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Predictors of Bachelor's Degree Completion among Rural Students at Four-Year Institutions

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Abstract

Using the National Education Longitudinal Study, this study explored various factors that predicted bachelor's degree attainment among rural youth attending a four-year institution. Results showed that Hispanic origin, family income, parental educational expectations, the rigor of the high school curriculum, timing and intensity of college enrollment, and participation in Greek social clubs were significant predictors. Gender, parental education, family structure, number of siblings, institutional features of college first attended, and participation in intramural athletics and student government were insignificant predictors. We discussed similarities and differences between rural and metro students in factors predicting bachelor's degree completion.

Approximately nine million students attend public schools in rural areas, representing 19 % of the public school population in the United States (Johnson & Strange, 2009). In recent years, these rural students are increasingly attending college. In 2003, 35% of rural high school graduates attended a four-year college, while 42% did so in 2007, showing a 7% point increase (Snyder & Dillow, 2010). During the same period (between 2003 and 2007), four-year college attendance rates of high school graduates increased by approximately 4% (from 32.5% to 36.1%) in city areas and by approximately 1% (from 40.3% to 41.2%) in suburban areas (Snyder & Dillow, 2010). Despite the growing number of rural high school students enrolling in college, little is known about background characteristics, precollege preparation, and college experiences of these rural students, and how these factors may shape their college completion.

Prior research has mainly focused on samples of college students in general without considering potential differences in background characteristics and predictors of college completion among students from different types of communities (e.g., Adelman, 2006;

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Adelman, Daniel, Berkovits, & Owings, 2003). Several studies have focused on lower socioeconomic status (SES) (e.g., Cabrera & La Nasa, 2001; Titus, 2006) or minority students (e.g., Arbona & Nora, 2007; Eimers & Pike, 1997; Nora, Cabrera, Hagedorn, & Pascarella, 1996; Strayhorn, 2010). A few qualitative studies (e.g., Maltzan, 2006) have identified several factors that may impede college persistence among rural youth. These include family economic hardship, first-generation college student status, and poor academic preparation for college. Yet, few studies have examined the impact of these and other important factors on college completion for rural youth.

Accordingly, the overall goal of the current study was to explore how various factors predicted bachelor's degree attainment among rural youth attending a four-year institution. Toward that end, drawing on data from the National Education Longitudinal Study (NELS), we addressed the following questions: (a) Do rural youth at four-year institutions differ in background traits, precollege preparation, and college experiences from their metro counterparts?; (b) Which background traits, precollege experiences, and college experiences matter for bachelor's degree completion among rural youth?; and (c) Which predictors of bachelor's degree attainment among rural youth differ from those among metro youth? While numerous definitions and measures of *rurality* or *rural* exist (Arnold, Biscoe, Farmer, Robertson, & Shapley, 2007; Rural Policy Institute, 2006), this study followed the NELS's definition of rural schools which are located outside of the Metropolitan Statistical Areas referring to an urbanized area that has a population of at least 50,000 (for more information, see Lippman, Burns, & MacArthur, 1996).

Review of Literature

Although limited, some literature has investigated factors associated with persistence among rural youth who attend college. Yan (2002) found that SES, high school program, number of science courses taken, and various college experiences (e.g., intensity of college enrollment, types of institutions first attended) were predictors of college persistence among rural youth in Pennsylvania. Drawing on a sample of about 300 Iowa rural youth, Schonert and colleagues (1991) also found that family background, high school achievement, and college involvement predicted college persistence. However, given that these studies focused on small samples in specific geographic regions, it remains to be seen whether their findings are generalizable to a more diverse and broad rural student population in college.

Other studies have indicated that rural youth tend to face a unique set of challenges when transitioning to college (Guiffrida, 2008). Specifically, studies conducted in the 1970s documented that college students from rural areas showed higher levels of stress, alienation, and attrition than students from urban areas (Alyesworth & Bloom, 1976; Cope, 1972). In a more recent ethnographic study of students in a small rural town in Northeast Ohio, Maltzan (2006) also found that rural youth who attend college experienced more difficulty than their urban counterparts in adjusting to college, largely due to pronounced differences between their experiences in rural communities and those in the new urban settings. However, previous research on the college adjustment of rural youth was limited to one or two institutions of higher education. Given that pathways to college completion are becoming increasingly complex (Choy, 2001; Goldrick-Rab, 2006), data that follow students attending multiple institutions may provide more robust attrition rates among rural youth.

Indeed, empirical studies using such data do not fully support rural disadvantages in college persistence and degree completion. For example, using data from students across Iowa, Schonert and colleagues (1991) found that rural students who attended college persisted at rates even higher than the national average. In the study of college graduation rates using the National Longitudinal Survey of Youth, Gibbs (1998) found that although rural students

were slightly less than urban students to attend college, rural students who did attend college tended to graduate at the same rates as urban students. Although not explicitly testing the rural-metro gap, Adelman (2006) also found few rural and urban or suburban differences in bachelor's degree attainment.

Some researchers have pointed to unique college attendance patterns among rural youth for the relative success of students from rural areas in the college setting despite lower SES and a lack of rigorous precollege preparation. For example, Gibbs (1998) found that rural youth were more likely than urban youth to attend public and nonselective colleges. The author attributed this result to the following: (a) public colleges in rural areas are more numerous and have larger enrollments than private colleges; (b) rural students are less able to afford higher tuition private colleges; (c) public colleges are less likely to require advanced course work, which is often lacking in rural schools; and (d) selective colleges are mostly located in metro areas.¹

However, few studies have examined the extent to which these unique college attendance patterns among rural youth contribute to their bachelor's degree completion. In addition, little is known about which precollege and college experiences shape bachelor's degree completion among rural students attending a four-year institution. In this study, drawing on NELS, we seek to extend previous research by empirically investigating (a) how background characteristics, precollege preparation, and college experiences of rural youth at four-year institutions differ from those for metro youth, (b) which factors may be related to bachelor's degree completion for rural youth, and (c) how predictors of bachelor's degree completion for rural youth may differ from those for metro youth.

Data and Methods

Sample

To address these research questions, we drew on data from the NELS of 1988–2000 (NELS: 88-00) and the Postsecondary Education Transcript Study (PETS) collected as part of NELS.² In 1988, the National Center for Education Statistics (NCES) drew random samples of approximately 25 eighth graders in about 1,000 randomly selected schools. NELS followed these students through high school in 1990 and 1992, and beyond in 1994 and 2000 (at age 26 or 27). The NELS panel of 1988–2000 consisted of approximately 12,100 students.³ 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). All of our measures came from the PETS data. The exceptions were some family background variables (e.g., family structure, number of siblings) and college involvement variables (e.g., participation in student government and social clubs), which we extracted from the 1992 and 1994 waves, respectively, and merged with the postsecondary transcript data file.

We selected students who participated in the second (1992) through fourth (2000) follow-ups, ever attended at least one four-year institution as of 2000, and had a complete transcript record (approximately 6,000 students). Due to small sample sizes, we excluded American Indian/Alaska Native and multiracial students. Missing rurality identifiers and postsecondary information resulted in the final analytic sample of approximately 4,880 with

¹According to Gibbs (1998), of the 335 schools classified as most, highly, or very competitive in the 1990 of Barron's Profiles of American Colleges, only 61 were located in rural counties.

²The NELS's Education Longitudinal Study of 2002 has followed a more recent cohort of high school students but its second follow up (2006) does not yet provide data that can be used to examine postsecondary degree completion.

³Sample sizes throughout the article are rounded to the nearest 10 in compliance with NCES regulations for using restricted data.

rural, suburban, and urban youth being approximately 28%, 42% and 30%, respectively (Table 1).

Measures

Dependent variable—The dependent variable is bachelor's degree completion status and indicates two states: non-completion (= 0) and completion (= 1). *Non-completion* refers to students who enrolled in a four-year college at any time after high school graduation but had not earned a bachelor's degree by 2000 (eight years of high school graduation). *Completion* refers to students who enrolled in a four-year college at any time after high school graduation and earned a bachelor's degree or higher by 2000.

Explanatory variables—Numerous studies have investigated factors associated with college completion, including individual background characteristics, precollege (or high school) preparation, and college experiences (for reviews, see Goldrick-Rab, Carter, & Wagner, 2007; see also Deil-Amen & Turley, 2007). Guided by prior literature, we included a variety of explanatory variables that measure (a) individual background characteristics, (b) high school preparation, and (c) college experiences.

For *individual background characteristics*, we included (a) gender, (b) race/ethnicity, (c) parental education, (d) family income, (e) family structure, (f) number of siblings, and (g) parental educational expectations. All individual background variables were measured at grade 12 (1992). Gender was measured by the student's self-reported sex (female = 1 vs. male = 0). Race/ethnicity was measured by students' self-reported race/ethnicity (Asian, Hispanic, Black, and White [reference category]). Parental education was the highest level of education that parents reported (0 = some college or less and 1 = bachelor's degree and above). Family income was based on parents' report of family income at grade 12 and measured by the trichotomous categories: (a) less than \$25,000 (reference category), (b) \$25,000 – \$49,999, and (c) \$50,000 or more. Family structure was measured by whether students lived in traditional families (i.e., two-parent families = 0) vs. nontraditional families (e.g., single-parent or other family arrangement = 1). Parents reported the number of siblings that a student had at grade 12. Parental educational expectations were based on parents' reports of how far in school they wanted their teenager to go, and was measured with the dichotomous categories: some college or less (= 0) and bachelor's degree or higher (= 1).

High school preparation was indicated by standardized test scores and curriculum intensity. Standardized test scores were from the math/reading composite test score (measured at the 12th grade) provided by NELS.⁴ Curriculum intensity was the rigor of student's high school curriculum on a five-quintile scale (1 = lowest quintile; 5 = highest quintile).⁵

College experiences were indicated by (a) the location of institution first attended, (b) the sector of institution first attended, (c) the level of the first institution attended, (d) the selectivity of the first institution attended, (e) delay of entry; (f) enrollment intensity, (g)

⁴The NELS administered math and reading comprehension cognitive tests to the same student at eighth, tenth, and twelfth grades, and provided standardized test scores measuring math and reading skill level of each student using Item Response Theory models (Rock, Pollack, & Quinn, 1995).

⁵The curriculum intensity variable was based on a weighted quintile distribution of NELS:88/00 students across 31 levels of academic curriculum intensity and quality (Adelman, 2006). 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 Advanced Placement course; and no remedial courses for both English and mathematics (Adelman, 2006, p.27). Meanwhile, given a five-quintile scale, treating the curriculum intensity as a continuous variable might be problematic. To address this issue, we conducted analyses using the curriculum intensity as a categorical variable and found few differences in results reported in this paper. We also found few differences for the first-year cumulative GPA measured by the same five-quintile scale. Results from these supplementary analyses are available from the authors on request.

participation in intramural athletics, student government/politics, and social clubs, fraternities/sororities, and (h) first-year cumulative GPA. The location of institution was whether the college or university first attended was located in the same state (= 0) as high school or in a different state (= 1). The sector of institution was measured by whether the college or university first attended was private (= 0) or public (= 1). The level of institution was whether students first attended a two-year college (= 0) vs. four-year college (= 1). Selectivity was the selectivity of institution first attended and provided by the NELS. Its original measures were: 1 = highly selective, 2 = selective, 3 = non-selective, 4 = open-door, 5 = unrated, but we collapsed those into the dichotomous categories: highly selective or selective (= 1) vs. otherwise (= 0). Delay of entry was whether students entered a college (a) within seven months vs. (b) within 8–20 months vs. (c) after more than 20 months after high school graduation. We collapsed these into the dichotomous categories: within seven months (no delay = 0) vs. within 8–20 months or more (delay = 1). Enrollment intensity was a dichotomous indicator of whether student ever enrolled in college part-time (= 1) vs. full-time (= 0). Participation in intramural athletics, student government/politics, and social clubs, fraternities/sororities were measured by whether the student participated in each of these three activities (yes = 1 vs. no = 0) while attending college. Finally, the first-year cumulative GPA was the quintile version of the first calendar year GPA (1 = lowest quintile; 5 = highest quintile).

Analytic Strategies

The first research question focused on observed differences in individual background characteristics, high school preparation, and college experiences among students from rural, suburban, and urban schools. To address this question, we performed descriptive statistics and conducted analysis of variance (ANOVA) or chi-square test for each covariate, depending on their scale. For the continuous measures, we then conducted appropriate post-hoc tests to identify differences between specific subgroups with main focus on differences among students from rural, suburban, and urban schools.

We next examined which background traits, precollege experiences, and college experiences mattered for bachelor's degree completion among rural youth using logistic regression. Logistic regression is the appropriate method of analysis for dichotomous dependent variables such as bachelor's degree completion (vs. non-completion) (Agresti, 2002; Long & Freese, 2006). We entered the explanatory variables simultaneously, rather than in a stepwise fashion, because the aim was not to test a theory or model but to examine the explanatory significance of the variables in the model predicting the likelihood of completing a bachelor's degree among rural high school graduates attending a four-year institution. We examined Nagelkerke's R^2 to assess the overall fit of the logistic regression equation to the data. Nagelkerke's R^2 is known as a pseudo- R^2 as it approximates the amount of variance accounted by the model (Long & Freese, 2006). Results of the logistic regression analyses allowed us to determine which factors mattered in bachelor's degree completion among rural students at four-year institutions, after other variables were held constant.

The third and final analyses compared and contrasted the predictors of bachelor's degree completion among students from different types of communities. Specifically, we tested the differences in the logistic regression coefficients for statistical significance between rural and metro students using a z -test (Knoke, Bohrnstedt, & Mee, 2002, p.281). The aim was to investigate how predictors of bachelor's degree completion differed by rurality.

For the multivariate models, we applied the longitudinal weight (F4F2HP3W), which applied to the 12th-grade freshmen panel respondents with high school transcripts who have completed postsecondary transcript records (Adelman et al., 2003). We employed the *ice*

option in Stata (Royston, 2004) to impute missing data for family background and college activities. We generated five imputed datasets and then averaged the coefficients and standard errors using the *mim* option in Stata (Royston, 2004). To address the nested nature of the NELS data (i.e., students were randomly selected within the sampled schools), we used the *cluster* option in Stata, which adjusts for the inflated standard errors resulting from the violation of the independent errors (Rogers, 1993).

Results

The following sections summarize the results for each of the research questions. Each section corresponds with one of the guiding research questions of this study.

Characteristics of Rural College Students

We first examine selected background characteristics, precollege preparation, and college experiences of rural students at four-year institutions and how they differed from those of their metro counterparts. Table 1 provides weighted descriptive statistics for the sample by rurality. The first row of Table 1 showed few unadjusted differences in bachelor's degree completion rates between rural and metro students. About seven out of ten rural students who ever attended a four-year institution after high school graduation earned a bachelor's degree as of 2000, which was similar to suburban and urban students (.68). Rural students who attended a four-year institution were more often White (.85) compared to urban (.68) students. Rural students who attended a four-year institution less often had parents who had a bachelor's degree or more (.37) compared to suburban (.50) and urban (.50) students. Rural youth were less often from families whose annual income was \$50,000 or more (.38) than suburban (.54) and urban (.49) students. Rural students were less likely from single-parent families or other nontraditional families (.27) compared to urban (.30) students. No observable differences between rural and metro students were found in gender, number of siblings, and parental educational expectations.

Results of Table 1 also clearly showed differences in high school preparation between rural and metro students. Although rural students (66.10) performed as well as their suburban (67.84) and urban (67.85) counterparts on standardized tests (grade 12), rural students (3.67) had significantly lower curriculum intensity, compared to suburban (3.80) and urban (3.93) students. Significant rural-metro differences were also detected in several college experiences. Specifically, rural students more often first attended a public college (.76) than suburban (.73) students and urban (.68) students. In contrast, rural students less often first enrolled in a selective college (.15) than suburban (.25) and urban (.25) students. Of interest, rural students less often enrolled in college part-time (.25) than suburban (.33) and urban (.34) students. Rural students also more often participated in intramural athletics (.42) than suburban (.35) and urban (.33) students. The first-year cumulative GPA of rural students (3.18) was as high as that of urban students (3.11), but significantly higher than that of suburban students (3.05). No significant rural-metro differences were found in other college experiences including the location and the level of the institutions first attended, delay of entry, and participation in student government and Greek social clubs.

Predictors of Bachelor's Degree Completion of Rural Students

We now turn to the second research question: Which background traits, precollege experiences, and college experiences matter for bachelor's degree completion among rural youth at four-year institutions? The first column of Table 2 presents results from the logistic regression predicting bachelor's degree completion for rural students. When other factors were taken into account, gender was not a significant predictor of bachelor's degree completion for rural students. Hispanic students enrolled in a four-year institution were less

likely than White students to earn a bachelor's degree, while Asian and Black students were as likely as White students to obtain a bachelor's degree. Family income was significantly related to bachelor's degree completion among rural students. Students whose family income was \$50,000 or more were more likely than students whose family income was \$25,000 or less to earn a bachelor's degree. However, parental education was not significantly related to bachelor's degree completion among rural students. Neither family structure nor number of siblings was a significant predictor of bachelor's degree completion for rural students attending a four-year institution.

Amongst the college experience variables, timing and intensity of college enrollment were significantly associated with the odds of bachelor's college completion of rural youth. Rural students who delayed college entry after high school graduation were less likely than students who attended college right after high school graduation. Rural students who ever attended college part-time were less likely than students who attended college full-time to earn a bachelor's degree. Rural students who participated in social club, fraternities/sororities while attending college were more likely than students who never participated in such social clubs. The first-year cumulative GPA was associated with the higher likelihood of obtaining a bachelor's degree among rural students. However, none of the institutional features of college first attended (i.e., location, sector, level, and selectivity) predicted bachelor's degree completion among rural youth. Participation in intramural athletics and student government/politics was not a significant predictor either.

How Do the Predictors of Bachelor's Degree Completion Differ by Rurality?

We now examine the third research question: How do the predictors of bachelor's degree completion among rural youth differ from metro youth? The second and third columns of Table 2 present logistic regression results for suburban and urban students. Results showed similarities and differences among rural, suburban, and urban students. Specifically, Hispanic origin, parental educational expectations, and participation in Greek social clubs were significant predictors of bachelor's degree completion for rural students, but not for suburban or urban students. In contrast, parental education, family structure, and selectivity of institution first attended were not significant predictors for rural students, but they were significant predictors among suburban and urban students. Gender was a significant predictor of bachelor's degree attainment among urban students only.

We further tested whether differences in the magnitude of the coefficients between rural and metro students were statistically significant. The results showed that Hispanic students from rural communities were significantly more disadvantageous in bachelor's degree completion than their suburban ($z = 2.60, p < .01$) and urban ($z = 2.40, p < .01$) counterparts of the same ethnicity. Rural students from nontraditional families (e.g., single-parent family) were significantly less disadvantageous in four-year college completion than their urban counterparts from nontraditional families ($z = 2.19, p < .01$). No significant differences in the impact of family structure were found between rural and suburban students. Finally, the relation of curriculum intensity and four-year college completion was significantly stronger for rural students than suburban students ($z = 2.22, p < .01$). No significant differences in the impact of curriculum intensity were found between rural and urban students.

Discussion and Conclusions

A recent national report indicates that a growing number of students from rural communities are increasingly becoming a part of the American higher education (Snyder & Dillow, 2010). Yet this group of college students has received little research attention over the last decades (Gibbs, 1998; Schonert, Elliott, & Bills, 1991). As a result, there is little descriptive information on the background characteristics, high school preparation, postsecondary

education experiences of rural adolescents in higher education and the relation of these various factors to their college success, compared to their metro counterparts. In this study, we addressed this limitation by broadly investigating characteristics of rural students attending four-year institutions, predictors of college completion among these rural students, and the differential role of key factors in predicting college completion of rural and metro youth. Given the lack of scholarship on rural students attending college, the current study has important implications for higher education research and programs.

We began by examining similarities and differences in precollege characteristics and college experiences between rural and metro adolescents who attended a four-year institution. As prior studies documented (Gibbs, 1998; Provasnik et al., 2007; Smith, Beaulieu, & Seraphine, 1995), results showed several unique challenges that rural college students faced. Rural adolescents who attended a four-year institution were disproportionately more likely to be first-generation college students and to come from lower-income families, compared to their metro counterparts. In addition, rural students were more likely to enter college with a less rigorous academic curricular background, compared to their metro counterparts. Despite these challenges, rural students were more likely than their metro counterparts to attend college full-time. Furthermore, rural students performed as well as their urban counterparts and even outperformed their suburban counterparts during their early years in college. Most importantly, there were few differences in bachelor's degree completion rates and between rural and metro adolescents. While consistent with prior research (Adelman, 2006; Gibbs, 1998), this finding suggests that rural adolescents enrolled in a four-year institution do not suffer disadvantage in their degree completion simply as the result of their attendance at rural schools.

Gibbs (1998) argued that the college success of students from rural areas could be attributed to their disproportionate enrollment in public, nonselective colleges which are less demanding. Consistent with Gibbs' (1998) findings, our results indicated that rural students were disproportionately more likely to be enrolled in a public, less selective college, compared to their metro counterparts. At the same time, however, our results showed that attending public, selective colleges was not significantly related to the likelihood of earning a bachelor's degree among rural students, not fully supporting Gibbs's (1998) argument. In contrast, attending selective colleges mattered in college completion for both suburban and urban students.

An alternative explanation for the relative success of rural college students may be that impoverished but academically talented rural youth may especially value college education as a pathway toward economic prosperity due to declining employment opportunities in rural communities (Gibbs, Kusmin, & Cromartie, 2005; Conger & Elder, 1994; Lichter & McLaughlin, 1995). While this view of higher education as an instrument of upper economic mobility for socioeconomically disadvantaged students has long been discussed in the history of American higher education (Trow, 1992), it is also associated with substantially greater geographical mobility for rural youth who must leave their home communities to attend four-year institutions elsewhere (McGranahan & Beale, 2002; Mills & Hazarika, 2001). In this context, rural students who may be turning toward college education as a pathway to a different future from their parents may be more dedicated to college education.

Another possible explanation may be favoring institutional features of rural schools and communities that offer additional social resources for rural adolescents, especially socioeconomically disadvantaged students, to persist to achieve their postsecondary education goals. Rural schools are diverse but share several characteristics, including small size, strong community-school connections, and supportive teacher-student relations, all of which have positive benefits for youth (Byun, Meece, & Irvin, 2011; Crockett, Shanahan, &

Jackson-Newsom, 2000; Demi, Coleman-Jensen, & Synder, 2010; Elder & Conger, 2000; Hardré, Sullivan, & Crowson, 2009). Unique rural high school experiences may enable students to develop greater feelings of school belonging and stronger commitment to education beyond high school (Downey, 1985), which may lead to persistence and ultimately improve the likelihood of completing a college program for these students. Indeed, our results showed that rural students whose parents did not attend college or who came from nontraditional families were as likely as their counterparts whose parents did attend college or who came from traditional families to persist to achieve their postsecondary education goals. By contrast, lower parental education and nontraditional family arrangements significantly decreased the likelihood of earning a bachelor's degree for both suburban and urban metro students.

Nevertheless, the results showed that rural Hispanic students who enrolled in a four-institution were more disadvantageous in bachelor's degree completion than their suburban and urban students who had the same racial/ethnic background. One possible explanation for this finding may be that Hispanic students tend to have the most difficulty managing college enrollment and completion unless additional college guidance and counseling is provided. A recent study of Chicago students showed that while Hispanic students were the least likely to plan to enroll in a four-year college after graduation and the least likely to apply to a four-year college, their college plans and behaviors were more dependent on the expectations of their teachers and counselors and connections with teachers (Roderick et al., 2008). Given the lack of provision of college guidance and counseling in rural schools (Guiffrida, 2008; Provasnik et al., 2007), Hispanic students in rural areas may be particularly disadvantaged in college enrollment and completion.

In that regard, this study has several important implications for secondary education policy as well as for higher education policy. First, our findings suggest that the provision of rigorous high school curriculum for students preparing for college is important for all students, but especially beneficial for rural youth. Adelman (2006) highlighted the importance of academic preparation during high school, but the current study disaggregates his general conclusion by offering more nuanced insights into the potential differential impact of the academic rigor of the high school curriculum on rural students who tend to have the least opportunity to take AP courses (Graham, 2009; Provasnik et al., 2007). Second, the current study suggests that Greek organizations, social clubs, and fraternities/sororities may be particularly important in improving the college completion rates of rural students. Prior research highlights the important role of participation in various collegiate activities in college success (Berger & Milem, 1999; Kuh, 1995), but again, our findings offer more nuanced insights into the potential differential impact of a particular form of collegiate activities among rural students who tend to feel lost and out of place at large colleges (Guiffrida, 2008; Maltzan, 2006). Finally, our findings of the positive relation of parental educational expectations to college completion for rural students suggest that psychological encouragement from parents may have an especially important impact on rural students' achieving their postsecondary education goals when they experience economic hardship. In this vein, encouragement from high school teachers and counselors and faculties may offer additional social support for rural students to persist through college to degree attainment.

There are several limitations of this study that need to be considered in future research. Perhaps the most important limitation is that some students whose postsecondary attainment was identified as incomplete within the data collection timeframe of NELS may eventually earn a college degree. A longitudinal study with a longer time span may increase our understanding of the complex patterns of college persistence and completion among rural students as well as among metro students. Secondly, the present study examined the

relationship between selected family, precollege, and college factors and bachelor's degree completion among rural youth. Previous research suggests that various other factors including parental interaction styles, high school experiences and expectations, as well as college costs and financial aid availability are related to the likelihood of bachelor's degree completion (Deil-Amen & Turley, 2007; Goldrick-Rab et al., 2007). An investigation of how these factors may shape college completion among rural students who attend college compared to their metro counterparts will further inform secondary and postsecondary education policy for developing intervention programs that better reflect the unique and similar needs of rural and metro students.

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Table 1

Weighted Descriptive Statistics of the Sample by Rurality

	All			Rural			Suburban			Urban			Significance Tests ^b	
	Mean or Proportion	(SE)		Mean or Proportion	(SE)		Mean or Proportion	(SE)		Mean or Proportion	(SE)		χ^2	F statistics
Dependent Variables														
Degree completed	.68			.67			.68			.68			.09	
Independent Variables														
<i>Background characteristics</i>														
Female	.53			.54			.50			.56			14.15	
Race/ethnicity														
Asian	.05			.02			.05			.07			193.59***	
Hispanic	.07			.06			.05			.09				
Black	.08			.06			.06			.15				
White	.80			.85			.84			.68				
Parent has BA or higher	.46			.37			.50			.50			59.90***	
Family income														
\$24,999 or less	.19			.24			.15			.22			105.36***	
\$25,000 – \$49,999	.33			.38			.32			.29				
\$50,000 or more	.48			.38			.54			.49				
Nontraditional family	.26			.27			.24			.30			16.90*	
Number of siblings	4.24	(.03)		4.22	(.04)		4.23	(.05)		4.27	(.07)			.55
Parents expected child to have BA or higher	.95			.96			.95			.96			2.69	
<i>High school preparation</i>														
Standardized test scores	67.35	(.60)		66.10	(.84)		67.84	(.98)		67.85	(1.23)			2.65
Curriculum intensity ^d	3.80	(.03)		3.67	(.04)		3.80	(.04)		3.93	(.06)			17.00***†
<i>College experiences</i>														
Attended first college: Different state	.23			.19			.25			.24			14.49	
Attended first college: Public	.73			.76			.73			.68			22.34*	
Attended first college: 4-year	.79			.80			.78			.81			7.30	

	All			Rural		Suburban		Urban		Significance Tests ^b	
	Mean or Proportion	(SE)		Mean or Proportion	(SE)	Mean or Proportion	(SE)	Mean or Proportion	(SE)	χ^2	F statistics
Attended first college: Selective	.22			.15		.25		.25		58.76***	
Delayed entry into college	.07			.08		.06		.07		6.02	
Ever attended college part-time	.31			.25		.33		.34		33.43**	
Unweighted N	4,880			1,340		2,060		1,480			
Independent Variables											
<i>College experiences</i>											
Participated in intramural athletics	.37			.42		.35		.33		26.598*	
Participated in student government/politics	.13			.14		.11		.14		6.793	
Participated in social clubs, fraternities/sororities	.30			.29		.30		.30		.333	
First-year cumulative GPA ^a	3.10	(.03)		3.18	(.05)	3.05	(.05)	3.11	(.06)		3.740*†
Unweighted N ^b	4,880			1,340		2,060		1,480			

^a 1=lowest quintile; 5=highest quintile.

^b Significant tests based on one complete and weighted data set.

[†] Post-hoc comparison (Bonferroni) revealed statistically significant differences among students from different types of communities at .05 level.

*** p < .001,

** p < .01,

* p < .05 (two-tailed tests)

Table 2

Comparison of Predictors of Bachelor's Degree Completion by Rurality

Predictors	Rural			Suburban			Urban		
	Coef.	(Robust Std. Err.)	OR	Coef.	(Robust Std. Err.)	OR	Coef.	(Robust Std. Err.)	OR
<i>Background characteristics</i>									
Female (vs. male)	.07	(.17)	1.08	.33	(.20)	1.39	.65**	(.24)	1.91
Race/ethnicity (White omitted)									
Asian	.74	(.95)	2.09	.02	(.30)	1.02	-.64	(.43)	.53
Hispanic	-1.68***	(.41)	.19	-.30 [†]	(.34)	.74	-.37 [†]	(.36)	.69
Black	-.37	(.28)	.69	-.04	(.31)	.96	-.23	(.37)	.79
Parent has BA or more	.25	(.18)	1.29	.42*	(.20)	1.52	.63**	(.23)	1.87
Family income (\$24,999 or less omitted)									
\$25,000 – \$49,999	.02	(.20)	1.02	-.25	(.24)	.78	.41	(.32)	1.51
\$50,000 or more	.50*	(.24)	1.64	.20	(.24)	1.22	.62*	(.31)	1.86
Nontraditional family (vs. traditional)	.01	(.19)	1.01	-.50**	(.19)	.61	-.70** [†]	(.26)	.50
Number of siblings	.02	(.06)	1.02	-.10	(.07)	.90	-.21	(.11)	.81
Parent educational expectations	.79*	(.39)	2.21	.20	(.50)	1.22	.47	(.43)	1.60
<i>High school preparation</i>									
Standardized test scores (12th grade)	-.01	(.00)	.99	.01	(.01)	1.00	-.01	(.01)	1.00
Curriculum intensity	.45***	(.08)	1.57	.19* [†]	(.09)	1.21	.32***	(.10)	1.38
<i>College experiences</i>									
Attended first college: Different state	.05	(.22)	1.06	-.38	(.20)	.68	.43	(.38)	1.53
Attended first college: Public	.01	(.20)	1.01	-.22	(.20)	.80	.11	(.29)	1.12
Attended first college: 4-year	.00	(.23)	1.00	.10	(.27)	1.10	.27	(.35)	1.30
Attended first college: Selective	.52	(.30)	1.68	.77**	(.23)	2.16	1.23***	(.35)	3.41
Delayed entry into college	-1.34***	(.36)	.26	-1.18**	(.36)	.31	-1.70***	(.48)	.18
Ever attended college part-time	-1.16***	(.18)	.31	-1.38***	(.20)	.25	-1.39***	(.22)	.25
Participated in intramural athletics	.14	(.18)	1.15	.35	(.19)	1.42	.28	(.25)	1.32
Participated in student government/politics	-.11	(.25)	.90	-.02	(.21)	.98	.21	(.45)	1.24

Predictors	Rural		Suburban		Urban			
	Coef.	(Robust Std. Err.)	OR	OR	Coef.	(Robust Std. Err.)	OR	OR
Participated in social clubs, fraternities/sororities	.38*	(.19)	1.46	1.30	.26	(.18)	1.30	1.29
First-year cumulative GPA	.70****	(.07)	2.01	1.91	.65****	(.08)	1.91	1.97
Intercept	-3.22****	(.62)			-1.60*	(.67)		
Nagelkerke R^2 ^a	0.42		0.46		0.51			
Unweighted N	1,340		2,060		1,480			

^aNagelkerke R^2 based on one complete and weighted data set.

[†] denotes significant differences in the magnitude of the coefficient from rural areas under the $p < .01$.

*** $p < .001$

** $p < .01$

* $p < .05$ (two-tailed tests)