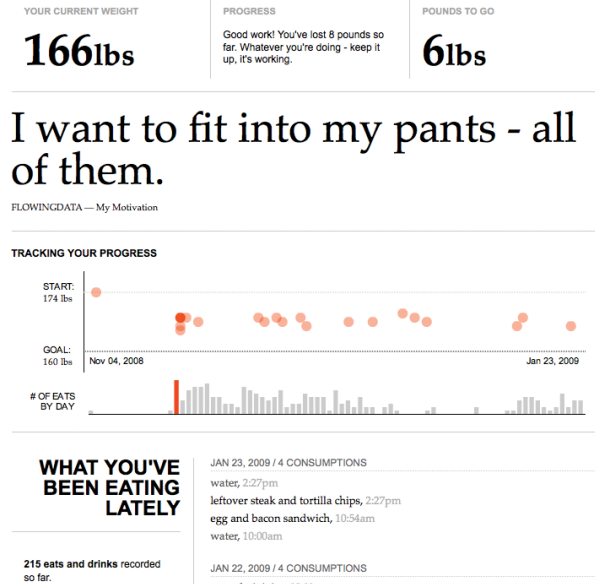*COLOR PLATE 1 (FIGURE 1-1). We experimented with different visual cues on a map to best display location data with impact and exposure values. The above shows three iterations during our preliminary design. The left map shows GPS traces colorcoded by carbon impact; in the center map, we encoded impact with uni-color area circles; on the right, we incorporated GPS data showing when the user was idle and went back to using color-coding.*

COLOR PLATE 2 (FIGURE 1-2). In the current mapping scheme, we use color filters to highlight the data. The map serves solely as context. Linked histograms show impact and exposure distributions of mapped data. When the user scrolls over a histogram bar, the corresponding GPS data is highlighted on the map.
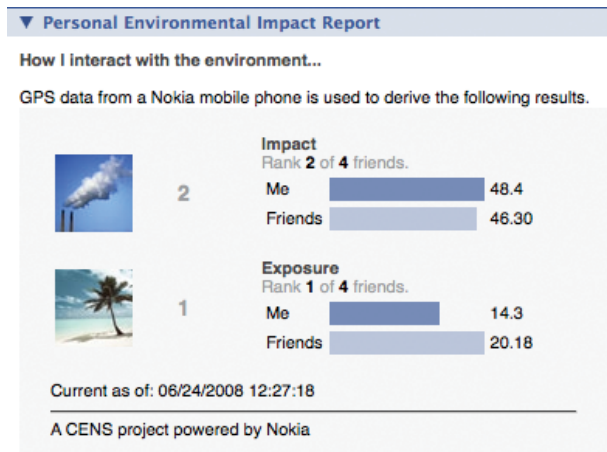
COLOR PLATE 3 (FIGURE 1-4). PEIR's Facebook application lets users share their impact and exposure findings as well as compare their values with friends.

YOUR CURRENT WEIGHT

166lbs

PROGRESS

Good work! You've lost 8 pounds so far. Whatever you're doing - keep it up, it's working.

POUNDS TO GO

6lbs

I want to fit into my pants - all of them.

FLOWINGDATA — My Motivation

TRACKING YOUR PROGRESS

START:
174 lbs

GOAL:
160 lbs   Nov 04, 2008   Jan 23, 2009

OF EATS
BY DAY

WHAT YOU'VE BEEN EATING LATELY

215 eats and drinks recorded so far.

JAN 23, 2009 / 4 CONSUMPTIONS

water, 2:27pm
leftover steak and tortilla chips, 2:27pm
egg and bacon sandwich, 10:54am
water, 10:00am

JAN 22, 2009 / 4 CONSUMPTIONS

HOW TO MONITOR YOUR WEIGHT, EATING, AND DRINKING

Send direct messages to **yfd** in the following format:

What You Weigh

weigh: How much you weigh, in pounds, right now.

EXAMPLE: d yfd **weigh** 190

What You Ate

ate: Whatever you just finished eating.

EXAMPLE: d yfd **ate** an entire chicken

What You Drank

drank: Whatever you just finished drinking.

EXAMPLE: d yfd **drank** water

Set a Weight Goal

weight_goal: Weight in pounds

EXAMPLE: d yfd **weight_goal** 160

What Motivates You

weight_bc: What will motivate you to live healthier?

COLOR PLATE 4 (FIGURE 1-5). People track their weight and what they eat for different reasons. YFD places motivation front and center.
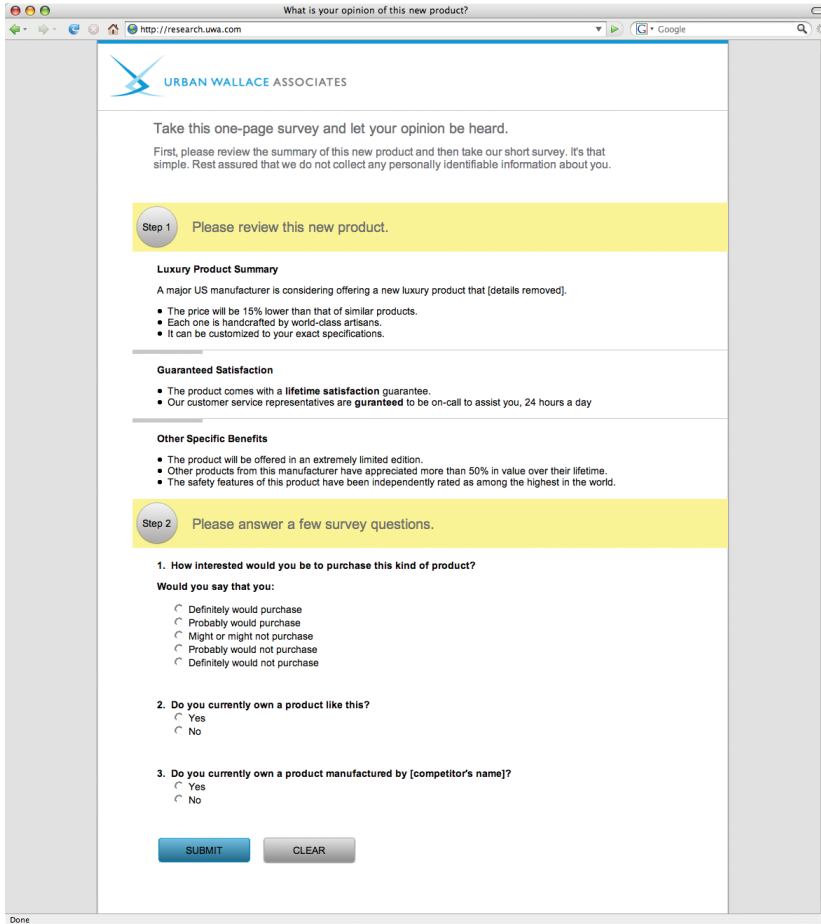

For legibility, headers were set in Arial at 20 px

Body copy was also set in Arial at 14 px.

Bullet points help break up the text into easily readable chunks.

Whitespace is always appreciated and makes the page seem lighter and less oppressive.

COLOR PLATE 5 (FIGURE 2-2). Designing for legibility.

COLOR PLATE 6 (FIGURE 2-3). The survey starts with only three questions.

COLOR PLATE 7 (FIGURE 2-4). The survey may expand to up to six questions depending on user input.

COLOR PLATE 8 (FIGURE 2-5). *Detail of survey when the user answers "Yes" to Question 1.*

COLOR PLATE 9 (FIGURE 2-6). *Detail of survey when the user answers "No" to Question 1.*

COLOR PLATE 10 (FIGURE 3-1). *Artist's impression of Phoenix on Mars (Image credit: NASA/JPL).*
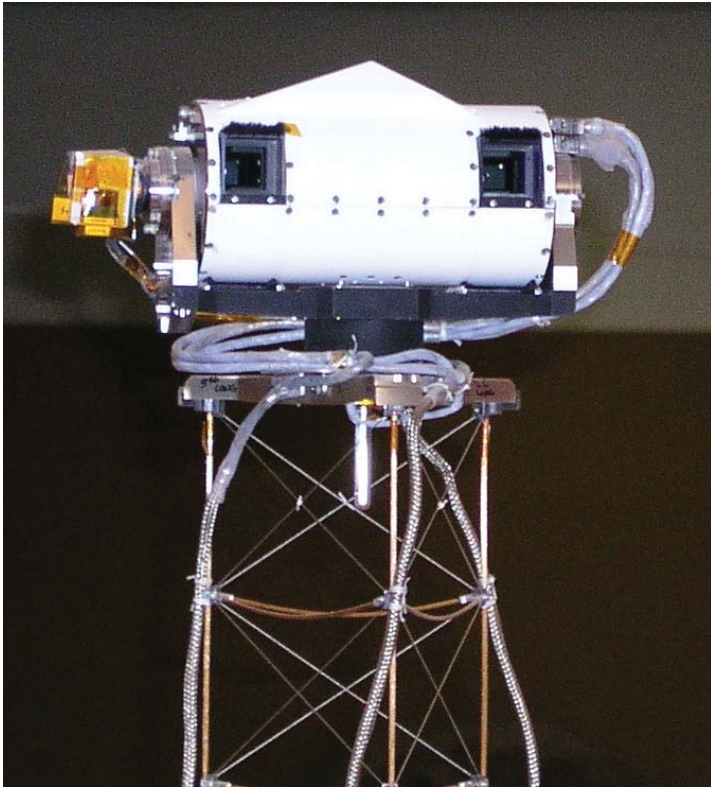
COLOR PLATE 11 (FIGURE 3-2). The Stereo Surface Imager (Image credit: University of Arizona/NASA/JPL).

COLOR PLATE 12 (FIGURE 6-1). Minor road near Aberuchill. Bioran Dalchonzie in the distance. This is the 1,000,000th image to appear on the Geograph website (http://www.geograph.org.uk/photo/1006884). Image (c) Dr. Richard Murray; licensed for reuse under a Creative Commons License (http://creativecommons.org/licenses/by-sa/2.0/).

COLOR PLATE 13 (FIGURE 6-2). Example Geograph photomosaic of the Norfolk coast. Each photo is mapped at its geographic location and represents a 1 km square of the landscape. Images licensed for reuse under a Creative Commons License (http://creativecommons.org/licenses/by-sa/2.0).
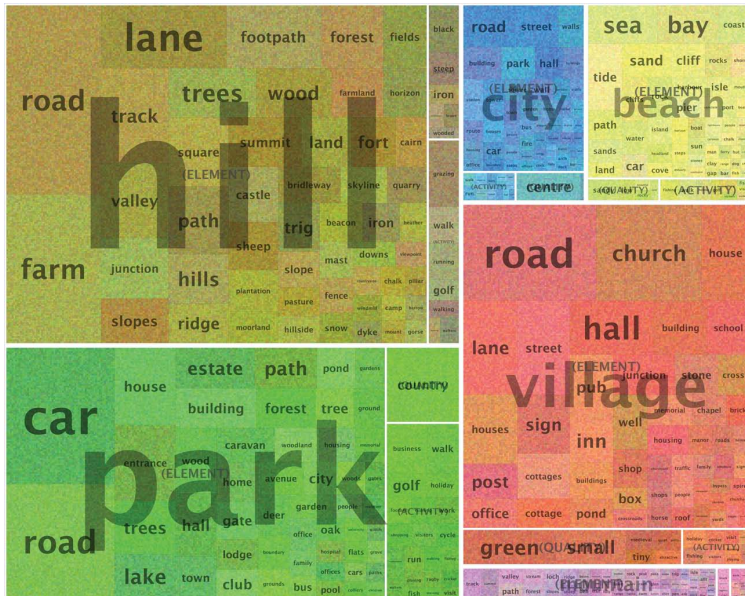
COLOR PLATE 14 (FIGURE 6-4). Treemap of terms occurring in geograph titles and comments for six selected scene types. Node sizes represent term occurrence. Colors emphasize the scene type/facet/descriptor hierarchy with an inherited random scheme. Layout uses an "ordered squarified" approach to maintain square shapes amongst nodes.

COLOR PLATE 15 (FIGURE 6-5). Treemap of terms occurring in geograph titles and comments for six selected scene types. Node sizes represent term occurrence. Colors emphasize the scene type/facet/descriptor hierarchy with an inherited random scheme. Layouts uses a "slice and dice" approach to aid comparison of magnitudes (top) and "slice and dice/ordered squarified" approaches to aid legibility of labels (bottom).

COLOR PLATE 16 (FIGURE 6-6). "Ordered squarified" treemap with colors showing absolute locations through a CIELab color space in which perceived differences in color relate closely to differences in location.


COLOR PLATE 17 (FIGURE 6-7). "Ordered squarified" treemap with colors showing absolute locations through a CIELab color space. Leaf nodes within descriptor nodes are arranged to relate to relative locations using a spatial ordering algorithm.


COLOR PLATE 18 (FIGURE 6-8). Spatial treemap of terms occurring in geograph titles and comments for six selected scene types. Node sizes represent term occurrence, and colors represent absolute spatial locations with CIELab scheme. Displacement vectors show absolute locations of non-leaf nodes (scene types, facets, and descriptors).


COLOR PLATE 19 (FIGURE 6-9). Spatial treemap of terms occurring in geograph titles and comments for six selected scene types. Displacement vectors show absolute locations of leaf nodes (co-occurring terms) and provide information about spatial clustering and spatial trends in displacement required to meet the space-filling objectives of the treemap.
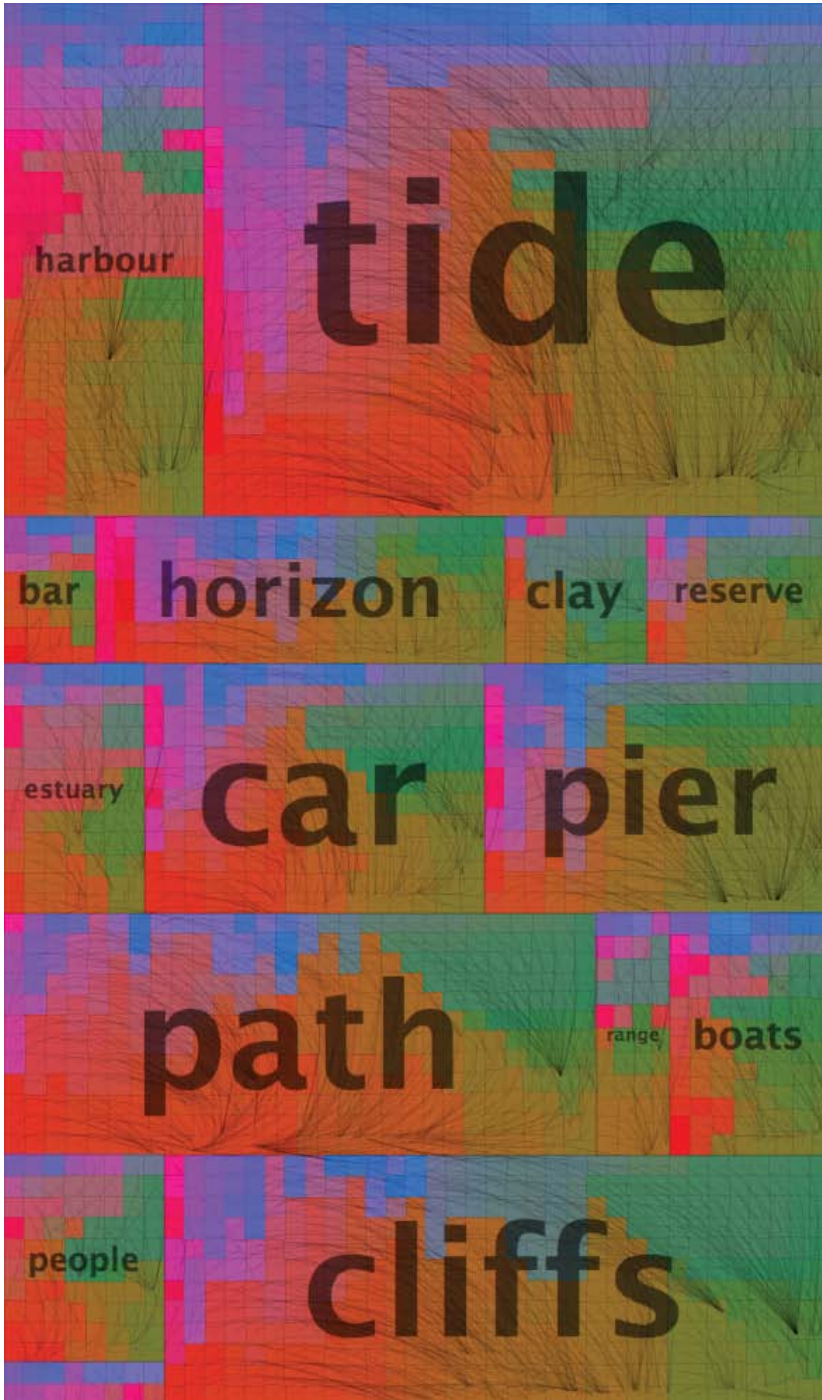
COLOR PLATE 20 (FIGURE 6-10). Spatial treemap of terms occurring in geograph titles and comments for selected element descriptors in the beach base level. Displacement vectors show absolute locations of leaf nodes in this enlarged section of Figure 6-9.
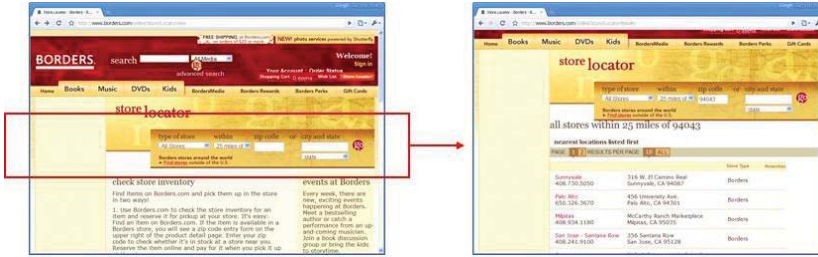
COLOR PLATE 21 (FIGURE 9-1). The Borders Store Locator form and a deep-web page resulting from a particular form submission.
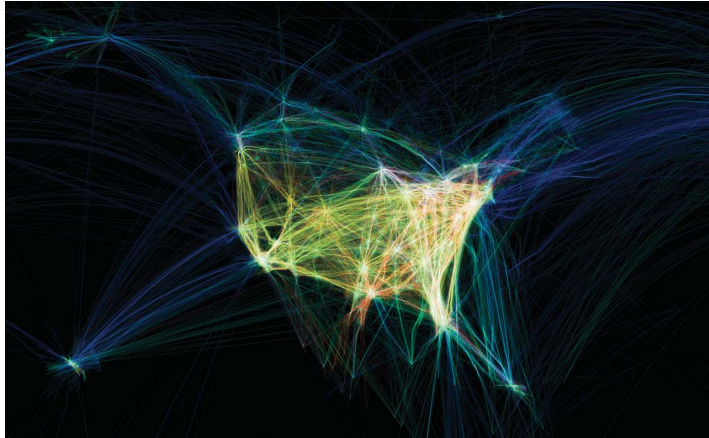

COLOR PLATE 22 (FIGURE 10-1). Still image from "Flight Patterns" (2005).
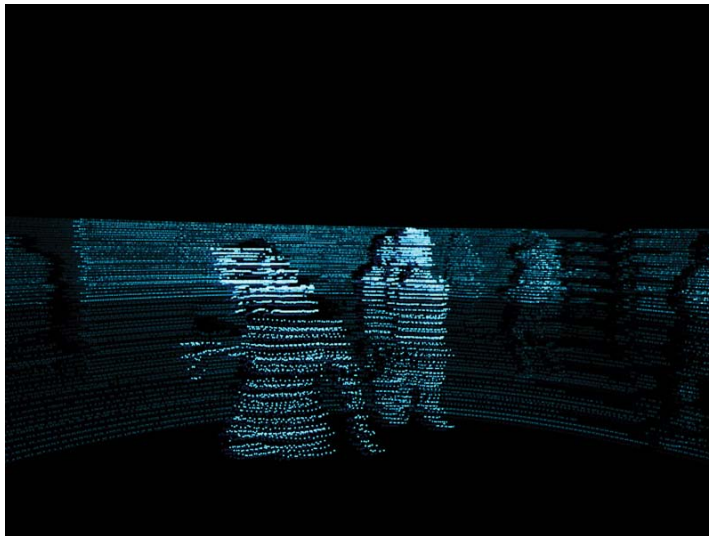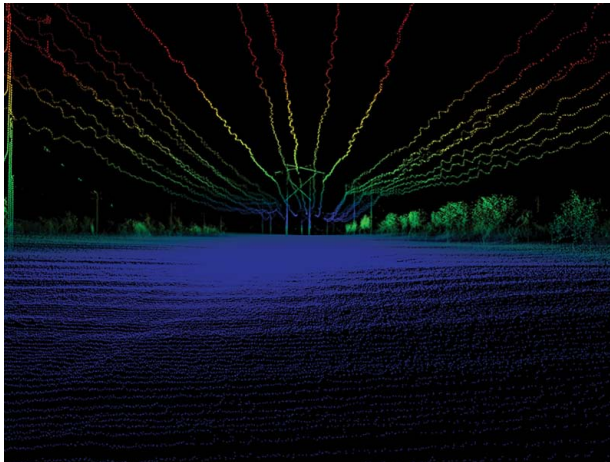

COLOR PLATE 23 (FIGURE 10-3). A still image of the party scene, shot with the Velodyne Lidar; notice the higher resolution at the top of this image, which was caused by the faster trigger rate of the lasers on the upper bank.
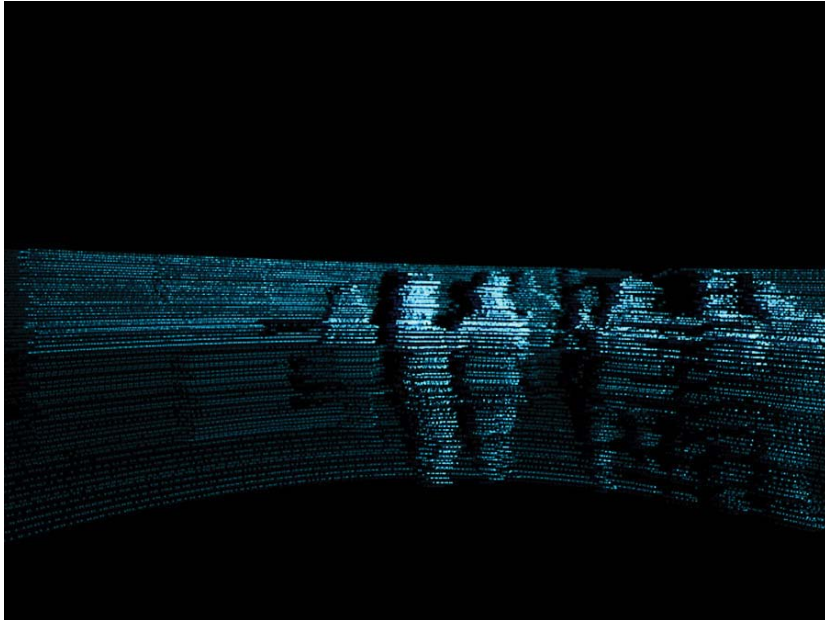
High Frequency Light Source

High Frequency Imaging Element
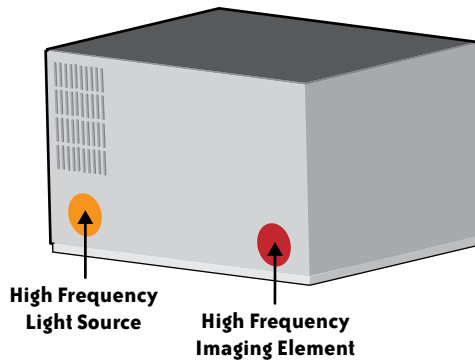
COLOR PLATE 24 (FIGURE 10-4). The Geometric Informatics system (image courtesy of Geometric Informatics).
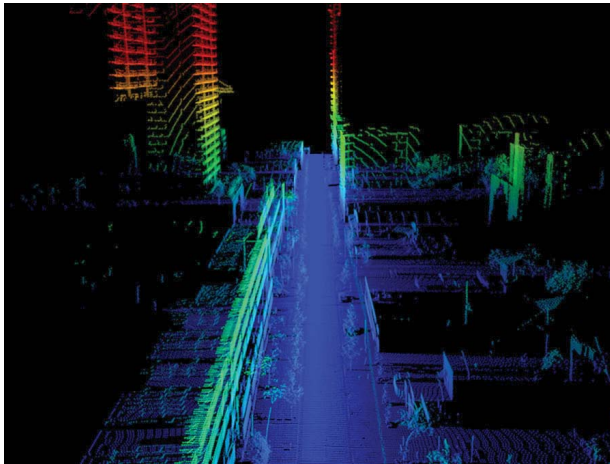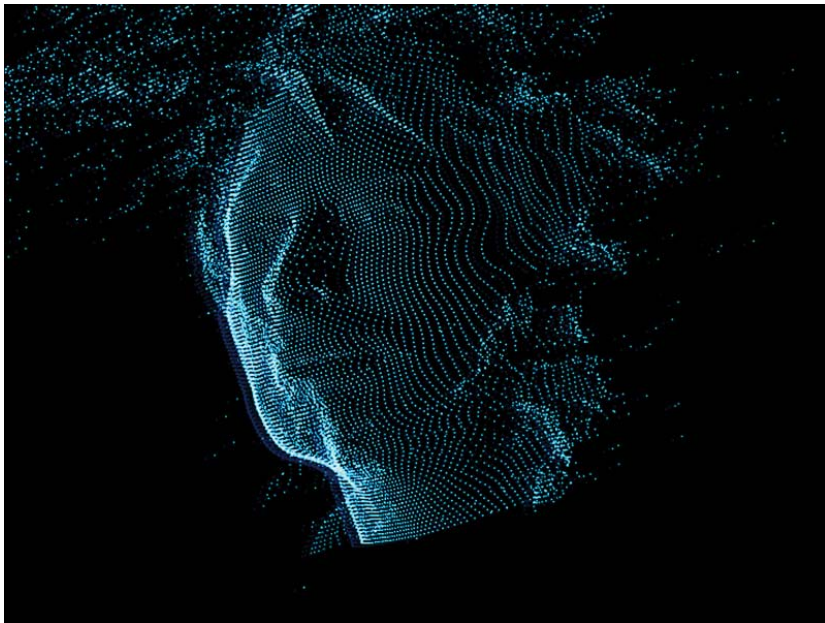

COLOR PLATE 25 (FIGURE 10-5). Data captured by one laser from the Velodyne Lidar.
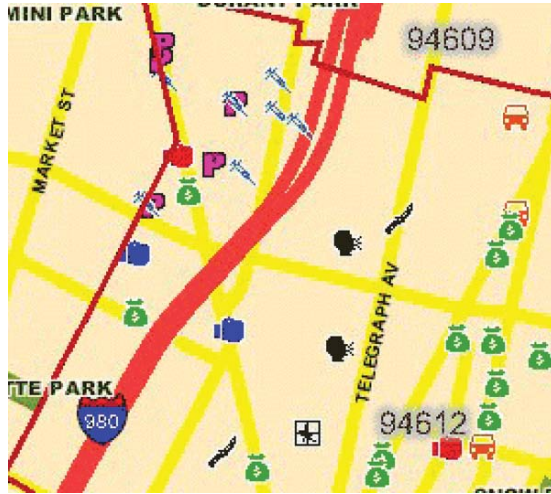

COLOR PLATE 26 (FIGURE 10-6). Another landscape image captured by the Velodyne Lidar.
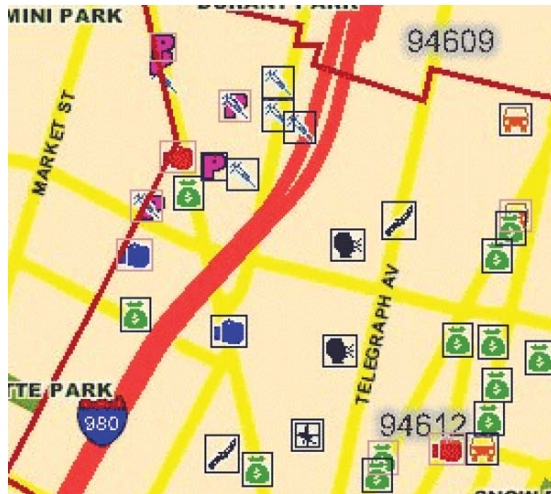
COLOR PLATE 27 (FIGURE 10-7). A still from the party scene, captured by the Velodyne Lidar; there are 64 lines of data, or one for each of the Lidar's lasers.

COLOR PLATE 28 (FIGURE 10-8). A still image from the video of Radiohead singer Thom Yorke.
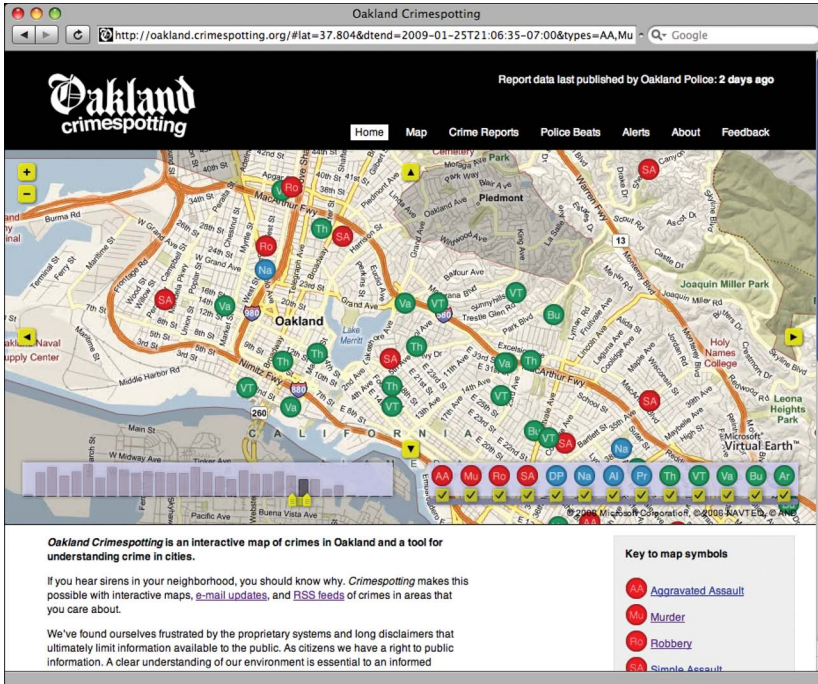
COLOR PLATE 29 (FIGURE 11-2). A sample image from CrimeWatch shows areas of theft, narcotics, robbery, vehicle theft, and other crimes.
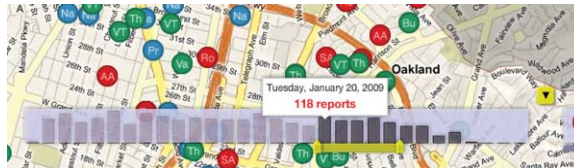

COLOR PLATE 30 (FIGURE 11-3). The same sample image from CrimeWatch with programmatically recognized icons outlined.
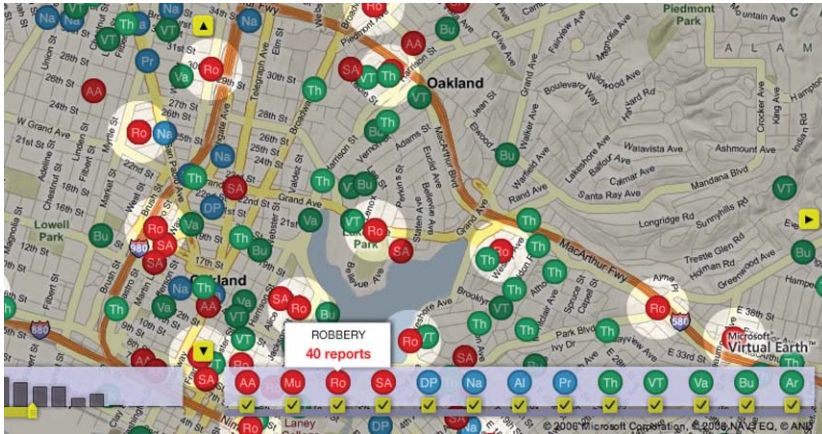

COLOR PLATE 31 (FIGURE 11-5). A map of downtown Oakland showing three reference points for triangulation purposes.
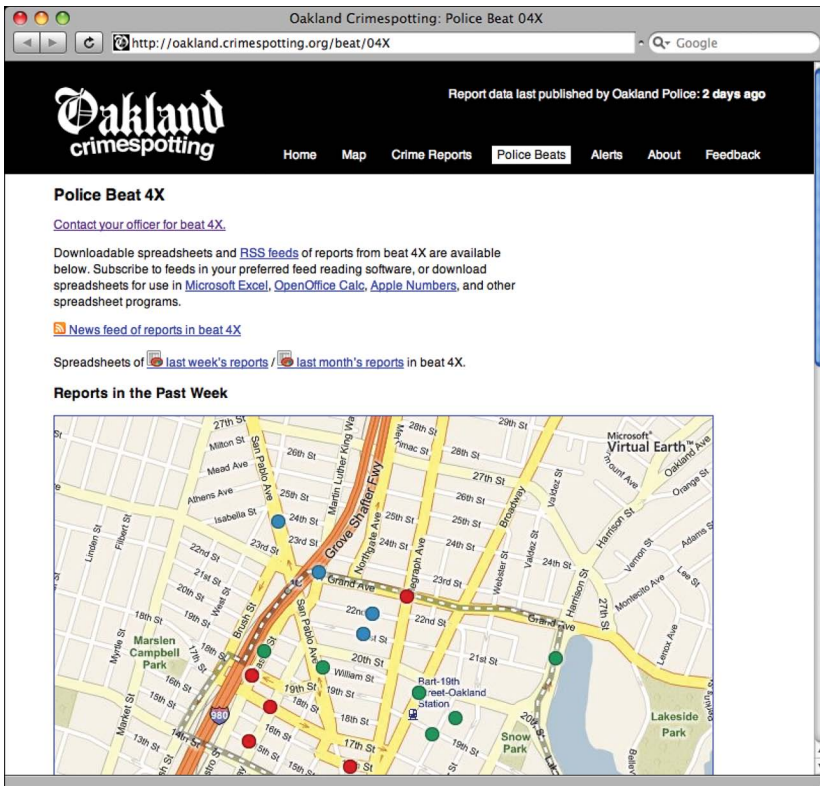
COLOR PLATE 32 (FIGURE 11-6). The Oakland Crimespotting home page shows a map of crime reports from the past week.
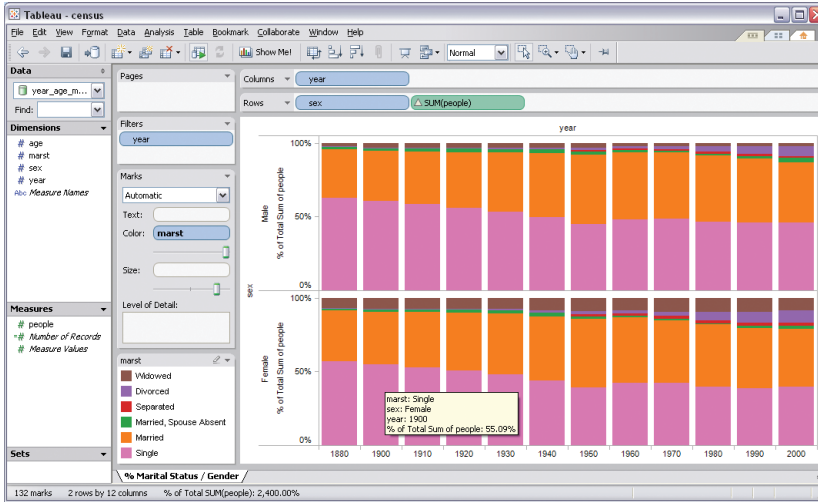

COLOR PLATE 33 (FIGURE 11-7). The date selector interface on the main Crimespotting map.

COLOR PLATE 34 (FIGURE 11-8). *The type selector shows the total numbers of each report type in the selected time span.*


COLOR PLATE 35 (FIGURE 11-10). *A beat-specific page allows citizens to provide feedback to the officers who patrol their local areas.*

COLOR PLATE 36 (FIGURE 12-3). A prototype visualization built using Tableau showing the distribution of marital status over multiple decades.
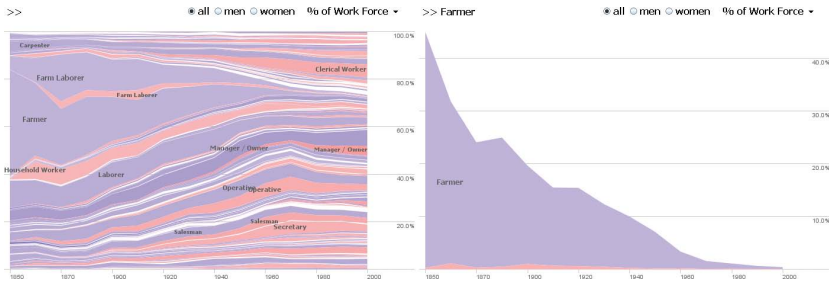

COLOR PLATE 37 (FIGURE 12-4). Job Voyager visualization: (left) an overview showing the constitution of the labor force over 150 years, and (right) a filtered view showing the percentage of farmers.
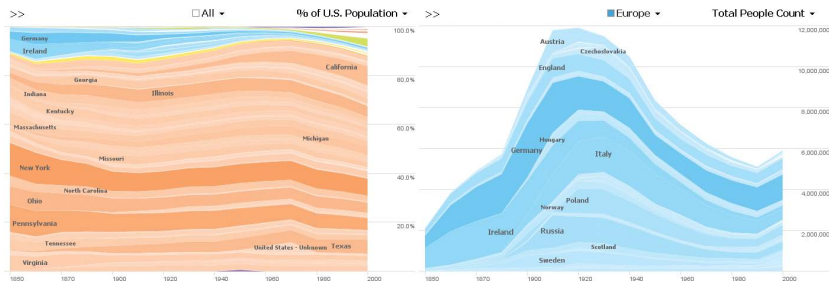

COLOR PLATE 38 (FIGURE 12-5). Birthplace Voyager visualization: (left) an overview showing the distribution of birthplaces over 150 years, and (right) a filtered view showing the total number of European immigrants.
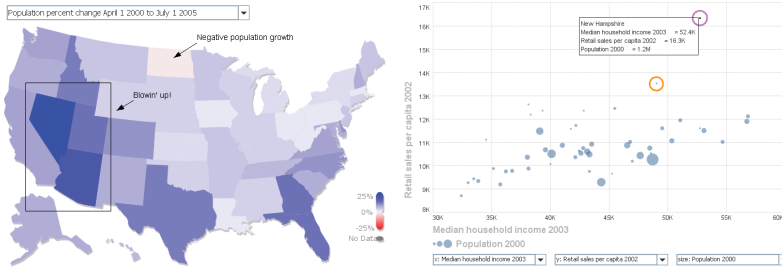
COLOR PLATE 39 (FIGURE 12-6). *(Left) Interactive state map showing changes in each state's population from 2000 to 2005, and (right) scatterplot of U.S. states showing median household income (x-axis) versus retail sales (y-axis); New Hampshire and Delaware have the highest retail sales.*
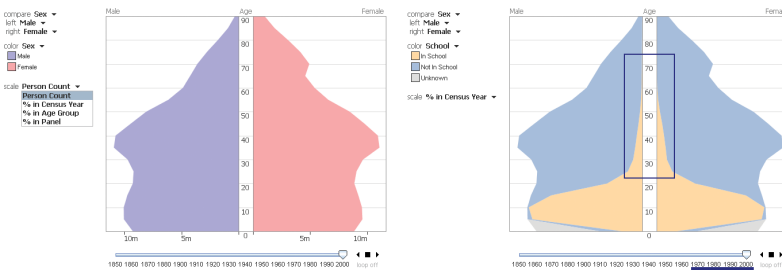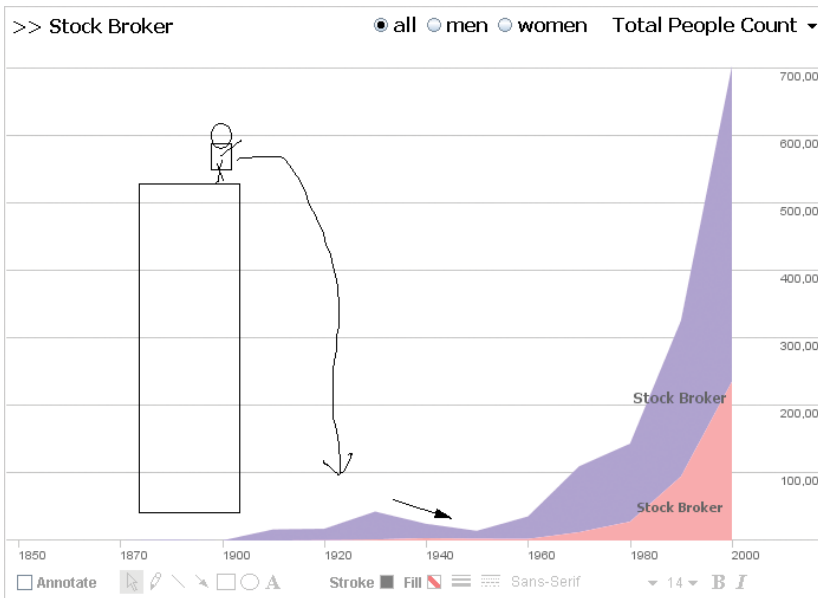

COLOR PLATE 40 (FIGURE 12-7). *Population pyramid visualization: (left) a comparison of the total number of males and females in each age group in 2000, and (right) the distribution of school attendees in 2000 (an annotation highlights the prevalence of adult education).*
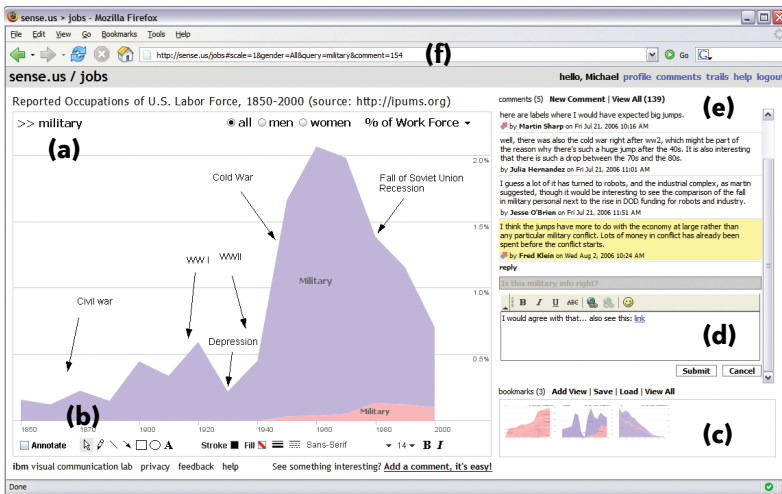

COLOR PLATE 41 (FIGURE 12-8). *The sense.us collaborative visualization system: (a) An interactive visualization applet, with a graphical annotation for the currently selected comment. The visualization is a stacked time-series visualization of the U.S. labor force, broken down by gender. Here, the percentage of the workforce in military jobs is shown. (b) A set of graphical annotation tools. (c) A bookmark trail of saved views. (d) Text-entry field for adding comments. Bookmarks can be dragged onto the text field to add a link to that view in the comment. (e) Threaded comments attached to the current view. (f) URL for the current state of the application. The URL is updated automatically as the visualization state changes.*
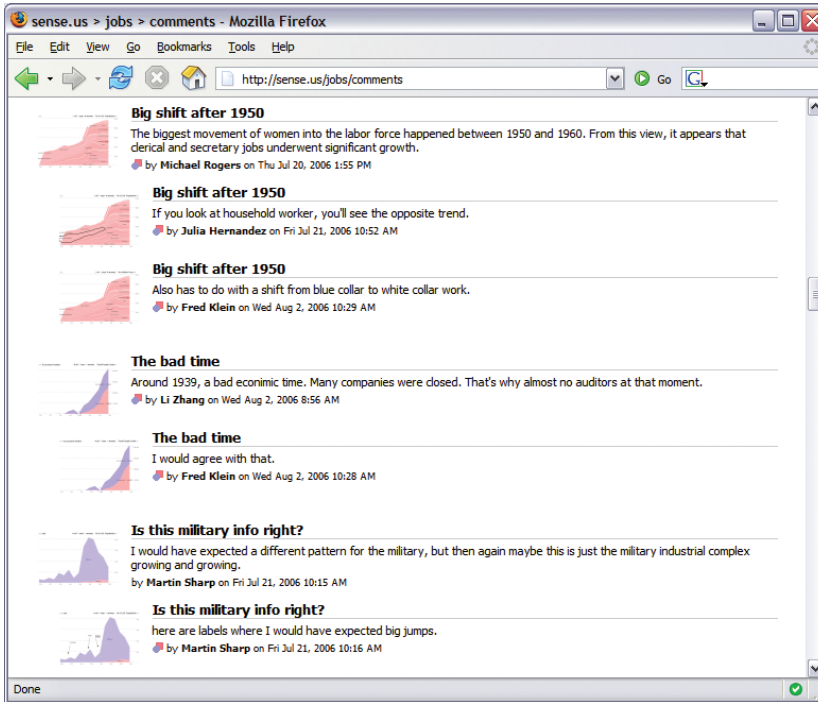
COLOR PLATE 42 (FIGURE 12-9). *The sense.us comment listing page; comment listings display all commentary on visualizations and provide links to the commented visualization views.*


COLOR PLATE 43 (FIGURE 12-10). *Annotated view of stockbrokers; the attached comment reads "Great depression 'killed' a lot of brokers."*
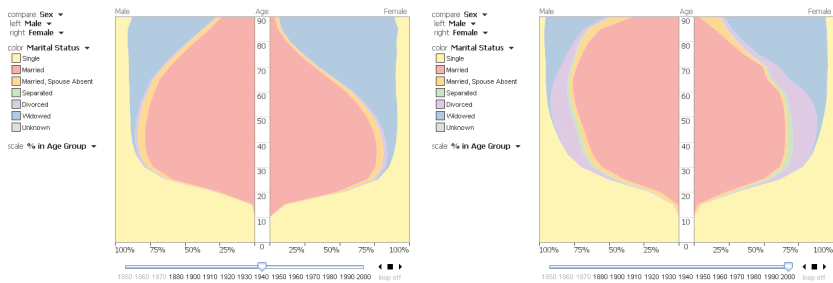
COLOR PLATE 44 (FIGURE 12-11). *Population pyramid showing the distribution of marital status for each age group in (left) 1940, and (right) 2000.*
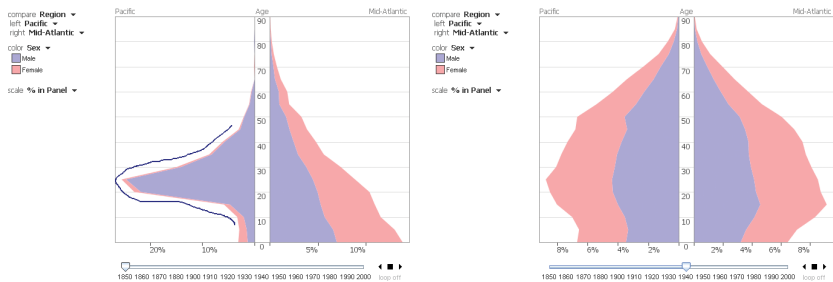
COLOR PLATE 45 (FIGURE 12-12). *Population pyramid comparing the populations of the west coast and mid-Atlantic regions in (left) 1850, and (right) 1940.*
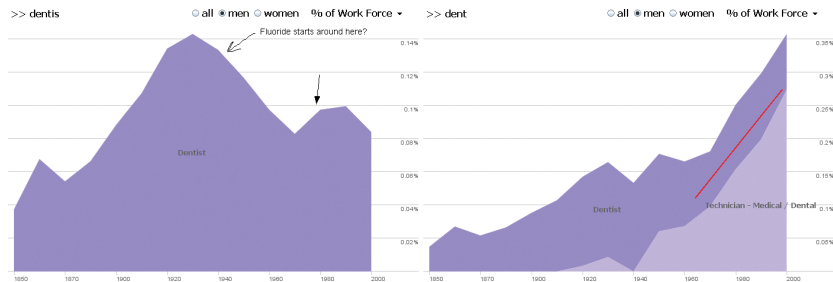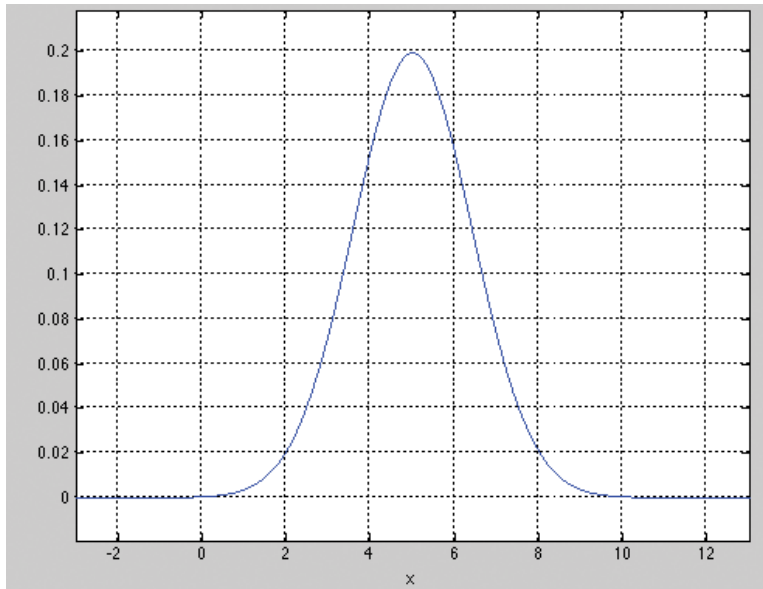

COLOR PLATE 46 (FIGURE 12-13). *Annotated job voyager views highlighting (left) a decline in dentists after 1930, and (right) an overall increase in dentistry due to the rising ranks of dental technicians.*
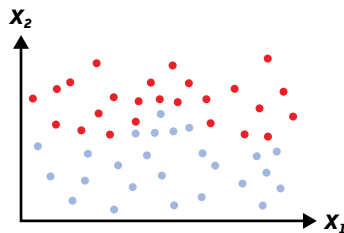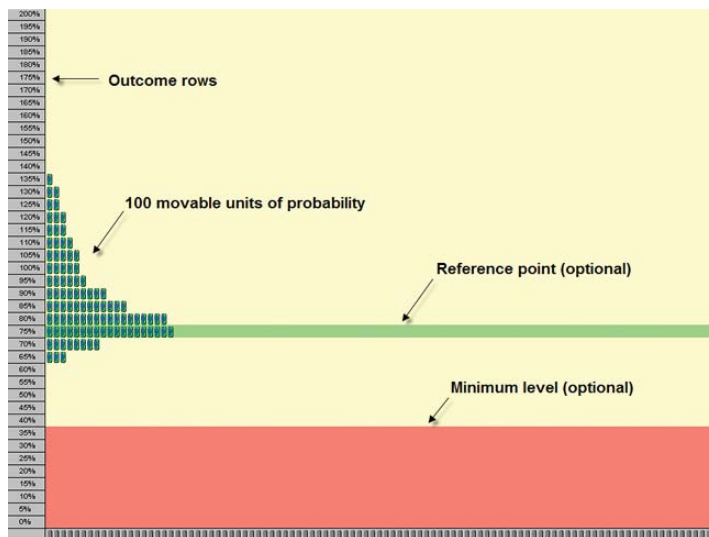

COLOR PLATE 47 (FIGURE 13-2). *We can build models to discriminate between two sets of data.*
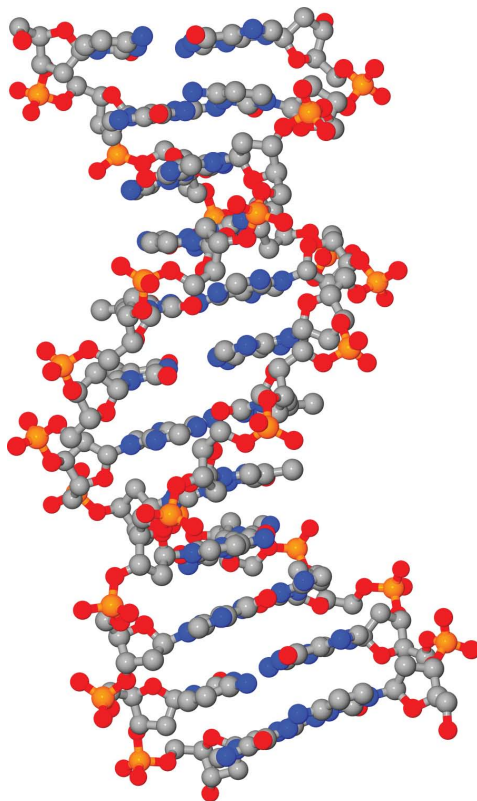
COLOR PLATE 48 (FIGURE 13-3). *Performance of three securities (a, b, and c) in 2005.*

COLOR PLATE 49 (FIGURE 13-4). *The normal distribution.*

COLOR PLATE 50 (FIGURE 13-6). A tool by Goldstein et al. helps people understand a distribution as a set of outcomes.

COLOR PLATE 51 (FIGURE 15-1). A short section of DNA, rendered in POV-Ray from PDB file 1BNA, doi: 10.2210/pdb1bna/pdb.

Enhancer **Promoter** **Gene**

COLOR PLATE 52 (FIGURE 15-2). A stretch of DNA containing a gene also contains nearby regions that interact with the cellular machinery to regulate its expression; here, a gene is preceded by a promoter element and an enhancer element, which "tag" the gene so the cell knows when it should be expressed.

COLOR PLATE 53 (FIGURE 16-1). Using free generic services to host the record of experimental work and processed data. (A) Part of the page of a single experimental measurement. (B) Images taken of the experiment hosted on Flickr. (C) A portion of the primary data store on a GoogleDocs spreadsheet.
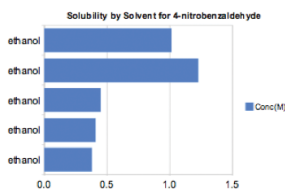
COLOR PLATE 54 (FIGURE 16-2). *Visualization tools for examining the solubility data.(A) A simple form-based input uses JavaScript and the GoogleDocs API to generate (B) a graphical representation of the solubility values selected and (C) a tabular output of the data with rendered 2-D chemical structures. The service is available at http://toposome.chemistry.drexel.edu/~rguha/jcsol/sol.html. Note that these and other services described are dynamic and may not give the same results as those shown here for the same query.*

COLOR PLATE 55 (FIGURE 16-3). *This example ChemSpider entry shows the solubility value and link to the original data.*
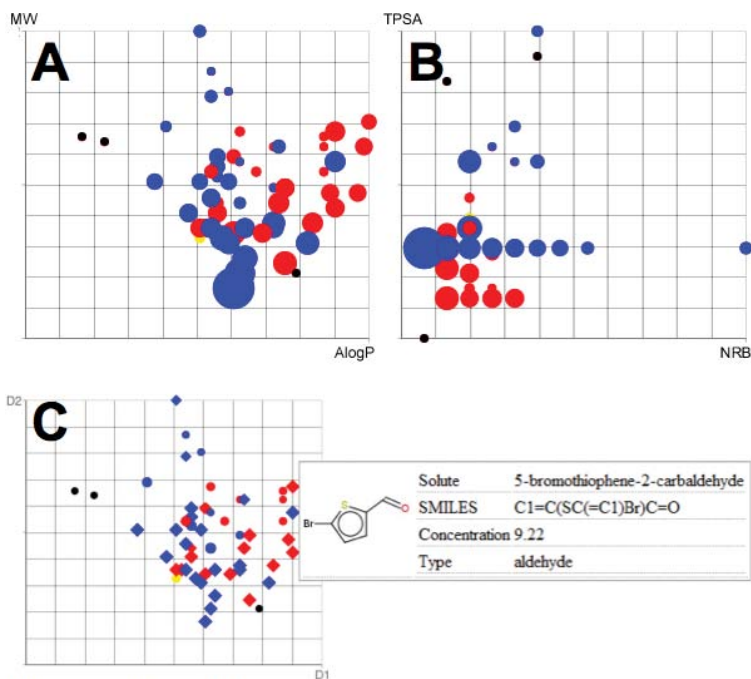
KEY: x-axis: ALOGP - y-axis: Weight
Pointsize is proportional to solubility value - Hover mouse over point to view data [Firefox].

COLOR PLATE 56 (FIGURE 16-5). *Graphical representation of solubility data in chemical space. Panels A and B show two visualizations of the same data plotted onto axes representing different chemical characteristics. The color of the spots represents the chemical type (red for aldehyde, blue for carboxylic acid, yellow for amine, and black for other) and the size the solubility. Panel C illustrates the clickable interface showing the chemical structure and value of the solubility for one data point.*
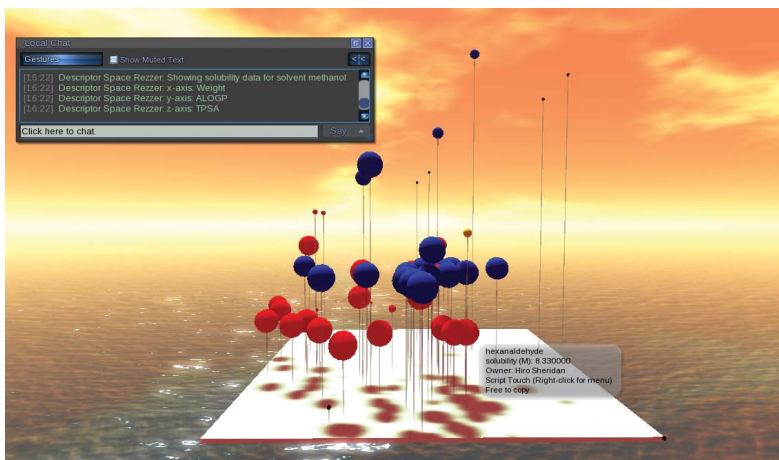
COLOR PLATE 57 (FIGURE 16-6). *Representing multidimensional data using Second Life. Three chemical descriptors are represented on the three spatial axes. The color of the balls indicates the type of chemical entity (as defined in the previous figure), and the size shows the solubility in the current solvent. The visualization is available at http://slurl.com/secondlife/Drexel/ 165/178/24 on Drexel Island, Second Life.*
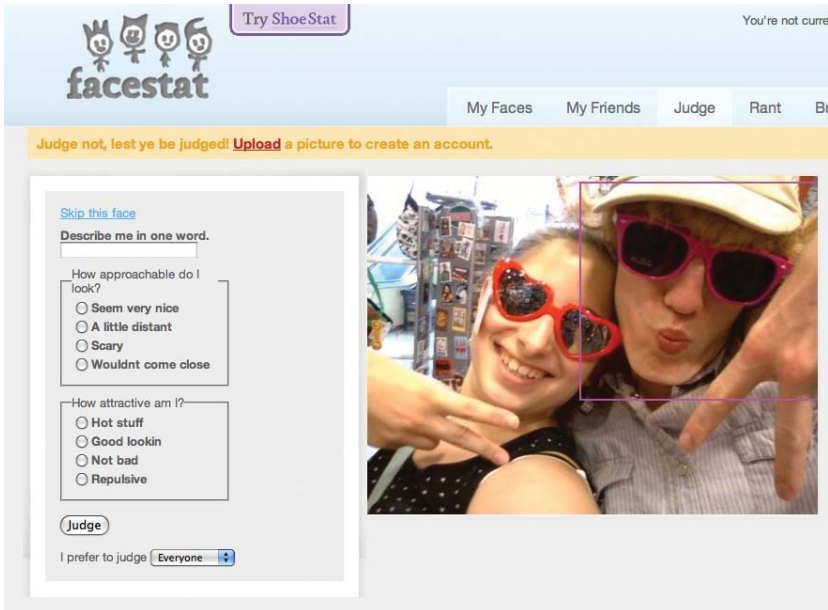
COLOR PLATE 58 (FIGURE 17-1). The FaceStat judging interface.
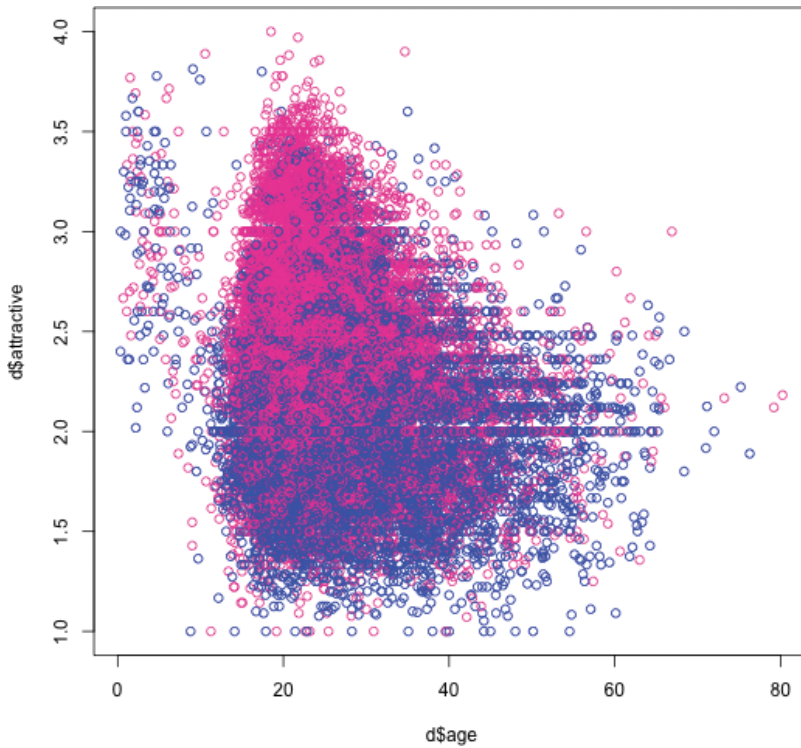
COLOR PLATE 59 (FIGURE 17-5). Scatterplot of attractiveness versus age, colored by gender.
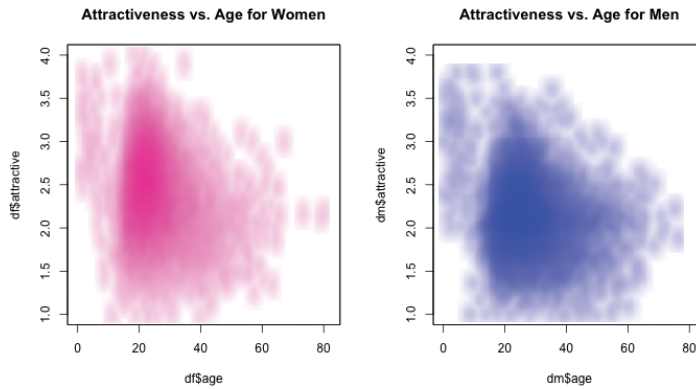
COLOR PLATE 60 (FIGURE 17-6). Smoothed scatterplots for attractiveness versus age, one plot per gender.
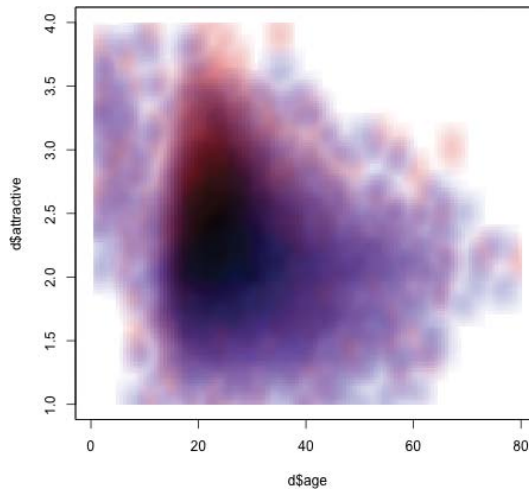
COLOR PLATE 61 (FIGURE 17-7). Smoothed scatterplots for attractiveness versus age, colored by gender and overlaid on one plot.
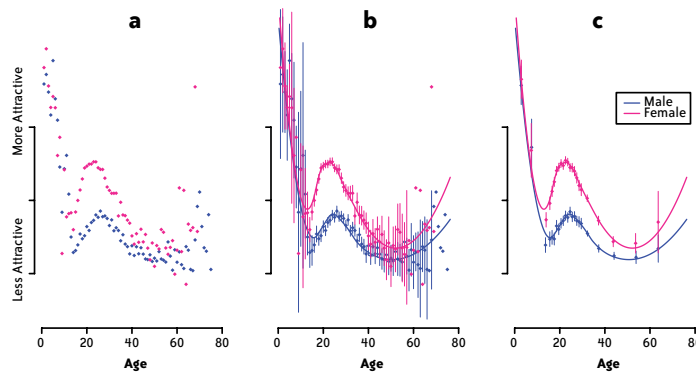
COLOR PLATE 62 (FIGURE 17-8). Three iterations of plotting attractiveness versus age versus gender: (a) ages averaged within buckets per age year, (b) 95% confidence interval for each bucket, plus loess curves, and (c) larger buckets where the data is sparser.
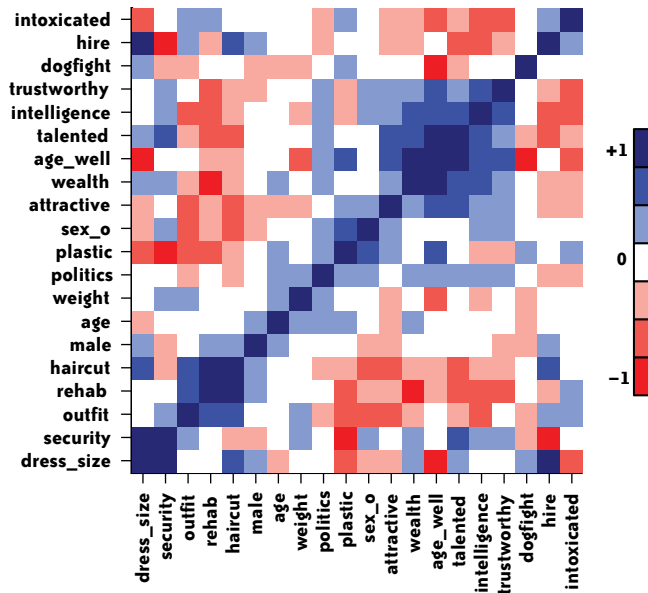
Text of questions

- **dress_size:** What is my dress size?
- **security:** If you were an airport security guard, would you search me?
- **outfit:** Do you like my outfit?
- **rehab:** Will I end up in rehab?
- **haircut:** Do you like my hairstyle?
- **age:** How old am I?
- **weight:** How much do I weigh?
- **political_affiliation:** What is my political affiliation? (Higher is more conservative)
- **plastic_surgery:** Have I had plastic surgery?
- **sexual_orientation:** What is my sexual orientation? (Higher is more gay)
- **attractive:** How attractive am I?
- **wealth:** How wealthy am I?
- **age_well:** Will/Have I age(d) well?
- **talented:** Am I talented?
- **intelligence:** How smart am I?
- **trustworthy:** How trustworthy am I?
- **dogfight:** Do you think I would win a fight with a medium sized dog?
- **hire:** Would you hire me?
- **intoxicated:** How intoxicated am I?

COLOR PLATE 63 (FIGURE 17-9). Pearson correlation matrix; attribute pairs with blue squares are positively correlated, while pairs with red squares are anticorrelated.
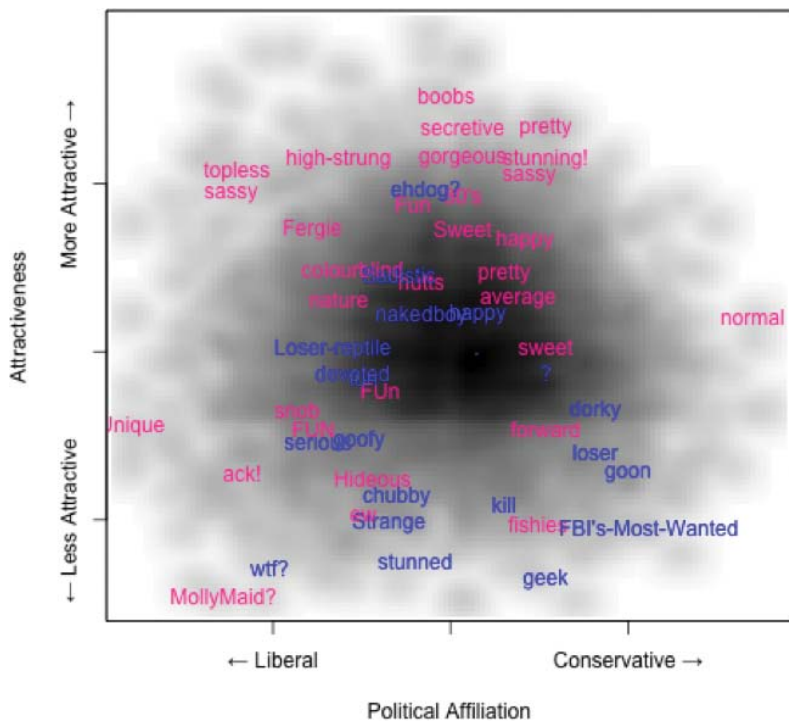
COLOR PLATE 64 (FIGURE 17-12). *Tag sample plotted on a smoothed attractiveness versus age scatterplot.*
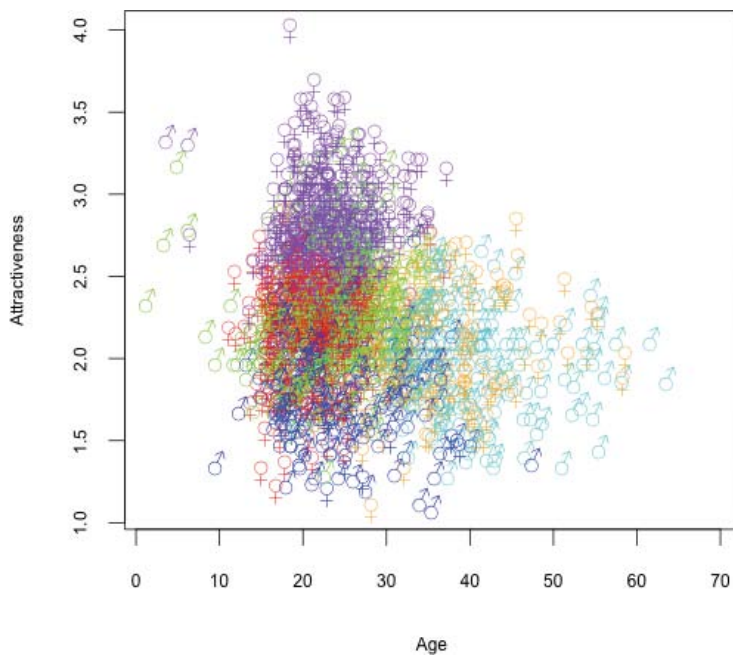
COLOR PLATE 65 (FIGURE 17-13). *Attractiveness versus age, colored by cluster, showing a subsample of 2,000 points.*

Cluster centroid

Most typical tags

Example faces

Purple cluster
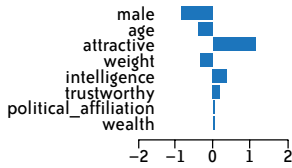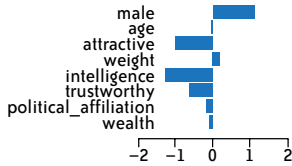

male, age, attractive, weight, intelligence, trustworthy, political_affiliation, wealth

−2 −1 0 1 2

verycute
Flirty
superficial
cheerleader
prissy
snobby
exotic
flirt
Bubbly
perky

Blue cluster

male, age, attractive, weight, intelligence, trustworthy, political_affiliation, wealth

−2 −1 0 1 2

bench
pop
thug
stoner
redneck
player
fratboy
idiot
gangsta
cocky

Green cluster

male, age, attractive, weight, intelligence, trustworthy, political_affiliation, wealth

−2 −1 0 1 2
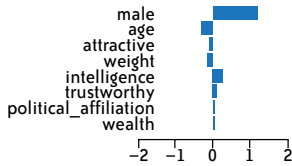
Fratboy
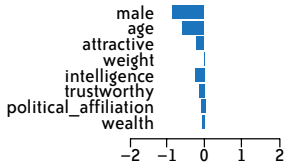Player
Jock
metro
jock
player
Cocky
Handsome
handsome
ass

COLOR PLATE 66 (FIGURE 17-15). Cluster centroids, tags, and exemplars.
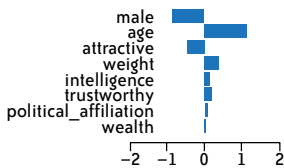
Cluster centroid

Most typical tags

Example faces

Red cluster

male, age, attractive, weight, intelligence, trustworthy, political_affiliation, wealth

−2 −1 0 1 2

fjortis
striking
bimbo
gothic
Emo
goth
ditzy
Unique
tomboy
attitude

Orange cluster

male, age, attractive, weight, intelligence, trustworthy, political_affiliation, wealth
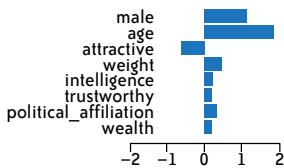
−2 −1 0 1 2

grandma
motherly
cougar
mom
mother
Mom
mommy
teacher
milf
older

Turquoise cluster

male, age, attractive, weight, intelligence, trustworthy, political_affiliation, wealth

−2 −1 0 1 2

grandpa
fatherly
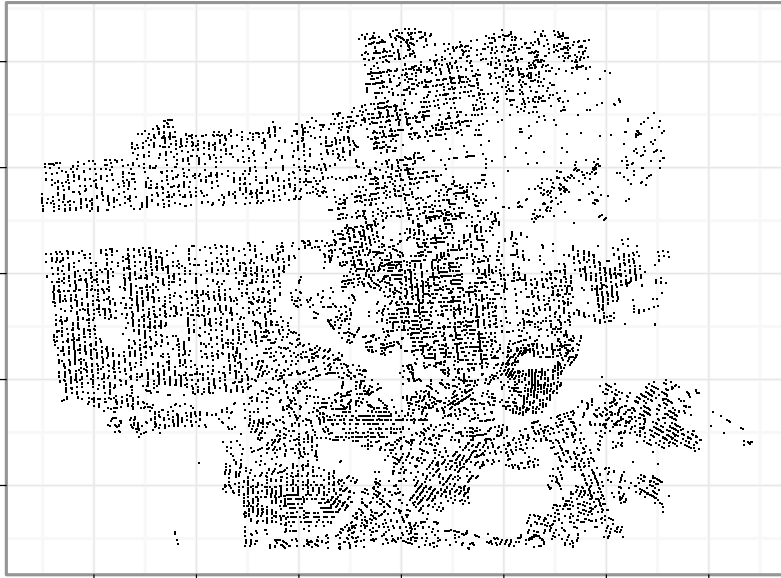father
dad
successful
bald
daddy
jolly
professional
Old

COLOR PLATE 67 (FIGURE 17-16). Cluster centroids, tags, and exemplars, continued.
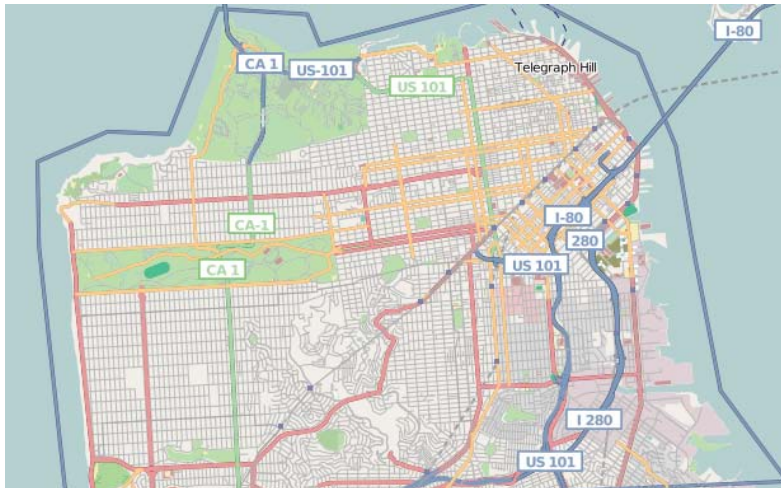
COLOR PLATE 68 (FIGURE 18-13). (Top) A small point is drawn for every residential sale in the data. It gives us a pretty good feel for the layout of San Francisco. (Bottom) For comparison, a street map of San Francisco from http://openstreetmap.com.
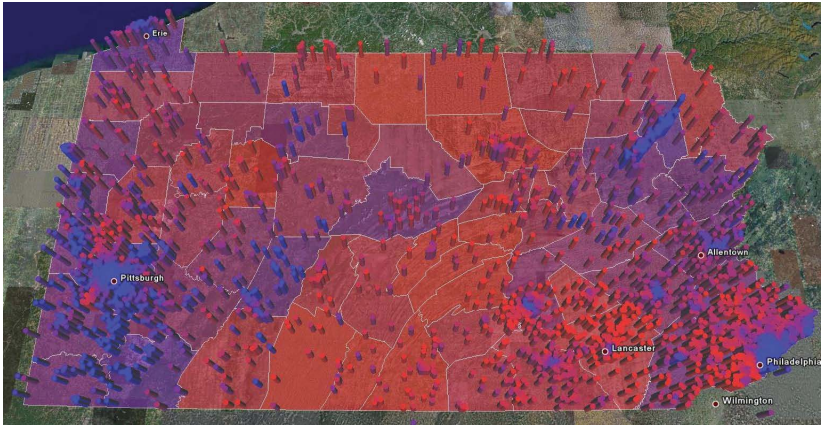
COLOR PLATE 69 (FIGURE 19-5). Geographic partisanship in Pennsylvania. The base layer shows Pennsylvania counties shaded by their 2004 presidential election returns, with blue indicating higher support for the Democratic candidate John Kerry, red indicating higher support for the Republican candidate George W. Bush, and shades of purple in between. The scattered cylinders represent localized partisanship for 4,000 random registered voters in the state, defined as the percentage of people living within a 1-mile radius who are registered Democrats. Each cylinder is located on the voter's household and has a radius of 1 mile, thus replicating the region for the partisanship measure. Again, blue cylinders indicate highly Democratic regions—this time with regard to individual-level registration—red cylinders indicate highly Republican regions, and shades of purple indicate regions in the middle. The beauty of this graph is that it reveals complexity in the idea of red and blue regions of the country, of individual states, and even of individual counties.
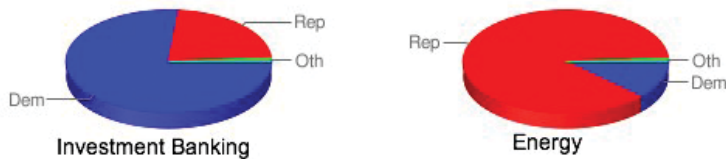
COLOR PLATE 70 (FIGURE 20-1). Pie charts resulting from a data mashup of SEC industry data and Center for Responsible Politics political contribution data.