#90529 Data Visualisation 2020/21

#Homework 1

Due: Monday, October 26, 2020, 00:00.

In this assignment you will create a simple webpage with some graphical content using HTML, CSS, and SVG. These are basic building blocks that we will manipulate in later projects using Javascript and D3 in order to create visualizations. As such, it is important that you know how the pieces work on their own, before moving forward.

The Data

This is one of the datasets from Anscombe's quartett that we discussed in Lecture. You will create multiple representations for this dataset, specifically a bar chart, a line chart, an area chart and a scatterplot, all using vanilla SVG. Take this exercise just as a way to practice with SVG, as these visualizations will be not much meaningful to analyze this dataset: as a matter of fact, the only meaningful chart will be the scatterplot. *You should write the svg manually and not create it using either javascript or drawing software.*

X	Y
10.0	8.04
8.0	6.95
13.0	7.58
9.0	8.81
11.0	8.33
14.0	9.96
6.0	7.24
4.0	4.26
12.0	10.84
7.0	4.82
5.0	5.68

Design and Implementation

Implement your solution in a file called `SurnameName-hw1.html`, with your surname and name, which you should upload to the assignment module in AulaWeb of the course for Homework 1. At the top of the file add "90529 Data Visualisation Homework 1", your name, your e-mail address and your uID. Use the proper HTML elements to structure this information and use headings to label your charts.

You can choose your design parameters freely, i.e., things like the color, aspect ratio and size of your charts is up to you. You need to make sure, however, that

the data can be clearly read. Note that you will probably need to make some kind of transformation to the data to achieve pleasant results.

You must use selectors to style your SVG elements, i.e., you should not use inline styling. You should also not use classes or identifiers more than necessary for each chart, i.e., one class definition per chart should be sufficient. There are good reasons to use both, css class selectors and element selectors in this homework.

Make sure your submission is a valid HTML5 file. Check that it is valid by uploading it to the W3C HTML Validator.

Bar Charts

Create a horizontal bar chart for both the X and the Y dimensions of the data. Your bars should be aligned along the left and point right. You may use the **rect** primitive of SVG to draw bars. Here is how your barcharts could look like:

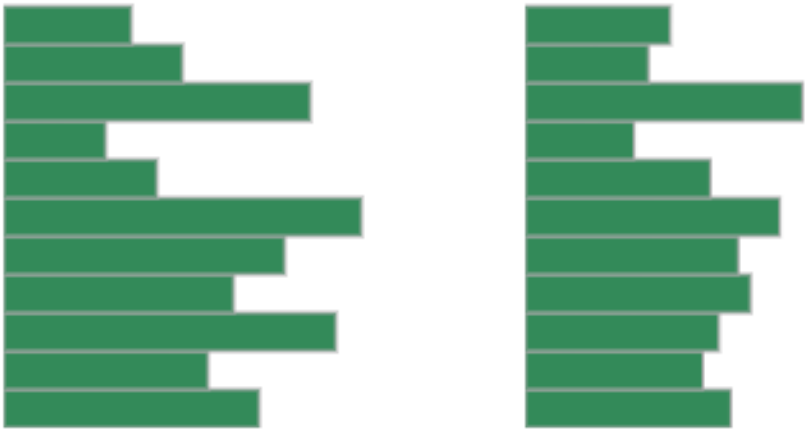

Figure 1: Bar chart

Line Charts

Create a line chart for both, the X and the Y dimensions of the data. Your y-axis should have 0 at the bottom. Create the line chart for the X dimension out of a path element, and the line chart for the Y dimension out of SVG line elements. You may use the **polyline** primitive of SVG to draw your line charts. An example of the line charts:

Figure 2: Line chart

Area Charts

Next, you should draw an area chart of the same data. An area chart is very much like the line chart (hint: you can probably re-use some of the code from before), but it is filled. You may use the **path** primitive of SVG to draw your area charts. See this example:

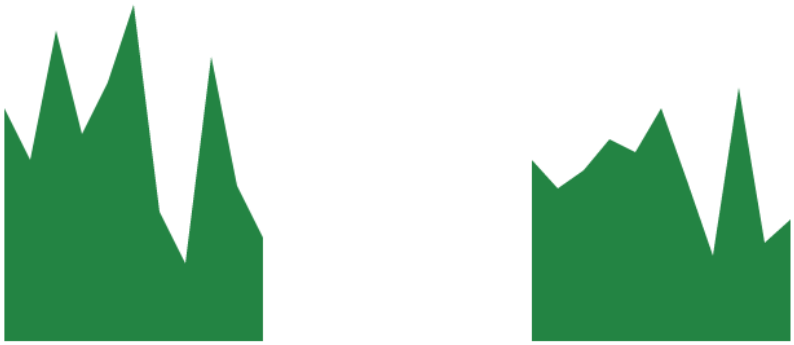

Figure 3: Area chart

Scatterplot

A scatterplot shows how two dimensions relate to each other. Plot the X dimension along the x-axis, and the Y dimension along the y-axis. Frame your scatterplot. You may use the **circle** primitive of SVG to draw your marks in the scatterplot. This should be your result, approximately:

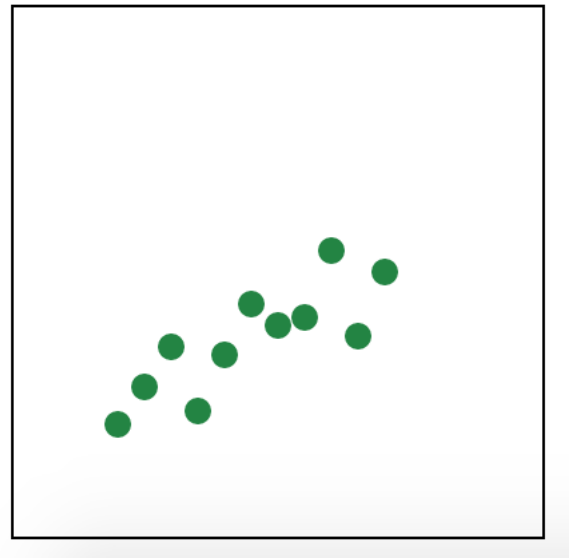

Figure 4: Scatterplot

ASSESSMENT

25% of the grade will be given to submissions for each chart that gets full marks. The charts don't have to look exactly like the ones shown, but the data must be clearly legible. We consider HTML validity and efficient use of the SVG elements and styles in our evaluation, i.e., even if your charts look exactly like shown here you could still lose points if you do complicated and unnecessary things.

As you will see it can be a little tedious to get the SVG to represent the data, in the next homework we will no longer write this by hand but use JavaScript to generate SVG!

Remark: Homeworks contribute to the final mark for 20%. The contribution of each specific homework to that fraction will be as follows: Homewor0: 5%; Homework1 (this one) 15%; Homework2 30%; Homework3 50%.