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Will They Stay or Will They Go? Predicting the Risk of Attrition at a Large Public University

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WILL THEY
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PREDICTING THE RISK
OF ATTRITION AT
A LARGE PUBLIC
UNIVERSITY
THE PROJECT described in this article seeks to utilize a complex set of variables and characteristics, including data mined from an administration of the College Student Experiences Questionnaire, to determine the specific risk of attrition of individual college students prior to their matriculation, permitting specific and personal interventions.

Student persistence is a matter of concern at almost all institutions of higher education, as well as to legislators, government officials, and the public. While some student attrition is not necessarily a negative outcome, the wasted resources and perceptions of failure that are associated with unacceptable attrition levels are problematic for college and university administrators.

Many institutions have implemented strategies intended to enhance student persistence. However, most involve the broad application of programs, services, or instructional initiatives that affect large groups of students. Because it is reasonable to expect that some portion of any group of students would have been retained regardless of the intervention, such a broad approach is, at best, inefficient.

The project described in this article seeks to utilize a complex set of variables and characteristics to determine the specific risk of attrition of individual students prior to their matriculation. For those determined to be most at risk, an intervention specific to the individual student and his or her risk factors will be implemented.

BACKGROUND

A number of studies of student persistence have examined the interaction between students and institutions. Tinto (1975) proposes a predictive model based upon principles of the student’s level of academic and social integration. The model appears very useful in explaining attrition in the second year of college and beyond. However, decades of evidence suggest that attrition is greatest during the first year of college, as demonstrated by Iffert (1958), Marsh (1966), and Eckland (1964).

Pascarella and Terenzini (1980) applied Tinto’s principles of academic and social integration of students in the first year of college. They found evidence to support the basic aspects of the Tinto model—particularly the value of interaction between students and faculty members. Tinto’s research and that of Pascarella and Terenzini are useful models for predicting attrition based upon student characteristics and the nature and extent of student interaction with the institution.

Chapman and Pascarella (1983) studied differences in student social and academic integration, central principles in Tinto’s work, across various types of institutions. The researchers controlled for differences in student characteristics and found that there were differences across institutional type regarding both social and academic integration. The results suggest that particular types of institutions foster different sorts of integration or interaction opportunities for students. Robbins, Allen, Cassilas & Peterson (2006) studied the effect of student self-reported psychosocial factors on college outcomes in the first year and also found differences across institutional type.

Braxton, Vesper, and Hossler (1995) studied students’ expectations of the college experience and the relationship of those expectations to students’ intention to persist across a number of institutions. The study demonstrated...
that the extent to which student expectations of their experience are met has an effect on their plans to continue their matriculation. Helland, Stallings, and Braxton (2002) also studied how the fulfillment of student expectation relates to social integration and student departure. Their study at a single institution concluded that the satisfaction of student expectations plays a substantial role in student departure.

In a study at Canisius College, a smaller institution, Glynn, Sauer, and Miller (2003) developed a model for predicting attrition based upon pre-matriculation characteristics and opinions. Their model allowed for identification of the risk of attrition of individual in-coming students prior to the beginning of their coursework. The institution thus was able to design intervention strategies for students at risk of dropping out. The resulting increase in persistence and in degree attainment was a powerful testimony to the usefulness of the predictive model. The same researchers found that the model continued to be effective even after several years as the institution continued to demonstrate a substantially higher rate of student degree attainment (Glynn, Sauer, and Miller 2006).

Efforts to enhance student persistence often involve broad-based, widely applied programs. Such programs include enhanced orientation efforts, required first-year student seminar courses, early alert systems, and mandatory academic advising (Habley and McClanahan 2004). From the standpoint of enhancing service to and support of students, programs designed to enhance student persistence are laudable. When institutions give attention to student success and engage students in programs to enhance their prospects for persistence, the outcome is usually a good one. Further, the programs employed often do have a positive effect on persistence.

However, if the original rate of persistence is greater than zero (which always is the case), then some of the effort and expenditure associated with the programs' implementation is unnecessary. In other words, some students would have persisted to graduation regardless of the programs.

It is through the prediction of risk of attrition of individual students that institutions can identify those in need of an intervention and can employ a specific strategy to enhance those students' chances of success. Resources then can be diverted where they are most needed. This article describes the application of a predictive model at a large, Research I institution.

INSTITUTIONAL CIRCUMSTANCE

The University of South Florida (USF) is the third largest university in the Southeast and the ninth largest university in the country. More than 44,000 students study on campuses in Tampa, St. Petersburg, Sarasota-Manatee, and Lakeland. Undergraduate enrollment in 2006-07 was 44,038, with graduate students numbering more than 7,000.

USF is a rapidly growing research university. The Carnegie Foundation for the Advancement of Teaching ratings place the University in the top tier of research universities with more than $300 million in research funding. The freshman class on the Tampa campus numbered almost 4,000 in the fall 2006; more than 4,600 transfer students enrolled that same semester. Approximately 4,200 students live on the largely commuter campus.

The University's student population profile has characteristics associated with higher attrition rates. In fact, the most recent IPEDS data demonstrate that the first-time-in-college (FTIC) population at the University has a four-year graduation rate of 21 percent, a five-year rate of 39 percent, and a six-year rate of 47 percent. Many of the University's peer institutions have better rates—some dramatically so. In response to a desire to enhance student success and persistence, the institution has made a commitment to improve in this area.

THE COLLEGE STUDENT EXPECTATIONS QUESTIONNAIRE

The College Student Expectations Questionnaire (CSXQ) was developed in 1997 (Kuh and Pace 1998) to help institutions understand what students anticipate about the college-going experience. Institutional researchers utilize the instrument to determine whether student expectations need to be modified and also to inform recruitment and enrollment management strategies and approaches. Information about student expectations can help institutions construct orientation programs that provide updated and accurate information about the college experience (Gonyea 2003). Institutions generally are well-served to evaluate students' expectations because the cognitive dissonance generated by unmet expectations can compromise the commitment of an individual student to the institution (Howard 2005).

Aggregated data evaluated by the national administrators of the CSXQ show that student expectations of the college-going experience are not met (Kuh, Gonyea, and Williams 2005). However, even though the nationally aggregated data are valuable, institutionally based research is both encouraged and recommended (Miller, Kuh, and Paine 2006).

The University of South Florida administered the CSXQ in summer 2006 to in-coming First Time in College (FTIC) students as part of new student orientation. Students were asked to provide their individual student
identification number so researchers could collect additional information. Approximately 1,000 usable surveys with verified student identification numbers were collected. University officials are interested in the general results of the CSXQ and will analyze them in order to inform any adjustment of student programs and services. For the purpose of the present study, CSXQ data are examined to determine their worth in predicting student persistence; other evidence suggests that student expectations may be useful in a prediction model (Miller 2005). The CSXQ gathers information about student expectations of library use and information technology, interactions with faculty, course learning, writing, campus programs and facilities, and clubs and organizations. What students expect to experience in those aspects of the college experience may prove useful in predicting their continued matriculation.

INSTITUTIONAL DATA TO SUPPLEMENT CSXQ

In addition to the CSXQ data, the research team will examine other known student factors. For example, demographic information shown to be useful in predicting attrition—to include gender, ethnicity, and age—will be part of the data set. Academic performance and potential, in the form of SAT (or modified ACT) and high school average, also will be included. In an effort to account for students' distance from home, researchers will include permanent address zip code in the data set. Commitment to the institution will be measured by the time lapse between application for admission and matriculation. Plans for the college experience will be assessed by intended major and by plans for residence. Parental support has been found to be of predictive worth, so the data set also will include the number of family members who accompanied a student at new student orientation.

Several University programs are intended to provide extra support to students and to stimulate behaviors to enhance student success. For example, two summer programs—Student Support Services and Freshman Summer Institute—involve special advisement and support for students determined on the basis of pre-matriculation characteristics to be at risk. Further, special support and academic monitoring services are provided to student-athletes. Involvement in these programs will be part of the data set. Some of these factors are likely to be positively correlated with persistence, and some will be negatively correlated.

PROJECT PLAN

The full data set was constructed from the merging of the CSXQ data into institutionally housed data. Once enrollment in the subsequent academic year is firm (i.e., after the drop and add period), the researchers will be able to determine what proportion of the 1,000 students in the study have persisted into the second year. The dichotomous dependent variable, persistence, will divide the data set into two groups; logistic regression will allow the researchers to determine which independent variables in the data set are useful in distinguishing persisters from dropouts, as well as the predictive weight of each of those variables.

On the basis of that set of determinations, a model will be constructed and a regression formula applied to incoming students. The researchers intend to complete model construction by late in the fall of 2007. If aspects of the model demonstrate predictive value, the CSXQ (or a modified version thereof) will be administered in summer 2008 to entering FTIC students attending orientation. The model will be applied to the entering cohort, and a risk-of-attrition score will be calculated for each student.

DESIGNING INTERVENTIONS

The most important aspect of this project is the design of well-formulated interventions in response to information about students determined to be at risk of dropping out. An essential first step is the identification of attrition risk of individual students. But improvement will occur only if the institution fashions responses for students that make success and persistence more likely.

Undergraduate Studies and the Division of Student Affairs at the University of South Florida are committed to developing strategies to enhance the likelihood that individual students will persist. Several departments already provide services that relate directly to student persistence. Some participate in regular, routine interaction with first-year students. Individuals working in First-Year Programs, the Academic Advising Center, Financial Aid, Career Services, and the University Experience (first-year seminar) course have a considerable amount of interaction with first-year students, sometimes because the interaction is a requirement for the student.

Using the predictive model, the researchers, with the support of appropriate administrative staff, will determine which components of risk of attrition are best addressed by which departments. Students at high risk of attrition and with career or major objectives that are particularly challenging in the context of their academic preparation and performance history would benefit from interventions fashioned by the Academic Advising Center and the Career Center. Students at high risk because of living circumstances may be offered residential scholarships to make campus living affordable. Students planning to spend considerable time in off-campus employment may be offered meaningful, well-compensated jobs on campus.
There are many intervention strategies with many forms of delivery. Research at Canisius College demonstrated that interventions can be productive and fruitful; the key value of the model is that those who design and manage interventions must know exactly who stands to benefit most from them. Delivering help and support where it is most needed is efficient for departments and beneficial to the students served.

CONCLUSION
In subsequent writing, the research team will describe findings from the first-year study and will present the model that will be employed to measure attrition risk. Specific interventions tailored to aspects of attrition risk will be described, and the plan for administering the program or attrition intervention will be explained.

REFERENCES

About the Author
Thomase. Miller is an Associate Professor at the Tampa campus of the University of South Florida, where he has served since 2001. He previously worked in senior student affairs positions at the University of South Florida, Eckerd College, and Canisius College, and he also held positions at Indiana University, and at Shippensburg University. Miller holds a bachelor's degree from Muhlenberg College and master's and doctoral degrees from Indiana University.