Project 5, Introduction to Information Visualization

Team Members: Justin Cozzone, Jeramie Paz
    Justin coded the scatterplot portion of the project, while Jeramie coded the bar charts
    and the table portions of the project. We both believe we did a fair amount of work.
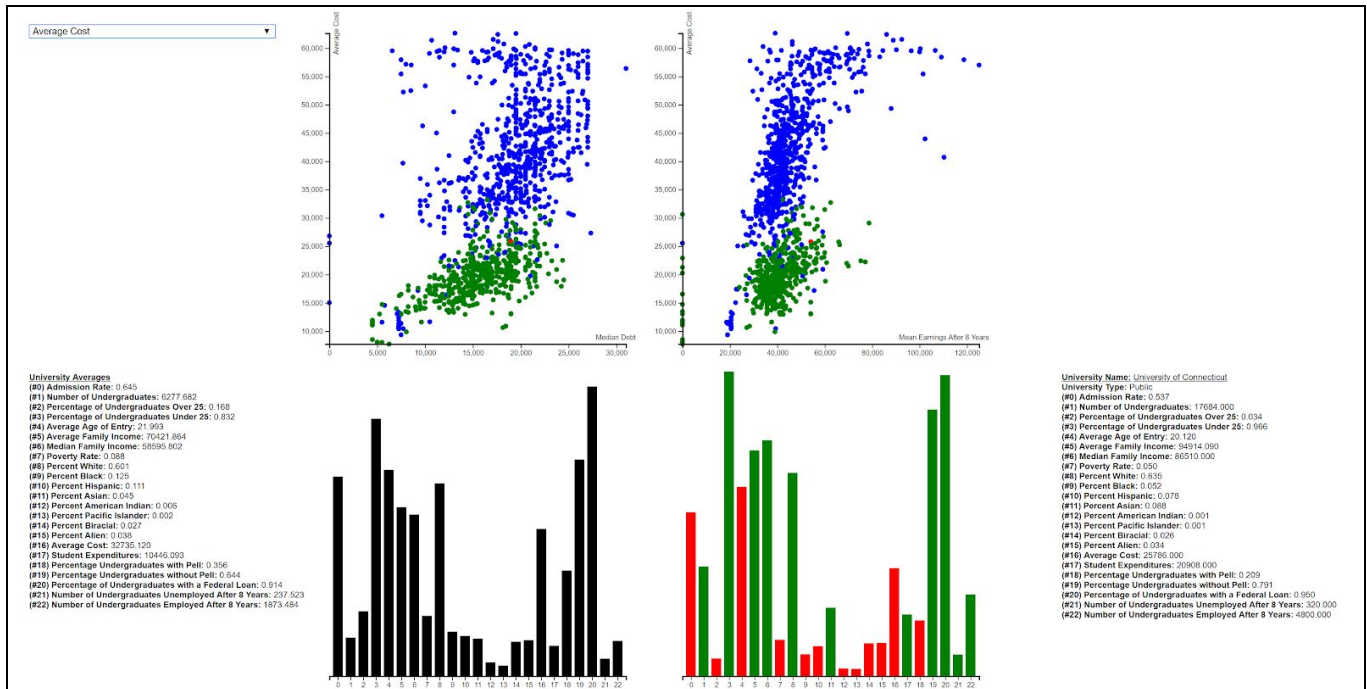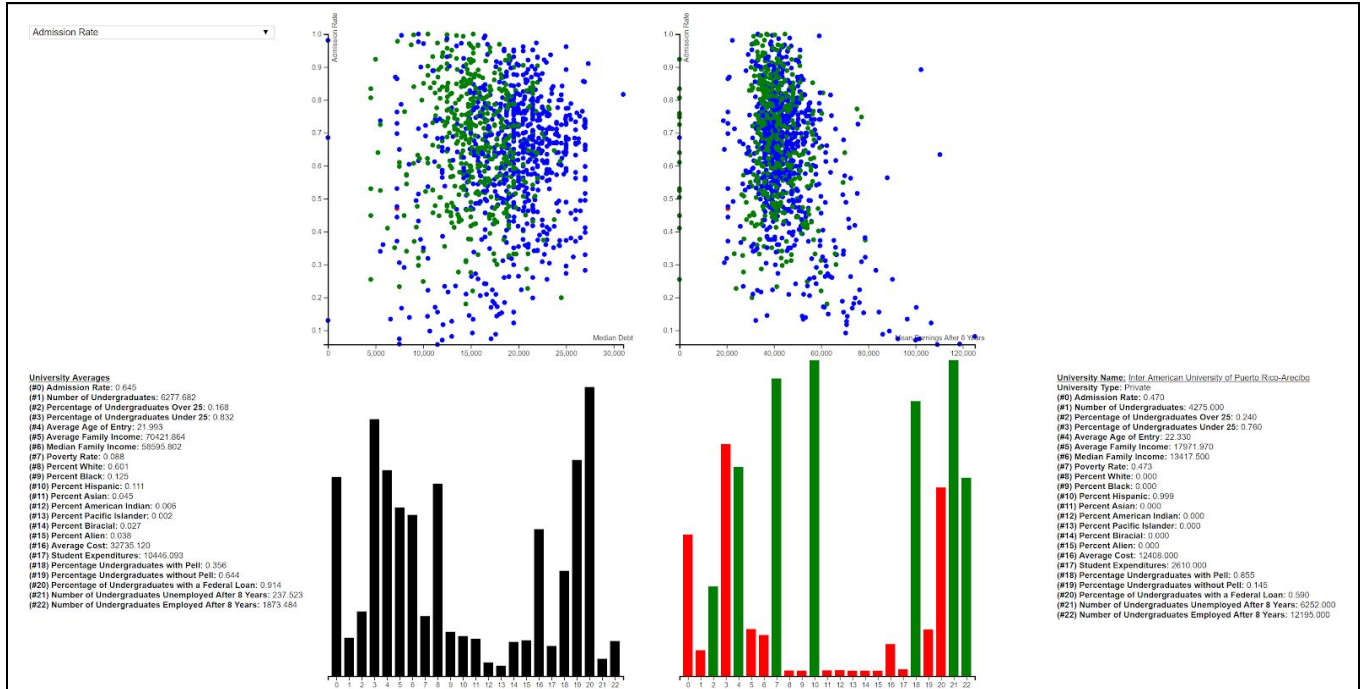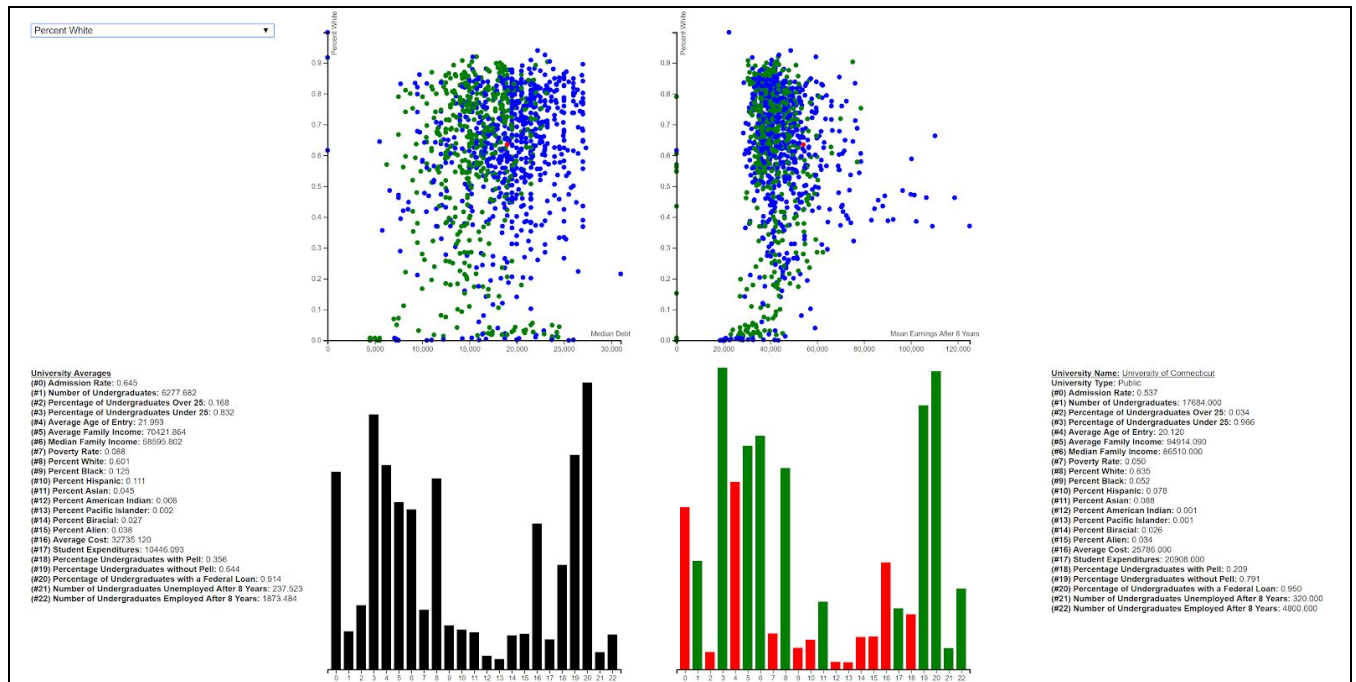
Dataset Chosen: Colleges

Analytic tasks our visualization supports: Our visualization supports value retrieval, computing a derived value, finding extremum, determining range, distribution characterization, anomaly identification, clustering, and correlation from the list of low-level taxonomy tasks. We do not support filtering or sorting (although we could make a half-decent argument for sorting, we do not feel it sorts well enough to qualify for this task). Of the interaction tasks, our visualization supports selection, exploration, reconfiguration (of sorts), abstraction/elaboration, and connections. We do not support the filtering or encoding tasks very well.

Our objective for this project was to determine the relationship between many different variables relating to college and how they affect debt and earnings. Therefore, we decided to create two scatterplots with debt and earnings on the x-axis, and the many influencing variables on the y-axis, changed via a drop-down. We also decided that more information about colleges was needed, especially if the user wanted to see how a college compared to averages, so we created two bar charts. One is a static chart that displays the averages of many of the variables (which have been converted to a 0-1 scale), and the other displays information about the college that is selected. The individual bars turns red when below average and green when above average for easy comparison, while the average naturally stays a static black throughout. We also included tables for average and individual values. In addition, we felt it was pertinent to judge public and private colleges separately, so we turned the private colleges' dots blue and the public dots green for separate comparison. This approach also allows sight of general trends across all colleges. Finally, we added brushing in case one wanted to see how a host of colleges changed from one variable to the next easily.

Questions that our visualization can answer include, but are not limited to: What is the relationship between average debt and average family income? Do colleges with more white people have higher average earnings? Does a lower admission rate correspond to higher earnings? How about higher debt? Is there a correlation between how many people have loans and how high debt is? How do individual colleges compare to an aggregation of averages? Are there any outliers in this set? What are the important values for an individual college?

Screenshots of our visualization:

Admission Rate ▼

Admission Rate (y-axis) vs Median Debt (x-axis); Admission Rate vs Mean Earnings After 8 Years

University Averages
(#0) Admission Rate: 0.645
(#1) Number of Undergraduates: 6277.682
(#2) Percentage of Undergraduates Over 25: 0.168
(#3) Percentage of Undergraduates Under 25: 0.832
(#4) Average Age of Entry: 21.993
(#5) Average Family Income: 70421.864
(#6) Median Family Income: 58595.802
(#7) Poverty Rate: 0.088
(#8) Percent White: 0.601
(#9) Percent Black: 0.125
(#10) Percent Hispanic: 0.111
(#11) Percent Asian: 0.045
(#12) Percent American Indian: 0.006
(#13) Percent Pacific Islander: 0.002
(#14) Percent Biracial: 0.027
(#15) Percent Alien: 0.038
(#16) Average Cost: 32735.120
(#17) Student Expenditures: 10446.093
(#18) Percentage Undergraduates with Pell: 0.356
(#19) Percentage Undergraduates without Pell: 0.644
(#20) Percentage of Undergraduates with a Federal Loan: 0.914
(#21) Number of Undergraduates Unemployed After 8 Years: 237.523
(#22) Number of Undergraduates Employed After 8 Years: 1873.484

University Name: Inter American University of Puerto Rico-Arecibo
University Type: Private
(#0) Admission Rate: 0.470
(#1) Number of Undergraduates: 4275.000
(#2) Percentage of Undergraduates Over 25: 0.240
(#3) Percentage of Undergraduates Under 25: 0.760
(#4) Average Age of Entry: 22.330
(#5) Average Family Income: 17971.970
(#6) Median Family Income: 13417.500
(#7) Poverty Rate: 0.473
(#8) Percent White: 0.000
(#9) Percent Black: 0.000
(#10) Percent Hispanic: 0.999
(#11) Percent Asian: 0.000
(#12) Percent American Indian: 0.000
(#13) Percent Pacific Islander: 0.000
(#14) Percent Biracial: 0.000
(#15) Percent Alien: 0.000
(#16) Average Cost: 12408.000
(#17) Student Expenditures: 2610.000
(#18) Percentage Undergraduates with Pell: 0.855
(#19) Percentage Undergraduates without Pell: 0.145
(#20) Percentage of Undergraduates with a Federal Loan: 0.590
(#21) Number of Undergraduates Unemployed After 8 Years: 6252.000
(#22) Number of Undergraduates Employed After 8 Years: 12195.000

Average Cost ▼

Average Cost (y-axis) vs Median Debt (x-axis); Average Cost vs Mean Earnings After 8 Years

University Averages
(#0) Admission Rate: 0.645
(#1) Number of Undergraduates: 6277.682
(#2) Percentage of Undergraduates Over 25: 0.168
(#3) Percentage of Undergraduates Under 25: 0.832
(#4) Average Age of Entry: 21.993
(#5) Average Family Income: 70421.864
(#6) Median Family Income: 58595.802
(#7) Poverty Rate: 0.088
(#8) Percent White: 0.601
(#9) Percent Black: 0.125
(#10) Percent Hispanic: 0.111
(#11) Percent Asian: 0.045
(#12) Percent American Indian: 0.006
(#13) Percent Pacific Islander: 0.002
(#14) Percent Biracial: 0.027
(#15) Percent Alien: 0.038
(#16) Average Cost: 32735.120
(#17) Student Expenditures: 10446.093
(#18) Percentage Undergraduates with Pell: 0.356
(#19) Percentage Undergraduates without Pell: 0.644
(#20) Percentage of Undergraduates with a Federal Loan: 0.914
(#21) Number of Undergraduates Unemployed After 8 Years: 237.523
(#22) Number of Undergraduates Employed After 8 Years: 1873.484

University Name: University of Connecticut
University Type: Public
(#0) Admission Rate: 0.537
(#1) Number of Undergraduates: 17684.000
(#2) Percentage of Undergraduates Over 25: 0.034
(#3) Percentage of Undergraduates Under 25: 0.966
(#4) Average Age of Entry: 20.120
(#5) Average Family Income: 94914.090
(#6) Median Family Income: 86510.000
(#7) Poverty Rate: 0.050
(#8) Percent White: 0.635
(#9) Percent Black: 0.052
(#10) Percent Hispanic: 0.078
(#11) Percent Asian: 0.088
(#12) Percent American Indian: 0.001
(#13) Percent Pacific Islander: 0.001
(#14) Percent Biracial: 0.026
(#15) Percent Alien: 0.034
(#16) Average Cost: 25786.000
(#17) Student Expenditures: 20908.000
(#18) Percentage Undergraduates with Pell: 0.209
(#19) Percentage Undergraduates without Pell: 0.791
(#20) Percentage of Undergraduates with a Federal Loan: 0.950
(#21) Number of Undergraduates Unemployed After 8 Years: 320.000
(#22) Number of Undergraduates Employed After 8 Years: 4800.000

Elements that need explanation:

It is worth noting that due to our implementation of the CSS, the visualization doesn't work for all screen sizes. If it is too large or too small, please do not hold our beginner's knowledge of CSS against us and simply resize it by zooming the browser in or out.

In addition, we centered the graphs because due to the choice of table positioning, any other location would have made the visualization seem awkward. Unfortunately, there is empty space, especially to the right of the second scatterplot, but this choice was deliberate as it was the least worst option.

We chose yellow as the brush color as it was the only color distinct enough from all the other colors we had used to be a good choice in our eyes. Although it is a bit glaring, it also allows for easy tracking of the dots from one variable to the next.

Finally, we would like to explain that we lack a key for the public and private colors (green and blue, respectively) since we did not think it would look nice, nor would it add too much to the visualization. If we were to publish some variant of these charts, we'd simply include it in the information a paragraph above the chart.