Bring information alive

An introduction to data visualisation

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RESYST (Resilient and Responsive Health Systems) Consortium

Overview

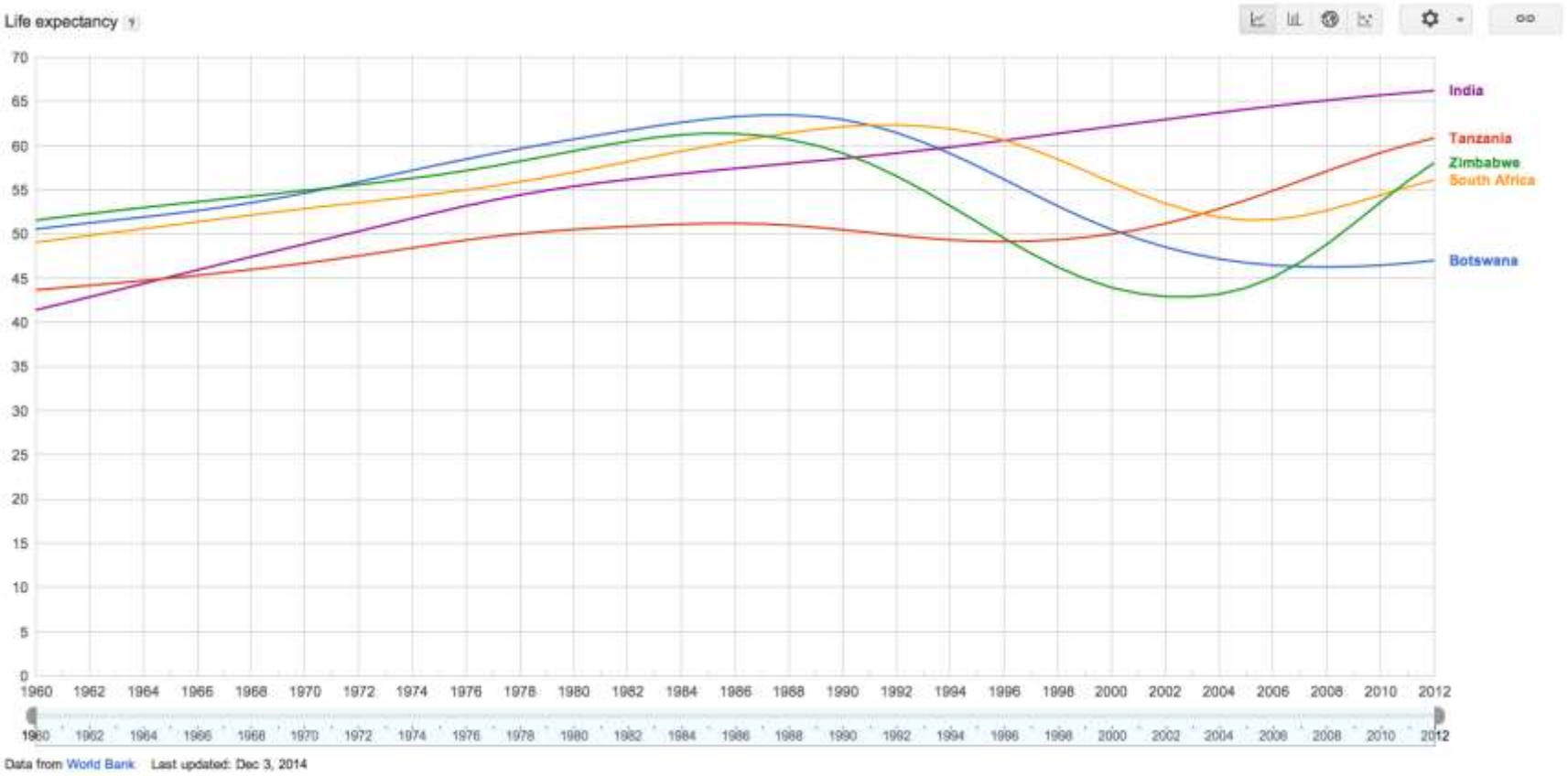
- Introduction to data visualisation
- Choosing the right chart
- Design tips
- Online data visualisation tools

1 Introduction to data visualisation

What is data visualisation?

The presentation of data or information in a visual format with the goal of communicating information clearly and efficiently.

Visualisations can range from a conventional line chart…



…to interactive graphics with multiple variables.

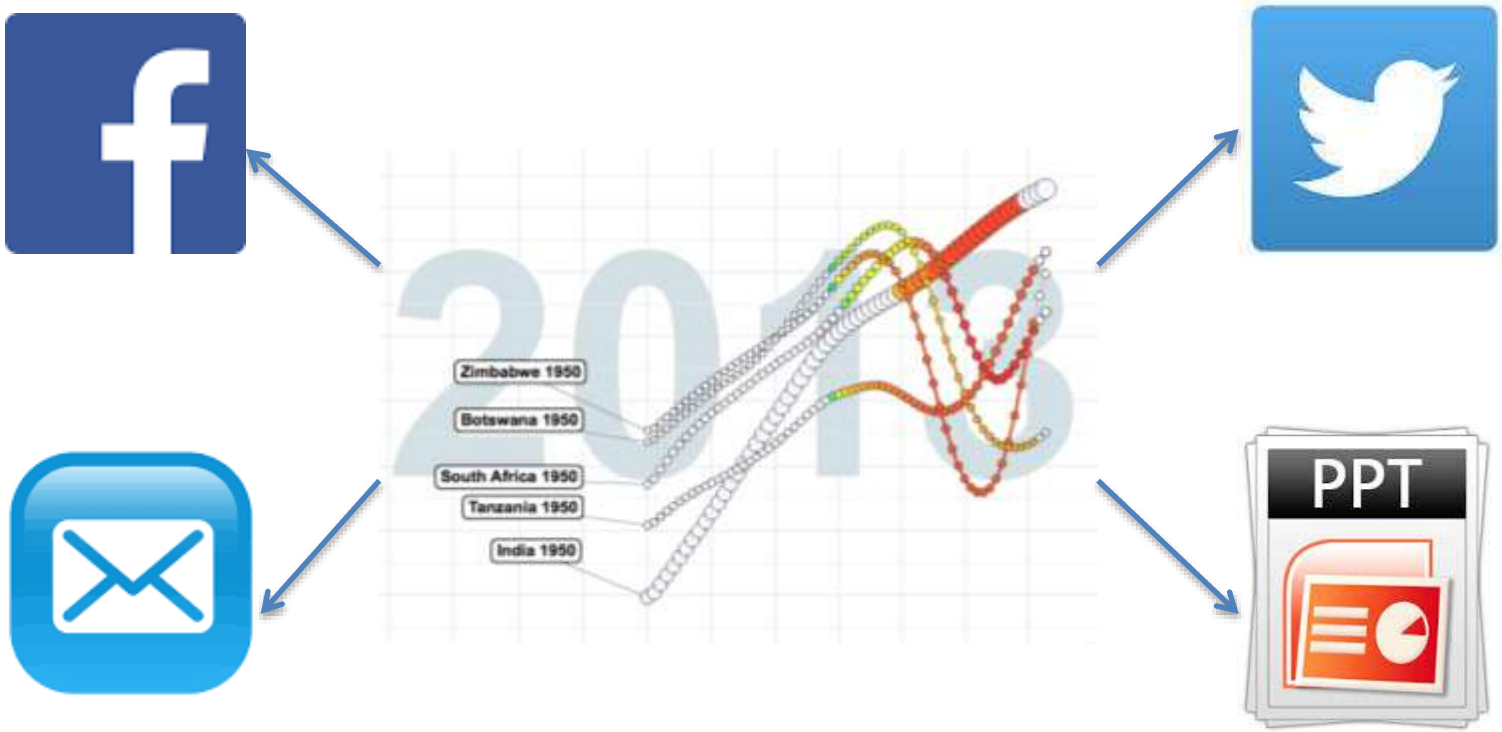
The value of data visualisations

- Reveal patterns, relationships or stories in data.
- Tell stories in a compelling and immediate way which can be more memorable than words or tables.

Life expectancy at birth	1980	1982	1984	1986	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012
Botswana	61	62	63	63	64	63	62	59	56	53	51	49	47	47	46	47	47
India	55	56	57	57	58	59	59	60	61	61	62	63	64	64	65	66	66
South Africa	57	58	59	60	61	62	62	62	61	58	56	54	52	52	53	55	56
Tanzania	51	51	51	51	51	50	50	49	49	49	50	51	53	55	57	59	61
Zimbabwe	59	60	61	61	61	59	57	53	50	46	44	43	43	45	49	54	58

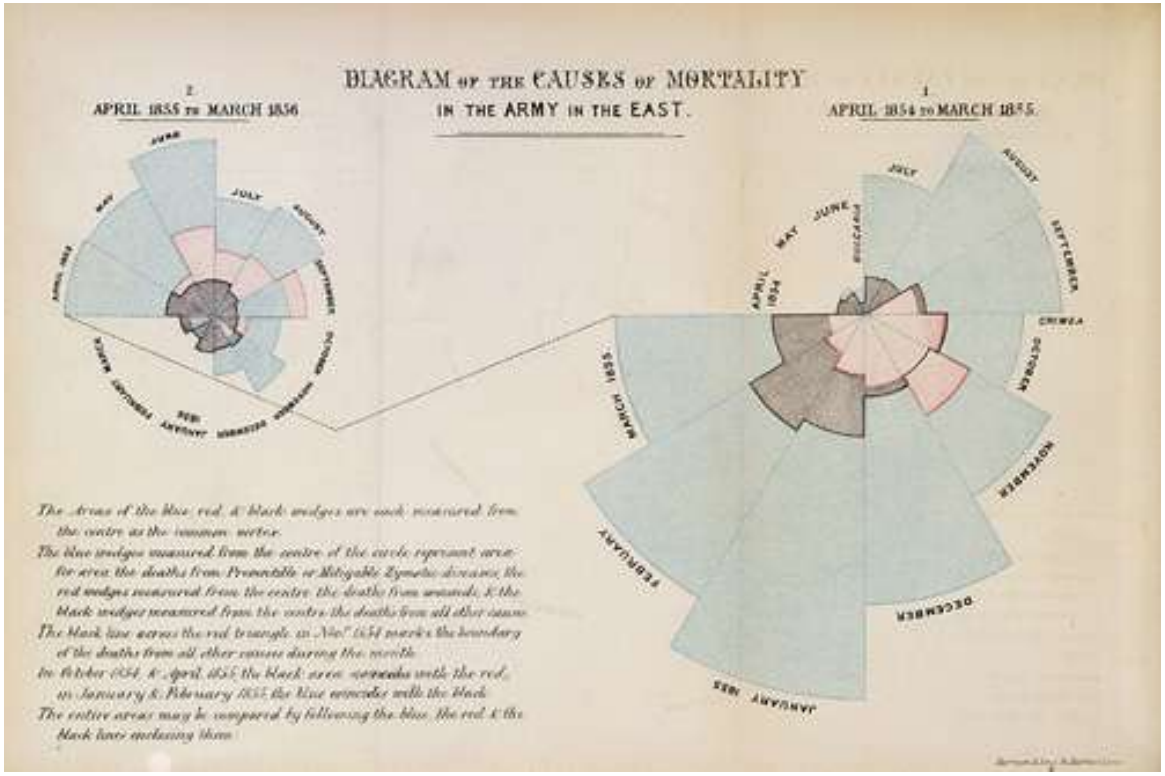
The value of data visualisations

- Visualisations can be easily shared with others.



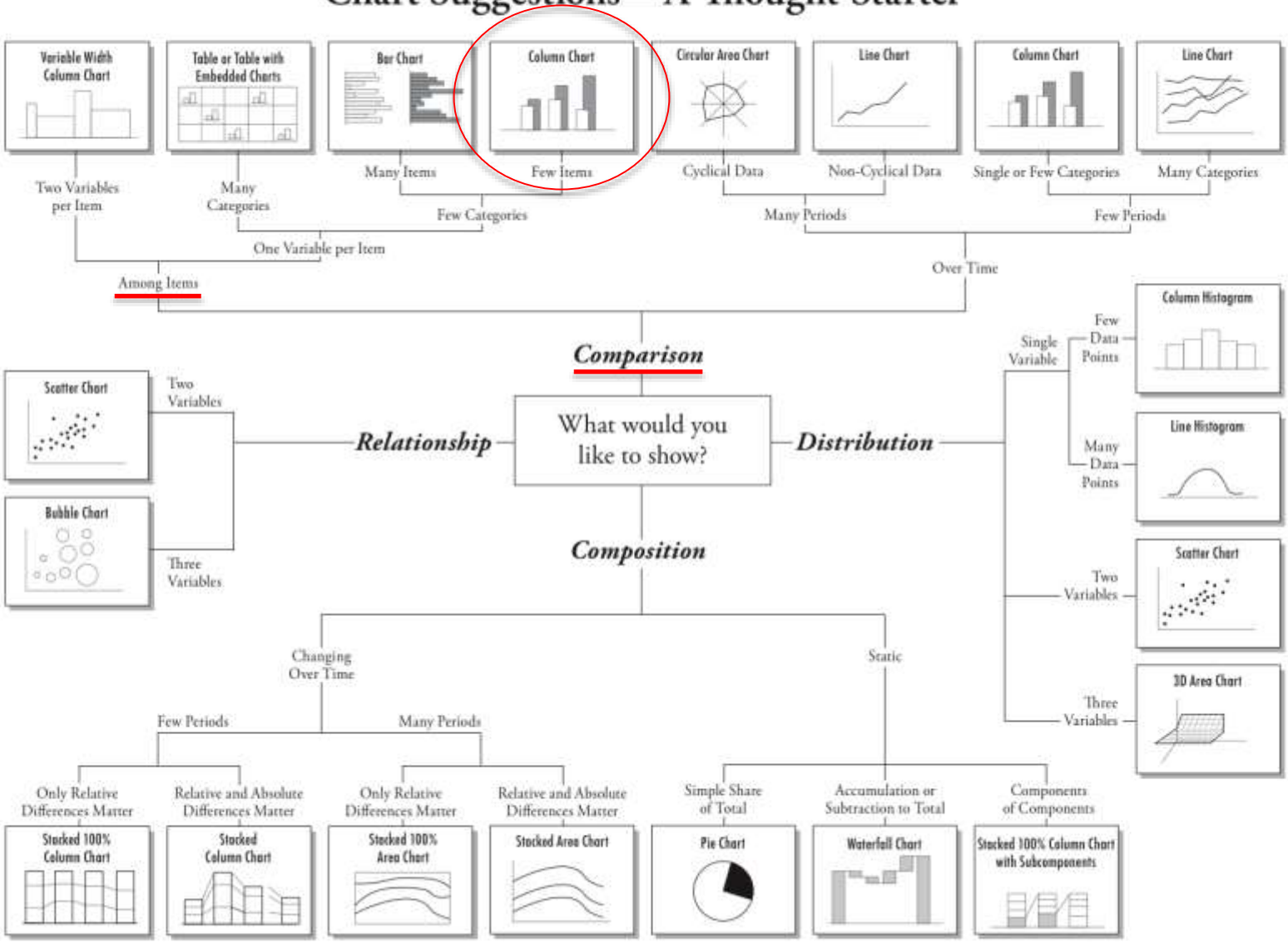
The value of data visualisations

- Effective visualisations can alter perceptions, influence people and bring about change.



2 Choosing the right chart

Chart Suggestions—A Thought-Starter



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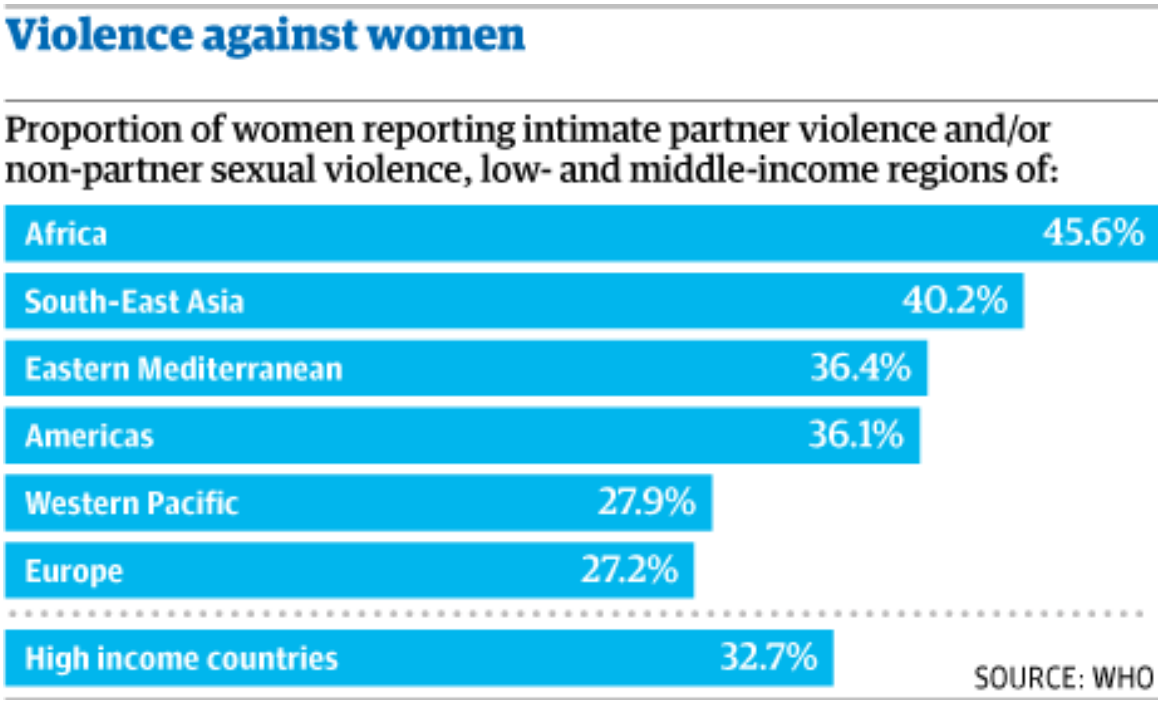
Column/bar charts



Source: The Guardian
http://www.theguardian.com/society/2013/jun/20/one-in-three-women-suffers-violence

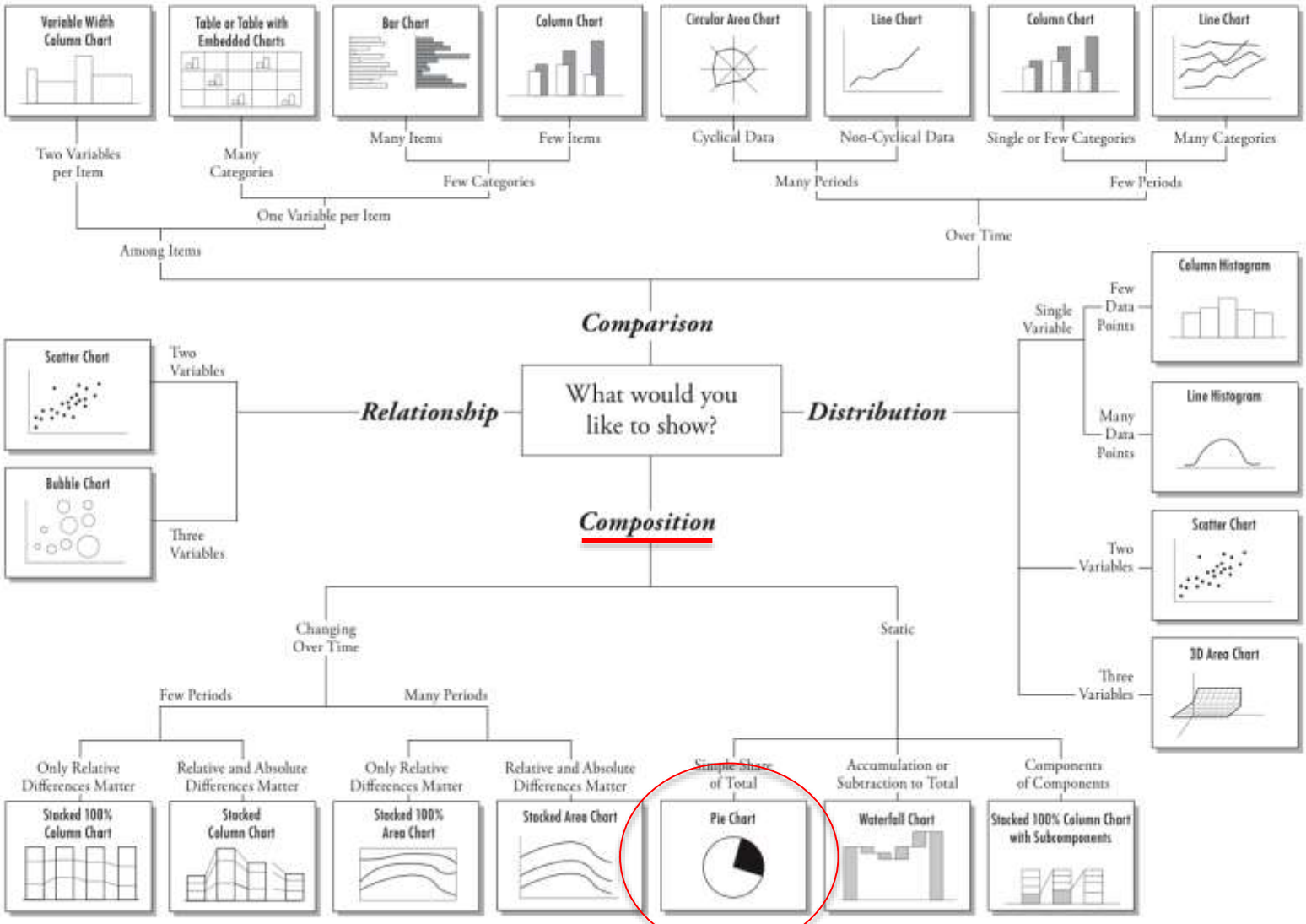
Pros

- Clear and easy to read
- Show even small differences in values

Cons

- Can be dull. People rarely stop and look.

Chart Suggestions—A Thought-Starter



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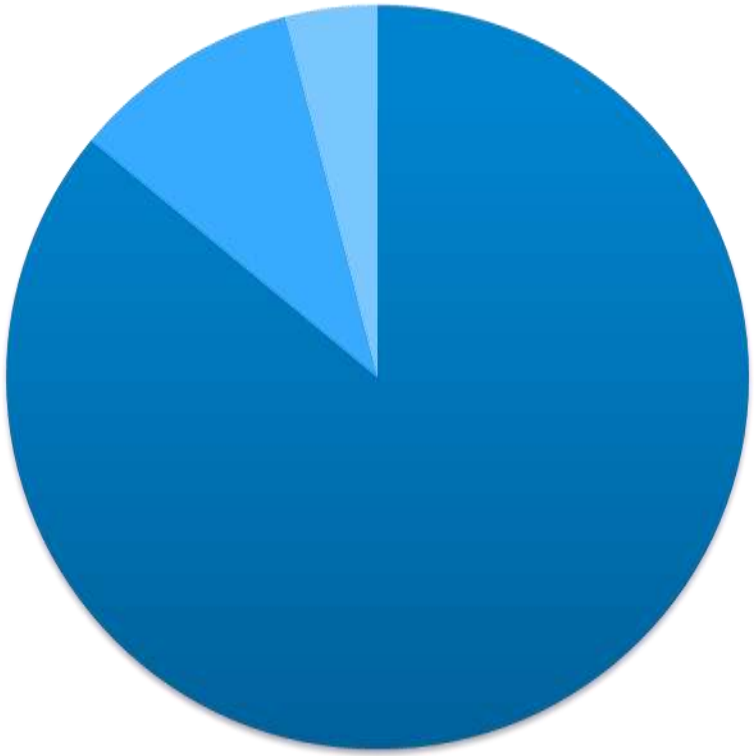
Pie charts



Pros

- Pie charts are good for showing percentages.

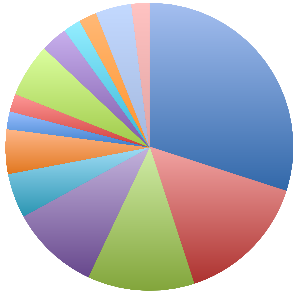
Cons

- Don’t represent values accurately, which makes it hard to compare values.

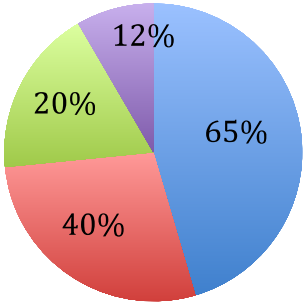
Pie charts

Examples of bad pie charts

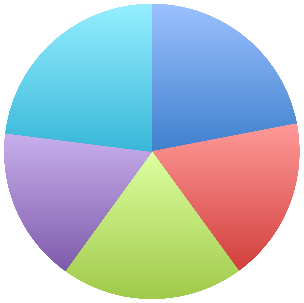
Too many values (and colours)



Values don't add up to 100



Too many similar values



- Don't show more than 4 values using a pie chart (group the rest into "other" category).
- Consider stacked bar charts as an alternative to pie charts.

Stacked bars

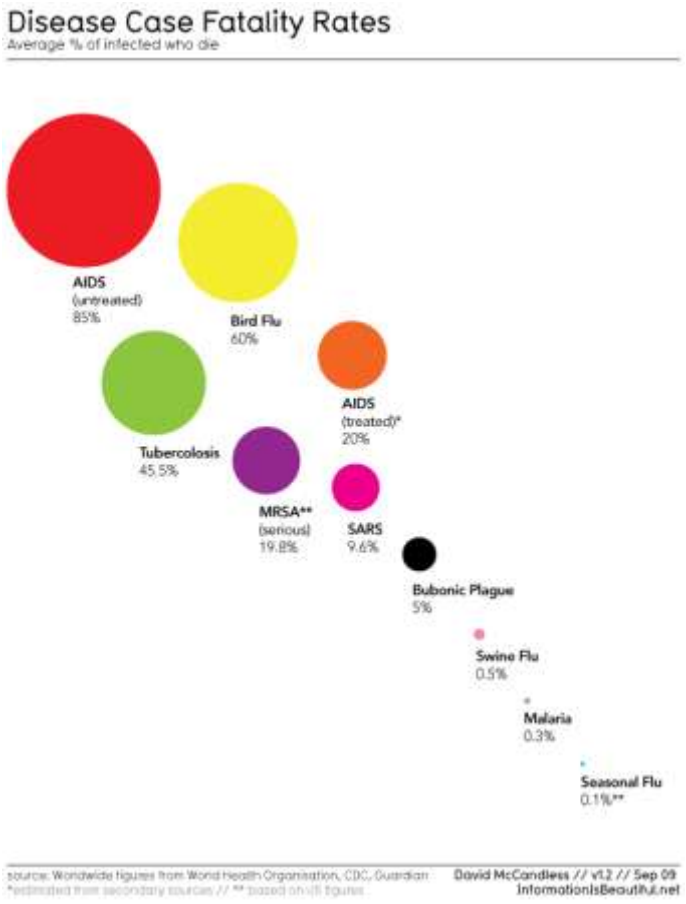
Pros

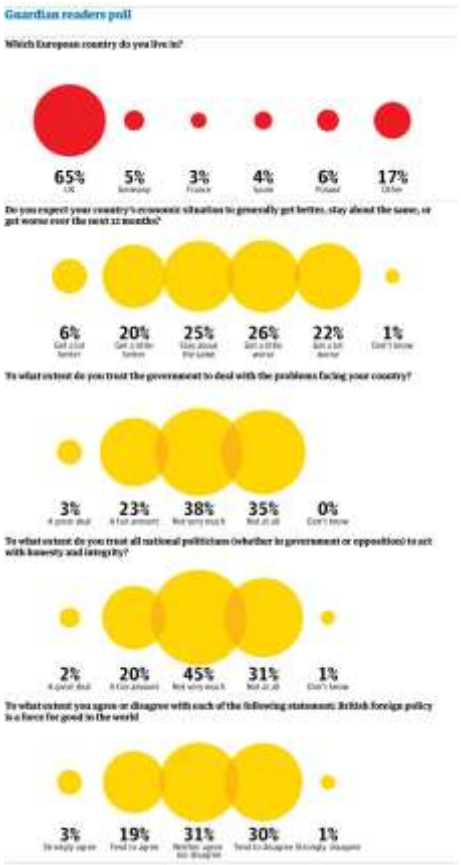
- Good alternative to pie charts when you have values adding up to 100%

Cons

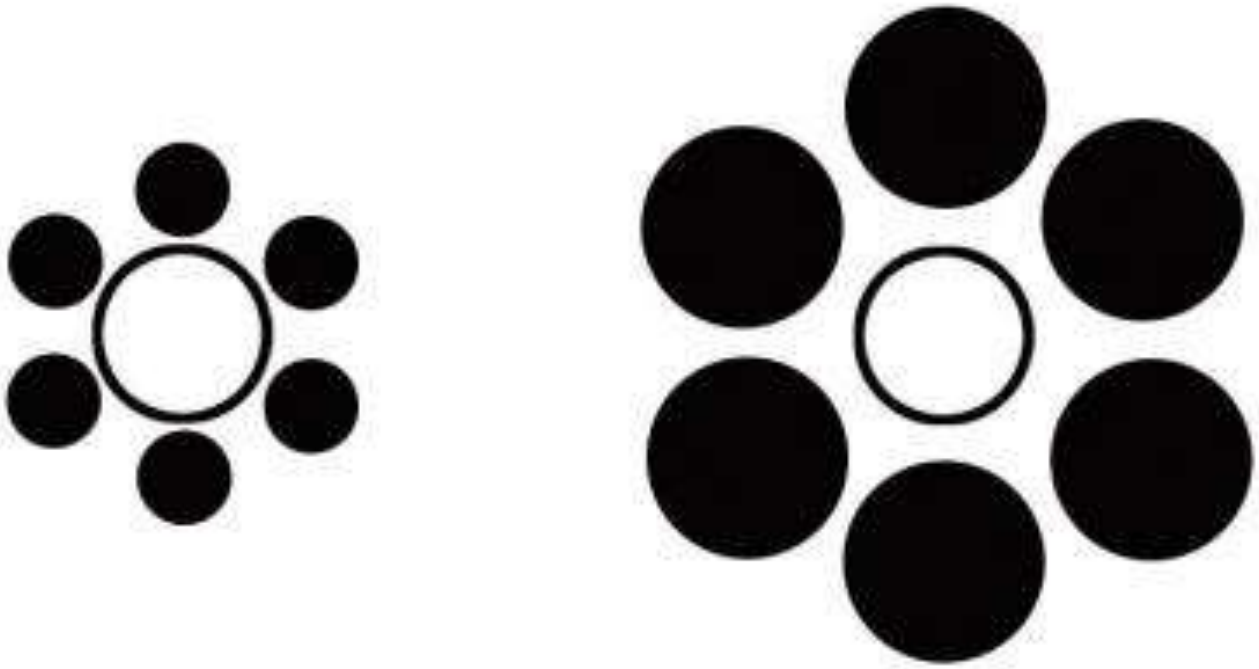
- Can be hard to compare values in the middle.
- Lose smaller values

Bubble charts





Bubble charts: optical illusions

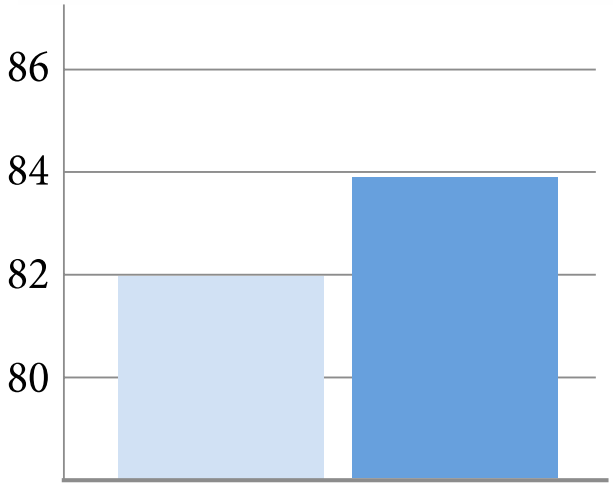


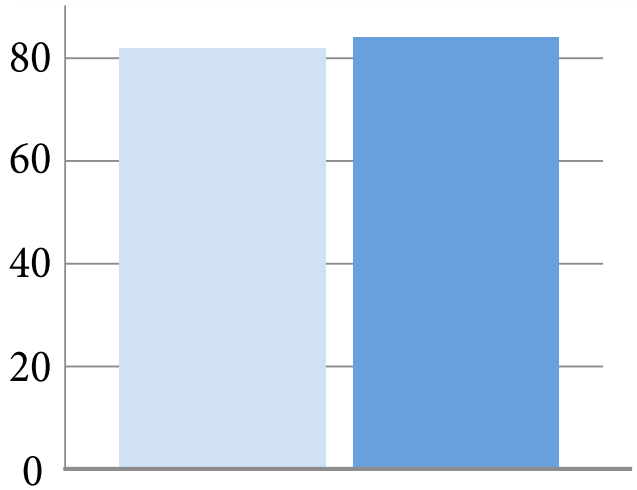
Design tips

1. Represent the data accurately
2. Style the chart simply
3. Use colour with caution
4. Choose a clear font
5. Use annotations to tell a story

1. Represent the data accurately

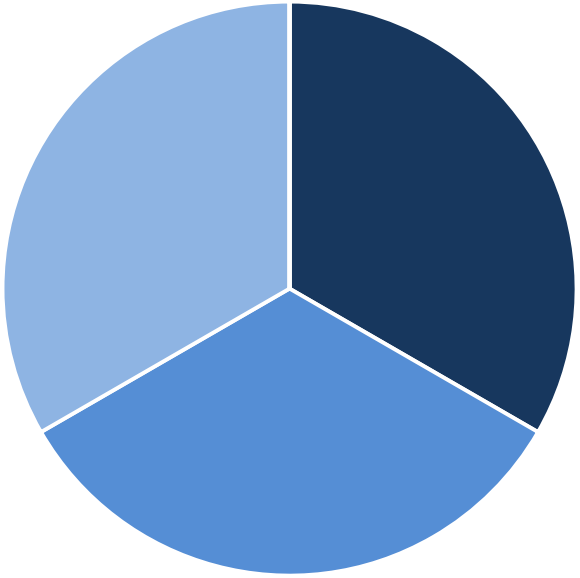
Always scale to zero

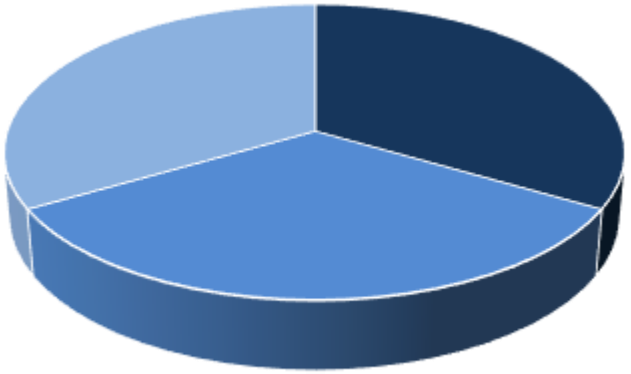




1. Represent the data accurately

Don’t use 3D charts

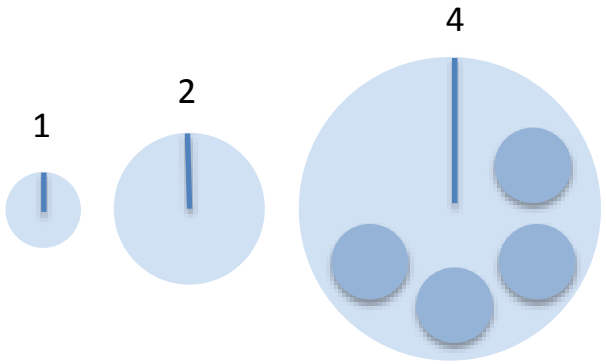




1. Represent the data accurately

Circle size by area, not radius

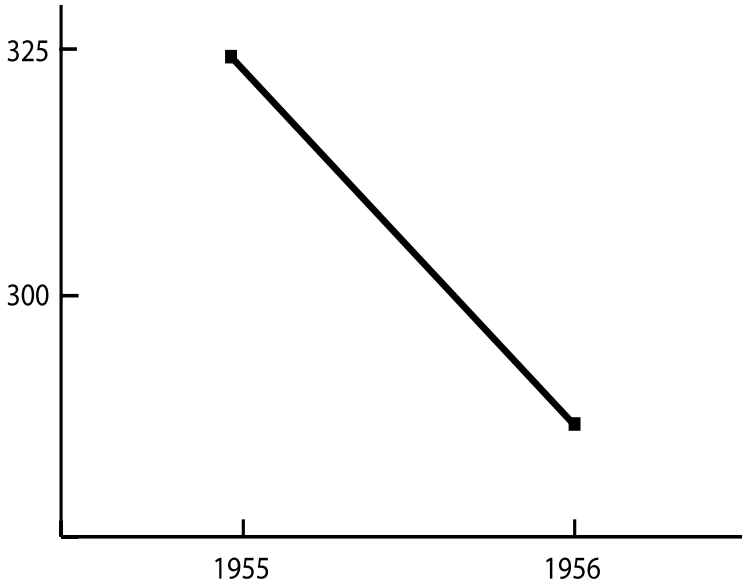
Size by radius

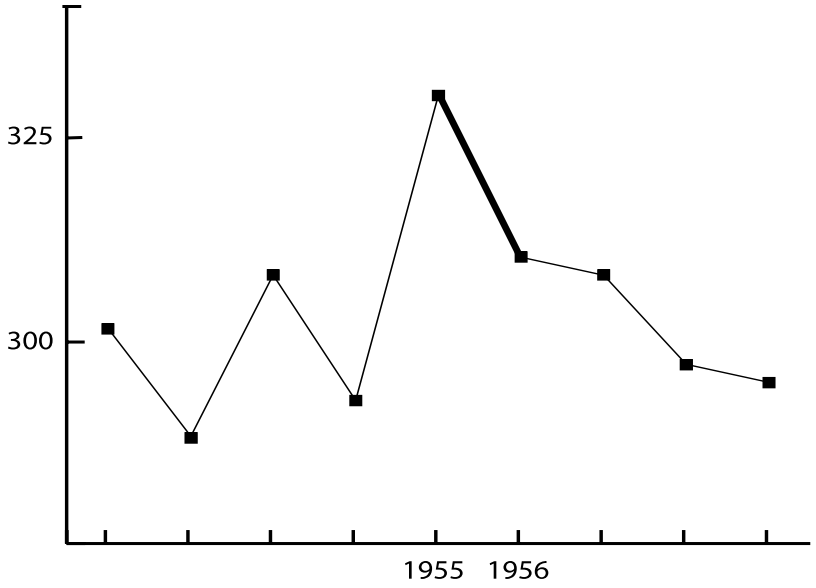


Size by area

1. Represent the data accurately

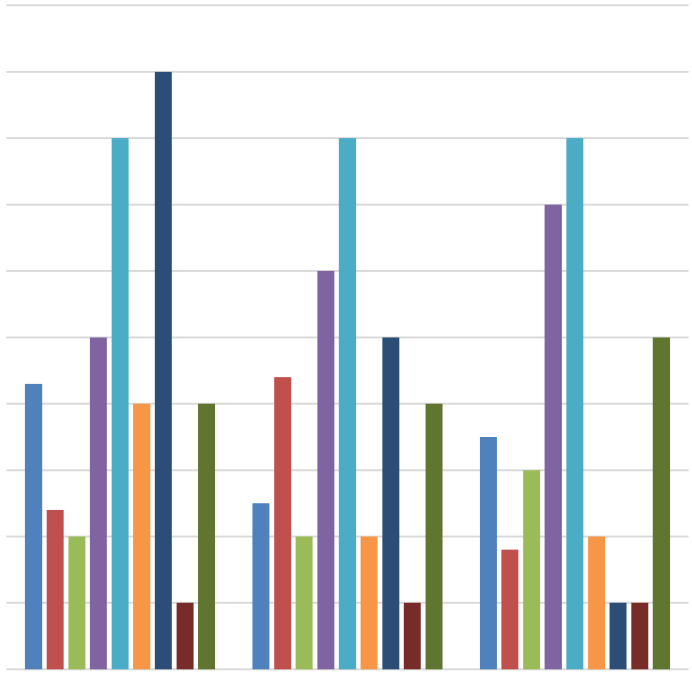
Provide context

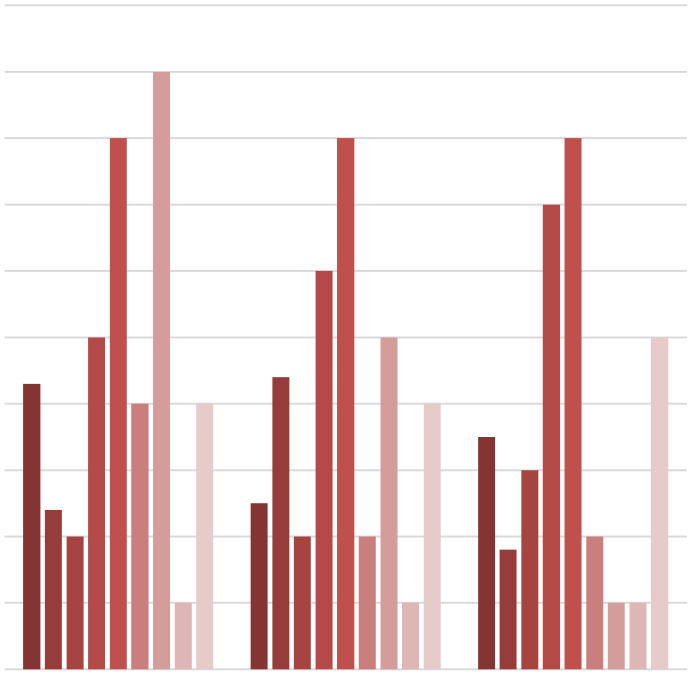




2. Style the chart simply

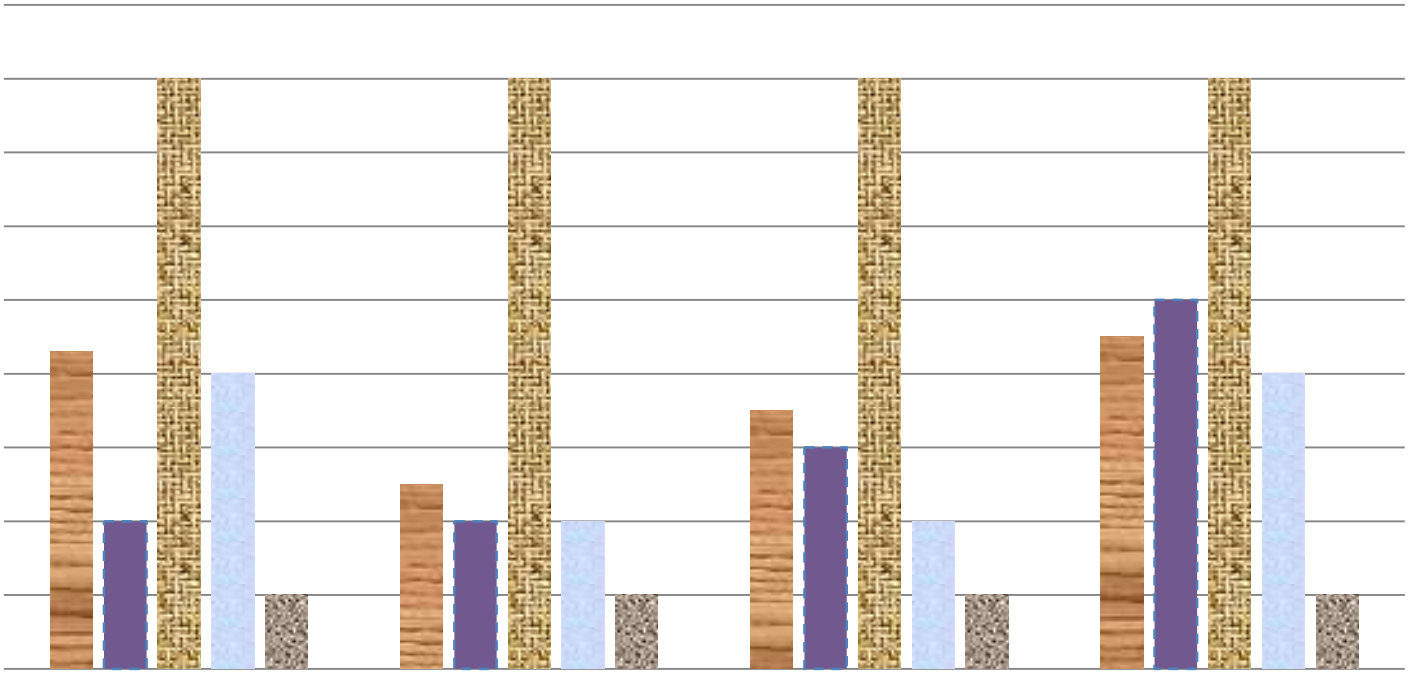
Use a limited colour palette





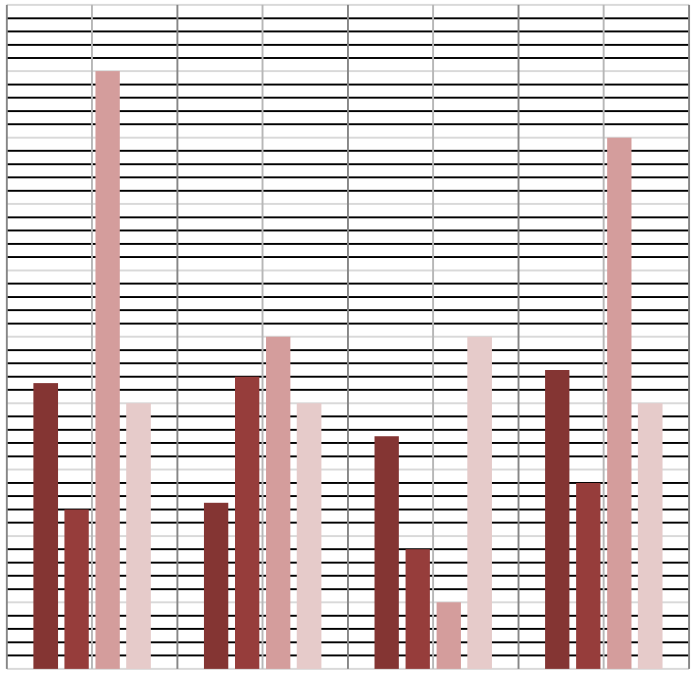
2. Style the chart simply

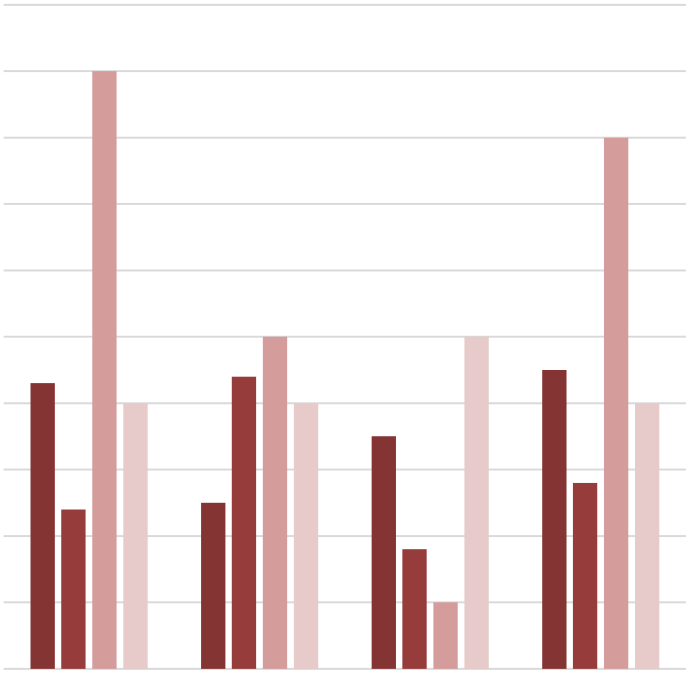
Don’t fill with patterns



2. Style the chart simply

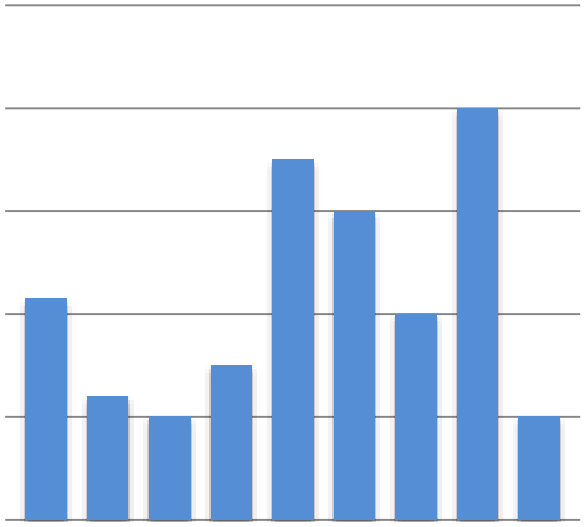
Mute gridlines

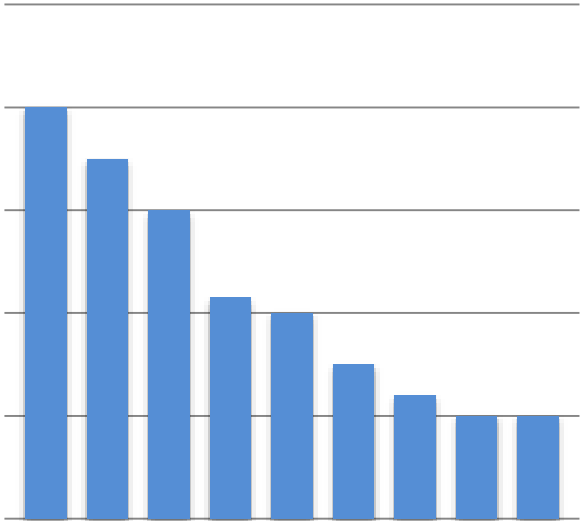




2. Style the chart simply

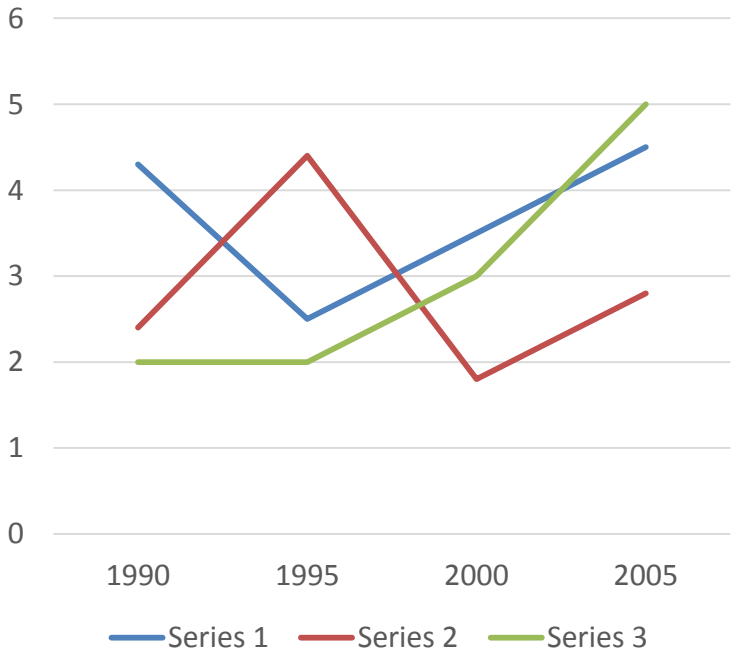
Order by value

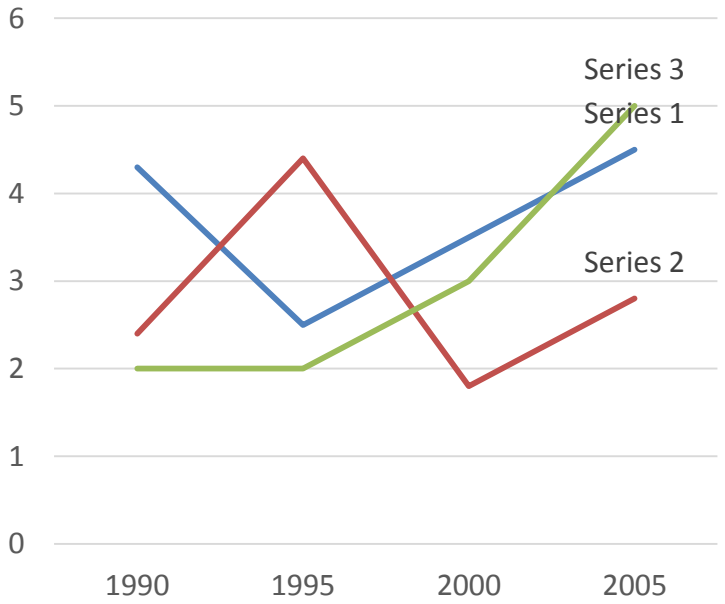




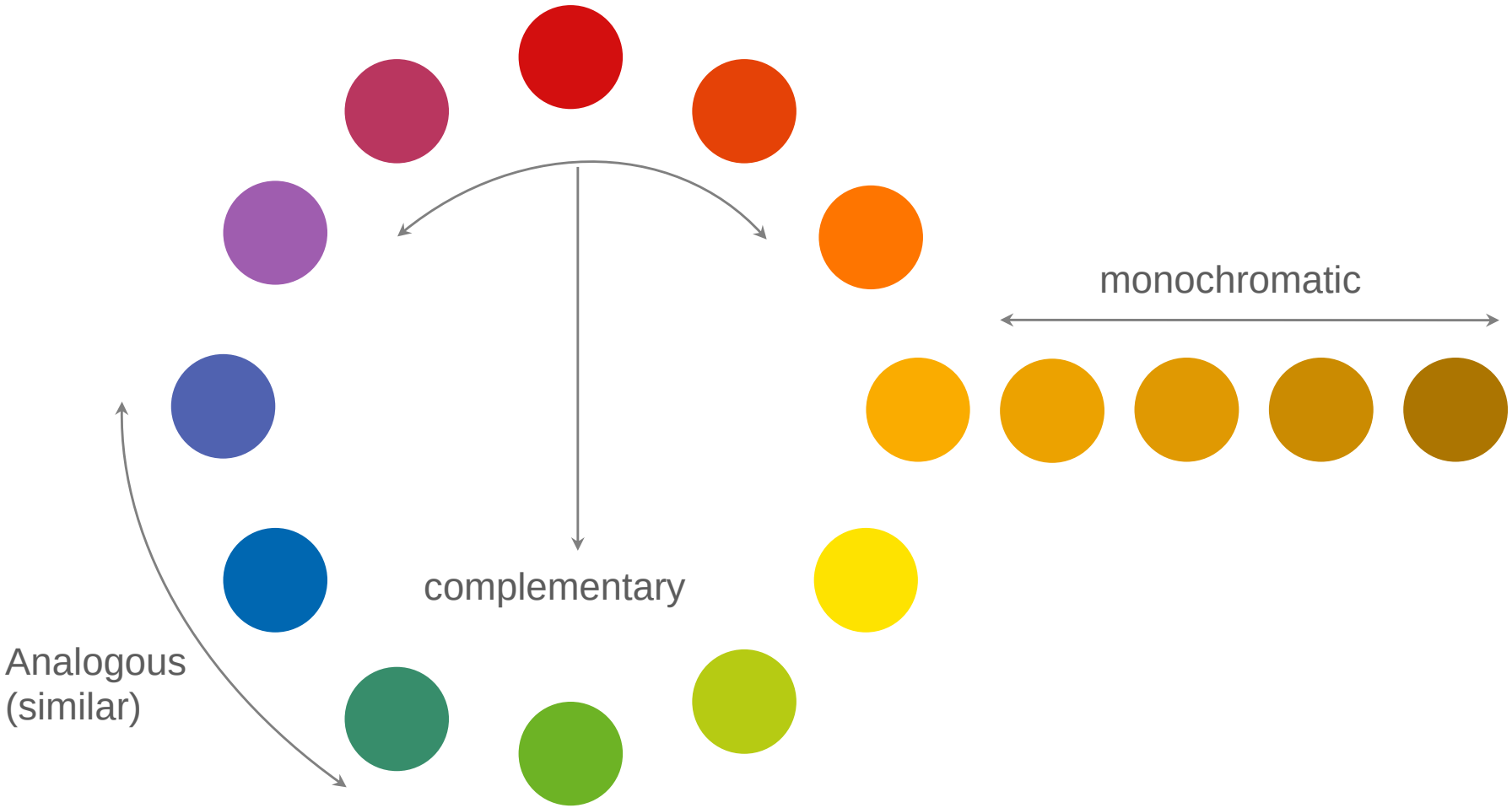
2. Style the chart simply

Label as directly as possible





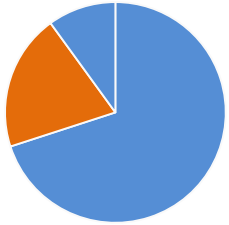
3. Use colour with caution



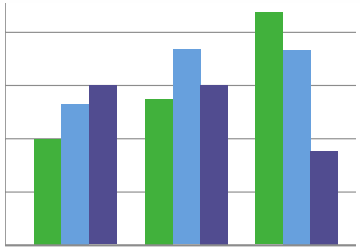
3. Use colour with caution

Monochromatic colours for a data map

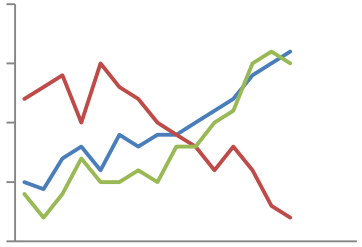
Complementary colours to highlight



Similar colours to distinguish data



Bright colours to emphasise the important line



3. Use colour with caution

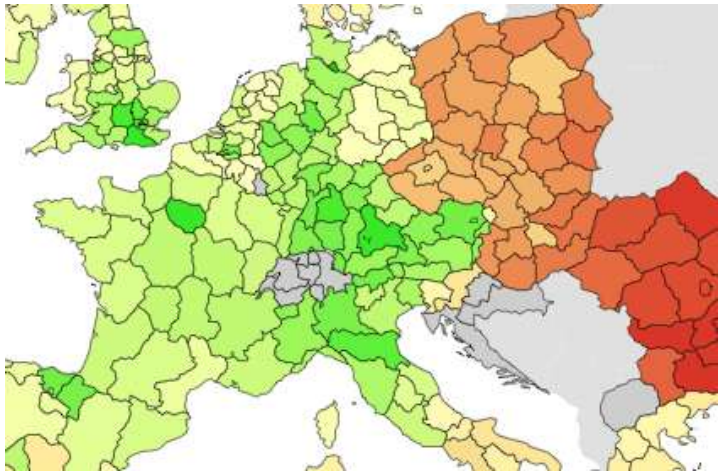
Have consideration for the meaning of colours

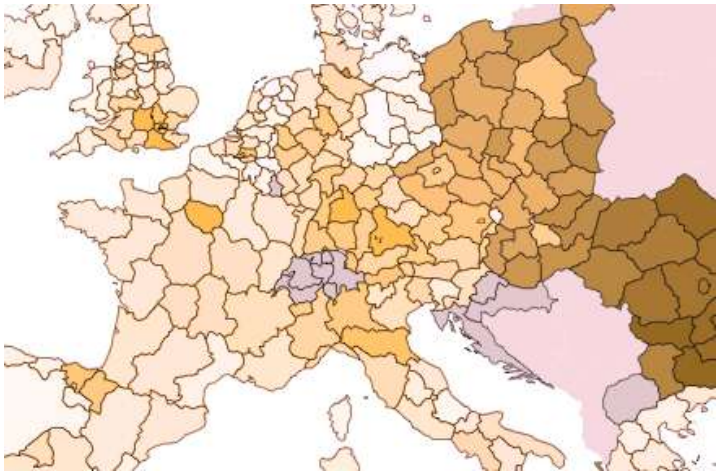
What is wrong with this picture?

3. Use colour with caution

Don’t use red and green together

(many people who are colour-blind cannot distinguish between them)





4. Choose a clear font

For screen

- Calibri
- Myriad Pro
- Helvetica
- Franklin Gothic

For print

- Georgia
- Minion
- Garamond
- Baskerville

4. Choose a clear font

Is this easy to read?

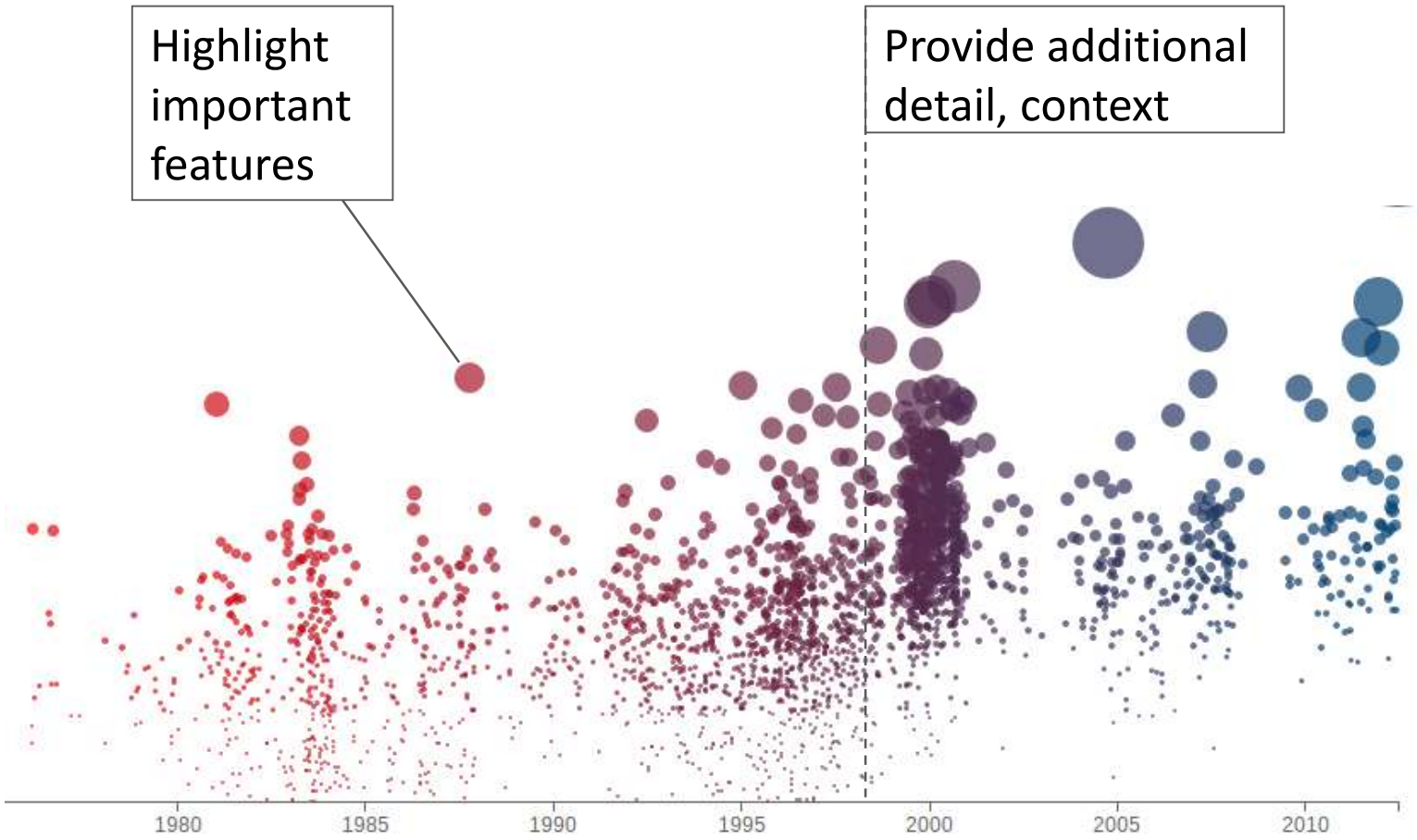
Is this easy to read?

Is this easy to read?

Is this easy to read?

IS THIS EASY TO READ?

5. Use annotations to tell a story



4 Online tools

Infogr.am

Tableau Public

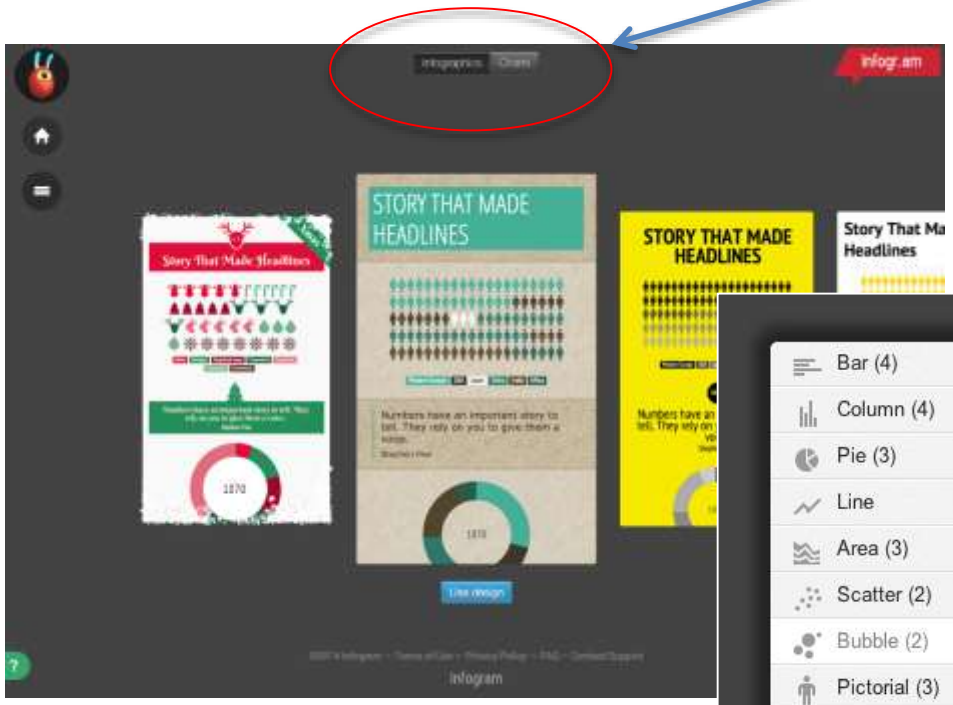
Data: Estimated numbers of people living with HIV/AIDS in countries, regions

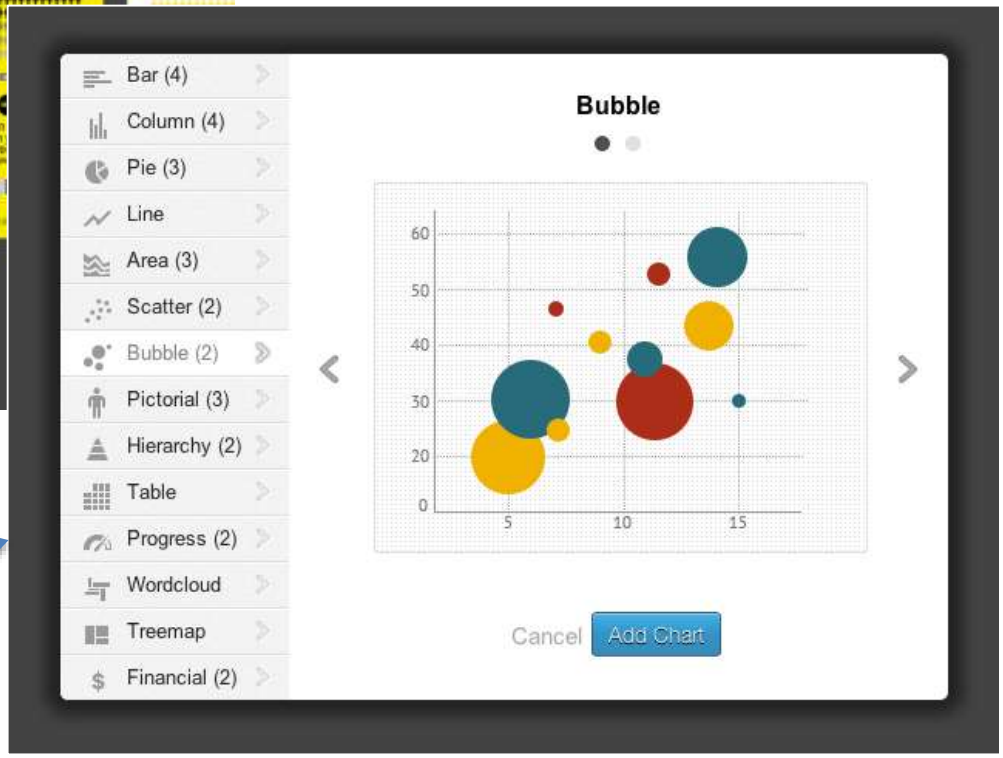
Country	Region	Estimated adults and children living with HIV
South Africa	**Sub-Saharan Africa**	5600000
India	**South and South-East Asia**	2100000
United Republic of Tanzania	**Sub-Saharan Africa**	1600000
Kenya	**Sub-Saharan Africa**	1600000
Uganda	**Sub-Saharan Africa**	1400000
Mozambique	**Sub-Saharan Africa**	1400000
United States of America	**North America**	1300000
Zimbabwe	**Sub-Saharan Africa**	1200000

Source: *UNAIDS Report on the Global AIDS Epidemic, 2012*

Infogr.am

Select chart

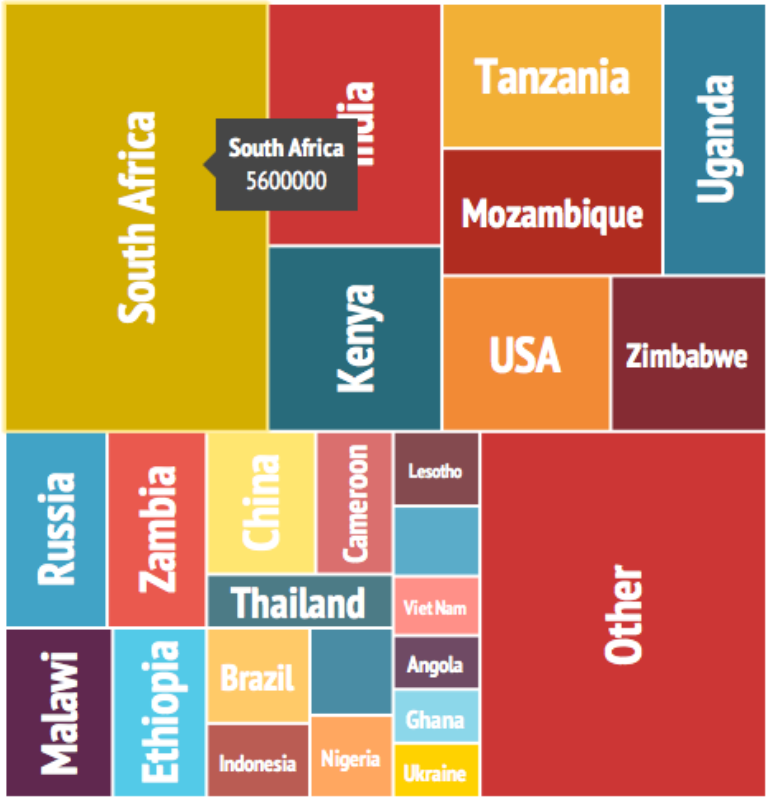




Choose a type of chart

The burden of HIV/Aids

Countries with the largest number of people living with HIV/AIDS



Add text, a photo or even a movie to your graphic

THE BURDEN OF HIV/AIDS

35,000,000

Total number of people worldwide estimated to be living with HIV/Aids

Countries with the largest number of people living with HIV/AIDS

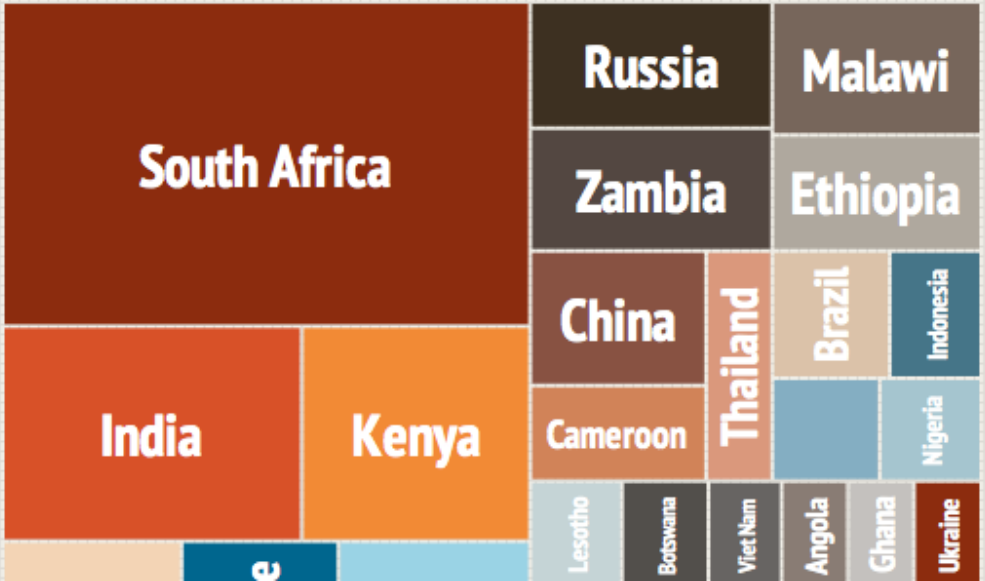
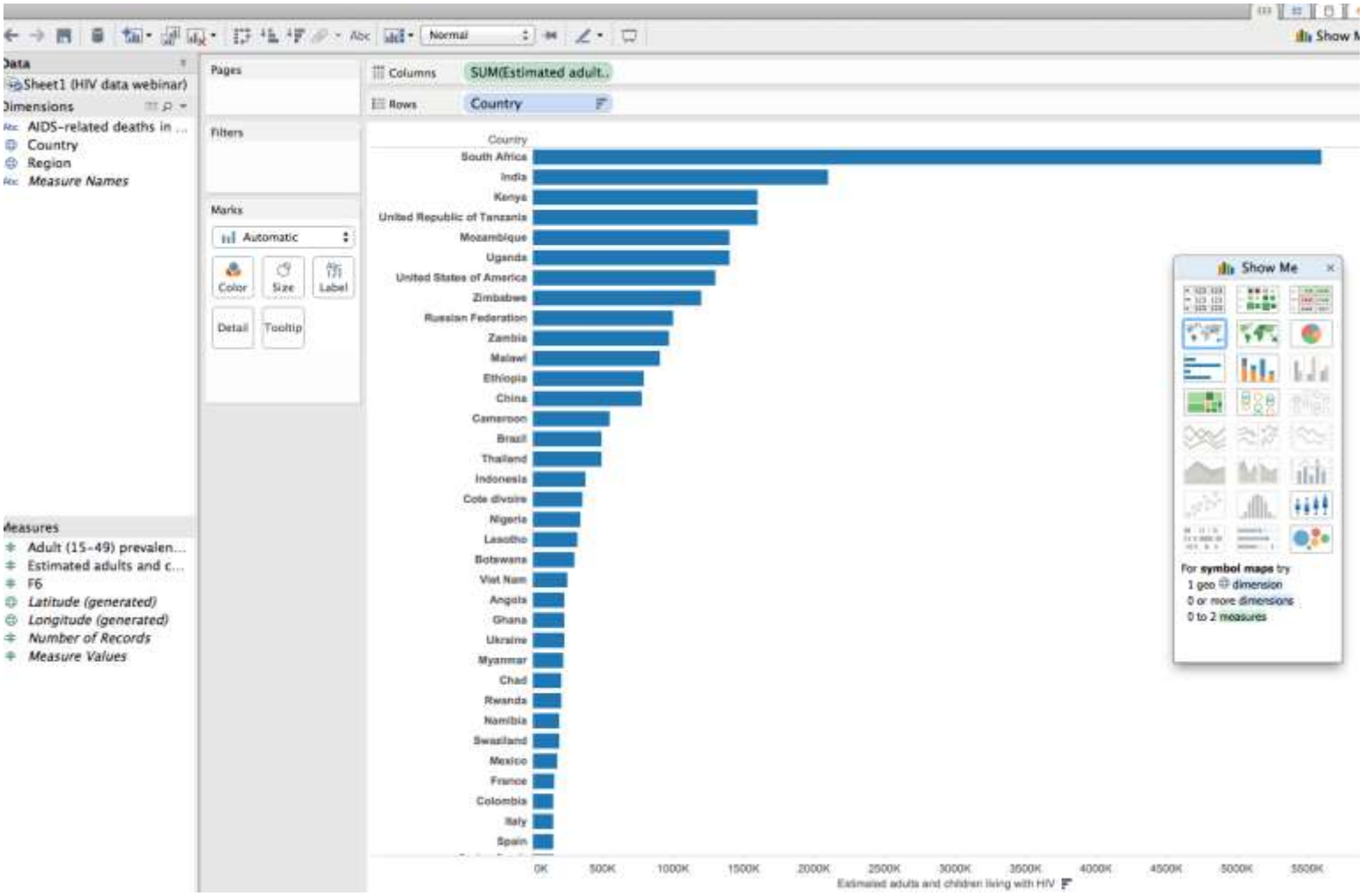
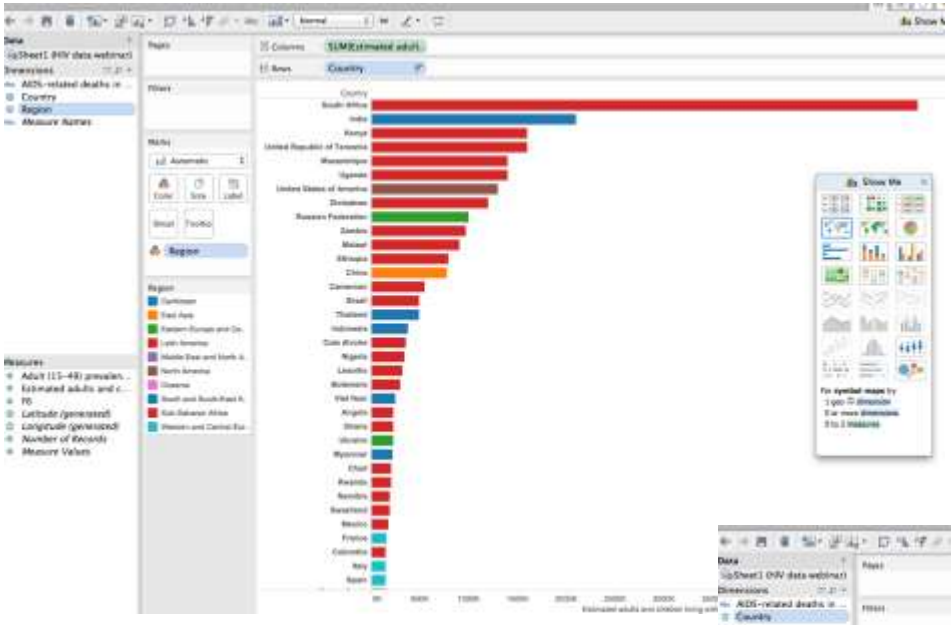
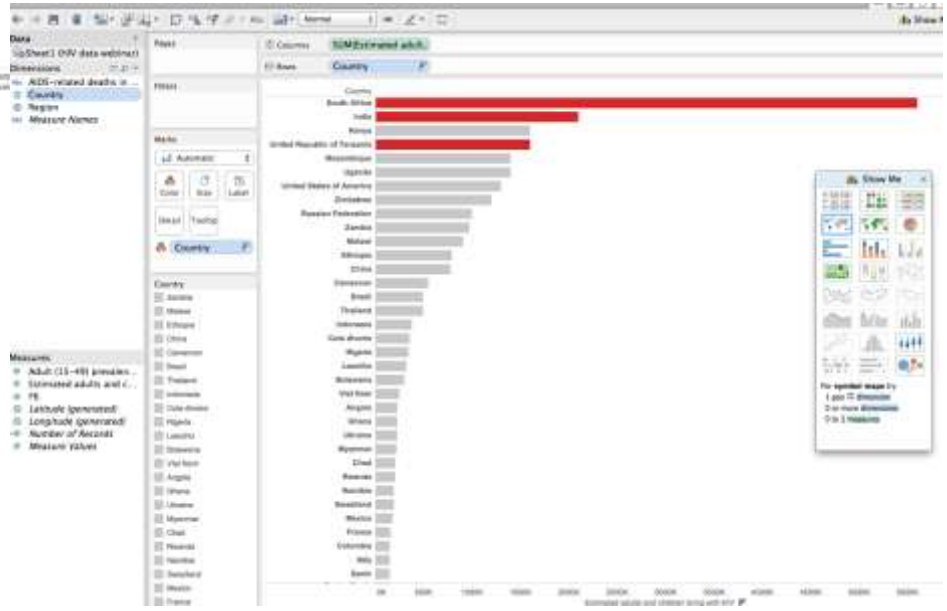
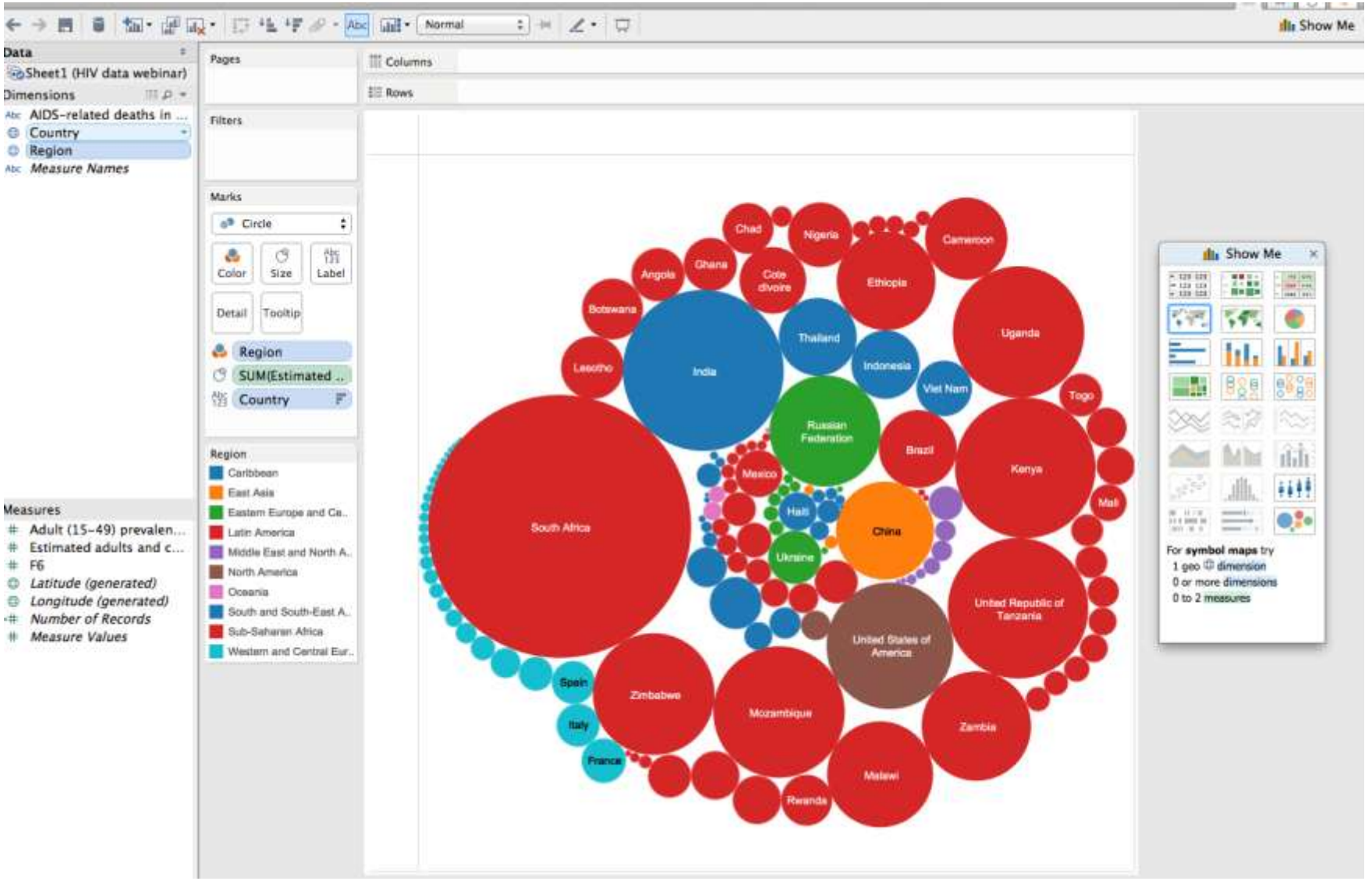


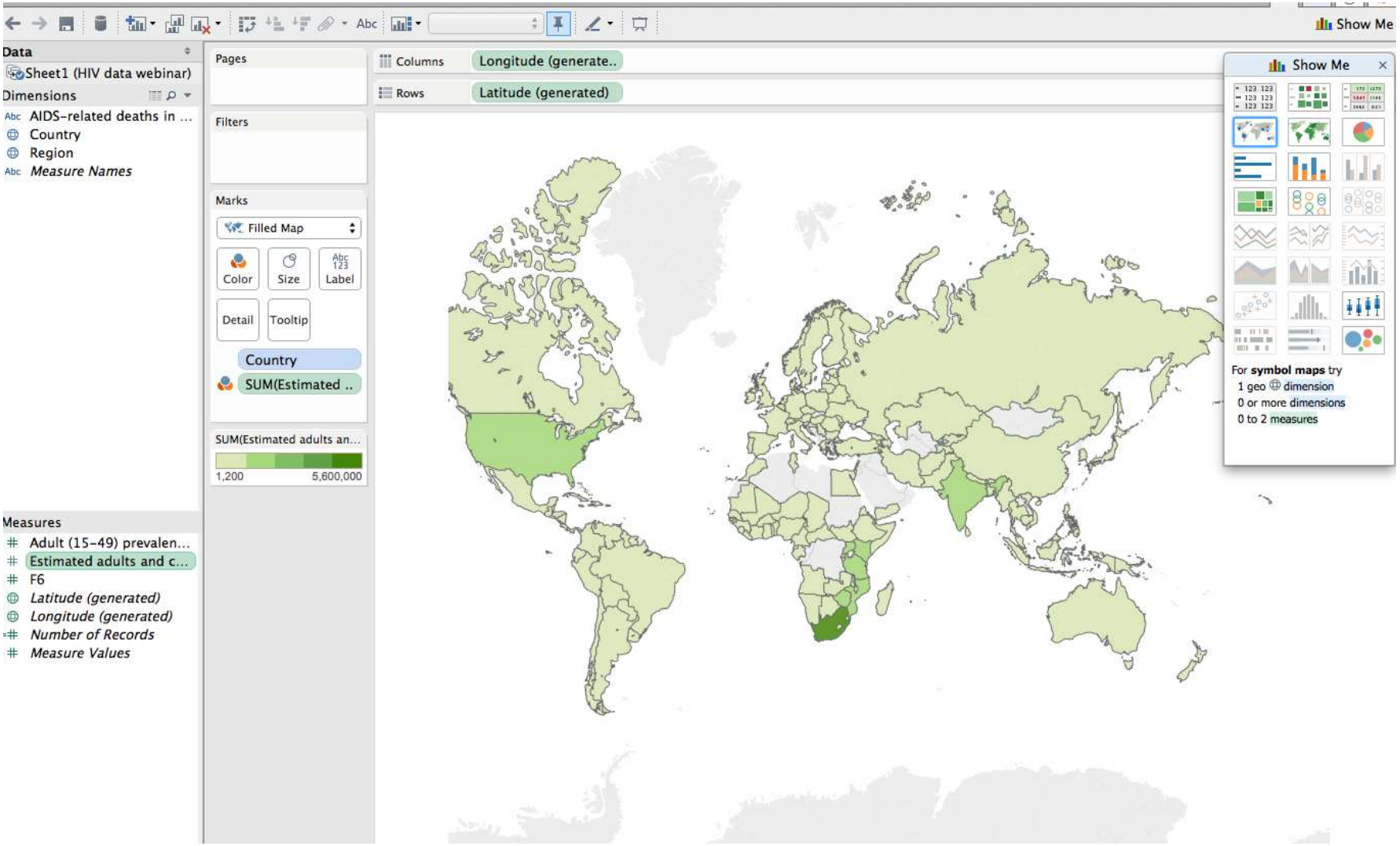
Tableau Public








Normal
Show Me
Data
Sheet1 (HIV data webinar)
Dimensions
AIDS-related deaths in ...
Country
Region
Measure Names
Measures
Adult (15-49) prevalen...
Estimated adults and c...
F6
Latitude (generated)
Longitude (generated)
Number of Records
Measure Values
Pages
Filters
Marks
Circle
Color
Size
Label
Detail
Tooltip
Region
SUM(Estimated ..
Country
Region
Caribbean
East Asia
Eastern Europe and Ce..
Latin America
Middle East and North A..
North America
Oceania
South and South-East A..
Sub-Saharan Africa
Western and Central Eur..
Columns
Rows
Chad
Nigeria
Cameroon
Angola
Ghana
Cote divoire
Ethiopia
Botswana
Uganda
Thailand
Lesotho
India
Indonesia
Viet Nam
Togo
Russian Federation
Brazil
Kenya
Mexico
Mali
Haiti
China
South Africa
Ukraine
United Republic of Tanzania
United States of America
Spain
Zimbabwe
Mozambique
Zambia
Italy
France
Malawi
Rwanda
Show Me
For symbol maps try
1 geo dimension
0 or more dimensions
0 to 2 measures


Show Me
Data
Sheet1 (HIV data webinar)
Dimensions
AIDS-related deaths in ...
Country
Region
Measure Names
Pages
Filters
Marks
Filled Map
Color
Size
Label
Detail
Tooltip
Country
SUM(Estimated ..
SUM(Estimated adults an...
1,200
5,600,000
Measures
Adult (15-49) prevalen...
Estimated adults and c...
F6
Latitude (generated)
Longitude (generated)
Number of Records
Measure Values
Columns
Longitude (generate..
Rows
Latitude (generated)
Show Me
For symbol maps try
1 geo dimension
0 or more dimensions
0 to 2 measures

Interactive visualisations: Gapminder

Conclusion

- Visualisations effective way of sharing complex data and information – increases reach to non-specialist audiences
- Important when creating graphs and charts that the data is represented easily and there are some rules to ensure this
- Creating visually appealing graphics doesn’t require artistic talent – there are many tools on the internet that can do it for you
- Go to website, give it a try