CIS 467/602-01: Data Visualization

D3 Colormaps & Interaction

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Colormaps Review

[Munzner (ill. Maguire), 2014]
Assignment 4

• Still working…
Categorical Colormap Example

- Each state's most common food stop based on OpenTable data

[http://blog.estately.com/2014/07/the-geography-of-each-u-s-states-favorite-food/]
College Education Map in D3
Interaction

• Why?
Interaction

• Why?

• Static views cannot handle the scale and complexity of most datasets, trying to show everything leads to visual clutter
Other Solutions

• Creating derived data
• Creating more views
• Changing the data shown
• (Embedding focus and context together)
Interaction

• The view changes over time
• Changes can affect almost any aspect of the visualization
  - encoding
  - arrangement
  - ordering
  - viewpoint
  - attributes being shown
  - aggregation level
Encoding Changes

- Bioengineering
- BioMedical Engineering/BioTechnology
- Civil Engineering
- Computer Engineering
- Computer Science
- Electrical Engineering
- Engineering & Applied Sciences
- Engineering Undeclared
- Mechanical Engineering
- Physics
Encoding Changes
Encoding Changes
Encoding Changes
Sorting

- Allow user to find patterns by reordering the data
- Do this with tabular data all the time
- Note that ordered attributes don't really need sorting
  - We can compare these attributes no matter what order
  - Instead, sort categorical attribute based on an ordered attribute
Example: LineUp

[Gratzl et al., 2013]
Example: LineUp

[Gratzl et al., 2013]
Slope Graphs

- Connection marks
- Link the same item appearing in different rows
- Show changes for different attributes (parallel coordinates idea) but with one highlighted item
- Also called bump charts
Animated Transitions

[http://vadim.ogievetsky.com/IntroD3/#36]
Animated Transitions

A♥
K♣
A♣
J♣
A♦
J♥
K♦
J♠
A♠
J♦
Q♣
K♡
K♦
Q♦
Q♠
Q♥

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Animated Transitions

[http://bl.ocks.org/mbostock/3943967]
Animated Transitions

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Animated Transitions

- "Jump cuts" are hard to follow
- Animations help users maintain sense of context between two states
- Empirical study showed that they work (Heer & Robertson, 2007)
Selection

- Selection is often used to initiate other changes
- User needs to select something to drive the next change
- What can be a selection target?
  - Items, links, attributes, (views)
- How?
  - mouse click, mouse hover, touch
  - keyboard modifiers, right/left mouse click, force
- Selection modes:
  - Single, multiple
  - Contiguous?
Highlighting

- Selection is the user action
- Feedback is important!
- How? Change selected item's visual encoding
  - Change color: want to achieve visual popout
  - Add outline mark: allows original color to be preserved
  - Change size (line width)
  - Add motion: marching ants
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Highlighting

Selection Outcomes

- Selection is usually a part of an action sequence
- Can filter, aggregate, reorder selected items