



DEEP  
LEARNING  
INSTITUTE

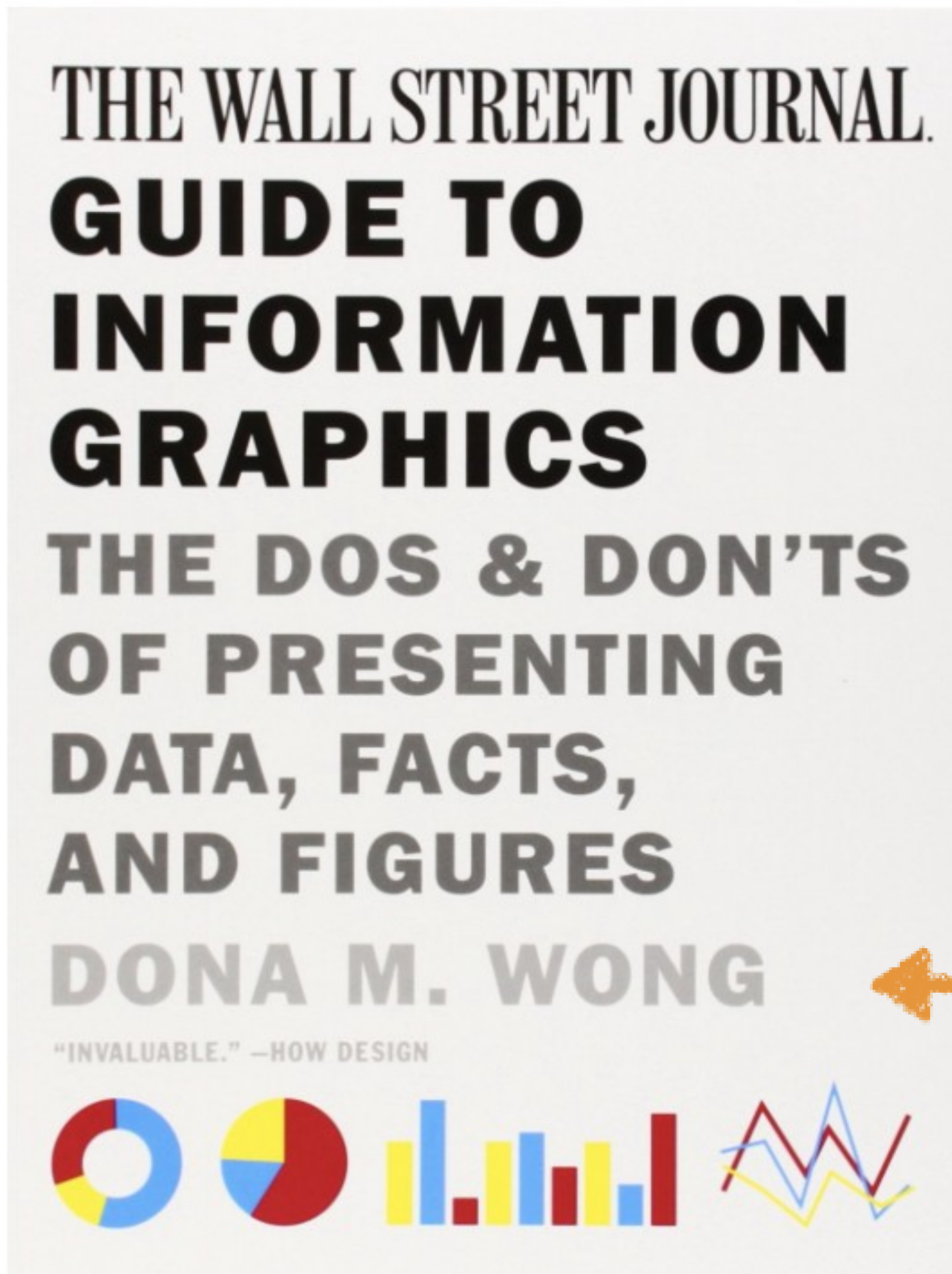


DLI Accelerated Data Science Teaching Kit

# Lecture 8.1 - Fixing Bar Charts, Line Charts, Tables and More



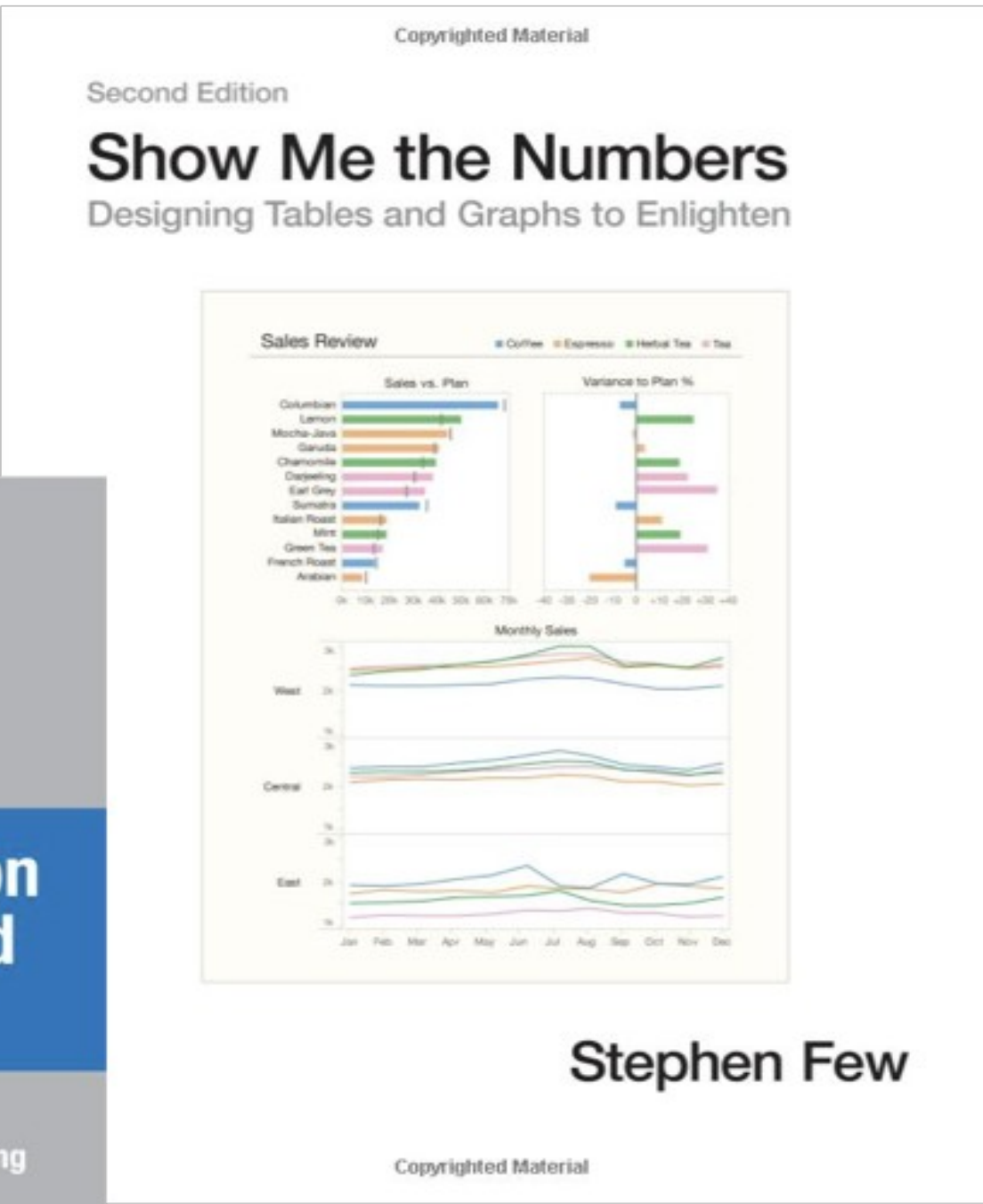
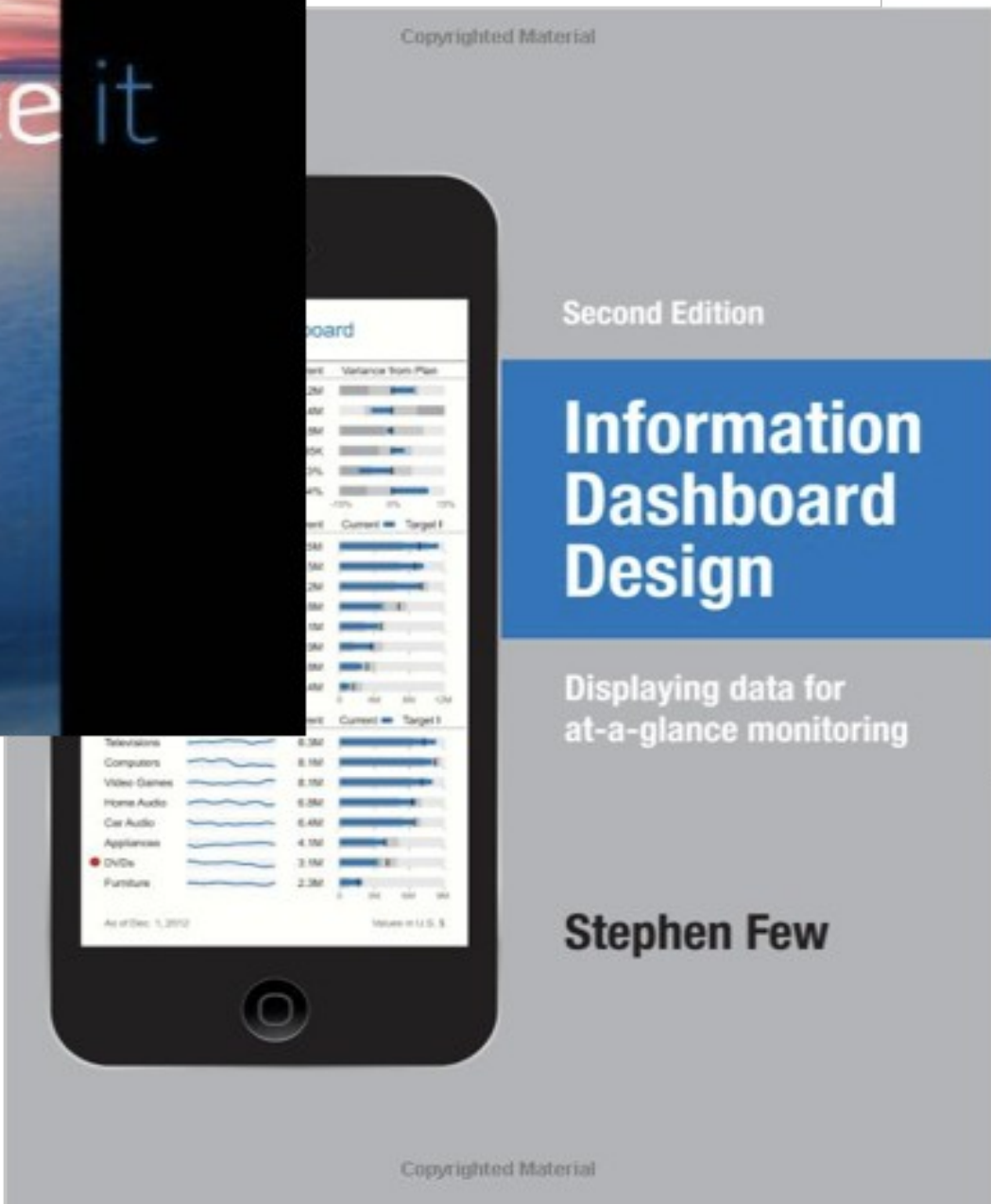
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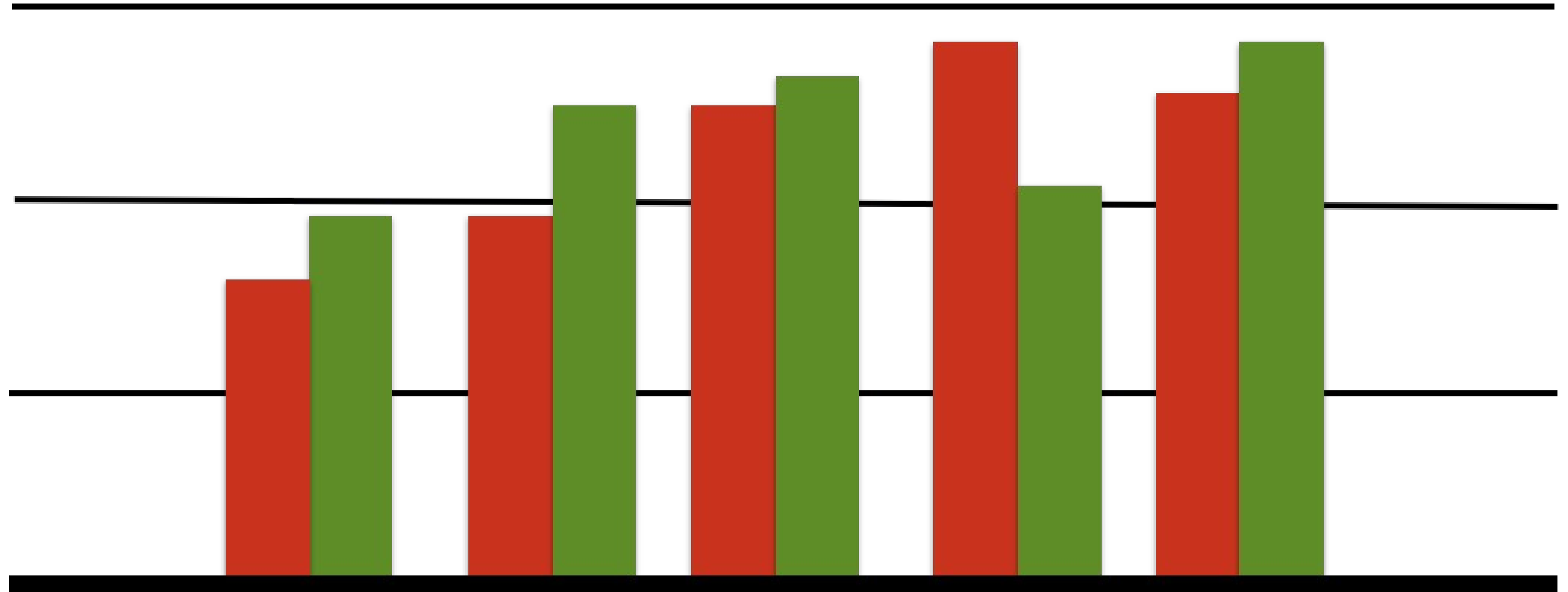
Student of  
Edward Tufte

Wong, D. M. (2013). Guide to information graphics: the dos and donts of presenting data, facts, and figures. New York: W.W. Norton & Company.

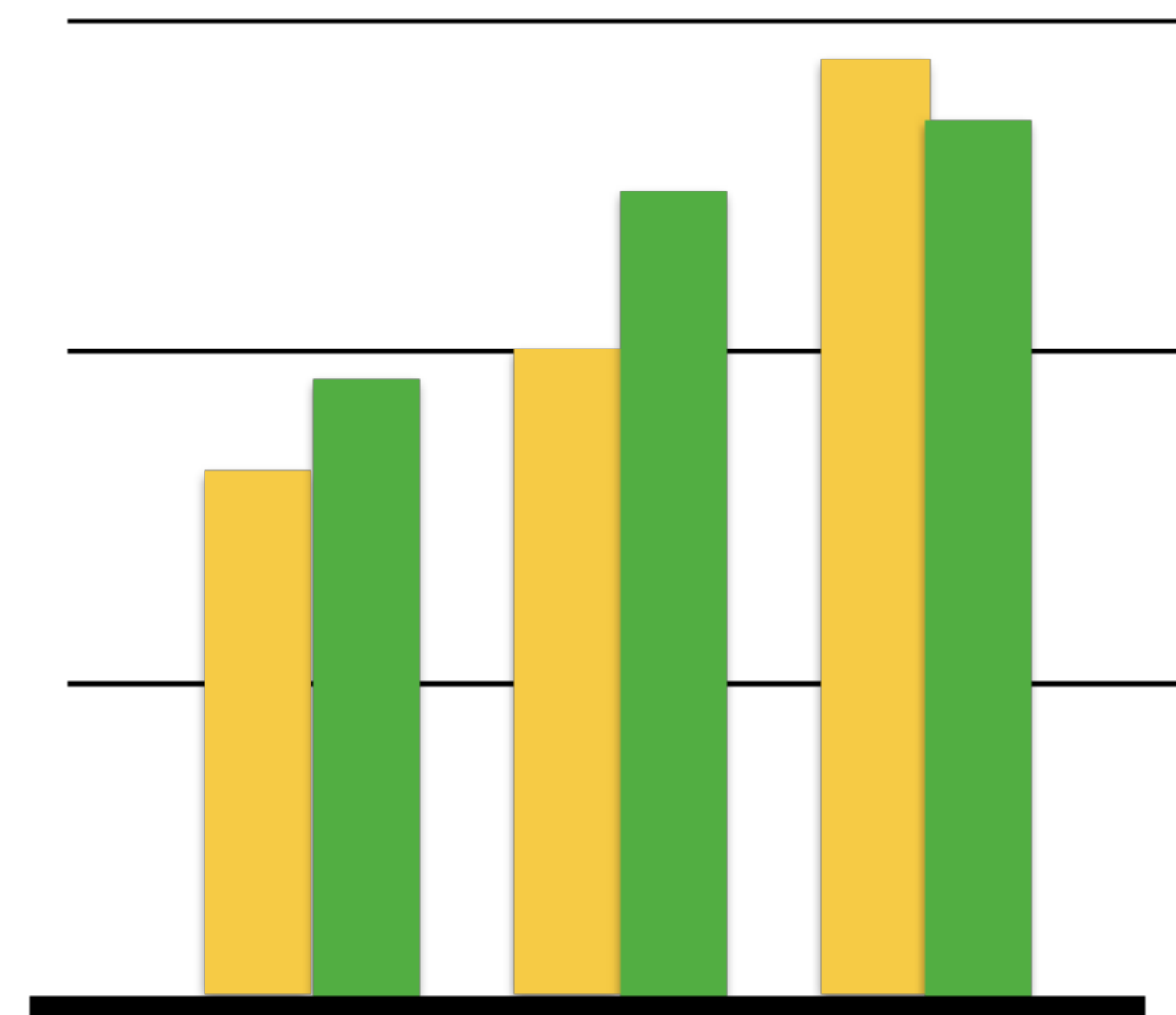
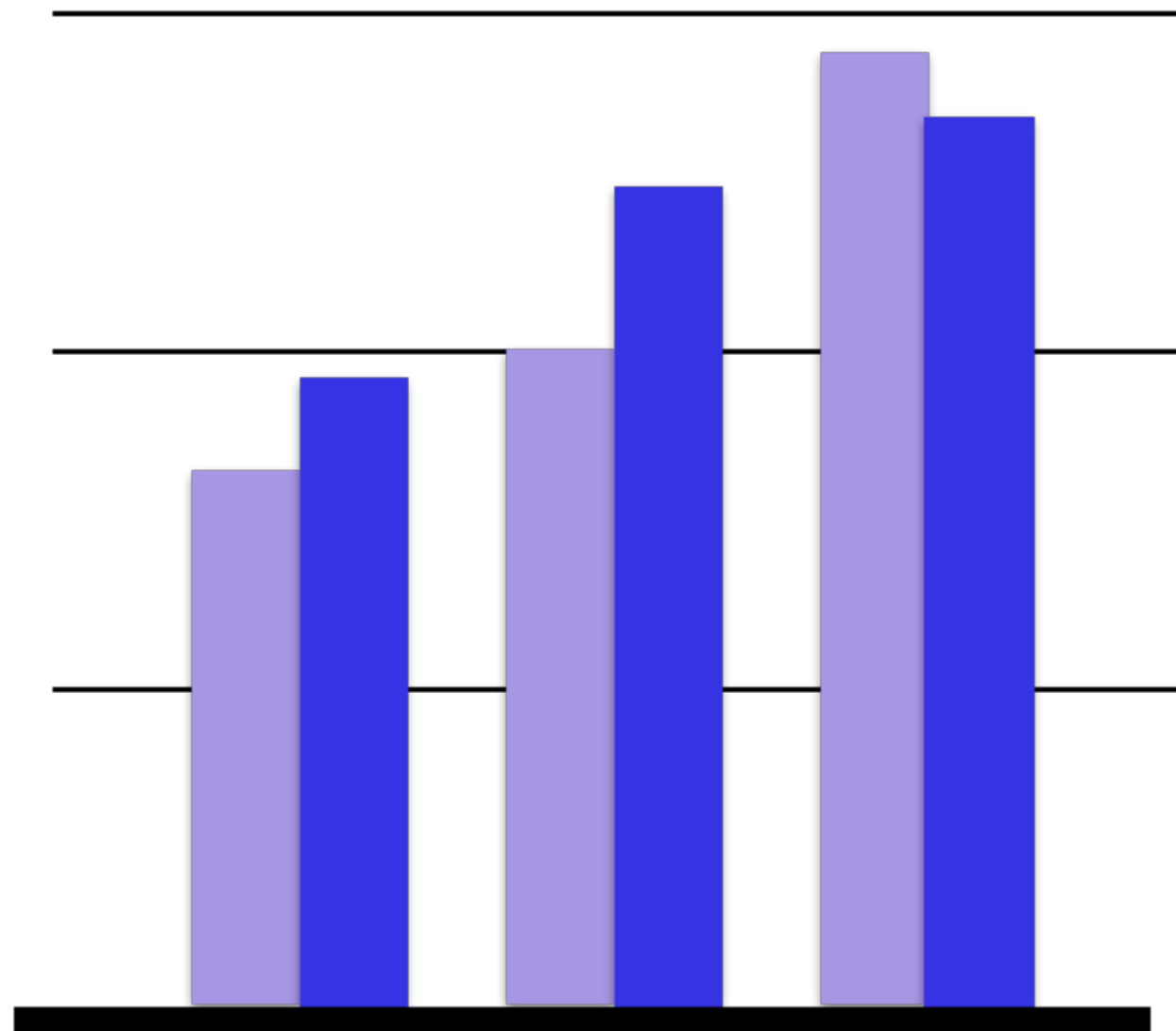
# Also Highly Recommended:



# Bar Charts

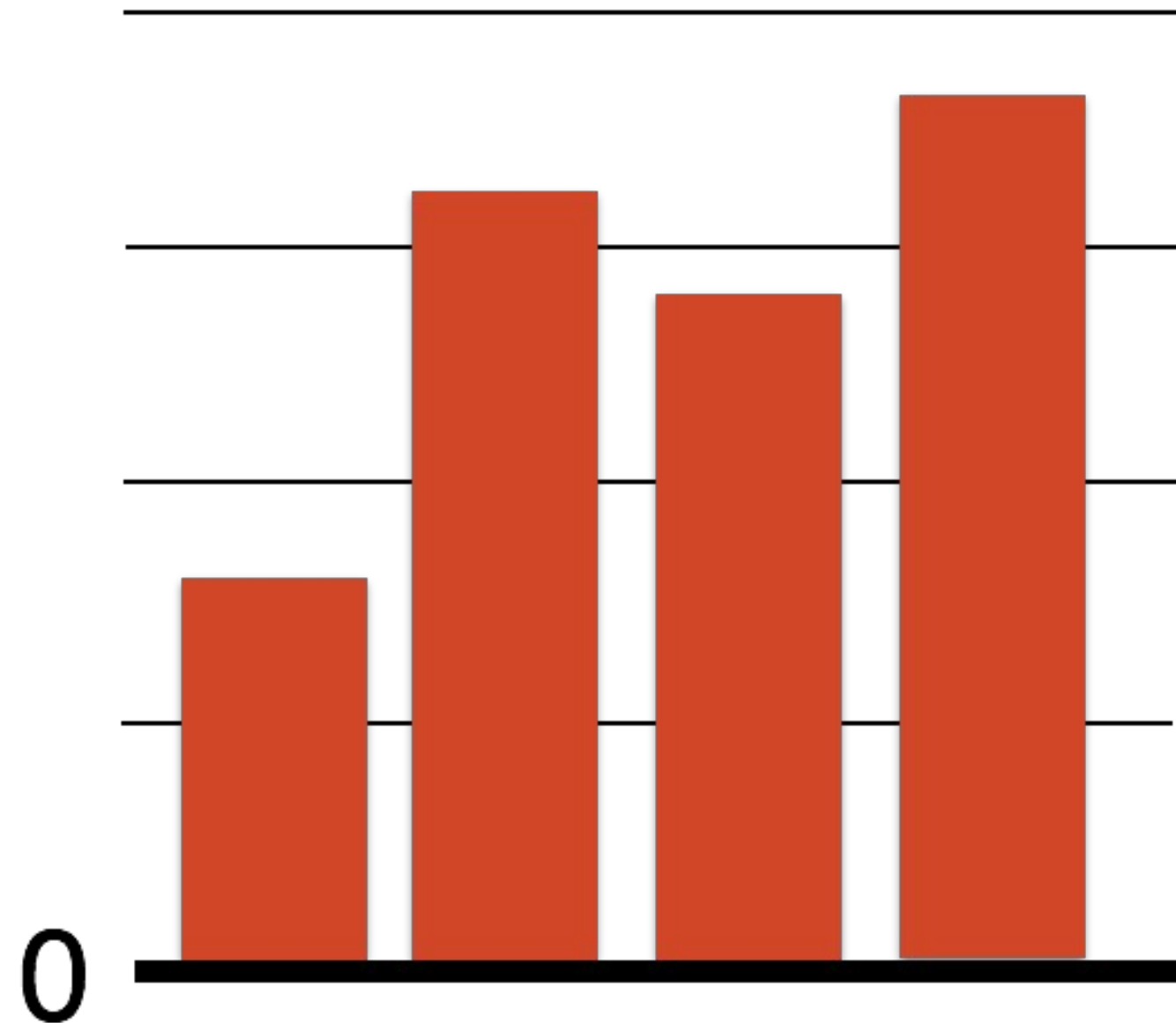


The color scheme reminds you of what?

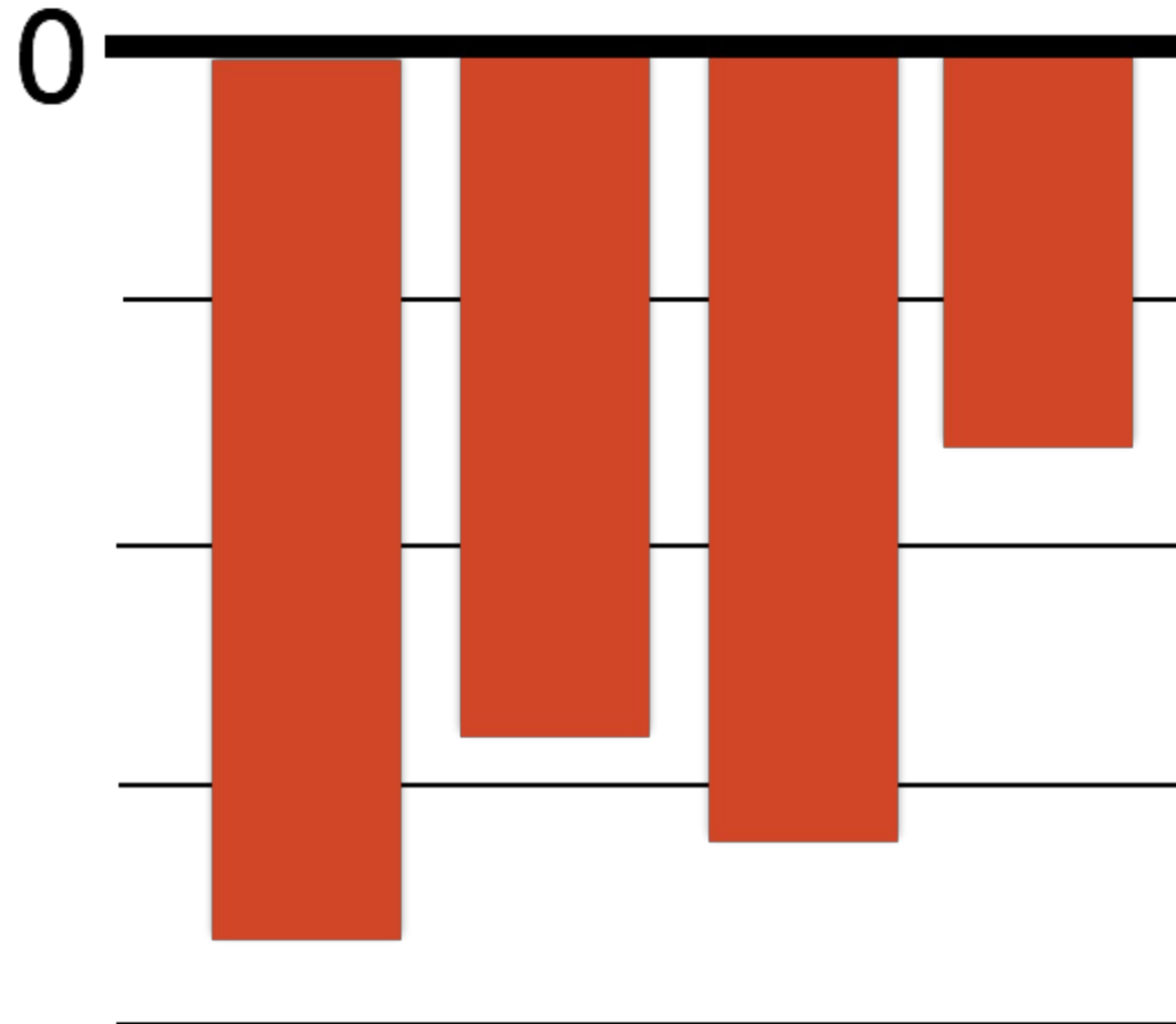


Better than Christmas  
(Use color brewer to find good color schemes)

# Company Profits

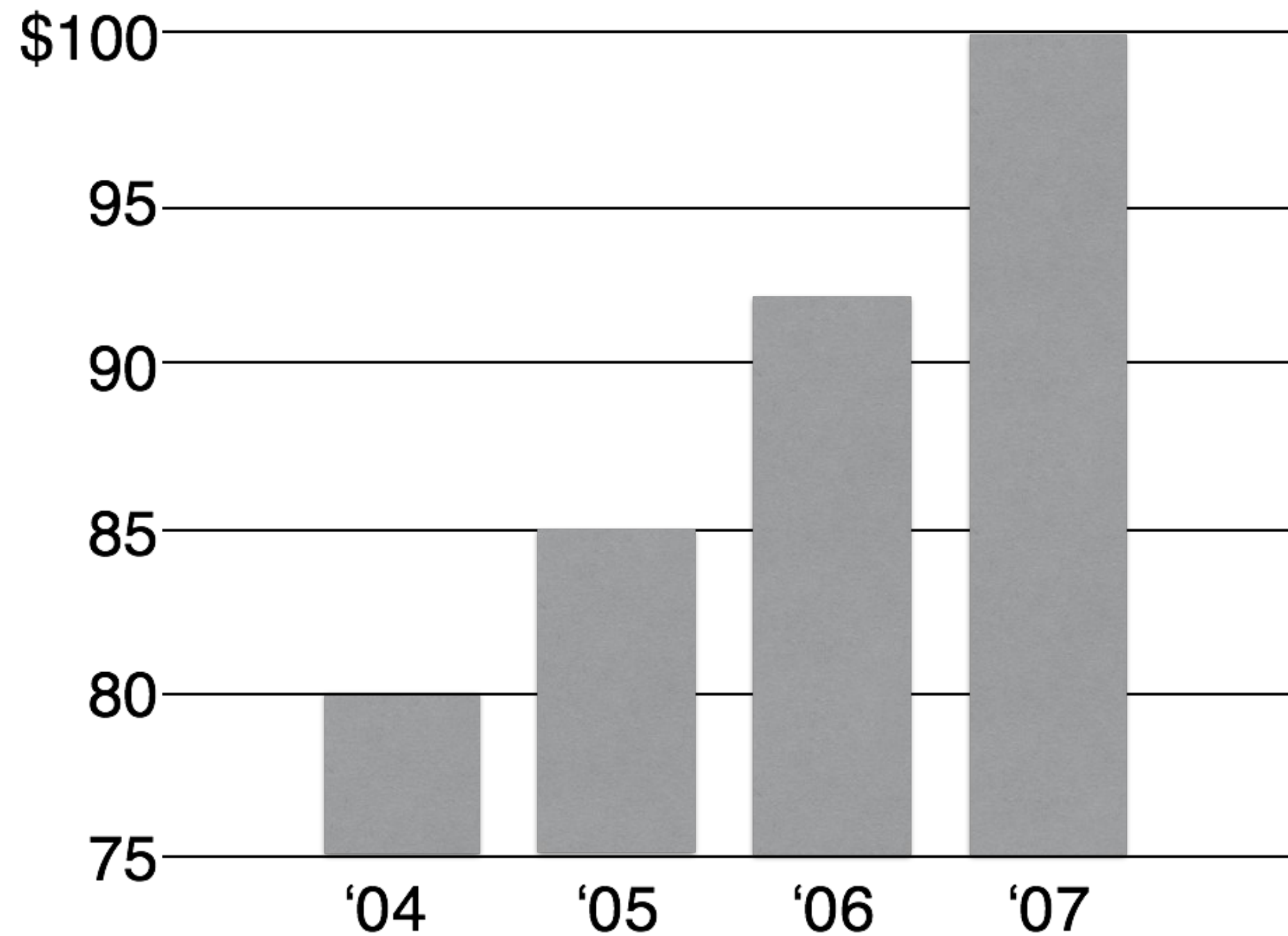


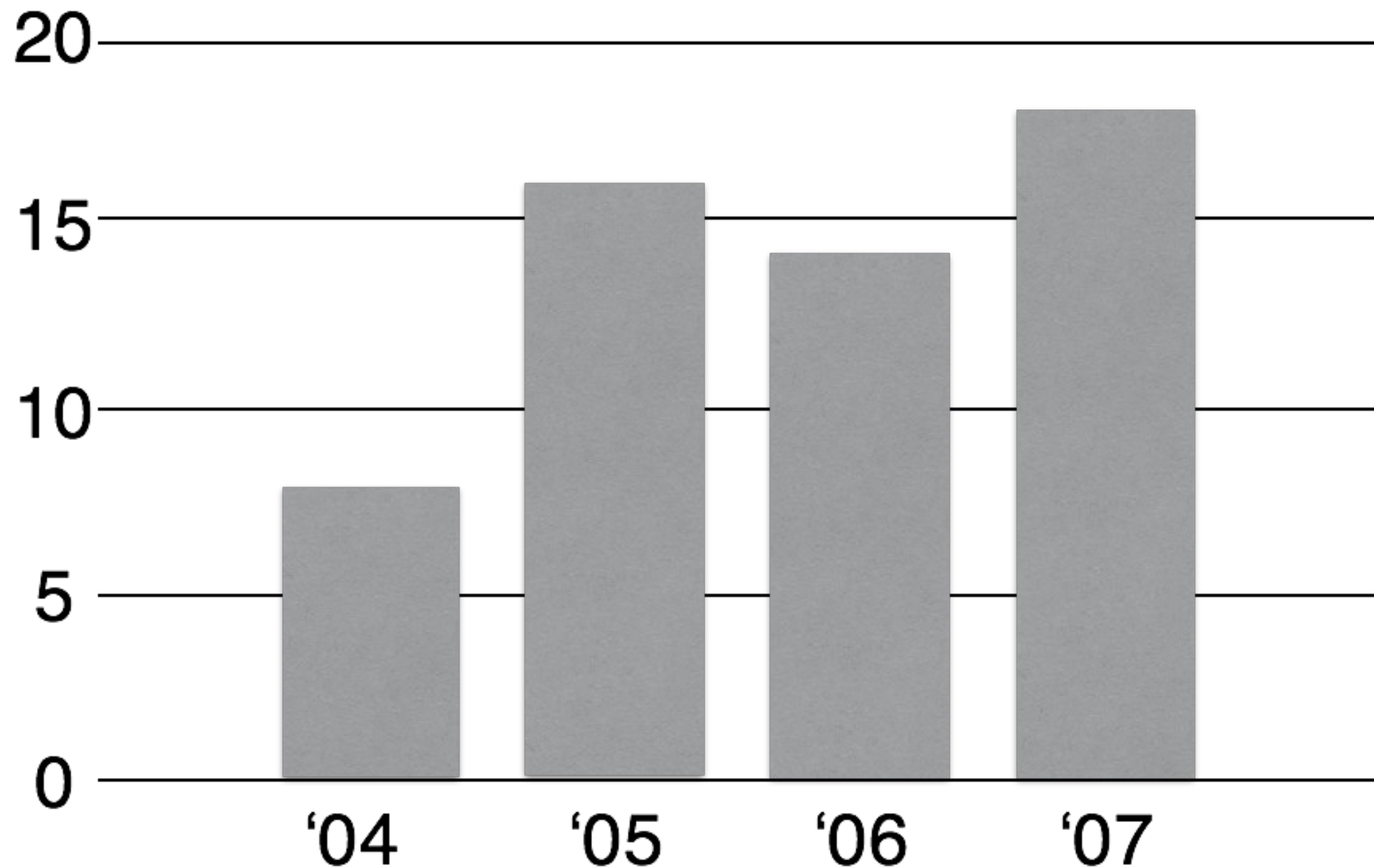
Don't show profits in **red**!!  
Think carefully about your color choices.





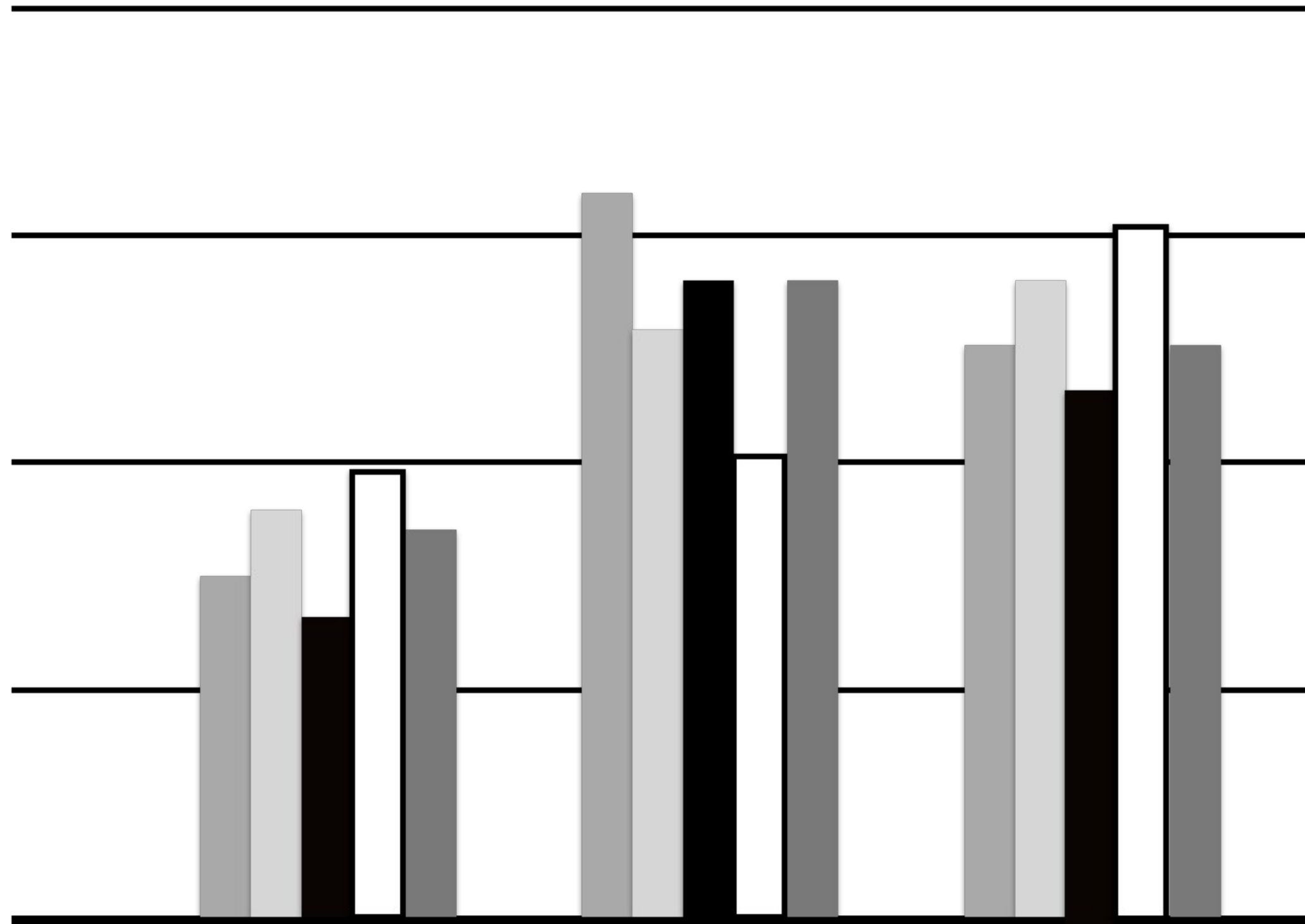
# Misleading Bar Charts



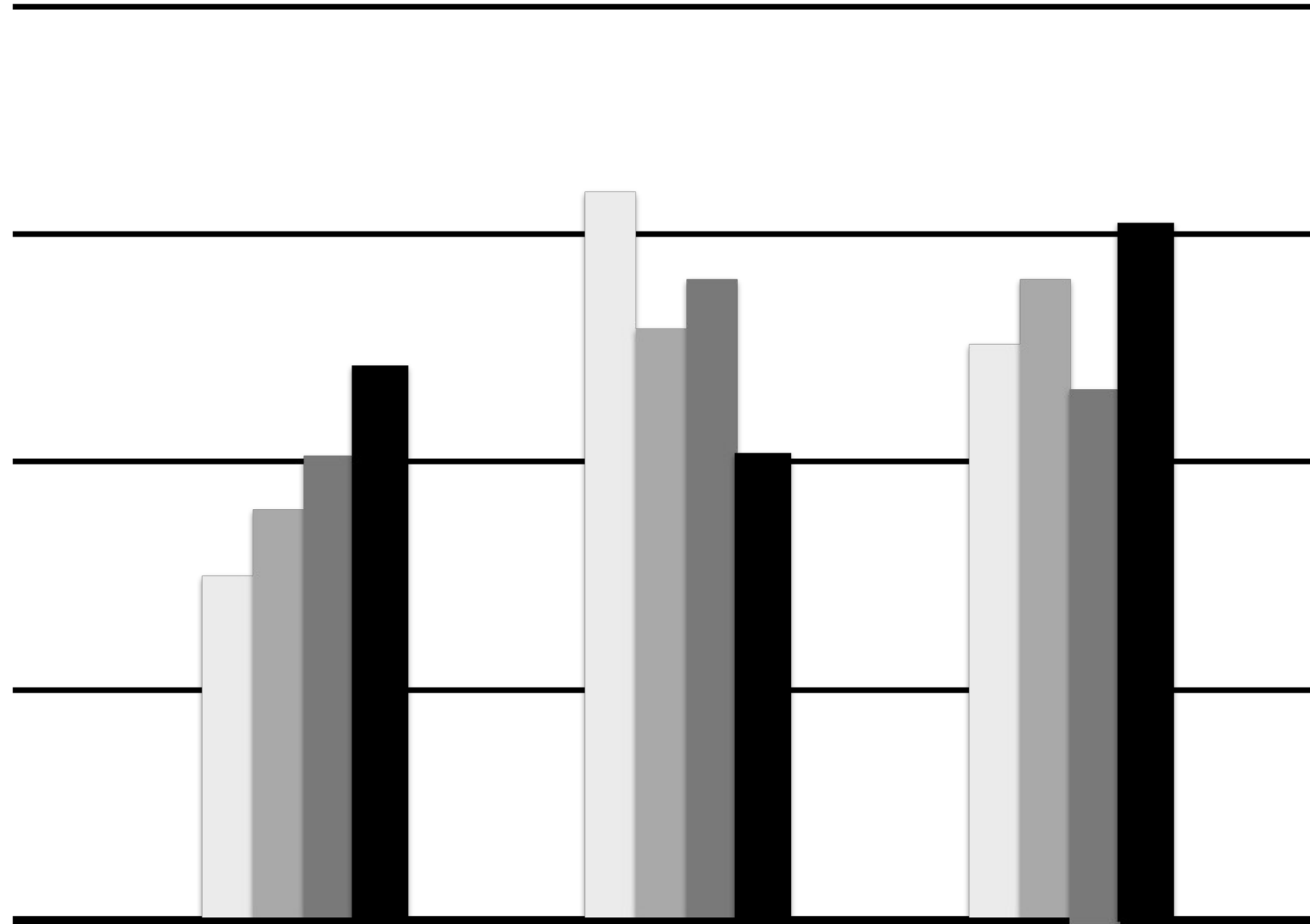


Vertical axis of bar charts  
should start at 0, almost always

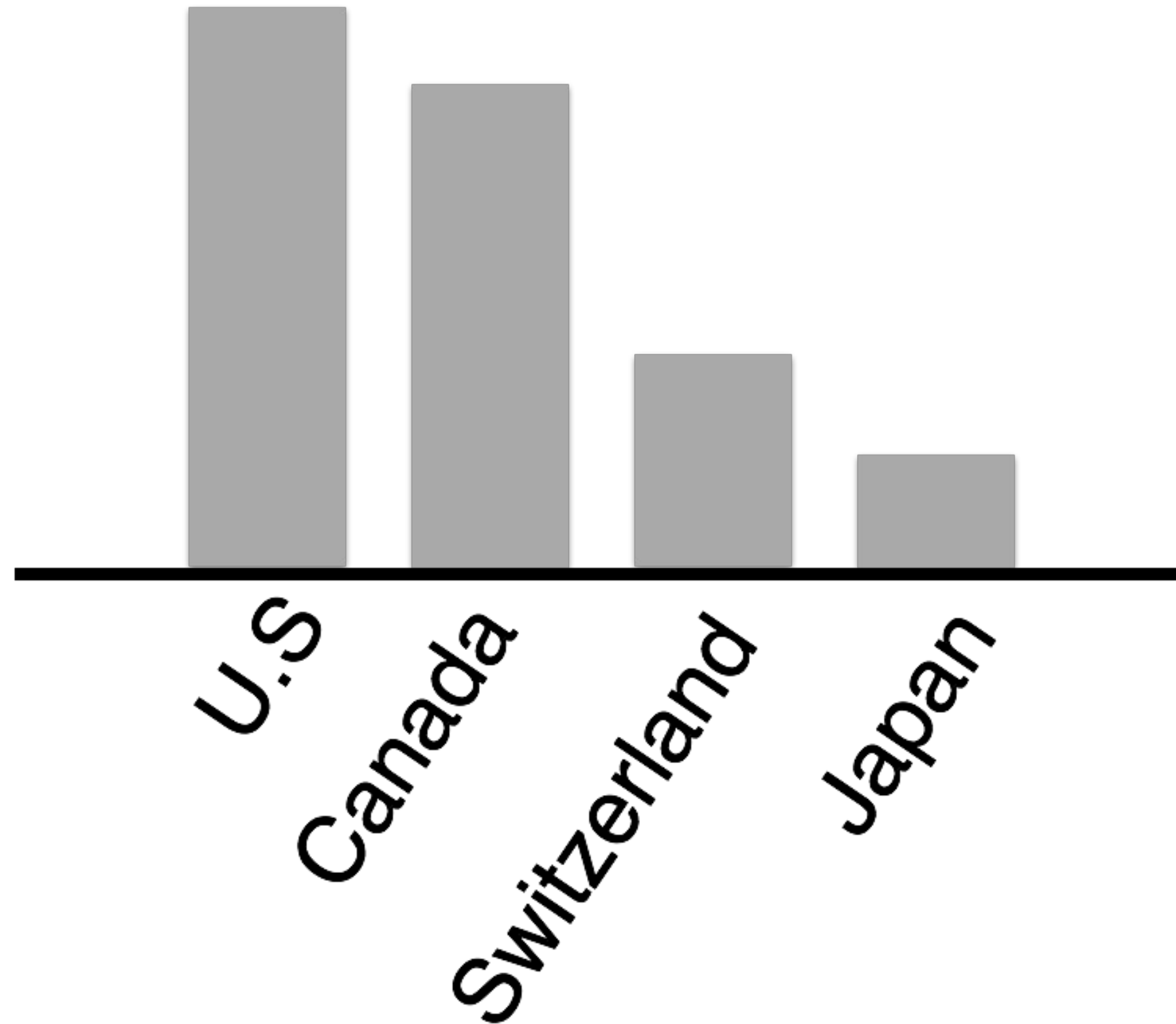
# Disorienting Color Bars



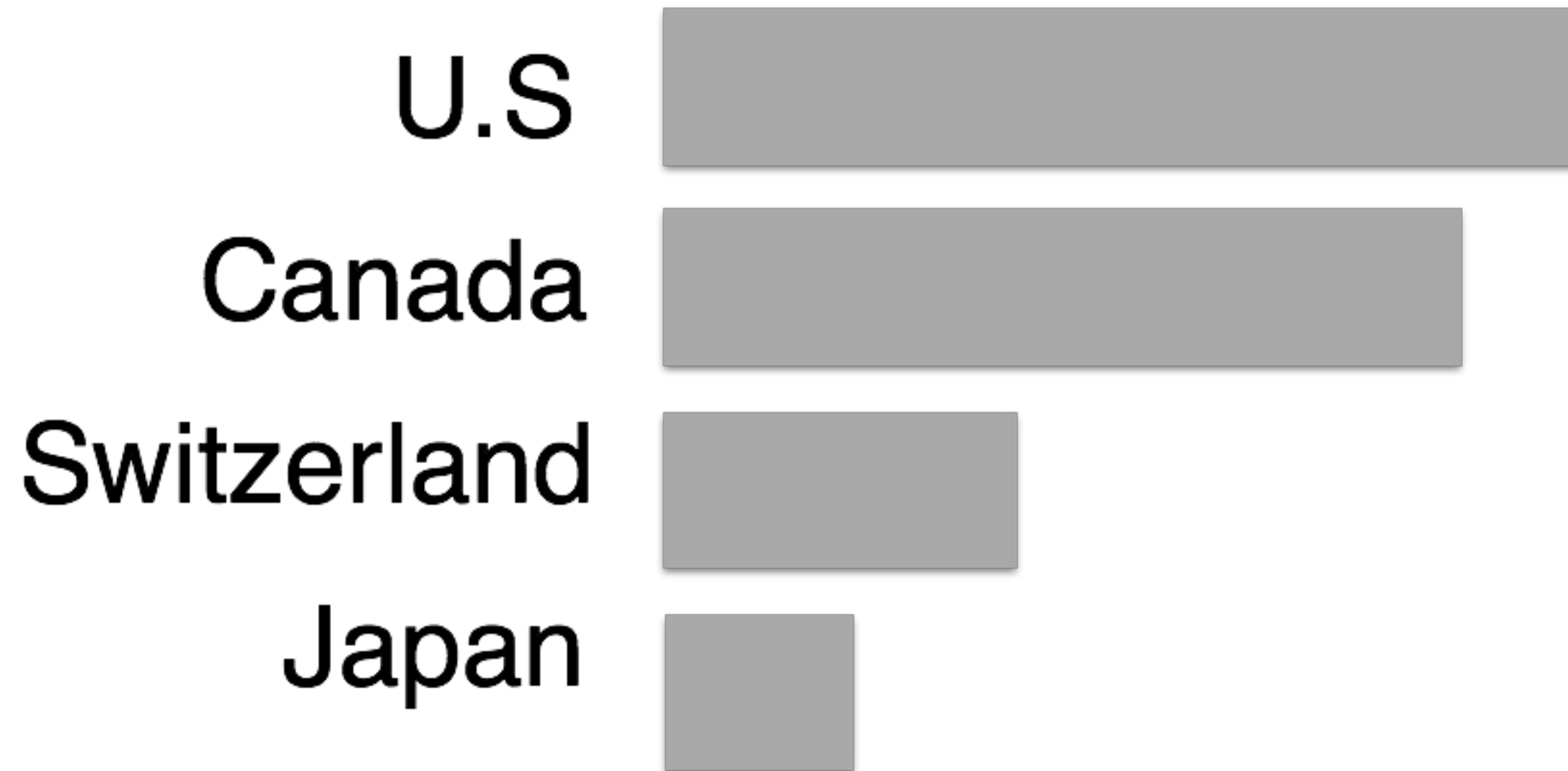
# Use gradation



# Avoid Tilted or Rotated labels



# Bars can be Horizontal

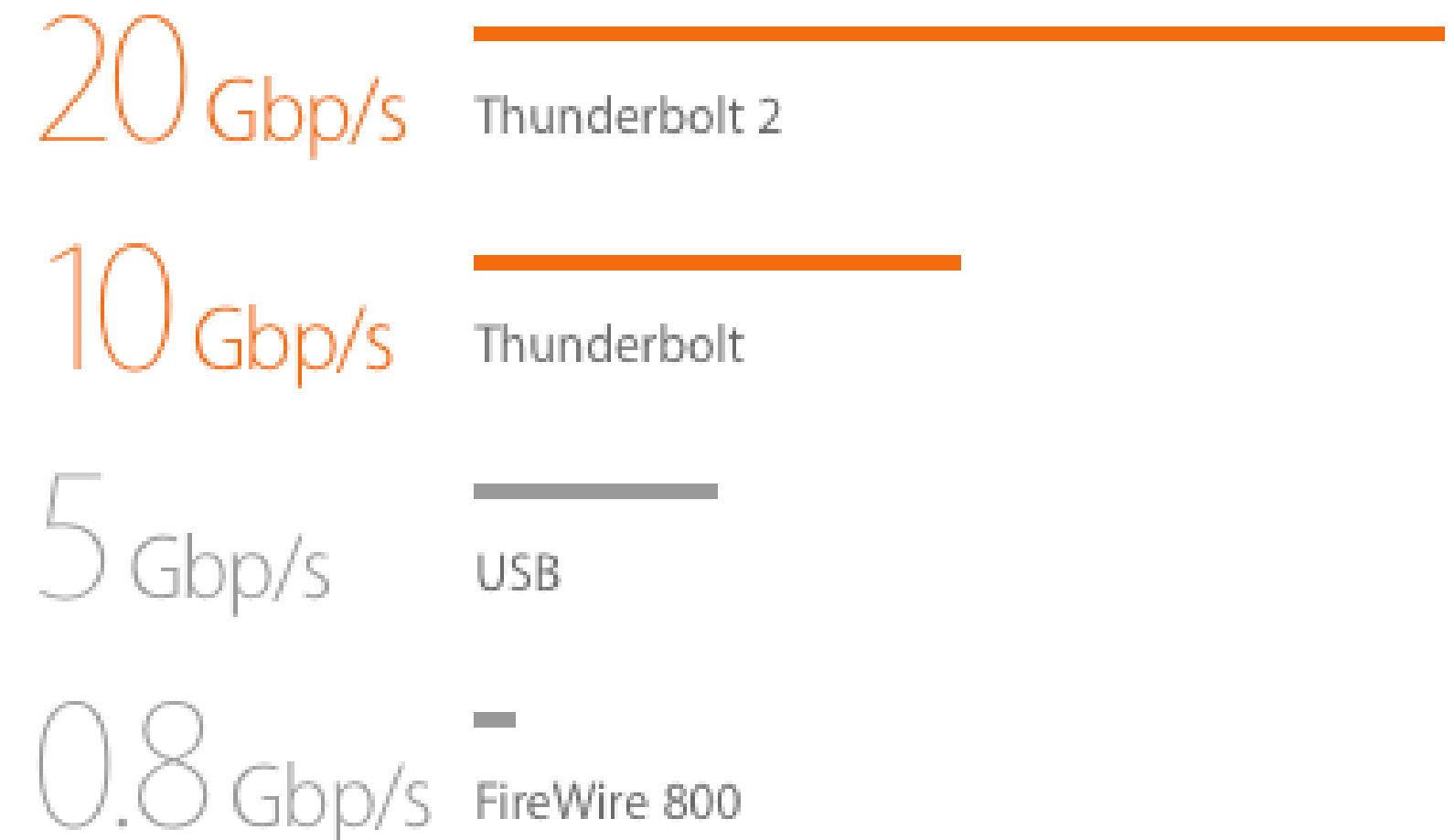


When labels are hard to read, try horizontal layout.  
Don't settle for the default.

## Thunderbolt 2

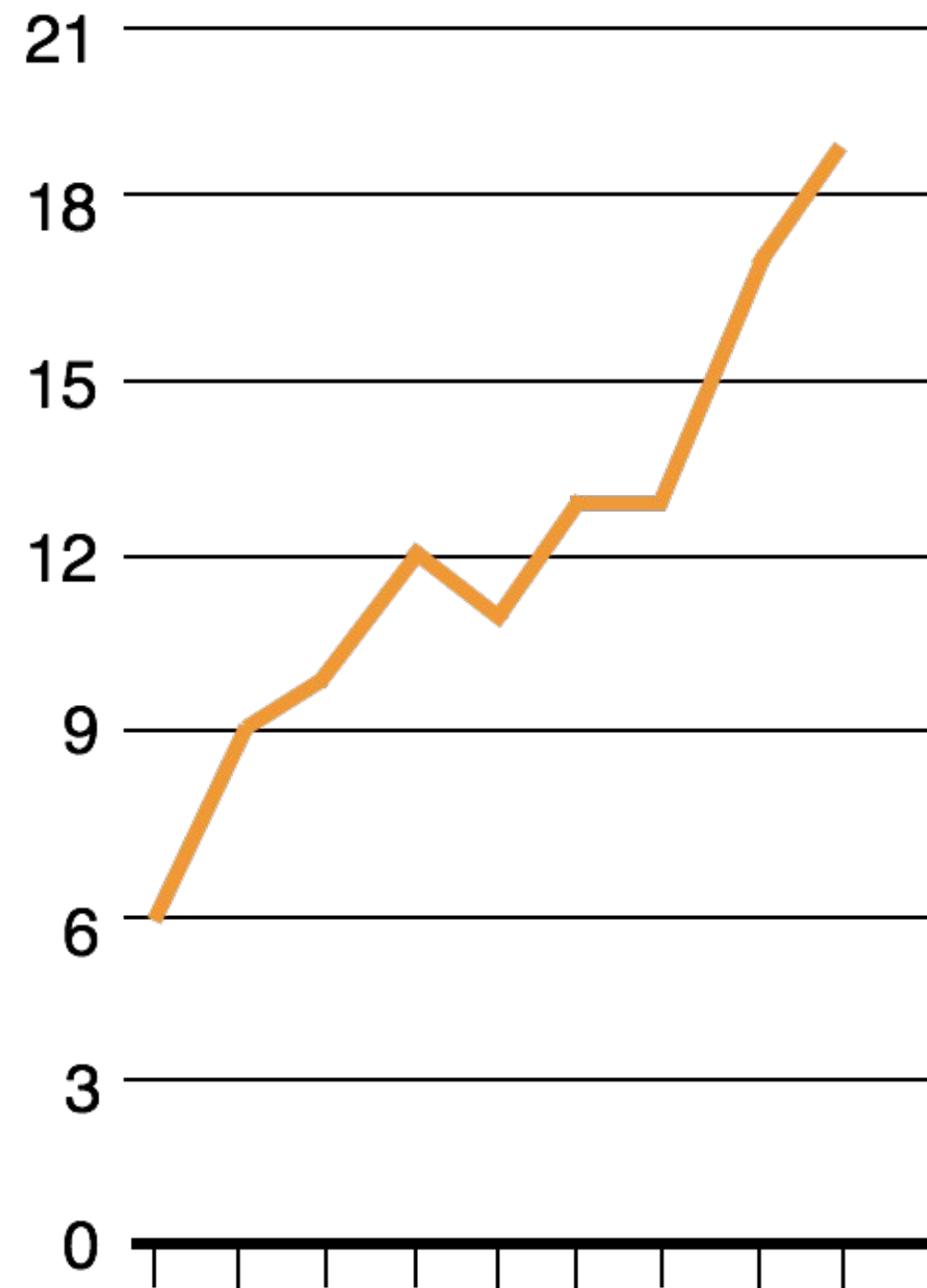
# Blazing-fast data transfer.

Each of the two ultrafast, ultraflexible Thunderbolt 2 ports significantly expand the capabilities of iMac. For example, you can connect high-performance peripherals and move data up to 40 times faster than with USB 2, and up to 25 times faster than with FireWire 800. You also have more than enough bandwidth — up to 20 Gbps — to daisy-chain multiple high-speed devices and still maintain maximum throughput.



<http://www.apple.com/imac/performance/>

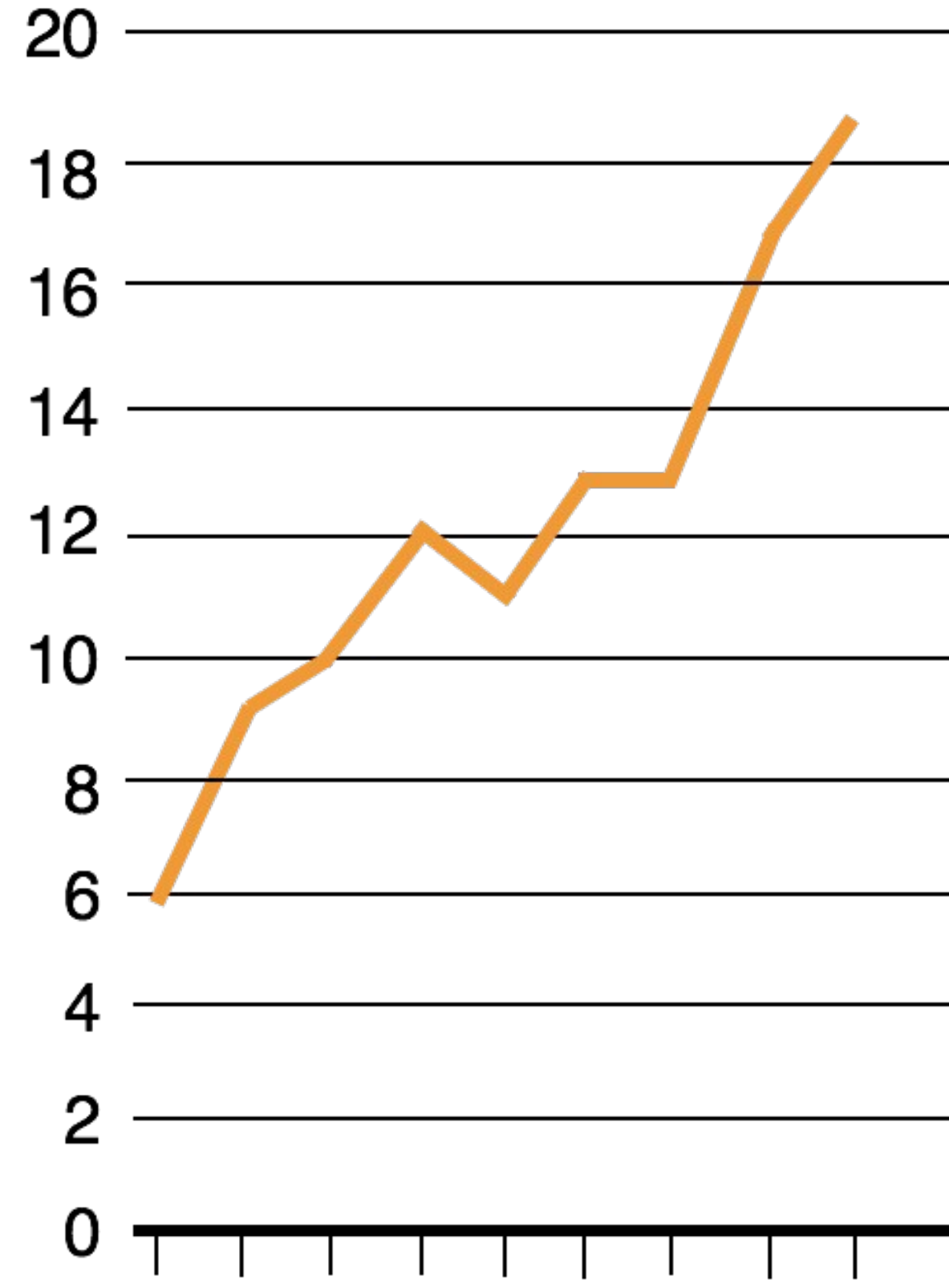
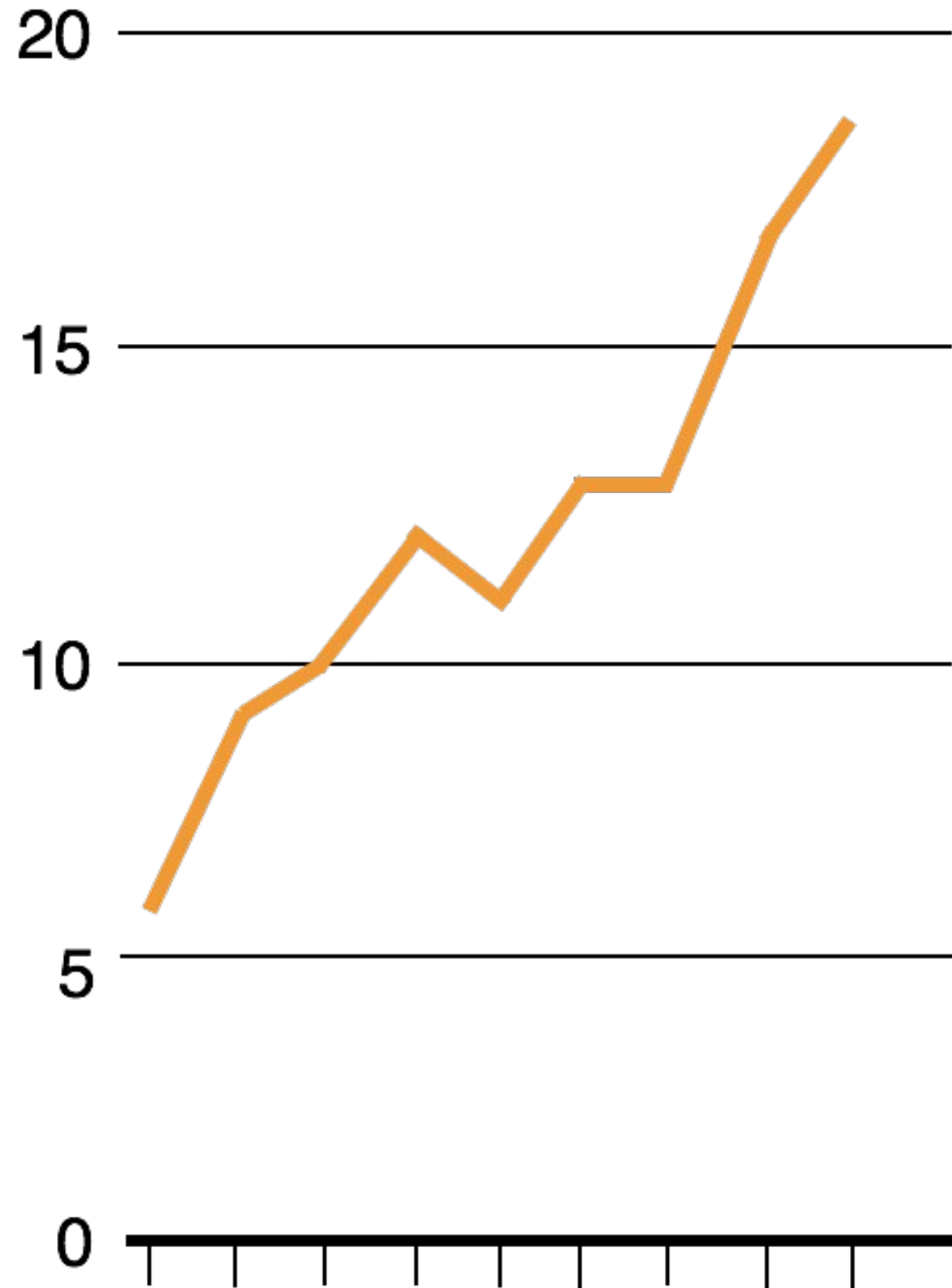
# Line Charts



Can you improve the tick labels ?

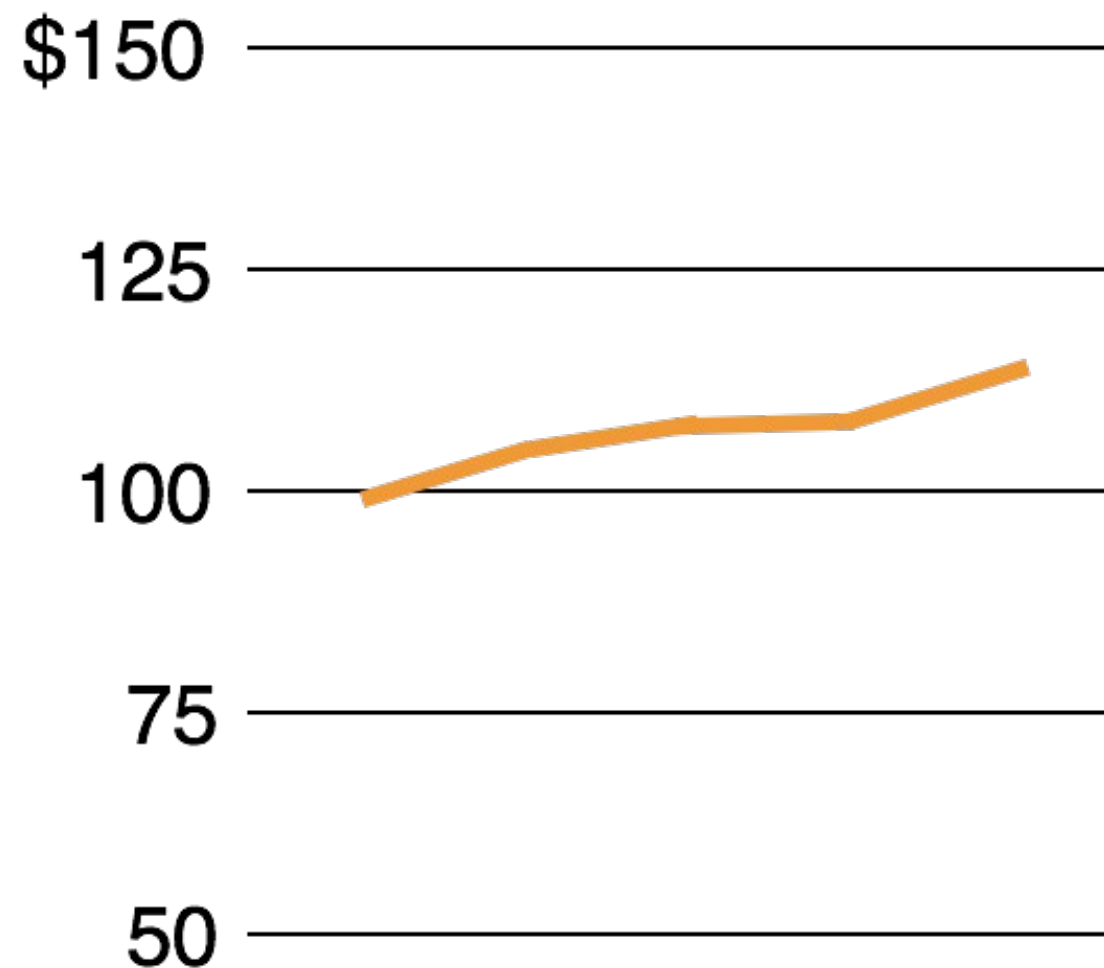


# Use tick at common intervals (e.g. 2, 5, 10, etc.)

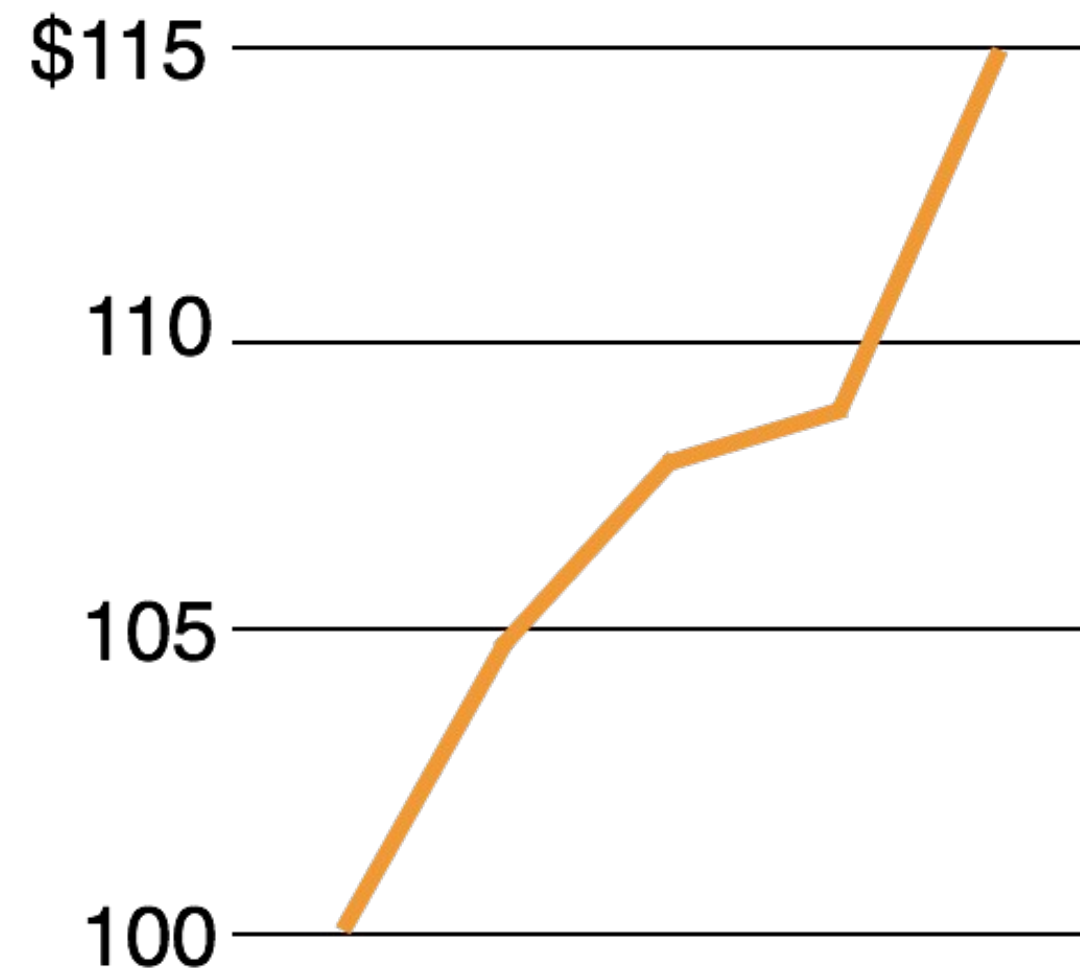


# Too flat or too steep?

Too flat obscures  
the message

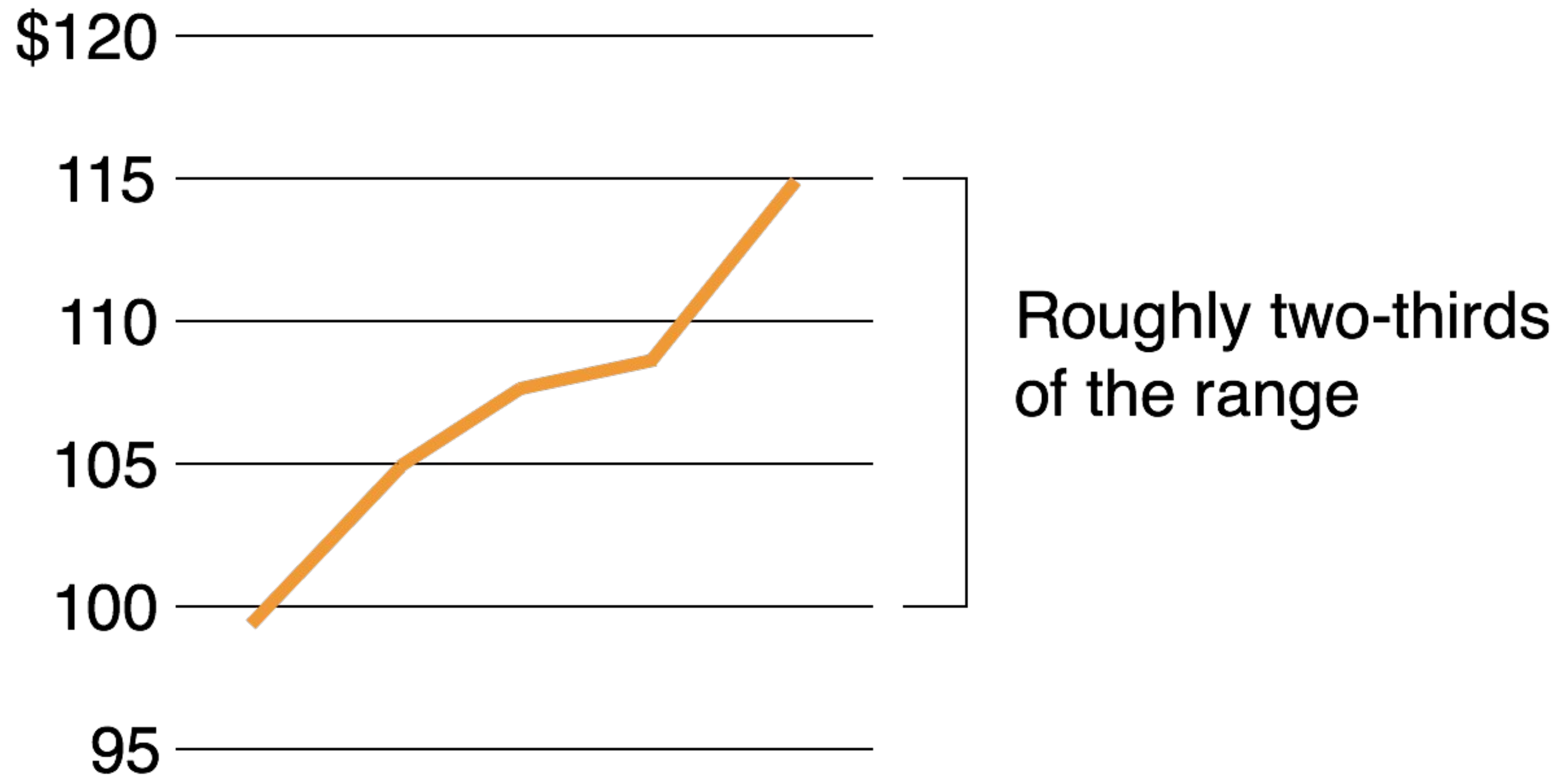


Too exaggerated  
overstates the trend

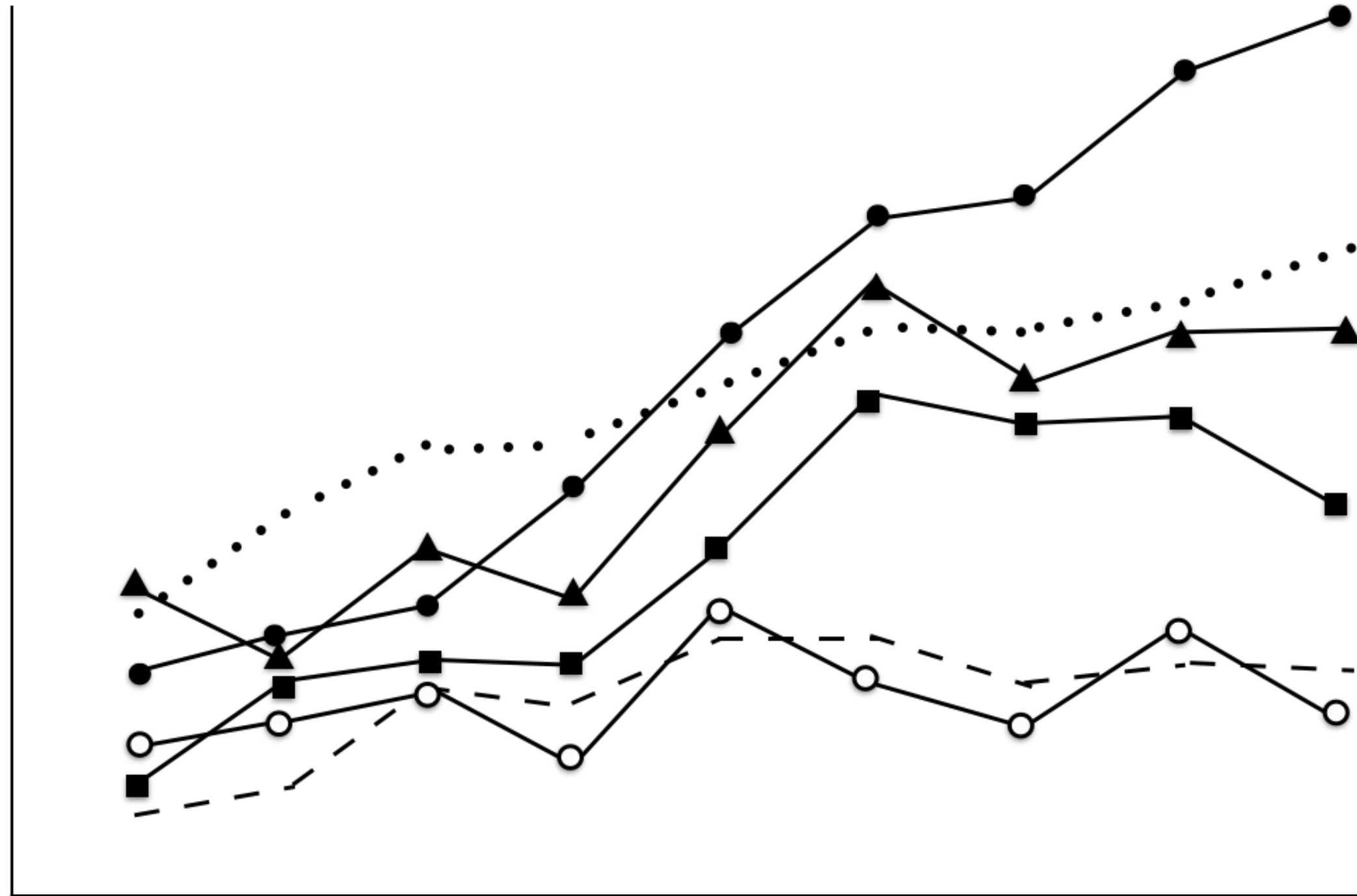


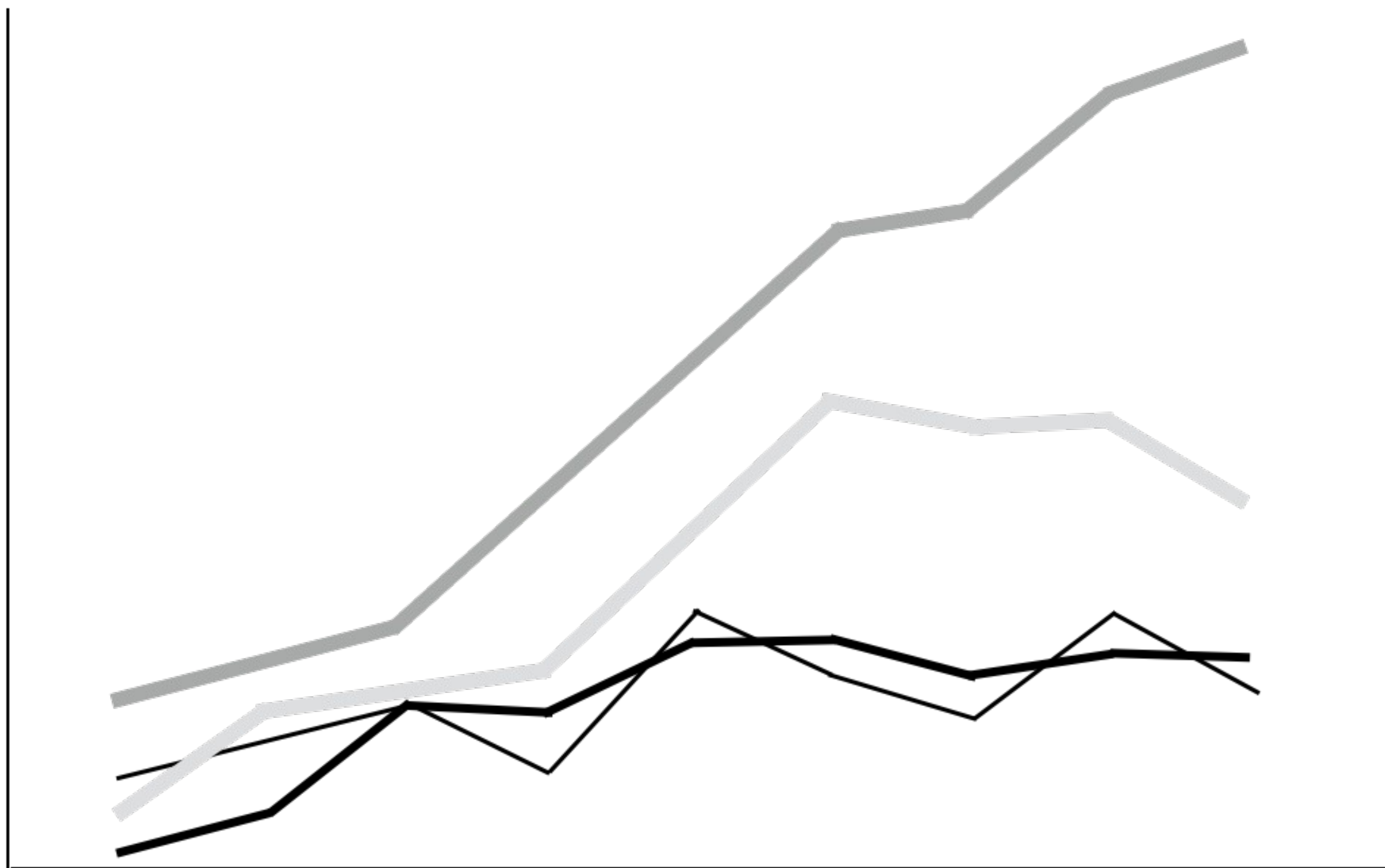
Note y-axis does not need to start at 0.  
Why not as bad as in the case of bar chart?

# Rule of Thumb



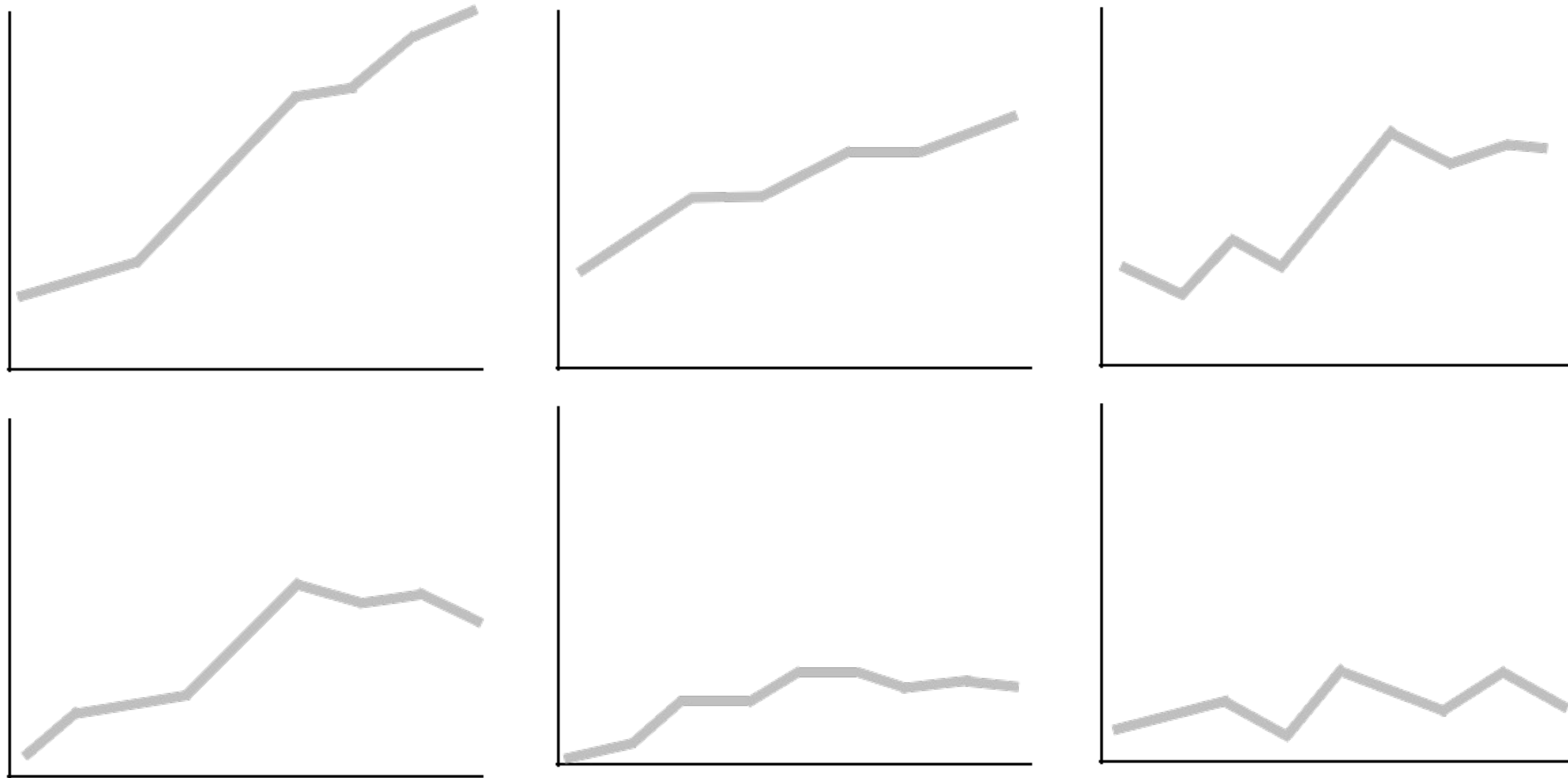
# Multiple Patterned Lines in one chart





Better?

Note the “double encoding” of line width and brightness.  
What if you have many lines you want to show?



## “Small Multiple” - Edward Tufte Better than overlapping (sometimes)

“a series or grid of small similar graphics or charts, allowing them to be easily compared”

# Tables

Name	Data	Data	Data
Company A	0.0	0.0	0.0
Company B	0.0	0.0	0.0
Company C	0.0	0.0	0.0
Company D	0.0	0.0	0.0

What can you improve ?

What's the problem with  
making everything  
bold or italic?



# When everyone is special, no one is!



# When everyone is special, no one is!

Name	Data	Data	Data
Company A	0.0	0.0	0.0
Company B	0.0	0.0	0.0
Company C	0.0	0.0	0.0
Company D	0.0	0.0	0.0

Name	Data	Data	Data	Data	Data	Data
Company A	0.0	0.0	0.0	0.0	0.0	0.0
Company B	0.0	0.0	0.0	0.0	0.0	0.0
Company C	0.0	0.0	0.0	0.0	0.0	0.0
Company D	0.0	0.0	0.0	0.0	0.0	0.0
Company E	0.0	0.0	0.0	0.0	0.0	0.0
Company F	0.0	0.0	0.0	0.0	0.0	0.0
Company G	0.0	0.0	0.0	0.0	0.0	0.0
Company H	0.0	0.0	0.0	0.0	0.0	0.0

A lot of “chart junk”.

Low “data to ink” ratio (Edward Tufte)

Name	Data	Data	Data	Data	Data	Data
Company A	0.0	0.0	0.0	12.0	0.0	0.0
Company B	0.0	0.0	0.0	11.0	0.0	0.0
Company C	0.0	0.0	0.0	10.0	0.0	0.0
Company D	0.0	0.0	0.0	9.0	0.0	0.0
Company E	0.0	0.0	0.0	8.0	0.0	0.0
Company F	0.0	0.0	0.0	7.0	0.0	0.0
Company G	0.0	0.0	0.0	6.0	0.0	0.0
Company H	0.0	0.0	0.0	5.0	0.0	0.0
Company I	0.0	0.0	0.0	4.0	0.0	0.0
Company J	0.0	0.0	0.0	3.0	0.0	0.0
Company K	0.0	0.0	0.0	2.0	0.0	0.0
Company L	0.0	0.0	0.0	1.0	0.0	0.0

Higher “data to ink” ratio

# Problems?

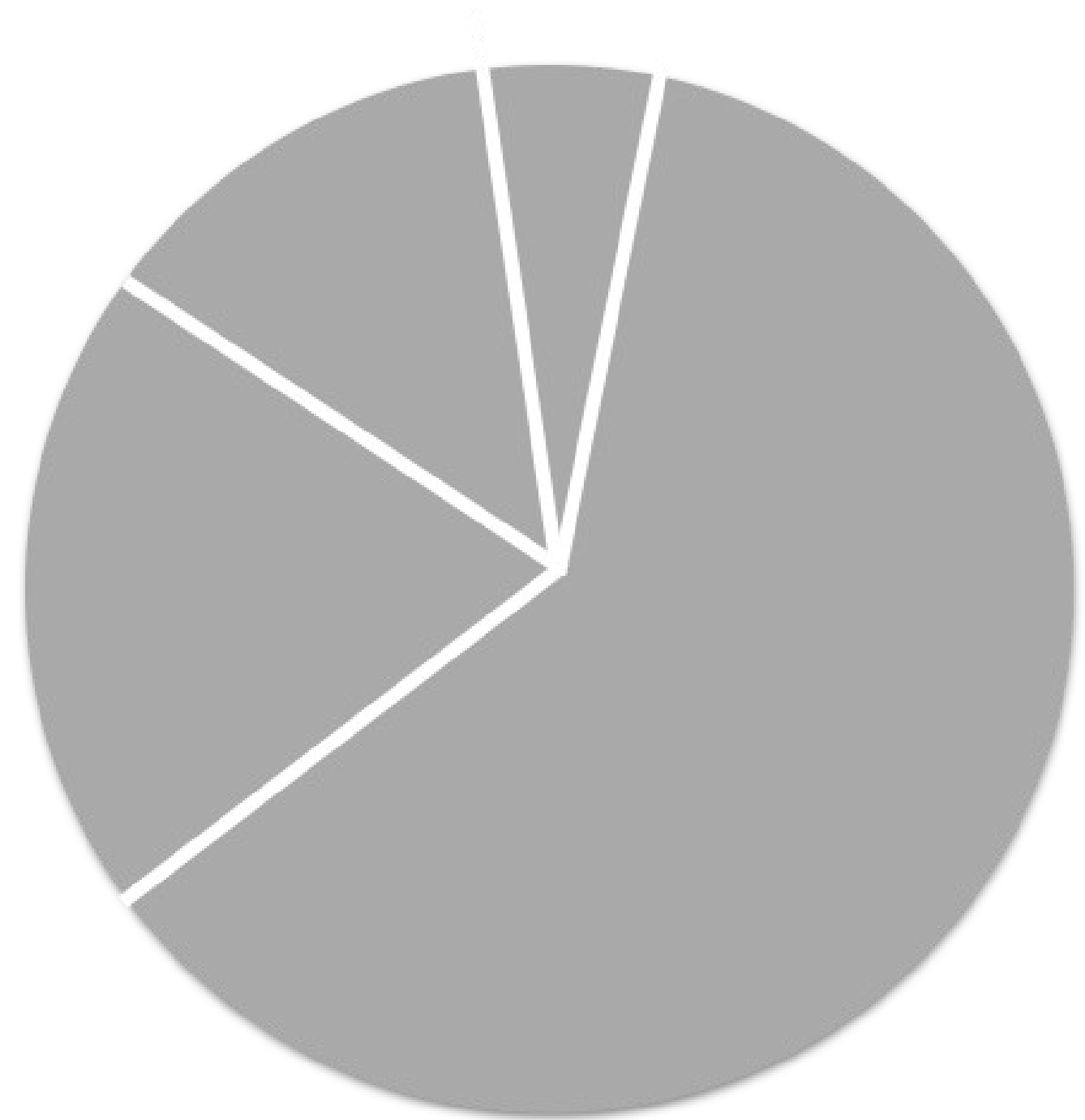
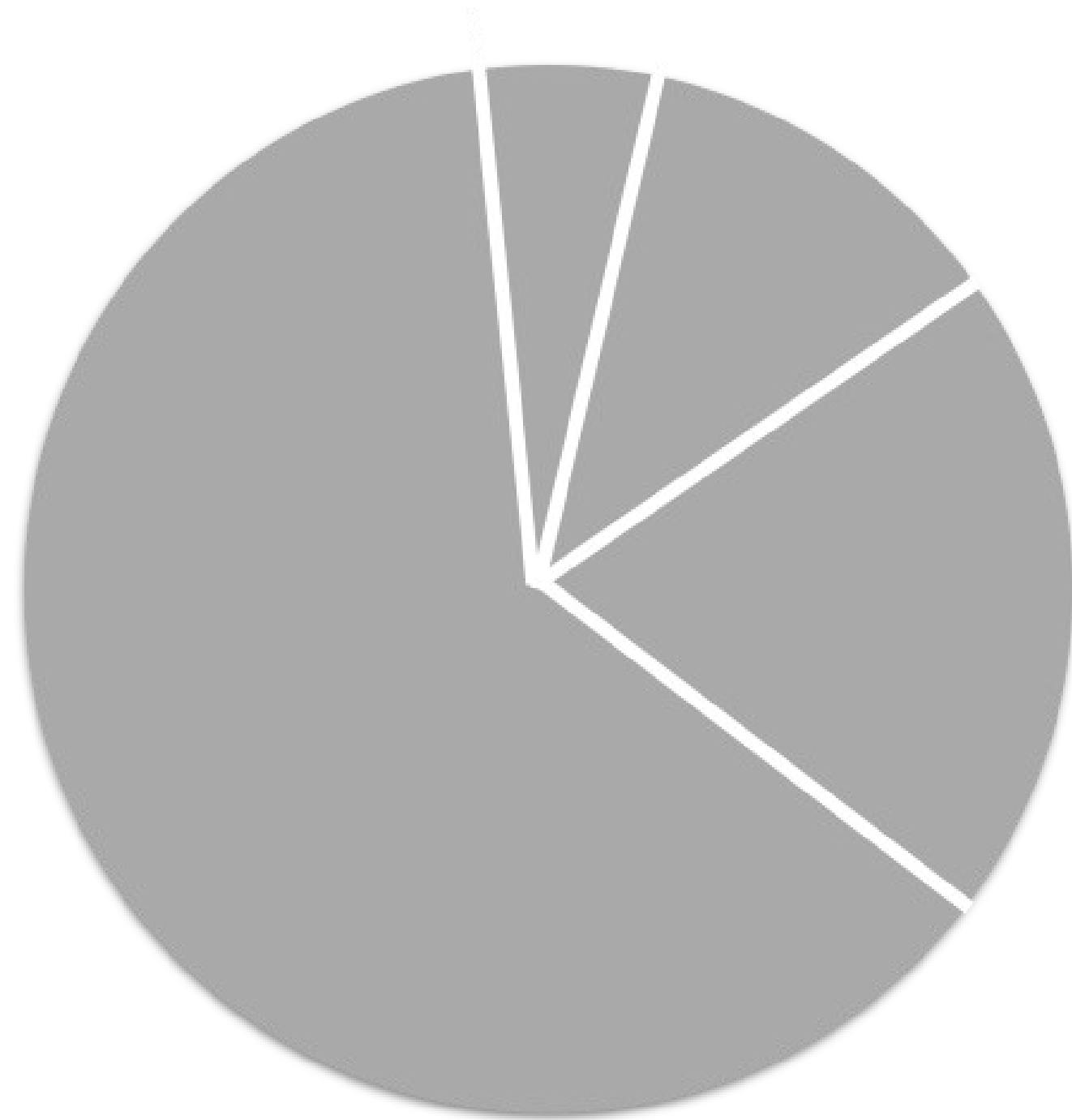
Name	Data
Company A	1000
Company B	900
Company C	80
Company D	7

Name	Data
Company A	10.82
Company B	9.49
Company C	8
Company D	7.4

Name	Data
Company A	10.82
Company B	9.49
Company C	8
Company D	7.4

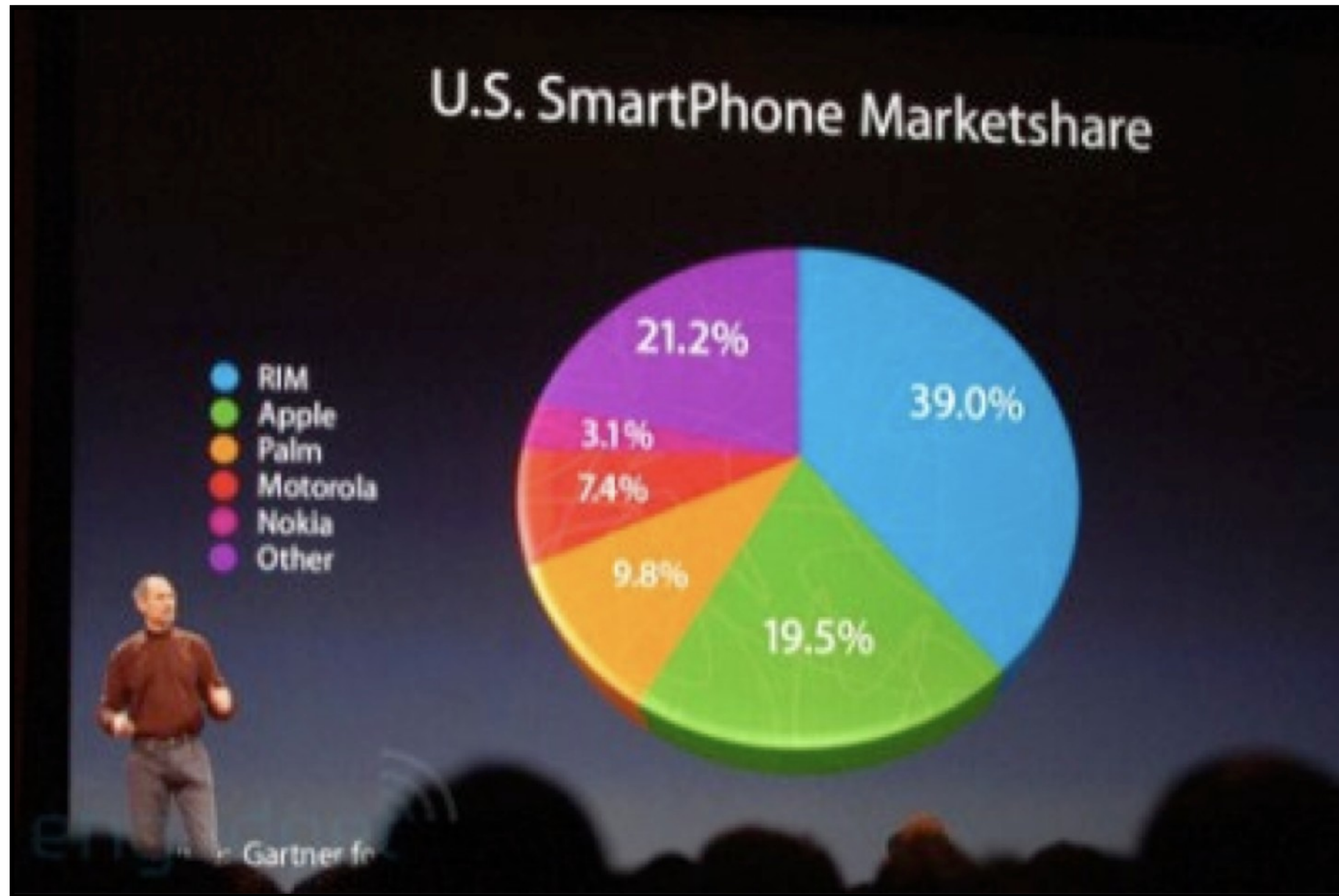
Name	Data
Company A	10.8
Company B	9.5
Company C	8.0
Company D	7.4

# The Dreaded Pie Charts



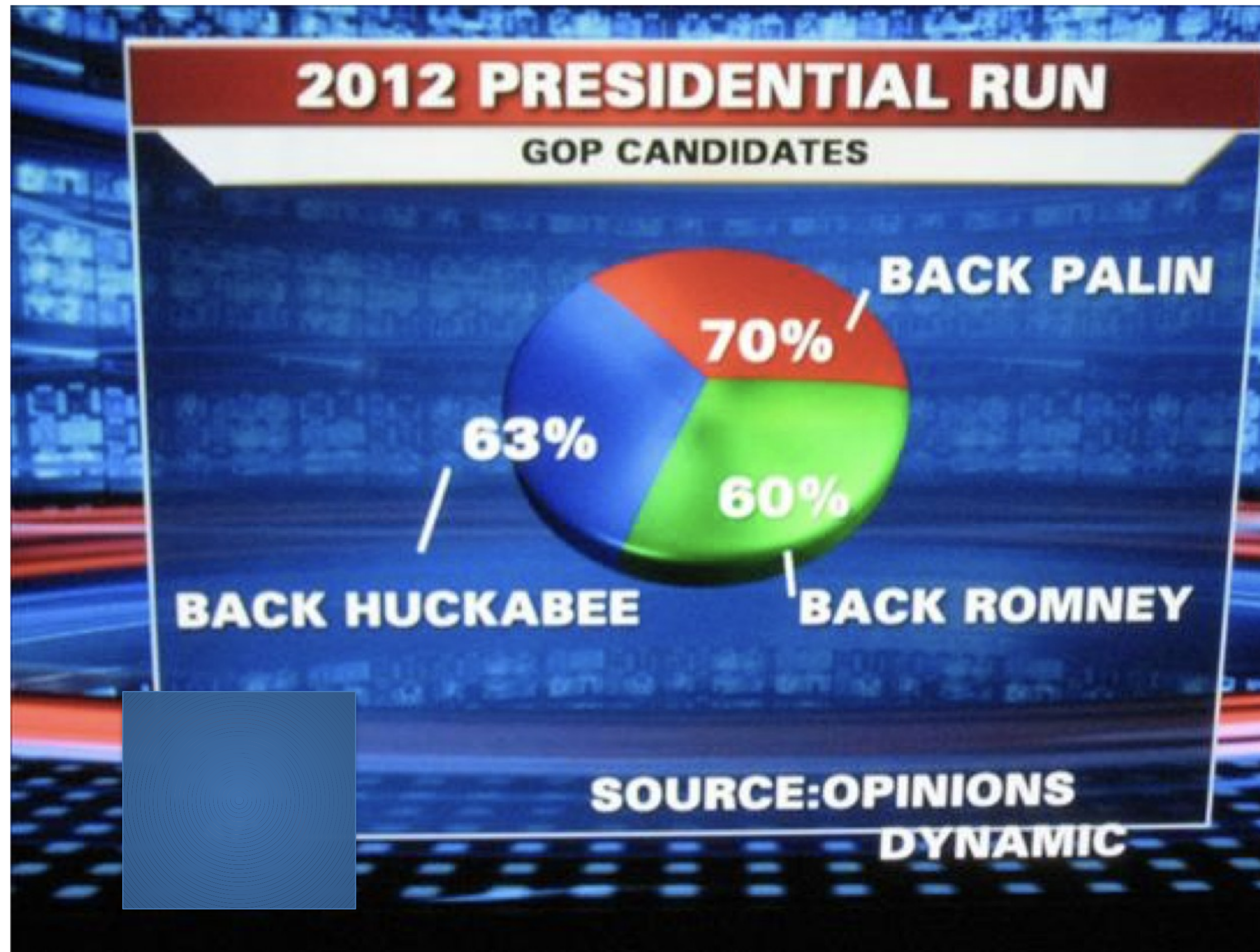
Why people like to use pie charts ?





Beschizza, R. (2017, June 03). MacWorld's iPhone Pie Chart: Perspective Trick Makes 19.5% Look Bigger Than 21.2%. Retrieved November 30, 2017, from <http://www.wired.com/2008/02/macworlds-iphon>





<http://wonkette.com/412361/all-193-of-republicans-support-palin-romney-and-huckabee>



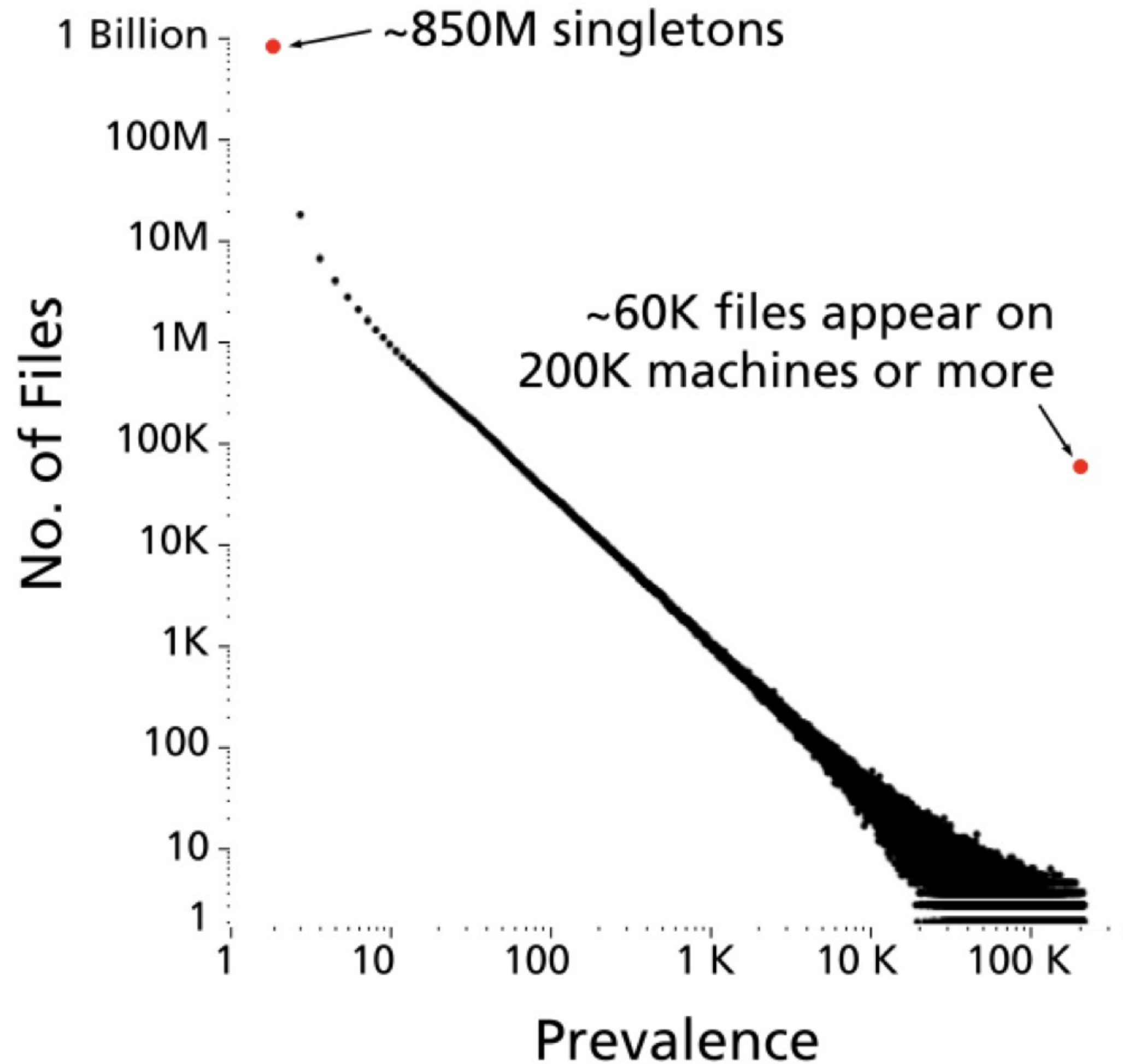


[http://infosthetics.com/archives/2008/09/funniest\\_pie\\_chart\\_ever.html](http://infosthetics.com/archives/2008/09/funniest_pie_chart_ever.html)

# Log scale instead of linear scale

Include numbers from different orders of magnitude

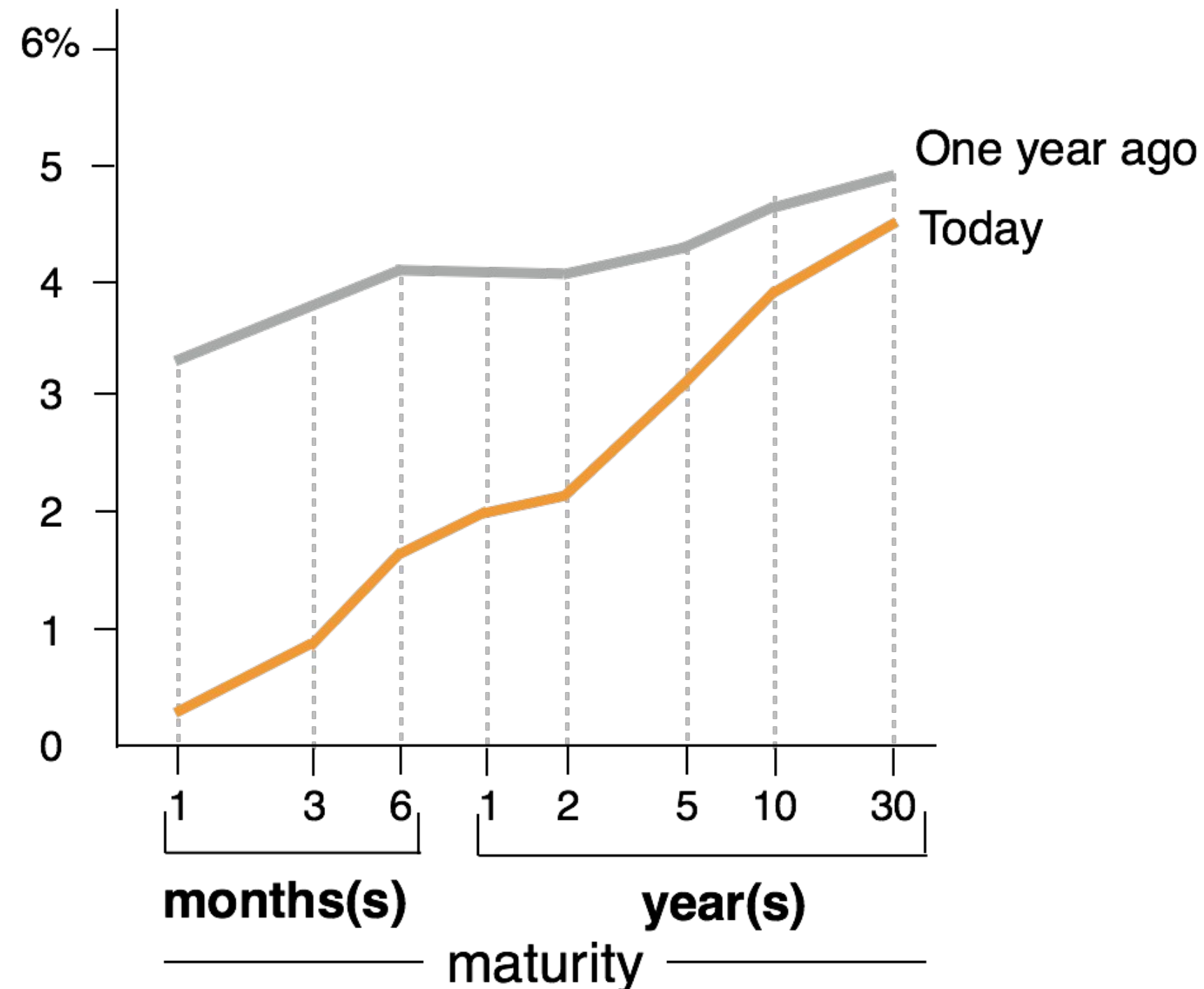
log-log



“log” also works well for time

Example

The yield curve of Treasury bills, notes and bonds







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# Thank You