achievement was accounted for. Differences in the relationship between magnet and comprehensive high schools were also calculated. The analyses used student records for 26,529 Clark County School District students graduating from 43 high schools (7 magnet and 36 comprehensive) in 2011 and 2012 (see box 3 for more on sample selection). For each student, the data included the entire course-taking record for each semester that the student was enrolled in a Clark County School District high school, from grade 9 through grade 12, which enabled the study team to examine which students completed (passed with a grade of D or better) at least one course in honors English language arts, honors math, AP English language arts, or AP math. The data also indicated the high school from which each student graduated, so the type of high school attended could be identified. Student achievement prior to entering high school was measured using each student's grade 8 reading and math scores from Nevada's statewide student assessments, the Criterion-Referenced Test (CRT). Technical details of the analyses are in appendix A.

Two supplemental analyses were also conducted: one examined the likelihood of completing either an honors or AP English language arts course, and the other examined the likelihood of completing either an honors or AP math course. The findings for the combined outcomes replicated the findings for honors courses alone and are discussed in appendix B.

Box 3. The study sample

Clark County School District had 57 high schools with a total of 33,412 graduates in 2011 and 2012, the two most recent cohorts for whom data were available. The analyses included only students who graduated with standard, advanced, honors, or adjusted diplomas and excluded graduates with adult diplomas or certificates of attendance.[1] This standard eliminated 2,218 graduates from the pool. In addition, 675 graduates were not included because they graduated from one of the district's seven alternative schools or one of its two schools that served only students in special education. Graduates from these nine schools were excluded because their schools typically do not offer advanced courses. In addition, 3,990 graduates from the five comprehensive high schools that host separate magnet programs were excluded because the study team was unable to identify whether the students had attended the magnet or comprehensive program. Because the district was interested in the college preparedness of graduates, the study did not include students who left high school without a diploma, graduates who had repeated any grade, or students who did not graduate on time. The final study sample included data on 26,529 students who graduated in 2011 or 2012 from 43 high schools (36 comprehensive schools and 7 magnet schools), which constituted 85 percent of the students from the graduating classes.

The final study sample included data on 26,529 students who graduated in 2011 or 2012 from 43 high schools (36 comprehensive schools and 7 magnet schools), which constituted 85 percent of the students from the graduating classes

Note

1. Adult diplomas are awarded to individuals who are older than the compulsory age for attending high school, who previously withdrew from high school, and who were ineligible to graduate on time with their cohort. They later receive a diploma from a separate adult education program. Certificates of attendance are awarded to students in special education who fulfill all their individualized education program requirements but not all the high school graduation requirements.

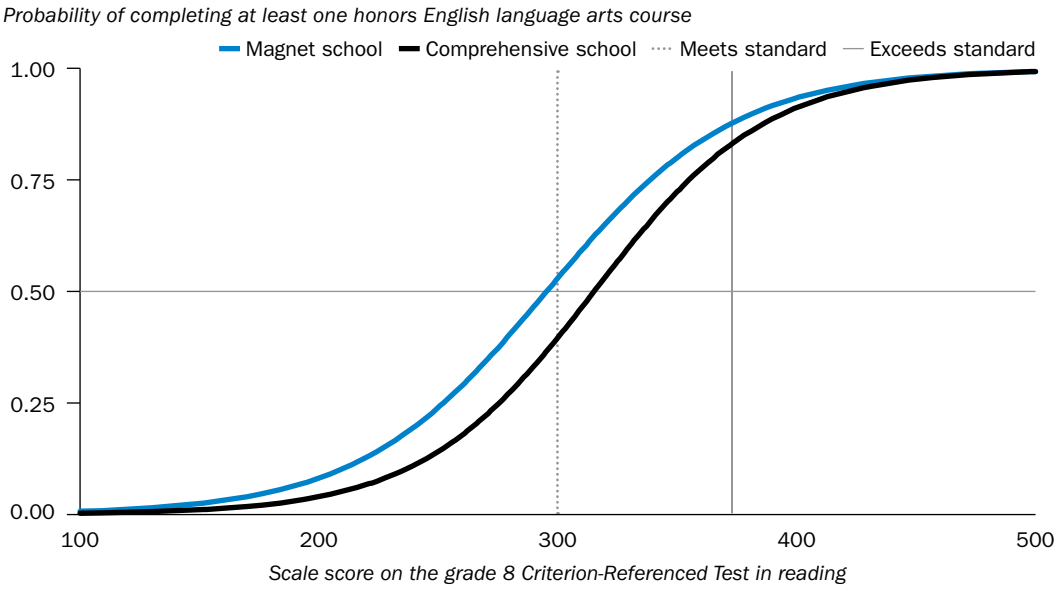
What the study found

Graduates of magnet schools are more likely than graduates of comprehensive schools to complete an honors English language arts course, after prior academic achievement is accounted for. However, graduates of magnet schools are no more likely than graduates of comprehensive high schools to complete an honors math course. In addition, graduates of magnet and comprehensive schools differ in their likelihood of completing an AP English language arts course or an AP math course based on their prior achievement. Specifically, the relationship between prior achievement and completing an AP English language arts or AP math course was stronger for graduates of comprehensive schools than for graduates of magnet high schools.

Among students with similar prior achievement, graduates of magnet high schools are more likely than graduates of comprehensive high schools to complete an honors English language arts course; the strength of the relationship between school type and likelihood of completing an honors English language arts course did not differ by students' prior reading achievement

After students' prior achievement is accounted for, graduates of magnet schools have a statistically significantly higher likelihood of completing an honors English language arts course than graduates of comprehensive schools (figure 1). This indicates that school type helps predict the likelihood of completing an honors English language arts course. In other words, students in magnet schools with a certain prior achievement score are more likely to complete an honors English language arts course than students in comprehensive schools with the same prior achievement score. For example, the estimated probability of completing an honors English language arts course is .52 for graduates of magnet

Figure 1. After students' prior achievement on the grade 8 Criterion-Referenced Test in reading is accounted for, graduates of magnet high schools have a statistically significant higher likelihood of completing an honors English language arts course than graduates of comprehensive high schools, 2011 and 2012



Note: The blue curve shows the relationship between scale scores on the grade 8 Criterion-Referenced Test (CRT) in reading and the probability of completing at least one honors English language arts course for graduates of magnet high schools. The black curve shows the same relationship for graduates of comprehensive high schools. "Meets standard" indicates the lowest scale score (300) on the CRT in reading whereby students meet the proficiency standard. "Exceeds standard" indicates the lowest scale score (373) on the CRT in reading whereby students exceed the proficiency standard. Although scale scores on the grade 8 CRT in reading were centered for purposes of the logistic regression analysis, they were not centered in this figure so the findings could be more easily interpreted. The figure is based on table B1 in appendix B, which did not include the interaction term in the statistical model.

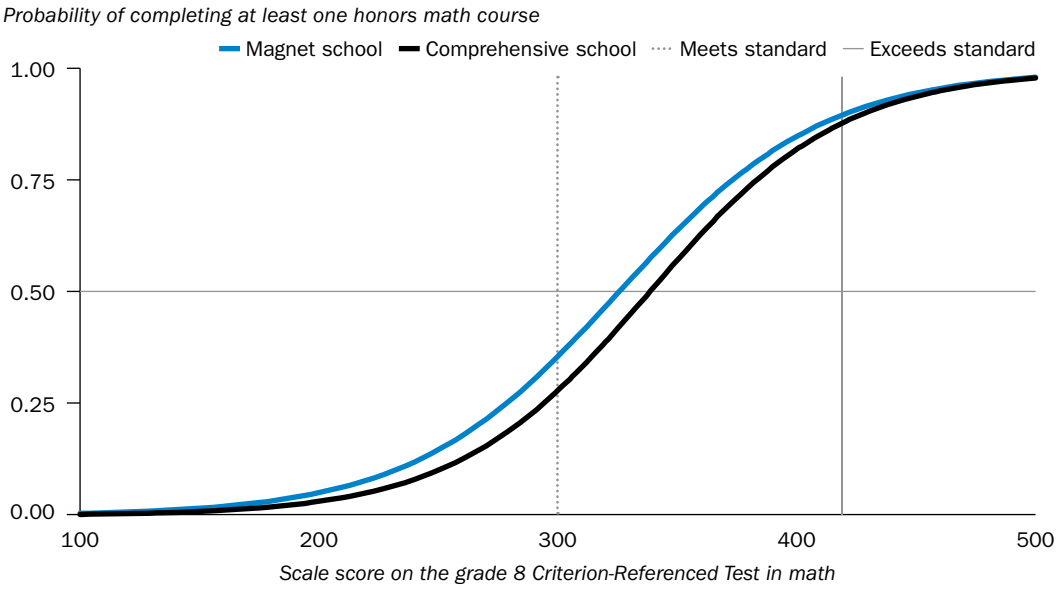
Source: Authors' analysis of data from Clark County School District.

schools with a scale score of 300 (the threshold for "meets standards") on the grade 8 CRT in reading, compared with .40 for graduates of comprehensive schools with the same score. The fact that the two curves do not cross indicates that the relationship between school type and the likelihood of completing an honors English language arts course does not differ with students' prior achievement (see appendix B for detailed results of the analyses).

Among students with similar prior achievement, graduates of magnet high schools are no more likely than graduates of comprehensive high schools to complete an honors math course; the strength of the relationship between school type and likelihood of completing an honors math course did not vary based on students' prior achievement

There is no statistical difference in the likelihood of completing an honors math course for graduates of magnet and comprehensive high schools. The curve depicting the relationship between prior achievement and likelihood of completing an honors math course for graduates of magnet schools is above the curve for graduates of comprehensive schools (figure 2). This finding is similar to that for honors English language arts, except that the difference between the curves is not statistically significant for honors math. This means that school type does not help predict the likelihood of completing an honors math course

Figure 2. After students' prior achievement on the grade 8 Criterion-Referenced Test in math is accounted for, graduates of magnet schools do not have a statistically significantly higher likelihood of completing an honors math course than graduates of comprehensive schools, 2011 and 2012



Note: The blue curve shows the relationship between scale scores on the grade 8 Criterion-Referenced Test (CRT) in math and the probability of completing at least one honors math course for graduates of magnet high schools. The black curve shows the same relationship for graduates of comprehensive high schools. "Meets standard" indicates the lowest scale score (300) on the CRT in math whereby students meet the proficiency standard. "Exceeds standard" indicates the lowest scale score (419) on the CRT in math whereby students exceed the proficiency standard. Although scale scores on the grade 8 CRT in math were centered for purposes of the logistic regression analysis, they were not centered in this figure so the findings could be more easily interpreted. The figure is based on table B2 in appendix B, which did not include the interaction term in the statistical model.

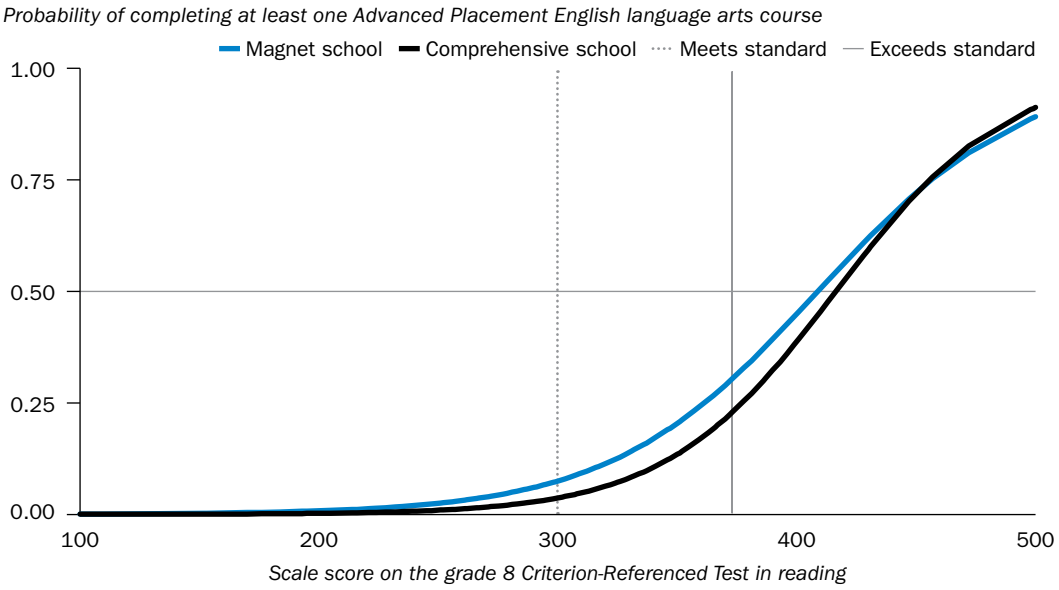
Source: Authors' analysis of data from Clark County School District.

beyond what students' achievement levels already contribute to the prediction. In addition, the fact that the two curves do not cross indicates that the relationship between school type and the likelihood of completing an honors math course does not differ depending on students' prior achievement.

School type contributes to the likelihood of completing an Advanced Placement English language arts course, but the degree of its contribution depends on students' prior achievement

School type contributes significantly to the likelihood of completing an AP English language arts course, but completing the course also depends on students' prior achievement, as can be seen from the fact that the two curves intersect in figure 3. The interaction of school type and prior achievement can be seen in the fact that the black curve for comprehensive schools rises more steeply than the blue curve for magnet schools, such that the two curves cross at a scale score of approximately 450.[3] This finding indicates that, beyond the contribution of student achievement, school type also contributes to the likelihood of completing an AP English language arts course, with its contribution varying depending on students' prior achievement.

Figure 3. School type contributes significantly to the likelihood of completing an Advanced Placement English language arts course, but completing the course also depends on students' prior achievement on the grade 8 Criterion-Referenced Test in reading, 2011 and 2012



Note: The blue curve shows the relationship between scale scores on the grade 8 Criterion-Referenced Test (CRT) in reading and the probability of completing at least one Advanced Placement English language arts course for graduates of magnet high schools. The black curve shows the same relationship for graduates of comprehensive high schools. "Meets standard" indicates the lowest scale score (300) on the CRT in reading whereby students meet the proficiency standard. "Exceeds standard" indicates the lowest scale score (373) on the CRT in reading whereby students exceed the proficiency standard. Although scale scores on the grade 8 CRT in reading were centered for purposes of the logistic regression analysis, they were not centered in this figure so the findings could be more easily interpreted. The figure is based on table B3 in appendix B, which included the interaction term in the statistical model.

Source: Authors' analysis of data from Clark County School District.

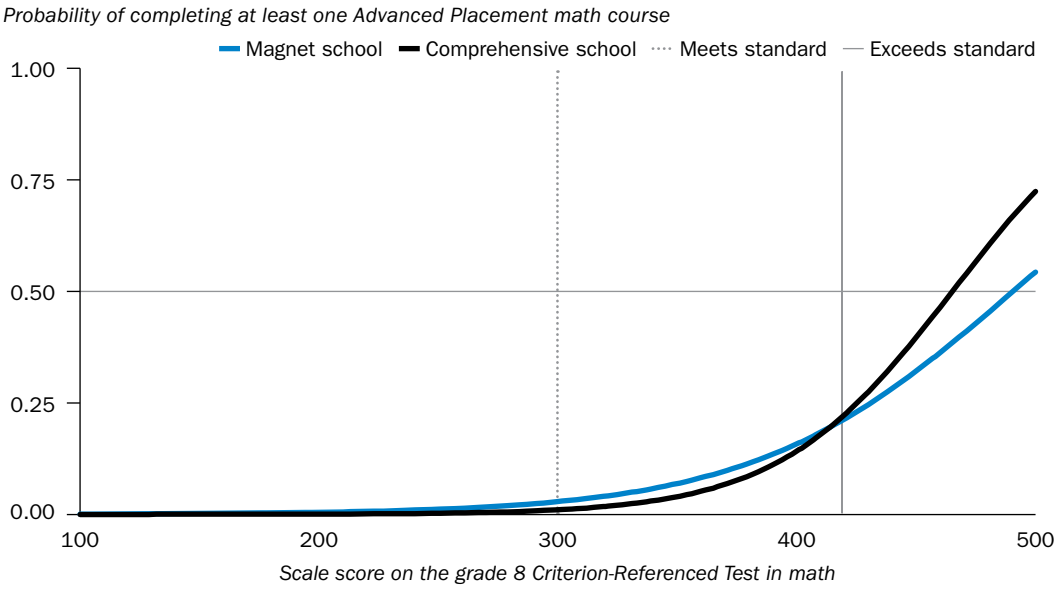
School type contributes to the likelihood of completing an Advanced Placement math course, but the degree of its contribution depends on students' prior achievement

School type contributes significantly to the likelihood of completing an AP math course, but completing the course also depends on students' prior achievement, as can be seen in the fact that the two curves intersect in figure 4. This is shown by the fact that the curve for graduates of comprehensive schools rises more steeply than the curve for graduates of magnet schools, such that the two curves cross at a grade 8 CRT math scale score of approximately 420, which is one point above the cutoff for exceeding standards. Graduates of comprehensive schools who score above 420 are more likely than graduates of magnet schools with the same score to complete an AP math course. This finding indicates that, beyond the contribution of student achievement, school type also contributes to the likelihood of completing an AP math course, with its contribution varying depending on students' prior achievement.

Findings were not influenced by student demographic characteristics

The study team conducted a supplemental analysis to explore whether student demographic characteristics helped account for the differences in the relationship between prior

Figure 4. School type contributes significantly to the likelihood of completing an Advanced Placement math course, but completing the course also depends on students' prior achievement on the grade 8 Criterion-Referenced Test in math, 2011 and 2012



Note: The blue curve shows the relationship between scale scores on the grade 8 Criterion-Referenced Test (CRT) in math and the probability of completing at least one Advanced Placement math course for graduates of magnet high schools. The black curve shows the same relationship for graduates of comprehensive high schools. "Meets standard" indicates the lowest scale score (300) on the CRT in math whereby students meet the proficiency standard. "Exceeds standard" indicates the lowest scale score (419) on the CRT in math whereby students exceed the proficiency standard. Although scale scores on the grade 8 CRT in math were centered for purposes of the logistic regression analysis, they were not centered in this figure so the findings could be more easily interpreted. The figure is based on table B4 in appendix B, which included the interaction term in the statistical model.

Source: Authors' analysis of data from Clark County School District.

achievement and completion of advanced courses for graduates of different school types. Neither the direction nor the statistical significance of the findings changed for any of the analyses when the following factors were added to the model: race/ethnicity, whether a student had ever been classified as an English learner student, whether a student had ever been eligible for a federal school lunch program, whether a student was in special education, and prior achievement in English language arts (when examining math outcomes) or in math (when examining English language arts outcomes). Details of this supplementary analysis are presented in appendix D.

Implications of the study findings

This study was performed because Clark County School District educators speculated that factors other than prior student achievement might contribute to the differences in advanced course completion between graduates of magnet and comprehensive schools. The findings may also be of interest to other districts that aim to have all students, regardless of prior academic success, complete advanced courses.

This study was not meant to identify the factors that underlie the findings. However, there are several possible explanations for the findings that could be explored in future research

by the district. One could investigate whether characteristics unique to magnet schools contribute to the likelihood of completing an honors English language arts course but not an honors math course. It is also possible that something about magnet schools decreases the contribution of their students' prior achievement to the likelihood of completing an AP course. For example, compared with comprehensive schools, magnet schools might have policies or practices that better support students enrolled in honors and AP courses. If these associations exist due to certain characteristics of magnet schools, they are relevant to Clark County School District because the district is interested in ensuring that students with similar achievement levels complete advanced coursework irrespective of the type of high school they attend.

It is also possible that the findings can be explained by unobserved, pre-existing differences between students who attend the two types of schools. For example, students who attend magnet versus comprehensive high schools might differ in terms of motivation, persistence, or academic self-efficacy. Alternatively, families of students in magnet schools could be providing more academic resources and supports.

The findings from this study may not be representative of all Clark County School District graduates because the study examined data from only two cohorts of graduates

Clark County School District might follow up on these findings by exploring whether magnet school practices or policies help students take and complete advanced coursework. A follow-up study could collect data on the availability of advanced courses at magnet and comprehensive high schools. In addition, a follow-up study could investigate possible explanations for the differences in the likelihood of advanced course completion. The findings for such a study might also be of interest to other districts seeking to increase their students' exposure to advanced courses.

Another follow-up study could examine how middle school course-taking patterns are associated with advanced course-taking in high school. Such a study could examine the extent to which students' opportunities to enroll in advanced high school courses are determined by their course choices in middle school. If this were the case, Clark County School District might explore or expand policies or practices that that make students' likelihood of completing advanced courses less dependent on type of school attended.

Limitations of the study

The findings from this study may not be representative of all Clark County School District graduates for two reasons. First, students who entered the district after grade 8 were not included because their grade 8 CRT data were unavailable. Second, the study examined data from only two cohorts of graduates, so the results cannot be generalized beyond them. The study may have also under- or overestimated the strength of the relationship between prior achievement and the probability of completing advanced courses in the two types of high school. This is because students were grouped by the type of high school from which they graduated (that is, magnet or comprehensive), but a student may have attended a different type of high school at some time before graduation or may have switched schools repeatedly.

In addition, the analyses excluded graduates of five comprehensive high schools that house separate magnet programs within their schools because, in these cases, it was impossible to identify whether individual students attended the magnet or comprehensive programs. Also, the findings on the relationship between prior achievement and completion

of advanced courses examined only whether students had ever completed an advanced course, because this was the outcome of interest to the district. However, it is possible that the relationship between prior achievement and advanced course completion would be different if the number of advanced courses completed by graduation had been examined.

Finally, because the study design was such that only relationships could be examined, no causal attributions can be made based on these findings. In other words, the study findings cannot be used to determine whether the relationships between school type and the likelihood of completing an advanced course are due to practices and policies of the high schools themselves as opposed to other factors, including characteristics of the students that existed before entry into high school.

Appendix A. Analytic methods

To answer the research questions, the study team examined the relationship between high school type (magnet versus comprehensive) and the predicted likelihood of completing an advanced course, after students' prior achievement was accounted for. The study team also examined the interaction between school type and students' prior achievement on the likelihood of completing an advanced course. Five logistic regression analyses were performed. The first examined students' likelihood of completing at least one honors English language arts course. The second examined their likelihood of completing at least one honors math course. The third examined their likelihood of completing at least one Advanced Placement (AP) English language arts course. The fourth examined the likelihood of completing one AP math course. And the fifth examined the likelihood of completing at least one honors or AP course in either subject. To maximize statistical power, the analyses used pooled samples of students from both cohorts. However, separate analyses were conducted for each cohort to determine whether something specific to one cohort drove results.

The logistic regression used a random intercept model with a cross-level interaction term: school type by student grade 8 Criterion-Referenced Test (CRT) scale score. A multilevel model was used to account for the nested structure of the data; that is, students nested within schools. For each logistic regression, the study team first examined the full model, which included the interaction term.

Because CRT scale scores range from 100 to 500 and do not include zero, they were centered on the grand mean (that is, subtracting the grand mean from each of the raw CRT scale scores) prior to running the logistic regression analyses. This did not affect the coefficient and standard error for either CRT scale score or the interaction between school type and CRT scale score. But it did change the coefficient and standard error for both school type and the intercept. Without centering, the coefficient for school type represents the difference in the likelihood of completing an advanced course between graduates of magnet and comprehensive high schools when their CRT scale scores are zero, which is not possible. When the CRT scale scores are centered, the coefficient and standard error for school type represent the average difference between a student in a magnet high school and a student in a comprehensive high school, each with average CRT scale scores. Similarly, without centering, the intercept is the log-odds ratio of a student in a comprehensive school with a CRT scale score of zero. When CRT scale scores are centered, the intercept is the log-odds ratio of a graduate of a comprehensive school with an average scale score on the CRT in math (Enders & Tofighi, 2007).

For the AP math outcome, the analytic model used was:

$$\text{logit}(\pi_{ij}) = \alpha + \gamma z_j + \mu_j + \beta x_{ij} + \theta z_j x_{ij} \quad \text{(A1)}$$

where subscript i denotes student and subscript j denotes school, and π_{ij} represents the odds of a student completing at least one AP math course as a function of grade 8 math performance x of student i in school j, school type z, and the interaction of grade 8 math performance with school type zx. In the model, α is the grand mean for comprehensive schools (that is, when school type is zero), γ is the parameter for school type, μ is the school random effect, β is the average slope relating a unit change in the grade 8 CRT in math to the odds of completing at least one AP math course, and θ is the parameter of the

interaction term. To address the first research question on the main effect of school type, γ is the parameter of interest. Its statistical significance indicates a main effect for school type. Also, θ is the parameter of interest for addressing the second research question regarding the interaction. Its statistical significance indicates an interaction between school type and achievement level; that is, whether the relationship between prior achievement and completing an advanced course differs for graduates of magnet schools and comprehensive schools. The log-odds ratios derived from the model were used to calculate the likelihoods depicted in the figures in the main report.

The same analytic model was used to examine the honors math outcomes, except π_{ij} represented the odds of a student completing at least one honors math course. This analytic model was also used to examine AP and honors English language arts outcomes with π_{ij} representing the probability of a student completing at least one AP English language arts or honors English language arts course, and x of student i in school j representing grade 8 English language arts performance.

For each logistic regression, if the interaction term was statistically significant, a second logistic regression was conducted examining only the relationship between school type and the odds of completing an advanced course. In this study the interaction term was statistically significant for the logistic regression examining the likelihood of completing an AP course in English language arts (see figure 3 in the main report) and for the logistic regression examining the likelihood of completing an AP course in math (see figure 4 in the main report). If the interaction term was not statistically significant, analytic model (A1) was used, but the interaction term was excluded. The interaction terms were not statistically significant for the logistic regressions examining the likelihood of completing an honors course in English language arts (see figure 1 in the main report) or the logistic regression examining the likelihood of completing an honors course in math (see figure 2 in the main report). For these two outcomes, the reported coefficients are for the relationship between school type and the odds of completing an advanced course from the model that excluded the interaction term.

Appendix B. Logistic regression solutions for fixed effects

This appendix includes the results from the logistic regressions used to address the study's research questions. Specifically, the research question regarding differences in completion rates for advanced courses for graduates of Clark County School District magnet and comprehensive schools was addressed by examining the coefficient estimates on school type in the model without the interaction term (tables B1 and B2). The research question regarding differences in completion rates for advanced courses for graduates of Clark County School District magnet and comprehensive high schools and its variation by students' prior achievement was addressed by the coefficient estimates of the model that included the interaction term (tables B3 and B4).

Results of the logistic regression that examined the likelihood of completing at least one honors English language arts course, at least one honors math course, at least one Advanced Placement (AP) English language arts course, or at least one AP math course are shown in tables B1–B4. These tables include the results for an additional logistic regression that examined the likelihood of completing either at least one advanced English language arts course (honors or AP) or at least one advanced math course (honors or AP). The direction of beta, or whether beta met the threshold for statistical significance, did not change when the data for each cohort of graduates were examined separately using the same three outcomes and predictor variables.

Table B1. Logistic regression predicting the likelihood (log-odds ratio) of completing at least one advanced English language arts course as a function of achievement on the grade 8 Criterion-Referenced Test in reading and type of school

		Honors English language arts		Advanced Placement English language arts		Honors or Advanced Placement English language arts	
Predictor variable	Degrees of freedom	Beta	Standard error	Beta	Standard error	Beta	Standard error
Constant	41	0.154	0.090	–2.64*	0.195	0.187	0.093
Graduate's grand mean–centered score on the grade 8 Criterion-Referenced Test in reading	22,753	0.027*	0.000	0.027*	0.000	0.028*	0.000
Whether student graduated from a magnet high school	41	0.481*	0.223	0.444	0.468	0.482*	0.229

* is significant at $p < .05$.

Note: Data cover 22,797 students in 43 schools from the 2011 and 2012 graduation cohorts who met all graduation requirements, completed grade 12 on time, and graduated from either a full magnet or a comprehensive high school. Odds ratio is the odds a student will complete an advanced course under a given condition (such as graduating from a magnet high school) compared with the odds of completing an advanced course not under that condition (such as graduating from a comprehensive high school). Odds ratios are estimated using the exponent of estimated regression coefficient (that is, beta).

Source: Authors' analysis of data from Clark County School District.

Table B2. Logistic regression predicting the likelihood (log-odds ratio) of completing at least one advanced math course as a function of achievement on the grade 8 Criterion-Referenced Test in math and school type

Predictor variable	Degrees of freedom	Honors math		Advanced Placement math		Honors or Advanced Placement math	
		Beta	Standard error	Beta	Standard error	Beta	Standard error
Constant	41	–0.257*	0.104	–3.66*	0.180	–0.239*	0.103
Graduate's grand mean–centered score on the grade 8 Criterion-Referenced Test in math	22,749	0.025*	0.000	0.026*	0.000	0.025*	0.000
Whether student graduated from a magnet high school	41	0.290	0.255	0.063	0.425	0.316	0.254

* is significant at $p < .05$.

Note: Data cover 22,802 students in 43 schools from the 2011 and 2012 graduation cohorts who met all graduation requirements, completed grade 12 on time, and graduated from either a full magnet or a comprehensive high school. Odds ratio is the odds a student will complete an advanced course under a given condition (such as graduating from a magnet high school) compared with the odds of completing an advanced course not under that condition (such as graduating from a comprehensive high school). Odds ratios are estimated using the exponent of estimated regression coefficient (that is, beta).

Source: Authors' analysis of data from Clark County School District.

Table B3. Logistic regression predicting the likelihood (log-odds ratio) of completing at least one advanced English language arts course as a function of achievement on the grade 8 Criterion-Referenced Test in reading, school type, and the interaction of grade 8 reading achievement and school type

Predictor variable	Degrees of freedom	Honors English language arts		Advanced Placement English language arts		Honors or Advanced Placement English language arts	
		Beta	Standard error	Beta	Standard error	Beta	Standard error
Constant	41	0.155	0.092	–2.68*	0.200	0.187	0.093
Graduate's grand mean–centered scale score on the grade 8 Criterion-Referenced Test in reading	22,744	0.028*	0.000	0.028*	0.001	0.028*	0.000
Whether student graduated from a magnet high school	41	0.493*	0.223	0.643	0.490	0.229*	0.235
Graduate's grand mean–centered scale score on the grade 8 Criterion-Referenced Test in reading X whether student graduated from a magnet high school	22,744	–0.002	0.001	–0.005*	0.001	–0.001	0.001

* is significant at $p < .05$.

Note: Data cover 22,797 students in 43 schools from the 2011 and 2012 graduation cohorts who met all graduation requirements, completed grade 12 on time, and graduated from either a full magnet or a comprehensive high school. Odds ratio is the odds a student will complete an advanced course under a given condition (such as graduating from a magnet high school) compared with the odds of completing an advanced course not under that condition (such as graduating from a comprehensive high school). Odds ratios are estimated using the exponent of estimated regression coefficient (that is, beta).

Source: Authors' analysis of data from Clark County School District.

Table B4. Logistic regression predicting the likelihood (log-odds ratio) of completing at least one advanced math course as a function of achievement on the grade 8 Criterion-Referenced Test in math, school type, and the interaction of grade 8 math achievement and school type

Predictor variable	Degrees of freedom	Honors math		Advanced Placement math		Honors or Advanced Placement math	
		Beta	Standard error	Beta	Standard error	Beta	Standard error
Constant	41	–0.259*	0.104	–3.80*	0.188	–0.241*	0.103
Graduate's grand mean–centered scale score on the grade 8 Criterion-Referenced Test in math	22,749	0.025*	0.000	0.028*	0.001	0.025*	0.000
Whether student graduated from a magnet high school	41	0.315	0.256	0.790	0.450	0.342	0.255
Graduate's grand mean–centered scale score on the grade 8 Criterion-Referenced Test math X whether student graduated from a magnet high school	22,749	–0.001	0.001	–0.009*	0.001	–0.002	0.001

* is significant at $p < .05$.

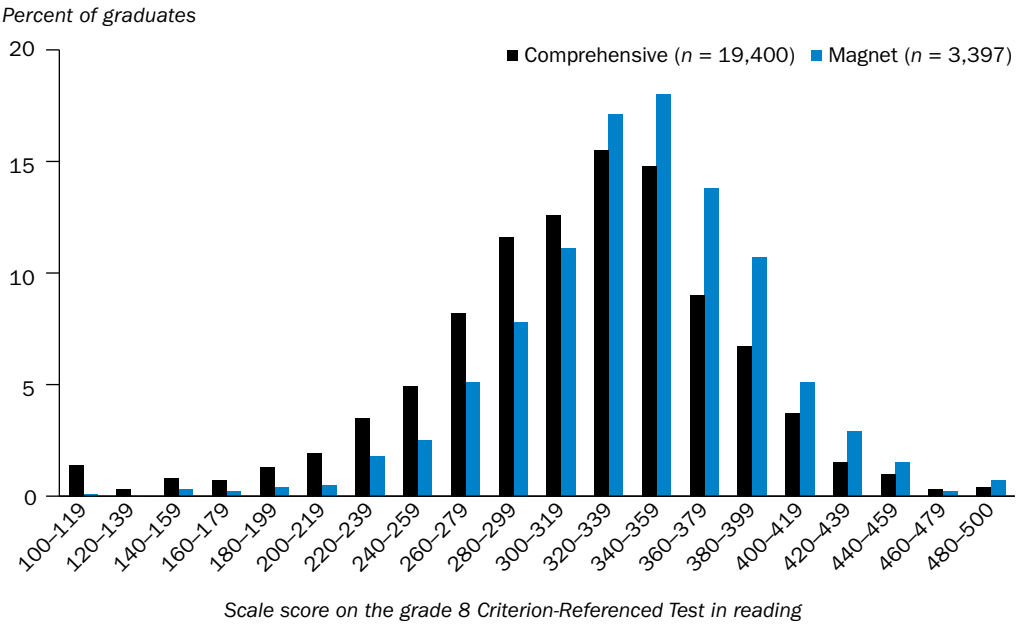
Note: Data cover 22,802 students in 43 schools from the 2011 and 2012 graduation cohorts who met all graduation requirements, completed grade 12 on time, and graduated from either a full magnet or a comprehensive high school. Odds ratio is the odds a student will complete an advanced course under a given condition (such as graduating from a magnet high school) compared with the odds of completing an advanced course not under that condition (such as graduating from a comprehensive high school). Odds ratios are estimated using the exponent of estimated regression coefficient (that is, beta).

Source: Authors' analysis of data from Clark County School District.

Appendix C. Distribution of graduates from magnet and comprehensive high schools

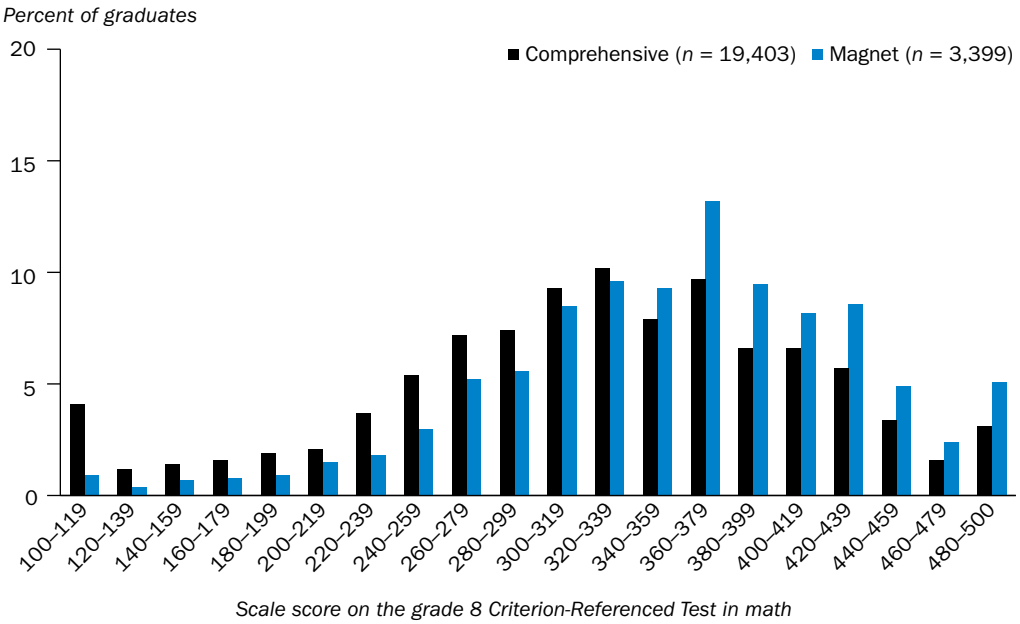
The study team examined the distribution of prior achievement scores on the grade 8 Criterion-Referenced Test (CRT) in reading (figure C1) and in math (figure C2) for all 2011 and 2012 graduates of magnet and comprehensive schools. The study team found that students had scale scores across the full range of possible scores in both subject areas. The mean scale score on the CRT in reading was 340.88 for graduates of magnet schools and 317.15 for graduates of comprehensive schools. The mean scale score on the CRT in math score was 355.76 for graduates of magnet schools and 322.73 for graduates of comprehensive schools.

Figure C1. Distribution of graduates from magnet and comprehensive high schools by scale score on the grade 8 Criterion-Referenced Test in reading, 2011 and 2012



Source: Authors' analysis of data from Clark County School District.

Figure C2. Distribution of graduates from magnet and comprehensive high schools by scale score on the grade 8 Criterion-Referenced Test in math, 2011 and 2012



Source: Authors' analysis of data from Clark County School District.

Appendix D. Supplemental analyses: Analytic methods and logistic regression solutions for fixed effects

In addition to the main analyses that addressed the research questions, the study team also conducted a series of cross-tabulations and logistic regressions to determine whether observed student characteristics could explain the difference in the relationship between students' prior achievement and completing an advanced course for graduates of magnet and comprehensive schools.

First, the differences in student characteristics between the two types of schools were examined. Significant differences were found in each observable student characteristic: race/ethnicity, English learner status, and special education status (table D1). Specifically, compared with comprehensive schools, magnet schools had a lower percentage of White and Black students and a higher percentage of Hispanic and Asian students, a smaller percentage of English learner students, and a smaller percentage of students in special education. Finally, graduates of magnet schools had higher grade 8 Criterion-Referenced Test (CRT) reading and math scores than graduates of comprehensive schools.

The logistic regressions used to determine whether observed student characteristics could explain the difference in the relationship between students' prior achievement and completing an advanced course for magnet and comprehensive schools mirrored those discussed in appendix B. However, in this case the outcome in the analytic model was also

Table D1. Differences in student demographic characteristics and prior achievement by type of high school, 2011 and 2012

Student characteristic	Comprehensive high schools	Magnet high schools	*p* value
Race/ethnicity (percent)			< .0001
White	42.85	33.04	
Black	11.86	8.00	
Asian	8.06	11.40	
Hispanic	28.96	38.56	
Native American	0.56	0.71	
Pacific Islander	1.72	1.79	
Multiracial/other race	5.99	6.61	
English learner status (percent)			
Ever classified as English learner student in high school	5.64	3.67	< .0001
Special education status (percent)			
Ever in special education in high school	9.21	3.43	< .0001
Prior achievement			
Average grand mean–centered score on the grade 8 Criterion-Referenced Test in reading[a]	317.2	340.9	< .0001
Average grand mean–centered score on the grade 8 Criterion-Referenced Test in math[a]	322.7	355.8	< .0001
Number of observations	22,852	3,677	

a. Approximately 14 percent of students in the analytic sample were excluded because of missing values: 22,797 students had nonmissing values for reading, and 22,802 had nonmissing values for math.

Source: Authors' analysis of data from Clark County School District.

conditioned on a series of student-level dummy variables: race/ethnicity (with separate parameters for Black, Asian, Hispanic, Native American, Pacific Islander, and multiracial/other race using White as the reference group), English learner student status (ever categorized as an English learner student during high school = 1), and special education status (ever categorized as a special education student during high school = 1).

As with the main analysis, the logistic regression used a random intercept model with a cross-level interaction term (that is, school type by student scale score on the grade 8 CRT in math). A multilevel model was used to account for the nested structure of the data; that is, students nested within schools. The analytic model used was:

$$\text{logit}(\pi_{ij}) = \alpha + \gamma z_j + \mu_j + \beta_1 x_{ij} + [\beta_2 BLK_{ij} + \beta_3 AS_{ij} + \beta_4 HIS_{ij} + \beta_5 NAT_{ij} + \beta_6 PI_{ij} + \beta_7 MULT_{ij} + \beta_8 ELL_{ij} + \beta_9 IEP_{ij}] + \theta z_j x_{ij} \quad \text{(D1)}$$

In addition to replicating the main analyses using observed student characteristics as covariates, the likelihood of completing at least one advanced English language arts course (honors or AP) was also examined. Separate analyses were also conducted for each cohort to determine whether something specific to one cohort drove results.

Results of the logistic regression that examined the likelihood of completing at least one honors English language arts course, one AP English language arts course, or one advanced English language arts course are shown in table D2. The only statistically significant interaction was for the likelihood of completing at least one AP English language arts course. Whether beta met the threshold for statistical significance did not change when the data for each cohort of graduates were examined separately using the same three outcomes and predictor variables.

Results of the logistic regression that examined the likelihood of completing at least one honors math course, one AP math course, or one advanced math course are shown in table D3. The table includes the results for an additional logistic regression that examined the likelihood of completing at least one advanced math course (honors or AP). The only statistically significant interaction was for the likelihood of completing at least one AP math course. The direction of beta, or whether beta met the threshold for statistical significance, did not change when the data for each cohort of graduates were examined separately using the same three outcomes and predictor variables.

Table D2. Logistic regression (log-odds ratios) predicting the likelihood of completing at least one advanced English language arts course, with covariates, 2011 and 2012

Predictor variable	Degrees of freedom	Honors English language arts		Advanced Placement English language arts		Honors or Advanced Placement English language arts	
		Beta	Standard error	Beta	Standard error	Beta	Standard error
Constant	41	0.271*	0.094	–2.75*	0.199	0.318*	0.096
Black	22,738	0.060	0.061	–0.074	0.090	0.057	0.061
Asian	22,738	0.406*	0.069	0.528*	0.071	0.399*	0.070
Hispanic	22,738	–0.366*	0.043	–0.203*	0.057	–0.389*	0.043
Native American	22,738	–0.296	0.221	–0.102	0.292	–0.228	0.221
Pacific Islander	22,738	0.255	0.132	0.587*	0.149	0.247	0.132
Multiracial/other race	22,738	–0.069	0.073	0.138	0.088	–0.079	0.073
Ever classified as English learner student in high school	22,738	0.121	0.099	–0.03	0.180	0.133	0.098
Ever in special education in high school	22,738	–1.648*	0.126	–1.31*	0.309	–1.674*	0.127
Grand mean–centered score on the grade 8 Criterion-Referenced Test in reading	22,738	0.018*	0.001	0.019*	0.001	0.018*	0.001
Graduated from a magnet high school	41	0.475*	0.226	0.414	0.475	0.488*	0.231
Grand mean–centered score on the grade 8 Criterion-Referenced Test in reading X graduated from a magnet high school	22,738	–0.002	0.001	–0.004*	0.001	–0.001	0.001
Grand mean–centered score on the grade 8 Criterion-Referenced Test in math	22,738	0.009*	0.000	0.009*	.000	0.009*	0.000

* is significant at $p < .05$.

Note: Data cover 22,792 students in 43 schools from the 2011 and 2012 graduation cohorts who met all graduation requirements, completed grade 12 on time, and graduated from either a full magnet or a comprehensive high school. Odds ratio is the odds a student will complete an advanced course under a given condition (such as graduating from a magnet high school) compared with the odds of completing an advanced course not under that condition (such as graduating from a comprehensive high school). Odds ratios are estimated using the exponent of estimated regression coefficient (that is, beta).

Source: Authors' analysis of data from Clark County School District.

Table D3. Logistic regression (log-odds ratios) predicting the likelihood of completing at least one advanced math course, with covariates, 2011 and 2012

Predictor variable	Degrees of freedom	Honors math		Advanced Placement math		Honors or Advanced Placement math	
		Beta	Standard error	Beta	Standard error	Beta	Standard error
Constant	41	–0.319*	0.116	–3.861*	0.188	–0.298*	0.116
Black	22,738	–0.002	0.065	–0.173	0.124	0.008	0.065
Asian	22,738	0.592*	0.071	0.803*	0.079	0.612*	0.071
Hispanic	22,738	–0.128*	0.045	–0.156*	0.071	–0.121*	0.045
Native American	22,738	0.060	0.227	–0.024	0.356	0.138	0.227
Pacific Islander	22,738	0.562*	0.136	0.544*	0.174	0.577*	0.137
Multiracial/other race	22,738	0.064	0.075	0.073	0.105	0.070	0.075
Ever classified as English learner student in high school	22,738	0.357*	0.106	0.511*	0.201	0.348*	0.106
Ever in special education in high school	22,738	–1.048*	0.134	–0.715*	0.350	–1.06*	0.134
Grand mean–centered score on the grade 8 Criterion-Referenced Test in math	22,738	0.020*	0.000	0.024*	0.001	0.020*	0.000
Graduated from a magnet high school	41	0.206	0.279	0.441	0.450	0.220	0.278
Grand mean–centered score on the grade 8 Criterion-Referenced Test in math X graduated from a magnet school	22,738	–0.001	0.001	–0.009*	0.001	–0.001	0.001
Grand mean–centered score on the grade 8 Criterion-Referenced Test in reading	22,738	0.009*	0.001	0.008*	0.001	0.009*	0.001

* is significant at $p < .05$.

Note: Data cover 22,792 students in 43 schools from the 2011 and 2012 graduation cohorts who met all graduation requirements, completed grade 12 on time, and graduated from either a full magnet or a comprehensive high school. Odds ratio is the odds a student will complete an advanced course under a given condition (such as graduating from a magnet high school) compared with the odds of completing an advanced course not under that condition (such as graduating from a comprehensive high school). Odds ratios are estimated using the exponent of estimated regression coefficient (that is, beta).

Source: Authors' analysis of data from Clark County School District.

Notes

1. The study intended to address a third research question: "Does the availability of advanced courses differ between magnet and comprehensive high schools?" However, Clark County School District was unable to provide the data needed to address this question.
2. Because the district was interested in whether a student had ever completed an advanced course, the outcome variable of interest for this study was whether the student completed at least one advanced course as opposed to the number of advanced courses completed.
3. See appendix C for more information about the distribution of graduates from magnet and comprehensive schools based on their grade 8 CRT scale scores. The mean grade 8 CRT scale scores differ by school type, but there is a great deal of overlap in the distributions.

References

Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*. Washington, DC: U.S. Department of Education. http://eric.ed.gov/?id=ED490195

Ballou, D., Goldring, E., & Liu, K. (2006). *Magnet schools and student achievement*. New York, NY: Columbia University, Teachers College, National Center for the Study of Privatization in Education. Retrieved April 14, 2014, from http://www.ncspe.org/publications_files/OP123.pdf.

Clark County School District. (2014a). *Pledge of achievement strategic plan*. Las Vegas, NV: Author. Retrieved August 6, 2015, from http://www.ccsd.net/district/superintendent/resources/pdf/poa-strategic-plan.pdf.

Clark County School District. (2014b). *Silver state AP* summer institute*. Retrieved April 14, 2014, from http://www.silverstateap.net/.

College Board. (2000). *Dispelling a culture of mediocrity: Expanding Advanced Placement*. New York, NY: Author. http://eric.ed.gov/?id=ED445106

Dougherty, C., & Mellor, L. (2009). *Preparation matters*. Austin, TX: National Center for Educational Achievement. http://eric.ed.gov/?id=ED516789

Dougherty, C., Mellor, L., & Jian, S. (2005). *The relationship between Advanced Placement and college graduation*. Austin, TX: National Center for Educational Accountability [Now known as National Center for Educational Achievement]. http://eric.ed.gov/?id=ED519365

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12*(2), 121–138. http://eric.ed.gov/?id=EJ766180

Geiser, S., & Santelices, V. (2004). *The role of Advanced Placement and Honors courses in college admissions*. Berkeley, CA: Center for Studies in Higher Education. http://eric.ed.gov/?id=ED492533

Jackson, C. K. (2010). A little now for a lot later: A look at a Texas Advanced Placement Incentive Program. *The Journal of Human Resources, 45*(3), 591–639. http://eric.ed.gov/?id=EJ889245

Klepfer, K., & Hull, J. (2012). *High school rigor and good advice: Setting up students to succeed*. Alexandria, VA: The Center for Public Education. Retrieved April 15, 2014, from http://www.centerforpubliceducation.org/Main-Menu/Staffingstudents/High-school-rigor-and-good-advice-Setting-up-students-to-succeed/High-school-rigor-and-good-advice-Setting-up-students-to-succeed-Full-Report.pdf.

Klopfenstein, K., & Thomas, K. (2005). *The Advanced Placement performance advantage: Fact or fiction?* Paper presented at the 2005 American Economic Association

Conference, Philadelphia, PA. Retrieved April 15, 2014, from http://www.aeaweb.org/annual_mtg_papers/2005/0108_1015_0302.pdf.

Klopfenstein, K., & Thomas, M. K. (2009). The link between Advanced Placement experience and early college success. *The Southern Economic Journal, 75*(3), 873–891.

Lichten, W. (2010). Whither Advanced Placement—Now? In P. M. Sadler, G. Sonnert, R. H. Tai, & K. Klopfenstein (Eds.), *AP: A critical examination of the Advanced Placement Program* (pp. 233–234). Cambridge, MA: Harvard Education Press. http://eric.ed.gov/?id=ED515277

Long, M. C., Iatarola, P., & Conger, D. (2009). Explaining gaps in readiness for college-level math: The role of high school courses. *Education Finance and Policy, 4*(1), 1–33. http://eric.ed.gov/?id=EJ849850

Rice, J. (2012). *Lessons learned*: *Findings from REL West NV 3.3.3: Clark County School District technical assistance on research*. Memo delivered to the Institute of Education Sciences. San Francisco, CA: Regional Educational Laboratory West at WestEd.

Rice, J., Huang, M., Lash, A., & Peterson, M. (2012, December). *Findings from REL West NV 3.3.3: Clark County School District technical assistance on research*. Presentation to the Southern Workgroup of the Nevada Education Research Alliance. San Francisco, CA: Regional Educational Laboratory West at WestEd.

U.S. Department of Education, National Center for Education Statistics. (2013). *Common core of data*. Washington, DC: Author. Retrieved May 5, 2014, from http://nces.ed.gov/ccd/.

U.S. Department of Education, Office of Civil Rights. (2000). *Evaluation of the magnet schools assistance program, 1998 grantees: Year 1 interim report*. Washington, DC: Author.

U.S. Department of Education, Office of Civil Rights. (2004). *Achieving diversity: Race-neutral alternatives in American education*. Washington, DC: Author. http://eric.ed.gov/?id=ED486351

U.S. Department of Education, Office of Civil Rights. (2008). *Creating and sustaining successful K–8 magnet schools*. Washington, DC: Author. http://eric.ed.gov/?id=ED504196

Wainer, H. (2011). *Uneducated guesses: Using evidence to uncover misguided education policies*. Princeton, NJ: Princeton University Press. http://eric.ed.gov/?id=ED538074

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