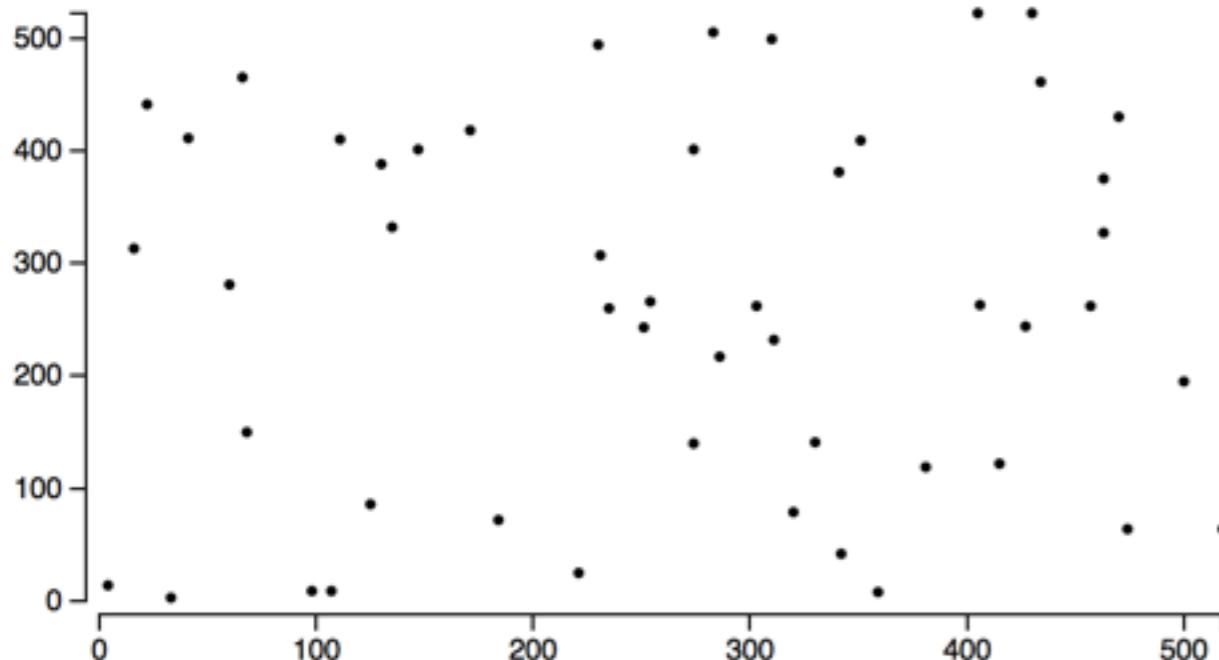


Intro to D3 + BYOD



Scott Murray

@alignedleft

alignedleft.com

As you get settled...

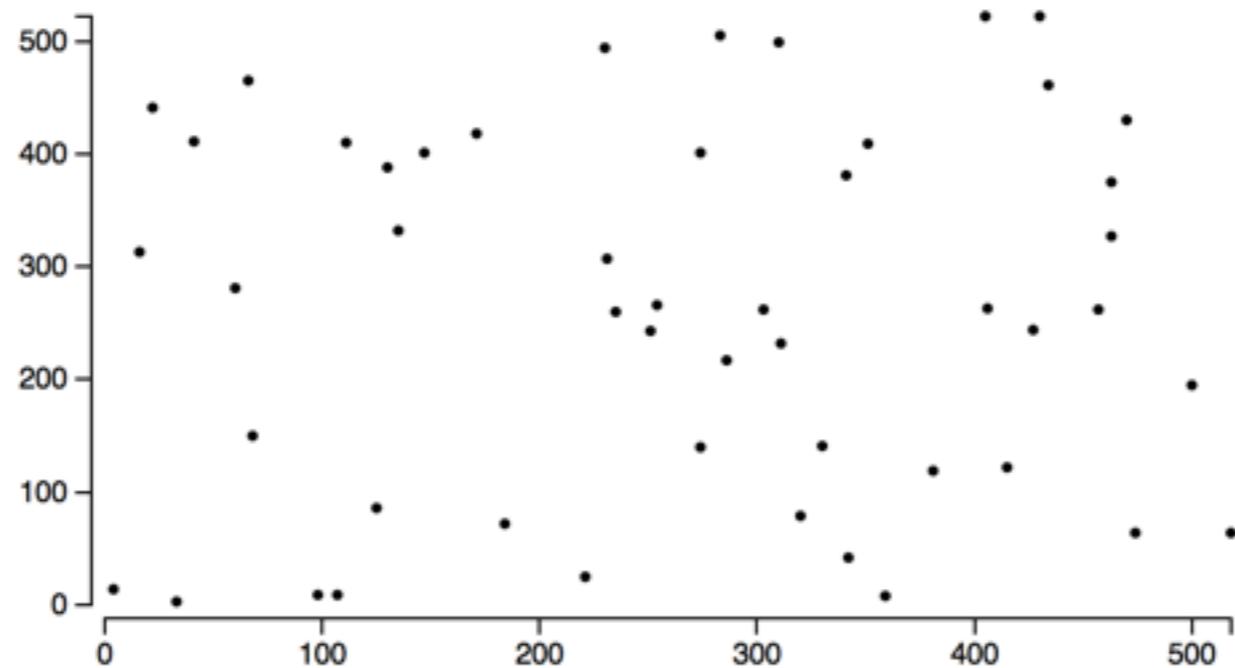
Introduce yourself to someone new!

Protip — Ask them things like:

- What is your name?
- Where are you coming from?
- What do you want to learn today?
- Do you like peppermint bonbon?

BTW this is the first projected image you will see at Eyeo 2015.
I am honored!

Intro to D3 + BYOD



An Introduction to Designing With D3

Interactive Data Visualization

for the Web

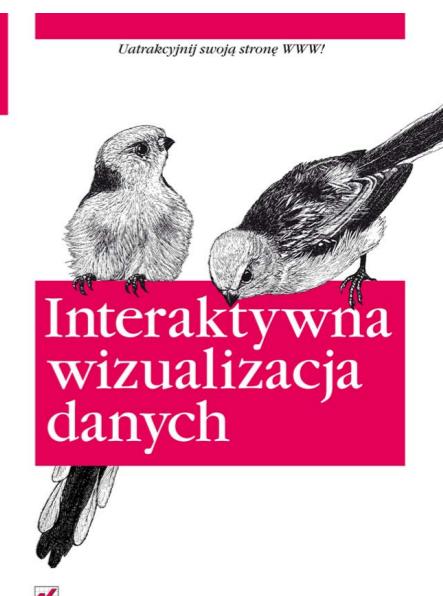
O'REILLY®

Scott Murray

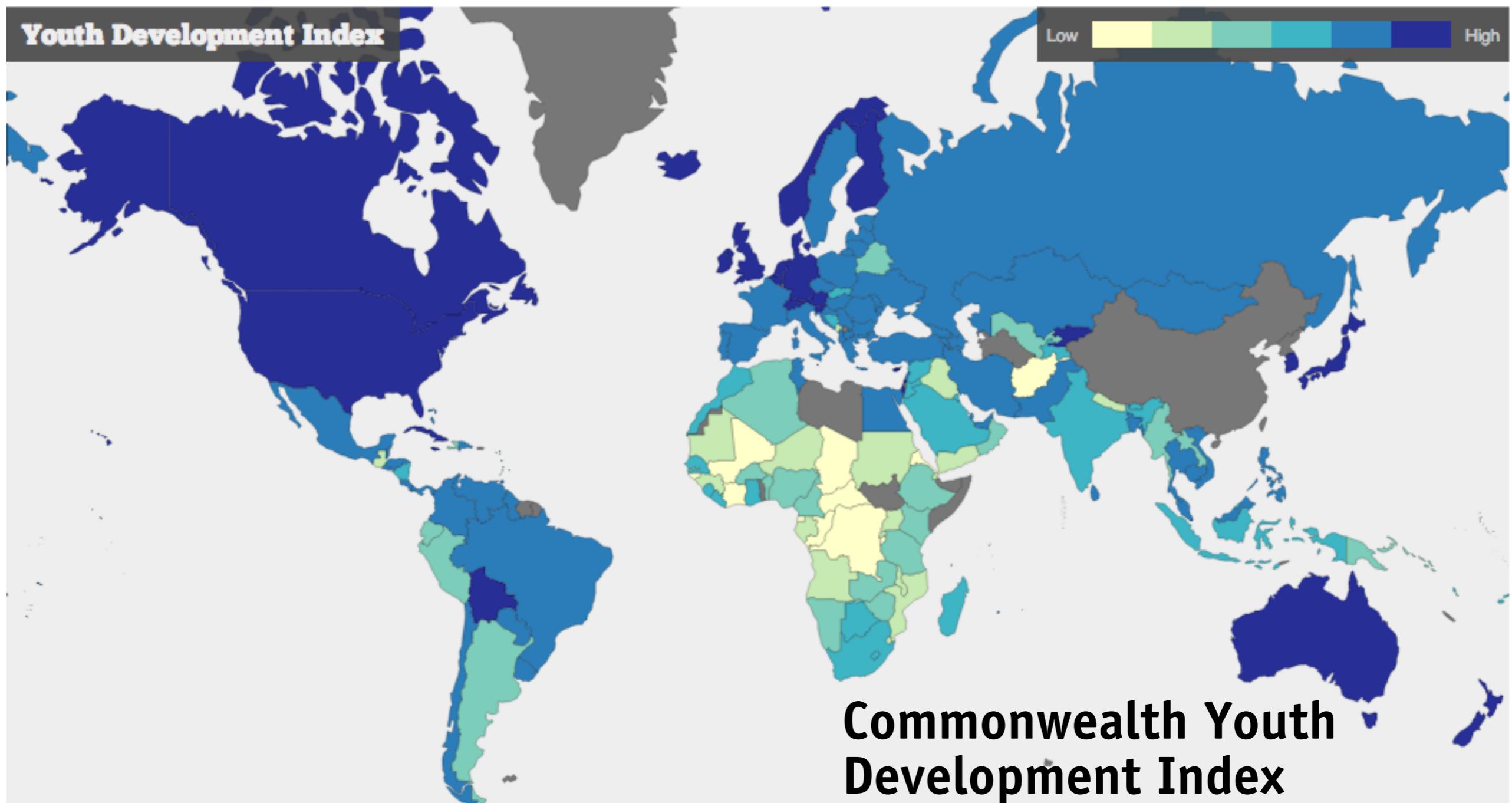
Scott Murray

@alignedleft

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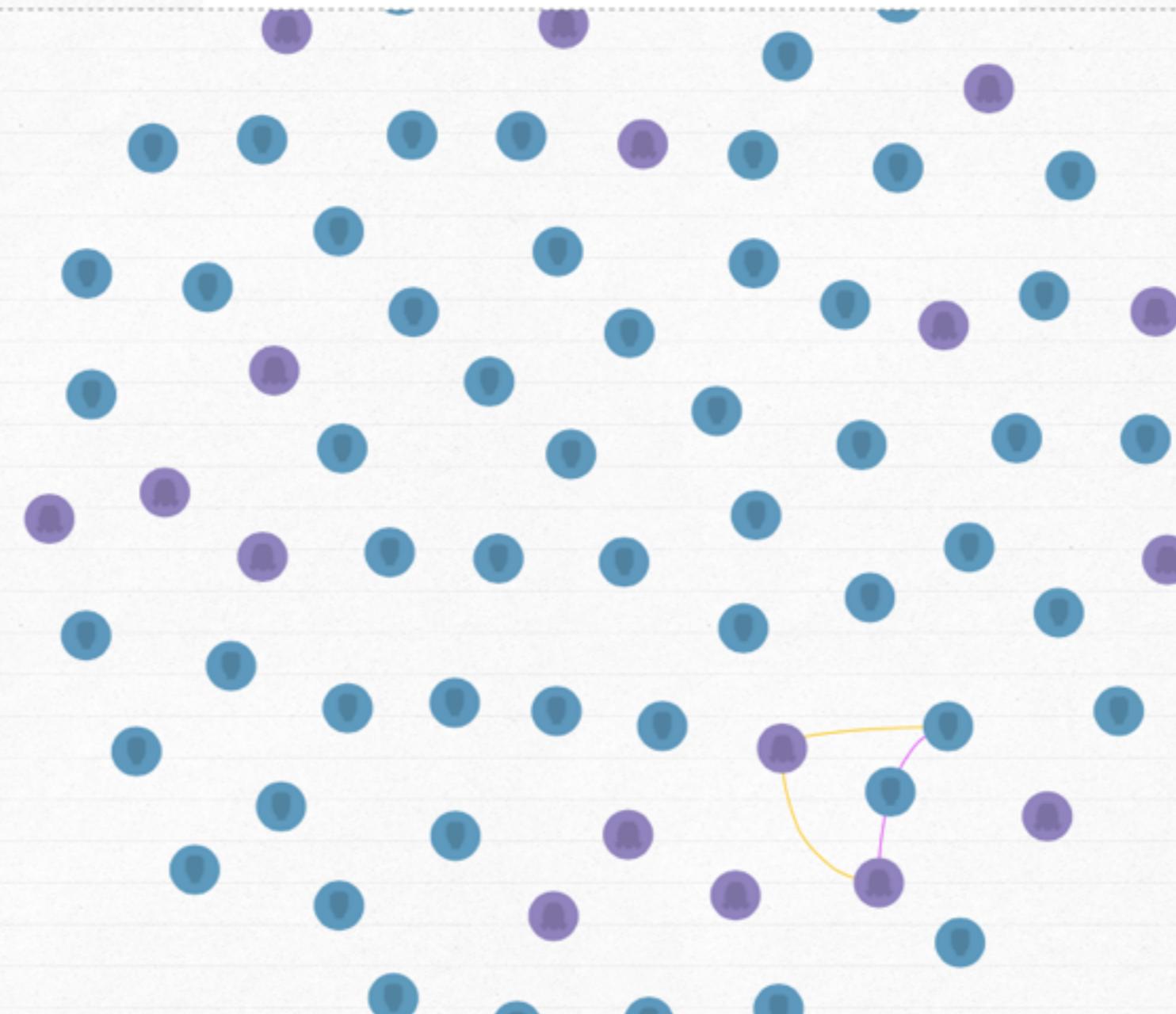


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Some Luminaries in Kindred Britain

NETWORK



Kindred Britain
with Nicholas Jenkins & Elijah Meeks, 2013

Curriculum

Intro to D3

Set up with empty page template

Selecting elements

Creating elements

SVG images and elements

Data in JavaScript (arrays)

Binding data to create elements

Using transitions between states

Using scales to position elements

Adding axes

Lunch around 12:30–1:30 →

Bring Your Own Data

Loading external data

Parsing, representing

Assumptions

- You are somewhat familiar with HTML & CSS
- You have a little programming experience (not necessarily JavaScript)
- You have a laptop and code editor



...and today I want to _____.

What is d3.js?

Data-Driven Documents



```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>D3: Empty page template</title>
  <script type="text/javascript"
    src="d3.v3.js"></script>
</head>
<body>
  <script type="text/javascript">
    // Your beautiful D3 code
    // can go here
  </script>
</body>
</html>
```

HTML Hypertext Markup Language

CSS Cascading Style Sheets

JS JavaScript

SVG Scalable Vector Graphics

DOM The Document Object Model

all of the above == web standards

HTML Hypertext Markup Language

CSS Cascading Style Sheets

JS JavaScript

SVG Scalable Vector Graphics

DOM The Document Object Model

Learning D3 is a process of “learning the web”

Setting up

<https://github.com/alignedleft/eyeo-d3>

This repository Search Explore Gist Blog Help alignedleft + - ⌂ ⚙ ⌂

alignedleft / eyeo-d3 Unwatch 1 Star 0 Fork 0

For the Intro to D3 + BYOD workshop at Eyeo 2015 — Edit

3 commits 1 branch 0 releases 1 contributor

branch: master eyeo-d3 / +

Initial add of files

Scott Murray authored 3 minutes ago	latest commit fed7248ac5
sample_data	Initial add of files 3 minutes ago
.gitignore	Initial add of files 3 minutes ago
00_empty_page_template.html	Initial add of files 3 minutes ago
01_selecting_elements.html	Initial add of files 3 minutes ago
02_chain_syntax.html	Initial add of files 3 minutes ago
03_svg.html	Initial add of files 3 minutes ago
04_svg_with_d3.html	Initial add of files 3 minutes ago
05_data_values.html	Initial add of files 3 minutes ago
06_circles.html	Initial add of files 3 minutes ago
07_transition.html	Initial add of files 3 minutes ago
08_scales.html	Initial add of files 3 minutes ago
09_axes.html	Initial add of files 3 minutes ago
10_scatterplot.html	Initial add of files 3 minutes ago
D3 Cheat Sheet.pdf	Initial add of files 3 minutes ago
LICENSE	Initial add of files 3 minutes ago

Code Issues Pull requests Wiki Pulse Graphs Settings

SSH clone URL git@github.com:alignedleft/eyeo-d3 You can clone with HTTPS, SSH, or Subversion.

Clone in Desktop Download ZIP

D3 Cheat Sheet

Scott Murray — @alignedleft — alignedleft.com — January 6, 2014

Selections

	<i>Explanation</i>
<code>d3.select()</code>	Returns the element found
<code>d3.selectAll()</code>	Returns all found elements
<code>selection.append()</code>	Creates a new element inside the selection
<code>selection.remove()</code>	Removes the selection from the DOM
<code>selection.text()</code>	Sets the text content of the selection
<code>selection.attr()</code>	Set an HTML attribute value on the selection
<code>selection.style()</code>	Set an inline CSS style on the selection
<code>selection.classed()</code>	Adds or removes a class from the selection

Example

```
d3.select("svg")
d3.selectAll("circle")
d3.select("svg").append("circle")
d3.select("rect").remove()
d3.select("#tooltip").text("")
d3.selectAll("circle").attr("r", 10)
d3.selectAll("circle").style("fill", "teal")
d3.select("circle").classed("highlight", true)
```

Data

<code>selection.data()</code>	Binds an array of data values to the selection
<code>selection.enter()</code>	Returns a selection of “new” placeholder elements
Use anonymous functions to access data values bound to elements via <code>d</code> .	

Optionally, include `i` to get the index value of each element in the selection.

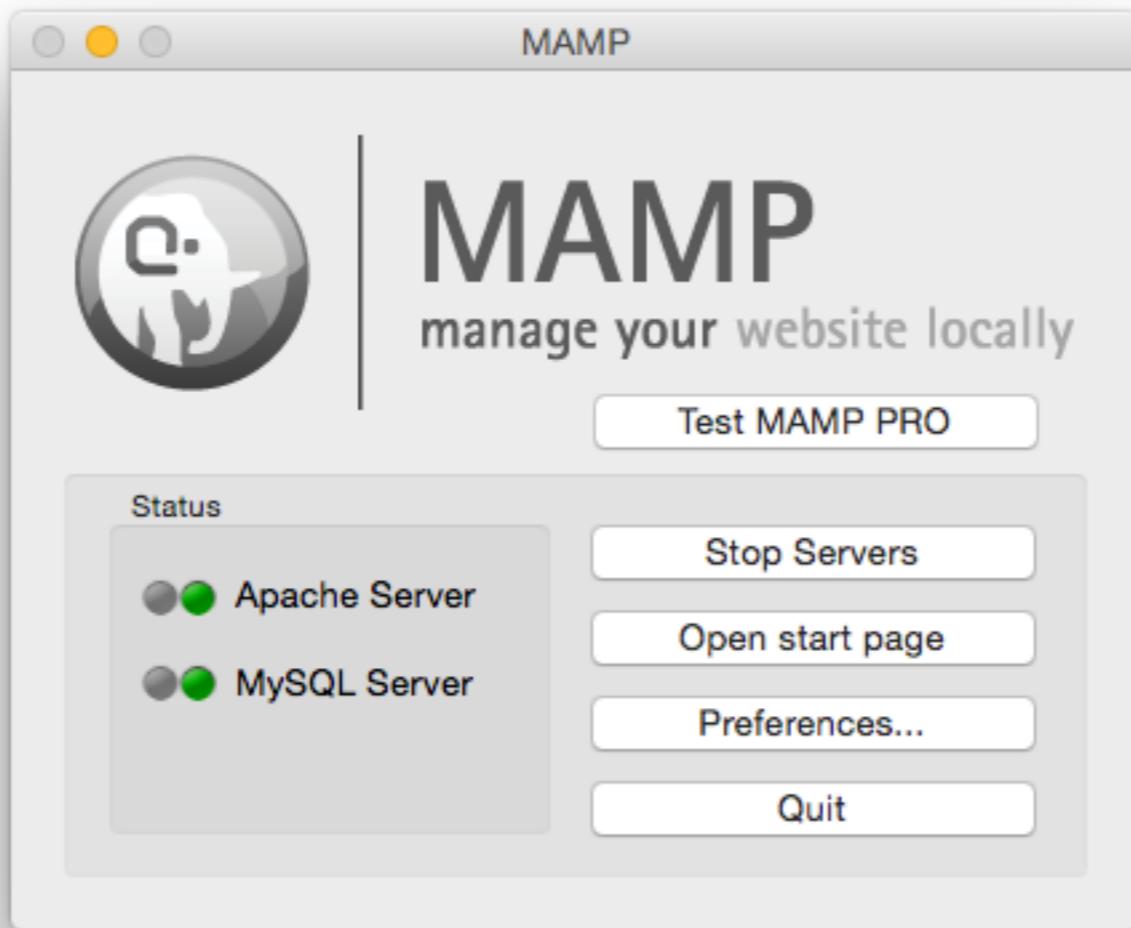
```
d3.selectAll("circle").data(dataset).enter()...
d3.selectAll("circle").data(dataset).enter()...
d3.selectAll("rect")
  .attr("height", function(d) {
    return d.value; // Set the height to 'value'
  });
d3.selectAll("rect")
  .attr("x", function(d, i) {
    return i * 10; // Move each rect to the right
 });
```

Transitions

<code>selection.transition()</code>	Initiates a new transition
<code>selection.duration()</code>	Sets the transition duration, in milliseconds

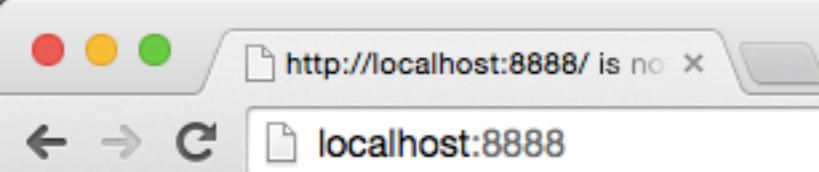
```
d3.selectAll("circle").transition().attr("cx", ...
d3.selectAll("circle").transition().duration(2000)...
```

08_scales.html	Initial add of files	3 minutes ago
09_axes.html	Initial add of files	3 minutes ago
10_scatterplot.html	Initial add of files	3 minutes ago
D3 Cheat Sheet.pdf	Initial add of files	3 minutes ago
LICENSE	Initial add of files	3 minutes ago
README.md	Initial add of files	3 minutes ago



```
cd ~/Desktop/eyeo-d3  
python -m SimpleHTTPServer 8888 &.
```

Then visit...



Selecting & generating elements

Exercise: Create the web page below by typing D3 code into the console.

h1

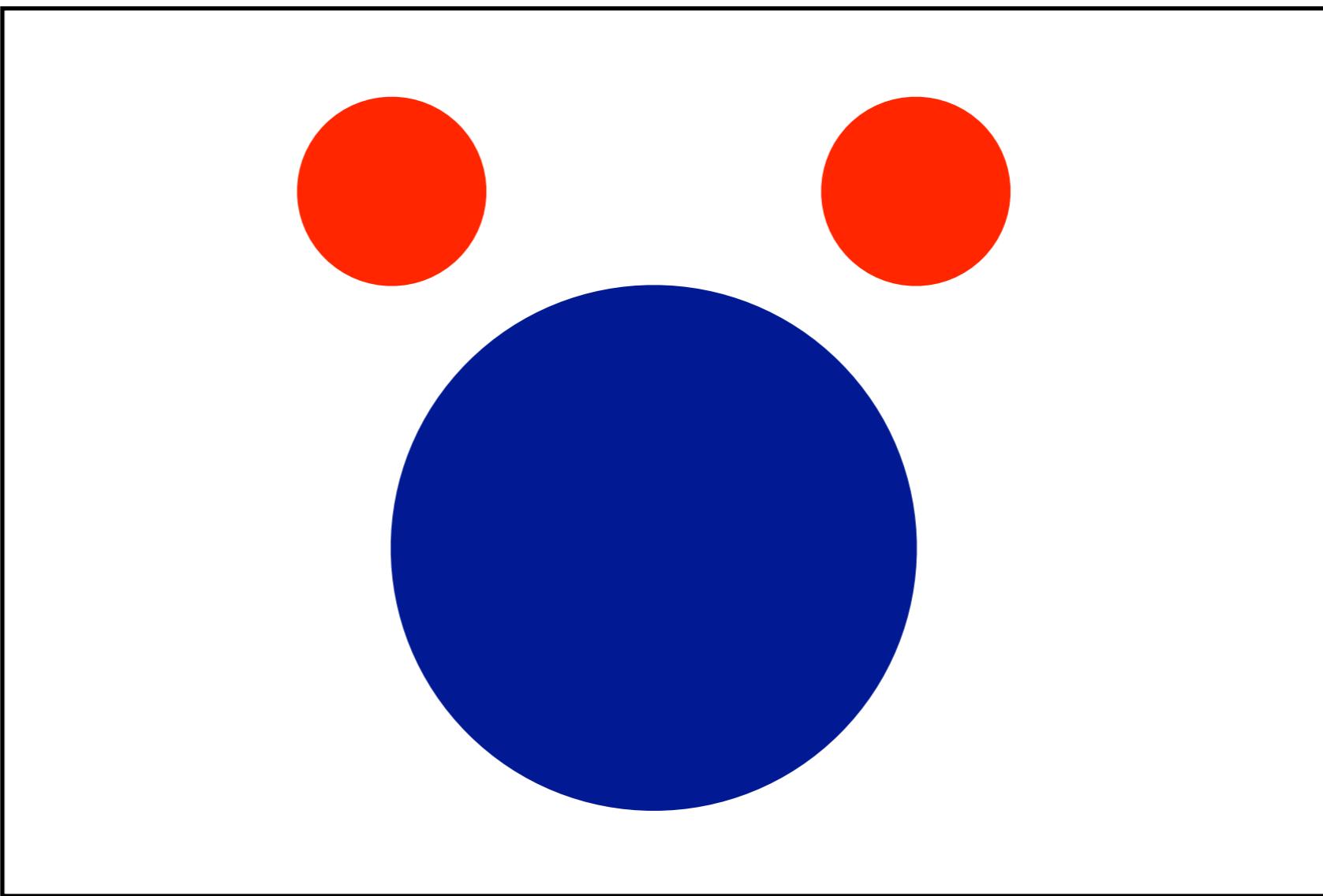
Minneapolis

p

The most pleasant place for learning how to use D3.

SVG

Exercise: Recreate this image by typing D3 code into the console.



Binding data / data joins

```
// JavaScript arrays!  
  
var dataset = [ 5, 10, 20, 15, 18 ];
```

```
// Data joins!
```

```
var dataset = [ 5, 10, 20, 15, 18 ];  
  
d3.select("svg").selectAll("circle")  
.data(dataset)  
.enter()  
.append("circle");
```

```
// Data joins!
```

```
var dataset = [ 5, 10, 20, 15, 18 ];
```

```
d3.select("svg").selectAll("circle")
  .data(dataset)
  .enter()
  .append("circle");
```

```
// Data joins!
```

```
var dataset = [ 5, 10, 20, 15, 18 ];
```

```
d3.select("svg").selectAll("circle")
  .data(dataset)
  .enter()
  .append("circle");
```

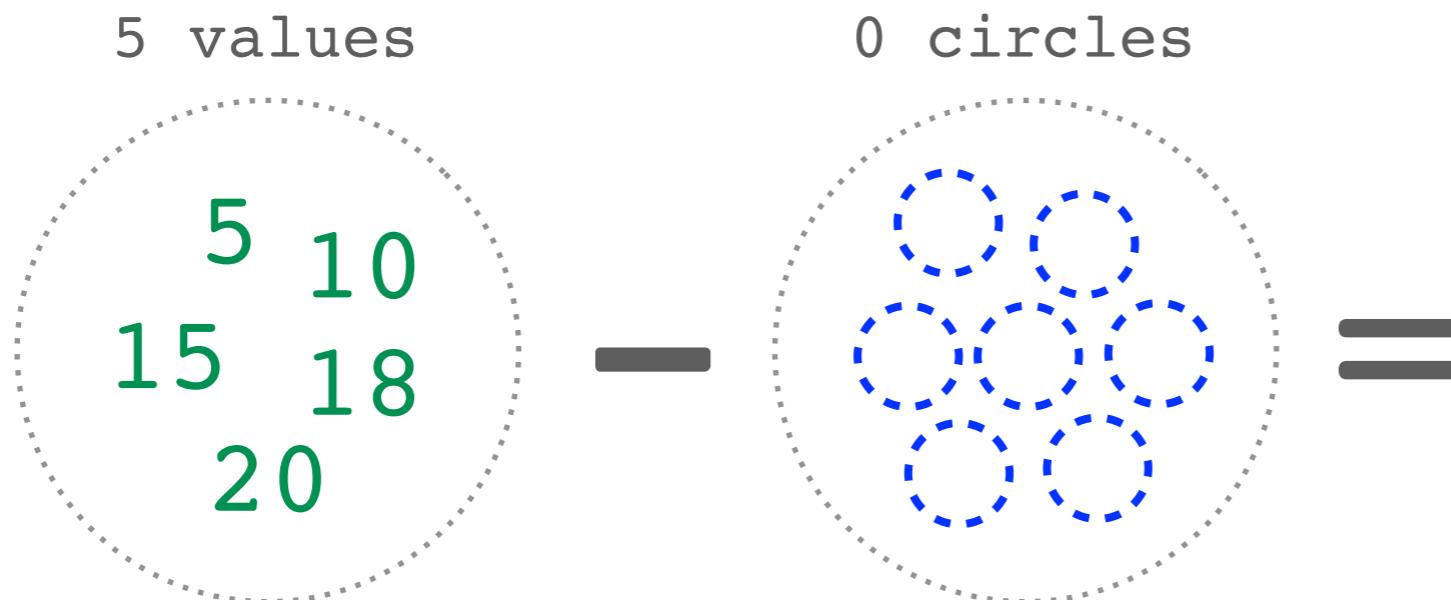


(empty selection)

// Data joins!

```
var dataset = [ 5, 10, 20, 15, 18 ];
```

```
d3.select("svg").selectAll("circle")
  .data(dataset)
  .enter()
  .append("circle");
```

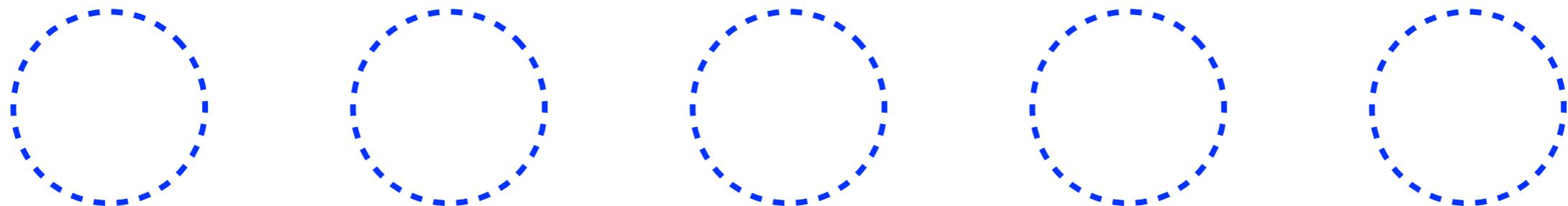


Room for
5 new
circles!

```
// Data joins!
```

```
var dataset = [ 5, 10, 20, 15, 18 ];
```

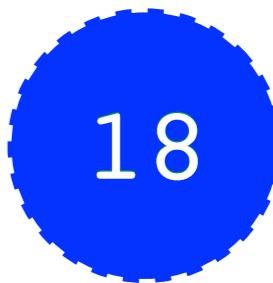
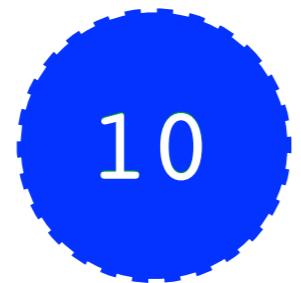
```
d3.select("svg").selectAll("circle")
  .data(dataset)
  .enter()
  .append("circle");
```



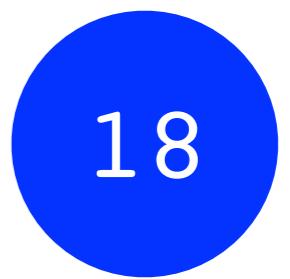
```
// Data joins!
```

```
var dataset = [ 5, 10, 20, 15, 18 ];
```

```
d3.select("svg").selectAll("circle")
  .data(dataset)
  .enter()
  .append("circle");
```



// Setting attributes from data!

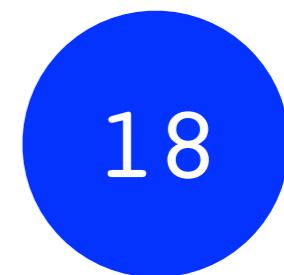
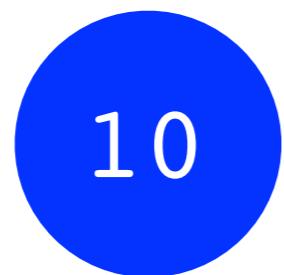


```
d3.selectAll("circle")
  .attr("r", function(d) {
    return d;
} );
```



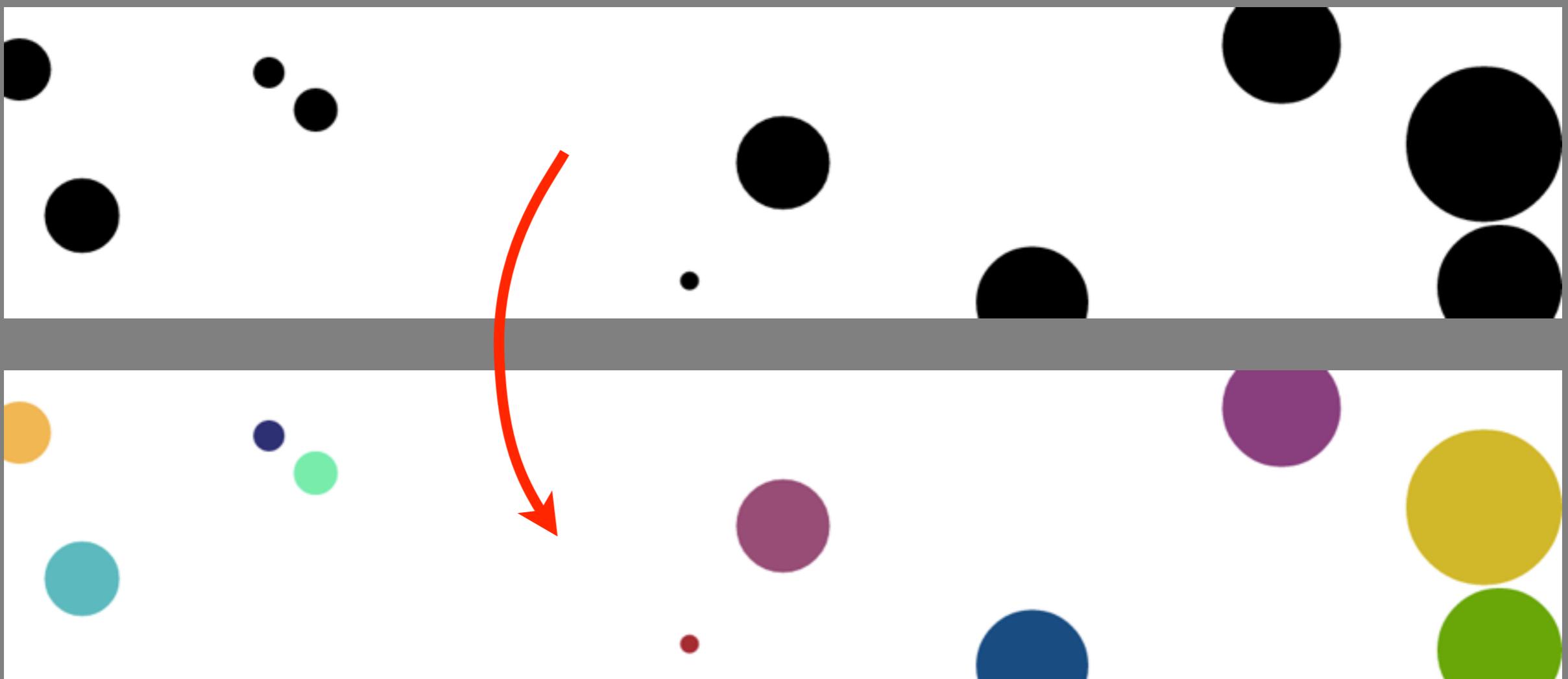
```
// Binding data to elements
```

```
// 1. Lets you reference values later  
// 2. Prevents need to "redraw" elements
```



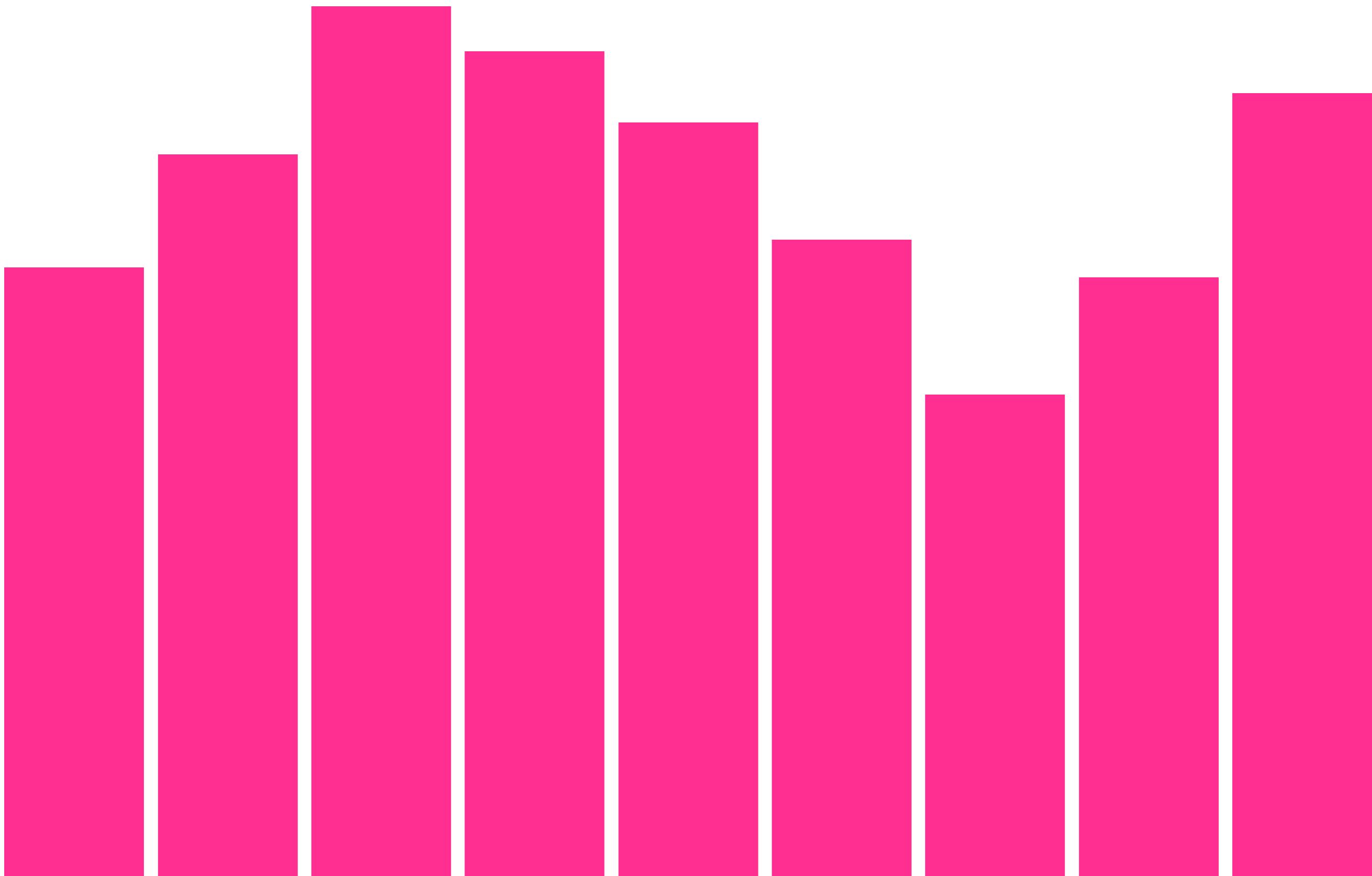
Exercise: Starting with `06_circles.html`, add a **color value** to each object in the data set.

Then use that value to set the **fill** of each circle.



Transitions

// Transitions and motion

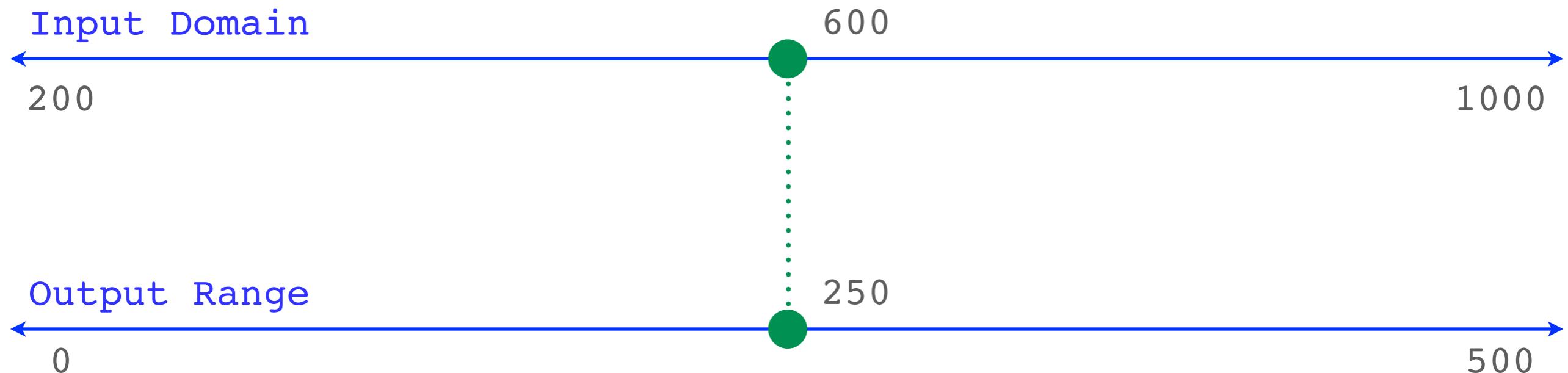


Scales

```
// Scale values
```

```
var scale = d3.scale.linear()  
    .domain([200, 1000])  
    .range([0, 500]);
```

```
scale(600); // Returns 250
```



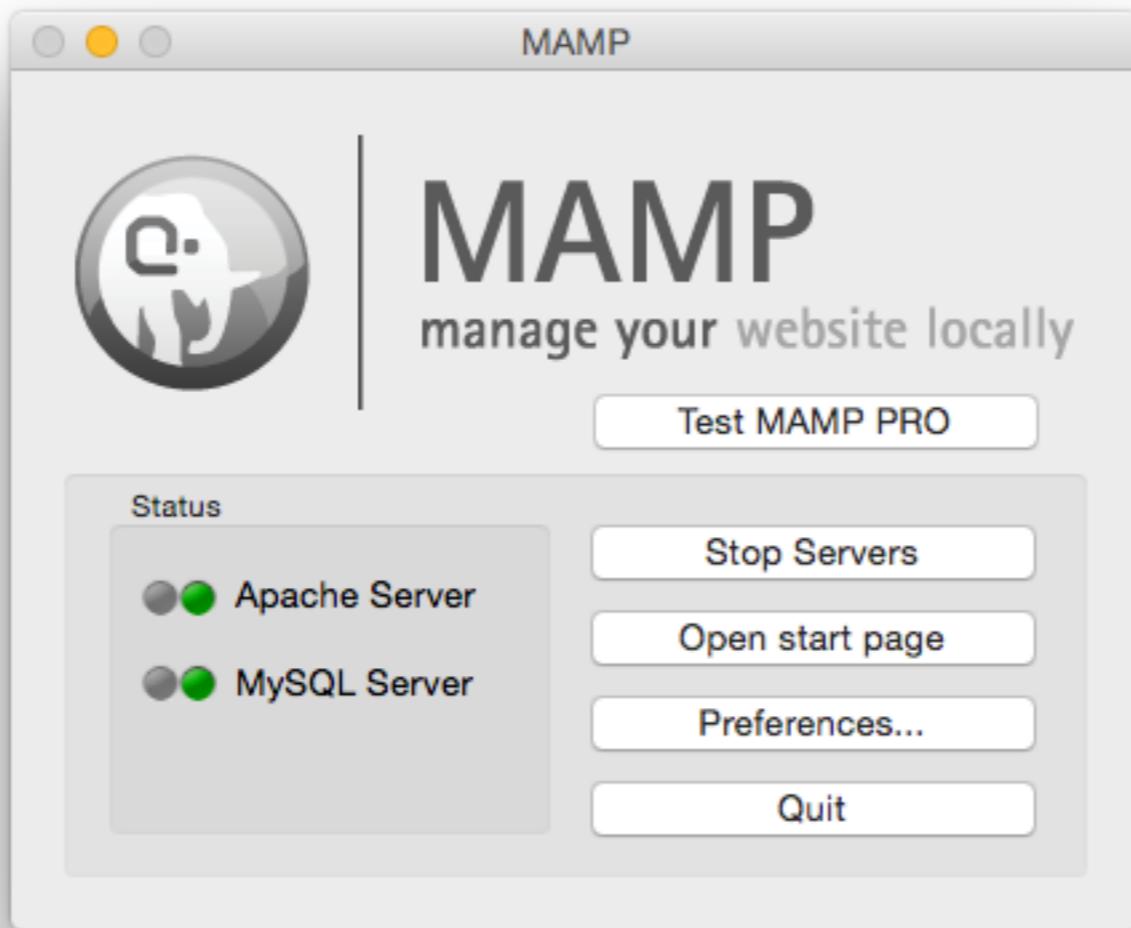
Axes

```
// Generate axes
```

```
var axis = d3.svg.axis()  
    .scale(scale);  
  
svg.append("g")  
    .call(axis);
```



Bring Your Own Data



```
cd ~/Desktop/eyeo-d3  
python -m SimpleHTTPServer 8888 &.
```

Then visit...

