Stated Briefly

College enrollment patterns for rural Indiana high school graduates

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In collaboration with the Midwest College and Career Success Alliance and the Midwest Rural Research Alliance

This study examined rural–nonrural differences in college enrollment patterns among Indiana's 2010 public high school graduates. It found that a similar proportion of graduates of rural and nonrural high schools enrolled in public Indiana colleges. In addition, a similar proportion of the two groups of graduates were presumptively eligible for selective and very selective four-year colleges based on their grade point averages and college entrance test scores. However, the proportion that enrolled in a two-year college was higher for rural graduates than for nonrural graduates, while the proportion that enrolled in a very selective college was lower for rural graduates than for nonrural graduates. Some findings from analyses based on Indiana data differ from those based on analyses of national data, thus emphasizing the importance of relying on state data in making education policy decisions at the state level.

This brief summarizes the findings of Burke, M. R., Davis, E., & Stephan, J. L. (2015). *College enrollment patterns for rural Indiana high school graduates* (REL 2015–083). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Midwest. That report is available at http://www.ies.ed.gov/ncee/edlabs/projects/project.asp?ProjectID=382.

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Why this study?

Postsecondary education is a fundamental tool for achieving upward mobility and economic growth. Students with an associate's or bachelor's degree earn substantially more in a lifetime and experience better working conditions and job benefits than students with only a high school diploma (Baum, Ma, & Payea, 2010). Researchers have estimated that by 2018, 63 percent of job openings will require some postsecondary education and that the country will have 3 million fewer college graduates than the job market will demand (Carnevale, Smith, & Strohl, 2010). Faced with this projected demand for college-educated workers, most states in the Regional Educational Laboratory (REL) Midwest Region have committed to increasing the proportion of students who acquire college credentials (Lumina Foundation, 2013).

Achieving this goal requires understanding students' college enrollment patterns and the factors that influence different types of students. Rural students make up a substantial proportion of high school students in Indiana (31 percent) and in the REL Midwest Region more generally (23 percent; U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2010). Indiana has taken multiple steps to improve the college readiness of students regardless of locale by introducing initiatives aimed at raising students' expectations and high school achievement (Indiana Code 20-30-10-1, 2005; Indiana Code 20-30-10-4, 2006), by aligning high school standards with college and workplace expectations (Plucker, Wongsarnpigoon, & Houser, 2006), and by adopting new graduation requirements (Indiana Department of Education, 2011). Although these changes allow for greater access to a more rigorous high school curriculum, rural and nonrural students may use the resources in different ways. For instance, rural schools may not be able to offer the same advanced math, world language, Advanced Placement, International Baccalaureate, or dual-credit options as nonrural schools, and rural students may not take advantage of honors diploma offerings at the same rate as nonrural students.

A gap exists between rural and nonrural students in college enrollment and degree attainment

Nationally, college enrollment rates are lower for students from rural areas than for students from nonrural areas, and smaller percentages of rural adults than of urban adults earn a bachelor's degree or graduate or professional degree (Provasnik et al., 2007). The differences have been attributed mostly to lower socioeconomic status (Byun, Meece, & Irvin, 2012). But research examining college enrollment or attainment rarely accounts for students' geographic context, nor has previous research used geographic information system data (including mapping and distance data) in the analyses (Byun et al., 2012; Turley, 2009). In addition, studies that examine rural–nonrural differences in college enrollment and attainment often use national datasets, making it difficult to apply findings to a specific state (for example, Byun et al., 2012; Hu, 2003). In fact, some research has suggested that studies of rural–nonrural differences should be conducted at a regional level by identifying clusters of rural districts sharing similar economic, historic, and demographic characteristics (Johnson & Strange, 2009).

Regional Educational Laboratory Midwest Region school leaders want to know more about the differences in postsecondary pathways between rural and nonrural students

Increasing postsecondary educational attainment for all students requires understanding and addressing the pathways of rural students. To this end, this study is the result of a collaborative partnership with both the Rural Research Alliance and the College and Career Success Research Alliance, two groups convened

by REL Midwest. Through this collaboration, the study aimed to gain a better understanding of rural–nonrural differences in the following characteristics and outcomes:

What are the rural–nonrural differences in:

- College enrollment, academic preparation, and eligibility for the federal school lunch program?
- Distance to the nearest two- and four-year college and students' college of enrollment?
- Presumptive eligibility for various levels of college selectivity based on academic qualifications?
- Instances of enrolling in a college undermatched to students' presumptive eligibility?

After student- and school-level characteristics are controlled for, do rural–nonrural differences persist in:

- Likelihood of enrolling in a two-year versus a four-year college?
- Likelihood of enrolling in a college undermatched to students' presumptive eligibility?

Box 1 summarizes the data and methods of the study.

Box 1. Data and methods

This study uses data from the Indiana state longitudinal data system, the Elementary and Secondary Information system (U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2010), and Barron's Educational Series (2010) to assess rural–nonrural differences in college enrollment patterns. The rural–nonrural distinction in this report is based on National Center for Education Statistics urban-centric locale codes. Schools with a code for cities, suburbs, or towns were grouped together as nonrural schools, and schools with all other codes were grouped as rural.

The study team calculated college enrollment rates and level of academic preparation for all 2010 rural and nonrural high school graduates in Indiana. The study team also used geographic information system software (ArcMap 10.2; Environmental Systems Research Institute, 2013) to create maps depicting the locations of public colleges in Indiana, student enrollment in various types of colleges, and geographic proximity of postsecondary institutions to high schools. Students' presumptive eligibility, or the level of college selectivity for which a student is likely eligible based on grade point average and ACT or SAT score, was calculated for students enrolling in an Indiana public two- or four-year college. Selectivity ratings of four-year colleges were based on Barron's Profile of American Colleges (Barrons Educational Series, 2010), and two-year colleges were considered nonselective because they have an open enrollment policy. The selectivity ratings (nonselective, less selective, selective, and very selective) of these students' colleges of enrollment were compared with the presumptive eligibility ratings to show rural–nonrural differences in undermatching, or enrolling in a college less selective than their presumptive eligibility suggested (Bowen, Chingos, & McPherson, 2009). Finally, the study team developed regression models, which controlled for various demographic and high school characteristics while examining whether, among graduates enrolling in an Indiana public college, rural or nonrural high school locale predicted enrollment in a two-year versus a four-year college and enrollment in a college less selective than the level for which a student was presumptively eligible.

What the study found

A similar proportion of graduates of rural and nonrural Indiana public high schools enrolled in an Indiana public college, and rural and nonrural graduates had similar academic preparation and presumptive eligibility for colleges of varying selectivity. However, differences between these two groups emerged in the type and selectivity of their colleges of enrollment, eligibility for the federal school lunch program, and likelihood of undermatching.

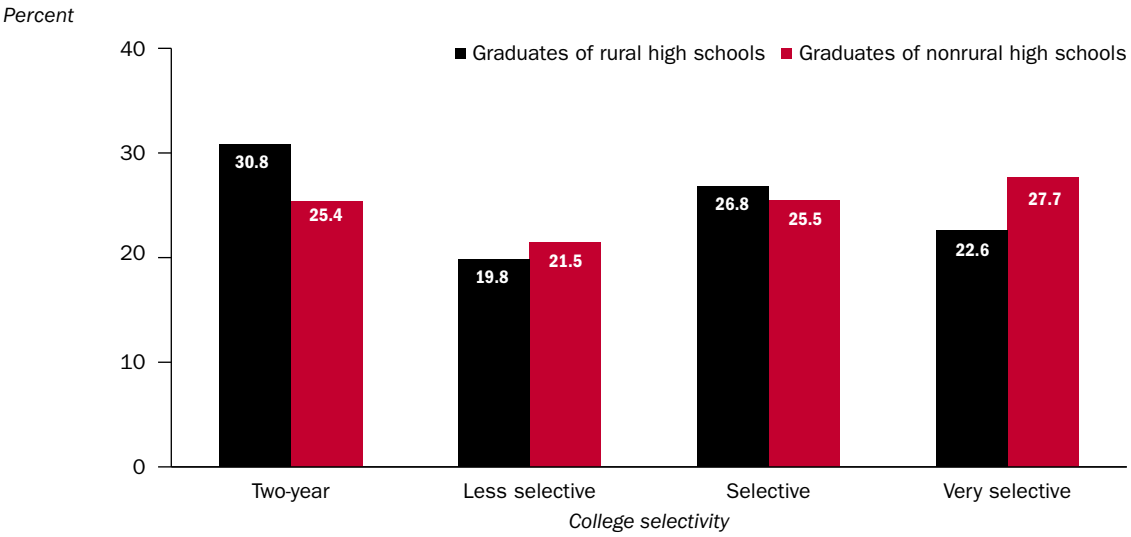
Rural high school graduates were more likely than nonrural graduates to enroll in a two-year college and less likely to enroll in a very selective four-year college

Graduates of rural and nonrural public high schools enrolled in college at a similar rate (62 percent for rural graduates and 61 percent for nonrural graduates). However, rural graduates were more likely than nonrural graduates to enroll in a two-year college (31 percent versus 25 percent) and less likely to enroll in a very selective four-year college (23 percent versus 28 percent; figure 1). After other student- and school-level characteristics were controlled for, the likelihood of enrolling in a two- versus a four-year college was 5.6 percentage points higher for rural graduates than for nonrural graduates. This difference was statistically significant.

Rural high school graduates had academic preparation similar to that of nonrural high school graduates and were less often eligible for the federal school lunch program

Rural and nonrural graduates had similar state standardized test[1] scores, ACT and SAT scores, rates of taking at least one Advanced Placement examination, and grade point averages (table 1). However, unlike

Figure 1. Among graduates who enrolled in an Indiana public college in 2010, graduates of rural high schools were more likely than graduates of nonrural high schools to enroll in a two-year college and less likely to enroll in a very selective college



Note: Two-year, nonselective colleges include Ivy Tech Community College—Indiana's only public two-year college, which has more than 30 campuses statewide—and Vincennes University—a four-year college with an open-admissions policy that grants primarily associate's degrees. Less selective, selective, and very selective colleges include four-year colleges only.

Source: Author's calculations based on data from the Indiana state longitudinal data system and Barron's Educational Series (2010).

Table 1. Number and percentage of 2010 graduates of Indiana rural and nonrural high schools, by student academic and socioeconomic subgroup

Student academic subgroup	Rural high school graduates		Nonrural high school graduates	
	Number	Percent	Number	Percent
Total	20,817	100.0	43,717	100.0
Grade 10 ISTEP+ math and English language arts composite[a]				
Lower third of ISTEP+ composite	6,032	30.2	14,155	34.4
Middle third of ISTEP+ composite	7,120	35.7	13,060	31.7
Upper third of ISTEP+ composite	6,803	34.1	13,998	34.0
ACT score[a]				
Lower third of ACT scores	1,467	36.6	4,359	40.6
Middle third of ACT scores	1,022	25.5	2,327	21.7
Upper third of ACT scores	1,524	38.0	4,056	37.8
SAT score[a]				
Lower third of SAT scores	3,724	32.4	7,922	33.4
Middle third of SAT scores	3,957	34.4	7,329	30.9
Upper third of SAT scores	3,819	33.2	8,488	35.8
ACT or SAT score				
Has a score	12,433	59.7	26,737	61.2
Does not have a score	8,384	40.3	16,980	38.8
Advanced Placement exam				
Took and passed at least one exam	2,055	9.9	5,520	12.7
Took at least one exam but did not pass any	3,596	17.3	6,733	15.5
Did not take any exams	15,120	72.8	31,333	71.9
Eligibility for school lunch program				
Eligible	4,871	23.5	13,578	31.2
Not eligible	15,900	76.6	30,008	68.9

ISTEP+ is the Indiana Statewide Testing for Educational Progress—Plus.

Note: Numbers within subgroups may not sum to total number of graduates because of missing data. Percentages may not sum to 100 because of rounding.

a. Lower, middle, and upper thirds are based on scores of students in the high school graduates analytic sample.

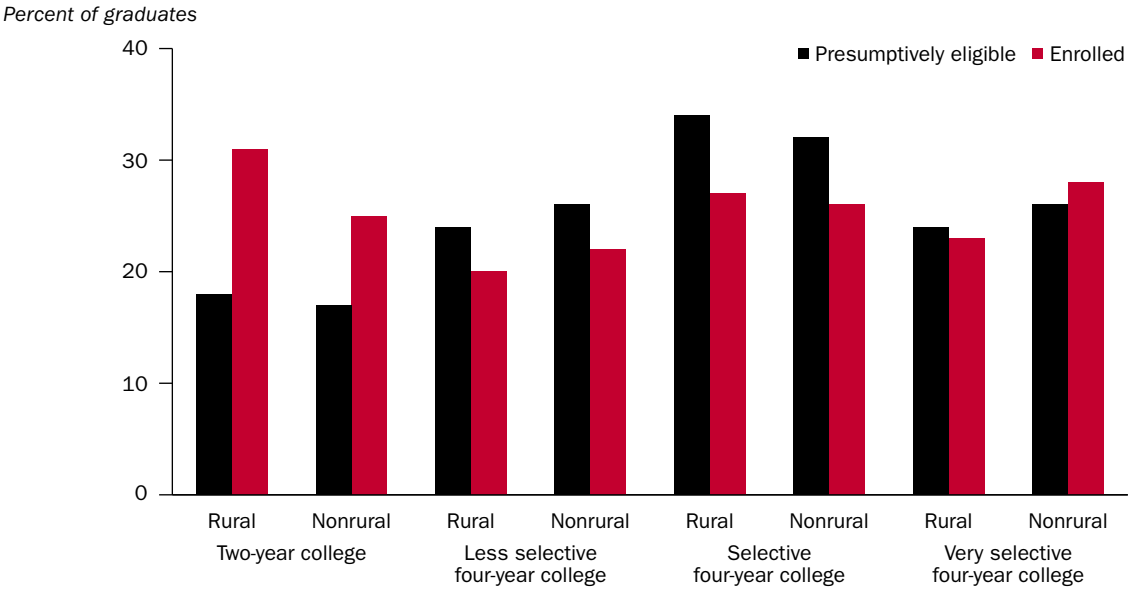
Source: Author's calculations based on data from the Indiana state longitudinal data system.

previous national studies, the Indiana data suggest that rural graduates were less likely than nonrural graduates to be eligible for the federal school lunch program (24 percent versus 31 percent).

Rural high school graduates traveled farther than nonrural high school graduates to two-year colleges and to less selective four-year colleges

Two- and four-year colleges in Indiana are located primarily in cities and more urban areas (see Burke, Davis & Stephan [2015] for maps plotting locations of high schools and colleges in Indiana). Rural graduates traveled farther on average than nonrural graduates to two-year colleges (45 miles versus 39 miles) and to less selective four-year colleges (54 miles versus 45 miles) and traveled shorter distances on average than nonrural graduates to very selective four-year colleges (89 miles versus 94 miles). The rural–nonrural difference in distance to selective four-year colleges (73 miles versus 76 miles) was less pronounced.

Figure 2. Rural high school graduates were more likely than nonrural high school graduates to enroll in a college that was less selective, even though both groups had similar presumptive eligibility rates for different types of colleges



Note: Nineteen percent (n = 5,814) of the 30,624 graduates who enrolled in an Indiana public college were missing data on grade point average and were excluded from the analysis on presumptive eligibility. Because two-year colleges do not require ACT or SAT scores for admission, graduates who were missing data on ACT and SAT scores were presumed eligible for two-year colleges. Ninety three percent of those missing data on grade point average enrolled in a two-year college (over half of graduates who enrolled in a two year college), so percentages of presumptive eligibility for two year colleges may be underestimated.

Source: Authors' calculations based on data from the Indiana state longitudinal data system and Barron's Educational Series (2010).

Despite similar patterns of presumptive eligibility, rural high school graduates were more likely than nonrural high school graduates to enroll in a college undermatched with their level of presumptive eligibility

Rural and nonrural graduates had a similar pattern of presumptive eligibility for colleges of different selectivity levels. For example, 24 percent of rural graduates and 26 percent of nonrural graduates were presumptively eligible to attend a very selective four-year college (figure 2). For two-year colleges, more rural and nonrural graduates enrolled than would be expected given their presumptive eligibility, and the undermatching is wider for rural students (a 13 percentage point difference versus an 8 percentage point difference). For selective and less selective four-year colleges the mismatch between where graduates enrolled and where they were presumed eligible to enroll was narrower. The strongest match was for graduates who were presumed eligible to enroll in a very selective four-year college. However, the percentage of nonrural graduates who enrolled in a very selective four-year college was slightly greater than the percentage of graduates presumed eligible, and the percentage of rural graduates who enrolled in a very selective four-year college was slightly lower than the percentage of graduates presumed eligible.

Despite similar patterns of presumptive eligibility, rural graduates were more likely than nonrural graduates to enroll in a college undermatched with their level of presumptive eligibility (29 percent of rural graduates, compared with 24 percent of nonrural graduates). After student- and school-level characteristics were controlled for, the likelihood of undermatching was 3.2 percent higher for rural graduates than for nonrural graduates. This difference was statistically significant.

Implications of the study

The findings raise three considerations for educators and policymakers about rural–nonrural differences in Indiana.

First, rural and nonrural students may have different college choice processes. Future research could attempt to determine how students learn about their college options, what supports are in place to help them enroll in college, and how the processes and supports differ between rural and nonrural schools. In addition, future work could examine rural and nonrural student aspirations in Indiana in addition to enrollment patterns to determine differences in the reasons students choose to attend various types of colleges.

Second, future research aimed at understanding rural Indiana students' reasons for enrolling in a two-year college may help explain the differences found in college enrollment patterns between rural and nonrural high school graduates. For example, if rural students (especially students who are presumptively eligible to attend a four-year college) are enrolling in a two-year college primarily for high-payoff technical programs or in programs that are supported by a local employer, the finding that rural students are more likely to enroll in a two-year college or less selective college may not be as much of a concern as it would be for student groups found to be at risk of undermatch in previous studies (Roderick, Nagaoka, Coca, & Moeller, 2008; Smith, Howell, Pender, & Hurwitz, 2012).

Finally, this study suggests that there are factors influencing the two-year college enrollment rate of rural Indiana high school graduates that are unrelated to poverty and socioeconomic status. Because these results are counter to the results of studies using national data, state policymakers may want to examine the unique characteristics of their rural populations whenever possible and act cautiously when using information from studies of nationally representative samples of students (Johnson & Strange, 2009).

Limitations of the study

There are several limitations to this study. First, variables in the analysis were limited to those collected and available through the Indiana Student Information System and did not consider all factors related to the enrollment patterns of rural and nonrural public high school graduates in Indiana. However, the factors that were included, such as academic preparation, eligibility for the federal school lunch program, and distance to college, have been identified as important factors related to college enrollment in previous literature.

Second, the current study used urban-centric locale codes from the National Center for Education Statistics on the basis of proximity to an urban area, which may not adequately identify all rural schools (U.S. Department of Education Institute of Education Sciences, National Center for Education Statistics, n.d.). Further, not all rural communities are equal in their composition or resources, and the study made no attempt to control for these variations. Future work may attempt to isolate differences between subclassifications of rural and nonrural students.

Third, only college enrollments for Indiana public colleges were included in the analyses. Although this limits the generalizability of the findings, the majority (78 percent) of the 39,405 public high school graduates in 2010 who continued on to college enrolled in an Indiana public college.

Fourth, the presumptive eligibility analysis includes only graduates who enrolled in a public Indiana college in the fall immediately following high school graduation. As such, the results cannot be generalized to students who may have been presumptively eligible to attend colleges of varying selectivity but did not attend college, delayed their enrollment, or enrolled in a private or out-of-state college.

Fifth, high school grade point average data are self-reported by the students, and the Indiana Commission for Higher Education is not able to verify the accuracy of the data. However, previous studies have shown that self-reported grade point averages are similar to those of official school records (see, for example, Cassady, 2001).

Finally, the study is descriptive and cannot examine causality. However, it does provide information about rural Indiana students that may inform the decisions of policymakers in targeting resources and designing improvement in policies, programs, and initiatives to support college and career success.

Note

1. Indiana Statewide Testing for Educational Progress (ISTEP+). The grade 10 ISTEP+ math and English language arts assessments make up the Graduate Qualifying Examination, which students must pass to receive a diploma. Since 2009/10 the ISTEP+ has been administered to grades 3–8, and end-of-course examinations have been administered for Algebra I and English 10.

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