Robert Bridge
Sepehr Piri

Project Proposal

The average cost of undergraduate tuition in the United States has become a major consideration for those interested in attending college. The rate at which tuition costs has increased in the past 20 years has far surpassed the rate of inflation for the same time period. Oftentimes college tuition is the largest expenditure a student has ever had to consider. As such, tuition is a major factor for considering which college to attend, especially as an out-of-state student.

The goal of this project is to use the below described dataset and variables to create a model predicting tuition based upon a set of 7 variables generally used to describe the quality of a university. We will use influence diagnostics and multicollinearity tests to determine the best regression analysis to use, so that we can create a model that best creates coefficients that are useful to interpretation. We will also build a principle component regression model and compare it to OLS regression to determine which performs best. Then, using the model, we will try to determine how "good of a deal" VCU is for out-of-state students by using the model to predict VCU's out of state tuition and comparing this to VCU's actual tuition. Additionally, we will use a multivariate means test to determine if VCU's characteristics have a significant difference with our dataset.

Another goal of this project is to submit our results to the VCU News/Public Relations Department for possible publication on the VCU News website, so that the results can serve as a helpful educational tool for current students.

The following dataset includes statistics for 777 observations of colleges taken from the 1995 U.S. News and World Report. The data is available to the public and Out-of-State Tuition (Outstate) is included as the dependent variable. The independent variables listed will be % of new students from top 10% of H.S. class (Top10perc), number of full-time undergraduates (F.Undergrad), % of faculty with Ph.D.'s (PhD), instructional expenditure per student (Expend), graduation rate (Grad.Rate), student/faculty ratio (S.F.Ratio), and private or public as a categorical variable in which yes indicates private and no indicates public university (Private).
* note: This dataset is tentative and we are currently investigating more up-to-date data as well as researching which variables best describe university quality

The objective of this analysis is to determine the relationship between the independent variables listed and the dependent variable of out-of-state college tuition. Such a relationship could help prospective college students make more informed choices for such a large expenditure.

Variables:
- Y = Out-of-state Tuition ($ per semester)
- X_1= % of New Students from Top 10% of H.S. Class (%)
- X_2= Number of Full-Time Undergraduates
- X_3= % of Faculty with Ph.D.'s (%)
- X_4= Instructional Expenditure per Student ($ per year)
- X_5= Graduation Rate (%)
- X_6= Student/Faculty Ratio
- X_7= Private or Public Status (Yes = Private, No = Public)