CS 205

Scales in d3.js

Lecture #7 | Feb. 7, 2017

What type of data is the data?

(1): Quantitative Data

- Maps a continuous domain to a continuous range.
- Linear: `d3.scaleLinear()`
- Power/Log: `d3.scalePow()` or `d3.scaleLog()`

(2): Categorical Data

- Maps a discrete domain to continuous or discrete range.
- Bands *(ex: bar chart)*: `d3.scaleBand()`
- Points *(ex: scatter chart)*: `d3.scalePoint()`

What is the domain (input) of the data?

(1): Quantitative Data

- Data may be fixed, *ex: [0, 100] for grades*
- Data may be pre-processed (ex: minValue, maxValue)
- Data may be found in JavaScript when the data is an **array of dictionaries** *(ex: find min/max of ["score"])*:
  - ```
    var min = _.minBy(data, "score")["score"];
    var max = _.maxBy(data, "score")["score"];
    ```
    Domain: `[min, max]`

(2): Categorical Data

- Data may be fixed or pre-processed
- Data may be found in JavaScript when the data is an **array of dictionaries** *(ex: find categories of ["className"]):*

```
var categories = _.map(data, "className");
categories = _.uniq(categories);
```

Domain: `categories`

What is the range (output) of the data?

(1): Horizontal (x-axis)

- `.range( [0, width] )`

(2): Vertical (y-axis)

- `.range( [0, height] )`

Create the Scale

```
var gpaScale = d3.scaleLinear()
                 .domain( [0, 4] )
                 .range( [0, width] );
```

...what does this scale do?

```
var opponents = _.map(data, "Opponent");
    opponents = _.uniq(opponents);

var opponentScale = d3.scale()
                      .domain( opponents )
                      .range( [0, height] );
```

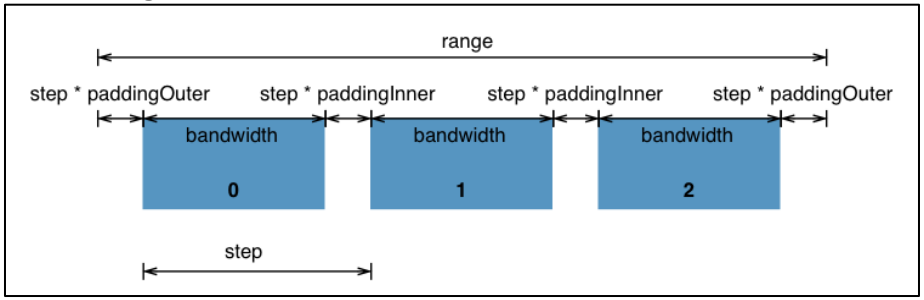
...what does this scale do?

Using the Scale

With a scale function variable, you can translate data into a visual encoding:

```
gpaScale( 3.7 );   // returns (width * (3.7/4.0))
```

When using `scaleBand`, we have addition information on our scale:



We can find the width of each band in our scale:

```
someBandScale.bandwidth();  // may return 100
```
```

Create the Axis

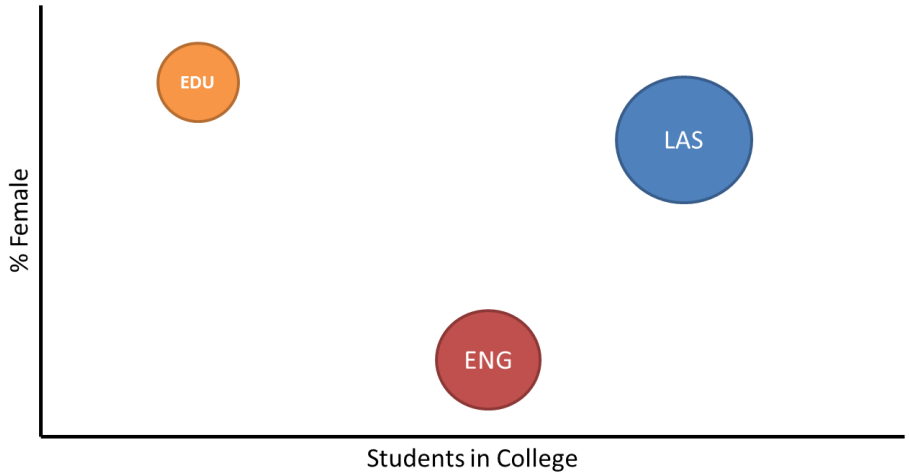
For any scale, we can create an axis on our visualization:

```
1: var axis = d3.axisTop()
2:               .scale( scaleName );
3:
4: svg.append("g")
5:    .call(axis);
```

Visual Encodings

Example #1

Designed by Tana Wuren for Activity 4, heavily modified for simplicity



Example #2

Designed by Tianyue (Andy) Mao for Activity 4, modified for simplicity