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# Participation and pass rates for college preparatory transition courses in Kentucky

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CNA

## Key findings

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This study of Kentucky students who take college preparatory transition courses (voluntary courses in math and reading available to grade 12 students who test below state benchmarks on the ACT in grade 11) finds that:

- Statewide, the percentage of students in the approaching benchmarks category (the category recommended for transition courses) is higher in math (37.5 percent) than in reading (20.5 percent).
- Statewide participation in transition courses for students in the approaching benchmarks category is 28.1 percent in math and 8.0 percent in reading.
- Statewide pass rates for students in the approaching benchmarks category who take transition courses are 94.7 percent for math and 96.1 percent for reading.

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## Summary

In response to growing concerns about college readiness, the Kentucky legislature revised the state's assessment and accountability system in an effort to increase the number of students who are ready for college when they graduate. The Kentucky Department of Education and the Kentucky Council on Postsecondary Education responded by redefining college and career readiness, articulating objectives and outcomes to measure progress, and establishing pathways to achieve those objectives.

### **Kentucky students scoring below state benchmarks on the ACT in grade 11 have the opportunity to take college preparatory transition courses in grade 12**

This study focuses on one of these pathways: college preparatory transition courses in math and reading for grade 12 students scoring below state benchmarks on the ACT assessment administered in grade 11. This study describes the types of students who take these transition courses, along with participation and pass rates. The study presents results separately for students falling into three state benchmark categories on the ACT:

- *Meeting state benchmarks*: scoring 19 or higher on the ACT math assessment and 20 or higher on the ACT reading assessment.
- *Approaching state benchmarks*: scoring 16–18 on math and 17–19 on reading.
- *Performing below state benchmarks*: scoring 15 or lower on math and 16 or lower on reading.

The Kentucky Department of Education provides curricula for one math college preparatory transition course and one reading course, though schools and districts may choose their own curricula. The department recommends that students in the approaching benchmarks category receive college preparatory interventions (such as transition courses), but participation is not mandatory or restricted to students approaching benchmarks, and not all schools offer both courses.

### **Data on transition courses can inform efforts to increase college readiness**

The Southeast/South-Central Educational Cooperative (SE/SC Coop), a research alliance partner with Regional Educational Laboratory Appalachia, worked with a local college to develop its own curricula for these transition courses. The SE/SC Coop wants to know which students participate in the transition courses, how these students perform, and how students in SE/SC Coop district schools compare with other students in the state.

The analyses of the participation and pass rates are based on the population of grade 12 students in Kentucky public schools in 2011/12. The results for the SE/SC Coop districts are compared with results for a set of districts in Kentucky with similar characteristics (the matched comparison districts) and with results for the state as a whole. Results are also disaggregated by student and school subgroup. These comparisons can help the SE/SC Coop districts set measurable goals for increasing the college readiness of their students. The disaggregated results will allow the SE/SC Coop to identify gaps in performance across subgroups and work to reduce them. The findings can also inform the SE/SC Coop's broader research agenda.

**While a majority of Kentucky students do not enroll in transition courses, regardless of their ACT performance, statewide pass rates are higher than 90 percent for those who do enroll**

The study finds that:

- *Participation in transition courses for all students (regardless of ACT performance) is higher in SE/SC Coop districts than in matched comparison districts and in the state as a whole.* Participation in math transition courses for all students is 26.7 percent in the SE/SC Coop districts, 19.1 percent in the matched comparison districts, and 18.7 percent in the state as a whole. For reading, participation is even lower, at 7.5 percent in the SE/SC Coop districts, 2.4 percent in the matched comparison districts, and 5.4 percent in the state as a whole.
- *More students are in the approaching benchmarks category in math than in reading.* These are the students that the Kentucky Department of Education recommends for transition courses. The percentage of students in the approaching benchmarks category is nearly twice as high in math (40.0 percent in the SE/SC Coop districts and 39.0 percent in the matched comparison districts) as in reading (20.5 percent and 21.5 percent). Statewide, the gap is similar, at 37.5 percent in the approaching benchmarks category in math and 20.5 percent in reading. The percentage of students in the performing below benchmarks category is lower in math (21.3 percent statewide) than in reading (35.5 percent statewide).
- *Most students in the approaching benchmarks category do not enroll in college preparatory transition courses.* Statewide participation in transition courses for students in the approaching benchmarks category is 28.1 percent in math and 8.0 percent in reading. These are lower-bound estimates, as schools could be offering transition courses that cannot be identified by state course codes or course names.
- *For students in the approaching benchmarks category, participation in transition courses is greater in SE/SC Coop districts than in matched comparison districts and in the state as a whole.* For students in the approaching benchmarks category, participation in math is 39.8 percent in the SE/SC Coop districts, 26.4 percent in the matched comparison districts, and 28.1 percent in the state as a whole. Participation in reading is lower than in math: 17.3 percent among SE/SC Coop districts, 2.8 percent in the matched comparison districts, and 8.0 percent in the state as a whole. Participation in both math and reading is lower for students in the meeting benchmarks and performing below benchmarks categories than for students in the approaching benchmarks category.
- *In both math and reading most students who take college preparatory transition courses pass them.* Pass rates for students in the approaching benchmarks category are 98.0 percent for math and 88.8 percent for reading in the SE/SC Coop districts, 96.1 percent for math and 100 percent for reading in the matched comparison districts, and 94.7 percent for math and 96.1 percent for reading in the state as a whole.

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## **Why this study?**

High school course-taking requirements do not ensure that students graduate with the skills to succeed in college-level courses (Long, Iatarola, & Conger, 2009). Many high school students doing well enough to graduate do not realize that they are unprepared for introductory college courses without remediation (Venezia & Kirst, 2005; Kirst & Bracco, 2004). Together with the weak articulation between secondary and postsecondary education, this lack of awareness can contribute to low college success rates for underprepared students (Rosenbaum, 2011).

In 2009 the Kentucky legislature declared that the state's education system was in a state of emergency (An Act Relating to Education Assessment and Declaring an Emergency, 2009). Kentucky ranked 47th in the country in bachelor's degree attainment, and 41 percent of first-time freshmen in postsecondary institutions needed remediation in one or more subjects during 2007/08 (Kentucky Department of Education, 2010). In response to these growing concerns, the Kentucky legislature mandated a new state assessment and accountability system to "increase the rigor and focus the content of P-12 education, thereby increasing the number of students that are college ready" (Kentucky Council on Postsecondary Education, 2010a, p. 1). The Kentucky Department of Education (KDE) and the Kentucky Council on Postsecondary Education (CPE) responded by redefining college and career readiness, articulating objectives and outcomes to measure progress, and establishing pathways to achieve those objectives.

***The Kentucky Department of Education recommends that students scoring 1-3 points below state benchmarks on the ACT receive college-readiness intervention***

### **Kentucky high schools offer college preparatory transition courses to increase college readiness**

Assessments are one way to help students understand their level of college readiness and overcome any deficiencies (Tierney, Bailey, Constantine, Finkelstein, & Hurd, 2009). Postsecondary outcomes have improved faster than the national average in states and districts that require schools to use the ACT or other assessments that predict college readiness (ACT, 2008a, 2008b, 2009a, 2009b). But there is no proof that requiring such assessments caused the improvements. Other changes could have had an impact; for example, state standards or high school graduation requirements might have become more rigorous (ACT, 2008a, 2008b, 2009a, 2009b).

Since spring 2008 all grade 11 students in Kentucky have been required to take the ACT. The CPE has established college-readiness benchmarks for the ACT: a score of 19 in math and 20 in reading (Kentucky Council on Postsecondary Education, 2010b). These benchmarks are lower than the ACT's own benchmark scores of 22 in math and 21 in reading (ACT, 2011). The KDE recommends that students scoring 1-3 points below the state benchmarks (referred to as the students approaching the state benchmarks category) receive college-readiness intervention. One such intervention is a college preparatory transition course.

To prepare students in the approaching state benchmarks category to enroll in college credit-conferring courses and increase their likelihood of success in college, the state developed curricula for college preparatory transition courses in math (available to schools in 2009/10) and reading (2010/11; box 1). Participation is open—any student may enroll—and voluntary, even for the main target group, students in the approaching state benchmarks category.

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## Box 1. College preparatory transition courses in Kentucky

All Kentucky public high schools were required to offer an intervention to increase college readiness starting in the 2010/11 school year. Providing college preparatory transition courses in math and reading is just one strategy. More informal interventions, such as afterschool tutoring, could also be offered, but they are not covered in this study.

College preparatory transition courses in Kentucky have the following characteristics:

- *Course credit:* The transition courses in math can count toward the required graduation requirements in math, and the transition courses in reading can count toward elective credit on students' transcripts (Southern Regional Education Board [SREB], 2011).
  - *Content:* Course content must be aligned with the ACT, the Common Core State Standards, and Kentucky's college and career readiness standards (ACT, 2010; Kentucky Department of Education, 2010). The transition courses in math address the skills needed for introductory, credit-conferring, college-level courses. The transition courses in reading focus on reading skills in social studies, arts and humanities, science, and literary nonfiction.
  - *Curriculum:* Schools can develop their own transition courses or use courses developed by the state or another provider. College preparatory transition courses have been developed by high school teachers, by faculty at community colleges and four-year universities, and by teams of educators working through the Kentucky Department of Education's Office of Next Generation Learners (SREB, 2011). The state curricula were made available to schools in 2009/10 for math and in 2010/11 for reading.
  - *Format:* Although all college preparatory transition courses must be taught by a certified teacher, Kentucky allows wide variation in format. Each school can choose its content provider and how content is delivered (face-to-face, online, or hybrid). Schools can also choose whether to offer courses during or outside the school day, or both.
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## Several other states also offer college preparatory transition courses

The KDE is one of many state and local education agencies that emphasize graduating students from high school who are prepared for the academic demands of college. From Florida's "Advanced Placement for All" to Chicago's "College Preparatory Curriculum for All," states and districts are providing rigorous curricula, setting high expectations, and imposing tougher graduation standards. The Southern Regional Education Board has noted that grade 12 college preparatory transition courses are in use or under development in several of its member states—Florida, Kentucky, Texas, Virginia, and West Virginia (SREB, 2011). The programs vary, however, in types of students targeted for participation, whether courses are required or elective, the content and format of the courses, the entities responsible for developing the courses, and the availability of professional development for teachers of such courses.

Several studies in other states describe participation and performance in college-readiness testing and transition courses for high school students. Under California's Early Assessment Program, participation rates in college placement tests in spring 2010 were 77 percent of eligible students in math and 84 percent in English (California Department of Education, 2011). Among students who took the exams the following spring, 58 percent demonstrated college readiness in math and 23 percent in English (California Department of Education, 2012). For Florida's College and Career Readiness Initiative the pass rate for students taking the college placement test was 30 percent in math, 35 percent in reading, and 49 percent in writing. Among students who did not meet college-readiness benchmarks, participation

in transition courses was 44 percent in math, 10 percent in reading, and 6 percent in writing (Florida College System, 2010).

Kentucky should not necessarily expect similar results, because California's and Florida's initiatives differ from Kentucky's in important ways. For example, in Florida some college preparatory courses in both math and language arts count toward graduation requirements, whereas in Kentucky only the math course does. States can also differ in course participation, which can influence outcomes such as course pass rates.

In Virginia a qualitative study of the implementation of the state's Capstone course indicated disagreement among stakeholders at the state, school division, and district levels regarding how to define college readiness and the types of students who might benefit most from the courses (Wathington et al., 2012). This suggests that it is important to look at how students' characteristics affect their success in college preparatory transition courses.

### **To improve course offerings, more needs to be known about the types of students who take college preparatory transition courses and how they perform**

Kentucky has needed information on the statewide availability and use of college preparatory transition courses and on the characteristics of students who take them. This study provides descriptive analyses to help state policymakers and district leaders understand student performance on the ACT based on CPE state benchmarks and participation and pass rates in transition courses. The analyses use data for a cohort of first-time grade 12 students in all public high schools in Kentucky in 2011/12. (See box 2 and appendix A for details on data and methodology.)<sup>1</sup>

The report classifies students into three groups based on their ACT scores in math and reading:

- *Meeting state benchmarks*: scoring 19 or higher on the ACT math assessment and 20 or higher on the ACT reading assessment.
- *Approaching state benchmarks*: scoring 16–18 on math and 17–19 on reading.
- *Performing below state benchmarks*: scoring 15 or lower on math and 16 or lower on reading.

The report compares results for students in Southeast/South-Central Educational Cooperative (SE/SC Coop; box 3) districts with those for students in a group of matched comparison districts and statewide. With student performance information for both SE/SC Coop and matched comparison districts, SE/SC Coop will be able to set measurable goals for improving the college readiness of the students in its districts. The results may also encourage state policymakers and district leaders to consider strategies to increase participation in transition courses.

Although Kentucky offers several types of math and reading interventions for grade 12 students who do not meet college-readiness benchmarks, this study focuses on full-semester college preparatory transition courses.

### **Learning who takes the classes and how well they do**

Three questions about Kentucky students in grade 12 in 2011/12 guided the study. Each question looks at students in the three state benchmark categories for math and

***This study provides descriptive analyses to help state policymakers and district leaders understand student performance on the ACT based on state benchmarks and participation and pass rates in college preparatory transition courses***

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## Box 2. Research process

**Data:** The Kentucky Department of Education’s Division of Enterprise Data provided de-identified student data for 2011/12 on school enrollment, demographics, and course records. The department’s Office of Assessment and Accountability provided de-identified grade 11 ACT records for the same students to assess their college readiness. The school locale variable was downloaded from the 2010/11 Common Core of Data (U.S. Department of Education, 2012). Tables B1–B6 in appendix B describe how college preparatory transition courses were identified using student course records.

**Sample:** The study population consisted of Kentucky public high school students who were in grade 12 for the first time during the 2011/12 school year ( $N = 44,296$ ). Students who repeated grade 12 were omitted because they might have participated in a college preparatory transition course the year before. Students whose first school enrollment record for grade 12 occurs after October 1, 2011, were also omitted. No tests of statistical significance were conducted because the analysis included the entire population of students with nonmissing data statewide, as well as all students in the Southeast/South-Central Educational Cooperative (SE/SC Coop) districts and the matched comparison districts.

**Matched comparison group:** The results for the SE/SC Coop districts were compared with those for a set of matched comparison districts. The matched comparison districts were identified through a propensity score model, so the districts in both groups had similar baseline ACT scores in math and reading. They also had similar student and school characteristics (see appendix C). This helped ensure that both SE/SC Coop and matched comparison districts served similar students with similar backgrounds.

**Missing data:** Students missing ACT scores, course records in math and English/language arts, or data on student or school characteristics were excluded. The analytic sample included 33,928 students. Data on one or more variables were missing for 10,368 students (approximately 23 percent). A comparison of the outcomes for students with and without missing data found statistically significant differences in many outcomes (students recommended for college preparatory transition courses, participation rates, and pass rates; see appendix A).

**Data limitations:** The administrative data used for this study identify only college preparatory transition courses that match the state course code or course name. The statewide data indicate that 60 percent of high schools offer no transition courses, 24 percent offer courses only in math, 5 percent offer courses only in reading, and 12 percent offer both. In the SE/SC Coop districts, 15 percent of schools offer no college preparatory transition courses, 35 percent offer courses only in math, 23 percent offer courses only in reading, and 27 percent offer both. If schools are offering additional college preparatory transition courses that cannot be identified by the Kentucky Department of Education course code or name, the findings in this report could underestimate actual enrollment. In addition, if schools set their own criteria for placement in transition courses instead of using the ACT benchmark scores established by the Kentucky Council on Postsecondary Education and recommended by the Kentucky Department of Education, some of the differences in participation could be attributed to school policies rather than to differences in voluntary student participation. (For other study limitations, see appendix A.)

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### Box 3. Southeast/South-Central Educational Cooperative

The Southeast/South-Central Educational Cooperative (SE/SC Coop) is a research alliance focused on reaching the Kentucky legislature's goals of reducing the need for college remediation and increasing college completion. Its goal is to increase the number of high school graduates classified as college- or career-ready when they graduate, based on statewide definitions.

The SE/SC Coop includes 24 of the state's 174 public school districts. Superintendents or their designees are the primary attendees at the group's monthly meetings. Districts discuss common challenges, and when possible the SE/SC Coop provides resources and training in areas of critical need. SE/SC Coop districts include 28 high schools—14 in rural locales and 14 in towns.

The Kentucky Department of Education developed curricula for college preparatory transition courses and made them available to schools in 2009/10 for math and in 2010/11 for reading. The state also gave districts the option to develop their own curricula, and some schools in SE/SC Coop districts did so in collaboration with Eastern Kentucky University (EKU). Schools in SE/SC Coop districts have been publicly interested in college preparatory transition courses since summer 2009, when EKU's Department of Mathematics and Statistics partnered with schools in SE/SC Coop districts to design and pilot college preparatory transition courses in math (Thomas & Williams, 2010). More recently some of the schools worked with EKU to develop a transition course in reading. Several schools in SE/SC Coop districts have offered these courses to their students.

*The report focuses on students assessed as approaching state benchmarks on the ACT, because these are the students recommended for participation in college preparatory transition courses*

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reading: those meeting the benchmarks in grade 11, those approaching the benchmarks, and those performing below the benchmarks. For each question the analysis separates students into these three categories—to better understand the types of students who participate in college preparatory transition courses and how their performance varies by their level of college readiness (as measured by ACT scores).

- What are the number and percentage of grade 12 students in the three state benchmark categories?
- What are the participation rates in full-semester college preparatory transition courses in math and reading for grade 12 students in the three state benchmark categories?
- Among grade 12 students who enroll in full-semester college preparatory transition courses in math and reading, what is the pass rate (percentage of students earning credit for the course) in 2011/12 for students in the three state benchmark categories?

The results for each research question are disaggregated by student and school characteristics to identify any gaps in performance. Disaggregating results also enables comparing districts serving similar students with similar backgrounds. Based on nationwide scores, it seems likely that the percentage of students recommended for participation in college preparatory transition courses would differ by race/ethnicity (average composite scores on the ACT nationwide varied from 17.0 for Black students to 24.6 for Asian students) and by sex (the percentage of students meeting all four college-readiness benchmarks was 29 percent for male students and 22 percent for female students; ACT, 2012). The results are also disaggregated by other student subgroups—low-income status (based on eligibility for free or reduced-price lunch), limited English proficiency status, and special education status

(based on whether a student has an individualized education program)—and by school subgroups (locale and enrollment).

The report focuses on students assessed as approaching state benchmarks on the ACT, because these are the students the KDE recommends for participation in college preparatory transition courses. And the report focuses on the subgroup results for the state as a whole because the numbers of observations for some of the subgroups for the SE/SC Coop districts and the matched comparison districts are too small.

### **A larger percentage of students are in the approaching benchmarks category in math than in reading**

A larger percentage of students are in the approaching benchmarks category in math than in reading in the SE/SC Coop districts, the matched comparison districts, and the state as a whole (figures 1 and 2). The percentage of students in the approaching benchmarks category is nearly twice as high in math (40.0 percent in the SE/SC Coop districts and 39.0 percent in the matched comparison districts) as in reading (20.5 percent in the SE/SC Coop districts and 21.0 percent in the matched comparison districts), largely because the percentage of students performing below the state benchmarks is smaller in math than in reading.

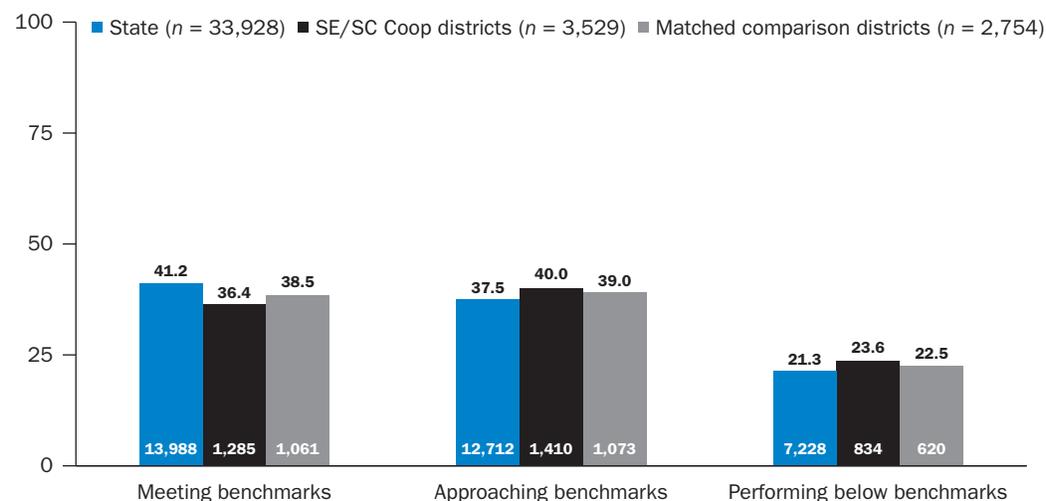
*The percentage of students in the approaching benchmarks category is nearly twice as high in math as in reading*

### **A smaller percentage of students are in the performing below benchmarks category in math than in reading**

Statewide, 21.3 percent of students are in the performing below state benchmarks category in math, compared with 35.5 percent in reading (see figures 1 and 2). The percentage of

**Figure 1. Performance on spring 2011 ACT math assessment for Kentucky grade 12 students, 2011/12**

Percent of grade 12 students



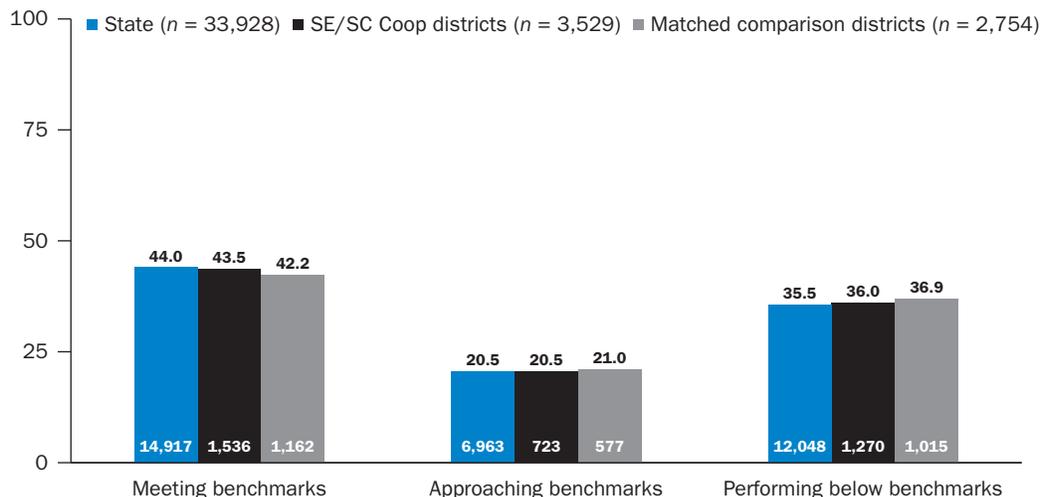
SE/SC Coop is Southeast/South-Central Educational Cooperative.

**Note:** Tests of statistical significance were not conducted because the analyses include the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Figure 2. Performance on spring 2011 ACT reading assessment for Kentucky grade 12 students, 2011/12**

Percent of grade 12 students



SE/SC Coop is Southeast/South-Central Educational Cooperative.

**Note:** Components may not sum to totals because of rounding. Tests of statistical significance were not conducted because the analyses include the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

students in the meeting state benchmarks category is slightly smaller in math (41.2 percent) than in reading (44.0 percent). For all three categories, results for the SE/SC Coop districts and the matched comparison districts are within 1.0–4.8 percentage points of the statewide results in math and within 1.8 percentage points in reading.

**The proportions of students in the approaching benchmarks category differ by student and school subgroup, with larger differences in math than in reading**

In both math and reading the largest statewide variation in the percentage of students in the approaching benchmarks category was found across the race/ethnicity student subgroups (table 1).

For math, the percentage of students in the approaching benchmarks category is 29.4 percent for other races,<sup>2</sup> 37.2 percent for White students, 40.8 percent for Black students, and 41.4 percent for Hispanic students, a spread of 12 percentage points. For reading, the percentages are 16.8 percent for Hispanic students, 18.6 percent for students of other races, 20.6 percent for Black students, and 20.7 percent for White students, a spread of nearly 4 percentage points. For reading, the percentage of White students in the meeting state benchmarks category (46.9 percent) is more than twice that of Black students (22.1 percent), while the percentage of Black students in the performing below state benchmarks category (57.4 percent) is nearly twice that of White students (32.5 percent; see table C2 in appendix C).

For math, three student subgroups have a difference of more than 3 percentage points in the percentage of students in the approaching state benchmarks category. The percentage is

**Table 1. Percentage of Kentucky grade 12 students in 2011/12 in the approaching state benchmarks category on the spring 2011 ACT math and reading assessments, by student and school subgroup**

Subgroup	Number of observations	Approaching benchmarks on ACT math	Approaching benchmarks on ACT reading
Total	33,928	37.5	20.5
<b>Student subgroup</b>			
<i>Race/ethnicity</i>			
White	28,879	37.2	20.7
Black	3,423	40.8	20.6
Hispanic	823	41.4	16.8
Other <sup>a</sup>	803	29.4	18.6
<i>Sex</i>			
Female	17,161	40.0	20.8
Male	16,767	34.9	20.3
<i>Low-income status</i>			
Eligible for free or reduced-price lunch	14,865	41.9	21.3
Not eligible	19,063	34.0	19.9
<i>Limited English proficiency status</i>			
Limited English proficient	981	36.0	15.4
Not limited English proficient	32,947	37.5	20.7
<i>Special education status</i>			
Has individualized education program	3,814	30.0	17.0
Does not have program	30,114	38.4	21.0
<b>School subgroup</b>			
<i>Locale</i>			
Urban	7,358	34.1	18.6
Suburban	5,274	35.6	20.8
Town	8,297	38.1	20.7
Rural	12,999	39.7	21.3
<i>Size (number of students in grades 9–12)</i>			
Fewer than 500	3,165	40.3	21.0
500–749	5,318	39.5	20.7
750–999	6,866	38.0	20.3
1,000 or more	18,579	36.2	20.5

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author’s calculations based on data from the Kentucky Department of Education.

higher for female students than for male students (5.1 percentage point difference), for students from low-income households than for other students (7.9 percentage points), and for students who are not in special education than for those who are (8.4 percentage points). The percentage of students in the meeting state benchmarks category is lower for female students and students from low-income households and higher for students who are in special education.

For reading, two student subgroups have a difference of more than 3 percentage points in the percentage of students in the approaching state benchmarks category. The percentage is lower for students who are in special education than for those who are not (4.0 percentage

point difference) and for limited English proficient students than for other students (5.3 percentage points). The percentage of students in the performing below state benchmarks category is higher for students in special education (62.2 percent) and limited English proficient students (60.9 percent; see table C2 in appendix C). (Tables C1 and C2 show the complete subgroup results for students meeting, approaching, and performing below the state benchmarks on the math and reading ACT.)

For math, the percentage of students in the approaching state benchmarks category is higher in rural schools and small schools than in urban schools and large schools, with a gap of 5.6 percentage points between the highest (rural schools, at 39.7 percent) and the lowest (urban schools, at 34.1 percent). The percentage of students in the meeting benchmarks category is higher in urban schools than in rural schools. And there is a 4.1 percentage point gap across school sizes for percentages of students in the approaching benchmarks category, which range from 36.2 percent for students in schools with 1,000 or more students to 40.3 percent for students in schools with fewer than 500 students. The percentage of students in the meeting state benchmarks category is higher in larger schools than in small schools.

For reading, the percentage of students in the approaching state benchmarks category is similar for all school subgroups, with gaps of less than 3 percentage points for both locale and size.

**While most students do not participate in college preparatory transition courses, overall participation is higher in math than in reading**

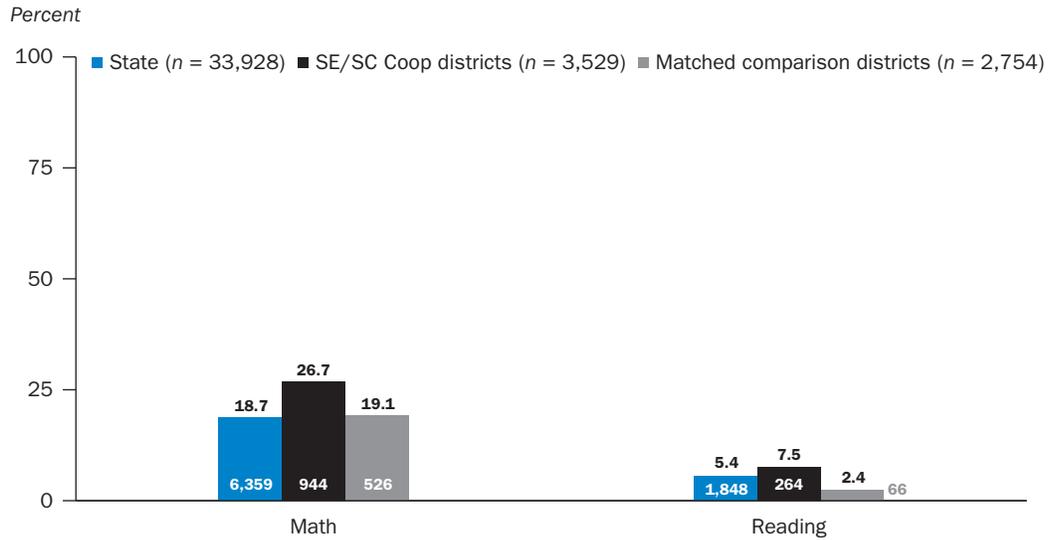
Participation in college preparatory transition courses is low.<sup>3</sup> For math, overall participation is 26.7 percent of grade 12 students in the SE/SC Coop districts, 19.1 percent in the matched comparison districts, and 18.7 percent in the state as a whole (figure 3). For reading, participation is even lower, at 7.5 percent in the SE/SC Coop districts, 2.4 percent in the matched comparison districts, and 5.4 percent in the state as a whole. Even among the students that the KDE recommends for the courses (those in the approaching state benchmarks category), a majority do not enroll. Across all categories participation is higher in math than in reading. For students in the approaching state benchmarks category, statewide participation is 28.1 percent in math and 8.0 percent in reading.

There are several possible reasons for why participation in college preparatory transition courses is higher in math than in reading. First, as discussed in the previous section, the percentage of students statewide in the approaching state benchmarks category is nearly twice as high in math (37.5 percent) as in reading (20.5 percent). Demand could be lower for the transition courses in reading because the courses are intended for students in the approaching benchmarks category, and there are fewer students in that category in reading than in math. Second, the math transition courses count toward high school graduation requirements, while the reading courses do not. Students might be less inclined to voluntarily enroll in college preparatory transition courses if the course credit does not count toward their graduation requirements.

Because many students with ACT scores outside the state-recommended range for taking college preparatory transition courses also enroll, the ACT performance of these students is examined to see whether participation changes at certain points along the ACT score distribution. For math, participation is highest for students with ACT math scores of 11–18 (figure 4),

***Participation in college preparatory transition courses is low, ranging from 26.7 percent of grade 12 students in SE/SC Coop districts to 18.7 percent in the state as a whole in math and from 7.5 percent in SE/SC Coop districts to 2.4 percent in matched comparison districts in reading***

**Figure 3. Participation rate in college preparatory transition courses in math and reading by Kentucky grade 12 students, 2011/12**

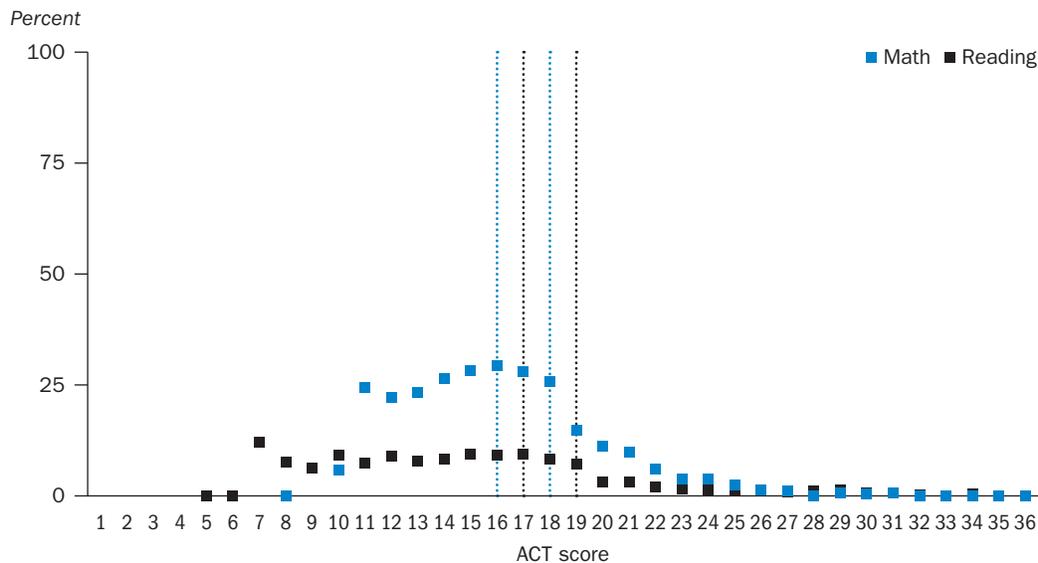


SE/SC Coop is Southeast/South-Central Educational Cooperative.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Figure 4. Participation rate in college preparatory transition courses in math and reading by Kentucky grade 12 students in 2011/12, by spring 2011 ACT math and reading scores**



N = 33,928.

**Note:** Vertical lines indicate the range of scores recommended by the Kentucky Department of Education for participation in college preparatory transition courses. Data points are missing where there are fewer than three observations.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

meaning that students with ACT scores of up to 5 points lower than the state-recommended range (16–18) participated in college preparatory transition courses at rates similar to those for students scoring within the range. There is a noticeable drop-off in participation for students at the upper end of the range (scores higher than 18).

For reading, the results are similar, but with an even broader range of ACT performance for students enrolling in the transition courses. Participation peaks at more than 5 percent for students with ACT reading scores of 7–19, meaning that students with scores of up to 10 points lower than the state-recommended range (17–19) participate in college preparatory transition courses at rates similar to those scoring within the range.

### **Participation in transition courses is higher in Southeast/South-Central Educational Cooperative districts than in matched comparison districts and in the state as a whole**

The SE/SC Coop districts have higher participation rates in college preparatory transition courses in math and reading than both the matched comparison districts and the state as a whole.

#### **A majority of students recommended for transition courses are not participating**

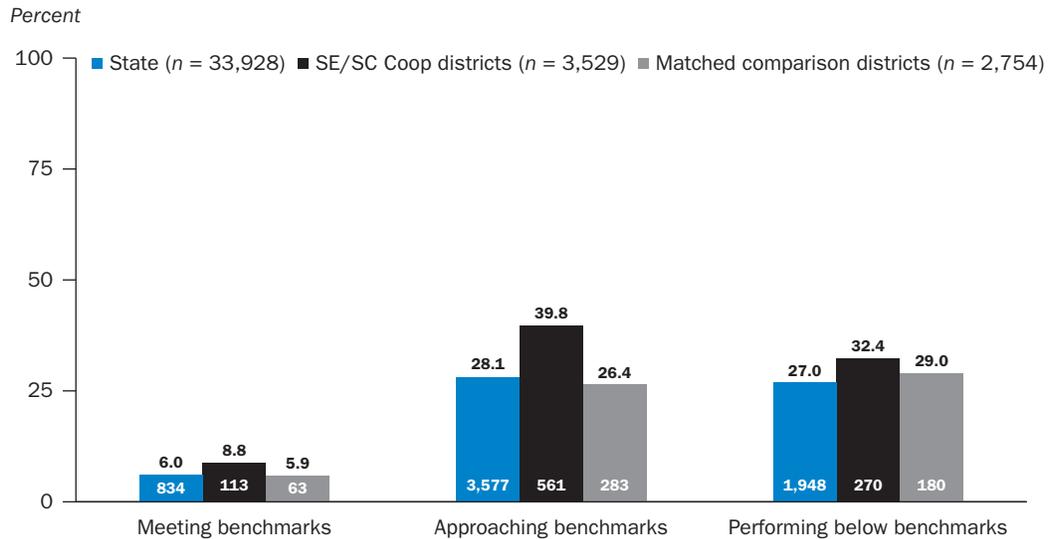
For math, participation in transition courses for students in the approaching state benchmarks category ranges from 39.8 percent in the SE/SC Coop districts to 28.1 percent in the state as a whole and to 26.4 percent in the matched comparison districts (figure 5). This means that a majority of the students recommended for transition courses (students scoring 1–3 points below the state benchmarks) are not participating. In addition, schools are not limiting participation to students within the targeted ACT score range (see figure 4). Participation in the college preparatory transition courses ranges from 5.9 percent in the matched comparison districts to 8.8 percent in the SE/SC Coop districts for students meeting the benchmarks and from 27.0 percent statewide to 32.4 in the SE/SC Coop districts for students performing below the benchmarks.

#### **Participation in transition courses is higher in math than in reading**

Participation in college preparatory transition courses is higher in math than in reading for all state benchmark categories for both SE/SC Coop districts and matched comparison districts and for the state as a whole (see figures 5 and 6). As with math, participation in transition courses in reading is equal to or higher in the SE/SC Coop districts than in the matched comparison districts for all three benchmark categories (see figure 6). In the SE/SC Coop districts participation is 1.8 percent for students meeting state benchmarks, 17.3 percent for students in the approaching benchmarks category, and 8.7 percent for students in the performing below benchmarks category. In the matched comparison districts participation is 2.8 percent for students in the approaching benchmarks category and 4.4 percent for students in the performing below benchmarks category.<sup>4</sup> Statewide, participation is 1.6 percent for students in the meeting benchmarks category, 8.0 percent for students in the approaching benchmarks category, and 8.7 percent for students in the performing below benchmarks category.

*In both math and reading, participation in college preparatory transition courses for the target group of students (those in the approaching benchmarks category) is highest in the SE/SC Coop districts, at 39.8 percent in math and 17.3 percent in reading*

**Figure 5. Participation rate in college preparatory transition courses in math by Kentucky grade 12 students in 2011/12, by performance on the spring 2011 ACT math assessment**

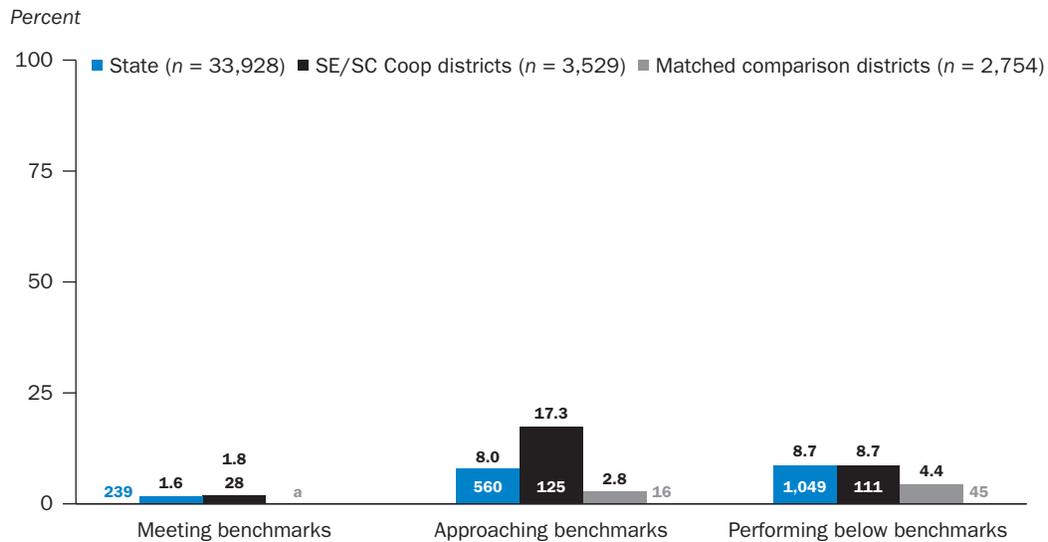


SE/SC Coop is Southeast/South-Central Educational Cooperative.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Figure 6. Participation rate in college preparatory transition courses in reading by Kentucky grade 12 students in 2011/12, by performance on the spring 2011 ACT reading assessment**



SE/SC Coop is Southeast/South-Central Educational Cooperative.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$ .

**Source:** Author's calculations based on data from the Kentucky Department of Education.

## Participation in college preparatory transition courses varies across several student and school subgroups in math and across school subgroups in reading

Across student subgroups the greatest variation in participation in college preparatory transition courses in math for students in the approaching benchmarks category is by race/ethnicity, ranging from around 19 percent for Black students and students of other races to 29.7 percent for White students (table 2). There are differences of more than 3 percentage points for several other subgroups, with higher participation for students who are not limited English proficient (a gap of 10.8 percentage points) and for students who are not in special education (4.6 percentage points). By contrast, participation in transition courses in reading for students in the approaching benchmarks category is similar for all student subgroups, with gaps less than 3 percentage points. (See appendix C for complete subgroup results.)

By school subgroup the greatest variation in participation in transition courses in math for students in the approaching state benchmarks category is by locale, ranging from 3.9 percent in suburbs to around 30 percent in rural locales and towns.<sup>5</sup> There are also variations by school size, with participation ranging from 21 percent for schools with enrollment of 750–999 students to 39.2 percent for schools with fewer than 500 students.

For reading, the greatest variation in participation for students in the approaching state benchmarks category is by school size, ranging from 7 percent for schools with 1,000 or more students to 16 percent for schools with fewer than 500 students. There are also variations by school locale, with participation ranging from 3.1 percent for urban schools to 9–10 percent for all other locales.

### **In both math and reading most students who take college preparatory transition courses pass them**

Pass rates are high for college preparatory transition courses in both math and reading.

#### **In math, pass rates are higher in Southeast/South-Central Educational Cooperative districts and matched comparison districts than in the state as a whole**

For math, pass rates are higher in the SE/SC Coop districts and the matched comparison districts than in the state as a whole, though all the rates are above 90 percent (figure 7). For the SE/SC Coop districts and the matched comparison districts the difference is less than 2 percentage points in each benchmark category. Statewide, the pass rate is 92.0 percent for students in the meeting state benchmarks category, 94.7 percent for students in the approaching state benchmarks category, and 91.4 percent for students in the performing below state benchmarks category.

#### **In reading, pass rates are lower in Southeast/South-Central Educational Cooperative districts than for matched comparison districts and in the state as a whole**

For reading, college preparatory transition course pass rates are lower for students in SE/SC Coop districts than in matched comparison districts and in the state as a whole. For students in the approaching state benchmarks and the performing below state benchmarks categories, pass rates are just below 90 percent in the SE/SC Coop districts and 100 percent in the matched comparison districts (figure 8). Statewide, the pass rate is 98.3 percent for students

*Across student subgroups the greatest variation in participation in college preparatory transition courses in math for students in the approaching benchmarks category is by race/ethnicity, ranging from around 19 percent for Black students and students of other races to 29.7 percent for White students*

**Table 2. Participation in college preparatory transition courses in math and reading by Kentucky grade 12 students in 2011/12 in the approaching state benchmarks category on the spring 2011 ACT math and reading assessments, by student and school subgroup**

Subgroup	Math		Reading	
	Number	Percent	Number	Percent
Total	12,712	28.1	6,963	8.0
<b>Student subgroup</b>				
<i>Race/ethnicity</i>				
White	10,734	29.7	5,975	8.1
Black	1,395	18.6	704	7.7
Hispanic	341	25.2	138	8.0
Other <sup>a</sup>	242	19.8	146	7.9
<i>Sex</i>				
Female	6,858	27.7	3,562	7.9
Male	5,854	28.6	3,401	8.2
<i>Low-income status</i>				
Eligible for free or reduced-price lunch	6,230	29.6	3,173	9.4
Not eligible	6,482	26.7	3,790	6.9
<i>Limited English proficiency status</i>				
Limited English proficient	353	17.6	151	6.0
Not limited English proficient	12,359	28.4	6,812	8.1
<i>Special education status</i>				
Has individualized education program	1,143	24.0	647	8.7
Does not have program	11,569	28.6	6,316	8.0
<b>School subgroup</b>				
<i>Locale</i>				
Urban	2,512	9.1	1,370	3.1
Suburban	1,875	39.3	1,097	8.7
Town	3,165	31.7	1,721	10.3
Rural	5,160	31.2	2,775	8.8
<i>Size (number of students in grades 9-12)</i>				
Fewer than 500	1,276	39.2	666	15.6
500-749	2,102	37.4	1,101	7.7
750-999	2,608	21.0	1,395	8.9
1,000 or more	6,726	25.9	3,801	6.5

N = 33,928.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

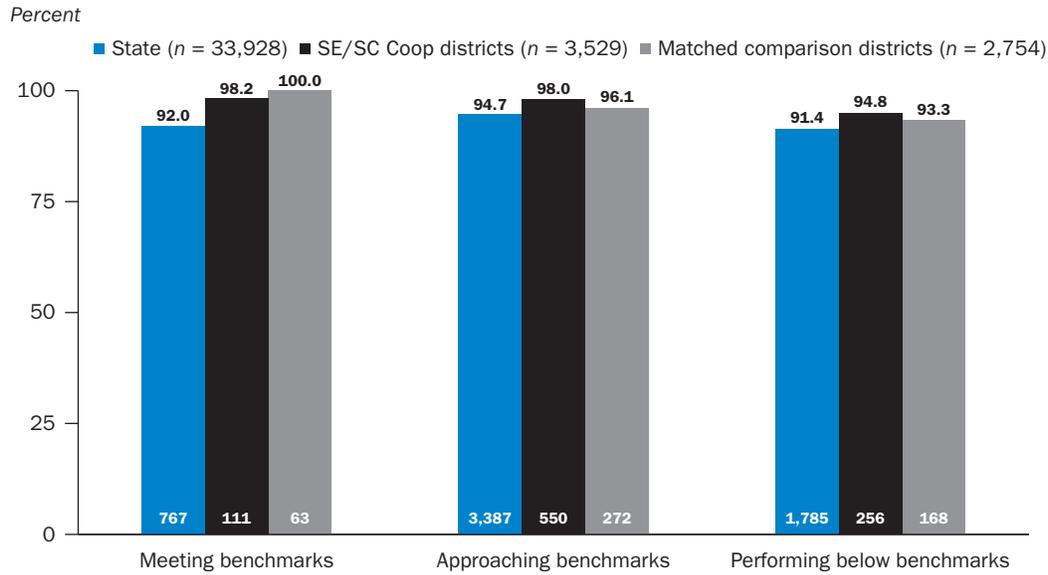
**Source:** Author's calculations based on data from the Kentucky Department of Education.

in the meeting benchmarks category, 96.1 percent for students in the approaching benchmarks category, and 96.5 percent for students in the performing below benchmarks category.

### Statewide pass rates differ by school subgroup for college preparatory transition courses in math and by student and school subgroup for courses in reading

For math, pass rates for college preparatory transition courses statewide are similar for all student subgroups, with differences of 3 percentage points or less (table 3). For reading,

**Figure 7. Pass rates in college preparatory transition courses in math for Kentucky grade 12 students in 2011/12, by performance on the spring 2011 ACT math assessment**

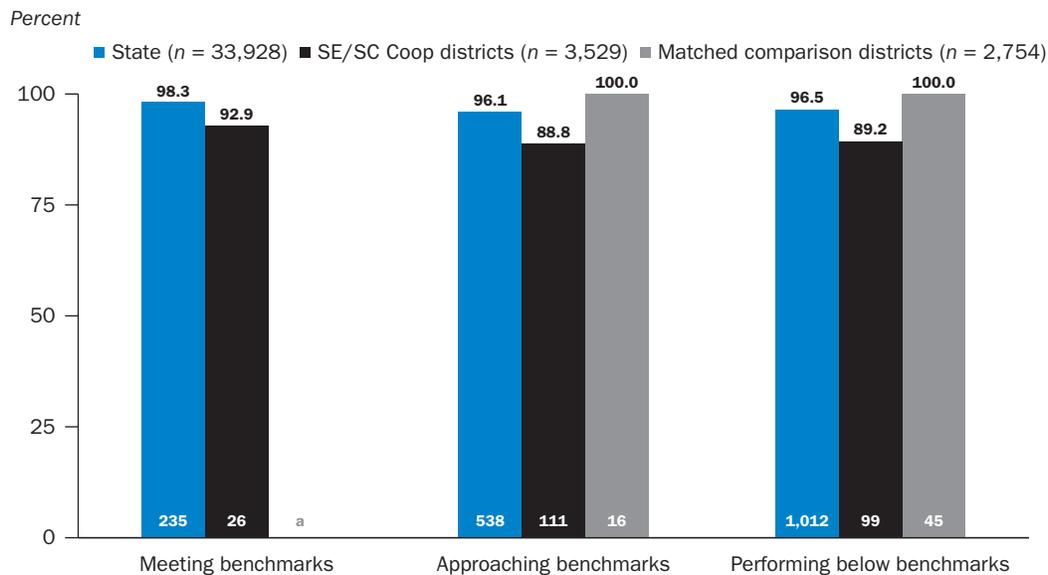


SE/SC Coop is Southeast/South-Central Educational Cooperative.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Figure 8. Pass rates in college preparatory transition courses in reading for Kentucky grade 12 students in 2011/12, by performance on the spring 2011 ACT reading assessment**



SE/SC Coop is Southeast/South-Central Educational Cooperative.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$ .

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table 3. Pass rates in college preparatory transition courses in math and reading for Kentucky grade 12 students in 2011/12 in the approaching state benchmarks category on the spring 2011 ACT math and reading assessments, by student and school subgroup**

Subgroup	Math		Reading	
	Number	Percent	Number	Percent
<b>Student subgroup</b>				
<i>Race/ethnicity</i>				
White	3,020	94.8	464	96.1
Black	244	94.2	54	100.0
Hispanic	81	94.2	10	90.9
Other <sup>a</sup>	42	93.2	10	83.3
<i>Sex</i>				
Female	1,816	95.5	266	95.0
Male	1,571	93.8	272	97.1
<i>Low-income status</i>				
Eligible for free or reduced-price lunch	1,732	93.8	283	94.6
Not eligible	1,655	95.7	255	97.7
<i>Limited English proficiency status</i>				
Limited English proficient	58	93.5	<sup>b</sup>	<sup>b</sup>
Not limited English proficient	3,329	94.7	<sup>b</sup>	<sup>b</sup>
<i>Special education status</i>				
Has individualized education program	266	97.1	54	96.4
Does not have program	3,121	94.5	484	96.0
<b>School subgroup</b>				
<i>Locale</i>				
Urban	168	73.7	41	95.3
Suburban	714	97.0	94	98.9
Town	977	97.4	174	97.8
Rural	1,528	94.9	229	93.9
<i>Size (number of students in grades 9–12)</i>				
Fewer than 500	434	86.8	99	95.2
500–749	770	98.0	83	97.6
750–999	539	98.5	110	88.7
1,000 or more	1,644	94.3	246	99.6

*N* = 33,928.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**b.** Value is suppressed to protect student identities where *n* < 10 for one or more categories.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

there are larger differences across racial/ethnic subgroups and for the limited English proficiency subgroup. Among students in the approaching state benchmarks category in reading, pass rates range from 83.3 percent for students of other races to 100 percent for Black students, a difference of 16.7 percentage points (see appendix C for complete results by subgroup).

There is also variation within school subgroups in statewide pass rates for students in the approaching state benchmarks category, but the trends in reading differ from those in math. In math, pass rates by school locale are lowest in urban schools (73.7 percent) and highest in towns (97.4 percent). For reading, variations are smaller, with pass rates ranging from 93.9 percent in rural schools to 98.9 percent in suburban schools. The gaps in pass rates by school size in math are similar to those in reading, but the school sizes with the lowest and highest rates differ by subject.

### **Study findings can help schools and districts increase college readiness and inform future research**

The findings of this study can help districts and schools as they work to increase college readiness in grade 12 and offer ideas for potential follow-up studies.

#### **How districts and schools can use this information to improve college preparation in grade 12**

The information in this study can inform discussions within the SE/SC Coop related to:

- *Seeing whether the percentage of students in a school whose performance on the ACT places them in the group recommended for transition courses correlates with whether the school offers transition courses.* In the SE/SC Coop districts 62 percent of schools offer college preparatory transition courses in math and 50 percent offer transition courses in reading. The higher percentage in math could partly account for the higher course participation in math. District staff might consider whether to base course offerings in part on the percentages of students in the approaching or performing below state benchmarks categories on the ACT.
- *Pooling resources across districts to offer transition courses.* Some schools might not offer college preparatory transition courses because there are too few students in the approaching state benchmarks category to make it worthwhile. The SE/SC Coop includes many small, rural schools that might not have the resources to offer transition courses in both subjects. These schools could consider distance learning options to allow for collaboration in offering courses.
- *Using correct course codes and names in the student information system so that the state has accurate records of student participation in transition courses.* Schools are supposed to use the standardized state course codes to report student enrollment in college preparatory transition courses, but statewide 31 schools in math and 8 in reading used a different course code even though the course name indicated that it was a college preparatory transition course. Schools might be offering college preparatory transition courses that they do not identify with the state course code or name assigned by the KDE. This means that the findings in this report could underestimate enrollment.
- *Identifying reasons for the low participation in transition courses among students whose ACT scores identify them as potentially benefitting from taking these courses, and differentiating them by student and school subgroup.* For example, participation in college preparatory transition courses in math is at least 3 percentage points higher for White students than for Black students, limited English proficient students than for other students, and students who are in special education than for students who are not. Schools might examine which math courses (if any) students in the subgroups with low participation are taking. Schools might also offer additional counseling on college preparatory transition courses to underrepresented students.

***Some schools might not offer college preparatory transition courses because there are too few students in the approaching state benchmarks category to make it worthwhile. These schools could consider distance learning options***

## Gaps in the research on college preparatory transition courses

The findings reveal several gaps in the research on college preparatory transition courses, particularly in:

- *Identifying other interventions to increase college readiness.* All Kentucky schools are required to offer some type of intervention for students not meeting state college-readiness benchmarks. The KDE recommends college preparatory transition courses, but schools may opt for something else. Because fewer than half the students recommended for college preparatory transition courses in Kentucky take such courses during the regular school day, knowing what types of interventions schools are offering instead and which students are taking advantage of them could be useful.
- *Learning more about the content of transition courses.* While Kentucky offers standardized curricula in math and reading for college preparatory transition courses, schools and districts may develop their own curricula. To learn more, the KDE could survey schools on their curricula and any professional development they offer to teachers of transition courses. A research study could compare the state curricula with independent curricula and compare them both with material taught in traditional senior year courses in the same subjects.
- *Identifying how students choose to enroll in transition courses.* Schools and districts could be surveyed on their policies for specifying which students are expected to enroll in college preparatory transition courses. Information could also be collected on the methods of advising students on college readiness and the types of materials students receive.
- *Examining whether students who take transition courses retake and score higher on the ACT and whether pass rates in transition courses correlate with postsecondary outcomes.* A descriptive study of students who completed transition courses could examine such outcomes as scores on retests of the ACT, student enrollment in postsecondary institutions, and the percentage of students passing the first college-level course in the subject in which they tested below the college-ready level on the ACT.
- *Assessing the impact of transition courses.* An evaluation of differences in postsecondary outcomes for students who enroll in transition courses (or have the opportunity to enroll) and students who do not could examine short-term outcomes (such as persistence in the first year of college) and long-term outcomes (such as postsecondary degree completion).

**Because fewer than half the students recommended for college preparatory transition courses in Kentucky take such courses during the regular school day, knowing what types of interventions schools are offering instead and which students are taking advantage of them could be useful**

## Appendix A. Data and methods

This appendix details the data sources and study methods.

### Data sources and variables

Students are the unit of analysis for this study for three reasons: students voluntarily participate in college preparatory transition courses, the state policy was designed to improve student outcomes of college and career readiness, and college placement testing and college preparatory transition courses occur at the student level.

School enrollment records for the 2011/12 school year, obtained from the Kentucky Department of Education (KDE), were used to identify the district and school where each student was enrolled. The school enrollment files include enrollment and withdrawal dates and codes at the school level. Because ACT scores (used to target students for college preparatory transition courses) are known by the beginning of grade 12, students with multiple enrollment records for grade 12 were assigned to a school in a Southeast/South-Central Educational Cooperative (SE/SC Coop) district or matched comparison district based on the school from their first enrollment in grade 12.

*Student performance on the math and reading ACT assessments.* For the first research question, on the number and percentage of students performing at three achievement levels on the ACT math and reading assessments in grade 11 (meeting state benchmarks, approaching benchmarks, and performing below benchmarks), students were categorized based on their scale scores on the ACT math and reading assessments from the KDE's records. All test scores were from the statewide administration of the ACT in March 2011, and KDE provided only one record for each student.<sup>6</sup>

*Participation in college preparatory transition courses.* For the second research question, on participation in full-semester college preparatory transition courses in math and reading, participation is defined as enrollment in a for-credit, full-semester college preparatory transition course in math or reading in the fall or spring semester of the 2011/12 school year. The data are from KDE course records and include standard state course codes for identifying students who participated in transition courses in either subject.<sup>7</sup>

Initial examination of the data sorted by official state course codes found that 27.5 percent of schools had students enrolled in a college preparatory transition course in math and 15.2 percent had students enrolled in a transition course in reading. Because these percentages were lower than anticipated, the course names in the file were also examined. Records were found with different state course codes but with course names that included the words (or abbreviations for) “transition,” “college preparatory,” “college readiness,” “college success,” and “college and career.” These names were similar to those in schools using the official state course codes and so were coded as college preparatory transition courses. (See appendix B for a complete list of the course names for records that use the official state course codes and records that use other state course codes.) Adding these courses brought the percentage of schools with students enrolled in transition courses up to 35.2 percent for math and 17.3 percent for reading (table A1).

**Table A1. Number and percentage of Kentucky high schools offering college preparatory transition courses in math or reading, 2011/12**

Transition course status	Math		Reading	
	Number	Percent	Number	Percent
Any transition courses	135	35.2	66	17.3
Identified by state course code only	42	11.0	16	4.2
Identified by course name only	31	8.1	8	2.1
Identified by state course code and name	62	16.2	42	11.0
No transition courses	248	64.5	317	82.8
Total	383	100.0	383	100.0

**Note:** Percentages may not sum to 100 because of rounding.

**Source:** Author’s calculations based on data from the Kentucky Department of Education.

As an additional check on accuracy, 10 SE/SC Coop districts were asked to confirm the state course codes and course names they used in 2011/12. All 10 offered college preparatory transition courses in math, and 8 offered them in reading. The districts identified 13 math courses and 7 reading courses. It is possible, however, that schools were offering additional college preparatory transition courses that were not identifiable in the administrative data. If so, the findings on participation would underestimate actual participation.

Initial coding identified 9 of the 13 math courses and 2 of the 7 reading courses in the SE/SC Coop districts by the state course code or name. Three more math courses and four more reading courses did not use the state course codes but were found in the administrative data with the additional information on state course codes and names provided by the districts. These courses had names such as “Senior math, advanced topics,” which would not be identifiable as transition courses without the district identifying them as such. The remaining math course and two reading courses could not be found in the database, even with the additional information provided by the districts. It could be that the districts offered these courses but no students enrolled or that the course enrollment records the districts reported to the KDE were incomplete.

Although the primary analyses exclude courses not identified in the initial coding because comparable information is not available for all districts statewide or the matched comparison districts, appendix D compares the results for the SE/SC Coop districts when these courses are included. For example, participation in college preparatory transition courses for students in the approaching state benchmarks category is 43.8 percent with the additional courses and 39.8 percent without them for math and 23.1 percent with them and 17.3 percent without them for reading (see tables D1 and D2 in appendix D). This indicates that the findings in the report underestimate actual enrollment because the administrative records alone do not provide complete information on the number of transition courses actually offered.

*Pass rates in college preparatory transition courses.* The third research question examines pass rates in full-semester college preparatory transition courses in math and reading. The KDE course records include a variable for the number of credits earned.<sup>8</sup> Students were categorized as passing a college preparatory transition course if they earned more than zero credits for the course. There were also 183 students in college preparatory transition courses in math and 16 students in transition courses in reading who were missing data for

the number of credits earned but had data for the final course grade. These students were categorized as passing if they received a final course grade of C or higher.

*Student and school subgroup analyses.* KDE demographic records for the 2011/12 school year were used to identify student characteristics of race/ethnicity, sex, low-income status (based on eligibility for free or reduced-price lunch), limited English proficiency status, and special education status (based on whether students have an individualized education program).

The Common Core of Data (U.S. Department of Education, 2012) was used to identify school locale and enrollment variables. The school locale variable was used to categorize students as attending an urban, suburban, town, or rural school.<sup>9</sup> Enrollment size is a categorical variable that identifies students attending a school with a total enrollment of fewer than 500, 500–749, 750–999, or 1,000 or more.

### Missing data

The complete case analysis excluded students missing ACT scores, course records in math and reading, or data on student or school characteristics. The analytic sample included 33,928 students with no missing data, or approximately three-quarters of students (table A2). This appendix details the findings for students statewide, but the results are similar for the SE/SC Coop districts and the matched comparison districts. First, 4.6 percent of students statewide were missing data for the ACT only. ACT data could be missing if students were absent on the testing day, if they were enrolled in a private or out-of-state school on the testing day, or if their ID numbers were incorrectly entered on the test form. Second, 12.1 percent of students statewide were missing course records only. This means that a student was not enrolled in any math or reading course at any time during grade 12. While it is possible for students to complete their graduation requirements before senior year, it is unlikely that these students would have no course records for grade 12 because Kentucky requires students to complete four years of math and four years of reading. Almost all these cases of missing course data are thus likely a result of the students' school failing to report their course enrollment records to the KDE.

Next, 0.1 percent of students statewide were missing data on school characteristics only. Six schools had no record in the Common Core of Data. Three of these schools were

**Table A2. Number and percentage of Kentucky grade 12 students in 2011/12 with missing data**

Type of missing data	Statewide		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent
No missing data	33,928	76.6	3,530	78.4	2,750	79.5
Missing ACT data only	2,052	4.6	210	4.6	160	4.6
Missing course records only	5,345	12.1	444	9.9	399	11.5
Missing school characteristics only	47	0.1	0	0	0	0
Missing data from multiple sources	2,925	6.6	319	7.1	149	4.3
Total	44,297	100.0	4,503	100.0	3,458	100.0

SE/SC Coop is Southeast/South-Central Educational Cooperative.

**Note:** Percentages may not sum to 100 because of rounding.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

in nontraditional settings (a technical center, an alternative school, and a homebound school), and three were new in 2011/12. No students were missing data for any of the student characteristics included in the subgroup analyses. Lastly, 6.6 percent of students statewide were missing data from multiple sources.

To assess the possibility of missing-data bias, the mean difference was calculated for each outcome in each domain (math and reading) between students with missing data and students without missing data, and a two-tailed *t*-test was conducted using a 95 percent confidence level (tables A3–A5). There were statistically significant differences on three of the outcomes (target students, participation rates, and pass rates in college preparatory transition courses) between students with no missing data and students with one or more sources of missing data. This difference is important to consider. It means that the results in the body of the report might not be representative of the entire population of students in the state. However, no adjustments were made for multiple comparisons, so some of these differences could have occurred by chance.

### Identifying matched comparison districts

The first step in the analysis was to identify a group of comparison districts to be matched with the SE/SC Coop districts. There are 22 districts in the SE/SC Coop that have at least one high school.<sup>10</sup> A district-level propensity score model was used to identify 22 comparison districts among the 152 public school districts in Kentucky that are not part of the SE/SC Coop. A binary logit regression model was used to estimate the probability that a

**Table A3. Comparison of outcomes for Kentucky grade 12 students in 2011/12 who are missing ACT data only and for students with no missing data**

Outcome	Missing ACT data only			No missing data			Mean difference (percentage points)	<i>p</i>
	Number	Mean (percent)	Standard deviation (percent)	Number	Mean (percent)	Standard deviation (percent)		
<b>Math</b>								
Meeting state benchmarks	na	na	na	13,978	41.2	49.2	na	na
Approaching state benchmarks	na	na	na	12,723	37.5	48.4	na	na
Performing below state benchmarks	na	na	na	7,227	21.3	40.9	na	na
Took a college preparatory transition course	2,052	15.0	35.7	6,359	18.7	39.0	3.7**	.00
Passed a college preparatory transition course	308	86.0	34.7	5,939	93.4	24.8	7.4**	.00
<b>Reading</b>								
Meeting state benchmarks	na	na	na	14,928	44.0	49.6	na	na
Approaching state benchmarks	na	na	na	6,955	20.5	40.4	na	na
Performing below state benchmarks	na	na	na	12,045	35.5	47.9	na	na
Took a college preparatory transition course	2,052	5.0	21.8	1,848	5.4	22.7	0.4	.41
Passed a college preparatory transition course	103	96.6	18.2	1,632	88.3	32.2	8.2**	.00

\*\* Mean difference (from *t*-test) is statistically significant at the 95 percent confidence level using a two-tailed test.

na is not applicable because one group is missing data used to construct this outcome.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table A4. Comparison of outcomes for Kentucky grade 12 students in 2011/12 who are missing course records data only and for students with no missing data**

Outcome	Missing enrollment data only			No missing data			Mean difference (percentage points)	p
	Number	Mean (percent)	Standard deviation (percent)	Number	Mean (percent)	Standard deviation (percent)		
<b>Math</b>								
Meeting state benchmarks	5,345	23.0	42.1	13,978	41.2	49.2	18.2**	.00
Approaching state benchmarks	5,345	36.6	48.2	12,723	37.5	48.4	0.9	.20
Performing below state benchmarks	5,345	40.4	49.1	7,227	21.3	40.9	-19.1**	.00
Took a college preparatory transition course	na	na	na	6,359	18.7	39.0	na	na
Passed a college preparatory transition course	na	na	na	5,939	93.4	24.8	na	na
<b>Reading</b>								
Meeting state benchmarks	5,345	29.9	45.8	14,928	44.0	49.6	14.1**	.00
Approaching state benchmarks	5,345	18.5	38.8	6,955	20.5	40.4	2.1**	.00
Performing below state benchmarks	5,345	51.6	50.0	12,045	35.5	47.9	-16.1**	.00
Took a college preparatory transition course	na	na	na	1,848	5.4	22.7	na	na
Passed a college preparatory transition course	na	na	na	1,632	88.3	32.2	na	na

\*\* Mean difference (from t-test) is statistically significant at the 95 percent confidence level using a two-tailed test.

na is not applicable because one group is missing data used to construct this outcome.

Source: Author's calculations based on data from the Kentucky Department of Education.

**Table A5. Comparison of outcomes for Kentucky grade 12 students in 2011/12 who are missing school characteristics data only and for students with no missing data**

Outcome	Missing school data only			No missing data			Mean difference (percentage points)	p
	Number	Mean (percent)	Standard deviation (percent)	Number	Mean (percent)	Standard deviation (percent)		
<b>Math</b>								
Meeting state benchmarks	47	72.3	0.5	13,978	41.2	49.2	-31.1**	.00
Approaching state benchmarks	47	23.4	42.8	12,723	37.5	48.4	14.1**	.05
Performing below state benchmarks	47	4.3	20.4	7,227	21.3	40.9	17.0**	.00
Took a college preparatory transition course	47	23.4	42.8	6,359	18.7	39.0	-4.7	.41
Passed a college preparatory transition course	11	100.0	0.0	5,939	93.4	24.8	-6.6	.38
<b>Reading</b>								
Meeting state benchmarks	47	61.7	49.1	14,928	44.0	49.6	-17.7**	.01
Approaching state benchmarks	47	17.0	38.0	6,955	20.5	40.4	3.5	.55
Performing below state benchmarks	47	21.3	41.4	12,045	35.5	47.9	14.2**	.04
Took a college preparatory transition course	47	14.9	36.0	1,848	5.4	22.7	-9.4**	.00
Passed a college preparatory transition course	a	a	a	1,632	96.6	18.2	-3.4	.62

a. Value is suppressed to protect student identifies where  $n < 10$ .

\*\* Mean difference (from t-test) is statistically significant at the 95 percent confidence level using a two-tailed test.

Source: Author's calculations based on data from the Kentucky Department of Education.

district is a member of the SE/SC Coop. For each district, the propensity score is defined as:

$$P(Y = 1) = \frac{e^{\beta'X}}{1 + e^{\beta'X}} \quad (1)$$

where  $Y$  is the outcome variable (1 if the district is a member of the SE/SC Coop, and 0 otherwise), and  $X$  is the set of observed characteristics that include baseline scores on the math and reading ACT assessments and all the characteristics in the student and school subgroup analyses. Students with missing data on any of the variables in the propensity score model were excluded from calculations of the district average for the observed characteristic. The following explanatory variables are included in the logit model:<sup>11</sup>

- District-level average math ACT score in the baseline year.
- District-level average reading ACT score in the baseline year.
- Percentage of students in the district from each racial/ethnic group (White, Black, Hispanic, other).
- Percentage of students in the district who are female.
- Percentage of students in the district who are eligible for free or reduced-price lunch (low-income status).
- Percentage of students in the district who are classified as limited English proficient.
- Percentage of students in the district who have an individualized education program (special education status).
- Percentage of students in the district who attend school in each locale (urban, suburban, town, rural).
- Percentage of students in the district who attend a school in each school size category (fewer than 500, 500–749, 750–999, and 1,000 or more).

The quality of the match between district  $i$  and district  $j$  is defined using the distance function:

$$D(i,j) = (P_i^A - P_j^C)^2 \quad (2)$$

where  $P_i^A$  is the propensity score for district  $i$  of the SE/SC Coop and  $P_j^C$  is the corresponding propensity score for district  $j$  of the comparison group. The closer the predicted propensity scores of two districts, the smaller will be the value of the distance function. If two districts are identical in observed characteristics, the value of the distance function will be zero. Nearest-neighbor matching was used to assign to each SE/SC Coop district the comparison group district closest in predicted probability of being a district of the SE/SC Coop alliance. Districts with similar predicted probabilities have similar observed characteristics. In other words, for each SE/SC Coop district the comparison group district that results in the lowest absolute value of the distance function  $D(i,j)$  was chosen. Matches were selected without replacement, so each comparison district could be matched only to a single SE/SC Coop district.

After each SE/SC Coop district was matched to a comparison district, the baseline equivalence of the analytic sample was determined for the ACT math and reading scores in the prior year. ACT scores are similar for students in the SE/SC Coop districts and matched comparison districts, with a mean difference of less than 0.05 standard deviation in both math and reading (table A6). This mean difference meets the criteria outlined in the What Works Clearinghouse Procedures and Standards Handbook Version 2.0

(U.S. Department of Education, 2008) for establishing baseline equivalence on pretest measures.

Even though the ACT scores are similar for the SE/SC Coop districts and the matched comparison districts, there may be differences in unobservable characteristics, so the results of comparisons should be interpreted with caution. The propensity score model is limited to a small number of observable district-level variables, which might not capture any systematic differences between the SE/SC Coop districts and the matched comparison districts.

**Table A6. Characteristics at baseline for Kentucky grade 12 students in 2011/12 in SE/SC Coop districts and matched comparison districts, by student and school subgroups**

Characteristic	SE/SC Coop districts mean (n = 3,530)	Matched comparison districts mean (n = 2,750)	Pooled standard deviation	Mean difference	Effect size difference
ACT math score	18.5	18.7	4.2	0.2	0.04
ACT reading score	19.5	19.4	5.6	-0.1	-0.02
<b>Student subgroup (percent)</b>					
<i>Race/ethnicity</i>					
White	96.0	94.8	3.9	-1.2	-0.32
Black	1.7	2.6	2.8	0.9	0.33
Hispanic	1.0	1.1	1.1	0.2	0.16
Other	1.6	1.5	1.8	-0.2	-0.08
<i>Sex</i>					
Female	51.6	52.6	4.8	1.0	0.20
Male	48.4	47.4	4.8	-1.0	-0.20
<i>Low-income status</i>					
Eligible for free or reduced-price lunch	54.5	52.0	14.1	-2.5	-0.18
Not eligible	45.5	48.0	14.1	2.5	0.18
<i>Limited English proficiency status</i>					
Limited English proficient	0.8	0.3	0.8	-0.5	-0.66
Not limited English proficient	99.2	99.7	0.8	0.5	0.66
<i>Special education status</i>					
Has individualized education program	11.9	11.2	4.9	-0.7	-0.14
Does not have program	88.1	88.8	4.9	0.7	0.14
<b>Student subgroup (percent)</b>					
<i>Locale</i>					
Urban	na	na	na	na	na
Suburban	na	na	na	na	na
Town	49.3	35.2	49.5	-14.1	-0.28
Rural	50.7	64.8	49.5	14.1	0.28
<i>Size (number of students in grades 9-12)</i>					
Fewer than 500	13.5	17.8	36.1	4.3	0.12
500-749	28.2	23.3	43.9	-4.9	-0.11
750-999	9.7	23.2	36.3	13.5	0.37
1,000 or more	48.6	35.8	49.5	-12.9	-0.26

SE/SC Coop is Southeast/South-Central Educational Cooperative.

na is not applicable because no schools in SE/SC Coop or matched comparison districts are in urban or suburban locales.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

### Methods used to examine students recommended for college preparatory transition courses

The first research question addresses the number and percentage of Kentucky students in grade 12 whose scores on the math or reading ACT assessment put them above, within, or below the KDE-recommended college preparatory transition course benchmark criteria. For each subject students' ACT scale scores in grade 11 were categorized as either meeting state college-readiness benchmarks (19 or higher in math, 20 or higher in reading), approaching state benchmarks (16–18 in math, 17–19 in reading), or performing below state benchmarks (15 or below in math, 16 or below in reading). A dichotomous variable was created for each category (1 = ACT scores within the category, 0 = ACT scores not within the category) and used to calculate the mean for students in the SE/SC Coop districts and matched comparison districts. No tests of statistical significance were conducted because the analysis includes the entire population of students with nonmissing data in the SE/SC Coop districts and the matched comparison districts. The same methods were used to examine the students targeted for college preparatory transition courses in the state as a whole.

### Methods used to examine participation in college preparatory transition courses

The second research question addresses participation in college preparatory transition courses in math and reading for students in SE/SC Coop districts and matched comparison districts based on the state college-readiness benchmarks for ACT scores. The KDE recommends that students whose scores are 1–3 points below the state benchmarks enroll in college preparatory transition courses, but schools may establish their own guidelines. State course codes and course names from student transcripts were examined to determine which students enrolled in transition courses. For each subject, a dichotomous variable was created for participation in a transition course, with a value of 1 for students who enrolled and a value of 0 for students who did not. Participation for each state benchmark category was determined by calculating the mean of the dichotomous participation variable for students in the SE/SC Coop districts, the matched comparison districts, and the state as a whole.

### Methods used to examine pass rates in college preparatory transition courses

The third research question addresses the pass rates of college preparatory transition course participants in math and reading by state benchmark category. Student transcripts were used to identify which students passed college preparatory transition courses, as measured by whether students earned credit for the course. The percentage of students passing was calculated based on the total number of students enrolled. For each subject a dichotomous variable for passing was created, with a value of 1 for students who earned credit, 0 for students who earned no credit, or null for students not enrolled in a college preparatory transition course. The mean of the passing variable was calculated for students in SE/SC Coop districts, the matched comparison districts, and the state as a whole for each subject. Results were calculated separately for students in each state benchmark category.

### Limitations of the study

One limitation of the study is that the results are confined to full-semester, for-credit college preparatory transition courses. They do not account for more informal college preparatory transition programs (such as after-school tutoring) that some schools might use to improve

students' college readiness because the state does not collect data on these informal activities. Further, no information is available on the content of the for-credit transition courses or how they vary by school (such as by use of technology or type of curriculum)

Schools may be offering additional college preparatory transition courses that cannot be identified by the state course code or course name in the KDE administrative data. Some courses might not have been identified because schools do not report enrollment in college preparatory transition courses consistently. All schools are supposed to use the same standardized state course codes, but statewide 31 schools in math and 8 schools in reading used a different code, even though the course name indicated that it was a college preparatory transition course. This means that the findings in this report might underestimate actual enrollment in transition courses.

Data are missing for some ACT records, course records, and school characteristics. Only students with complete datasets were included in the analyses, perhaps limiting the ability to generalize the findings. A comparison of the outcomes for students with and without missing data showed differences in the outcomes of students recommended for transition courses, participation rates, and pass rates (see tables A3–A5).

Some schools might not offer college preparatory transition courses, or they might set their own criteria for placement in such courses instead of using the KDE-recommended eligibility criteria. This means that some of the differences in participation rates could be attributed to school policies rather than differences in voluntary student participation.

While the comparison of the performance of the SE/SC Coop districts and the matched comparison districts can help districts set goals for improvement, limited data are available to explore the root causes of gaps in college preparatory transition course participation and pass rates or to develop appropriate action plans.

The propensity score matching used to create the comparison group ensures only that districts are similar on observed characteristics. Other differences that might influence student outcomes are not captured in the propensity score model.

The criteria for passing the college preparatory transition courses are subjective and can vary by teacher and school. The SE/SC Coop will need to take this into account when comparing pass rates across districts.

Finally, this study provides no information on whether students who take college preparatory transition courses benefit from them or whether some types of transition courses are more beneficial than others. In addition, the pass rate in transition courses is higher than 90 percent for all three state benchmark categories, making it unclear how well the pass rates indicate an improvement in college readiness.

## Appendix B. Identifying College Preparatory Transition Courses

This appendix lists the course names for college preparatory transition courses identified by state course code only, for courses identified by name only, and for courses identified by both course code and name.

### Math

Tables B1–B3 list names for college preparatory transition courses in math and display the frequency and percentage of student records identified by state course code only (table B1), by course name only (table B2), and by both course code and course name (table B3).

**Table B1. Course name, frequency, and percentage for records identified as college preparatory transition courses in math by state course code only, 2011/12**

Course name	Frequency	Percent
ACT Math	13	0.6
Adv. Topics in Math	52	2.3
Advanced Math	48	2.1
Advanced Topics in Math	22	1.0
App Math	7	0.3
Applied Math III	194	8.6
C&C Readiness Math	51	2.3
Career Math Y	25	1.1
Career Readiness Math/c	8	0.4
CCR – Math	12	0.5
Col./Car. Readiness Math	32	1.4
Col/Career Rdnes Math - Sem1	29	1.3
Col/Career Rdnes Math - Sem2	20	0.9
Col/Career Read Math-1	145	6.4
Col/Career Read Math-2	126	5.6
Col/Career Read Math.	37	1.6
Col/Career Readiness Math	560	24.7
Cont. College math	12	0.5
Credit Recovery-Math	3	0.1
Developmental Mathematics	2	0.1
Excursions in Math	55	2.4
Fundamental Math II	1	0.0
High School Mathematics 4	1	0.0
HS Math lab 1 A	1	0.0
HS Math Lab 1 A	16	0.7
Intro to College Math	37	1.6
JCTC-MT 150	6	0.3
MA ACT Prep T1	44	1.9
MA ACT Prep T2	51	2.3
MA ACT Prep T3	36	1.6
MA ACTprep T1	12	0.5
MAT 055/065	59	2.6
Math ACT Readiness A	7	0.3

(continued)

**Table B1. Course name, frequency, and percentage for records identified as college preparatory transition courses in math by state course code only, 2011/12**  
(continued)

Course name	Frequency	Percent
Math Basic Collab	1	0.0
Math Concepts	36	1.6
Math Credit Recovery	1	0.0
Math Enrichment	3	0.1
Math Intern	5	0.2
Math Intervention	8	0.4
Math Intervention-HS	1	0.0
Math Lab	15	0.7
Math Test Skills	9	0.4
Mathematics Intervention	233	10.3
Mathematics Intervention Sem1	10	0.4
Mathematics Intervention Sem2	12	0.5
MSU: Inter Alg A	16	0.7
MSU: Inter Alg B	20	0.9
MSU: Inter Alg C	21	0.9
MT 065	24	1.1
MT091 Introductory Algebra-MSU	32	1.4
MT093 Intermediate Algebra-MSU	14	0.6
MTH 055/065	58	2.6
RTI-Math	1	0.0
Senior Math – A	11	0.5
Senior Math Lab	9	0.4
Special Topics: Math	1	0.0
Transitional Math 1 Par	3	0.1

$n = 2,268$ .

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table B2. Course name, frequency, and percentage for records identified as college preparatory transition courses in math by course name only, 2011/12**

Course name	Frequency	Percent
Alg 3 /Prep.for College Alg	33	0.9
Alg College & Workplace Readi	107	3.0
Alg.3-Prep for Coll. Alg.	1	0.0
Algebra 2 College Transition	169	4.7
Algebra 3/Prep for College Alg	12	0.3
Algebra III/Prep for College	31	0.9
Algebra III/Prep. College Alg.	18	0.5
College Algebra Prep	90	2.5
College Math Prep I	16	0.4
College Prep Algebra	123	3.4
College Prep Math	42	1.2

(continued)

**Table B2. Course name, frequency, and percentage for records identified as college preparatory transition courses in math by course name only, 2011/12 (continued)**

Course name	Frequency	Percent
College Prep Math S1	52	1.5
College Prep Math S2	47	1.3
College Prep Math-BI	26	0.7
College Prep Math-FA	39	1.1
College Prep Mathematics I	17	0.5
College Read Alg A	57	1.6
College Read Alg B	49	1.4
College Read Math/Int Coll Alg	71	2.0
College Readiness Math 1 3744	74	2.1
College Readiness Math 2 3744	56	1.6
College Readiness Math 3 3744	7	0.2
College Trans. Math (DUAL CR)	16	0.4
College Transition Algebra T2	27	0.8
College Transition Algebra T3	17	0.5
College Transition Math	40	1.1
College Transitional Math A	44	1.2
College Transitional Math B	51	1.4
College Transitions Algebra	18	0.5
College/Career Math	60	1.7
College/Career Math I	128	3.6
College/Career Math II	24	0.7
College/Career Read. MT/MT 098	15	0.4
College/Career Readiness Math	2	0.1
Collprepmath	165	4.6
Math for College & Career	80	2.2
Math Transition to College	13	0.4
Math Transitions	9	0.2
Math/College Success	9	0.3
Pre-college Algebra Transition	16	0.4
Prep for College Alg	82	2.3
Prep for College Algebra	128	3.6
Senior Transitions Math	45	1.3
Trans Math Tier 1 A	130	3.6
Trans Math Tier 1 B	26	0.7
Trans Math Tier 2 A	109	3.0
Trans Math Tier 2 B	46	1.3
Trans Math Tier 3 A	33	0.9
Trans Math Tier 3 B	18	0.5
Transition Algebra	63	1.8
Transition Math	134	3.8
Transition Math A	104	2.9
Transition Math B	82	2.3
Transition Mathematics A	26	0.7
Transition Mathematics B	26	0.7
Transition Mathematics C	9	0.3

(continued)

**Table B2. Course name, frequency, and percentage for records identified as college preparatory transition courses in math by course name only, 2011/12 (continued)**

Course name	Frequency	Percent
Transition to College Math	66	1.8
Transitional Math	394	11.0
Transitional Math 1	46	1.3
Transitional Mathematics	33	0.9
Transitions in Math Concepts	84	2.3
Transitions Math	21	0.6
Transitions to Algebra	21	0.6

$n = 3,597.$

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table B3. Course name, frequency, and percentage for records identified as college preparatory transition courses in math by both state course code and course name, 2011/12**

Course name	Frequency	Percent
Coll/Career Readiness Math	45	1.2
College & Career Math	15	0.4
College & Career Mathematics	95	2.5
College & Career Readiness	66	1.7
College & Career Readiness Mat	40	1.1
College Career Readiness Math	84	2.2
College Career Ready Math A	14	0.4
College Career Ready Math B	10	0.3
College Prep Math	764	20.0
College Readiness 1	76	2.0
College Readiness 2	55	1.4
College Readiness 3	35	0.9
College Readiness Math	26	0.7
College Readiness Math T2	21	0.6
College Readiness Math Tier 1	65	1.7
College Readiness Math Tier 2	24	0.6
College Readiness Math Tier 3	6	0.2
College Tran. Math/1st block	16	0.4
College Tran. Math/2nd Block	24	0.6
College Transition Math	40	1.1
College Transitional Math A	44	1.2
College Transitional Math B	51	1.3
College Transitions Algebra	18	0.5
College/Career Math (12)	10	0.3
College/Career Math A	121	3.2
College/Career Math II	27	0.7
College/Career Math Lev 1 (12)	22	0.6
College/Career Read. Math TI	1	0.03

(continued)

**Table B3. Course name, frequency, and percentage for records identified as college preparatory transition courses in math by both state course code and course name, 2011/12 (continued)**

Course name	Frequency	Percent
College/Career Read. MT/MT 099	10	0.3
College/Career Readiness Math	724	18.9
College&Career Math Lev 2 (12)	27	0.7
College&Career Math Lev 3 (12)	21	0.6
College&Career Readiness Math	4	0.1
Math College Readiness	106	2.8
Math Transition to College	13	0.3
Math Transitions	1	0.03
MATH--Coll & Career Readiness	11	0.3
Senior Transitions Math	45	1.2
T1 College & Career Math	31	0.8
Trans Math Tier 1 A	130	3.4
Trans Math Tier 1 B	26	0.7
Trans Math Tier 2 A	109	2.9
Trans Math Tier 2 B	46	1.2
Trans Math Tier 3 A	33	0.9
Trans Math Tier 3 B	18	0.5
Transition Math	9	0.2
Transition Math A	104	2.7
Transition Math B	82	2.1
Transition Mathematics A	26	0.7
Transition Mathematics B	26	0.7
Transition Mathematics C	9	0.2
Transitional Math	298	7.8
Transitional Math 1	46	1.2
Transitional Mathematics	33	0.9
Transitions Math	21	0.6

$n = 3,824$ .

**Source:** Author's calculations based on data from the Kentucky Department of Education.

## Reading

Tables B4–B6 list course names for college preparatory transition courses in reading and display the frequency and percentage of student records identified by state course code only (table B4), by course name only (table B5), and by both course code and course name (table B6).

**Table B4. Course name, frequency, and percentage for records identified as college preparatory transition courses in reading by state course code, 2011/12**

Course name	Frequency	Percent
ACT English (S)	14	2.0
C&C Readiness English	60	8.6
CCR English IV	217	31.0
Col&Career Reading/English LA	23	3.3
Col/Career Rdnes.Eng.Lang Arts	4	0.6
Col/Career Readiness Reading	66	9.4
College English 101	40	5.7
College English 102	40	5.7
Eng 090	40	5.7
Eng 099	46	6.6
English IV	20	2.9
English ACT Readiness A	28	4.0
Life Experiences	4	0.6
Ramp Up I	1	0.1
Ramp Up II	1	0.1
RDG 20 Holmes	14	2.0
RDG 30 Holmes	9	1.3
Renaissance	9	1.3
Reading	1	0.1
Reading for Success	56	8.0
Sr. ACT Reading Lab	7	1.0

*n* = 700.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table B5. Course name, frequency, and percentage for records identified as college preparatory transition courses in reading by course name only, 2011/12**

Course name	Frequency	Percent
ACT Reading Transitions	1	0.1
College Readiness	1	0.1
College Readiness English IV	44	5.0
Eng III Transitions	12	1.4
Eng IV Transitions	430	48.4
English IV Trans.	42	4.7
English IV, College Prep	118	13.3
English IV Transition	138	15.5
Reading Transition to College	20	2.3
Transitional Reading	10	1.1
Transition Eng 4 FRM	18	2.0
Transition English 4	25	2.8
Transitional Reading	30	3.4

*n* = 889.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table B6. Course name, frequency, and percentage for records identified as college preparatory transition courses in reading by both state course code and course name, 2011/12**

Course name	Frequency	Percent
Career & College Eng & Reading	45	3.9
Career & College Reading	14	1.2
Coll & Career Readi Lang Arts	70	6.0
Coll Prep Sr English	37	3.2
Coll/Car Readiness Reading	13	1.1
College & Career Readiness Eng	48	4.1
College and Career Prep I	1	0.1
College Developmental Reading	29	2.5
College Eng Read (2 terms)	10	0.9
College Readiness	43	3.7
College Readiness English	48	4.1
College Readiness English/Math	1	0.1
College/Career	21	1.8
College/Career English/Read 12	69	5.9
College/Career Readiness Eng	42	3.6
College/Career Readiness Read	2	0.2
College/Career Reading	114	9.8
English College Readiness	50	4.3
English IV Transition	138	11.9
English-Coll/Career Readiness	7	0.6
English/College Readiness	189	16.3
Intro to College & Career 11	3	0.3
PB College and Career Prep	1	0.1
Read/College Success	7	0.6
Reading College/Career Success	27	2.3
Reading for Coll Success Sem 1	30	2.6
Reading for Coll Success Sem 2	15	1.3
Reading for College Success	29	2.5
Reading Transition to College	20	1.7
Transitional Reading	40	3.5

$n = 1,163$ .

**Source:** Author's calculations based on data from the Kentucky Department of Education.

## Appendix C. Complete results of subgroup analyses

This appendix contains the complete findings of study results disaggregated by student and school subgroups.

### Differences by student subgroup in the distribution of students across the three state college-readiness benchmark categories on the ACT

For both math and reading ACT assessments, there are differences in the distribution of students across the three benchmark categories relative to the Kentucky Council on Post-secondary Education (CPE) state college-readiness benchmarks.

*Differences for math.* For math statewide, the percentage of students in the approaching state benchmarks category is highest for Hispanic students (41.4 percent) and lowest for students of other racial/ethnic groups (29.4 percent; table C1). It is higher for female students (40.0 percent) than for male students (34.9 percent), for students from low-income households (students eligible for free or reduced-price lunch; 41.9 percent) than for other students (34.0 percent), students who are not limited English proficient (37.5 percent) than for those who are (36.0 percent), and for students who are not in special education (38.4 percent) than for those who are (students with an individualized education program; 30.0 percent). Patterns are similar, for the most part, for schools in the Southeast/South-Central Educational Cooperative (SE/SC Coop) districts, except that the percentage of students in the approaching state benchmarks category is highest for Black students (41.7 percent).

*Differences for reading.* For reading statewide, the percentage of students in the approaching CPE benchmarks category is highest for White students (20.7 percent) and lowest for Hispanic students (16.8 percent; table C2). It is higher for students who are not limited English proficient (20.7 percent) than for those who are (15.4 percent) and for students who are not in special education (21.0 percent) than for those who are (17.0 percent). The percentages are similar for male and female students (20.3 percent and 20.8 percent) and for students from low-income households and other students (21.3 percent and 19.9 percent). For schools in the SE/SC Coop districts, patterns are mostly similar.

### Differences by school subgroup in the percentage of students in the approaching state college-readiness benchmarks category on the ACT

The report also examines whether the percentage of students approaching the state ACT benchmarks varies by school subgroup.

*Differences for math.* For math statewide, the percentage of students in the approaching state benchmarks category is higher in rural locales (39.7 percent) and towns (38.1 percent) than in suburbs (35.6 percent) and urban locales (34.1 percent; table C3). The percentage decreases with school size, from 40.3 percent of students in the smallest schools (fewer than 500 students in grades 9–12) to 36.2 percent in the largest (1,000 or more students). In the SE/SC Coop districts and matched comparison districts, patterns are similar for school locale but not for school size. In the SE/SC Coop districts the percentage is lowest for students in the smallest schools (37.6 percent) and highest for students in the largest (40.9 percent). In the matched comparison districts the reverse is true, with the lowest

**Table C1. Percentage of Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT math assessment in spring 2011, by student subgroup**

Student subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	13,988	41.2	1,285	36.4	1,061	38.5	12,712	37.5	1,410	40.0	1,073	39.0	7,228	21.3	834	23.6	620	22.5
<b>Race/ethnicity</b>																		
White	12,599	43.6	1,239	36.6	1,016	38.9	10,734	37.2	1,363	40.2	1,023	39.2	5,546	19.2	788	23.3	568	21.8
Black	703	20.5	13	21.7	15	20.8	1,395	40.7	25	41.7	25	34.7	1,325	38.7	22	36.7	32	44.4
Hispanic	252	30.6	a	a	11	35.5	341	41.4	a	a	a	a	230	27.9	13	38.2	a	a
Other <sup>b</sup>	434	55.1	a	a	19	51.5	242	29.4	a	a	a	a	127	15.4	11	23.2	a	a
<b>Sex</b>																		
Female	6,676	38.9	614	33.7	533	36.8	6,858	40.0	785	43.1	599	41.3	3,627	21.1	424	23.3	317	21.9
Male	7,312	43.6	671	39.3	528	40.5	5,854	34.9	625	36.6	474	36.3	3,601	21.5	410	24.0	303	23.2
<b>Low-income status</b>																		
Eligible for free or reduced-price lunch	4,022	27.1	527	27.4	405	28.3	6,230	41.9	836	43.5	607	42.4	4,613	31.0	561	29.2	417	29.2
Not eligible	9,966	52.2	758	47.2	656	49.5	6,482	34.0	574	35.8	466	35.2	2,615	13.7	273	17.0	203	15.3
<b>Limited English proficiency status</b>																		
Limited English proficient	311	31.7	a	a	a	a	353	36.0	a	a	a	a	317	32.3	a	a	a	a
Not limited English proficient	13,677	41.5	a	a	a	a	12,359	37.5	a	a	a	a	6,911	21.0	a	a	a	a
<b>Special education status</b>																		
Has individualized education program	666	17.5	60	14.3	34	11.0	1,143	30.0	123	29.4	88	28.5	2,005	52.6	236	56.3	187	60.5
Does not have program	13,322	44.2	1,225	39.4	1,027	42.0	11,569	38.4	1,287	41.3	985	40.3	5,223	17.3	598	19.2	433	17.7

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 33,928$ ; SE/SC Coop  $n = 3,529$ ; matched comparison  $n = 2,754$ .

**Note:** Components may not sum to totals because of rounding. Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

percentage in the largest schools (36.2 percent) and the highest percentage in the second smallest schools (500–749 students; 43.8 percent).

*Differences for reading.* For reading statewide, the percentage of students in the approaching state benchmarks category is lowest in urban locales (18.6 percent) and highest in rural locales (21.3 percent; table C4). There are fewer differences by school size. The percentage ranges from 20.3 percent for schools with 750–999 students to 21.0 percent for schools with fewer than 500. In the SE/SC Coop districts the pattern is similar for locales (19.3 percent in town locales and 21.6 percent in rural locales), but differences are greater for school size, ranging from 19.5 percent in the smallest schools (fewer than 500 students) to 23.1 percent for medium-size schools (750–999 students). In the matched comparison districts the percentages are also similar for locales (20.4 percent in rural locales and 22.0 percent in towns), with differences by school size ranging from 19.5 percent for medium-size schools (500–749 students) to 22.3 percent for the largest schools (1,000 or more students).

**Table C2. Percentage of Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT reading assessment in spring 2011, by student subgroup**

Student subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	14,917	44.0	1,536	43.5	1,162	42.2	6,963	20.5	723	20.5	577	21.0	12,048	35.5	1,270	36.0	1,015	36.9
<b>Race/ethnicity</b>																		
White	13,532	46.9	1,483	43.7	1,113	42.6	5,975	20.7	698	20.6	543	20.8	9,372	32.5	1,209	35.7	952	36.6
Black	756	22.1	a	a	22	30.6	704	20.6	a	a	15	20.8	1,963	57.4	a	a	35	48.6
Hispanic	243	29.5	a	a	a	a	138	16.8	a	a	a	a	442	53.7	a	a	a	a
Other <sup>b</sup>	386	47.8	a	a	a	a	146	18.6	a	a	a	a	271	33.6	a	a	a	a
<b>Sex</b>																		
Female	8,043	46.9	872	47.8	654	45.1	3,562	20.8	373	20.4	324	22.4	5,556	32.4	578	31.7	471	32.5
Male	6,874	41.0	664	38.9	508	38.9	3,401	20.3	350	20.5	253	19.4	6,492	38.7	692	40.6	544	41.7
<b>Low-income status</b>																		
Eligible for free or reduced-price lunch	4,605	31.0	682	35.4	475	33.2	3,173	21.3	411	21.4	294	20.6	7,087	47.7	831	43.2	660	46.2
Not eligible	10,312	54.1	854	53.2	687	51.8	3,790	19.9	312	19.4	283	21.4	4,961	26.0	439	27.4	355	26.8
<b>Limited English proficiency status</b>																		
Limited English proficient	233	23.8	a	a	a	a	151	15.4	a	a	a	a	597	60.9	a	a	a	a
Not limited English proficient	14,684	44.6	a	a	a	a	6,812	20.7	a	a	a	a	11,451	34.8	a	a	a	a
<b>Special education status</b>																		
Has individualized education program	793	20.8	82	19.6	50	16.2	647	17.0	73	17.4	59	19.1	2,374	62.2	264	63.0	200	64.7
Does not have program	14,124	46.9	1,454	46.8	1,112	45.5	6,316	21.0	650	20.9	518	21.2	9,674	32.1	1,006	32.3	8,115	33.3

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 33,928$ ; SE/SC Coop  $n = 3,529$ ; matched comparison  $n = 2,754$ .

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**b.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

### Differences by student subgroup in student participation in college preparatory transition courses

There are more differences in participation in college preparatory transition courses by student subgroup for math than for reading.

*Differences for math.* For college preparatory transition courses in math, differences in participation within student subgroups for students in the approaching state benchmarks category vary for all three district groups (table C5). Statewide, participation by racial/ethnic subgroup is highest for White students (29.7 percent) and lowest for Black students (18.6 percent). Participation is higher for students who are not limited English proficient (28.4 percent) than for students who are (17.6 percent) and for students who are not in special education (28.6 percent) than for students who are (24.0 percent). Participation is similar (within 3 percentage points) for male and female students and for students from low-income households and other students.

**Table C3. Percentage of Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT math assessment in spring 2011, by school subgroup**

School subgroup	Number of observations			Meeting benchmarks			Approaching benchmarks			Performing below benchmarks		
	State	SE/SC Coop districts	Matched comparison districts	State	SE/SC Coop districts	Matched comparison districts	State	SE/SC Coop districts	Matched comparison districts	State	SE/SC Coop districts	Matched comparison districts
Locale												
Urban	7,358	na	na	44.8	na	na	34.1	na	na	21.1	na	na
Suburban	5,274	na	na	45.0	na	na	35.6	na	na	19.5	na	na
Town	8,297	1,737	969	41.0	39.7	44.1	38.1	38.9	36.8	20.9	21.4	19.2
Rural	12,999	1,792	1,785	37.9	33.3	35.5	39.7	41.0	40.2	22.4	25.8	24.3
Size (number of students in grades 9–12)												
Fewer than 500	3,165	473	492	34.0	36.6	35.6	40.3	37.6	41.3	25.7	25.8	23.2
500–749	5,318	996	642	36.9	37.1	27.3	39.5	39.3	43.8	23.6	23.6	29.0
750–999	6,866	342	637	37.5	28.1	39.4	38.0	40.4	36.6	24.5	31.6	24.0
1,000 or more	18,579	1,718	983	45.1	37.6	46.8	36.2	40.9	36.2	18.7	21.5	17.0

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 33,928$ ; SE/SC Coop  $n = 3,529$ ; matched comparison  $n = 2,754$ .

na is not applicable because no schools in SE/SC Coop or matched comparison districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table C4. Percentage of Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT reading assessment in spring 2011, by school subgroup**

School subgroup	Number of observations			Meeting benchmarks			Approaching benchmarks			Performing below benchmarks		
	State	SE/SC Coop districts	Matched comparison districts	State	SE/SC Coop districts	Matched comparison districts	State	SE/SC Coop districts	Matched comparison districts	State	SE/SC Coop districts	Matched comparison districts
Locale												
Urban	7,358	na	na	45.9	na	na	18.6	na	na	35.5	na	na
Suburban	5,274	na	na	46.3	na	na	20.8	na	na	32.9	na	na
Town	8,297	1,737	969	44.2	47.2	46.1	20.7	19.3	22.0	35.0	33.4	31.9
Rural	12,999	1,792	1,785	41.8	40.0	40.1	21.3	21.6	20.4	36.9	38.4	39.6
Size (number of students in grades 9–12)												
Fewer than 500	3,165	473	492	39.4	45.9	38.4	21.0	19.5	21.3	39.5	34.7	40.2
500–749	5,318	996	642	40.3	40.1	34.4	20.7	19.6	19.5	39.0	40.4	46.1
750–999	6,866	342	637	40.2	33.3	45.4	20.3	23.1	20.1	39.5	43.6	34.5
1,000 or more	18,579	1,718	983	47.2	46.9	47.1	20.5	20.8	22.3	32.3	32.3	30.6

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 33,928$ ; SE/SC Coop  $n = 3,529$ ; matched comparison  $n = 2,754$ .

na is not applicable because no schools in SE/SC Coop or matched comparison districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table C5. Participation in college preparatory transition courses in math by Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT math assessment in spring 2011, by student subgroup**

Student subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	834	6.0	113	8.8	63	5.9	3,577	28.1	561	39.8	283	26.4	1,948	27.0	270	32.4	180	29.0
Race/ethnicity																		
White	771	6.1	110	8.9	59	5.8	3,187	29.7	548	40.2	269	26.3	1,580	28.5	260	33.0	158	27.9
Black	37	5.1	a	a	a	a	258	18.6	a	a	a	a	271	20.5	a	a	a	a
Hispanic	14	5.2	a	a	a	a	85	25.2	a	a	a	a	58	25.7	a	a	a	a
Other <sup>b</sup>	12	2.4	a	a	a	a	47	19.8	a	a	a	a	39	31.0	a	a	a	a
Sex																		
Female	353	5.3	48	7.8	21	3.9	1,902	27.7	308	39.2	168	28.0	1,016	28.0	137	32.3	107	33.8
Male	481	6.6	65	9.7	42	8.0	1,675	28.6	253	40.5	115	24.3	933	25.9	133	32.4	73	24.1
Low-income status																		
Eligible for free or reduced-price lunch	377	9.4	63	12.0	26	6.4	1,845	29.6	374	44.7	173	28.5	1,193	25.9	184	32.8	114	27.3
Not eligible	457	4.6	50	6.6	37	5.6	1,732	26.7	187	32.6	110	23.6	755	28.9	86	31.5	66	32.5
Limited English proficiency status																		
Limited English proficient	12	3.9	a	a	a	a	63	17.6	a	a	a	a	59	18.3	a	a	a	a
Not limited English proficient	822	6.0	a	a	a	a	3,514	28.4	a	a	a	a	1,889	27.3	a	a	a	a
Special education status																		
Has individualized education program	48	7.2	a	a	a	a	273	24.0	a	a	a	a	433	21.6	a	a	a	a
Does not have program	786	5.9	a	a	a	a	3,304	28.6	a	a	a	a	1,515	29.0	a	a	a	a

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 33,928$ ; SE/SC Coop  $n = 3,529$ ; matched comparison  $n = 2,754$ .

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

By low-income status the SE/SC Coop districts have a larger difference in participation for students in the approaching state benchmarks category (44.7 percent for students eligible for free or reduced-price lunch and 32.6 percent for noneligible students, a difference of 12.1 percentage points) than the matched comparison districts (28.5 percent for eligible students and 23.6 percent for noneligible students, a difference of 4.9 percentage points). The SE/SC Coop districts also have smaller differences in participation by sex (40.5 percent for male students and 39.2 percent for female students, a difference of 1.3 percentage points) than the matched comparison districts (24.3 percent for male students and 28.0 percent for female students, a difference of 3.7 percentage points). The results for these districts must be interpreted with caution, however, because of the small number of students in many subgroups.

*Differences for reading.* There are fewer differences in participation in college preparatory transition courses by student subgroup in reading (table C6) than in math. Statewide, the differences are within 3 percentage points for all comparisons.

### Differences by school subgroup in student participation in college preparatory transition courses

There are also differences by school subgroups in student participation in college preparatory transition courses.

*Differences for math.* By school locale statewide participation in math transition courses is highest in suburbs for students meeting state benchmarks on the ACT (8.0 percent versus 2.8 percent for urban districts), in towns for students in the approaching state benchmarks category (31.7 percent versus 3.9 percent for suburbs), and in suburbs for students in the

**Table C6. Participation in college preparatory transition courses in reading by Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT reading assessment in spring 2011, by student subgroup**

Student subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	239	1.6	25	1.6	a	a	560	8.0	125	17.3	a	a	1,049	8.7	111	8.7	a	a
<b>Race/ethnicity</b>																		
White	217	1.6	a	a	a	a	484	8.1	a	a	a	a	797	8.5	a	a	a	a
Black	15	2.0	a	a	a	a	54	7.7	a	a	a	a	177	9.0	a	a	a	a
Hispanic	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Other <sup>b</sup>	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
<b>Sex</b>																		
Female	129	1.6	12	1.5	a	a	282	7.9	63	16.9	a	a	529	9.5	63	10.9	a	a
Male	110	1.6	13	2.3	a	a	279	8.2	62	17.7	a	a	520	8.0	48	6.9	a	a
<b>Low-income status</b>																		
Eligible for free or reduced-price lunch	120	2.6	15	2.5	a	a	298	9.4	75	18.2	a	a	647	9.1	74	8.9	a	a
Not eligible	124	1.2	10	1.3	a	a	262	6.9	50	16.0	a	a	402	8.1	37	8.4	a	a
<b>Limited English proficiency status</b>																		
Limited English proficient	a	a	a	a	a	a	a	a	a	a	a	a	56	9.5	a	a	a	a
Not limited English proficient	a	a	a	a	a	a	a	a	a	a	a	a	993	8.7	a	a	a	a
<b>Special education status</b>																		
Has individualized education program	24	2.9	a	a	a	a	56	8.7	a	a	a	a	196	8.2	a	a	a	a
Does not have program	215	1.5	a	a	a	a	504	8.0	a	a	a	a	853	8.8	a	a	a	a

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 33,928$ ; SE/SC Coop  $n = 3,529$ ; matched comparison  $n = 2,754$ .

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

performing below state benchmarks category (33.8 percent versus 12.0 percent for urban locales; table C7). Differences in participation by locale are greater in the SE/SC Coop districts than in the matched comparison districts in all three state benchmark categories. For example, for students in the approaching state benchmarks category, participation in SE/SC Coop districts is 56.0 percent in rural locales and 22.2 percent in towns (a difference of 33.8 percentage points), while participation in the matched comparison districts is 24.0 percent in rural locales and 31.2 percent in towns (a difference of 7.2 percentage points). (There are no urban or suburban schools in the SE/SC Coop districts or the matched comparison districts.)

By school size statewide participation in math transition courses is highest for schools with fewer than 500 students in all three state benchmark categories. The school size with the highest student participation in math transition courses differs by benchmark category between SE/SC Coop districts and matched comparison districts.

*Differences for reading.* By school locale statewide participation in reading transition courses is highest in towns for all three state benchmark categories (table C8).

By school size differences vary by benchmark category. The greatest difference is among students in the performing below state benchmarks category: 14.6 percentage points statewide (19.6 percent for schools with fewer than 500 students and 5.0 percent for schools with 500–749 students).

**Table C7. Participation in college preparatory transition courses in math by Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT math assessment in spring 2011, by school subgroup**

School subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	834	6.0	113	8.8	63	5.9	3,577	28.1	561	39.8	283	26.4	1,948	27.0	270	32.4	180	29.0
Locale																		
Urban	93	2.8	na	na	na	na	228	9.1	na	na	na	na	186	12.0	na	na	na	na
Suburban	190	8.0	na	na	na	na	737	39.3	na	na	na	na	347	33.8	na	na	na	na
Town	211	6.2	41	6.0	26	6.1	1,003	31.7	150	22.2	111	31.2	558	32.2	80	21.5	71	38.2
Rural	340	6.9	72	12.1	37	5.8	1,609	31.2	411	56.0	172	24.0	858	29.4	190	41.1	109	25.1
Size (number of students in grades 9–12)																		
Fewer than 500	132	12.2	1	0.6	37	21.1	501	39.2	30	16.9	95	46.8	296	36.4	27	22.1	34	29.8
500–749	214	10.9	65	17.6	<sup>a</sup>	<sup>a</sup>	786	37.4	179	45.8	<sup>a</sup>	<sup>a</sup>	414	33.0	90	38.3	<sup>a</sup>	<sup>a</sup>
750–999	127	4.9	19	19.8	<sup>a</sup>	<sup>a</sup>	548	21.0	86	62.3	<sup>a</sup>	<sup>a</sup>	359	21.3	46	42.6	<sup>a</sup>	<sup>a</sup>
1,000 or more	361	4.3	28	4.3	15	3.3	1,742	25.9	266	37.8	72	20.2	879	25.3	107	29.0	42	25.1

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 33,928$ ; SE/SC Coop  $n = 3,529$ ; matched comparison  $n = 2,754$ .

na is not applicable because no schools in SE/SC Coop or matched comparison districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table C8. Participation in college preparatory transition courses in reading by Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT reading assessment in spring 2011, by school subgroup**

School subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	239	1.6	25	1.6	b	b	560	8.0	125	17.3	b	b	1,049	8.7	111	8.7	b	b
Locale																		
Urban	14	0.4	na	na	na	na	43	3.1	na	na	na	na	112	4.3	na	na	na	na
Suburban	32	1.3	na	na	na	na	96	8.7	na	na	na	na	197	11.4	na	na	na	na
Town	89	2.4	a	a	a	a	177	10.3	62	18.5	a	a	429	14.8	79	13.6	a	a
Rural	104	1.9	a	a	a	a	244	8.8	63	16.3	a	a	311	6.5	32	4.6	a	a
Size (number of students in grades 9-12)																		
Fewer than 500	32	2.5	a	a	a	a	104	15.6	a	a	a	a	245	19.6	46	28.0	a	a
500-749	52	2.4	a	a	a	a	85	7.7	a	a	a	a	104	5.0	a	a	a	a
750-999	83	3.0	a	a	a	a	124	8.9	17	21.5	a	a	291	10.7	a	a	a	a
1,000 or more	72	0.8	19	2.4	a	a	247	6.5	87	24.4	a	a	409	6.8	34	6.1	a	a

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 33,928$ ; SE/SC Coop  $n = 3,529$ ; matched comparison  $n = 2,754$ .

na is not applicable because no schools in SE/SC Coop or matched comparison districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

### Differences by student subgroup in student pass rates in college preparatory transition courses

There are more differences by student subgroup in pass rates for college preparatory transition courses in math than in reading

*Differences for math.* Statewide for students in the meeting state benchmarks category, the pass rate for transition courses in math is lower than 90 percent for students not eligible for free or reduced-price lunch (89.5 percent) and students who are in special education (87.5 percent; table C9). For students in the approaching state benchmarks category, pass rates are higher than 90 percent for all student subgroups. For students in the performing below state benchmarks category pass rates are lower than 90 percent for Hispanic students (84.7 percent) and students of other races/ethnicities (88.9 percent). In the SE/SC Coop districts and matched comparison districts the pass rates are 90 percent or higher for all subgroups in all three benchmark categories. The results for the SE/SC Coop districts and matched comparison districts must be interpreted with caution, however, because of the small number of students in many subgroups.

*Differences for reading.* Statewide for students in the meeting state benchmarks and performing below state benchmarks categories, pass rates are higher than 90 percent for all student subgroups (table C10). In the approaching benchmarks category pass rates are lower than 90 percent for students of other races/ethnicities (83.3 percent). In the SE/SC Coop districts the pass rates are lower than 90 percent for male students in the meeting state benchmarks category (86.7 percent). In the approaching state benchmarks category the pass rates are lower than 90 percent for White students (88.9 percent), female students

**Table C9. Pass rates for college preparatory transition courses in math for Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT math assessment in spring 2011, by student subgroup**

Student subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	767	92.0	111	98.2	63	100.0	3,387	94.7	550	98.0	272	96.1	1,785	91.4	256	94.8	168	93.3
<b>Race/ethnicity</b>																		
White	712	92.0	108	98.2	59	100.0	3,020	94.8	536	98.0	258	95.9	1,448	91.7	247	95.0	149	93.7
Black	34	94.4	a	a	a	a	244	94.2	a	a	11	100.0	253	93.0	a	a	14	100.0
Hispanic	12	92.	a	a	a	a	81	94.2	a	a	a	a	50	84.7	a	a	a	a
Other <sup>b</sup>	a	a	a	a	a	a	42	93.2	a	a	a	a	30	88.9	a	a	a	a
<b>Sex</b>																		
Female	333	93.8	48	100.0	21	100.0	1,816	95.5	305	99.0	163	97.0	942	92.8	132	96.4	102	95.3
Male	434	90.6	63	96.9	42	100.0	1,571	93.8	245	96.8	109	94.8	843	90.4	124	93.2	66	90.4
<b>Low-income status</b>																		
Eligible for free or reduced-price lunch	360	95.0	63	100.0	26	100.0	1,732	93.8	366	97.9	167	96.5	1,078	90.4	174	94.6	105	92.1
Not eligible	407	89.5	48	96.0	37	100.0	1,655	95.7	184	98.4	105	95.5	707	93.6	82	95.3	63	95.5
<b>Limited English proficiency status</b>																		
Limited English proficient	a	a	a	a	a	a	58	93.5	a	a	na	na	53	91.4	a	a	a	a
Not limited English proficient	758	92.2	109	98.2	63	100.0	3,329	94.7	543	98.0	272	96.1	1,732	91.6	253	94.8	166	93.3
<b>Special education status</b>																		
Has individualized education program	42	87.5	a	a	a	a	266	97.1	48	100.0	17	100.0	400	92.4	60	95.2	37	100.0
Does not have program	725	92.2	103	99.0	58	100.0	3,121	94.5	502	97.9	255	95.9	1,385	91.4	196	94.7	131	91.6

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 6,359$ ; SE/SC Coop  $n = 944$ ; matched comparison  $n = 526$ .

na is not applicable because no students in the category enrolled in a transition course in math.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

(82.5 percent), and students from low-income households (85.3 percent). In the performing below benchmarks category the pass rates are lower than 90 percent for female students (87.3 percent) and for students from low-income households (86.5 percent).

### Differences by school subgroup in student pass rates for college preparatory transition courses

There are also differences in pass rates for transition courses in math and reading across some school subgroups.

*Differences for math.* Statewide, the pass rate for transition courses in math is lower than 90 percent in urban locales for students in all three state benchmark categories: meeting benchmarks (62.4 percent), approaching benchmarks (73.7 percent), and performing below

**Table C10. Pass rates for college preparatory transition courses in reading for Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT reading assessment in spring 2011, by student subgroup**

Student subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	235	98.3	26	92.9	a	a	538	96.1	111	88.8	a	a	1,012	96.5	99	89.2	45	100.0
<b>Race/ethnicity</b>																		
White	213	98.2	24	92.3	a	a	464	96.1	104	88.9	15	100.0	765	96.3	90	90.0	44	100.0
Black	15	100.0	na	na	a	a	54	100.0	a	a	a	a	171	97.2	a	a	a	a
Hispanic	a	a	a	a	a	a	10	90.9	a	a	a	a	52	96.3	a	a	a	a
Other <sup>b</sup>	a	a	a	a	a	a	10	83.3	a	a	a	a	24	96.0	a	a	a	a
<b>Sex</b>																		
Female	127	99.2	13	100.0	a	a	266	95.0	52	82.5	12	100.0	510	96.2	55	87.3	25	100.0
Male	108	97.3	13	86.7	a	a	272	97.1	59	95.2	a	a	502	96.7	44	91.7	20	100.0
<b>Low-income status</b>																		
Eligible for free or reduced-price lunch	117	98.3	16	94.1	a	a	283	94.6	64	85.3	a	100.0	614	95.2	64	86.5	28	100.0
Not eligible	118	98.3	10	90.9	a	a	255	97.7	47	94.0	a	100.0	398	98.5	35	94.6	17	100.0
<b>Limited English proficiency status</b>																		
Limited English proficient	a	a	na	na	a	a	a	a	na	na	na	na	56	98.2	a	a	a	a
Not limited English proficient	233	98.3	26	92.9	a	a	530	96.2	111	88.8	16	100.0	956	96.4	98	89.1	45	100.0
<b>Special education status</b>																		
Has individualized education program	22	95.7	a	a	a	a	54	96.4	15	93.8	a	a	182	93.3	15	93.8	a	a
Does not have program	213	98.6	23	92.0	a	a	484	96.0	96	88.1	15	100.0	830	97.2	84	88.4	37	100.0

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 1,848$ ; SE/SC Coop  $n = 264$ ; matched comparison  $n = 66$ .

na is not applicable because no students in the category enrolled in a transition course in reading.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

benchmarks (80.6 percent; table C11). All other math transition course pass rates are higher than 90 percent in other locales for the state as a whole, the SE/SC Coop districts, and the matched comparison districts.

Statewide, course pass rates are also lower than 90 percent in schools with 1,000 or more students for students in the meeting state benchmarks category (85.7 percent), as well as in schools with fewer than 500 students for students in the approaching state benchmarks category (86.8 percent) and in the performing below state benchmarks category (84.1 percent).

*Differences for reading.* Statewide, the pass rate for transition courses in reading is higher than 90 percent for all school locales and all state benchmark categories (table C12). In the

**Table C11. Pass rates for college preparatory transition courses in math for Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT math assessment in spring 2011, by school subgroup**

School subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	767	92.0	111	98.2	63	100.0	3,387	94.7	550	98.0	272	96.1	1,785	91.4	256	94.8	168	93.3
Locale																		
Urban	93	62.4	na	na	na	na	168	73.7	na	na	na	na	150	80.6	na	na	na	na
Suburban	190	94.2	na	na	na	na	714	97.0	na	na	na	na	327	94.2	na	na	na	na
Town	211	97.2	40	97.6	26	100.0	977	97.4	142	94.7	106	95.5	531	95.3	72	90.0	69	97.2
Rural	340	95.6	71	98.6	37	100.0	1,528	94.9	408	99.3	166	96.5	777	90.6	184	96.8	99	90.8
Size (number of students in grades 9–12)																		
Fewer than 500	131	93.9	a	a	37	100.0	434	86.8	26	86.7	89	93.7	249	84.1	27	100.0	30	88.2
500–749	213	97.7	64	98.5	a	a	770	98.0	173	96.6	44	100.0	384	92.8	78	86.7	36	90.0
750–999	126	98.4	18	94.7	a	a	539	98.5	85	98.8	71	98.6	342	95.0	44	95.7	62	96.9
1,000 or more	364	85.7	28	100.0	15	100.0	1,644	94.3	266	100.0	68	94.4	810	92.3	107	100.0	40	95.2

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 6,359$ ; SE/SC Coop  $n = 944$ ; matched comparison  $n = 526$ .

na is not applicable because no schools in SE/SC Coop or matched comparison districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

a. Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table C12. Pass rates for college preparatory transition courses in reading for Kentucky grade 12 students in 2011/12 in each state college-readiness benchmark category on the ACT reading assessment in spring 2011, by school subgroup**

School subgroup	Meeting benchmarks						Approaching benchmarks						Performing below benchmarks					
	State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts		State		SE/SC Coop districts		Matched comparison districts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	235	98.3	26	92.9	a	a	538	96.1	111	88.8	a	a	1,012	96.5	99	89.2	45	100.0
Locale																		
Urban	15	100.0	na	na	na	na	41	95.3	na	na	na	na	105	93.8	na	na	na	na
Suburban	31	100.0	na	na	na	na	94	98.9	na	na	na	na	191	97.0	na	na	na	na
Town	88	100.0	21	100.0	a	a	174	97.8	61	98.4	a	a	421	98.1	76	96.2	12	100.0
Rural	101	96.2	a	a	a	a	229	93.9	50	79.4	11	100.0	295	94.9	23	71.9	33	100.0
Size (number of students in grades 9–12)																		
Fewer than 500	30	96.8	a	a	a	a	99	95.2	20	95.2	a	a	230	93.9	43	93.5	12	100.0
500–749	51	100.0	a	a	na	na	83	97.6	na	na	na	na	101	98.1	a	a	na	na
750–999	81	97.6	a	a	a	a	110	88.7	a	a	12	100.0	279	96.2	20	69.0	33	100.0
1,000 or more	73	98.6	19	100.0	na	na	246	99.6	87	100.0	na	na	402	97.8	34	100.0	na	na

SE/SC Coop is Southeast/South-Central Educational Cooperative.

State  $n = 1,848$ ; SE/SC Coop  $n = 264$ ; matched comparison  $n = 66$ .

na is not applicable because no schools in SE/SC Coop or matched comparison districts are in urban or suburban locales.

a. Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

SE/SC Coop districts the pass rate is lower than 90 percent in rural schools for students in the approaching state benchmarks (79.4 percent) and performing below state benchmarks (71.9 percent) categories. In the matched comparison districts the pass rate is 100 percent for all school locales and all state benchmark categories with at least 10 observations.

Statewide, the pass rate is higher than 90 percent for all school sizes and all state benchmark categories, except in schools with 750–999 students for students in the approaching the state benchmarks category (88.7 percent).

## **Appendix D. Sensitivity Analysis for Southeast/ South-Central Educational Cooperative District Results**

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Staff from 10 of the 22 Southeast/South-Central Educational Cooperative (SE/SC Coop) districts identified four additional college preparatory transition courses in math and five additional courses in reading in the data that would not have been identified based on course name or state course code alone. This appendix details the results of a sensitivity analysis showing participation (tables D1 and D2) and pass rates (tables D3 and D4) for the SE/SC Coop district schools when these courses are included. Among the key findings: participation in college preparatory transition courses for students in the approaching state benchmarks category on the ACT in math are 39.8 percent without the additional courses and 43.8 percent with them (see table D1); participation rates in reading are 17.3 percent without the additional courses and 23.1 percent with them (see table D2).

**Table D1. Sensitivity analyses of SE/SC Coop district results for participation in college preparatory transition courses in math by Kentucky grade 12 students in 2011/12 when four additional math transition courses are included, by performance on the ACT math assessment in spring 2011 and by student and school subgroup**

Subgroup	Meeting benchmarks		Approaching benchmarks		Performing below benchmarks	
	Number	Percent	Number	Percent	Number	Percent
Total	132	10.3	619	43.8	292	34.9
<b>Student subgroup</b>						
<i>Race/ethnicity</i>						
White	129	10.4	604	44.3	281	35.7
Black	a	a	a	a	a	a
Hispanic	a	a	a	a	a	a
Other <sup>b</sup>	a	a	a	a	a	a
<i>Sex</i>						
Female	53	8.6	339	43.1	152	35.8
Male	79	11.8	280	44.8	140	34.1
<i>Low-income status</i>						
Eligible for free or reduced-price lunch	71	13.5	403	48.2	195	34.8
Not eligible	61	8.0	216	37.6	97	35.5
<i>Limited English proficiency status</i>						
Limited English proficient	a	a	a	a	a	a
Not limited English proficient	a	a	a	a	a	a
<i>Special education status</i>						
Has individualized education program	10	16.7	49	39.8	69	29.2
Does not have program	122	10.0	570	44.3	223	37.3
<b>School subgroup</b>						
<i>Locale</i>						
Urban	na	na	na	na	na	na
Suburban	na	na	na	na	na	na
Town	45	6.5	186	27.5	91	24.5
Rural	87	14.6	433	58.9	201	43.5
<i>Size (number of students in grades 9–12)</i>						
Fewer than 500	a	a	31	17.4	27	21.8
500–749	a	a	215	55.0	101	43.0
750–999	18	18.9	86	62.3	46	42.6
1,000 or more	46	7.1	287	40.8	118	32.2

SE/SC Coop is Southeast/South-Central Educational Cooperative.

$n = 1,043$ .

na is not applicable because no schools in SE/SC Coop districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table D2. Sensitivity analyses of SE/SC Coop district results for participation in college preparatory transition courses in reading by Kentucky grade 12 students in 2011/12 when five additional reading transition courses are included, by performance on the ACT reading assessment in spring 2011 and by student and school subgroup**

Subgroup	Meeting benchmarks		Approaching benchmarks		Performing below benchmarks	
	Number	Percent	Number	Percent	Number	Percent
Total	110	7.2	167	23.1	205	16.1
<b>Student subgroup</b>						
<i>Race/ethnicity</i>						
White	108	7.3	159	22.8	190	15.7
Black	a	a	a	a	a	a
Hispanic	a	a	a	a	a	a
Other <sup>a</sup>	a	a	a	a	a	a
<i>Sex</i>						
Female	58	6.7	87	23.3	104	18.0
Male	52	7.8	80	22.9	101	14.6
<i>Low-income status</i>						
Eligible for free or reduced-price lunch	55	8.1	98	23.8	127	15.3
Not eligible	55	6.4	69	22.1	78	17.8
<i>Limited English proficiency status</i>						
Limited English proficient	na	na	na	na	a	a
Not limited English proficient	110	7.2	167	23.3	a	a
<i>Special education status</i>						
Has individualized education program	a	a	19	26.0	35	13.3
Does not have program	a	a	148	22.8	170	17.0
<b>School subgroup</b>						
<i>Locale</i>						
Urban	na	na	na	na	na	na
Suburban	na	na	na	na	na	na
Town	30	3.7	69	20.5	101	17.4
Rural	80	11.2	98	25.4	104	15.1
<i>Size (number of students in grades 9–12)</i>						
Fewer than 500	a	a	a	a	47	28.3
500–749	12	3.0	a	a	26	6.5
750–999	a	a	16	20.5	29	19.5
1,000 or more	89	11.0	123	34.4	103	18.6

SE/SC Coop is Southeast/South-Central Educational Cooperative.

$n = 372$ .

na is not applicable because no schools in SE/SC Coop districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table D3. Sensitivity analyses of SE/SC Coop district results for pass rates for college preparatory transition courses in math by Kentucky grade 12 students in 2011/12 when four additional math transition courses are included, by performance on the ACT math assessment in spring 2011 and by student and school subgroup**

Subgroup	Meeting benchmarks		Approaching benchmarks		Performing below benchmarks	
	Number	Percent	Number	Percent	Number	Percent
Total	129	97.8	608	98.2	276	94.6
<b>Student subgroup</b>						
<i>Race/ethnicity</i>						
White	126	97.7	593	98.2	266	94.7
Black	a	a	a	a	a	a
Hispanic	a	a	a	a	a	a
Other <sup>a</sup>	a	a	a	a	a	a
<i>Sex</i>						
Female	53	100.0	336	99.4	146	96.1
Male	76	96.2	272	97.1	130	92.9
<i>Low-income status</i>						
Eligible for free or reduced-price lunch	71	100.0	395	98.0	184	94.4
Not eligible	58	95.1	213	98.6	92	94.8
<i>Limited English proficiency status</i>						
Limited English proficient	a	a	a	a	a	a
Not limited English proficient	a	a	a	a	a	a
<i>Special education status</i>						
Has individualized education program	a	a	49	100.0	65	94.2
Does not have program	a	a	559	98.1	211	94.6
<b>School subgroup</b>						
<i>Locale</i>						
Urban	na	na	na	na	na	na
Suburban	na	na	na	na	na	na
Town	43	95.6	178	95.7	83	91.2
Rural	86	98.9	430	99.3	193	96.0
<i>Size (number of students in grades 9–12)</i>						
Fewer than 500	a	a	27	87.1	27	100.0
500–749	a	a	209	97.2	89	88.1
750–999	17	94.4	85	98.8	44	95.7
1,000 or more	45	97.8	287	100.0	116	98.3

SE/SC Coop is Southeast/South-Central Educational Cooperative.

$n = 884$ .

na is not applicable because no schools in SE/SC Coop districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where  $n < 10$  for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

**Table D4. Sensitivity analyses of SE/SC Coop district results for pass rates for college preparatory transition courses in reading by Kentucky grade 12 students in 2011/12 when five additional reading transition courses are included, by performance on the ACT reading assessment in spring 2011 and by student and school subgroup**

Subgroup	Meeting benchmarks		Approaching benchmarks		Performing below benchmarks	
	Number	Percent	Number	Percent	Number	Percent
Total	107	97.3	153	91.7	191	93.2
<b>Student subgroup</b>						
<i>Race/ethnicity</i>						
White	105	97.2	146	91.8	178	93.7
Black	a	a	a	a	a	a
Hispanic	a	a	a	a	a	a
Other <sup>a</sup>	a	a	a	a	a	a
<i>Sex</i>						
Female	57	98.3	76	87.4	94	90.4
Male	50	96.2	77	96.3	97	96.0
<i>Low-income status</i>						
Eligible for free or reduced-price lunch	54	98.2	87	88.8	115	90.6
Not eligible	53	96.4	66	95.7	76	97.4
<i>Limited English proficiency status</i>						
Limited English proficient	na	na	na	na	a	a
Not limited English proficient	107	97.3	153	91.6	a	a
<i>Special education status</i>						
Has individualized education program	a	a	18	94.7	34	97.1
Does not have program	a	a	135	91.2	157	92.4
<b>School subgroup</b>						
<i>Locale</i>						
Urban	na	na	na	na	na	na
Suburban	na	na	na	na	na	na
Town	29	96.7	67	97.1	96	95.0
Rural	78	97.5	86	87.8	95	91.3
<i>Size (number of students in grades 9–12)</i>						
Fewer than 500	a	a	20	95.2	44	93.6
500–749	11	91.7	a	a	24	92.3
750–999	a	a	a	a	20	69.0
1,000 or more	89	100.0	122	99.2	103	100.0

SE/SC Coop is Southeast/South-Central Educational Cooperative.

*n* = 451.

na is not applicable because no schools in SE/SC Coop districts are in urban or suburban locales.

**Note:** Tests of statistical significance were not conducted because the analysis includes the entire population of students with nonmissing data.

**a.** Value is suppressed to protect student identities where *n* < 10 for one or more categories.

**b.** Includes Asian American, Pacific Islander, American Indian, and multiracial students.

**Source:** Author's calculations based on data from the Kentucky Department of Education.

## Notes

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1. The study focuses on grade 12 students taking the ACT in the 2011/12 school year because, as juniors in 2010/11, these students were the first group eligible to take college preparatory transition courses in both math and reading.
2. The “other” racial/ethnic subgroup includes Asian American, Pacific Islander, American Indian, and multiracial students.
3. Limitations of the data provided by the KDE might account in part for the report’s findings of low participation rates. (See box 2 and the discussion of limitations of the data in appendix A.)
4. Results are suppressed for students in the meeting benchmarks category in the matched comparison districts to protect student identities where  $n < 10$ .
5. Differences in participation rates by school locale could explain some of the differences by race/ethnicity. For example, Black students were the least likely racial/ethnic subgroup to participate in college preparatory transition courses in math, and urban schools had lower participation than rural schools. Black students make up a much larger percentage of the student population in urban schools (26 percent) than in rural schools (4.7 percent) and so might be more likely to attend a school that does not offer transition courses or encourage participation.
6. The state pays for one administration of the ACT assessment per student. Students may retake the ACT at their own expense. In addition, students who transfer schools during the testing period may have ACT records for each school they attended. Data from these additional ACT exams were not available for these analyses.
7. The codes for college preparatory transition courses are 270718 and 270309 in math and 230195 and 231295 in reading. The state course codes 270718 and 230195 are supposed to be used only if the college preparatory transition course uses the state curriculum. However, KDE officials believe that schools are also using the state course codes for college preparatory transition courses that use their own curricula. For this analysis the two state course codes in the same subject were combined.
8. The study proposal indicated that the variable for number of credits earned was not available and that course grades would be used to identify student pass rates. In further communication the KDE indicated that a new variable for credits earned had been added and that its data quality was better than the course grade variable.
9. These summary locale values incorporate the following finer disaggregations: urban (locale values of city, large; city, midsize; and city, small); suburban (suburb, large; suburb, midsize; and suburb, small); town (town, fringe; town, distant; and town, remote), and rural (rural, fringe; rural, distant; and rural, remote); see <http://nces.ed.gov/surveys/ruraled/page2.asp>.
10. There are 24 districts in the SE/SC Coop, but 2 have only K–8 schools.
11. The student-level data were used to calculate the district-level average for each variable.

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