

A background collage of various data visualization types, including bubble plots, scatter plots, bar charts, boxplots, line graphs, parallel coordinates, lollipop plots, sunburst diagrams, donut plots, pie charts, and word clouds, all overlaid with semi-transparent colored circles.

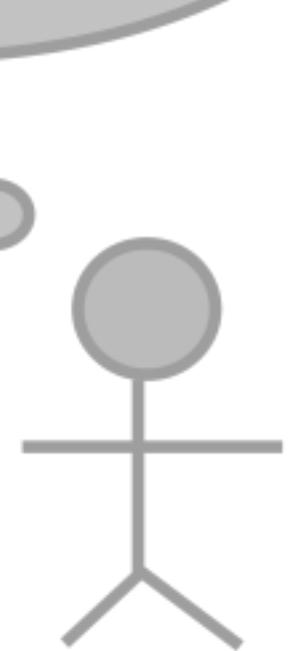
A project by Yan Holtz and Conor Healy

from Data to Viz

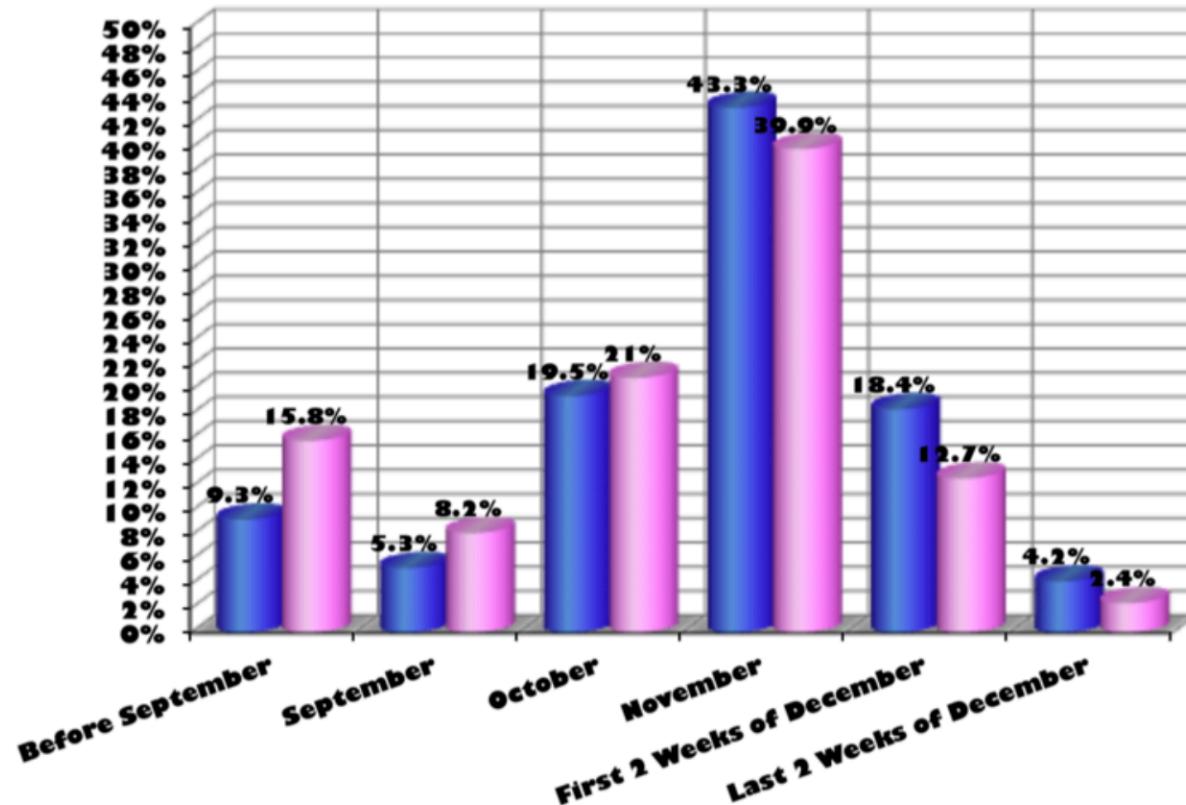
A classification of chart types based on input data format

Id	feature 1
A	10
B	12
C	15
...	...

What should I do with my
data ??



■ Men ■ Women



...

What about
that?

Source: [Storytelling with data](#) by Cole Nussbaumer Knaflic

Looking for a chart ?

What you
can do

What you
should do

Caveats to
avoid

How to
build it

WHAT YOU CAN DO

A classification of chart types based on data input format

Who sells more weapons ?

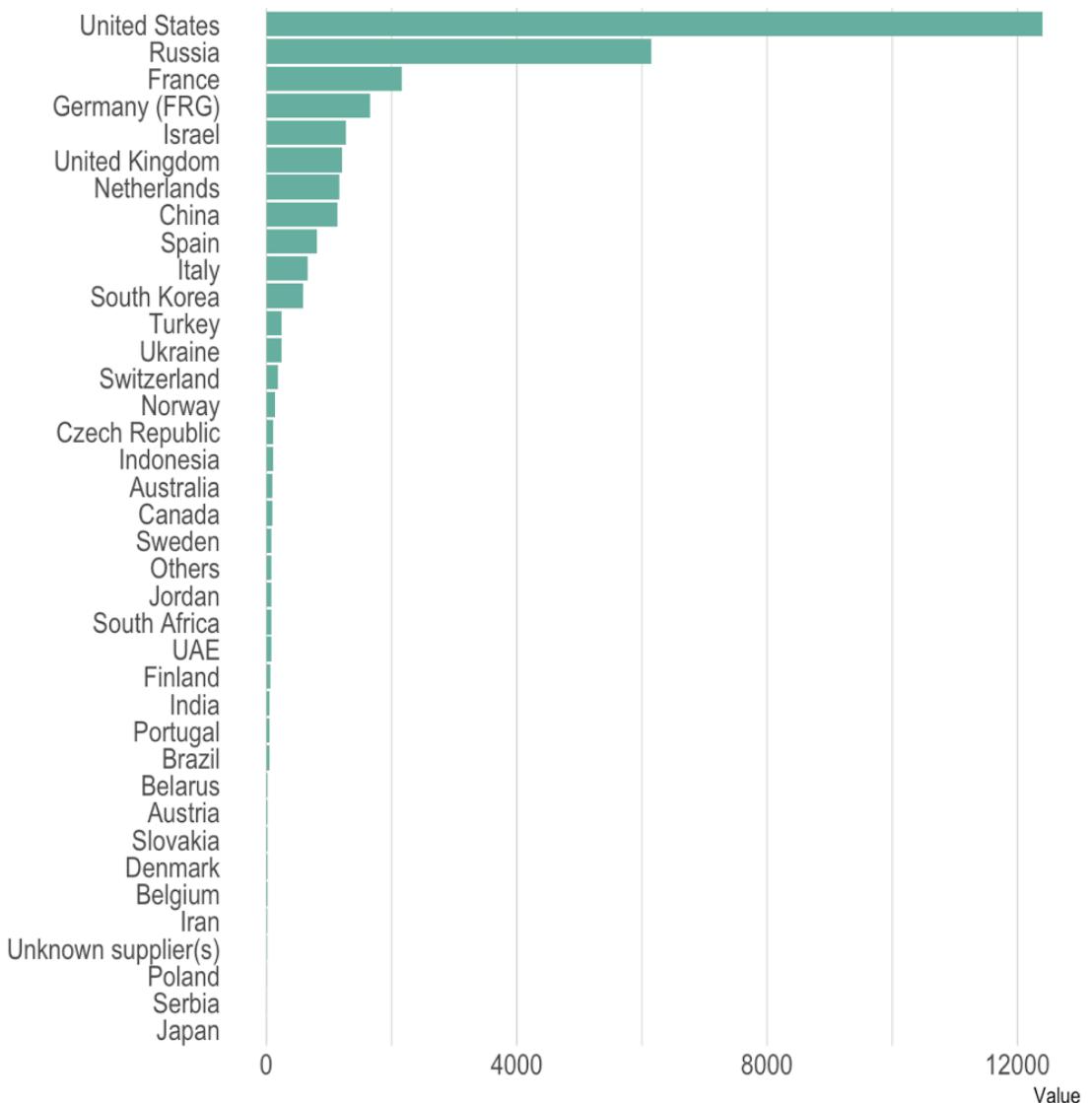
Country	Value
United States	12394
Russia	6148
Germany (FRG)	1653
France	2162
United Kingdom	1214
China	1131



?

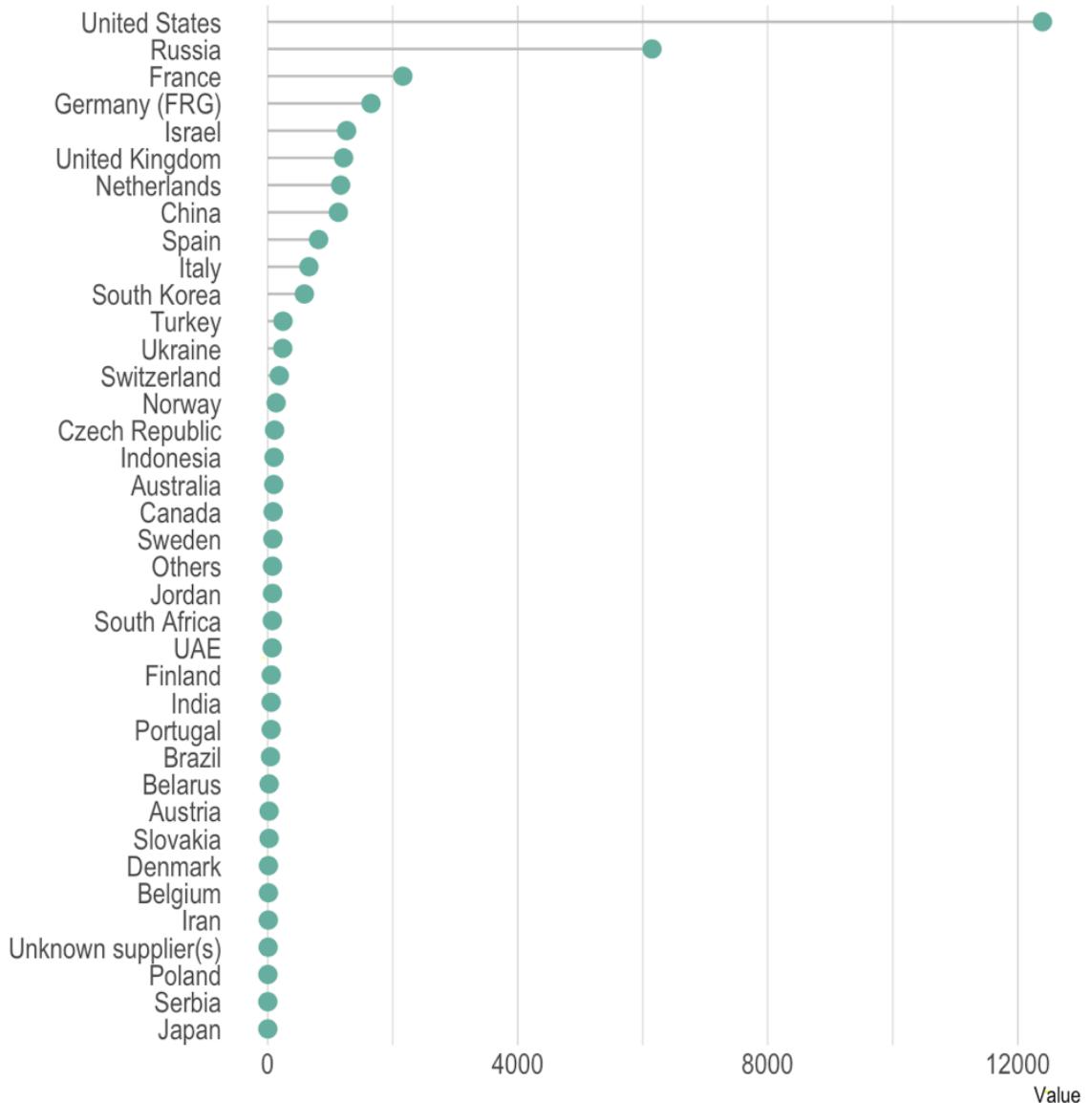
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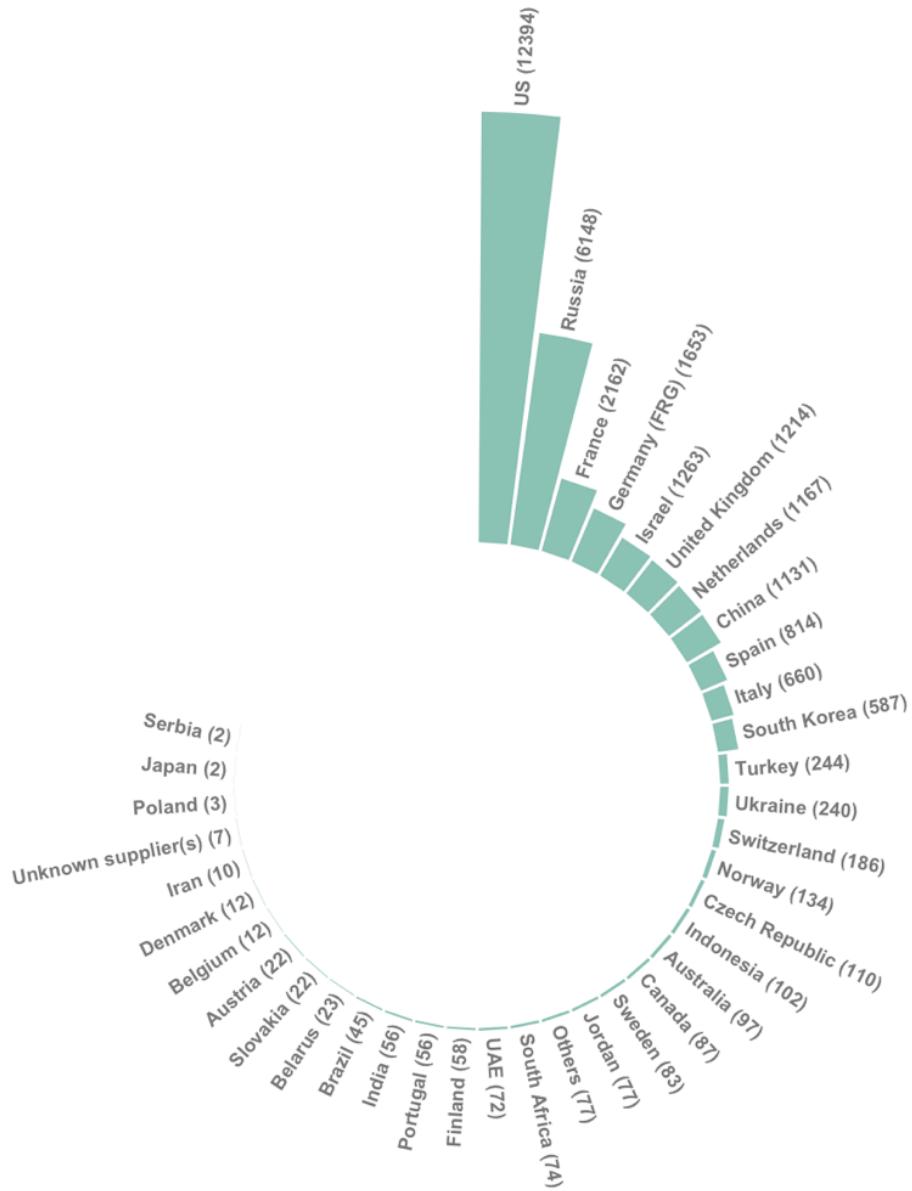
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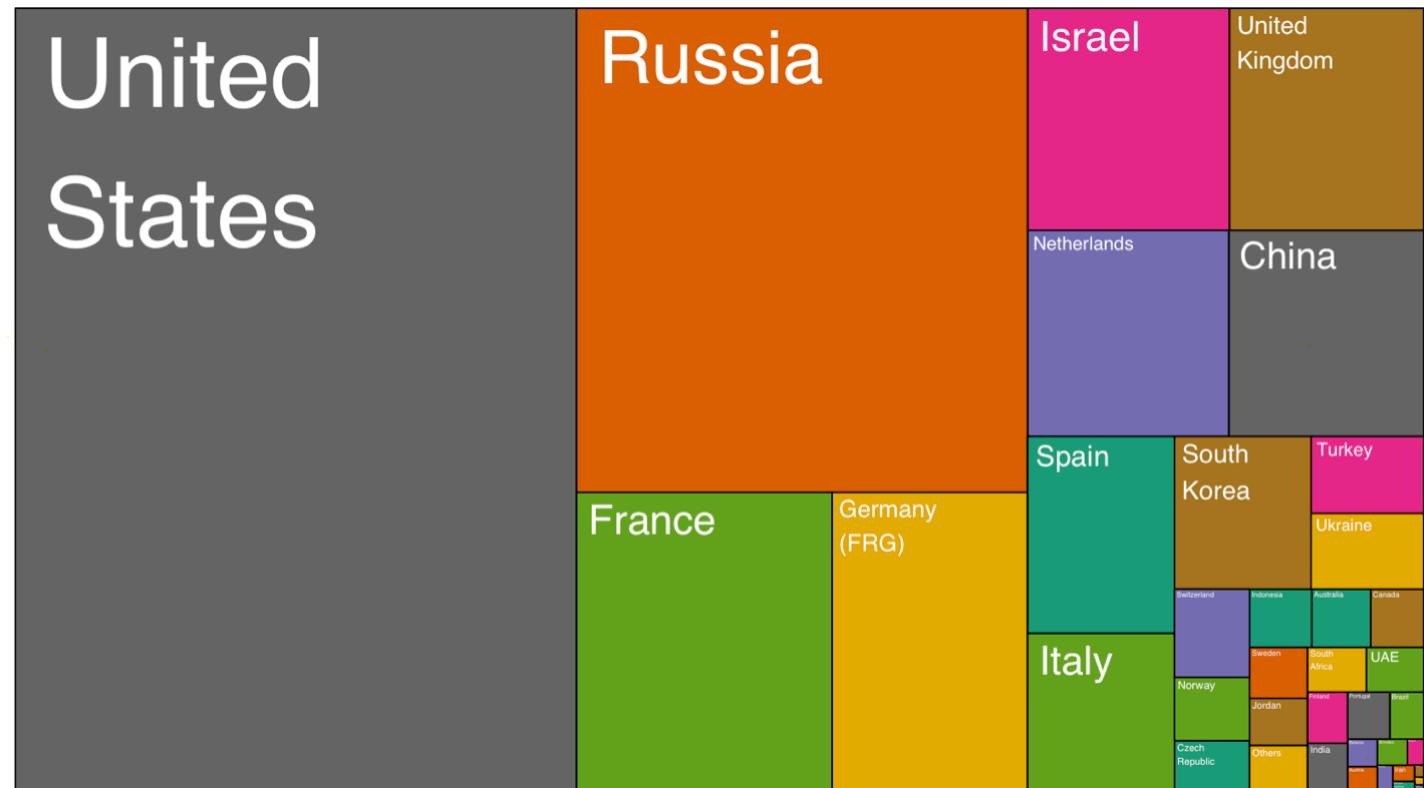
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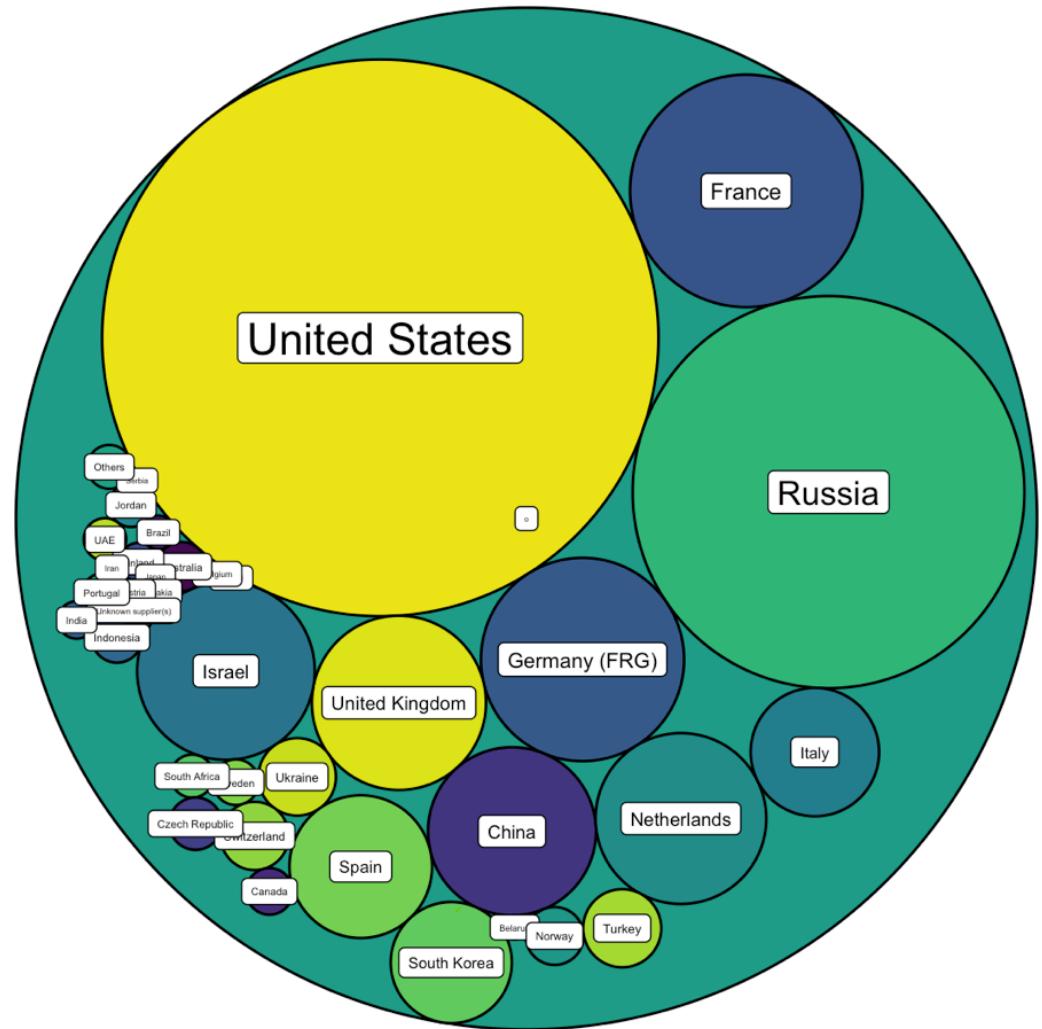
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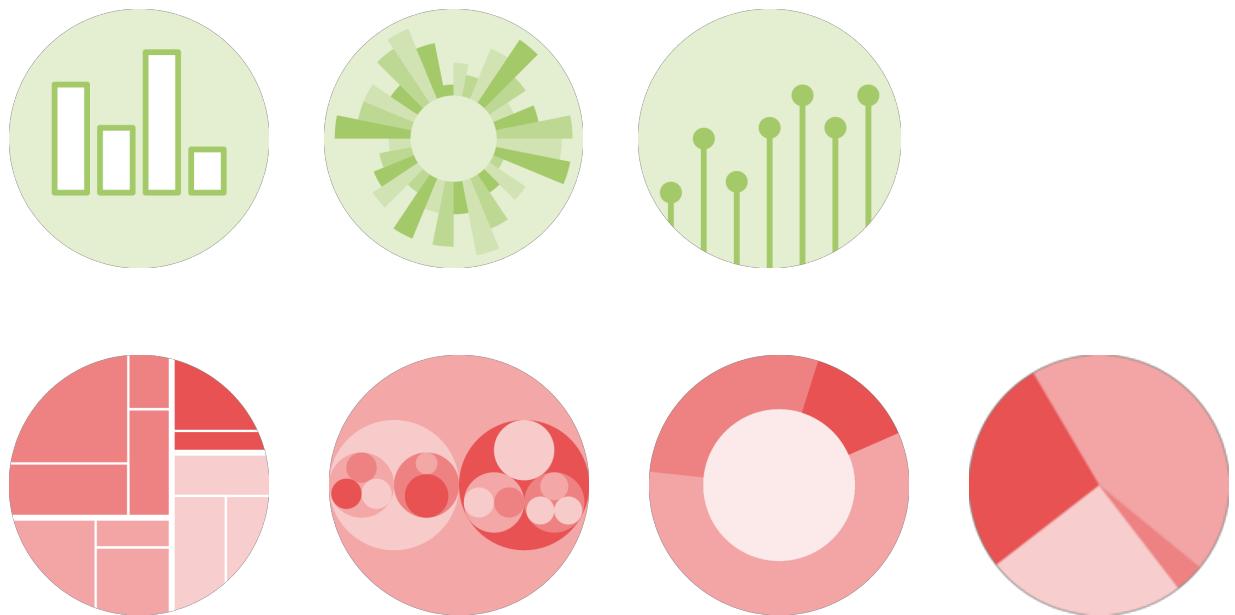
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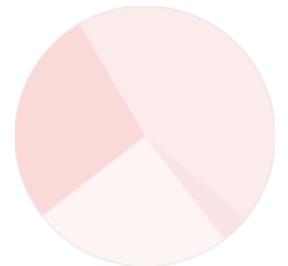
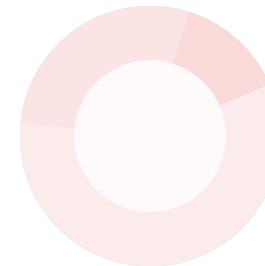
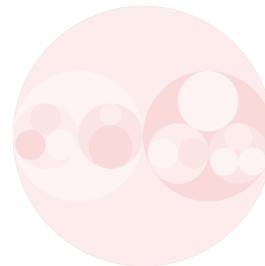
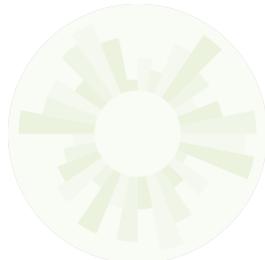
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1 observation
per group

1 numerical
variable



1 categorical
variable

Perception of probability

text	value
Improbable	33
Almost Certainly	98
Likely	60
Almost Certainly	98
Unlikely	10
Probably Not	25
About Even	50
Probably	75

Perception of probability

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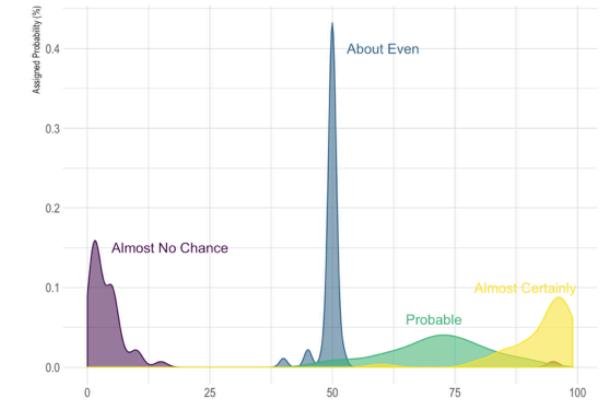
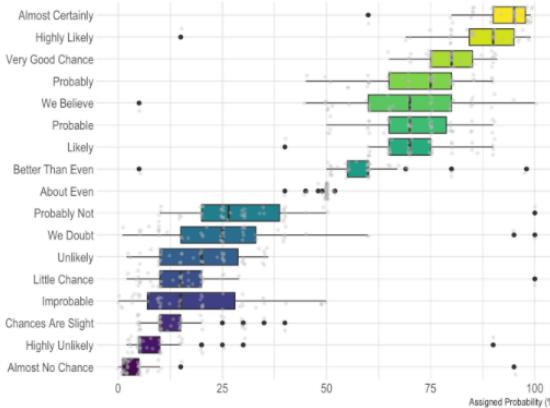
Several
observations
per group

1 categorical
variable

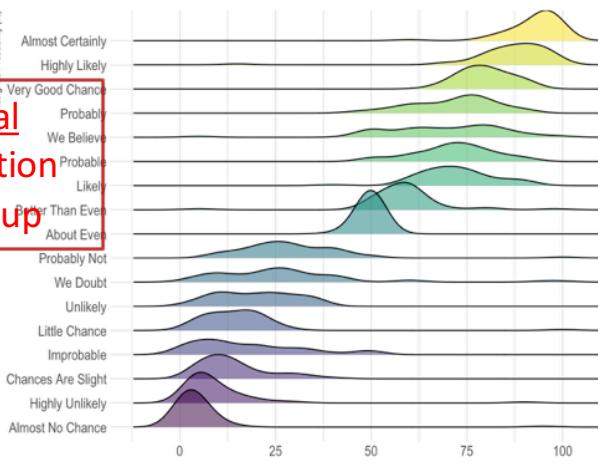
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Perception of probability

text	value
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About Even	50
Probably	75



Several
observation
per group



1 categorical
variable

1 numerical
variable

So...

- Knowing the **possibilities** is the **first step** in chart choice
- Not easy to know **all** the **chart types**
- Hard to figure out options **from a dataset**

→ Let's build a decision tree



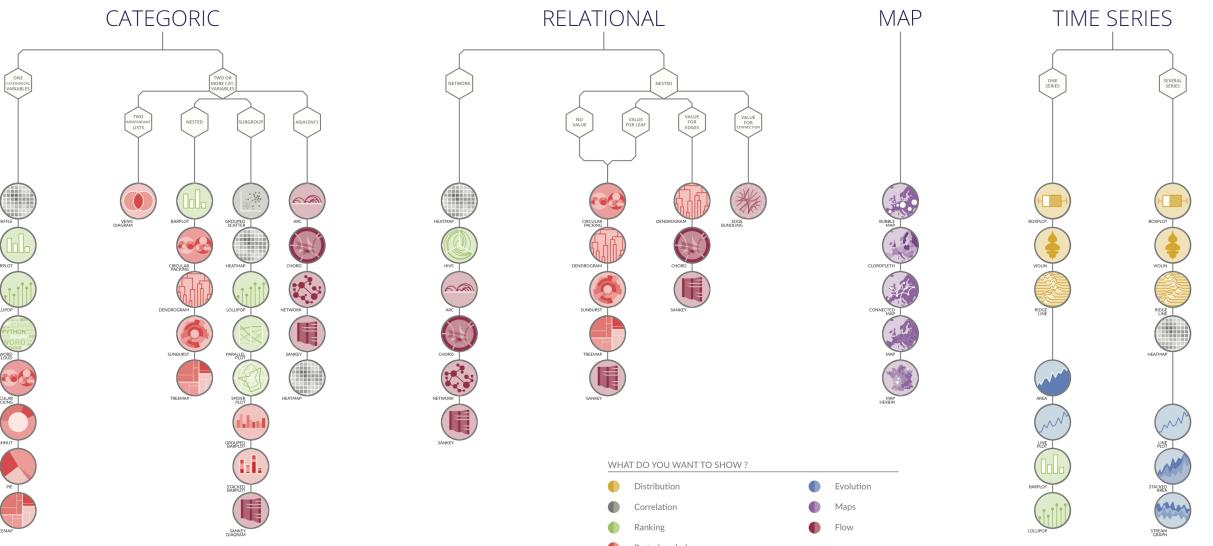
from Data to Viz

From Data to Viz® is a classification of chart types based on input data format. It will help you find the perfect chart in three simple steps.

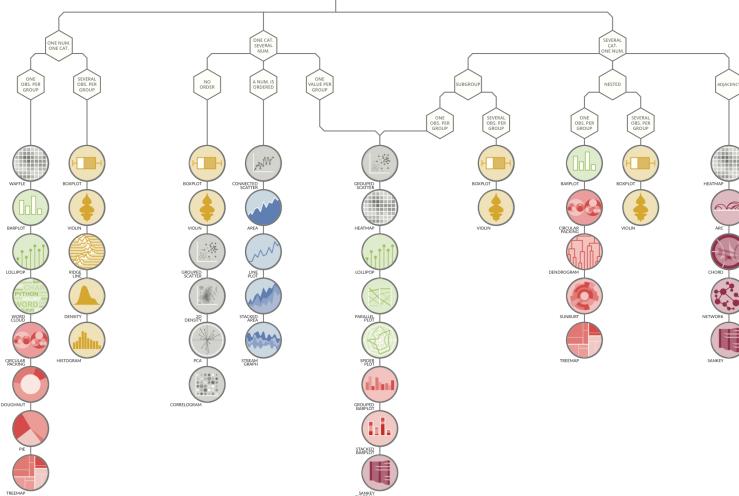
- 1 Identify what type of data you have.
- 2 Go to the corresponding decision tree and follow it down to a set of possible charts.
- 3 Choose the chart from the set that will suit your data and your needs best.

Dataviz is a work with endless possibilities, and this project does not claim to be exhaustive. However it should provide you with a good starting point. For an interactive version and much more, visit:

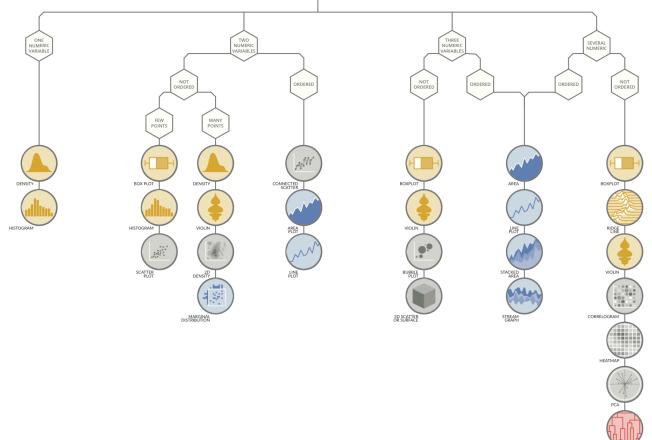
data-to-viz.com



CATEGORIC AND NUMERIC

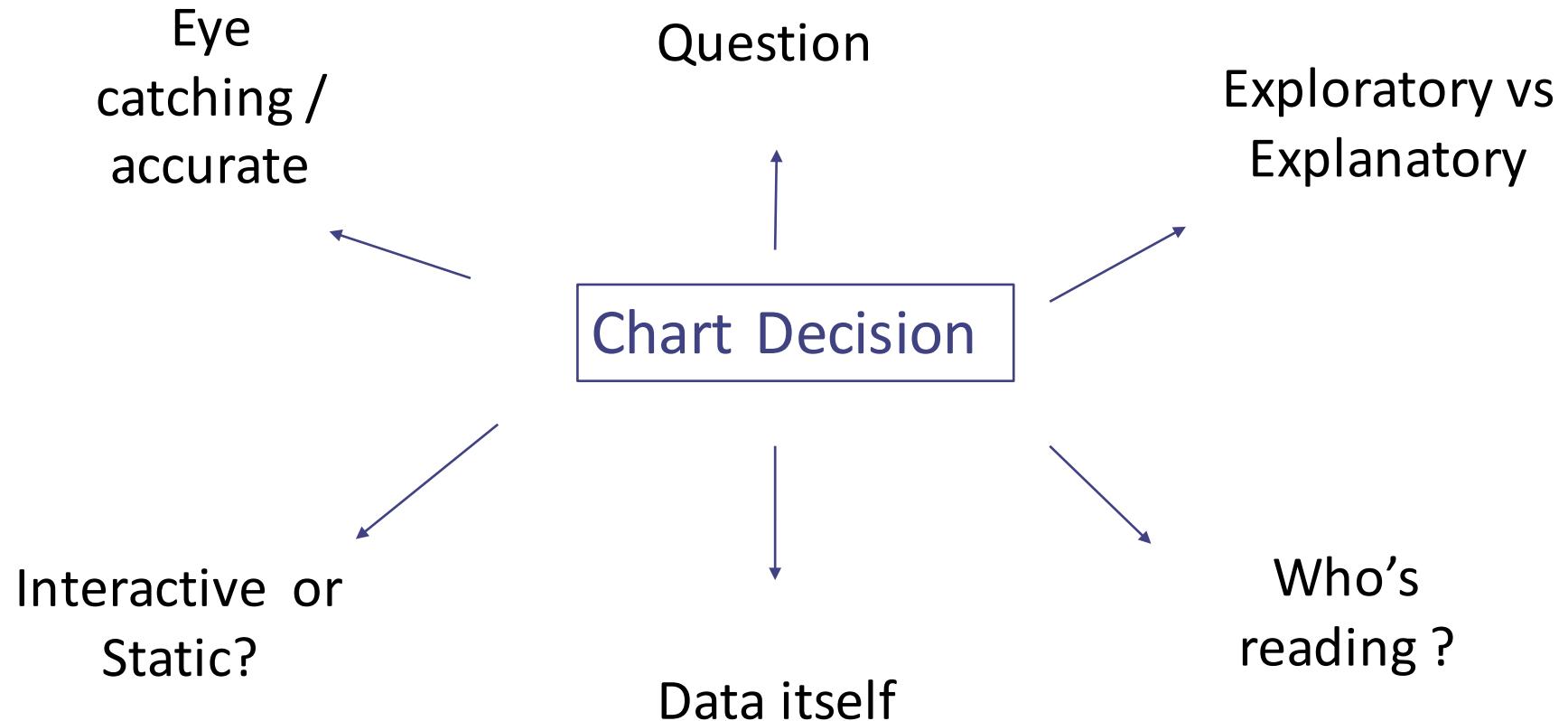


NUMERIC



WHAT YOU SHOULD DO

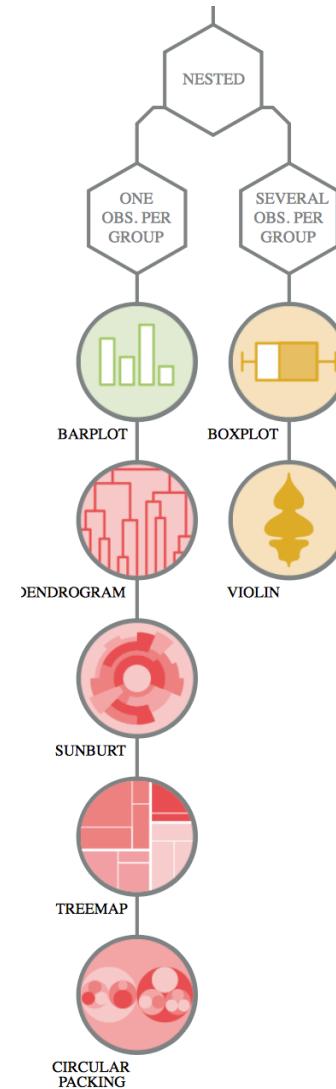
About 20 examples of storytelling with data



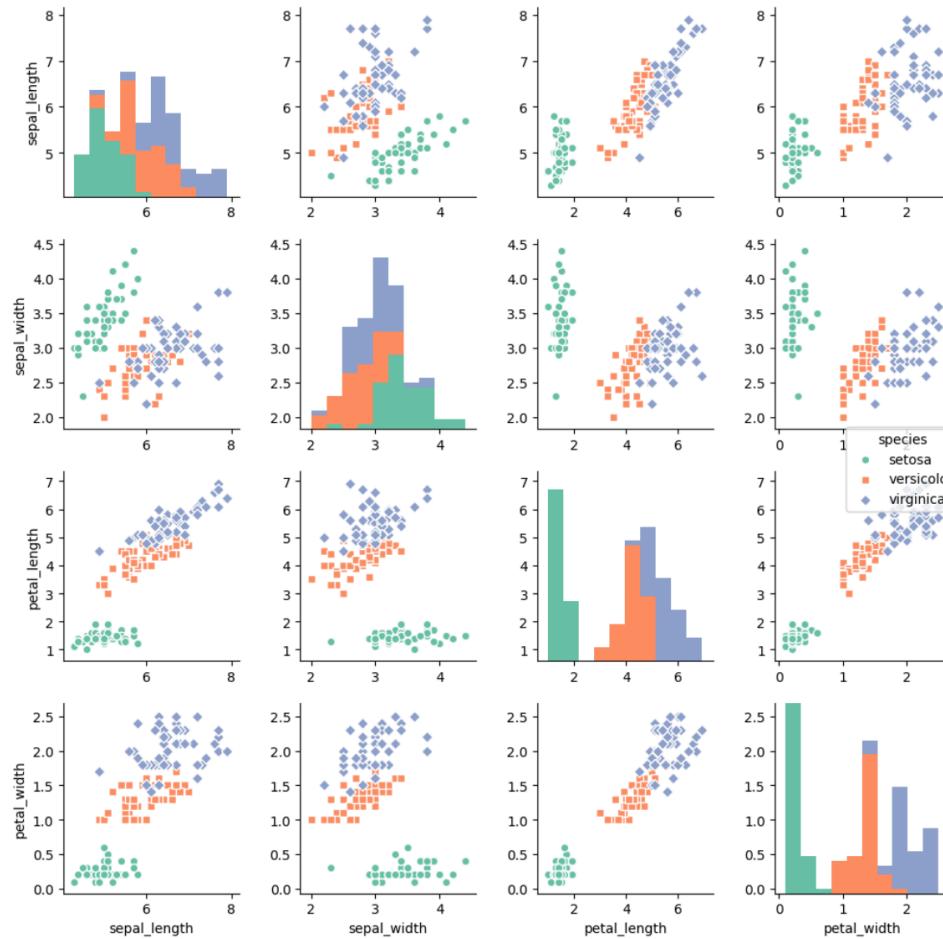
Question – Explo/Expla – Reader – Data – Interactivity – Eye catching

WHAT DO YOU WANT TO SHOW ?

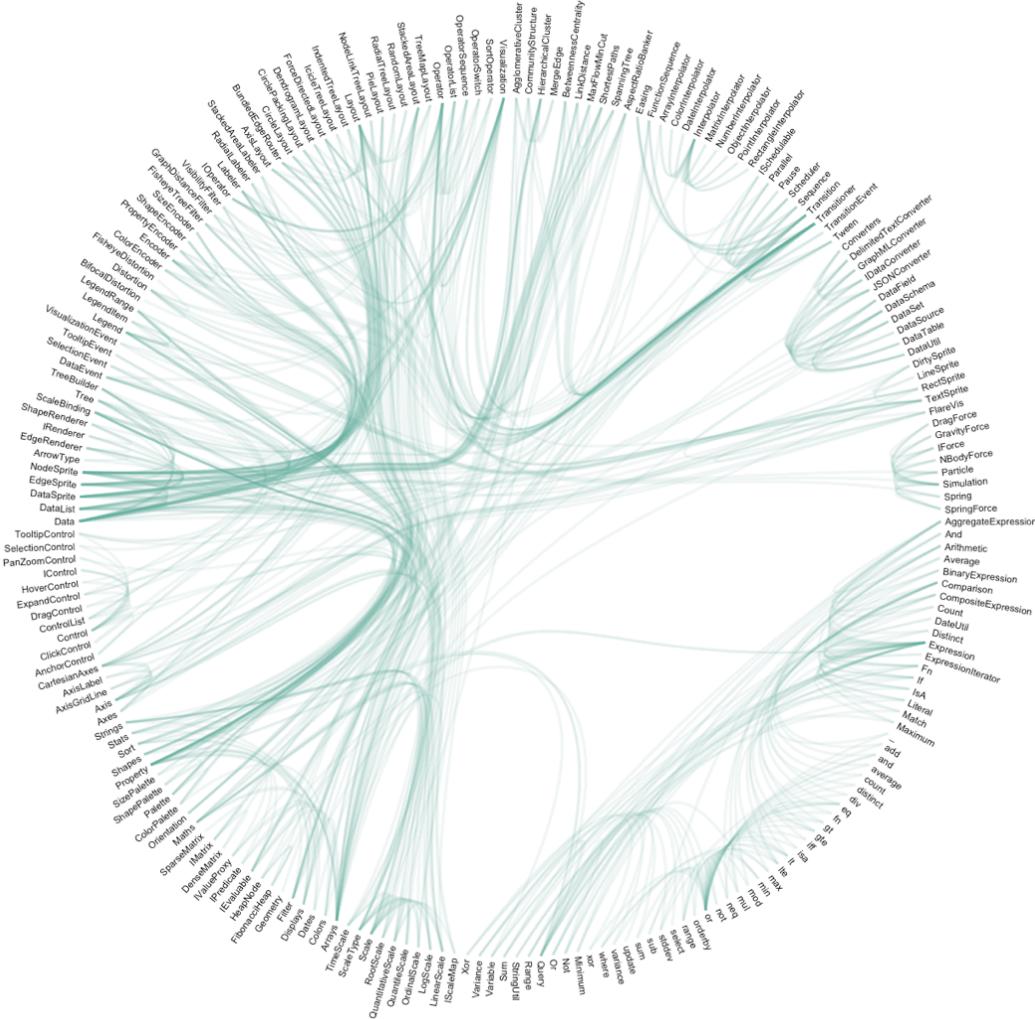
- Distribution
- Evolution
- Correlation
- Maps
- Ranking
- Flow
- Part of a whole



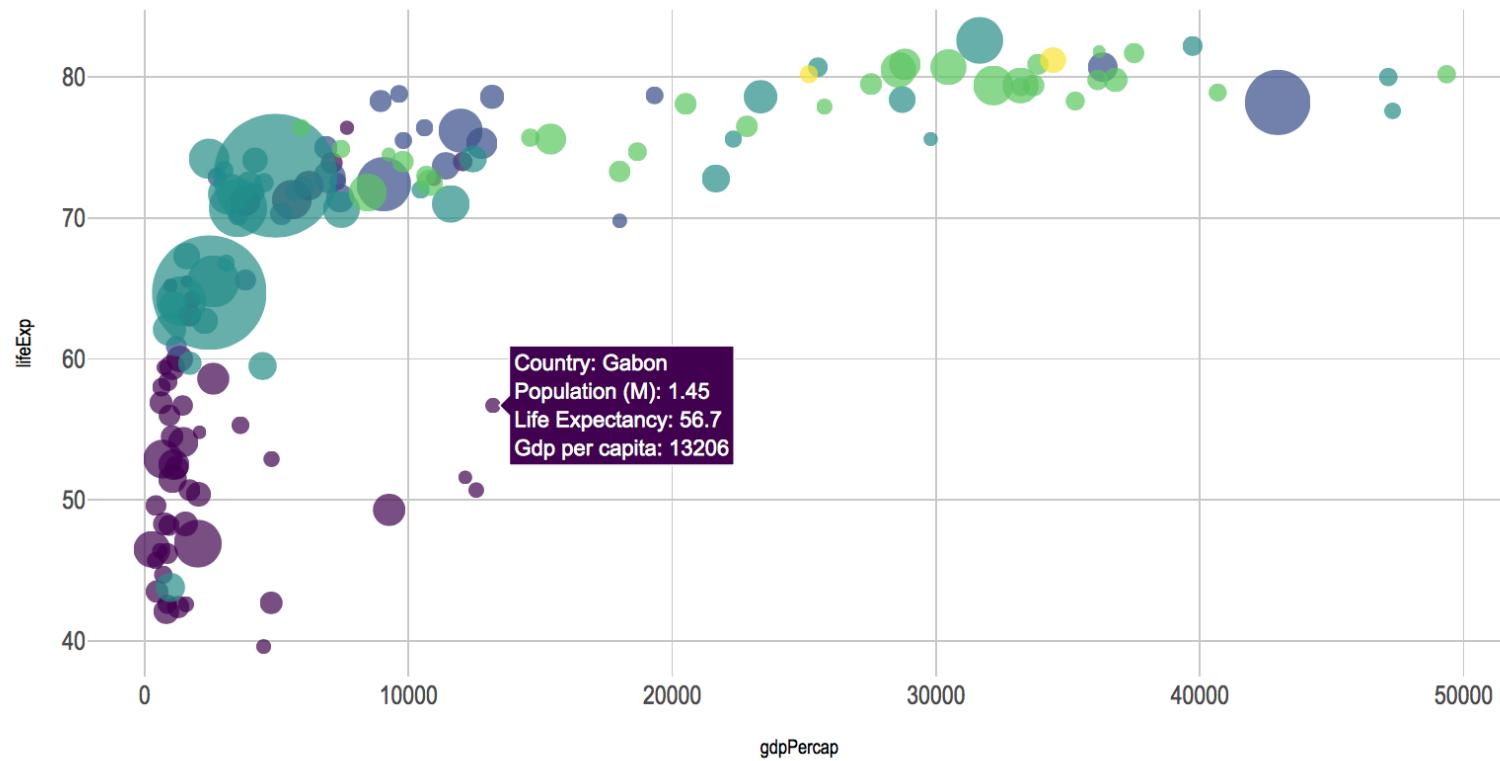
Question – **Exploratory** – Reader – Data – Interactivity – Eye catching



Question – Explo/Expla – **Reader** – Data – Interactivity – Eye catching

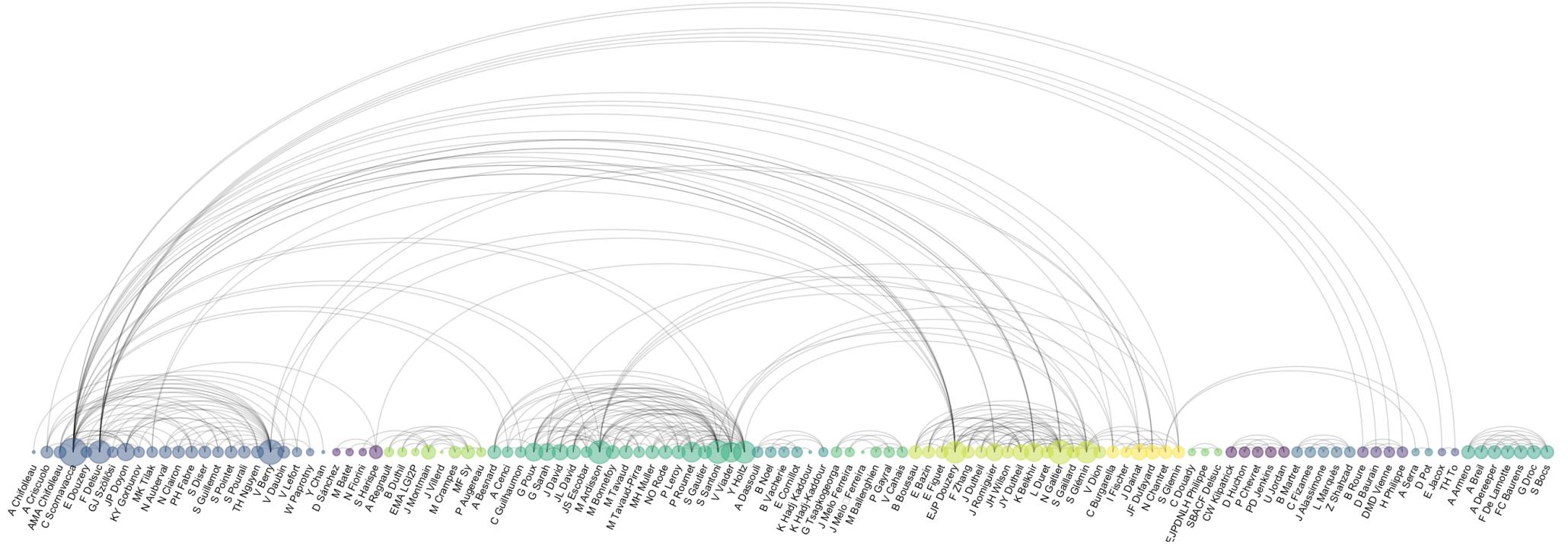


Question – Explo/Expla – Reader – Data – **Interactivity** – Eye catching



Question – Explo/Expla – Reader – Data – Interactivity – **Eye catching**





Co-authorship network of a researcher



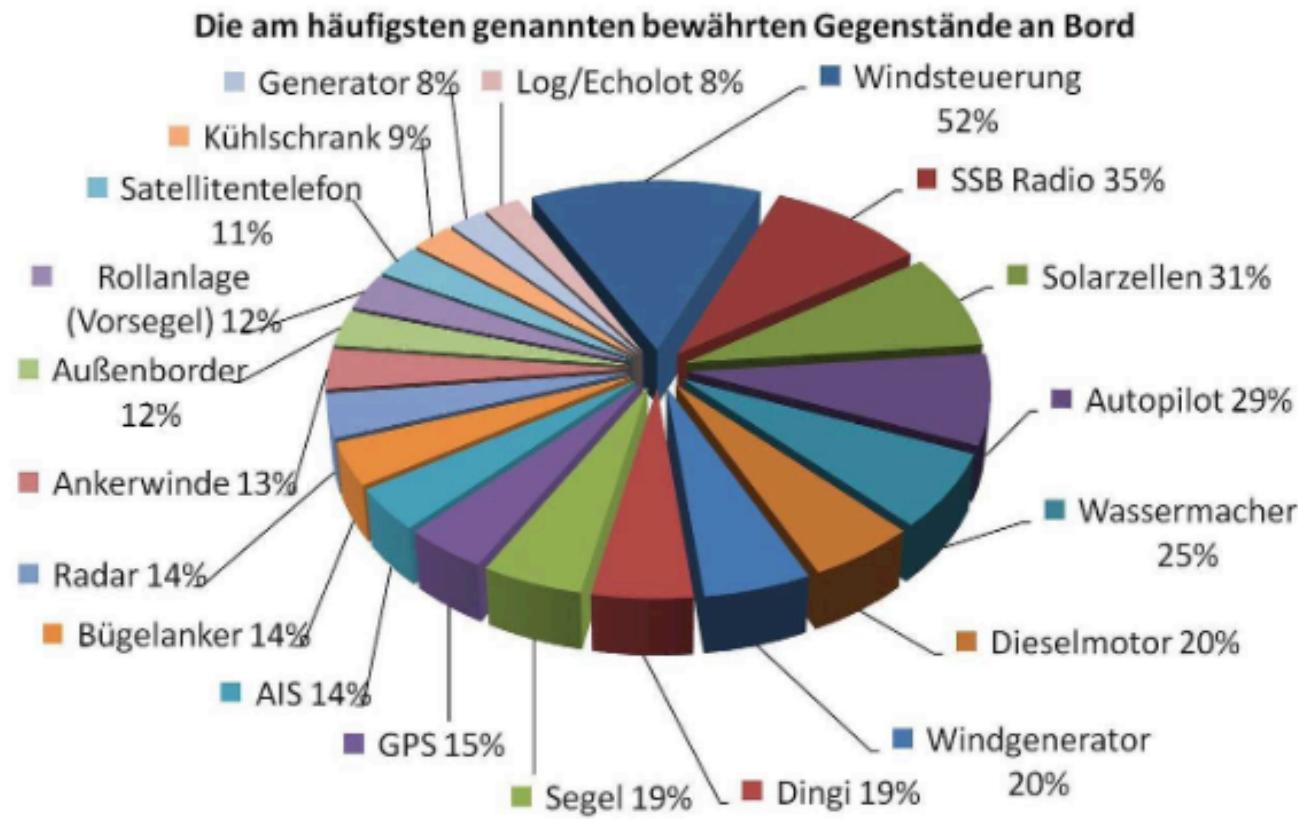
Where surfers travel.

data-to-viz.com | NASA.gov | 10,000 #surf tweets recovered

WHAT YOU SHOULD **NOT** DO

A gallery of most common caveats

What's wrong with
this chart?



Source: [WTF Visualizations](#)

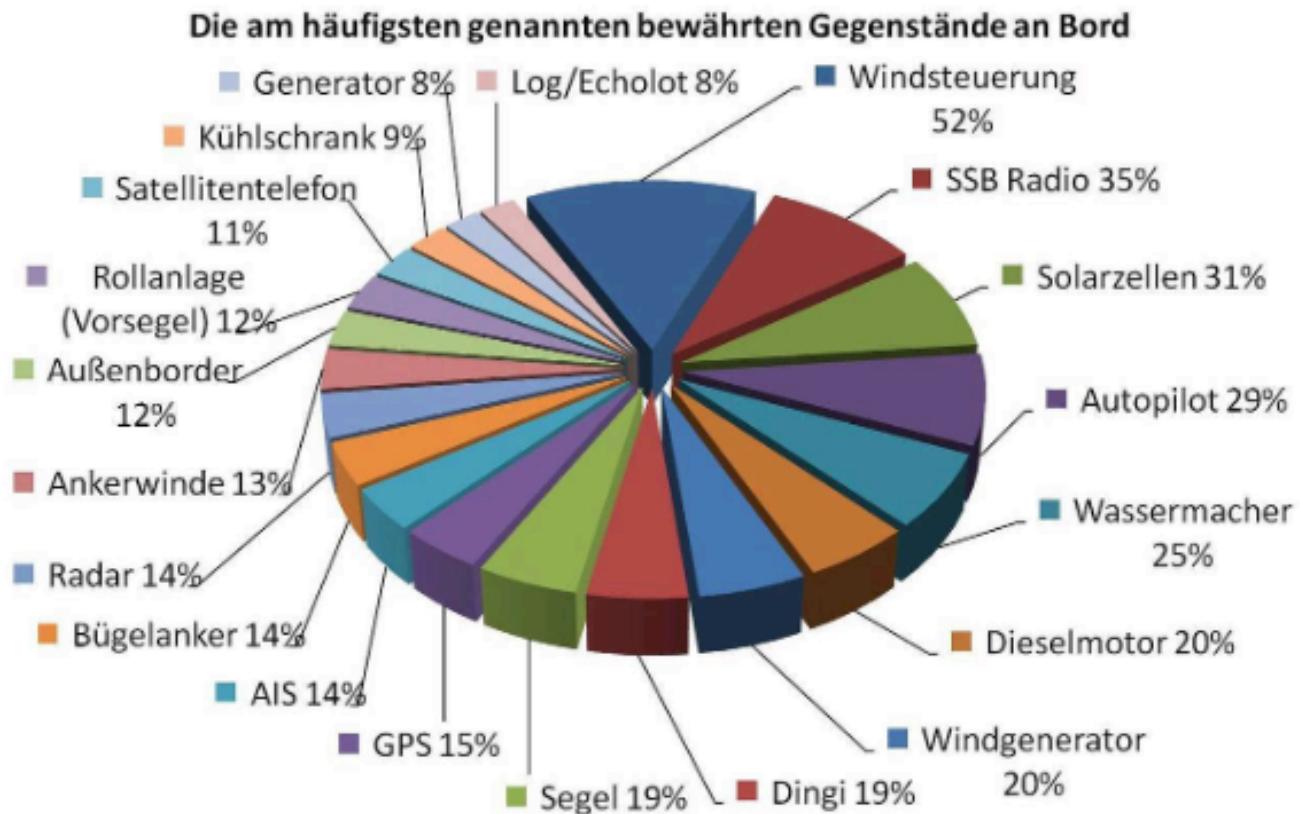
Calculation

+

3D

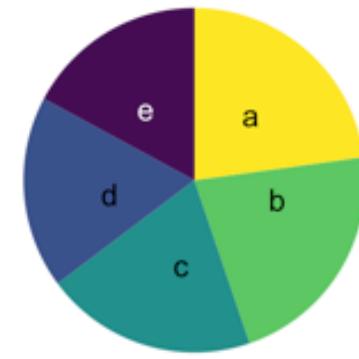
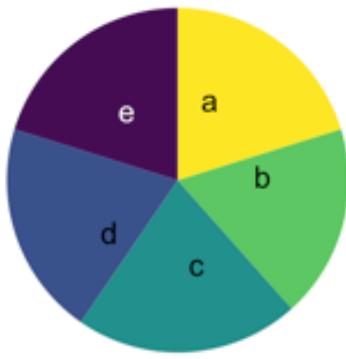
+

Pie chart



Source: [WTF Visualizations](#)

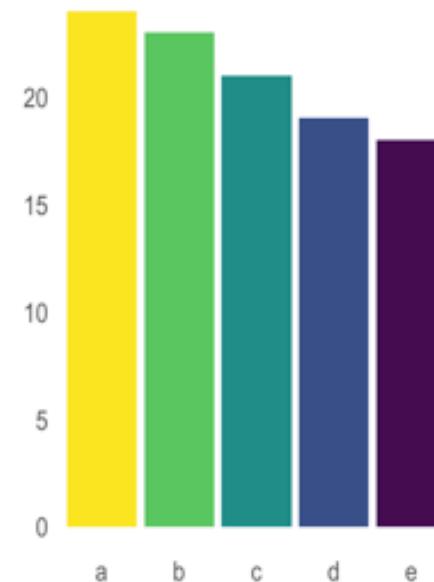
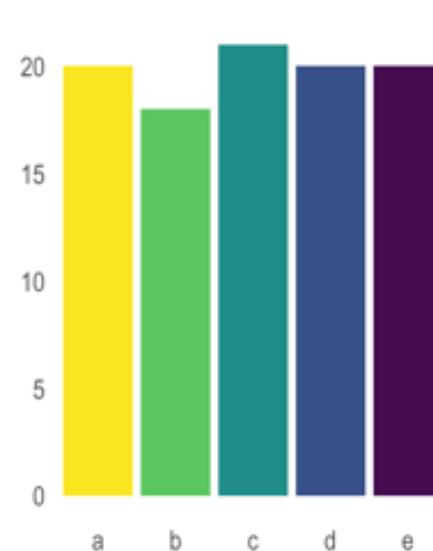
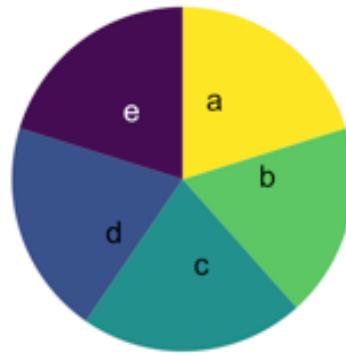
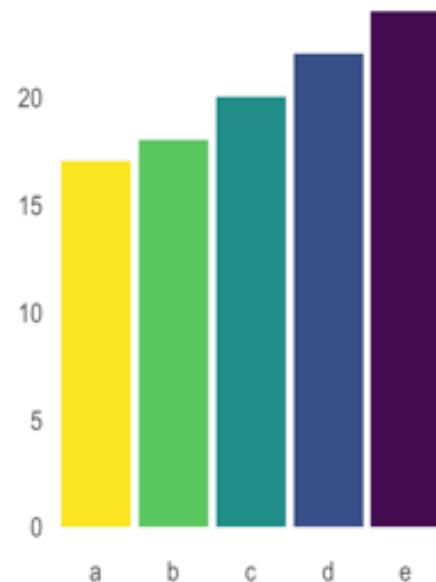
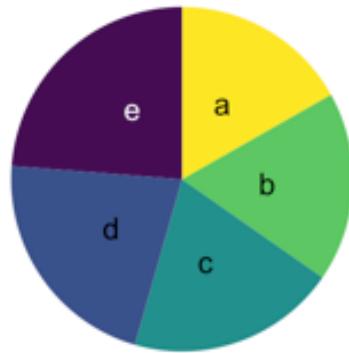
What's wrong
with pie chart?



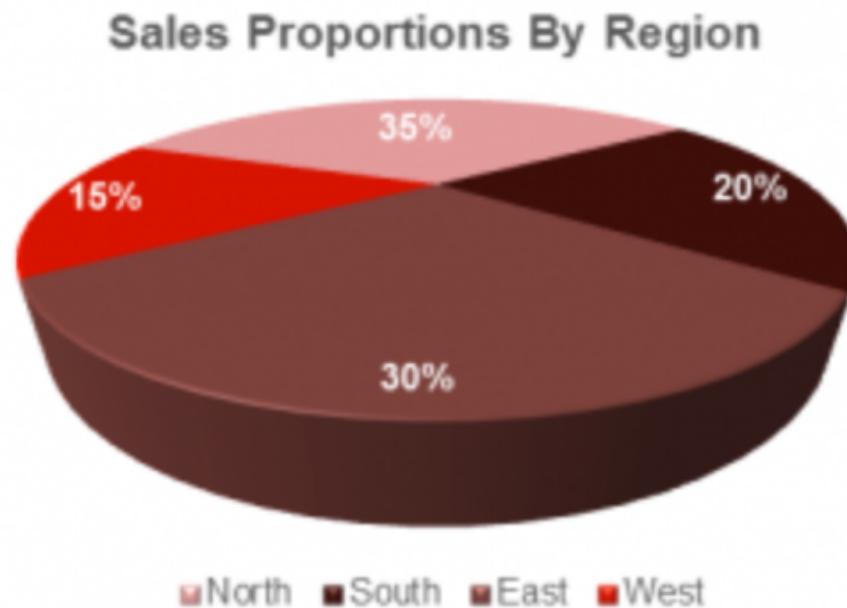
What can you see?

What's wrong with
pie chart?

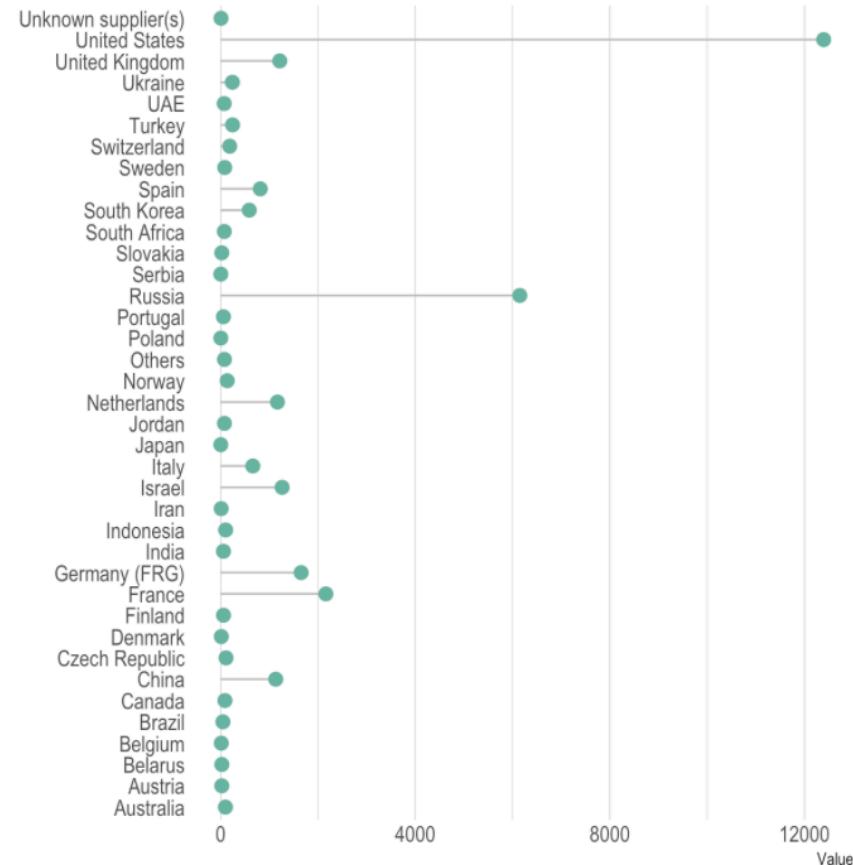
It is hard to
distinguish angles



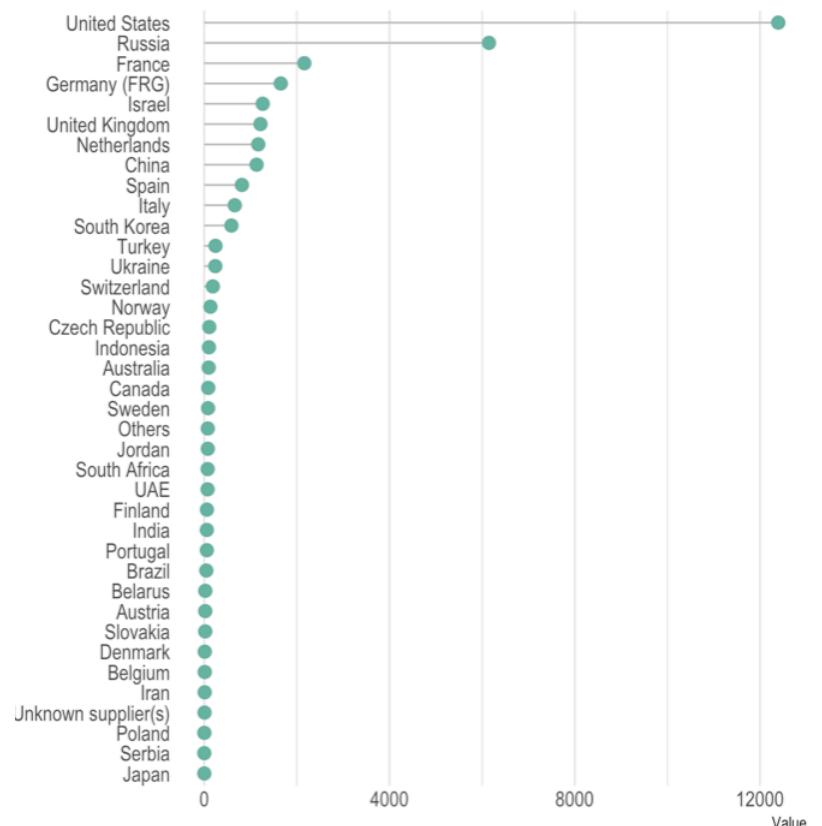
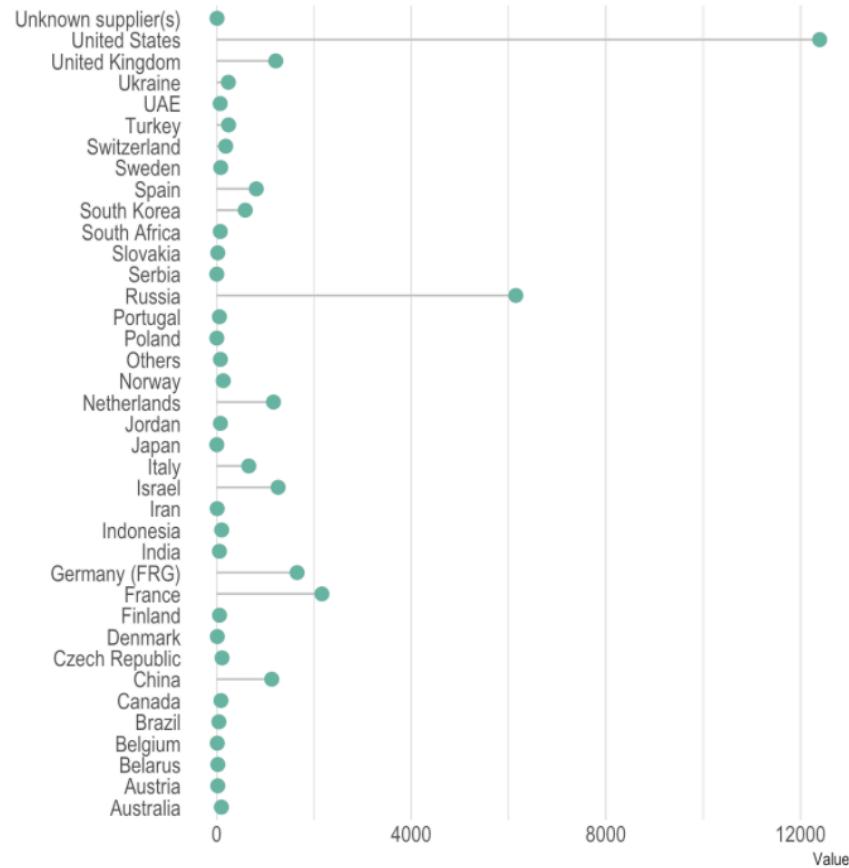
What's wrong with 3D



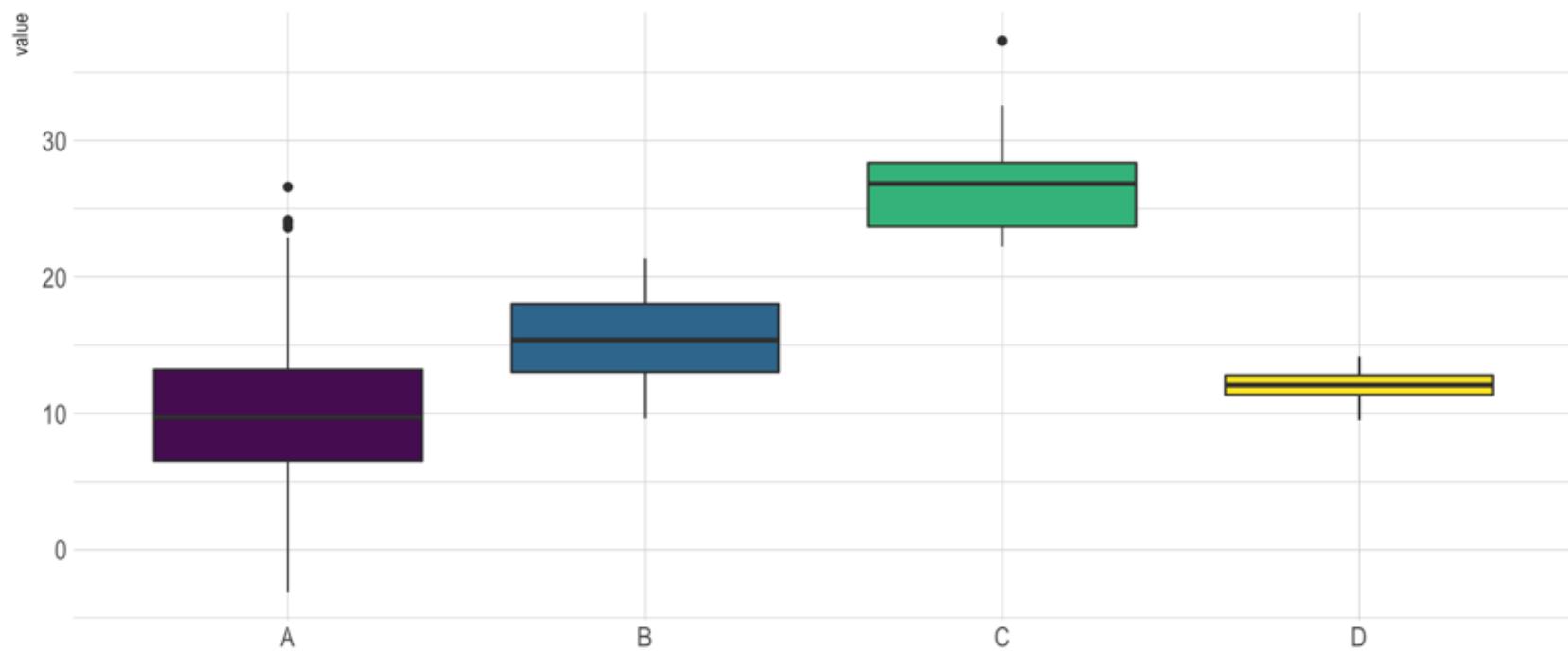
What could be better
here?



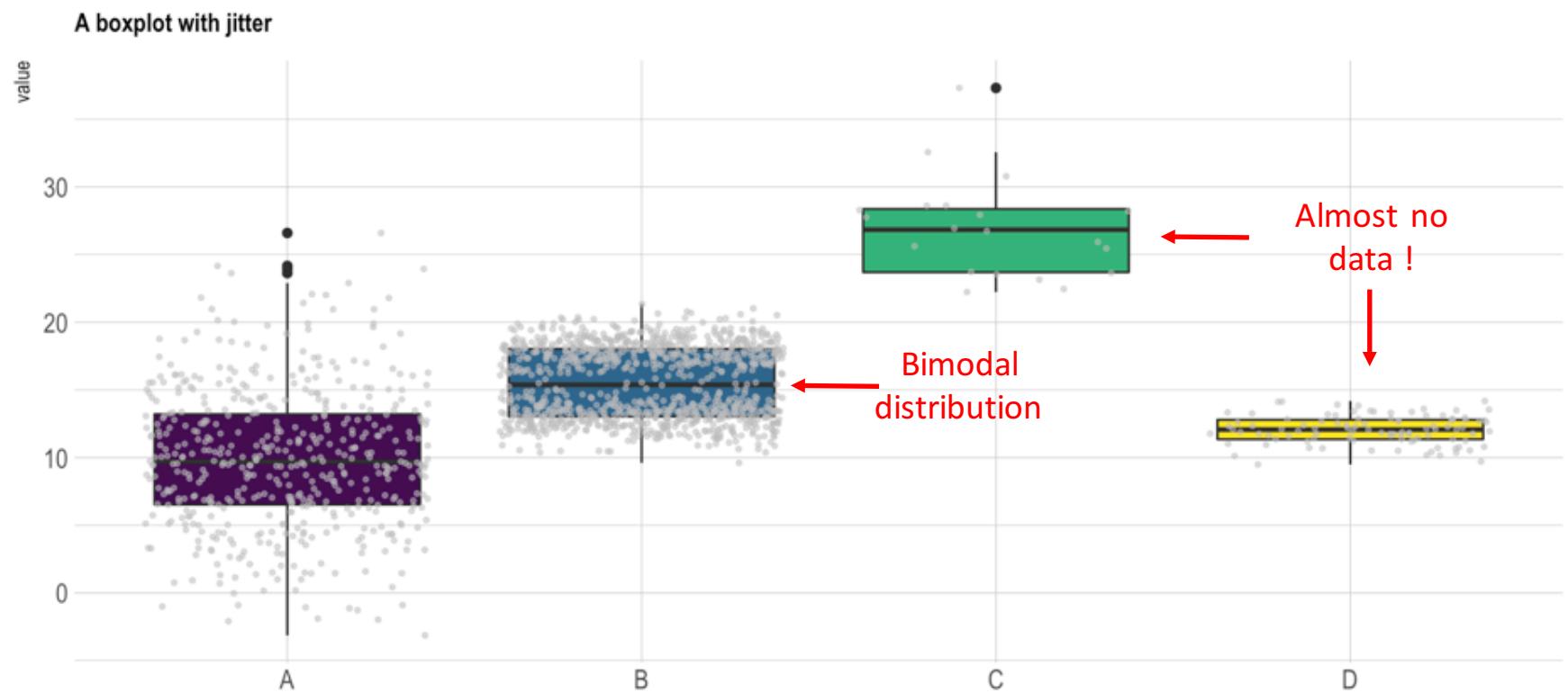
Order your data



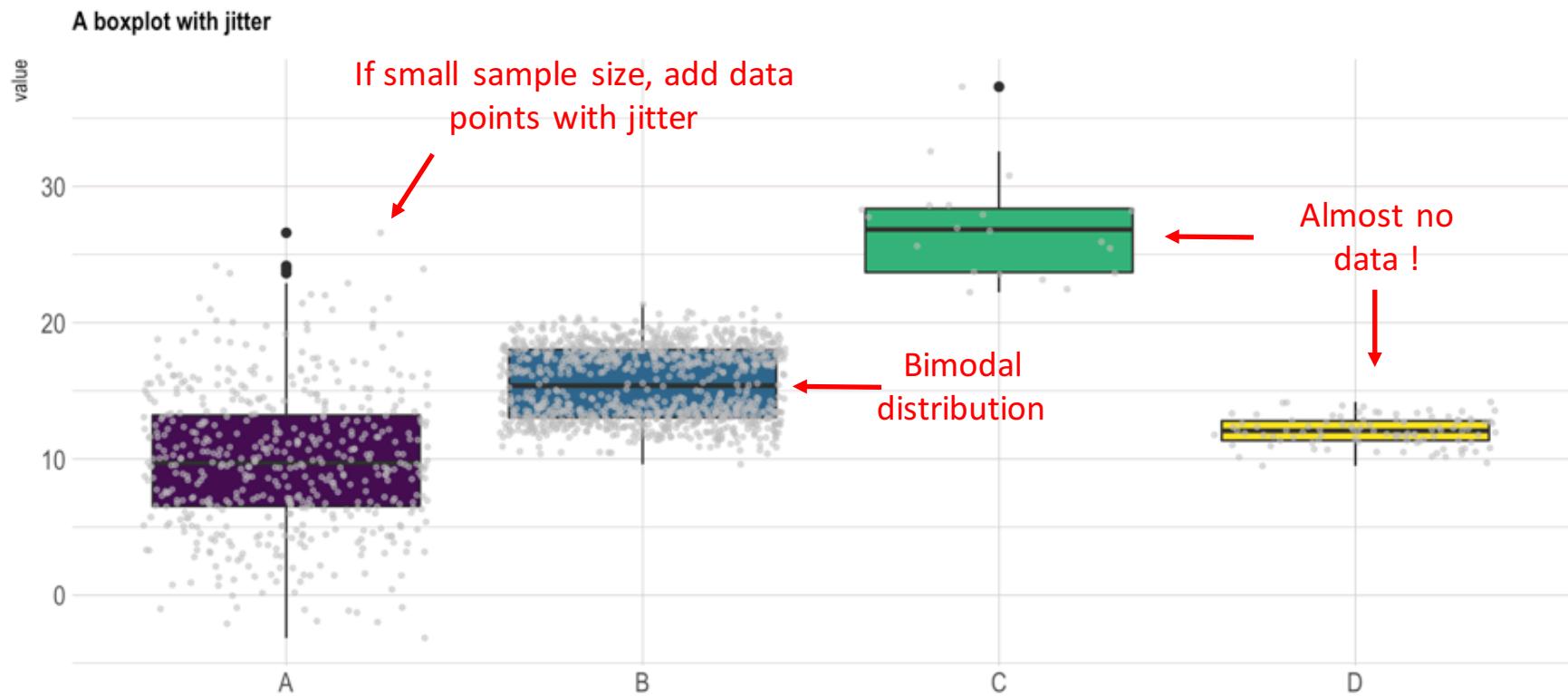
Anything wrong here?



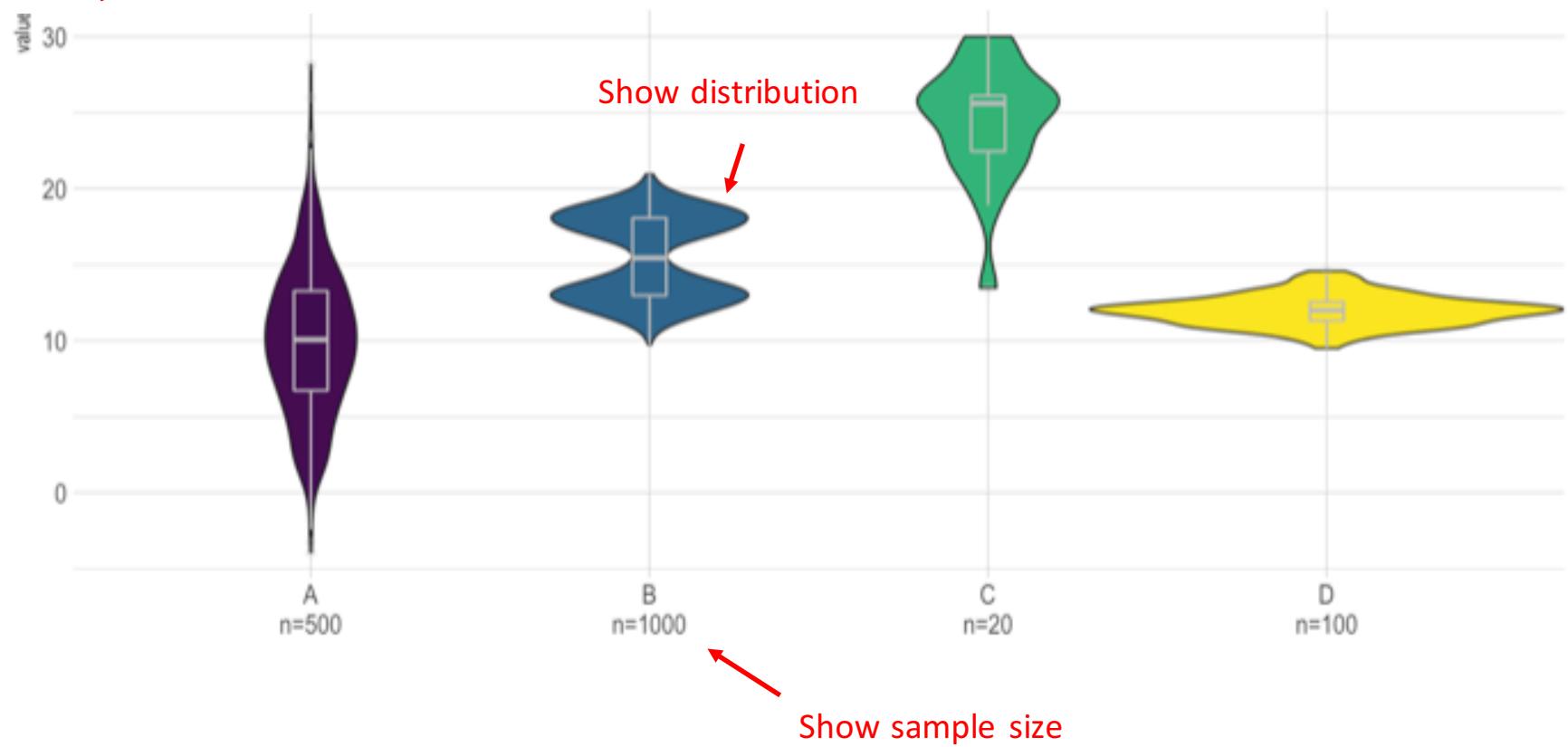
Boxplot = hide information



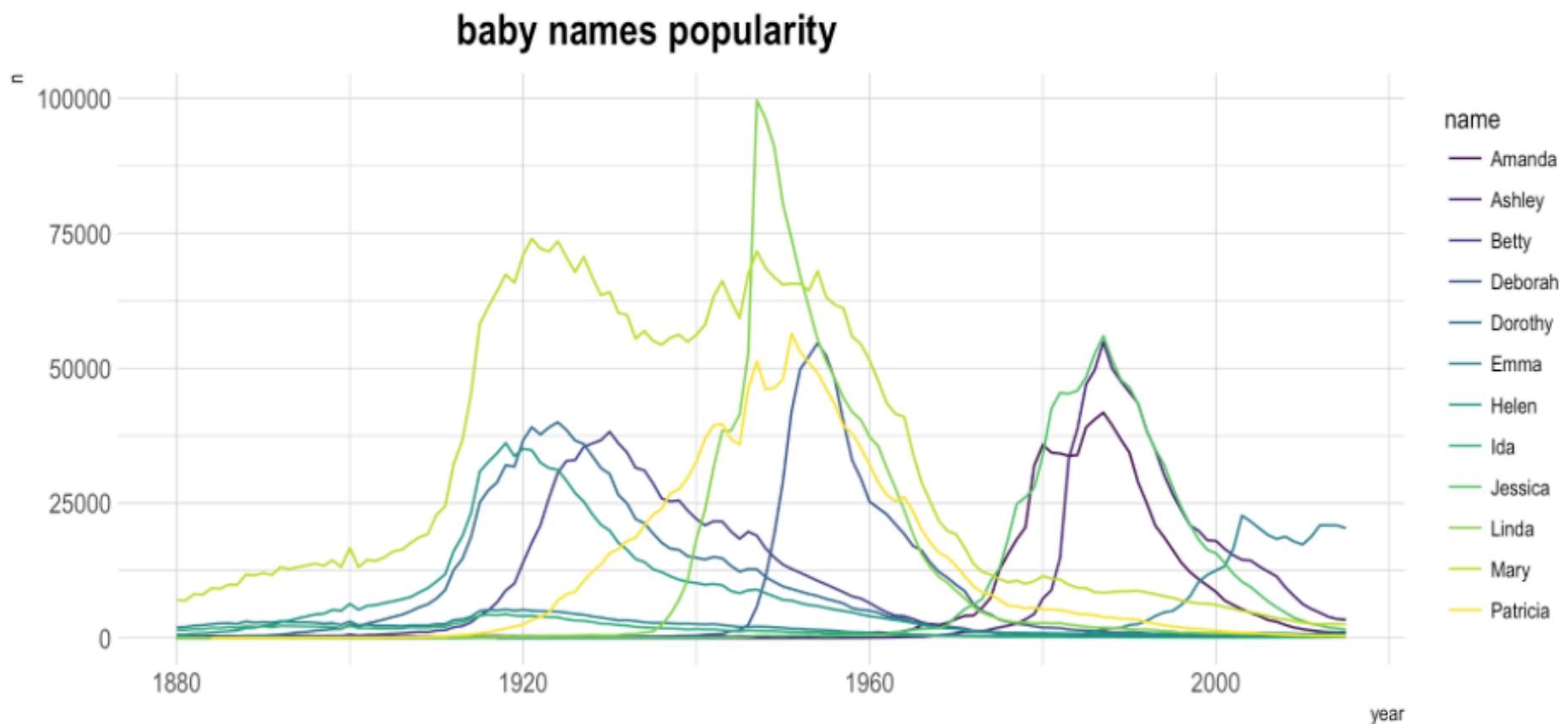
Boxplot = hide information



If big sample size, use violin plot



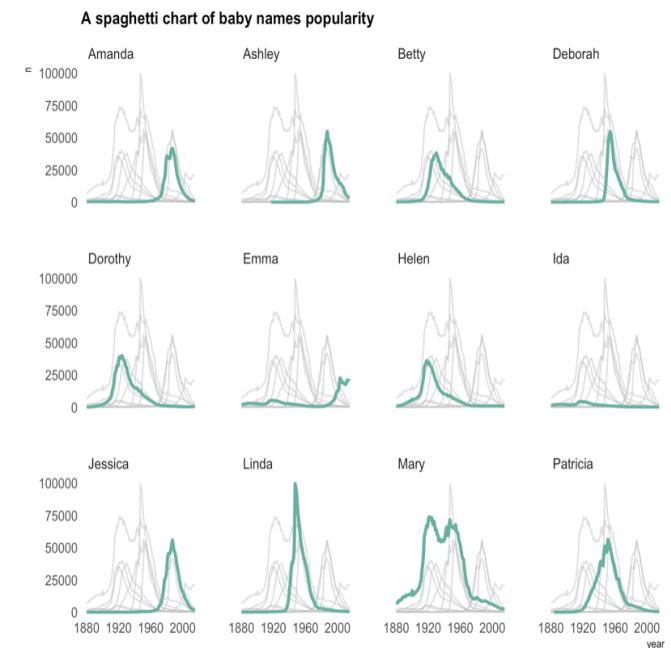
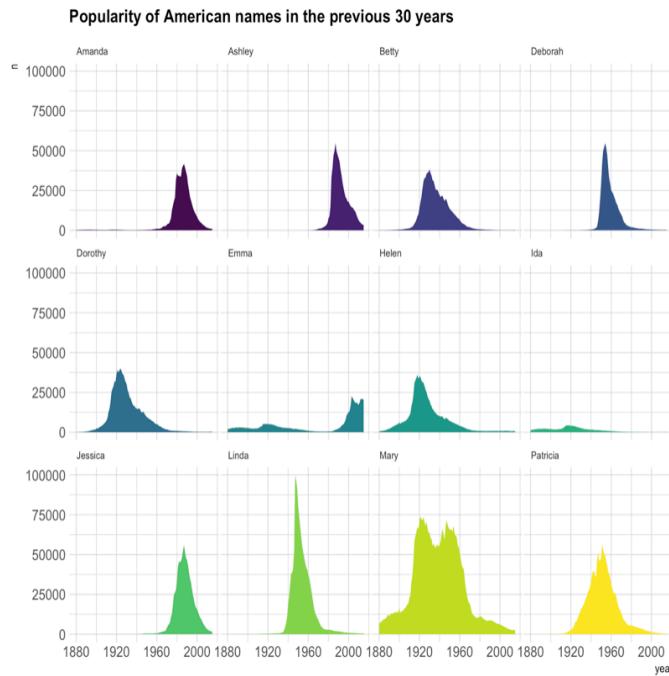
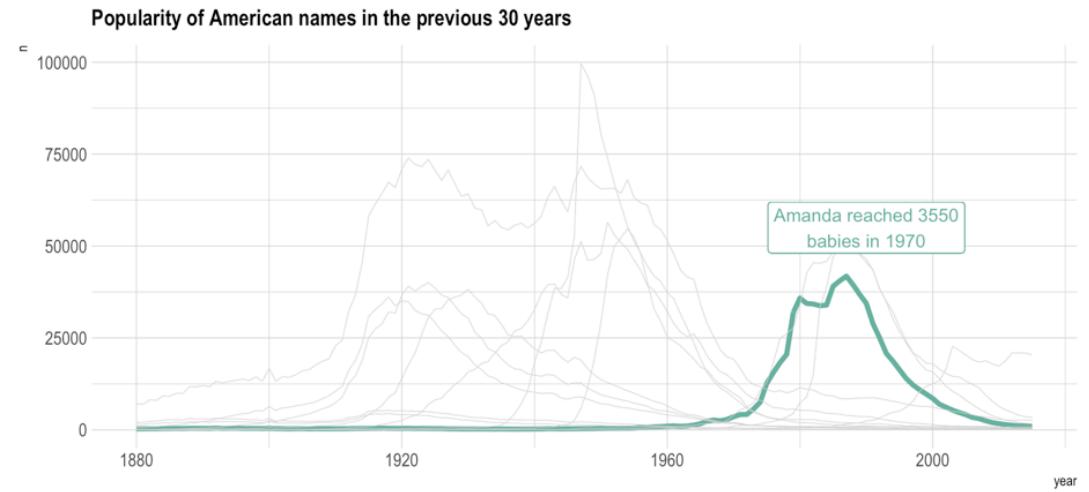
Look at this chart



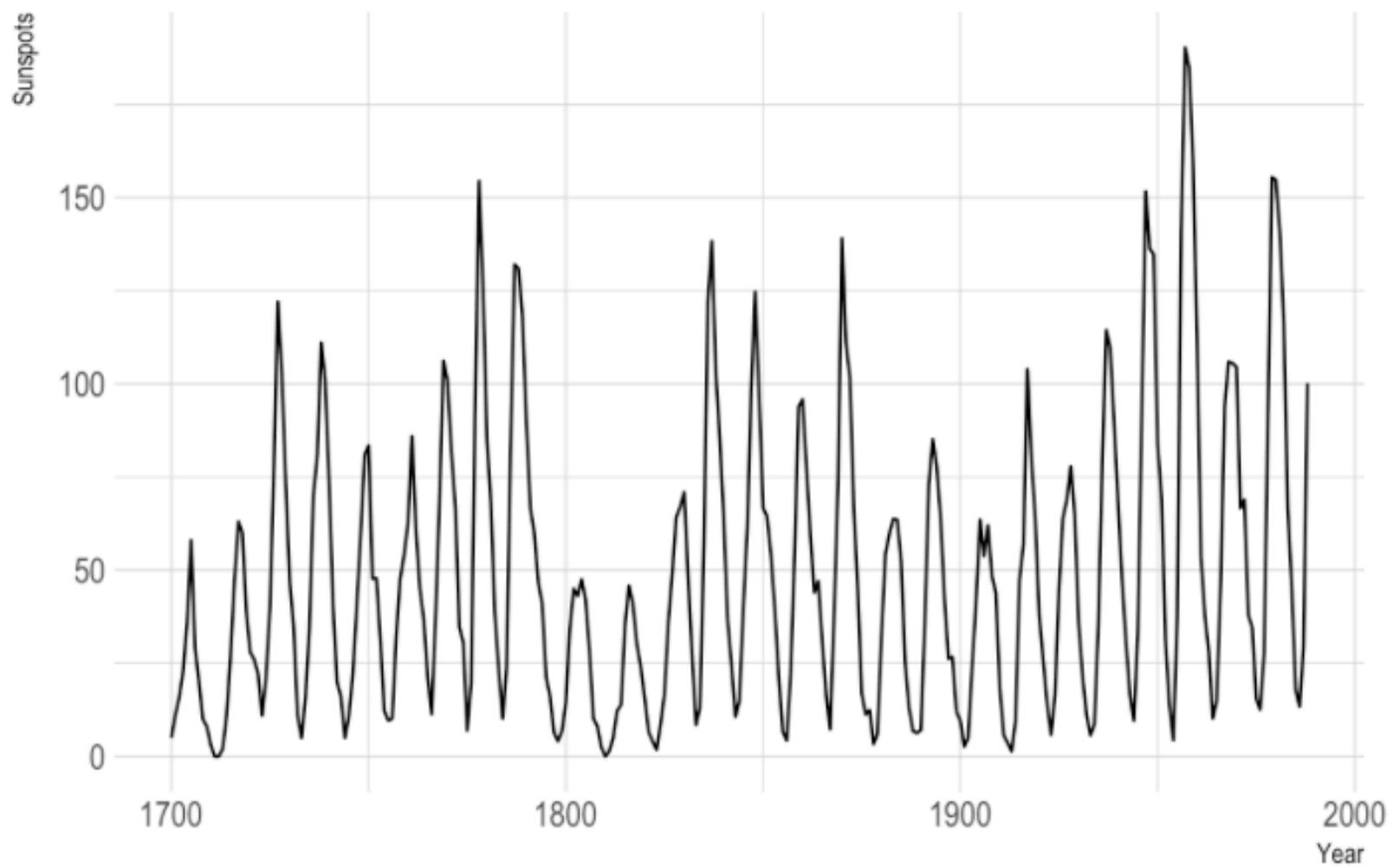
What do you remember?

The Spaghetti chart

[Read more](#)

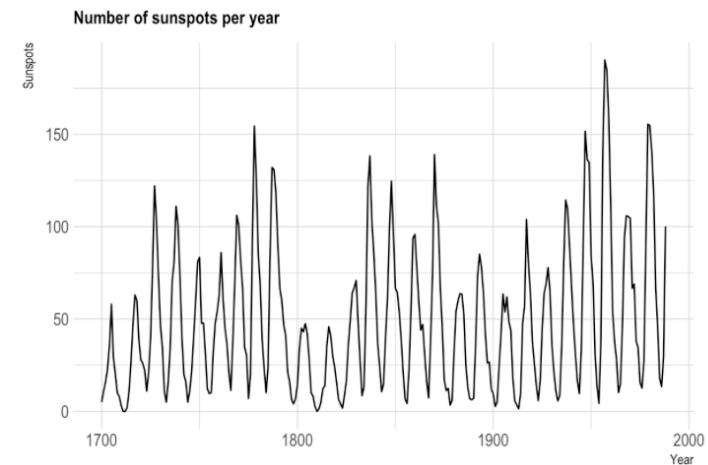


Number of sunspots per year

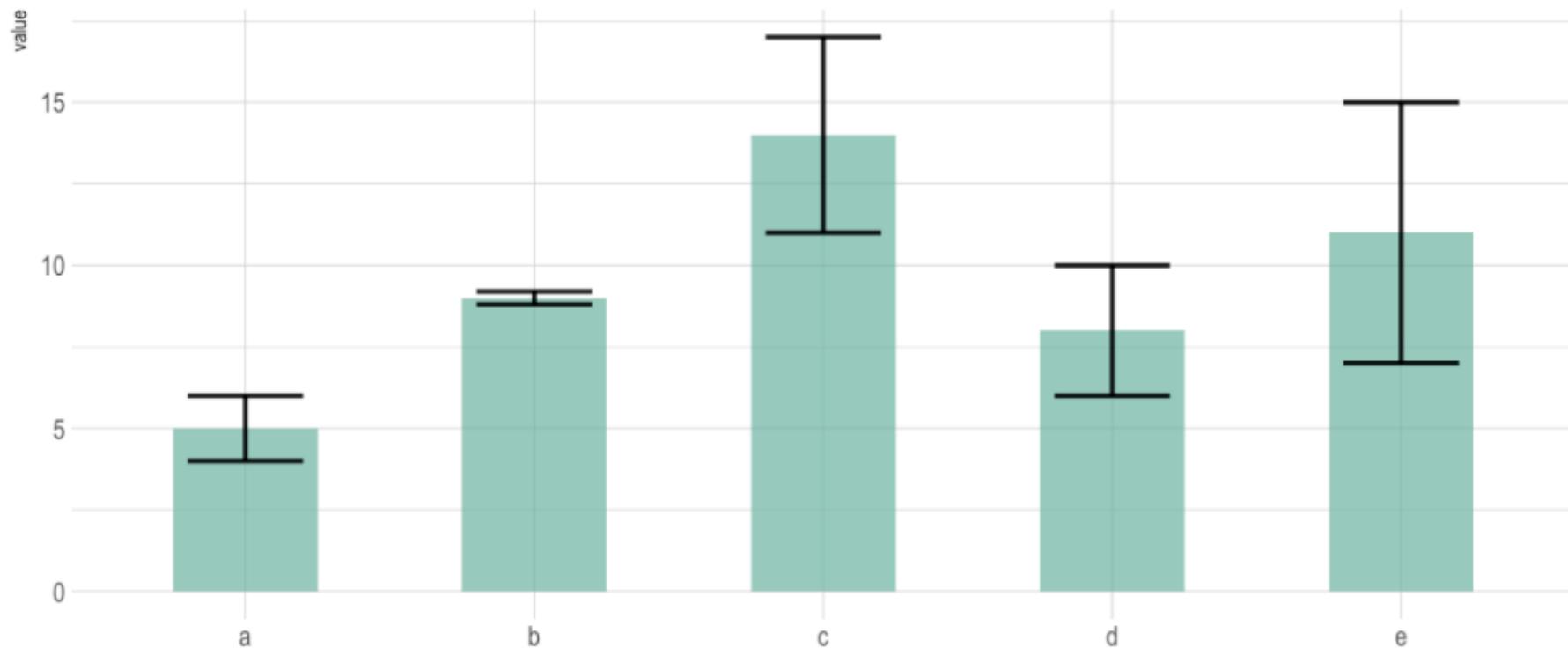


Mind the aspect ratio

[Read more](#)

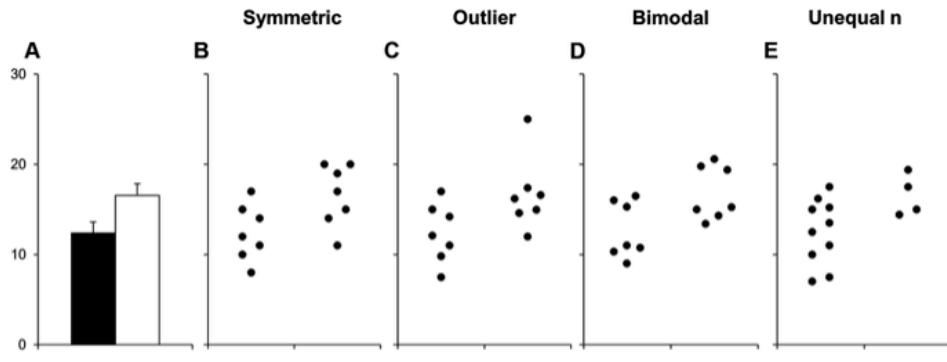


A barplot with error bar



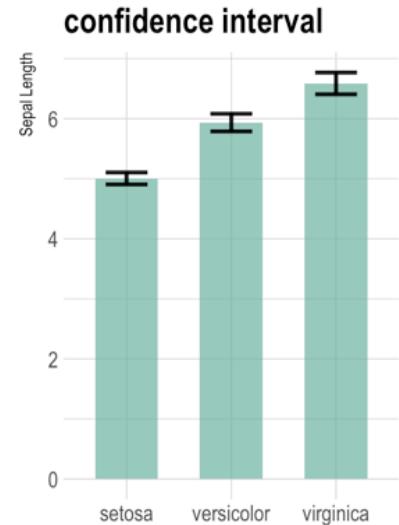
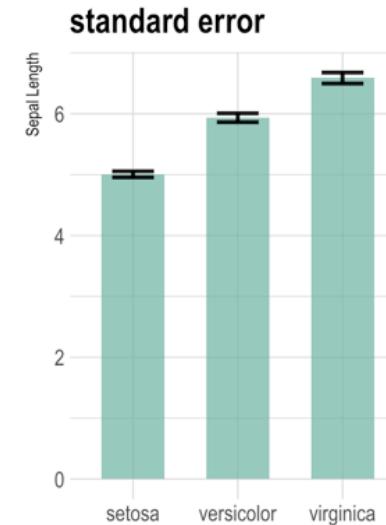
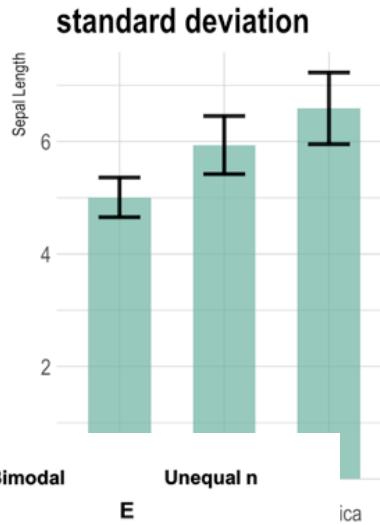
The issue with error bars

[Read more](#)



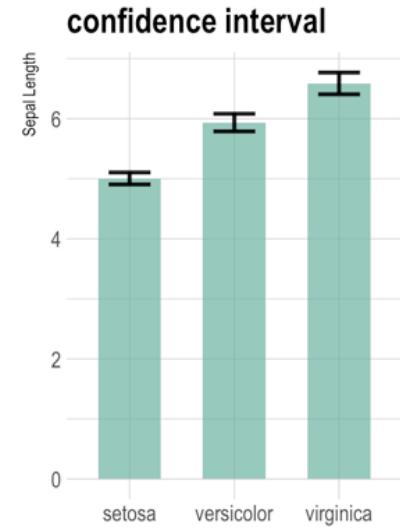
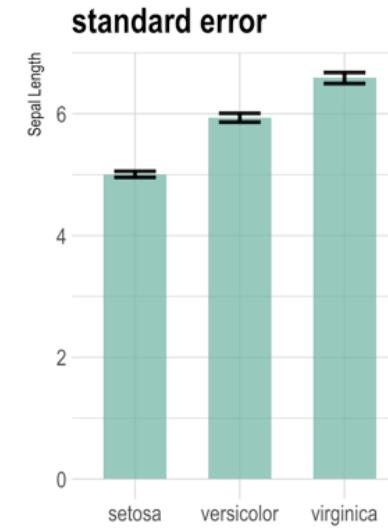
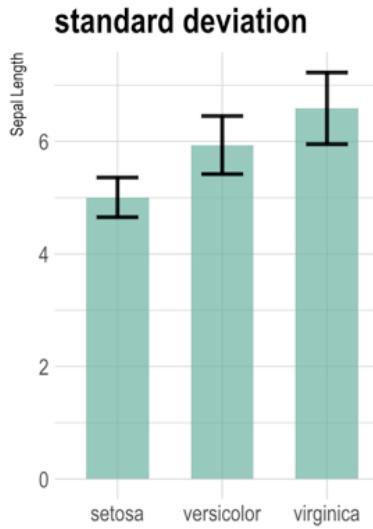
Test	p value			
T-test: Equal var.	0.035	0.050	0.026	0.063
T-test: Unequal var.	0.035	0.050	0.026	0.035
Wilcoxon	0.054	0.073	0.128	0.103

Weissgerber et al. 2015



The issue with error bars

[Read more](#)





AMERICA'S ECONOMY 2010 GROSS DOMESTIC PRODUCT



United States
\$14.6 TRILLION



China \$5.7 TRILLION



Japan \$5.3 TRILLION

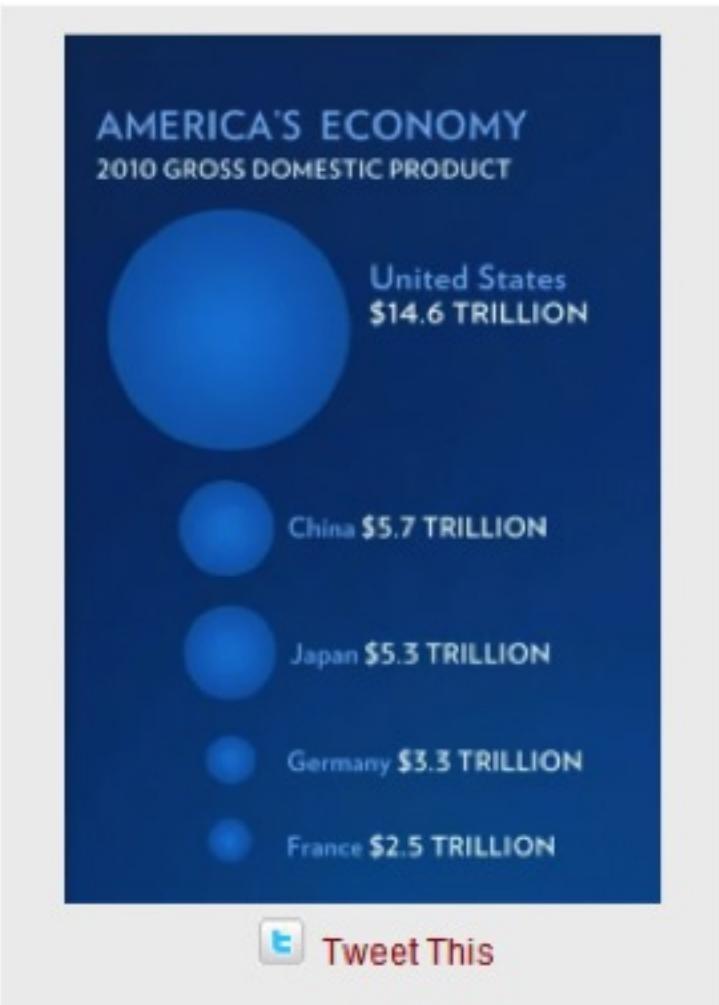


Germany \$3.3 TRILLION

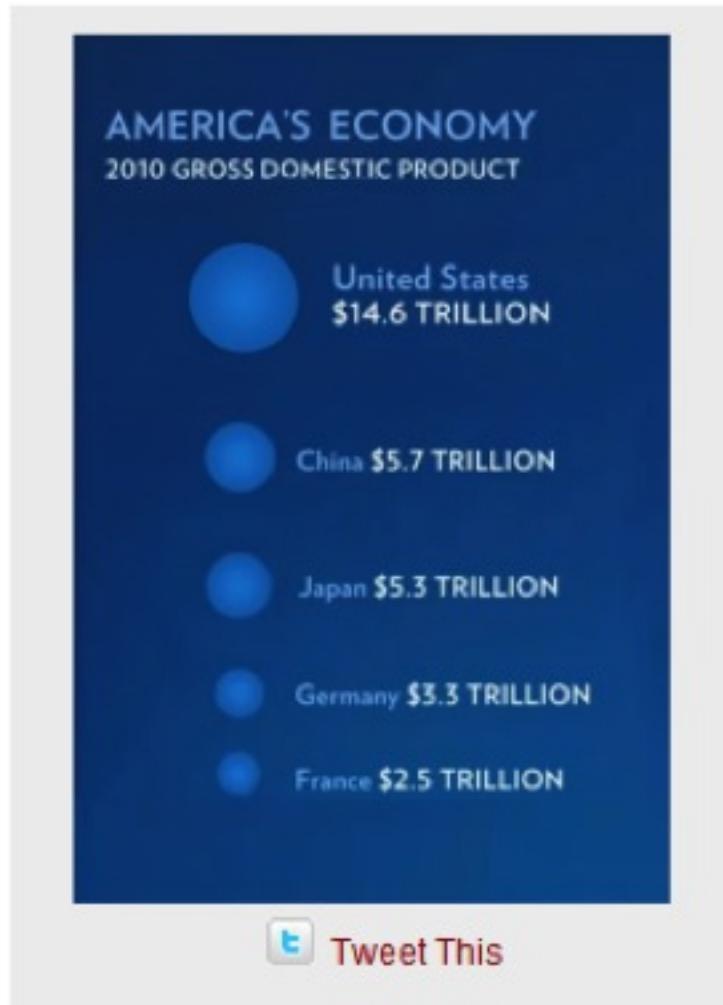


France \$2.5 TRILLION

Size = radius



Size = area



Source: [Fast Fedora blog](#)

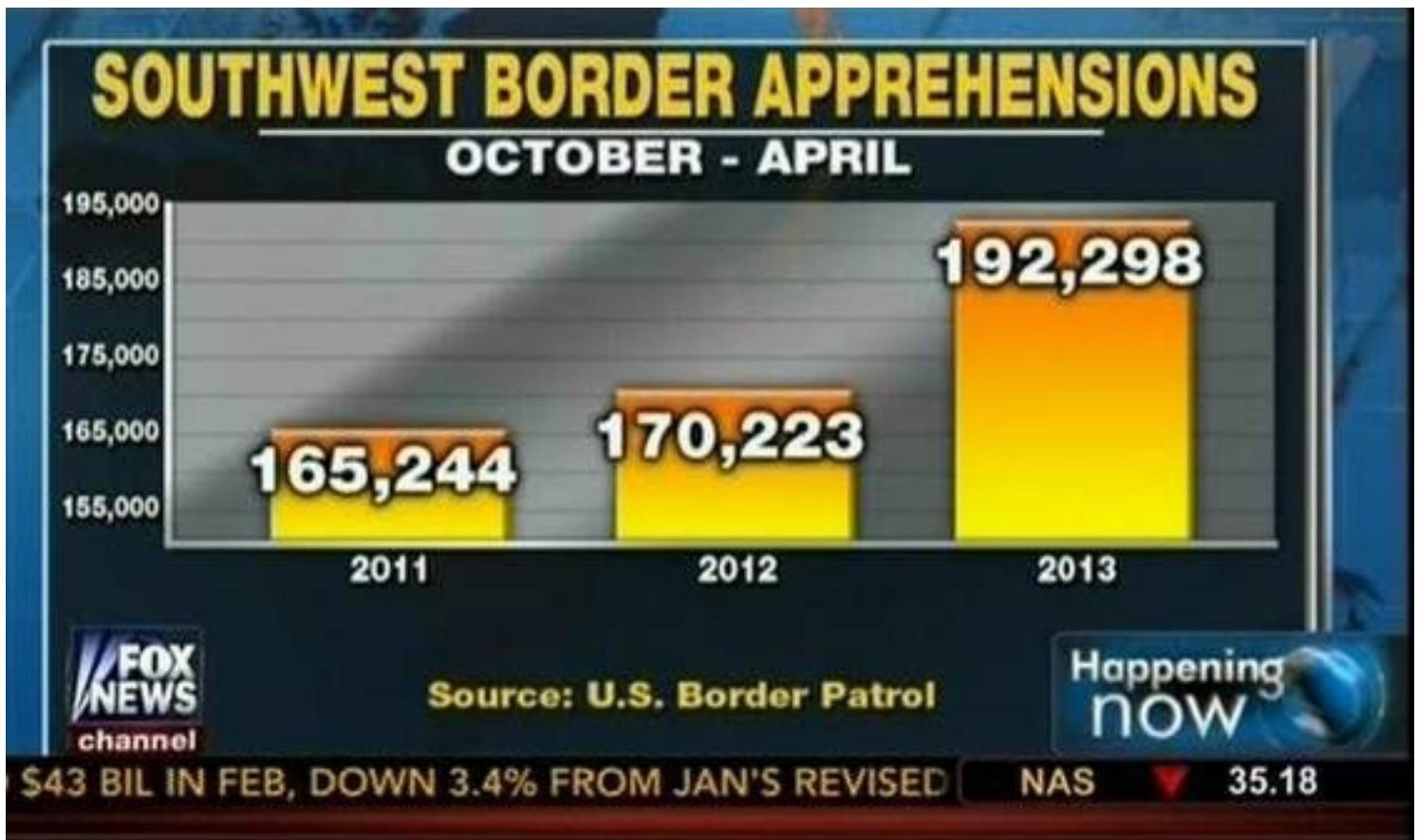
Size = radius



Size = area



Source: [Fast Fedora blog](#)



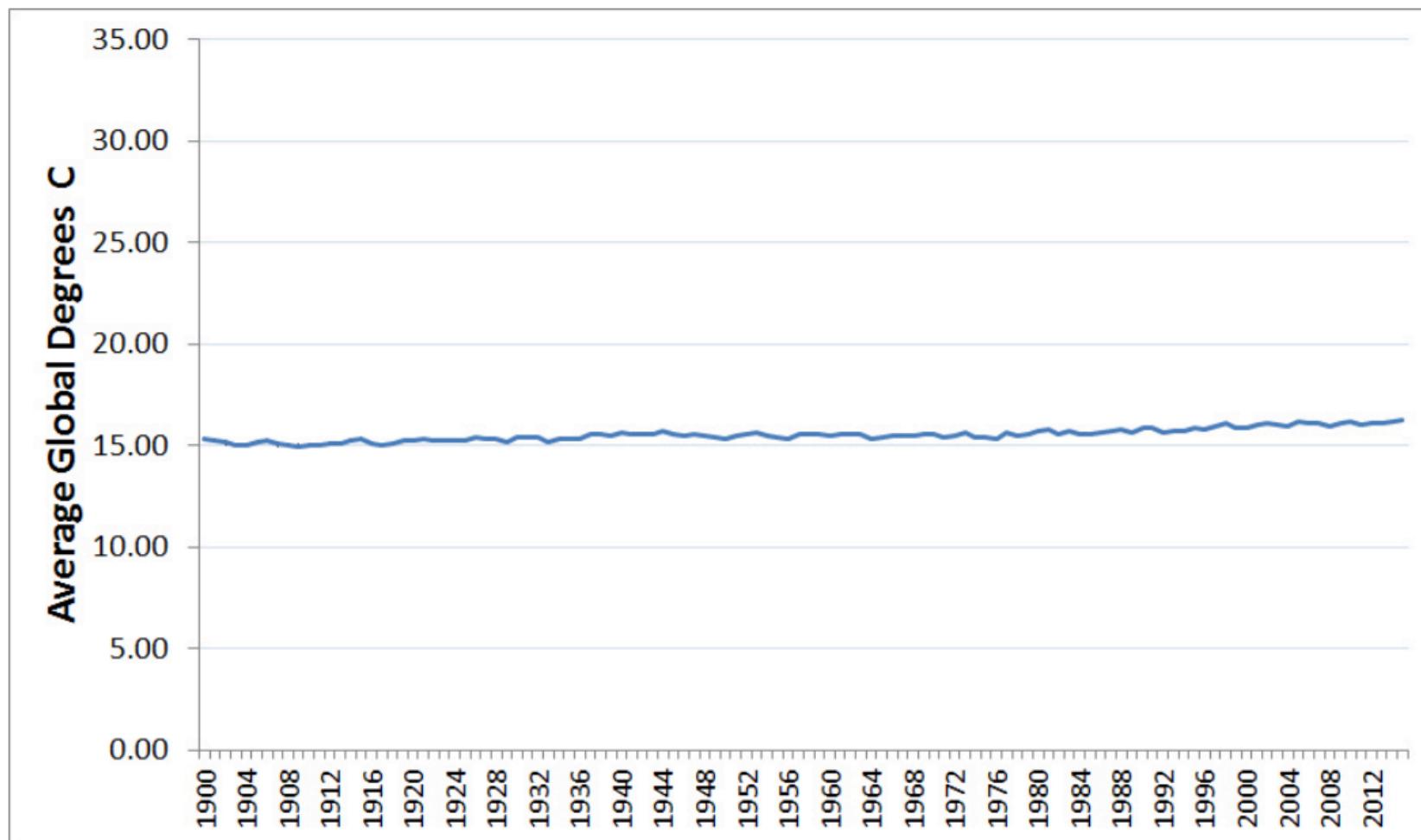
Source: Fox News, via [Media Matters for America](#)

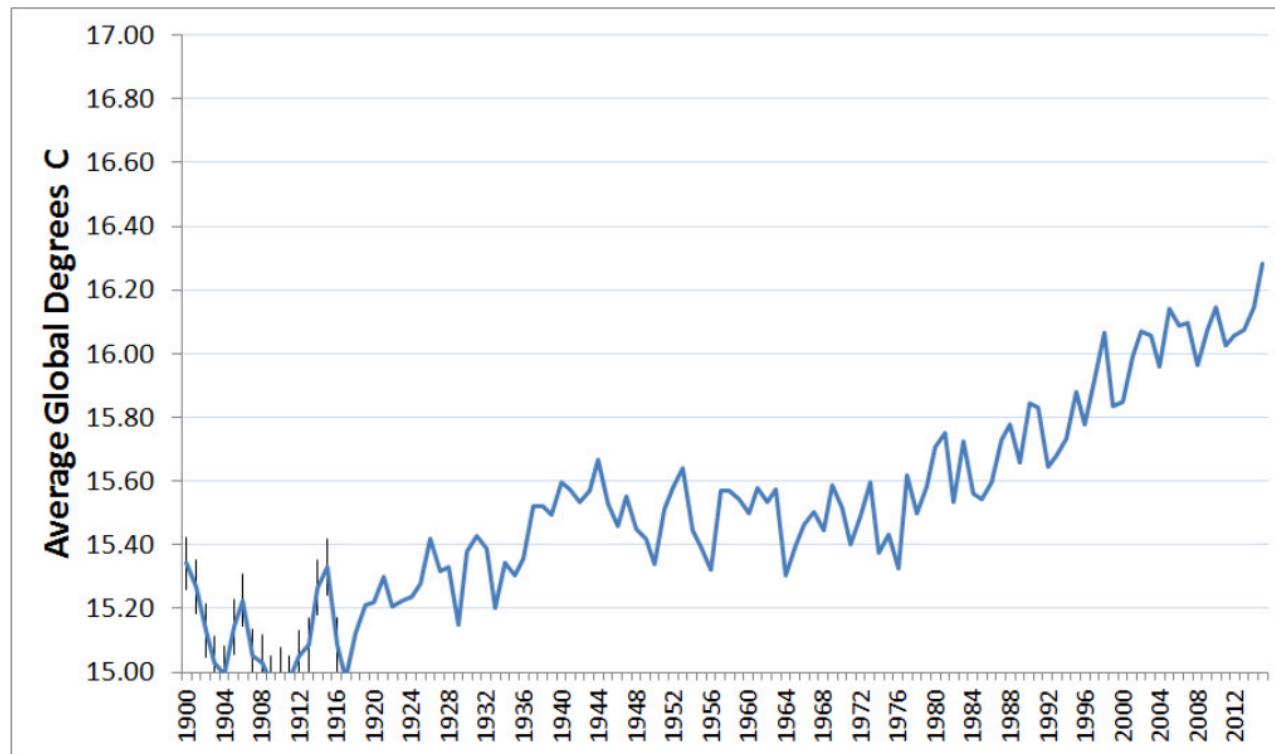
Obama
adminitration

=
2x more
apprehensions?



Source: Fox News, via [Media Matters for America](#)

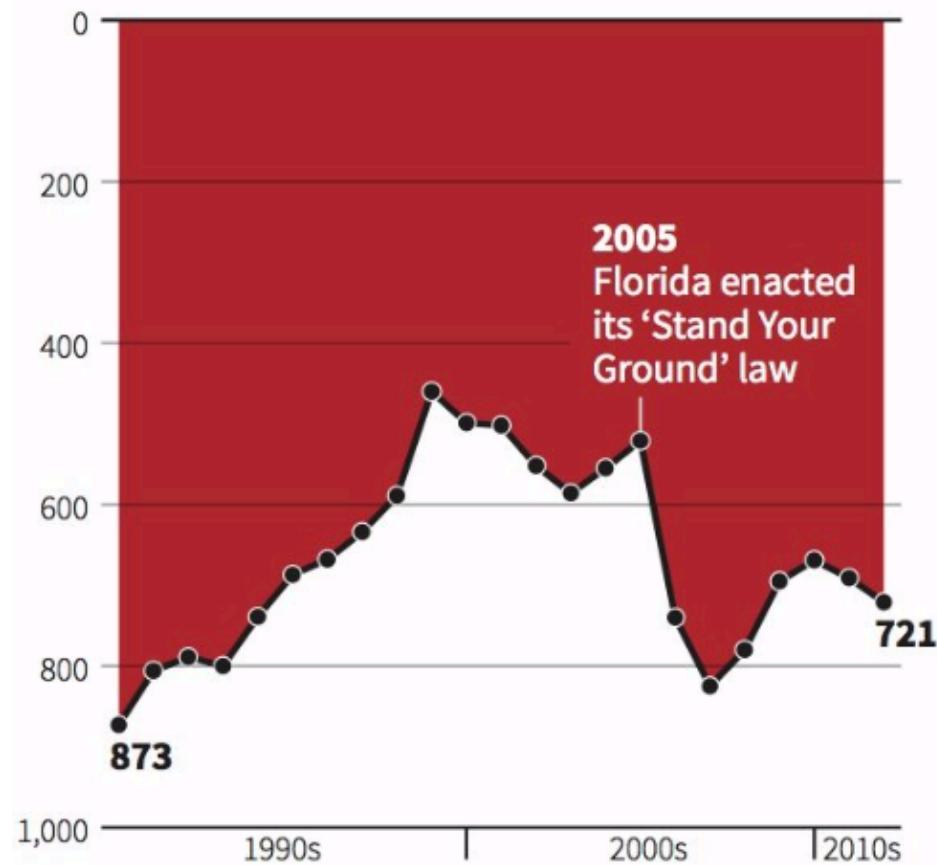




“In general, in a time-series, use a baseline that shows the data not the zero point” - [Edward Tufte](#)

Gun deaths in Florida

Number of murders committed using firearms



Source: Florida Department of Law Enforcement

C. Chan 16/02/2014

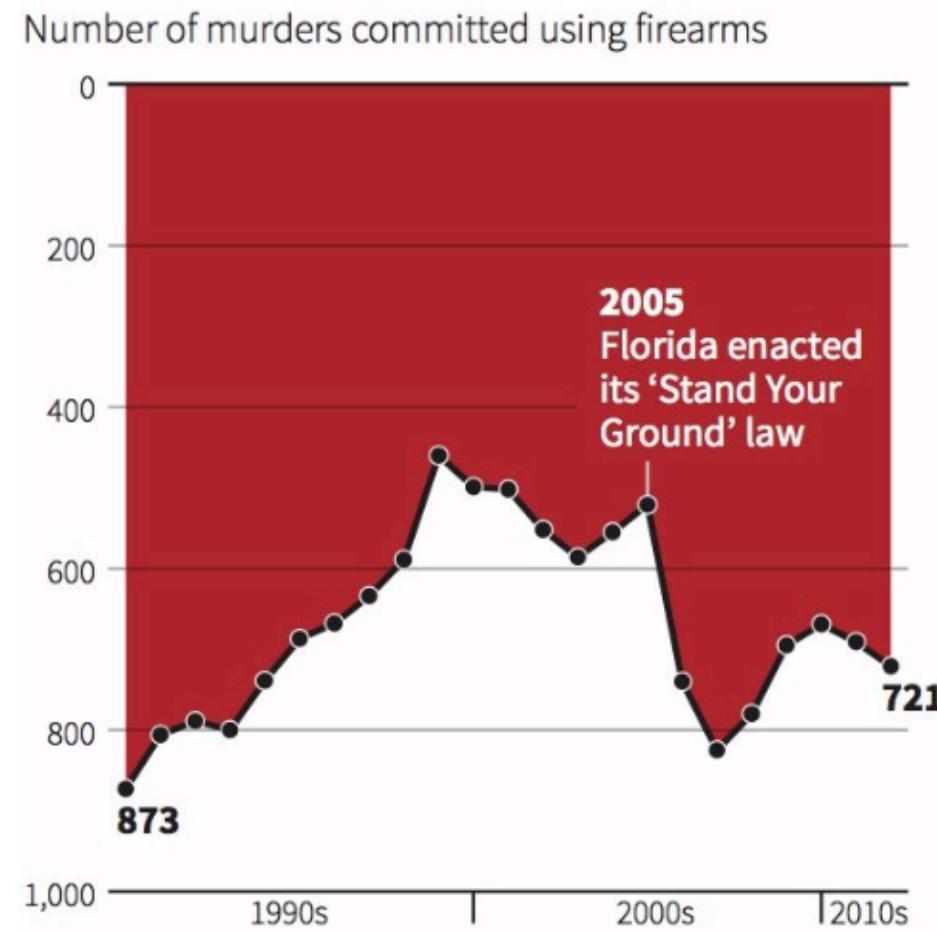
 REUTERS

[Source: KD Nuggets](#)

Do not be
counter intuitive

Reverse Y Axis →

Gun deaths in Florida



Source: Florida Department of Law Enforcement

C. Chan 16/02/2014

REUTERS

[Source: KD Nuggets](#)

Data to Viz

A collection of
dataviz caveats

Data-to-viz.com/caveats



Order your data

When displaying the value of several entities, ordering them makes the graph much more insightful.



To cut or not to cut?

Cutting the Y-axis is one of the most controversial practice in data viz. See why.



The spaghetti chart

A line graph with too many lines becomes unreadable: it is called a spaghetti graph.



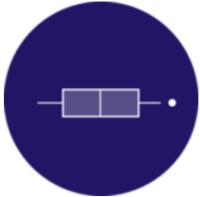
Pie chart

The human eye is bad at reading angles. See how to replace the most criticized chart ever.



Play with histogram bin size

Always try different bin sizes when you build a histogram, it can lead to different insights.



Do boxplots hide information?

Boxplots are a great way to summarize a distribution but hide the sample size and their distribution.



The problem with error bars

Barplots with error bars must be used with great care. See why and how to replace them.



Too many distributions.

If you need to compare the distributions of many variables, don't clutter your graphic.

HOW TO DO IT

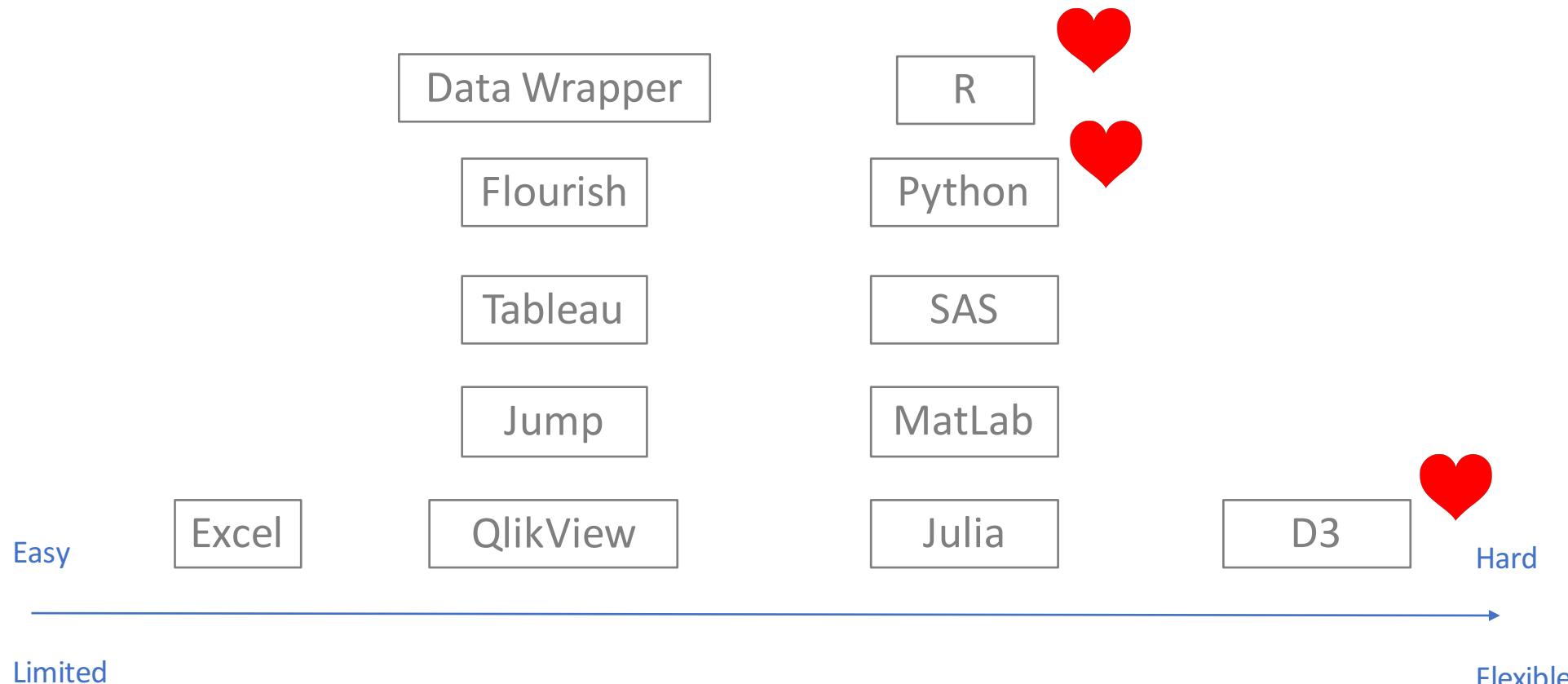
The R and Python graph galleries

See the [chart maker directory](#) by visualisingdata.com



* Far from being exhaustive

See the [chart maker directory](#) by visualisingdata.com



* Far from being exhaustive



from Data to *Viz*



[**R-graph-gallery.com**](#)

[**Python-graph-gallery.com**](#)

[**D3-graph-gallery.com**](#)



KANTAR
Information is Beautiful
Awards

Data-to-viz.com



[@R_Graph_Gallery](#)



github.com/holtzy/Talk



Yan.holtz.data@gmail.com



www.yan-holtz.com