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DLI Accelerated Data Science Teaching Kit

# Lecture 7.4 - Chart Basics



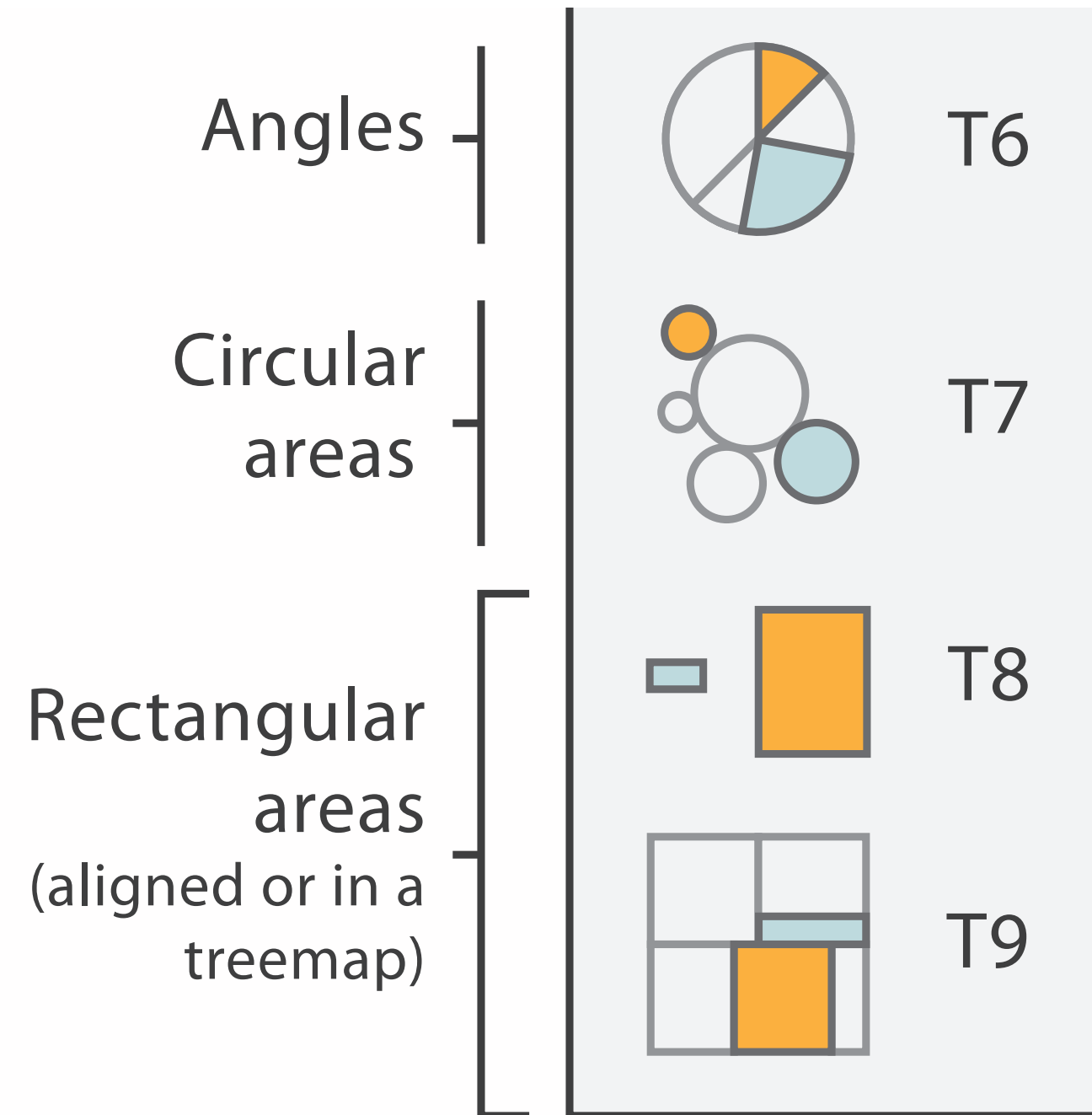
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# Pre-Attentive Processing

## Gestalt Laws

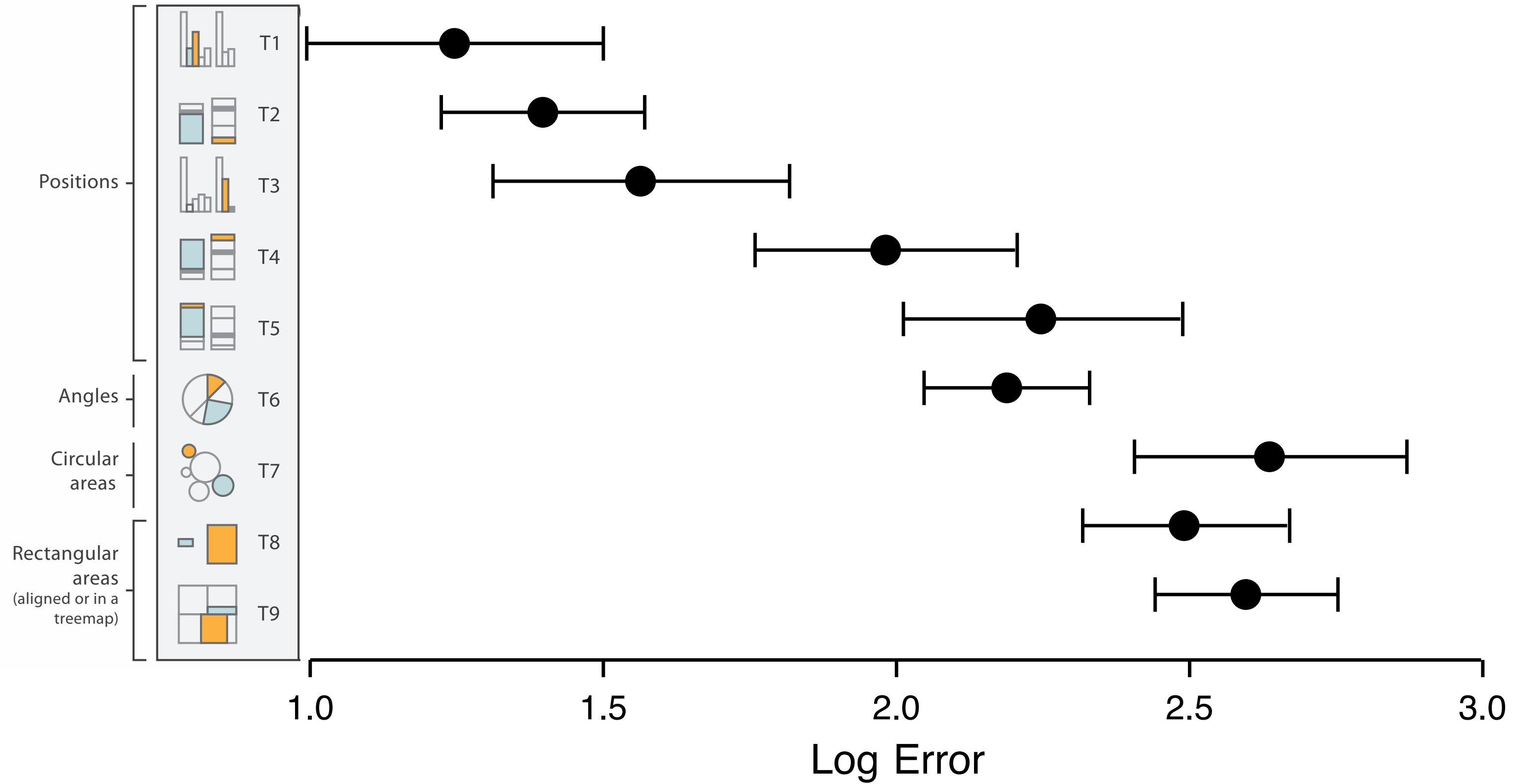
**Detect quickly **does NOT** mean  
detect accurately**

**Ideally you want both.**

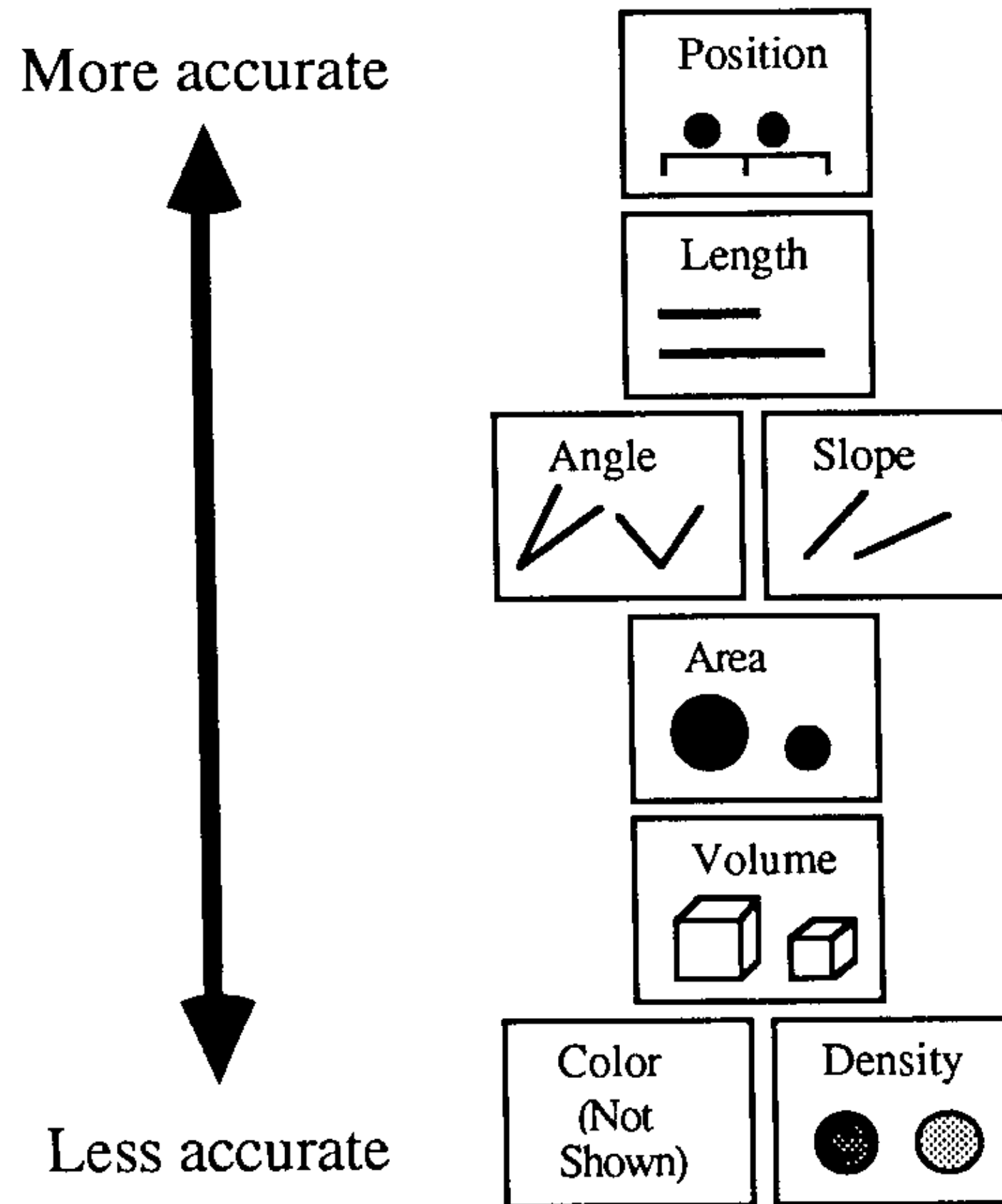


Crowdsourcing Graphical Perception: Using Mechanical Turk to Assess Visualization Design. Heer and Bostock. Proc ACM Conf. Human Factors in Computing Systems (CHI) 2010, p. 203–212.

# Crowdsourced Results



Crowdsourcing Graphical Perception: Using Mechanical Turk to Assess Visualization Design. Heer and Bostock. Proc ACM Conf. Human Factors in Computing Systems (CHI) 2010, p. 203–212.

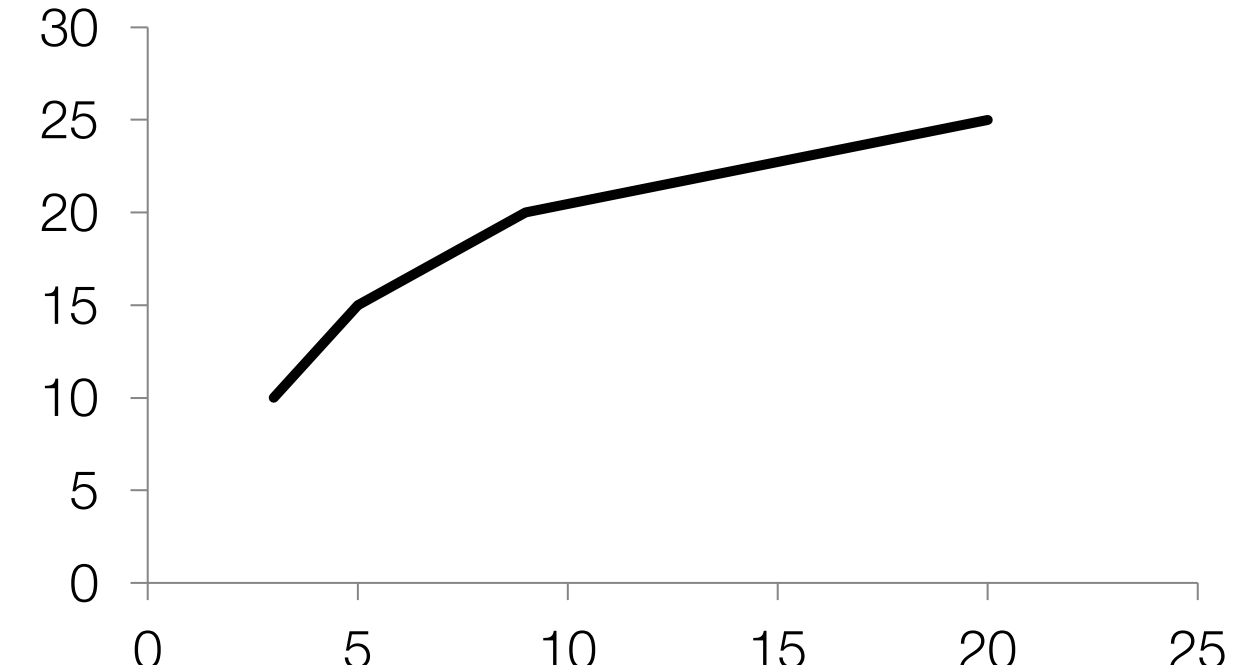
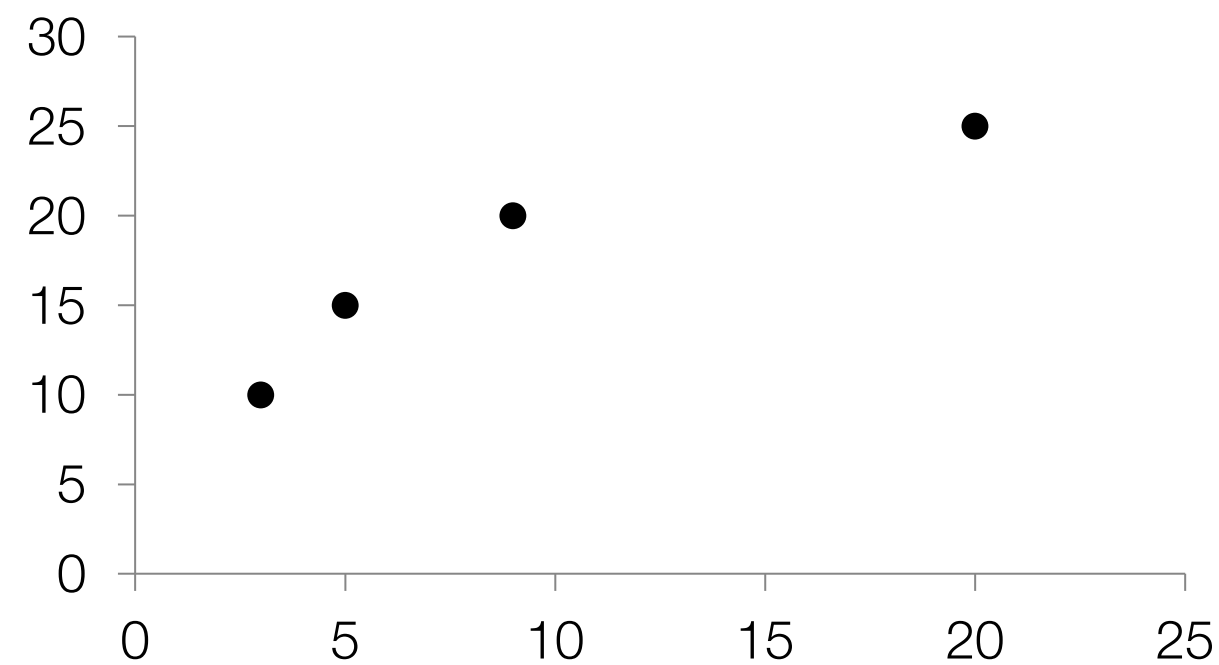
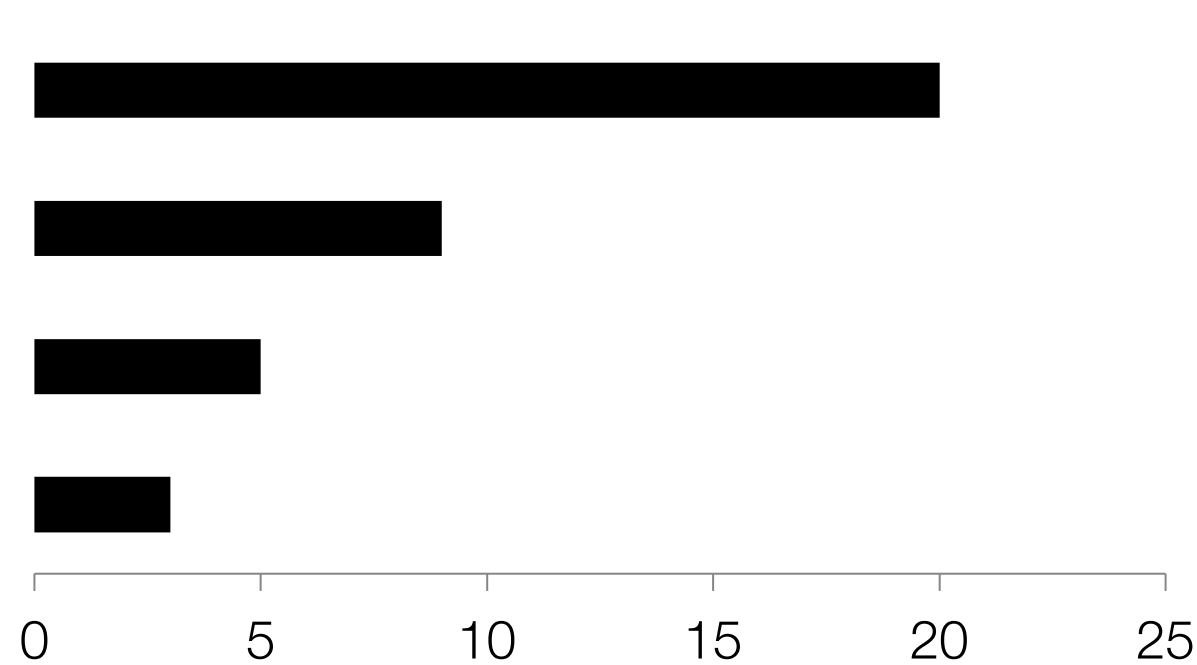


Mackinlay, L. (1986). Echo of applause. Leicester: Ulverscroft.

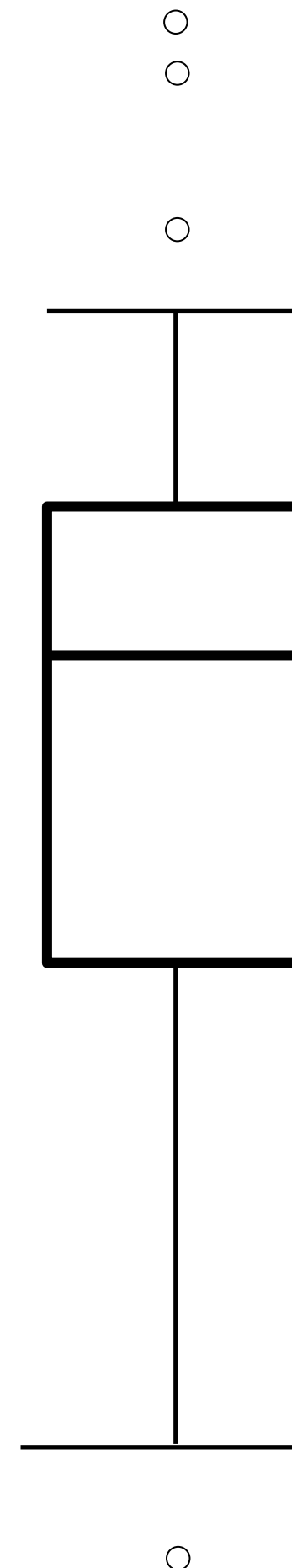
# What does this tell us?



# Bar charts, scatterplots, and line charts are really effective for quantitative data



# **(and for statistical distributions) Tukey Box Plots**



Outliers

Largest  $< Q3 + 1.5 \text{ IQR}$

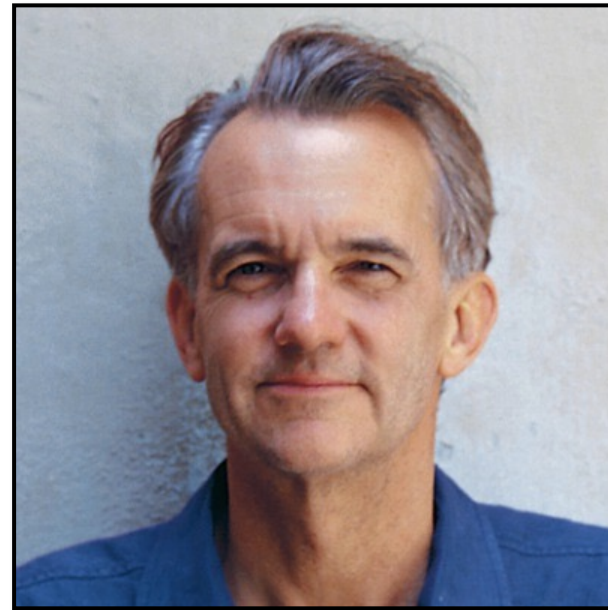
Largest  $< Q3$

Median

Smallest  $> Q1$

Smallest  $> Q1 - 1.5 \text{ IQR}$

# Tufte's Chart Principles



Edward Tufte

Tufte, Edward. (n.d.). In Wikipedia. Retrieved November 30, 2017. from [https://en.wikipedia.org/wiki/Edward\\_Tufte](https://en.wikipedia.org/wiki/Edward_Tufte)

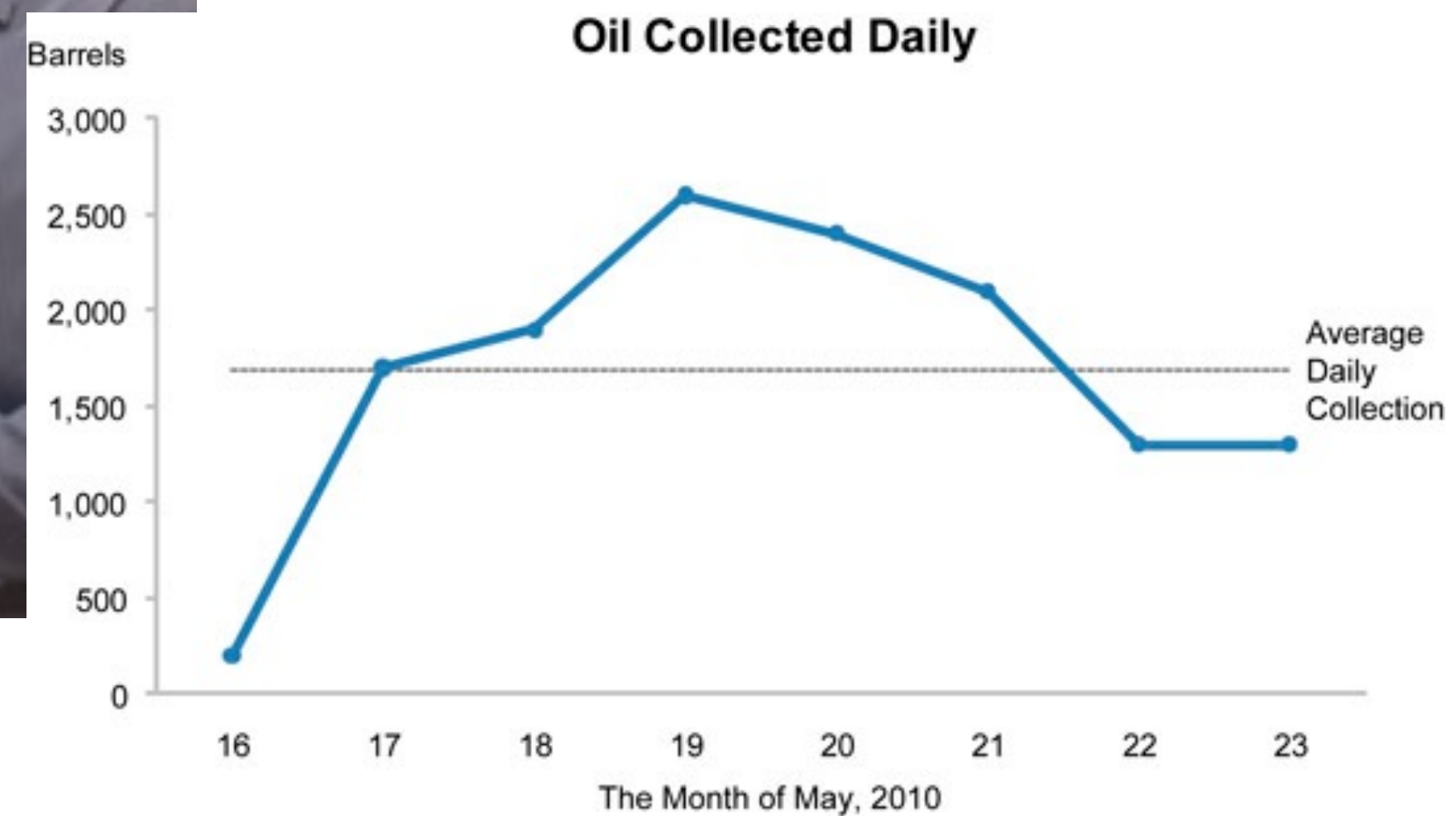
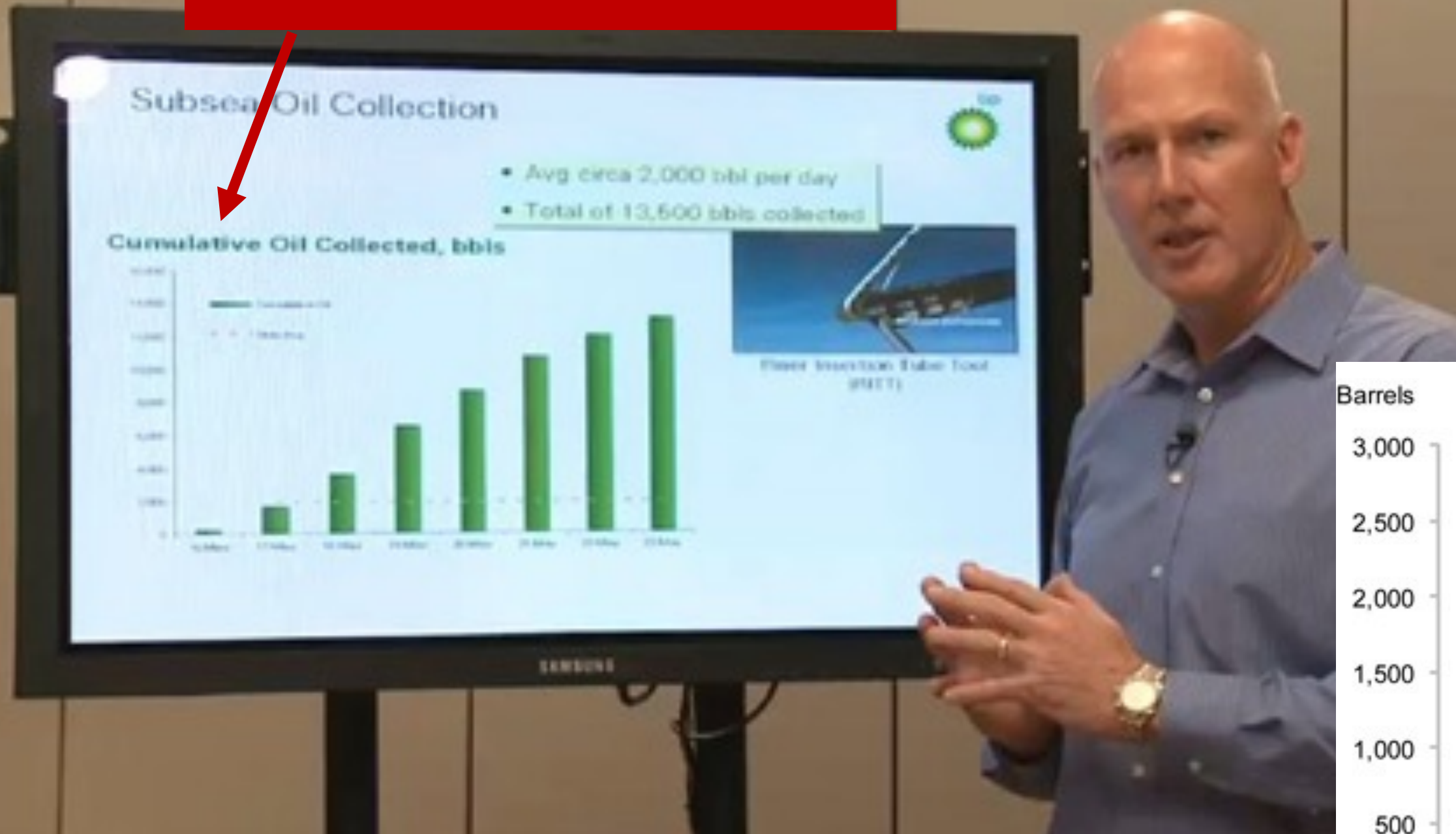
# Tufte's Chart Principles

## DO NOT LIE!

Maximize Data-Ink Ratio

Minimize Chart Junk

“Cumulative”



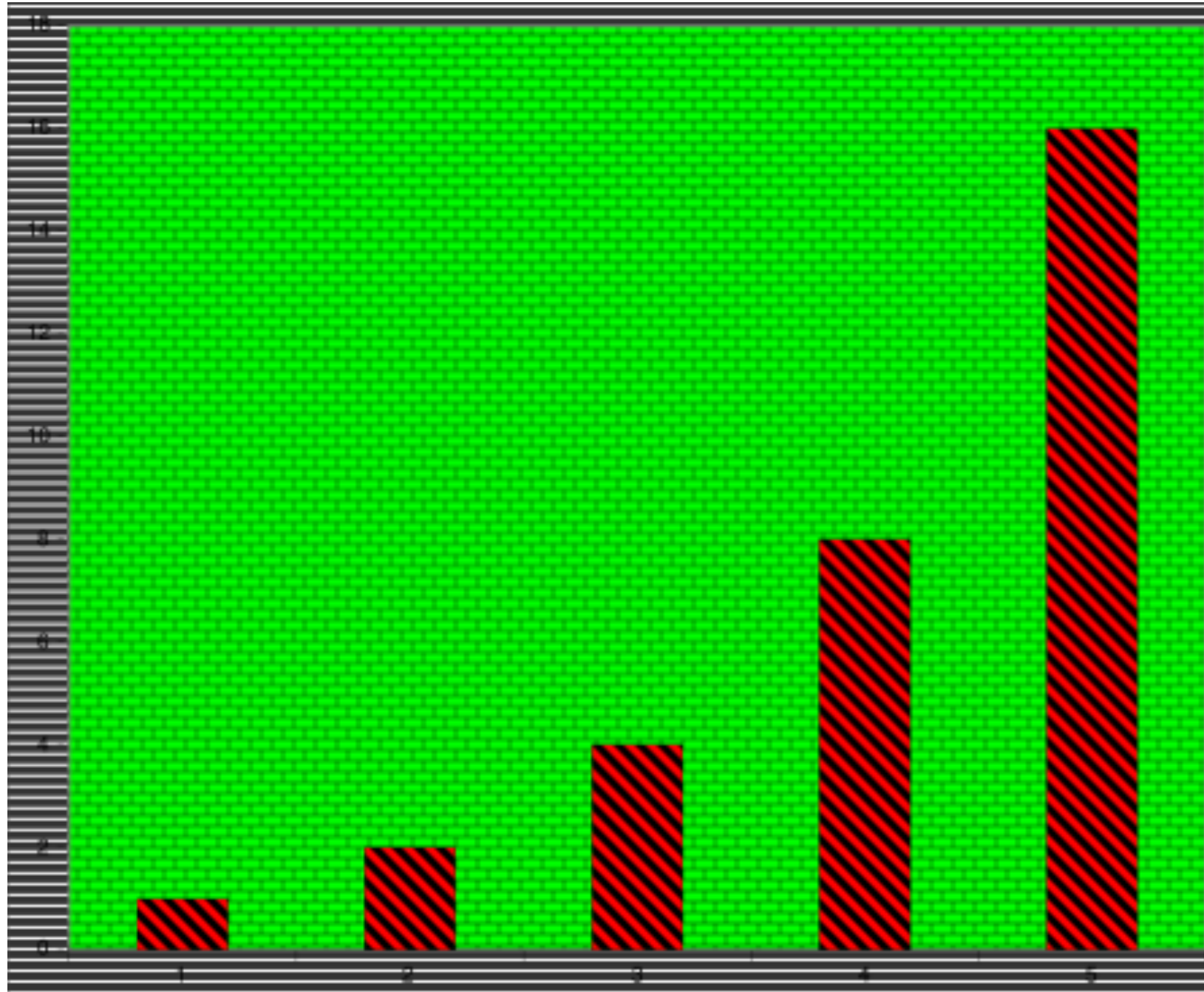
# Tufte's Chart Principles

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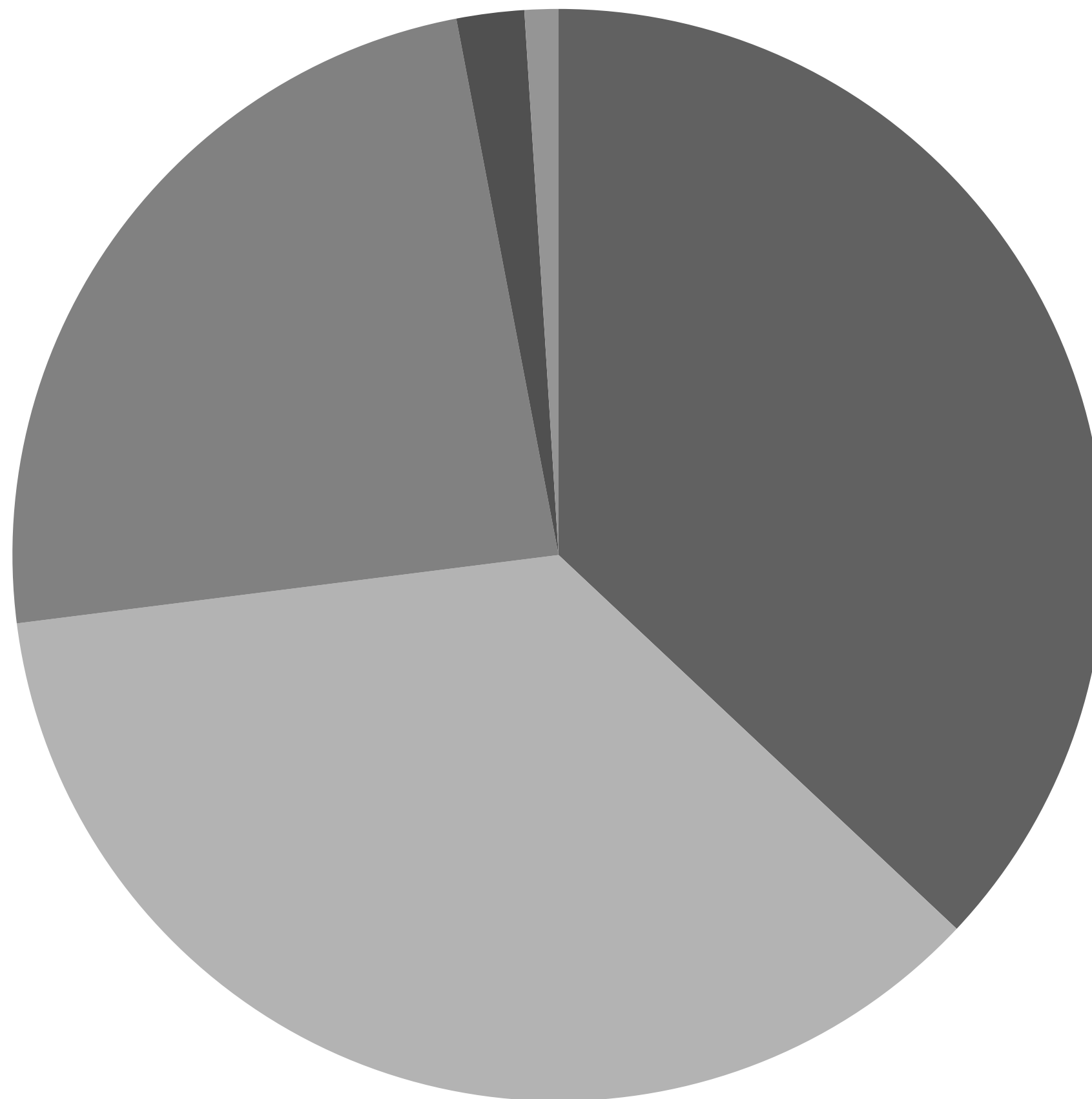


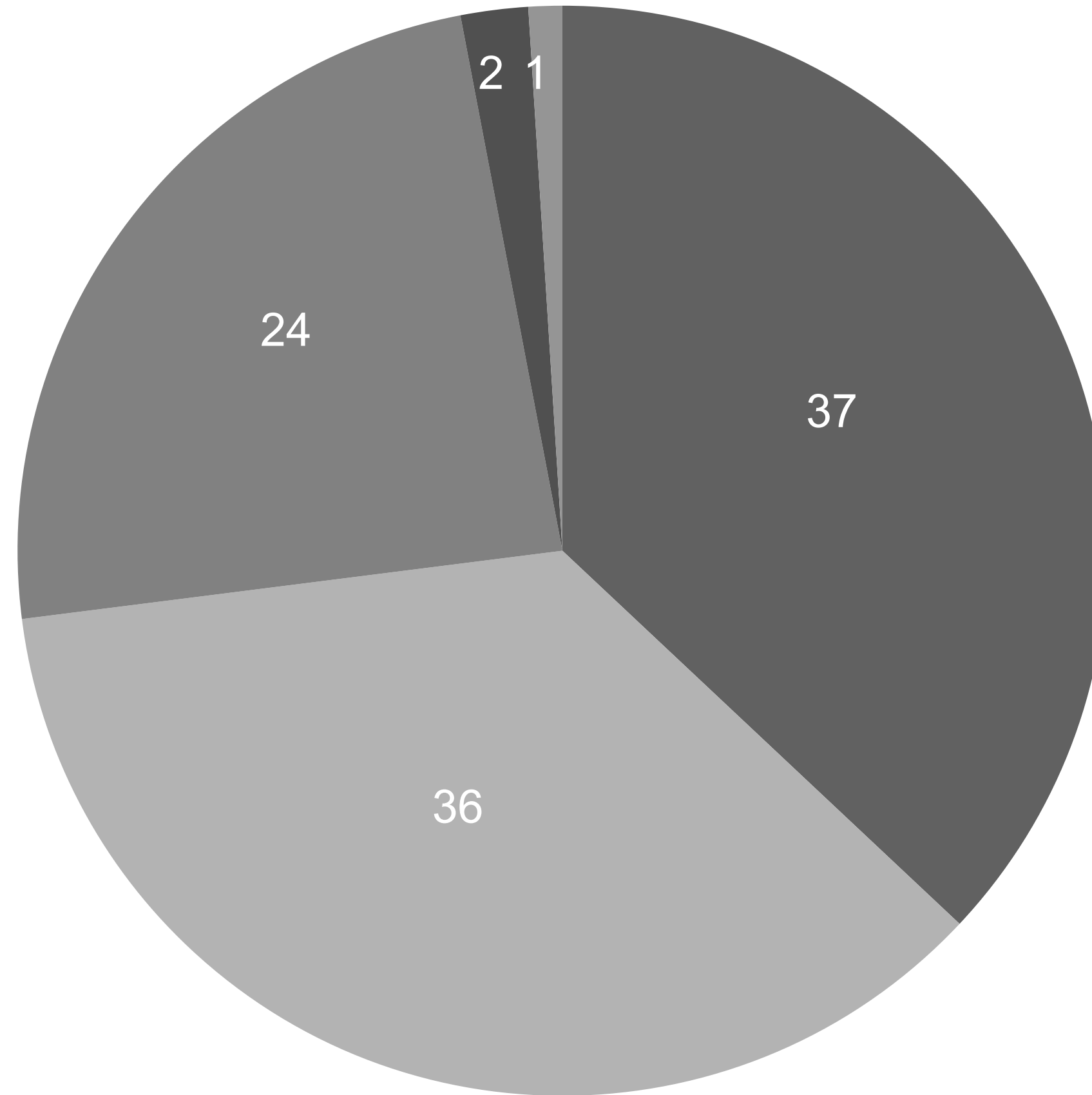
Retrieved: <https://en.wikipedia.org/wiki/Chartjunk>

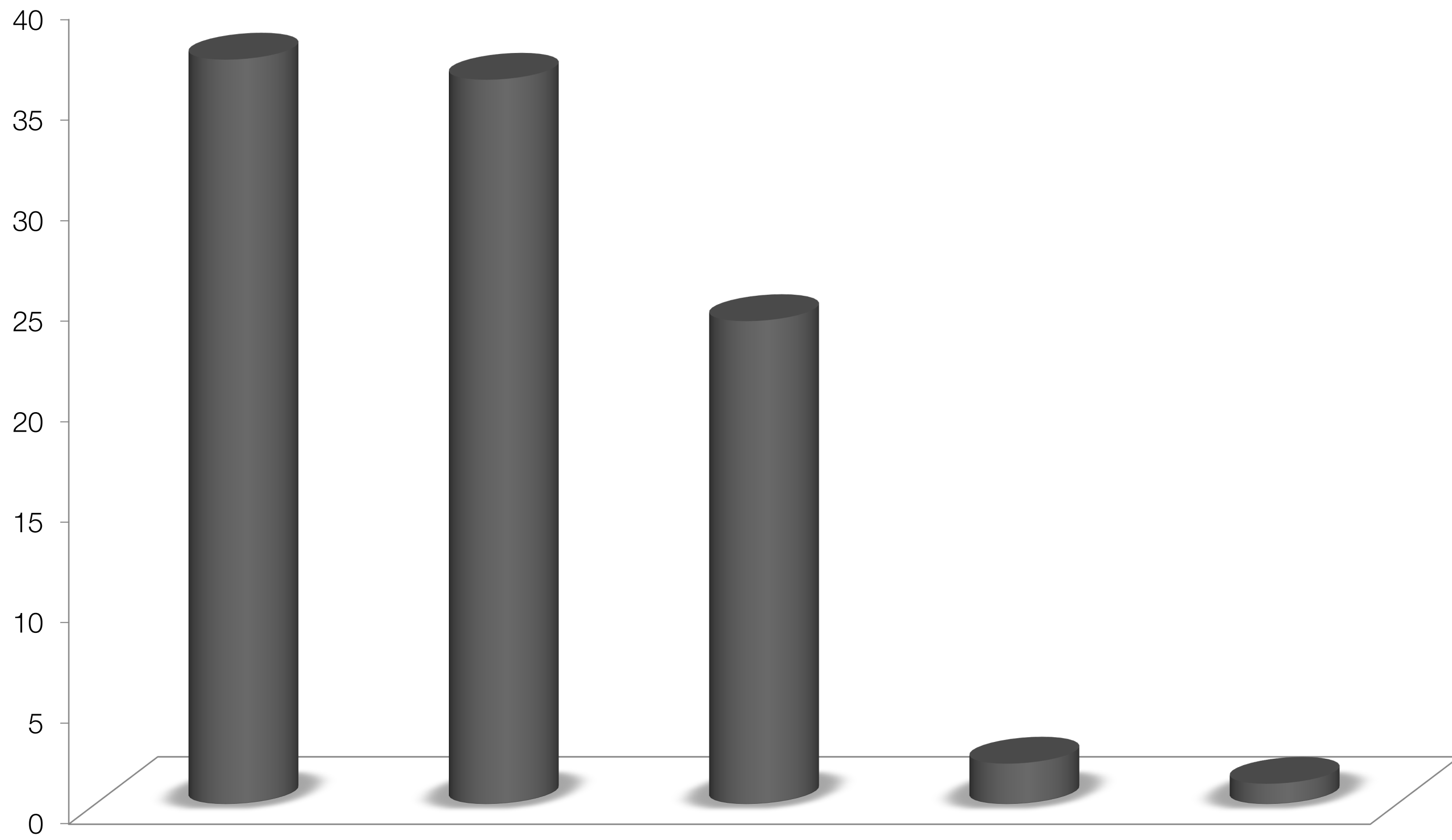


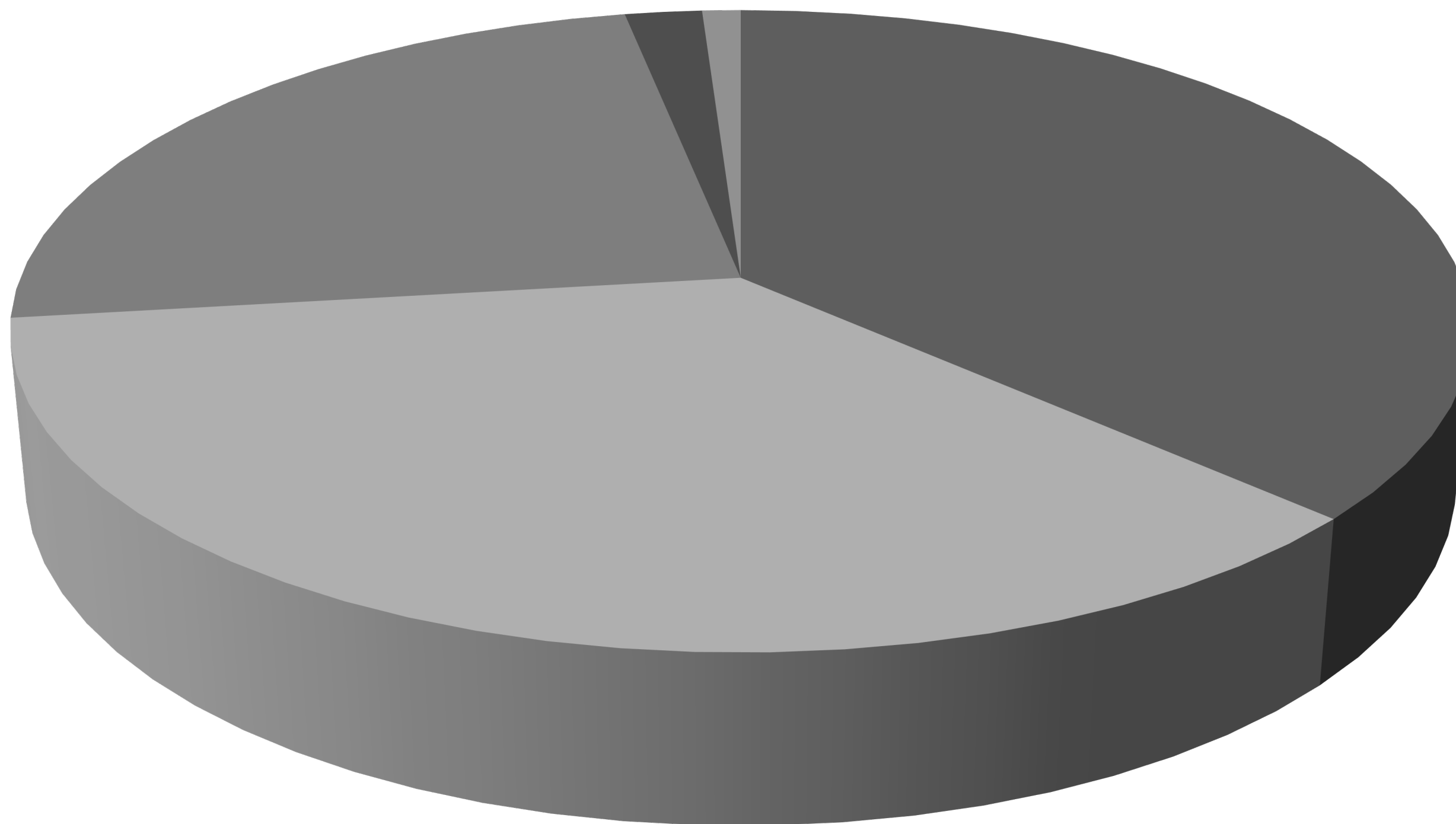
# Please...

**No pie charts.  
No 2.5D charts.**

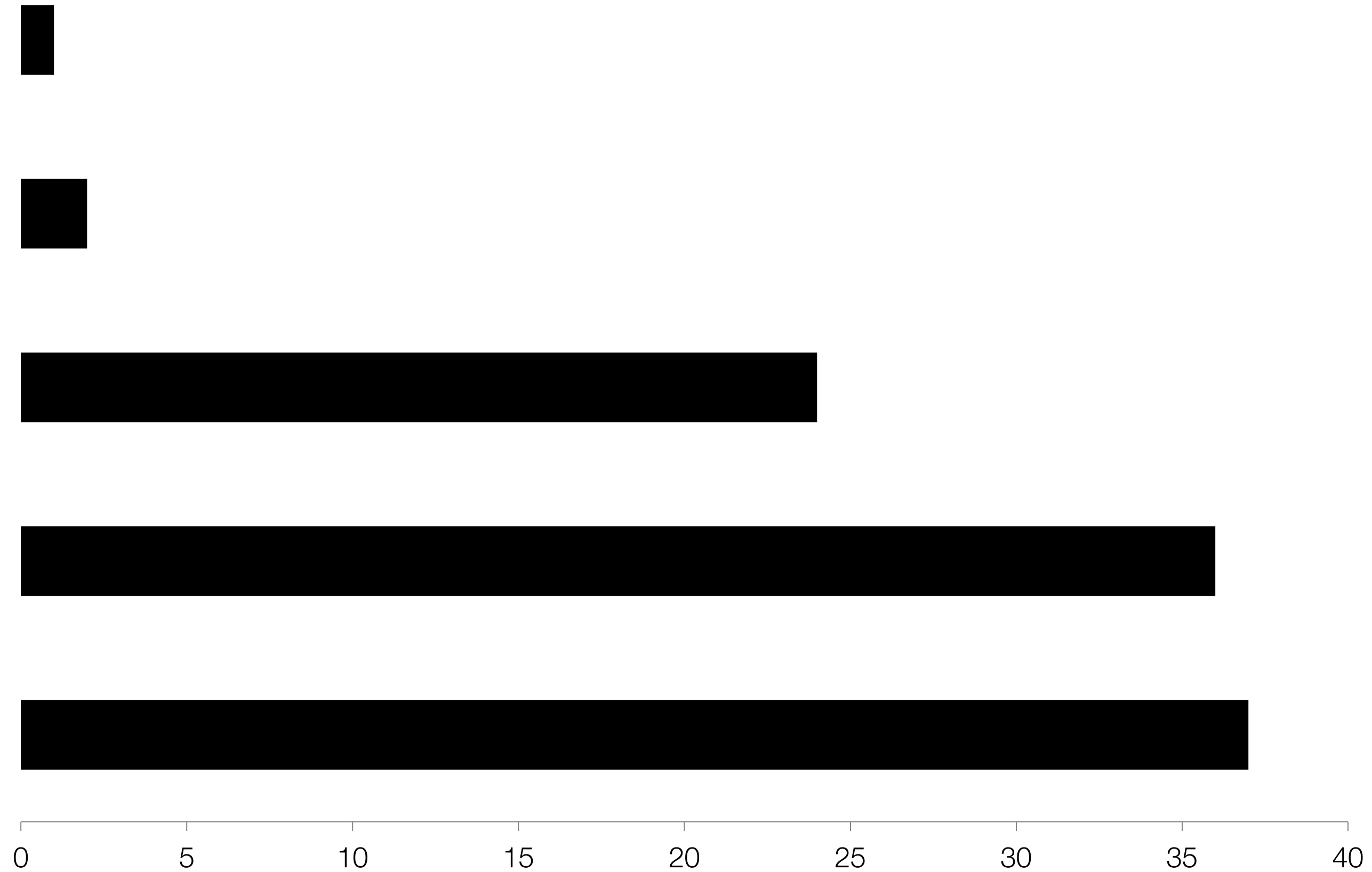
















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# Thank You