Knowing Where to Draw the Line

Tools and Strategies for Visualizing Data

Kirstin Krumsee
Reading comprehension is around 300 words per minute
The brain can process an image in 13 milliseconds
Would you rather read or see 1,000,000 data points?
Organization matters
White space is a good thing
Know your audience
Travel Trends

Summer Holidays
End of July and Beginning of September
Keep things simple
Export von Bananen in Tonnen von 1994-2005

Dr. Hochhaus
Banexport 2005
Daten ZMP
Pick the right tool
There’s a strand of the data viz world that argues that everything could be a bar chart. That’s possibly true but also possibly a world without joy.

Amanda Cox  New York Times
What do you want to show?

Comparisons
Proportions
Relationships
Hierarchy
Concepts
Location
Part-to-a-whole
Distribution
How things work
Processes & methods
Movement or flow
Patterns
Showing Data Over Time

Visualisation methods that show the data over a time period or show time itself.

- Area Graph
- Bubble Chart
- Calendar
- Histogram
- Line Graph
- Nightingale Rose Chart
- Stacked Area Graph
- Timeline
- Timetable
A Bubble Chart is a multi-attribute combination of a Scatter plot and a 3D chart. Like a Scatter Plot, Bubble Charts are used to show the relationships between labeled categorized circles. The overall picture of the data can also be shown either by having variables changing over time or by animating the data. Bubble Charts can be used to compare and show the relationships between labeled categories and Y axes are separated vertically. Each point is assigned a label or category (either displayed along the x- or y-axis). Each plotted point then represents a third variable by the area of its circle. Colors can also be used to distinguish between categories or used to represent an additional data variable. As can also be shown either by having brightness and opacity. Time can be shown either by having it as variable on one of the axes or by animating the data variables changing over time.
Tell the truth
Number of fraudulent data visualizations is stable

Number of fraudulent data visualizations is skyrocketing!
Gun deaths in Florida

Number of murders committed using firearms

![Graph showing the number of gun deaths in Florida over time.]
HAVE YOU EVER FOLLOWED A BRAND ON TWITTER?

25.5% YES

74.5% NO
Get to the point
Tell a story
THE MIGHTY BLUE WHALE

The blue whale carcasses that washed up onto the shore of Newfoundland recently measured 24 m in length. But the species can reach lengths of up to 33 m. Blue whales are the largest animals known to have lived on Earth. They reach these extreme sizes on a diet consisting exclusively of krill — tiny shrimp-like animals about 1-2 cm long. At certain times during the year, blue whales can consume up to 4 tonnes of krill a day.

One blue whale is about as long as...

One blue whale weighs about as much as...

How much does a blue whale weigh?

Preparing for display: how do scientists cut up and remove the skeleton to prepare it for museum display?

1. The skin is removed.
2. The spine is removed.
3. The skull is removed.
4. The vertebrae are removed.
5. The bones are then hardened in casts and means for a year to remove any flesh still attached.
6. The shaped bones are wired together and displayed.
78% of the service population has a library card
Pick a color scheme
Library Fact Sheet

UPPER ARLINGTON
Public Library
FY 2014

"The threefold Mission of the UA Library is to help the community explore current topics, UA heritage, and world issues; to provide a central place for the citizens of UA to gather and share stories; and to encourage its residents to grow through a lifetime of learning."

At a Glance . . .

Library users checked out

1,708,310 items
50 items per person in the library's service district.

17,724 people visit the library every week.
921,648 annually.
2,542 questions each week.

1,298 times

The library houses 83 public computers. On average, each computer has been used 1,298 times.

82% of attendees were children.

Circulation by Format
- Books
- Periodicals
- Music
- Audio Books

Circulation by Location
- Electronic
- Lane Road
- Main
- Miller Park
ILL, Database, Full Text, Holds, ILS, Index, Abstract, Serials, Boolean Searching, Citation, Record, MARC, etc.
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<th>Total # of Internet PC's Used by General Public</th>
<th>Total Annual # of Uses of Public Internet PC's per yr</th>
<th>Total Circulation of Physical Materials to Library Users</th>
<th>Total Circulation of Downloadable Materials to Library Users</th>
<th>Total Adult Circulation</th>
<th>Total Juvenile Circulation</th>
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27,597 people attended library programs.

82% of attendees were children.
HOW BABY BOOMERS DESCRIBE THEMSELVES

LEADERS 40%
WILLING TO LEARN 61%
TECH-SAVVY 22%
PEOPLE-SAVVY 78%
CREATIVE 42%

I have a smart phone, don’t discount my technical abilities.

My work experience has made me resourceful.
When we push the hard tasks to the end of the day, it takes a toll on our energy all day long. In the end, stressing for hours over the task we’re procrastinating negatively affects all the other tasks on our list.

**Outcomes**

- **30%** candidates successfully pass the test
- **50%** candidates withdraw midway through the test
- **20%** candidates failed to pass the test

This experiment was participated by 100 volunteers student from North High School. The experiment was carried out in 99 classrooms.
What is the relationship between Population of Legal Svc Area and Adult by Location?
What is the relationship between Population of Legal Svc Area and Adult by Location?
Choose a Chart

Streamgraph

For continuous data such as time series, a streamgraph can be used in place of stacked bars.

Based on
http://bl.ocks.org/mbostock/4060854
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STATE LIBRARY OF OHIO