



Data Week Online 2020

Making data work for everyone

bristol.ac.uk/golding

Data Week Online 2020

The Jean Golding Institute

- A central hub for data science and data-intensive research
- One of 5 University of Bristol research institutes
- Connect multidisciplinary experts across the University and beyond
- Events, training, funding, Ask JGI, The Alan Turing Institute

Our priorities

1. Societal challenges
2. Data visualisation
3. Reproducibility & data governance
4. Fundamental research



Making data work for everyone

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Data Week Online 2020

Date	Event	Speaker
Monday 15 June	Data science and COVID 19 & Data Week Introduction	Kate Robson Brown, JGI Director
Monday 15 June	Intermediate Python	Advanced Computing Research Centre
Tuesday 16 June	Talk: Working at and with The Turing Institute: experiences as a Fellow	Jon Crowcroft, Turing Fellow & University of Cambridge
Tuesday 16 June	Talk: increasing engagement with data	Michael Green, Luna 9
Tuesday 16 June	Introduction to data analysis in Python	Advanced Computing Research Centre
Wednesday 17 June	Do you want to be a data Rockstar?	Luke Stoughton, The Information Lab
Wednesday 17 June	Applied data analysis in Python	Advanced Computing Research Centre
Thursday 18 June	Talk: New data on COVID-19 is undermined by old statistical problems	Gibran Hemani, University of Bristol
Thursday 18 June	Managing sensitive research data: from planning to sharing	Library Research Services
Thursday 18 June	Introduction to deep learning	Advanced Computing Research Centre
Friday 19 June	Deep Learning for Health and Life Sciences	Valerio Maggio, University of Bristol
Friday 19 June	Tour of the Tidyverse	Max Kronborg, Mango Solutions
Friday 19 June	Best practices in software engineering	Advanced Computing Research Centre

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Data Week Online 2020

Share your participation

#Dataweekonline2020



@JGIBristol

jgi-admin@bristol.ac.uk

bristol.ac.uk/golding

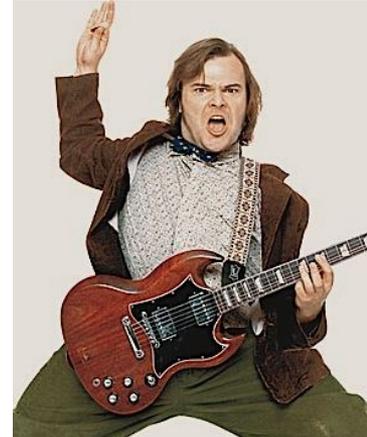
Keep in touch

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Do you want to be a Data Rockstar?

16th June 2020



Luke Stoughton | The Information Lab



@dataschooluk | @infolabuk | @barnsleybeast | @JGIBristol



Agenda

What is visual analytics and why does it matter?

Practical session



Data

<https://til.bi/TabTraining>



What is The Information Lab?

- Founded in 2010
- The largest specialist Data Visualisation consultancy in Europe
- Tableau and Alteryx specialists & Gold Partners
- Presence across 6 other European countries
- Core Team in UK around 30 members
- Shorter term consulting



What is The Data School?

- Founded in 2015
- Recruits 8 people every 2 months
- 2.5yr contract including 4 months initial training
- 4 x 6-month placements
- Work as a consultant with prestigious companies
- 100+ consultants through the program
- Started in Sydney in 2018



Our Tableau Zen Masters



Andy Kriebel - Head Coach

Tableau Zen Master Hall of Fame, previous experience includes running the Facebook Tableau Centre of Excellence for 3 years.



Craig Bloodworth

Tableau Zen Master Hall of Fame, Tableau server wizard and master of the dark art of hacking Tableau.



Chris Love

Twice winner of the Alteryx Grand Prix and widely regarded as one of the best in the world with Alteryx.

And a three-time Tableau Zen Master too!



Emma Whyte

Certified Tableau Trainer, Desktop and Server Certified and Tableau Social Media Ambassador.

Tableau Zen Master, Tableau Server and Desktop guru.



Our Alteryx ACEs



Chris Love

Twice winner of the Alteryx Grand Prix and widely regarded as one of the best in the world with Alteryx.

And a three-time Tableau Zen Master too!



Ben Moss

An incredible Alteryx (and Tableau!) user who gained ACE status in 2018 Ben is a graduate of DS2 and now an Information Lab Core Team consultant.



But don't I need to be a **GEEK?**

BA (Hons) Spanish



MSc International Relations



University of Southampton

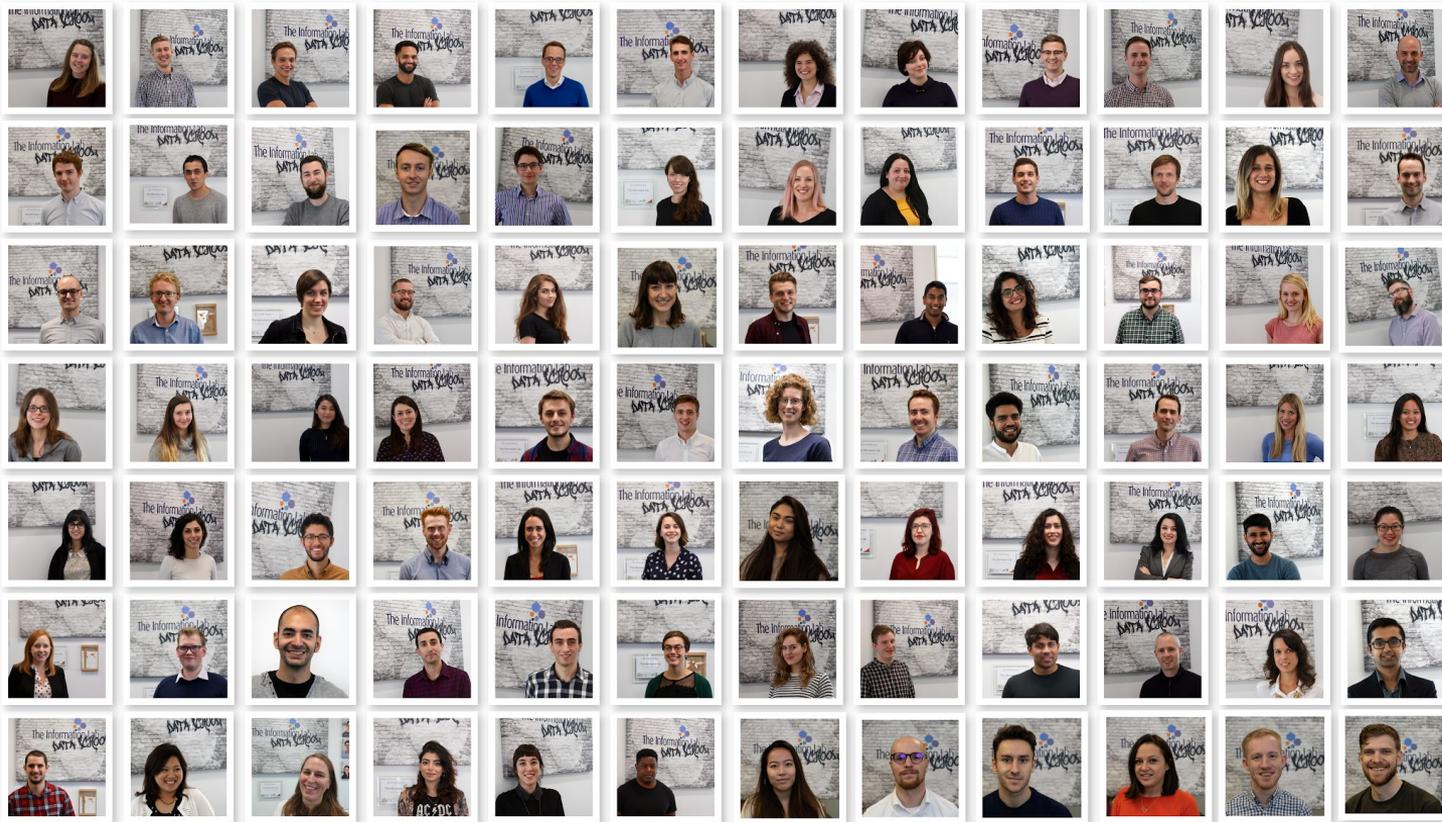


UNIVERSITY OF
WEST LONDON
The Career University

PG Cert (MBA)



Some of our consultants



So what is data anyway?

data

/ˈdeɪtə/ 

noun

facts and statistics collected together for reference or analysis.

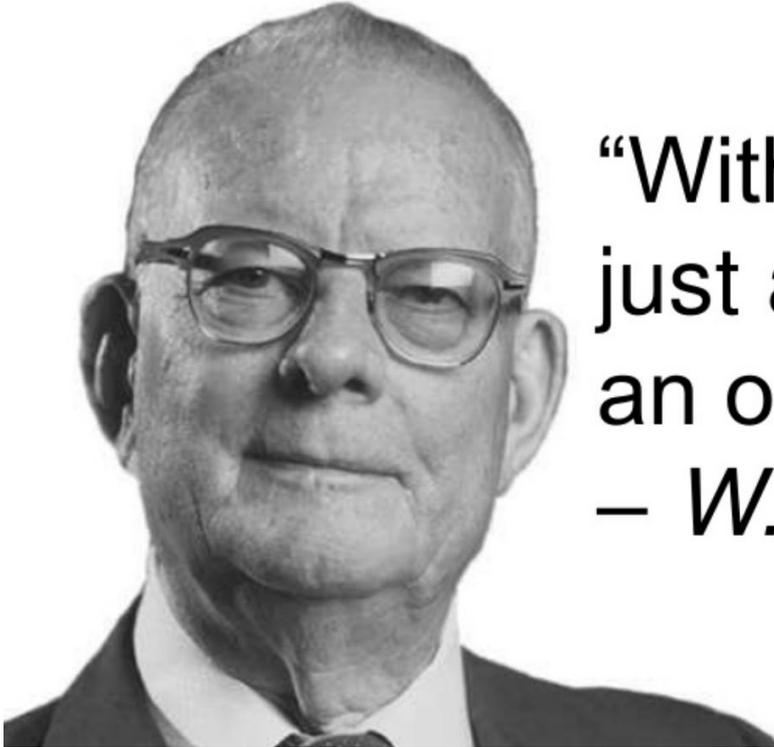
"there is very little data available"

synonyms: facts, figures, **statistics**, details, particulars, specifics, features; [More](#)

- the quantities, characters, or symbols on which operations are performed by a computer, which may be stored and transmitted in the form of electrical signals and recorded on magnetic, optical, or mechanical recording media.
- **PHILOSOPHY**
things known or assumed as facts, making the basis of reasoning or calculation.



So what is data anyway?



“Without data you’re
just another person with
an opinion.”

– *W. Edwards Deming*



Don't guess, use data!

Harvard
Business
Review

DECISION MAKING

Don't Trust Your Gut

by Eric Bonabeau

FROM THE MAY 2003 ISSUE

SAVE SHARE COMMENT 2 H H TEXT SIZE PRINT \$8.95 BUY COPIES

Making high-stakes business decisions has always been hard. But in recent decades, as the complexities of global commerce have deepened, it's become tougher than ever. The choices facing managers and the data requiring analysis have multiplied even as the time for analyzing them has shrunk.

One decision-making tool—human intuition—seems to offer a reliable alternative to painstaking fact gathering and analysis. Encouraged by scientific research on intuition, top managers feel increasingly confident that, when faced with complicated choices, they can just trust their gut. Indeed, a survey that was conducted in May 2002 by executive search firm Christian & Timbers reveals that fully 45% of corporate executives now rely more on instinct than on facts and figures in running their businesses. Decision-making consultant Gary Klein, in his book *Intuition at Work*, expresses the common wisdom when he

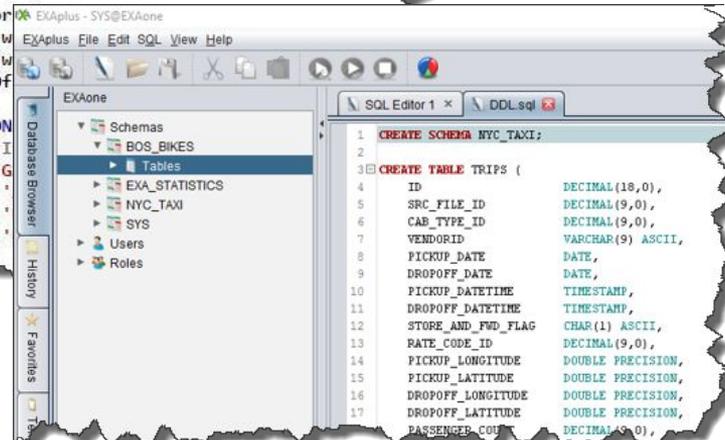


Why did people trust their gut instinct?

We're drowning
in a sea of data.



```
SELECT tbla.NAME  
      ,tbla.LstName  
      ,tblB.PhoneNum  
      ,tblC.Address  
FROM tblUserName tblA  
INNER JOIN tblUsrPhone tblB ON tblA.usrID = tblB.usrID  
LEFT JOIN tblUsrAddr tblC ON tblC.usrID = tblA.usrID  
INNER JOIN (  
  SELECT wor  
  ,tblB  
  ,tblC  
  ,tblD  
  ,tblE  
  ,tblF  
  ,tblG  
  ,tblH  
  ,tblI  
  ,tblJ  
  ,tblK  
  ,tblL  
  ,tblM  
  ,tblN  
  ,tblO  
  ,tblP  
  ,tblQ  
  ,tblR  
  ,tblS  
  ,tblT  
  ,tblU  
  ,tblV  
  ,tblW  
  ,tblX  
  ,tblY  
  ,tblZ  
FROM tblOf  
) z  
INNER JOIN tblB ON  
WHERE tblC.Stane I
```



So what is Data Visualisation?



SHALL HE PLAY A GAME?



TR 888

GUIDED MICRO-PROJECTILE

18

15

ROCKET2

ROCKET2

ROCKET2

0EA

ROCKET2

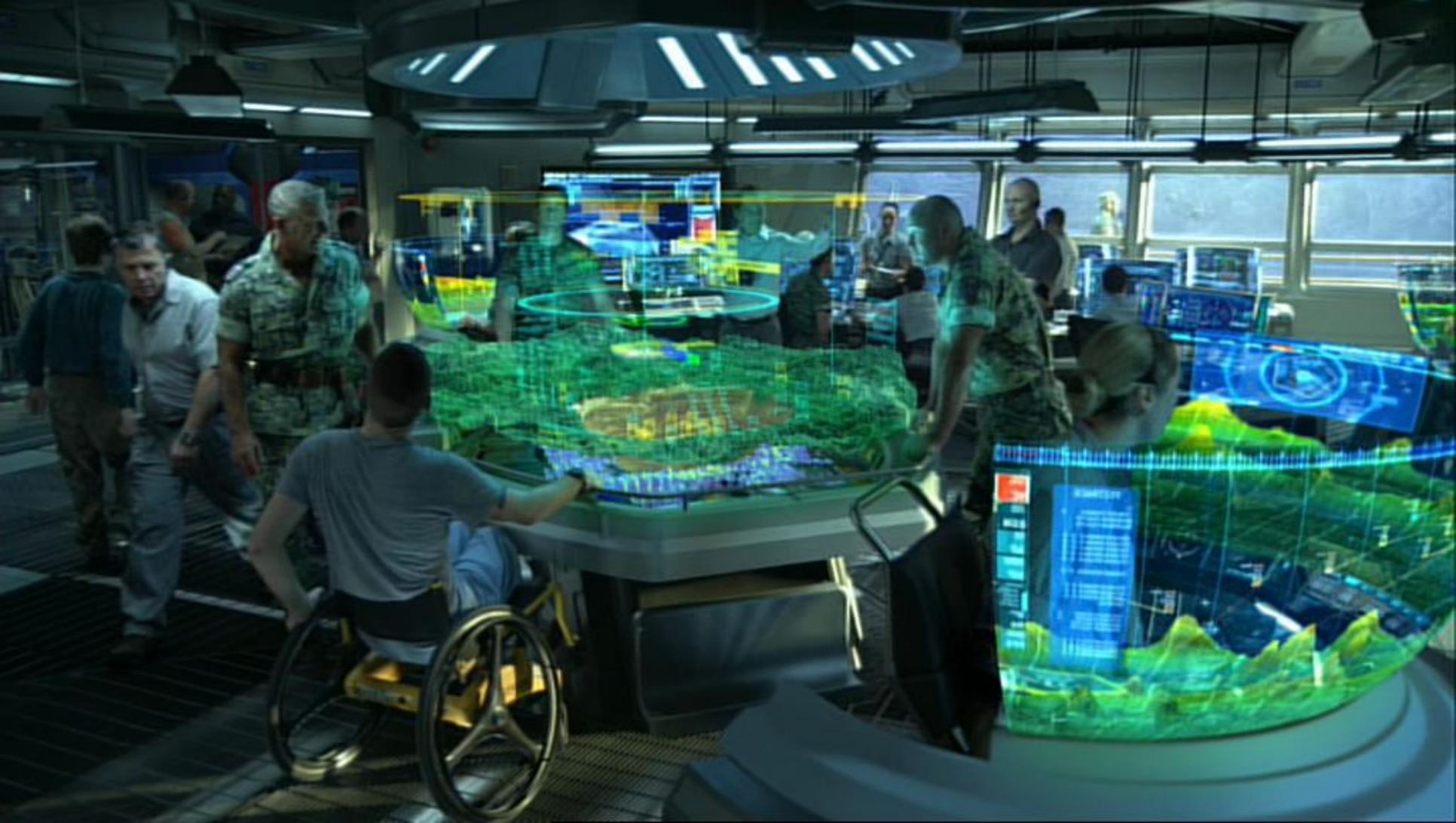
ROCKET2

ROCKET2

ROCKET2

ROCKET2

ROCKET2





SCIENCE

ENGINEERING

CONTROL

00014	57908200000000000000	0000	00000000000000000000	00000000000000000000
00015	57908200000000000000	0000	00000000000000000000	00000000000000000000
00016	57908200000000000000	0000	00000000000000000000	00000000000000000000
00017	57908200000000000000	0000	00000000000000000000	00000000000000000000
00018	57908200000000000000	0000	00000000000000000000	00000000000000000000

MEMORY LOAD

AMD Athlon 1200 10%

CPU RAM

EXT

TOOLS

WVORNS

SYSTEM ONLINE

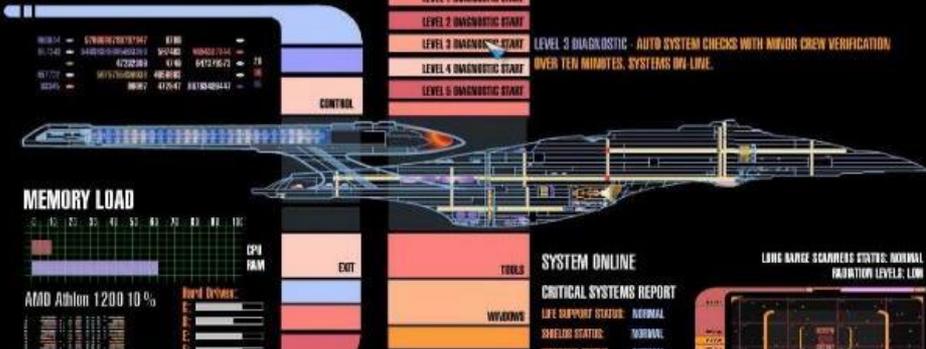
CRITICAL SYSTEMS REPORT

LIFE SUPPORT STATUS: NORMAL

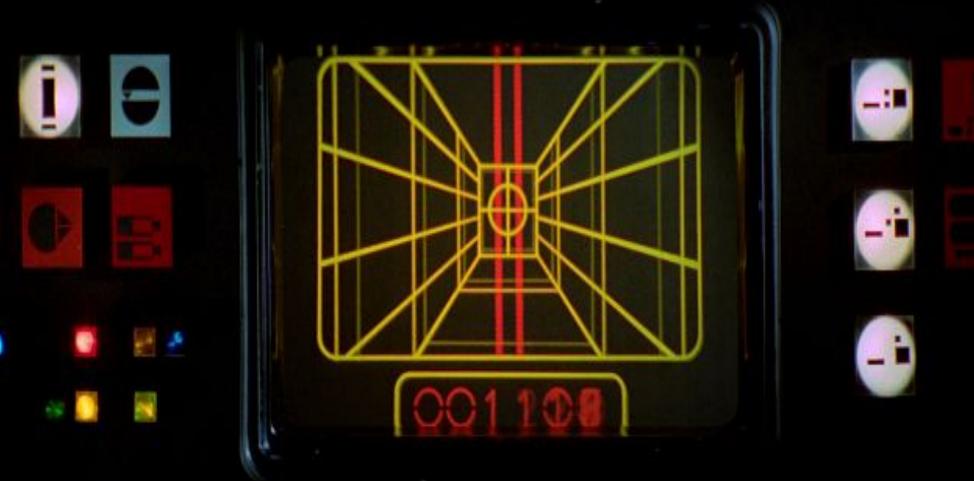
SHIELDS STATUS: NORMAL

LONG RANGE SCANNERS STATUS: MAXIMAL

PROBATION LEVELS: LOW



001 100



Data Visualisation is.....

- The translation of data from big tables of numbers into a visual format
- Trends, correlations, outliers and errors in the data all jump out more quickly when visualised
- Human cognitive functions respond far more quickly to visual stimulae
- Democratising data



It's really just a brain hack...

“Visual analytics is the representation and presentation of data that **exploits our visual perception abilities** in order to amplify cognition.”

Andy Kirk, data viz specialist



How many 5s are there?

12754443748372
53894774398570
48375034871034
87803406704067
01467324623756
34785649832768



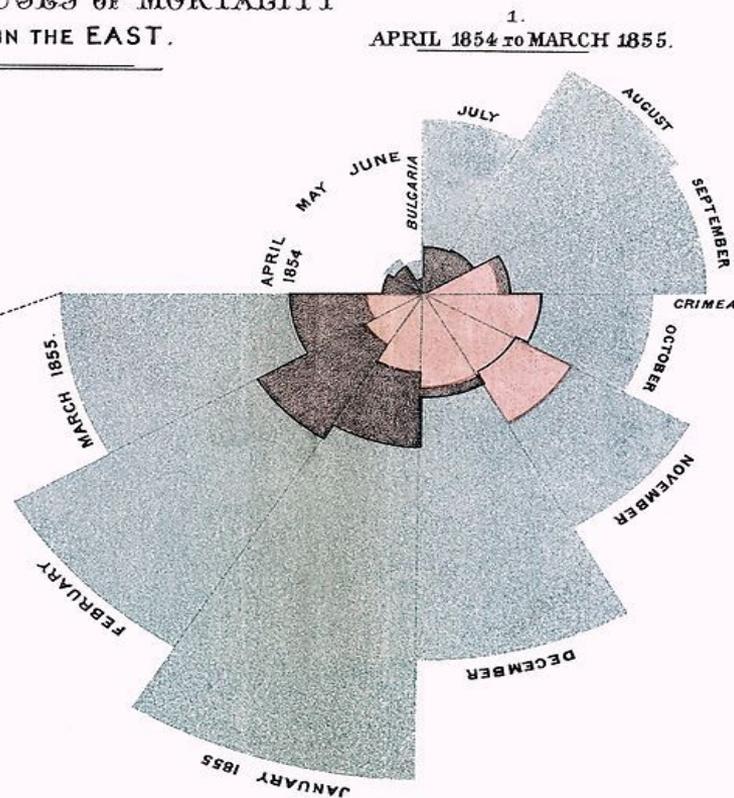
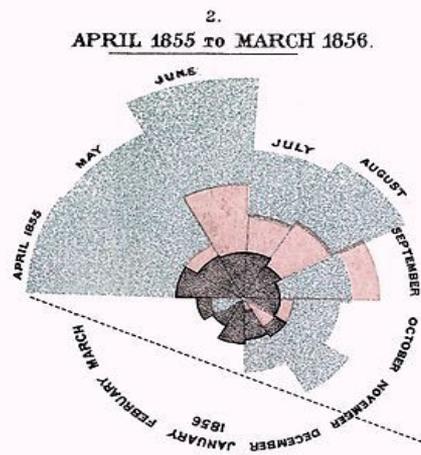
Easier now? Let's use our sensory memory..

127**5**4443748372
53894774398**5**70
4837**5**034871034
87803406704067
014673246237**5**6
3478**5**649832768



It's not a new thing...

DIAGRAM OF THE CAUSES OF MORTALITY IN THE ARMY IN THE EAST.



The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex.

The blue wedges measured from the centre of the circle represent area for area the deaths from Preventible or Mitigable Zymotic diseases, the red wedges measured from the centre the deaths from wounds, & the black wedges measured from the centre the deaths from all other causes.

The black line across the red triangle in Nov. 1854 marks the boundary of the deaths from all other causes during the month.

In October 1854, & April 1855, the black area coincides with the red; in January & February 1855, the blue coincides with the black.

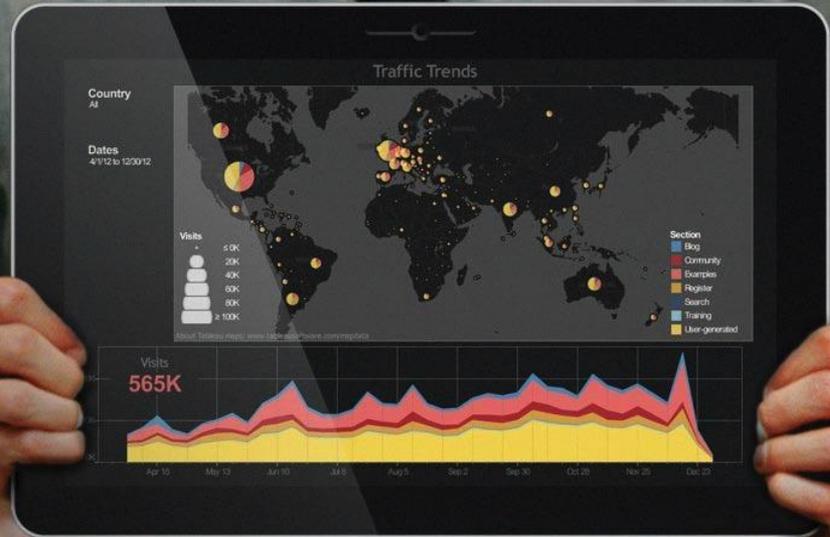
The entire areas may be compared by following the blue, the red & the black lines enclosing them.

What is Tableau?

- Market leading data visualisation tool
- Revolutionising analytic capabilities of companies
- No coding required - drag and drop
- Used across diverse industries
- Full scale enterprise software solution
- Created in the US at Stanford University



We help people
see and understand
their data.

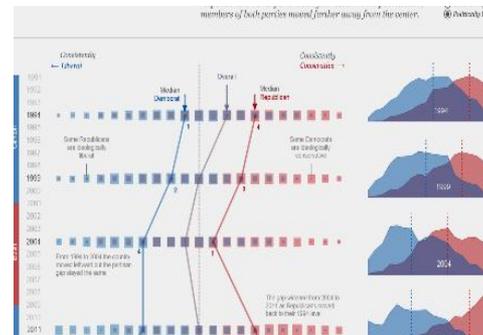
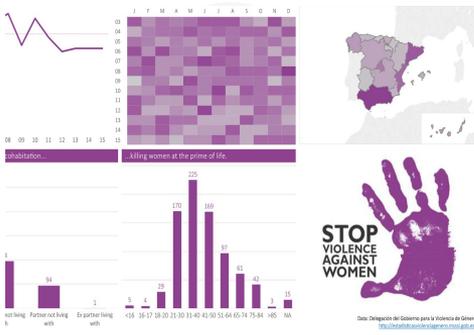
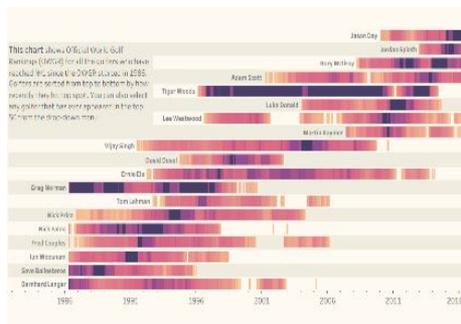
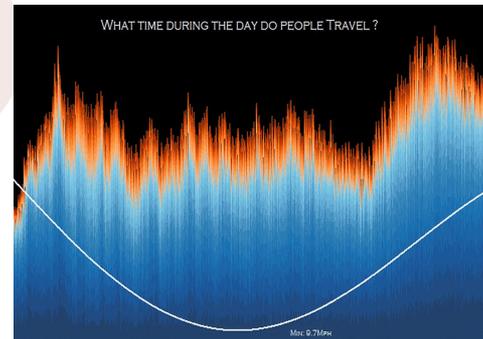
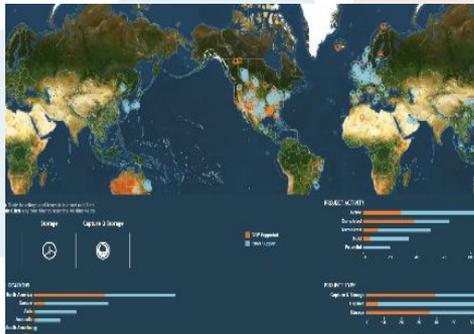


It was invented at Stanford University

- **Chris Stolte** – PhD candidate researching visualisation techniques
- **Prof. Pat Hanrahan** – the mind behind 
- **Christian Chapot** – data analyst and Stanford entrepreneurship major



What does Tableau do?



Who is using Tableau?



Audi



The New York Times



What does Tableau do?

Let's take a **closer look** at how dataviz can help (with some **real data**)...



Have a go..

Your turn



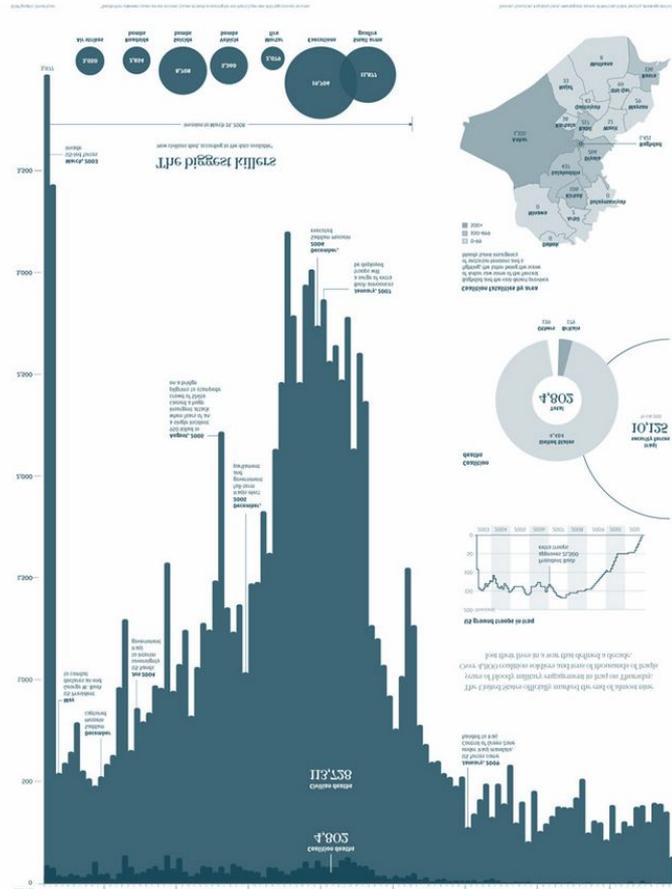
Some key points to **consider..**



Framing - what do you want to **show**?



Iraq: Deaths on the decline

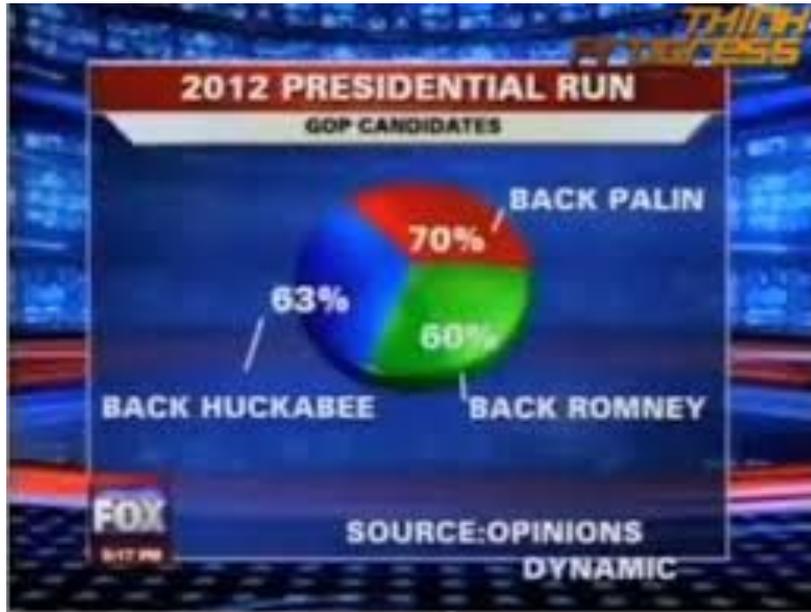


Things to **avoid!!**

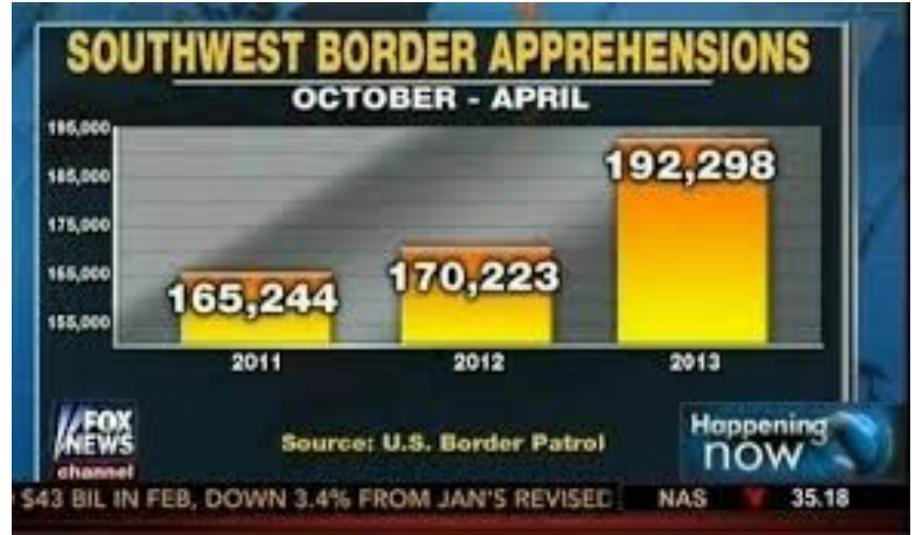


Things to avoid...

W.T.F(ox) Vizzes!

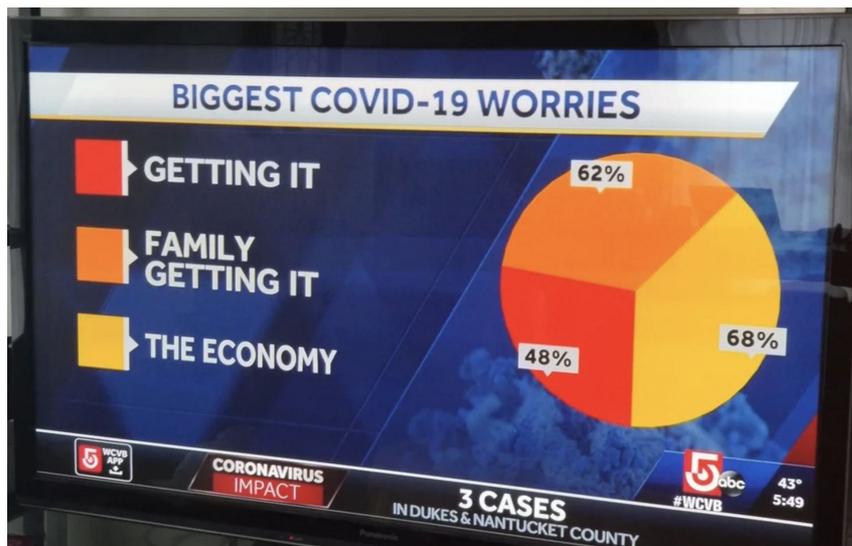


193%!!



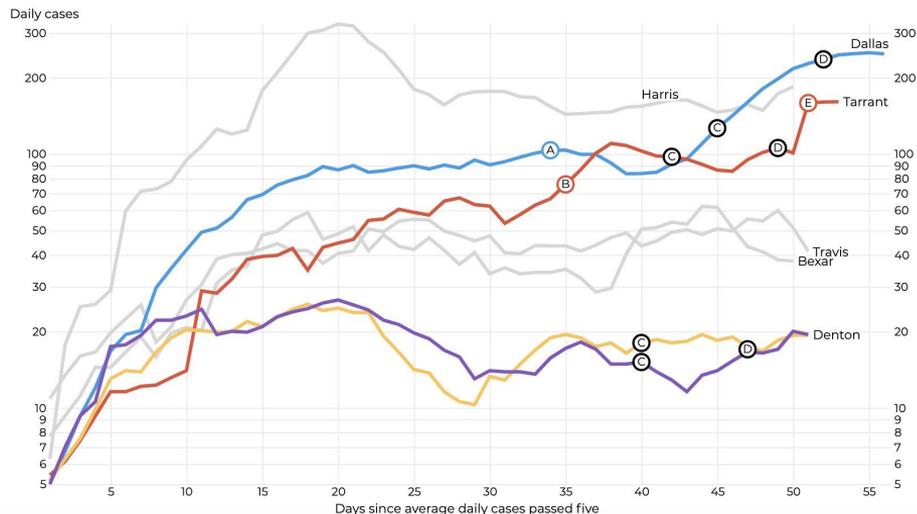
Things to avoid...

W.T.F(ox) Vizzes! cont'd



<https://venngage.com/blog/misleading-graphs/>

178%!!



<https://www.dmagazine.com/frontburner/2020/05/dmn-publishes-dangerously-misleading-covid-graph/>



More things to avoid...

100 Most Active Tweeters

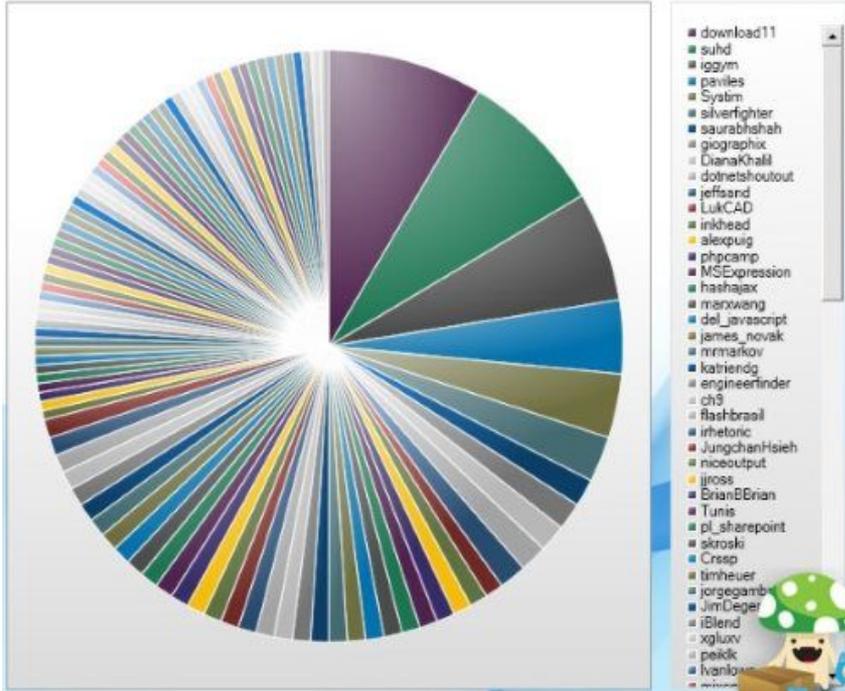
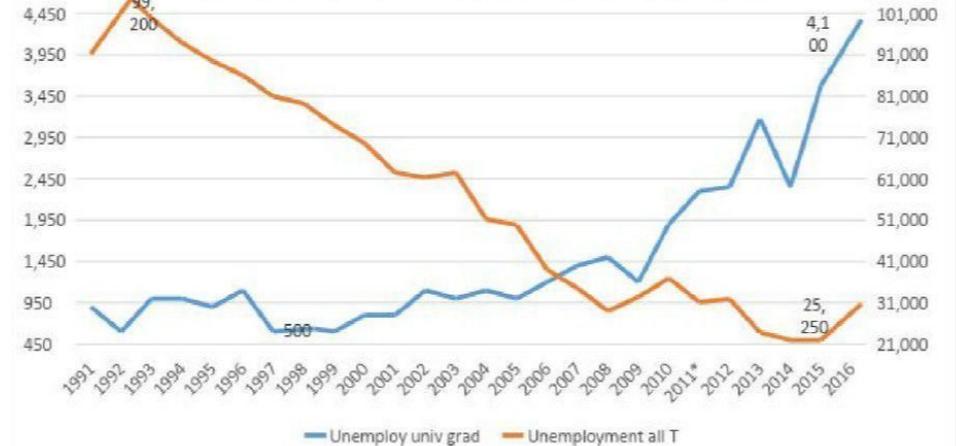
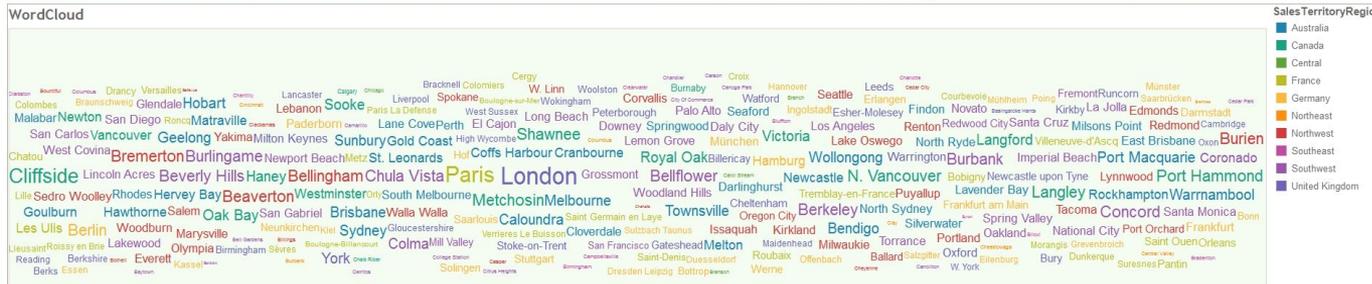
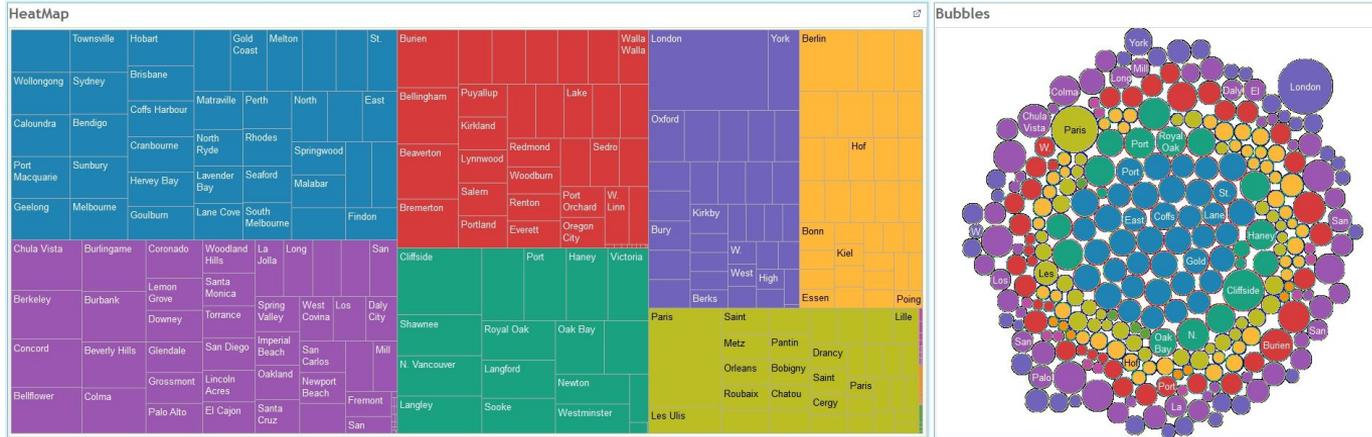


Figure 1: Trends in the national unemployment level and the unemployment level of university graduates, 1991-2016



Remember.... Cognitive load..

Too much granularity...



Room to 'breathe'



LONDON BUS COLLISIONS REPORT 2015 to 2017



FILTER BY QUARTER
All Period



FILTER BY INJURED PARTY
All



FILTER BY INJURY RESULT
All



FILTER BY OPERATOR
All

KEY POINTS & SUMMARY

JOURNEYS

6.36B

(One incident per 1.8M Journeys)

COLLISION INCIDENTS

3,524

(19.2% of all TfL bus incidents)

FATALITIES

31

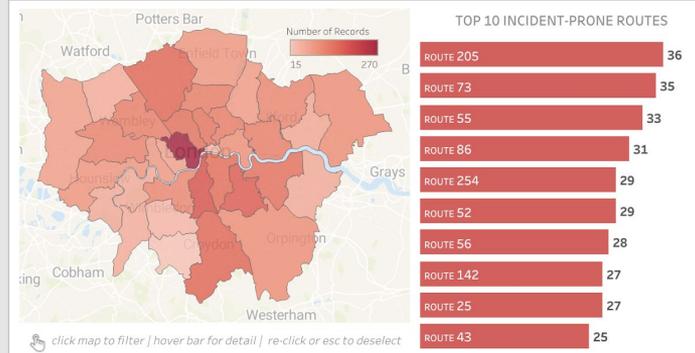
(83.8% of all TfL bus fatalities)

MOST INCIDENTS REPORTED
WESTMINSTER
BOROUGH

METROLINE
OPERATOR

From 2015 to 2017, collision incidents have increased by 39.9% but one less fatality has been reported.

LONDON BOROUGHS BY NUMBER OF INCIDENTS



INCIDENTS BY SERVICE

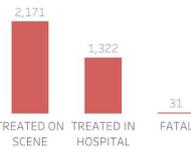


■ NORMAL SERVICE
■ OOS, RR & NIGHT

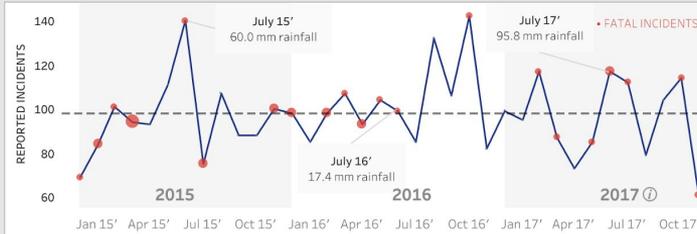
REPORTED CASUALTY



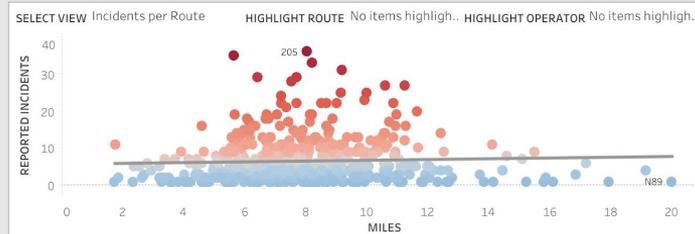
INJURY RESULT



NUMBER OF INCIDENTS OVER TIME



ROUTE & OPERATOR COMPARISON



Learning resources...

- Tableau training videos: <https://www.tableau.com/learn/training>
- Youtube: <https://www.youtube.com/user/theinformationlab>
- The Data School Blog: <https://www.thedataschool.co.uk/blog/>
- Stephen Few:
https://www.amazon.co.uk/s/ref=nb_sb_noss_1?url=search-alias%3Daps&field-keywords=stephen+few
- Makeover Monday: <http://www.makeovermonday.co.uk/>
- Tableau Public: <https://public.tableau.com/en-us/s/>



Free Tableau licences for students & academics



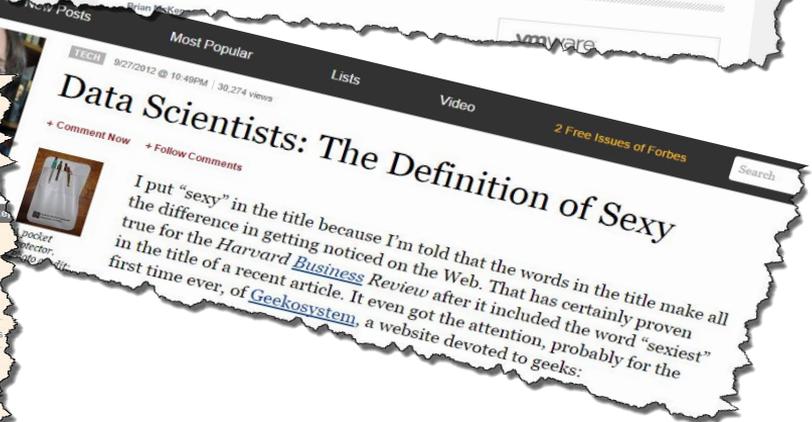
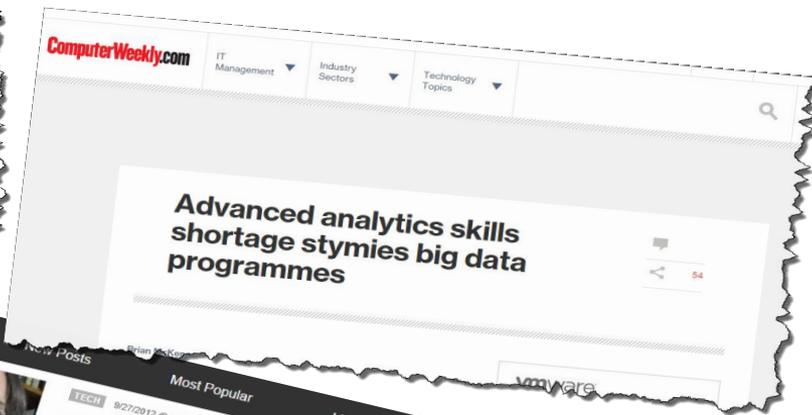
Valid for **1 year** from registration, renewable if you are still in education after expiry. Over 700,000 student downloads worldwide!

<https://www.tableau.com/en-gb/academic/students>

<https://www.tableau.com/academic/teaching>



A shortage of skills in data analytics..



You don't need to take my word for it..

The screenshot shows a LinkedIn search interface. At the top, the search criteria are 'Tableau in London, Greater London, United Kingdom' with 1,889 results. A red circle highlights this search bar and the '1,889 results' text, with a red arrow pointing to the number. Below the search bar, there are filters for 'Company', 'Experience Level', and 'All filters'. The first search result is for a 'Senior Consultant - Digital Risk, IT Risk Advisory, Audit Analytics - Professional Services - London - Up to £42,000 + bonus!' at 'Hunter Bond'. The job details include 'Posted 2 weeks ago · 283 views', 'Save', and 'Easy Apply' buttons. Below the job details is a table with columns for 'Job', 'Company', and 'Connections'. The 'Job' column shows '5/10 skills match' and '81 applicants'. The 'Company' column shows '11-50 employees' and 'Staffing and Recruiting'. The 'Connections' column shows 'You have 0 connections at this company.' Below the table is the 'Job description' section, which is partially visible, showing 'Posted by Stephen Perkins 2nd Director and Co-Founder at Hunter Bond'.





The
Information Lab

DATA SCHOOL



What can we offer?

- 4 months of **fully-paid** training, learning from the best in the world
- £30k first year, £35k p.a for the remaining time
- 4 x 6-month consulting placements
- Professional certifications in Tableau and Alteryx
- Exposure as a consultant to some incredible companies
- Amazing career prospects in an in-demand area
- Opportunity to travel
- Fun working environment
- Laptop & mobile phone
- Pension
- Year-round recruiting



Check out our website



<https://www.thedataschool.co.uk/>



Come and meet us



bit.ly/DSMeetAndGreetJune

4th June 6-9pm



What's it all about?



www.thedataschool.co.uk



Some of our Clients



ocado



J.P.Morgan

Solar Turbines
A Caterpillar Company

BCG
THE BOSTON CONSULTING GROUP

Deloitte. 



UBS



Schroders