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Rural/Nonrural Differences in College Attendance Patterns

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Abstract

Using data from the National Education Longitudinal Study of 1988, this study documented college attendance patterns of rural youth in terms of the selectivity of first postsecondary institution of attendance, the timing of transition to postsecondary education, and the continuity of enrollment. The study also examined how these college attendance patterns among rural students differed from those among their non-rural counterparts and which factors explained these rural/nonrural differences. Results showed that rural youth were less likely than their nonrural counterparts to attend a selective institution. In addition, rural youth were more likely to delay entry to postsecondary education, compared to their urban counterparts. Finally, rural students were less likely than their urban counterparts to be continuously enrolled in college. Much of these rural/nonrural disparities in college attendance patterns were explained by rural/nonrural differences in socioeconomic status and high school preparation. Policy implications, limitations of the study, and future research directions are also discussed.

Keywords

Rural youth; rural/nonrural differences; college attendance patterns

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Research has consistently documented that students from rural high schools are less likely than their suburban and urban peers to attend postsecondary institutions, especially four-year colleges (Byun, Meece, & Irvin, 2012; Gibbs, 1998). However, most past research has been focused mainly on either college enrollment status or type of college enrolled in. As a result, we know little about various aspects of college attendance among rural youth, including the selectivity of the institution that rural youth attend, the timing of their attendance, and the continuity of their enrollment. Furthermore, we know little about how college attendance patterns of rural youth differ from those of their nonrural counterparts. The lack of research on college attendance patterns of rural youth is surprising, given that the vast majority of rural youth these days want to further their education beyond high school (Meece et al., 2013) and that an increasing number of rural youth attend college (Snyder & Dillow, 2010).

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In this study, we seek to extend literature by addressing this research gap. Specifically, using data from the National Education Longitudinal Study of 1988–2000 (NELS:88/2000) Postsecondary Education Transcript Study (PETS), we first document college attendance patterns of rural youth in terms of the selectivity of first postsecondary institution of attendance, the timing of entry to postsecondary education (e.g., straight after high school graduation vs. somewhat later), and the continuity of enrollment (e.g., continuous vs. noncontinuous). Our rationale of focusing on these aspects of college attendance is that the selectivity (Alon & Tienda, 2005; Bowen & Bok, 1998) of first postsecondary institution of attendance, timing of entry to postsecondary education (Bozick & Deluca, 2005), and continuity of enrollment (Adelman 1999, 2006) are all important to predict college degree attainment. We then examine whether these college attendance patterns of rural students differ from those of their nonrural counterparts and which factors, if any, account for such rural/nonrural differences.

It is important to note that, while other datasets are more recent, NELS:88/2000 was the most appropriate for our study. For example, the High School Longitudinal Study of 2009 (HSLS:09) has followed the most recent cohort of high school students but its second follow-up data (2012) were not available when the current study was conducted. The Education Longitudinal Study of 2002 (ELS:02) has also followed a more recent cohort of high school students into the postsecondary years than NELS:88/2000, but its postsecondary transcript data were not available either. Adelman (1999) found discrepancies between students' reports of various college enrollment and experiences claimed (e.g., number of institutions attended, coursework, and degree) versus data obtained from transcripts, suggesting inaccuracies of selfreports. In short, at this time the NELS:88/2000 data are the most recent survey data that follow high school students through college and offer postsecondary transcript information.

It is also important to note that we draw on the geographical locale codes defined by NELS: 88/2000, which correspond to U.S. Bureau of the Census classification of the school location. In this classification system, urban schools are defined as schools located in central cities of Metropolitan Statistical Areas (MSAs) that has a population of 50,000 people or more; suburban schools as schools located within the area surrounding central city within the MSA; and rural schools as schools outside of an MSA, including those in rural or farming communities, towns of less than 50,000 people that are not suburbs of a larger city, and Indian reservations (Lippman, Burns, & McArthur, 1996).

Review of Literature

Rural/Nonrural Disparities in Postsecondary Attendance

Most prior research focuses on rural/nonrural differences in college enrollment, and the literature documents that rural youth lag behind nonrural students, especially in four-year college enrollment. For example, using data from the High School and Beyond (HS&B) study on a nationally representative sample of sophomore high school students in 1980, Smith, Beaulieu, and Seraphine (1995) found that rural youth had the lowest likelihood of attending college (two- and four-year colleges combined), while suburban youth had the highest, followed by urban students. Using data from the NELS:88/1994, Hu (2003) found similar results: the college enrollment rate was the lowest among rural youth.

However, using more recent data from the ELS:02, Irvin, Byun, Smiley, and Hutchins (2013) found that the overall proportion of youth attending college was higher for rural youth than for urban youth, even though it remained smaller compared to that of suburban youth. Yet, when it came to four-college attendance rate, rural youth still lagged behind suburban and urban rural youth. Similarly, Irvin et al. (2013) showed that while an increasing number of rural youth attended college, the reduced or even reverse rural-urban gap in college attendance was driven by a greater proportion of rural high school students attending a two-year college.

Only a few studies have examined rural/nonrural differences in college attendance patterns beyond college matriculation. Drawing on data from the National Longitudinal Survey of Youth (NLSY), Gibbs (1998) found that rural students were more likely than urban students to attend rural, public, and nonselective colleges.[1] Using data from the NELS:88/2000, Byun, Irvin, and Meece (2012) also found that rural students were more likely to attend a public college and attend college full-time but less likely to attend a selective college compared to suburban and urban students. These studies highlight some unique patterns of college attendance among rural youth compared to nonrural youth, but our understanding of more specific college attendance patterns of rural youth is very limited.

Explaining Rural/Nonrural Disparities in College Enrollment

Much past research suggested that the lower socioeconomic status (SES), lower parental expectations, and less intensive high school preparation in rural areas compared to nonrural areas are the main sources of rural/nonrural disparities in educational outcomes including college enrollment (Byun et al., 2012; Roscigno & Crowley, 2001; Roscigno, Tomaskovic-Devey, & Crowley, 2006). According to data from the American Community Survey for 2011, 31% of rural children in the U.S. live below the poverty line (compared to 26% in the U.S. overall) (Mattingly, Bean, & Schaefer, 2012). As a result, rural children are more likely than their nonrural counterparts to receive food stamps and free or reduced-price school lunches (Rogers, 2005). In addition, postsecondary educational attainment is lower among parents of children in rural areas than in suburban and urban areas (Byun et al., 2012; Provasnik et al., 2007; Smith et al., 1995).

Furthermore, students in rural high schools are less often offered and take advanced courses. For example, Irvin et al. (2013) showed that a significantly smaller proportion of students in rural high schools took advanced math courses (indicated by Algebra II and beyond, including trigonometry, pre-calculus, and calculus) compared to students in suburban high schools. In addition, Provasnik et al. (2007) found that the percentage of public high schools students enrolled in schools offering Advanced Placement (AP) courses was 95.7% for students in suburban areas, and 93.0% for students in urban areas, but only 69.2% for students in rural areas. As such, rural students have limited opportunities to engage in college preparatory courses, which may negatively impact their college attendance prospects

[1]In his study, Gibbs (1998) defined college selectivity based on the 1990 edition of *Barron's Profiles of American Colleges*.

(Adelman, 1999, 2006; Irvin et al., 2013). In sum, family background and high school preparation have been suggested as key sources of rural/nonrural differences in college attendance.

However, very limited research has investigated the extent to which rural/nonrural differences in family background and high school preparation indeed explain rural/nonrural differences in college attendance. For example, using HS&B data, Smith et al. (1995) found that rural/urban differences in family income and parental education, as well as various family and community social resources, explained some but not all of rural/urban difference in college attendance. By contrast, using more recent data from NELS:88/2000, Byun et al. (2012) found that rural/nonrural differences in family income and parental education explained all of rural/nonrural differences in college enrollment and degree attainment, highlighting the importance of family SES in understanding rural/nonrural disparities in college attendance and degree attainment.[2]

Family SES can also be a major source of rural/nonrural differences in college attendance patterns in terms of type and selectivity of first institution of attendance, timing of entry to postsecondary education, and continuity of enrollment. This is because students from low-SES families are less likely to attend a four-year and selective college program (Adelman 1999, 2006; Alon & Tienda, 2005; Bowen & Bok, 1998) but are more likely to delay transition to postsecondary education (Bozick & Deluca, 2005), when compared to students from high-SES families. Additionally, low-SES students tend to attend college with frequent stopouts[3] (Adelman, 2006; Goldrick-Rab, 2006). Indeed, Gibbs (1998) speculated that rural youth were less likely than urban youth to attend public, nonselective colleges because rural students are less able to afford higher tuition private colleges and because nonselective colleges are less likely to require advanced course work, which is often lacking in rural schools. Yet, little research has investigated the extent to which family SES and high school preparation might account for rural/nonrural disparities in college attendance patterns.

Purposes and Aims of the Current Study

The purpose of the current study was to document college attendance patterns of rural youth. Toward that end, we addressed two research questions:

1. Do rural youth differ in the selectivity of first institution of attendance, the timing of entry to postsecondary education, and the continuity of enrollment from their nonrural counterparts?
2. If there are significant rural/nonrural differences in college enrollment patterns, which factors may explain these rural/nonrural differences?

[2]It is unclear why Smith et al. (1994) and Byun et al. (2012) found different results but one possible reason may be that these two studies used different datasets (i.e., HS&B vs. NELS:88/2000), which have data on youth from different time periods.
[3]Stopouts usually refer to discontinuous enrollment (e.g., missing an entire semester or academic year), which is different from dropouts from college (Goldrick-Rab, 2006).

Method

Data

We drew on data from the NELS:88/2000 PETS (Adelman, Daniel, Berkovits, & Owings, 2003). For the NELS:88/2000, the National Center of Education Statistics (NCES) drew random samples of approximately 25 eighth- graders in about 1,000 randomly selected schools in 1988. The NELS:88/2000 followed these students through high school in 1990 and 1992, and beyond in 1994 and 2000 (at age 26 or 27). NELS:88/2000 consisted of approximately 12,100 students. Of these, students who reported enrollment in postsecondary institutions in one of the last two follow-ups (i.e., 1994 and 2000) were included in the PETS sample, and their postsecondary transcripts were requested from institutions they attended (approximately 9,600) (Adelman et al., 2003).

For the current study, we restricted our analyses to those students who had ever attended at least one postsecondary institution and earned more than 10 course credits as of 2000. Due to small sample sizes, we excluded American Indian/Alaska Native students. After we deleted records with missing locale identifiers and postsecondary transcript information, the final analytic sample included approximately 8,200 with rural, suburban, and urban youth being approximately 28% (n = 2,320), 42% (n = 3,420) and 30% (n = 2,430), respectively.[4] Among these students, 54% were female and 74% were White.

Measures

Locale—As noted, we drew on the geographical locale codes defined by NELS:88/2000, which defined urban schools as schools located in central cities of MSAs that has a population of 50,000 people or more; suburban schools as schools located within the area surrounding central city within the MSA; and rural schools as schools outside of an MSA (Lippman, Burns, & McArthur, 1996).

Dependent variables—As noted, we focused on college attendance patterns in terms of the following three indicators:

- *Selectivity of first postsecondary institution of attendance*: This variable indicates the selectivity of postsecondary institution that students first attended after high school graduation as of 2000. The selectivity was measured as follows: 1 = highly selective, 2 = selective, 3 = nonselective, 4 = open-door, 5 = unrated.[5]
- *Delay of entry to postsecondary education*: Delay of entry to postsecondary education was measured by a dichotomous variable indicating whether students were enrolled in a college within 7 months (= 0) vs. after 8 month (= 1) after high school graduation

[4]Sample sizes throughout the article are rounded to the nearest 10 in compliance with NCES regulations for using restricted data.
[5]The selectivity level of the institution was based on the selectivity cell cluster used in the Cooperative Institutional Research Project's 1992 publication *The American Freshman* (Adelman et al., 2003), which defines selectivity as the average composite SAT score of the entering class (low = nonselective, medium = selective, and high = highly selective) (Dey, Astin, Korn, & Riggs, 1992). While open-door institutions typically refer to community colleges, unrated institutions include "specialized schools art/music/drama, theological seminaries, and nearly all sub-baccalaureate institutions awarding less than the associate's degree" (Adelman et al., 2003, p.25).

- *Continuity of enrollment*: Finally, continuity of enrollment was measured by a dichotomous variable indicating whether or not students were enrolled in college continuously without any break or with a stopout. Note that the NELS:88/2000 defined noncontinuous enrollments as a stopout period of more than one semester or two quarters (or their equivalent) but not including summer terms (Adelman et al., 2003). Thus, by this defition, sitting out one semester would not qualify as a stopout.

All these measures of the dependent variables were based on transcripts and provided by the PETS.

Explanatory variables—As described, prior research suggests that rural students lag behind nonrural students in attending a four-year college largely due to their lower socioeconomic background and poor high school preparation (e.g., Byun et al., 2012). Accordingly, we included SES and high school curriculum intensity as well as other demographics and high school achievement as explanatory variables. Specific ways to measure these variables follow.

- *SES*: SES was measured by the quintile distribution of the standardized composite variable created by using parental education, parental occupation, and household income and provided by the NELS (1 = 81st – 100th quintile [lowest SES], 5 = 1st – 20th quintile [highest SES]) (Adelman et al., 2003).
- *High school curriculum intensity*: High school curriculum intensity indicates the rigor of student's high school curriculum determined for multiple subjects (e.g., math, AP courses, English, foreign language, etc.) by assessing both the quality of courses taken and number of hard courses (Adelman et al., 2003). This measure was rated on the five-quintile scale (1 = highest quintile; 5 = lowest quintile).[6]
- *Gender*: Gender was measured by students' self-reported sex (female = 1 vs. male = 0).
- *Race/ethnicity*: Race/ethnicity was measured by students' self-reported race/ ethnicity (Asian, Hispanic, Black, and White [reference group]).
- *High school achievement*: High school achievement was based on the students' high school transcripts and measured by the quintile distribution of students' overall GPA (1 = highest quintile; 5 = lowest quintile).

Analytic Strategies

We first performed descriptive statistics for each type of geographic locale (rural, suburban, and urban) of the individual student's high school as well as for the pooled sample. Next, we conducted multinomial logistic regression analyses for the selectivity of first postsecondary

[6]The curriculum intensity variable was based on a weighted quintile distribution of NELS:88/00 students across 32 levels of academic curriculum intensity and quality (Adelman et al., 2003, p.66). At the highest quintile, for example, students accumulated 3.75 or more Carnegie units of both English and mathematics; highest mathematics of either calculus, precalculus, or trigonometry; 2.5 or more Carnegie units of science or more than 2.0 Carnegie units of core laboratory science; more than 2.0 Carnegie units of both foreign languages and history and/or social studies; more than 1 AP course; and no remedial courses for both English and mathematics (Adelman, 2006, p.27).

institution of attendance, given the categorical nature of the dependent variables (Agresti, 2002; Long & Freese, 2006). Then, we conducted logistic regression analyses for the timing of entry to postsecondary education and continuity of enrolment because they were measured by the dichotomous variables (Agresti, 2002; Long & Freese, 2006).

To more systemically examine factors that might explain rural/nonrural differences in college attendance patterns, we estimated four models for all three dependent variables. We first included only the dummy variables for locale with rural as the reference group to examine unadjusted differences in college attendance patterns (Model 2). Next, we introduced SES (Model 2) and high school curriculum intensity (Model 3), respectively, because literature suggests that these two variables are main sources of rural/nonrural differences in college enrollment (e.g., Byun et al., 2012). Finally, we controlled for other demographic and high school achievement variables (Model 4) to determine whether these variables also helped to account for rural/nonrural differences in college attendance patterns. In sum, the aim of this modeling process was to determine the extent to which each set of variables (or model) explained rural/nonrural differences in college attendance patterns. This modeling also allowed us to identify which set of variables were more (or less) important to explain overall variance in the outcome variables. To assess overall fit, we examined pseudo (McFadden's) *R*-squared, which approximates the amount of variance accounted for by the model (Agresti, 2002; Long & Freese, 2006).

We replaced missing data for SES, high school curriculum intensity, and high school achievement variables by using multiple imputations (Schafer & Graham, 2002) (see Table 1 for the percentage of missing data for these variables). Note that there were no missing data for our dependent variables because we restricted the analytic sample to students who had valid postsecondary transcript information. Given literature suggesting that accurate results typically can be obtained from 2 to 10 imputations (Rubin, 1987; von Hippel, 2005), we generated 10 imputed datasets and then averaged the coefficients and standard errors by using Rubin's (1987) rule. For the multivariate analyses, we used the F4F2P2WT weight (the participation weight for 12^{th}-grade panel members [F2, F3, and F4 panel] with returned or imputed postsecondary transcripts) which is recommended for studies using postsecondary transcripts (Adelman et al., 2003).

Results

Descriptive Findings

The first set of analyses examined descriptive statistics for the variables included in analyses across different types of communities—rural, suburban, and urban (Table 1). Descriptive results showed rural-nonrural disparities in college attendance patterns. With respect to the selectivity of first postsecondary institution of attendance, as expected, students from rural high schools less often attended a highly selective or selective college (.09) than students from suburban (.20) and urban (.21) high schools. By contrast, rural students more often attended nonselective (.45) and open door colleges (.44) compared to students from suburban (.39 and .38) and urban (.42 and .38) high schools. In addition, students from rural high schools more often delayed entry to college (.19) than students from suburban (.14) and urban (.15) high schools.

Finally, students from rural high schools (.35) more often experienced discontinuous enrollment than students from suburban (.29) and urban (.31) high schools. Descriptive results also showed rural/nonrural differences in SES, curriculum intensity, and other demographic characteristics. For example, the proportion of students falling into the highest quintile of SEs was lowest among rural students (.17) (suburban = .34; urban = .36). The proportion of students experiencing the highest level of curriculum intensity was also lowest among rural students (.20) (suburban = .29; urban = 34). With respect to race/ethnicity, the proportion of White students was highest for rural students (.82) followed by suburban (.75) and urban (.57), whereas the proportion of Asian students was lowest among rural students (. 03) followed by suburban (.11) and urban (.13). Yet, rural/nonrural differences in high school class rank/GPA were not significant.

College Attendance Comparison Findings

The second set of analyses investigated rural/nonrural differences in college attendance patterns. Our interpretations focus on the extent to which each model explains rural/nonrural differences in college attendance patterns, rather than on the coefficients of the variables, because we are interested in identifying a source of rural vs. nonrural differences. We begin with the selectivity of first postsecondary institution of attendance, followed by the delay of entry to postsecondary education, and the continuity of enrollment.

Selectivity

Table 2 presents multinomial logistic regression results for the selectivity of first postsecondary institution of attendance.[7] Model 1, which included the locale variable only, showed that urban and suburban students were far more likely to attend a highly selective and selective college relative to a nonselective college, compared to rural students, confirming the above descriptive results. Yet, there was no significant rural/nonrural difference in the likelihood of attending an open-door college relative to a nonselective college. Model 1 explained very small variance in the likelihood of the selectivity of first postsecondary institutions that high school graduates attended (Pseudo R^2 = .003).

Once we controlled for SES (Model 2), the rural-urban gap in the likelihood of attending a highly selective college relative to a nonselective college became nonsignificant, while the rural-suburban gap remained significant. This result suggested that the observed rural-urban gap in the likelihood of attending a highly selective college relative to a nonselective college could be attributable to SES differences between rural and urban students. By contrast, the rural-urban gap in the likelihood of attending a selective college relative to a nonselective college remained significant, while the rural-suburban gap disappeared. Of interest, the rural-urban difference in the likelihood of attending an open-door college relative to a nonselective college became significant once SES was taken into account. Model 2 added approximately 6% to the explained variance for the likelihood of the selectivity of first postsecondary institutions among high school graduates (Pseudo R^2 change between Model 1 and Model 2 = .063).

[7]Note that we included the not-ratable category for analyses but do not present its results as they are of less interest but results are available from the authors.

When we additionally included curriculum intensity (Model 3), the rural-suburban differences in the likelihood of attending a selective college relative to a nonselective college became nonsignificant. This result indicated that the rural-suburban gap in the likelihood of attending a selective college relative to a nonselective college could be attributable to rural-suburban differences in SES and high school curriculum intensity. Yet, the rural-urban gap in the likelihood of attending a selective college and an open-door college relative to a nonselective college remained significant. Model 3 added approximately 9% to the explained variance for the likelihood of the selectivity of the first postsecondary institution among high school graduates (Pseudo R^2 change between Model 2 and Model 3 = .092).

Finally, when we controlled for other demographic and high school achievement variables (Model 4), the rural-urban differences in the likelihood of attending a selective college and an open-door college relative to a nonselective college remained significant. Model 4 accounted for approximately 21% of the variance for the likelihood of the selectivity of the first postsecondary institution among high school graduates (Pseudo R^2 = .205).

Delay of entry

Table 3 presents logistic regression results for the delay of entry to postsecondary education. Model 1, which included the locale variable only, showed that urban students were more likely than rural students to enter college immediately after high school graduation, while there was no significant difference between rural and suburban students. The locale variable itself, however, accounted for extremely small variance in the likelihood of the delayed entry to postsecondary education among high school graduates (Pseudo R^2 = .002).

In Model 2, which added SES to Model 1, the existing rural-urban gap in the likelihood of the delayed entry to postsecondary education became nonsignificant. This result suggested that the rural-urban difference in the timing of entry to postsecondary education could be due mainly to differences in SES between rural and urban students. The inclusion of the SES variable in Model 2 added about 6% to the explained variance in the likelihood of the delayed entry to postsecondary education among high school graduates (Pseudo R^2 change between Model 1 and Model 2 = .06).

In Model 3 and Model 4 where we included high school curriculum intensity, and other demographics and high school achievement, respectively, the rural-urban gap remained nonsignificant. Model 3 and Model 4 explained approximately 13% and 16%, respectively, of variance in the likelihood of the delayed entry to postsecondary education among high school graduates (see Pseudo R^2 in Table 3).

Continuity of enrollment

Table 4 presents logistic regression results for the continuity of enrollment. Model 1, including the locale variable only, showed that urban students were more likely than rural students to be continuously enrolled in a college, while there was no significant difference between rural and suburban students. Model 1 accounted for very little variance in the likelihood of the delayed entry to postsecondary education among high school graduates (Pseudo R^2 = .002).

When we controlled for SES (Model 2), the rural-urban gap observed in Model 1 became nonsignificant. This result indicated that the rural-urban gap could be explained by SES differences between rural and urban students. The introduction of the SES variable in Model 2 added approximately 4% to the explained variance in the likelihood of the continuity of enrollment among high school graduates (Pseudo R^2 change between Model 1 and Model 2 = .043).

Of interest, when we additionally controlled for curriculum intensity (Model 3), the rural-suburban gap in the likelihood of continuous enrollment became significant. However, when we took into account the other demographic and high school achievement variables (Model 4), this rural-suburban gap in the likelihood of continuous enrollment disappeared. Model 3 and Model 4 explained approximately 9% and 13%, respectively, of variance in the likelihood of continuous enrollment among high school graduates (see Pseudo R^2 in Table 4).

In sum,

- The rural-suburban disparities in the likelihood of attending a selective college relative to a nonselective college were fully explained by SES and high school curriculum intensity. However, the rural-urban gap in the likelihood of attending a selective college and an open-door college relative to a nonselective college was only partially explained by SES, curriculum intensity, and other demographic and high school achievement variables.
- The observed rural-urban gap in the time of entry to postsecondary education was fully explained by SES.
- The rural-urban gap in the likelihood of continuous enrollment was fully explained by SES, high school curriculum intensity, and other demographic and high school achievement variables.

Discussion

The overall goal of this study was to examine rural/nonrural differences in college attendance patterns and factors that might explain rural/nonrural differences in college attendance patterns. Drawing on data from NELS:88/2000 PETS, we found that rural high school graduates enrolled in college were significantly less likely to first attend a highly selective and selective institution, compared to their urban and suburban counterparts. Instead, rural high school graduates were more likely to attend a nonselective college, compared to their nonrural counterparts. In addition, rural high school graduates were more likely to delay entry to postsecondary education, compared to their urban counterparts. Moreover, rural high school graduates enrolled in college were less likely than their urban counterparts to be continuously enrolled in a college.

Most important, we found that these rural/nonrural differences in college attendance were mostly explained by family SES and high school curriculum intensity. The findings suggest that lower SES and less intensive high school preparation in rural areas compared to nonrural areas are major sources of rural/nonrural disparities in college attendance patterns. Given that low income students often attend high poverty schools with fewer resources to provide college preparation programs and rigorous curriculum (Darling-Hammond & Post, 2000), these findings also suggest a double jeopardy for low SES students in rural areas (i.e., low SES students in rural areas are disadvantaged because of their circumstances at home and school).

On the other hand, when it comes to the rural-urban gap in the likelihood of attending a selective college relative to a nonselective college, SES, curriculum intensity, and other demographic and high school achievement only partially explained this rural-urban gap. In other words, the rural-urban gap remained significant even after controlling for SES, curriculum intensity, and other demographic and high school achievement variables. This finding suggests that, with other things being equal, rural students are still less likely than their urban counterparts to attend a selective college. One possible explanation of this finding may be that selective colleges are mostly located in metropolitan areas. According to Gibbs (1998), of the 335 schools classified as most, highly, or very competitive in the 1990 edition of *Barron's Profiles of American Colleges*, only 61 were located in rural counties. Literature also suggests that geographic access to college is important as college proximity increases the likelihood of applying to college, especially a four-year college (Turley, 2009). Yet, future research should test the extent to which the presence of, or proximity to, selective colleges impact the likelihood of attending a selective college.

Implications

There are several implications that are evident from our results. The finding that high school curriculum intensity was central to enrollment in a highly selective institution for students from rural high schools is promising. High school curriculum intensity is a factor that can be more readily addressed by appropriate efforts and policies. Specifically, our results suggest that increasing the intensity of courses students in rural high schools might help to reduce the rural-suburban gap in attending a highly selective postsecondary institution. By contrast, the finding that low SES in rural areas was a source of rural/nonrural disparities in college attendance patterns may have less relevance because ameliorating poverty is difficult. However, this result suggests that efforts directed toward improving postsecondary attendance patterns should target youth from high-poverty rural backgrounds. In addition, it may be that the impact of low SES on college attendance patterns is at least partly, if not completely, indirect. That is, low SES may affect other factors such as access to guidance counselors, information on financial aid, and more effective teachers, which in turn leads to the observed differences in college attendance patterns (Lee & Ekstrom, 1987). Yet, one limitation of the current study is that we did not examine the underlying process by which SES may result in college attendance patterns.

Limitations and Future Research Directions

The current study has some additional limitations that should be considered, as well as directions for future research. First, although the research was longitudinal and accounted for several important background factors (e.g., high school achievement, SES, race/ ethnicity), the study was still correlational in nature. Thus, definitive causal conclusions are not appropriate. Second, as noted, our models do not fully account for some of rural/ nonrural disparities in the selectivity of first postsecondary institutions, which warrant further investigations. Third, the current study used data from the NELS:88/2000 because of the availability of postsecondary transcript information. However, the NELS data are somewhat outdated and may not reflect recent changes in rural/nonrural differences in college attendance. Future research should use more recent data such as ELS:02 and HSLS: 09 to better understand the current status of rural/nonrural differences in college attendance. Fourth, although we excluded American Indian/Alaska Native students from our analyses due to small sample sizes, future research should examine college attendance among this ethnic group especially in rural communities because of a disproportional concentration of American Indian/Alaska Native students in rural areas.[8]

Finally, this study examined only a limited number of dimensions of college attendance. Future research should look at other aspects of college attendance and pathways to college degree attainment among rural youth and how they differ from those of nonrural youth, as recent research highlights the increasing complexity of college enrollment patterns and pathways to degree attainment (Adelman, 2006; Goldrick-Rab, 2006; Goldrick-Rab & Pfeffer, 2009). Rural students may (or may not) differ from nonrural students in terms of college experiences and pathways they take to postsecondary education, but we know little about how well rural students perform, how they engage in academic and social activities in a college environment, and what they study. In short, our understanding of college experiences and pathways among rural youth remains limited and should be extended by examining how attending rural high school shapes college experiences and pathways.

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[8]Our supplementary analysis suggests that more than half of the American Indian students (84 out of 156) included in NELS:88/2000 data attended rural high schools.

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Table 1

Unweighted Descriptive Statistics of the Variables Included in Analyses by Rurality

Variable	Rural	Suburban	Urban	All	% imputed
Dependent Variables					
Selectivity of first institution of attendance					—
Highly selective	0.01	0.04	0.06	0.04	
Selective	0.08	0.16	0.15	0.13	
Nonselective	0.45	0.39	0.42	0.42	
Open door	0.44	0.38	0.34	0.38	
Not ratable	0.02	0.03	0.03	0.03	
Delay of Entry to Postsecondary Education					—
No delay	0.81	0.86	0.85	0.84	
Delayed entry	0.19	0.14	0.15	0.16	
Continuity of Enrollment					—
Continuous	0.65	0.71	0.69	0.69	
Noncontinuous	0.35	0.29	0.31	0.31	
Independent variables					
Socioeconomic status quintile					0.5
Lowest	0.14	0.07	0.13	0.11	
4th	0.22	0.14	0.14	0.16	
3rd	0.24	0.19	0.17	0.20	
2nd	0.23	0.25	0.21	0.23	
Highest	0.17	0.34	0.36	0.30	
High school academic curriculum intensity quintile					13.5
Highest	0.20	0.29	0.34	0.28	
2nd	0.24	0.24	0.25	0.24	
3rd	0.23	0.20	0.19	0.20	
4th	0.21	0.16	0.13	0.17	
Lowest	0.12	0.11	0.10	0.11	
Female	0.56	0.53	0.53	0.54	—
Race/ethnicity					—

Variable	Rural	Suburban	Urban	All	% imputed
Asian	0.03	0.11	0.13	0.09	
Hispanic	0.08	0.09	0.19	0.12	
Black	0.07	0.06	0.12	0.08	
White	0.82	0.75	0.57	0.71	
High school class rank/GPA quintile					18.7
Highest	0.26	0.26	0.29	0.27	
2nd	0.22	0.22	0.21	0.22	
3rd	0.20	0.20	0.18	0.19	
4th	0.17	0.17	0.16	0.17	
Lowest	0.14	0.15	0.16	0.15	
Unweight N	2,320	3,420	2,430	8,170	

Note: Numbers are proportions.

Table 2

Coefficients and Standard Errors from Multinomial Regression of Selectivity of First Postsecondary Institutions of Attendance

	Model 1 (+Locale only)						Model 2 (+ SES)					
	Reference category = Nonselective						Reference category = Nonselective					
	Highly selective		Selective		Open- door		Highly selective		Selective		Open door	
Variable	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Locale												
Urban	0.95 **	0.42	0.71 ***	0.13	0.09	0.09	0.63	0.43	0.50 ***	0.13	0.27 **	0.09
Suburban	1.16 **	0.44	0.42 **	0.16	−0.04	0.10	0.98 *	0.46	0.30	0.16	0.03	0.11
SES[a]												
4th							1.16	0.67	−0.01	0.36	−0.30	0.17
3rd							0.54	0.65	0.12	0.33	−0.48 **	0.17
2nd							1.95 **	0.67	0.55	0.32	−0.74 ***	0.17
Highest							3.07 ***	0.52	1.33 ***	0.31	−1.57 ***	0.17
High school academic curriculum intensity[a]												
Highest												
2nd												
3rd												
4th												
Female												
Race/ethnicity[b]												
Asian												
Hispanic												
Black												
High school class rank/GPA[a]												
Highest												
2nd												
3rd												
4th												

Variable	Model 3 (+ high school curriculum intensity)									Model 4 (+ other demographic and achievement variables)								
	Reference category = Nonselective									Reference category = Nonselective								
	Highly selective			Selective			Open-door			Highly selective			Selective			Open-door		
	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
Intercept	−3.38	***	0.39	−1.63	***	0.1	0.06	***	0.06	−5.48	***	0.60	−2.27	***	0.32	0.68	***	0.14
Pseudo R^{2c}	0.006									0.069								
Locale																		
Urban	0.54		0.43	0.44	**	0.14	0.33	**	0.10	0.55		0.42	0.53	***	0.14	0.25	*	0.10
Suburban	0.85		0.47	0.20		0.16	0.17		0.12	0.78		0.44	0.28		0.17	0.09		0.12
SES[a]																		
4th	1.03		0.69	−0.13		0.36	−0.16		0.19	1.28		0.74	−0.09		0.36	−0.11		0.19
3rd	0.28		0.68	−0.08		0.33	−0.20		0.18	0.59		0.71	0.01		0.33	−0.19		0.18
2nd	1.67	*	0.74	0.32		0.32	−0.40	*	0.18	1.96	*	0.76	0.41		0.34	−0.40		0.20
Highest	2.72	***	0.55	1.03	**	0.31	−1.07	***	0.19	3.30	***	0.63	1.13	*	0.32	−1.07	*	0.19
High school academic curriculum intensity[a]																		
Highest	18.31		9.39	1.48	**	0.42	−2.51	***	0.22	16.98		9.41	0.80		0.44	−1.83	***	0.24
2nd	17.34		9.39	0.91	*	0.43	−1.61	***	0.19	16.33		9.44	0.38		0.44	−1.15	***	0.21
3rd	15.48		9.45	0.10		0.46	−0.82	***	0.17	15.04		9.43	−0.15		0.48	−0.57	**	0.17
4th	17.40		9.44	0.39		0.48	−0.43	*	0.18	16.84		9.45	0.15		0.49	−0.25		0.18
Female										−0.58	*	0.26	−0.21		0.12	−0.03		0.10
Race/ethnicity[b]																		
Asian										2.07	***	0.32	0.54	*	0.21	0.27		0.23
Hispanic										0.71		0.38	0.32		0.29	0.34	*	0.16
Black										1.80	***	0.46	0.08		0.28	−0.43	*	0.20
High school class rank/GPA[a]																		
Highest										2.46		1.59	1.59	***	0.34	−1.46	***	0.18
2nd										0.87		1.58	1.23	**	0.38	−1.00	***	0.18
3rd										−0.27		1.59	0.60		0.36	−0.72	***	0.17

4th										−1.16		1.46	0.38		0.42	−0.36		0.19
Intercept	−22.77	*	9.39	−2.96	***	0.50	1.47	***	0.21	−23.91	*	9.63	−3.68	***	0.55	1.92	***	0.26
Pseudo R^{2c}					0.161									0.205				

[a] The reference group is the lowest quintile (omitted)

[b] The reference group is White (omitted)

[c] R^2 is based on one complete and imputed data set.

*** p<.001,

** p<.01,

* p<.05 (two-tailed tests)

Table 3

Coefficients and Standard Errors from Logistic Regression of Delay of Entry to Postsecondary Education

	Model 1 (+Locale only)			Model 2 (+ SES)			Model 3 (+ high school curriculum intensity)			Model 4 (+ other demographic and achievement variables)		
Variable	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**	**Coef.**		**SE**
Locale												
Urban	0.28	*	0.12	0.05		0.12	0.04		0.13	0.10		0.13
Suburban	0.11		0.13	0.02		0.14	−0.08		0.14	−0.02		0.15
SES[a]												
4th				0.35	*	0.16	0.23		0.18	0.29		0.18
3rd				0.60	***	0.17	0.36	*	0.18	0.44	*	0.19
2nd				0.87	***	0.19	0.52	**	0.20	0.61	**	0.21
Highest				2.04	***	0.20	1.40	***	0.22	1.43	***	0.22
High school academic curriculum intensity[a]												
Highest							2.47	***	0.26	1.65	***	0.27
2nd							1.60	***	0.24	1.06	***	0.26
3rd							0.84	***	0.19	0.59	**	0.20
4th							0.55	**	0.18	0.38	*	0.19
Female										−0.01		0.12
Race/ethnicity[b]												
Asian										0.52		0.31
Hispanic										0.19		0.18
Black										0.02		0.23
High school class rank/GPA[a]												
Highest										1.65	***	0.31
2nd										1.09	***	0.21
3rd										0.72	**	0.21
4th										0.44	*	0.18
Intercept	1.36	***	0.08	0.64	***	0.14	0.06		0.19	−0.57	*	0.23

Variable	Model 1 (+Locale only) Coef.	SE	Model 2 (+ SES) Coef.	SE	Model 3 (+ high school curriculum intensity) Coef.	SE	Model 4 (+ other demographic and achievement variables) Coef.	SE
Pseudo R^{2c}	0.002		0.063		0.131		0.162	

[a]The reference group is the lowest quintile (omitted)

[b]The reference group is White (omitted)

[c]R^2 is based on one complete and imputed data set.

***p<.001,

**p<.01,

*p<.05 (two-tailed tests)

Table 4

Coefficients and Standard Errors from Logistic Regression of Continuity of Enrollment

Variable	Model 1 (+Locale only)			Model 2 (+ SES)			Model 3 (+ high school curriculum intensity)			Model 4 (+ other demographic and achievement variables)		
	Coef.		SE	Coef.		SE	Coef.		SE	Coef.		SE
Locale												
Urban	0.19	*	0.09	0.01		0.09	−0.02		0.10	0.08		0.10
Suburban	−0.07		0.10	−0.17		0.10	−0.28	**	0.11	−0.11		0.11
SES[a]												
4th				0.22		0.15	0.10		0.16	−0.03		0.17
3rd				0.50	**	0.15	0.31		0.16	0.19		0.17
2nd				0.72	***	0.15	0.43	**	0.16	0.29		0.17
Highest				1.49	***	0.15	0.99	***	0.17	0.78	***	0.17
High school academic curriculum intensity[a]												
Highest							1.68	***	0.17	0.92	***	0.19
2nd							1.03	***	0.17	0.50	**	0.18
3rd							0.54	**	0.17	0.29		0.18
4th							0.18		0.16	−0.01		0.17
Female										0.00		0.09
Race/ethnicity[b]												
Asian										0.06		0.20
Hispanic										−0.59	***	0.15
Black										−0.19		0.17
High school class rank/GPA[a]												
Highest										1.51	***	0.18
2nd										1.08	***	0.19
3rd										0.79	***	0.18
4th										0.55	**	0.17
Intercept	0.58	***	0.06	−0.01		0.13	−0.45	**	0.17	−0.76	***	0.20

Variable	Model 1 (+Locale only)		Model 2 (+ SES)		Model 3 (+ high school curriculum intensity)		Model 4 (+ other demographic and achievement variables)	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Pseudo R^{2c}	0.002		0.045		0.094		0.127	

[a]The reference group is the lowest quintile (omitted)

[b]The reference group is White (omitted)

[c]R^2 is based on one complete and imputed data set.

***p<.001,

**p<.01,

*p<.05 (two-tailed tests)