Lecture Handout #9
February 18, 2016

The workflow of using d3.js revolves around drawing visual encodings of underlying data points. To do this, d3 uses an array of elements (usually stored in a variable called `data`):

```
var data = [
   10,
   20,
   30,
   ...
];
```

After our boilerplate data chaining code, the code following `.enter()` will run for every single data element in the data array.

Visualization #1 - vis1.js
What is an example of one element in our data?

What visual encodings do we want to create from this data?

Every attribute can have a function passed to it which must return the value for the attribute. The function can have up to two arguments:

```
function (d, i) {
   // d: The current data point (ex: d == 20)
   // i: The current index      (ex: i == 1)

   return d * d;   // Returns d * d (ex: 400)
}
```

Visualization #2 – vis2.js
What is an example of one element in our data?

What visual encodings do we want to create from this data?

How does this differ from Visualization #1?

Visualization #3 – vis3.js
What is an example of one element in our data?

What visual encodings do we want to create from this data?

What are common attributes we will modify?

Visualization #4 – vis4.js
What is an example of one element in our data?

What visual encodings do we want to create from this data?

What is the input range (mathematical, the **"domain"**) of our data?

What is the output range (mathematically, the **"range"**) of our visual encoding?

Visualization #5 – vis5.js
What additional elements can we add to improve the visualization?

Visualization #6 – `vis6.js`
What is an example of one element in our data?

What visual encodings do we want to create from this data?

Suppose we want to pull out an array of all the unique teams. How?

1. Create an array that contains only the value of the team. How?

```
var teams = d3.map(
  data,
  function (d) { return d["Opponent"]; }
);
```

2. Use a set to extract the unique values:

```
teams = d3.set(teams).values();
```

What scale would we use for **teams**?

Suppose we want to pull out an array of all season years. How?

What scale would we use for **years**?

Suppose we want to explore streaks, where each consecutive Illini win results in a larger circle. How?