Distance Education Enrollment is Associated with Greater Academic Progress Among First Generation Low-Income Undergraduate Students in the US in 2008

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Abstract

First Generation undergraduate students from low-income households (FGLI students) continue to have substantially higher dropout rates than non first generation students or students from more affluent households despite numerous efforts over many decades to improve graduation rates among this group of students. The purpose of this research is to determine whether FGLI students in the US who enroll in distance education classes are likely to make greater academic progress (more likely to be enrolled for the entire academic year and more likely to be enrolled full time during the academic year) than FGLI students who enroll in face-to-face classes exclusively. For this research, we used data from the National Postsecondary Student Aid Survey (NPSAS) conducted in 2008. The NPSAS 2008 used a complex survey design to collect data from a nationally representative sample of about 113,500 postsecondary undergraduate students in the US. The results of this study show that FGLI students who enrolled in distance education were significantly <u>less likely to have an enrollment gap</u> in 2008 than FGLI students who did not enroll in any distance education class. Indeed, the negative association between distance education enrollment and the likelihood of an enrollment gap was significantly <u>greater among FGLI students</u> than among non-FGLI students. Distance education enrollment was also associated with a greater likelihood of full-time enrollment in 2008, among both FGLI students and non-FGLI students. These results, from a large nationally representative sample, suggest that providing FGLI students with greater access to distance education classes may increase degree progress rates and degree completion rates.

Abbreviations
Low-income = Household income of no greater than 150% of the Federal Poverty Level income.
First generation student = student whose parents do not have a bachelor's degree.
First generation low-income (FGLI) students = first generation undergraduate students from low-income households.
Non first generation low-income (non FGLI) students = Undergraduate students who are not first generation students from low-income households.

Introduction

The Federal TRIO programs (TRIO) are the set of programs targeted to serve and assist low-income individuals, first-generation college students, and individuals with disabilities to make academic progress from middle school through postbaccalaureate programs (Office of Post Secondary Education, 2009). These TRIO programs were instituted because previous research has shown that the students targeted by the TRIO programs are far less likely than their peers to enroll in college (Chen, 2005; Choy, 2001; Mortenson, 1992). Also, these students, when enrolled in college, make slower degree progress (take longer to complete their degree), and have higher rates of degree non-completion, than their peers (Chen, 2005; Choy, 2001; Mortenson, 1992). First-generation students from low income households (FGLI students) are at particularly increased risk for degree non-completion; therefore, researchers have identified several TRIO-supported interventions that increase persistence and graduation rates among this group of students (Dale, 1995; Thayer, 2000). Despite several decades of these TRIO-supported programs, degree progress and degree completion rates for these students continue to remain significantly lower than their peers (Chen, 2005; Choy, 2001). The principal goal of the present research is to examine whether distance education enrollment is associated with increased degree progress rates within an academic year among FGLI students, specifically, not just among non-FGLI students.

Previous Research

First Generation Low-Income Students and College Completion

Research, with data from the 1988 National Education Longitudinal Survey (NELS), showed that first generation postsecondary undergraduate students have substantially lower rates of degree completion than students whose parent(s) had a bachelor's or higher degree (Chen, 2005). Previous research, with data from the 1980 High School and Beyond Survey (HS&B), has also shown that there is a significant negative relationship between a student's family income and undergraduate degree completion (Mortenson, 1992). Finally, research with NELS data also shows that the family income of first generation undergraduate students is substantially lower than family income of students who are not first generation (Chen, 2005). Thus, previous research has shown that first generation students have significantly lower incomes, lower persistence, and make slower degree progress, than students whose parent(s) have college degrees.

First Generation Low-Income Students and Risk Factors for Degree Non-Completion.

Previous research has identified seven factors that increase the risk of student attrition (Horn, Premo, & Malizio, 1995). These risk factors are, 1) part-time enrollment, 2) delayed enrollment (first enrollment in postsecondary education not in the same year as graduation from high school), 3) financial independence (either student is ≥24 years of age or is married or has children), 4) presence of dependents other than spouse (children or elders), 5) full-time employment, 6) single parent, and 7) not a high school graduate (Horn et al., 1995). By definition, traditional students have none of these risk factors, and non-traditional students have one of more of these risk factors (Horn et al., 1995). Research clearly shows that students with multiple risk factors have much lower persistence and make slower progress towards degree completion (Choy, 2002; Horn et al., 1995). Not surprisingly research has also shown that first generation students are more likely to be nontraditional and have multiple dropout risk factors. (Chen, 2005; Choy, 2001).

First Generation Low-Income Students and Distance Education Enrollment.

The Pew Research Center conducts the Pew Internet and American Life Project to produce reports that explore the impact of the Internet on families, communities, work and home, daily life, education, health care, and civic and political life (Pew Charitable Trusts, 2011). Previous research has shown that both Internet usage and broadband access increase greatly with higher household income levels (Jansen, 2010). Because of the strong relationship between income and access to computers and the Internet, first generation and low-income students are likely to have substantially lower access to computers and the Internet, and thus they may be less likely to enroll in distance education classes.

Distance Education and Academic Progress Rates.

Previous research has used data from the 2008 National Postsecondary Students Aid Survey (NPSAS) Undergraduate to examine the relationship between distance education enrollment and likelihood of an enrollment gap in 2008 (M. C. F. Pontes & Pontes, 2012). (Note: Enrollment gap = some period of non-enrollment in the academic year). This research showed that among nontraditional students, the probability of an enrollment gap was significantly lower among students enrolled in distance education classes (45.6%) than among students enrolled in face-to-face classes only (49.3%) (M. C. F. Pontes & Pontes, 2012). Among traditional students, on the other hand, the probability of an enrollment gap was not significantly different whether students enrolled in distance education classes (16.8%) or face-to-face classes only (15.6%) (M. C. F. Pontes & Pontes, 2012).

Previous research indicates that most FGLI students are not only significantly less likely to complete their degree requirements within six years but are significantly more likely to be nontraditional students who have time and location constraints that conflict with their schoolwork (Chen, 2005; Choy, 2001; N. M. H. Pontes, 2003). Because of the time and location constraints faced by most FGLI students, distance education enrollment, which allows students to take courses at a convenient time and location, may also be associated with a lower probability of an enrollment gap among these students. Insofar as distance education decreases the likelihood of enrollment gaps among FGLI students, it may be a useful approach to increase graduation rates among these students. There is no previous research that has investigated the relationship between distance education enrollment and the likelihood of full-time enrollment. It is also likely that the convenience of distance education may also facilitate more full-time enrollment (less part-time enrollment) among nontraditional FGLI students who have work and family constraints that limit when they can enroll in classes. (Note: By definition, traditional students enroll full-time exclusively).

Previous research has shown that variables that increase persistence among more affluent students do not necessarily increase persistence among first generation low-income students with their specialized needs and limitations (Thayer, 2000). These researchers recommend that interventions that are likely to increase persistence should be tested with this subgroup of students (Thayer, 2000). Thus, although distance education enrollment is associated with a lower probability of an enrollment gap among all students (M. C. F. Pontes & Pontes, 2012), it is necessary to specifically investigate the relationship between distance education enrollment and degree-progress rates among FGLI students – the principal goal of this research.

Methods

Data Source and Subjects. In order to examine the relationship between distance education enrollment, enrollment patterns, and students' household income and parental education, we used data from the 2008 National Postsecondary Student Aid Study (NPSAS:08): Undergraduates (Cominole et al., 2008; Office of Post Secondary Education, 2011; Wei et al., 2009). The NPSAS is conducted every four years by the National Center for Education Statistics and its purpose is to create a comprehensive research dataset, based on student-level records, on financial aid provided by federal and state governments, postsecondary institutions, employers, and private agencies, along with student demographic and enrollment data. Financial aid variables are collected from institutional records and data about demographics, family characteristics, education and work experiences, and student expectations are collected from students through web-based self-administered surveys and computer assisted telephone surveys (Office of Post Secondary Education, 2011). The 2008 NPSAS assembled data from a sample of about 113,500 postsecondary undergraduates who were enrolled in about 1,400 postsecondary institutions in the US at any time between July 1, 2007 and June 30, 2008. The sample, generated by a multistage sampling design, is representative of all undergraduate students in the US who were eligible to participate in the federal financial aid programs specified in Title IV of the Higher Education Act. Note: Details about how the multi-stage sampling design results in a nationally representative sample, and how the over 800 variables were measured, are presented in great detail in several technical reports (Cominole et al., 2008; Cominole, Riccobono, Siegel, Caves, & Hunter-White, 2010; Office of Post Secondary Education, 2011; Wei et al., 2009).

Variables. The dependent variables that are the principal focus of this study are, 1) whether or not the student enrolled in one or more distance education classes, 2) whether or not the student had an enrollment gap within the academic year (enrollment gap is defined as non enrollment for part of the academic year), and 3) whether the or not the student was enrolled full-time exclusively. The independent variables that are the focus of this study are, 1) distance education enrollment in 2008, 2) dropout risk factor levels, and 3) whether or not the student was classified as First Generation Low-Income (FGLI) student. First Generation student is defined as a student who has no parents with a bachelor's degree (Chen, 2005; Choy, 2001). Low Income student is defined as a student with household income no greater than 150% of the Federal Poverty Level income for 2008 (Cominole et al., 2008; Wei et al., 2009). Note: The First Generation Low-Income variable is predefined in the NPSAS 2008 dataset (Cominole et al., 2008; Cominole et al., 2010; Wei et al., 2009).

Statistical Analyses. The estimates in this paper were produced using NCES PowerStats, which provides public access to data from postsecondary studies conducted by the National Center for Education Statistics and enables users to create customized tables and regressions (National Center for Education Statistics, 2010a). Standard errors, confidence intervals, and t-statistics are estimated by the method of Balanced Repeated Replication (BRR) (Rao & Shao, 1999). Reporting standards require that estimates of percentages should only be reported if the standard error of the estimated percentage is less than 30% of the estimate (National Center for Education Statistics, 2010a). For the analyses reported in this paper, standard errors of estimated percentages ranged from 1% to 5% of the estimate.

For this paper, univariate and multivariate analyses are reported. For univariate analyses, the statistical significance of each two-group difference was estimated by t-statistics as described (National Center for Education Statistics, 2010b). Multivariate analyses were performed by the use of three logistic regression models. The independent variables used for the first logistic regression model were dropout risk factor level (Zero (Traditional student), one (minimally nontraditional student), two to three (Moderately nontraditional student) and four to seven (highly nontraditional)) and Low-income first generation student (Yes, No). (The rationale for this classification of risk factor levels that has been described previously (Choy, 2002; Horn et al., 1995)). The dependent variable was distance education enrollment (Reference group = No distance education enrollment).

For the second and third regression models, the independent variables were dropout risk factor levels, and distance education enrollment (Yes, No). The dependent variable for the second model was whether or not the student had an enrollment gap (Reference group = No enrollment gap). The dependent variable for the third model was whether or not the student was enrolled full-time exclusively (Reference group = No exclusive full-time enrollment). The second and third model were each estimated separately on a) FGLI students and b) Non FGLI students. The dropout risk factors were used in the model to statistically control for the greater probability of dropout risk among students who enroll in distance education classes, since previous research has shown that students who enroll in distance education have more dropout risk factors (M. C. F. Pontes, Hasit, Pontes, Lewis, & Siefring, 2010; M. C. F. Pontes & Pontes, 2012), and students with more dropout risk factors are more likely to experience an enrollment gap (M. C. F. Pontes & Pontes, 2012). In addition, t-tests were used to estimate whether the standardized regressions coefficient for distance education was significantly different between FGLI students and non-FGLI students (Gelman & Stern, 2006; Paternoster, Brame, Mazerolle, & Piquero, 1998).

Results

Characteristics of FGLI Students and Non-FGLI Students. Results clearly show that FGLI students were significantly more likely than non-FGLI students to have an enrollment gap (44.5% versus 36.9%, p<0.01) and significantly less likely than non-FGLI students to enroll full time exclusively (50.6% versus 54.1%, p<0.01) (Table 1). Also results show that FGLI students are much more likely to have virtually every one of the other 6 dropout risk factors (part-time enrollment is the 7th). Thus, for example, FGLI students were significantly more likely to be financially independent (72.5% versus 39.5%, p<0.01), to have dependents (36.7% versus 22.1%, p<0.01), and to be single with dependents (30.5% versus 8.3%, p<0.01) (Table 1). FGLI students were also more likely to have delayed enrollment (44.8% versus 27.5%, p<0.01) and to have no high school diploma (13.3% versus 5.5%, p<0.01). FGLI students were less likely to work full time than non-FGLI students (31.5% versus 32.4%, p>0.10) but the difference was non-significant. Thus results show that FGLI students were significantly more likely than non-FGLI students to have 6 of the 7 dropout risk factors.

Results also show that FGLI students were more likely than non-FGLI students to have multiple risk factors. Thus, FGLI students were significantly less likely than non-FGLI students to be traditional students (12.3% versus 35.2%, p<0.01) and to be minimally nontraditional students (15.0% versus 18.5%, p<0.01) (Table 2). In contrast FGLI students were significantly more likely than non-FGLI students to be moderately nontraditional (36.5% versus 24.2%, p<0.01) and to be highly nontraditional (36.3% versus 22.1%, p<0.01) (Table 2).

Enrollment in Distance Education Classes. Enrollment in distance education classes was not significantly different between FGLI students and non-FGLI students among traditional students (13.6% versus 12.4%, p>0.10) and among minimally traditional students (17.1% versus 17.0%, p> 0.10) (Table 3). In contrast, enrollment in distance education classes was significantly lower among FGLI students than among non-FGLI students, for both moderately nontraditional students (20.2% versus 24.9%, p<0.01) and highly nontraditional students (23.0% versus 32.0%, p<0.01) (Table 3). Multivariate regression analyses were performed to examine the effects of FGLI status and risk factor levels on enrollment in distance education classes. Results displayed in Table 4 show that FGLI students were significantly less likely to enroll in distance education classes than their peers (b= -0.046, OR=0.76, t= -6.37, p<0.01) (Table 4). Risk factor levels had a significant influence on distance education enrollment. Compared to students with no risk factors, students were significantly more likely to enroll in distance education classes if they had one risk factor (b=0.047, OR=1.47, t=11.25, p<0.01), or two-three risk factors (b=0.131, OR=2.26, t=23.14, p<0.01), or four-seven risk factors (b=0.190, OR=3.05, t=24.95, p<0.01). Thus, results show that FGLI students were significantly less likely to enroll in distance education classes than non-FGLI students.

FGLI Students: Distance Education and enrollment gaps. Results show that the probability of an enrollment gap was significantly smaller for FGLI students who enrolled in at least one distance education class (39.7%) than for FGLI students who enrolled in face-to-face classes exclusively (45.7%), p<0.01 (Table 5). Among traditional FGLI students, the probability of an enrollment gap was not significantly different among students enrolled in one or more distance education classes (18.1%) than among those enrolled in face-to-face classes only (17.3%), p>0.20 (Table 5). Stratification by levels of risk factors showed that the probability of an enrollment gap was lower among nontraditional FGLI students enrolled in distance education than among nontraditional FGLI students enrolled in face-to-face classes regardless of whether the students were highly nontraditional (DE, 44.5%, versus F2F only, 54.9%, p<0.01), or were moderately nontraditional (DE, 41.1%, versus F2F only, 50.6%, p<0.01) or were minimally nontraditional, (DE, 33.7% versus F2F only, 37.7%), p>0.10 (Table 5).

Multivariate logistic regression was used to estimate the effects of distance education and risk factor levels on the likelihood of an enrollment gap among FGLI students. Results show that FGLI students enrolled in one or more distance education classes were significantly less likely to have an enrollment gap in 2008 (b= -0.066, OR=0.71, t= -7.27, p<0.01), (Table 6). Risk factor levels had a significant influence on likelihood of an enrollment gap among FGLI students. Compared to traditional FGLI students with no risk factors, FGLI students were significantly more likely to have an enrollment gap if they had one risk factor (b=0.143, OR=2.83, t=11.78, p<0.01), or two-three risk factors (b=0.309, OR=4.63, t=22.55, p<0.01), or four-seven risk factors (b=0.347, OR=5.45, t=24.95, p<0.01) (Table 6). Thus, results show that FGLI students who enrolled in distance education were significantly less likely to have an enrollment gap than FGLI students who enrolled in face-to-face classes exclusively.

Effects of Distance Education: FGLI Students Versus non FGLI Students. Multivariate logistic regression was also used to estimate the effects of distance education and risk factor levels on the likelihood of an enrollment gap among non-FGLI students. Results show that non-FGLI students enrolled in one or more distance education classes were also significantly less likely to have an enrollment gap in 2008 (b= -0.026, OR=0.86, t= -4.96, p<0.01), (Table 7). Risk factor levels were also significantly related to likelihood of an enrollment gap among non-FGLI students (Results for risk factor levels are not displayed for brevity). Statistical tests (t-tests) were performed, as described in the literature, to estimate whether the standardized regression coefficient for distance education was significantly different between the two student groups (Gelman & Stern, 2006; Paternoster et al., 1998). Results showed that the coefficient for distance education was significantly more negative for FGLI students (b=-0.066) than for non-FGLI students (b=-0.026), (t (b diff)=-3.89, p<0.01) (Table 7). This result shows that the association between distance education enrollment and the likelihood of an enrollment gap was significantly more negative for FGLI students than for non-FGLI students (Table 7).

Nontraditional FGLI Students: Distance Education and Full-time Enrollment. Results show that the probability of full-time enrollment was not significantly different among nontraditional FGLI students who enrolled in at least one distance education class (49.2%) than among those who enrolled in face-to-face classes exclusively (50.9%), p>0.10 (Table 9). (Note: Traditional students by definition enroll full-time exclusively). Stratification by levels of risk factors showed that the probability of full-time enrollment was greater among nontraditional FGLI students enrolled in distance education than among those enrolled in face-to-face classes exclusively regardless of whether the students were highly nontraditional (DE, 33.2%, versus F2F only, 32.4%, p>0.25), or were moderately nontraditional (DE, 48.0%, versus F2F only, 44.6%, p>0.10) or were minimally nontraditional, (DE, 71.4% versus F2F only, 65.8%), p<0.05 (Table 8).

Multivariate logistic regression was used to estimate the effects of distance education and risk factor levels on the likelihood of full-time enrollment among nontraditional FGLI students.

Results show that students enrolled in one or more distance education classes were more likely to enroll full time in 2008; the effect was marginally significant (b= 0.021, OR=1.12, t= 1.87, p<0.10), (Table 9). Risk factor levels had a significant influence on likelihood of full-time enrollment. Compared to students with one risk factor, students were significantly less likely to enroll full time if they had two-three risk factors (b=0.214, OR=0.41, t=-16.39, p<0.01), or four-seven risk factors (b=0.341, OR=0.24, t=-25.14, p<0.01) (Table 9). Thus, results show that FGLI students who enrolled in distance education were more likely to enroll full-time than FGLI students who enrolled in face-to-face classes exclusively; the effect was marginally significant.

Effects of Distance Education: FGLI Students Versus non FGLI Students. Multivariate logistic regression was also used to estimate the effects of distance education and risk factor levels on the likelihood of full-time enrollment among non-traditional non-FGLI students. Results show that non-FGLI students enrolled in one or more distance education classes were significantly more likely to enroll full-time in 2008 (b= 0.018, OR=1.10, t= 2.39, p<0.05), (Table 10). Statistical tests (t-tests) were performed, as described in the literature, to estimate whether the standardized regression coefficient for distance education was significantly different between the two student groups (Gelman & Stern, 2006; Paternoster et al., 1998). Results showed that the distance education coefficient estimated for FGLI students (b= 0.021) was not significantly greater than the distance education coefficient estimated for non-FGLI students (b= 0.018), (t (b diff)=0.23, p>0.25) (Table 10). Since the effect of distance education on the likelihood of full-time enrollment was not significantly different between FGLI students and non-FGLI students (Table 10), multivariate regression was also used to estimate the effect of distance education, risk factor levels, and TRIO classification on full-time enrollment for all students. Results showed that distance education enrollment was positively related to full-time enrollment among all nontraditional students (b= 0.019, OR=1.12, t= 2.87, p<0.01), (Table 10).

Conclusion

The results of this research, obtained with data collected in 2008 from a large nationally representative US sample (NPSAS 2008) of about 113,500 students from about 1,400 postsecondary institutions, show that FGLI students were significantly more likely than non FGLI students to have an enrollment gap (some period of non-enrollment), and significantly less likely than non-FGLI students to enroll full-time in 2008 (Table 1). These results are consistent with previous research that has clearly demonstrated that FGLI students have substantially lower persistence and make slower progress towards degree completion (Chen, 2005; Choy, 2002). Indeed, the TRIO programs were authorized by the Higher Education Act of 1964 to increase enrollment and improve degree completion rates for this group of disadvantaged students (Office of Post Secondary Education, 2009).

A major "new" result of this study was the significant negative association between distance education enrollment and the likelihood of an enrollment gap among FGLI students in 2008. Previous research has shown that distance education enrollment was associated with a decreased likelihood of an enrollment gap among non-traditional students (M. C. F. Pontes & Pontes, 2012). Unfortunately variables that increase persistence among more affluent students do not necessarily increase persistence among FGLI students who often have special needs and constraints (Thayer, 2000). Consequently, researchers recommend that efforts to increase persistence need to be investigated with FGLI students to ensure they are effective for this population (Thayer, 2000). The results of the present research confirm that distance education enrollment is effective in reducing the likelihood of an enrollment gap among FGLI students.

Surprisingly, the negative association between distance education enrollment and the likelihood of an enrollment gap was significantly more pronounced (more negative) among FGLI students than among non-FGLI students (Table 7). Perhaps time and location constraints are more common among FGLI students, and are more commonly associated with interruption in academic progress among FGLI students, than among non-FGLI students. (The results of this study, displayed in Table 1, show that FGLI students are much more likely than non-FGLI students to have dependents and to work full-time). As a result, FGLI students may be more likely to value the convenience of distance education classes, which allows them to stay enrolled in their program of study for the entire academic year.
Results, displayed in Table 10, show that there was a significant relationship between distance education enrollment and full-time enrollment for all students. The effect size of distance education on full-time enrollment is essentially the same for FGLI students and for non-FGLI students (Table 10). Thus, both FGLI students and non-FGLI students who enrolled in distance education classes made significantly greater academic progress (were significantly less likely to have an enrollment gap and significantly more likely to enroll full time) during the academic year.

Several TRIO-funded Student Support Services programs have increased retention of FGLI students; the major goals of these successful programs were to increase study skills and to create a learning community (Dale, 1995; Thayer, 2000). Despite these TRIO-funded services, graduation rates for first generation low-income students are much lower than their more affluent peers (Chen, 2005; Choy, 2001; Mortenson, 1992). The use of distance education classes to increase degree progress rates among FGLI students has not been investigated to date. This research appears to be the first study that has shown that enrollment in distance education is related to increased degree progress rates (lower probability of an enrollment gap and greater probability of full-time enrollment) within an academic year, among FGLI students, specifically, as well as among non FGLI students. The results of this research, with a large nationally representative sample, suggest that providing FGLI students with greater access to distance education classes may increase degree progress rates and potentially degree completion rates. Future research needs use longitudinal data to investigate whether distance education enrollment is associated with higher 6-year degree completion rates among FGLI students.

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Table 1: Comparison of Low Income 1st Generation (FGLI) Students and Non FGLI Students

	TRIO Classification	
	FGLI students % (SE)	Non FGLI students % (SE)
Percentage of Students who		
Had an enrollment gap	44.5 (0.62)	36.9 (0.38)**
Enrolled full-time exclusively	50.6 (0.62)	54.1 (0.33)**
Were financially independent	72.5 (0.43)	39.5 (0.33)**
Had dependents	36.7 (0.58)	22.1 (0.29)**
Were single with dependents	30.5 (0.54)	8.3 (0.22)**
Delayed enrollment	44.8 (0.57)	27.5 (0.27)**
Had no high school diploma	13.3 (0.35)	5.5 (0.14)**
Worked full time	31.5 (0.44)	32.4 (0.35)

FGLI students=first generation students from low-income households (£150% of Federal poverty level), %=percentage of students within TRIO classification, SE=standard error of estimate, significance of two-group contrast (Ref=Non FGLI Students), **=p<0.01.

Table 2: Comparison of FGLI Students and Not-FGLI Students

	TRIO Classification	
	FGLI students % (SE)	Non FGLI students % (SE)
Percentage of Students who were		
Traditional students	12.3 (0.31)	35.2 (0.29)**
Minimally nontraditional students	15.0 (0.34)	18.5 (0.20)**
Moderately nontraditional students	36.5 (0.49)	24.2 (0.27)**
Highly nontraditional students	36.3 (0.63)	22.1 (0.29)**

%=percentage of students within TRIO classification, SE=standard error of estimate, significance of two-group contrast (Ref=Non FGLI students), **=p<0.01.

Table 3: Enrollment in Distance Education Classes in 2008 by Risk Factor Levels and TRIO Classification

Risk Factor Levels	FGLI Students % (SE)	Non FGLI Students % (SE)
Four-Seven (Highly nontraditional)	23.0 (0.74)	32.0 (0.86)**
Two-Three (Moderately nontraditional)	20.2 (0.64)	24.9 (0.67)**
One (Minimally nontraditional)	17.1 (0.84)	17.0 (0.42)
Zero (Traditional)	13.6 (0.82)	12.4 (0.33)

%=percentage of students within risk factor level who enrolled in one or more distance education classes in 2008, SE=standard error of estimate, significance of two-group contrasts (Reference group=First Generation and Low Income students), **=p<0.001.

Table 4: Logistic Regression - Effects on Likelihood of Distance Education Enrollment in 2008

Variables		b (SE)	OR (95% CI)	t
FGLI students		-0.046 (0.007)	0.76 (0.70 – 0.83)	-6.37**
Non FGLI students (Ref)				
Risk factor levels	Four-Seven	0.190 (0.008)	3.05 (2.84 – 3.27)	24.95**
	Two-Three	0.131 (0.006)	2.26 (2.13 – 2.41)	23.14**
	One	0.047 (0.004)	1.47 (1.37 – 1.57)	11.25**
	Zero (Ref)			

b=standardized regression coefficient, SE=standard error of estimate, OR=odds ratio, 95% CI=95% confidence interval, t=t-statistic, Ref=reference category.

Table 5: Relationship Between Distance Education Enrollment and Likelihood of An Enrollment Gap by Risk Factor Levels (FGLI Students)

	Students enrolled in at least 1 Distance Education Class		
	No (Ref) % (SE)	Yes % (SE)	
Risk Factor Levels			t
All students	45.7 (0.66)	39.7 (1.09)**	- 4.42
Four-Seven (Highly Non-traditional)	54.9 (1.04)	44.5 (2.37)**	- 4.02
Two-Three (Moderately Non traditional)	50.6 (0.82)	41.1 (1.84)**	- 4.72
One (Minimally Nontraditional)	37.7 (1.64)	33.7 (3.13)	-1.13
Zero (Traditional)	17.3 (0.96)	18.1 (2.93)	0.26

Table 6: Logistic Regression - Effects on Likelihood of An Enrollment Gap in 2008 (FGLI Students)

Variables		b (SE)	OR (95% CI)	t
Enrolled in distance	Yes	-0.066 (0.009)	0.71 (0.64 – 0.78)	- 7.27**
education class(es)	No (Ref)			
Risk factor levels	Four-Seven	0.347 (0.014)	5.45 (4.73 – 6.28)	24.95**
	Two-Three	0.309 (0.014)	4.63 (3.95 – 5.43)	22.55**
	One	0.143 (0.012)	2.83 (2.40 – 3.35)	11.78**
	Zero (Ref)			

b=standardized regression coefficient, SE=standard error of estimate, OR=odds ratio, 95% CI=95% confidence interval, t=t-statistic, Ref = reference category, significance of t-statistic: **=p<0.01.

Table 7: Logistic Regression – Adjusted Effects of Distance Education on Likelihood of An Enrollment Gap in 2008 by TRIO Classification

TRIO Classification	b (SE)	OR (95% CI)	t	t (b diff)
FGLI students	-0.066 (0.009)	0.69 (0.63 – 0.76)	- 7.27**	-3.89**
Non FGLI students (Ref)	-0.026 (0.005)	0.86 (0.81 – 0.92)	- 4.96**	

b=standardized regression coefficient, SE=standard error of estimate, OR=odds ratio, 95% CI=95% confidence interval, t=t-statistic, Ref = reference category, significance of t-statistic: **=p<0.01.

Table 8: Relationship Between Distance Education Enrollment and Likelihood of Full-Time Enrollment by Risk Factor Levels (FGLI Students)

	Students enrolled in at least 1 Distance Education Class		
Risk Factor Level	No (Ref) % (SE)	Yes % (SE)	t
All students	50.9 (0.65)	49.2 (1.30)	-1.17
Four-Seven (Highly Non-traditional)	32.4 (1.28)	33.2 (2.02)	0.33
Two-Three (Moderately Non traditional	44.6 (0.99)	48.0 (1.69)	1.74
One (Minimally Nontraditional)	65.8 (1.05)	71.4 (2.62)*	1.98
Zero (Traditional)	100	100	100

%=percentage of students within risk factor level who were enrolled full-time only in 2008, SE=standard error of estimate, significance of two-group contrast (Reference Group= No Distance Ed enrolled students) *=p<0.05.

Table 9: Logistic Regression - Effects on Likelihood of Full-Time Enrollment in 2008 (Nontraditional FGLI Students)

Variables		b (SE)	OR (95% CI)	t
Enrolled in distance	Yes	0.021 (0.011)	1.12 (0.99 – 1.26)	1.87
education class(es)	No (Ref)			
Risk factor levels	Four-Seven	-0.341 (0.014)	0.24 (0.21 – 0.27)	-25.14**
	Two-Three	-0.214 (0.013)	0.41 (0.37 – 0.46)	-16.39**
	One (Ref)			

b=standardized regression coefficient, SE=standard error of estimate, OR=odds ratio, 95% CI=95% confidence interval, t=t-statistic, Ref = reference category, significance of t-statistic: **=p<0.01.

Table 10: Logistic Regression – Adjusted Effects of Distance Education on Likelihood of Full-Time Enrollment by Nontraditional Students in 2008

TRIO Classification	b (SE)	OR (95% CI)	t	t (b diff)
FGLI students	0.021 (0.011)	1.12 (0.99 – 1.26)	1.87	0.23
Non FGLI students (Ref)	0.018 (0.007)	1.10 (1.02 – 1.20)	2.39*	
All students	0.019 (0.007)	1.11 (1.03 – 1.19)	2.87**	

b=standardized regression coefficient, SE=standard error of estimate, OR=odds ratio, 95% CI=95% confidence interval, t=t-statistic, Ref = reference category, significance of t-statistic: *=p<0.05, **=p<0.01.