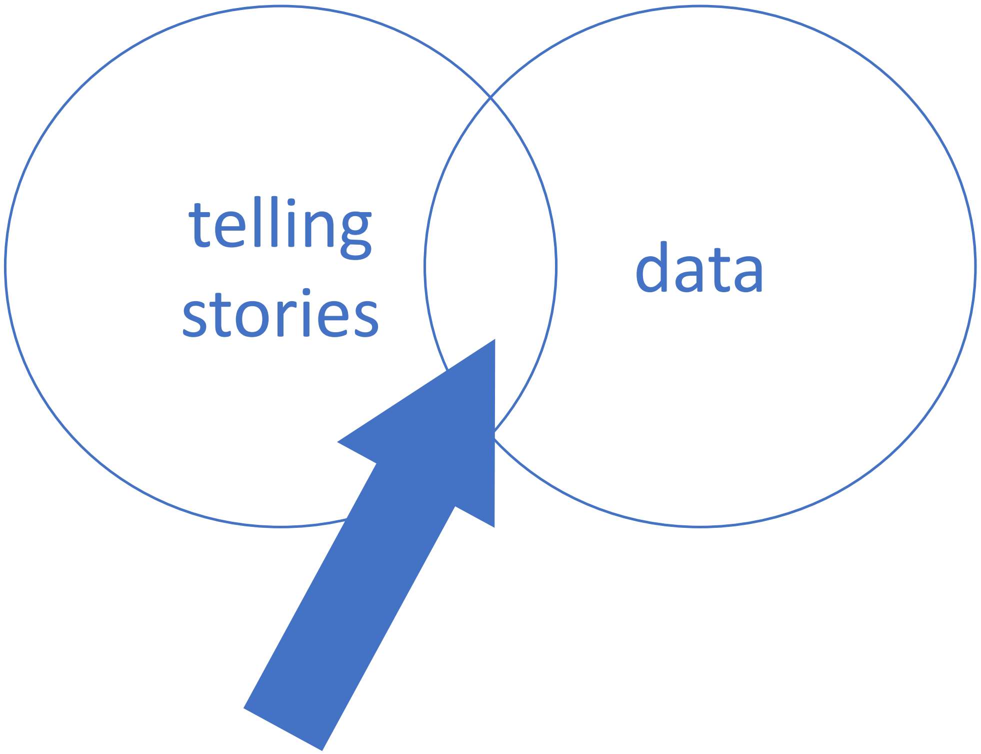
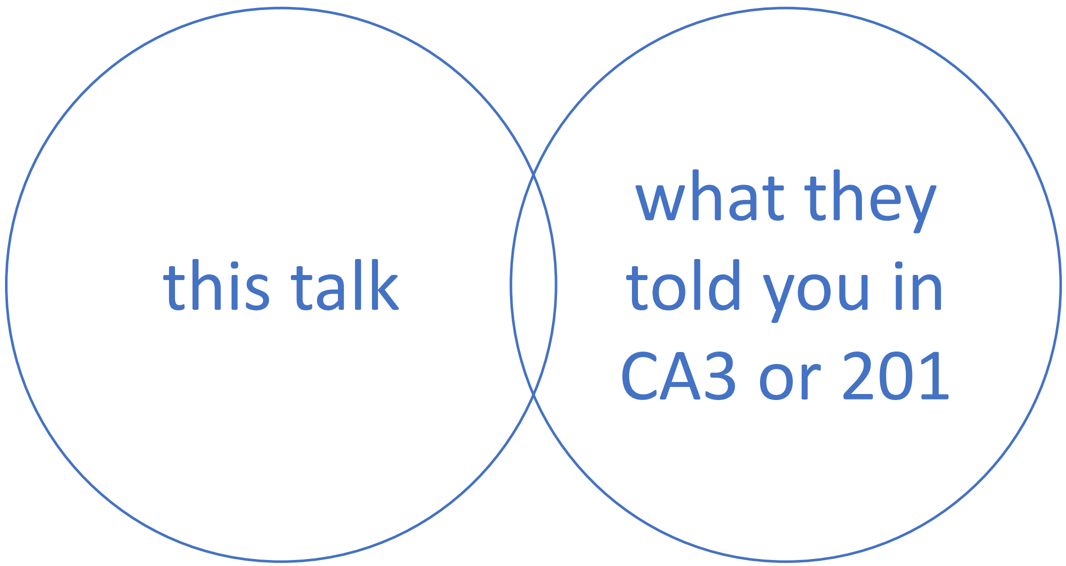
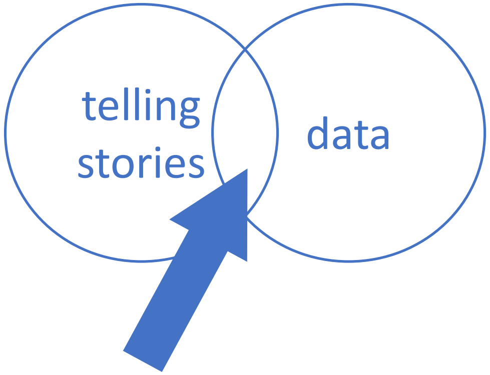
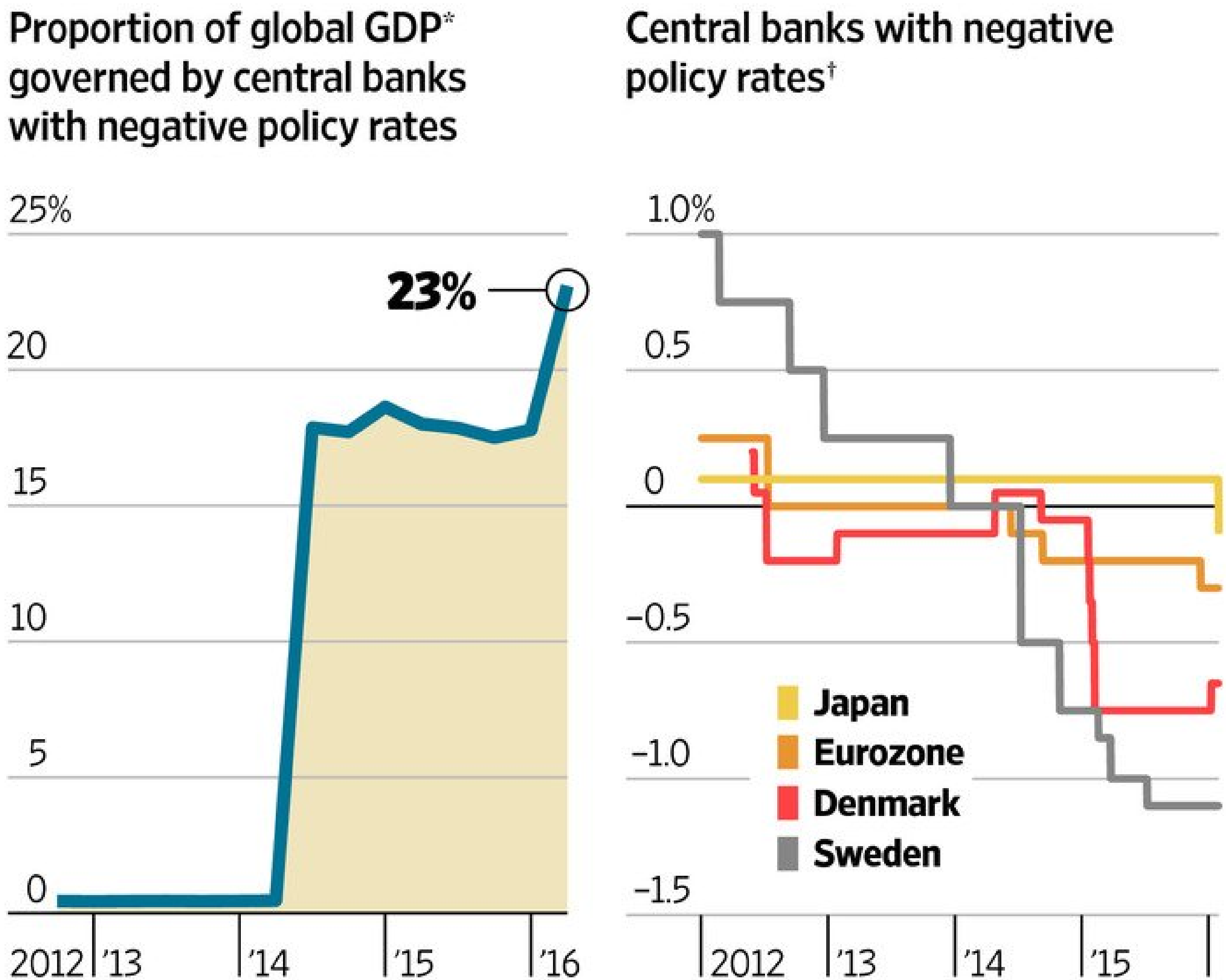

telling stories
data


this talk
what they told you in CA3 or 201



part 1:
what is it?

conveying the meaning in the data

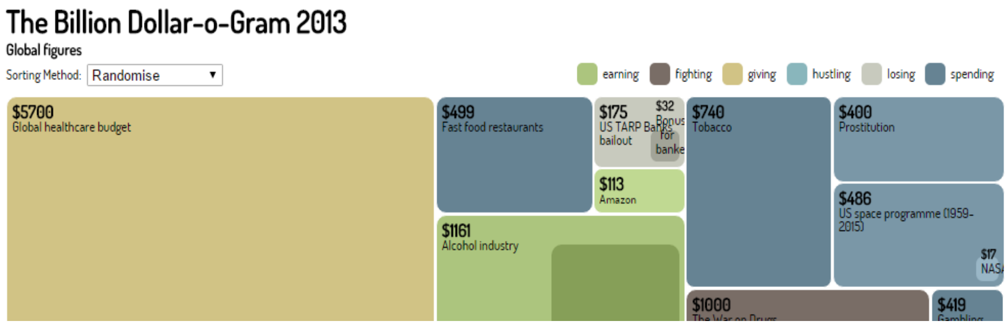


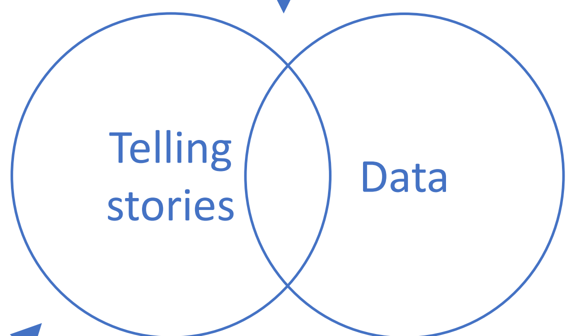
*Measured in nominal U.S. dollars †Rates charged on deposits at central bank. Sweden's main policy rate is the repo rate, currently −0.35%

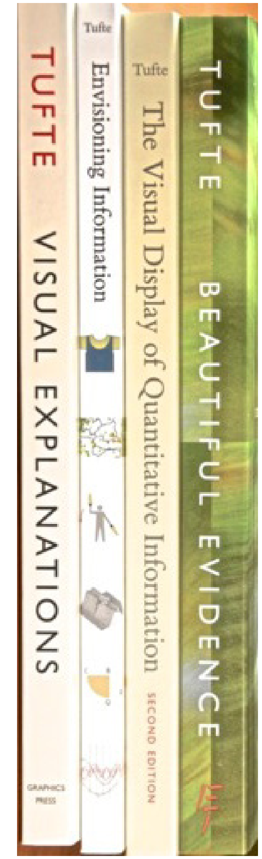
Sources: FactSet, Oxford Economics (GDP); Central banks THE WALL STREET JOURNAL.

building it into stories

eclectic sources



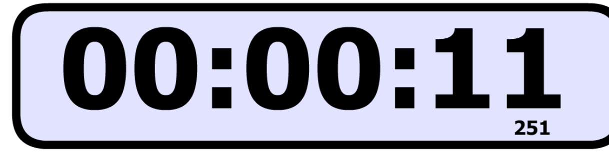




How has Brixton really changed? The data behind the story

Few areas of London have seen such drastic transformation as Brixton. But how exactly is gentrification affecting prices, diversity and local businesses? Sarah Marsh digs into the numbers and finds some surprising truths a lot of data

but limited ability to process it

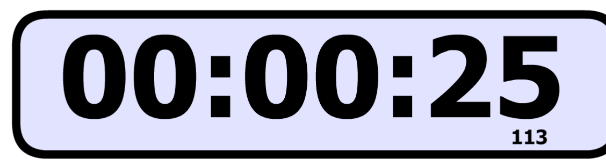


WEATHER FORECAST
Regional forecast for Highlands & Eilean Siar
Rain tonight, then showers tomorrow with storm force winds later.

This Evening and Tonight:
Cloudy with outbreaks of rain with hill snow possible for a time. The rain will become heavy and persistent through Lochaber and the Northwest Highlands. Turning milder, strengthening southwest winds. Minimum Temperature 0°C.

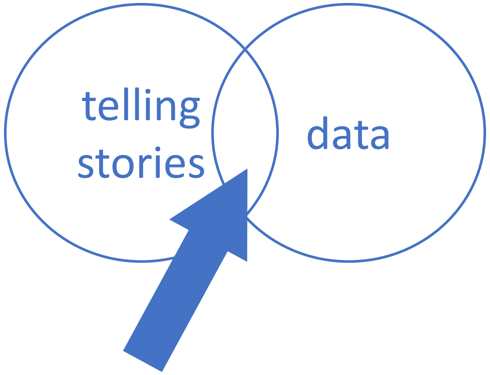
Monday:
Turning stormy, particularly over the Western Isles and around the west coast. Rain or showers, heaviest and most frequent in the west. Gusts 60 to 80mph expected widely. Maximum Temperature 10°C.

Outlook for Tuesday to Thursday:
Brighter and colder again on Tuesday with wintry showers, significant snowfall over the hills. Gales gradually easing. Turning fair early Wednesday then occasional rain pushing from west from late Wednesday.



this isn't new

1854



part 2:
why is it relevant?

it’s important to actuaries

“Information [should be] presented in a clear and comprehensible manner”

TAS R

FRC

Institute and Faculty of Actuaries

“It is essential that actuaries have excellent communication skills to enable them to communicate actuarial ideas to non-specialists in a way that meets the needs of the audience.”

Actuarial Skillset, www.actuaries.org.uk

“… so what is it you do again?”

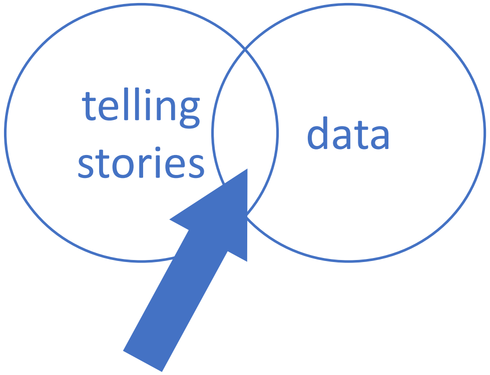
Most people I have met, including close friends, family and my wife

it’s INCREASINGLY important to actuaries

is this an opportunity for the profession?

Institute and Faculty of Actuaries

Making the complex simple



part 3:
how to
use it

principles

1. Work out the context
   - Audience
   - Message or story or advice
   - Data needed to tell that story

2. Choose your chart carefully
   - Based on audience, story, and data

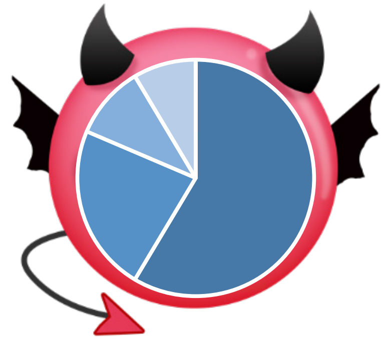
3. Reduce clutter and arrange for the eye to follow easily
   - Visual hierarchy

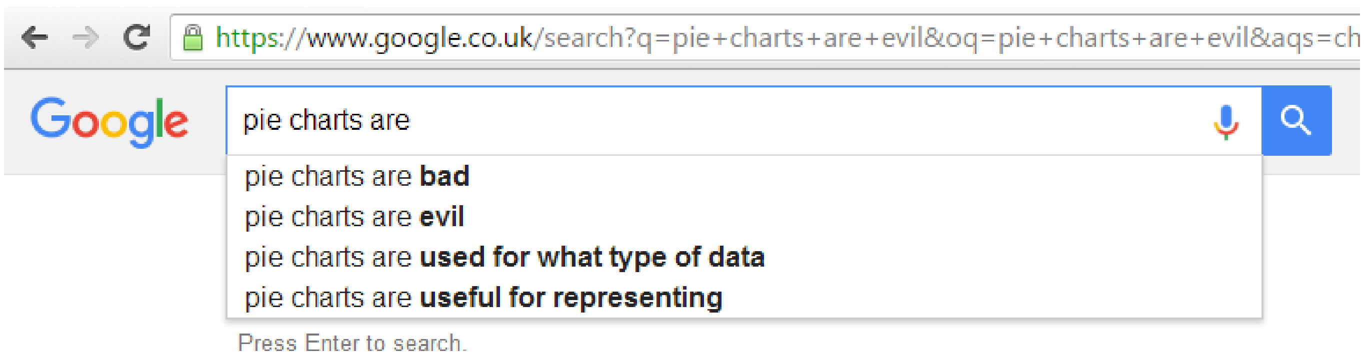
4. Add emphasis to tell the story

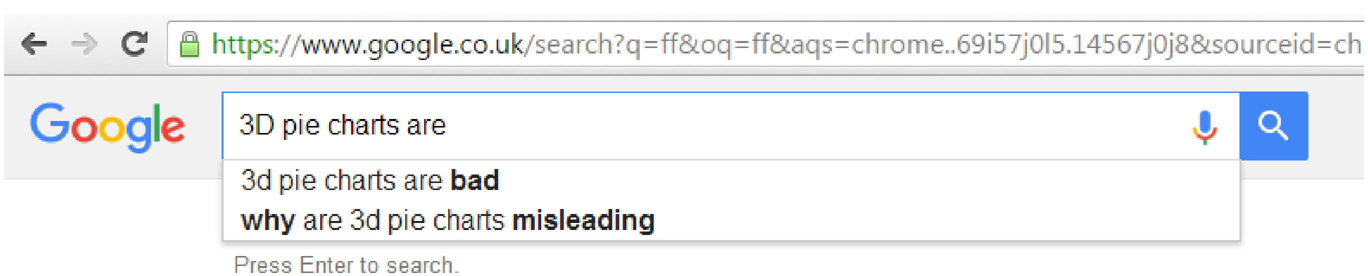
5. Test it out and experiment

2. choose your chart carefully

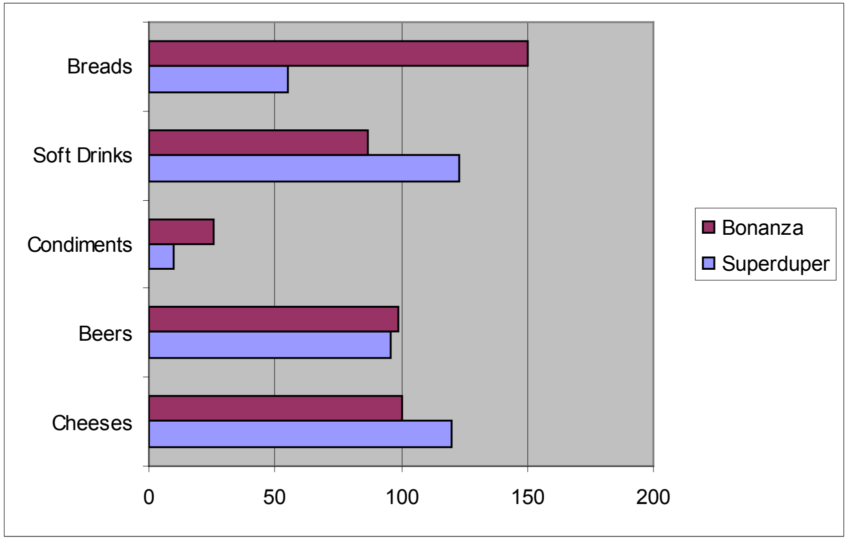
2. choose your chart carefully

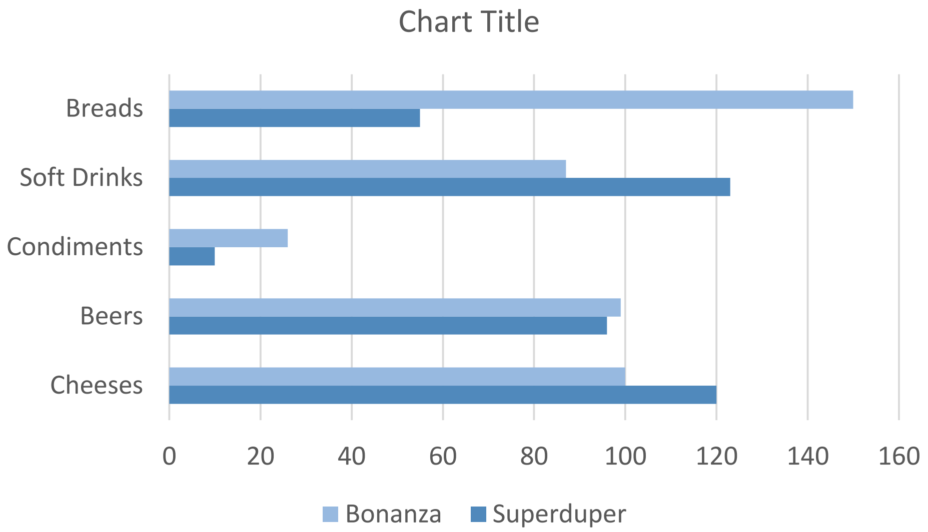




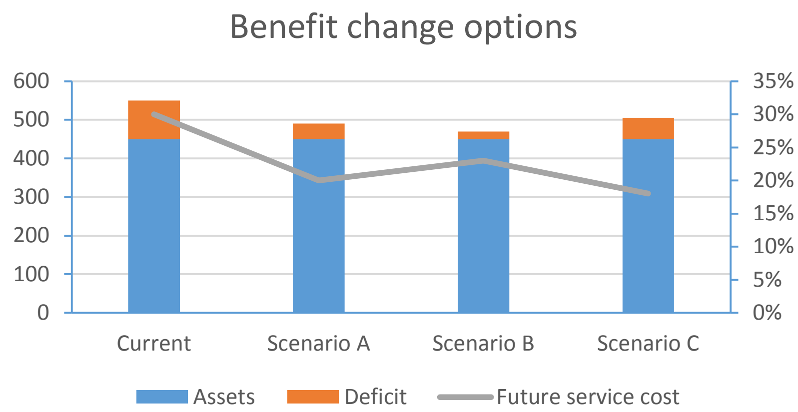


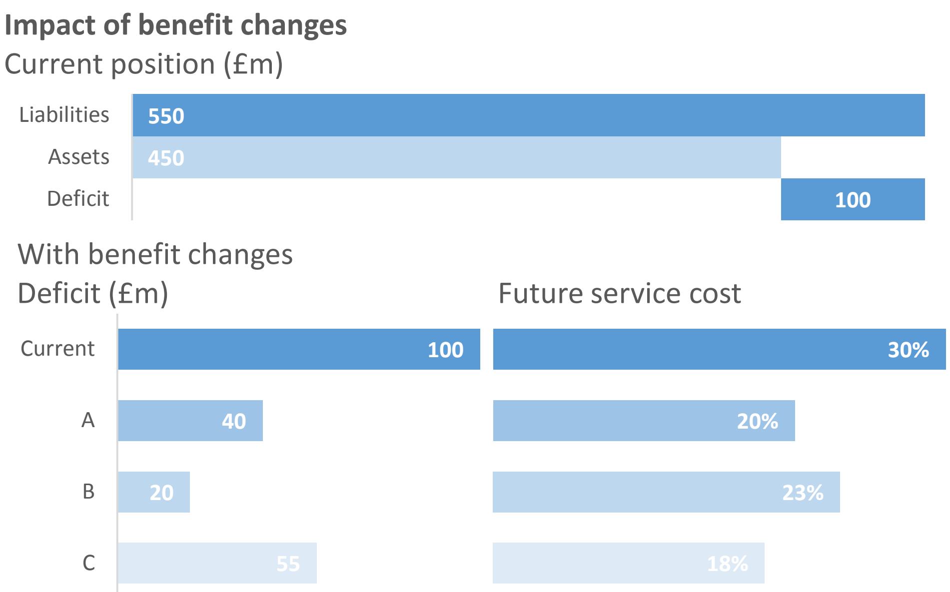
3. reduce clutter





3. arrange for the eye to follow easily

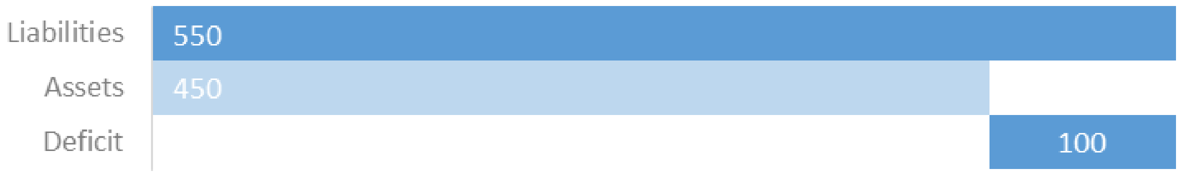




4. add emphasis to tell the story

Impact of benefit changes

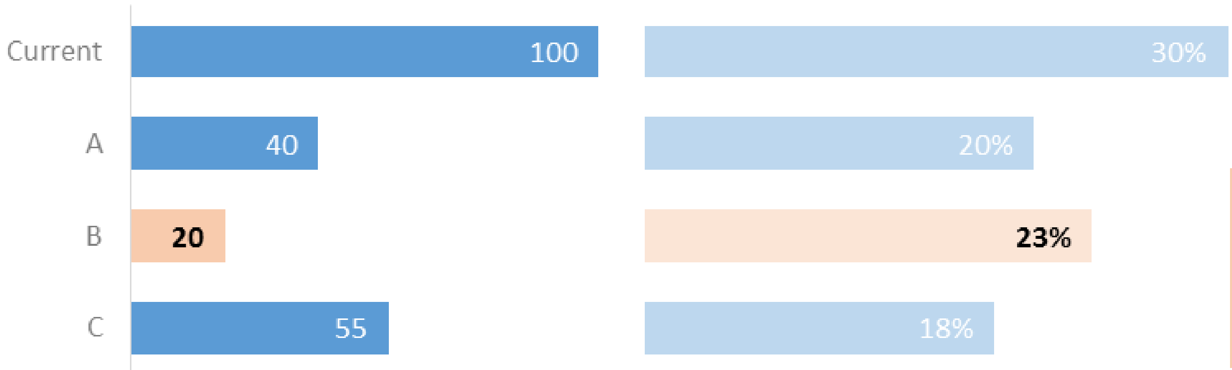
Current position (£m)



With benefit changes

Deficit (£m)

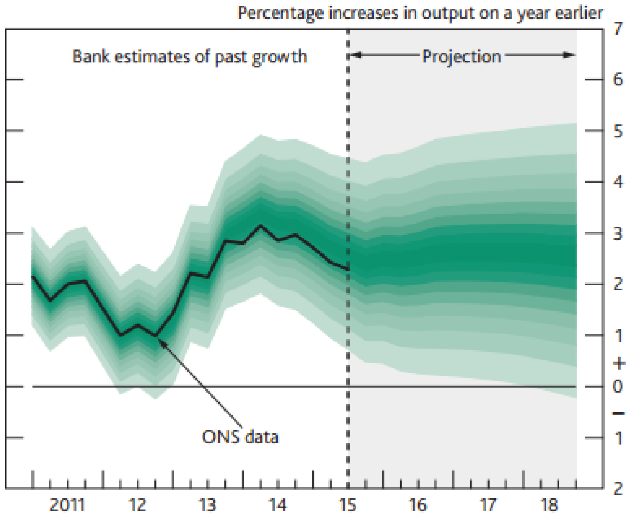
Future service cost (% salary)



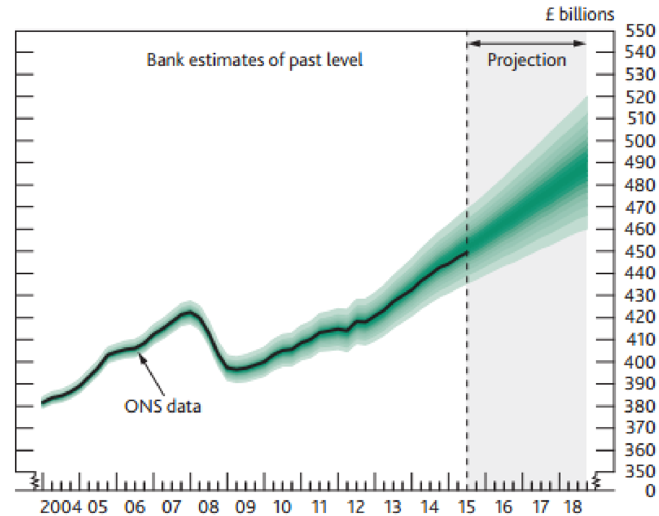
Option B best meets the scheme objectives of **prioritising the deficit reduction**

5. test it out and experiment

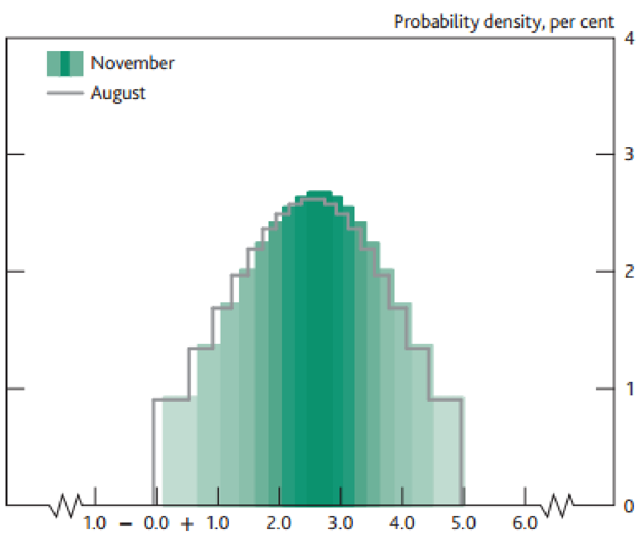
GDP projection (narrow bands)[a][b]



Projection of the level of GDP (narrow bands)[a][b][c]



Projected probabilities of GDP growth in 2017 Q4 (central 90% of the distribution)[a][d]



tailoring for the audience is vital

what's next?

Life Expectancy

People are living longer around the world, some more so than others. Select a region (as defined by World Bank) below to compare, or roll over to the graph to highlight countries. Read more...

East Asia and Pacific | South Asia | Europe and Central Asia | Middle East and North Africa | Sub-Saharan Africa | Latin America and Caribbean | North America

WORLD

The average life expectancy in the world in 2009 was 69 years.

what’s next?

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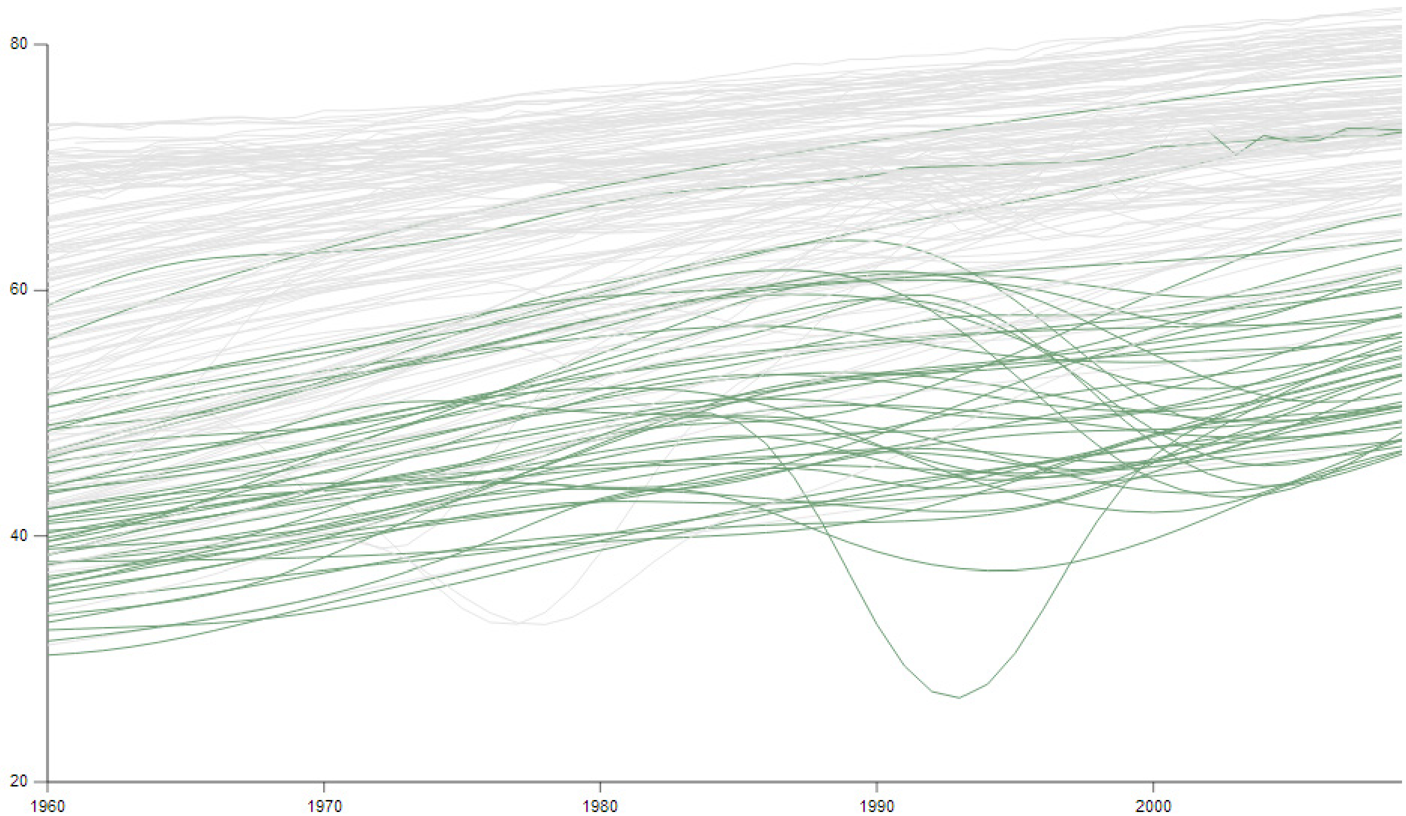

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Life Expectancy

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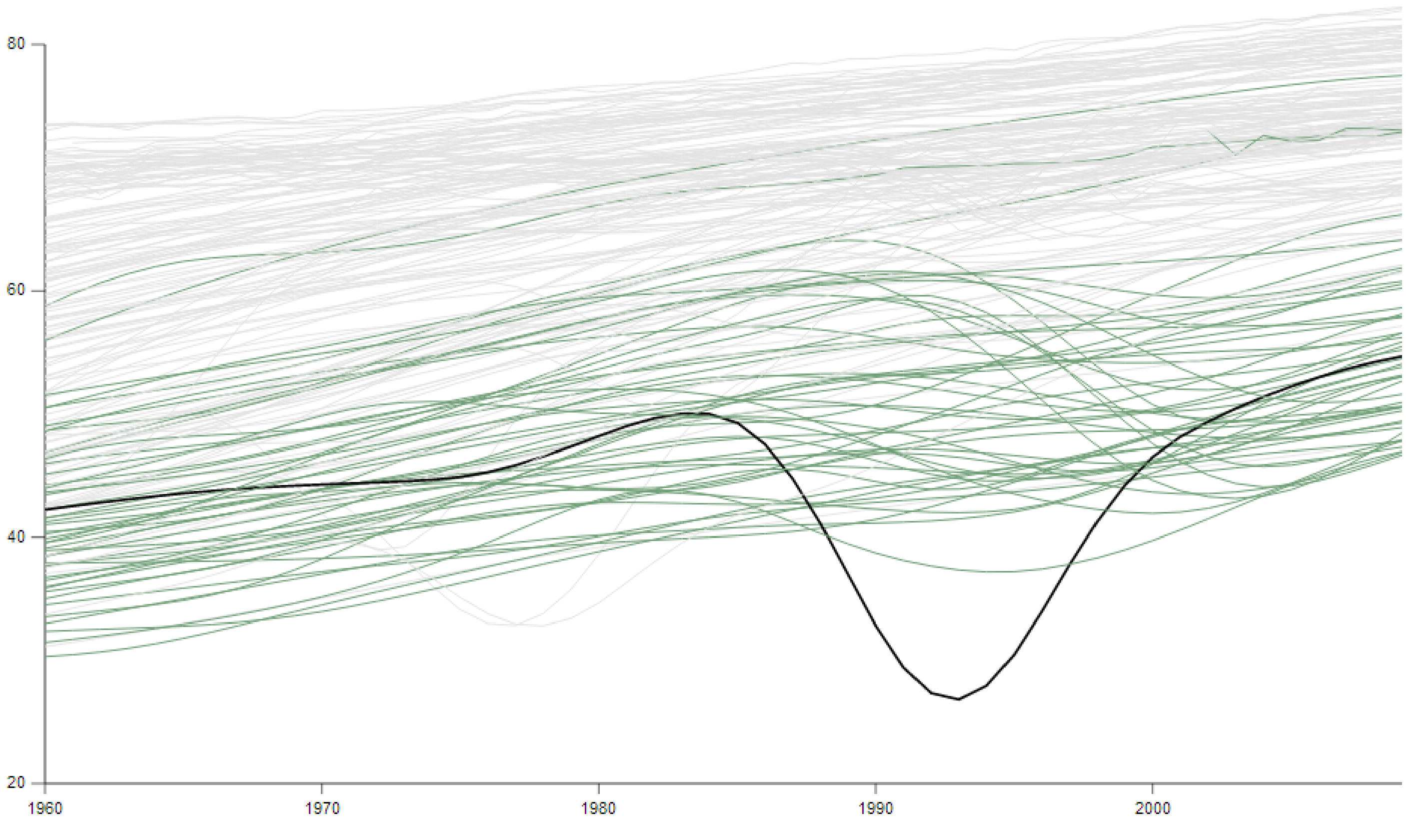
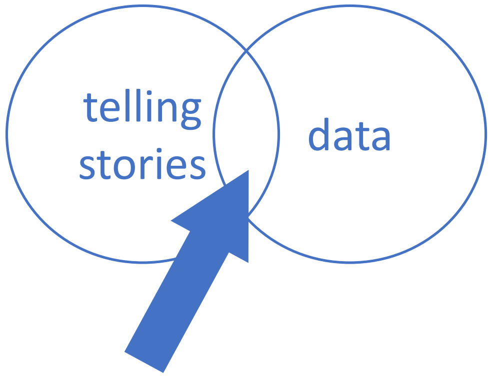
RWANDA

On average: a life expectancy of 42 years in 1960 and 55 years in 2009, an increase of 29 percent.





so what?

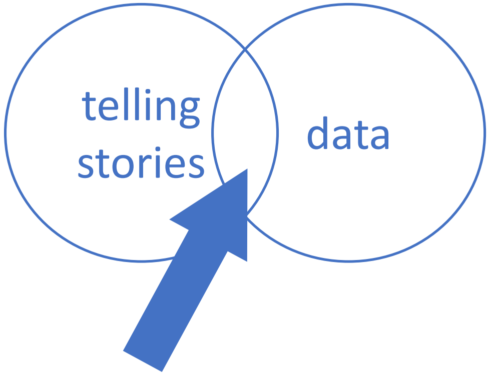
"In general there is insufficient time for an audience to **appreciate the full impact** of a graph without being led through it **slowly and carefully**."

Multiple CA3 Examiners reports

There is some science, and some art to creating visual representations of stories from data which enable the audience to understand the meaning more quickly and easily.

We as consulting actuaries can do this better by paying more attention, spending more time, and putting in more effort to this aspect of our work.

… I think it's worth it.



Questions

references

Edward Tufte: www.edwardtufte.com

Hans Rosling / Gapminder: www.gapminder.org

David Spiegelhalter on visualising uncertainty: http://understandinguncertainty.org/visualising-uncertainty

Storytelling with data by Cole Nusbaumer Knaflic: http://www.storytellingwithdata.com/

Presenting data effectively by Stephanie Evergreen: http://stephanieevergreen.com/book/

The functional art by Alberto Cairo: http://www.thefunctionalart.com/

Interactive life expectancy chart by Nathan Yau: http://projects.flowingdata.com/life-expectancy/

The Guardian data blog: http://www.theguardian.com/data

Big Bang Data exhibition: http://bigbangdata.somersethouse.org.uk/

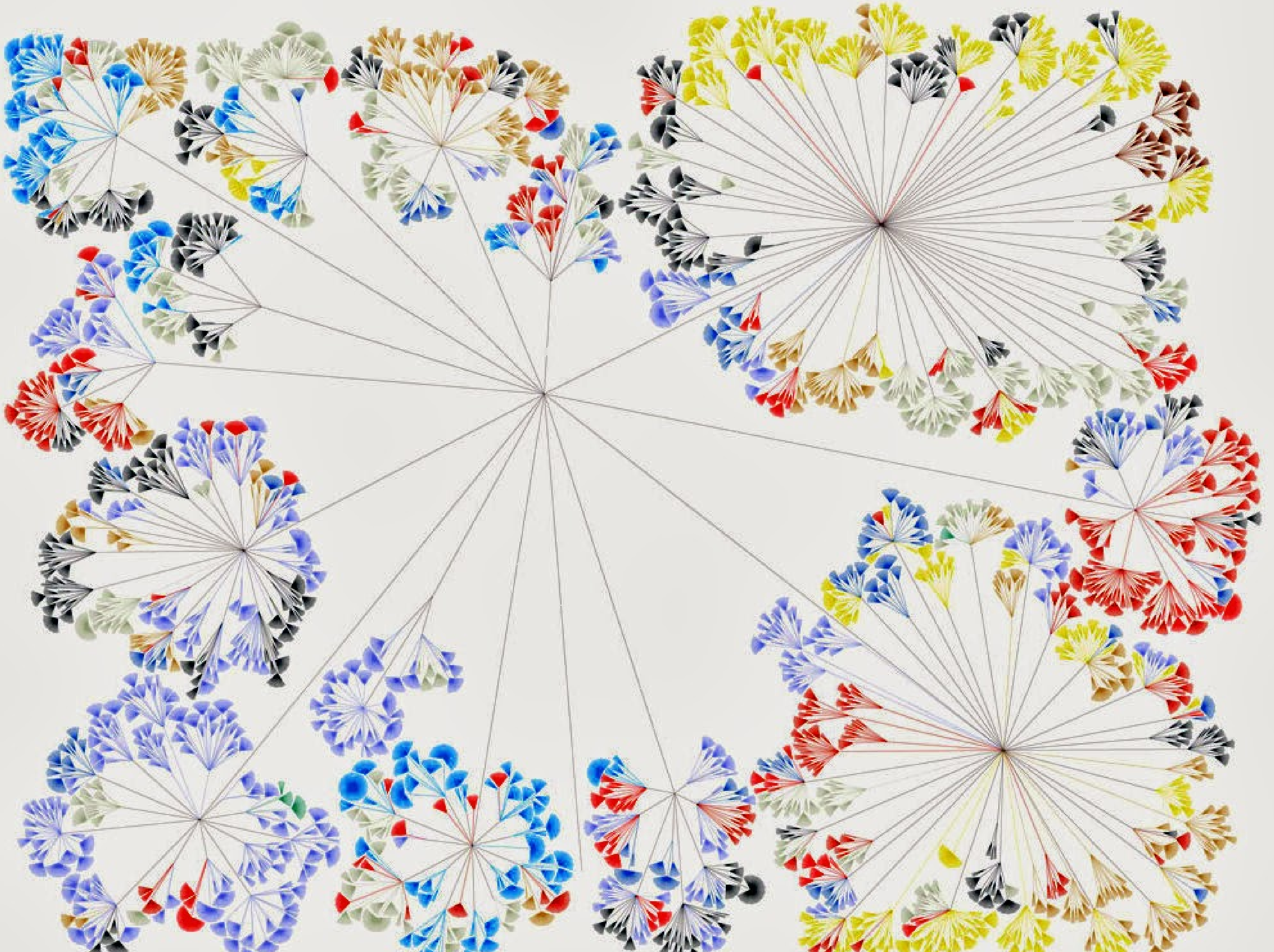
Extract from CA3 syllabus

Written communication / Oral communication

- Demonstrate an appropriate use of visual aids where required:
- Be able to include appropriate visual aids which might include any of:

1. charts (bar charts, pie charts, graphs)
2. diagrams
3. pictures
4. tables of numbers
5. slide presentations
6. bullet points
7. flipchart pages


Central Power
Germany, Austria, Hungary, Bulgaria, Turkey
Great War 1914-18
Each figure 1 million soldiers
(killed, wounded, others returning home)
Allies
USA, British Empire, France, Belgium,
Italy, Serbia, Romania, Russia, Japan a.s.o.
ISOTYPE



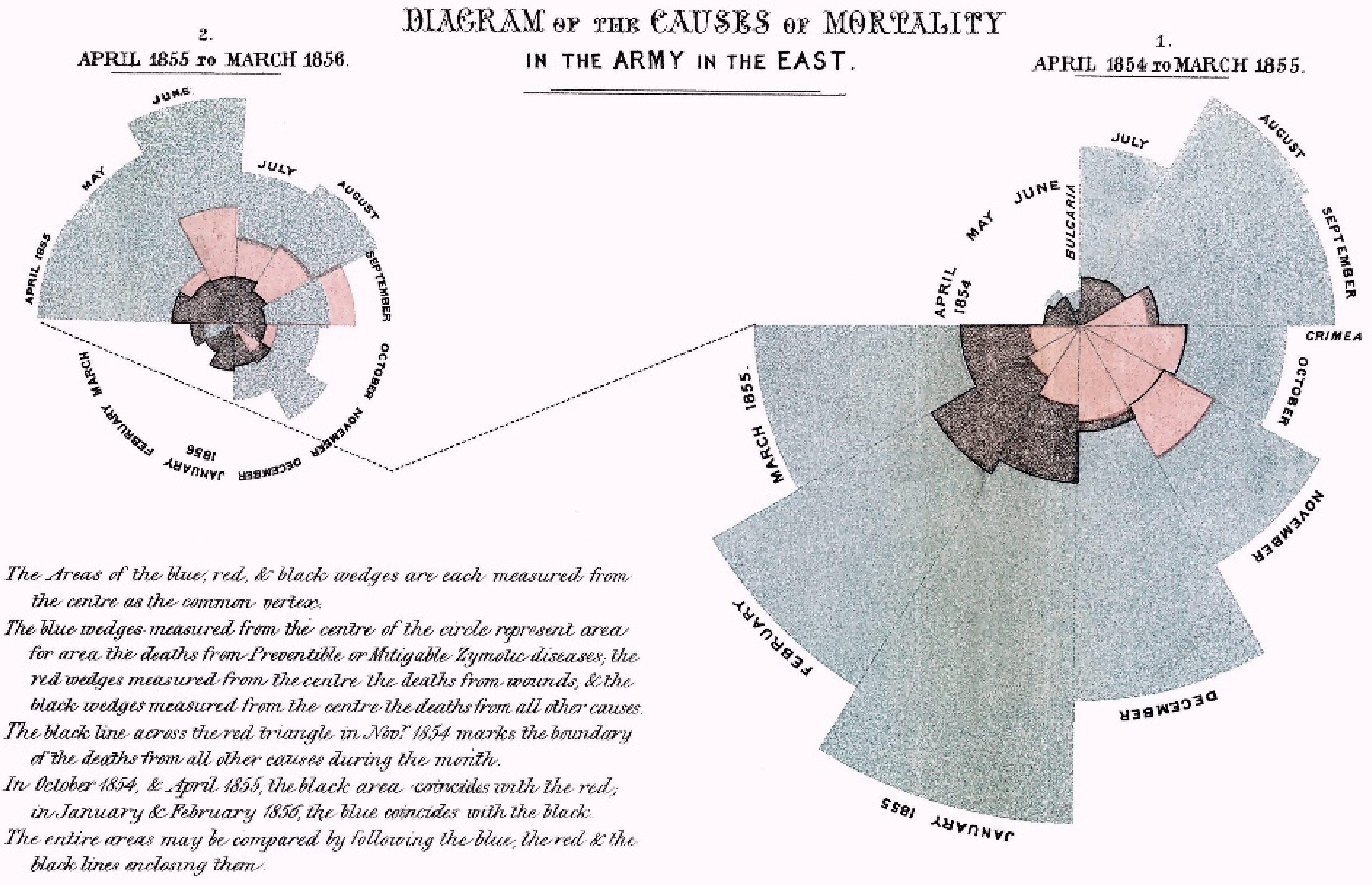


DIAGRAM OF THE CAUSES OF MORTALITY
IN THE ARMY IN THE EAST.
2.
APRIL 1855 TO MARCH 1856.
1.
APRIL 1854 TO MARCH 1855.
JUNE
MAY
JULY
AUGUST
APRIL 1855
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
1856
JANUARY
FEBRUARY
MARCH
JULY
AUGUST
JUNE
MAY
BULGARIA
APRIL 1854
SEPTEMBER
CRIMEA
OCTOBER
NOVEMBER
DECEMBER
JANUARY 1855
FEBRUARY
MARCH 1855.
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 Novr 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 1856, the blue coincides with the black.
The entire areas may be compared by following the blue, the red & the black lines enclosing them.

1859