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Catherine W. Shoulders  
*University of Arkansas*

Leslie D. Edgar  
*University of Georgia*

Donald M. Johnson  
*University of Arkansas, dmjohnso@uark.edu*

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## The Relationship between Student Admissions Data and Six-Year Degree Completion

**Catherine W. Shoulders**

*University of Arkansas*

**Leslie D. Edgar**

*University of Georgia*

**Donald M. Johnson**

*University of Arkansas*

*This study examined the six-year bachelor's degree graduation status of freshmen ( $N = 1,839$ ) entering the Dale Bumpers College of Agricultural, Food and Life Sciences (AFLS) between 2001 and 2010. The overall graduation rate was 64%, including 23% who had transferred out of AFLS. Multinomial logistic regression was used to determine if student entry data differentiated between graduates and non-graduates and between AFLS and non-AFLS graduates. High school GPA (HSGPA), first-generation status, and year of admission to the university significantly ( $p < .001$ ) differentiated between graduates and non-graduates. Each standard deviation increase in HSGPA was associated with a 224% increase in the relative odds of graduating. Students entering each subsequent year had a 10% increase in the relative odds of graduating. Being a first-generation student decreased the relative odds of graduating by 52%. Year, major (agriculture or human environmental sciences), and composite ACT score (CACT) significantly ( $p < .001$ ) differentiated between AFLS and non-AFLS graduates. Students entering each subsequent year had a 16% increase in the relative odds of being AFLS graduates, while agriculture majors were about twice as likely to be AFLS graduates. Each standard deviation increase in CACT score was associated with a 26% decrease in the relative odds of being an AFLS graduate.*

*Keywords:* ACT score, college students, graduation rates, high school GPA, student retention

### Introduction

The need for more graduates with degrees in agriculture, food, and natural resources (AFNR) has been well documented. In 2015, the USDA released figures showing an estimated 34,500 AFNR graduates available each year to fill 57,900 annual AFNR job openings, resulting in a 40% annual shortage of graduates (Goecker, Smith, Fernandez, Ali, & Theller, 2015). In 2009, the

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Direct correspondence to Donald M. Johnson at dmjohnso@uark.edu

National Research Council called for changes in higher education to reduce the shortage of qualified AFNR graduates. In 2014, the STEM Food and Ag Council sounded the alarm again, “We are not producing nearly enough . . . professionals to meet industry demand—which continues to grow year after year” (p. 9). In 2016, the American Association of Agricultural Educators (AAAE) stated in its National Research Agenda, “The range of issues and subject matters important to agriculture has broadened, and the educational system to provide skilled individuals to fill the needed occupations has scrambled to keep pace” (Roberts, Harder, & Brashears, 2016, p. 30). While recruitment efforts have assisted in reducing the gap between workforce needs and available human capital (Roberts et al., 2016), stalled graduation rates continue to temper increases in recruitment (NRC, 2009). The number of students recruited to pursue AFNR degrees has increased. However, “The number of students earning degrees in agriculture has been relatively stable since 2000” (NRC, 2009, p. 26). Efforts to understand the gap between enrollment in AFNR degree programs and graduation from AFNR degree programs can assist institutions of higher education in taking action to improve graduation rates.

The reasons students choose to depart from their initial majors or institutions are numerous. Tinto’s (1993) theory of student departure posits that student characteristics determined before college, such as gender, race, parental education, socioeconomic status, high school achievement, and standardized test scores, interact with the social and academic systems of an institution. These interactions, occurring via the student’s day-to-day experiences, ultimately lead to the student’s decision to remain enrolled until graduation or leave the institution. In four-year institutions with more than one college, the college in which a student is enrolled can impact his or her experiences, which then interacts with his or her pre-college characteristics (Wohlgemuth et al., 2007). An examination of how each of these pre-college factors influences AFNR students’ likelihood to graduate can shape university retention efforts to mitigate the effects of specific factors that put students at-risk of dropping out (Astin & Oseguera, 2005; DeAngelo, Franke, Hurdado, Pryor, & Tran, 2011).

Identifying variables predicting college graduation has been the subject of numerous studies, some with conflicting findings. In 2005, Astin and Oseguera studied graduation rates from 3,700 four-year institutions and found that 57.6% of freshmen had earned a bachelors’ degree within six years. DeAngelo et al. (2011) found that the six-year graduation rate had increased to 61.2% and that women graduated at a higher rate (63.6%) than did males (58.1%). They also found that first-generation college students graduated at a lower rate (50.2%) than other students who had at least one parent who had attended college (64.2%) and that students with higher high school GPAs and higher standardized test scores were more likely to graduate than their less academically prepared peers.

Wohlgemuth et al. (2007) found that females, students receiving financial aid, and students entering the College of Agriculture were more likely to graduate within six years with a

bachelor's degree from Iowa State University. The researchers found that while ACT scores predicted four-year graduation rates, they did not predict five- or six-year graduation rates.

Pike, Hansen, and Childress (2014) sampled 4,006 students at one Midwestern institution, examining their pre-college characteristics and degree status. They found that first-generation students were less likely to have graduated within six years of initial enrollment. Students with higher SAT scores and those with higher high school class percentile ranks were more likely to have graduated within six years.

Stebbleton and Soria (2013) examined self-perceived academic obstacles encountered by first-generation college students at six large, public research universities. First-generation students rated job, family, and other responsibilities; weak English, math, and study skills; and feelings of depression or stress as significantly higher obstacles to graduation than did non-first-generation students. In addition, Oldfield (2007) posited that first-generation students bridge two cultures and often find higher education to be "a rarified and often mystifying culture" (p. 2) with unfamiliar customs, rules, and values. Oldfield (2007) recommended increased institutional efforts to assist first-generation students in acquiring the cultural capital necessary for academic and social success.

Mau (2016) tracked 71,405 students in a Midwestern state pursuing degrees in science, technology, engineering, or math (STEM) for five years to identify characteristics that led to degree attainment. The five-year graduation rate within the STEM degree programs was 19.2%. Males graduated at a significantly higher rate than females. Additionally, significantly more transfer students completed degrees than first-time freshmen. Ethnicity, ACT score, and high school GPA significantly predicted STEM degree completion.

The percentage of out-of-state freshmen entering the University of Arkansas increased from 30.5% in 2006 to 52.3% in 2016 (University of Arkansas, n.d.a). Previous research indicates out-of-state students were less likely to be retained, because of a propensity to transfer to institutions in their home states (Campbell & Mislevy, 2013). Thus, student residency classification (in-state vs. out-of-state) was included as a potential predictor in this study.

The University of Arkansas has a longstanding goal of increasing its six-year graduation rate (Hale, Graham, & Johnson, 2009), with a current goal of improving from 62.5% in 2015 to 70% by 2021 (Jones, 2015). The university's six-year graduation rate increased by approximately 0.78% per year between 1998 and 2010 (University of Arkansas, n.d.b). Because the university goal is incremental improvement in graduation rates over time, year of admission was included as a potential predictor of six-year graduation.

The Dale Bumpers College of AFLS has contributed to this overall growth with an overall graduation rate increase of 15.9%. The college houses majors in the agricultural disciplines, as well as a School of Human and Environmental Sciences (HES), leading to the convergence of

two student groups within one college. Johnson, Shoulders, and Edgar (2018) found that HES students comprised approximately one-third of AFLS enrollment, and that while females constituted slightly over half of the agriculture majors, they made up 94% of the HES majors. Additionally, they found that HES students were 39% more likely to transfer out of AFLS as sophomores than were agriculture students. The differences between these two groups of students warrant examination of majoring in either HES or agriculture as a predictor of six-year graduation rate.

This study was conducted as part of the university effort to assess annual progress toward its retention and graduation goals. By tracking six-year graduation rates of AFLS students by year of admission and identifying factors associated with graduation versus non-graduation, the Dale Bumpers College of AFLS can both assess its contribution to the university's six-year graduation goals and tailor intervention efforts to meet the needs of students at risk of non-graduation. Factors examined as potential predictors of six-year graduation rate included year of admission (Jones, 2015), high school GPA (DeAngelo et al., 2011; Mau, 2016), composite ACT score (Mau, 2016), gender (Mau, 2016; Wohlgemuth et al., 2007), major, Pell Grant eligibility ([as students eligible for Pell Grants have an established financial need] Wohlgemuth et al., 2007), residency (Campbell & Mislevy, 2013), and first-generation college student status (Pike et al., 2014).

### **Purpose and Objectives**

The purpose of this study was to determine if university admissions data could be used to predict six-year graduation for first-time, full-time freshmen enrolling in the Dale Bumpers College of Agricultural, Food and Life Sciences (AFLS) at the University of Arkansas from 2001 to 2010. Specific objectives were to:

- 1) Determine the six-year degree status (graduated, enrolled, or not enrolled) of first-time, full-time freshmen admitted to the AFLS from 2001 to 2010;
- 2) Determine if selected variables (year of admission, high school GPA, composite ACT score, gender, major, Pell Grant eligibility, residency, and first-generation college student status) could differentiate between students graduating (in any major) and students not graduating from the University of Arkansas for first-time, full-time freshmen entering AFLS from 2001 to 2010; and
- 3) Determine if selected variables (year of admission, high school GPA, composite ACT score, gender, major, Pell Grant eligibility, residency, and first-generation college student status) could differentiate between AFLS graduates and non-AFLS graduates for first-time, full-time freshmen entering AFLS from 2001 to 2010.

## Methods

The population for this study included all AFLS students entering a land-grant university as new, first-semester, full-time freshmen ( $N = 1,839$ ) from 2001 to 2010. After institutional IRB approval, the Office of Institutional Research (OIR) provided the researchers with a data file containing the following admissions data for each student: year of admission, high school GPA (HSGPA), composite ACT score (CACT), major (categorized as human environmental sciences or agriculture), Pell Grant eligibility, and first-generation college student status. The OIR also supplied matched data for each student's sixth-year graduation outcome (graduated; enrolled, but not graduated; or not enrolled) and the student's undergraduate college (for graduates and currently enrolled students) or the last college of enrollment (for students no longer enrolled). Complete admissions data were available for 1,672 (90.9%) total students and for 1,176 (92.0%) of the 1,272 students who graduated in six years. Descriptive statistics are reported for all ( $N = 1,839$ ) students. Logistic regression models were based on complete cases after removal of outliers and leverage points. The dataset was deemed valid and reliable because it consisted of official university records supplied by the OIR.

Descriptive statistics and logistic regression were used to analyze the data. According to Peng, Lee, and Ingersoll (2002), "Logistic regression is well suited for describing and testing hypotheses about relationships between a categorical outcome variable and one or more categorical or continuous predictor variables" (p. 4). To meet the study objectives, two logistic regression models were estimated. The first model sought to identify variables differentiating between six-year graduates and non-graduates. The second model sought to differentiate between sixth-year AFLS graduates and students transferring to and graduating from other undergraduate colleges at the university (non-AFLS graduates).

Prior to logistic regression analyses, the continuous variables (CACT and HSGPA) were converted to  $z$  scores as recommended by Osborne (2015). Year of admission (Year) was converted to a 10-point basis (2001 = 1 to 2010 = 10). Values for all binary categorical variables were coded as either zeros or ones (Table 1).

**Table 1. Variable Coding for Logistic Regression**

Variable	Coding
Gender	Female = 0 Male = 1
Major	Human environmental sciences = 0 Agriculture = 1
Pell Grant eligible	No = 0 Yes = 1
First-generation college student	No = 0 Yes = 1
Arkansas resident	No = 0 Yes = 1

Variable	Coding
HSGPA	Converted to $z$ scores
CACT	Converted to $z$ scores
Year of admission	2001 = 1 to 2010 = 10
Six-year graduation status	Not graduated = 0 Graduated = 1
College of graduation	0 = Non-AFLS 1 = AFLS

The assumptions of logistic regression differ from those of ordinary least squares (OLS) regression. Logistic regression, a non-parametric method, does not require the OLS assumptions of linearity, normality, and homoscedasticity (Osborne, 2015). The two primary assumptions of logistic regression are independence of error terms and linearity of continuous independent variables and log odds (Peng et al., 2002). Independence of error terms was assumed because each observation in the dataset represented one unique student. Linearity of the three continuous independent variables (HSGPA, CACT, and year of admission) and their respective log odds was assessed using procedures recommended by Field, Miles, and Field (2012). The results indicated the linearity assumption was not violated.

The dataset was examined for outliers and leverage points by plotting and testing the significance of the standardized residuals as recommended by Osborne (2015). Sixty-six observations (3.4%) were removed from the dataset leaving 1,606 observations for analysis. Analysis of the deleted observations indicated these students were primarily a unique subgroup of non-graduates, characterized by above-average CACTs ( $z = 0.35$ ) and HSGPAs ( $z = 0.87$ ).

## Results

Of the 1,839 new, first-semester freshmen entering AFLS from 2001 to 2010, a majority were female (69.0%) and had majors in agriculture (62.1%), as opposed to human environmental sciences (37.9%). Females comprised a slight majority (53.2%) of agriculture majors and the vast majority (94.7%) of human environmental sciences majors.

About one-fourth of freshmen were from out-of-state (23.3%) and were first-generation college students (24.0%). Almost one-fourth of freshmen were first-generation college students (24.0%), and almost one-fifth were eligible for Pell grants (19.1%). The students had a mean HSGPA of 3.55 ( $SD = 0.44$ ), with a range of 1.42 to 5.0. HSGPAs greater than 4.0 were due to schools' use of weighted GPA calculations. The mean CACT score was 24.70 ( $SD = 3.71$ ), with a range of 15.0 to 35.0.

For new, first-semester freshmen entering AFLS between 2001 and 2010, the overall six-year graduation rate was 64.0% (Table 2). Over one-third (36.2%) of these graduates had transferred out of AFLS and graduated from other colleges. Of the remaining students, 44 (2.4%) were still

enrolled as undergraduates, and 619 (34.7%) had not received a degree and were not enrolled six years after entering AFLS as freshmen.

**Table 2. Overall Six-Year Retention and Graduation Rates for New Freshmen, 2001 to 2010**

<b>Outcome</b>	<b>F</b>	<b>%</b>
Graduated (total)	1176	64.0
AFLS	750	40.8
Non-AFLS	426	23.2
Enrolled (total)	44	2.4
AFLS	18	1.0
Non-AFLS	26	1.4
Not enrolled (total)	619	33.7

Overall, six-year graduation rates trended upward for new freshmen entering AFLS from 2001 to 2010, increasing from 58.8% to 67.5%. Year of admission had a moderate correlation (Davis, 1971) with six-year graduation rates ( $r = .34$ ). Because of this relationship, year of admission was retained as a potential predictor in logistic regression analyses.

The correlations between year of admission and HSGPA ( $r = .01$ ) and CACT ( $r = .06$ ) were negligible (Davis, 1971). The point-biserial correlations between year of admission and gender ( $r_{pb} = -.01$ ), Pell grant eligibility ( $r_{pb} = .01$ ), and majoring in agriculture were negligible ( $r_{pb} = -.10$ ), while the correlations between year of admission and in-state status ( $r_{pb} = -.14$ ), and first-generation status ( $r_{pb} = .17$ ) were low (Davis, 1971).

### **Model 1: Graduates (Any Major) vs. Non-Graduates**

The first stepwise logistic regression model compared students graduating in six years in any major (graduates,  $n = 1,078$ ) with students not graduating in six years (non-graduates,  $n = 528$ ), including students still enrolled. Graduates were entered as the reference group in this analysis. Thus, positive logistic regression coefficients and odds ratios (*ORs*) greater than one for a specific variable indicated that increases in the variable were associated with increased odds of being a graduate as opposed to being a non-graduate, with all other variables held constant. Negative coefficients and *ORs* less than one indicated that increases in the variable were associated with decreased relative odds of being a graduate.

The global null hypothesis that no logistic regression coefficient was significantly different from zero was rejected,  $\chi^2(2) = 356.18$ ,  $p < .001$ , pseudo- $R^2 = .29$ . Three variables entered into the model were significant at the .001 *alpha* level: HSGPA, first-generation student status, and year of admission (Table 3).



**Table 3. Results of Stepwise Logistic Regression Analyses Predicting Six-Year Graduation, Any Major, 2001 to 2010**

	Cumulative Pseudo- $R^2$	$\beta$ (SE)	$CI_{95}$ for Odds Ratio		
			Odds Ratio	Lower Limit	Upper Limit
Intercept		0.55 (0.15)***			
HSGPA <sup>a</sup>	.26	1.18 (0.07)***	3.24	2.81	3.74
First-generation student	.28	-0.74 (0.14)***	0.48	0.36	0.63
Year of admission	.29	0.09 (0.02)***	1.10	1.05	1.15

Note: <sup>a</sup>Converted to  $z$  scores. <sup>b</sup>Coded as no = 0 and yes = 1. <sup>c</sup>Coded as 2001 = 1 to 2010 = 10. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

HSGPA was the first predictor to enter into the equation, resulting in a pseudo- $R^2$  of .26. The  $OR$  of 3.24 indicated each one standard deviation ( $z = 1.0$ ) increase in HSGPA was associated with a 224% increase [ $(OR - 1) * 100$ ] in the odds of being a graduate as compared to a non-graduate. First-generation entered second, with a negative regression coefficient and a pseudo- $R^2$  increase of .02. The  $OR$  of 0.48 indicated that being a first-generation college student decreased the relative odds of being a graduate by 52% [ $(OR - 1) * 100$ ]. Year of admission was entered last and provided a pseudo- $R^2$  increase of .01. The  $OR$  of 1.10 indicated students entering in each subsequent year had a 10% increase in the relative odds of being a graduate as compared to students entering in the previous year.

The logistic regression model consisting of these three predictors correctly classified 73.8% of all observations into their correct six-year outcome (graduate or non-graduate), Somers  $D = .55$ . The model was more accurate in predicting graduates (89.1% correct) than in predicting non-graduates (42.6% correct).

### Model 2: AFLS Graduates vs. Non-AFLS Graduates

Of the 1,078 graduates, 63.8% graduated from AFLS (AFLS graduates), while 36.2% had transferred and graduated from a different college (non-AFLS graduate) at the University of Arkansas. The second stepwise logistic regression analysis was conducted to determine if the predictor variables could differentiate between these two groups. AFLS graduates were used as the reference group, so, again, positive regression coefficients and  $OR$ s greater than one indicated increases in the predictor variables were associated with increased odds of being an AFLS-graduate as opposed to a non-AFLS graduate, with all other variables held constant.

The global null hypothesis that no logistic regression coefficient was significantly different from zero was rejected,  $\chi^2(1) = 34.16$ ,  $p < .001$ , pseudo- $R^2 = .09$ . Three variables entered into the model and were significant at the .001  $alpha$  level: year of admission, major, and CACT (Table 4).

**Table 4. Results of Stepwise Logistic Regression Analyses Predicting Six-Year AFLS vs. Non-AFLS Graduates**

	Cumulative Pseudo- $R^2$	$\beta$ (SE)	Odds Ratio	CI <sub>95</sub> for Odds Ratio	
				Lower Limit	Upper Limit
Intercept		-0.69 (0.18)***			
Year of admission <sup>a</sup>	.04	0.14 (0.02)***	1.16	1.10	1.21
Major <sup>b</sup>	.07	0.78 (0.14)***	2.19	1.66	2.88
CACT <sup>c</sup>	.09	-0.31 (-0.07)***	0.74	0.64	0.84

Note: <sup>a</sup>Coded as 2001 = 1 to 2010 = 10. <sup>b</sup>Major coded as 0 = human environmental sciences and 1 = agriculture. <sup>c</sup>Converted to  $z$  scores. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Year of admission was the first predictor to enter into the equation, resulting in a pseudo- $R^2$  of .04. The *OR* of 1.16 indicated each subsequent year of entry increased the relative odds of being an AFLS graduate by 16% over graduates entering in the previous year. Major entered second resulting in a pseudo- $R^2$  increase of .03. Students entering AFLS as agriculture majors were slightly more than twice as likely (*OR* = 2.19) to be AFLS graduates as were students entering as human environmental sciences majors. CACT entered last, with a negative regression coefficient, and resulted in a pseudo- $R^2$  increase of .02. The *OR* of 0.74 indicated a one *SD* ( $z = 1.0$ ) increase in CACT was associated with a 26% decrease in the relative odds of being an AFLS graduate.

The logistic regression model consisting of these three predictors correctly classified 65.5% of all graduates into the correct category (AFLS graduate or non-AFLS graduate), Somers' *D* = .32. The model correctly predicted 67.3% of AFLS graduates and 54.8% of non-AFLS graduates, showing a predictive bias in favor of AFLS graduates.

### Discussion and Summary

Tinto (1993) and Wohlgemuth et al. (2007) outlined the importance of understanding how student characteristics and college experiences influence student success. This study examined the six-year graduation status of new, first-semester freshmen ( $N = 1,839$ ) entering a land-grant university's College of Agricultural, Food, and Life Sciences (AFLS) between 2001 and 2010. Overall, six-year graduation rates trended upward about 10% for new freshmen entering AFLS majors within the ten years included in this study. Year of admission had a moderate positive correlation (Davis, 1971) with six-year graduation rates. The overall graduation rate for students was 64%, including 23% who had transferred out of AFLS.

Findings indicated that high school GPA, first-generation student status, and year of admission were significant predictors of six-year graduation rate. Students with higher GPAs were more likely to graduate, as were students who were admitted later (each subsequent year increasing the likelihood of graduating by 10%); conversely, being a first-generation college student decreased the relative odds of graduating by 52%.

These findings lead to two divergent strategies for improving six-year graduation rates: improved students or improvements within the university. The first strategy is to emphasize the recruitment of high-GPA freshmen with college-educated parents who are most likely to graduate. Such an approach would focus on increasing the quality of entering students and less on improvement of the college and university into which these students enter. The second strategy is more difficult but more consistent with this university's land-grant mission. This strategy would entail using these results to identify and provide additional academic assistance and needed services to lower-GPA and first-generation students designed to help overcome potential barriers to graduation. Emphasis on this strategy would necessarily focus on improvements within the college and university, so these students are better served.

Student services are currently available at this land-grant university within both AFLS and the overall university to assist students with academic, study, and time-management issues. Thus, efforts in this area should focus on better identifying students who can benefit from these services and motivating them to participate. However, few if any formal services are available specifically designed to assist first-generation students in developing the cultural capital (Oldfield, 2007) necessary for both academic success and social integration into the college and university. Development of effective student services for first-generation students should be a priority for both AFLS and the university.

Findings also indicated that agriculture majors were slightly more than twice as likely to graduate from AFLS as students who entered as HES majors. Students entering the university as HES majors were more apt to transfer to a different major outside AFLS and graduate from a different college within the university. Additionally, students who were admitted to the university later were more likely to graduate from AFLS, with each subsequent year increasing the likelihood by 16%. Alternately, students with higher CACT scores were 26% less likely to graduate from AFLS but instead graduated from a different college within the university.

Although the specific reasons agriculture majors were more likely than human environmental sciences majors to graduate from AFLS could not be determined from the data, the authors posit this may be a result of agriculture students' backgrounds and self-identity with agriculture and rural life (Shoulders & Myers, 2011). Additional research in this area is definitely warranted, as the potential for HES students to feel "out of place" within a college of AFLS may contribute to their greater likelihood to pursue other majors. In the meantime, human environmental sciences faculty and administrators should open a dialogue with undergraduate students to identify factors related to their increased likelihood to transfer out of AFLS.

The finding that students with higher CACT scores were relatively more likely to be non-AFLS graduates also warrants further study. Future research should focus on why these students leave AFLS and into which colleges and majors they transfer. In the meantime, AFLS faculty and administrators should more fully engage these students in the college honors program, with

faculty mentors, and in undergraduate research experiences in an effort to retain these high-ability AFLS students (Edgar, Whitehead, & Davis, 2017).

Residency was not a significant predictor of six-year degree completion or completion of an AFLS degree; both Arkansas and non-Arkansas students were equally likely to graduate and to receive AFLS degrees. This is an important finding, given the increasing percentage of out-of-state freshmen entering the University of Arkansas.

Improving six-year graduation rates has been a longstanding priority for both the university and for AFLS (Hale et al., 2009). These results indicate relative year-to-year improvements in both overall six-year graduation rates and AFLS-retained graduation rates over the ten-year period, despite relatively little change in either HSGPA or CACT scores. Edgar, Johnson, Graham, and Dixon (2014) reported no significant changes in selected AFLS course GPAs between 2000 and 2012, providing some evidence that increased graduation rates were not due to grade inflation. Thus, current university and AFLS retention efforts appear to be working without changes in student academic characteristics or achievement.

Although the results of this study are generally consistent with findings from previous studies (DeAngelo et al., 2011; Mau, 2016; Pike et al., 2014; Wohlgemuth et al., 2007), caution should be exercised in generalizing these results to other students and universities. Other researchers are encouraged to conduct similar studies at their own universities to determine specific factors identifying students potentially at-risk for non-retention. Subsequent meta-analysis of a group of similar studies could potentially yield a generalizable set of predictor variables capable of identifying students at-risk of dropping out of AFNR programs.

Concerns regarding the need for increased graduates with degrees in agriculture, food, and natural resources (AFNR) and STEM fields have been well documented (NRC, 2009; Roberts et al., 2006; Goecker et al., 2015). This research was an attempt to identify specific characteristics of students entering AFLS and their relationship to six-year degree completion. Through a better understanding of how pre-college factors influence AFLS students' likelihood to graduate, college and university retention efforts can be directed toward the students most needing these services (Astin & Oseguera, 2005; DeAngelo et al., 2011; Mau, 2016; Pike et al., 2013; Wohlgemuth et al., 2007).

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*Dr. Catherine W. Shoulders* is an associate professor of agricultural education at the University of Arkansas in the Department of Agricultural Education, Communications and Technology.

*Dr. Leslie D. Edgar* is a professor and department head at the University of Georgia in the Department of Agricultural Leadership, Education and Communication.

*Dr. Donald M. Johnson* (corresponding author) is a professor at the University of Arkansas in the Department of Agricultural Education, Communications and Technology.