Visualization Software

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CS 294-10: Visualization
Spring 2010

Assignment 2: Visualization Design

Haiti pledges of aid by country and organisation
Click headings to sort

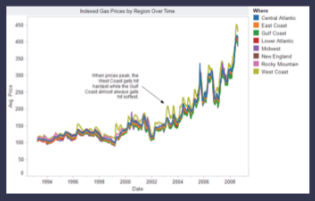
Country/organisation	Funding, committed and uncommitted, $	$ per person	% of total
Others	636958619		36.32
Private (individuals & organisations)	363486895		20.73
United States	167769881	0.53	9.57
Canada	130733775	3.89	7.45
World Bank (emergency grant)	100000000		5.7
Spain	45880231	1.02	2.62
European Commission	44877340		2.56
United Kingdom	32590138	0.53	1.86
France	31313132	0.50	1.79

Due before class on Feb 8, 2010

Assignment 2: Creating Visualizations

Use existing software to formulate & answer questions

First steps
- Step 1: Pick a domain
- Step 2: Pose questions
- Step 3: Find data
- Iterate



Create visualizations
- Interact with data
- Question will evolve
- Tableau

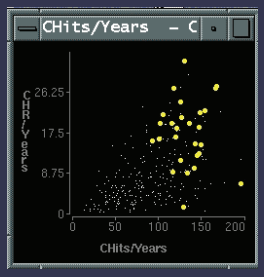
Make wiki notebook
- Keep record of all steps you took to answer the questions

Due before class on Feb 22, 2010

Brushing and Linking

Highlighting

Focus user attention on a subset of the data within one graph [from Wills 95]



[www.sims.berkeley.edu/courses/is247/s02/lectures/Lecture3.ppt]

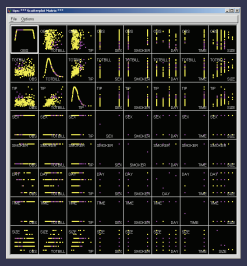
Ggobi: Tips Data

What are the factors that affect tipping behavior?

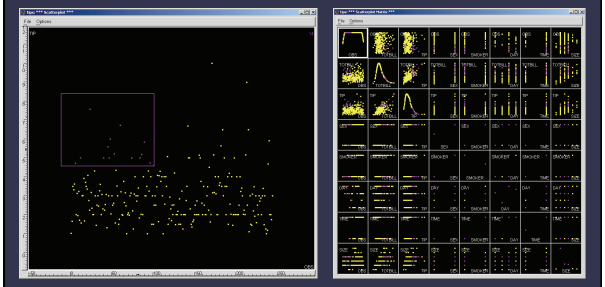
Tips received: 1 waiter, 1 restaurant, few months

- ***tip*** **in dollars,**
- ***bill*** **in dollars,**
- ***sex*** **of the bill payer,**
- ***smokers*** **in the party,**
- ***day*** **of the week,**
- ***time*** **of day,**
- ***size*** **of the party**

244 total tips

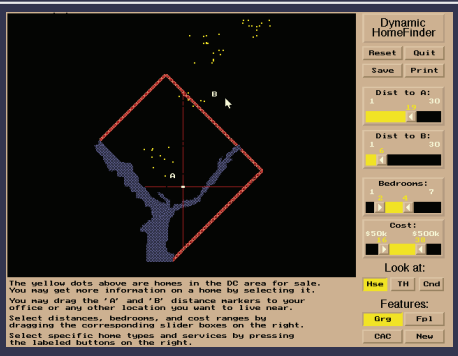


GGobi: Brushing



http://www.ggobi.org/

HomeFinder

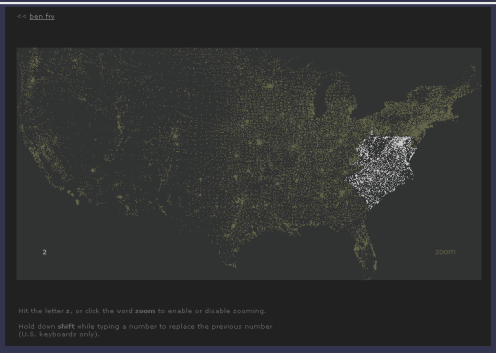


[Ahlberg and Schneiderman 92]

Cellphones

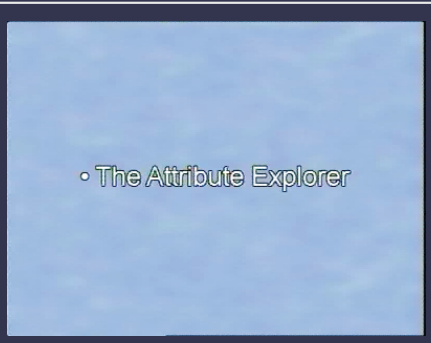
http://www.myrateplan.com/cellphones/

Zipdecode [from Fry 04]

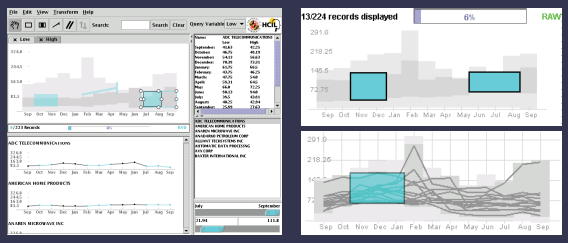


http://acg.media.mit.edu/people/fry/zipdecode/

Attribute explorer [Spence and Tweedie 98]

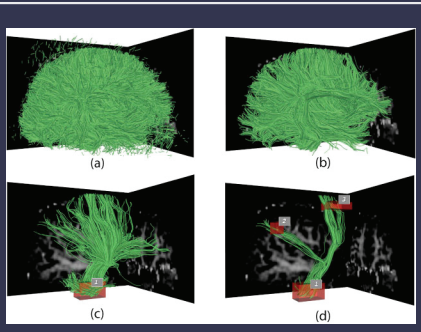


TimeSearcher [Hochheiser & Schneiderman 02]

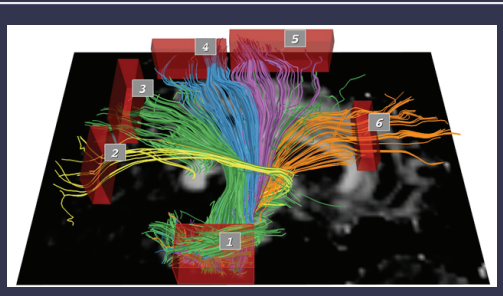


Based on Wattenberg's [2001] idea for sketch-based queries of time-series data.

3D dynamic queries [Akers et al. 04]



3D dynamic queries [Akers et al. 04]



Pros and cons

Pros

- Controls useful for both novices and experts
- Quick way to explore data

Cons

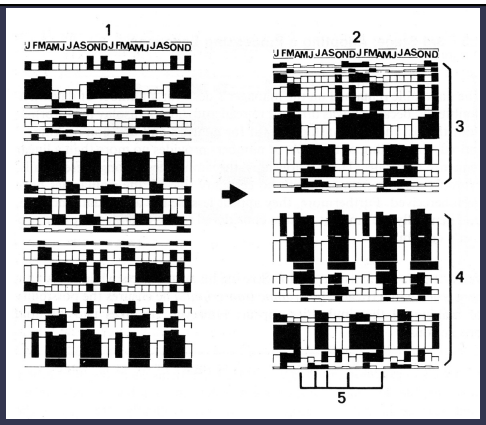
- Simple queries
- Lots of controls
- Amount of data shown limited by screen space

Who would use these kinds of tools?

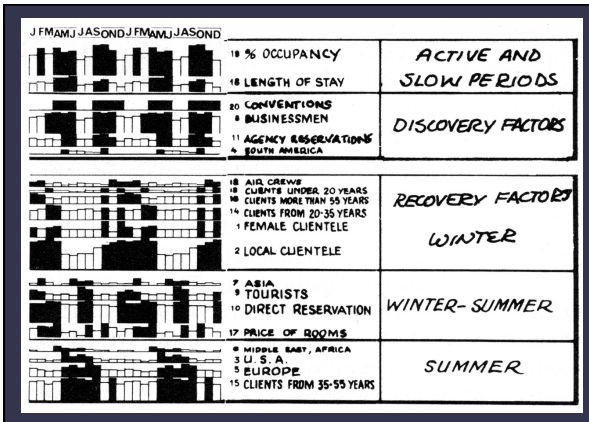
Rearrangements

J	F	M	A	M	J	J	A	S	O	N	D		
26	21	26	28	20	20	20	20	20	40	15	40	1	% CLIENTELE FEMALE
69	70	77	71	37	36	39	39	55	60	68	72	2	% —//— LOCAL
7	6	3	6	23	14	19	14	9	6	8	8	3	% —//— U.S.A.
0	0	0	0	8	6	6	4	2	12	0	0	4	% —//— SOUTH AMERICA
20	15	14	15	23	27	22	30	27	19	19	17	5	% —//— EUROPE
1	0	0	8	6	4	6	4	2	1	0	1	6	% —//— M.EAST, AFRICA
3	10	6	0	3	13	8	9	5	2	5	2	7	% —//— ASIA
78	80	85	86	85	87	70	76	87	85	87	80	8	% BUSINESSMEN
22	20	15	14	15	13	30	24	13	15	13	20	9	% TOURISTS
70	70	75	74	69	68	74	75	68	68	64	75	10	% DIRECT RESERVATIONS
20	18	19	17	27	27	19	19	26	27	21	15	11	% AGENCY ———//———
10	12	6	9	4	5	7	6	6	5	15	10	12	% AIR CREWS
2	2	4	2	2	1	1	2	2	4	2	5	13	% CLIENTS UNDER 20 YEARS
25	27	37	35	25	25	27	28	24	30	24	30	14	% —//— 20-35 —//—
48	49	42	48	54	55	53	57	55	46	55	43	15	% —//— 35-55 —//—
25	22	17	15	19	19	19	19	19	20	19	22	16	% —//— MORE THAN 55 —//—
163	167	166	174	152	155	145	170	157	174	165	158	17	PRICE OF ROOMS
1.65	1.71	1.65	1.91	1.90	2.	1.54	1.66	1.73	1.82	1.66	1.44	18	LENGTH OF STAY
67	82	70	83	74	77	56	62	90	92	78	55	19	% OCCUPANCY
			X	X	X			X	X	X	X	20	CONVENTIONS

[Graphics and Graphic Information Processing, Bertin 81]



[Graphics and Graphic Information Processing, Bertin 81]



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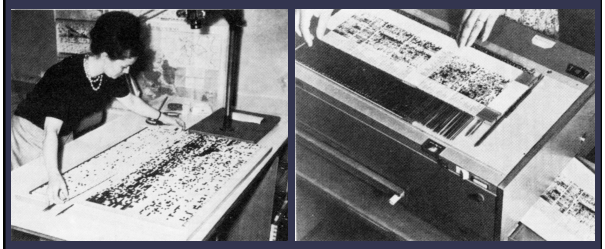

[Graphics and Graphic Information Processing, Bertin 81]

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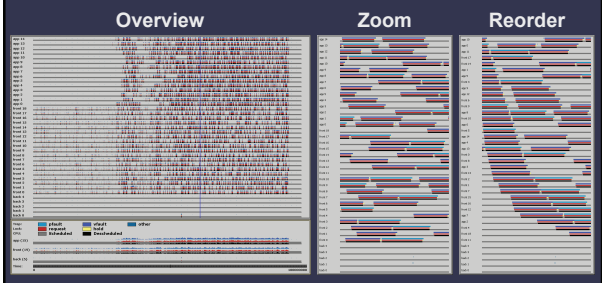
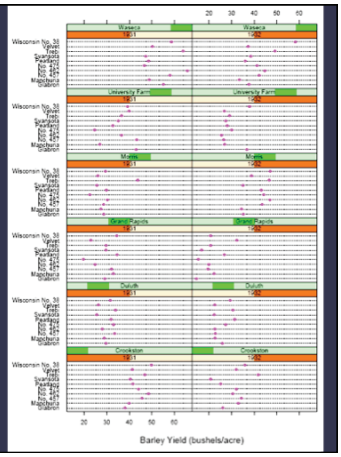
Rivet: Interactive reordering



Performance Analysis and Visualization of Parallel Systems Using SimOS and Rivet: A Case Study [Bosch et al. 00]

Trellis

[Becker, Cleveland, and Shyu 96]

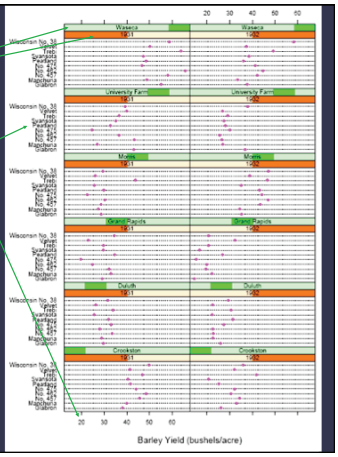


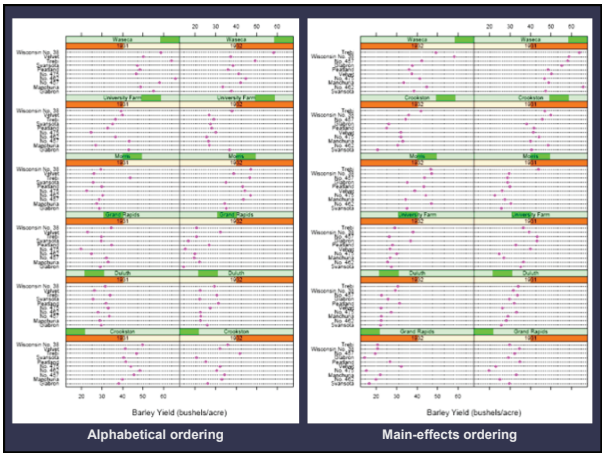
Trellis

[Becker, Cleveland, and Shyu 96]

Condition variables
location, year

Panel variables
type, yield





Alphabetical ordering | Main-effects ordering

Summary

Most visualizations are interactive

- Even passive media elicit interactions

Good visualizations are task dependant

- Choose the right space
- Pick the right interaction technique

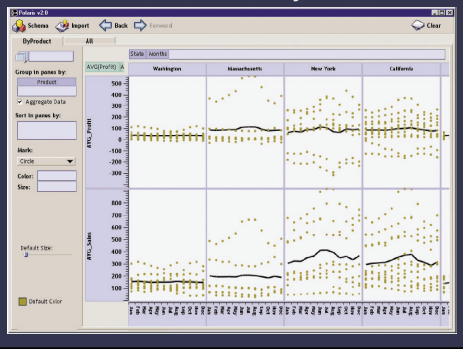
Human factors are important

- Leverage human strengths
- Assist to get past human limitations

Visualization Software

Tableau

Research at Stanford: “Polaris” by Stolte and Hanrahan.



Tableau

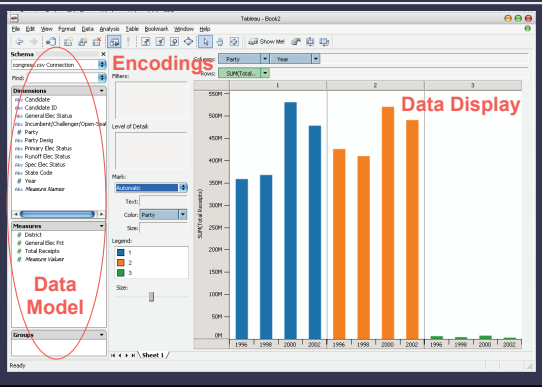


Tableau demo

The dataset:

- Federal Elections Commission Receipts
- Every Congressional Candidate from 1996 to 2002
- 4 Election Cycles
- 9216 Candidacies

Data Set Schema

- Year (Qi)
- Candidate Code (N)
- Candidate Name (N)
- Incumbent / Challenger / Open-Seat (N)
- Party Code (N) [1=Dem,2=Rep,3=Other]
- Party Name (N)
- Total Receipts (Qr)
- State (N)
- District (N)

- This is a subset of the larger data set available from the FEC, but should be sufficient for the demo

Hypotheses?

What might we learn from this data?

Correlation between receipts and whether elected?
Do receipts increase over time?
Which states spend the most?
Which party spends the most?
Margin of victory vs. amount spent?
Amount spent between competitors?

Hypotheses?

What might we learn from this data?

- Has spending increased over time?
- Do democrats or republicans spend more money?
- Candidates from which state spend the most money?