Perspectives on Rural Student Success: Evidence from a Multi-Institutional Study

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Abstract

Rural learners represent a significant yet understudied population in U.S. higher education. Although prior research documents barriers facing rural students, less is known about how their engagement varies across institutions or the characteristics of institutions that effectively engage them. This study examines rural learners' identities, enrollment patterns, college experiences, and engagement in effective educational practices while identifying institutions that create highly engaging environments for rural students. Guided by ecological systems theory, student engagement, and organizational learning perspectives, the study uses data from the National Survey of Student Engagement (NSSE) to analyze institution-level data from more than 50,000 rural students attending 872 four-year colleges and universities. Findings demonstrate considerable diversity among rural learners and reveal meaningful differences between highly engaged students and their peers. Highly engaged rural students were more likely to participate in high-impact practices, as well as co-curricular activities, community service, and on-campus employment. Historically underrepresented populations, including Black or African American and LGBQ+ students, were notably represented among highly engaged rural learners. Highly engaging institutions included private nonprofit institutions, Historically Black Colleges and Universities, smaller institutions, and institutions located in several geographic and community contexts, particularly the Southeast. Findings challenge deficit-oriented conceptions of rural students by highlighting their diversity, assets, and capacity for meaningful engagement. The resulting typology provides institutions with a framework for identifying effective practices and environments and offers actionable insight for developing policies, programs, and supports that advance equitable engagement and postsecondary success for rural learners.

Keywords: student success, rural learners, student engagement

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Rural learners comprise a significant but often overlooked population in US higher education. Although rural students graduate high school at rates like their urban peers, they are less likely to enroll in or attain a college degree (Hussar, et al., 2020; Means, 2019; Wells, et al., 2019). Once enrolled, rural learners may question the relevance of their rural culture to the campus community, face challenges related to their socioeconomic status or experience alienation in the "ivory towers" of the academy (Byun, Irvin & Meece, 2012; Koricich et al., 2018; McCauley, 2019). In addition, some rural students experience a rocky college transition, are challenged to connect socially, and are less involved in co-curricular activities (Ganss, 2016). From a non-deficit lens, some rural students can leverage their rural social and cultural capital to navigate otherwise marginalizing environments and to use their rural home communities as support during their collegiate experience (McNamee, Ardoin, Cooper, & Sansone, 2026). This variation suggests that capable students from rural communities may not attempt, and some may be challenged to complete a postsecondary degree. To assure more equitable postsecondary degree outcomes for all student populations, it is important to understand more about rural learners' access and success in higher education.

Rural students' college attainment and success is a function of many factors, including students' identities and background characteristics, pre-college experiences, and their college experiences (Byun, Irvin & Meece, 2012). Knowing more about rural learners' identities and their engagement in experiences of the college environment, sources of support, and academic and co-curricular involvements across multiple four-year institutions, is useful to expand scholarship about this under-researched student population (McNamee, Ardoin, Cooper, & Sansone, 2026). Even more, organizing this information into a classification scheme or typology can expose patterns for rural learners and reveal institutions where rural students are more successful.

Colleges and universities' data structures, cultures, and practices generally fall short of adequately or accurately identifying and assessing rural learners, their experiences

and outcomes, leading researchers to conclude that due to a lack of consistent definitions, and data, it is challenging to accurately reflect rural learners' experiences and outcomes in college (Dunstan et al., 2021; Manly et al., 2020; Sowl & Crain, 2021). Importantly, rural learner success can be advanced when institutions are prepared to meet students where they are, act with intentionality to recognize rural learner assets, and address unsupportive aspects of the college environment (McNamee, Ardoin, Cooper, & Sansone, 2026). Our study of rural learners and the colleges and universities they attend starts from a position of believing that with information and intention, institutions can more effectively serve rural learners.

This study leverages a large multi-institutional college student survey dataset, the National Survey of Student Engagement (NSSE), to explore rural learners' enrollment and experience in college, and from this information, identify the characteristics of institutions in which rural students are engaging in practices associated with student success. Importantly, NSSE is newly positioned to examine this topic with the addition in 2023 of a student-level question about home ZIP code that allows for completely unexplored information about rural learners engagement in four-year colleges and universities. We analyze institution-level data from more than 50,000 rural students at 872 four-year colleges and universities, to explore the extent to which institutions are engaging rural learners at comparatively high levels and identify rural-serving exemplar institutions, to generate rigorous knowledge, portable insight, and actionable recommendations for improving student and institutional dimensions of rural postsecondary education at local, state, and national levels. This study is fundamentally a broad, exploratory study focused on four specific questions:

1. Who are today's rural learners in higher education in terms of social identities and student characteristics?
2. What characterizes the four-year higher education institutions at which rural learners enroll?

3. What do rural learners experience in terms of engagement in effective educational practices – including nature and quality of interaction, perceptions of support and sense of belonging?
4. What are the student engagement characteristics of institutions that engage rural students at high levels? In what ways are these institutions exemplary engaging institutions?

Conceptual Framework

Rural student success is shaped by students' identities, individual behaviors, institutional environments, and broader structural conditions, so our conceptual framework relies on multiple lenses. Specifically, we integrate perspectives of ecological systems theory, student engagement, and institutional variation. From an ecological perspective, student success is shaped by the interaction of multiple contexts—individual characteristics, institutional environments, and the broader rural communities in which students are embedded (Bronfenbrener, 1979). Within this system, student engagement, including students' experiences in practices that matter for learning, collaboration and interactions with faculty and peers, perception of belonging, and sense of support for learning, serves as a key mechanism linking institutional conditions to student outcomes (Kuh, et al., 2010). At the same time, an institutional variation lens recognizes that colleges and universities differ in how effectively they structure opportunities, supports, and environments that foster engagement, particularly for rural learners (Pascarella & Terenzini, 2005).

In addition, across the three lenses of ecological systems, student engagement and institutional variation, we are asset-oriented, exploring student and institutional strengths, including identifying practices, relationships and capacities associated with serving rural students well. The Rural Cultural Wealth framework (Crumb et al., 2023) inspires our framing. This lens recognizes the inherent strengths, knowledge, and assets of rural communities focusing on their resourcefulness, ingenuity, familism, and community sustainability. This framework encourages us to focus on the skills rural learners bring to

their higher education experience and what institutions that serve rural students do well, instead of highlighting what they may lack.

Combined, this integrated and asset-oriented framework allows us to examine how institutional practices and contexts influence engagement behaviors and perceptions, and in turn, how these dynamics contribute to variation in postsecondary success among rural students across institutions. Importantly, we also draw on Bensimon's (2005) perspective of organizational learning theory, which asserts that the collection of individuals on campuses and institutions are agents responsible for creating conditions that produce equitable outcomes, to frame our approach and to discuss implications of our findings.

Literature Review

A wealth of existing literature informs our study of rural student success. In this section we briefly review key studies defining and identifying rural learners in higher education and shift to explorations of rural learner diversity. We then highlight literature about rural learners' postsecondary participation, studies of rural student assets and supports and offer a short review of studies of institutions' support for rural learners.

Identifying Rural Learners

Existing literature has used different approaches to determine students' rurality, including traditional operationalizations using federal classifications, population thresholds, and sociocultural characteristics. Federal classifications used to determine rurality include the U.S. Census Bureau and National Center for Education Statistics (NCES), which define rural as areas not designated as urban (50,000+ residents) or urban clusters (2,500-50,000), and the National Education Longitudinal Study (NELS), which defines rural as areas outside metropolitan statistical areas with a population of at least 50,000 (Lewine et al., 2019; Nelson, 2016; McNamee, Ardoin, Cooper, & Sansone, 2026; Byun, Meece & Irvin, 2012; Byun, Irvin & Meece, 2012). Other studies developed their own determinants of rurality based on population thresholds as well, such as McCauley (2025), who defined it as locations with fewer than 284 people per square mile. Sparse populations, close-knit communities, and connections to nature are aspects mentioned in

studies that base rurality on sociocultural characteristics (McNamee & Ganss, 2023; McNamee, Ardoin, Cooper, & Sansone, 2026). There have also been a few studies that do not provide an explicit definition of rurality or allow students to self-identify their rural status, further underscoring the lack of consensus in defining rural students (Means, 2016; Paterson, 2020; McNamee, Ardoin & Islem, 2026).

Rural Learner Diversity

Past literature suggests that college students from rural areas do not share a monolithic experience (Walker & Raval, 2017). They reside in regions all over the United States (Schmitt-Wilson, et al., 2018) and represent a range of racial and ethnic backgrounds, gender identities, sexual orientations, and disability statuses (Cain & Willis, 2022; McNamee, Ardoin, Cooper, & Sansone, 2026). Their family compositions and incomes, and parental degree attainment and occupations also vary. Compared with their non-rural counterparts, these students are primarily traditional-aged (McCauley, 2025), disproportionately White (Koricich et al., 2018; Li & MacLean, 2025), and first-generation college students (Byun, Irvin & Meece, 2012). They often come from working-class (McNamee, Ardoin & Islem, 2026), low-income (Byun, Meece & Irvin, 2012; Koricich et al., 2018) families and communities with fewer college-educated residents and high unemployment and poverty (Li & MacLean, 2025). Compared with their urban peers, rural students are less likely to live in a single-parent household (Byun, Meece & Irvin, 2012), whereas comparisons with their suburban peers show a lower likelihood of living in a two-parent household (Byun, Irvin & Meece, 2012).

Postsecondary Attendance

Rural students have lower rates of college enrollment (Byun, Irvin & Meece, 2012; Li & MacLean, 2025), and when they do enroll, they often do not do so right after high school, continuously, or part-time (Byun et al., 2015; Byun, Meece & Irvin, 2012). Regarding where they attend, rural students tend to choose less selective (Byun et al., 2015; Li & MacLean, 2025) and public institutions (Byun, Meece & Irvin, 2012). They are also more likely to attend two-year colleges, while their attendance at institutions that confer graduate degrees is lower (Koricich et al., 2018). Their choice between rural and urban settings is

also about equal (McCauley, 2025). Rural students generally have lower rates of attaining a bachelor's degree or higher (Byun, Irvin & Meece, 2012; Li & MacLean, 2025), but among those who attend urban institutions, degree attainment is lower than among those who attend rural institutions (McCauley, 2025). Delaying enrollment and attending part-time are also associated with a lower likelihood of earning a bachelor's degree (Byun, Meece & Irvin, 2012). Additionally, rural students from the Northeast had higher rates of bachelor's degree attainment than their counterparts in other U.S. regions (Schmitt-Wilson et al., 2018).

Rural Student Assets and Supports

Research has identified numerous factors that support rural learners during college. Institutional elements, such as academic advising and on-campus employment, increased rural students' sense of belonging (Yang et al., 2025), and living on campus during their first term helped them adjust socially (Ames et al., 2014). Rural students' participation in clubs and Greek life also increases their likelihood of earning a bachelor's degree (Byun, Meece & Irvin, 2012). For rural, first-generation male students specifically, support programs, family and financial support, and campus mentors were shown to play a role in their college success (Tillapaugh & McAuliffe, 2019).

Diversity is another beneficial aspect that supports rural students. When they are satisfied with their institution's socioeconomic diversity and feel it welcomes people with different immigration statuses, they are more likely to feel a sense of belonging (Yang et al., 2025). Participating in intergroup dialogue and, for rural students of color, having peers from similar racial backgrounds at their institution also helped them feel they belong. Many rural students additionally found support from friends they made, who often held other minoritized identities (McNamee, Ardoin, Cooper, & Sansone, 2026).

Additionally, rural students' homes and families assist their success in college. Broadly, social resources in their communities have been linked to higher bachelor's degree completion rates (Byun, Irvin & Meece, 2012), and community support has been linked to retention in first-generation rural students (McCulloh, 2022). More specifically, their communities provide guidance and care (McNamee, Ardoin & Islem, 2026) and support during difficult times (Walker & Raval, 2017). Their communities also provide them

with skills and knowledge they can use in college, such as relationship-building skills (McNamee, Ardoin & Islem, 2026).

Institutions and Rural Learners

College and universities have only been broadly examined regarding the extent to which they support and serve rural students. Most of the research has concentrated on access, preparation and enrollment, and rural students' own experiences versus the study of institutional characteristics or conditions or comparative assessments of institutional effectiveness for rural students. However, a useful starting point is McNamee and Ganss' (2023) integrative review synthesizing studies of rural students' higher education experiences and persistence in which they explore the role institutions play in rural students' postsecondary experience. Their research found that rural student retention in the first year is high, suggesting that colleges and universities may have some strengths built into the first college year for rural students, and that some conditions at the institution including small classes, quality student-faculty relationships, peer connections and social supports, and opportunities for campus involvement, support rural students. However, they conclude that the few studies of campus involvement show mixed evidence, including that some rural students held off getting involved in what they perceive as a multitude of campus organizations while others extended their high school involvement immediately into college. Overall, though they found a lack of research on the efficacy of programs in colleges and universities to support rural students, including no evidence of how rural students benefit from co-curricular programming or rural student identity group programming specifically.

Literature on the examination of institutional practices and policies to support rural students is rather thin (McNamee, 2024). Studies have identified characteristics of rural-connected colleges and universities to demonstrate the extent to which they orient teaching and research to serve their surrounding rural communities and populations (Koricich, Sansone, & Fryar, 2022). In a study of a regional comprehensive university, authors explored via a case study how it serves its rural Appalachian region, identifying the institution's investment in and leveraging of rural community human capital through

education, workforce development and public health as the institutional assets that contributed to its effectiveness in serving rural learners (Orphan & McClure, 2019).

Another theme in the study of institutions and rural learners is scholarship to identify rural-serving institutions (RSIs). Using an evidence-based metric for identifying colleges that serve rural students and communities, Koricich et al., (2022) identified 1,087 rural-serving institutions that span a range of postsecondary types but are all clearly important educational access points for student populations who are often excluded by other postsecondary institutions and anchor institutions for workforce development and the well-being of their communities. This work also distinguishes being in a rural place from *serving* rural students and communities. However, identifying institutions as rural serving is not the same as determining how effectively they serve rural students.

Finally, colleges, universities, and the broader higher education system were not built to serve all learners, so disparate experiences and inequitable outcomes between different groups, in this case rural learners, may well be framed as "institutional performance gaps" versus problems with students (Bensimon & Spiva, 2022). This points scholarly research and our examination to the systems and structures within higher education, reinforcing the importance of examining college and university environments to address the structures and policies that contribute to outcomes experienced by rural learners. Even more, it helps strengthen the case for an asset lens to examine colleges and universities that appear to serve rural students well, and to discover the institutional assets, practices, relationships, and cultural characteristics that distinguish those institutions.

Method

This study is an exploratory quantitative analysis. It uses descriptive statistics to characterize rural students in college in terms of identities and background characteristics. We then use variable-centered analyses to examine the relationships between rural learners' intersecting social identities and student characteristics and our engagement indicator outcomes. These analyses focus solely on rural learners to look for patterns within their experience that contribute to successes or challenges and to identify highly

engaging institutions for rural learners. Notably, while this study uses a quantitative approach to identify highly engaging institutions for rural students, we understand the value of qualitative methods to strengthen our asset framework and understand what these institutions do to serve rural students well. In the discussion section, we start to explore the practices and capacities that will be a part of the next phase of this multi-institutional study of rural student success.

Data Source

Data for this study is from the 2023-2025 administrations of the National Survey of Student Engagement (NSSE). NSSE collects information about first-year and senior student experiences at four-year colleges and universities. Our study focuses exclusively on rural students resulting in a sample of 50,410 rural learners (17% of the total 2023-2025 NSSE administration) enrolled at 872 institutions. If an institution participated in more than one administration of NSSE in that timeframe, we only used their most recent administration. Around one third of the data came from the 2023 (32%), 2024 (29%), and 2025 (39%) administrations.

Respondents

We describe the respondents and the institutions at which they are enrolled in our results section, for details, see Tables 1-6.

Measures

Rurality

We matched student-reported ZIP code on NSSE to codes identified as rural by the Federal Office of Rural Health Policy (FORHP). NSSE asks students, “what is the 5-digit ZIP code of your home address during your last year of high school?” FORHP defines a ZIP code to be rural if more than 50% of the population is in a rural area as defined by the U.S. Census Bureau.

Engagement

We operationalized our engagement measures with a combination of NSSE scales. See the NSSE Engagement Indicators and NSSE codebooks websites for more information on component items and scale-score calculations. We defined *Engaging Academics* as a combination of NSSE's *Higher-Order Learning*, *Reflective & Integrative Learning*, *Quantitative Reasoning*, and *Learning Strategies* Engagement Indicators. We defined *Engaging Interactions* as a combination of NSSE's *Student-Faculty Interactions*, *Collaborative Learning*, and *Discussions with Diverse Others* Engagement Indicators. We defined *Engaging Environments* as a combination of NSSE's *Effective Teaching Practices*, *Quality of Interactions*, and *Supportive Environment* Engagement Indicators along with scales measuring *Sense of Belonging* and student-reported *Perceived Gains*. We designated students as being highly engaged or enrolled at a highly engaging institution if they were in the highest scoring categories for *Engaging Academics*, *Engaging Interactions*, and *Engaging Environments*.

Analyses

To answer our first two research questions, we examined descriptives of rural learners in terms of social identities and student characteristics as well as the characteristics of institutions at which rural learners enroll. To answer our third and fourth research questions we conducted a series of two-step cluster analyses, chi-square statistics, and adjusted standardized residuals.

Cluster Analyses

We conducted a series of two-step cluster analyses to categorize rural learners into groups based on their engagement experiences operationalized as we described in our measures section. Using an aggregated institution-level version of our data file, we similarly conducted a series of two-step cluster analyses to categorize the institutions in which rural students are enrolled based on the institutional average of student engagement experiences operationalized as we described in our measures section.

At the student level, students clustered into two *Engaging Academics* groups (Silhouette = .44): higher academic engagement (39.6%) and lower academic engagement

(60.4%). Students clustered into three *Engaging Interactions* groups (Silhouette = .39): high engaging interactions (28.7%), lower engaging interactions but high discussions with diverse others (36.7%), and lower engaging interactions (34.6%). Students clustered into two *Engaging Environments* groups (Silhouette = .43): more supportive environment (55.2%) and less supportive environment (44.8%).

At the institution level, institutions clustered into three *Engaging Academics* groups (Silhouette = .48): more positive engagement (20%), positive engagement (74%), and less positive engagement (6%). Institutions clustered into two *Engaging Interactions* groups (Silhouette = .48): more positive engagement (20%), positive engagement (74%), and less positive engagement (6%). Institutions clustered into three *Engaging Environments* groups (Silhouette = .40): more supportive environment (45%), supportive environment (50%), and less supportive environment (5%).

We then looked across the clusters designating a student as "highly engaged" or an institution as "highly engaging" if they were in *all* the highest engagement groups within our engagement categories.

Representation

For our third and fourth research questions, we rely on the notion of overrepresentation and underrepresentation of characteristics across engagement experiences. We computed a series of chi-square (χ^2) analyses and adjusted standardized residuals (ASRs). We considered ASRs greater than 2 or less than -2 to be notable differences (Agresti & Finlay, 2009). Positive ASRs, for example, mean the counts of students with a given social identity or student characteristic or the counts of institutions with a given characteristic were overrepresented in our sample compared to what we would have expected. For the noncategorical measures of how students spend their time, we examined *t*-tests and Cohen's *d* effect sizes to compare the estimated average hours spent in a typical week.

Limitations

In many instances, we made decisions about how to group students. Although our analyses were person-centered, we still needed to label students in categories of student characteristics and social identity demographics. Many of these categorizations came from the questions asked on the NSSE survey (such as choices for race and ethnicity) but other categorizations were choices that we made (such as grouping students who did not identify as straight into an LGBQ+ community category). All these categorizations could bias our study in ways that we cannot know, and we are mindful that these broad groupings of students could be hiding nuanced differences that we could not see in our study.

Results

Who Are Today's Rural Learners?

The largest proportion of first-year rural students were majoring in biological sciences (11%), business (14%), education (12%), and health professions (18%). Most first-year students (84%) started at their current institution and three quarters (75%) took mostly in-person courses. Around two thirds (67%) of first-year students lived on campus and small proportions of first-year students were Greek-letter members (6%), student athletes (10%), or U.S. veterans (2%). Around half of first-year students (54%) had participated in a service-learning experience with smaller proportions having participated in an internship (9%), learning community (11%), study abroad (2%), undergraduate research (5%), or capstone experience (2%). Around half (49%) were first generation students with the largest proportion of first-year students (43%) aspiring to a bachelor's degree. One in five (21%) first-year students reported having a disability. Around three-quarters of first-year students identified as White (74%) with smaller proportions identifying as Asian (2%), Black or African American (5%), Latine (7%), Indigenous (1%), or multiracial (10%). Fewer than one percent of first-year students identified as Middle Eastern or North African, Native Hawaiian or Pacific Islander, or another race or ethnicity. Around one in five (21%) first-year students identified as LGBQ+, and around two-thirds of first-year students identified as women (65%) with smaller proportions identifying as men (28%) or genderqueer+ (5%). See

Tables 1 and 2 for details and proportions of first-year students by highly engaged rural learner status.

The largest proportion of rural seniors were majoring in biological sciences (11%), business (14%), education (13%), and health professions (17%). Around half of seniors (53%) started at their current institution and half (55%) took mostly in-person courses. Around two thirds (64%) of seniors lived off campus and small proportions of seniors were Greek-letter members (10%), student athletes (6%), or U.S. veterans (5%). More than half of seniors had participated in an internship (54%), a capstone experience (48%), or a service-learning experience (63%) with smaller proportions completing a learning community (24%), study abroad (10%), or undergraduate research experience (24%). Around half (50%) were first generation students with the largest proportions of seniors aspiring to a bachelor's degree (38%) or master's degree (36%). One in five (21%) seniors reported having a disability. Around three-quarters of seniors identified as White (76%) with smaller proportions identifying as Asian (2%), Black or African American (5%), Latine (6%), Indigenous (1%), or multiracial (7%). Fewer than one percent of seniors identified as Middle Eastern or North African, Native Hawaiian or Pacific Islander, or another race or ethnicity. Around one in five (18%) seniors identified as LGBQ+, and around two-thirds of seniors identified as women (66%) with smaller proportions identifying as men (28%) or genderqueer+ (4%). See Tables 3 and 4 for details and proportions of seniors by highly engaged rural learner status.

Where Are Rural Learners Enrolled?

Around one-third (37%) of respondents were enrolled in doctoral-granting institutions, close to half (46%) enrolled in master's-granting institutions, and around one in five (17%) enrolled in bachelor's-degree granting institutions. The largest proportions of students were enrolled at institutions located in the Great Lakes (21%), plains (16%), Southeast (26%), and Southwest (11%) regions of the United States. Nearly half (46%) of students were enrolled at institutions located in cities with smaller proportions located in suburbs (16%), towns (35%), and rural areas (3%). Almost three in four (69%) students were

enrolled in publicly controlled institutions. Small proportions of students were enrolled at Historically Black Colleges and Universities (1%), Hispanic Serving Institutions (5%), or Minority Serving Institutions (8%). See Table 6 for details and proportions of students by highly engaged rural learner status.

Highly Engaged Rural Learners

Across our three categories of *Engaging Academics*, *Engaging Interactions*, and *Engaging Environments* we found distinct groups of rural learners. Looking across these groupings, we found a subset of rural learners that appear in all the highest engaged student groups. We consider these students to be *highly engaged rural learners*.

Highly Engaged Rural First-Year Students

Overrepresentation. Highly engaged rural first-year students were overrepresented in biological science majors (ASR = 2.1) and health professions majors (ASR = 6.3). They were more often taking their courses in person (ASR = 5.1) and living on campus (ASR = 6.8). They were more often Greek-letter members (ASR = 9.2) and student athletes (ASR = 4.0). These students were overrepresented in the group of students who had participated in any of the high-impact practices that we asked about. They more often aspired to graduate degrees (ASR = 2.9 for master's degrees and ASR = 10.3 for doctoral/professional degrees). They disproportionately identified as Black or African American (ASR = 2.3), as Middle Eastern or North African (ASR = 2.2), and as women (ASR = 3.0). See Tables 1 and 2 for details.

Highly engaged rural first-year students spend more time preparing for class (d = .25), participating in co-curricular activities (d = .40), working for pay on campus (d = .16), working for pay overall (d = .07), doing community service or volunteer work (d = .31), and commuting to campus (d = .16). See Table 5 for details.

Underrepresentation. Highly engaged rural first-year students were underrepresented in business majors (ASR = -2.2), all other majors (ASR = -2.7), and undecided or undeclared majors (ASR = -3.1). They less often took their courses mostly

online (ASR = -8.9). They were less represented in the students who lived farther than walking distance from campus (ASR = -2.2) or at institutions primarily online (ASR = -3.1). They were underrepresented in the group of students aspiring to a bachelor's degree (ASR = -10.7) or in those who identified as men (ASR = -2.4). See Tables 1 and 2 for details.

Highly Engaged Rural Senior Students

Overrepresentation. Highly engaged rural seniors were overrepresented in biological sciences majors (ASR = 3.8), education (ASR = 4.5), health professions (ASR = 3.8), and social service professions (ASR = 3.7). They were more often taking their courses most in-person (ASR = 16.2) or mostly hybrid or blended (ASR = 3.9). They were overrepresented in the group of students without housing or whose housing was in transition (ASR = 2.0). They were more likely to be Greek-letter members (ASR = 10.2) or student athletes (ASR = 4.2). These students were overrepresented in the group of students who had participated in any of the high-impact practices that we asked about. They were more represented in the group of continuing generation students (ASR = 3.2) and those aspiring to master's (ASR = 4.1) and doctoral/professional degrees (ASR = 15.3). They were disproportionately represented in the students who identified as Black or African American (ASR = 2.1), as LGBQ+ (ASR = 2.6), or as women (ASR = 5.2). See Tables 3 and 4 for details.

Highly engaged rural seniors spend more time preparing for class (d = .18), participating in co-curricular activities (d = .42), working for pay on campus (d = .21), doing community service or volunteer work (d = .28), and commuting to campus (d = .20). They spend less time working for pay off campus (d = -.15) and providing care for dependents (d = -.15). See Table 5 for details.

Underrepresentation. Highly engaged rural seniors were underrepresented in physical sciences (ASR = -3.4), business (ASR = -7.0), and engineering (ASR = -3.9). They were underrepresented in the group of students who transferred from another institution (ASR = -7.2), in the group of students who took mostly remote courses (ASR = -21.0), and in the group of students in an entirely online program (ASR = -17.1). They were less often U.S. veterans (ASR = -4.2) and less often aspired to a bachelor's degree (ASR = -14.6) or less

(ASR = -2.4). They were disproportionately underrepresented in students who identify as men (ASR = -2.9). See Tables 3 and 4 for details.

Highly Engaging Institutions for Rural Learners

Again, using these same three categories of *Engaging Academics*, *Engaging Interactions*, and *Engaging Environment* we found distinct groups of institutions for engaging rural learners. Looking across these groupings, we found a subset of institutions that appear in the highest engaging institutional groups. We consider these institutions to be highly engaging for rural learners.

Overrepresentation

Rural students enrolled in highly engaging institutions were overrepresented at doctoral-granting institutions with very high research productivity (ASR = 11.9) and bachelor's-granting institutions with an Arts & Sciences focus (ASR = 18.8). They were more often enrolled at institutions located in the mid East (ASR = 2.2), Southeast (ASR = 51.0), other U.S. jurisdictions (ASR = 5.4), or were U.S. Service schools (ASR = 2.4). Students were enrolled at institutions located in large cities (ASR = 29.6), midsize suburbs (ASR = 23.9), or rural regions both distant (ASR = 9.0) or remote (ASR = 7.7). They were at institutions that were very small (ASR = 15.1), small (ASR = 14.2), or medium (ASR = 5.8) sized undergraduate enrollment. Students were overrepresented at private, not-for-profit, institutions (ASR = 23.6) and at Historically Black Colleges and Universities (ASR = 8.2). See Table 6 for details.

Underrepresentation

Rural students enrolled in highly engaging institutions were underrepresented at doctoral granting institutions with high research activity (ASR = -11.4), doctoral or professional degree granting (ASR = -4.4), master's-granting with large programs (ASR = -5.5), master's-granting with small programs (ASR = -3.3), and bachelor's-granting with diverse fields (ASR = -4.7). They were less enrolled at institutions that were located in the New England (ASR = -9.5), Great Lakes (ASR = -14.9), plains (ASR = -24.2), Southwest (ASR

= 3.4), Rocky Mountains (ASR = -15.4), and far West (ASR = -3.8) regions of the U.S. Students less often enrolled at institutions located in small cities (ASR = -8.5), large suburbs (ASR = -5.8), small suburbs (ASR = -4.5), and towns fringe (ASR = -9.1), distant (ASR = -7.0), and remote (ASR = -18.2). They were less often at institutions that were large (ASR = -19.4) or very large (ASR = -4.5) or at institutions that were publicly controlled (ASR = -19.2) or private for profit (ASR = -10.3). Students were underrepresented at Hispanic serving institutions (ASR = -2.8). See Table 6 for details.

Discussion

Rural students bring lived experiences that enrich campus communities, yet they continue to face barriers in access, quality of engagement, and college completion. Our findings provide more current information about who rural students are including a range of social identities, and notably that one in five students identify as LGBQ+ or have a disability. Rural students are enrolled across a range of institutional types, mainly at Master's-granting institutions, and the largest proportion of rural learners were enrolled at institutions in the Southeast. Our strong findings about location, including the Southeast region of the U.S. and HBCUs, likely further illustrate Koricich, Sansone, and Fryar's (2022) concept of "place" as a critical component characterizing rural serving institutions.

The development of a typology of rural student engagement revealed some noteworthy aspects of the rural student experience. The highly engaged rural learner results demonstrate a good range of social identities among rural students, with notably affirming results for historically underrepresented student populations including African American and students who are part of the LGBQ+ community. Participation in high-impact practices, such as internships, undergraduate research, involvement in co-curricular activities and working on campus, were also more likely for highly engaged rural students. These practices clearly represent types of engagement that institutions can prioritize and ensure rural learners are exposed to.

A multitude of factors, including those personal to the learner and particular to the institution, influence success for rural learners. Our findings about highly engaging

institutions for rural learners offer a simple and important reminder for colleges and universities to consider rural learners in conversations about student success. Consistent with research by the Alliance for Research on Regional Colleges (Koricich, Sansone, & Fryar, 2022) highlighting "place" as a critical component in understanding rural serving institutions, our results point to regions where institutions serve rural students well. Our focus on highly engaged rural learners and engaging institutions begins to elaborate on the strengths and skills highlighted in the Rural Cultural Wealth framework (Crumb et al., 2023) including appreciating rural resourcefulness, ingenuity, familism and community unity, and how institutions can foster engagement around these rural student qualities. Moreover, our research adds an important actionable educational practice dimension to further distinguish exemplary rural learner engaging institutions. Practically, findings point to the environmental factors in colleges and universities such as high-impact practices, co-curricular involvements, and institutional supports for learning, that characterize rural learner engagement and that should be fostered for rural learner success.

Implications

The typology we present can be used to guide and inform practice to better serve all rural students and enable the identification of colleges and universities that uniquely engage the full range of rural student identities and types. Additional implications and next steps for this research involve a deeper analysis of institutions that are highly engaging for rural learners. As Crumb et al, (2023) asserted in their Rural Cultural Wealth framework, to enact an asset-oriented frame, it is useful to asset map by cataloging strengths among people, local resources, and institutions. An asset orientation and map will help us look deeper at identified highly engaging institutions and point us to what to look for and where to look to affirm and appreciate approaches and practices to support rural student success. By identifying exemplary institutions and their practices, policies and programs to serve rural learners, it is possible to learn more about aspects of place, region, institutional mission, and engaging practice and policies that characterize colleges and universities that serve rural students well.

We encourage higher education educators, leaders, and policy makers to reflect and act on practices and programs that acknowledge and make use of the assets rural learners bring to educational institutions to better support their success. Knowing that there are many institutions that are highly engaging institutions for rural learners is heartening, and that HBCUs are highly engaging along with institutions in the southeast, suggests the power of institutional mission, context, or culture in relation to engaging rural students.

Institutional Perspectives on Engaging Rural Learners

Institutions likely have many reasons to create support mechanisms for their rural learners. As mentioned, while this paper discusses findings from our quantitative study, following our identification of highly engaging institutions for rural students we are currently using qualitative methods to deepen our study. The qualitative work reflects the asset-based collaborative approach grounded in rural cultural wealth advocated by Crumb et al, (2023), which engages institutions as partners in learning what these institutions do to serve rural students well. Briefly, our initial outreach to the institutions where rural students were engaged at substantially high levels included inquiries about general impressions about their rural learners, how our findings align with impressions, and the initiatives and programs to support rural learners and, of course, what institutional practices, programs, policies, and personnel support rural learners' success. Although responses from institutional contacts at the approximately 30 institutions identified as highly engaging for rural students are still being collected, impressions suggest a strong sense of rural community and unity that is about who the institution serves, that it reflects the communities surrounding the campus, and that the institution as a whole provides belonging and meaningful relationships and opportunities for rural learning success. Responses also suggest that some institutions were surprised by their highly engaging for rural student classification, with one surmising that they may have "lucked into being supportive of rural learners" and expressing the need to identify and grow what they do to support rural student success.

As a result, our focus on highly engaging institutions has prompted us to explore salient rural practices at institutions documented by scholars. These are important for our work going forward and serve as inspirational examples for others. For instance, the Pennsylvania State System of Higher Education, worried about how its financial challenges would affect rural students, merged several rural-serving institutions, and one of the newly formed institutions has seen increased enrollment (Means et al., 2024). The University of North Carolina (UNC) System is another example with its NC Promise Plan. To increase rural student enrollment and graduation, the UNC system lowered tuition at select institutions to $500 per semester and achieved their goal (Means et al., 2024). The UNC System also has an articulation agreement with the North Carolina Community College System to help rural students earn bachelor's degrees (Jaeger et al., 2015). This agreement guarantees that community college students in North Carolina who complete an associate's degree will satisfy the requirements for transfer to a UNC institution. Chico State has its North State Student Ambassadors (NSSA) program, a paid position open to all but aimed at rural students (Schulte & Schreder, 2024). NSSA gives them a dedicated space to share their experiences and connect with other rural students, increasing their sense of belonging and confidence in their identity. They also do outreach to educate others on rurality through tabling, speaking to classes, attending campus tours, or presenting research.

We look forward to adding to this body of scholarship about rural student support, exemplary state higher education, and practices at colleges and universities through our empirical identification of highly engaging institutions for rural learners and ensuring that the assets and these institutions are documented and celebrated.

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Table 1

First-Year Proportions and Chi-Square Statistics for Differences in Student Characteristics by Highly Engaging Rural Learner (HERL) Status

	Percentages					ASRs		Statistics
Student Characteristics	Row % HERL	Col % HERL	Row % Not HERL	Col % Not HERL	Col % Total	HERL	Not HERL	*n* (*df*) χ^2 Significance
Major Field								
Arts & Humanities	10.5	7.4	89.5	8.4	8.3	-1.9	1.9	23,437 (11)
Bio Sci, Agric, & Nat Resrcs	13.0	12.3	87.0	10.9	11.1	**2.1**	**-2.1**	72.48***
Phys Sci, Math, & CS	9.3	4.0	90.7	5.1	5.0	**-2.7**	**2.7**	
Social Sciences	11.7	10.1	88.3	10.2	10.2	-0.1	0.1	
Business	10.6	12.4	89.4	14.0	13.8	**-2.2**	**2.2**	
Comm, Media, & PR	11.8	2.4	88.2	2.4	2.4	0.0	0.0	
Education	12.6	12.6	87.4	11.8	11.9	1.4	-1.4	
Engineering	10.2	6.0	89.8	7.0	6.9	**-2.0**	**2.0**	
Health Professions	14.6	22.7	85.4	17.7	18.3	**6.3**	**-6.3**	
Social Service Professions	11.1	5.7	88.9	6.1	6.0	-0.8	0.8	
All other majors	9.2	3.8	90.8	5.0	4.9	**-2.7**	**2.7**	
Undecided, undeclared	6.3	0.7	93.7	1.4	1.4	**-3.1**	**3.1**	
Transfer Status								
Started here	11.6	84.4	88.4	84.4	84.4	0.1	-0.1	23,635 (1)
Started elsewhere	11.6	15.6	88.4	15.6	15.6	-0.1	0.1	.01
Course Modality								
Mostly in-person courses	12.3	78.8	87.7	74.3	74.8	**5.1**	**-5.1**	23,600 (3)
Mostly remote courses	6.5	6.5	93.5	12.3	11.6	**-8.9**	**8.9**	79.91***
Mostly hybrid or blended courses	13.3	4.9	86.7	4.2	4.3	1.7	-1.7	
A balanced mix of the above	12.3	9.8	87.7	9.2	9.3	1.0	-1.0	
Living Situation								
Campus housing	12.7	73.1	87.3	66.6	67.4	**6.8**	**-6.8**	23,657 (5)
Fraternity or sorority house	15.1	0.9	84.9	0.7	0.7	1.4	-1.4	91.27***
Residence within walking distance to campus	11.8	4.7	88.2	4.7	4.7	0.2	-0.2	
Residence farther than walking distance to campus	10.7	16.7	89.3	18.5	18.3	**-2.2**	**2.2**	
No campus, entirely online program, etc.	5.7	4.2	94.3	9.2	8.6	**-8.7**	**8.7**	
Homeless or in transition	9.6	0.3	90.4	0.3	0.3	-0.6	0.6	
Greek-Letter Member								
Not a Greek-letter member	11.1	89.6	88.9	94.2	93.6	**-9.2**	**9.2**	23,417 (1) 84.33***
Greek-letter member	19.0	10.4	81.0	5.8	6.4	**9.2**	**-9.2**	
Student Athlete								
Not an athlete	11.4	87.9	88.6	90.4	90.1	**-4.0**	**4.0**	23,631 (1)
Student athlete	14.2	12.1	85.8	9.6	9.9	**4.0**	**-4.0**	16.03***
High-Impact Practices								
Internship	22.2	16.8	77.8	7.8	8.9	**15.7**	**-15.7**	23,647(1) 346.4***
Learning Community	23.2	22.4	76.8	9.8	11.3	**19.7**	**-19.7**	23,609 (1) 388.1***
Study Abroad	29.1	5.9	70.9	1.9	2.4	**12.9**	**-12.9**	23,618(1) 166.8***
Undergraduate Research	30.7	13.6	69.3	4.1	5.2	**21.3**	**-21.3**	23,622(1) 451.9***
Capstone Experience	34.7	6.1	65.3	1.5	2.1	**16.0**	**-16.0**	23,631(1) 255.9***
Service Learning	15.6	72.4	84.4	51.9	54.3	**20.3**	**-20.3**	23,564(1) 411.6***

Note: HERL = Highly Engaging Rural Learner; Bio Sci, Agric, & Nat Resrcs = Biological Sciences, Agriculture, and Natural Resources; Physical Sciences, Mathematics, & Computer Science; Comm, Media, & PR = Communications, Media, & Public Relations; Col = Column; ASRs = Adjusted Standardized Residuals; *df* = degrees of freedom. Bold ASRs indicate ASR ≥ |2|; *p < .05, **p < .01, ***p < .001

Table 2

First-Year Proportions and Chi-Square Statistics for Differences in Student Social Identities by Highly Engaging Rural Learner (HERL) Status

	Percentages					ASRs		Statistics *n* (*df*) χ2 Significance
Student Social Identities	Row % HERL	Col % HERL	Row % Not HERL	Col % Not HERL	Col % Total	HERL	Not HERL	
Veteran Status								
Not a veteran	11.7	98.3	88.3	98.1	98.2	0.7	-0.7	23,602 (1)
Veteran	10.6	1.7	89.4	1.9	1.8	-0.7	0.7	.45
First Generation Status								
Continuing generation	11.8	51.4	88.2	51.0	51.0	0.4	-0.4	23,046 (1)
First generation	11.7	48.6	88.3	49.0	49.0	-0.4	0.4	.20
Educational Aspirations								
Some college/university but less than a bachelor's degree	11.9	11.1	88.1	10.8	10.9	0.4	-0.4	23,668 (3) 159.50***
Bachelor's degree	9.1	33.6	90.9	44.4	43.1	**-10.7**	**10.7**	
Master's degree	12.6	31.6	87.4	28.9	29.2	**2.9**	**-2.9**	
Doctoral or professional degree	16.4	23.7	83.6	15.9	16.8	**10.3**	**-10.3**	
Disability Status								
No	11.7	74.9	88.3	74.5	74.5	0.5	-0.5	23,723 (2)
Yes	11.6	21.0	88.4	21.0	21.0	0.0	0.0	1.23
I prefer not to respond	10.6	4.1	89.4	4.5	4.5	-1.1	1.1	
Racial Ethnic Identity								
Asian	12.3	1.8	87.7	1.7	1.7	0.4	-0.4	23,713 (9)
Black or African American	13.8	5.9	86.2	4.9	5.0	**2.3**	**-2.3**	21,41**
Hispanic, Latina/o, Latine, or Latinx	10.7	6.0	89.3	6.6	6.5	-1.3	1.3	
Indig, Am Indian, Native Am, or AK Native	7.7	0.7	92.3	1.1	1.0	-1.9	1.9	
Middle Eastern or North African	26.1	0.2	73.9	0.1	0.1	**2.2**	**-2.2**	
Native HI or Pacific Islander	18.0	0.3	82.0	0.2	0.2	1.4	-1.4	
White	11.5	72.7	88.5	74.0	73.9	-1.5	1.5	
Another race or ethnicity	13.8	0.3	86.2	0.3	0.3	0.5	-0.5	
Multiple races/ethnicities selected	12.8	10.4	87.2	9.4	9.5	1.8	-1.8	
I prefer not to respond	10.6	1.6	89.4	1.8	1.8	-0.7	0.7	
Sexual Orientation								
Straight	11.8	76.8	88.2	75.5	75.7	1.5	-1.5	23,719 (2)
LGBQ+	11.4	20.7	88.6	21.2	21.1	-0.6	0.6	5.53
I prefer not to respond	9.1	2.5	90.9	3.3	3.2	-2.2	2.2	
Gender Identity								
Woman	12.1	67.5	87.9	64.7	65.0	**3.0**	**-3.0**	23,648 (3)
Man	10.9	26.4	89.1	28.6	28.3	**-2.4**	**2.4**	10.92**
Genderqueer+	11.2	5.2	88.8	5.4	5.4	-0.5	0.5	
I prefer not to respond	8.3	0.9	91.7	1.3	1.3	-1.8	1.8	

Note: HERL = Highly Engaging Rural Learner; Indig, Am Indian, Native Am, or AK Native = Indigenous, American Indian, Native American, or Alaska Native; Native HI or Pacific Islander = Native Hawaiian or Pacific Islander; LGBQ+ = Lesbian, Gay, Bisexual, Queer, etc.; Col = Column; ASRs = Adjusted Standardized Residuals; *df* = degrees of freedom. Bold ASRs indicate ASR ≥ |2|; *p < .05, **p < .01, ***p < .001

Table 3

Senior Proportions and Chi-Square Statistics for Differences in Student Characteristics by Highly Engaging Rural Learner (HERL) Status

	Percentages					ASRs		Statistics
Student Characteristics	Row % HERL	Col % HERL	Row % Not HERL	Col % Not HERL	Col % Total	HERL	Not HERL	*n* (*df*) χ^2 Significance
Major Field								
Arts & Humanities	17.9	8.4	82.1	7.6	7.7	1.7	-1.7	26,430 (11)
Bio Sci, Agric, & Nat Resrcs	19.1	12.2	80.9	10.2	10.5	**3.8**	**-3.8**	179.06***
Phys Sci, Math, & CS	13.0	3.7	87.0	4.9	4.7	**-3.4**	**3.4**	
Social Sciences	17.1	11.3	82.9	10.8	10.9	0.8	-0.8	
Business	12.6	10.8	87.4	14.8	14.2	**-7.0**	**7.0**	
Comm, Media, & PR	19.2	3.0	80.8	2.5	2.6	1.9	-1.9	
Education	19.3	14.7	80.7	12.2	12.6	**4.5**	**-4.5**	
Engineering	13.3	5.8	86.7	7.5	7.2	**-3.9**	**3.9**	
Health Professions	18.5	18.9	81.5	16.6	16.9	**3.8**	**-3.8**	
Social Service Professions	19.9	6.9	80.1	5.5	5.8	**3.7**	**-3.7**	
All other majors	10.4	4.2	89.6	7.1	6.7	**-7.2**	**7.2**	
Undecided, undeclared	15.2	0.1	84.8	0.1	0.1	-0.2	0.2	
Transfer Status								
Started here	18.7	59.7	81.3	51.2	52.6	**10.2**	**-10.2**	26,530 (1)
Started elsewhere	14.0	40.3	86.0	48.8	47.4	**-10.2**	**10.2**	104.45***
Course Modality								
Mostly in-person courses	19.8	66.5	80.2	53.1	55.3	**16.2**	**-16.2**	26,468 (3)
Mostly remote courses	7.9	11.4	92.1	26.2	23.8	**-21.0**	**21.0**	466.80***
Mostly hybrid or blended courses	20.1	7.1	79.9	5.6	5.8	**3.9**	**-3.9**	
A balanced mix of the above	16.4	15.0	83.6	15.1	15.1	-0.1	0.1	
Living Situation								
Campus housing	20.9	25.0	79.1	18.7	19.7	**9.6**	**-9.6**	26,571 (5)
Fraternity or sorority house	22.7	1.6	77.3	1.1	1.2	**2.9**	**-2.9**	345.64***
Residence within walking distance to campus	18.0	22.5	82.0	20.2	20.6	**3.4**	**-3.4**	
Residence farther than walking distance to campus	16.7	44.0	83.3	43.2	43.3	1.0	-1.0	
No campus, entirely online program, etc.	7.2	6.6	92.8	16.7	15.0	**-17.1**	**17.1**	
Homeless or in transition	25.4	0.4	74.6	0.2	0.3	**2.0**	**-2.0**	
Greek-Letter Member								
Not a Greek-letter member	15.7	86.2	84.3	91.2	90.3	**-10.2**	**10.2**	26,222 (1)
Greek-letter member	23.7	13.8	76.3	8.8	9.7	**10.2**	**-10.2**	104.02***
Student Athlete								
Not an athlete	16.3	92.6	83.7	94.2	93.9	**-4.2**	**4.2**	26,526 (1)
Student athlete	20.3	7.4	79.7	5.8	6.1	**4.2**	**-4.2**	18.05***
High-Impact Practices								
Internship	21.1	68.5	78.9	50.8	53.7	**21.5**	**-21.5**	26,554(1) 463.4***
Learning Community	29.5	43.1	70.5	20.4	24.2	**32.0**	**-32.0**	26,488(1) 1025.2***
Study Abroad	26.6	15.8	73.4	8.7	9.8	**14.6**	**-14.6**	26,517(1) 213.2***
Undergraduate Research	28.8	41.1	71.2	20.1	23.6	**29.9**	**-29.9**	26,514(1) 892.3***
Capstone Experience	21.1	61.6	78.9	45.5	48.2	**19.5**	**-19.5**	26,540(1) 380.1***
Service Learning	21.2	81.2	78.8	59.9	63.4	**26.8**	**-26.8**	26,473(1) 717.3***

Note: HERL = Highly Engaging Rural Learner; Bio Sci, Agric, & Nat Resrcs = Biological Sciences, Agriculture, and Natural Resources; Physical Sciences, Mathematics, & Computer Science; Comm, Media, & PR = Communications, Media, & Public Relations; Col = Column; ASRs = Adjusted Standardized Residuals; *df* = degrees of freedom. Bold ASRs indicate ASR ≥ |2|; *p < .05, **p < .01, ***p < .001

Table 4

Senior Proportions and Chi-Square Statistics for Differences in Student Social Identities by Highly Engaging Rural Learner (HERL) Status

	Percentages					ASRs		Statistics *n* (*df*)
Student Social Identities	Row % HERL	Col % HERL	Row % Not HERL	Col % Not HERL	Col % Total	HERL	Not HERL	χ^2 Significance
Veteran Status								
Not a veteran	16.7	96.4	83.3	94.9	95.2	**4.2**	**-4.2**	26,542 (1)
Veteran	12.2	3.6	87.8	5.1	4.8	**-4.2**	**4.2**	17.71***
First Generation Status								
Continuing generation	17.3	52.0	82.7	49.3	49.8	**3.2**	**-3.2**	26,216 (1)
First generation	15.9	48.0	84.1	50.7	50.2	**-3.2**	**3.2**	10.12**
Educational Aspirations								
Some college/university but less than a bachelor's degree	14.6	7.2	85.4	8.3	8.1	**-2.4**	**2.4**	26,630 (3) 339.95***
Bachelor's degree	12.3	28.6	87.7	40.3	38.4	**-14.6**	**14.6**	
Master's degree	17.7	39.0	82.3	35.8	36.3	**4.1**	**-4.1**	
Doctoral or professional degree	24.1	25.2	75.9	15.7	17.2	**15.3**	**-15.3**	
Disability Status								
No	16.6	75.7	83.4	75.0	75.1	1.0	-1.0	26,621 (2)
Yes	16.7	21.7	83.3	21.4	21.4	0.4	-0.4	11.18**
I prefer not to respond	12.4	2.6	87.6	3.6	3.4	**-3.3**	**3.3**	
Racial Ethnic Identity								
Asian	14.2	1.3	85.8	1.6	1.5	-1.2	1.2	26,614(9)
Black or African American	18.6	5.3	81.4	4.5	4.7	**2.1**	**-2.1**	30.94***
Hispanic, Latina/o, Latine, or Latinx	17.5	6.6	82.5	6.1	6.2	1.2	-1.2	
Indig, Am Indian, Native Am, or AK Native	19.2	1.6	80.8	1.3	1.4	1.4	-1.4	
Middle Eastern or North African	25.8	0.2	74.2	0.1	0.1	1.4	-1.4	
Native HI or Pacific Islander	20.4	0.2	79.6	0.2	0.2	0.7	-0.7	
White	16.4	75.6	83.6	76.0	76.0	-0.6	0.6	
Another race or ethnicity	10.3	0.2	89.7	0.3	0.3	-1.4	1.4	
Multiple races/ethnicities selected	16.9	7.5	83.1	7.3	7.3	0.5	-0.5	
I prefer not to respond	10.4	1.5	89.6	2.6	2.4	**-4.2**	**4.2**	
Sexual Orientation								
Straight	16.4	78.1	83.6	78.6	78.5	-0.9	0.9	26,615 (2)
LGBQ+	17.7	19.6	82.3	17.9	18.2	**2.6**	**-2.6**	19.28***
I prefer not to respond	11.9	2.3	88.1	3.4	3.3	**-3.7**	**3.7**	
Gender Identity								
Woman	17.4	69.9	82.6	65.8	66.5	**5.2**	**-5.2**	26,542 (3)
Man	14.6	24.8	85.4	28.6	28.0	**-5.1**	**5.1**	37.58***
Genderqueer+	17.6	4.2	82.4	3.9	4.0	1.0	-1.0	
I prefer not to respond	11.1	1.0	88.9	1.6	1.5	**-2.9**	**2.9**	

Note: HERL = Highly Engaging Rural Learner; Indig, Am Indian, Native Am, or AK Native = Indigenous, American Indian, Native American, or Alaska Native; Native HI or Pacific Islander = Native Hawaiian or Pacific Islander; LGBQ+ = Lesbian, Gay, Bisexual, Queer, etc.; Col = Column; ASRs = Adjusted Standardized Residuals; *df* = degrees of freedom. Bold ASRs indicate ASR ≥ |2|; *p < .05, **p < .01, ***p < .001

Table 5

Average Estimated Hours and Differences by Highly Engaging Rural Learner (HERL) Status and Class Level

	First-Year Students					Seniors				
	HERL	Not HERL				HERL	Not HERL			
Time Spent	Ave Hrs	Ave Hrs	*t*	Sig	*d*	Ave Hrs	Ave Hrs	*t*	Sig	*d*
Preparing for class	4.6	4.2	-11.7	***	.25	4.7	4.4	-10.7	***	.18
Participating in co-curricular activities	7.4	4.8	-17.8	***	.40	7.0	4.2	-22.4	***	.42
Working for pay *on campus*	3.2	2.3	-6.9	***	.16	4.7	3.2	-11.8	***	.21
Working for pay *off campus*	7.2	7.2	.2		.00	11.9	13.8	9.3	***	-.15
Working for pay total	10.3	9.5	-3.6	***	.07	16.6	17.1	2.1	*	-.04
Doing community service or volunteer work	3.3	1.9	-13.2	***	.31	3.9	2.5	-14.8	***	.28
Relaxing and socializing	11.7	12.0	1.7	*	-.03	10.8	10.7	-1.2		.02
Providing care for dependents	3.2	3.5	1.8	*	-.03	4.9	6.6	10.0	***	-.15
Commuting to campus	4.1	3.2	-6.9	***	.16	4.8	3.7	-10.7	***	.20

Note: HERL = Highly Engaging Rural Learner; Ave Hrs = Average estimated hours; Sig = Significance; *$p < .05$, **$p < .01$, ***$p < .001$

Table 6

Proportions and Chi-Square Statistics for Differences in Institution Characteristics by Highly Engaging Rural Learner (HERL) Status

	Percentages					ASRs		Statistics
Institution Characteristics	Row % HERL	Col % HERL	Row % Not HERL	Col % Not HERL	Col % Total	HERL	Not HERL	*n* (*df*) χ^2 Significance
Basic Carnegie Classification								
Doctoral granting/Very high research productivity	10.1	32.4	89.9	15.9	16.7	**11.9**	**-11.9**	14,369 (8) 625.94***
Doctoral granting/High research productivity	0.4	1.3	99.6	17.0	16.2	**-11.4**	**11.4**	
Doctoral and professional	1.4	1.2	98.6	4.6	4.4	**-4.4**	**4.4**	
Master's granting-Large programs	3.7	21.4	96.3	30.9	30.4	**-5.5**	**5.5**	
Master's granting-Medium programs	5.8	11.3	94.2	10.0	10.1	1.1	-1.1	
Master's granting-Small programs	2.7	2.9	97.3	5.7	5.6	**-3.3**	**3.3**	
Baccalaureate granting-Arts & Sciences	17.2	25.6	82.8	6.8	7.8	**18.8**	**-18.8**	
Baccalaureate granting-Diverse fields	2.4	3.9	97.6	8.8	8.5	**-4.7**	**4.7**	
Other Carnegie Categories	0.0	0.0	100.0	0.4	0.4	-1.8	1.8	
Region of the United States								
U.S. Service schools	12.4	0.4	87.6	0.2	0.2	**2.4**	**-2.4**	50,410(9)
New England	1.4	0.9	98.6	4.4	4.2	**-9.5**	**9.5**	2961.66***
Mid East	7.3	7.9	92.7	6.9	6.9	**2.2**	**-2.2**	
Great Lakes	3.3	10.9	96.7	22.0	21.3	**-14.9**	**14.9**	
Plains	0.4	1.1	99.6	17.3	16.2	**-24.2**	**24.2**	
Southeast	15.9	63.7	84.1	23.1	25.7	**51.0**	**-51.0**	
Southwest	5.3	8.9	94.7	10.8	10.7	**-3.4**	**3.4**	
Rocky Mountains	0.6	0.7	99.4	8.1	7.7	**-15.4**	**15.4**	
Far West	4.9	5.4	95.1	7.2	7.1	**-3.8**	**3.8**	
Other U.S. jurisdictions	100.0	0.1	0.0	0.0	0.0	**5.4**	**-5.4**	
Institutional Locale								
City: Large	14.3	32.0	85.7	13.2	14.4	**29.6**	**-29.6**	50,410(11)
City: Midsize	6.5	13.1	93.5	12.9	13.0	0.3	-0.3	1954.75***
City: Small	4.5	12.9	95.5	19.0	18.6	**-8.5**	**8.5**	
Suburb: Large	4.5	7.2	95.5	10.5	10.2	**-5.8**	**5.8**	
Suburb: Midsize	19.5	11.6	80.5	3.3	3.8	**23.9**	**-23.9**	
Suburb: Small	2.8	0.8	97.2	1.9	1.8	**-4.5**	**4.5**	
Town: Fringe	2.2	1.9	97.8	5.5	5.3	**-9.1**	**9.1**	
Town: Distant	4.7	11.4	95.3	16.0	15.7	**-7.0**	**7.0**	
Town: Remote	1.5	3.4	98.5	15.0	14.2	**-18.2**	**18.2**	
Rural: Fringe	7.7	1.9	92.3	1.6	1.6	1.5	-1.5	
Rural: Distant	18.2	2.0	81.8	0.6	0.7	**9.0**	**-9.0**	
Rural: Remote	17.1	1.6	82.9	0.5	0.6	**7.7**	**-7.7**	
Undergraduate Enrollment Size								
Very Small (fewer than 1,000 undergraduates)	14.5	8.9	85.5	3.6	3.9	**15.1**	**-15.1**	
Small (1,000-2,500)	9.9	26.0	90.1	16.3	16.9	**14.2**	**-14.2**	50,510 (4)
Medium (2,500-4,999)	7.9	18.4	92.1	14.6	14.9	**5.8**	**-5.8**	719.13***
Large (5,000-9,999)	2.5	8.8	97.5	23.5	22.5	**-19.4**	**19.4**	
Very Large (10,000 or more)	5.8	38.0	94.2	42.0	41.7	**-4.5**	**4.5**	
Control								
Public	5.0	53.4	95.0	69.5	68.5	**-19.2**	**19.2**	50,410 (2)
Private not-for-profit	10.5	46.6	89.5	27.3	28.5	**23.6**	**-23.6**	617.32***
Private for-profit	0.0	0.0	100.0	3.2	3.0	**-10.3**	**10.3**	
Historically Black Colleges and Universities								
No	6.3	97.1	93.7	98.8	98.7	**-8.2**	**8.2**	50,372 (1)
Yes	14.1	2.9	85.9	1.2	1.3	**8.2**	**-8.2**	66.76***
Hispanic Serving Institution								
No	6.5	95.9	93.5	94.7	94.8	**2.8**	**-2.8**	50,372 (1)
Yes	5.1	4.1	94.9	5.3	5.2	**-2.8**	**2.8**	7.93**
Minority Serving Institution								
No	6.4	92.1	93.6	92.1	92.1	-0.1	0.1	50,372 (1)
Yes	6.5	7.9	93.5	7.9	7.9	0.1	-0.1	.02

Note: HERL = Highly Engaging Rural Learner; Col = Column; ASRs = Adjusted Standardized Residuals; *df* = degrees of freedom. Bold ASRs indicate ASR ≥ |2|; **p* < .05, ***p* < .01, ****p* < .001