M131 Assignment
Student Loan Default Rate

Our goal is to start to understand how a math model can predict student loan default rates. This process begins by being able to identify variables used in the model and know whether the variable increases or decreases the loan default rate.

Troubling Outcomes

Far too many students enroll in college but never complete their education. On average, less than 60% of students seeking four-year bachelor degrees graduate within six years.

The human side of this failure is significant. The student who drops out after a year or two of college will benefit only slightly – at least economically – from having attended college but not having earned a degree. They will earn, on average, only 5% to 10% more than peers who never attended college. Many of these students will take on thousands of dollars of student loan debt which will be a significant financial burden for years to come. In addition to these personal costs, taxpayers spend billions of dollars each year subsidizing the education of students who fail to graduate and who, too often, don't even make it through their first year of college.

Performance Measurement and Management

Stakeholders in the US higher education system – from students to administrators to legislators to employers - need to be able to accurately college measure performance, understand what that performance means to them, and act upon the information presented. What are the appropriate measures of college performance? What data exist to support those measures?

Out of the Warehouse, into the Storefront

Hundreds of millions of dollars have been spent creating data warehouses that contain the information needed to assess the performance of our higher education system. These warehouses exist at the school, state and national levels, and hold a powerful amount of information that needs to be presented in ways that are compelling to users.

Source: http://collegemeasures.org/

Let's get acquainted with terminology you will need when building your math model of student loan default rates.

Salary & Debt

Student Loan Default Rate - The percentage of borrowers whose first loan repayments came due between October 1 of one year and September 30 of the next year, and who defaulted before September 30 of the following year. For example, the student loan default rate for the 2008 represents the percentage of borrowers whose first loan repayments came due between October 1, 2007 and September 30, 2008, and who defaulted before September 30, 2009.

Average Debt per Recent Graduate - The average per-undergraduate-borrower cumulative principal borrowed of those in the class (for 2009-2010 data, those who started at the institution as first- time students and received a bachelor's degree between July 1, 2008 and June 30, 2009) who borrowed at any time through any loan programs (institutional, state, Federal Perkins, Federal Stafford Subsidized and Unsubsidized, private loans that were certified by the institution, etc.; exclude parent loans) multiplied by the percentage of the class who borrowed at any time through any loan programs (institutional, state, Federal Perkins, Federal Stafford Subsidized and Unsubsidized, private loans that were certified by the institution, etc.; excluding parent loans) and divided by 100.

Median Starting Pay for Recent Graduates - Half of the starting employees who are graduates of a school, are full-time employees with 5 years of experience or less in their career or field who hold a bachelor's degree and no higher degrees, will earn more than this salary, while half will earn less.

Ratio of Student Loan Payments to Earnings - Student loan payments are the sum of twelve of the monthly payments that would be needed to repay the average debt per recent graduate, assuming a 6.8% interest rate and equal monthly payments across a ten year period. The resulting figure is then divided by the median starting pay figure to derive the ratio of student loan payments to earnings.

Source: http://collegemeasures.org/page/Glossary.aspx

Consider the table:

Ratio of Student Loan Payments to Earnings Analysis

Measure	Outcome	National Rank Among All Colleges Percentile	National Rank Among Public Colleges Percentile
Average Annual Student Loan Payments Per Recent Graduates	$731	6th	12th
Median starting pay *	$43,200	67th	70th
Ratio of student loan payments to earnings per recent graduates *	1.7 %	7th	11th

Data presently available for 946 of the 1,575 institutions featured on this website.

Source: http://collegemeasures.org/4-year_colleges/reporting/institution/scorecard/rld/110608.aspx

Homework Questions

Q#1 CSUN is in the 6th percentile nationally of average annual student loan payments per recent graduates. What does that mean? Is that a positive or negative advertisement to get a degree at CSUN? [Forgot Percentile? Read http://www.behavioradvisor.com/701Percentiles.html for review and an example.]

Q#2 What percent age of recent CSUN students defaulted on their loans in 2008? See http://collegemeasures.org/4-year_colleges/reporting/institution/scorecard/sldr/110608.aspx

3.READ: Browse through the report “Student Loan Defaults in Texas: Yesterday, Today, and Tomorrow” found on: **http://www.tgslc.org/publications/reports/defaults_texas/ins_four.cfm#3**

The authors present a statistical regression model that describes student loan default rate in terms of many variables. The student loan default rate of a university is influenced by both student and institutional traits or characteristics or variables. [Here we can assume the words traits, characteristics, or variables all mean the same thing.]

Answer the following questions:

Q#3 List 10 variables that influence of student loan default rates (5 institutional variables or traits and 5 student variables or characteristics).

For example, an institutional can be public or private; so source of funding is a categorical variable.

Age is an example of a student variable or characteristic; that means that each student who is enrolled in college has an age (and age is a number). Age may be further divided into several groups such as 18-22, 23-26, 27-30, over 30). Is one of those age groups more likely to default? Why?

Q#4 List whether the variable you identified increase or decrease the student loan default rate. For example, browse through the articles and see if private universities have a higher or lower default rate than public universities. (WHY?) Dependence status is characteristic trait, i.e. with or without children or other dependents is broken down into 2 categories (children, no children, other dependents). Suppose a student has 3 children. Is that a factor associated with increasing the likelihood of student load default rate?

Q#5. Identify a group of 5 students’ variables that predict low student loan default rate? Characterize institutions with 5 variables that increase the likelihood of high student loan default rates.

Other sources for Information:

http://www.tgslc.org/pdf/Institutional_Default_Studies.pdf

http://centerforcollegeaffordability.org/uploads/Scratch_Beneath_Surface.pdf