Lab 7 B: Brushing and Linking

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Brushing and Linking Scatterplots

Lab7 Desciption

This final programming assignment of the term is a more open-ended data visualization challenge. We have created a series of design specification for you to implement against (Lab 7 A,B,C,D). *You only need to complete one of these.* Take some time to look through each of them and decide.

Note that there is no starter code for this lab. You are welcome to use code from your previous assignments, or start from scratch. Some descriptions include resources or tips that may help you get started.

What to submit

1. You should implement the design specification below, including the visual interface and user interaction components.
2. Rename your `lab7` folder to `LastName_FirstName_lab7`
3. Zip up `LastName_FirstName_lab7` as `LastName_FirstName_lab7.zip` and submit it to Canvas.

Grading

Each lab7 submission will be graded against the design specification provided for the lab that you choose. This will consists of:

1. Correctly implementing the visual design elements of the lab. This includes: correct syling of the chart (or charts) used, correct data mappings between the data and the views, and use of axis labels and styling where applicable.
2. Correctly implementing the interactive functionality. This is specified through the design specification, and also the short video for each lab7 option that highlights how it should work. Both of these components are important. Depending on which lab7 you choose, these may be independent (e.g., filters), or very connected (e.g., scrollytelling).

Grading Notes specific for lab 7B

In addition to the user interaction and interface elements described below (and in the video), this lab places particular emphasis on the brushing and linking interaction across the two scatterplots. Make sure that all the operations of brushing and linking are working (create selection region, drag selection region, clear selection region by clicking on empty part of vis, etc.) Also, make sure that the corresponding points in the second scatterplot highlight (and un-highlight).

Which TAs to ask for help on this lab

To make feedback, guidance, and grading more consistent for lab7, we have assigned the following TAs as the primary people to ask for assistance on this lab:

- Grace

Design Specification

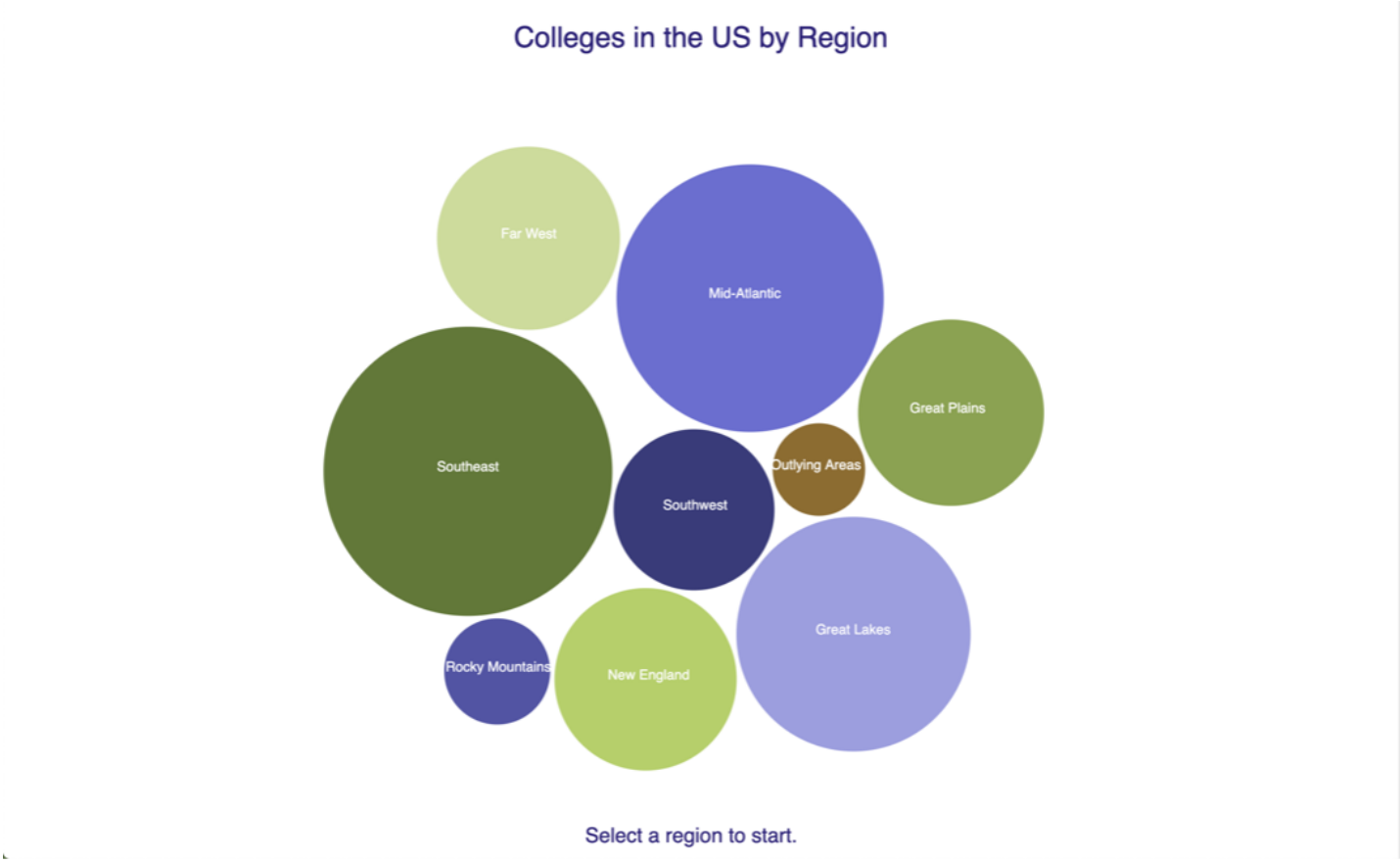
The goal of this visualization is to allow brushing and linking between two charts showing information about colleges. This visualization contains 2 pages. The first page shows a bubble chart of regions and the second shows 2 scatterplots with brushing and linking interaction. You must include the design requirements listed for both below.

See the video clip below of a demo of the visual and interactive aspects of this lab: Video

Dataset

For this visualization, please use this dataset: Data

Page 1: Bubble Chart



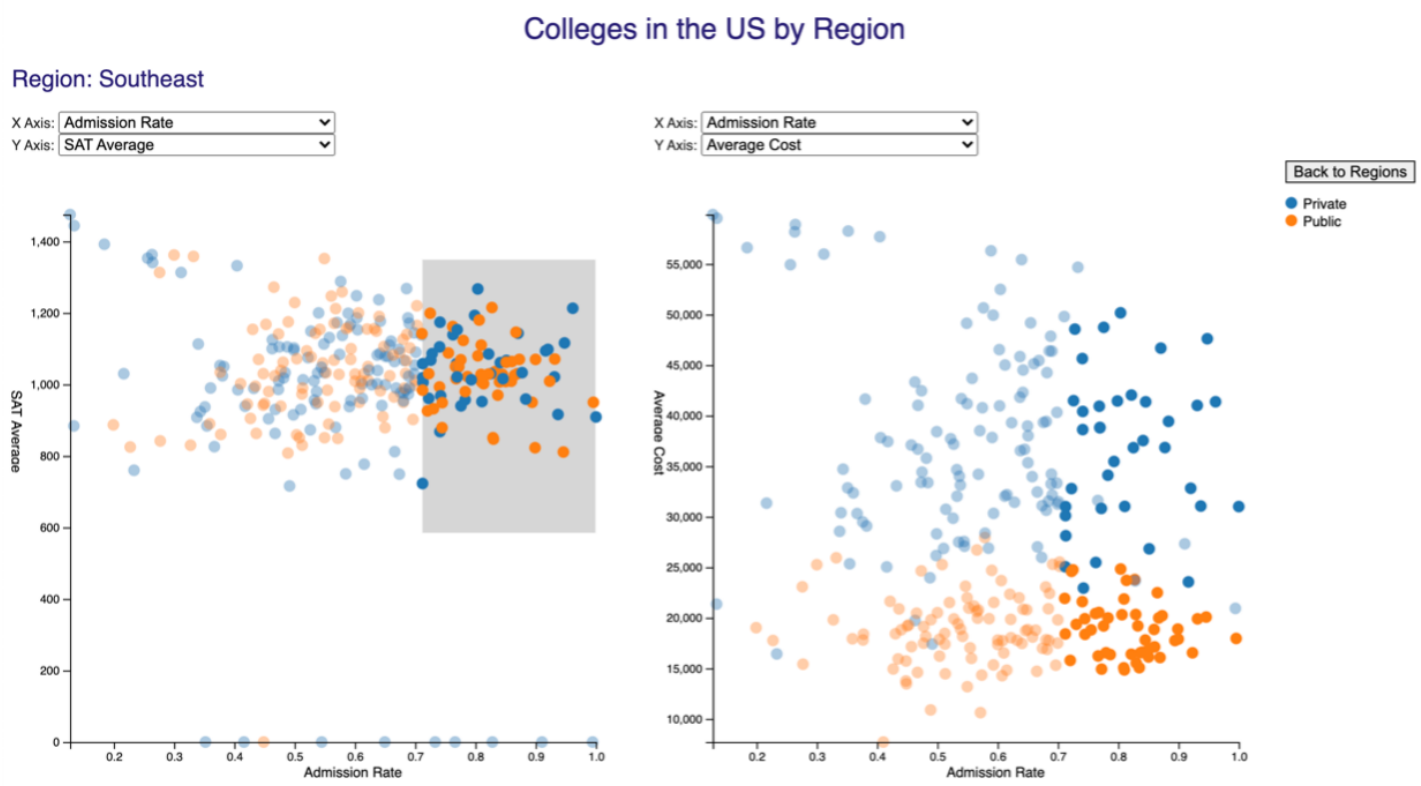
User Interface Elements

1. Title and “Select a Region” text
2. Display one bubble per region, uniquely colored with region labeled (try to match closely to color scheme above, but does not have to be exact)
3. Size of circle encodes number of schools in that region (exact sizes are not required, but a size mapping to the data needs to be used)

User Interactions

1. Hovering over circle shows tooltip with region name and number of schools in that region
2. Clicking a circle filters the data to just that region and takes you to page 2

Page 2: Scatterplots



User Interface Elements

1. Label indicating region
2. 2 scatterplots
3. 2 dropdown menus for each scatter plot to change the x and y axis – should include the following attributes for each axis:
    i. Admission Rate
    ii. ACT Median
    iii. SAT Average
    iv. Undergrad Population
    v. % White
    vi. % Black
    vii. % Hispanic
    viii. % Asian
    ix. % American Indian
    x. % Pacific Islander
    xi. % Biracial
    xii. Average Cost
    xiii. Expenditure Per Student
    xiv. Completion Rate 150% time
    xv. Retention Rate
    xvi. Median Debt on Graduation

xvii. Median Earnings 8 years After Entry

4. X and Y axis labels
5. The circles should be colored by private vs public school with default opacity of .4. Include a legend indicating the colors.
6. Back to regions button

User Interactions

1. Changing the x or y axis should redraw the scatterplot with correct axis
   i. axes should dynamically change according to the data
   ii. axes labels should update to indicate correct attributes
2. Brushing and linking
   i. brushing a region should increase circle opacity to 1 of the brushed circles on the brushed graph and the corresponding circles in the other graph
   ii. should be able to drag brushed region
   iii. clicking a circle on one graph should increase opacity of the corresponding circle on the other graph to 1
3. Hovering on a circle should show tooltip with college name, control and locale
4. Clicking back to regions button takes you back to page 1

Clone this wiki locally

```
https://github.gatech.edu/CS4460/Spring23-Labs-PUBLIC.wiki.git
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