Mining for Success
A community college and four-year joint project on student success

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Outcomes for this Session

- Purpose of the Kresge research project
- Development of a collaborative effort to promote student success
- Process for integrating a multi-institutional data
- Research questions, methods, and findings
- Lessons learned and next steps
Purpose of the Research

- Community college transfer students are an increasing population at universities nationwide.
- This research serves primarily under-represented and first generation transfer students.
- By using data mining and predictive modeling we identify successful pathways to graduation.
- Results of the study will inform interventions to improve student success.
UMUC

- Online institution that enrolls over 90,000 diverse students each year worldwide
- Over 90 academic programs fully online
- Most students transfer in
  - Prince George’s Community College and Montgomery College are the largest sources of transfer students
Montgomery College

- MC enrolls about 60,000 credit and non-credit students each fall
- Annually, over 5,000 MC students transfer to UMUC
- About 700 – 800 of those transfer to UMUC
Prince George’s Community College

- PGCC enrolls about 40,000 credit and non-credit students each fall
- Annually, over 3,800 students transfer
- About 500-600 of those transfer to UMUC
Value-Added for Participation for the Community Colleges

- CC advisers will use information from this research to advise students to prepare for transfer
- 4-year advisers will use this information to help transition students to a bachelor’s degree
- This research results will provide valuable feedback for CC faculty
Outcomes of the Collaboration

- Feedback on student success factors to enhance advising practices
- Interaction and meetings to discuss, explain, and interpret the outputs and results
- Best practices for the community colleges
- Align curriculum and expectations between the community colleges and the four-year institution
- Create and implement interventions based on student success factors
- Evaluate and revise interventions as needed
Challenges

- Understanding data mining methodology and outputs
- Expanding the project participants to include other MD community colleges
- Generalizing the student success factors and interventions to students who transfer to other 4-year institutions
The Population of Interest

- Students enrolled at UMUC between 2005 and 2011
- PG and MC transfer students
  - Direct compare (32,000)
  - National Student Clearinghouse (12,000)
  - UMUC records (8,000)
Transfer Student Progressions

Demog and Other Academic Work

CC

Transfer

First Semester

Semester 2

Last Semester

Four-Year Institution

Graduate School

University of Maryland University College
Kresge Data Mart

- Integrates student data from all sources:
  - Community College and UMUC SIS
  - Demographic
  - Courses
  - Performance
  - Classroom behavior (LMS)

- 300 source and derived variables
Outcome Variables

- Successful course completion (percent)
- First term GPA (dichotomized)
- Reenrollment in next term (Y/N)
- Retention (12 month window - Y/N)
- Student Success Quadrants
  - (Slackers, Splitters, Strivers, and Stars)
Research Studies
Which variables contribute to the prediction of online course success?

- 4,558 new undergraduate enrollments on online gateway courses
- Online student behavior, transfer credit, activity prior to Day 1, Transfer GPA, semester load, and time since last institution were all found to be significant predictors of course success
Which CC variables predict first term GPA of 2.0 or higher?

- 9,063 MC/PGCC transfer students
- Positive predictors
  - Course efficiency, Math, Honors, Married, Age
- Negative predictors
  - English, On-line course, Minority status
Predictive Model for Success

- Age
- Gender
- Race
- Marital Status
- English
- Math
- Speech
- Computer
- Honors
- On-line
- Remedial

Success @ UMUC

Logistic Regression

Course Efficiency
What factors predict first term GPA and retention?

- PGCC and MC transfer students
- Predictor variables: prior CC coursework and demographic variables
- Courses with quantitative content at the CC is positively correlated with success
- Dev ed is negatively correlated with success
- Withdrawals have a negative correlation
Success Quadrants

- Stars
- Splitters
- Strivers
- Slackers

Yes

No

Retention

GPA < 2.0
GPA ≥ 2.0
Summary of Findings

- Positive effects
  - Transfer credit, prior GPA, math, honors, course efficiency, online activity, age, marital status
  - Course success can predict retention

- Negative effects
  - remedial, online, minority status
Interventions

- Collaborate with CC to provide advising, tutoring, and mentoring at the community college
- Develop intervention strategies for UMUC
  - Tools to assist with transition
  - Online tutoring
  - Evaluate challenges for students in math
  - Develop learning communities and mentoring programs
Next Steps

- Implement and evaluate interventions – spring 2014
- Update data and examine course success at the CC
- Develop, understand, and explain predictive models to identify risky pathways for students at the CC
Discussion