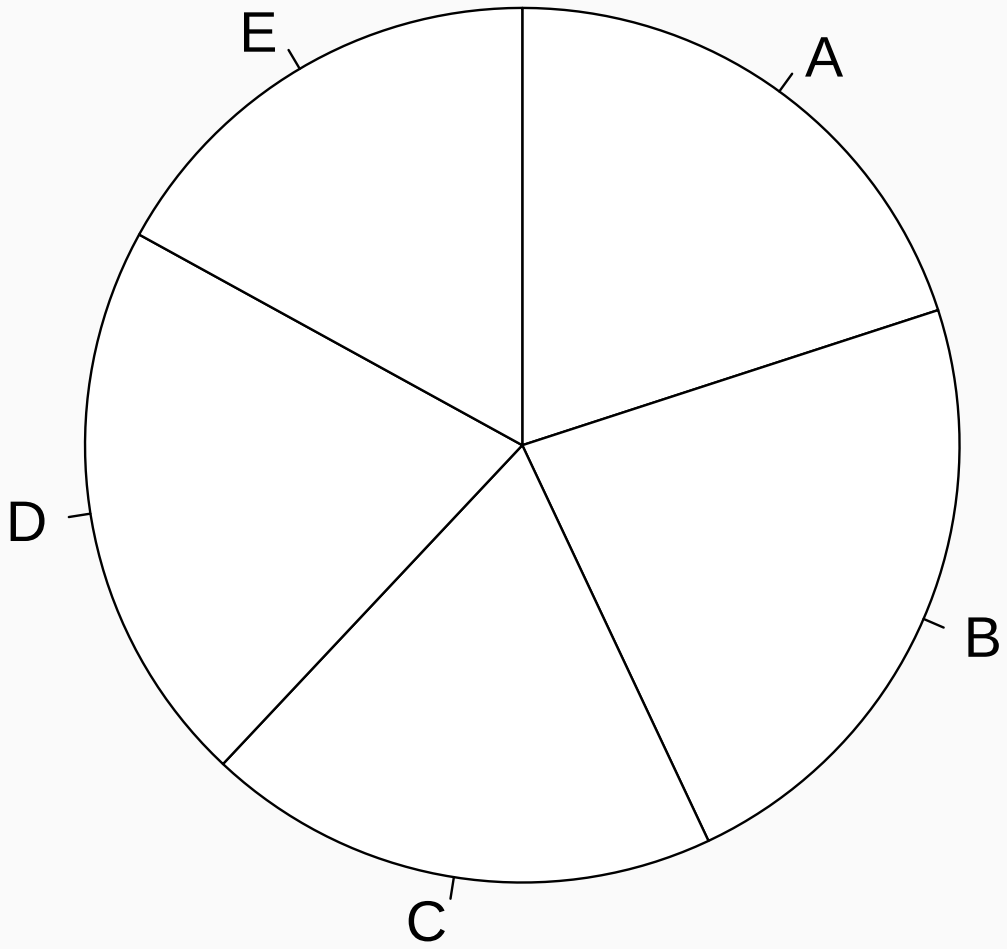
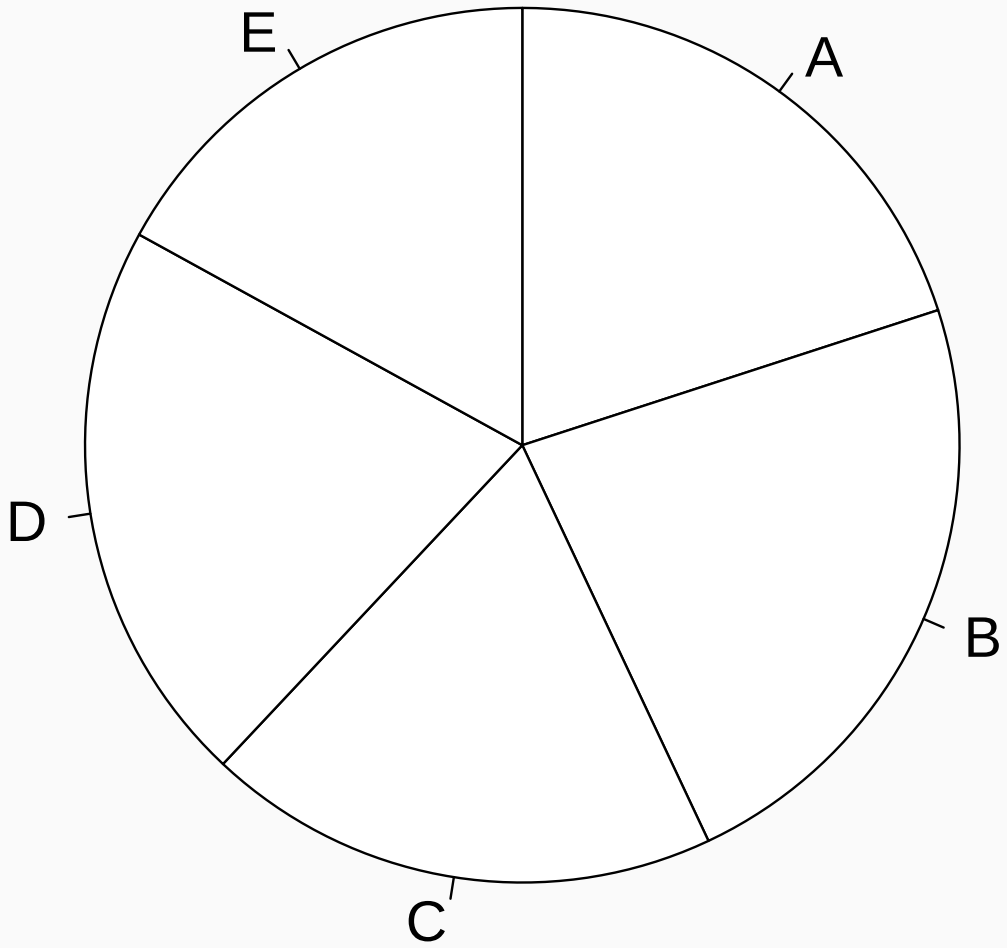
Elements of effective graphs

In your handout, list the slices A thru E from largest to smallest

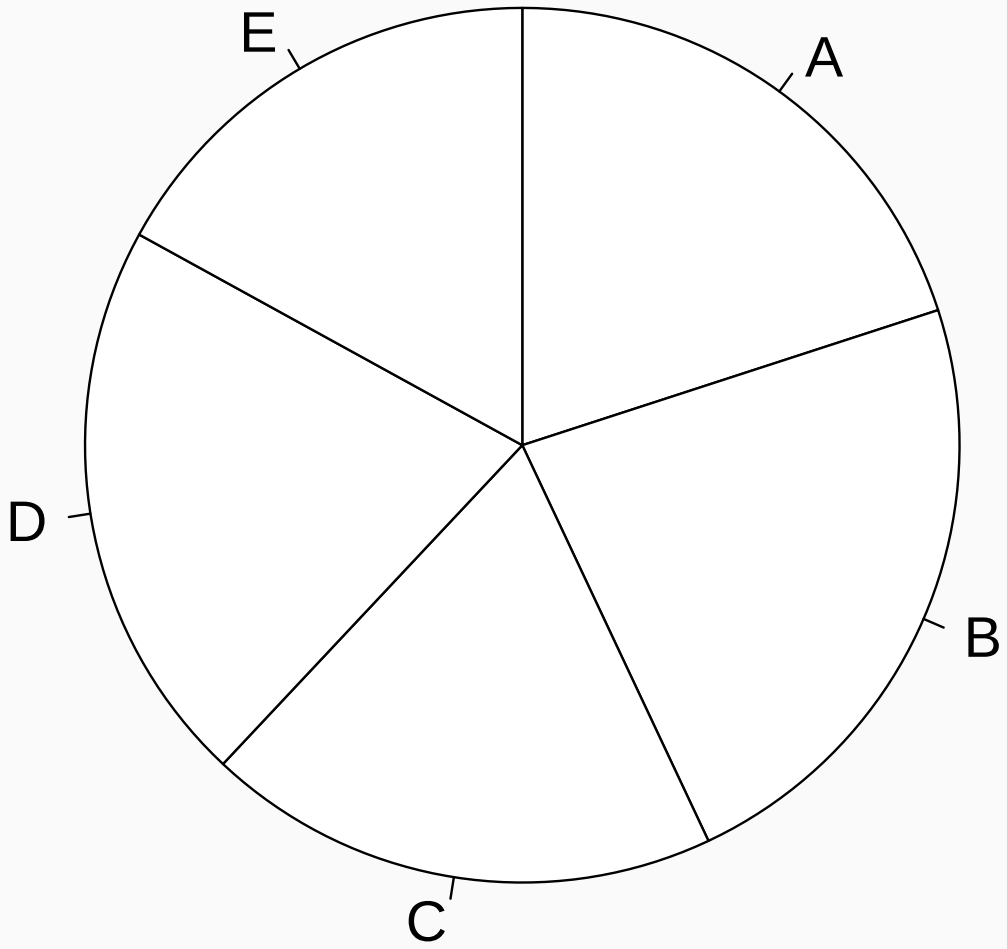


In your handout, list the slices A thru E from largest to smallest



- B (largest)

In your handout, list the slices A thru E from largest to smallest

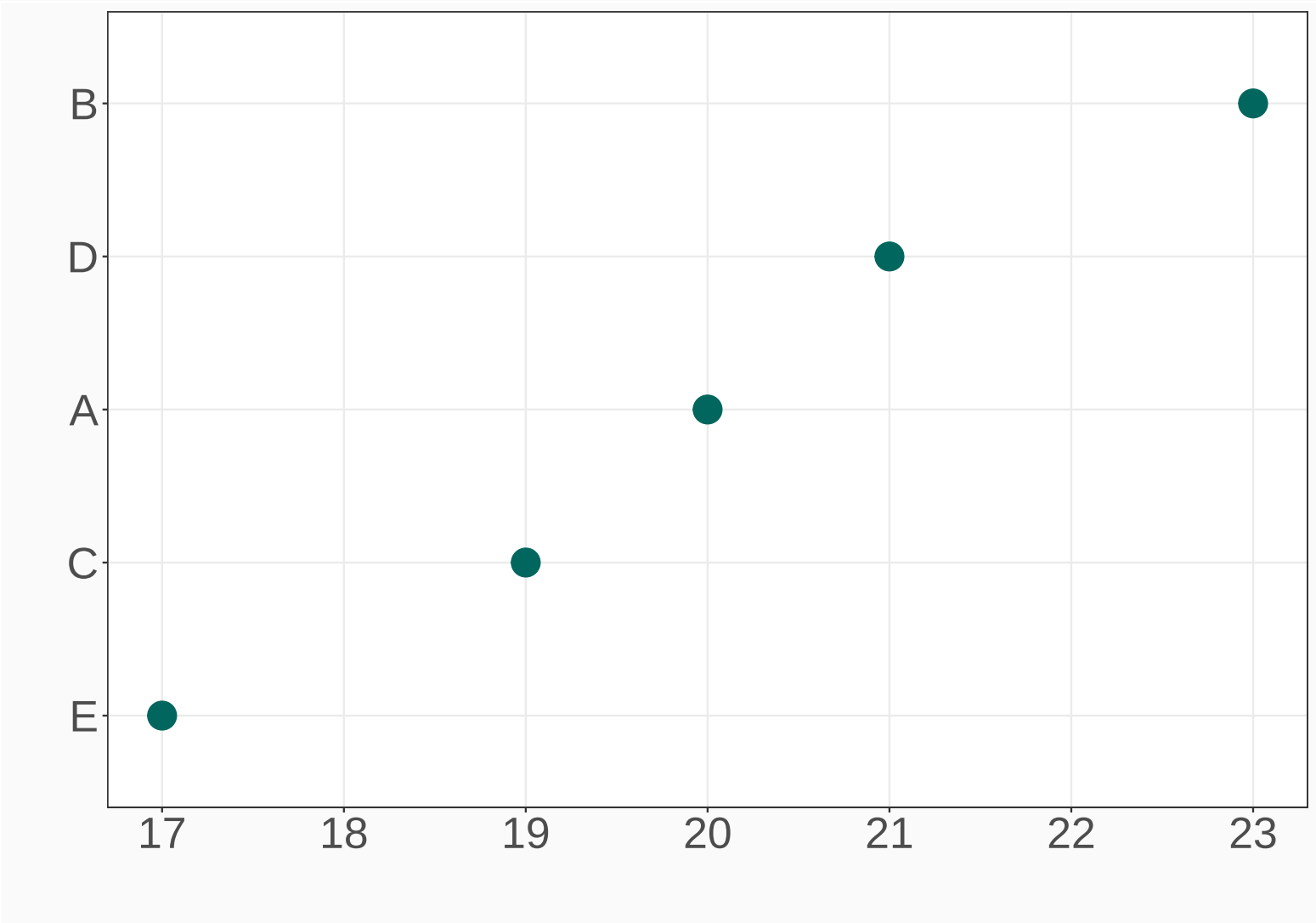


- B (largest)
- D
- A
- C
- E (smallest)

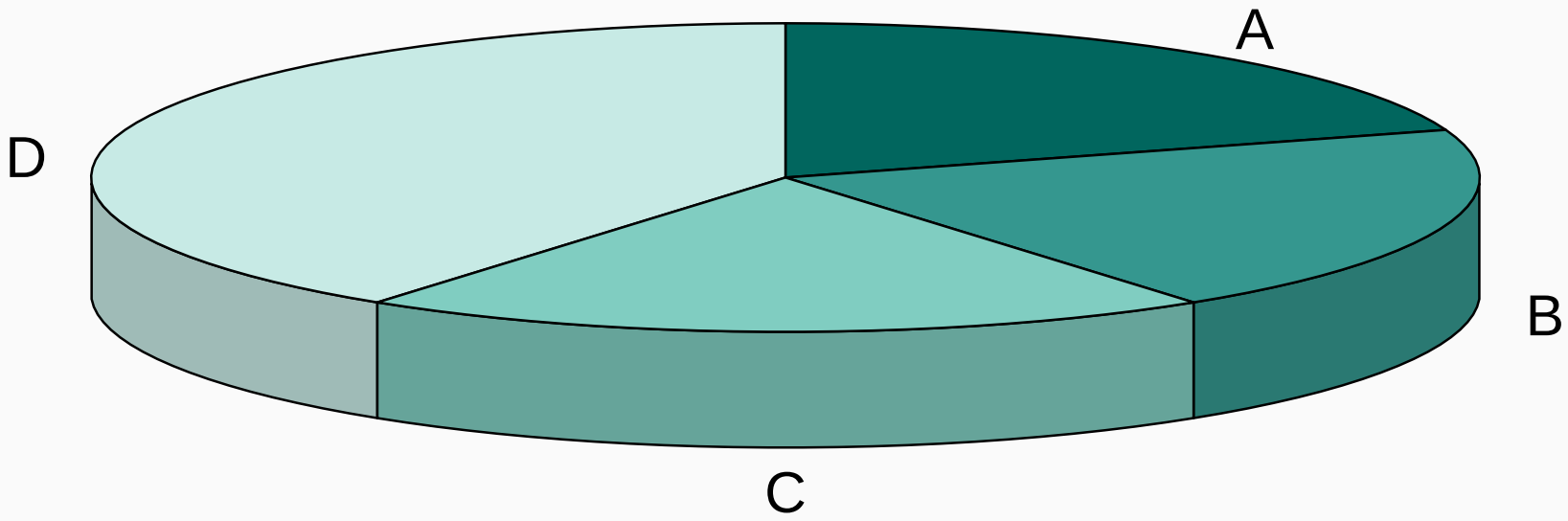
Adapted from (Robbins 2013) Ch. 2

The same data arranged along a common axis

Comparing values along a common axis is a high-accuracy visual task.



Slices are what percentage of the whole?



Fill in the blanks

The total should be 100%

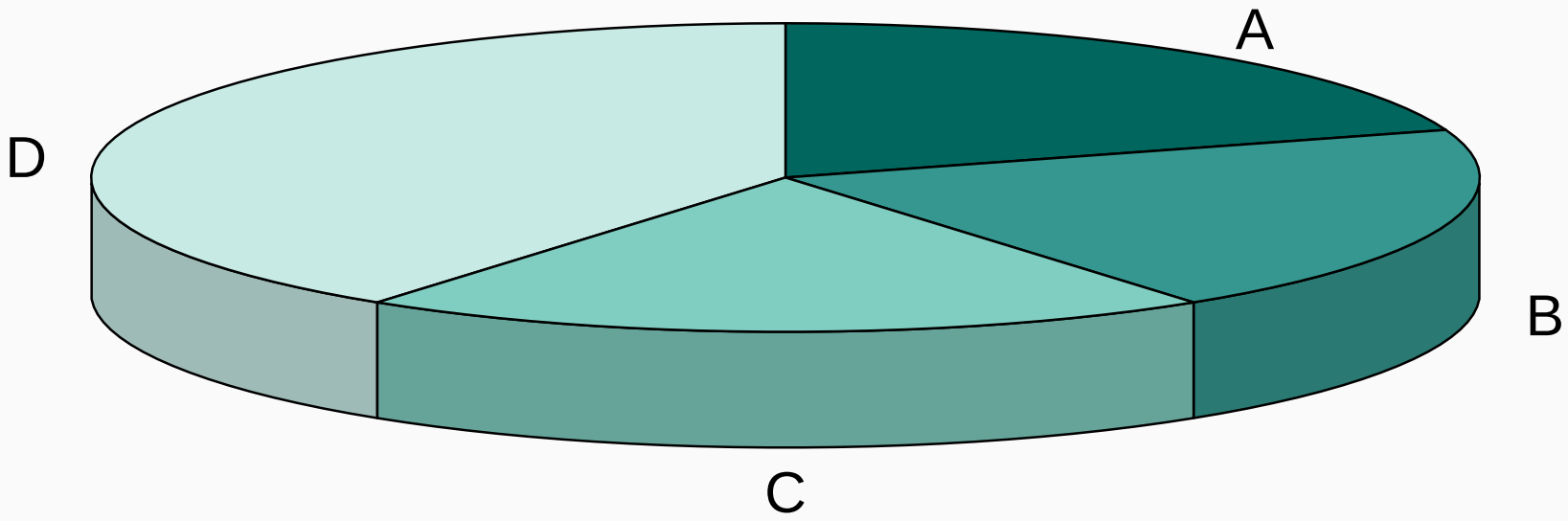
A. _____

B. _____

C. _____

D. _____

3D-effects distort our judgment



Fill in the blanks

The total should be 100%

A. 20%

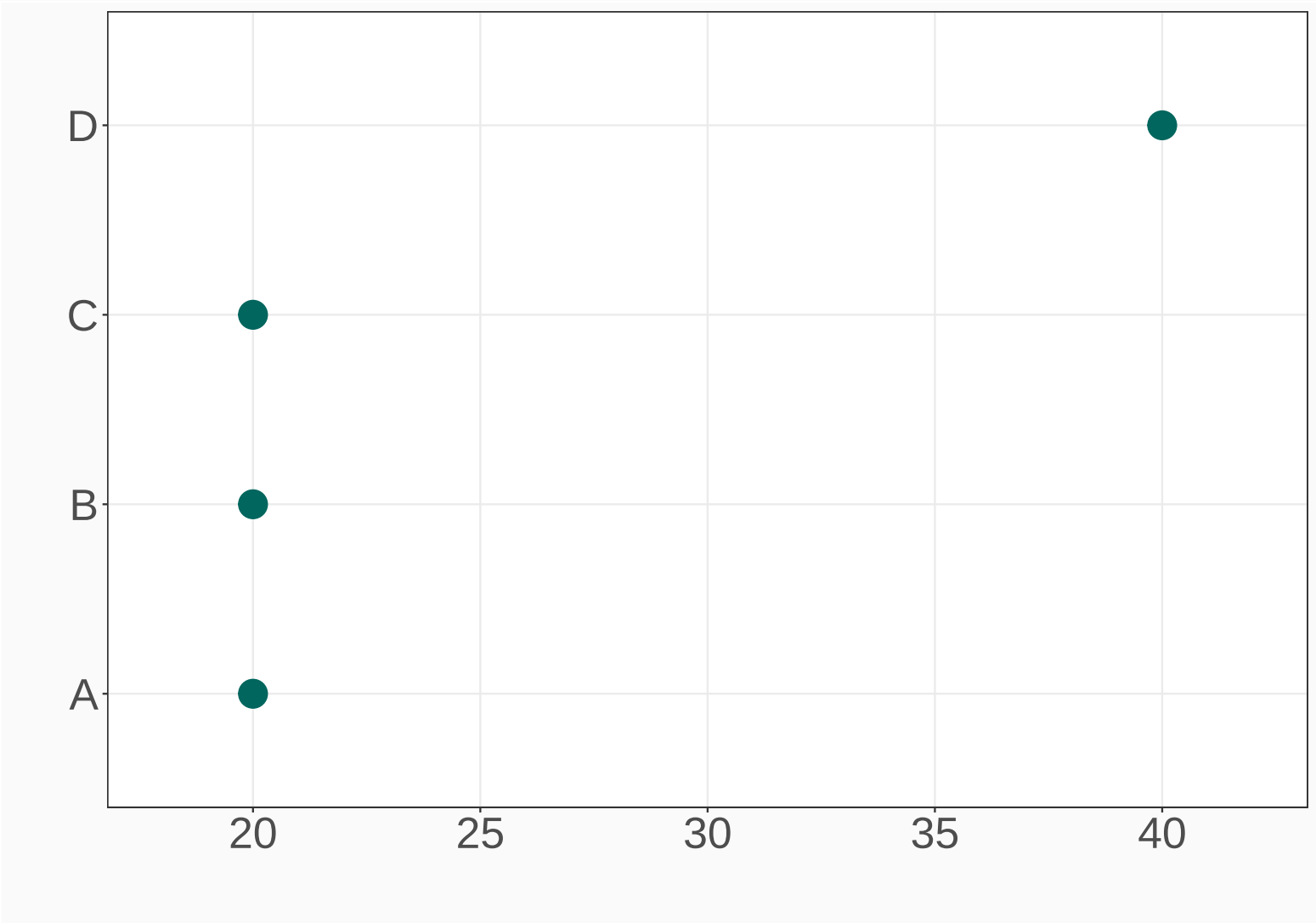
B. 20%

C. 20%

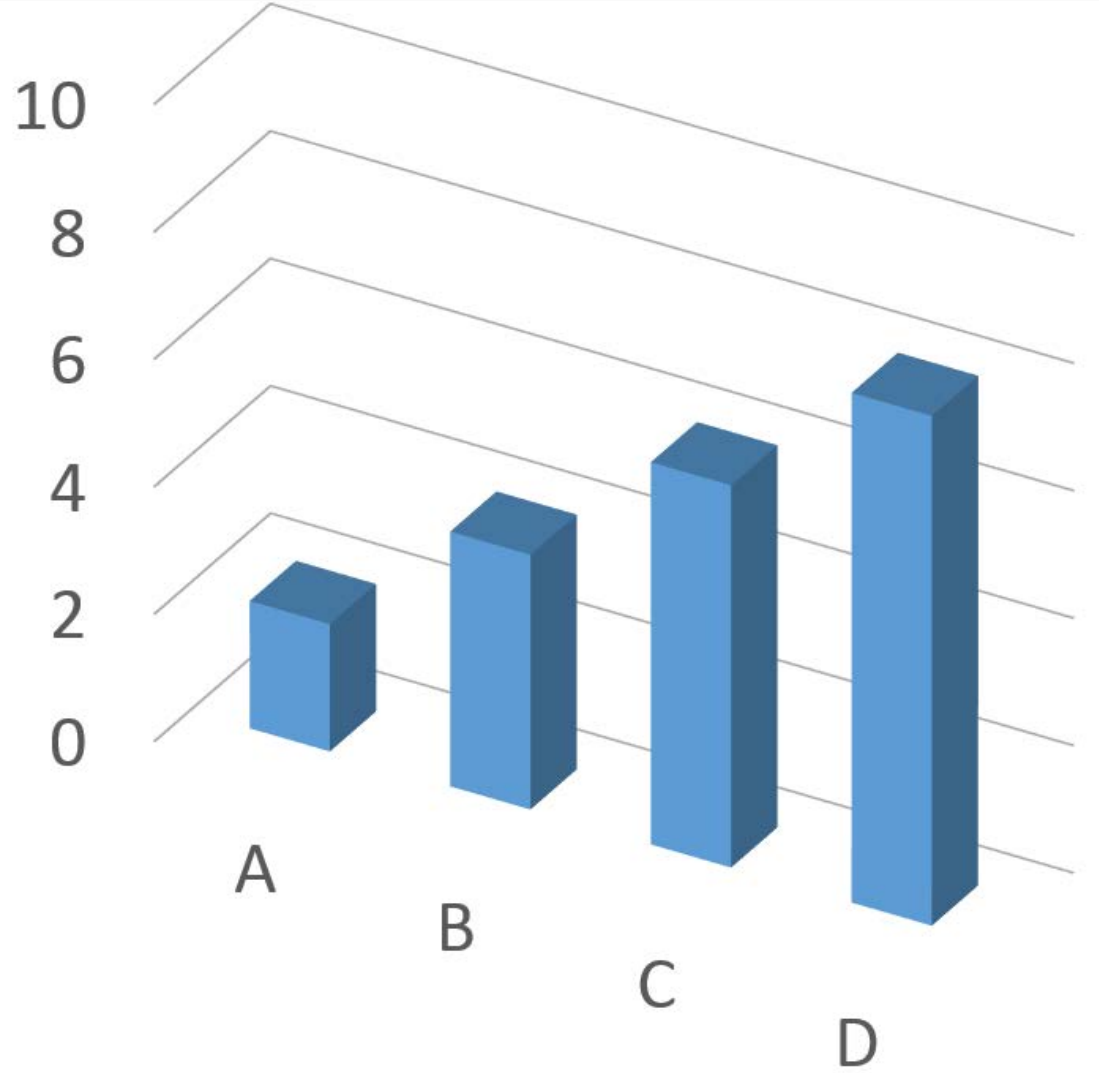
D. 40%

Again, the same data arranged along a common axis

A high-accuracy visual task.



Write down the heights of the bars



This is a visual inspection only.

Fill in the blanks

A. _____

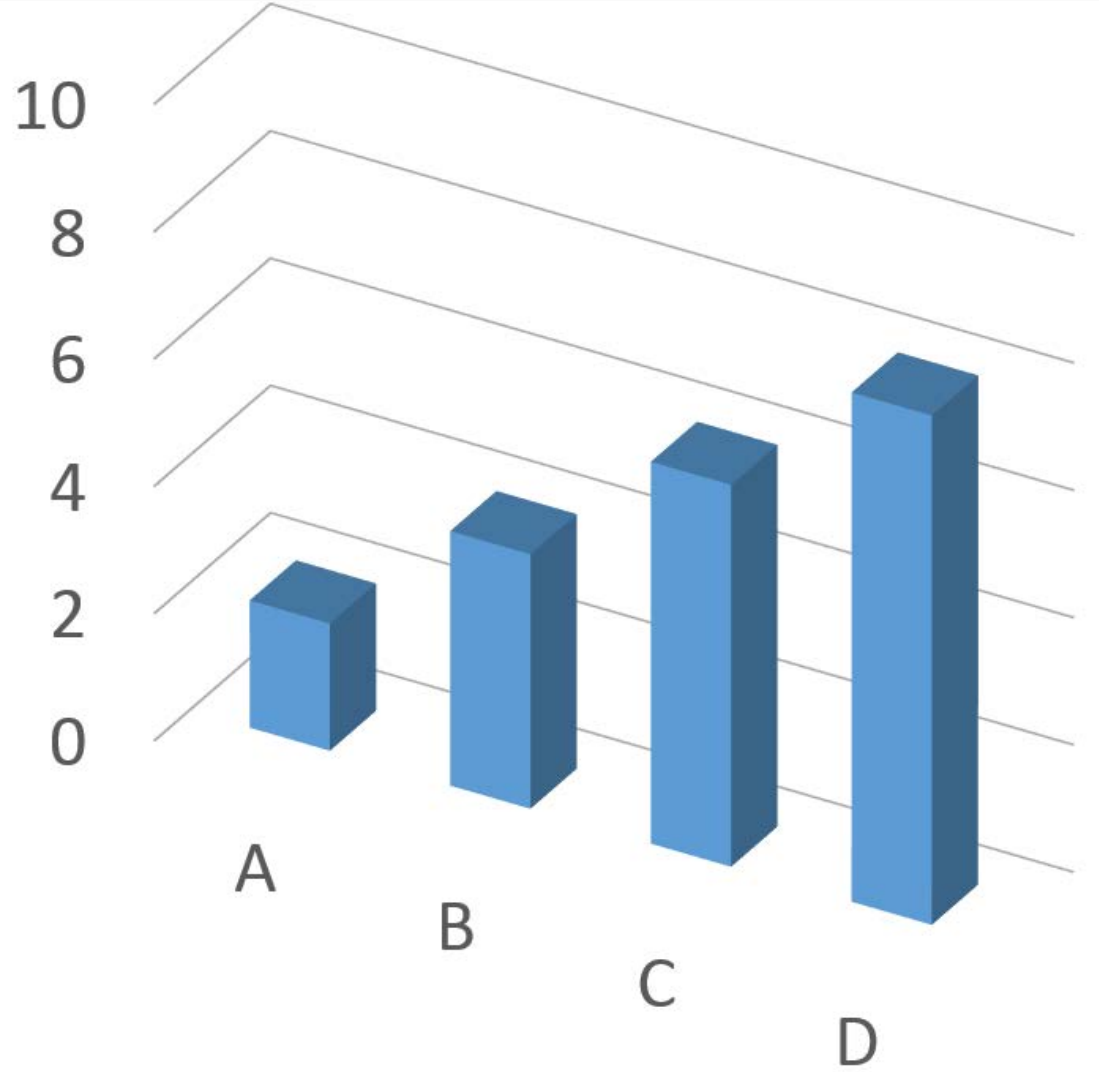
B. _____

C. _____

D. _____

Adapted from (Robbins 2013) p. 22

Again, 3D-effects distort our judgment



This is a visual inspection only.

Fill in the blanks

A. 2

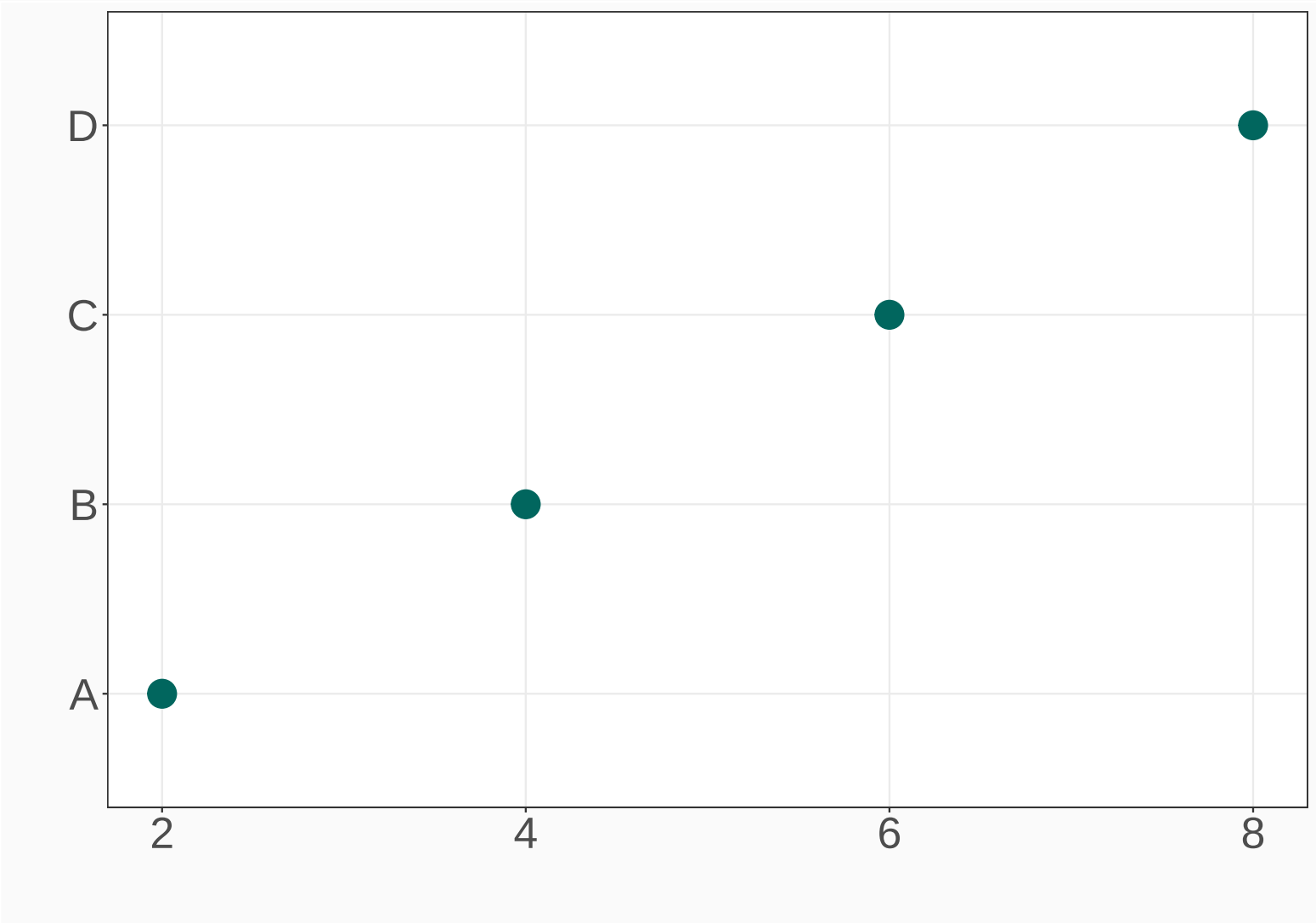
B. 4

C. 6

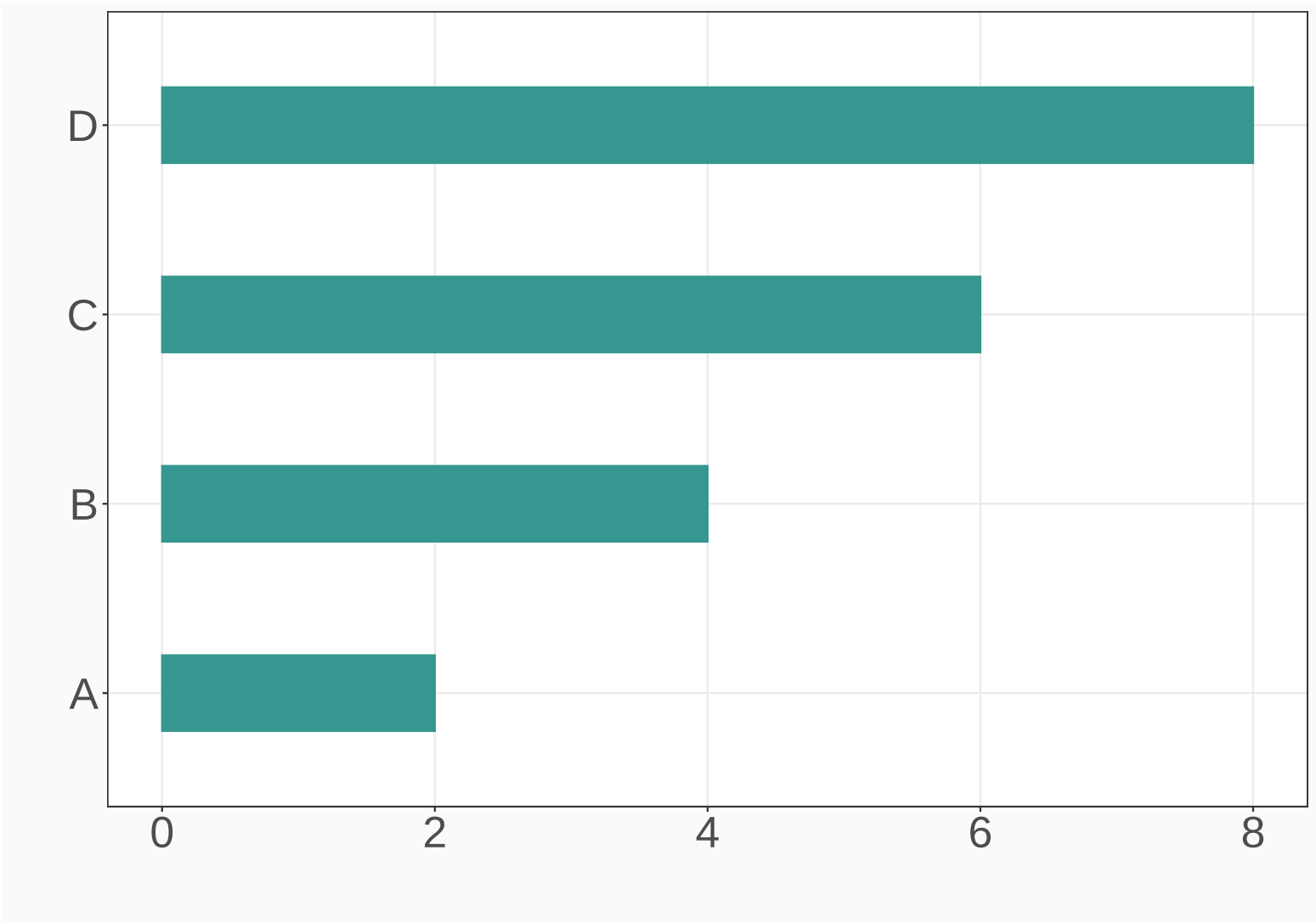
D. 8

Again, the same data arranged along a common axis

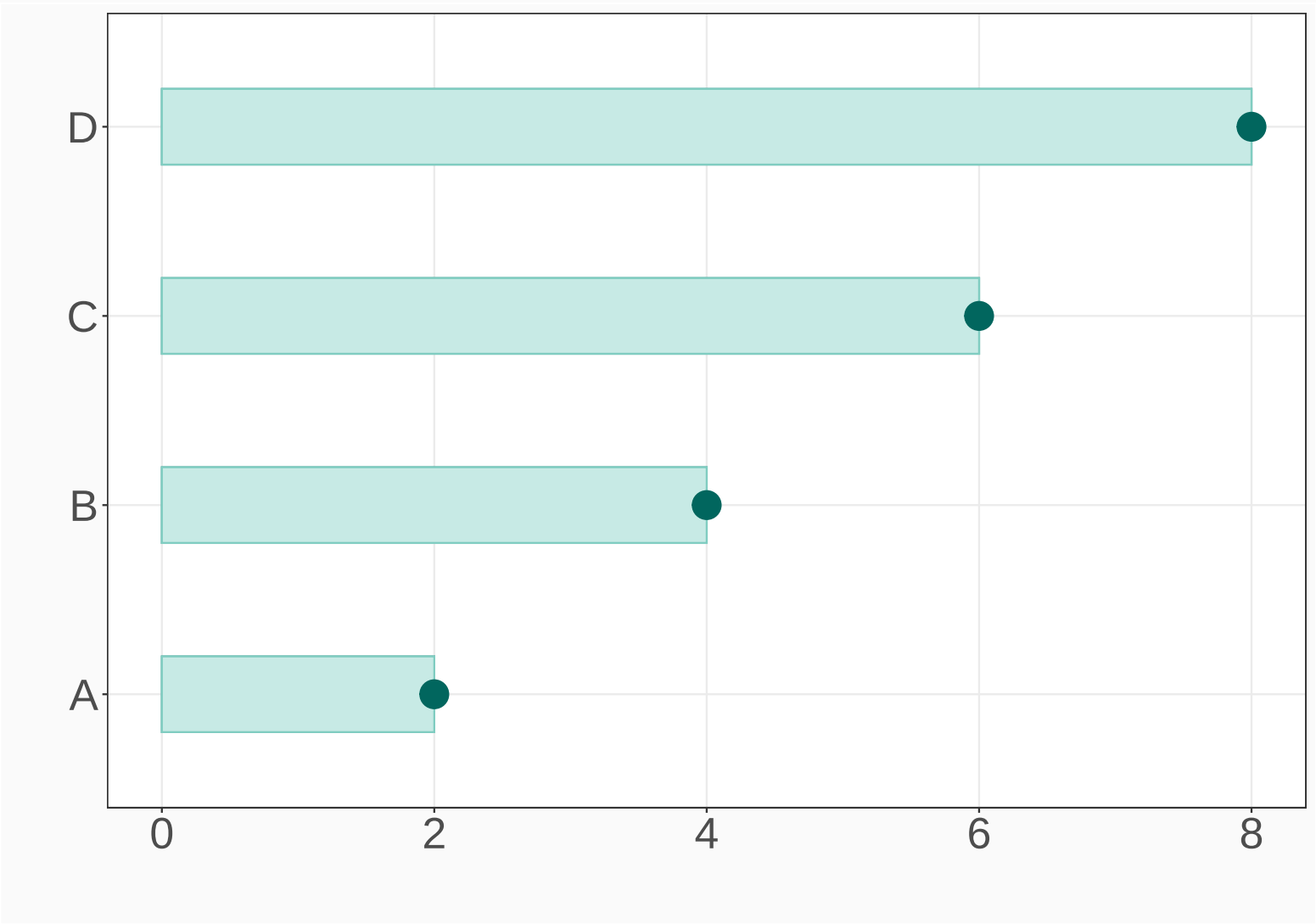
A high-accuracy visual task.



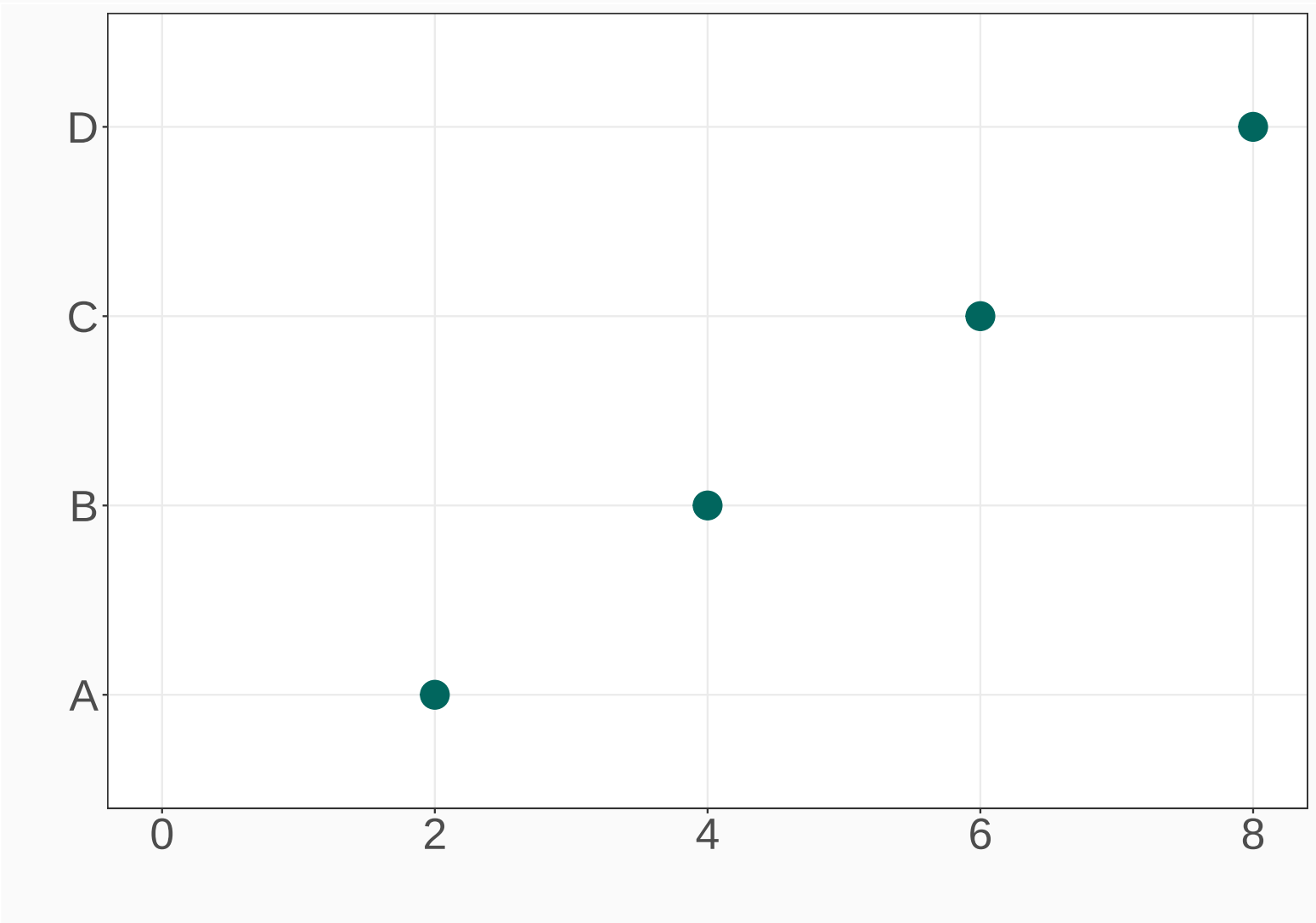
You can use bars, but must include zero



If you mark the endpoints, you can omit the bar



Producing a “dot plot” with rows ordered per the data



Try estimating areas of three states

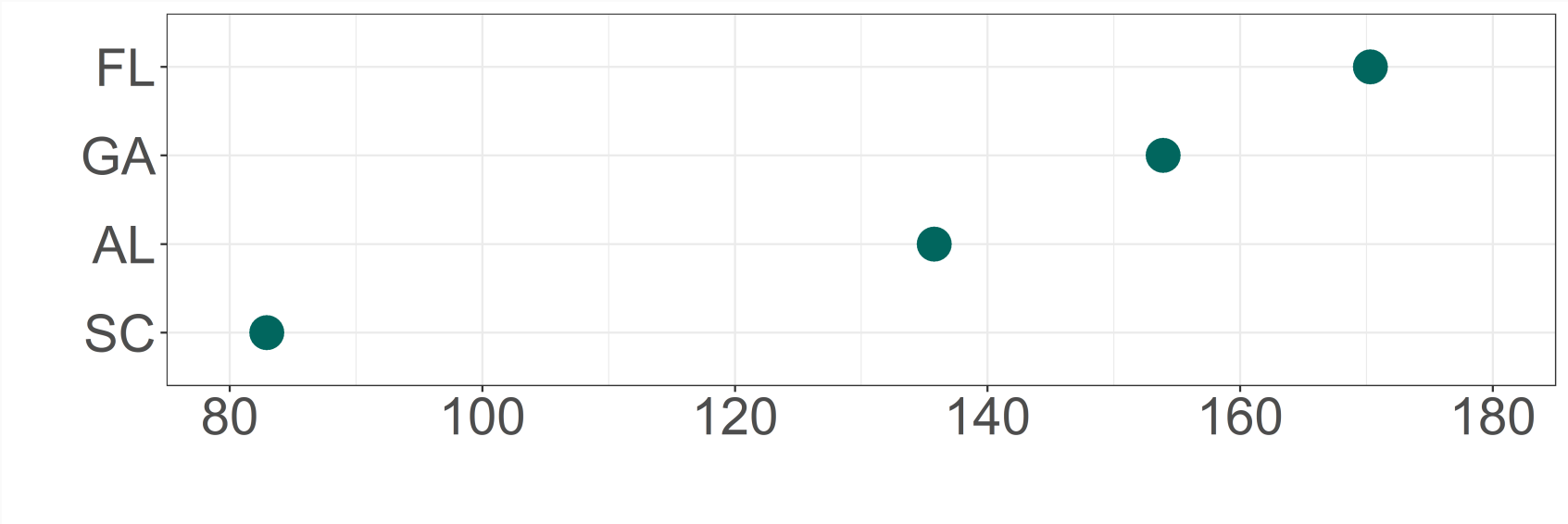
Visual estimation of area is a low-accuracy task.

South Carolina (SC) ≈ 83,000 sq km.

FL	_____	x 1000 sq. km
GA	_____	x 1000 sq. km
AL	_____	x 1000 sq. km
SC	83	x 1000 sq. km

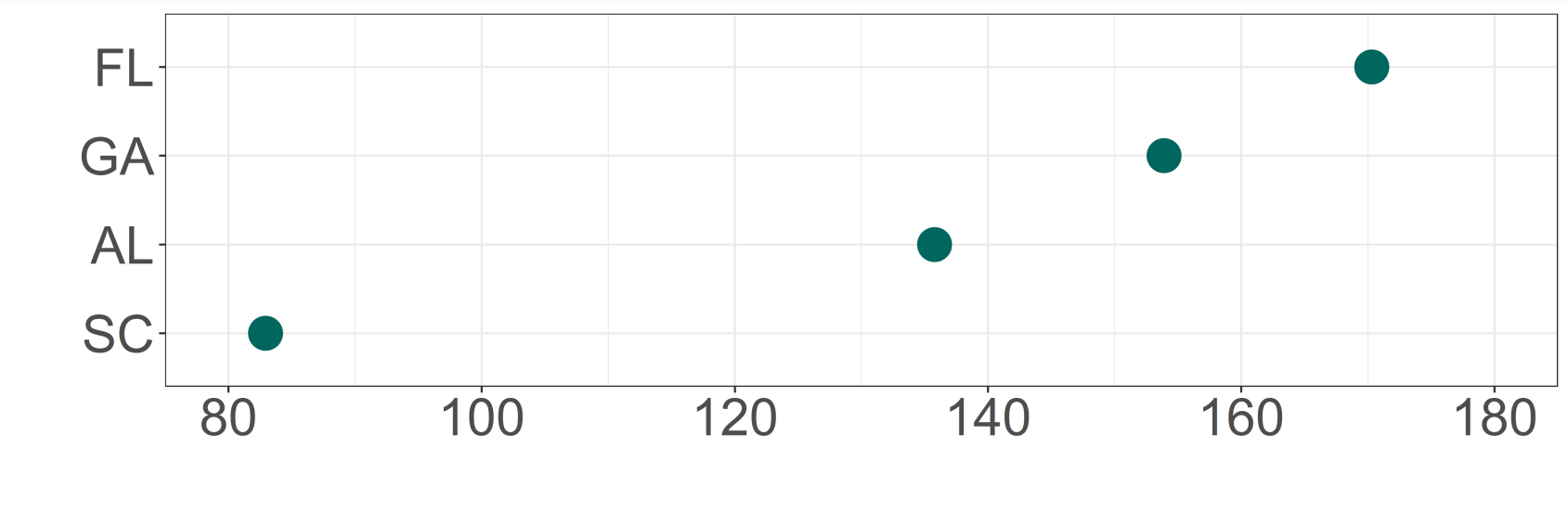
Adapted from (Ihaka 2007)

Again, the same data arranged along a common axis



FL	_____	x 1000 sq. km
GA	_____	x 1000 sq. km
AL	_____	x 1000 sq. km
SC	83	x 1000 sq. km

Your estimates have probably improved



FL **170** x 1000 sq. km

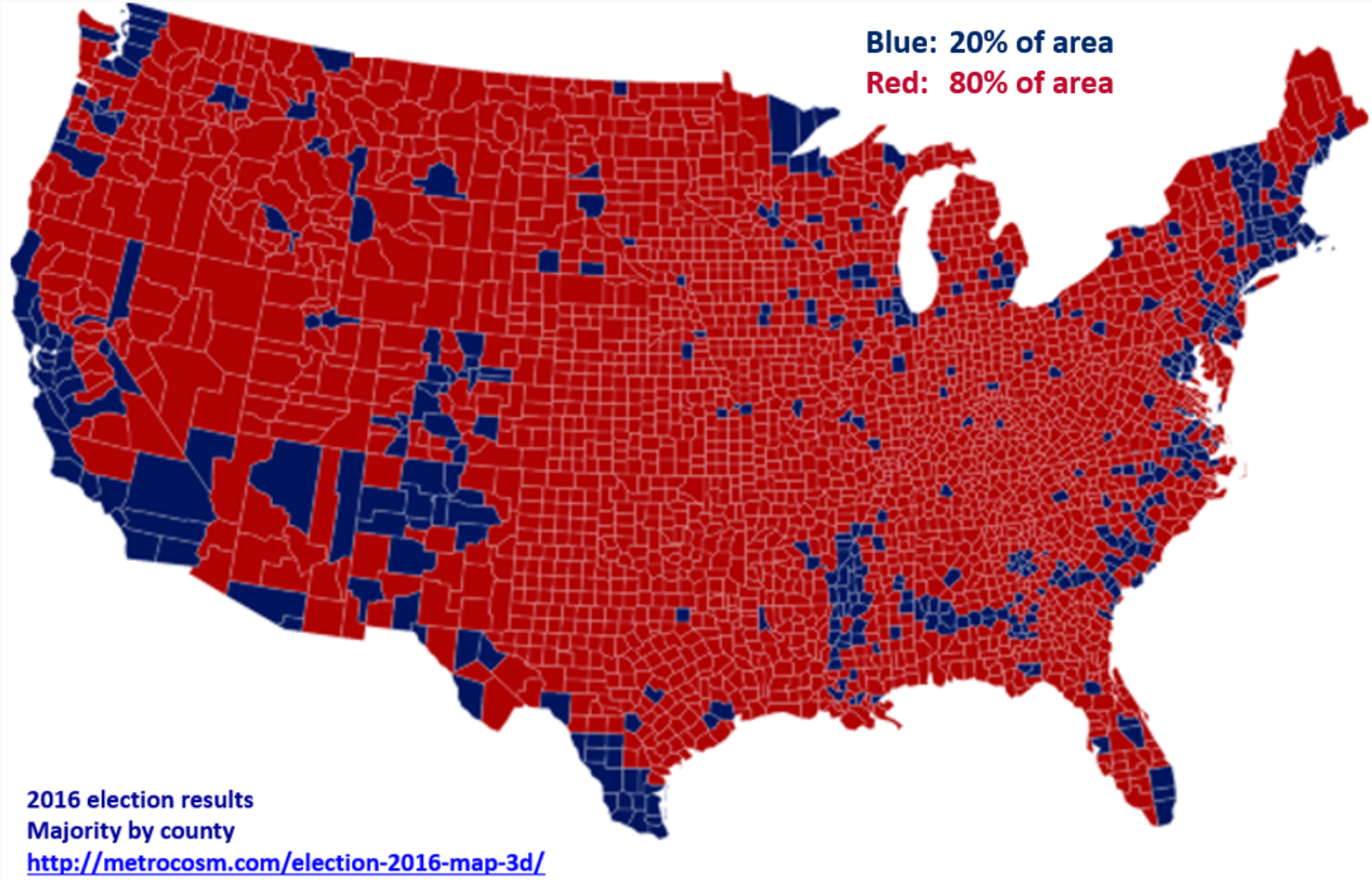
GA **154** x 1000 sq. km

AL **136** x 1000 sq. km

SC **83** x 1000 sq. km

When color represents area, what story emerges?

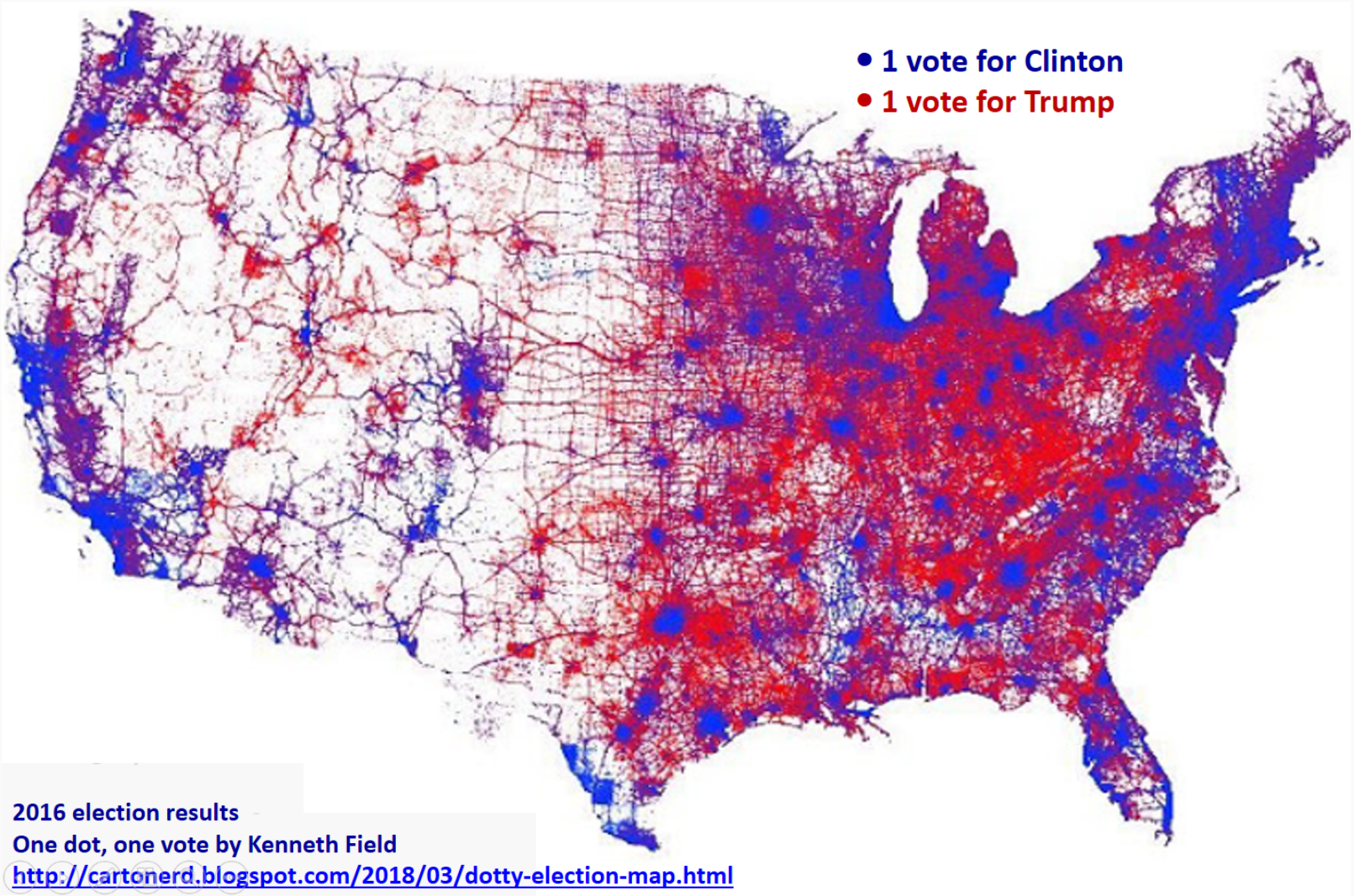
Color used deceptively, 2016 election by county: Clinton, Trump



http://www-personal.umich.edu/~mejn/election/2012/

When color represents voters?

Color used judiciously, each dot 1 votes for: Clinton, Trump



http://coach.weinstein.to/lets-get-specific/election-results/

The experts tell us

(Doumont 2009)

Image from `http://www.principiae.be/pdfs/Principiae-2014.pdf`

Optimal design primarily depends on

- The message to be conveyed
- The variables to be shown

The experts tell us

The task of the designer is to give visual access to the subtle and the difficult — that is, reveal the complex.

(Tufte 1983)

Image from `https://en.wikipedia.org/wiki/Edward_Tufte`

The experts tell us

What's your point?

Seriously, that's the most important question.

(Evergreen 2017)

Image from `https://tei.cgu.edu/people/stephanie-evergreen-phd/`

R is designed with statistical analysis and data graphics in mind

Well-designed data graphics are accessible, even to the beginner

- makes graphical exploration of data accessible to all
- work in progress is easily disseminated via GitHub

And because R is open-source

- new packages appear regularly—one might solve *your* problem
- anyone can help us find errors and add features to our packages