CS-5630 / CS-6630 Visualization
Best Projects, Review

Alexander Lex
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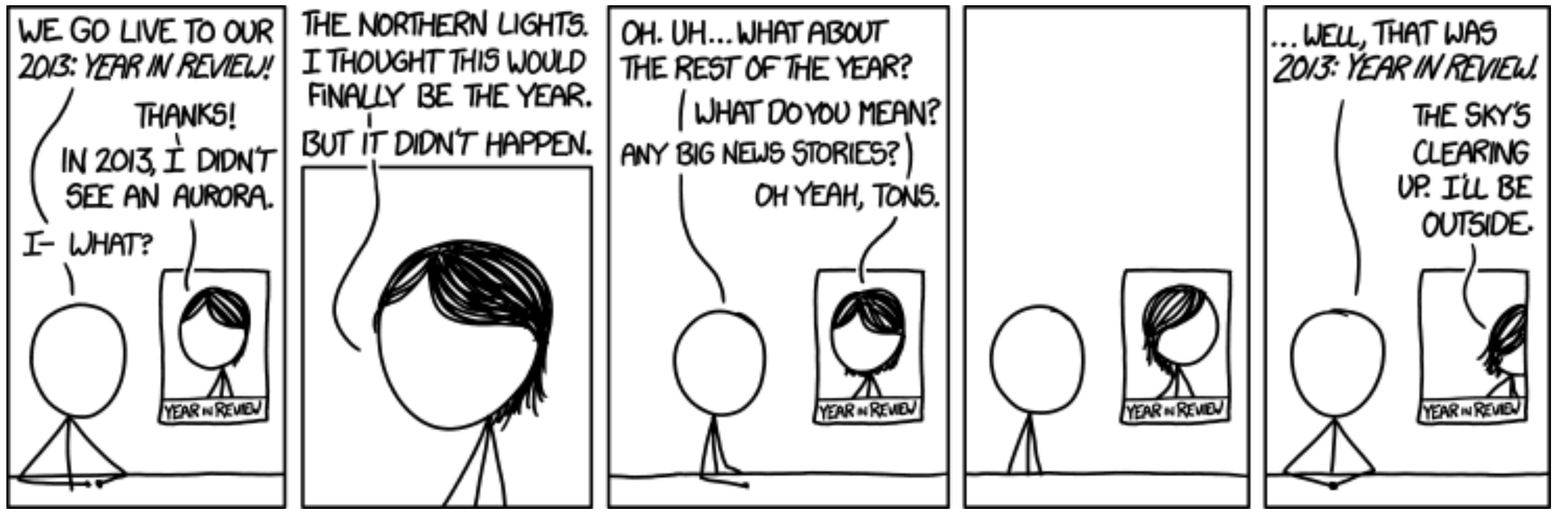
THE UNIVERSITY OF UTAH



[xkcd]

Best Projects

The Process

Each TA nominates 4-5 of her/his projects

All TAs meet, watch all videos, play with all tools, and discuss which ones get a nomination

Top three:

Each TA casts three votes towards his favorite projects

The Results

A first, a second, and a third place!

- Chocolate for everyone + 120% of points

5 Runner-Ups

110% of points

For all: listed in “Hall of Fame” on website

The Runner-Ups

In no particular Order

startupVIS

Yaodong Zhao, Lin Jia, Joris Gahéry

https://linjia00.github.io/2017-dataviscourse-project/

https://www.youtube.com/watch?v=SM4mKZPkmG8&feature=youtu.be

TED talks trend visualization

Hsuan Lee, Chien-Wei Sun

https://cwkenwaysun.github.io/TEDmap/

https://www.youtube.com/watch?v=cPfT3kuISxQ&feature=youtu.be

Ray Tracker

Justin Jensen, Nathan Morrical

http://www.cs.utah.edu/~natevm/courses/cs6630/RayTracker/
https://youtu.be/uq-jAYR3S-8

Visualizing Consumer Complaints

Madhur Pandey, Shlok Patel

https://madhur12.github.io/Visualizing-Consumer-Complaints/

https://www.youtube.com/watch?v=PDTcJAlrnNc&feature=youtu.be

Soccer Stats

Sravan Kumar Neerati, Sreekanth Reddy Konda

https://meerkat3.github.io/SoccerStats/

https://www.youtube.com/watch?v=CwiXTO2AIbk

#3

Spotify Dashboard

Maks Cegielski-Johnson, Jake Pitkin, Jackson Stafford

https://makscj.github.io/visualization-project/

https://goo.gl/kmhNPE

#2

A mirror of history

Yuwei Wang, Yanqing Peng

https://uvril.github.io/VisProject/

https://www.youtube.com/watch?v=RU9SZgfiIXg&feature=youtu.be

#1

Visualization for Flight Punctuality of United States

Zhi Wang, Run Li, Yulong Liang

https://leong1016.github.io/

https://www.youtube.com/watch?v=VfQW8zOnrNk&feature=youtu.be

Recap

Course Components

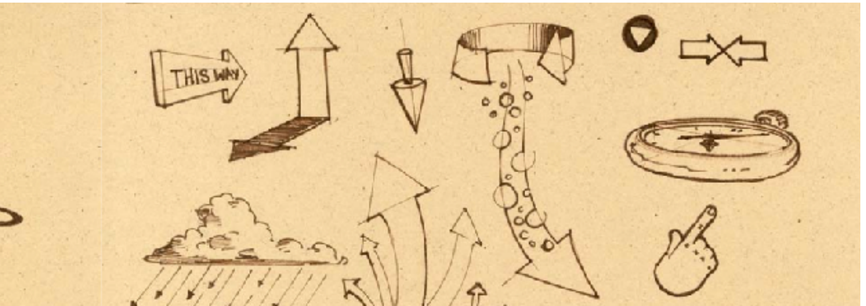
Lecture
Reading
Discussion

Theory

Design Lectures
Design Critiques
Exercises

Labs
D3 reading
Self-study
Office hours

Design Skills ⟷ Coding Skills

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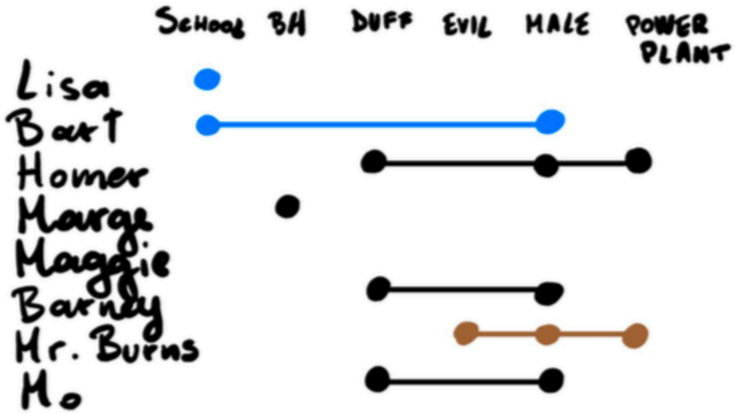
<meta charset="utf-8">
<style>

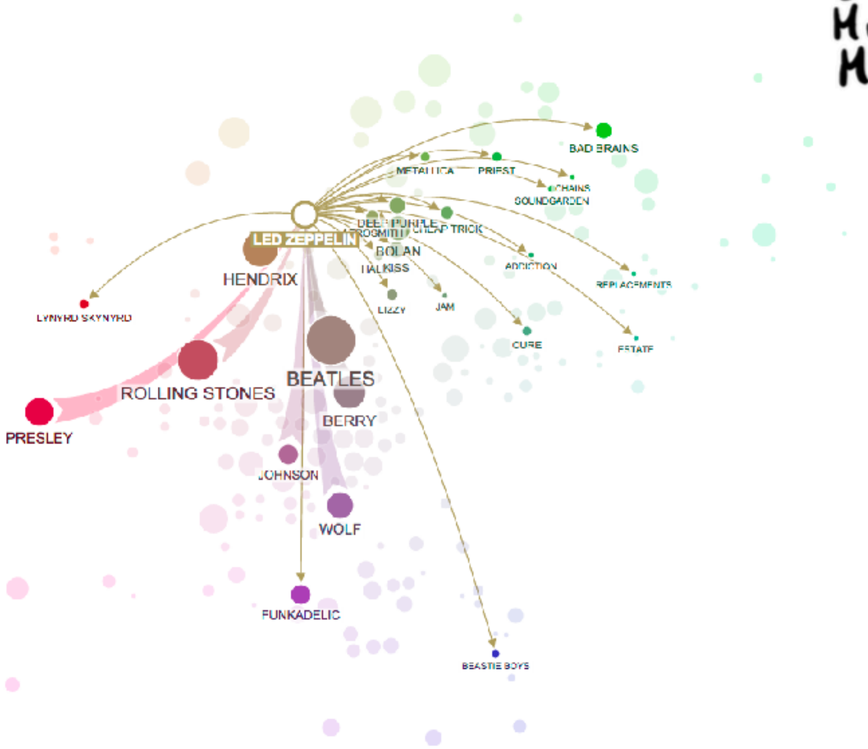
text {
  font: 10px sans-serif;
}

</style>
<body>
<script src="http://d3js.org/d3.v3.min.js"></script>
<script>
```

What is a good visualization?

Design Critiques and Redesigns





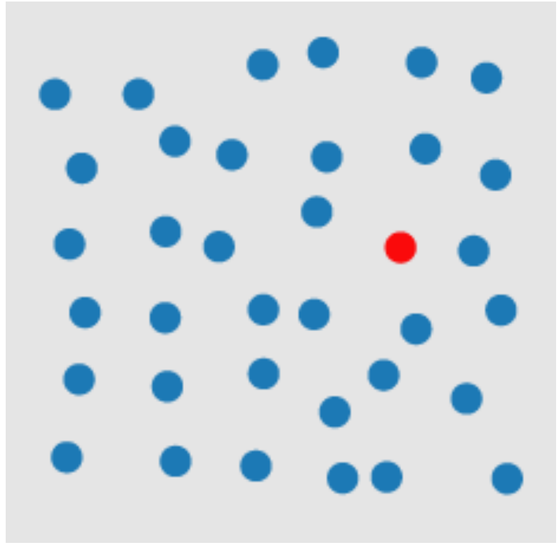
Programming

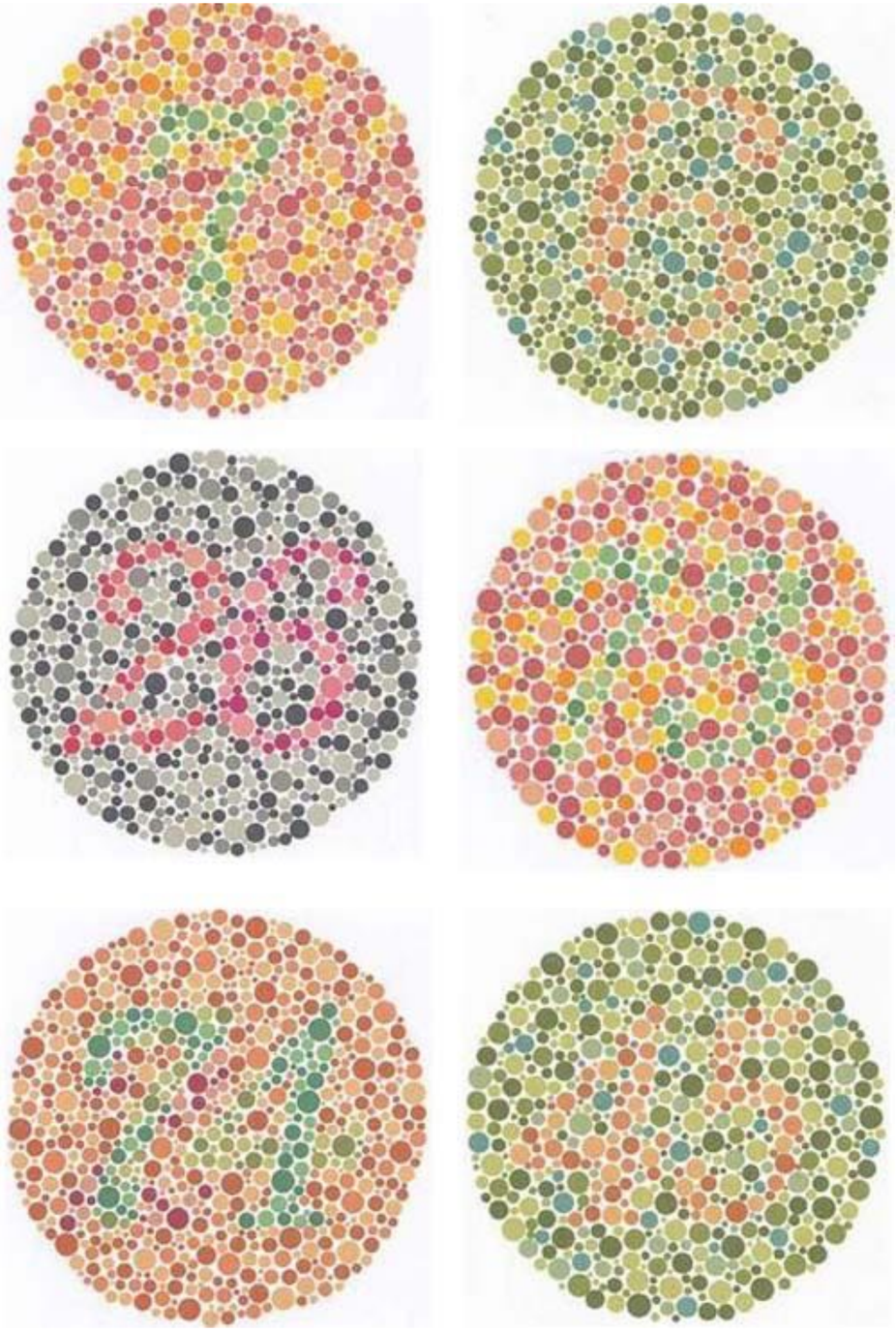
HTML

JS

Data-Driven Documents

Perception

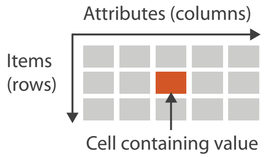




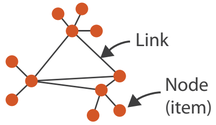
Data, Marks & Channels

Dataset Types

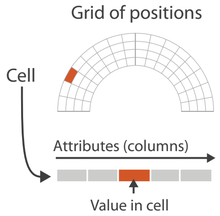
Tables



Networks

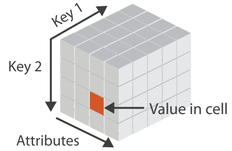


Fields (Continuous)



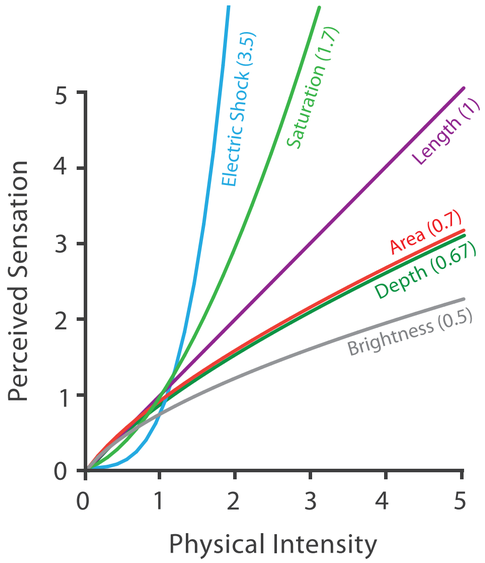
Geometry (Spatial)

Multidimensional Table



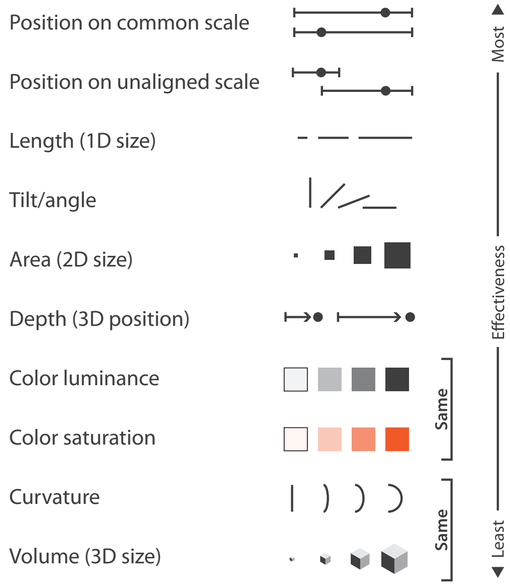
Trees

Steven's Psychophysical Power Law: $S = I^N$

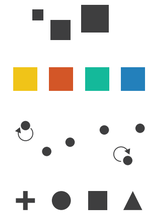


Channels: Expressiveness Types and Effectiveness Ranks

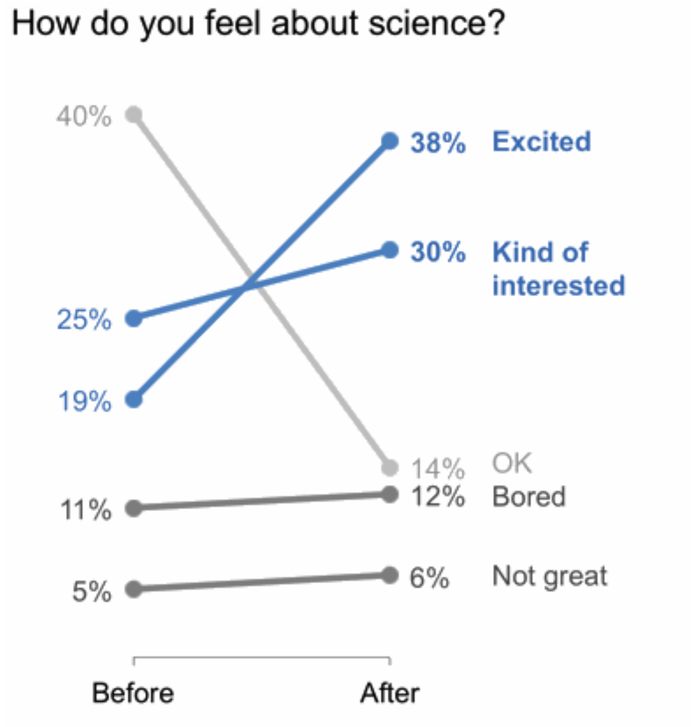
Magnitude Channels: Ordered Attributes

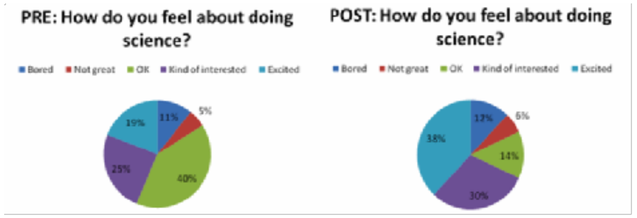


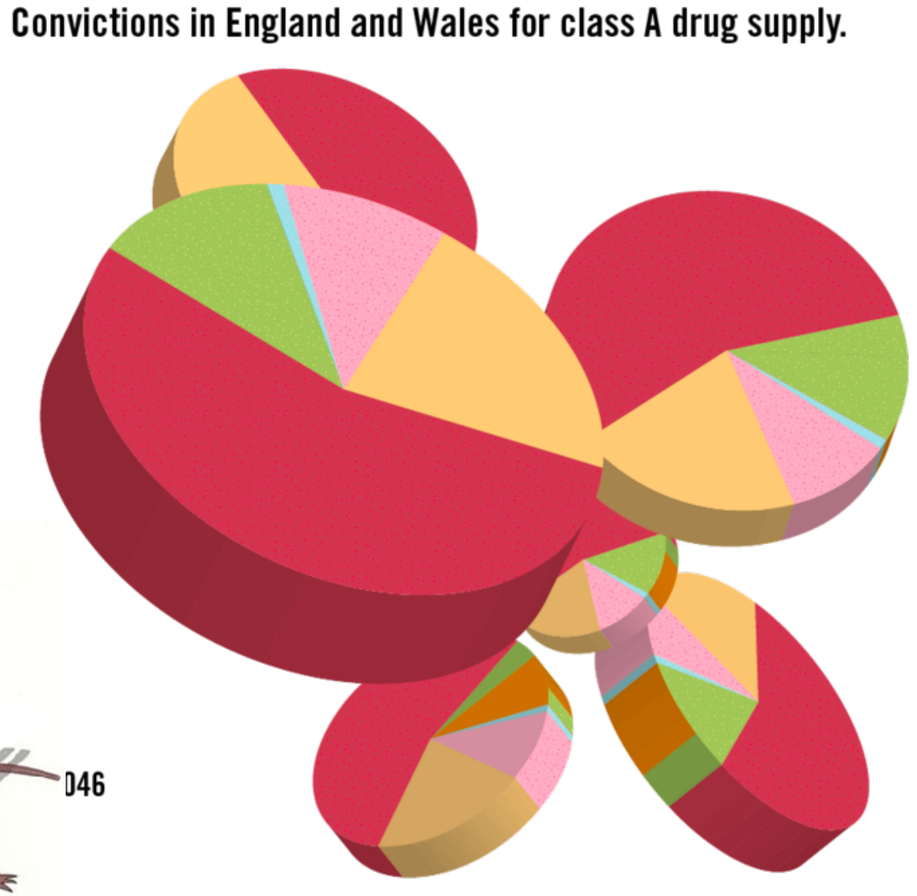
Identity Channels: Categorical Attributes

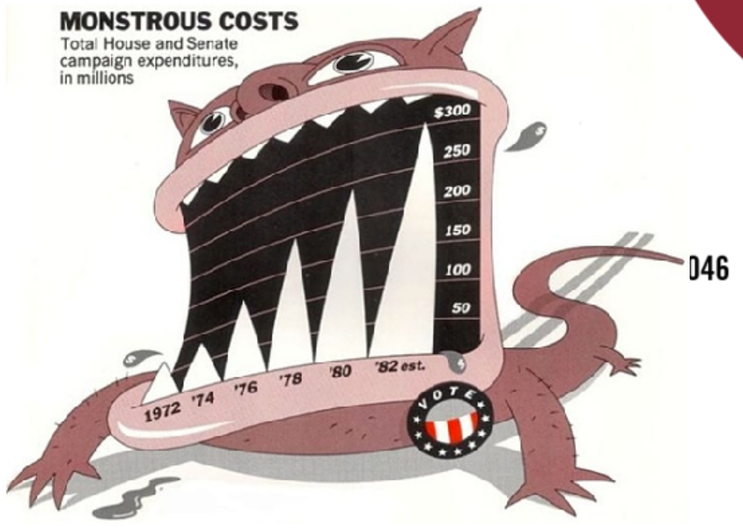


Design Guidelines

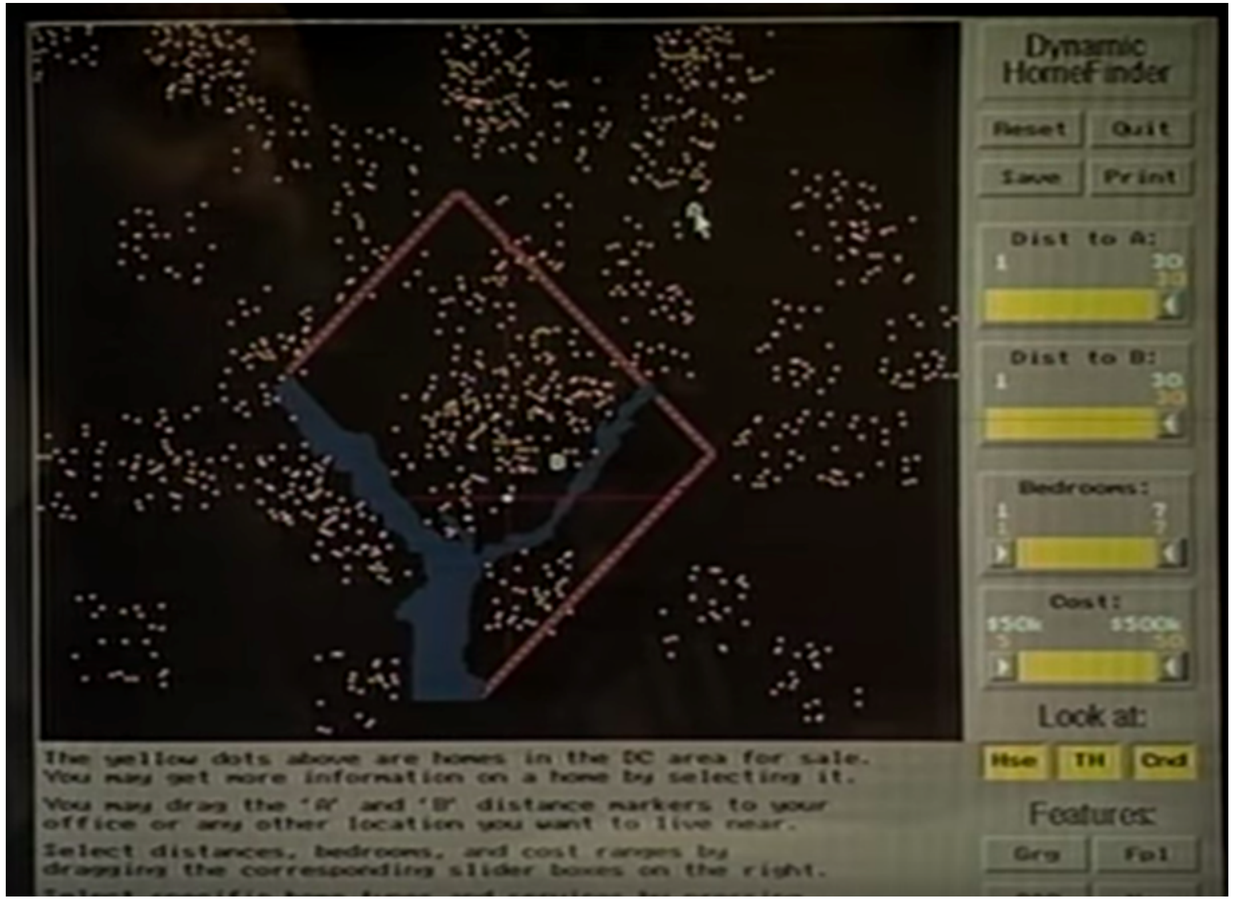


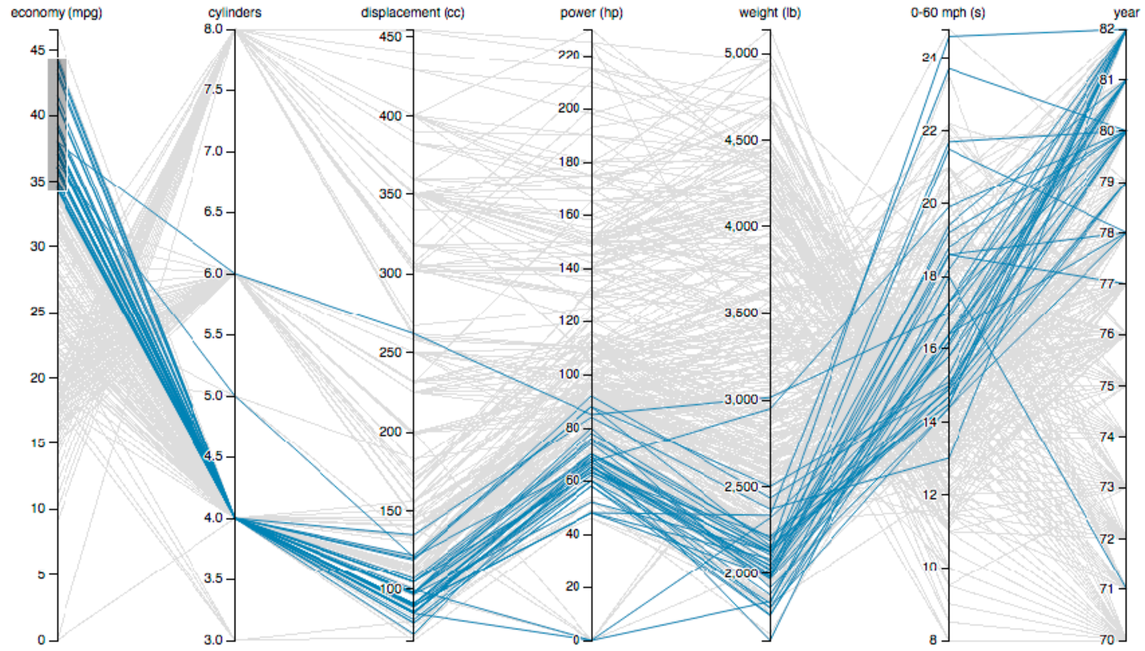






Interaction





Views

Multiple Views

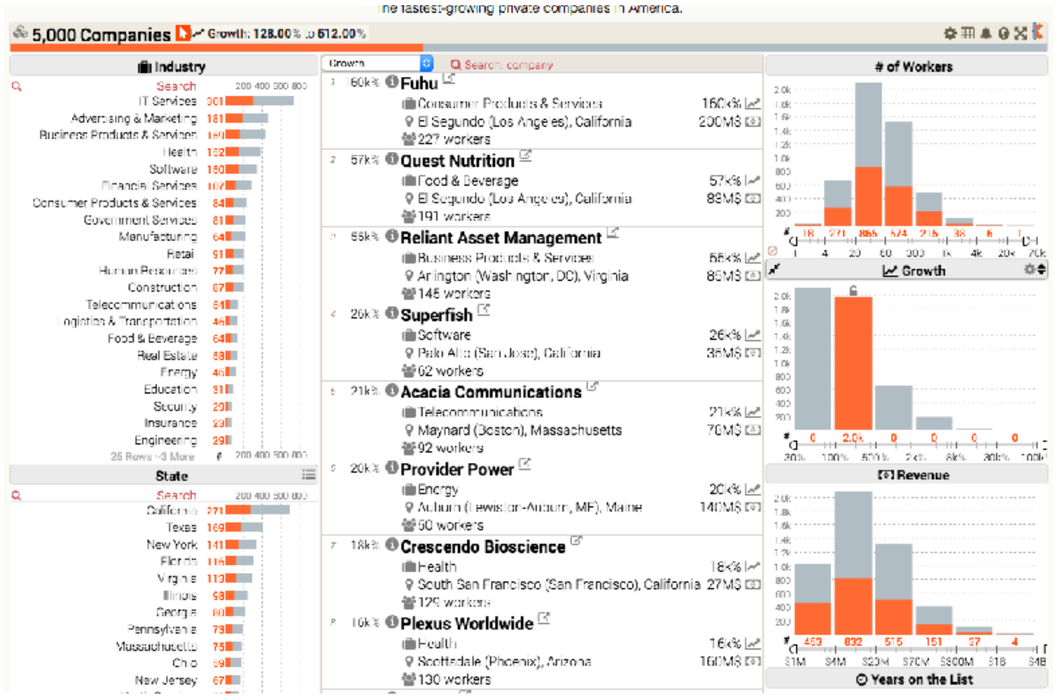
Linked Highlighting

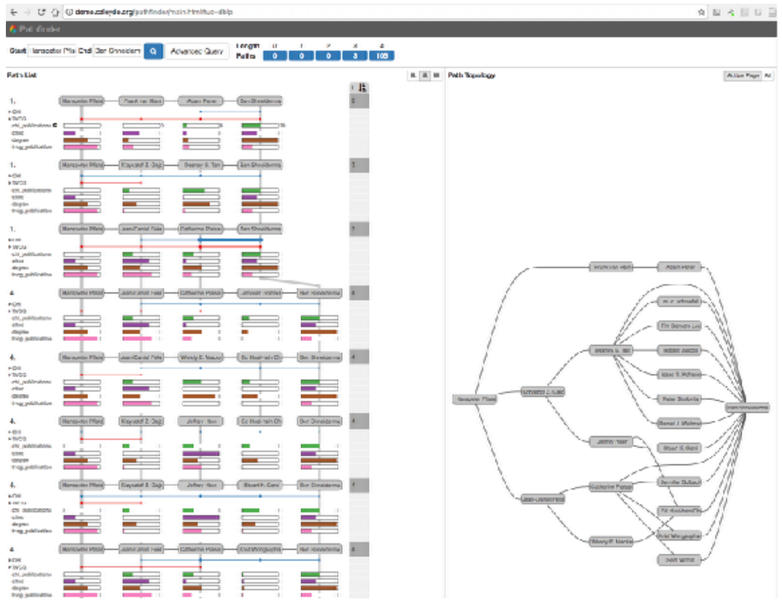
Same Data Different View

Different Data

Small Multiples

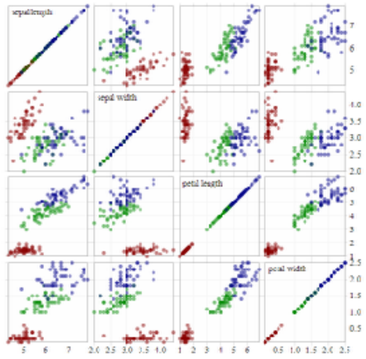
Partitioning



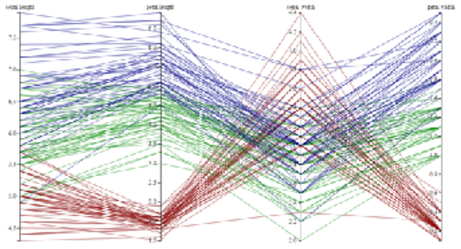


Exam Relevant

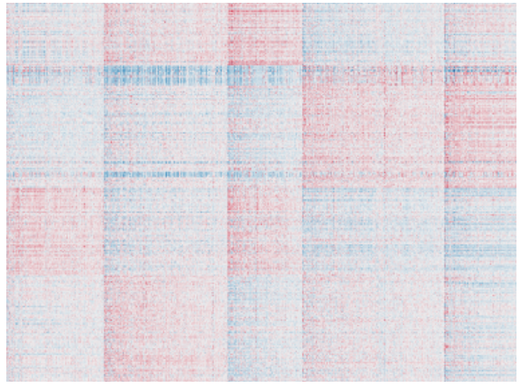
Tables



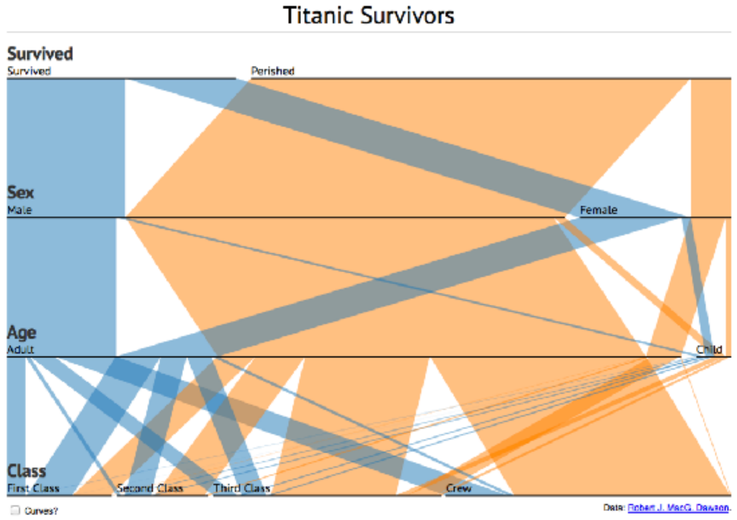
Scatterplot Matrices
[Bostock]



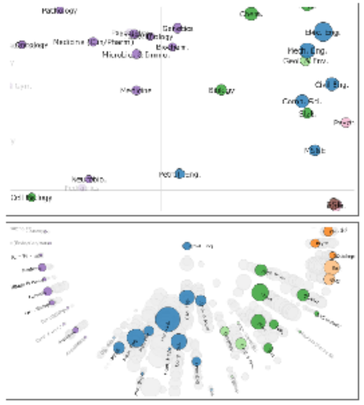
Parallel Coordinates
[Bostock]



Pixel-based visualizations / heat maps



Multidimensional Scaling
[Doerk 2011]



Maps

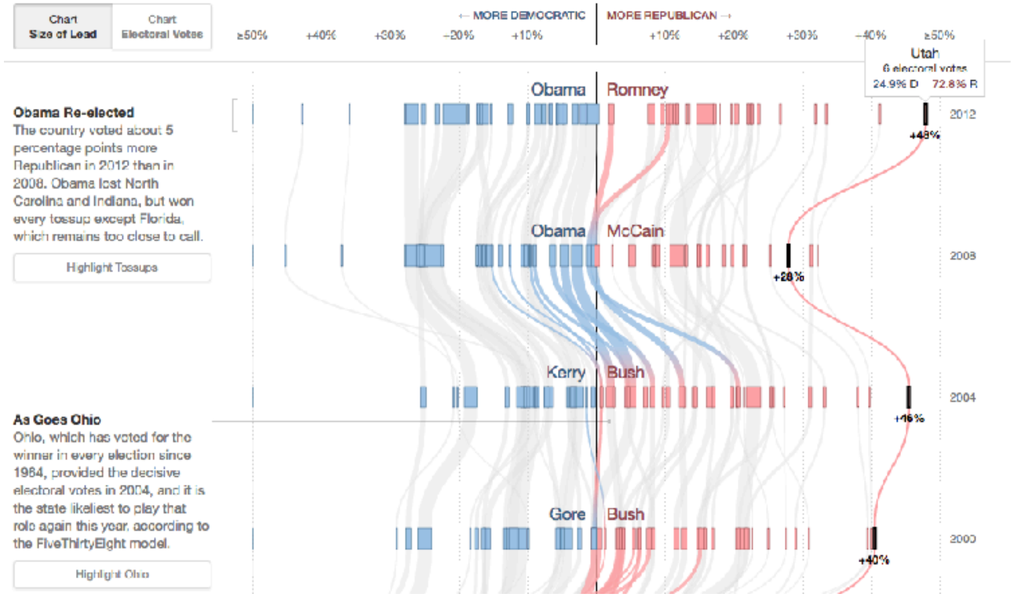
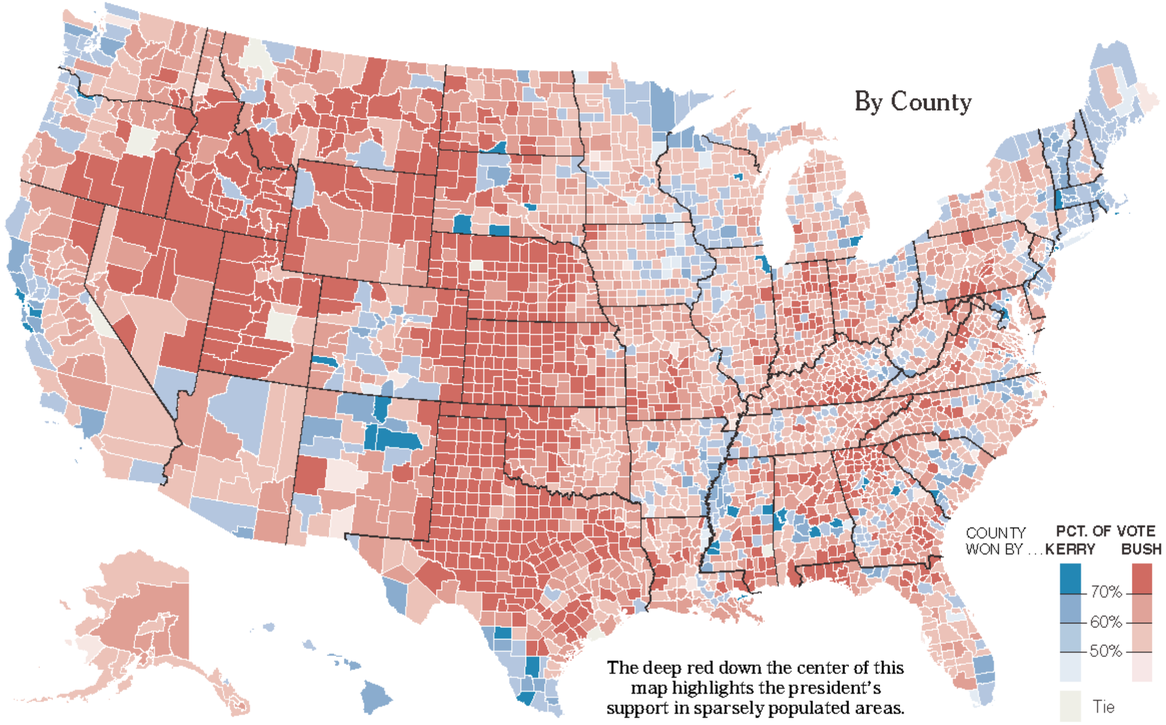
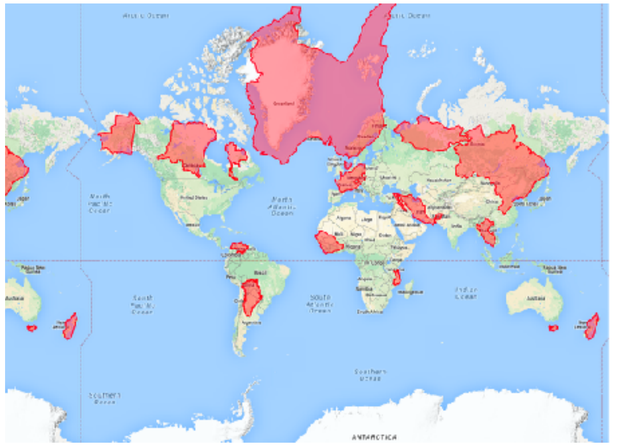
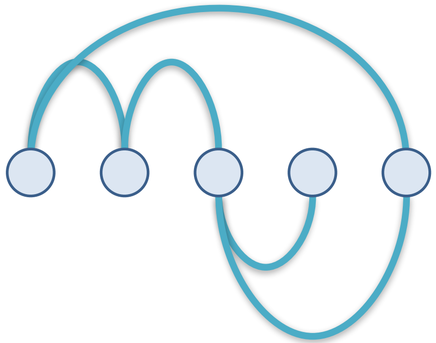


Chart
Size of Lead
Chart
Electoral Votes
← MORE DEMOCRATIC
MORE REPUBLICAN →
≥50%
+40%
+30%
+20%
+10%
Utah
6 electoral votes
24.9% D 72.8% R
Obama
Romney
2012
+48%
Obama
McCain
2008
+28%
Kerry
Bush
2004
+16%
Gore
Bush
2000
+40%
Obama Re-elected
The country voted about 5 percentage points more Republican in 2012 than in 2008. Obama lost North Carolina and Indiana, but won every tossup except Florida, which remains too close to call.
Highlight Tossups
As Goes Ohio
Ohio, which has voted for the winner in every election since 1984, provided the decisive electoral votes in 2004, and it is the state likeliest to play that role again this year, according to the FiveThirtyEight model.
Highlight Ohio

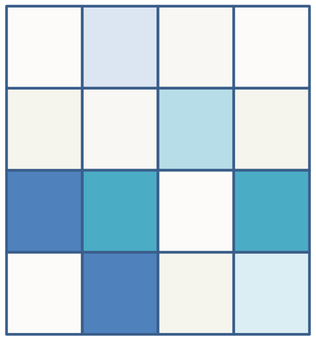

By County
COUNTY WON BY . . .
PCT. OF VOTE
KERRY
BUSH
70%
60%
50%
Tie
The deep red down the center of this map highlights the president's support in sparsely populated areas.


ANTARCTICA

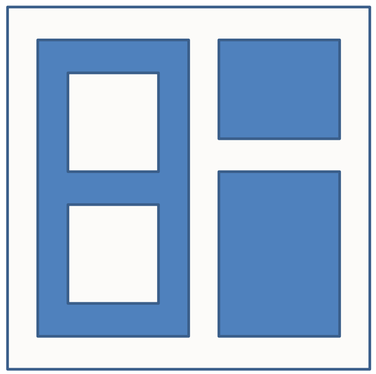
Graphs



Explicit
(Node-Link)



Matrix



Implicit

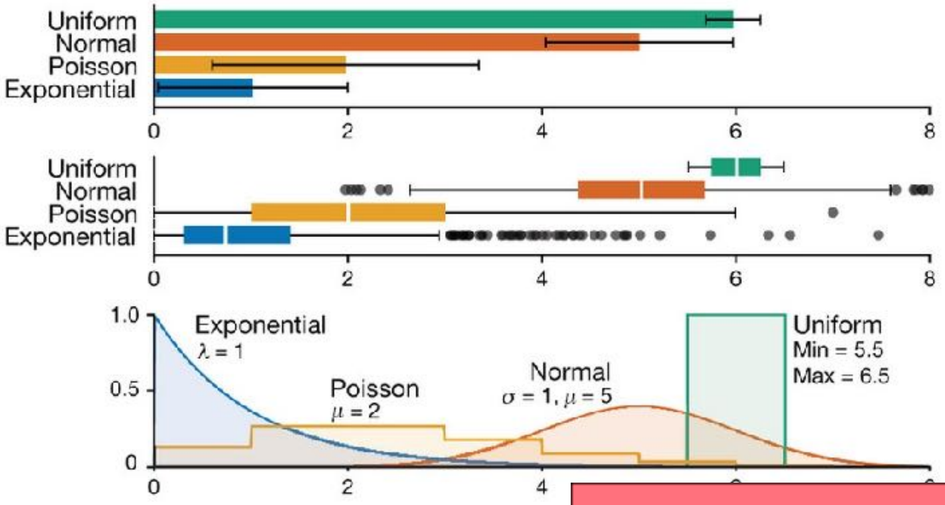
Filter & Aggregate

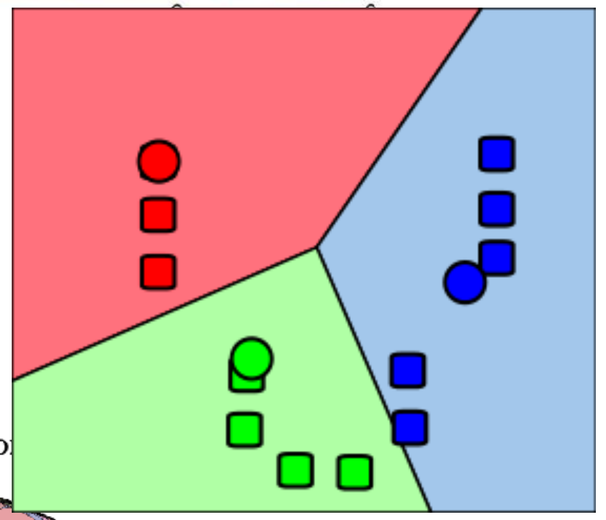
Eliminate Uniteresting Items

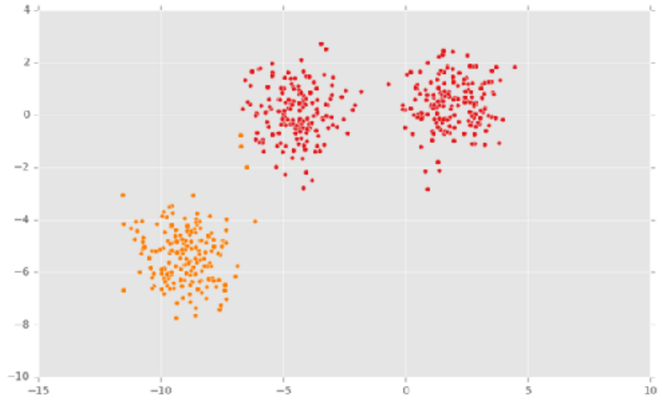
Group similar items

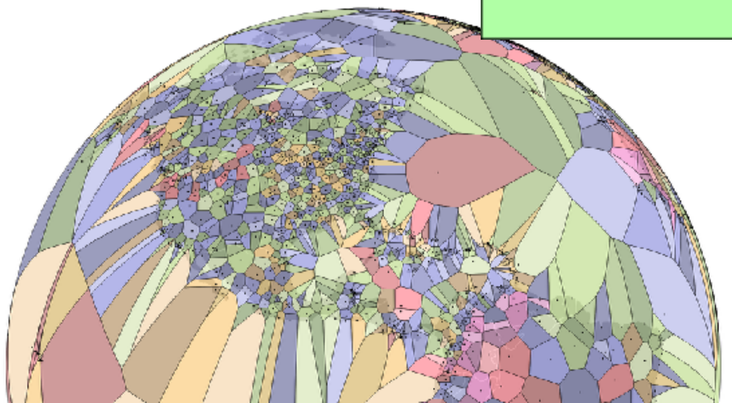
Clustering

Dimensionality Reduction

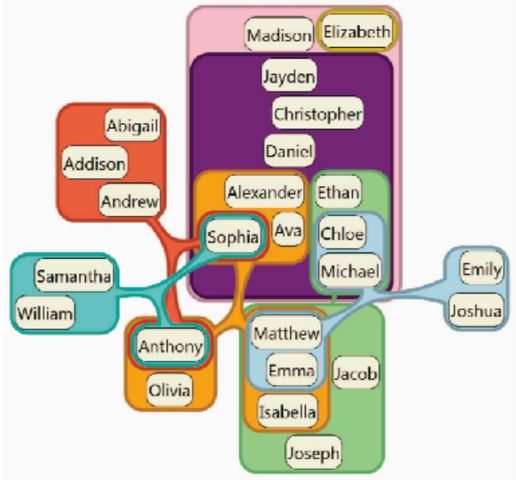


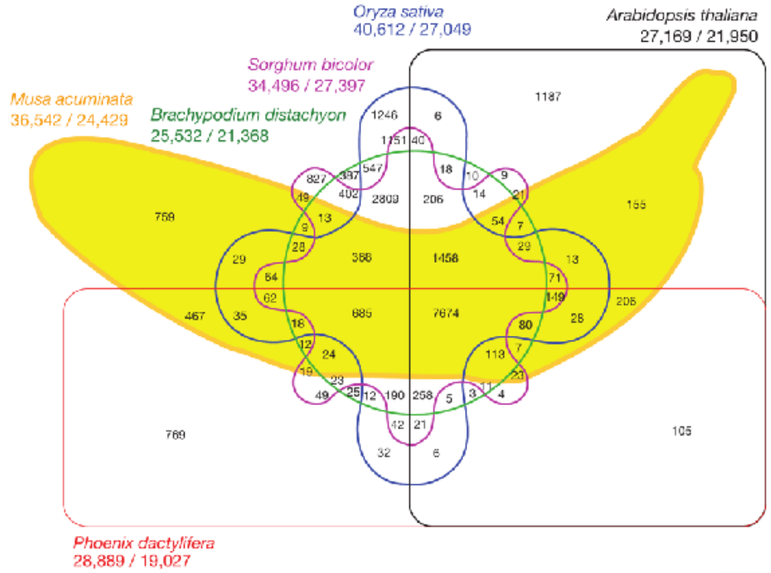


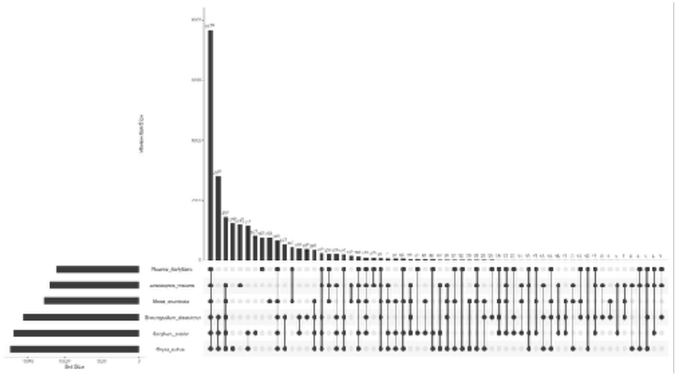


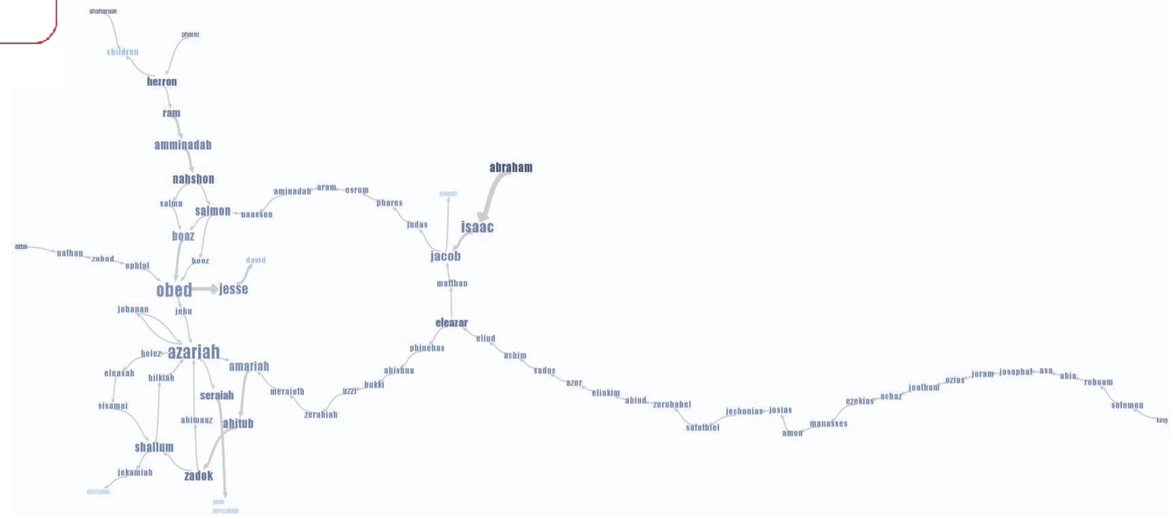


Sets and Text

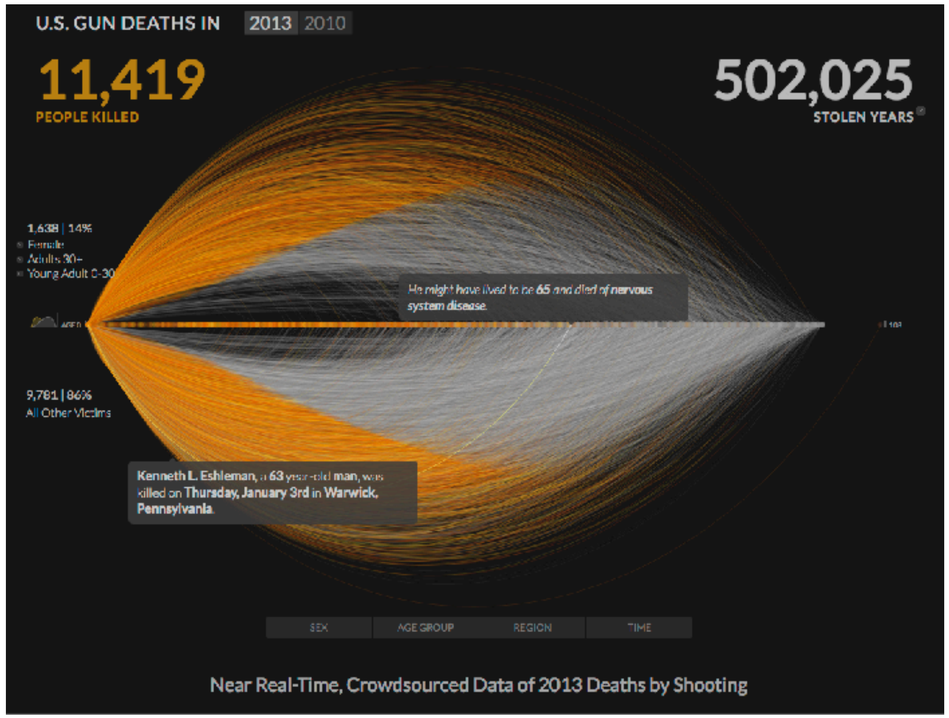


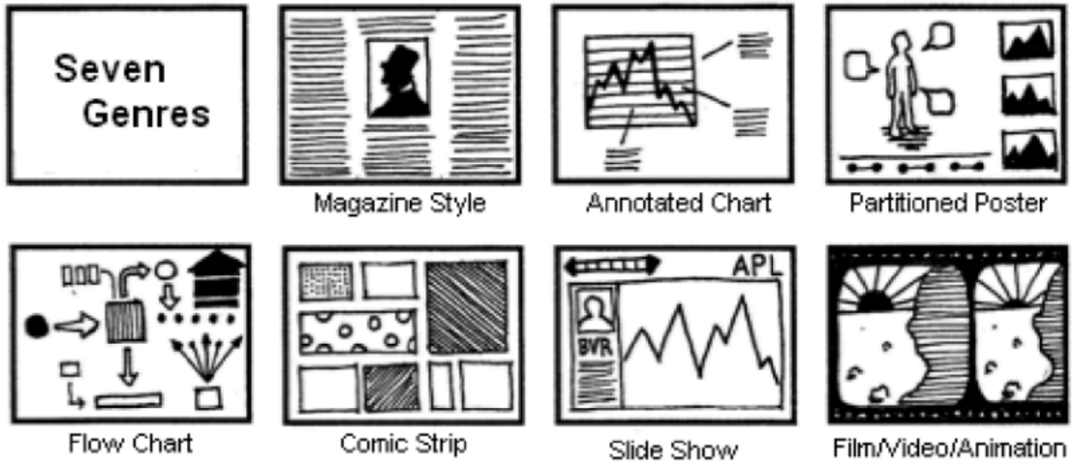


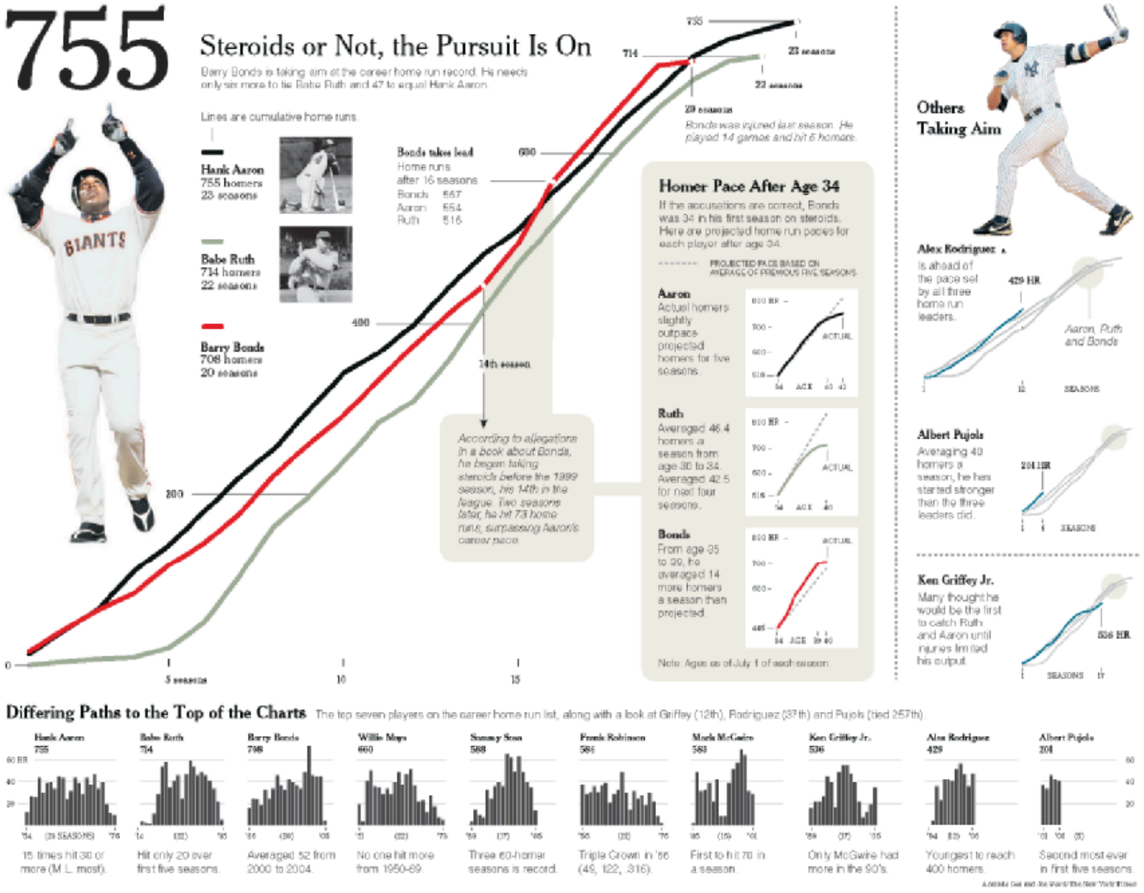




Storytelling



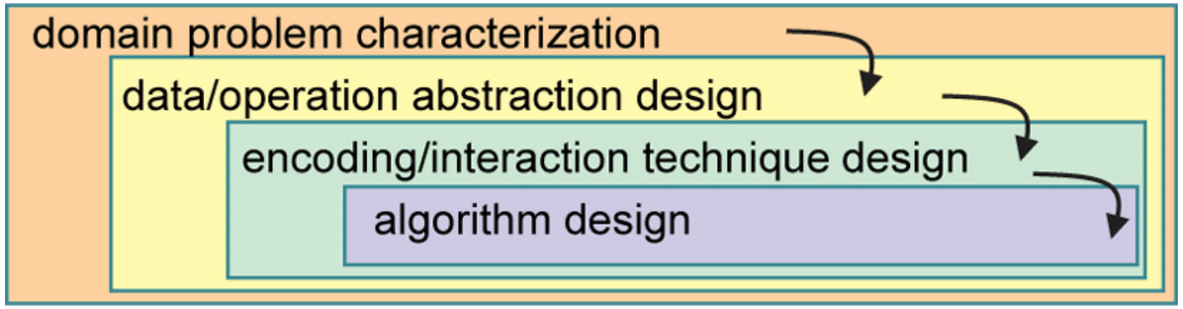




Design/Evaluation

seri
al

parall
el



Added value should be obvious!

Develop new methods/interface/software that are so awesome, cool, impressive, compelling, fascinating, and exciting that reviewers, colleagues, users are totally convinced just by looking at your work and some examples.

— Jarke van Wijk,
Capstone Talk @ IEEE VIS 2013

Opportunities

Classes & Other Opportunities

Visualization Seminar - CS 7942

Advanced Data Visualization - CS 6956

Vis for Scientific Data - CS 6636

Independent Study in VDL:

http://vdl.sci.utah.edu/

VIS 2018, October, Berlin, Germany

CHI 2018, May, Montreal, Canada

Human-Centered Computing

CS 6540 - HCI (Fall)

CS 6963 - Advanced HCI (Spring)

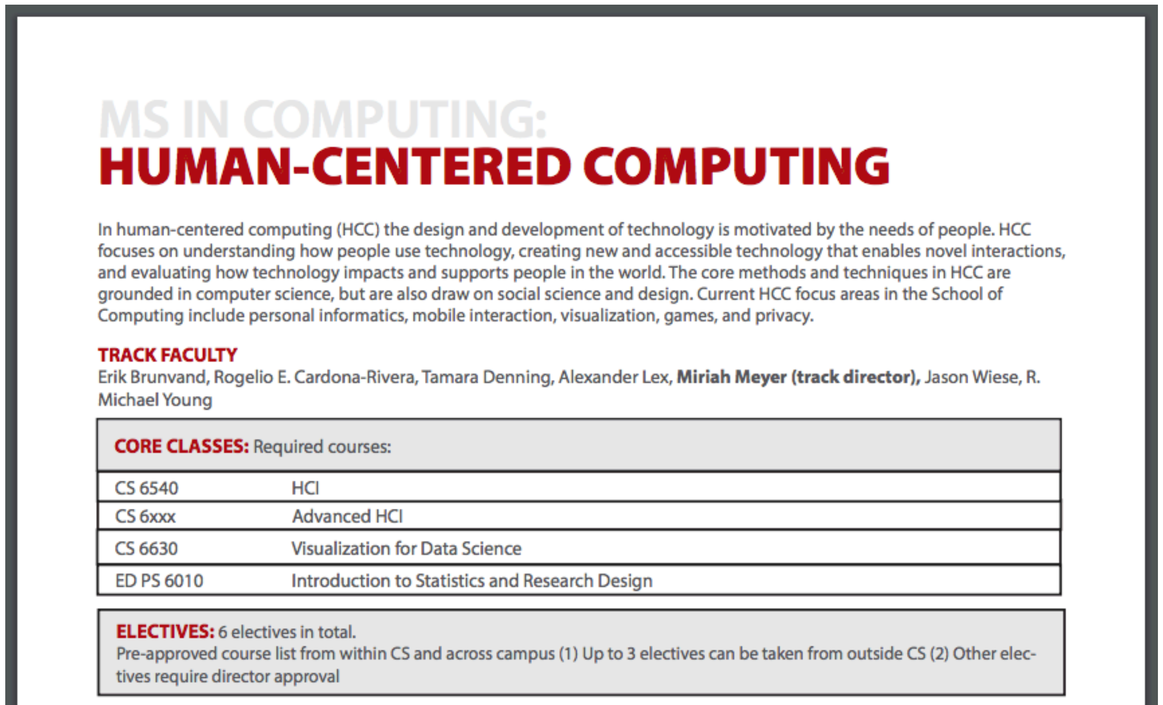
ED PS 6010 - Intro Statistics and Research Design

DES 5710 - Product Design and Development

ANTH 6169 - Ethnographic Methods

ED PS 6030 - Introduction to Research Design

CS 7940 - Human-Centered Computing Seminar



MS IN COMPUTING:

HUMAN-CENTERED COMPUTING

In human-centered computing (HCC) the design and development of technology is motivated by the needs of people. HCC focuses on understanding how people use technology, creating new and accessible technology that enables novel interactions, and evaluating how technology impacts and supports people in the world. The core methods and techniques in HCC are grounded in computer science, but are also draw on social science and design. Current HCC focus areas in the School of Computing include personal informatics, mobile interaction, visualization, games, and privacy.

TRACK FACULTY

Erik Brunvand, Rogelio E. Cardona-Rivera, Tamara Denning, Alexander Lex, **Miriah Meyer (track director),** Jason Wiese, R. Michael Young

CORE CLASSES: Required courses:

CS 6540	HCI
CS 6xxx	Advanced HCI
CS 6630	Visualization for Data Science
ED PS 6010	Introduction to Statistics and Research Design

ELECTIVES: 6 electives in total.
Pre-approved course list from within CS and across campus (1) Up to 3 electives can be taken from outside CS (2) Other electives require director approval

Feedback

Feedback Please!

Were your expectations met?

What else would you have liked to learn about?

Did you feel prepared? Are the prerequisites appropriate?

Was it too much work? Was it too easy?

Too little programming? Too much programming?

Did you like JS/D3?

Did you enjoy the project?

Course Evaluation

https://goo.gl/lbhkEr

Please Take 5 Min to evaluate this course!

Evaluations are important for us to improve the course and our teaching!

Thanks!

To you for participating and coming to lectures!

To Janet for her guest lectures!

To our TAs Carolina, Trang, and Pranav