

# Polar coordinates

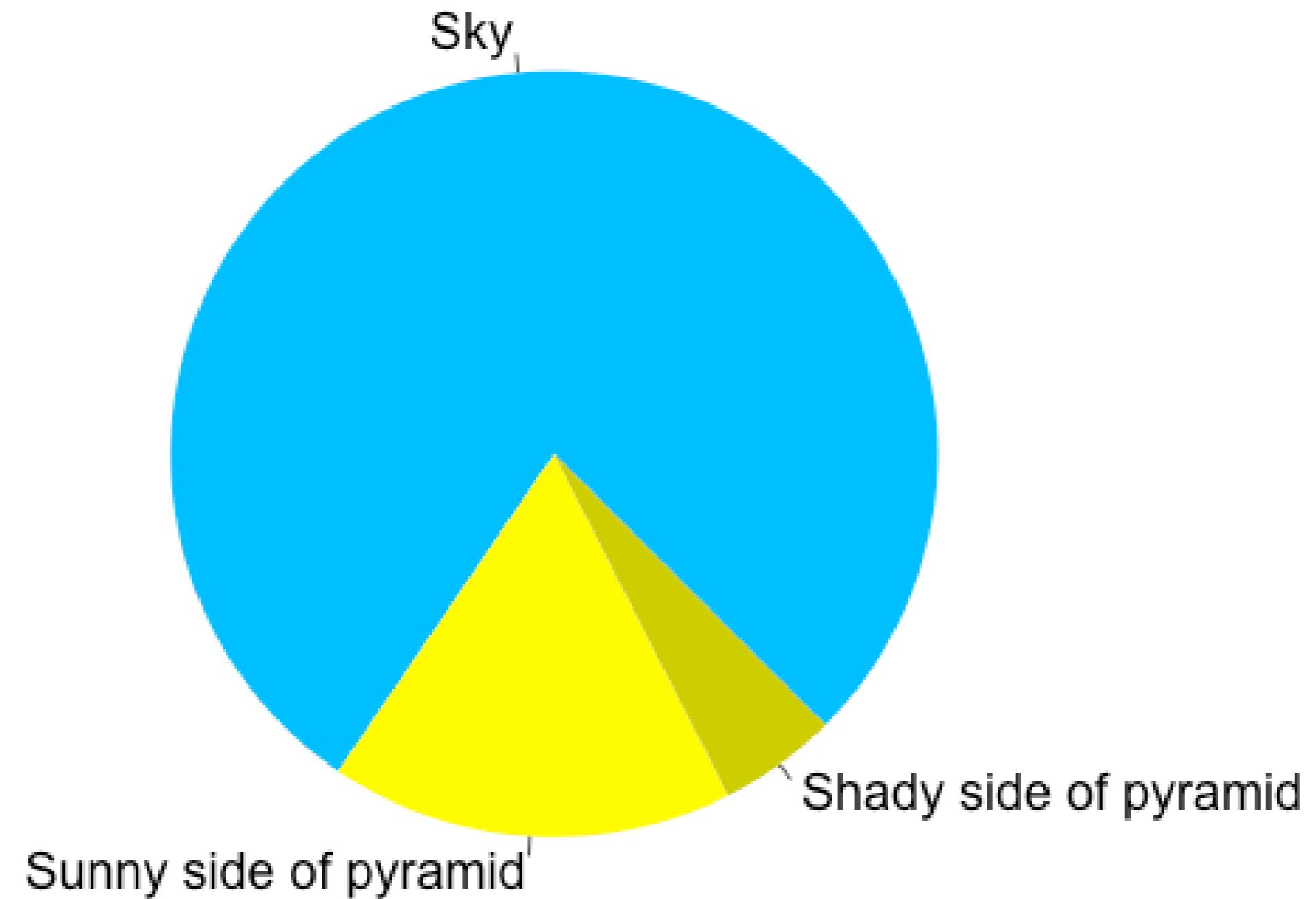
UNDERSTANDING DATA VISUALIZATION



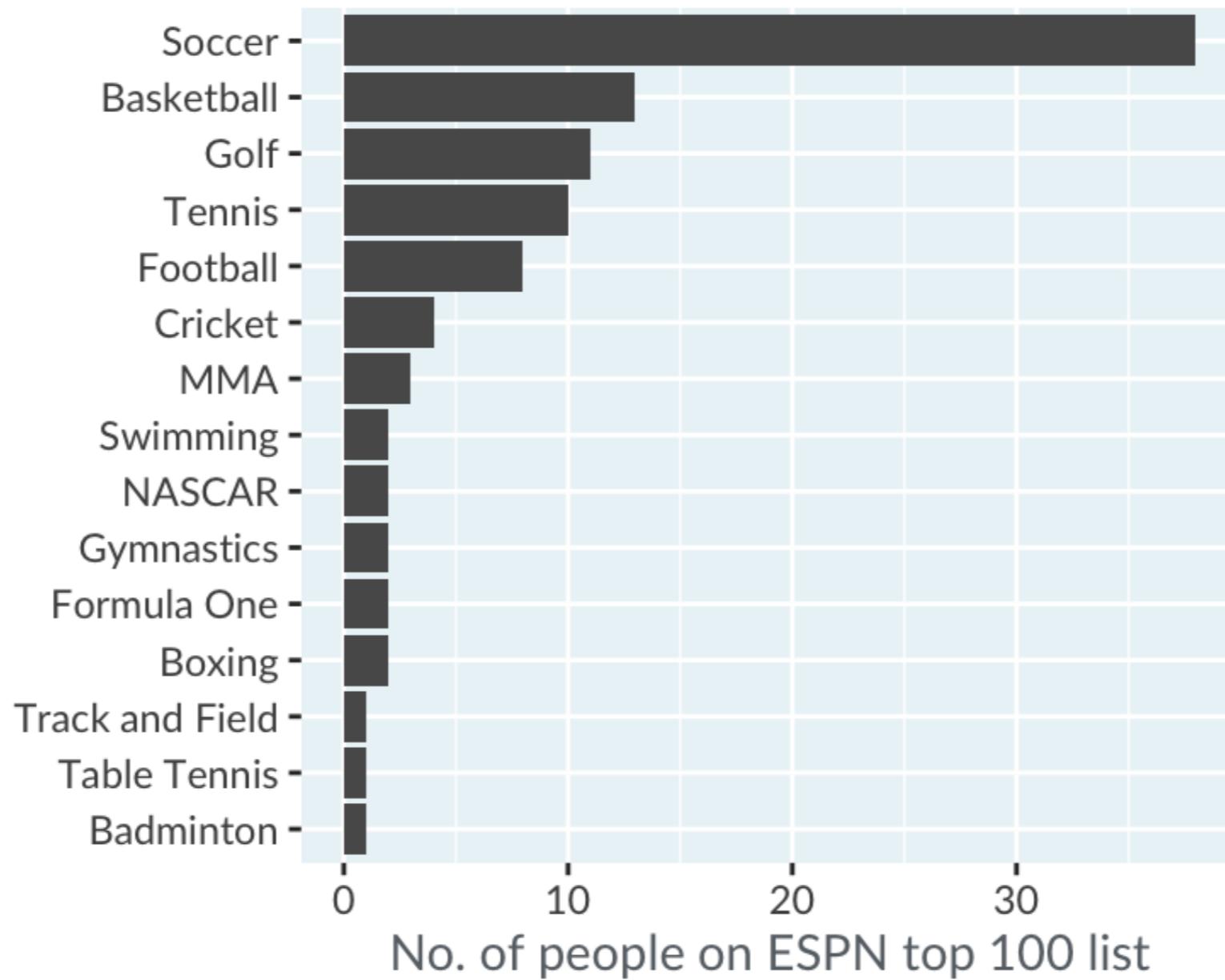
**Richie Cotton**

Data Evangelist at DataCamp

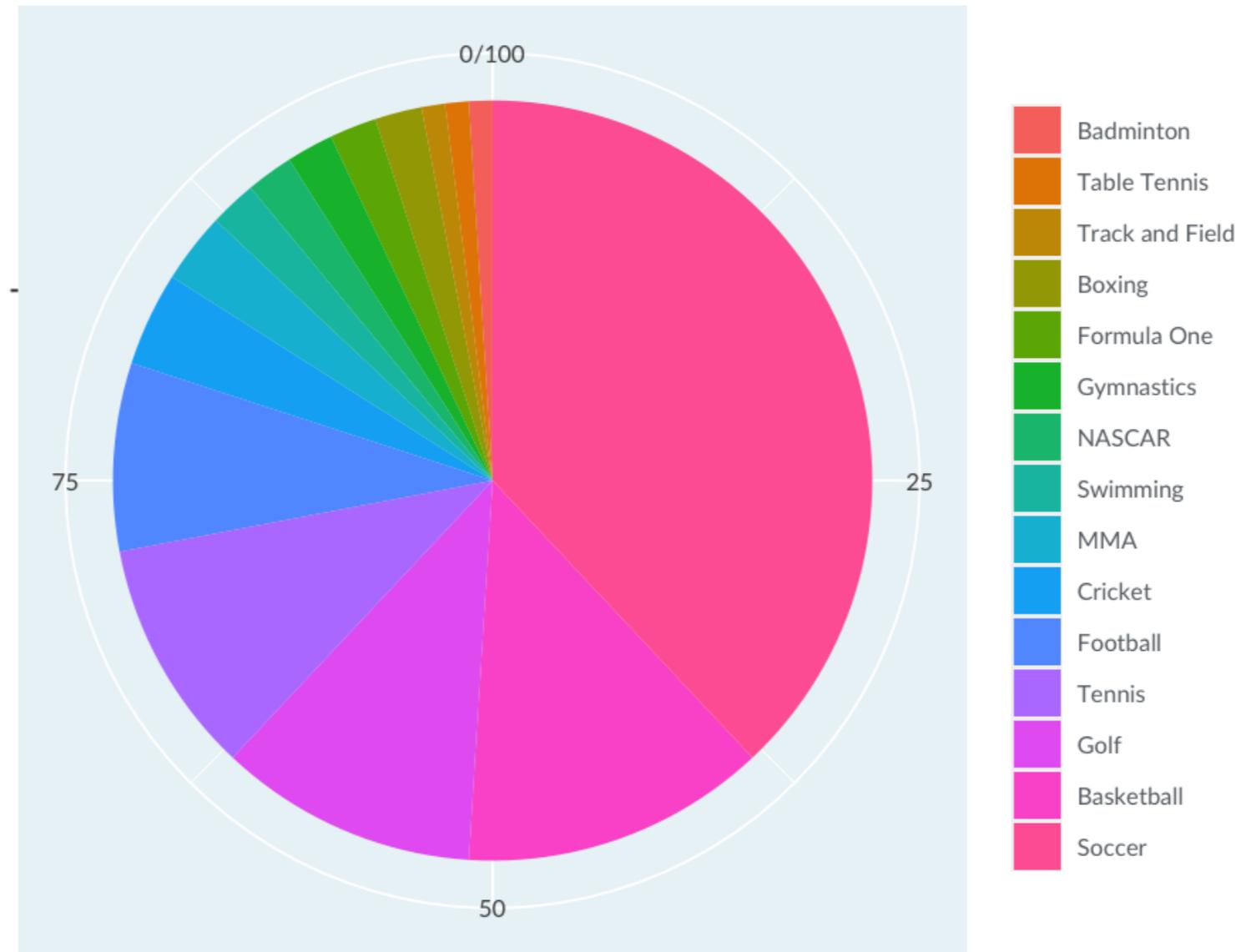
# Pie plots



# ESPN famous athletes, by sport



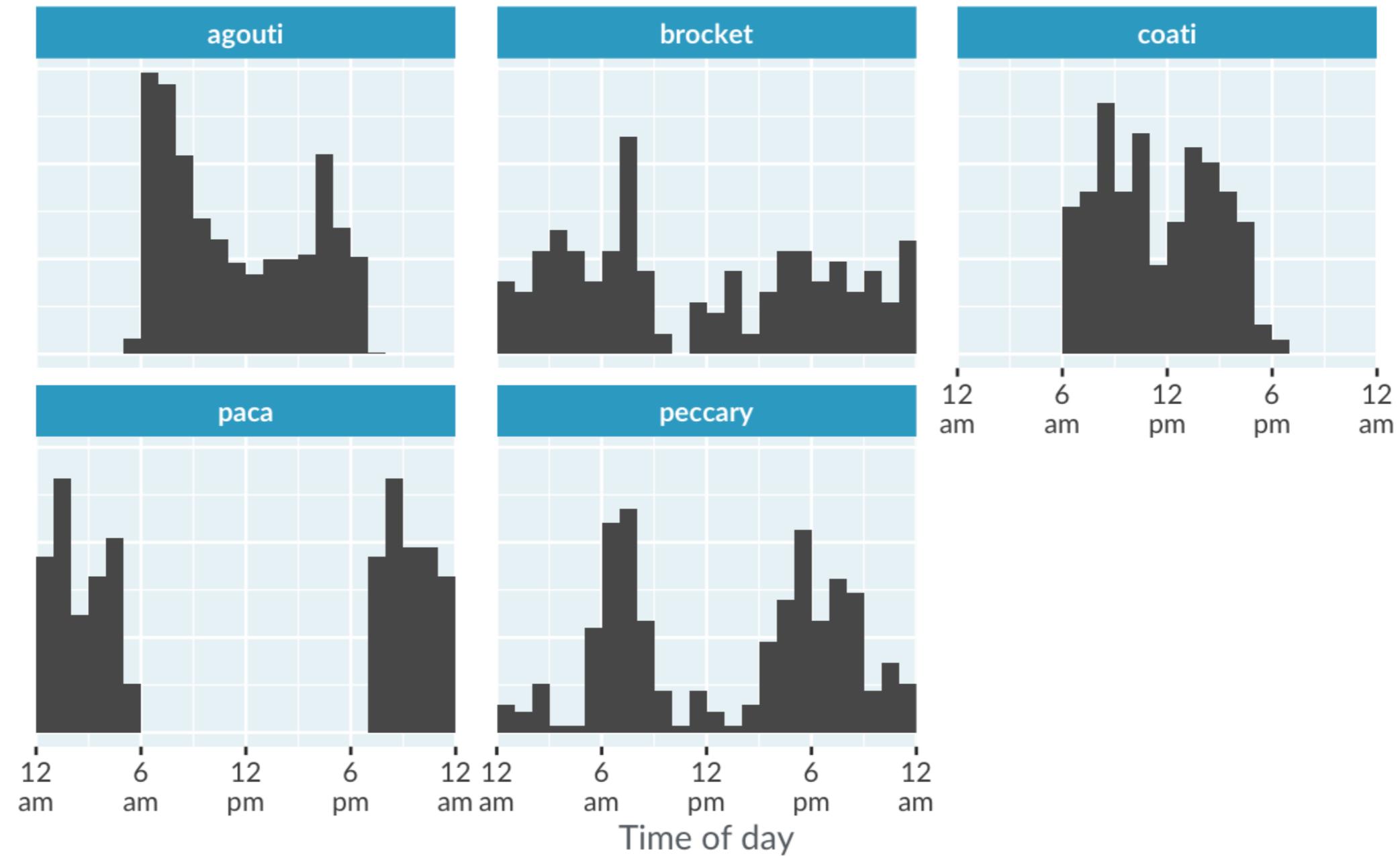
# Bar plot + polar coords = pie plot



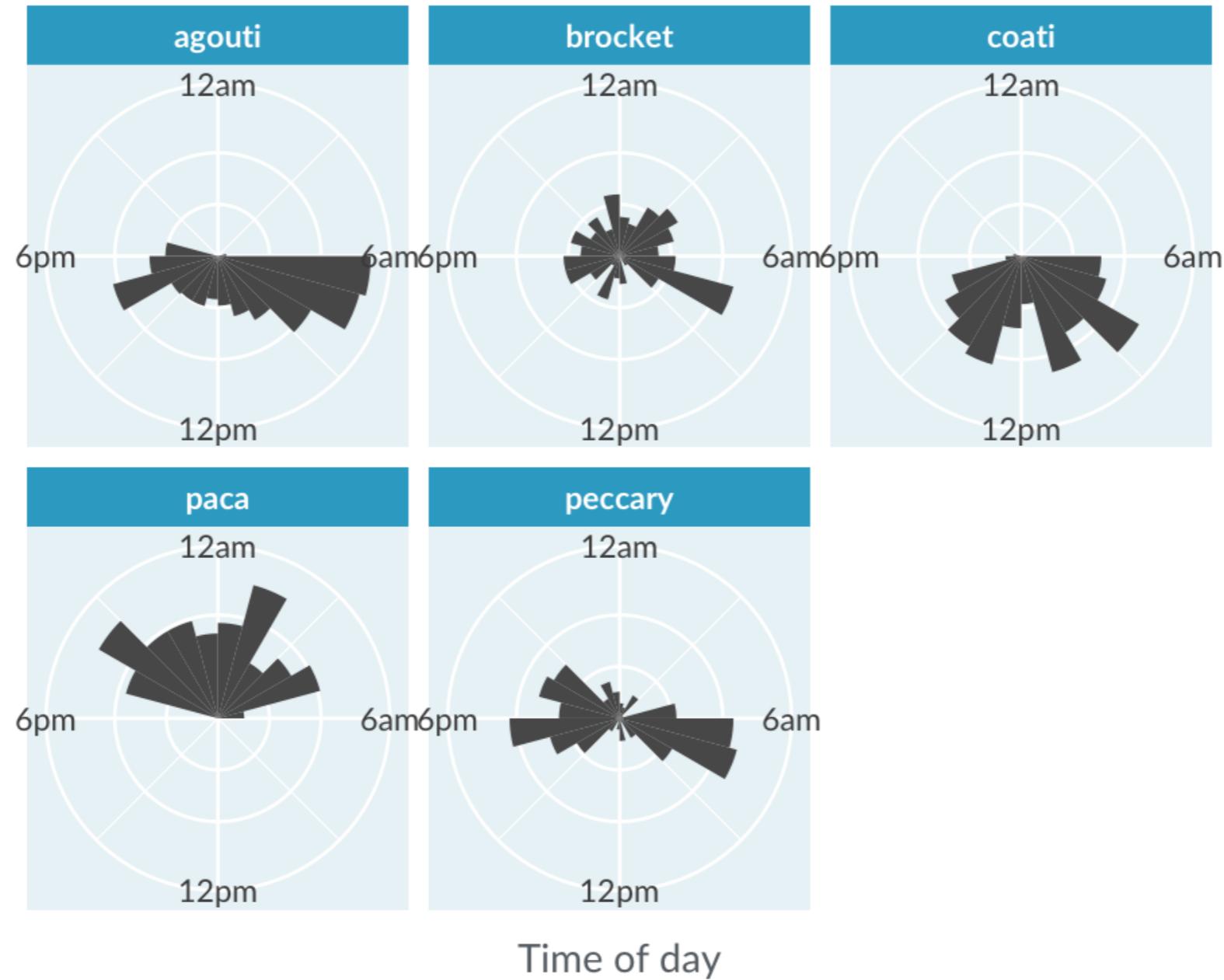
# When should you use polar coordinates?

- Almost never.
- If you have a variable that is naturally circular (time of day, compass direction).

# Histogram of animal activity



# Histogram + polar coords = rose plot



# **Let's practice!**

**UNDERSTANDING DATA VISUALIZATION**

# Axes of evil

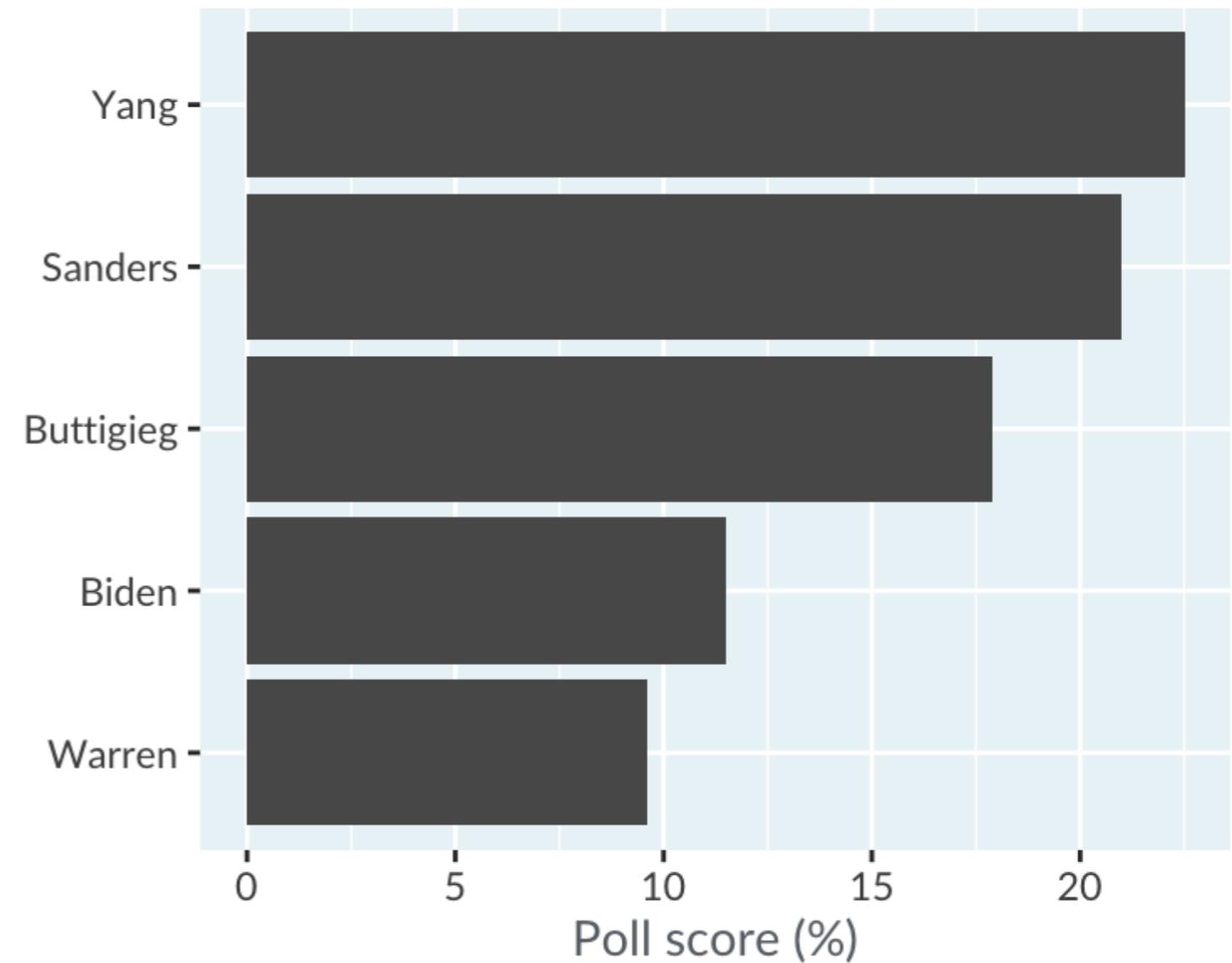
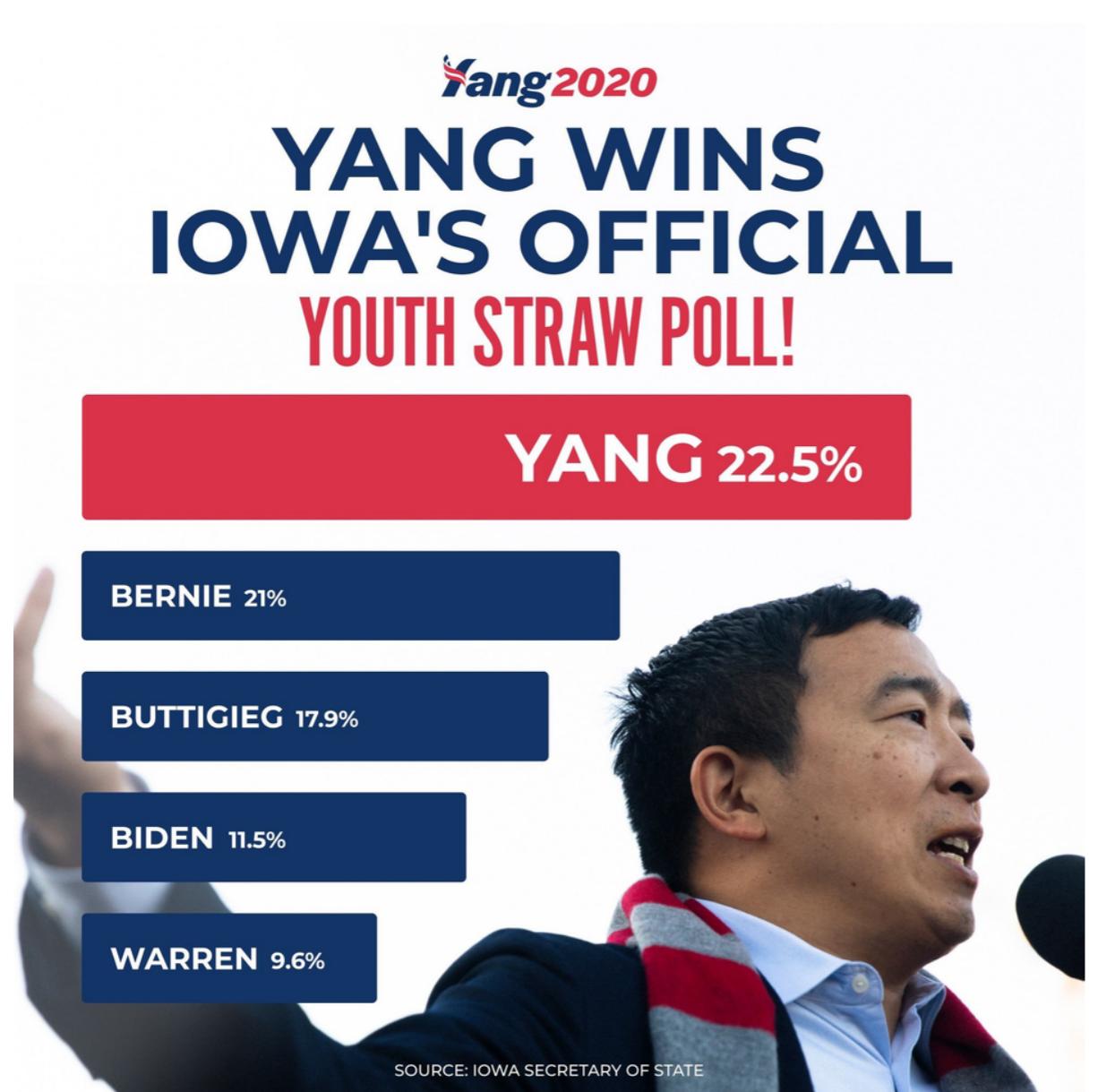
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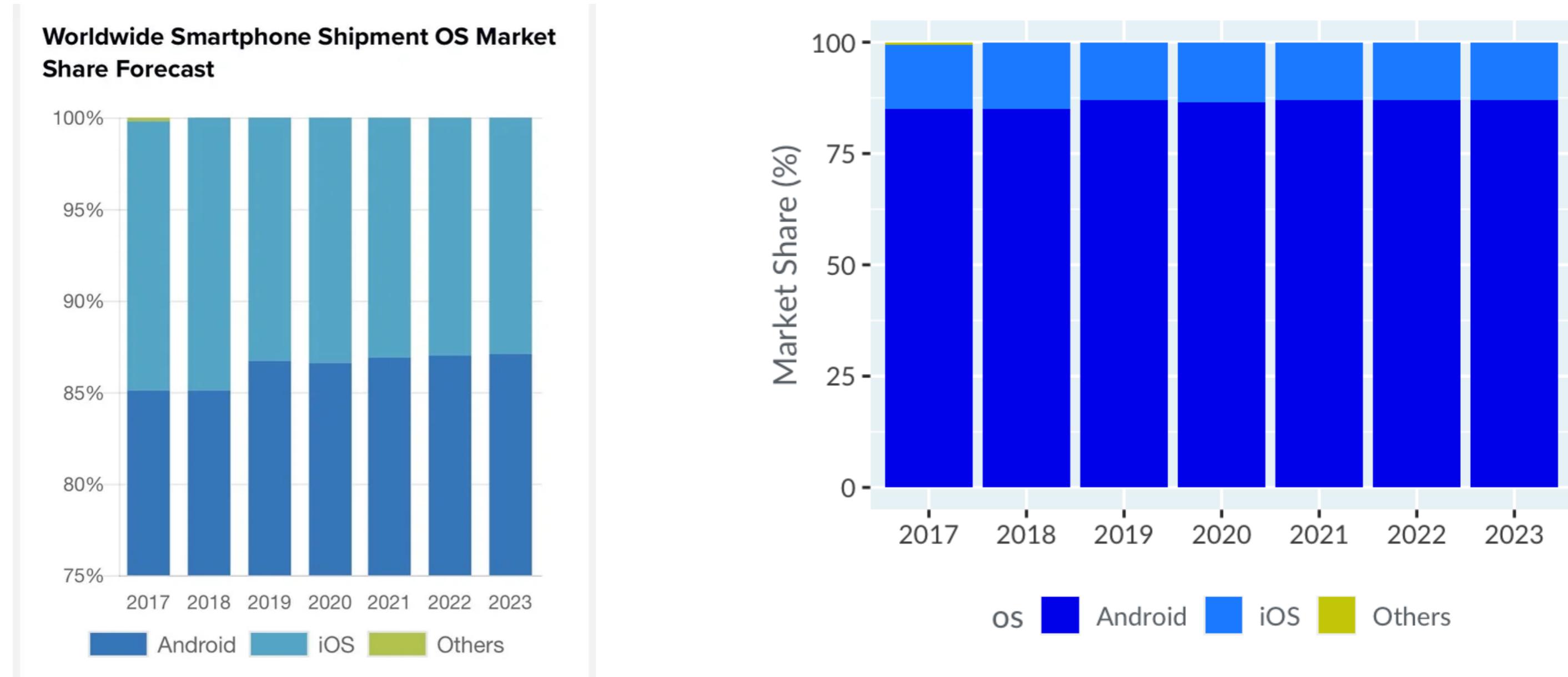
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# Nonsense bar lengths



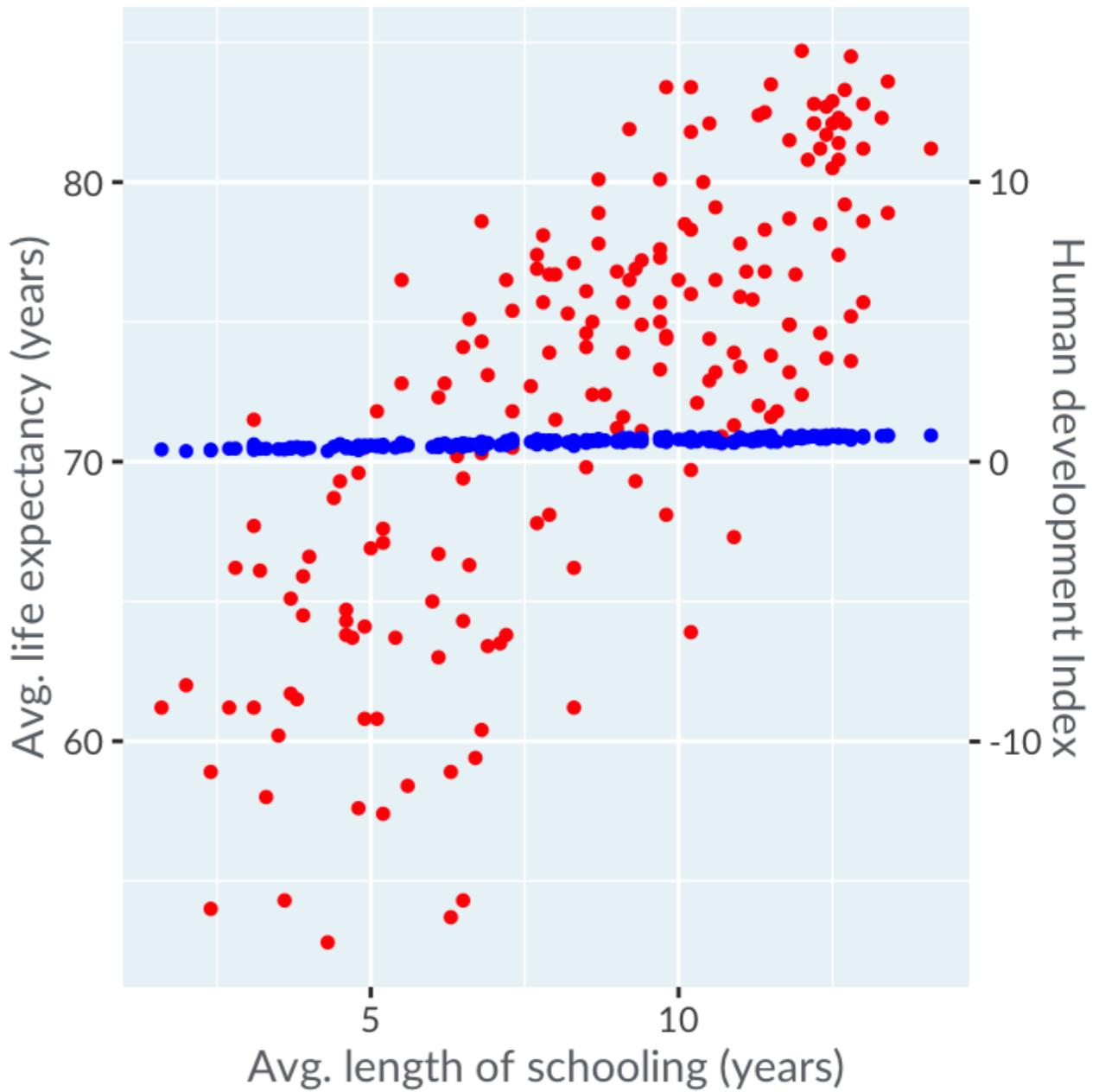
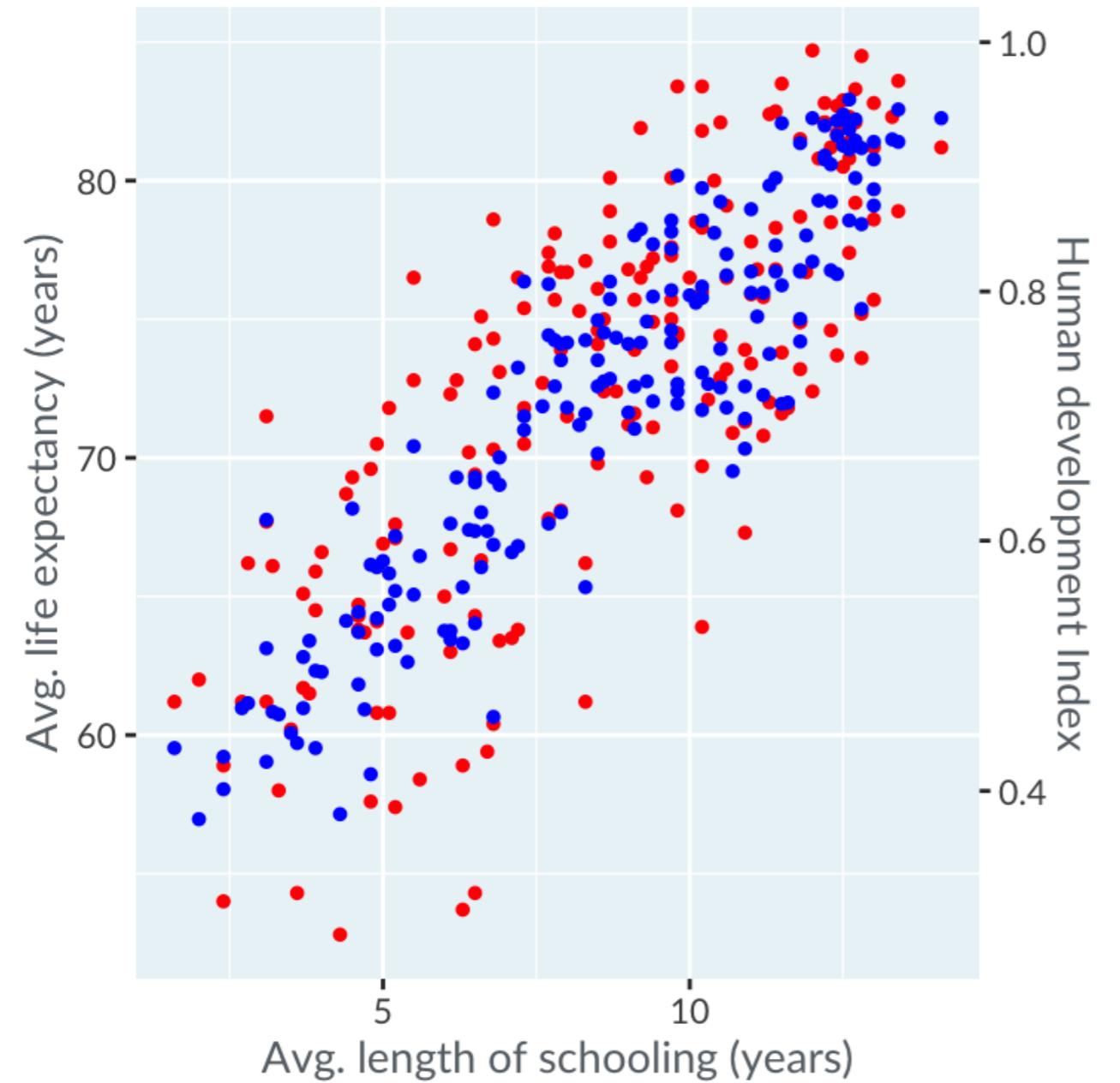
<sup>1</sup> [https://www.reddit.com/r/dataisugly/comments/exewcc/thats Quite\\_a\\_large\\_15](https://www.reddit.com/r/dataisugly/comments/exewcc/thats Quite_a_large_15)

# The same applies to stacked bar plots

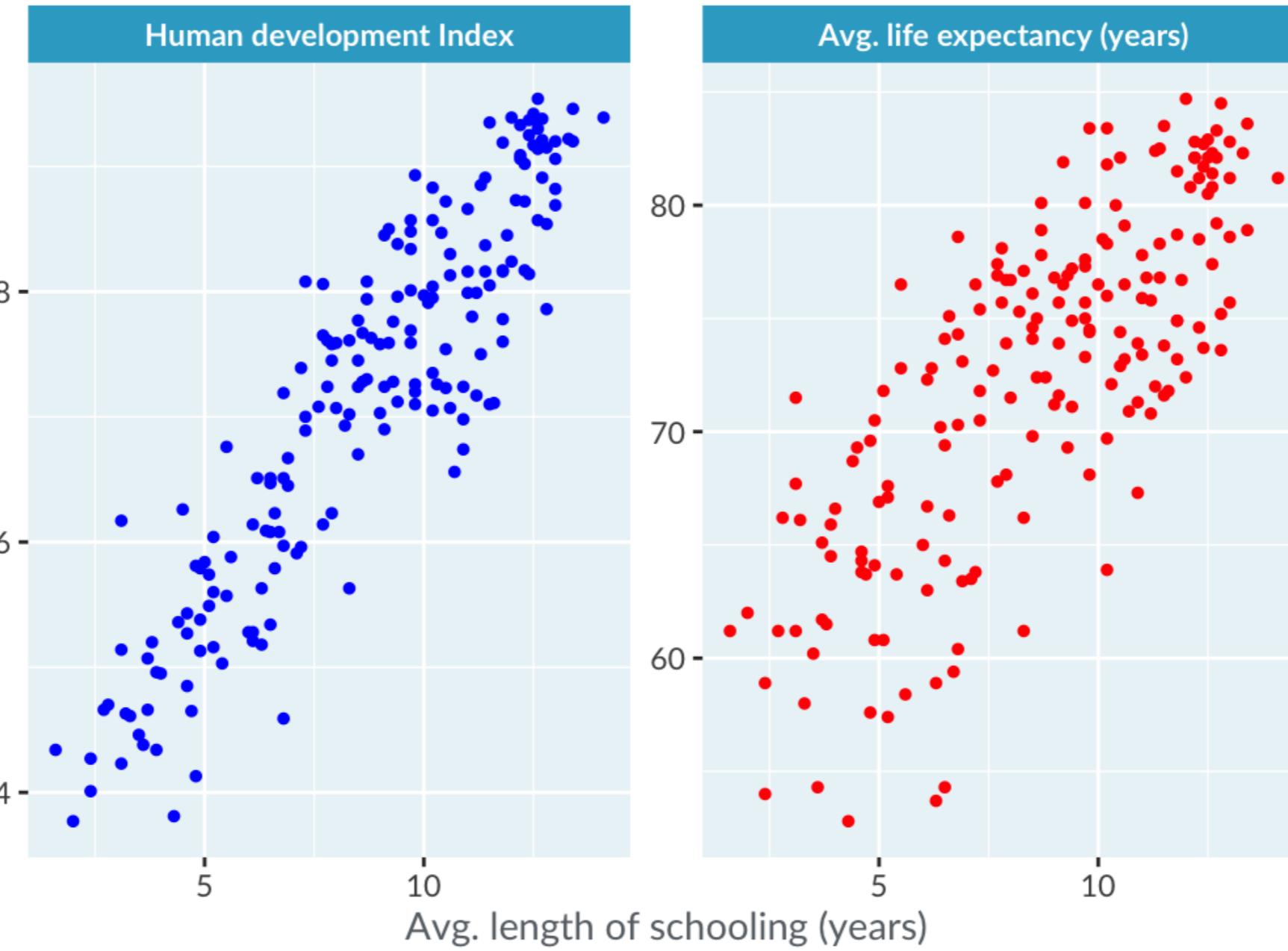


<sup>1</sup> [https://www.reddit.com/r/dataisugly/comments/d76ixt/lets\\_make\\_13\\_vs\\_87\\_market\\_share\\_look\\_like\\_5050](https://www.reddit.com/r/dataisugly/comments/d76ixt/lets_make_13_vs_87_market_share_look_like_5050)

# Dual axes are misleading



# Better to use multiple panels



# **Let's practice!**

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# Sensory overload

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# Measures of a good visualization

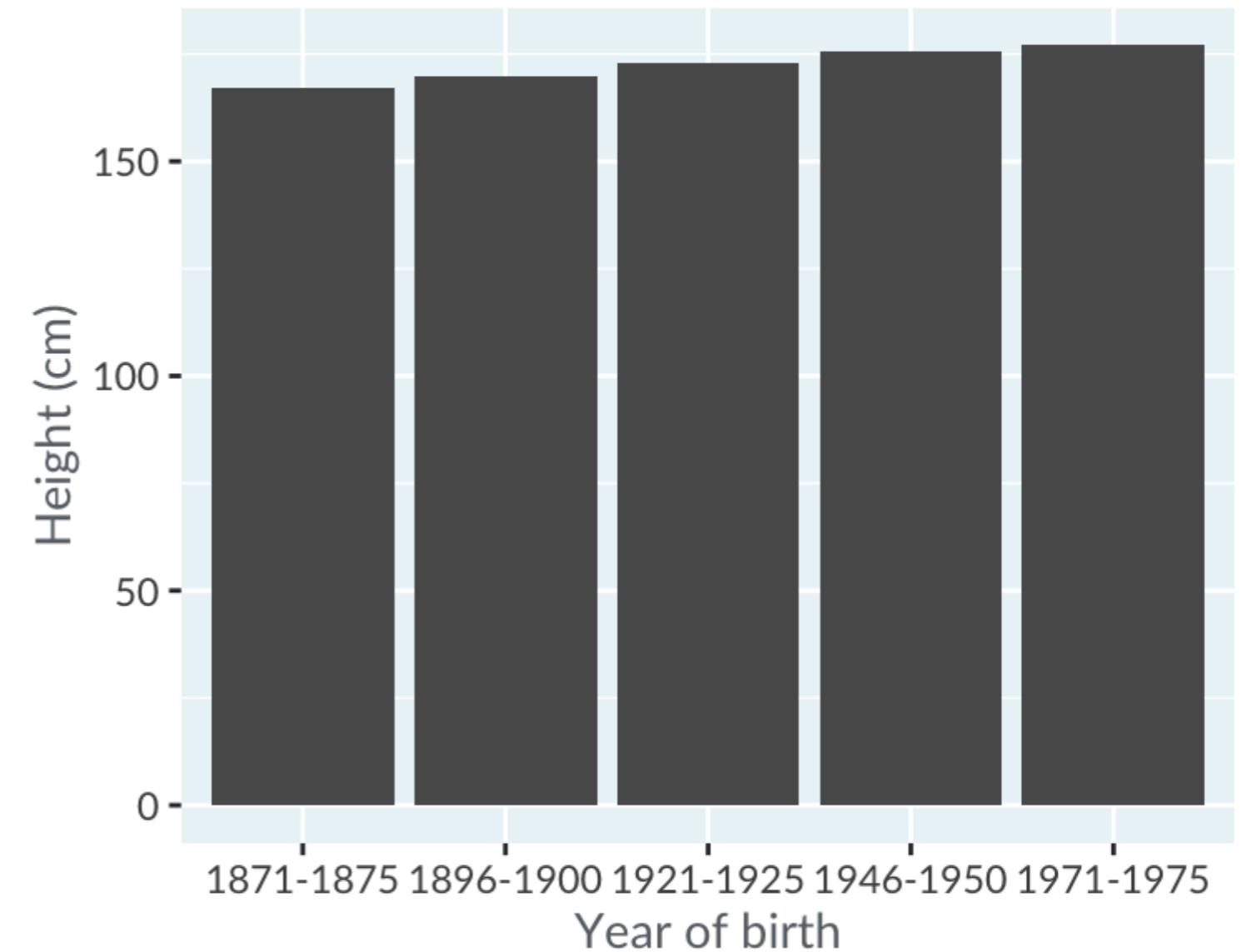
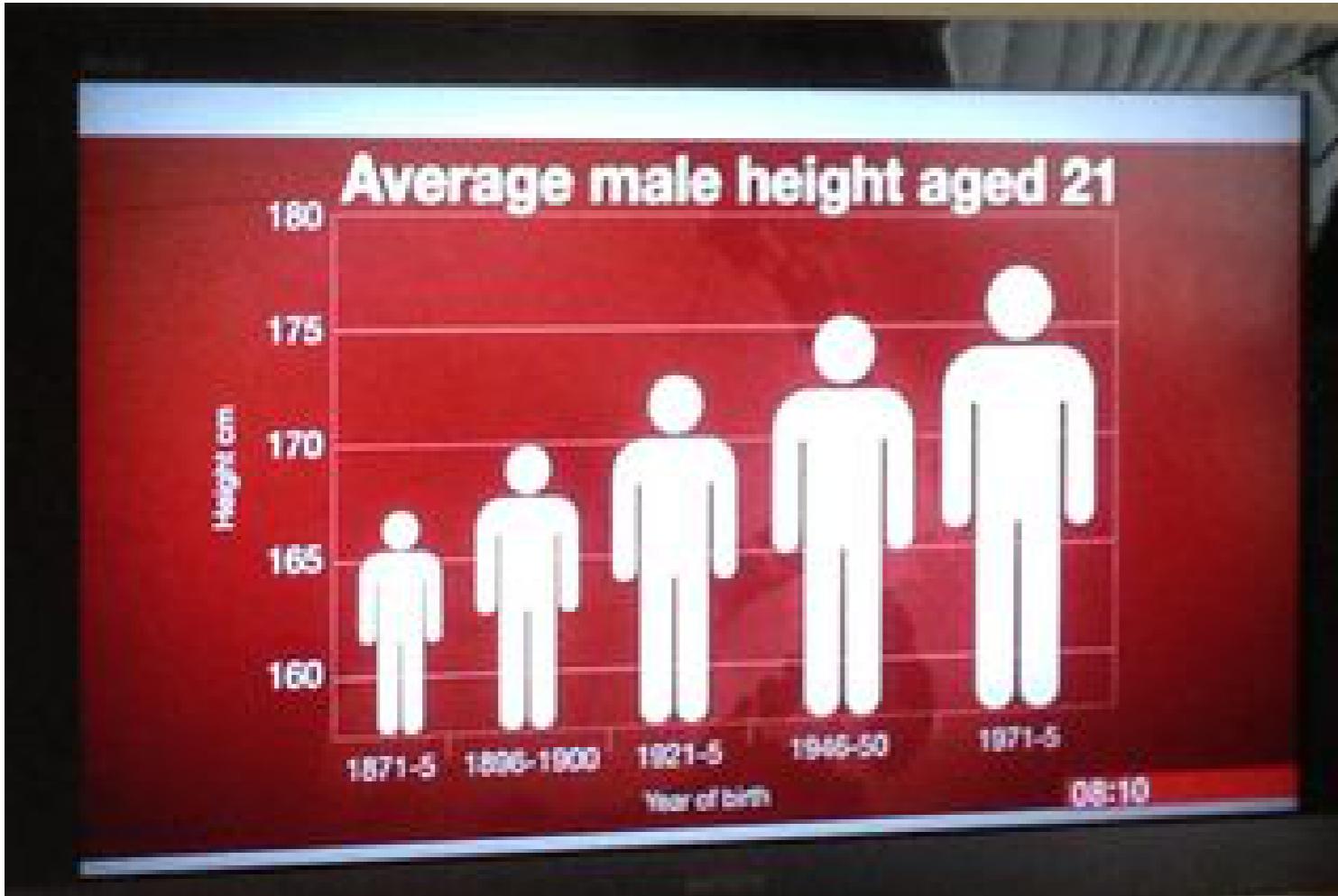
- How many interesting insights can your reader get from the plot?
- How quickly can they get those insights?

# Chartjunk

Any element of the plot that distracts from the reader getting insight

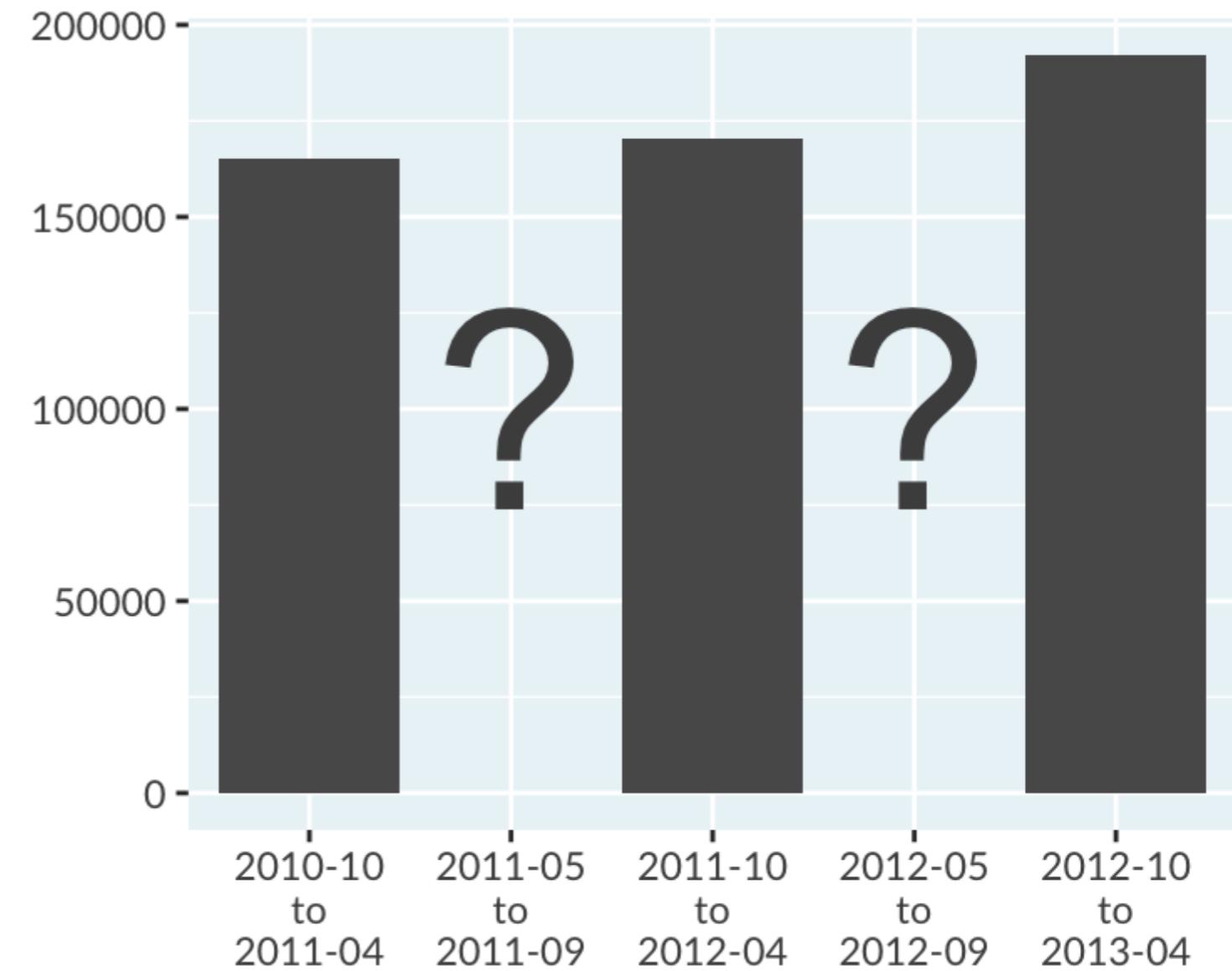
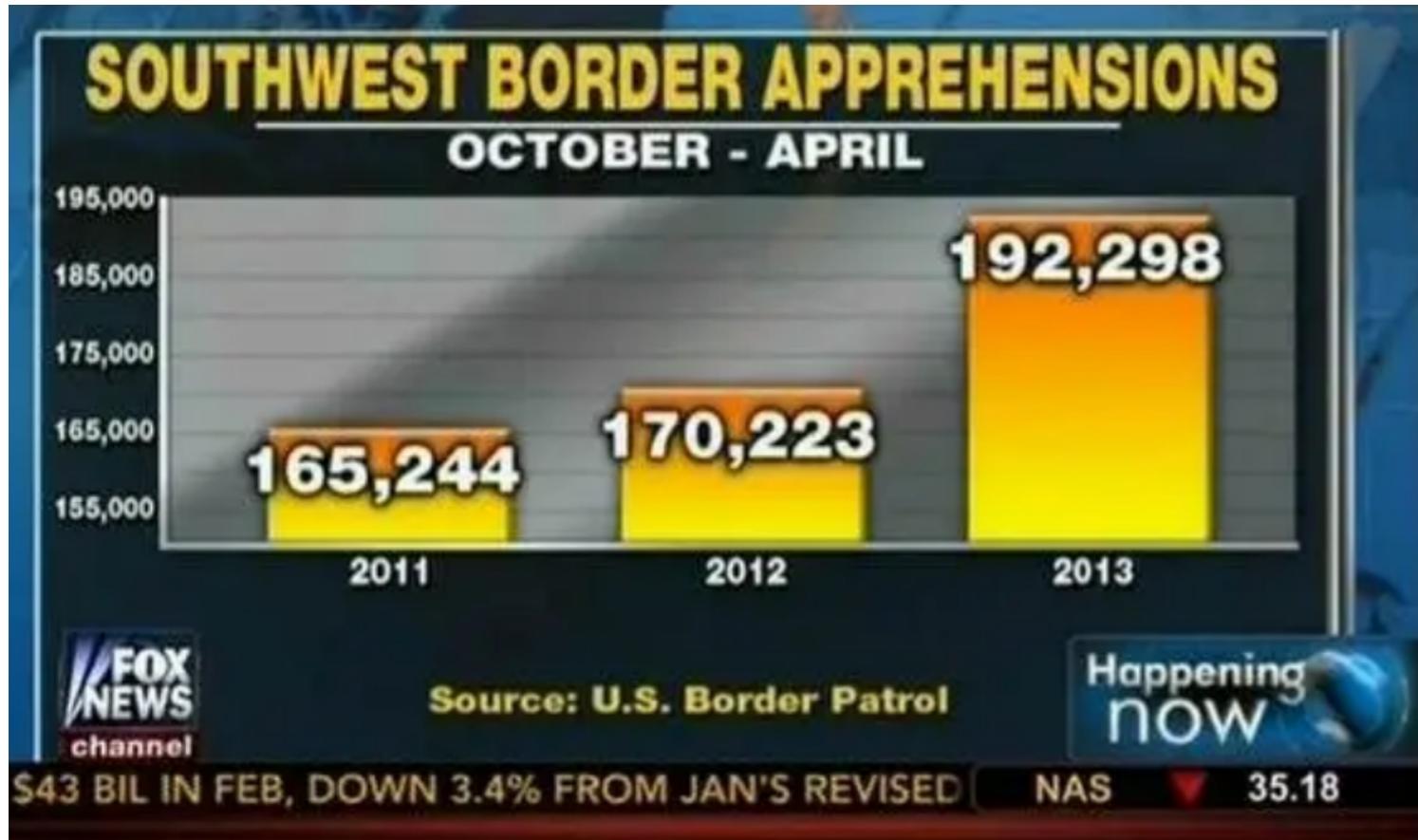
- Pictures
- Skeuomorphism: reflections, shadows, etc.
- Extra dimensions
- Ostentatious colors or lines

# Pictures



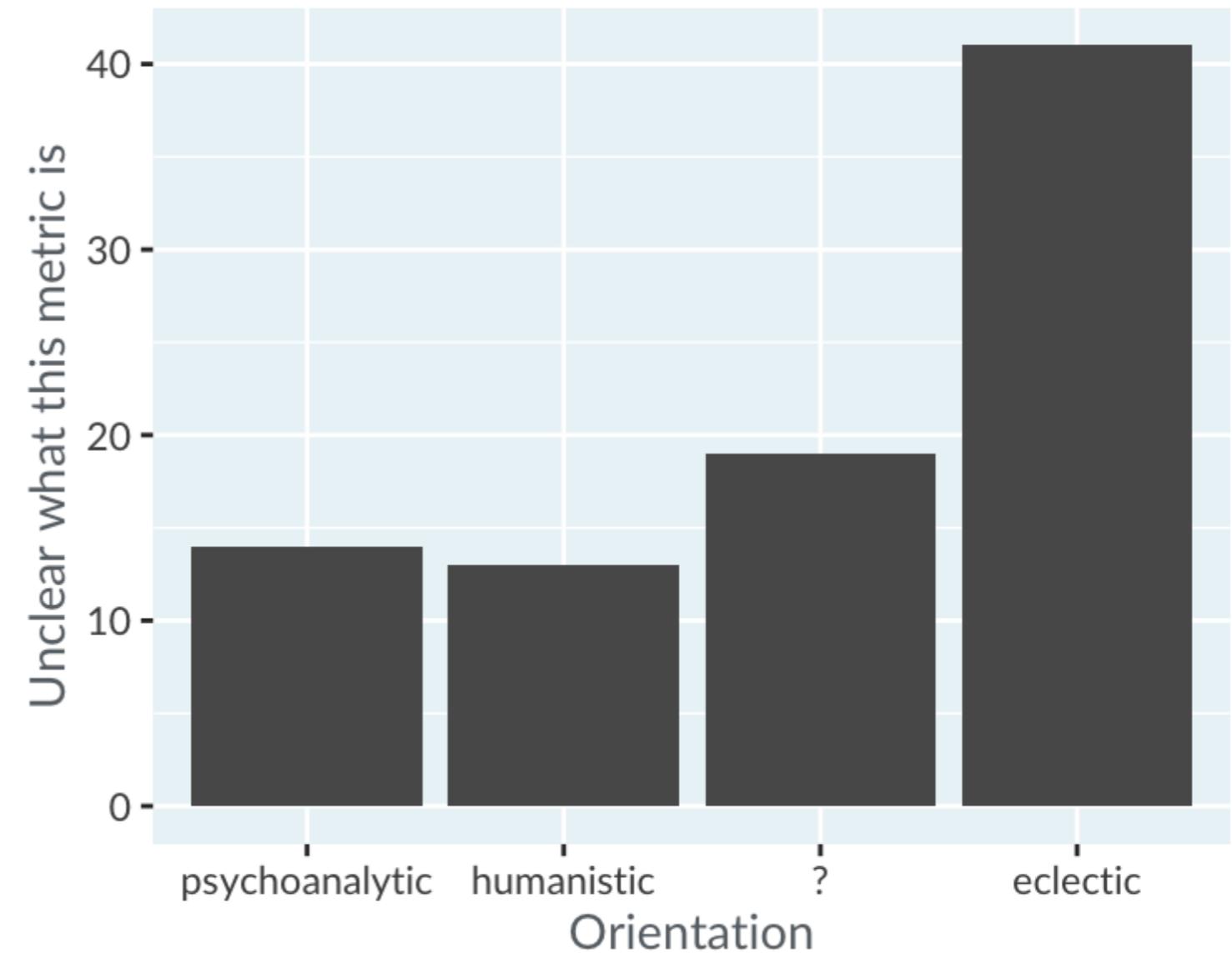
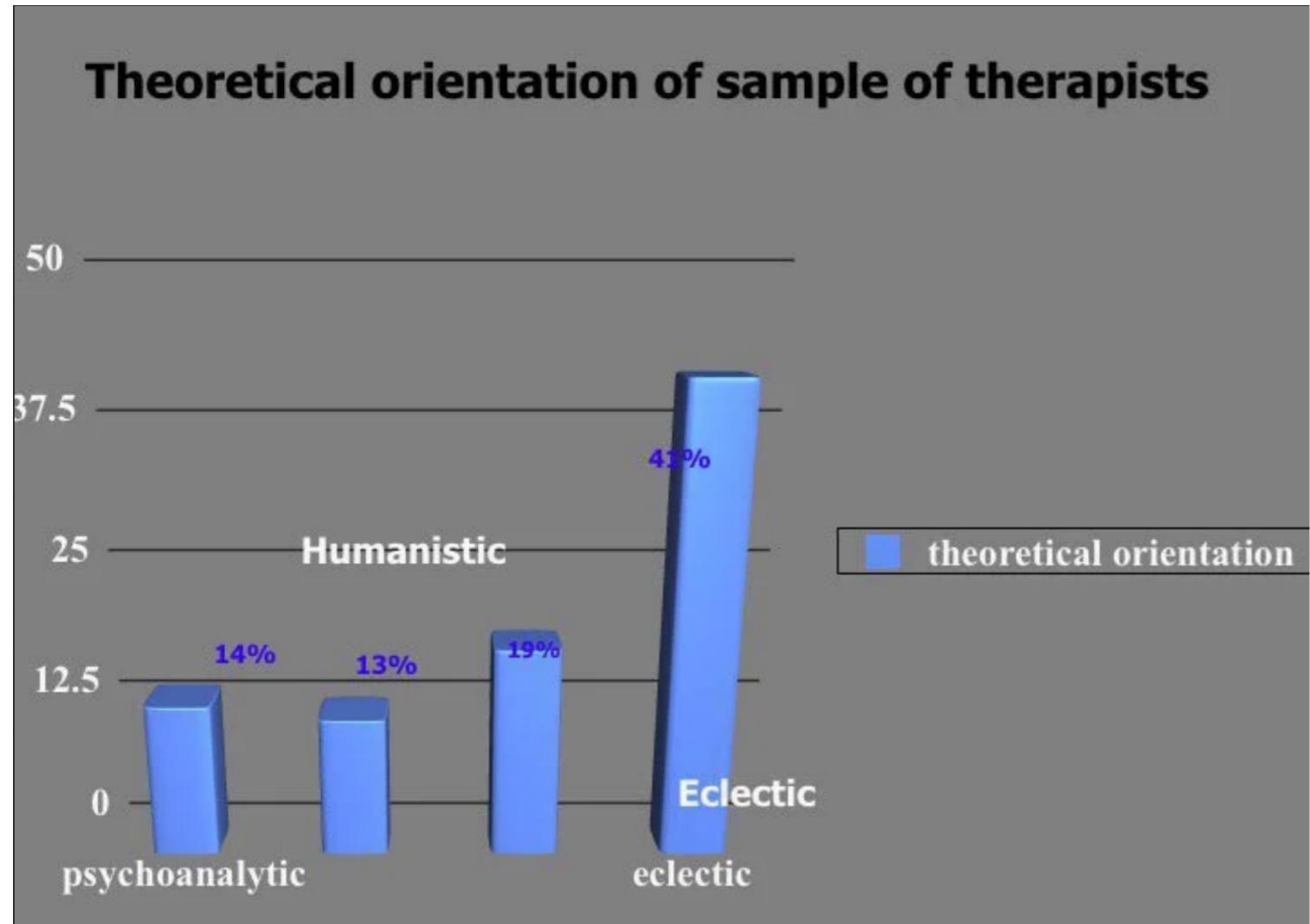
<sup>1</sup> [https://junkcharts.typepad.com/junk\\_charts/2013/09/the-incredibly-expanding-male.html](https://junkcharts.typepad.com/junk_charts/2013/09/the-incredibly-expanding-male.html)

# Skeuomorphism



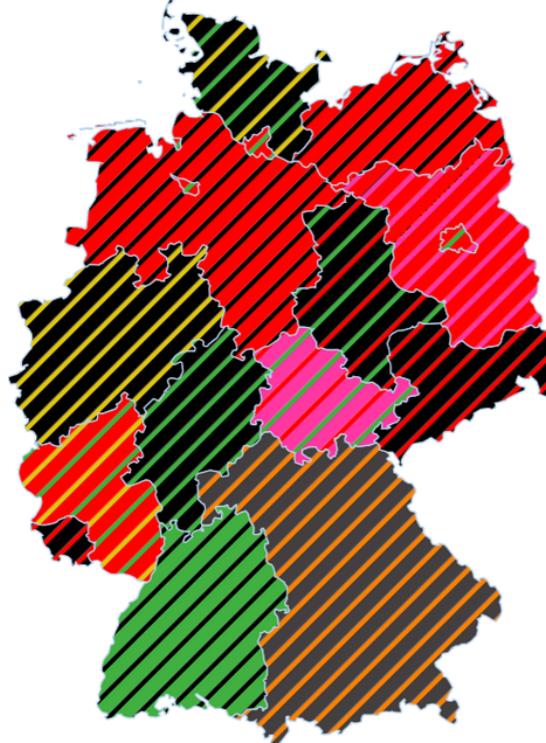
<sup>1</sup> <https://www.mediamatters.org/fox-news/fox-news-newest-dishonest-chart-immigration-enforcement>

# Extra dimensions

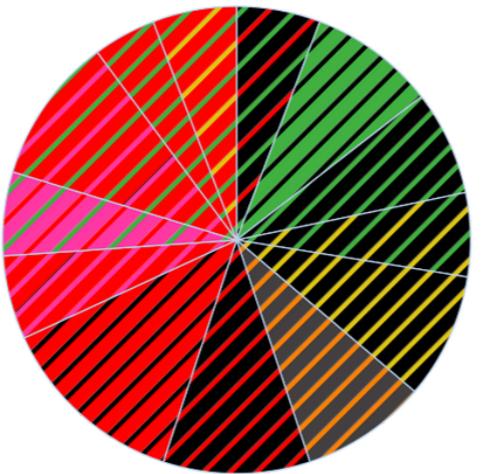


<sup>1</sup> [https://www.reddit.com/r/dataisugly/comments/dh6yra/an\\_actual\\_graph\\_presented\\_in\\_my\\_psychology](https://www.reddit.com/r/dataisugly/comments/dh6yra/an_actual_graph_presented_in_my_psychology)

# Ostentatious colors and lines



 CDU	10	
 SPD	9	
 GRÜNE	7	
 LINKE	7	
 FDP	6	
 FW	6	
 CDU + SPD	6	
 CDU + GRÜNE	5	
 SPD + FDP + GRÜNE	4	
 CDU + SPD + GRÜNE	4	
 SPD + LINKE	4	
 LINKE + SPD + GRÜNE	4	
 CDU + GRÜNE + FDP	4	
 SPD + GRÜNE	3	



<sup>1</sup> [https://www.reddit.com/r/dataisugly/comments/cyhle4/wikipedias\\_image\\_of\\_the\\_distribution\\_of\\_seats\\_in/](https://www.reddit.com/r/dataisugly/comments/cyhle4/wikipedias_image_of_the_distribution_of_seats_in/) <sup>2</sup> <https://imgur.com/y27mRLj>

# **Let's practice!**

**UNDERSTANDING DATA VISUALIZATION**

# Congratulations

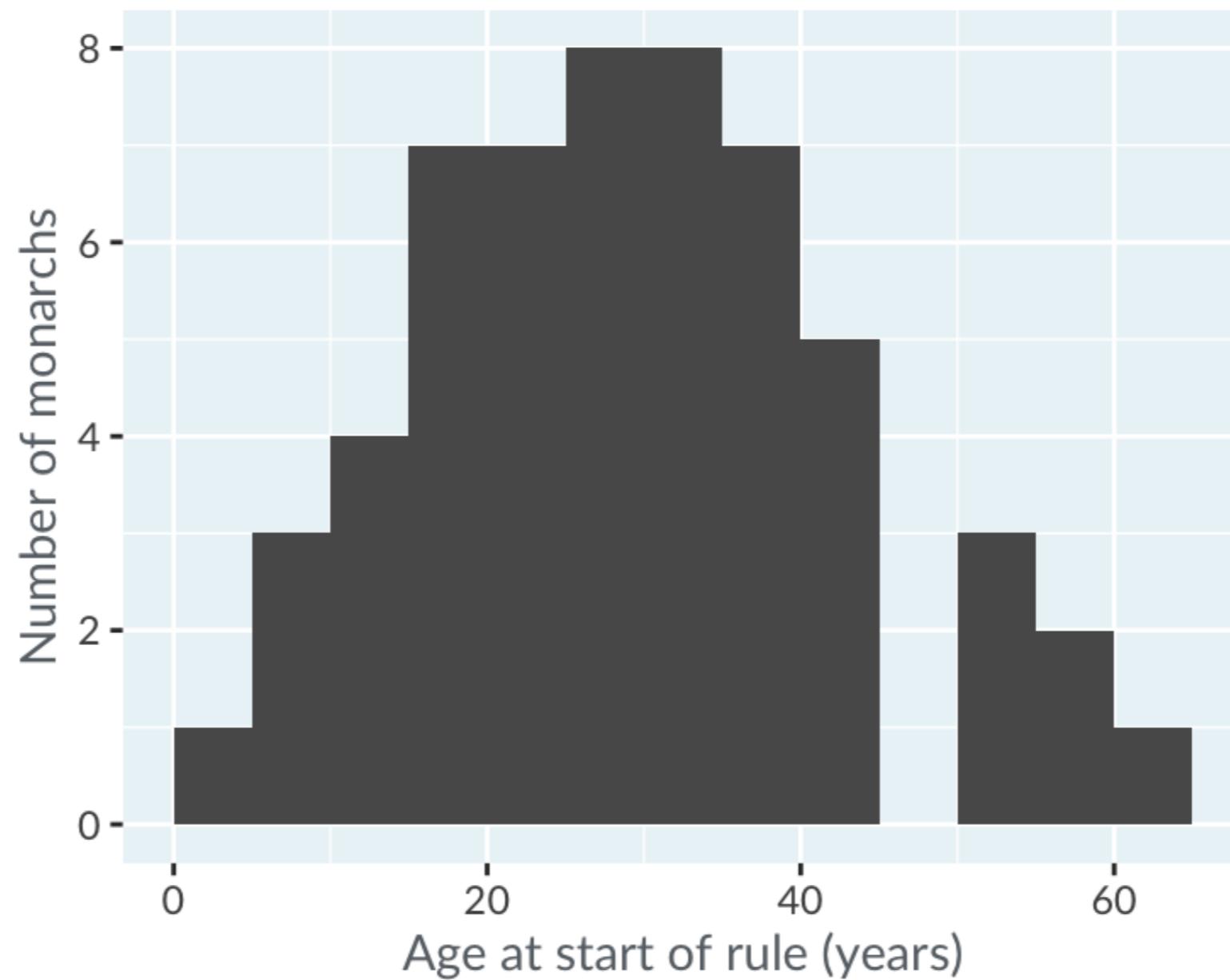
## UNDERSTANDING DATA VISUALIZATION



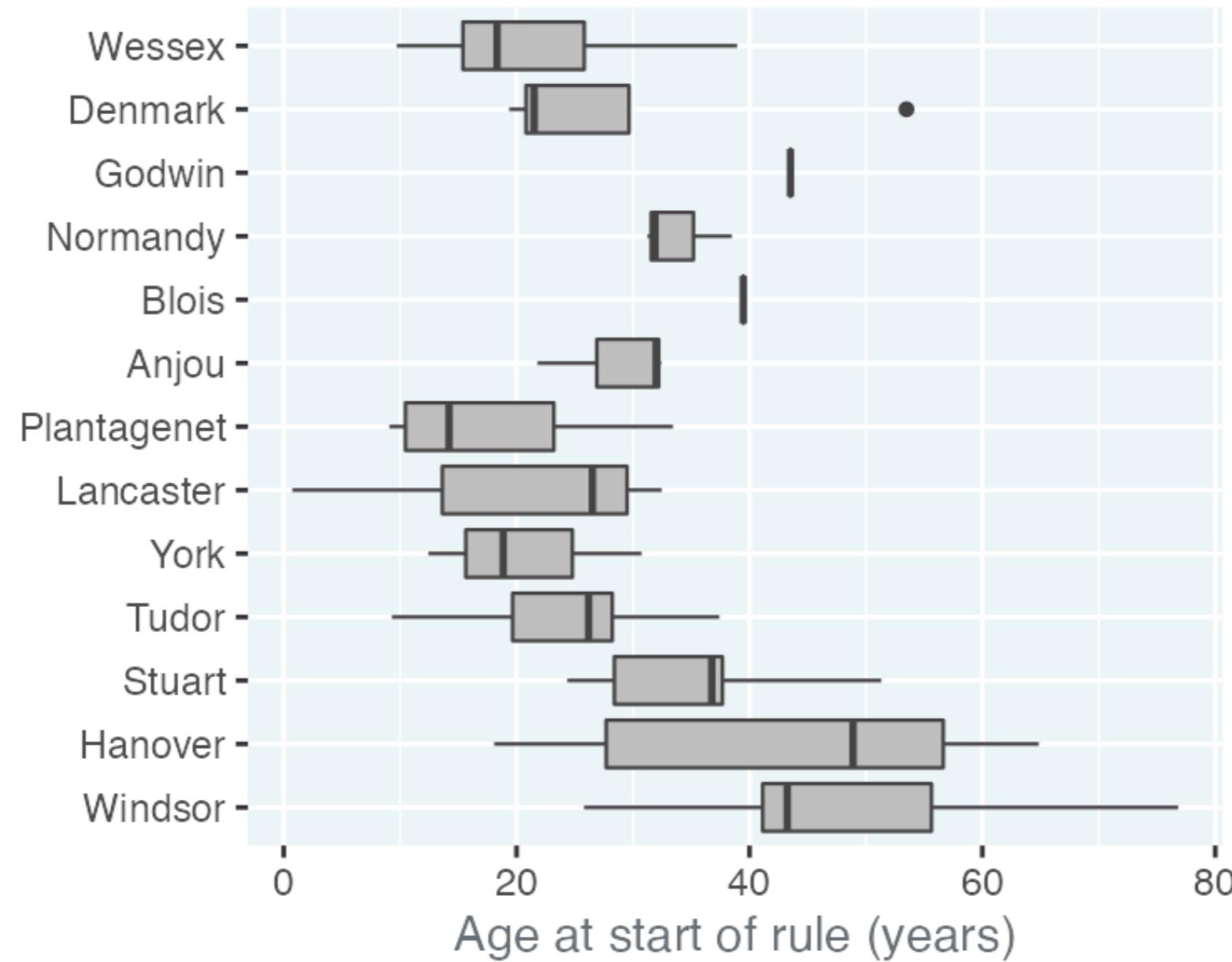
**Richie Cotton**

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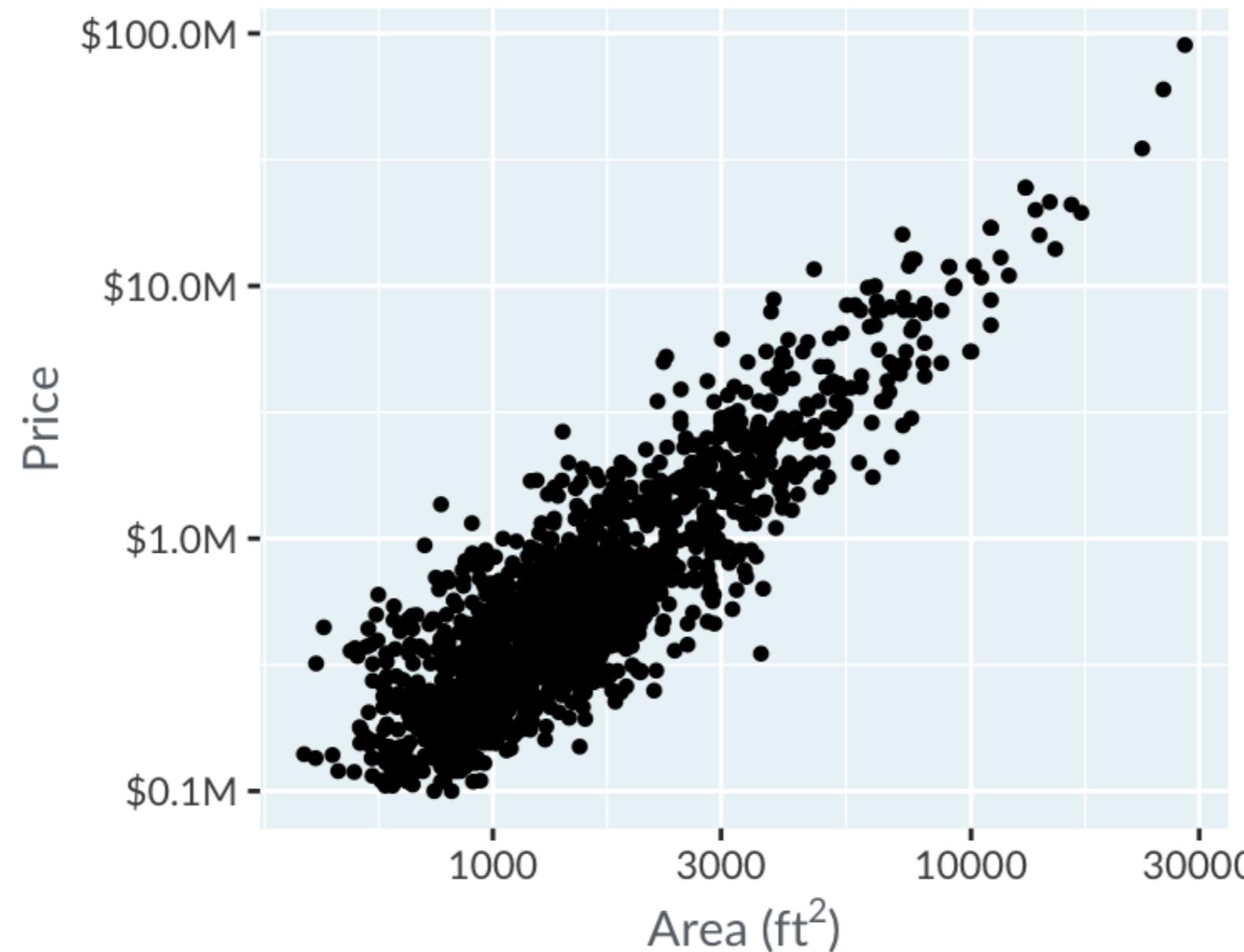
# Histograms: show a distribution



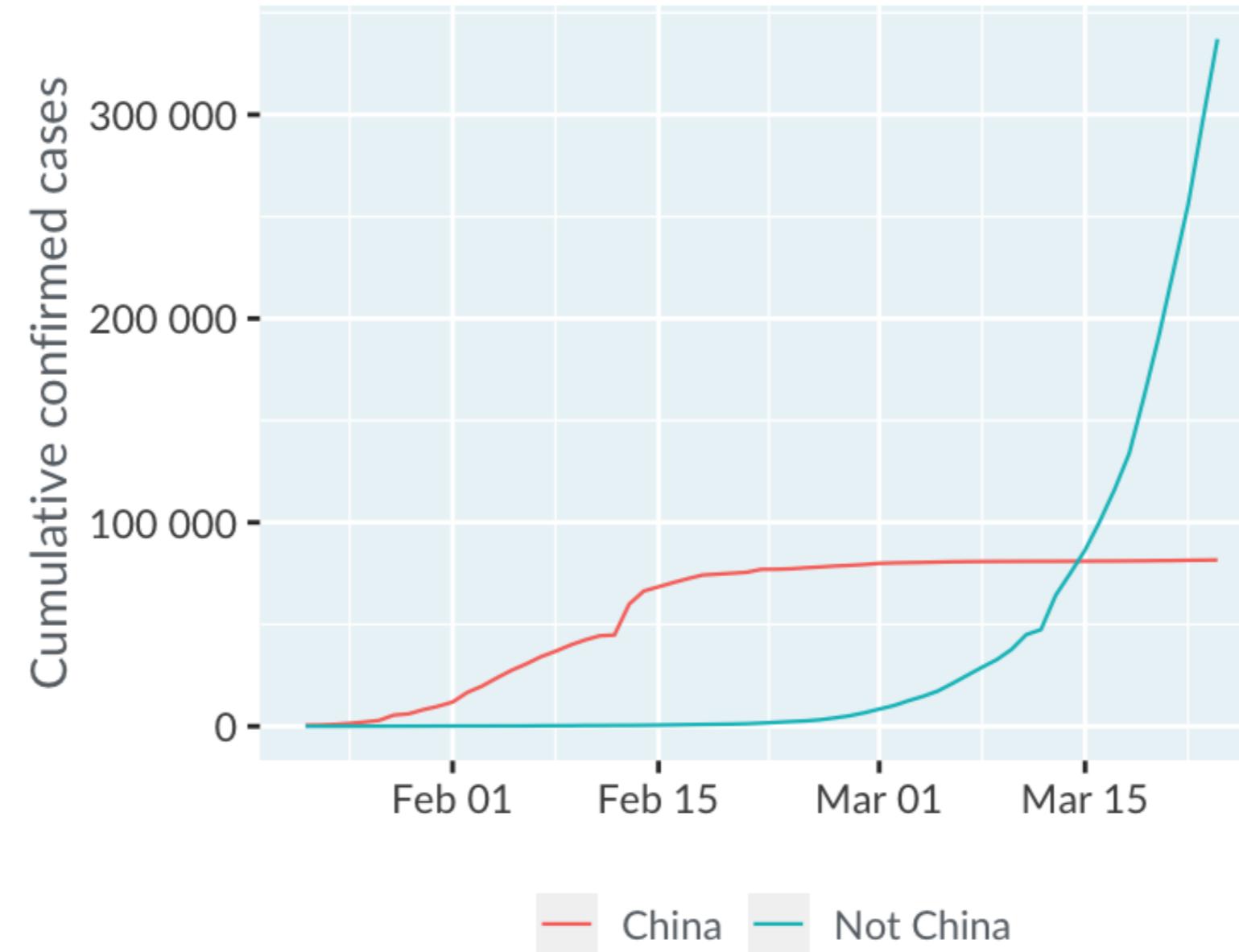
# Box plots: show lots of distributions



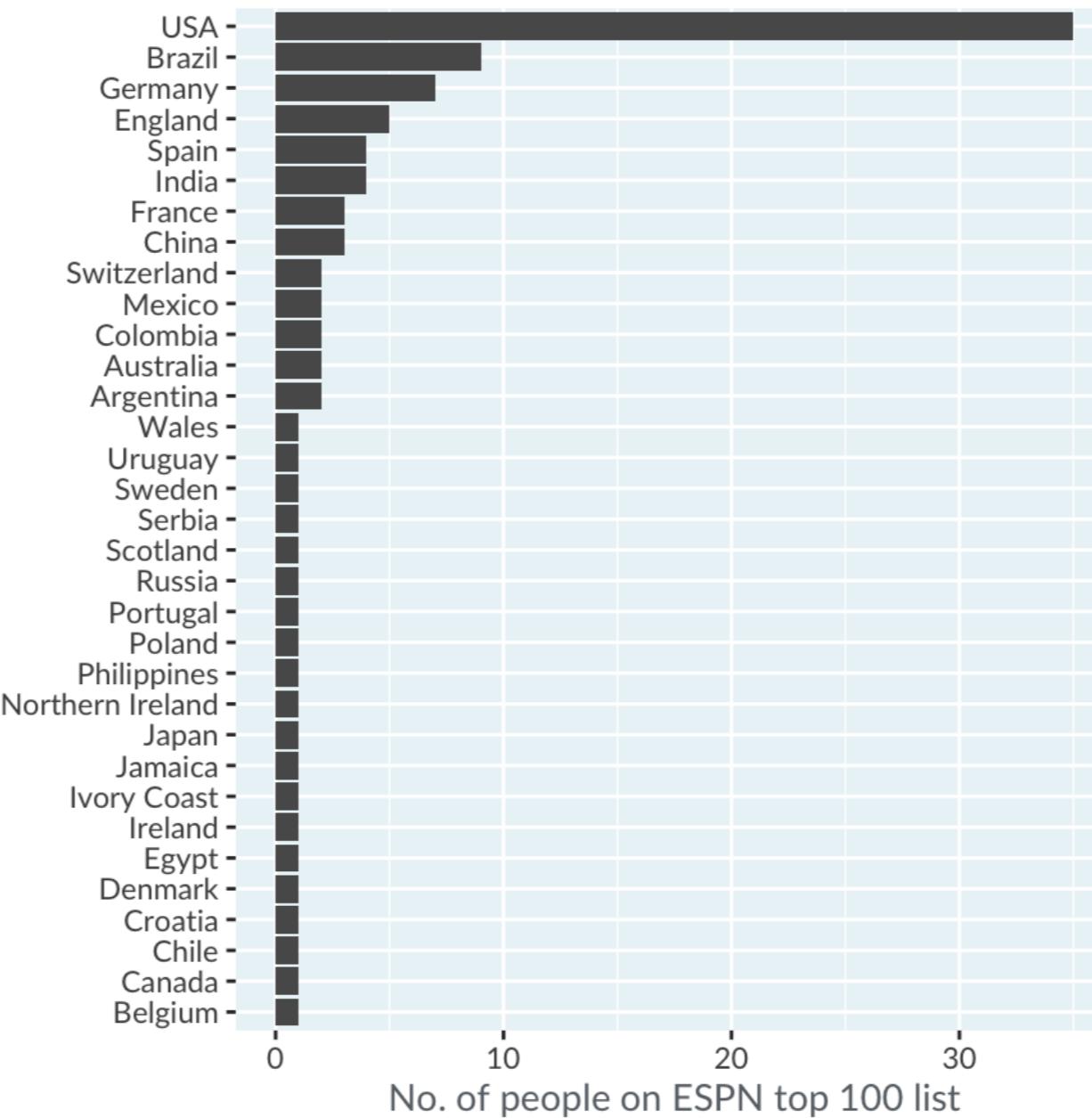
# Scatter plots: compare two numeric variables



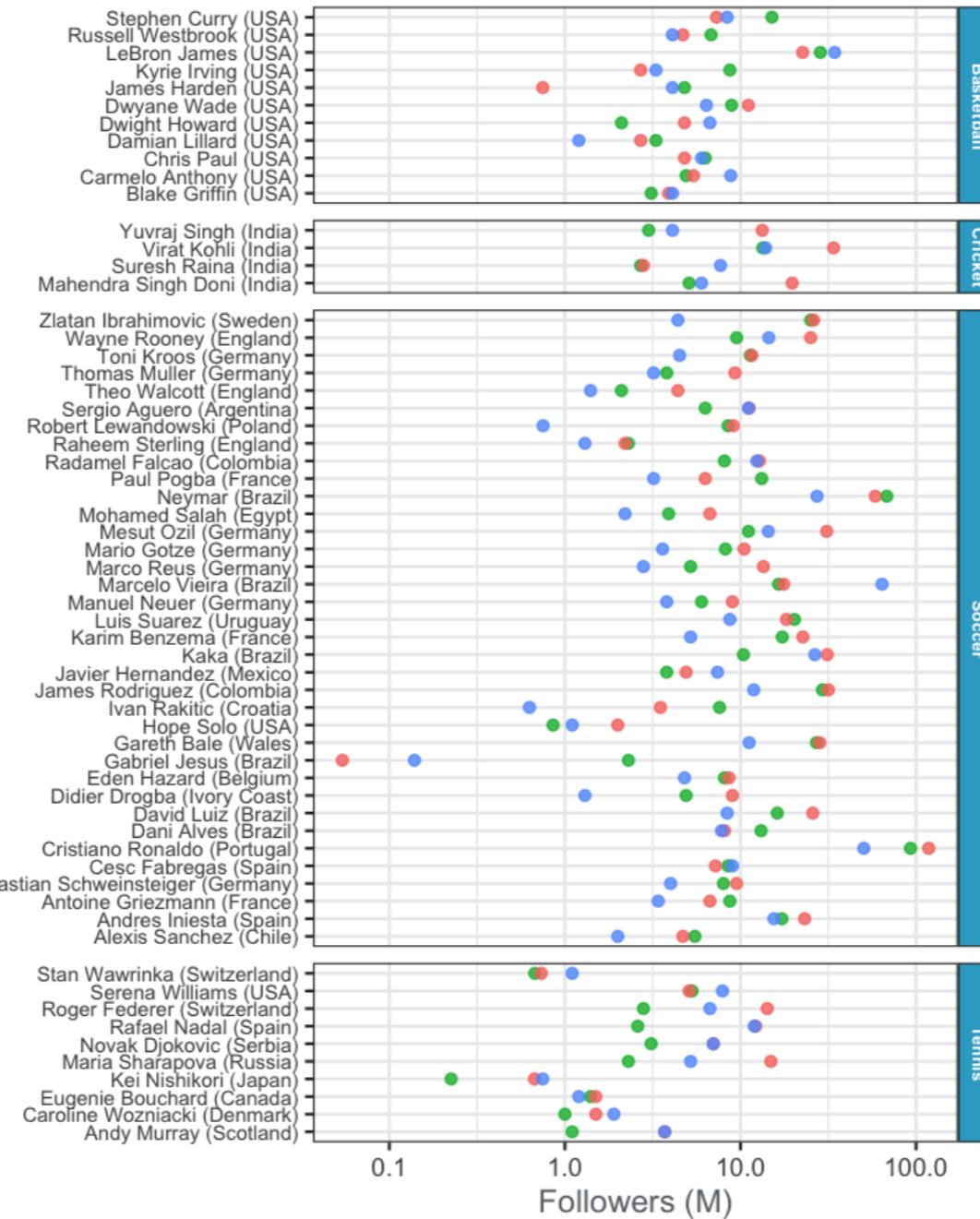
# Line plots: show trends over time



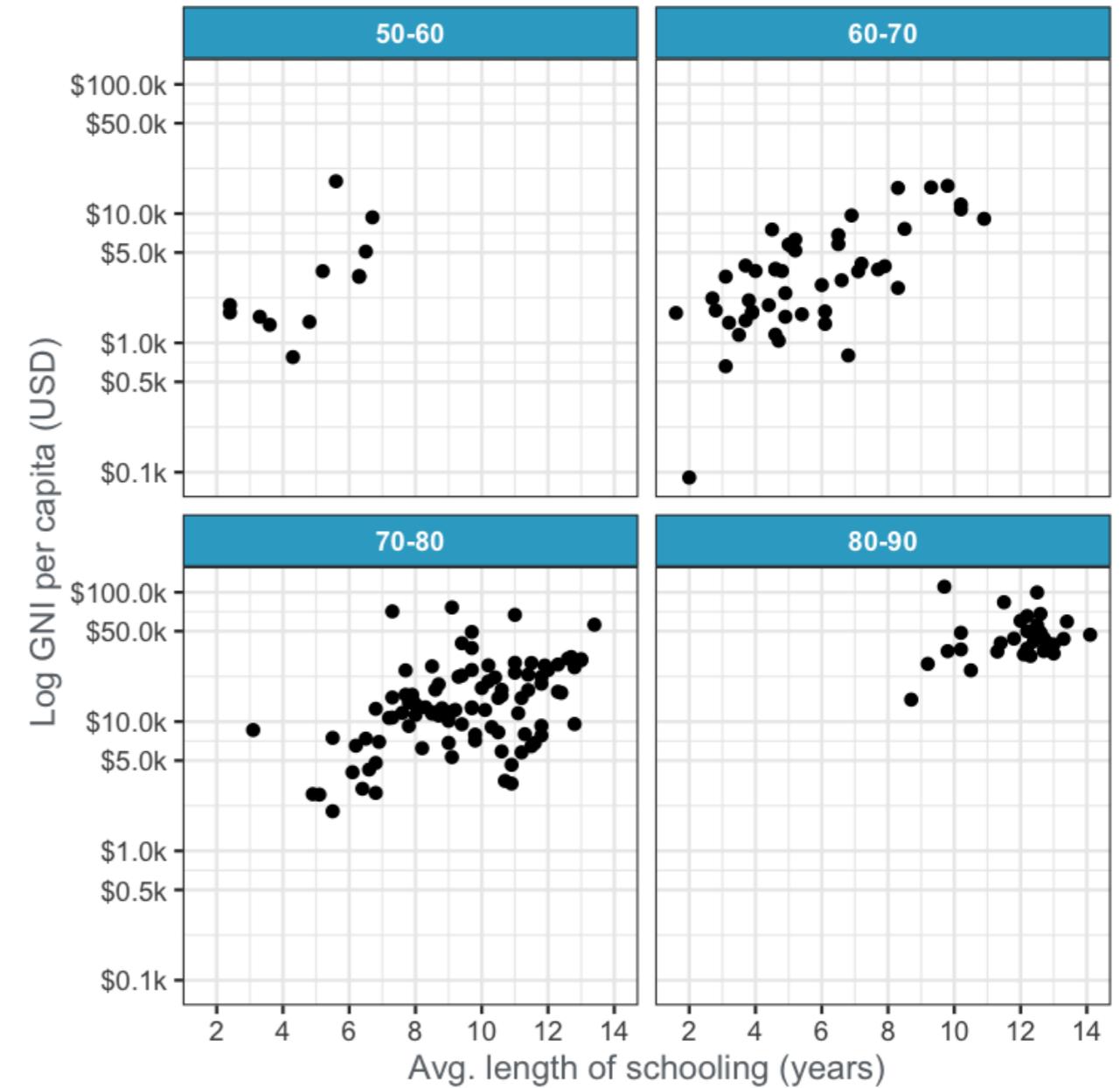
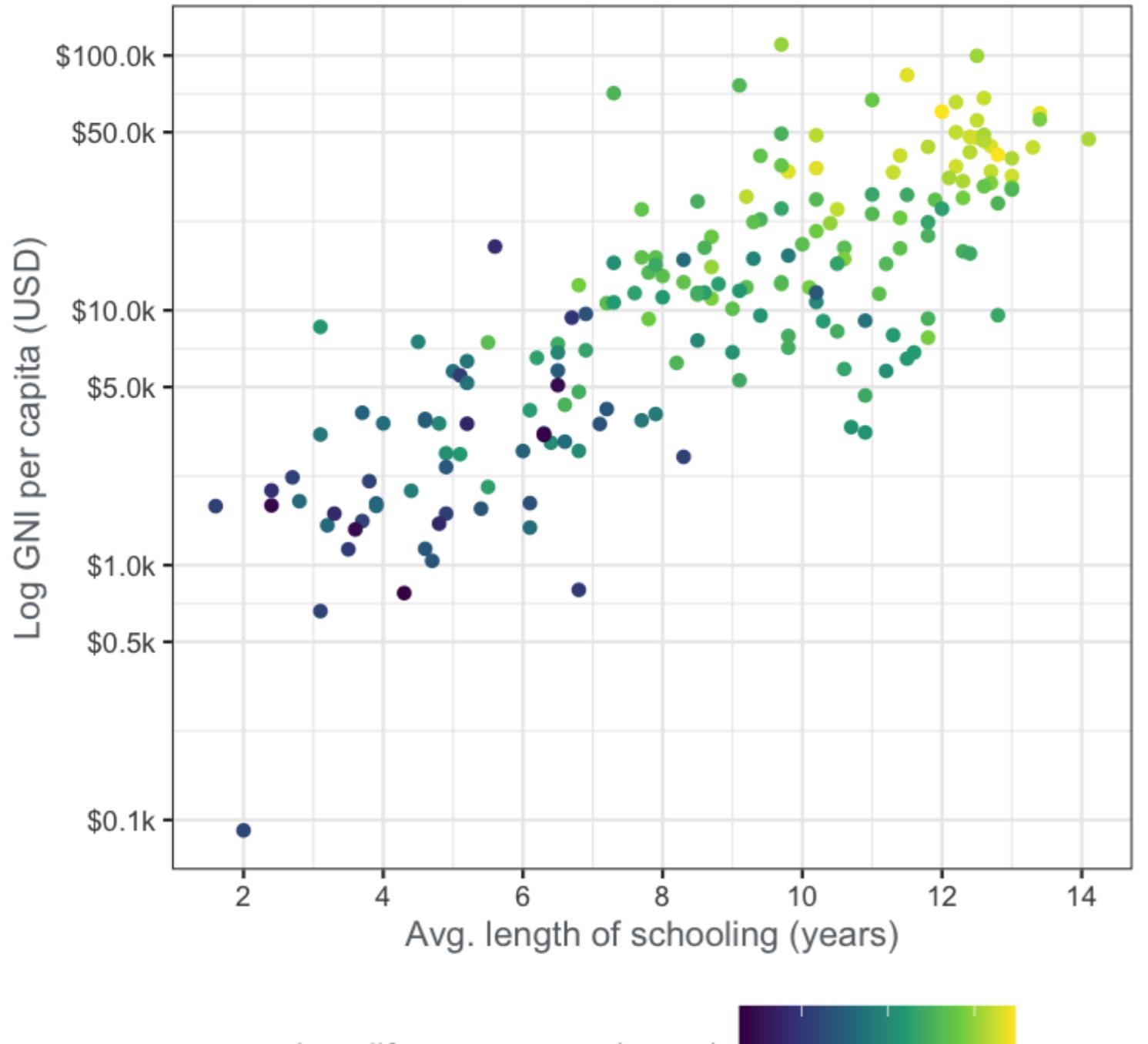
# Bar plots: show counts by category



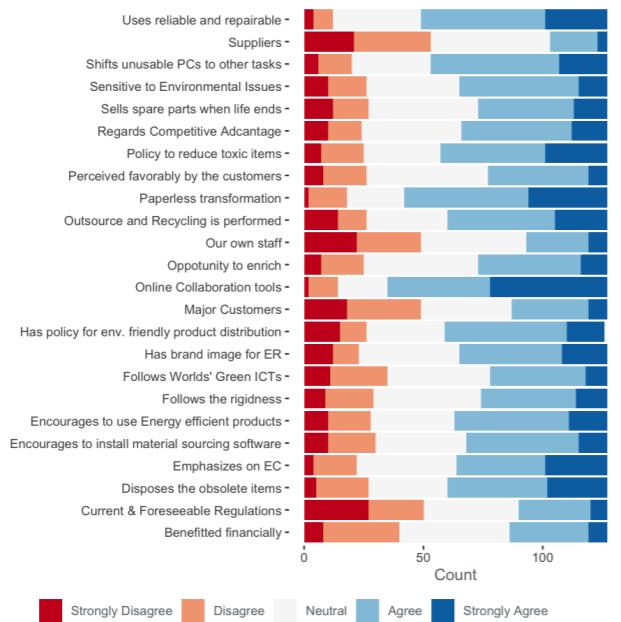
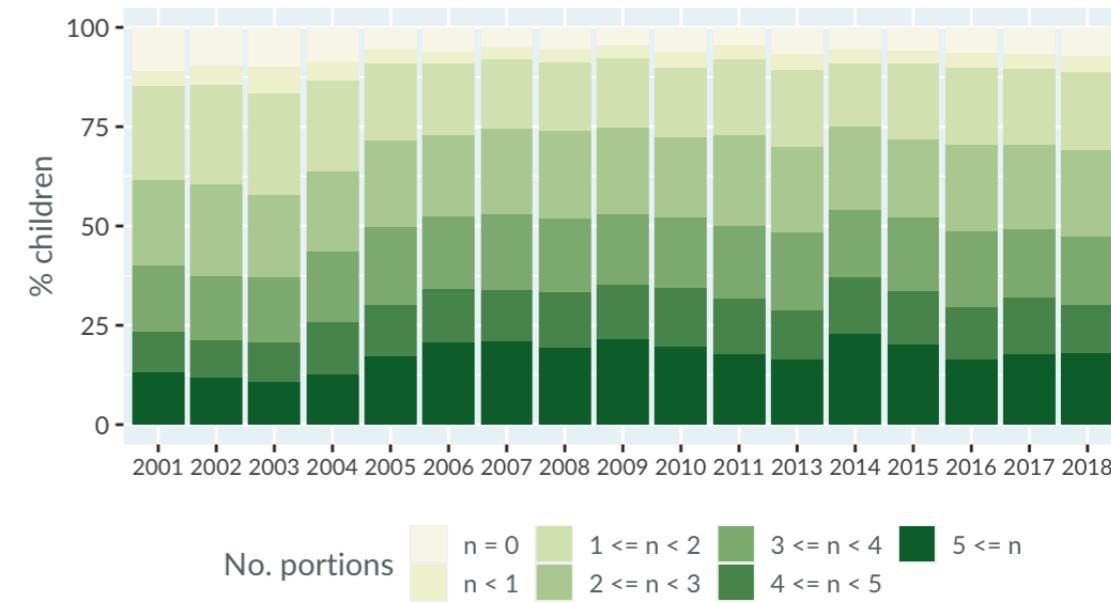
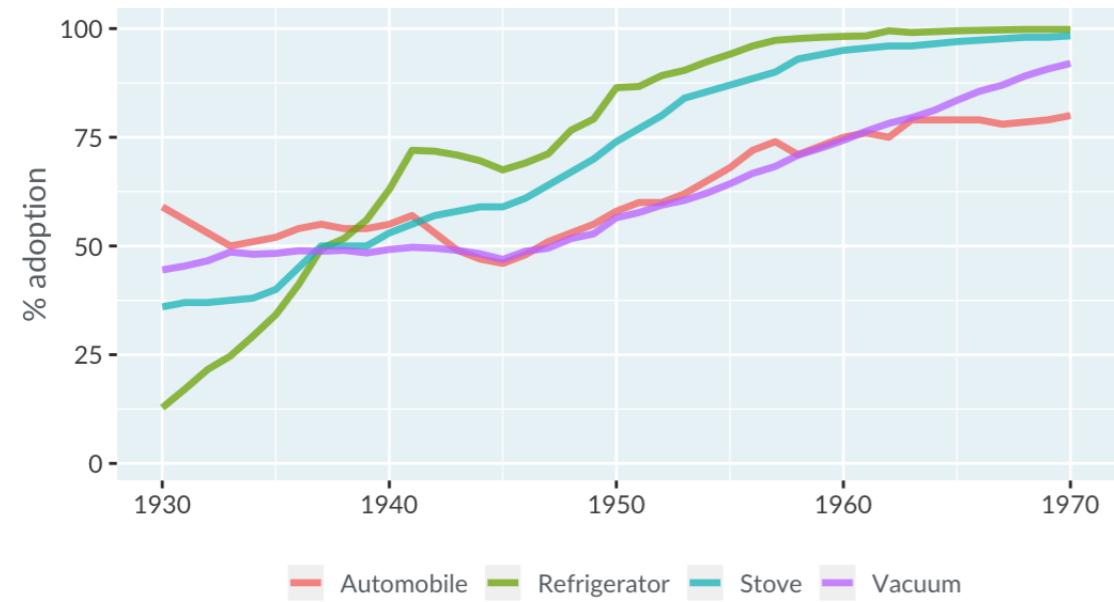
# Dot plots: show log scale metrics by category



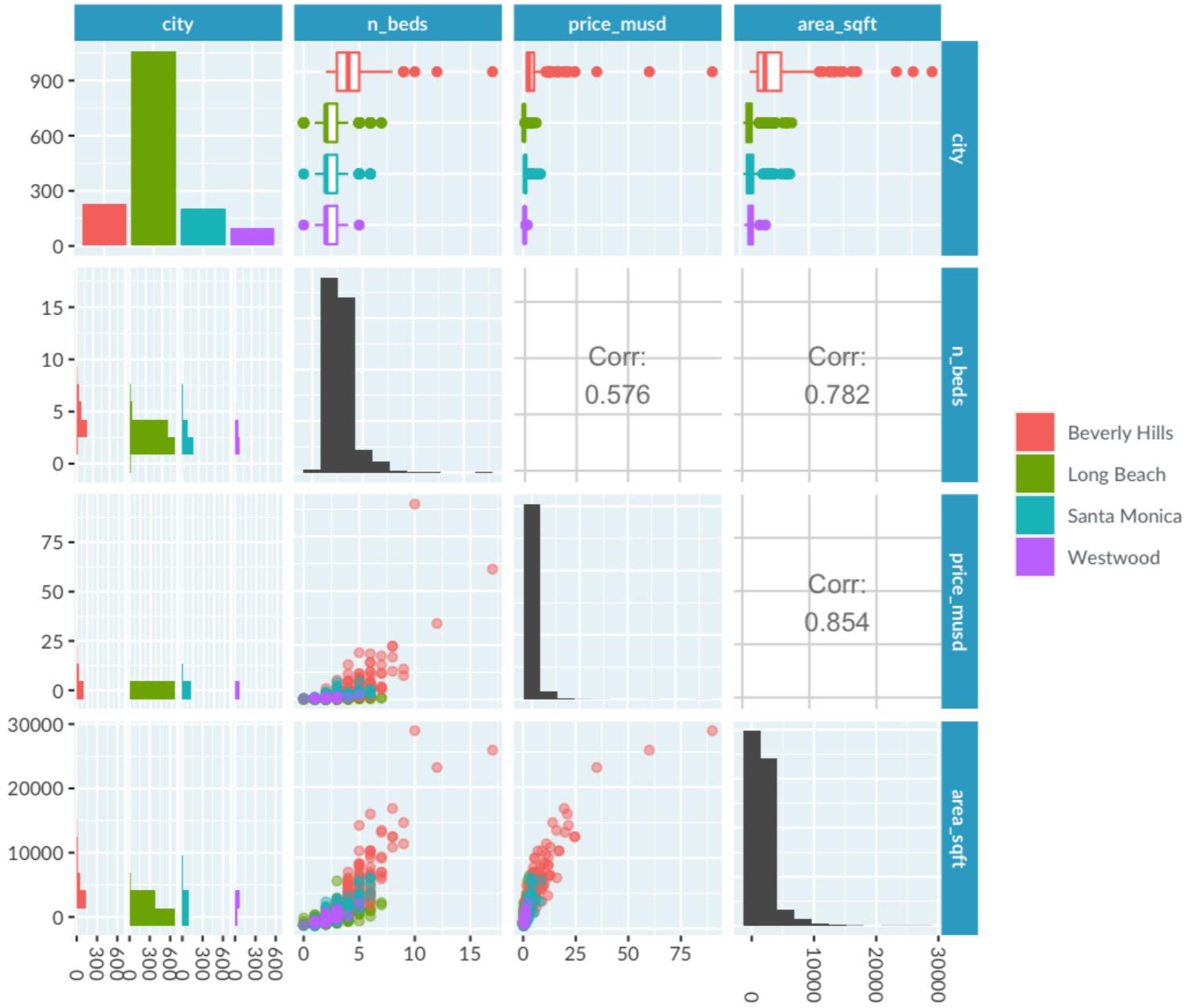
# Extra dimensions



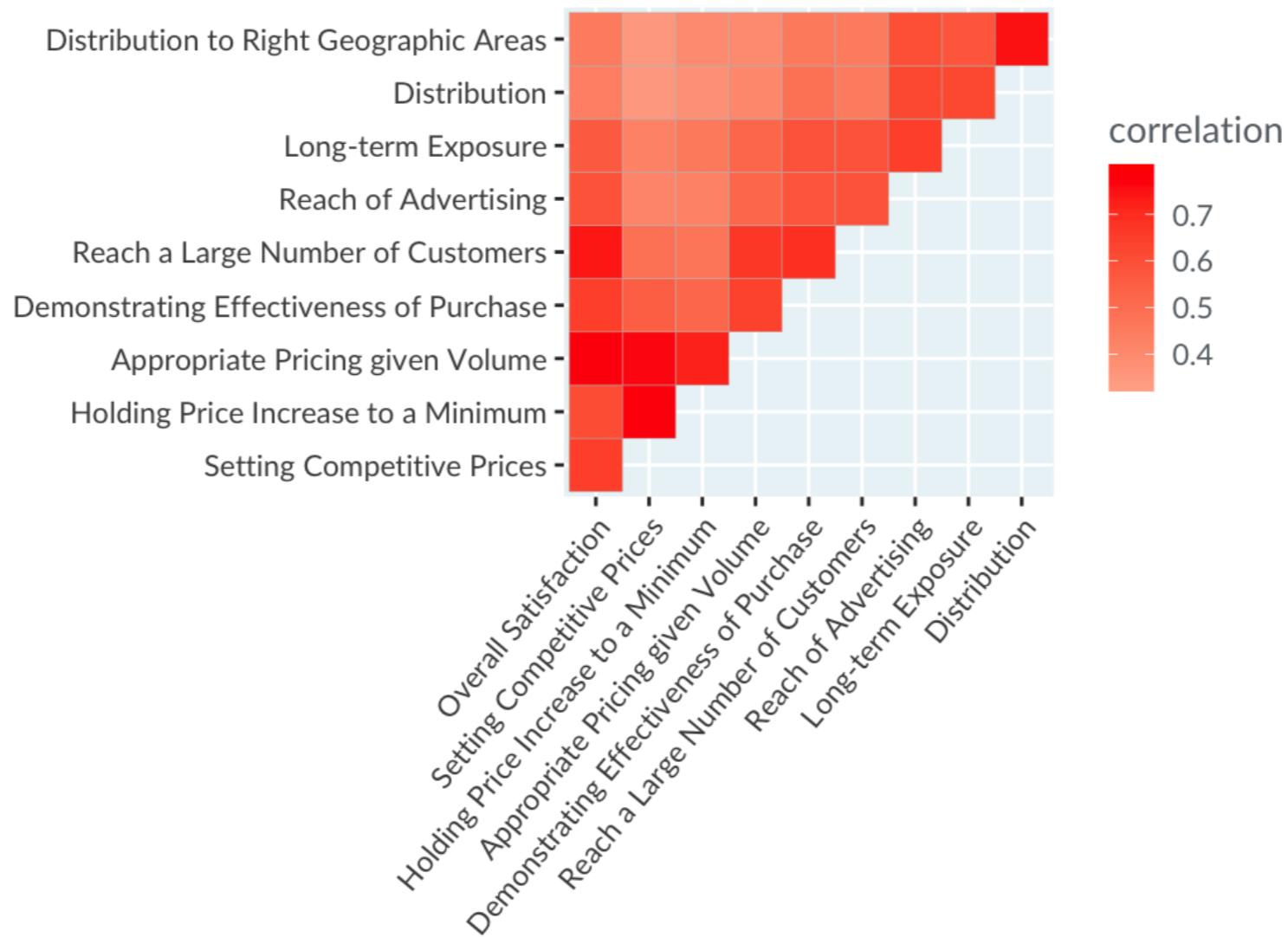
# 3 types of color scale



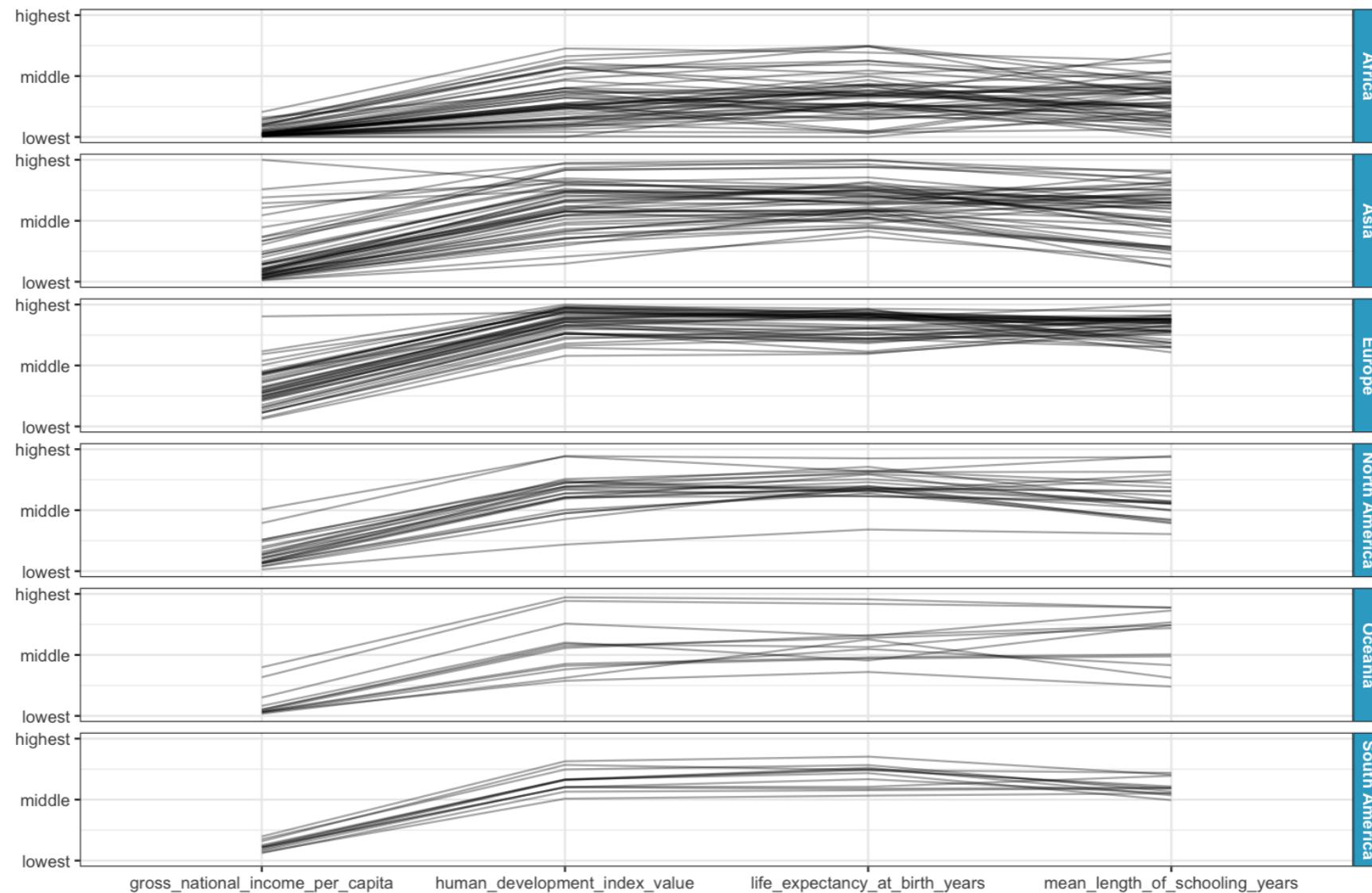
# Pair plot: compare many variables



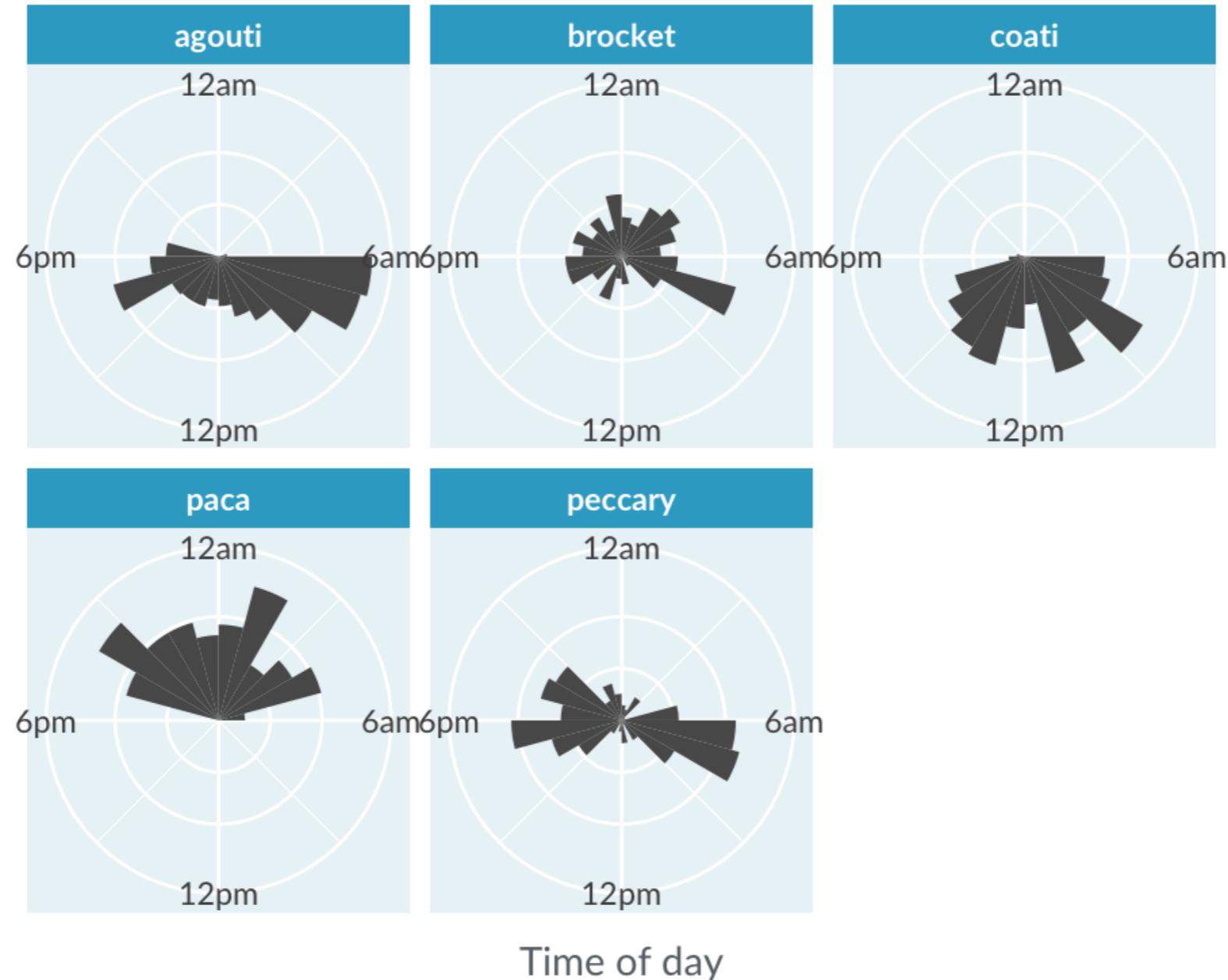
# Correlation heatmap: show related variables



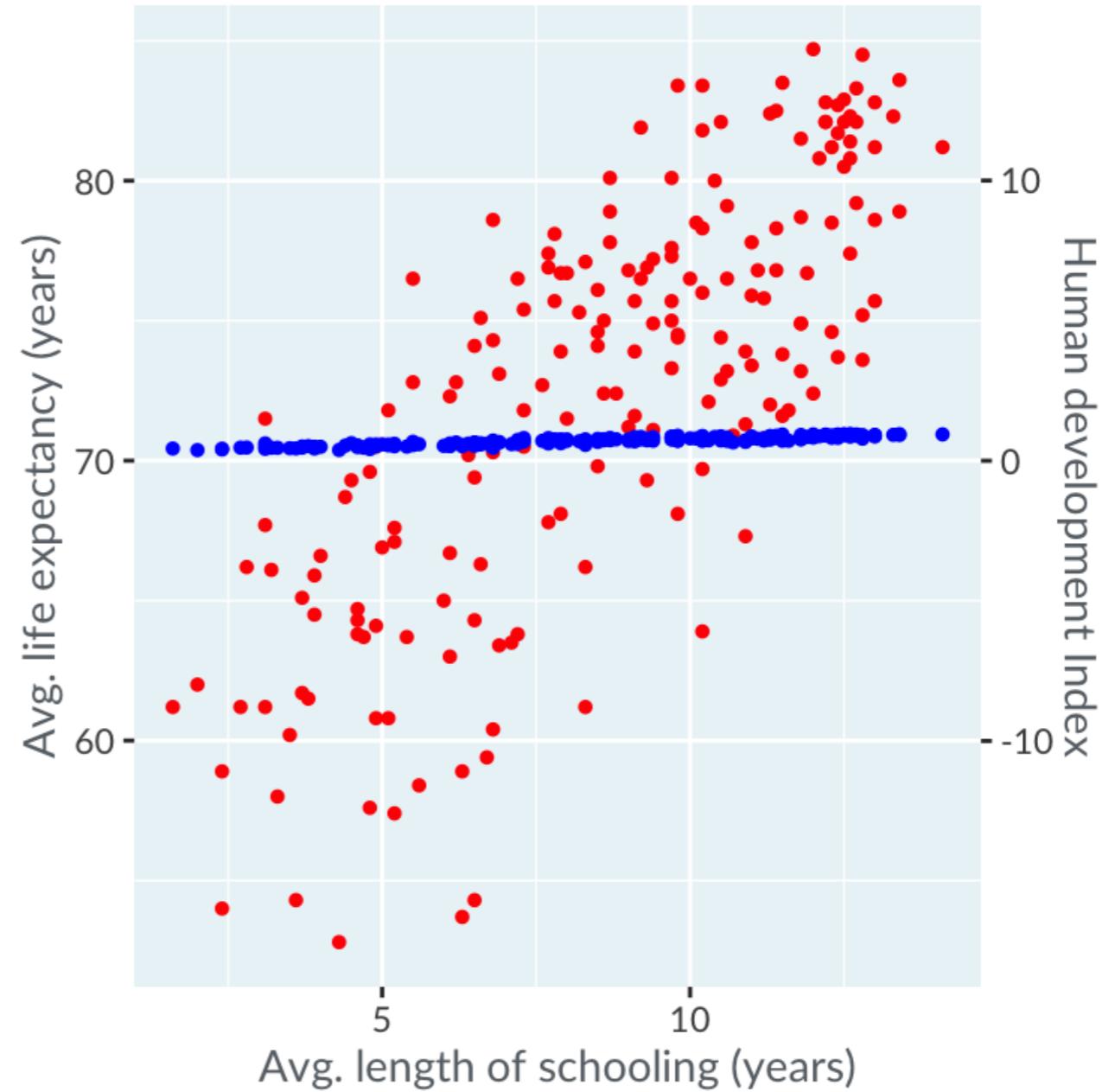
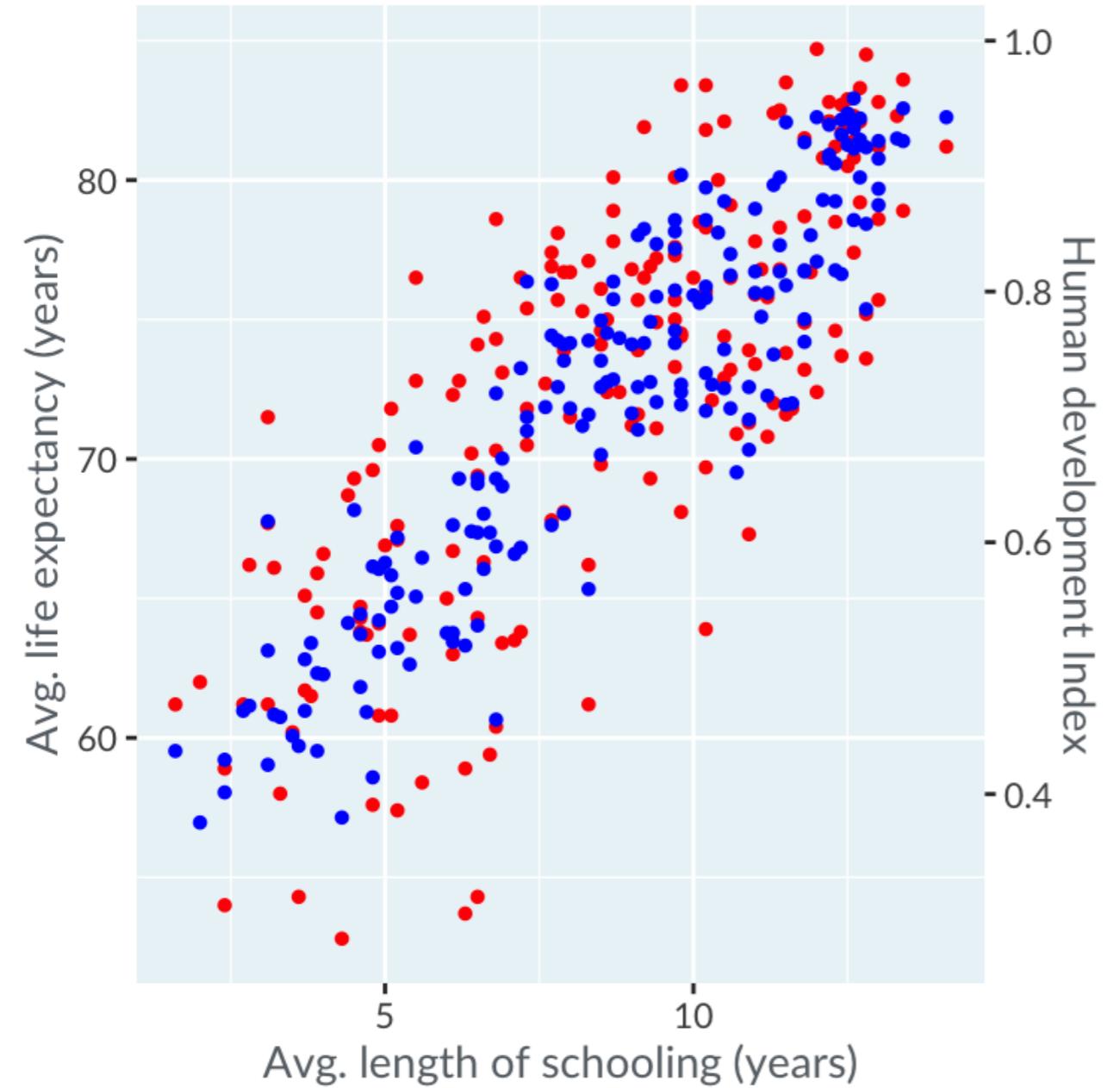
# Parallel coordinates plot: find patterns across variables



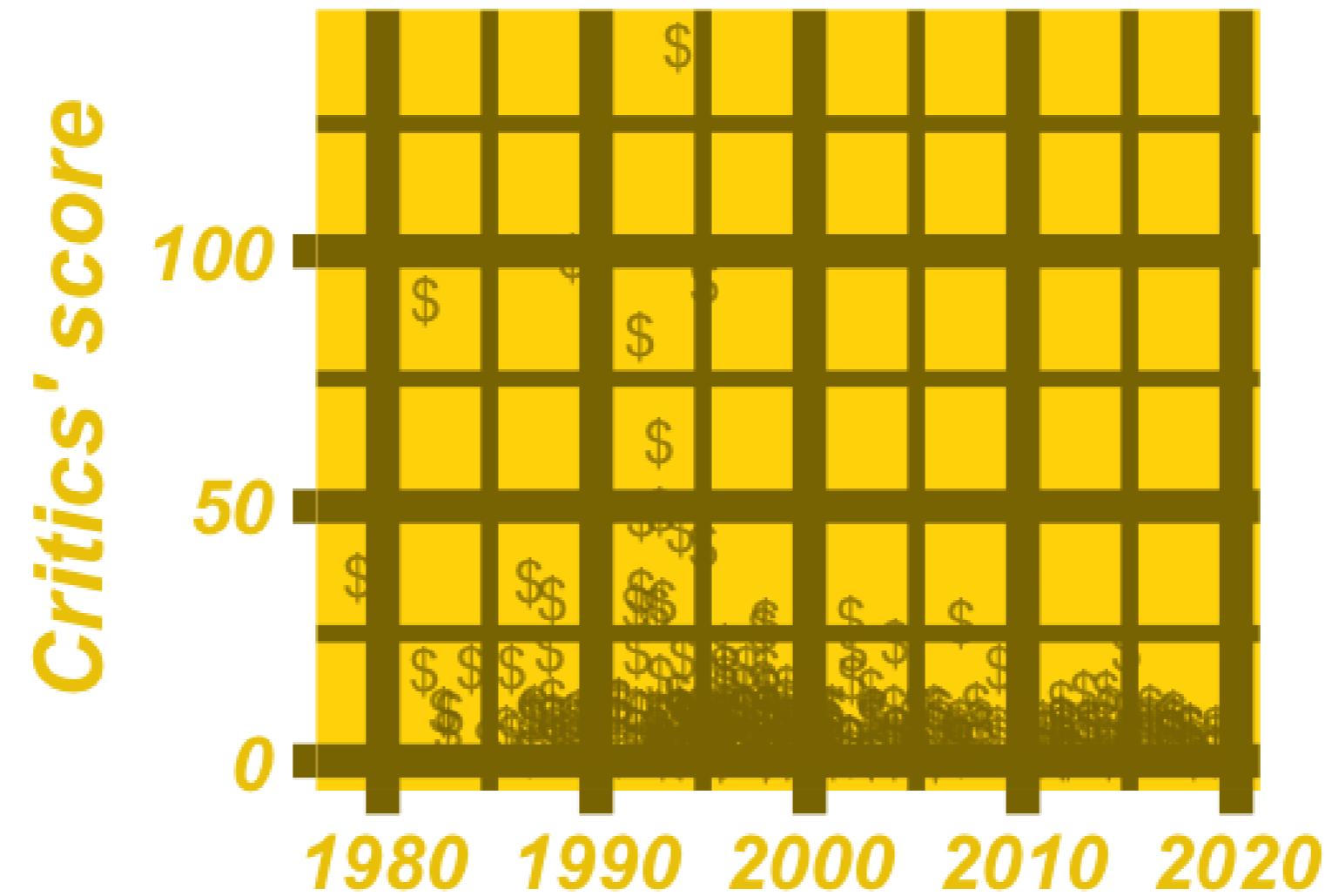
# Rose plot: show a cyclical distribution



# Dual axes are bad



# Eliminate chartjunk



# Next steps

- [Introduction to Data Visualization with ggplot2](#)
- [Introduction to Tableau](#)
- [Introduction to Data Visualization with Matplotlib](#)
- [Introduction to Data Visualization with Seaborn](#)

# You made it!

UNDERSTANDING DATA VISUALIZATION