

# Data Visualization (CSCI 627/490)

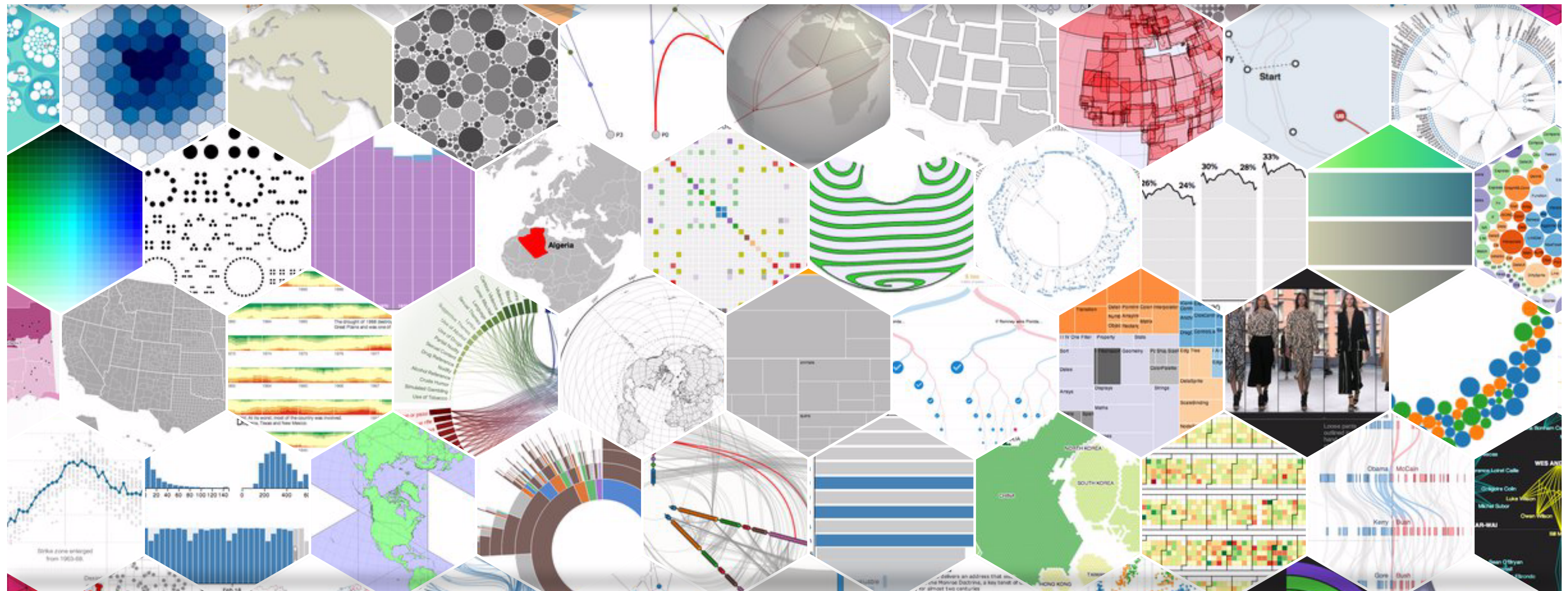
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D3

Dr. David Koop



d3.js





# D3 Key Features

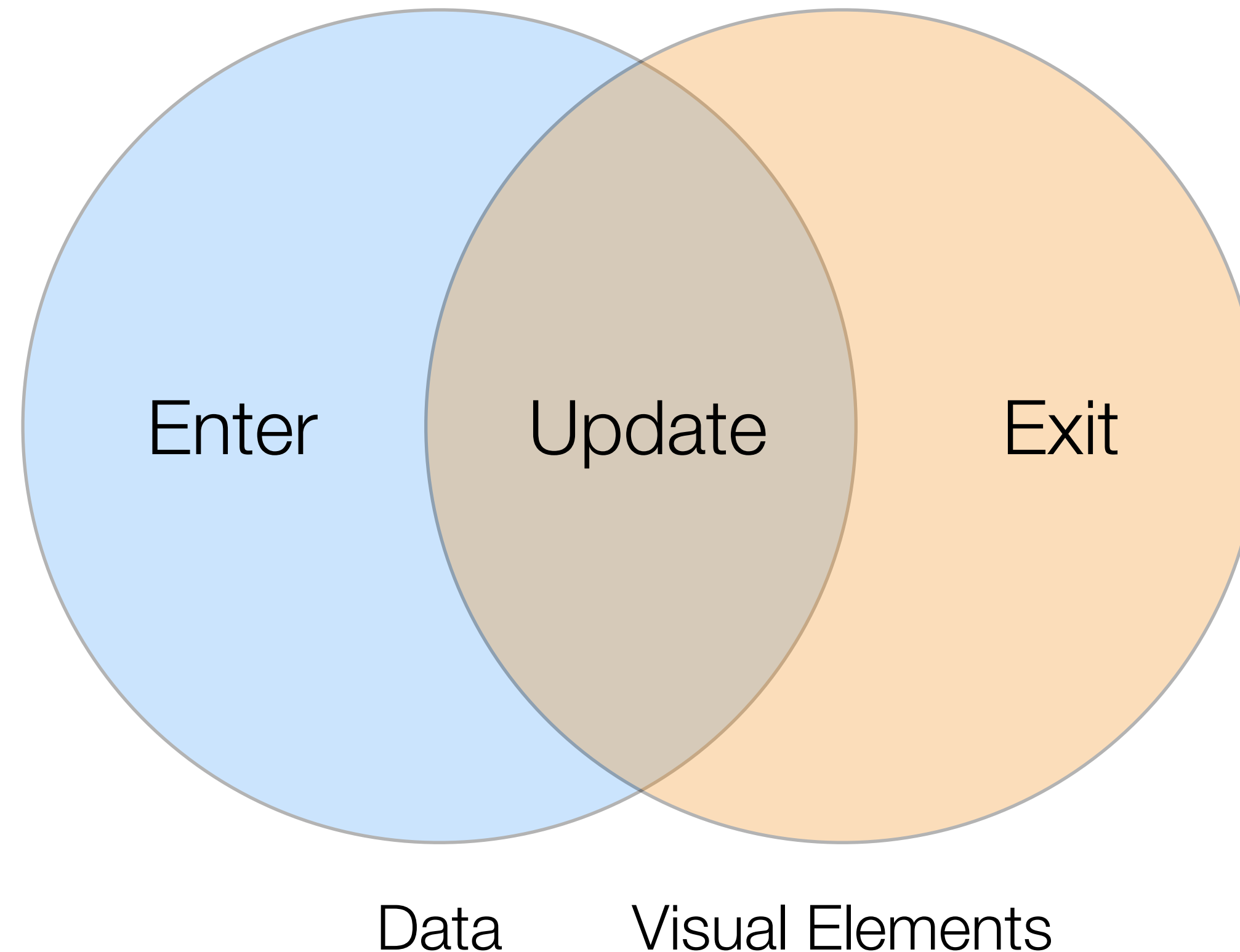
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- Supports data as a core piece of Web elements
  - Loading data
  - Dealing with changing data (joins, enter/update/exit)
  - **Correspondence** between data and DOM elements
- Selections (similar to CSS) that allow greater manipulation
- Method Chaining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

# D3 Data Joins

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- 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()`



# Merge vs. Join

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- 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

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



# CSAC Panel: Real Jobs in the Real World



**NIU**  
**ALUMNI**  
**ASSOCIATION**

**COMPUTER**  
**SCIENCE**  
**ALUMNI**  
**COUNCIL**

**REAL JOBS IN THE REAL WORLD**

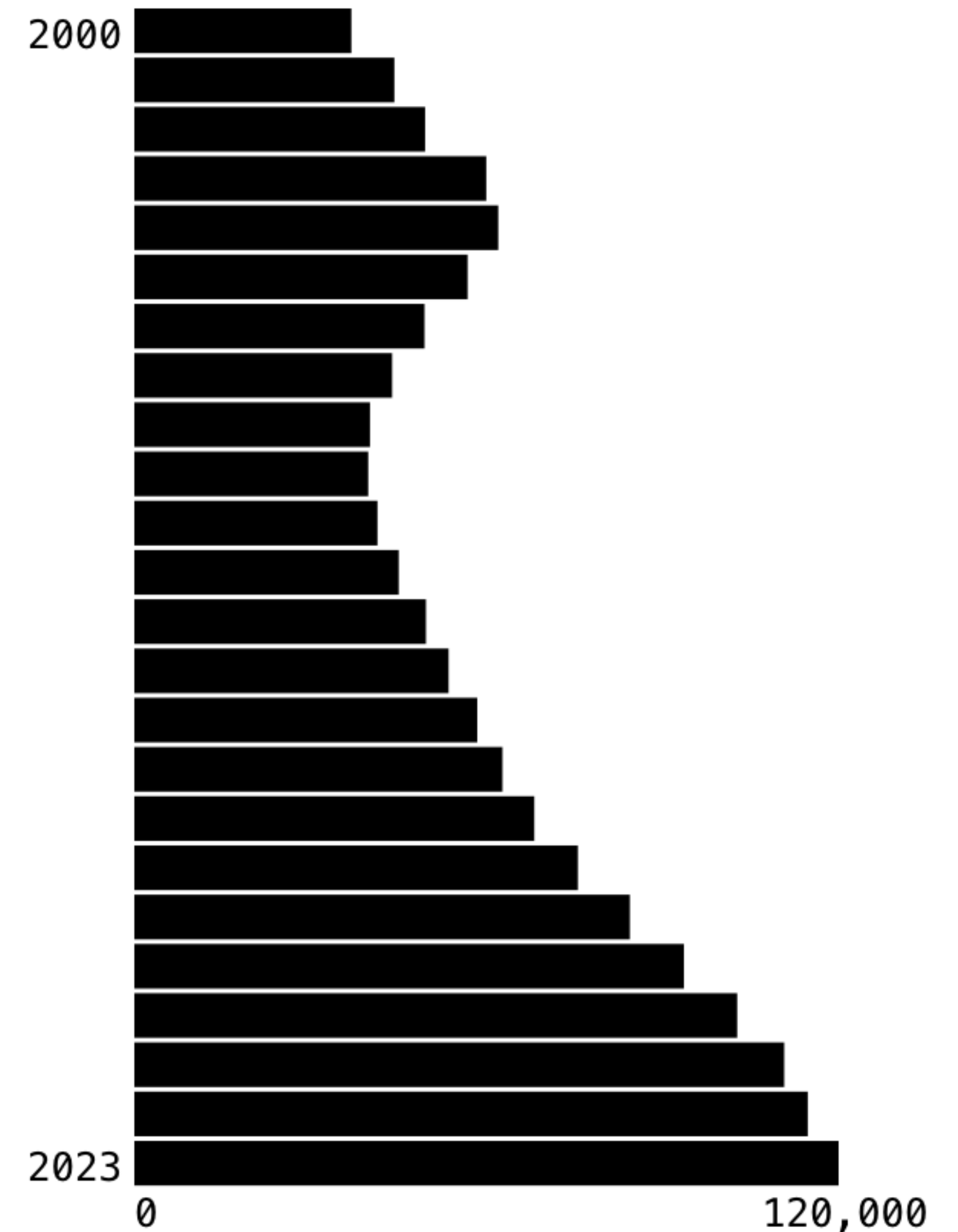
Advice From Real Technology Professionals

**TUESDAY, OCT. 1 | 5 - 7 p.m.**  
**Barsema Alumni & Visitors Center (Ballroom)**

- Panel on Tuesday, Oct. 1
- Provides an insight into jobs from NIU alumni
- Food is Provided

# Assignment 2

- Computer Science Graduates
- Data Processing in JavaScript
- Create Bar Charts using SVGs and JavaScript
- Add Interaction





# Assignment 3

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- Out Soon
- Creating Visualizations using different tools

# D3 Introduction (Continued)

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- <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>
  - Murrar's book on Interactive Data Visualization for the Web
  - The D3 website: [d3js.org](https://d3js.org)

# D3 Examples

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- 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>