Undergraduate Students' Preference for Distance Education by Field of Study

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Abstract

This research investigates the relationship between students' field of study and their preference for distance education. For this research, data were used from the National Postsecondary Student Aid Study: Undergraduate, which uses a complex survey design to collect data from a nationally representative sample of undergraduate postsecondary students in the US. Results show that a student's field of study is significantly related to enrollment in distance education classes, enrollment in a distance education program, and satisfaction with distance education. Full-time employment, presence of dependents, and a mobility-limiting disability are also significantly associated with distance education preference. Enrollment trends show significant growth in distance education enrollment over 2000 to 2008 among students in all fields of study.
Key Words: distance education enrollment, distance education satisfaction, field of study.

Introduction

There has been limited published research that has investigated whether distance education preference varies by students' field of study. Univariate analyses with data from the National Postsecondary Student Aid Study 2008 (NPSAS:08) showed that field of study was related to distance education enrollment in 2008 (Radford, 2011). Unfortunately, no multivariate analyses were performed to examine whether demographic characteristics of a student, such as full-time employment and the presence of dependents, were responsible for differences in distance education enrollment rates between groups of students in different fields of study. A major purpose of this research is to expand upon this preliminary finding and use data from NPSAS, and multivariate logistic regression analyses, to investigate whether field of study is significantly related to enrollment in distance education classes, enrollment in a distance education program, and satisfaction with distance education. Another purpose of this research is to examine trends in distance education enrollment over 2000 to 2008 for various fields of study; such trends have not been published previously.

Student Prefrences for Distance Education

Distance education requires the spatial separation of information source and learners, and allows learning that takes place at a more convenient location for the student (Lou, Bernard, & Abrami, 2006; Parsad & Lewis, 2008). Asynchronous distance education, typically delivered via the Internet, implies that instruction delivery and learning can be separated in time and place (Lou et al., 2006; Parsad & Lewis, 2008). As a result, students who enroll in asynchronous distance education need not adjust their non-academic activities in order to enroll in classes. Previous research with data from NPSAS:2004 showed that students who have external constraints, (such as full-time employment and/or dependents, and/or a mobility limiting disability) that create barriers to the times or the locations where they can enroll in classes, significantly prefer distance education (Pontes, Hasit, Pontes, Lewis, & Siefring, 2010).

Preference for Distance Education Classes: Field of Study

Business students, or computer and information science students, may be more likely to prefer distance education. Business students may be more likely to internalize the adage that "time is money" and thus may prefer distance education classes which offer instruction at a more convenient time and location. Computer and information science students may have a natural interest in working with computers and the Internet and may thus be attracted to distance education online courses. As a result, students who study business or computer information systems may be more likely to enroll in distance education. One of the goals of this research is to use multivariate logistic regression to examine whether differences in the demographic profile of students in various fields of study account for differences in distance education preference across these students. For this study, both behavioral (distance education enrollment) and attitudinal (distance education satisfaction) measures of distance education preference were used.

Growth in Distance Education Enrollment by Field of Study (2000-2008)

To date, there has not been any published research that has described the increase in distance education enrollment within major field of study during 2000 to 2008. Therefore, this research examines the increase in distance education enrollment within several fields of study during 2000-08. This research tests whether the change in distance education enrollment (2000 to 2004 and 2004 to 2008) was significant within each field of study.

Methods

Data Source and Subjects

The data used for this research were collected through the 1999-2000, 2003-04, and the 2007-08 National Postsecondary Student Aid Studies (NPSAS:2000, NPSAS:04, AND NPSAS:08, respectively) (Table 1). The NPSAS is conducted every four years by the National Center for Education Statistics (NCES) and its purpose is to create a comprehensive US 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 (National Center for Education Statistics, 2012). Financial aid variables are collected from institutional and U.S. Department of Education records; data about demographics, family characteristics, education and work experiences, students' expectations, and distance education enrollment and satisfaction, are collected from students through web-based self-administered surveys and computer assisted telephone surveys (National Center for Education Statistics, 2012). Details about the survey methodology are available (Cominole, Riccobono, Siegel, Caves, & Hunter-White, 2010; Cominole, Siegel, Dudley, Roe, & Gilligan, 2006; Riccobono et al., 2002). For each study year used for this research, the number of institutions, and the number of undergraduate study students, who participated in the survey are displayed in Table 1. These data sets have been used previously to investigate distance education enrollment among postsecondary undergraduate students (Flowers, White, Raynor, & Bhattacharya, 2012; Pontes et al., 2010; Pontes & Pontes, 2012a; Pontes & Pontes, 2012b; Radford, 2011; Sikora, 2002)

Variables

This study focused on three dependent variables that are measures of students' preference for distance education. Two of these preference variables are enrollment variables: 1) whether the student was enrolled in at least one distance education class during 2008, and 2) whether the student was enrolled in a distance education program during 2008. (A student was enrolled in a distance education program if the student's entire degree program was taught through distance education). The third preference variable is an attitudinal variable: 3) whether the student was more satisfied with distance education classes or face-to-face classes (this question was only asked of students who were enrolled in at least one distance education class during the study year). For the attitudinal variable, respondents indicated one of three responses: a) more satisfied with distance education, b) no difference in satisfaction between distance education and face-to-face education, or c) less satisfied with distance education. A distance education satisfaction index was defined as the percentage of students who were more satisfied with distance education classes among students who were either more satisfied with distance education classes or less satisfied with distance education classes (Pontes et al., 2010).

The independent variable of primary interest for this study is field of study. For this research our primary

interest was a comparison of the probability of distance education enrollment between students enrolled in the following fields of study categories: 1) business, 2) computer and information systems (CIS), 3) health care or education (HE), 4) humanities or social and behavioral sciences (HSBS), 4) the life sciences, physical sciences, mathematics, or engineering (LPME) and 5) all other students (Other). (For field of study, the predefined variable, MAJORS12=Field of Study: Undergraduate was used. The Appendix has a list of the field of study categories in MAJORS12 that were combined and used for the analyses reported in this paper). The other three independent variables (covariates) investigated in this study were whether the student 1) was employed full-time (worked ³35 hours per week), 2) had dependents, and 3) had a mobility-limiting disability. Previous research, with data from NPSAS:04 has shown that each of these covariates is significantly associated with increased distance education enrollment and with greater satisfaction with distance education (Pontes et al., 2010).

Statistical Analyses

The estimates in this paper were produced using NCES PowerStats software that enables researchers to create customized tables and regressions with data from NCES research studies that use complex survey designs (National Center for Education Statistics, 2010). NCES PowerStats software employs Balanced Repeated Replication (BRR) to estimate standard errors, confidence intervals, and t-statistics (National Center for Education Statistics, 2010). Estimated percentages are reliable if the standard error is less than 30% of the estimate (National Center for Education Statistics, 2010). Standard errors of all estimated percentages reported in this paper are less than 20% of the estimate.

For this paper, the results of three multivariate logistic regression analyses are reported. For the multivariate analyses, the independent variables used were Student's field of study category (see Appendix), student had dependents (Yes, No), student worked full-time (Yes, No), and student had a mobility-limiting disability (Yes, No). (The latter 3 variables were used as covariates in a multivariate regression model to examine whether the significant effect of field of study persisted with addition of these covariates to the regression model). The dependent variable for the first logistic regression model was enrollment in at least one distance education class in 2007-08 (Yes, No; reference group=No). The dependent variable for the second logistic regression was enrollment in a distance education program in 2007-08 (Yes, No, reference group=No). These two models were estimated with data from NPSAS:08. The dependent variable for the third logistic regression was distance education satisfaction (More satisfied with distance education, less satisfied with distance education, reference group=less satisfied with distance education). This model was estimated with data from NPSAS:04 since distance education satisfaction was not measured in NPSAS:08. For every variable in each logistic regression, t-statistics, significance levels, and the odds ratio were reported. In this paper the univariate relationships between field of study and each of the covariates on each of the three dependent variables were also reported.

Results

Enrollment in Distance Education Class(es)

Univariate analyses show that a student's field of study was significantly related to distance education enrollment in 2008 (Table 2). The percentage of students enrolled in distance education class(es) was significantly greater among students whose field of study was business (BUS) (23.9%, t=10.60), or computer and information sciences (CIS) (27.1%, t=7.44), or health or education (HE) (22.3%, t=11.22), or other (19.7% t=6.53), or humanities or social/behavioral sciences (18.7%, t=5.18) than among students whose field of study was either life sciences, physical sciences, mathematics, or engineering (LPME) (15.1%). Distance education enrollment was significantly greater among students who had dependents (29.1%, t=16.18) than among students who did not have dependents (17.5%), among students who worked full-time (27.4%, t=15.66) than among students who did not work full-time (16.9%), and among students who had a mobility-limiting disability (26.3%, t=3.96) than among students who had no mobility-limiting disability (20.3%).

Results of multivariate logistic regression analyses confirmed that a student's field of study was significantly related to distance education enrollment in 2008 (Table 2). The likelihood of distance education enrollment was significantly greater among students whose field of study was business (OR=1.49, t=7.73), or computer and information sciences (CIS) (OR=1.70, t=5.70), or health or

education (OR=1.33, t=6.76), or among all other students (OR=1.17, t=2.92), or among students in the humanities or behavioral and social sciences (HBSS) (OR=1.22, t=4.12) than among students whose field of study was life sciences, physical sciences, mathematics, or engineering (LPME). Results showed that the likelihood of distance education enrollment was significantly greater among students who had dependents (OR=1.65, t=16.22) than among students who did not have dependents, among students who worked full-time (OR=1.62, t=15.47) than among students who did not work full-time, and among students who had a mobility-limiting disability (OR=1.32, t=3.54) than among students who had no mobility-limiting disability.

Enrollment in a Distance Education Program

Results of univariate analyses show that a student's field of study was significantly related to enrollment in a distance education program in 2008 (Table 3). The percentage of students enrolled in a distance education program was significantly greater among students whose field of study was business (BUS) (6.0%, t=8.19), or computer and information sciences (CIS) (8.0%, t=4.99), or health or education (HE) (3.8%, t=6.85), or other (3.5% t=6.32), or humanities or social/behavioral sciences (2.4%, t=2.42) than among students whose field of study was either life sciences, physical sciences, mathematics, or engineering (LPME) (1.8%). Enrollment in a distance education program was significantly greater among students who had dependents (8.0%, t=12.26) than among students who did not have dependents (2.2%), and among students who worked full-time (6.7%, t=12.43) than among students who did not work full-time (2.1%). Enrollment in distance education was non-significantly greater among students who had a mobility-limiting disability (6.2%, t=1.87) than among students who had no mobility-limiting disability (3.6%).

Results of multivariate logistic regression analyses confirmed that a student's field of study was significantly related to enrollment in a distance education program in 2008 (Table 3). The likelihood of enrollment in a distance education program was significantly greater among students whose field of study was business (OR=2.49, t=6.18), or computer and information sciences (CIS) (OR=3.20, t=3.91), or health or education (HE) (OR=1.46, t=2.44), or among all other students (OR=1.46, t=2.41) than among students whose field of study was life sciences, physical sciences, mathematics, or engineering (LPME). Enrollment in a distance education program was non-significantly greater among students who enrolled in humanities or social and behavioral sciences (HSBS) (OR=1.19, t=0.94) than among students enrolled in LPME. Results also showed that the likelihood of distance education program enrollment was significantly greater among students who had dependents (OR=2.86, t=12.53) than among students who did not have dependents, among students who worked full-time (OR=2.35, t=13.40) than among students who did not work full-time, and among students who had a mobility-limiting disability (OR=1.54, t=2.10) than among students who had no mobility-limiting disability.

Distance Education Satisfaction

Results of univariate analyses (Table 4) show that distance education satisfaction index was significantly greater among students whose field of study was business (BUS) (50.2%, t=3.65), or health or education (HE) (45.6%, t=2.32), or other (47.5% t=2.88), than among students whose field of study was either life sciences, physical sciences, mathematics, or engineering (LPME) (38.0%). Distance education satisfaction index was also significantly greater among students who had dependents (52.6%, t=6.72) than among students who did not have dependents (41.9%), among students who worked full-time (53.1%, t=7.18) than among students who did not work full-time (40.9%), and among students who had a mobility-limiting disability (54.4%, t=2.81) than among students who had no mobility-limiting disability (45.6%) (Table 4).

Results of multivariate logistic regression analyses confirmed that the distance education satisfaction index was significantly greater among business students (OR=1.46, t=2.71), or among all other students (OR=1.46, t=2.41) than among students whose field of study was life sciences, physical sciences, mathematics, or engineering (LPME) (Table 4). Results also showed that the distance education satisfaction index was significantly greater among students who had dependents (OR=1.39, t=5.08) than among students who did not have dependents, and among students who worked full-time (OR=1.50, t=5.49) than among students who did not work full-time, and among students who had a mobility-limiting disability (OR=1.35, t=2.46) than among students who had no mobility-limiting disability.

Change in Distance Enrollment by Field of Study and Year

Results show that distance education enrollment increased significantly from 2000 to 2004 and from 2004 to 2008 within every field of study (Table 5). Compared to 2000, distance education enrollment in 2004 was significantly greater among students whose field of study was business (18.7% versus 9.5%, t=12.01), or CIS (19.4% versus 9.9%, t=7.11), or HE (17.3% versus 10.6%, t=8.52), or Other (14.7% versus 7.2%, t=11.28), or HSBS (13.4% versus 7.3%, t=9.47), or LPME (11.5% versus 5.7%, t=7.61). Compared to 2004, distance education enrollment in 2008 was significantly greater among students whose field of study was business (23.9% versus 18.7%, t=5.92), or CIS (27.1% versus 19.4%, t=4.30), or HE (22.3% versus 17.3%, t=7.85), or Other (19.7% versus 14.7%, t=7.29), or HSBS (18.7% versus 13.4%, t=8.33), or LPME (15.4% versus 11.5%, t=5.24) (Table 5).

Results also show that enrollment in a distance education program also increased significantly from 2000 to 2004 within every field of study (Table 6). Compared to 2000, enrollment in a distance education program in 2004 was significantly greater among students whose field of study was business (7.0% versus 2.9%, t=7.82), or CIS (7.2% versus 2.7%, t=5.00), or HE (5.3% versus 3.1%, t=5.76), or Other (5.2% versus 2.3%, t=8.54), or HSBS (3.7% versus 2.2%, t=4.50), or LPME (3.0% versus 1.5%, t=3.85) (Table 6). Compared to 2004, enrollment in a distance education program in 2008 was significantly lower among students whose field of study was HE (3.8% versus 5.3%, t=-4.23), or Other (3.5% versus 5.2%, t=-5.58), or HSBS (2.4% versus 3.7%, t=-4.68), or LPME (1.8% versus 3.0%, t=-3.52) (Table 5). Enrollment in a distance education program was non-significantly lower in 2008 versus 2004 among business students (6.0% versus 7.0%, t=-1.55) and non-significantly higher in 2008 versus 2004 among CIS students (8.0% versus 7.0%, t=0.55) (Table 6).

Since enrollment in a distance education program declined between 2004 and 2008, it was decided to examine if the decline in enrollment happened at both for-profit institutions and not-for-profit institutions. For brevity, we collapsed fields of study into two groups, Group 1: Business and CIS, and, Group 2: All other fields of study. Results showed that among students at for-profit institutions, the percentage of students enrolled in a distance education program increased significantly from 2004 to 2008: 1) Business and CIS, 20.7% versus 15.0%, t=2.00, and 2) All other fields of study, 8.5% versus 5.0%, t=3.02. In contrast, among students at not-for-profit institutions, the percentage of students enrolled in a distance education program decreased significantly from 2004 to 2008: 1) Business and CIS, 3.7% versus 5.6%, t=-4.70, and 2) All other fields of study, 2.5% versus 4.2%, t=-9.98. These results show that the decrease in distance education program enrollment between 2004 and 2008 happened only at not-for-profit institutions.

Conclusion

Multivariate logistic regression analyses, with data from large nationally representative samples, show that business students were significantly more likely than students in the Life sciences, physical sciences, mathematics, or engineering (LPME) to prefer distance education. Business students were more likely than students in LPME to enroll in distance education classes (Table 2), to enroll in a distance education program (Table 3), and to be more satisfied with distance education (Table 4), even after statistically controlling for the effect of three covariates. Multivariate logistic regression analyses confirmed that students enrolled in a LPME field were significantly less likely to enroll in a distance education class or in a distance education program than students enrolled in Business, Computer and Information Systems, Health/Education, or Other fields of study (Tables 2 and 3). Future research needs to examine the reasons why distance education enrollment varies by field of study. A field of study that requires hands-on laboratory work may not lend itself well to distance education instruction; this may be one reason why students in the life, and physical sciences, mathematics, or engineering had the lowest levels of distance education enrollment and satisfaction.

Results of multivariate analyses also show that students who were employed full-time, who had dependents, or who had a mobility-limiting disability were more likely to enroll in a distance education class(es) (Table 2), to enroll in a distance education program (Table 3), and to be more satisfied with distance education (Table 4). The results of this research, confirm the results of previous research that used data from NPSAS:04 and showed that full-time enrollment and presence of dependents were both significantly related to distance education enrollment and satisfaction (Pontes et al., 2010). The results of

this study also suggest that the availability of distance education classes can make higher education more accessible to persons with mobility limiting disabilities and possibly increase enrollment and graduation rates for such students. Greater accessibility is important since higher education institutions by law, are required to provide access to students with disabilities (Milani, 1996).

Results also showed that enrollment in distance education classes grew significantly from 2000 to 2004 and from 2004 to 2008 across every field of study (Table 5). Enrollment in a distance education program also grew significantly from 2000 to 2004 across every field of study (Table 6). In contrast, from 2004 to 2008, enrollment in a distance education program fell significantly among students in many fields of study (Health or Education (HE), Humanities or Social and Behavioral Sciences (HSBS), Life Sciences, Physical Sciences, Mathematics, or Engineering (LPME), and Other). Enrollment in a distance education program decreased non-significantly among business students, and increased non-significantly among CIS students. Further analyses showed that the percentage of students enrolled in a distance education program increased significantly from 2004 to 2008 at for-profit institutions, and decreased significantly from 2004 to 2008 at not-for-profit institutions (Table 6)

It is unclear why enrollment in distance education class(es) grew but enrollment in a distance program fell from 2004 to 2008. One explanation is that student's preference for enrollment in a distance education class increased but their preference for enrollment in a distance education program decreased. (Perhaps students increasingly enrolled in hybrid programs where they had the flexibility to enroll in either distance education or face-to-face classes). Another explanation is that because of academic reorganizations, many institutions merged their distance education programs and their face-to face programs between 2004 and 2008. Thus for example, an institution may have offered a face-to face education degree through the College of Education and an online education degree through the College of Continuing Education in 2004. Sometime between 2004 and 2008, the institution transferred the online education degree to the College of Education, which now offered a mix of online and face-to face classes and allowed students to choose courses from either format. Some students took advantage of this flexibility, and as result the percentage of students who enrolled exclusively in a distance education program fell at that institution and other such institutions. Another plausible explanation is that some distance education programs started offering a few face-to-face classes either because some faculty believed that such classes could be taught more effectively in a face-to-face format or because a subset of their distance education students preferred to lean the course material in a face-to-face format. These explanations for the decline in enrollment in distance education programs at non-profit institutions are untested hypotheses as there are no data in this data set to test these hypotheses. Future research with the 2012 NPSAS (data expected to be available in 2014) would allow further investigation into trends in distance enrollment.

Table 1: Number of Participating Institutions and Number of Study Students (NPSAS:08, NPSAS:04, and NPSAS:2000)

NPSAS Year	Number of Participating Institutions	Number of Study Students
NPSAS:2000	1,000	49,900/30,000
NPSAS:04	1,400	79,900
NPSAS:08	1,700	113,500

For NPSAS:2000, data were collected from 49,900 students on most variables. For a subset of variables (including distance education enrollment) data were collected from 30,000 students (Riccobono et al., 2002).

Table 2: Enrollment in Distance Education Class(es) in 2008

		Univariate		Multivariate Logistic Regression	
		% (SE)	t	OR (95% CI)	t
Field of Study	Business	23.9 (0.67)	10.60****	1.49 (1.35 – 1.65)	7.73**
	CIS	27.1 (1.51)	7.44**	1.70 (1.46 – 1.99)	5.70**
	HE	22.3 (0.43)	11.22**	1.33 (1.23 – 1.44)	6.76**

	Other	19.7 (0.49)	6.53**	1.17 (1.06 – 1.30)	2.92**
	HSBS	18.7 (0.46)	5.18**	1.22 (1.11 – 1.34)	4.12**
	LPME (Ref)	15.4 (0.44)			
Had dependents	Yes	29.1 (0.66)	16.18**	1.65 (1.56 – 1.74)	16.22**
	No (Ref)	17.5 (0.28)			
Worked full-time	Yes	27.4 (0.63)	15.66**	1.62 (1.54 – 1.71)	15.47**
	No (Ref)	16.9 (0.23)			
Disability: Mobility Limitation	Yes	26.3 (1.48)	3.96**	1.32 (1.15 – 1.51)	3.54**
	No (Ref)	20.3 (0.32)			

Field of study: See the Appendix, %=percentage of all students who enrolled in one or more distance education classes in 2008, SE=standard error of estimate, t=t statistic, significance of two-group contrasts, *=p<0.05, **=p<0.001.

Table 3: Enrollment in a Distance Education Program in 2008

		Univariate		Multivariate Logistic Regression	
		% (SE)	t	OR (95% CI)	t
Field of Study	Business	6.0 (0.48)	8.19**	2.49 (1.87 – 3.31)	6.18**
	CIS	8.0 (1.23)	4.99**	3.20 (2.18 – 4.69)	3.91**
	HE	3.8 (0.23)	6.85**	1.46 (1.15 – 1.85)	2.44*
	Other	3.5 (0.20)	6.32**	1.46 (1.14 – 1.87)	2.41*
	HSBS	2.4 (0.17)	2.42*	1.19 (0.91 – 1.55)	0.94
	LPME (Ref)	1.8 (0.18)			
Had dependents	Yes	8.0 (0.46)	12.26**	2.86 (2.55 – 3.20)	12.53**
	No (Ref)	2.2 (0.11)			
Worked full-time	Yes	6.7 (0.35)	12.43**	2.35 (2.11 – 2.61)	13.40**
	No (Ref)	2.1 (0.12)			
Disability: Mobility Limitation	Yes	6.2 (1.38)	1.87	1.54 (1.03 – 2.30)	2.10*
	No (Ref)	3.6 (0.14)			

Field of study: See Appendix, %=percentage of all students who enrolled in a distance education program in 2008 (a student was enrolled in a distance education program if the student's entire degree program was taught through distance education), SE=standard error of estimate, t=t statistic, significance of two-group contrasts, *=p<0.05, **=p<0.001.

Table 4: Distance Education Satisfaction Index 2004 (Distance Education Students)

		Univariate		Multivariate Logistic Regression	
		% (SE)	t	OR (95% CI)	t
Field of Study	Business	50.2 (1.72)	3.65**	1.46 (1.10 – 1.94)	2.71**
	CIS	46.3 (3.56)	1.82	1.19 (0.83 – 1.71)	0.93
	HE	45.6 (1.59)	2.32*	1.26 (0.95 – 1.67)	1.62
	Other	47.5 (1.63)	2.88**	1.37 (1.04 – 1.82)	2.26*
	HSBS	43.1 (2.18)	1.42	1.23 (0.94 – 1.60)	1.54
	LPME (Ref)	38.0 (2.87)			
Had dependents	Yes	52.6 (1.24)	6.72**	1.39 (1.23 – 1.58)	5.08**
	No	41.9 (1.00)			
Worked full-time	Yes	53.1 (1.32)	7.18**	1.50 (1.29 – 1.73)	5.49**
	No	40.9 (1.07)			
Disability: Mobility Limitation	Yes	54.4 (3.02)	2.81**	1.35 (1.06 – 1.72)	2.46**
	No	45.6 (0.83)			

Field of study: See Appendix, %=distance education satisfaction index in 2004, SE=standard error of estimate, t=t statistic, significance of two-group contrasts, *=p<0.05, **=p<0.001.

Table 5: Percentage of Students Enrolled in Distance Education by Field of Study and Year (2000-08)

	NPSAS Year - % (SE)				
Field of Study	2008	2004	2000	t 2008 -2004	t 2004 -2000
Business	23.9 (0.67)	18.7 (0.58)	9.5 (0.50)	5.92**	12.01**
CIS	27.1 (1.51)	19.4 (0.96)	9.9 (0.93)	4.30**	7.11**
HE	22.3 (0.43)	17.3 (0.47)	10.6 (0.63)	7.85**	8.52**
Other	19.7 (0.49)	14.7 (0.48)	7.2 (0.46)	7.29**	11.28**
HSBS	18.7 (0.46)	13.4 (0.44)	7.3 (0.47)	8.33**	9.47**
LPME	15.4 (0.44)	11.5 (0.60)	5.7 (0.47)	5.24**	7.61**

Field of study: See Appendix, %=percentage of students enrolled in distance education within field of study and year, SE=standard error of estimate, t 2008-2004=t statistic for significance of comparison year 2008 versus year 2004, t 2004-2000=t statistic for significance of comparison year 2004 versus year 2000, significance of statistical test, *=p<0.05, **=p<0.001.

Table 6: Percentage of Students Enrolled in a Distance Education Program by Field of Study and Year (2000-08)

	NPSAS Year - % (SE)				
Field of Study	2008	2004	2000	t 2008 -2004	t 2004 -2000
Business	6.0 (0.48)	7.0 (0.43)	2.9 (0.30)	- 1.55	7.82**
CIS	8.0 (1.23)	7.2 (0.72)	2.7 (0.54)	0.55	5.00**
HE	3.8 (0.23)	5.3 (0.27)	3.1 (0.27)	- 4.23**	5.76**
Other	3.5 (0.20)	5.2 (0.23)	2.3 (0.25)	- 5.58**	8.54**
HSBS	2.4 (0.17)	3.7 (0.22)	2.2 (0.25)	- 4.68**	4.50**
LPME	1.8 (0.18)	3.0 (0.29)	1.5 (0.26)	- 3.52**	3.85**

Field of study: See Appendix, %=percentage of students enrolled in a distance education within field of study and year, SE=standard error of estimate, t 2008-2004=t statistic for significance of comparison year 2008 versus year 2004, t 2004-2000=t statistic for significance of comparison year 2004 versus year 2000, significance of statistical test, *=p<0.05, **=p<0.001.

Table 6: Percentage of Students Enrolled in a Distance Education Program by Field of Study, Type of Institution, and Year (2004-08)

		NPSAS Year - % (SE)		
Type of Institution	Field of Study	2008	2004	t 2008 -2004
For-profit Institutions	Business & CIS	20.7 (2.02)	15.0 (2.01)	2.00*
	All other Fields of Study	8.5 (1.04)	5.0 (0.51)	3.02**
Not-for-profit Institutions	Business & CIS	3.7 (0.26)	5.6 (0.31)	- 4.70**
	All other Fields of Study	2.5 (0.11)	4.2 (0.13)	- 9.98**

Field of study: See Appendix, %=percentage of students enrolled in a distance education program, within field of study, type of institution, and year, SE=standard error of estimate, t 2008-2004=t statistic for significance of comparison year 2008 versus year 2004, significance of statistical test, *=p<0.05, **=p<0.001.

APPENDIX
VARIABLE. MAJORS12 (FIELD OF STUDY: UNDERGRADUATE)

Field of Study Category	Percentage of All Students (2008)	Numerical Categories
Business/management (BUS)	16.2	9
Computer/information science (CIS)	3.4	6
Health or Education (HE)	20.1	8 & 10
Humanities or Social/behavioral sciences (HSBS)	21.6	1 & 2
Life sciences, Physical sciences, Math, or Engineering (LPME)	11.8	3, 4, 5, & 7
Undeclared, Not in a degree program, Vocational/technical, Other technical/professional (OTHER)	26.9	0, (-3), (-9), 11, & 12

Numerical categories = The numerical categories in the Variable, Field of study: undergraduate (MAJORS12) that were combined to generate the Field of Study groups that were used for this paper. Note: The category, OTHER, includes all students who were not in one of the other categories. In 2008, students who were not in a degree program were coded as -3. In contrast, in 2000 and 2004, students who were undeclared or not in a degree program were coded as 0. In 2000, students with "missing" information were coded as -9; they were included in "OTHER". This code was not used in 2004 and 2008.

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