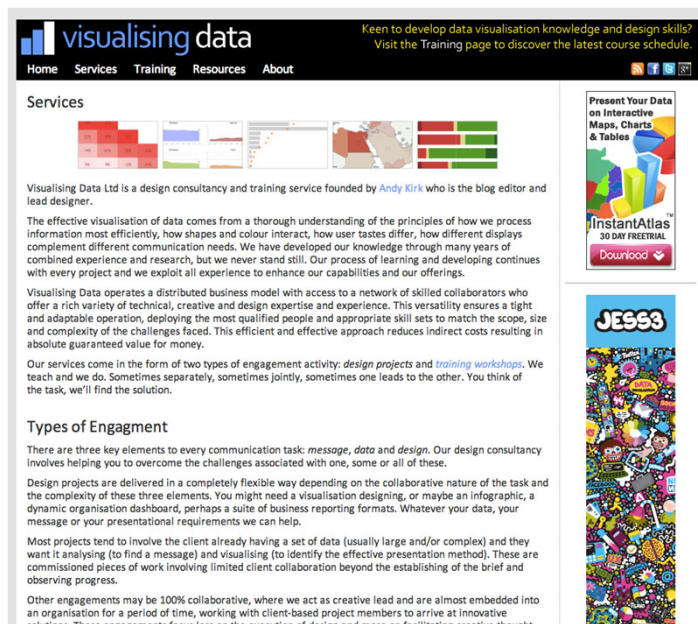


Visualisation's Duality: Finding Stories and Showing Stories

Andy Kirk

www.visualisingdata.com



The screenshot shows the homepage of www.visualisingdata.com. At the top, there is a navigation bar with links for Home, Services, Training, Resources, and About. Below the navigation bar, the 'Services' section is highlighted, featuring a grid of colorful data visualizations. To the right of the 'Services' section, there are two promotional banners: one for 'InstantAtlas' with a '30 DAY FREE TRIAL' and a 'Download' button, and another for 'JESSE3' which is a colorful, abstract graphic. The main content area contains several paragraphs of text describing the company's services and engagement models.

visualising data

Keen to develop data visualisation knowledge and design skills?
Visit the Training page to discover the latest course schedule.

Home Services Training Resources About

Services

Visualising Data Ltd is a design consultancy and training service founded by [Andy Kirk](#) who is the blog editor and lead designer.

The effective visualisation of data comes from a thorough understanding of the principles of how we process information most efficiently, how shapes and colour interact, how user tastes differ, how different displays complement different communication needs. We have developed our knowledge through many years of combined experience and research, but we never stand still. Our process of learning and developing continues with every project and we exploit all experience to enhance our capabilities and our offerings.

Visualising Data operates a distributed business model with access to a network of skilled collaborators who offer a rich variety of technical, creative and design expertise and experience. This versatility ensures a tight and adaptable operation, deploying the most qualified people and appropriate skill sets to match the scope, size and complexity of the challenges faced. This efficient and effective approach reduces indirect costs resulting in absolute guaranteed value for money.

Our services come in the form of two types of engagement activity: *design projects* and *training workshops*. We teach and we do. Sometimes separately, sometimes jointly, sometimes one leads to the other. You think of the task, we'll find the solution.

Types of Engagement

There are three key elements to every communication task: *message*, *data* and *design*. Our design consultancy involves helping you to overcome the challenges associated with one, some or all of these.

Design projects are delivered in a completely flexible way depending on the collaborative nature of the task and the complexity of these three elements. You might need a visualisation designing, or maybe an infographic, a dynamic organisation dashboard, perhaps a suite of business reporting formats. Whatever your data, your message or your presentational requirements we can help.

Most projects tend to involve the client already having a set of data (usually large and/or complex) and they want: it analysing (to find a message) and visualising (to identify the effective presentation method). These are commissioned pieces of work involving limited client collaboration beyond the establishing of the brief and observing progress.

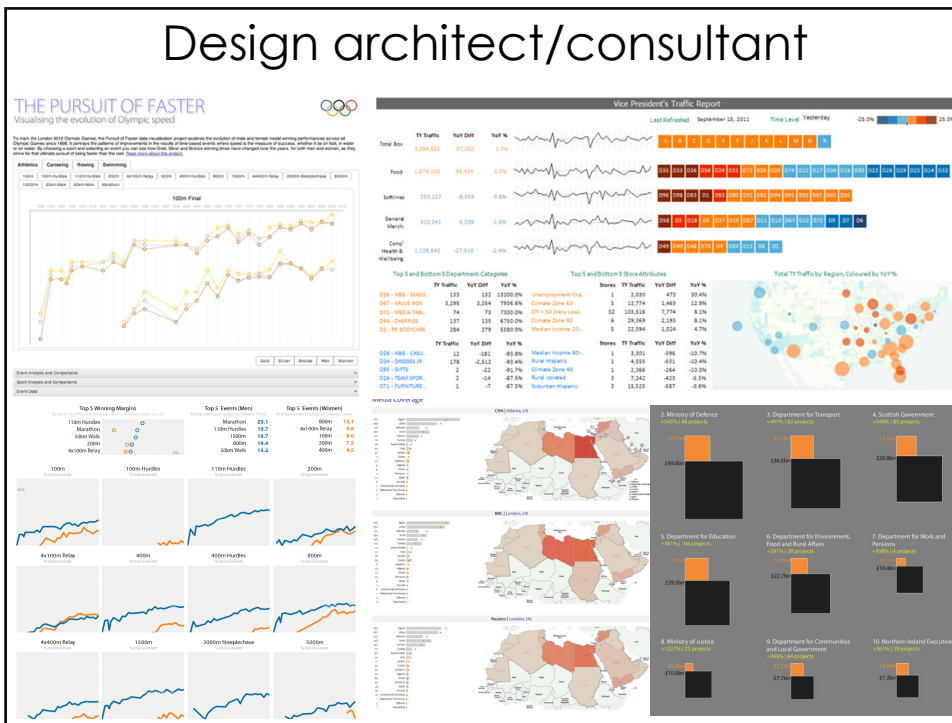
Other engagements may be 100% collaborative, where we act as creative lead and are almost embedded into an organisation for a period of time, working with client-based project members to arrive at innovative solutions. These engagements focus less on the execution of data and more on facilitating creative thought

Present Your Data on Interactive Maps, Charts & Tables

InstantAtlas™
30 DAY FREE TRIAL
Download

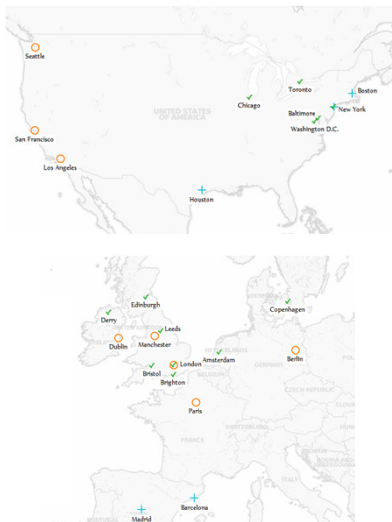
JESSE3

Design architect/consultant

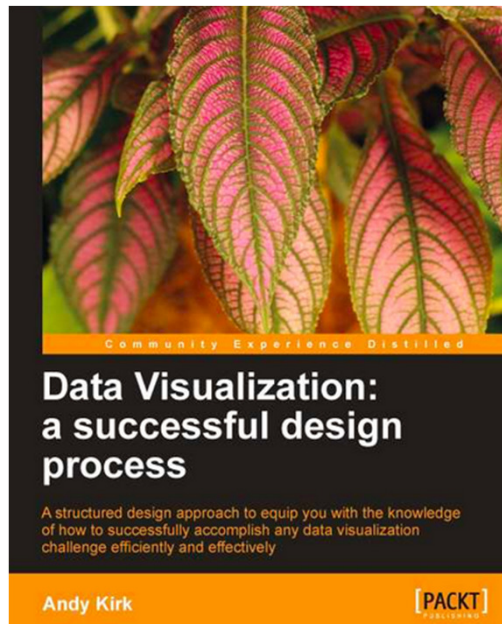


Trainer

Introduction to Data Visualisation



Author



What to show | How to show it

The real craft behind data
visualisation design is being able
to rationalise **choices**

1. Establish the visualisation's purpose and identify key factors

What is 'Purpose'?

Trigger

Its reason for existing
How well is it defined?

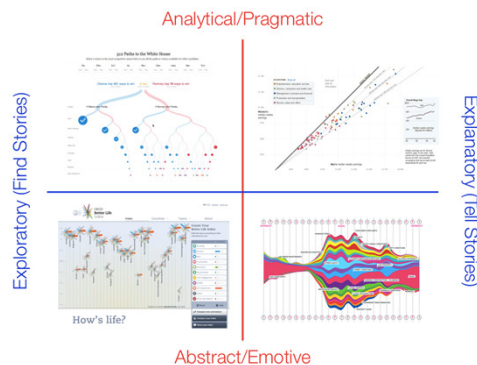
Client project (brief)
Internal project (brief)



Self-initiated

Intent

The intended *tone* and *function*



Intent: Tone

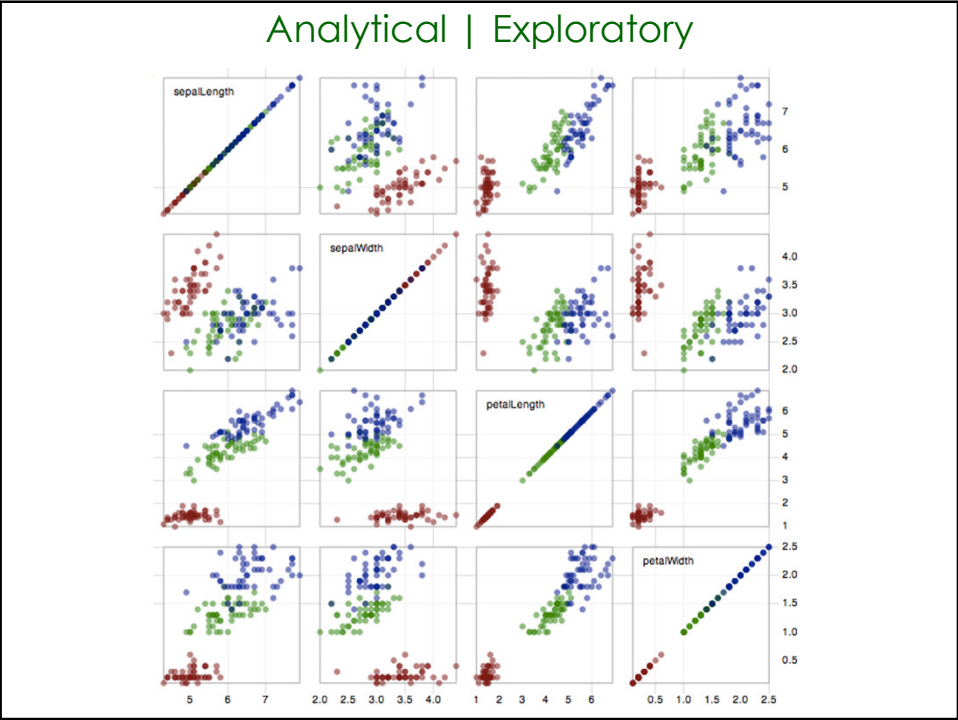
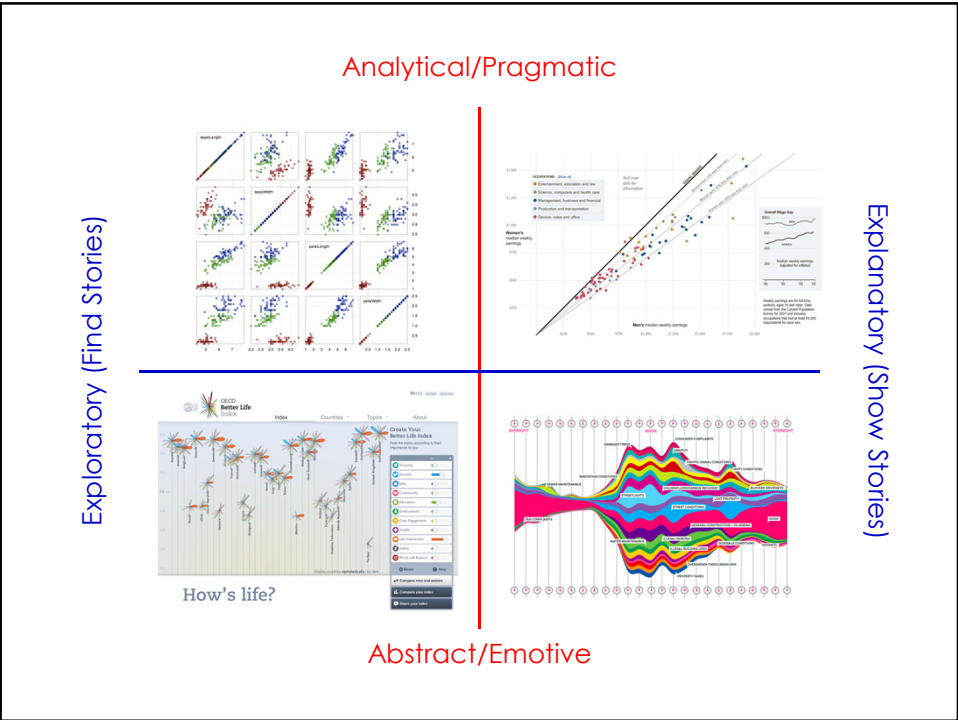
How important is accuracy
compared to aesthetics?

Read data vs Feel data
Precision vs Beauty
Pragmatism vs Emotion

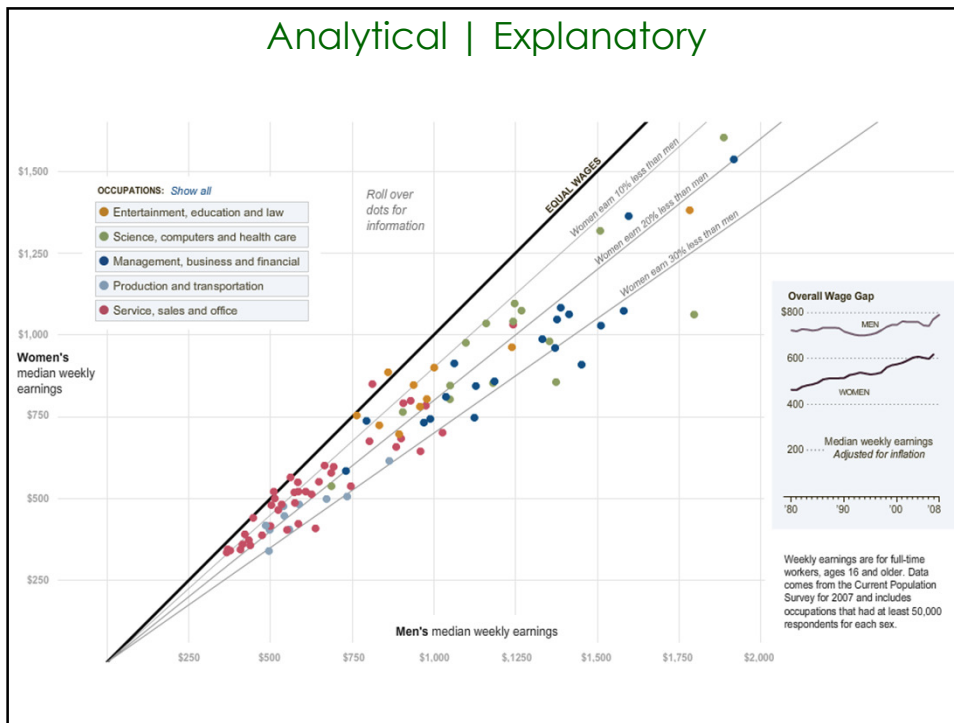
Intent: Function

Who does the work to surface
the insights?

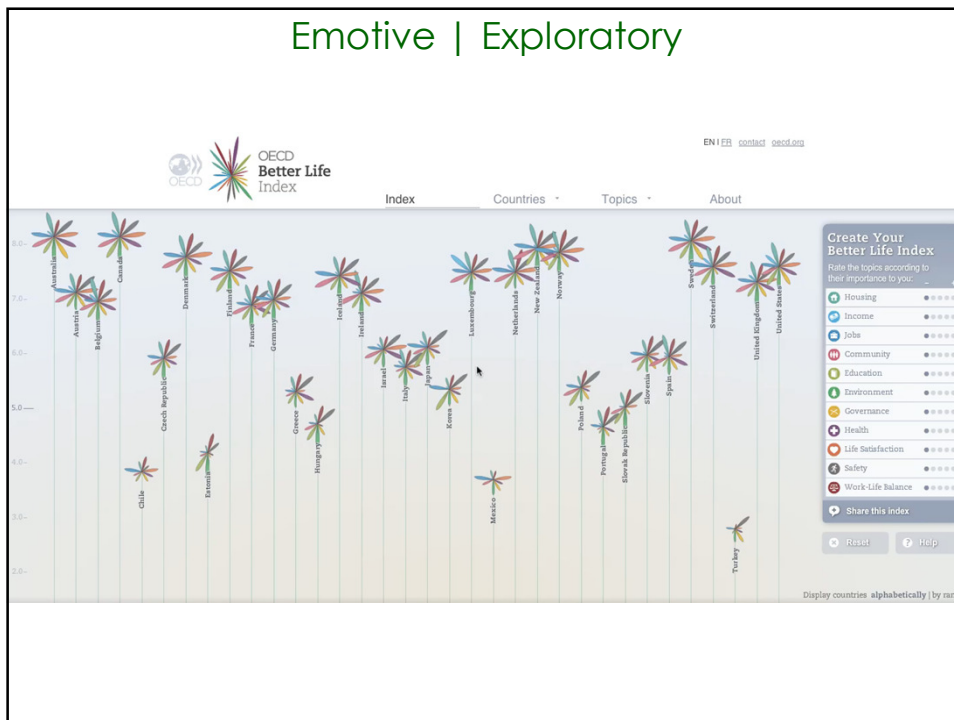
Find or Show
Reader or Designer
Explore or Explain

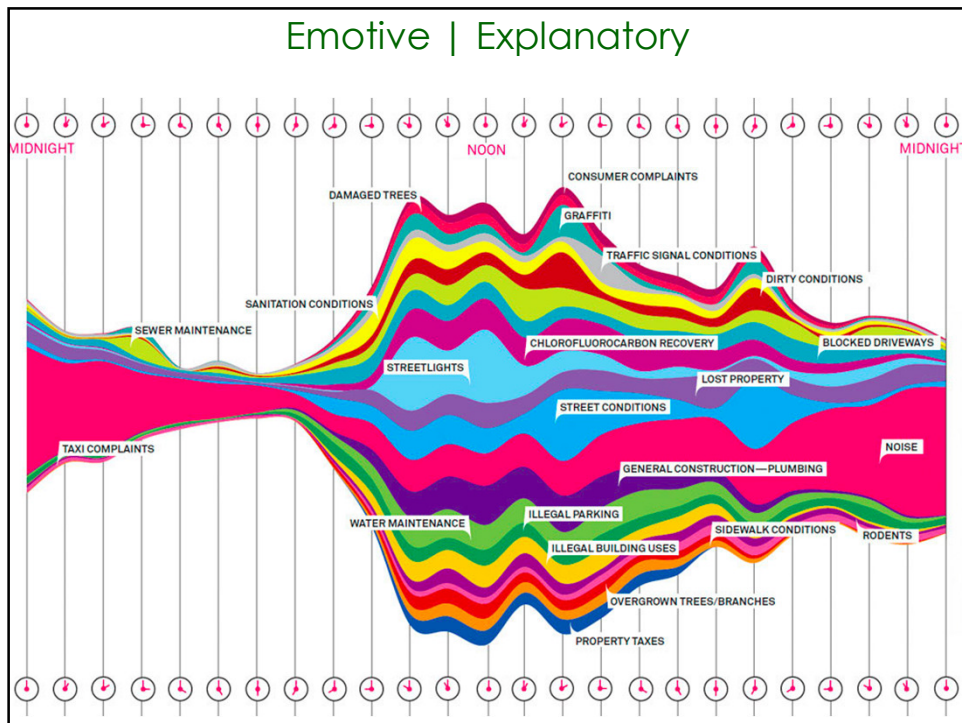


Analytical | Explanatory



Emotive | Exploratory





Potential key factors

The brief? Open, strict, helpful, unhelpful, clarity
 Pressures? Timescales, managerial, financial
 Format? Static, interactive, video, tools
 Setting? Issued, presented, instant, prolonged
 Technical? Software, hardware, infrastructure
 Audience size? One, group, organisation, outside
 Audience type? Domain, captive, general
 Resolution? Headlines, detail
 Frequency? One-off, regular
 Rules? Structure, layout, style, colour
 People? Individual, team, the 8 hats...

2. Acquire and prepare your data

The hidden burden...

Acquisition
Examination
Transform for quality

The hidden cleverness...

Transform for analysis

Consolidation

Visual Analysis

Visual analysis

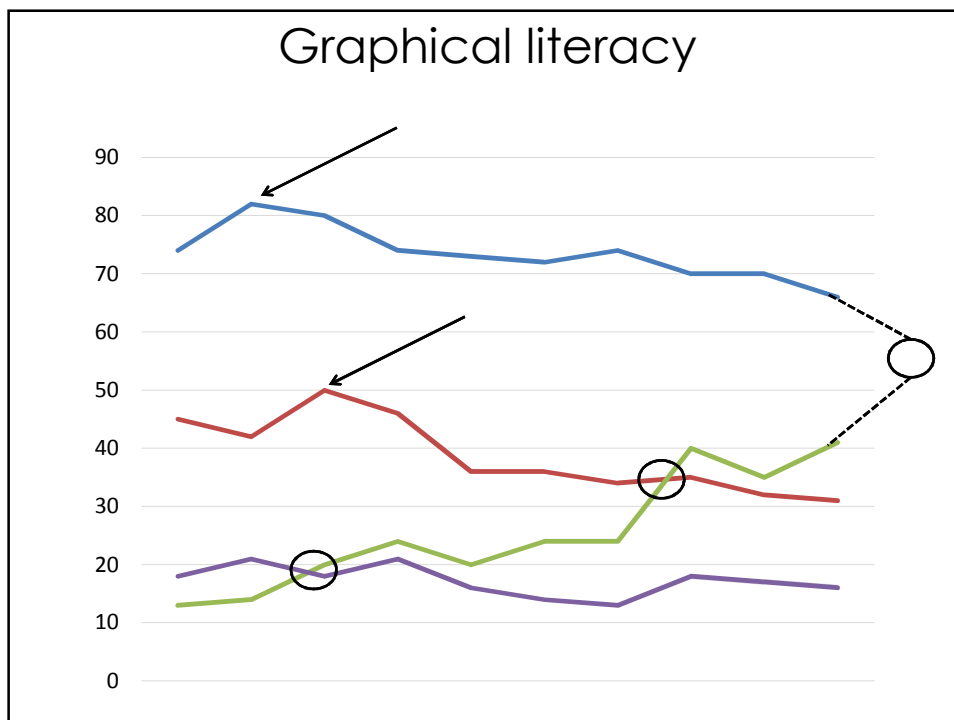
Using visualisation techniques to
familiarise, **learn** about and
discover insights from data

Requires **curiosity** and
graphical literacy

Graphical literacy

Trends and patterns (or lack of)

- Up and down vs. flat?
- Linear vs. exponential
- Steady vs. fluctuating
- Seasonal vs. random
- Rate of change vs. steepness

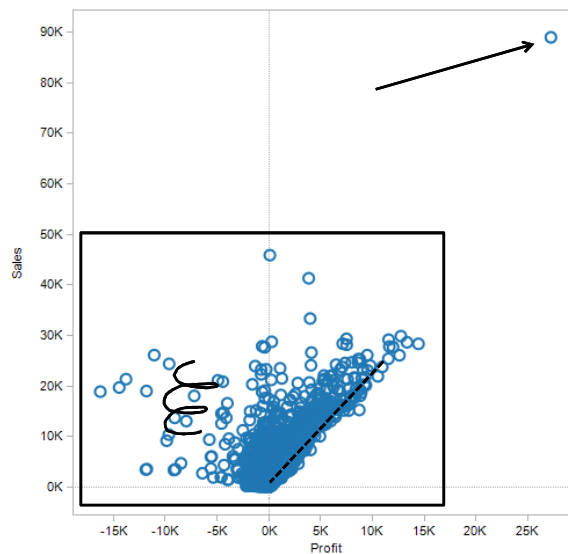


Graphical literacy

Relationships

- Outliers
- Intersections
- Correlations
- Connections
- Clusters
- Associations
- Gaps

Graphical literacy



3. Establishing editorial focus by finding stories

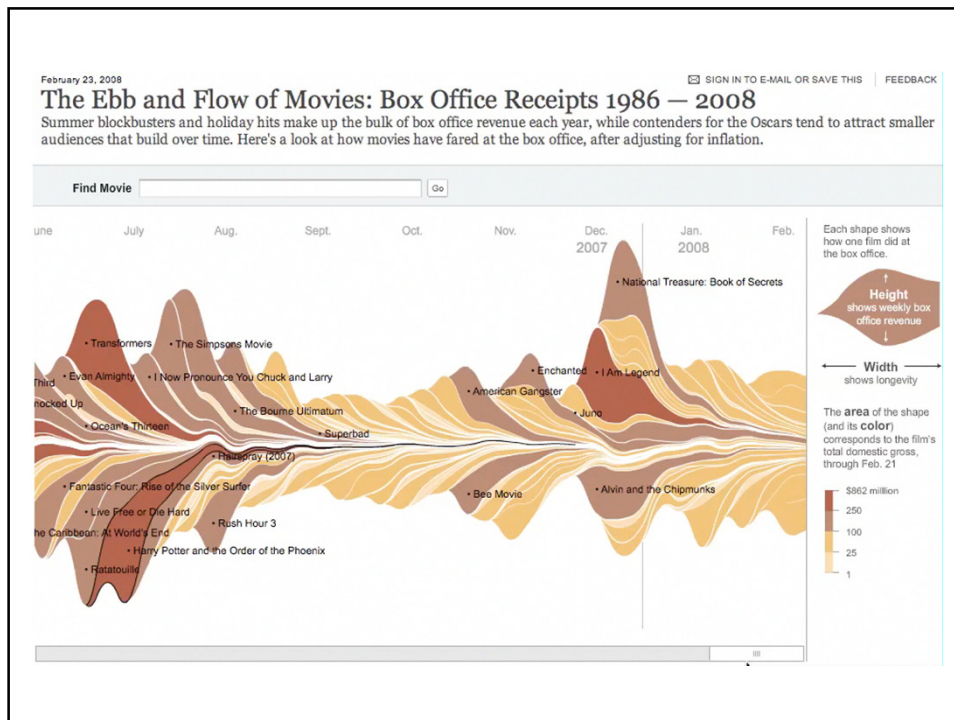
*Good content reasoners
and presenters are rare,
designers are not.*

Edward Tufte



What questions do **you** have about this data?

What questions do you want **readers** to be able to answer about this data?



We rejected them because they didn't do a good job of answering some of the most interesting questions... Different forms do better jobs at answering different questions.

Amanda Cox (on NYT Stream Graph)

4. Conceive your visualisation design specification

The 5 layers of a visualisation

1. Data representation

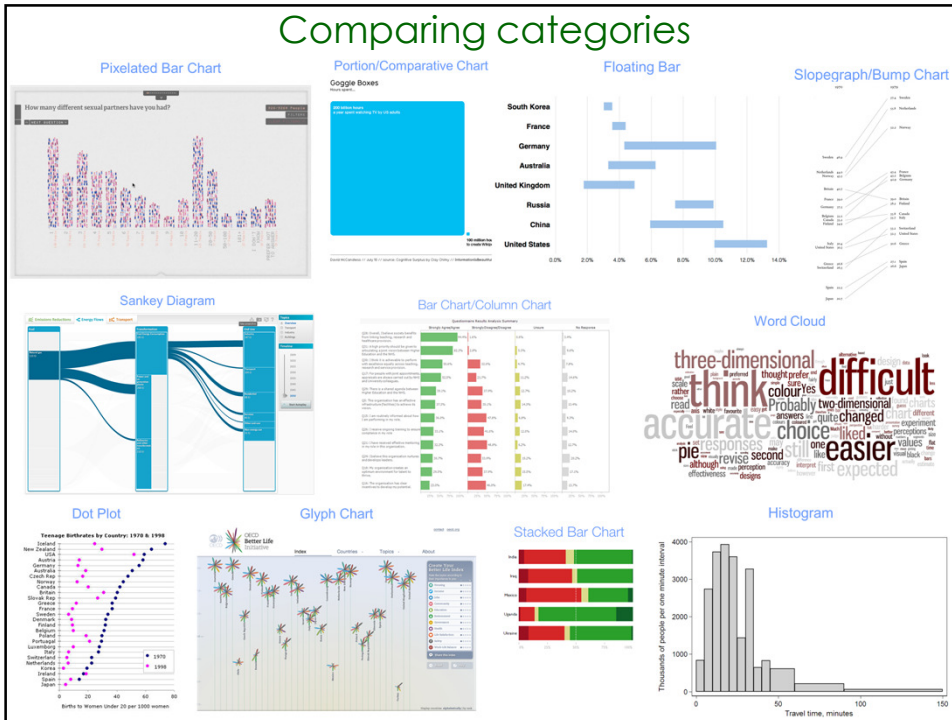
Which chart?

What are we trying to **say**
with what we are **showing**?

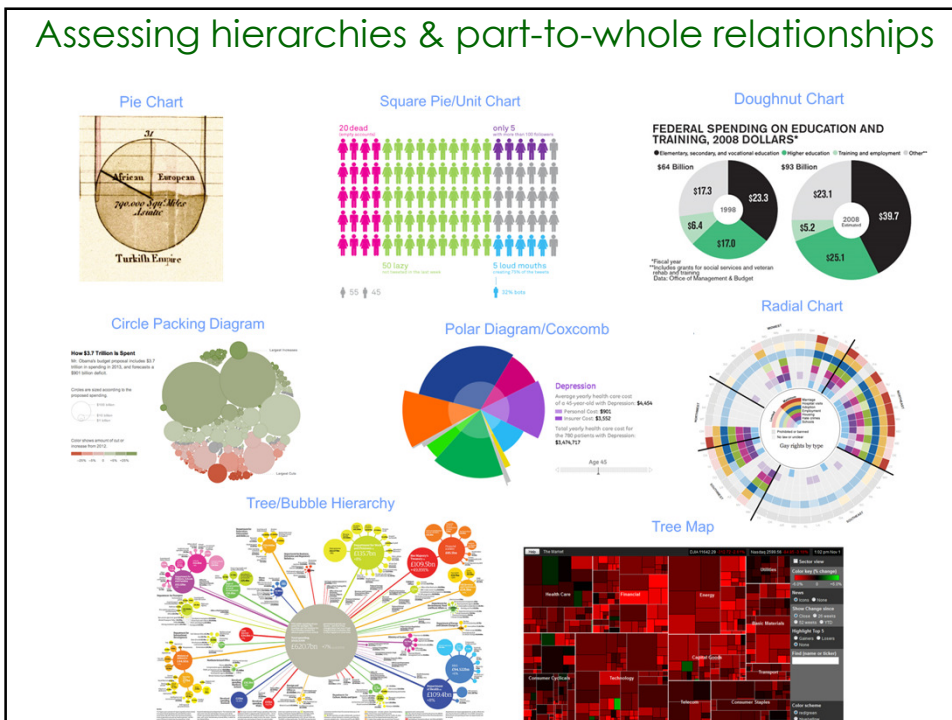
Data representation ingredients

1. Consistency with purpose
2. Choose the correct visualisation method
3. Effectiveness of visual analysis techniques
4. Consider physical properties of your data
5. Create the appropriate metaphor

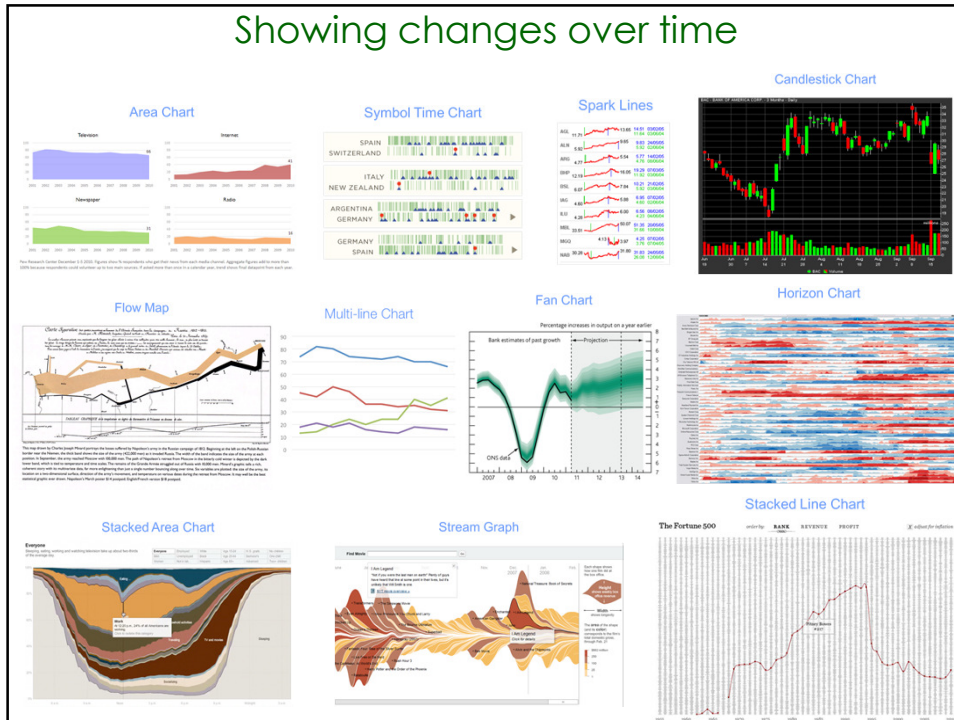
Comparing categories



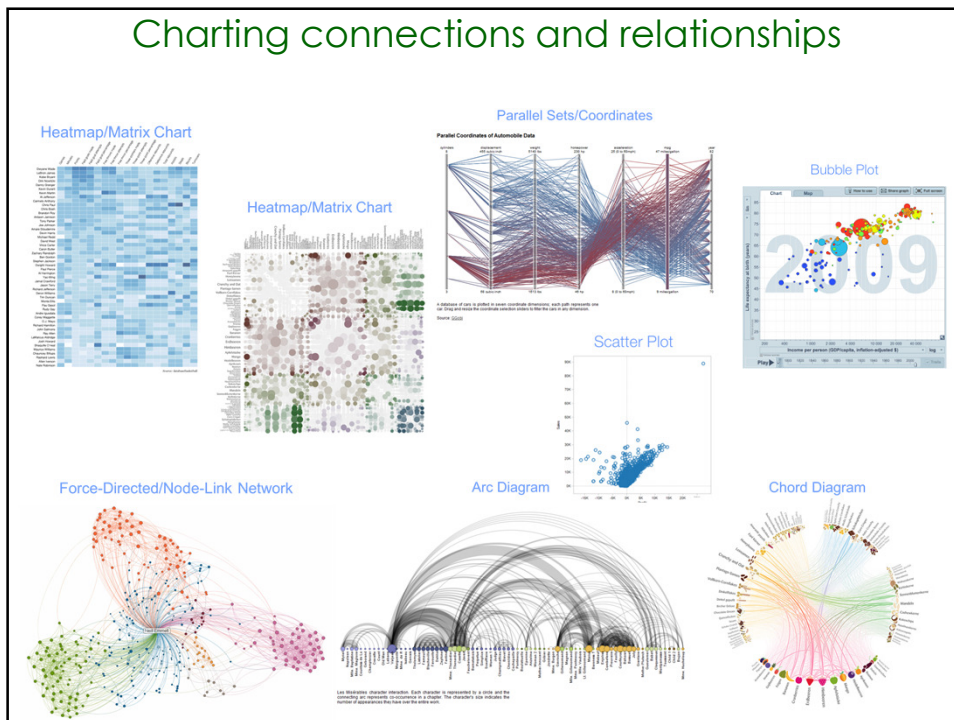
Assessing hierarchies & part-to-whole relationships



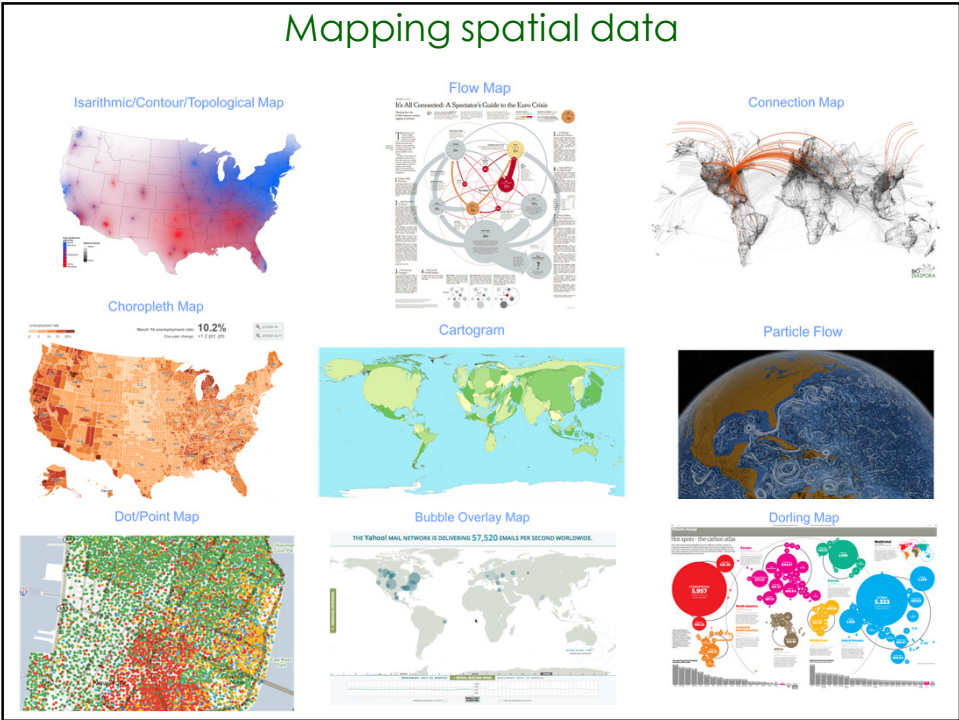
Showing changes over time



Charting connections and relationships



Mapping spatial data



The 5 layers of a visualisation

2. Colour

*Colour used well can enhance
and clarify a presentation.
Colour used poorly will
obscure, muddle and confuse.*

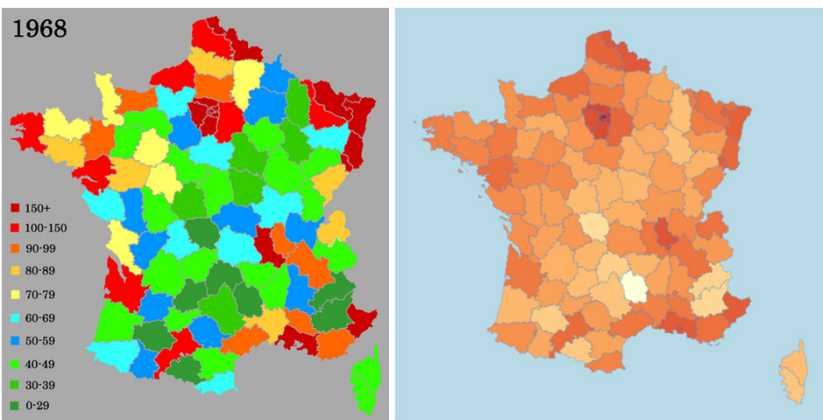
Maureen Stone

Represent data values

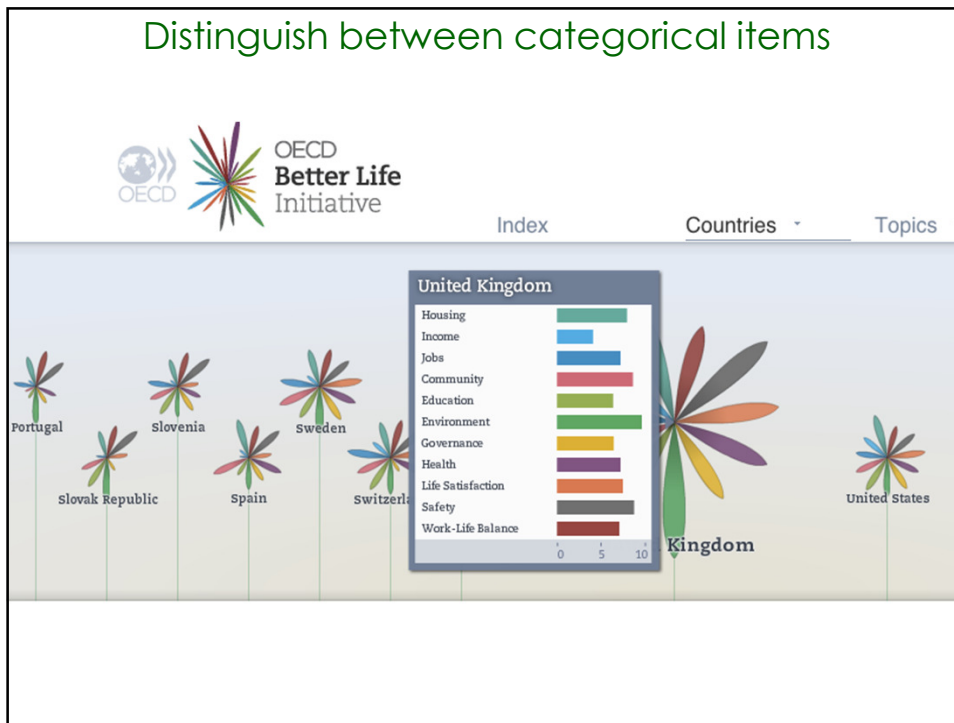
Colour (Hue)



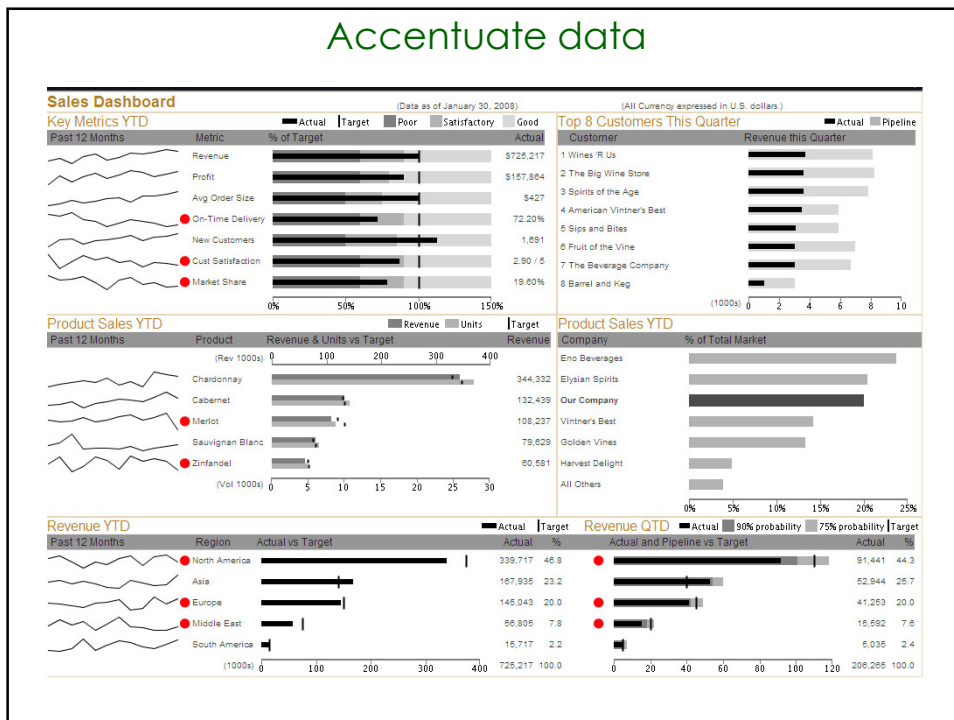
Colour
(Saturation)



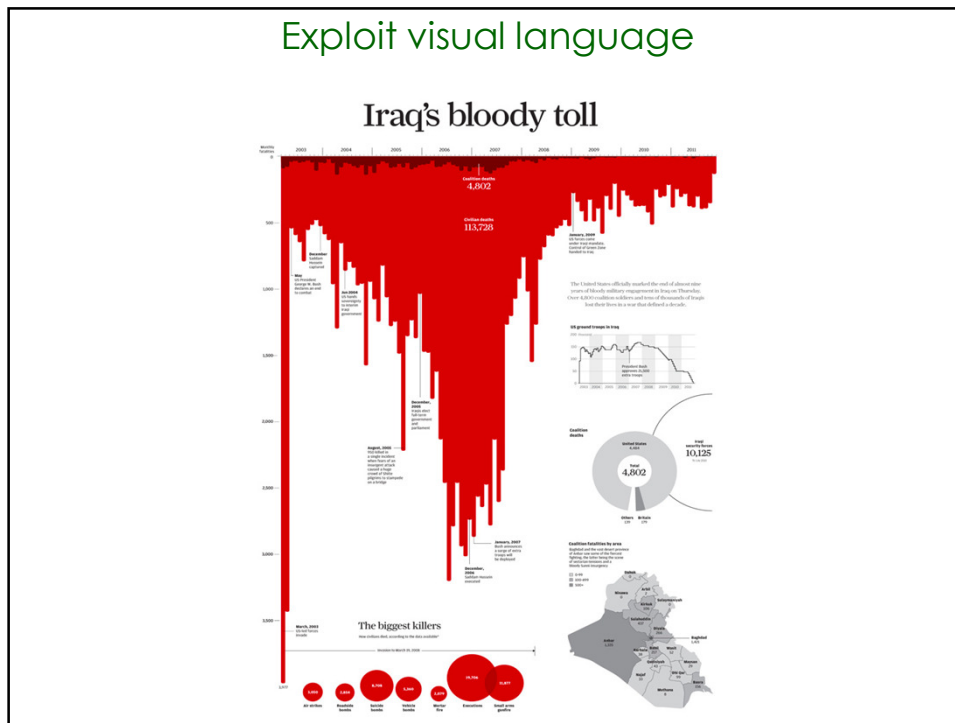
Distinguish between categorical items



Accentuate data



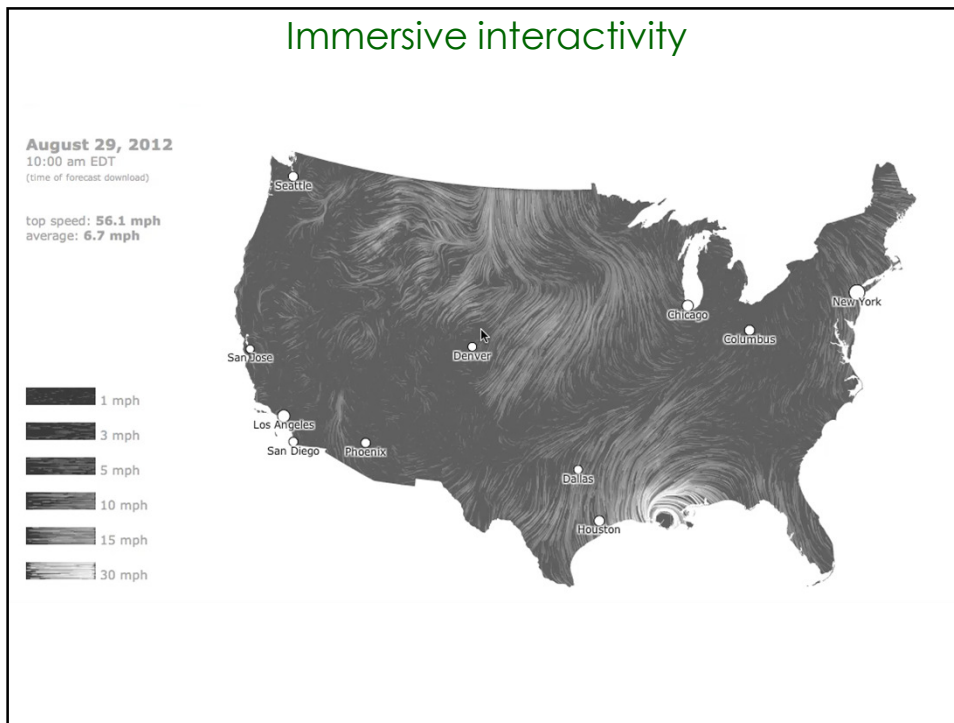
Exploit visual language



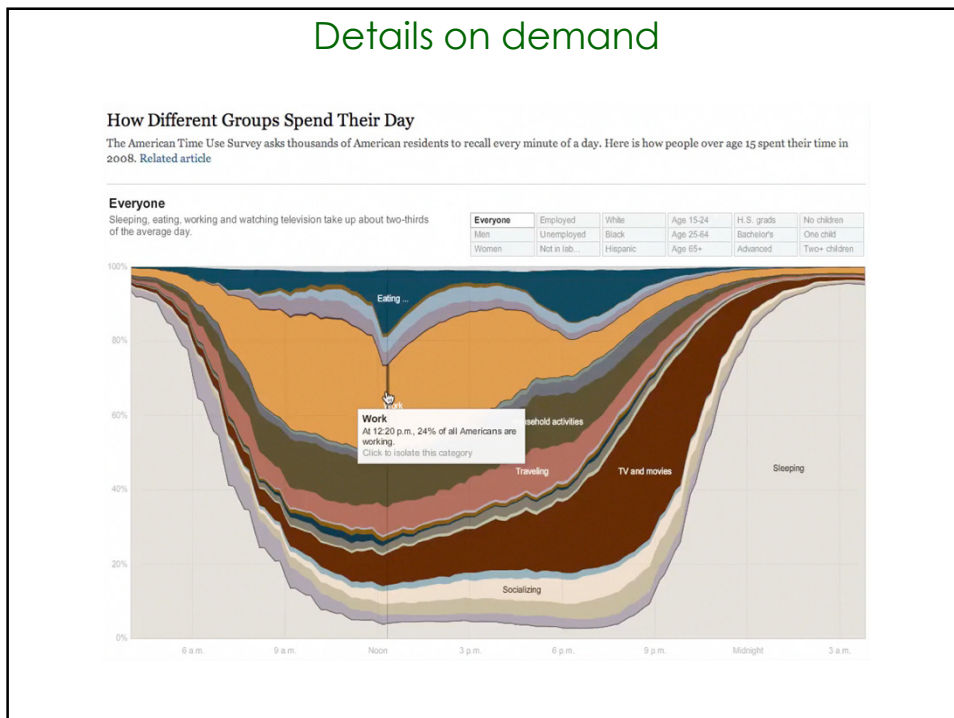
The 5 layers of a visualisation

3. Interactivity

Immersive interactivity



Details on demand



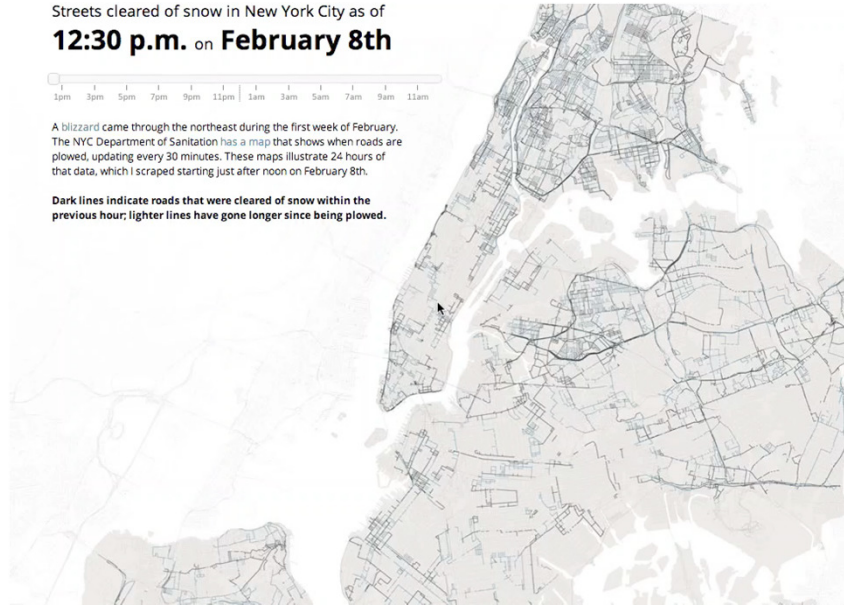
Potential for animation

Streets cleared of snow in New York City as of
12:30 p.m. on February 8th



A blizzard came through the northeast during the first week of February. The NYC Department of Sanitation has a map that shows when roads are plowed, updating every 30 minutes. These maps illustrate 24 hours of that data, which I scraped starting just after noon on February 8th.

Dark lines indicate roads that were cleared of snow within the previous hour; lighter lines have gone longer since being plowed.



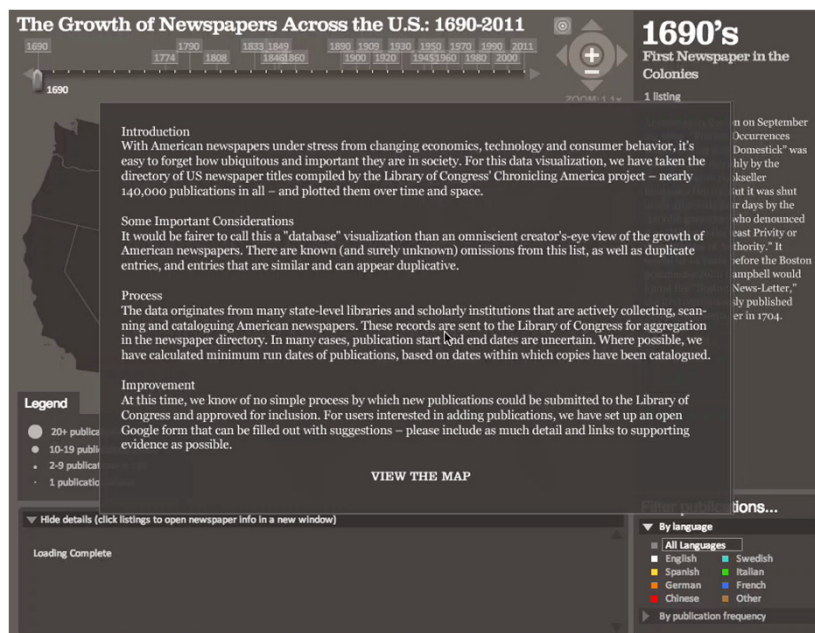
The 5 layers of a visualisation

4. Annotation

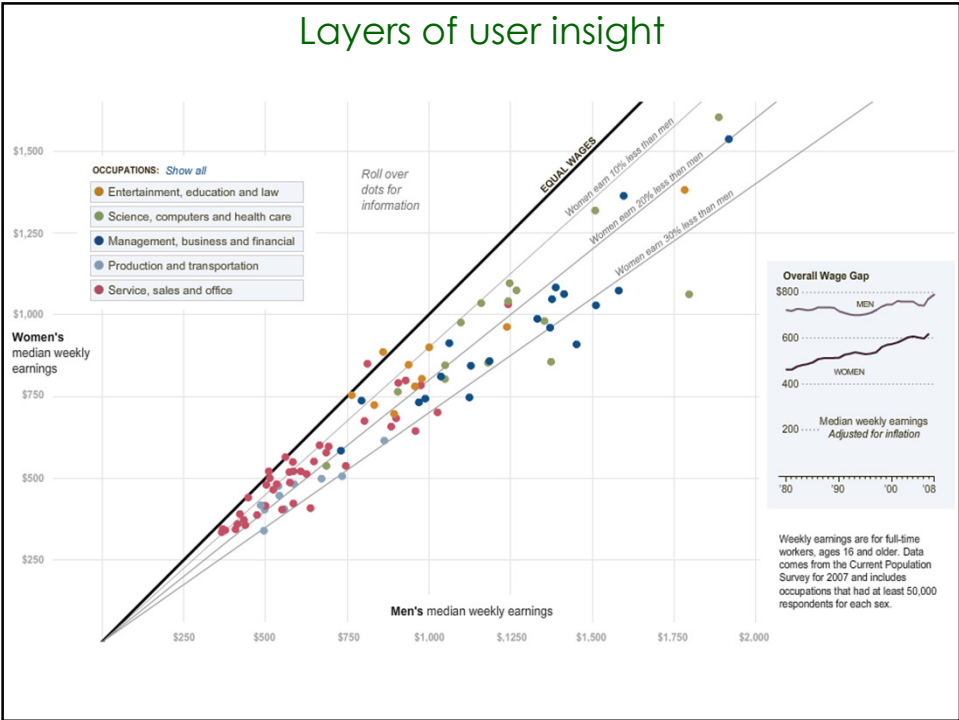
The annotation layer is the most important thing we do... otherwise it's a case of here it is, you go figure it out.

Amanda Cox, Graphics Editor, New York Times

Layers of user assistance



Layers of user insight

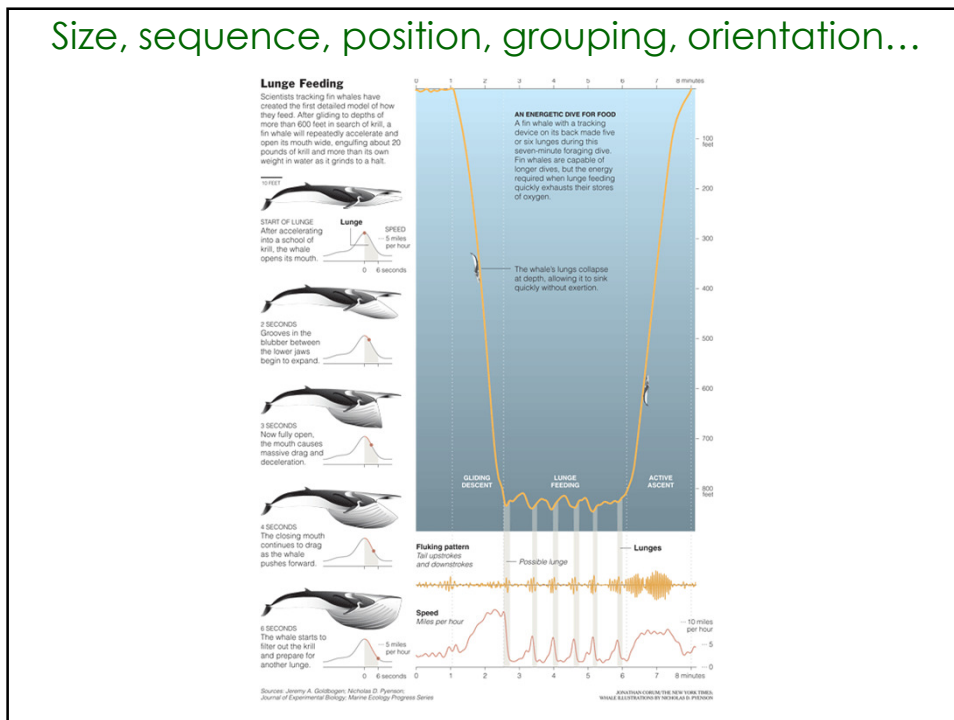


The 5 layers of a visualisation

5. Arrangement

Consider the placement of every single visible element in a way that **minimises** thinking and **maximises** interpretation

Size, sequence, position, grouping, orientation...



5. Construct and launch your data visualisation solution

The screenshot shows the homepage of the 'visualising data' website. The header features the site logo, navigation links (Home, Training, Book, Services, Resources, Speaking, About), and social media icons. The main content area is divided into two columns. The left column contains a section titled 'Important Tools for Visualising and Communicating Data' with a list of six parts. The right column features two promotional banners: one for a book 'Data Visualization: a successful design process' and another for 'InstantAtlas 30 DAY FREETRIAL' with a 'Download' button.

visualising data Keen to develop data visualisation knowledge and design skills? Visit the Training page to discover the latest course schedule.

Home Training Book Services Resources Speaking About

Important Tools for Visualising and Communicating Data

This list of resources represent an ongoing and growing series of blog posts presenting the most inspiring collection of important, effective, useful and practical data visualisation tools. You can also view these resources via a publicly accessible [Google Spreadsheet](#).

**** This series of posts will be undergoing a thorough update during January and February 2013! ****

- Part 1: Tools for Analysis, Graphing and Enterprise
- Part 2: Visual Programming Languages and Environments
- Part 3: Google's Charting and Visualisation Tools
- Part 4: Tools for Mapping
- Part 5: Specialist Tools and Visualisation Communities
- Part 6: Visualisation Presentation and Publishing Tools

The Most Influential Data Visualisation Books

- Part 7: A Personal Collection of Influential Books on Data Visualisation and Other Related Subjects (1)
- Part 8: A Personal Collection of Influential Books on Data Visualisation and Other Related Subjects (2)
- Part 9: A Personal Collection of Influential Books on Data Visualisation and Other Related Subjects (3)

Data Visualization: a successful design process

Present Your Data on Interactive Maps, Charts & Tables

InstantAtlas™
30 DAY FREETRIAL
Download

Microsoft Excel

Microsoft Excel is the most popular spreadsheet tool in the world with over 400 million users and therefore the most accessible tool for conducting analysis and presenting data in graphical format. The package receives a great deal of justified criticism within the visualisation field for the appalling default and range of bad practice graph designs it promotes, yet in the right hands it can be an incredibly powerful and effective visualisation tool.

[Find out more information](#) | Cost: Trial > under £100/\$150 per license | Tags: Spreadsheet, Office, Graphing

Good examples and references: [Peltier Tech](#) | [Excel Charts Blog](#) | [Chandoo](#)

Status: Ongoing (July 7, 2011)

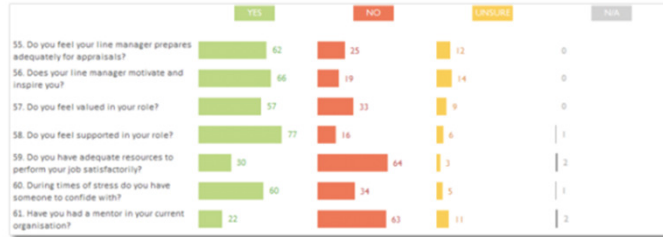


Tableau Desktop

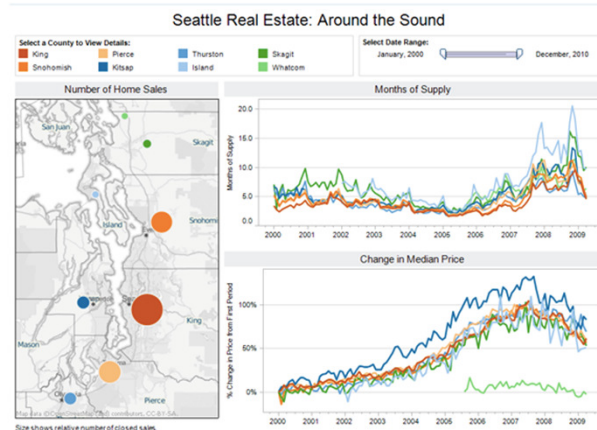
Tableau Desktop is based on breakthrough technology from Stanford University that lets you drag & drop to analyse data rapidly and fluidly, connect to data in a few clicks, then visualise and create interactive dashboards in an instant. Tableau have based their product on years of research to build a system that supports people's natural ability to think visually providing a tool that lets you easily build beautiful, effective, rich data visualisations.

[Find out more information](#) | Cost: Trial > £600/\$999 Personal, £1200/\$1999 Professional | Tags: Statistical Analysis, Business Intelligence, Dashboard

Examples and references: [The Information Lab](#) | [The Data Studio](#) | [Freakalytics](#)

Status: Ongoing (July 7, 2011)

Real Estate Prices



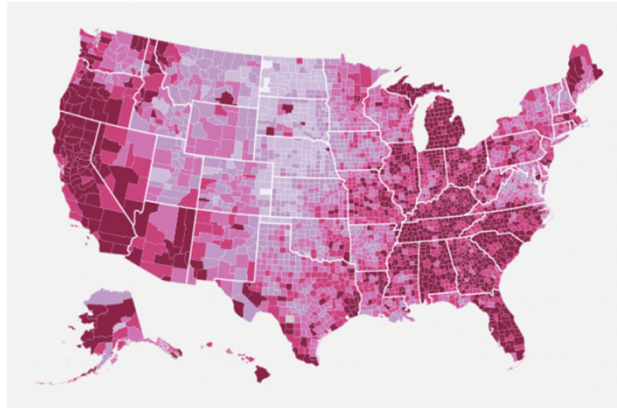
R

R is a highly extensible, open source language and environment for data handling, statistical computing and graphical techniques. One of R's key strengths is the ease with which well-designed publication-quality graphical plots can be produced. Importantly, from a good practice principles perspective, great care has been taken over the defaults for the minor design choices in graphics whilst allowing the user to retain full control beyond. Many people traditionally think of R as a statistics system but its power and potential as a visualisation tool is significant and its popularity within the field is growing constantly.

[Find out more information](#) | Cost: Free | Tags: [Statistical Programming Language](#), [Graphics](#), [Open Source](#)

Good examples and references: [RStudio](#) | [Hadley Wickham](#) | [ggPlot2 Library](#) | [FlowingData](#)

Status: **Ongoing** (July 7, 2011)



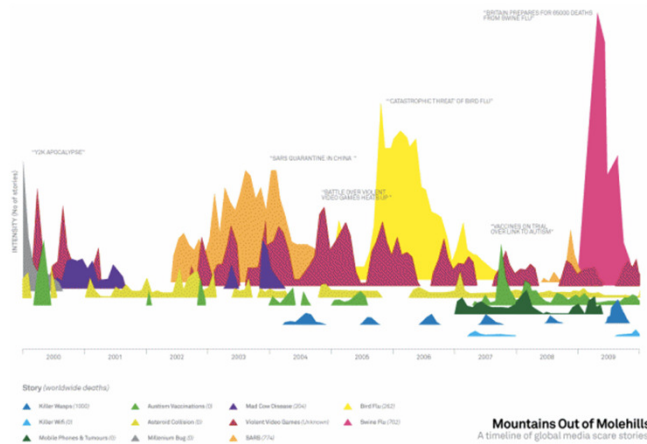
Adobe Illustrator

Like much of the Creative Suite software, Adobe Illustrator is the industry standard application for creating incredible electronic illustrations. Whilst most of us think of creating graphs using statistical software, like many of those listed above, its huge depth of features and capabilities make it the ideal accompaniment tool to take the graphic composition to the next level. Illustrator gives you the complete control you require to polish existing graphs, creating new ones or combine separate elements into an inspiring, customised and hand-crafted infographic design.

[Find out more information](#) | Cost: Trial > £375 /\$599 per license | Tags: [Illustration](#), [Graphics](#), [Graphing](#)

Examples and references: [Information is Beautiful](#) | [Flowing Data](#)

Status: **Ongoing** (July 7, 2011)



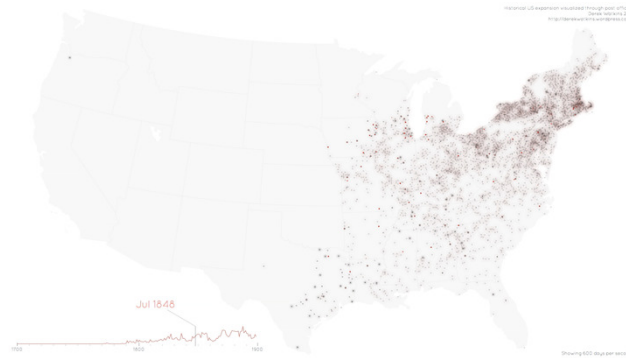
Processing

Processing is an open source programming language and environment for people who want to create images, animations, and interactions. It was founded by Ben Fry and Casey Reas in 2001 while both were students under John Maeda at the MIT Media Lab. In recent recent years it has evolved into one of the most significant and versatile visual programming languages in the visualisation field, particularly off the back of Fry's excellent [Visualizing Data](#) book about computational information design which extensively described the potential power of the Processing environment. Today, there are tens of thousands of students, artists, designers, researchers, and hobbyists who use Processing for learning, prototyping, and production.

[Find out more information](#) | Cost: Free | Tags: Visual Programming Language, Open Source, Java

Good examples and references: [Processing Exhibition Gallery](#) | [Ben Fry](#) | [Jer Thorp's blprnt.com](#) | 'giCentre' [Visualisation Library](#)

Status: Ongoing (July 7, 2011)



D3

D3 is a fresh and efficient visualisation framework created by one of the Protovis creators, Mike Bostock. Its key feature is that it allows you to bind data to a Document Object Model (DOM) and then apply smooth data-driven transformations and interactions to the document. D3's lightweight characteristics enables it to expose the full capabilities of underlying technologies such as CSS3, HTML5 and SVG. Accordingly D3 is extremely fast, supports large datasets and overall provides great flexibility in designing a contemporary web-based visualisation.

[Find out more information](#) | Cost: Free | Tags: JavaScript Library, Open Source, SVG

Good examples and references: [D3 Gallery](#) | [Jan Willem Tulp](#)

Status: Ongoing (July 7, 2011)

Four Ways to Slice Obama's 2013 Budget Proposal

Explore every nook and cranny of President Obama's federal budget proposal.

All Spending Types of Spending Changes Department Totals

How \$3.7 Trillion is Spent

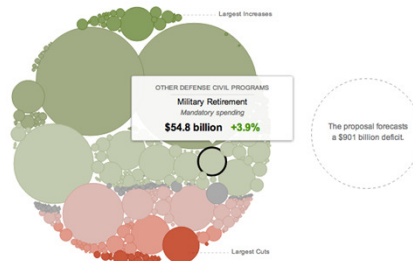
Mr. Obama's budget proposal includes \$3.7 trillion in spending in 2013, and forecasts a \$901 billion deficit.

Circles are sized according to the proposed spending.

\$100 billion
\$10 billion
\$1 billion

Color shows amount of out or increase from 2012.

-25% -5% 0 +5% +25%



www.visualisingdata.com
andy@visualisingdata.com
[@visualisingdata](#)