Data Visualization (CSCI 627/490)

D3

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D3 Key Features

- Supports data as a core piece of Web elements
  - Loading data
  - Dealing with changing data (joins, enter/update/exit)
  - **Correspondence** between data and DOM elements
- Selections (similar to CSS) that allow greater manipulation
- Method Chaining
- Integrated layout algorithms, axes calculations, etc.
- Focus on interaction support
  - Straightforward support for transitions
  - Event handling support for user-initiated changes
D3 Data Joins

- Two groups:
  - data items
  - visual elements
- Three parts of the join between them:
  - enter: `s.enter()`,
  - update: `s`,
  - exit: `s.exit()`
Merge vs. Join

• Merge creates a new selection that includes the items from both selections
  - If you want to update all elements (including those just added via enter), use merge!
  - Useful when enter+update have similar transitions

• Join allows you to modify different parts of the selection in a single statement
  - Also will create the final selection
  - Does enter+append and exit+remove automatically
  - Pass functions to modify the enter, update, and exit parts of the selection
  - Examples: https://observablehq.com/@d3/selection-join
Transitions

• Nested transitions (those that "hang off" of a parent transition) follow immediately after the parent transition
Assignment 2

- Due Wednesday
- Process Data
- Create Bar Charts using SVGs and JavaScript
- Interaction: Select by Decade
- Wording Updates
- Skipping 2010?
Assignment 3

- Upcoming
- Create the same visualization
- Use different tools
D3 Introduction (Continued)

- https://observablehq.com/@dakoop/d3-intro
- Standalone version: http://dakoop.github.io/IntroD3/
  - (Updated from original)
- Other references:
  - https://observablehq.com/@observablehq/introduction-to-d3-course
  - Murrary’s book on Interactive Data Visualization for the Web
  - The D3 website: d3js.org
D3 Examples

• Observable Notebook
• Three Bar Charts:
  - Similar Solution
  - With Axes and Scales
  - With Objects and Margin Convention
• More on Margin Convention: