

A Logistic Regression Analysis of Retention, Progression, and Graduation

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ABSTRACT

Growing discontent with return on investment in higher education has catapulted public discussion on college completion to the forefront. The purpose of this study is to evaluate the profile of students who have attained a four-year degree in six or less years to predict the relative importance of demographic and pre-college factors, as well as college behaviors on retention, progression, and graduation. A logistic regression analysis and descriptive statistics are used to evaluate those student characteristics. The study results showed that college behavioral attributes including the first semester grade point average, full-time enrollment, early selection of a major or pre-major are more critical for academic success and persistence in college. The overall results have contributed some insights to the analysis of ways and means of improving retention, progression, and graduation at the focus institution.

Keywords: Logistic Regression, Student Retention, Academic Milestones, Graduation.

INTRODUCTION

In the past few decades, the focus of attention in higher education has been on accessibility and affordability for potential students from the middle- and lower-income groups. The public concern today, however, is that higher education cost is exorbitant and hardly affordable. With growing discontent that the return on investment in higher education has not justified the costs, especially during a sagging economy characterized by high unemployment rates, the discussion has shifted from accessibility to graduating those who were admitted.

For example, the average six-year or less graduation rate of full-time, bachelor's degree-seeking students at U. S. four-year institutions in 2008 was 58 percent. This rate has called to question the financial repercussion of debt accumulated by the high percentage of those who did not graduate on time or entirely dropped out of college.

The discussion on increasing graduation rates also has illuminated the fact that the United States is no longer leading the rest of the world in educational attainment. The statistics reported by the Organisation for Economic Cooperation and Development (OECD, 2010) shows that the U. S. ranked 12th among other industrialized nations in the percentage of 25 to 34 years old holding associate degree or higher in 2008. In response, the U.S. president has proposed that 60 percent of the nation's working-age adults will have some type of degrees or career certificates by 2025. Since then the College Board's Commission on Access, Admissions and Success in higher education has initiated a completion agenda for the U.S. to regain its educational leadership by calling for 55 percent of young adults to obtain a college degree by 2025. Moreover, the expectation that the percentage of jobs that will require postsecondary education by 2018 may grow to 63 percent has spurred the National Governor's Association Chair to initiate plans for revamping the higher education accountability system as a matter of priority in 2010-2011 (Reindl & Reyna, 2011)

Consequently, politicians and other higher education stakeholders are now interested in strengthening the leading indicators for graduation, such as retention

and progression, by making use of data that will enhance monitoring and implementing processes for increasing graduation rates. This is why we hear about Complete College America, Complete College Georgia, Complete College Maryland, etc., and strikingly “reverse graduation,” where four year institutions may now award associate degrees as a milestone for progression towards a four-year degree. Funding to States will also be made available from the "*Credit When It's Due*" program to increase awarding associate degrees to students transferring early from community colleges to public higher education institutions. All these initiatives are to propel the student momentum to completing a degree.

PURPOSE OF STUDY

The purpose of this study is to evaluate the profile of students who have attained a four-year degree in six or less years to predict the relative importance of various pre-college factors and college behaviors that are likely to enhance retention, progression, and graduation. This effort will help to define policy measures or decision-making processes that could accentuate the completion agenda at the focus institution.

DATA AND METHOD

This study is a case analysis of a medium-size, four-year institution in Georgia. Data for the 2005 cohort of first-time students are used. Students are tracked from matriculation to graduation over a six-year period. A logistic regression analysis and descriptive statistics are used to evaluate student characteristics that are likely to predict student retention, progression, and graduation.

Student retention was tracked from the first semester to the beginning of sixth semester. The reason for limiting retention tracking to this time period is because the attrition rate of students, particularly at the focus institution, began to wane after the end of their sophomore year. Thus,

retention as a dependent variable was specified as a binary variable for each of the semesters tracked.

The impact of milestones or intermediate points of attainment, including credit hours earned at specific time periods during the course of obtaining a degree are examined as a precursor for progression. Progression milestones evaluated are: earned 12 student credit hours (SCH), 24 SCH, 36 SCH, 48 SCH, and 60 SCH at the end of the first, second, third, fourth, and fifth semester, respectively. Each intermediate credit hours attained was specified as a binary, dependent variable for progression.

The third set of models specified is for graduation as a binary, dependent variable. Students who graduated within six years or less were coded as ‘1’ and those who did not as ‘0’.

Independent variables analyzed include both continuous and dichotomous variables comprising demographic and pre-college variables (such as gender, race/ethnicity, high school GPA, SAT scores, etc.), as well as college behaviors (such as enrollment status, credit hours attempted, first semester GPA, major declaration, etc.).

RESULTS AND DISCUSSION

The findings of this study have been instrumental in designing relevant programs and policies that are ultimately expected to enhance graduation rates at the focus institution. For example, the results of this analysis showed that the first semester GPA is important for retention and progression as a leading indicator for graduation, whereas almost one-third of entering freshmen earned less than a 2.00 grade point average at the end of their first semester. Thus, this suggests the importance of an early alert system and intrusive advising for at-risk freshmen. Enrolling in college as a part-time student is symptomatic of a risk for retention, progression and timely degree completion.

The retention models showed that some pre-college variables such as SAT scores and race/ethnicity category are significant for the second semester retention. Afterwards, the college behavioral

variables, such as the first semester GPA, the amount of credit hours earned and the last GPA earned, are mainly critical for subsequent retention. In other words, continuing academic success is critical for student retention.

The progression milestone analysis showed that the amount of college credit hours accumulated within a given time period may spur progression and ultimately degree completion. For students to gain momentum toward degree completion, credit hours have to be earned at a reasonable pace that is pertinent to timely degree completion. Moreover, the odds ratio of timely selection of a major or pre-major is high and significant.

The graduation models indicated that pre-college, demographic, and college behavioral attributes all combined to determine the propensity to graduate. The overall results have contributed some insights to the means of improving retention, progression, and graduation at the focus institution.

CONCLUSIONS

The popularity of using analytics for solving problems in higher education has been growing lately (Bichsel, 2012). This study uses available data to provide solutions to issues of pressing concerns to many higher education institutions, such as identifying how retention, progression and graduation could be improved.

It is evident from this study that the first semester academic performance is critical for student retention and progression. Thus, institutions committed to student success must pay an immediate attention to assisting at-risk students upon and after matriculation. By putting in place an early alert system, students at risk of withdrawing can be quickly identified and helped. This calls for an intrusive advising before it is too late. While some departures or attrition could not be prevented because of extenuating factors beyond academic problems, higher education institutions could improve retention, progression and graduation by being responsive to issues within their control.

As more and more attention is being paid to college completion, some critics are afraid that this might be

at the expense low income, minority and other students who are at risk (Kantrowitz, 2012). If the emphasis on college completion is based on increasing graduation rates rather on increasing the number of graduates, financial aid and admissions may shift from needy students to academically talented students. This reversal may in the end hurt those who actually deserved assistance. The focus of this study, however, is to use available data and analytical models to inform decision-making related to retention, progression, and graduation.

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