Rurality and Resources: Influence of High School and Individual Characteristics on Postsecondary Participation

Frim Ampaw, *Morgan State University*
Sarah Rutt Williams, *Grand Valley State University*
Skylar Duke, *University of Wisconsin-Madison*
Anne M. Hornak, *Central Michigan University*

This study explores a cohort of rural high school students' participation in postsecondary education within three years of graduation. We use the National Center for Educational Statistics (NCES) 's High School Longitudinal Study of 2009 (HSLS2009) and logistic regression to answer our research questions. We found that many rural students plan to attend college and even apply to college; however, this did not mean that students would attend college. Also, counselors spending 20 to 50 percent of their time on college support positively affected students' college enrollment.

Keywords: multilevel linear modeling, rural students, college-going

During the 2010 census, rural areas comprised 97% of the United States land mass, and nearly 20% of the population lived in rural areas (Ratcliffe et al., 2016). As rural populations are typically spread thin across the country (Showalter et al., 2019), rural students are at exceptional risk of falling through the cracks of the nation's educational system. The act of overlooking some rural populations is not restricted merely to policymakers or the American public; educational researchers are also complicit. In a systematic mapping review, Thier et al. (2021) found notable geographic disparities in the rural populations investigated in peer-reviewed publications. Several states in the Northeast, Upper Midwest, and the West were labeled "research deserts" due to their marginal presence within the literature on rural students. This is a concerning trend as variation among rural communities across the United States is substantial. These differences range from the characteristics of individual rural residents to regional and state contexts (Dobis et al., 2021; Showalter et al., 2019). Particularly within educational research, the implications of these differences must be given proper consideration.

Economic disparities drive many of the remarkable differences among various rural populations. Collectively, rural locales experience poverty more frequently and severely than other locales (Farrigan, 2020). However, most high and persistent impoverished rural counties are disaggregated and concentrated within the southern United States (Dobis et al., 2021; Lavalley, 2018; Farrigan, 2020; Marré, 2017). As defined by the Economic Revenue Service (ERS), persistent poverty counties are those where "20% or more of their populations were living in poverty based on the 1980, 1990, and 2000 decennial censuses" (Farrigan, 2022). In 2015, 71% of the 301 persistent poverty counties identified by the ERS were southern and rural. Rural counties' economic and racial characteristics also influence the geographic distribution of poverty. Counties whose economies are based primarily on agriculture, manufacturing, or natural resource extraction face poverty more frequently than their more service-oriented counterparts (Dobis et al., 2021). Persistent poverty is also more likely to affect counties that have highly concentrated Black, Hispanic, and Native American populations (Dobis et al., 2021; Farrigan et al., 2020). The abundance of factors driving rural poverty showcases the individuality of rural communities.

In the same way, poverty affects some rural communities' economies more than others; disparities also exist in the educational services provided by rural schools. Overall, rural schools and educators have a demonstrated capacity to deliver exceptionally high-quality educational experiences. For example, the finding is that rural students graduate high school at higher rates than their nonrural counterparts (NCES, 2023). However, recent studies indicate that the most impoverished rural counties face the most significant restrictions in broadband internet access (Dobis et al., 2021) and below-average high school completion rates (Farrigan, 2022). While some schools thrive, others face tremendous shortfalls in funding and access to career and college-ready programming (Showalter et al., 2019). Poverty has also been tied to rural out-migration, with all rural population loss occurring between 2010 and 2020 within persistently poor counties (Dobis et al., 2021). Such circumstances have a marked effect on the educational contexts rural students are exposed to. As highly educated rural adults continue to relocate to urban areas, the gap in educational attainment between urban and rural communities is only increasing (Marré, 2017). Ultimately, low postsecondary attainment in many rural communities is associated with higher unemployment and poverty rates (U.S. BLC, 2021), increasing the likelihood of low postsecondary attainment. In this way, educational disparities caused by poverty can become self-perpetuating, making them exceedingly challenging to address.

Beyond comparisons of rural economies, investigations of rural students' college-going aspirations and behaviors also focus on community, school, family, and student characteristics (e.g., Agger et al., 2018; McKillip et al., 2012; Nelson, 2016). These highly interdependent factors shape rural students' educational aspirations and attainment (Nelson, 2016; Schafft, 2016). Such a nuanced approach is practical when investigating

differential educational access within and between rural communities. Given the highly idiosyncratic nature of rural places and populations, place-based investigations of rural students make exceptionally valuable contributions to the extant body of literature. As such, this study was designed to explore the influences of family and high school on college-going in rural students.

Literature Review

Rural students' educational experiences, college aspirations, and college-going behaviors differ noticeably from those of their urban and suburban counterparts. Historically, rural students' college enrollment has lagged that of their nonrural counterparts (Koricich et al., 2018; Wells et al., 2019). Although there is no significant difference between urban and rural students' immediate college enrollment rates, suburban students have maintained substantially higher enrollment rates (NSCRC, 2021). Rural students who pursue a postsecondary education also stand apart from urban and suburban college students. Notably, rural college students attend two-year colleges more frequently than four-year institutions and are typically less academically prepared for college than their peers (Byun et al., 2012a; Morton et al., 2018). It should be noted that these differences are not driven by rural students' apathy toward higher education, as rural students' educational aspirations are often comparable to those of urban students (Molefe et al., 2017). Instead, community, school, and student characteristics commonly drive rural students' unique postsecondary experiences (e.g., Agger et al., 2018; McKillip et al., 2012; Nelson, 2016; Schafft, 2016).

Community Characteristics

While trepidation about leaving home is a common experience among many prospective college students, it appears to be a particularly salient factor in rural students' college-going decisions. Most college students choose to attend institutions within 50 miles of their permanent home (Eagan et al., 2014; Hillman, 2019; Stolzenberg et al., 2020). Rural students tend to express stronger family and community ties when compared to nonrural students (Byun et al., 2012b; Hillman, 2016) and thus may be more reluctant to attend a college far from their community—rural students who choose to stay close to home face limited postsecondary options. Rural students are more likely than their nonrural counterparts to reside in educational deserts, defined as "a local area where there are either zero or only one public broad-access colleges nearby" (Hillman, 2019, p. 3). An estimated 51% of postsecondary institutions situated in rural areas are community colleges that grant certificates and associate degrees (Hillman et al., 2021). Rural students are approximately 20% more likely to attend two-year colleges (Koricich et al., 2018). Still, only 25% of these students transfer to a four-year institution to attain a bachelor's degree (Byun et al., 2017).

School Characteristics

Related to rural students' exceptionally strong community ties, rural educators and school staff play a prominent role in developing rural students' college-going attitudes and behaviors. In rural areas, especially schools serve a unique role as community anchors (Bauch, 2001; Schafft, 2016). Furthermore, in a qualitative study, Tran et al. (2020) found that teachers in rural schools noted the tight connections between the school, community, and families. This community support is provided more to rural students than their nonrural counterparts (Byun et al., 2012b). Although parents may often provide limited college information among prospective first-generation students, the knowledge and guidance provided by teachers, school counselors, and college advisors can serve as a valuable resource throughout the college-going process (McKillip et al., 2012; Morton et al., 2018). Rural schools tend to have smaller class sizes (Tran et al., 2020), and thus, teachers and counselors may have more time to interact with the students. Teachers' expectations have been positively related to rural students' educational aspirations and attainment (Byun et al., 2012c; Byun et al., 2017; Means, 2019). Rural school counselors also have the potential to serve as a powerful source of college information for students. Still, the limited research addressing their influence on rural students' educational outcomes is sometimes contradictory. Robinson and Roksa (2016) found that visiting school counselors positively relate to applying to a four-year institution. Conversely, Morton et al. (2018) students report that school counselors were unwilling to disclose information about college. When considering rural schools' characteristics, these sources of human capital should not be overlooked.

Rural students' college-going behaviors have also been associated with various school characteristics. The National Student Clearinghouse Research Center (NSCRC) tracks postsecondary enrollment trends based on high schools' poverty, income level, concentration of minority students, and rurality (2021). A sizeable body of literature has demonstrated how these factors shape rural students' educational experiences. Students from high-poverty high schools were less likely to enroll in college immediately after graduation (NSCRC, 2021). Logan and Burdick-Will (2017) also found that rural schools with high minority populations had lower math and reading proficiency scores on standardized tests. In general, attending a rural school has been related to such outcomes as lower postsecondary enrollment (NSCRC, 2021), enrollment at less competitive postsecondary institutions (Byun et al., 2012a; Koricich et al., 2018), and higher rates of undermatching in college enrollment (Lee et al., 2017), especially when the student lives more than 50 miles away from a match school (Ovink et al., 2018).

Inadequate academic preparation is a theme that frequently emerges in discussions of rural students' college access (e.g., Byun et al., 2012a; Hudacs, 2020; Mokher et al., 2019; Morton et al., 2018; Ovink et al., 2018). This reflects one of the significant disparities between various rural schools: access to advanced coursework.

Advanced Placement (A.P.) and dual enrollment (D.E.) are the most widely available forms of advanced learning offered to American high school students (Thomas et al., 2013). Gagnon and Mattingly (2016) found that access to A.P. courses is most limited within rural schools serving small, remote, and impoverished communities. Even when A.P. and D.E. courses are available, rural schools tend to have lower A.P. course participation (LeBeau et al., 2019; Mokher et al., 2019). Furthermore, low-income students are less likely to enroll in either type of course (Rivera et al., 2019). Such disparities suggest that opportunities for academic preparation vary across rural communities. This is exemplified by the rural students interviewed by Morton et al. (2018), who reported vastly different access levels to school resources like advanced coursework and high school counselors.

Student and Family Characteristics

Several studies have explored the effects of rural students' background characteristics on their educational attainment. In this research, individual-level attributes like gender, race, and socioeconomic status markedly influenced rural students' academic outcomes. Notably, women's educational attainment is typically higher than men's in rural communities (Marré, 2017). This may be related to the finding that female students are more likely to enroll in college in times of economic prosperity than males (Agger et al., 2018). Students of color also face educational barriers within rural communities. These students experience persistent poverty more than twice as often as urban minority students (Dobis et al., 2021). Across all marginalized student populations, Hispanic students face the most significant disparities in educational attainment between rural and urban locales (Byun et al., 2012a). Consequently, rural students of color are less likely to graduate than their White peers (Lavalley et al., 2018). These findings demonstrate how widely students' educational outcomes may vary even within the same rural community. Therefore, investigations of rural students' academic attainment must be mindful of students' identities.

Of course, rural parents' influences also play a crucial role in shaping their children's educational outcomes. For example, parental educational attainment and family income relate to rural students' postsecondary enrollment patterns and college persistence (Byun et al., 2017; Hudacs, 2020). Career and college aspirations, postsecondary enrollment, and degree completion similarly relate to parental educational expectations (Byun et al., 2012a; Byun et al., 2012b; Means, 2019). Furthermore, parental financial support and involvement during the college search and enrollment process influence rural students' educational attainment (King, 2012; Nelson et al., 2021).

The Present Study

This study aimed to explore the effect of individual and high school characteristics on participation in postsecondary education by a cohort of rural high

school students within three years of graduation. This study was designed to answer the following question:

What is the relationship between rural high school students' demographic characteristics, educational experiences, and high school characteristics on participation in postsecondary education?

We model participation in postsecondary education in three ways:

1. Intent to obtain an associate degree or higher in the ninth grade.
2. Applied or registered for college within three years of high school graduation.
3. Attended college within three years of high school graduation.

Theoretical Framework

We take an asset-based approach to this study. This framework allows us to center the individuals in the research and the factors related to their success rather than comparing them to a different group and focusing on their deficits (Cooper & Hawkins, 2016; Harper, 2010; Harper, 2012; Lee, 2020). This perspective influenced our study as it informed the selection of the population sample (rural high school students who attend college) and our focus on high school characteristics that influence college-going.

We also use Perna's (2006) model of college choice, which integrates the perspective of human capital theory (HCT) with the sociological concepts of habitus, social capital, and cultural capital. Perna's model conceptualizes college choice as a cost-benefit analysis wherein individual and societal factors influence college attendance's perceived costs and benefits. Recognition of academic preparation and financial resources as influential factors in this evaluation is also adopted from HCT's notions of implicit and explicit costs. Social and cultural capital also provide an understanding of the formation of college choice. As used in the model of college choice, cultural capital refers to an individual's knowledge and behavioral characteristics, which are heavily influenced by their parents' social class.

On the other hand, social capital refers to how an individual establishes, maintains, and navigates social networks. Finally, habitus refers to the external influences, such as systemic barriers or features of one's immediate environment, that shape an individual's disposition toward higher education. Habitus is an exceptionally valuable concept in investigating rural students' postsecondary choices. As conceptualized by this study, high school counselors can bridge social and cultural capital gaps related to access to postsecondary education.

Perna's (2006) model posits that contextual factors shape individuals' perceptions of the costs and benefits of higher education. These factors are conceptualized as four spheres of influence: the individual's habitus, school and community context, higher education context, and the broader social, economic, and policy context. As the first

sphere of Perna's model, habitus includes individuals' demographic characteristics, social and cultural capital, and locale. The second sphere reflects the influence of school resources and characteristics on college choice. Next, the higher education context addresses how postsecondary institutions' characteristics, means of conveying information to students, and competitiveness influence student decisions. The fourth layer, which is the broadest, speaks to the policy-driven messaging or circumstances that shape the perceived costs and benefits of college attendance.

With its consideration of contextual influences on the perceived net value of higher education, Perna's model is a powerful framework for evaluating differences across groups in college-going outcomes. As we are interested in evaluating numerous influences on rural students' college-going decisions, this model's view of college choice as a contextually dependent process is exceptionally well-suited for the current investigation. Accordingly, Perna's interpretation of both habitus and school and community characteristics provides an especially fitting perspective for interpreting this study's findings.

Methods

The data set used for this study was obtained from the National Center for Educational Statistics (NCES) High School Longitudinal Study of 2009 (HSLS:2009). The HSLS:2009 collected data on students' high school experiences, later following up to capture their postsecondary and labor market experiences. NCES created the nationally representative sample using strata sampling by randomly selecting 944 high schools. Twenty-three thousand students in the ninth grade in 2009 were selected from these schools. The students completed surveys about their educational and family experiences and cognitive assessments in algebraic skills, reasoning, and problem-solving. Their parents, teachers, principals, and counselors completed questionnaires as well. Follow-up surveys were subsequently given in 2012 and 2016.

Our analytical sample for this study is limited to students at high schools designated as rural. The NCES definition of rural used in the initial sampling frame was a census-defined territory five or more miles from an urbanized area or 2.5 miles or more from an urban cluster. We further limited the sample to include only those students who completed the initial survey and the two follow-up questionnaires. The final analytical sample included 3,700 students.

The primary outcome of interest in this study was postsecondary enrollment. We broke it out into three main dependent variables, including (1) intent to obtain a college degree (associates and above) in the ninth grade, (2) applied or registered at a postsecondary institution within three years of high school graduation, and (3) attended a postsecondary institution within three years of high school graduation. The independent variables were separated into two categories: the student's background and educational characteristics and their high school characteristics. Background and educational

characteristics consisted of gender, race/ethnicity, family income, highest math class taken in high school, parental educational attainment, and parental educational expectations for the student. High school characteristics consisted of the expected time counselors devoted to college advising, the percentage of students receiving free or reduced lunch, college preparation supports provided by the high school, and two constructs measured from the counselor's perspective. The first construct measured the counselor's perceptions of their expectations of the students. Second, we measured the counselor's perception of the principal's expectations of the students. We conducted a Block binary logistical regression for each dependent variable to predict our three dependent variables. We used two blocks, one for the students' demographic characteristics and the second for the school characteristics.

Results

Descriptive Analyses of Students' Plans for and Enrollment in College

For the dependent variables, shown in Table 1, about 20% of students did not know how far they would go regarding education. The following highest percentage expected to earn an advanced degree (e.g., Ph.D.), and about 15% expected to earn a bachelor's degree. This was closely followed by those who expected to earn a high school diploma or GED, which comprised 13% of the sample. Around 55% are expected to earn an associate degree or higher. Three years after high school graduation, over half the students had applied to or registered for college, and about 38% were either enrolled or had earned a degree. For our analyses, we combined the students who did not know with the unit non-response, so they were not included in the binary variable. Additionally, for the second and third research questions, the analysis sample was restricted to those who responded to the second follow-up survey and graduated high school. Therefore, the number of participants in the analysis is lower.

Table 1

Descriptive Statistics of Categorical Dependent Variables

Variable	*n*	Percentage
How far in school 9th grader plans to go		
Less than high school	30	0.4
High school diploma or GED	740	12.6
Start an associate degree	40	0.8
Complete an associate degree	340	5.9
Start a bachelor's degree	20	0.4
Complete a bachelor's degree	860	14.7
Start a master's degree	50	0.8
Complete a master's degree	920	15.8
Start a Ph.D./M.D./Law/other professional degree	40	0.6
Complete a Ph.D./M.D./Law/other professional degree	980	16.8
Do not know	1,140	19.4
Whether a student applied to or registered at a college		
Never applied or registered	640	16.4
Applied or registered	3,250	83.6
Attainment and persistence at any institution		
Attained bachelor's degree	10	0.5
Attained associate degree	190	6.7
Attained certificate	200	7.2
No degree, enrolled at a 4-year institution	1,340	47.6
No degree, enrolled at less than a 4-year institution	410	14.7
No degree, not enrolled	660	23.4

Note. Percentages do not equal 100% due to missing, unit non-response, or item legitimate skip. The National Center for Education Statistics requires that all descriptive statistics be rounded to the nearest ten to protect student privacy.

Source: U.S. Department of Education, The High School Longitudinal Study of 2009 (HSLS:09), Restricted Dataset.

Descriptive Analyses of Student and School Variables

As shown in Table 2, the analytical sample comprised almost equal men and women. White students comprised about 50% of the sample, with Hispanic, Black/African-American, and Asian students comprising the most significant percentages following that. Most studies on rural college-going populations had a significantly higher rate of White participants than our study (see Byun et al., 2017; Chenoweth & Galliher, 2004; Roscigno & Crowley, 2001). The lower number of White participants in our study may be due to a recent increase in Hispanic and American Indian populations and a decrease in White growth in rural areas (USDA, 2018). Family income averaged between

$35,000 per year and $75,000 per year, with the highest income being more than $235,000 per year.

Regarding the highest-level math classes students took in high school, those most frequently taken were Algebra II and Precalculus. Parents most frequently held a high school diploma or GED (28.4%), with the next largest group being those with a bachelor's degree (13.9%). The percentage of parents with bachelor's degrees was much lower than the national samples, which show around 41% (Hussar et al., 2020). The most frequently reported parental educational expectation was a bachelor's degree, with expectations of an advanced degree (e.g., Ph.D.) listed second. In line with national trends, most parents expect their children to earn a bachelor's degree or more. This matches what we see in national samples – parents expect more from their children (Taylor et al., 2011).

Table 2

Descriptive Statistics of Categorical Independent Variables

Variable	n	Percentage
Student variables		
Gender		
Female	2,820	48.1
Male	3,040	51.8
Race		
American Indian/Alaska Native, non-Hispanic	50	0.9
Asian, non-Hispanic	460	7.9
Black/African-American, non-Hispanic	630	10.8
Hispanic, no race specified	140	2.3
Hispanic, race specified	780	13.4
More than one race, non-Hispanic	440	7.5
Native Hawaiian/Pacific Islander, non-Hispanic	20	0.4
White, non-Hispanic	3,000	51.1
Family Income		
Less than or equal to $15,000	380	6.5
Greater than $15,000 through $35,000	860	14.7
Greater than $35,000 through $55,000	770	13.1
Greater than $55,000 through $75,000	650	11.1
Greater than $75,000 through $95,000	430	7.4
Greater than $95,000 through $115,000	320	5.4
Greater than $115,000 through $135,000	190	3.2
Greater than $135,000 through $155,000	130	2.3
Greater than $155,000 through $175,000	60	1.0
Greater than $175,000 through $195,000	50	0.9
Greater than $195,000 through $215,000	40	0.7
Greater than $215,000 through $235,000	10	0.2
Greater than $235,000	90	1.5

Variable	n	Percentage
Highest math class taken in high school		
No math	100	1.8
Basic math	40	0.7
Other math	60	1.0
Pre-algebra	50	0.9
Algebra I	320	5.5
Geometry	520	8.8
Algebra II	1,360	23.2
Trigonometry	240	4.1
Other advanced math	710	12.1
Probability and statistics	200	3.3
Other AP/IB math	60	1.0
Precalculus	940	16.1
Calculus	250	4.2
AP/IB Calculus	430	7.3
Parent's highest level of education		
Less than high school	290	4.9
High school diploma or GED	1,660	28.4
Associate degree	680	11.6
Bachelor's degree	820	13.9
Master's degree	370	6.4
Educational Specialist diploma	20	0.4
Ph.D./M.D./Law/other high-level professional degree	150	2.5
Parent's expectations for student's highest level of education		
Less than high school	20	0.3
High school diploma or GED	380	6.5
Start an associate degree	40	0.7
Complete an associate degree	370	6.3
Start a bachelor's degree	30	0.4
Complete a bachelor's degree	1,160	19.7
Start a master's degree	10	0.2
Complete a master's degree	700	11.9
Start a Ph.D./M.D./Law/other professional degree	10	0.2
Complete a Ph.D./M.D./Law/other professional degree	810	13.8
Don't know	470	7.9
School variables		
Expected time counselor spends on college advising		
5% or less	30	0.5
6%-10%	1,110	18.9
11%-20%	2,010	34.3
21%-50%	1,770	30.1
More than 50%	430	7.3
Percentage of students received free/reduced lunch		

Variable	n	Percentage
0%	130	2.2
More than 0% but less than 10%	380	6.5
At least 10% but less than 20%	650	11.2
At least 20% but less than 30%	960	16.4
At least 30% but less than 40%	890	15.1
At least 40% but less than 50%	690	11.8
At least 50% but less than 60%	710	12.1
At least 60% but less than 70%	670	11.5
At least 70% but less than 80%	110	1.9
At least 80% but less than 90%	90	1.6
At least 90% but less than 100%	30	0.5
100%	90	1.6
College preparation support provided by high school (yes)		
A.P. courses offered on-site	4,580	78.1
Counselor designated for college preparation	3,050	52.0
Holds or participates in college fairs	5,060	86.3
Organizes student college visits	3,460	59.0
Offers college preparation – Upward Bound/GEAR UP/AVID/MESA	2,480	42.2
Holds information sessions on transition to college	5,200	88.7
Assists students with college financial aid	5,280	90.0
Provides opportunities for dual/concurrent enrollment	5,120	87.3
Takes other steps to assist H.S. with college transition	1,870	31.9
Courses not offered at school are available at community College	4,120	70.3
Courses not offered at school available at 4-year college	2,550	43.5
Supports students with A.P./college/university courses	5,130	87.5

Note. Percentages do not equal 100% due to missing, unit non-response, or item legitimate skip. The National Center for Education Statistics requires that all descriptive statistics be rounded to the nearest ten to protect student privacy.

Source: U.S. Department of Education, The High School Longitudinal Study of 2009 (HSLS:09), Restricted Dataset

For the high school variables, counselors are most frequently expected to spend 11 to 50% of their time on college advising. About half the schools had a counselor specifically designated for college preparation. Additionally, most schools reported that between 10 and 70% of the student population received free or reduced lunch. Regarding college preparation provided by high schools, the supports most frequently supplied by schools included offering A.P. courses on-site, participating in or hosting college fairs, assisting students with college financial aid, holding information sessions on college transition, providing opportunities for dual or concurrent enrollment, and supporting students with A.P./college/university courses.

To collapse the variables for the college preparation supports provided by high schools, we converted the variables into one continuous variable. This allowed us to assess if there was a relationship between the number of supports provided and our dependent variables. The descriptive statistics for this continuous variable are displayed in Table 3. Rural high schools generally provided three to twelve different kinds of support towards postsecondary education, with a mean of nine.

Table 3

Descriptive Statistics of College Preparation Supports Provided by High School

Variable	*n*	Minimum	Maximum	M	SD	Skewness	Kurtosis
College preparation support provided by high school	5,040	3	12	8.9	1.6	–.7	1.1

Source: U.S. Department of Education, The High School Longitudinal Study of 2009 (HSLS:09), Restricted Dataset.

Additionally, we conducted a cross-tabulation on the categorical variables to ensure that each combination of independent and dependent variables would be five percent or more of the total data for that specific variable. After this analysis, we collapsed family income, race, highest math class taken in high school, highest degree earned by either parent, how much time counselors spent advising for college, and the percentage of students receiving free or reduced lunch. Because we were analyzing how these variables affected students' expectations of earning an associate degree or higher, we collapsed the variable of parents' expectations for students' highest level of education into expecting them to earn an associate degree or higher or not. In terms of the other independent variables, we collapsed the variable of ninth-grade students' expectation of the highest degree they will earn into whether they expect to earn an associate degree or higher or not (binary).

Regressions

Ninth Grade Students' Intent to Obtain an Associate Degree or Higher.

Our first regression analysis, see Table 4, addressed ninth-grade students' expectations and intent to obtain an associate degree or higher. We included the school characteristics in our second block, but this did not significantly change the findings for our characteristics. Both models were statistically significant, with our variables predicting the ninth-grade students' intent to receive a college degree, with the percentage predicted around 66%. Female rural students were 23% more likely than males to intend to earn an associate degree or higher. In terms of race, Hispanic and Asian students were about 40% less likely than White students to plan to earn an associate degree or higher. Notably, the findings for Asian students differed from those usually seen in studies with students from all locales. This means that when viewed nationally, Asian students are

generally similar to White students in their plans for and attendance in college (Hussar et al., 2020); however, in this analysis, and with a rural population, this does not seem to be the case.

Table 4

Hierarchical Multiple Regression for Variables' Effects on Ninth-Grade Students Expectation of Earning an Associate Degree or Above

Variable	Block 1		Block 2	
	Odds Ratio	S.E.	Odds Ratio	S.E.
Gender (male students)				
Female	1.23*	.07	1.23*	.07
Race (White)				
American Indian/Alaska Native, more than one race, Pacific Islander, Hawaiian	1.16	.12	1.14	.12
Asian	0.57**	.12	0.58**	.12
Black/African-American	1.02	.12	0.98	.11
Hispanic	0.60**	.09	0.59**	.09
Family income in dollars (greater than 75,000)				
0-35,000	0.71*	.11	0.68**	.11
More significant than 35,000 through 75,000	0.87	.10	0.85	.10
Highest math class taken in high school (Advanced (other advanced, probability and statistics, other AP/IB, precalculus, calculus, AP/IB calculus)				
Basic (None, basic, other basic, pre-algebra, algebra I & 2, geometry, trigonometry)	0.59**	.07	0.58**	.07
Parents have a bachelor's degree or higher (No)				
Yes	1.47**	.10	1.50**	.10
Parents expect students to earn an associate or higher (No)				
Yes	2.52**	.09	2.54**	.09
Percentage of students at school with free or reduced lunch (60% and above)				
0 up to 20%			0.77*	.11
20% up to 40%			0.80*	.10
40% up to 60%			0.82*	.10
Percentage of counselor's time spent on college prep (in hours) (50 and above)				
Ten or less			1.06	.15
11-20			1.06	.14
21-50			1.01	.13
Counselors' perception of counselors' expectation of students			1.04	.04

Counselors' perception of principals' expectation of students	0.97	.02
College prep support provided by the school	1.01	.02
	–2 log likelihood = 5571.09 % predicted = 66.2	–2 log likelihood = 5560.08 % predicted = 66.5

Note. N = 4,510. The referent category is in parentheses.

*p < 0.05. **p < 0.001.

Source: U.S. Department of Education, The High School Longitudinal Study of 2009 (HSLS:09), Restricted Dataset.

Students with a meager family income (earning up to $35,000) were approximately 30% less likely than those with a high family income (earning $75,000 or more) to plan to earn an associate degree or higher. The students who took basic math classes were around 40% less likely than those who took advanced math classes to plan to earn an associate degree or higher. If at least one parent had a bachelor's degree or higher, the student was 47% more likely to plan to earn an associate degree or higher. Similar to past research findings, if students' parents expected them to earn an associate degree or higher, they were 152% more likely to plan to earn an associate degree or higher. The only statistically significant school variable was the percentage of the student population who received free or reduced lunch. The students in schools with less of the school population receiving free or reduced lunch were less likely to expect to earn an associate degree. This contradicts most studies that show communities with higher SES related to increased college-going rates.

Variables' Effects on Students Applying to College Within Three Years.

The second regression analysis, as shown in Table 5, addressed whether the students applied to college within three years of graduating high school. This model was statistically significant for both blocks, with the percent predicted being around 67.5. Most statistically considerable family variable predictions and percentages remained close to the same in both blocks. In Block 2, females were 49% more likely to have applied to college than males. In terms of race, Asian students were 57% more likely than White students to have applied to college. This was a decrease from 65% in Block 1.

Additionally, this is in contrast to ninth-grade Asian students being much less likely than White students to state they would like to earn an associate degree or higher from our first regression. Also, Black/African American students were 38% more likely than White students to apply to college. Interestingly, this finding is counter to much of the national research on rates of Black students attending college as compared to White students. Black students tend to attend college at a slightly lower rate than White students (Hussar et al., 2020); however, in these analyses of rural students, with high school characteristics controlled, they were much more likely to apply to college. For family

income, students earning up to $35,000 were 27% less likely to have applied to college than those earning over $75,000. The students who took basic math classes were 49% less likely than those who took advanced math classes to have applied to college. If at least one parent had a bachelor's degree or higher, the student was 48% more likely to have applied to college (a decrease from 53% in Block 1). If the parents expected the student to earn an associate degree or higher, they were 104% more likely to have applied to college. None of the school variables were statistically significant.

Table 5

Hierarchical Multiple Regression for Variables' Effects on Students' Applying to College

Variable	Block 1		Block 2	
	Odds Ratio	*S.E.*	Odds Ratio	*S.E.*
Gender (Male)				
Female	1.50**	.07	1.49**	.07
Race (White)				
American Indian/Alaska Native, more than one race, Pacific Islander, Hawaiian	1.07	.12	1.08	.12
Asian	1.65**	.14	1.57*	.14
Black/African-American	1.40*	.12	1.38*	.12
Hispanic	0.90	.09	0.89	.09
Family income in dollars (Greater than 75,000)				
0-35,000	0.71*	.11	0.73*	.12
Greater than 35,000 through 75,000	0.85	.12	0.87	.12
Highest math class taken in high school (Advanced (other advanced, probability and statistics, other AP/IB, precalculus, calculus, AP/IB calculus))				
Basic (None, basic, other basic, pre-algebra, algebra I & 2, geometry, trigonometry)	0.51**	.07	0.51**	.07
Parents have a bachelor's degree or higher (No)				
Yes	1.53**	.10	1.48**	.10
Parents expect students to earn an associate or higher (No)				
Yes	2.04**	.09	2.03**	.09
Percentage of students at school with free or reduced lunch (60% and above)				
0 up to 20%			1.24	.11
20% up to 40%			1.00	.10
40% up to 60%			1.01	.10

Percentage of counselor's time spent on college prep (in hours) (50 and above)			
Ten or less		1.14	.15
11–20		1.06	.14
21–50		1.27	.14
Counselors' perception of counselors' expectation of students		1.05	.04
Counselors' perception of principals' expectation of students		0.98	.02
College prep support provided by the school		1.00	.02
	–2 log likelihood = 5194.74 % predicted = 67.2	–2 log likelihood = 5178.10 % predicted = 67.6	

Note. N = 4,280. The referent category is in parentheses.

*p < 0.05. **p < 0.001.

Source: U.S. Department of Education, The High School Longitudinal Study of 2009 (HSLS:09), Restricted Dataset.

Variables' Effects on Enrolling in College.

The third regression analysis, see Table 6, analyzed whether the students had enrolled in college three years after graduation. This model was statistically significant; Blocks 1 and 2 predicted 71%. There were several differences in the findings from Block 1 to Block 2. In Block 1, females were 49% more likely to have enrolled in college than males. In terms of race, Asian students were 94% more likely than White students to have enrolled in college. This decreased to 72% in Block 2. This is a slightly higher rate than the national average (Hussar et al., 2020) and is in contrast to them being much less likely to plan to earn an associate degree or higher in ninth grade than their White peers. For family income, students earning up to $35,000 were 47% less likely to have enrolled in college than those earning over $75,000. This decreased to 41% in Block 2. Students whose families earned between $35,000 and $75,000 were 27% less likely than those who earned over $75,000 to enroll in college. This decreased to 23% in Block 2. The students who took basic math classes were 57% less likely than those who took advanced math classes to have enrolled in college. If at least one parent had a bachelor's degree or higher, the student was 87% more likely to have enrolled in college (this decreased to 75% in Block 2). If the parents expected the student to earn an associate degree or higher, they were 96% more likely to have enrolled in college (decreased to 91% in Block 2).

Table 6

Hierarchical Multiple Regression for Variables' Effects on Enrolling in College

Variable	Block 1		Block 2	
	Odds Ratio	S.E.	Odds Ratio	S.E.

Gender (Male)				
Female	1.49**	.07	1.47**	.07
Race (White)				
American Indian/Alaska Native, more than one race, Pacific Islander, Hawaiian	1.06	.12	1.08	.12
Asian	1.94**	.13	1.72**	.13
Black/African-American	0.96	.12	0.97	.12
Hispanic	0.91	.10	0.91	.12
Family income in dollars (Greater than 75,000)				
0–35,000	0.53**	.11	0.59**	.11
Greater than 35,000 through 75,000	0.73**	.10	0.77*	.10
Highest math class taken in high school				
Advanced (other advanced, probability and statistics, other AP/IB, precalculus, calculus, AP/IB calculus)				
Basic (None, basic, other basic, pre-algebra, algebra I & 2, geometry, trigonometry)	0.43**	.07	0.43**	.07
Parents have a bachelor's degree or higher (No)				
Yes	1.87**	.09	1.75**	.09
Parents expect students to earn an associate's or higher (No)				
Yes	1.96**	.10	1.91**	.10
Percentage of students at school with free or reduced lunch (60% and above)				
0 up to 20%			1.75**	.12
20% up to 40%			1.37*	.10
40% up to 60%			1.13	.11
Percentage of counselor's time spent on college prep (in hours) (50 and above)				
Ten or less			1.17	.16
11-20			1.01	.15
21-50			1.42*	.14
Counselors' perception of counselors' expectation of students			1.05	.04
Counselors' perception of principals' expectation of students			0.97*	.02
College prep support provided by the school			0.98	.02
	−2 log likelihood = 5141.57 % predicted = 70.6		−2 log likelihood = 5086.21 % predicted = 71.3	

Note. N = 4,490. The referent category is in parentheses.

*p < 0.05. **p < 0.001.

Source: U.S. Department of Education, The High School Longitudinal Study of 2009 (HSLS:09), Restricted Dataset.

There were several statistically significant variables in this model regarding college support provided by the high school. First, if up to 20% of the students received free or reduced lunch, the students were 75% more likely, and if 20% to 40% of students received free or reduced lunch, then students were 37% more likely to have enrolled in college as compared to schools with 60% or more students receiving free or reduced lunch. This data contrasts our findings from the first regression, where the higher percentage of students receiving free or reduced lunch indicated a more significant percentage of students intending to enroll in college. However, the findings from regression three align with national data (Hussar et al., 2020). If the counselor spent between 21% and 50% of their time on college preparation, the students would be 42% more likely to enroll than students who had counselors who spent 50% or more on college preparation. Finally, the counselors' perception of their principals' expectations of the students was statistically significant, with an odds ratio of .97. This means that for every point the principal scored higher on the scale, the likelihood of the students enrolling in college decreased by three percent.

Discussion

Guided by Perna's (2006) model of college choice, the present study investigated how rural students' college-going aspirations and decisions are related to characteristics of their habitus and school and community context. HSLS:2009 data were used to conduct three logistic regressions that assessed students' likelihood of intending to attain an associate degree or higher as well as applying to and enrolling in college within three years of high school graduation.

All three regressions supported other scholars' findings that student and family characteristics greatly inform rural students' college-going expectations and decisions (e.g., Byun et al., 2012a; Molefe et al., 2017; Nelson, 2016; Schafft, 2016). Gender, race, family income, highest math class taken in high school, and parents' education and expectations significantly impacted students' educational intentions, college applications, and enrollment. Several notable racial differences in student outcomes emerged across the analyses. Contrary to findings at the national level (Hussar et al., 2020), the rural Asian students in our sample were significantly less likely than White students to intend to attain an associate degree or higher. Furthermore, Asian students' likelihood to apply and enroll in college fell when school factors were introduced into the regression model. These findings suggest that rural Asian students face restricted access to appropriate college-going support compared to their nonrural counterparts.

On the other hand, Black students were much more likely than their White peers to apply to college. In contrast to Asian students, high school characteristics did not affect the likelihood of their college application. These findings ultimately suggest that school-

level factors play significantly different roles in the college-going aspirations and actions of White, Asian, and Black rural students.

Comparing the results of our first and third regression revealed a finding of great practical significance to rural education researchers and practitioners alike. There appears to be a significant disconnect between college-going intentions and enrollment outcomes for rural students at low SES schools. The first regression indicated that students were increasingly likely to intend to earn an associate degree or higher as the proportion of FRPL students at their school increased. This trend was reversed entirely when assessing the likelihood of students *attending* college; we found that schools with lower percentages of FRPL students were more likely to enroll in college. The latter finding is not particularly surprising given its alignment with previous research like the National Student Clearinghouse Research Center's (2021) *High School Benchmarks* report. The discrepancy between intentions and outcomes may indicate the presence of divergent paths from college-going intentions to college-going behaviors based on school SES. However, interactions between these variables were not assessed in this analysis. Further research is needed to understand better why the relationship between rural students' postsecondary aspirations and enrollment looks so different based on school SES.

Across all three of our analyses, the variables of college preparation support and counselor and the principal's expectations of students had no statistically significant impact except for the principal's expectation of students enrolling in college (question 3), which had a slightly negative effect. The mean of college support provided by the school was nine, which is relatively high. Additionally, counselors spent a significant amount of time on college counseling. This data indicates that the habitus sphere in Perna's (2006) model seems to be more influential on college enrollment than school resources and characteristics. Interestingly, these findings do not support much of the current literature that discusses how rural students have inadequate college support and less access to advanced courses, which may negatively affect college enrollment (Gagnon & Mattingly, 2016; Thomas et al., 2013).

For the final question that analyzed the relationship between individual, family, and school characteristics and students enrolling in college, if the counselor spent between 21 and 50 hours on college counseling, the students were 42% more likely to enroll in college. This is a significant finding as there is limited research on the connection between college counselors in high schools and their effect on college-going students. Our findings bolster the findings of Robinson and Roksa (2016) but contradict qualitative research on college counselors conducted by Morton et al. (2018) who reported that students felt counselors seemed unwilling to provide information about college. This specific aspect of college support in high schools significantly impacts students enrolling in college. Interestingly, 21–50% of counselors' time spent on college was much more likely to

influence students to enroll as compared to those counselors who spent over 50% of their time. Perhaps the other support, which is not related directly to college, could help students enroll. This is an exciting aspect of the findings that indicates a need for further study on the counselor's role in college-going, which is not explicitly related to college preparation.

Considering Perna's (2006) model of college choice, our analysis reveals a close relationship between habitus and rural students' college aspirations and enrollment. The influence of the school and community context is also well-illustrated in this study as our findings show that school counselors and income levels at a high school significantly influence students' likelihood of attending college. Other results demand that we confront the fuzziness of the boundaries between the layers of influence in Perna's model. Differences in how school support affects the college-going process for White, Asian, and Black students showcase how students' habitus shapes their engagements with the school and community. The disconnect between some student populations' desires to attend college and their actual attendance in college might be interpreted within Perna's model as a friction between students' habitus and the broader college-going context. Our analyses primarily focused on the two innermost layers of influence discussed in the model (habitus and school and community context). Therefore, further research is needed to investigate such interactions with the remaining model layers.

Implications

The implications of this study highlight the importance of students receiving support from high school counselors and their parents or family members. Schools can ensure that their counselor has a significant amount of time to assist the students in planning and learning about college. However, the data indicate that counselor support for student success in high school might also assist students in enrolling in college. This means a combination of about half the time spent on college preparation and half the time spent on helping students succeed in high school made a difference. Additionally, parents should encourage and support their students through the process. Parental expectation and support of students attending college has a significant influence on students attending college. Therefore, high schools could assist with this by providing information sessions for families to share this information and give families guidance on how to support their high school students. This could include accurate information about how financial aid works, the benefits for their children of attending college, and information on basic college application practices, such as how to complete the FAFSA.

Another major factor in college-going is the highest math class taken in high school. This indicates that it matters when students take math classes. If school districts can offer Algebra I in eighth grade, students will be more likely to take higher-level math courses in high school. Again, ensuring that parents understand this will help parents encourage and enroll their students in higher-level math classes. Finally, further research

should be conducted looking more closely student experiences from grade nine through high school graduation so as to explore why student who plan to attend college do not end up attending college.

Limitations

This study's limitations include the need for more recent research or broader studies to examine our findings further. In terms of the data analysis, we collapsed all the college support variables into one variable for the college preparation supports variable. Thus, there may be nuances to college support that we did not analyze (e.g., college visits may be significant while dual enrollment may not).

Conclusion

Much of our analysis supports the extant literature that has found that personal and family characteristics strongly influence post-high school outcomes. Our findings suggest that high school characteristics have minimal effect, except for the percentage of students who receive free or reduced lunch. However, this is also reflective of individual and family characteristics. We also explored nuances in rural students' journey from ninth grade through three years post-high school. Namely, that desire to earn a bachelor's degree and apply to college did not mean students would attend college. Finally, we found that counselors spending 20–50% of their time on college support positively affected college enrollment. These findings support the influence parents and families have on college-going and the need for counselors to have time to work with students on college planning and successfully completing high school.

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https://doi.org/10.1086/705498

About the Authors

Frimpomaa (Frim) Ampaw, **EdD**, is a Professor of Higher Education and Chair of the Department of Advanced Studies, Leadership, and Policy at Morgan State University. Her research focuses on understanding students' experiences from low socioeconomic backgrounds and underrepresented minorities transitioning to college, during college, and in the labor market. Dr. Ampaw is a quantitative methodologist who has conducted extensive research on women and minorities in STEM education to understand their selection and persistence within the major.

Sarah Rutt Williams, **EdD**, is an Assistant Professor in the English department at Grand Valley State University. Her research interests center on social justice, equity, and inclusion in education as well as culturally responsive perspectives and practices in literacy and education research. Dr. Williams uses both quantitative and qualitative research methods.

Skylar Duke, **BS**, is a first-year doctoral student in the U.W. Educational Policy Studies Department. Using quantitative methods, Sky's research explores the educational

marginalization experienced by rural and first-generation students and policy interventions that improve these students' access to and success within postsecondary contexts. She is interested in the process through which research-based policies are adopted and implemented and how students from differing backgrounds experience them. Her identities deeply inform her work as a queer, disabled, low-income, and first-generation college student.

Anne M. Hornak (she, her), **PhD**, is a Professor of Higher Education in the Department of Counseling, Educational Leadership, and Higher Education at Central Michigan University. Her research focuses on understanding rural students and the development of postsecondary educational choices. She specifically focuses on the intersection of geography and college-going habits. She is also curious about financially strapped college students and how they navigate work and school.