Last Time

• Visualization Design
  – Examples of what not to do

• Design Principles
  – Maximize data-ink ratio
  – Avoid chartjunk
  – Increase data density
  – Layering and Separation
A Color Interlude
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6. I think if you’re color blind—and about 8 percent of all men with European ancestry have difficulty telling the difference between green and red—then the Jets-Bills game Thursday night was tough on the eyes. As in, you couldn’t make out the difference between the teams on TV, particularly with both teams wearing white helmets. This is what former kicker Lawrence Tynes, who is color blind, said via email Friday: “The game was difficult to watch especially from the elevated camera views. From the elevated views I could not identify who was who, and that was frustrating. Just my opinion, but two NFL teams should not have on dark-colored jerseys. There was just not enough contrast last night. To me everyone looked the same, especially with each team having white helmets. Looked like 22 guys on the same team playing against each other. My brother texted me and said he couldn't watch it. His color blindness is worse than mine, and he actually had to turn the game off.” The NFL said it would do a color blindness analysis before having teams wear uniforms like those again.
Designing Interactive Visualizations

- Overview + Detail
- Focus + Context
- Brushing & Linking
- Filtering & Dynamic Querying
- Zooming
- Details on Demand
- Animation
Overview + Detail

• Presenting the data with two images:
  – One shows a rough overview of the complete information space and neglects details.
  – The other shows a small portion of the information space and visualizes details.

• Images can be shown either sequentially or in parallel.
Overview + Detail
Overview + Detail

http://clearoutside.com/forecast/41.62/-80.14
Focus + Context

• Enable viewers to see the object of primary interest presented in full detail (focus) while at the same time getting an overview-impression of all the surrounding information available (context).
  – Typically all in the same image (as opposed to two views for overview + detail), but that’s not an absolute requirement.
Focus + Context

A. “You are here”
B. Overview + detail
C. Focus + context
Focus + Context
Focus + Context

Hyperbolic Tree Browser: youtu.be/pwpze3RF55o
Brushing & Linking

• Combine different visualization methods to overcome the shortcomings of individual techniques.

• Interactive changes made in one visualization are automatically reflected in the other visualization(s).
Brushing & Linking

Brushing Implemented in DataDesk

Conditional Regression Lines
Brushing & Linking
Filtering & Dynamic Querying

• Filtering: Limit the amount of displayed information by a set of predefined criteria

• Dynamic querying: Continually update the data that is filtered and visualized based on interactions.
Filtering & Dynamic Querying
Filtering & Dynamic Querying

- cscheid.net/static/mlb-hall-of-fame-voting/
- http://well-formed-data.net/experiments/elastic_lists/
Details on Demand

• Interactively selecting parts of the data to be visualized with more detail while providing an overview of the whole informational scope.
Details on Demand
The Shneiderman Mantra

• “Overview first, zoom and filter, and details on demand.” – Ben Shneiderman

• “Everything is best for something and worst for something else.” – Bill Buxton
Any Questions?