

Data Visualization (CSCI 627/490)

D3

Dr. David Koop

d3.js

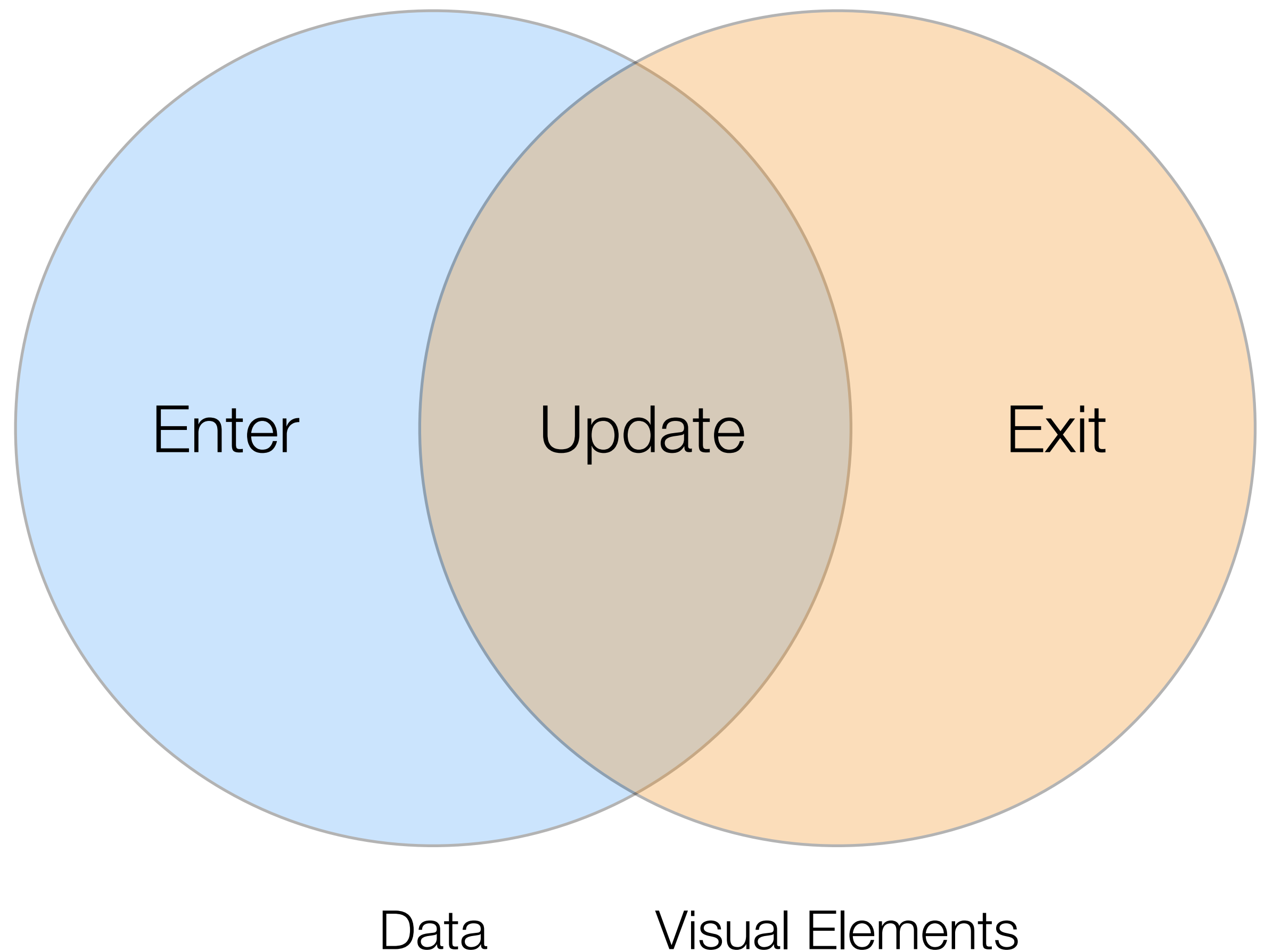


D3 Key Features

- 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

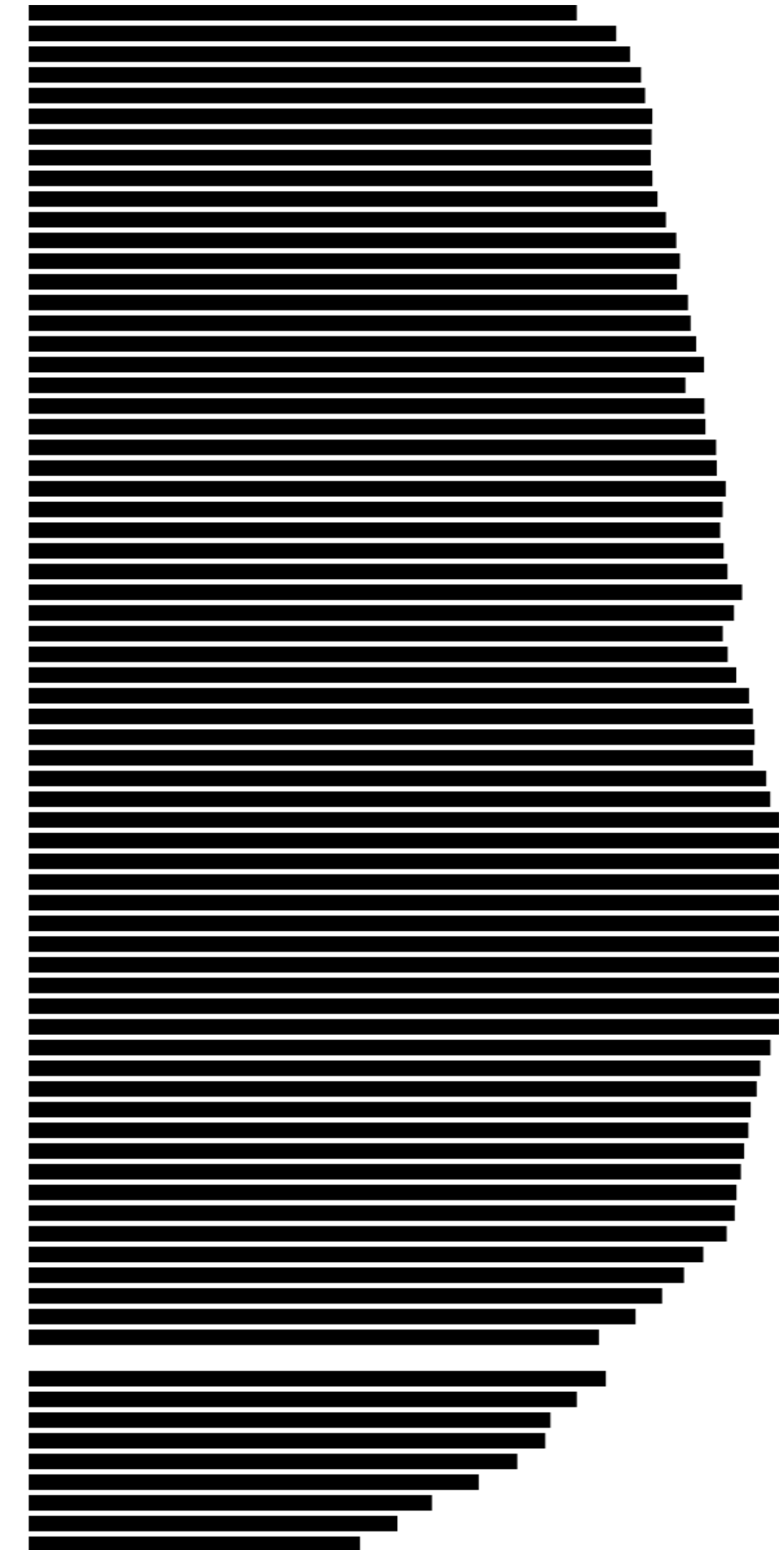
- Merge creates a new selection that includes the items from **both** selections
 - If you want to update all elements (including those just added via enter), use merge!
 - Useful when enter+update have similar transitions
- Join allows you to modify different parts of the selection in a single statement
 - 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>
 - <https://observablehq.com/@d3/learn-d3>
 - <https://observablehq.com/@d3/gallery>
 - Murrar'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:
 - <https://observablehq.com/@d3/margin-convention>