

FAR Designation Data as an Early Indicator of Appalachian Student Success in an Educator Preparation Program at a West Virginia 2-Year State College

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Abstract: This quantitative based applied research study examined data collected from students who have withdrawn from or completed an educator preparation program (EPP) in a small rural public community college in West Virginia. This study compared student retention rates with Frontier and Remote (FAR) designation by home zip code. These data informed the research results and identified significance for using FAR data as an early indicator of at-risk students' needs on admission to an EPP. The study offered many opportunities expansion with a future study of the phenomenon using a mixed methods approach.

Keywords: Rural, Retention, At-Risk

Overview

This quantitative-based applied research project for program review examined collected data of students who had withdrawn from or have persisted through the completion of an enrolled educator preparation program at a small rural public community college in West Virginia. The goal of this program evaluation was to see if Frontier and Remote (FAR) designation could serve as a significant indicator that could prove instructive to school leaders for early intervention with students at-risk of early dropout from college.

According to statistics presented by the West Virginia Higher Education Policy Commission (WVHEPC), nearly one-half of all students enrolled in educator preparation programs in the state community college system withdraw before completing the first two program years of study (West Virginia Higher Education Policy Commission [WVHEPC], 2022). The focus of the study was to discover if data exists enabling Appalachian community college leaders to be more proactive in identifying at-risk student needs before or at the point of enrollment by examining FAR designation by zip code. (Espinoza & Genna, 2021; Lewine et al., 2019). Data collected in the last 20 years by the United States Census Bureau (USCB), the United States Department of Agriculture (USDA), and the United States Department of Health and Human Services (USDHHS) have pointed to the need to identify specific regions of the country as at-risk or FAR by zip code (USCB, 2010; USCB, 2022; USDA, 2019; USDHHS, 2013). The gap in the literature failed to consider the impact of college

SRATE Journal

A peer-reviewed publication of the
Southeastern Regional Association of Teacher Educators (SRATE)
2025, Volume 34, Issue 1
SRATE.org



students coming to college for the first time from homes located in federally designated at-risk areas or students residing in FAR-designated zip codes (USCB, 2010; USCB, 2022; USDA, 2019; USDHHS, 2013).

Background and Problem Statement

This study examined the problem of significant student attrition in EPPs which have recently reached problematic levels statewide and in the college participating in this study (WVHEPC, 2022). Data for the study came from a random sample of student records (N = 70) from the past three years of data from former students in a single educator preparation program. Criteria for selecting the campus to participate in the study included that the community college has a two-year educator preparation program for prospective classroom teachers and memorandums of understanding with one or more four-year institutions. Additionally, institutions needed to be in partnership with the original community college to provide an established articulation plan for students to continue pursuing their bachelor's degree in education with the partner school.

The community college selected for this research project represents a distinct population in West Virginia, a somewhat suburban yet rural region within West Virginia (WVHEPC, 2022). The selected campus serves student populations in the central Ohio River Valley region. Data from the campus that participated in the study contributed to a greater understanding of the findings more generally applicable to this state. West Virginia is the only state in the union entirely rural by community status and wholly located within the Appalachian Mountain Range (Chenoweth & Galliher, 2009; Cotton et al., 2017; Espinoza & Genna, 2021; Keefe, 1992; Reck et al., 1993).

Purpose and Form of the Study

The quantitative program review sought to uncover opportunities for school administrators, faculty, student advisors, and support services to develop early intervention plans for at-risk students through relevant connections between student attrition rates and FAR designation. By identifying at-risk students by zip code early in their college experience, school leaders have an opportunity to meet the needs of students and enact a proactive intervention plan from day one. Understanding student challenges by zip code has the potential to enable university leaders to find alternative ways to support the varying needs of the student population.

This study used data for program evaluation from the educator preparation program at a West Virginia community and technical college. The literature review examined student socioeconomic, academic, and other retention needs identified in a small state community college in rural West Virginia. The research for this study reviewed three years of student records (N=70) who have failed standardized benchmark tests, withdrawn prematurely from programs of study, or completed an educator preparation program of study.

Some examples of research in the literature provided a background for understanding the impact of Appalachian culture and the importance of acquired cultural capital leading to college student success. In 1992, the groundbreaking work of Susan Keefe and subsequent work by Reck et al. (1993) provided an alternative foundation to traditional understandings of Appalachian people and culture. The two seminal studies by Keefe (1992) and Reck et al. (1993) provided a framework for understanding Appalachian culture as a

unique ethnic minority and not a part of the greater white protestant majority. Anthropological theorist Susan Keefe was the first to expand the limits of the definition of ethnicity to include an understanding of Appalachian people as something more than a geographical collection of white people living in the Appalachian Mountains. Her approach defined Appalachian culture as more of a unique ethnic identity worthy of separate consideration (Keefe, 1992). Keefe understood Appalachian culture as an element of cultural capital important for understanding how individuals from that region interacted with others within and without the cultural sub-group (Keefe, 1992).

Efforts by the federal government in the last two Census cycles have made significant strides at recognizing distressed and at-risk areas of the country by county or zip code (USCB, 2010, 2022; USDA, 2019, 2022; USDHHS, 2013). One of these studies by the USDA (2019) identified communities as FAR and at-risk by zip code. Additional recognition of FAR communities as distinct people with specific needs in the works completed by the US Census Bureau (2010) and the USDHHS (2013) led researchers to have a more comprehensive understanding of Appalachian barriers to success as college community outsiders. The USDA Economic Research Service established the criteria for identifying American FAR regions by zip code (USDA, 2019, 2022). Changes in criteria for determining remoteness have provided opportunities to review education changes in rural and at-risk communities through a new filter of understanding (Armstrong & Zabak, 2014; Chenowith & Galliher, 2004; Gibbons et al., 2019; Lewine et al., 2019; Reck et al., 1993; Rendon et al., 2016).

Understanding Appalachian Ethnicity and Cultural Capital

Early work by Keefe (1992) and Reck et al. (1993) established a foundation for understanding individuals and people groups living in rural Appalachia as a unique ethnic identity. In her seminal study, Keefe (1992) addressed the sociological construct of ethnicity and challenged the traditional view of Appalachian culture. Literature indicated that part of a study of first-year college students considered the sum of cultural capital as a contributing factor for many students to be a barrier to success. Several additional studies have subsequently supported the consideration of elements of cultural capital for analyzing student success factors. In these studies, factors included family and home community value of higher education, responsibilities from home weighed against duties at school, and overall importance given by family and home to higher education (Chenoweth & Galliher, 2009; Cotton et al., 2017; Espinoza & Genna, 2021). Studies showed that the acquisition of cultural capital, or a lack thereof, can significantly impact students who belong to culturally marginalized ethnic and other minority groups. Until the early 1990s, researchers had not considered Appalachian people as a struggling ethnic minority experiencing the same challenges to college entry and retention as other unique ethnic minority populations (Keefe, 1992).

Keefe included factors in the initial study to compare seemingly disconnected populations by ethnic group identity, cultural affiliation, and ethnic association through an analysis of the impact of symbolic attachment (Keefe, 1992). Keefe's work provided a robust historical research framework for understanding why more recent attempts have begun to designate certain targeted regions as at-risk or FAR communities by county and zip code (USCB, 2010, 2022; USDA, 2019, 2022; USDHHS, 2013). The new federal designations help provide an understanding for college advisors, coaches, and instructors in methods to help

bridge the cultural gap for students coming to school from areas identified in the reports as at-risk or FAR communities. A study by Rendon et al. (2016) explores the understanding of minority student retention regardless of the designation of minority status. Government agencies have recognized the shared values, norms, and experiences within specific community pockets as unique minority cultural areas worthy of special consideration (USCB, 2010, 2022; USDA, 2019, 2022; USDHHS, 2013).

After her 1992 groundbreaking study, Keefe expanded her study in partnership with Uma Reck and Gregory Reck in 1993. This collaboration yielded additional work regarding the impact of perceptions of Appalachian students as a unique American cultural identity (Keefe, 1992; Reck et al., 1993). The second study attempted to examine the implications of Appalachian identity on teacher perceptions of Appalachian and non-Appalachian students and the subsequent repercussions on student success (Reck et al., 1993). In a theoretical first, the researchers suggested the possibility of Appalachian culture as a strong foundation for thinking about the students and surrounding communities as a unique ethnic group worthy of a distinct understanding and consideration (Reck et al., 1993). The second work in the seminal series provided a way to understand the impact of negative educator perceptions when working with Appalachian students (Reck et al., 1993). According to the study, this negative identity can sometimes lead Appalachian students to feel like outsiders in the college and university setting.

The Reck et al. (1993) study showed that the impact of this negative perception led even Appalachian professors to distance themselves from their own cultural identity as Appalachian people. Many education professionals do this to avoid the negative stigma associated with what the study identified as “Appalachian Ethnicity” (Reck et al., 1993, p. 120). The study indicated that in addition to the seminal studies, others show that when students experience cultural barriers like this, it is possible to consider this designation a specific ethnicity (Reck et al., 1993). This designation can contribute to understanding how school leaders identify students as at-risk for attrition from college as students with explicit non-cognitive and socio-academic known barriers to completion (Horton, 2015; Keefe, 1992; Reck et al., 1993).

Federal Government Attempts to Identify At-Risk Communities by Zip Code

Initial government efforts to identify at-risk communities by zip code began in 2010 by the United States Census Bureau and have continued through the most recent Census in 2020 (United States Census, 2010). The early attempts to identify these areas designated communities that might be considered at-risk at the county level by zip code. Census researchers used the home address to identify the county where students lived during high school and attempted to determine potential needs by county of residence (Lewine et al., 2019; United States Census, 2010). As the 2013 National Center for Health Statistics Urban-Rural Classification Scheme indicated, subsequent studies considered counties by community status into six categories to more effectively pinpoint at-risk areas (USDA, 2019, 2022; USDHHS, 2013).

Counties are rarely homogeneous, with pockets of rural and urban at-risk neighborhoods more easily identifiable by zip code. Even within a zip code, there can be a diversity of outcome potential but deducting status by zip code provided a more accurate understanding of population outcomes and risks (USDA, 2019, 2022; USDHHS, 2013). Once

identified, students in cultural and ethnic minority groups need intervention programs that acknowledge the needs of the minority group. The struggling Appalachian minority entering college for the first time from at-risk communities needs to have institutional-level program interventions and remediation steps that recognize and affirm the value of the unique cultural heritage of new college students. School leadership is responsible for responding to students' needs by understanding the internal personal factors born through established ethnic and cultural norms, which may be barriers to program retention (Romero et al., 2020).

Research Project Design Sampling Procedures and Data Collection Sources

The research design for this research project used a quantitatively applied research model for program evaluation. The data collected for this study is of sufficient size, exceeding the minimum sample size of (N=51) records established by the G*Power Analysis for a t-test measuring the difference between two independent means. Sampling for this study included a total number of student records analyzed for the study [(N=70); (n=35) students completed and (n=35) students withdrawn]. The college which participated in this research project is in an area not generally considered to have significant numbers of FAR populations by zip code, as the college is in the suburbs of a small rural West Virginia city. However, some zip code data included in the study reflected some measure of a FAR-designated status. Statistical analysis used an a priori analysis for this research project and determined a rigorous sample size for the study was (N=51) represented by (power = .80; effect = .5; α = .05). The final sample size (N=70) exceeds the minimum number required by G*Power Analysis. None of the data collected for the study are from current students at the participating university.

Statistical Test

The research question used to examine whether a student's home zip FAR designation statistically impacts student retention by completing the educator preparation program. Analysis of the research question used an independent sample t-test to determine if there is any impact on a home location identified as a FAR community and student attrition outcomes. Results from this analysis provided insight into the significance of student needs for attrition prevention based on zip code data. The conversion of student home zip codes to the FAR level one data (fr1pop) designated by the United States Department of Agriculture served as the dependent variables for this question (2022). Using fr1pop data helps ensure student data's anonymity by eliminating student home zip codes. Using fr1pop data by zip code allows the dependent variable to show the composite population by zip code designated in the FAR database for a point of comparison based on zip code demographics. Numbers from this section reflect the population demographics indicated by FAR designations in communities where no more than 50,000 residents live at least one hour or more from another area with at least 50,000 residents (United States Department of Agriculture, 2022). The independent variable for this regression analysis included records indicating the student's completion of the first two years of study or withdrawal from the educator preparation program (expressed by 1, 0).

Research Findings

The categorical dependent variable for this question is student retention, and the independent scaled variable is the FAR concentration by zip code as identified in the federal database. The dependent variable for the research question compared retention rates with FAR concentration by zip code as the independent variable. The research question asked: To what extent is there a statistically significant difference between student outcomes (retention or withdrawal from a two-year program of study) among students by zip code (FAR designation)?

Data for this question included the fr1pop designation by zip code in the federal database (United States Department of Agriculture, 2022). The second variable, a categorical variable, included student retention outcomes. Students who completed the first two years of the educator program were identified by the categorical number one (1), and students who did not complete the first two years of the program were identified by the number zero (0). All data for this research question were analyzed by statistical software. The null hypotheses for this research question was:

H₀3. There is no statistically significant relationship between student home zip code (FAR designation) and student retention through the successful completion of a two-year program of study.

The data for the research question used a paired sample one-tail t-test to see if student residency in a FAR region identified by fr1pop designation (by zip code) had a statistically significant impact on student retention. The dependent variable in this question was the scale numbers indicated by the fr1pop designation. The second dependent variable consisted of the categorical variable representing student retention (1) or withdrawal (2) from a two-year program of study. The paired sample t-test required a sample size of only 27 sets of associated data points at a .80 confidence interval. Data analysis showed that residency in fr1pop designated FAR zip codes significantly impacted student retention. Data regarding fr1pop values ($M = 42614.89$, $SD = 209207.25$) and completion data ($M = .5$, $SD = .504$); ($t[69] = .70$, $p = .046$). The result of these data analyses rejects the null hypothesis for the research question.

Contributions to Existing Literature

The study contributed to the existing literature by considering quantifiable factors related to enrollment data as early indicators for the needs of students potentially at risk of premature withdrawal from an educator preparation program by examining FAR designation by zip code as a potential early indicator of student retention or withdrawal from an educator preparation program. Considering these requested data points includes the first-time examination of student home community data (fr1pop) as a potential indicator of student needs upon college admission. Including other traditional factors such as GPA, college entrance exam scores, and gender contributed to developing a broader understanding of the attrition phenomena in West Virginia community and technical colleges.

The findings for the research question were consistent with existing literature. One side of the literature indicates that many factors for student retention show identical results regardless of rural or urban status (Lewine et al., 2019). Evidence exists demonstrating a sociological phenomenon unique to the Appalachian experience shared by those living in more remote regions of the mountains (Holden et al., 2021; Kalkbrenner et al., 2019; Keefe,

1992; Reck et al., 1993). The data for the question, however, these data were limited to the application of national FAR designation to student retention data. There were no existing studies in the literature to consider the impact of aspects of FAR designation on student performance or retention rates in the West Virginia community and technical colleges. Additional qualitative factors available for consideration were beyond the scope of the limitations of this present study. The statistical analysis results of this research question were that the study narrowly rejected the null hypothesis. FAR status did indicate a small yet statistically significant relationship between zip code and retention rates.

Implication for Future Study

There remains opportunity for future study expanding the analysis beyond the limited fr1pop data points. Agencies within the federal government now have more than one way to identify communities with at-risk by county or FAR designations by zip code (USCB, 2010, 2022; USDA, 2019, 2022; USDHHS, 2013). The findings encourage future studies to understand the Appalachian college experience in EPPs based on multiple factors. A mixed methods approach could free researchers to consider both quantitative and qualitative factors contributing to decisions relevant to understanding student retention and attrition in EPPs (Creswell & Creswell, 2018; Harrison et al., 2020; Kanshik & Walsh, 2019).

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