

Is 'Rural' a Risk Factor for Freshmen-to-Sophomore Attrition in a College of Agriculture?

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Introduction

In 2015, 9.7 million students were enrolled in rural public schools (Byun, Meece, & Agger, 2017; Johnson, Showalter, Klein, & Lester, 2014; U.S. Department of Education, 2015). Rural students encounter unique challenges in accessing and completing higher education including a lower likelihood of enrolling in college, socioeconomic hardship, lower parental education and expectations, lack of academic preparation, lower levels of persistence, and difficulty transitioning to college (Byun, Irvin, & Meece, 2012; Byun, Meece, & Irvin, 2012; Byun et al., 2017). Rural students who pursue higher education often experience additional challenges in adapting to both the university and to more urbanized cultures, placing them at greater risk of non-retention, especially early in their academic careers (Schonert, Elliot, & Bills, 1991). Despite the large rural student population, there is a lack of research on rural students' persistence in higher education, especially between the freshman and sophomore years (Schonert et al., 2001). Priority 3 of the American Association for Agricultural Education's research agenda encouraged agricultural educators to determine factors affecting students' decisions to enter and complete postsecondary agriculture programs (Stripling & Ricketts, 2017).

The purpose of this study was to determine if rural students enrolled in a college of agricultural, food and life sciences (AFLS) were more at risk for non-retention between their freshmen and sophomore year in comparison to students from non-rural areas. The following research objectives guided the study: 1) to determine the risk ratio for non-retention for rural and non-rural human environmental sciences (HESC) majors, and 2) to determine the risk ratio for non-retention for rural and non-rural agriculture majors.

Methodology

After IRB approval, the University of Arkansas Office of Institutional Research provided us with a data file containing student demographic (major and home county) and freshmen-to-sophomore retention data (retained or not retained) for all in-state, new freshmen entering AFLS between 1998 and 2015 ($N = 2639$). We used the Rural-Urban Continuum Code (USDA-ERS, 2013) to classify students as either rural or urban based on their home ZIP code. We analyzed data using cross tabulations and risk ratios. According to Osborne (2006), a risk ratio is the percentage incidence of an outcome for one group (PI_1) relative to the percentage incidence of an outcome for a second group (PI_2). In the context of this study, the two groups were rural (PI_1) and non-rural (PI_2) students and the outcome of interest was non-retention for the sophomore year. We tested risk ratios for statistical significance at $p < .05$. Finally, because of previously identified differences between agriculture and HESC students in AFLS (Estes, Estes, Johnson, Edgar, & Shoulders, 2016)), we ran separate analyses for HESC and agriculture majors.

Results

Among HESC majors ($n = 807$), 13.14% of rural students did not return for their sophomore year compared to 14.72% of non-rural students (Table 1). The risk ratio of 0.89 was not significantly different from 1.0, indicating no difference in the relative risk of freshman-to-sophomore non-retention for rural versus non-rural HESC majors.

Table 1. *Frequencies, Percentages and Risk Ratios for Non-Retention of HESC Majors*

Home	Non-Returners (f)	Returners (f)	Total (f)	Returners (%)	Risk Ratio	CI ₉₅ <u>Risk Ratio</u>		Z
						LL	UL	
Rural	23	152	175	13.14	0.89	0.58	1.37	0.52 ^{NS}
Non-Rural	93	539	632	14.72				

^{NS} = Not significant ($p > .05$)

Among agriculture majors ($n = 1832$), 12.94% of rural students and 17.98% of non-rural students did not return for their sophomore year (Table 2). The risk ratio of 0.72 was statistically significant ($p < .01$) and indicated rural agriculture majors were only 72% as likely to be non-returners compared to non-rural agriculture majors. Thus, rural agriculture majors were more likely to return as sophomores than were non-rural agriculture majors.

Table 2. *Frequencies, Percentages and Risk Ratios for Non-Retention of Agriculture Majors*

Home	Non-Returners (f)	Returners (f)	Total (f)	Non-Returners (%)	Risk Ratio	CI ₉₅ <u>Risk Ratio</u>		Z
						LL	UL	
Rural	73	491	564	12.94	0.72	0.56	0.92	2.64**
Non-Rural	228	1040	1268	17.98				

** $p < .01$

Conclusions

Previous research indicates that students from rural areas often have trouble in transitioning to college (Byun, Irvin, & Meece, 2012). However, our study found a significant advantage in freshman-to-sophomore retention for rural agriculture majors and no significant difference in retention for rural HESC majors. We conclude rurality is not a risk factor for non-retention among AFLS students and is actually advantageous in the retention of agriculture majors.

Implications/Recommendations/Impact on Profession

Our results do not support previous studies concerning rurality and retention (Byun, Irvin, & Meece, 2012; Byun, Meece, & Irwin, 2012; Byun et al., 2017). However, because these studies were conducted across academic colleges, while our study was conducted within a college of agriculture, the possibility exists that rural students have an affinity for colleges of agriculture that both draws them to these colleges (Estes et al., 2016) and promotes retention. This may be particularly true for rural agriculture students and may be the result of a self-identity with agriculture and agricultural careers (Shoulders & Myers, 2011). In addition, faculty and staff in AFLS and similar colleges may hold values and norms more consistent with those of rural students, decreasing their difficulty in adapting to the college environment (Shonert et al., 1991). We recommend additional research to test these hypotheses.

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