Data Visualization (CSCI 627/490)

D3

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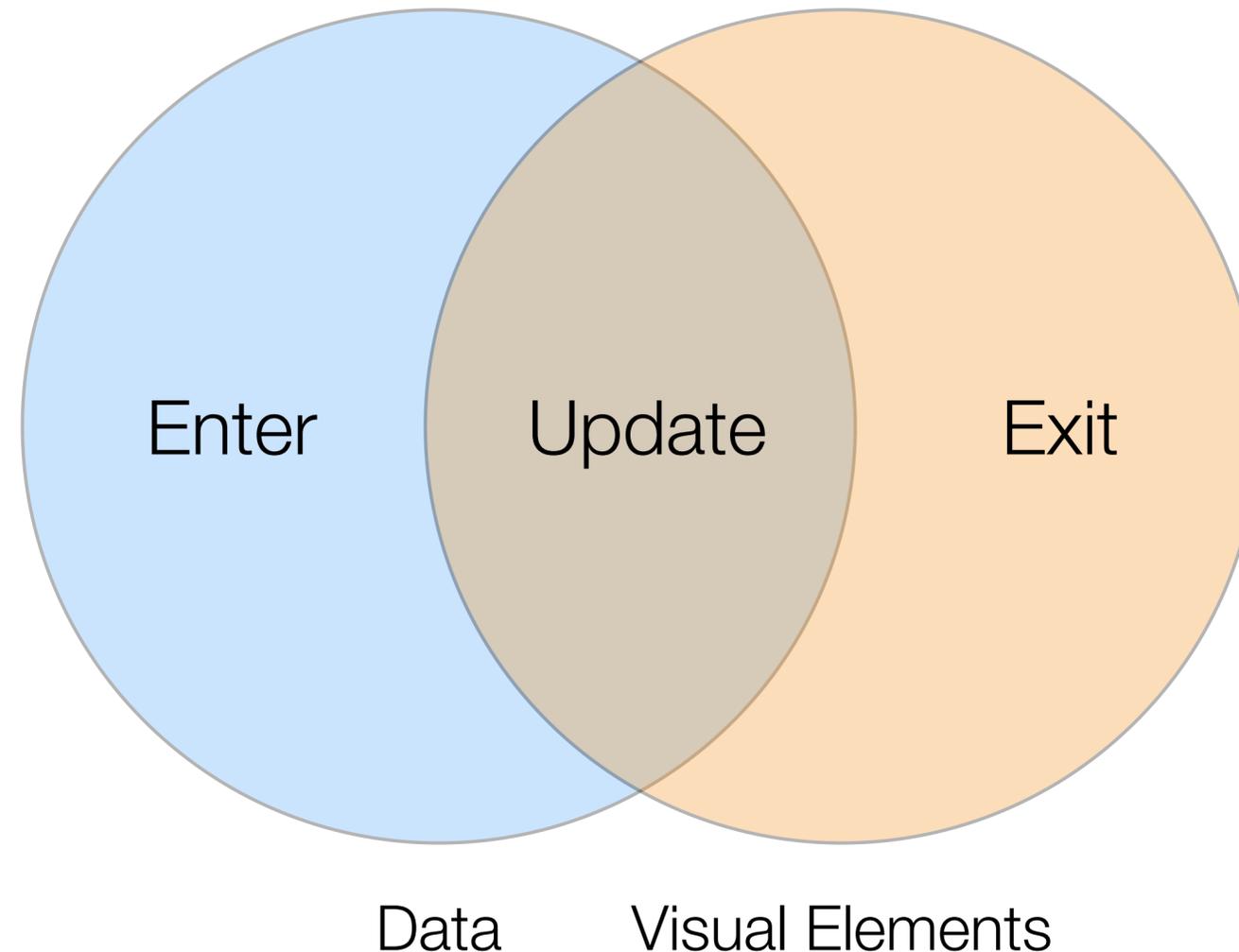Northern Illinois University

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 and visual elements
- Three parts of the join between them: enter, update, and exit
- enter: `s.enter()`, update: `s`, exit: `s.exit()`

Enter   Update   Exit

Data   Visual Elements

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 3

- Out Soon
- Creating Visualizations using different tools

Project

- Form groups

- Select dataset

- Gather data and metadata

- Determine questions

- See full information on course website

Quiz Monday

D3 Introduction (Continued)

- https://observablehq.com/d/c4a584e88e6155c3
- 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
  - 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:

  - https://observablehq.com/@d3/margin-convention