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DLI Accelerated Data Science Teaching Kit

# Lecture 9.7 - Dynamic Data and Interaction



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# What if the data is changing?

# E-U-E Pattern Template

```
function redraw(rawdata) {  
    var group = vis.selectAll("rect")  
        .data(rawdata) //rawdata must be an array!  
    group.enter( ).append("svg:rect") //ENTER!  
        .attr( )  
        .attr( )  
    group //UPDATE!  
        .attr( )  
        .attr( )  
    group.exit( ).remove( ) //EXIT!
```

```
}
```

# E-U-E Pattern Template

```
function redraw(rawdata) {  
    var group = vis.selectAll("rect")  
        .data(rawdata) //rawdata must be an array!  
    group.enter( ).append("svg:rect") //ENTER!  
        .attr( )  
        .attr( )  
    group.transition( ) //UPDATE!  
        .attr( )  
        .attr( )  
    group.exit( ).remove( ) //EXIT!  
}
```

# Transitions

- CSS3 transitions with D3 are magical!
- D3 interpolates values for you...

# Transitions

```
rect.attr("height", 0)
```

```
rect.transition()
```

```
  .delay( 500 ) //can be a function of data
```

```
  .duration(200) //can be a function of data
```

```
  .attr("height", 5) //can be a function of data
```

```
  .style("fill","green") //can be a function of data
```

So transitions allow a vis to be dynamic...

But they're not really interactive...



# Interaction

## The on( ) Method

# .on()

```
rect.on ("click", function(d) {  
    d.color = "blue";  
    redraw( rawdata )  
})
```

**d is the data point backing  
the element clicked on**



## HTML Events

- click
- mouseover
- mouseenter
- mouseout
- etc.

# Where to Learn More...?

- <http://d3js.org/>
  - Tons of examples and basics at D3 homepage
- <https://github.com/mbostock/d3/wiki/API-Reference>
  - Official D3 documentation. Extremely well done.
- <https://github.com/mbostock/d3/wiki/Tutorials>
  - List of seemingly ALL the tutorials online
- The Google/StackOverflow combination
  - (my personal favorite)



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# Thank You

We thank Dr. Chad Stolper for sharing teaching materials for visualization and D3.