

Data Visualisation

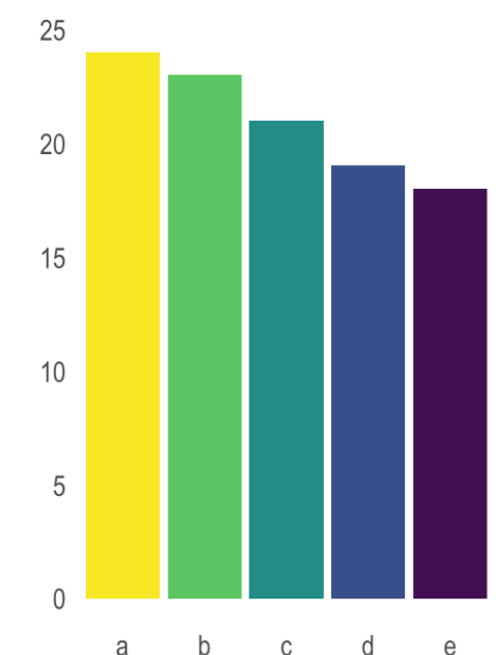
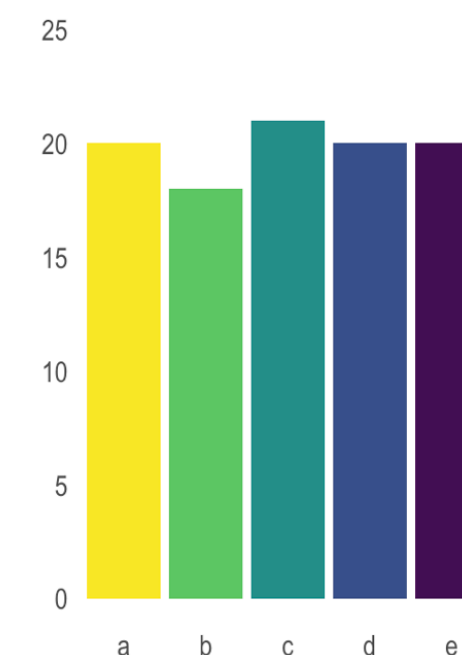
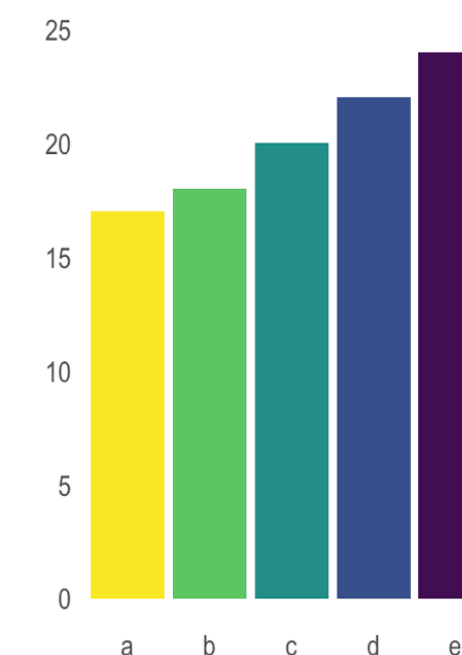
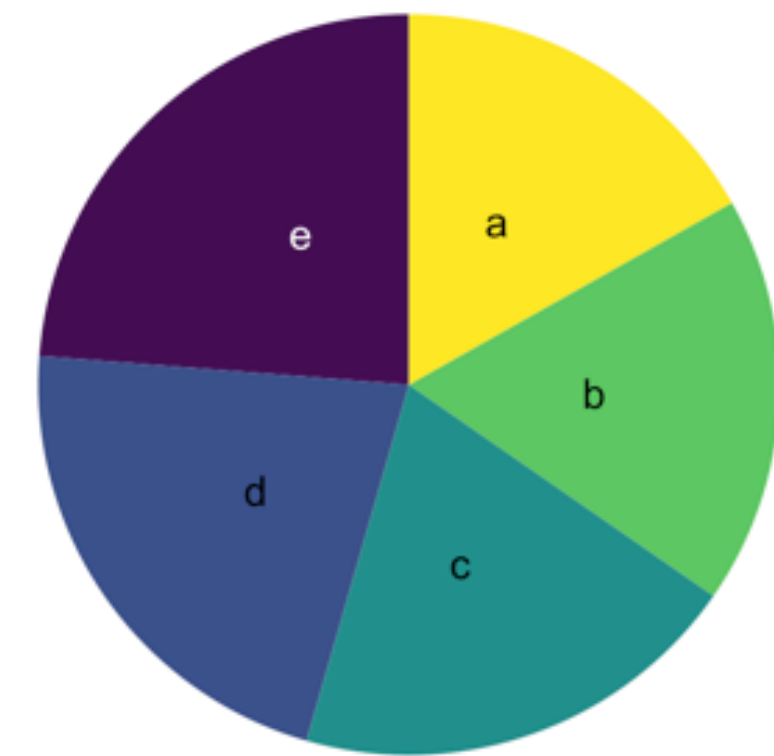
The good, the bad, and the ugly

Pie charts: the elephant in the room

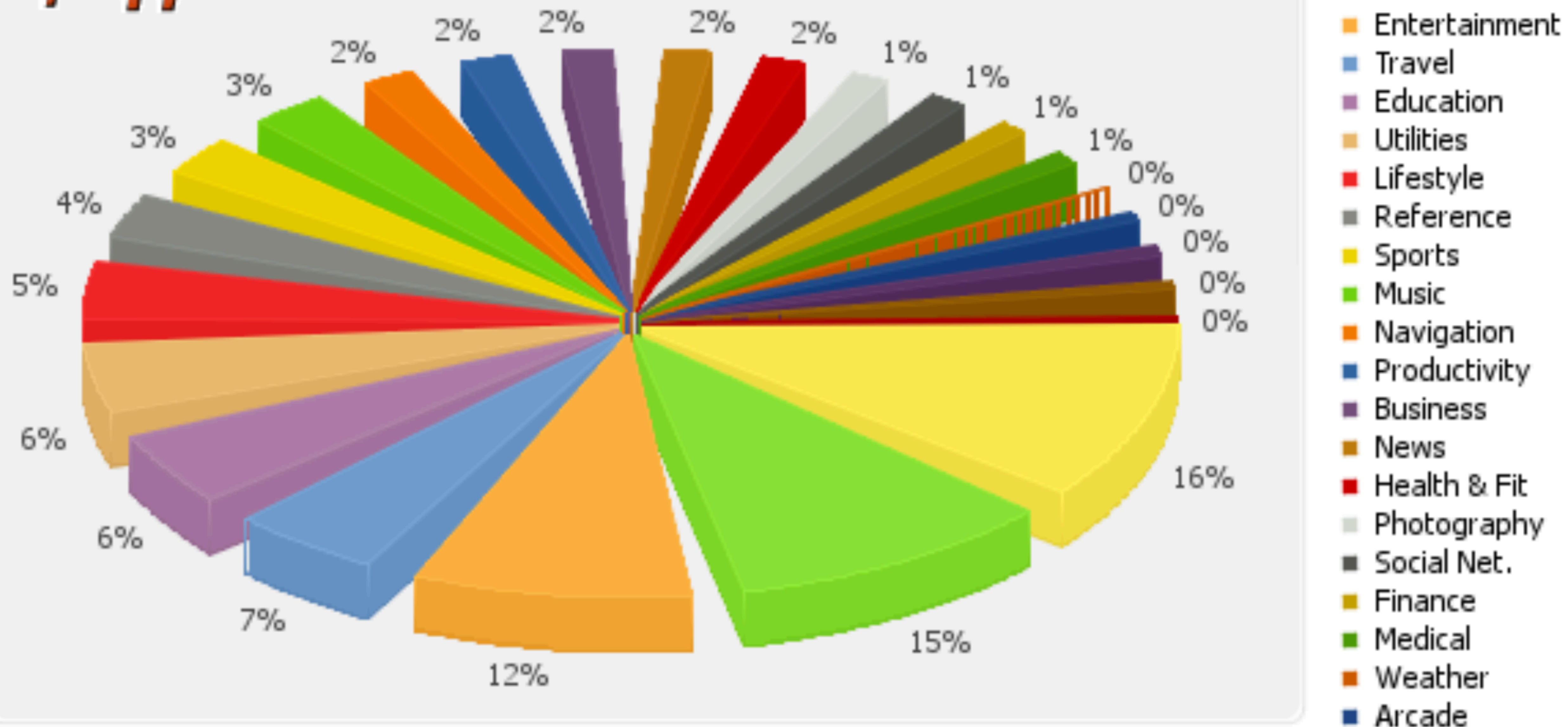
A note on pie charts

Why they should be absolutely banned.

- Human eye is really bad at discerning angles and translating them into values.
- Try to figure out the largest group and order the categories =>
- Not convinced? Try to figure out the changes =>
- Here is a simple bar plot alternative, you don't want to miss that in your story =>



Application Category Percentage

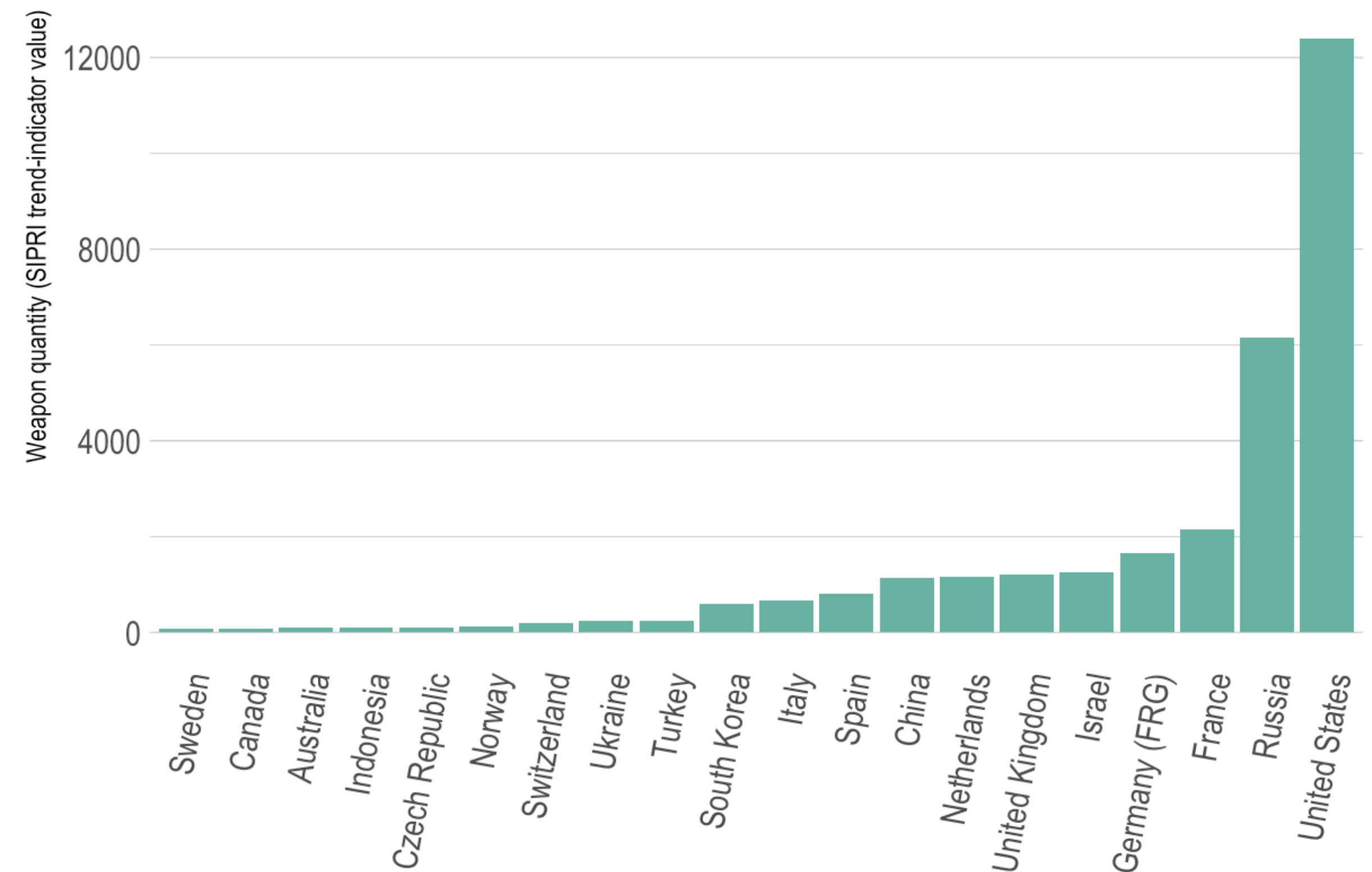


Alternatives

BAR PLOTS

Simple yet effective

- One of the most famous plot
- Often considered boring, yet extremely good for the human eye (judging vertical length)
- Bar plots aren't histograms! Histograms really show one value
- Tip:
Order the bars if categories don't have any rank
- Potential problem:
category names are often too long



BAR PLOTS

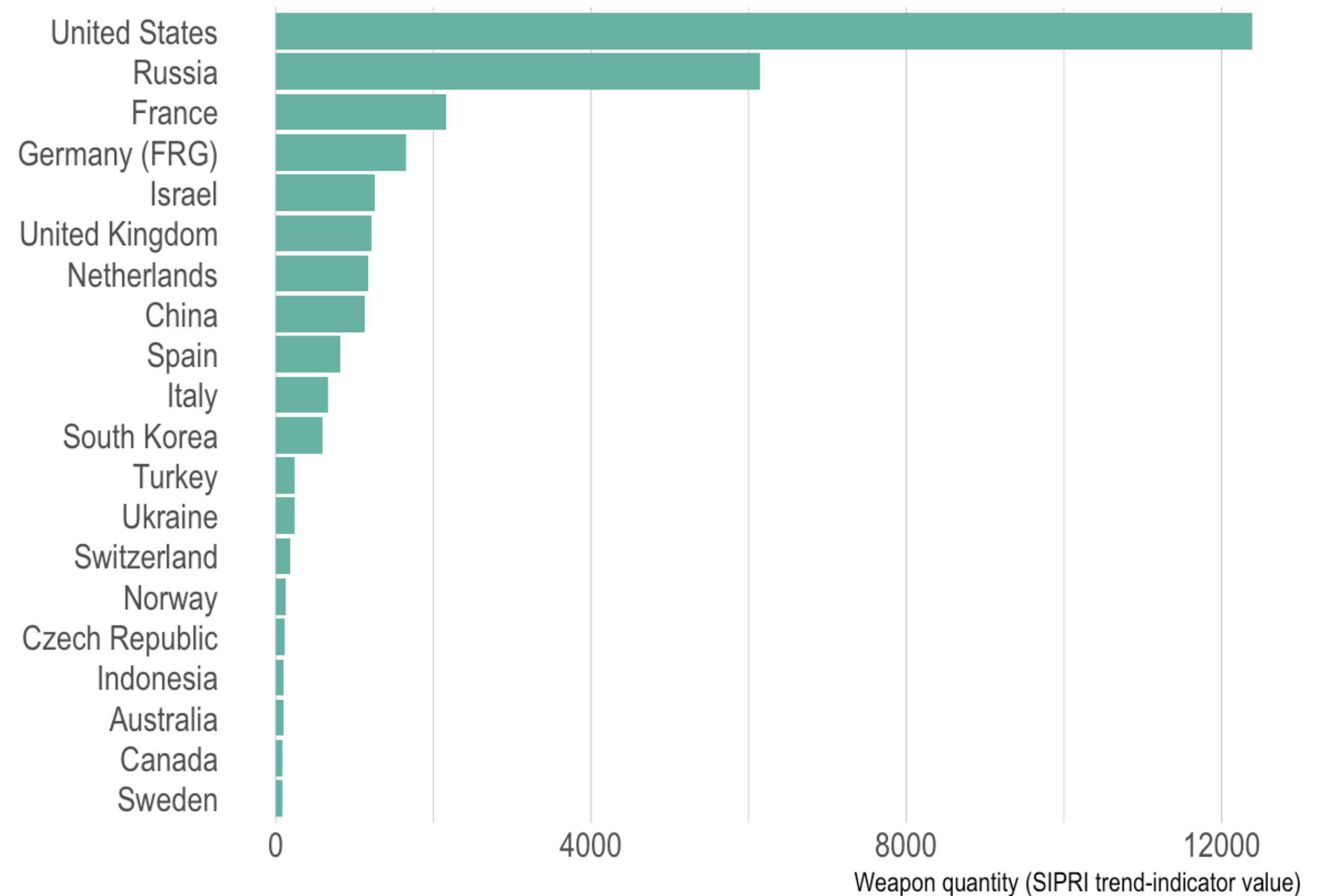
Flipping axes

- Not recommended when categories have some sort of ranking (ordinal categories)

ex:

- *low, middle, high*
- *before, during, after*
- *age ranges*

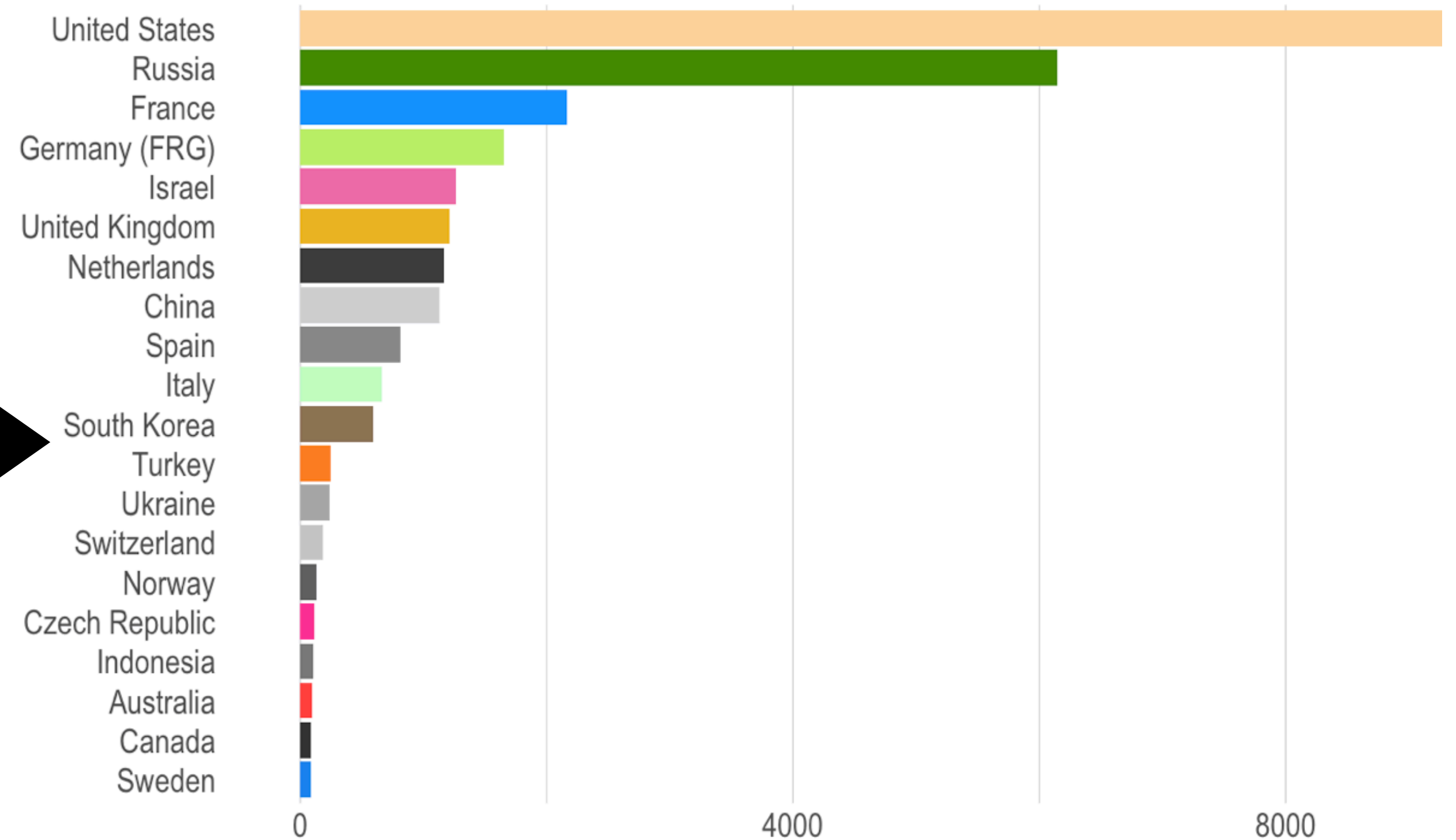
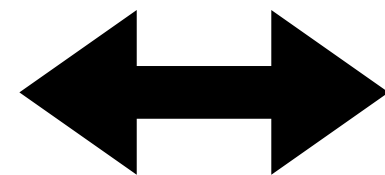
- **Do not** flip axes if time series



BAR PLOTS

Avoid the tuning-effect

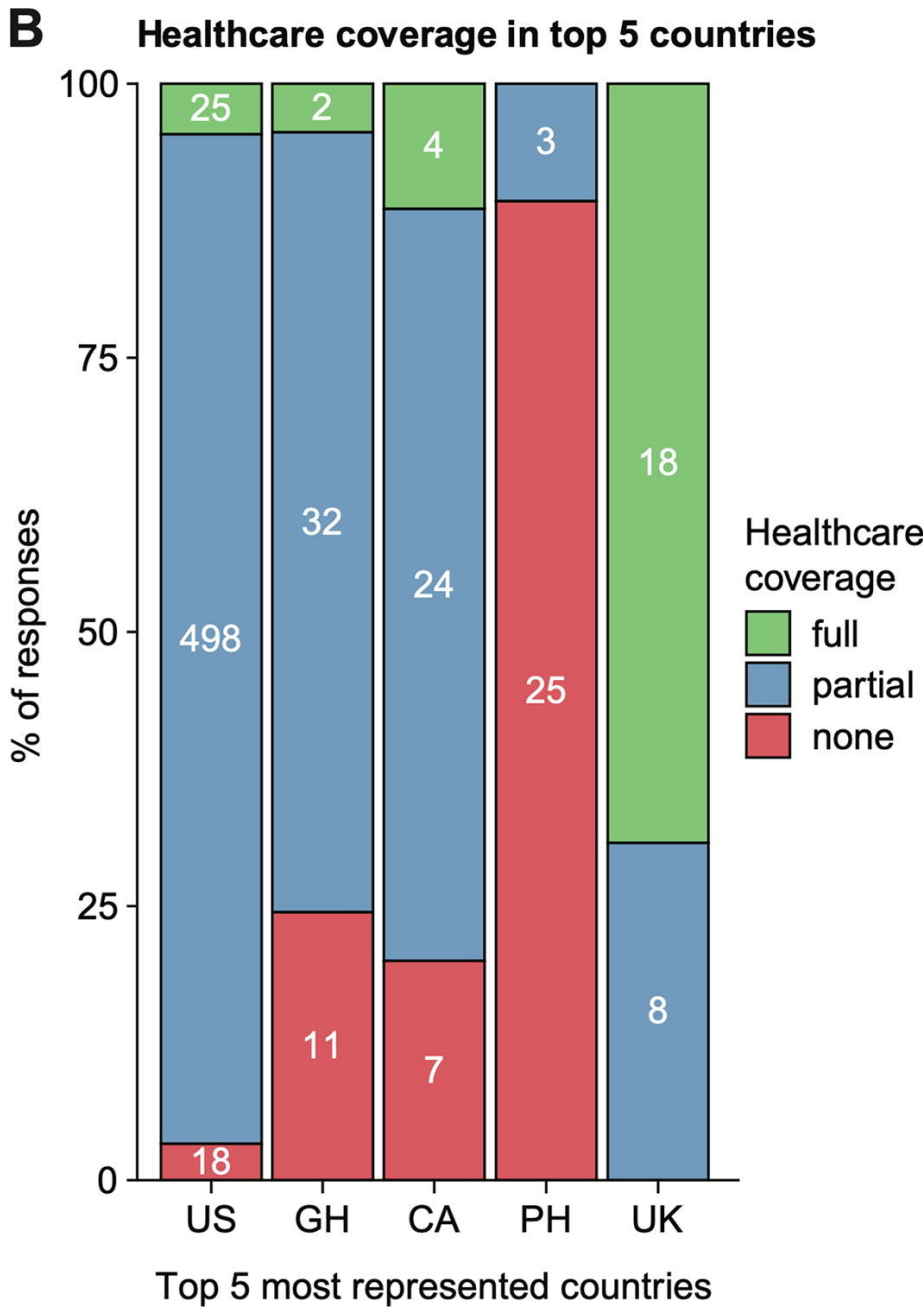
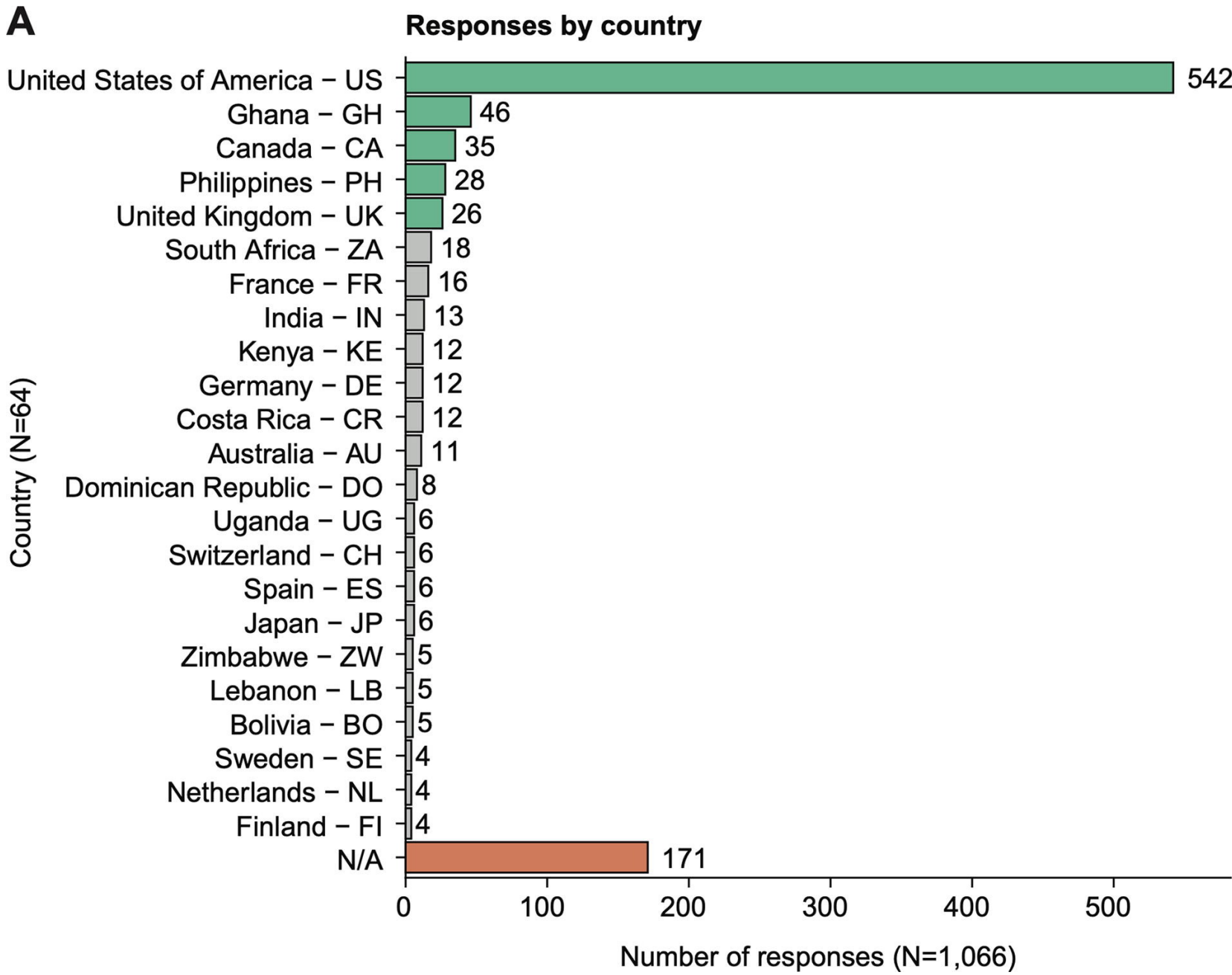
- Add color only if it brings new information, or helps understand a point



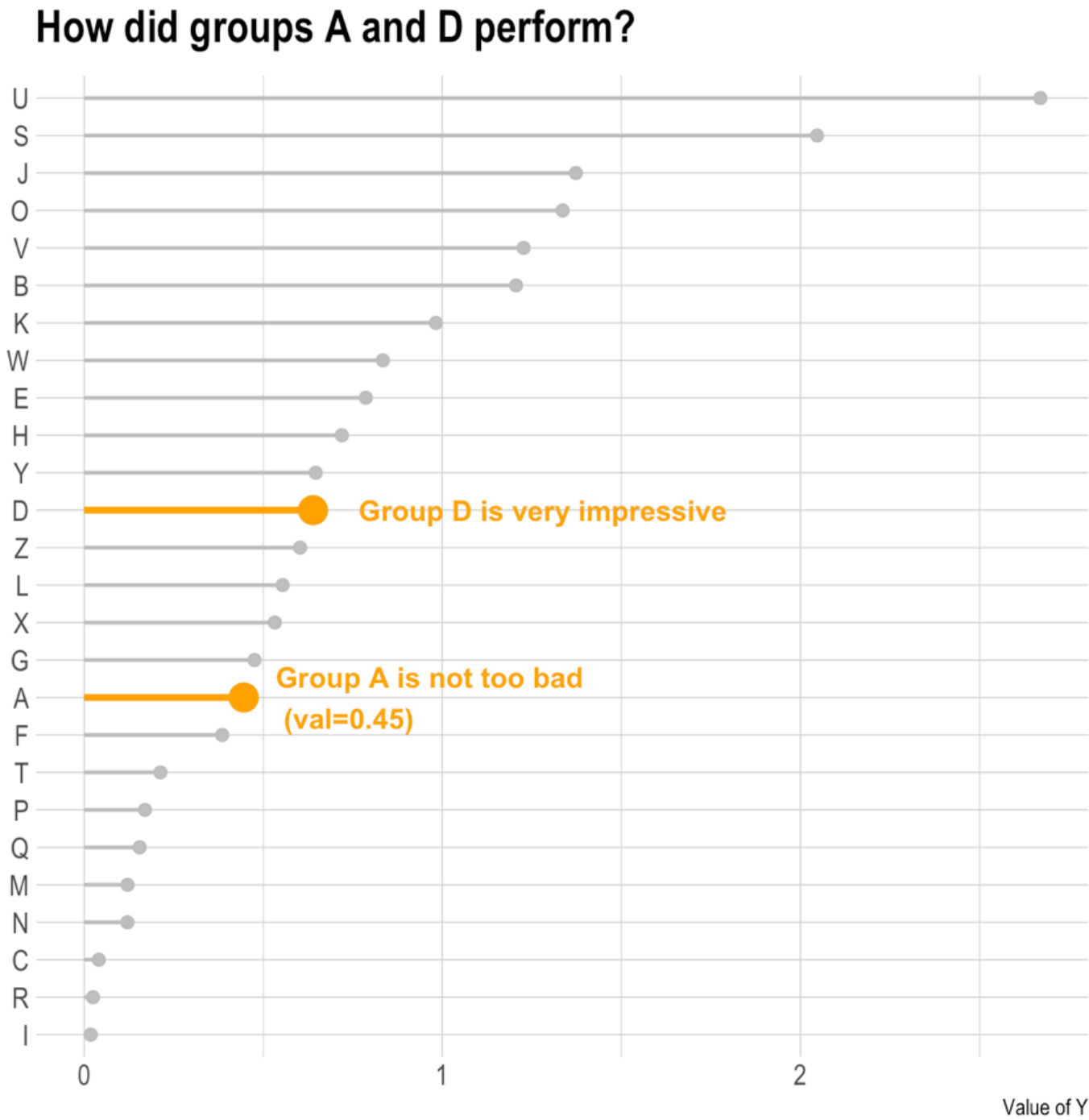
BAR PLOTS

Example of bar colouring that makes sense:

- Distinguish groups



- Attract attention



BAR PLOTS

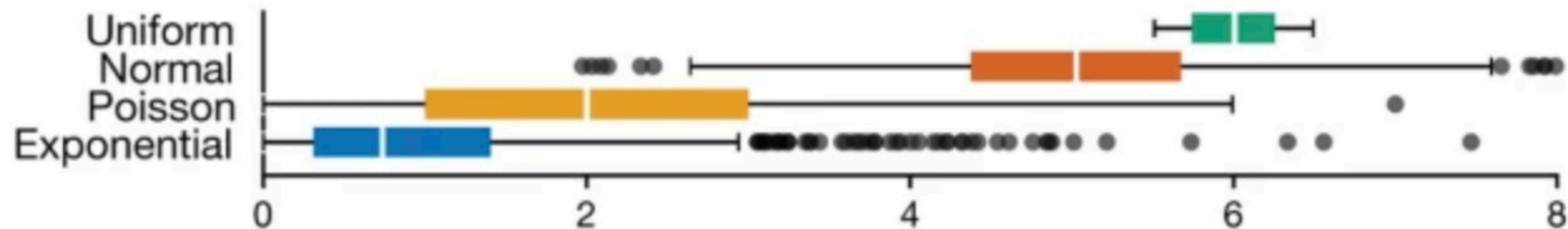
Can hide important info if they summarise data!

- Barplot (mean with SD)

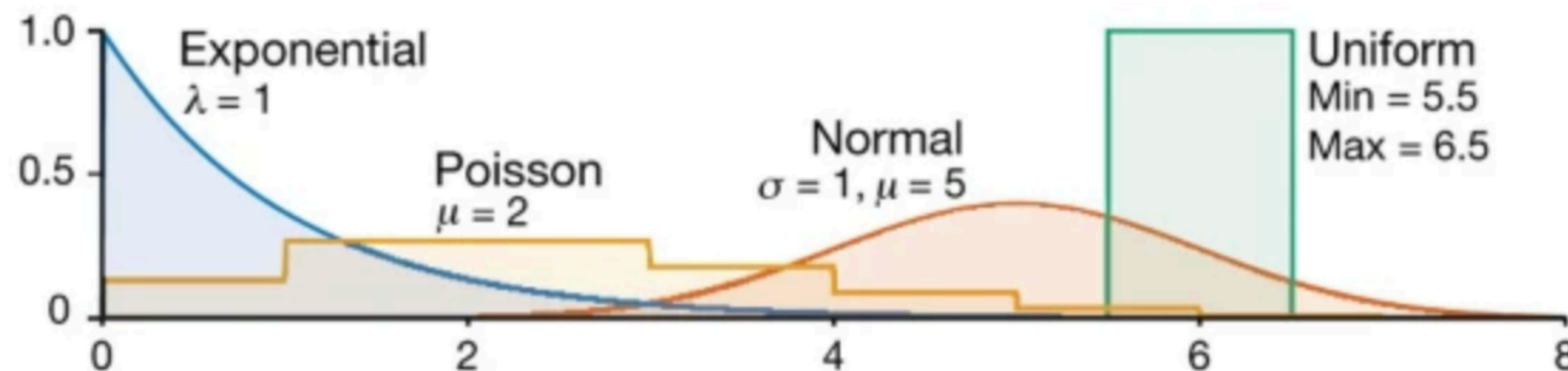


Same data!

- Boxplot (quartiles and outliers)



- Density plots

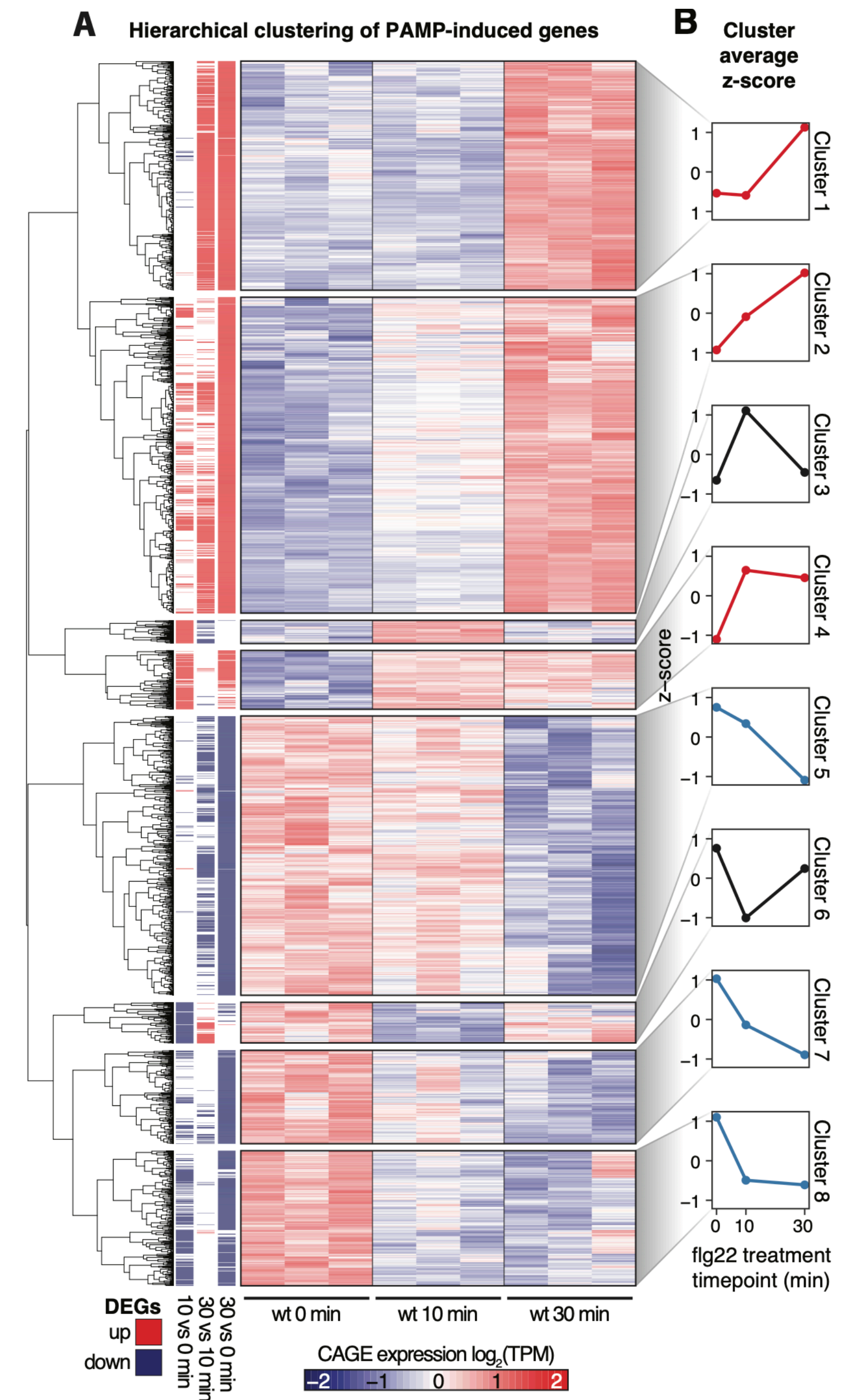


Heatmaps

HEATMAPS

Clustering made the right way

- Quantitative data?
Many samples (columns)?
Many features (rows)?
- => HEATMAP
Cluster the columns & rows
Color-gradient for each entry
- When the right options are found, a heat map can reveal crucial patterns in your data!
- **NA** values can be problematic for clustering.
Consider removing them or replacing them
- Best R package: **pheatmap** (pretty heatmaps)



Sanity-check your figures!

➔ <https://www.data-to-viz.com>

Compilation of fails

➔ <https://viz.wtf>