From: Daniel Gillinger & Brian Freiss

To: Professor Ryan

Date: 3/26/21

Subj: Databases & Data Visualization Proposal

Section 1:

Question: How do college’s out-of-state tuition affect graduation rates?

We searched through Kaggle and found observational data on 777 colleges around the country. It included the college name followed by 18 additional variables about each college. The main variables we focused on were out-of-state tuition costs, graduation rate, and student faculty ratio. The data was collected in 2018, but based on the tuition costs and the use of Allentown Coll. of St. Francis de Sales, rather than DeSales University, the actual date may be dated by a couple years.

Hypothesis: The higher the out-of-state tuition, the higher the graduation rate.

Section 2:Table

Description automatically generated

Variables:

* Name
  + The name of each college
* Private
  + Data shows up as “Yes” or “No” in relationship to if it is a private school or not, with the alternative being public
  + i.e. Yes = private; No = public
* Apps
  + Number of applications for the year
* Accept
  + Number of acceptances for the year
* Enroll
  + Number of enrollments for the year
* Top10perc
  + Number of new students who were in the top 10% of their high school class
* Top25perc
  + Number of new students who were in the top 25% of their high school class
* F.Undergrad
  + Number of full-time undergraduates
* P.Undergrad
  + Number of part-time undergraduates
* Outstate
  + Tuition cost for out-of-state students
* Room.Board
  + Cost for room and board
* Books
  + Estimated cost of books
* Personal
  + Estimated personal costs
* PhD
  + Percentage of faculty with PhDs
* Terminal
  + Percentage of faculty with terminal degrees
* S.F. Ratio
  + Student/faculty ratio
* Perc.alumni
  + Percentage of Alumni who donate
* Expend
  + Expenditures made by the college per student
* Grad.Rate
  + Graduation Rate

Section 3:

Main Variables:

X: Out-of-State tuition

Y: Graduation rate

* Other Focused on Variables: Private, Student Faculty Ratio

Summary Statistics:

Graduation rate average, Student/Faculty ratio average, Student/Faculty ratio minimum, Student/Faculty ratio maximum, graduation rate minimum, graduation rate maximum

Graphical user interface, text, application

Description automatically generated with medium confidence

Visualizations (2):

Chart, scatter chart

Description automatically generated

Chart, histogram

Description automatically generated

* Scatter plot:
  + The scatter plot above presents the relationship graduation rate and out-of-state tuition cost in a clear and easily consumed way.
  + The plot directly relates to our hypothesis, showing a positive correlation between graduation rate and out-of-state tuition cost.
* Bar chart:
  + The bar chart above shows how many colleges had a given out-of-state tuition cost. It makes it easier to see what range the majority of costs fall into.
  + The chart helps to show if the data may be skewed with a significant number of colleges only taking up a small range of the costs. While this data does appear to be skewed to the left, it will take more analysis to determine if it will affect the accuracy of our hypothesis.