

GR5702

Exploratory Data Analysis and Visualization

Prof. Joyce Robbins

"Don't"

March 30, 2017



AMERICANS WHO HAVE TRIED MARIJUANA

CBS NEWS POLL

51%
TODAY



43%
LAST YEAR

34%
1997

Source: MOE +/- 4%

HIGH SUPPORT FOR LEGALIZING MARIJUANA
MORE THAN HALF OF AMERICANS SAY THEY'VE TRIED POT

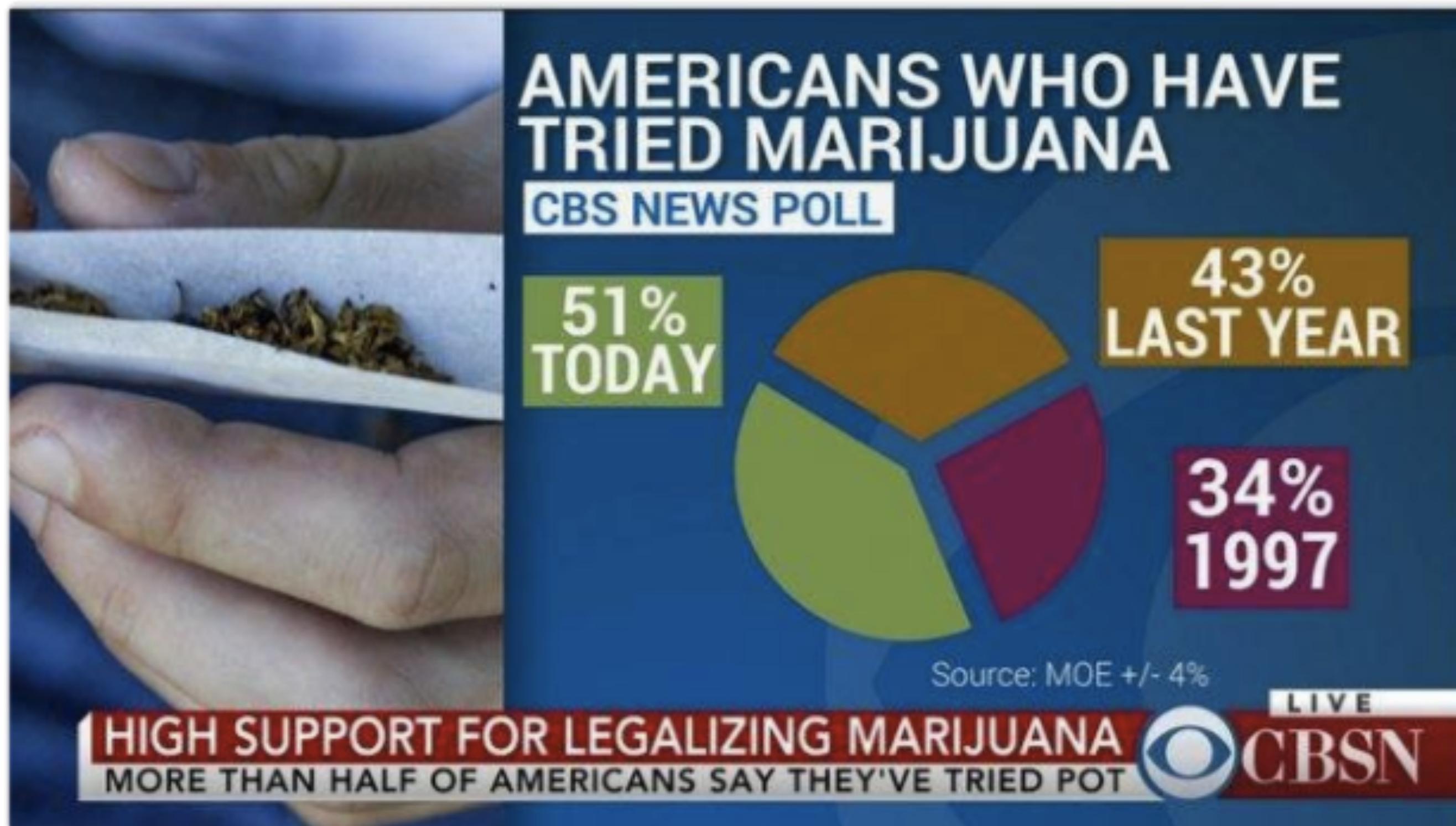
LIVE
 CBSN



Sean J. Taylor
@seanjtaylor

Follow

+ geom_nonsense()



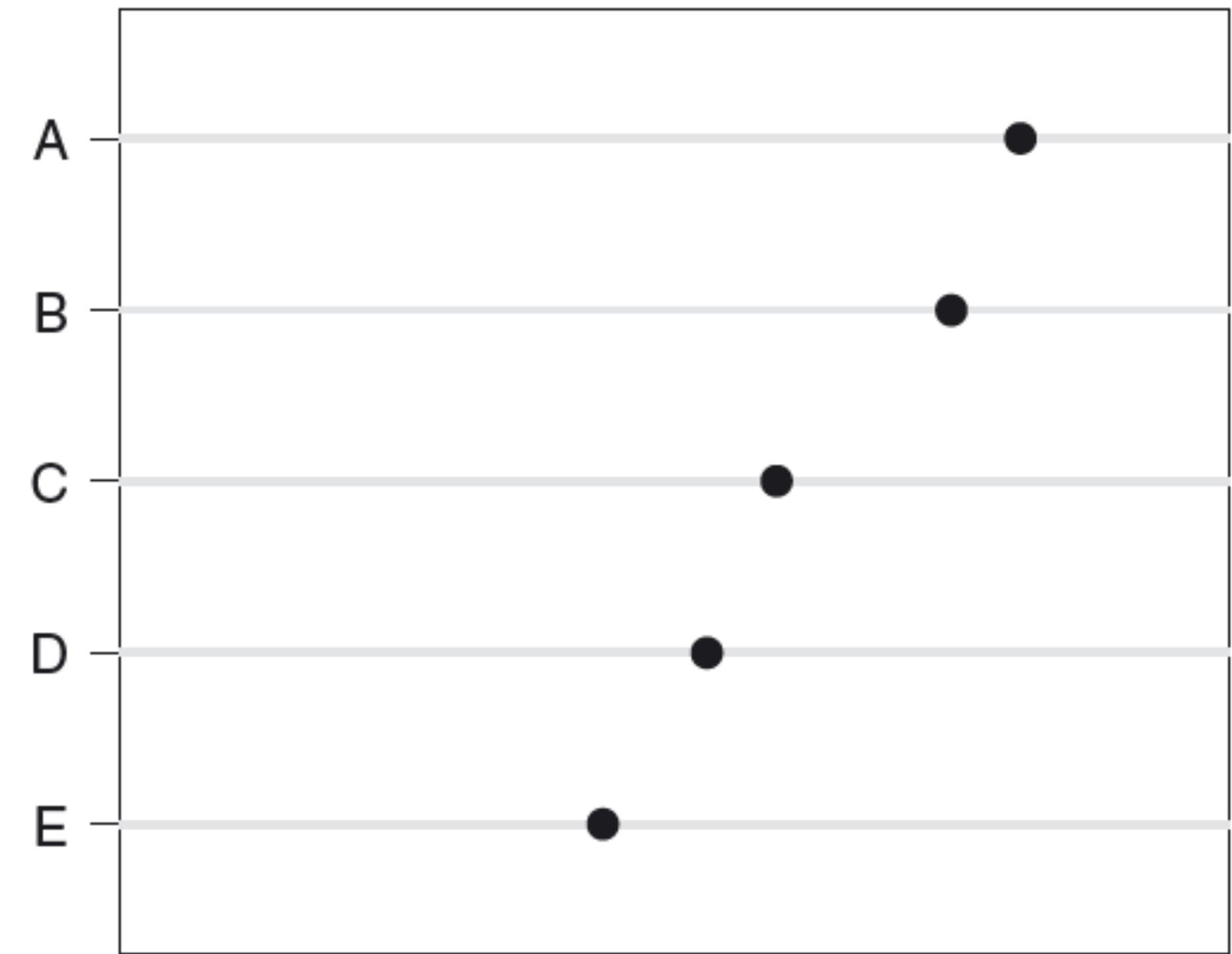
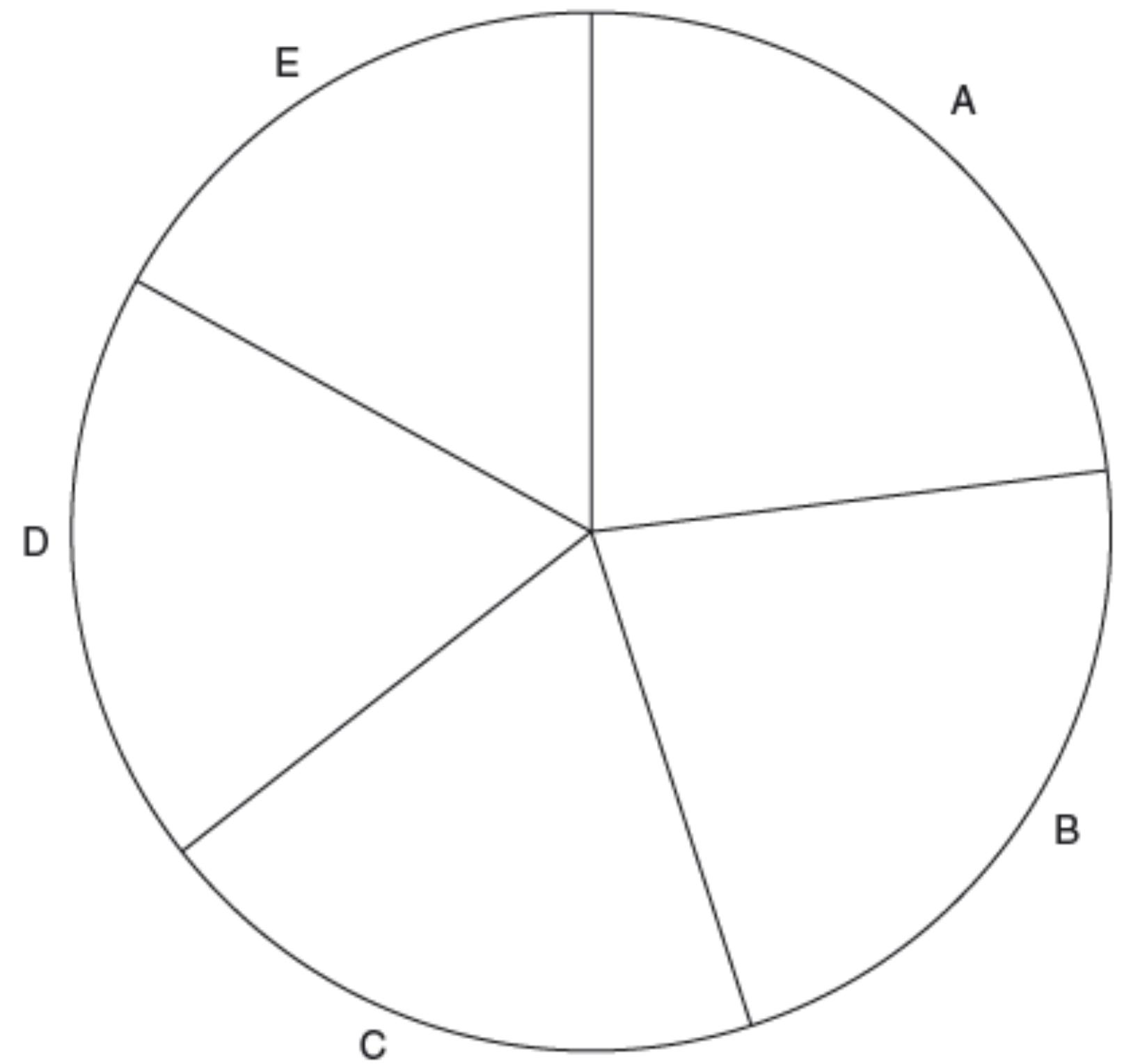
RETWEETS
359

LIKES
987



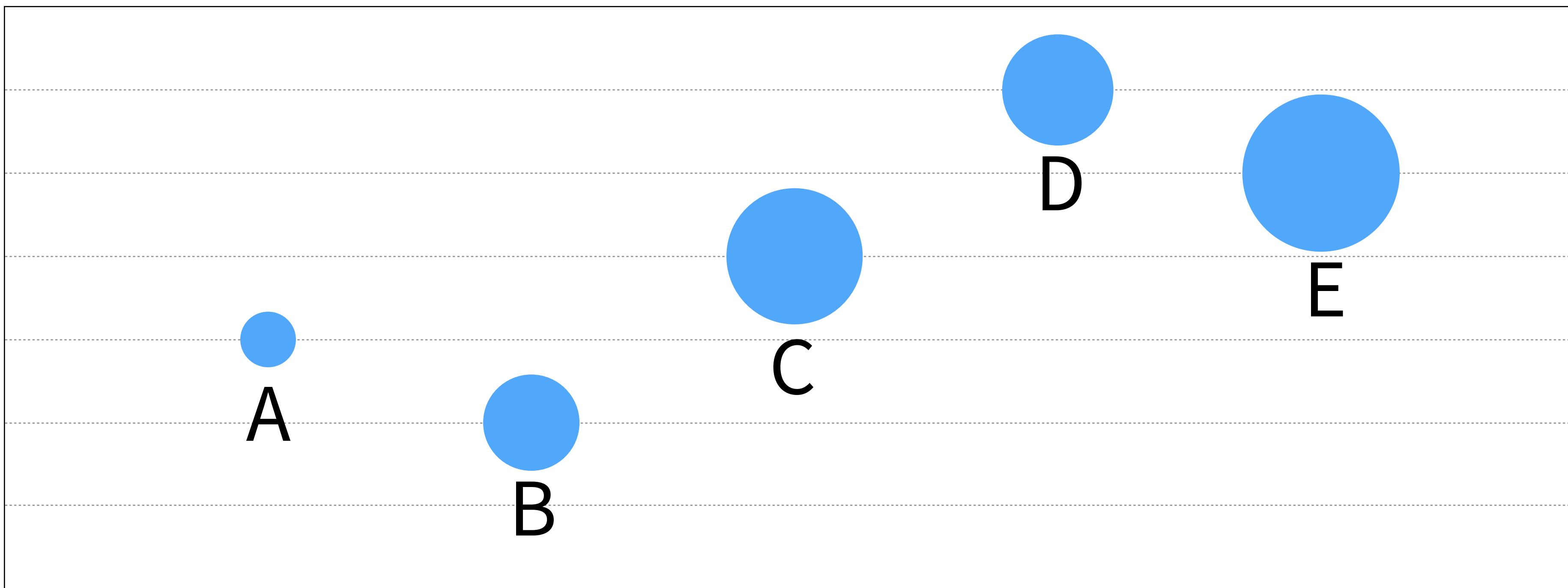
4:23 PM - 10 Mar 2017

Circles: Angle Judgements

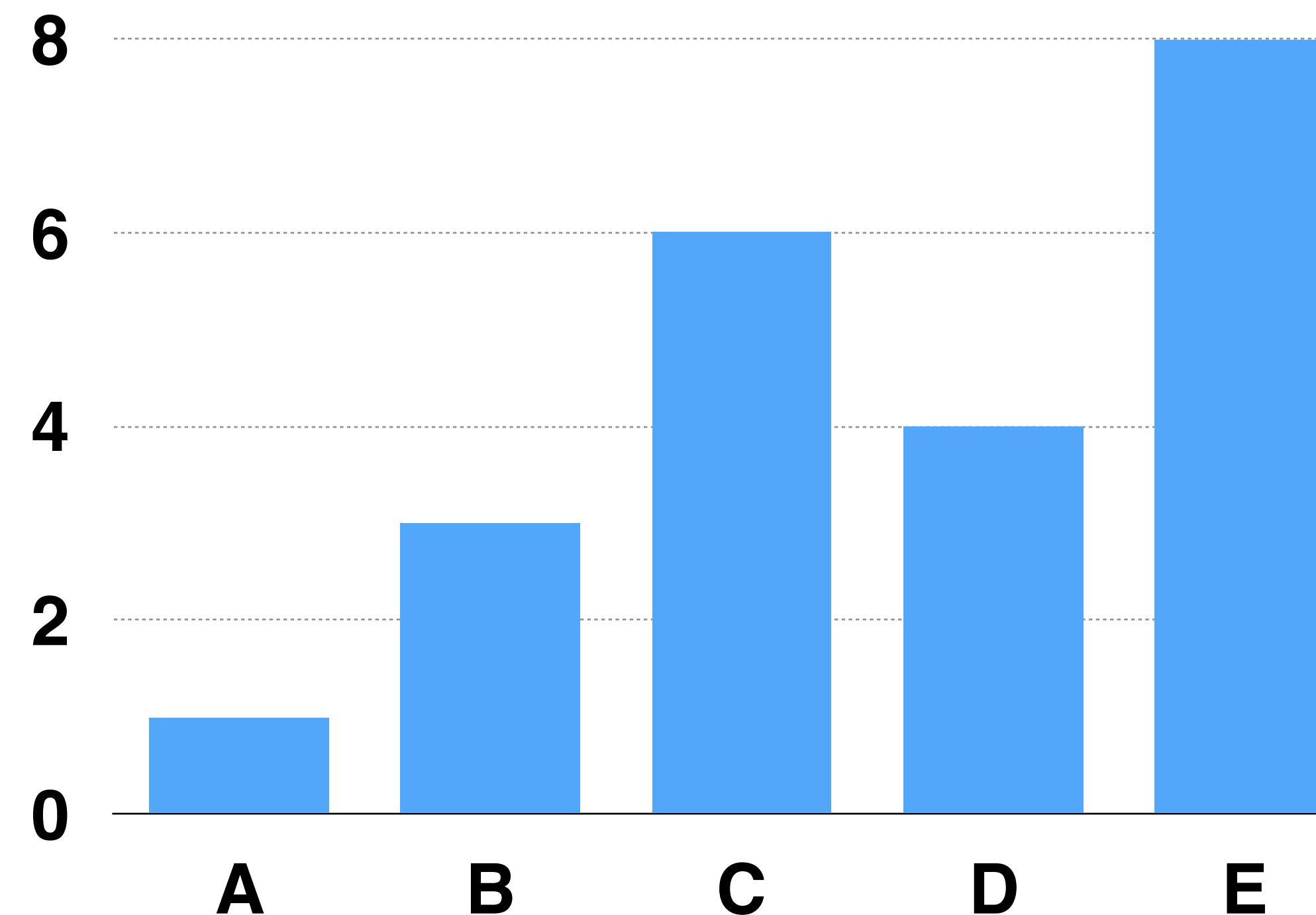


Circles: Area Judgements

If the area of A is 1, what are the areas of the other circles?



Bar Chart (same data)



What is the ratio of the area of a nickel, dime, quarter, and half dollar to the area of a penny?

penny

\$0.01

nickel

\$0.05

half dollar

\$0.50



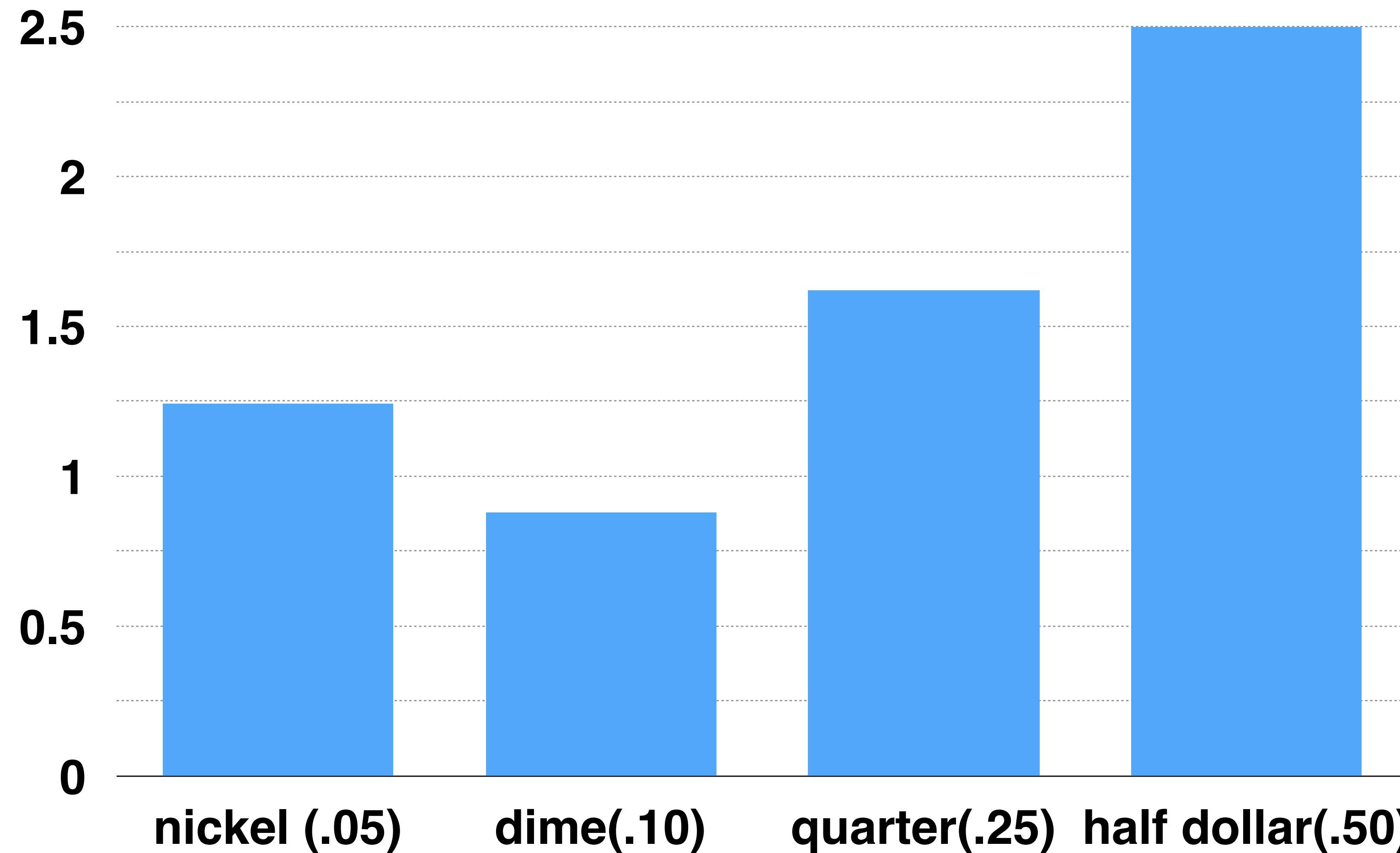
dime

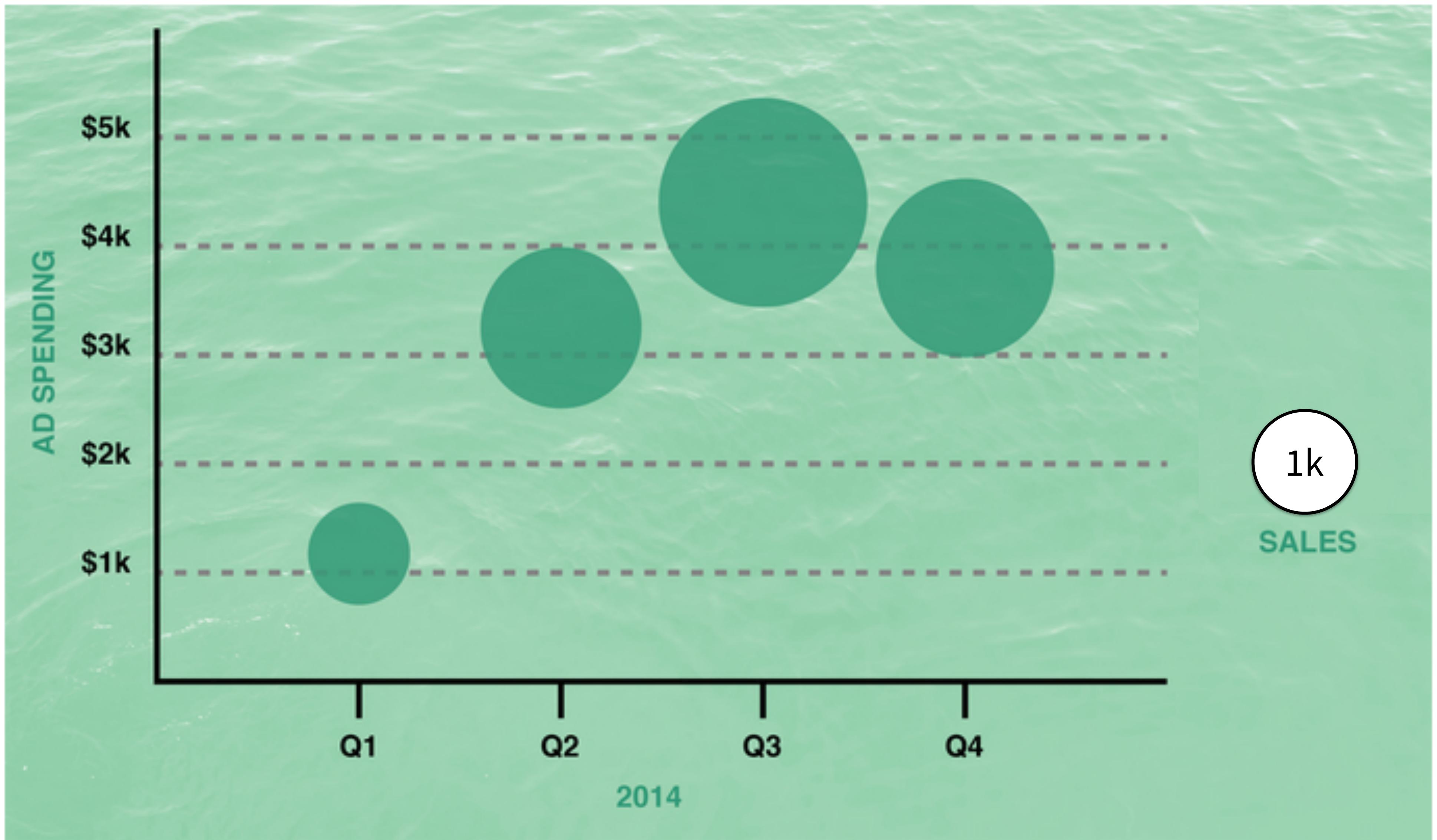
\$0.10

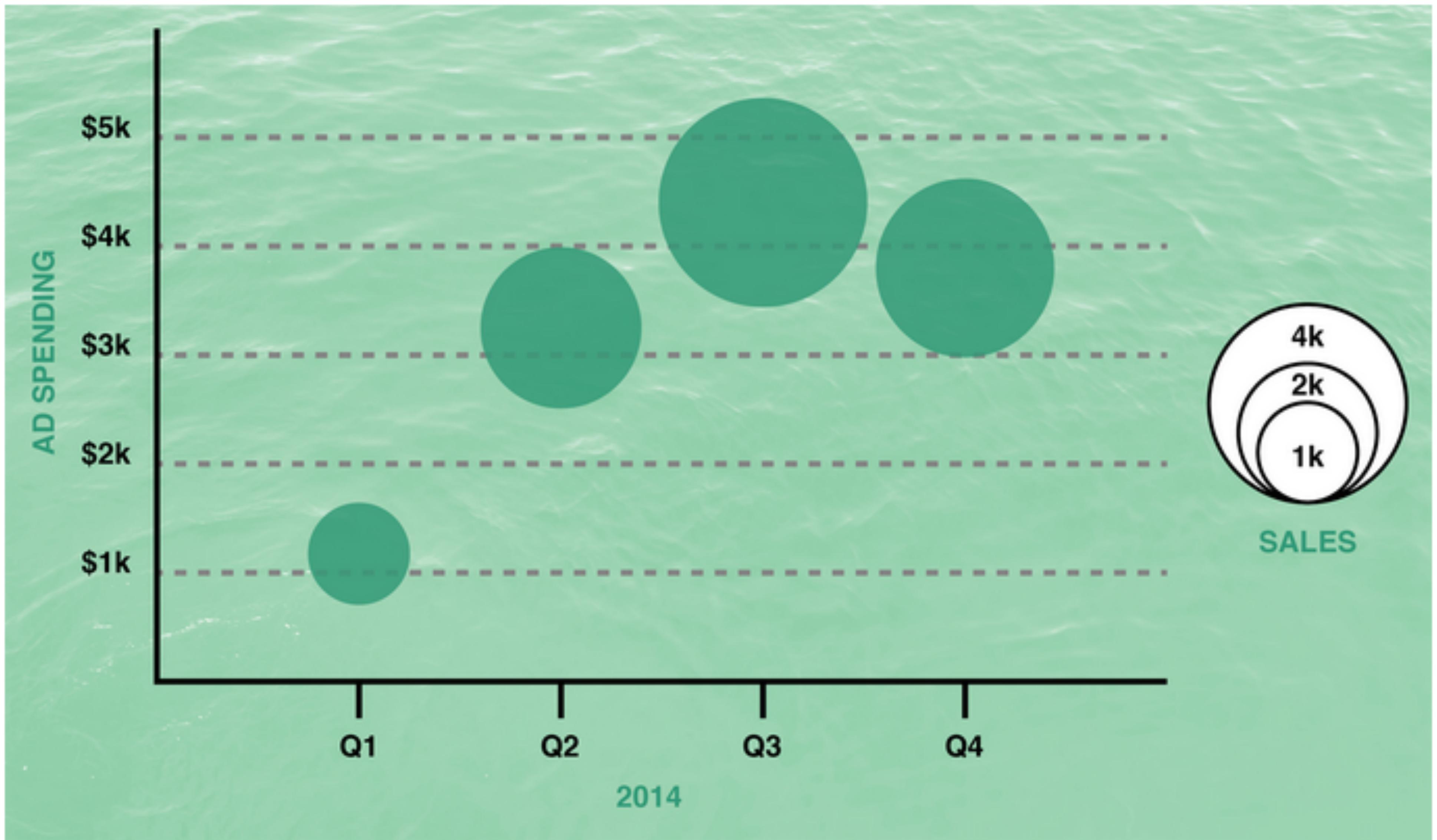
quarter

\$0.25

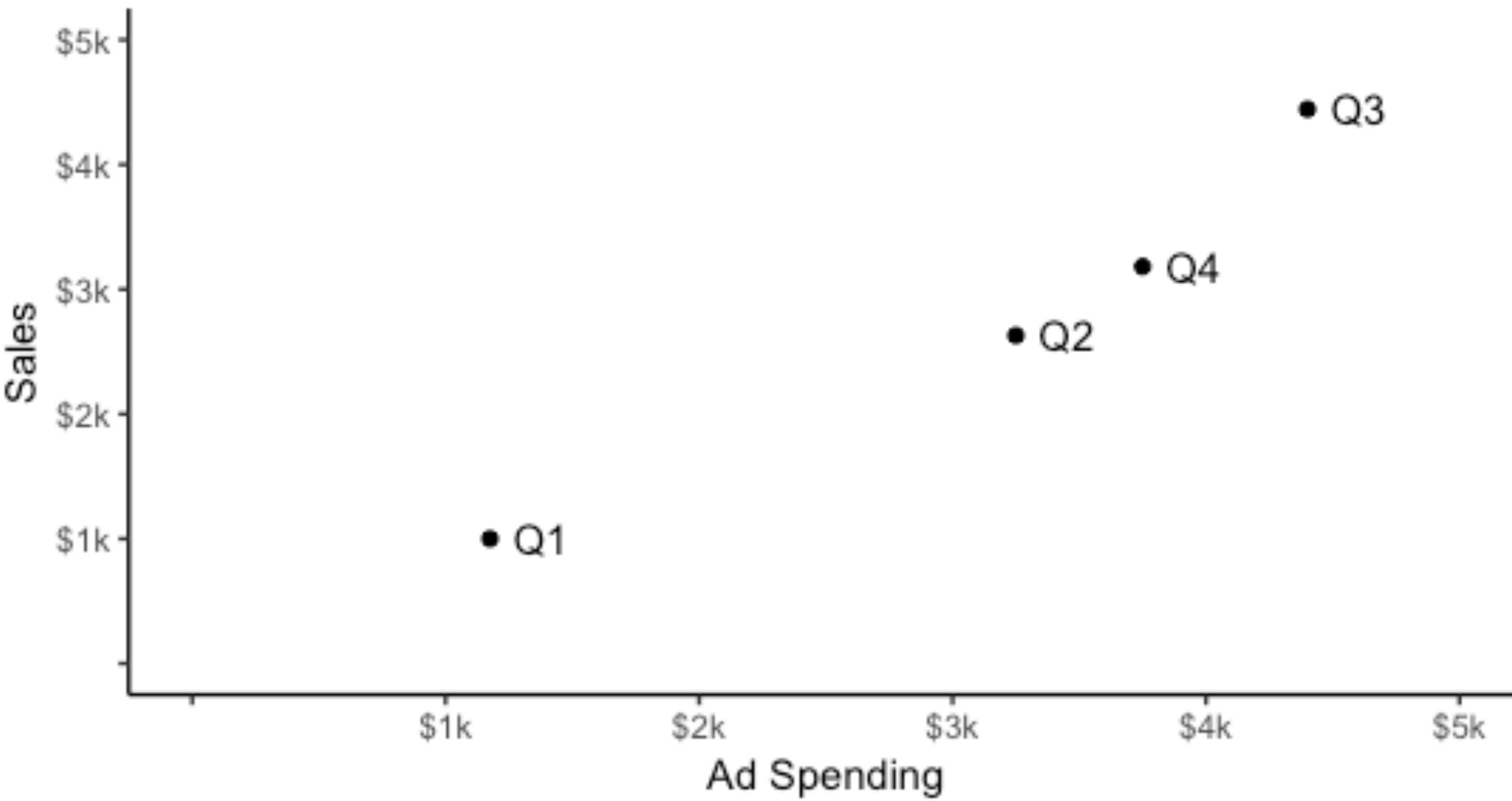
Ratio of each to the area of a penny



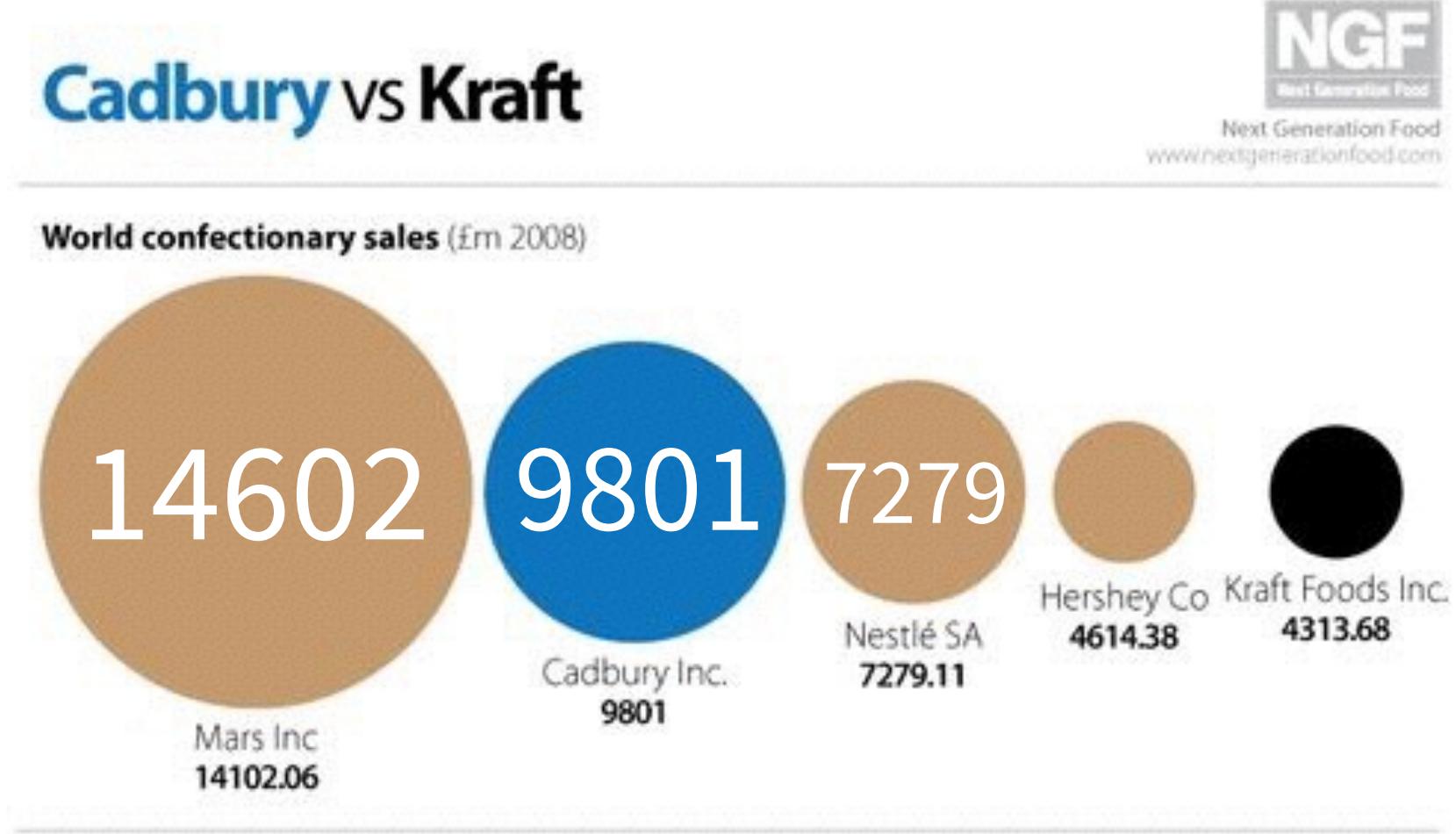




Sales vs. Ad Spending, 2014



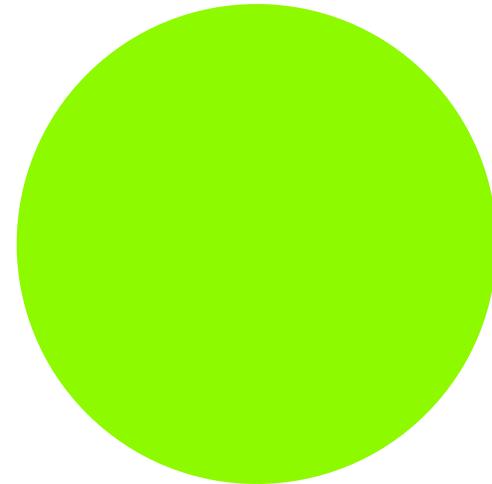
Area or Diameter?



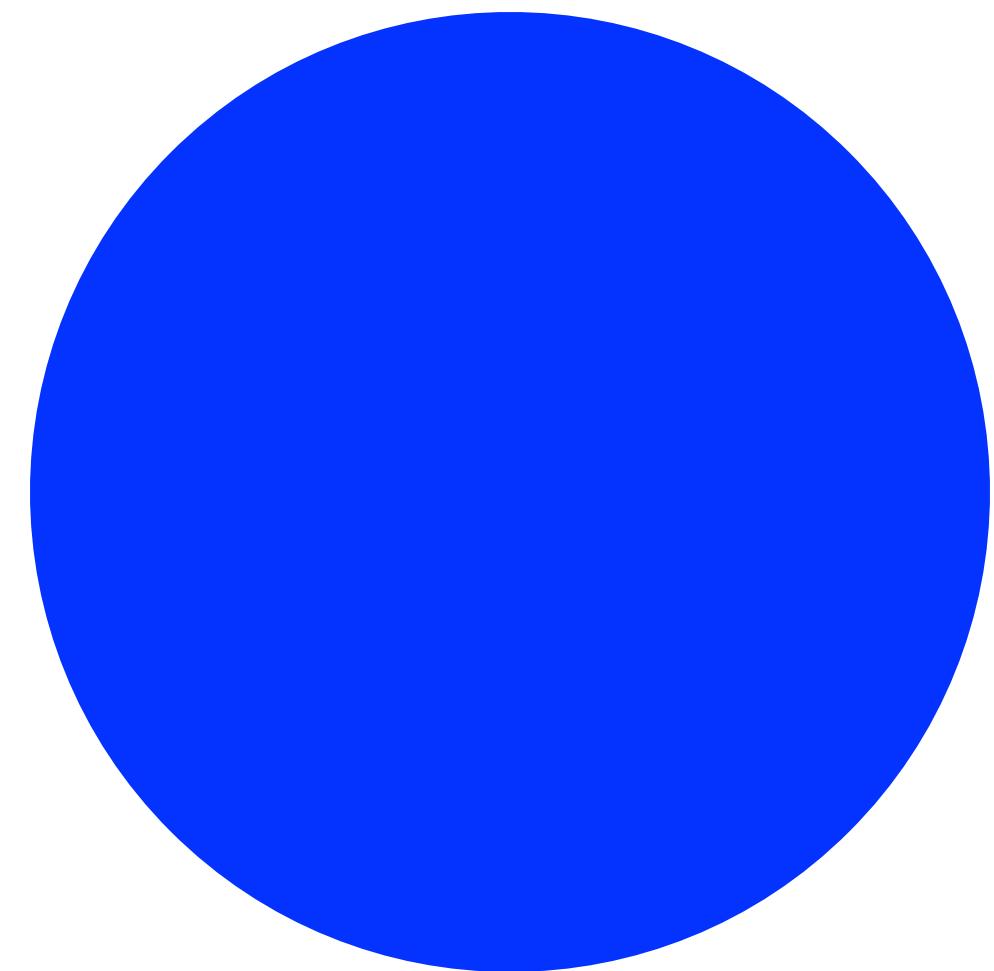
Area of a circle

$$A = \pi r^2$$

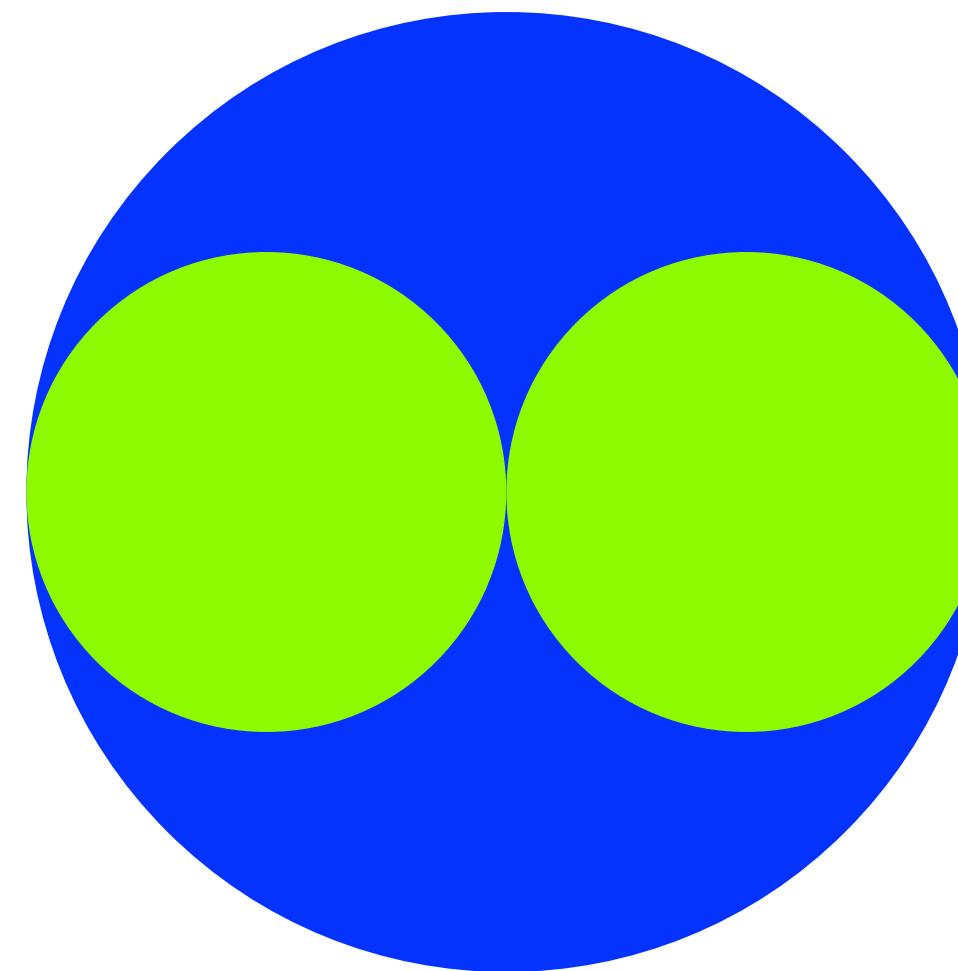
double (2X) the radius --> quadruple the area (4X)



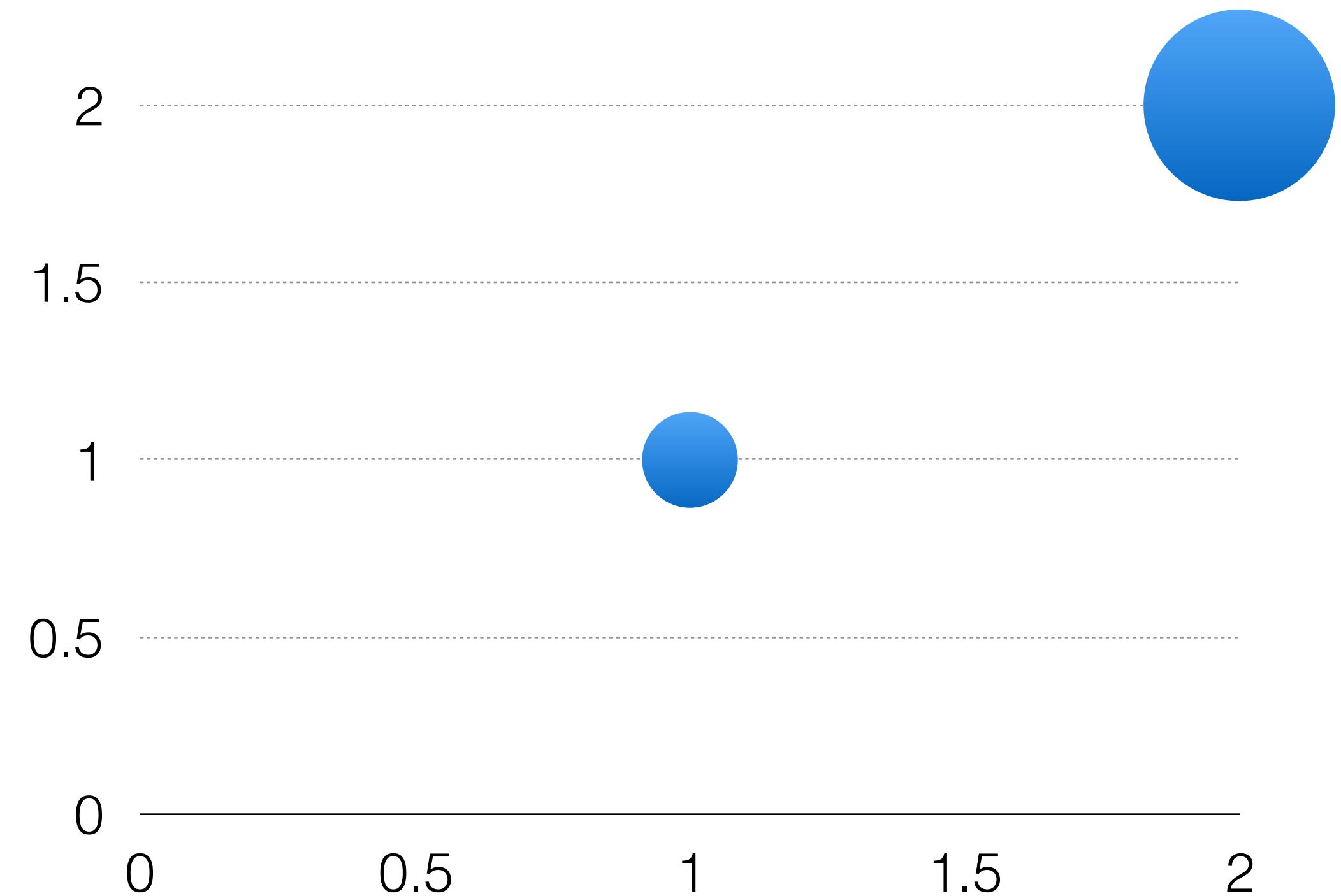
area: 1



area: 4



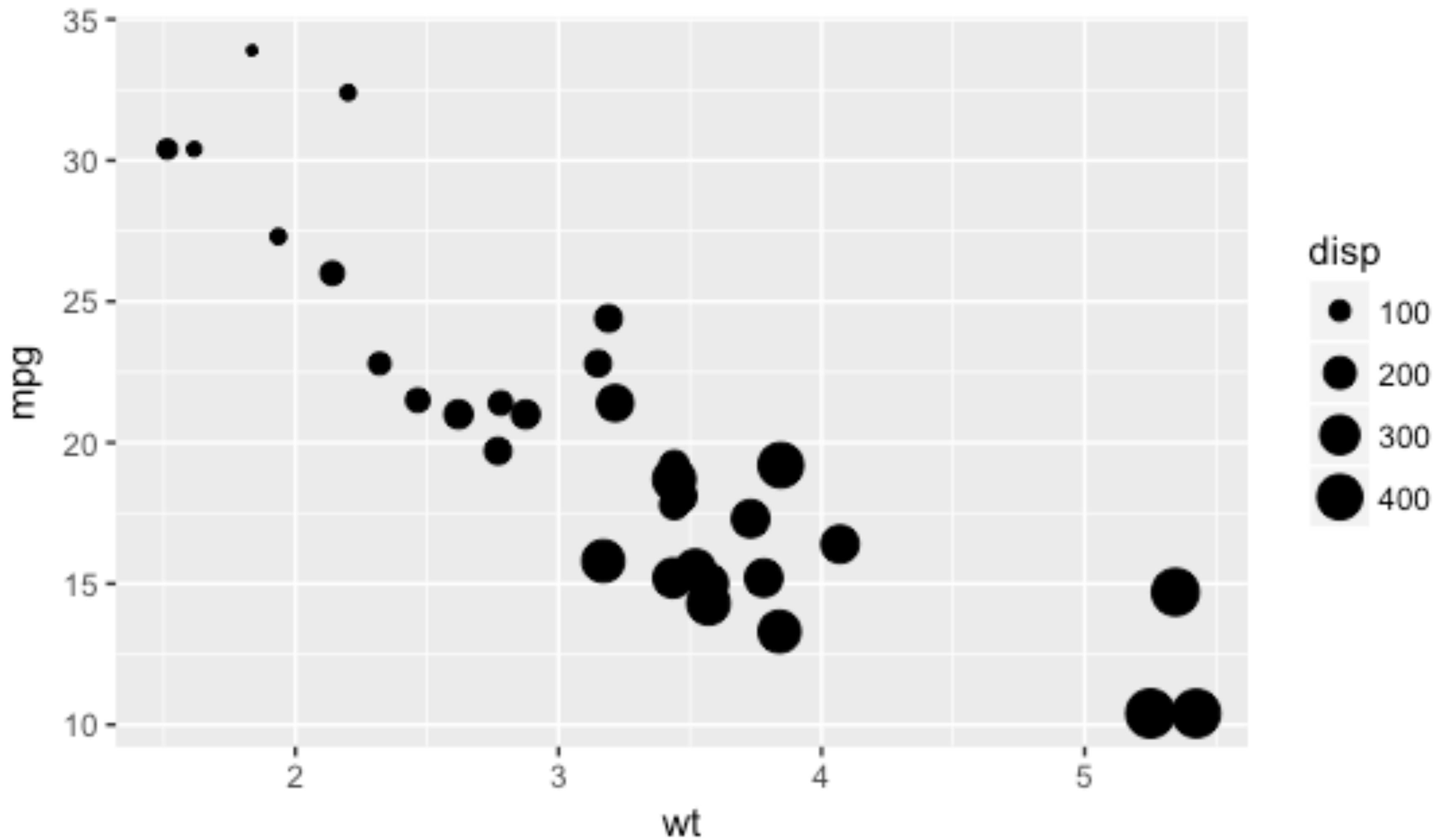
Check the algorithm



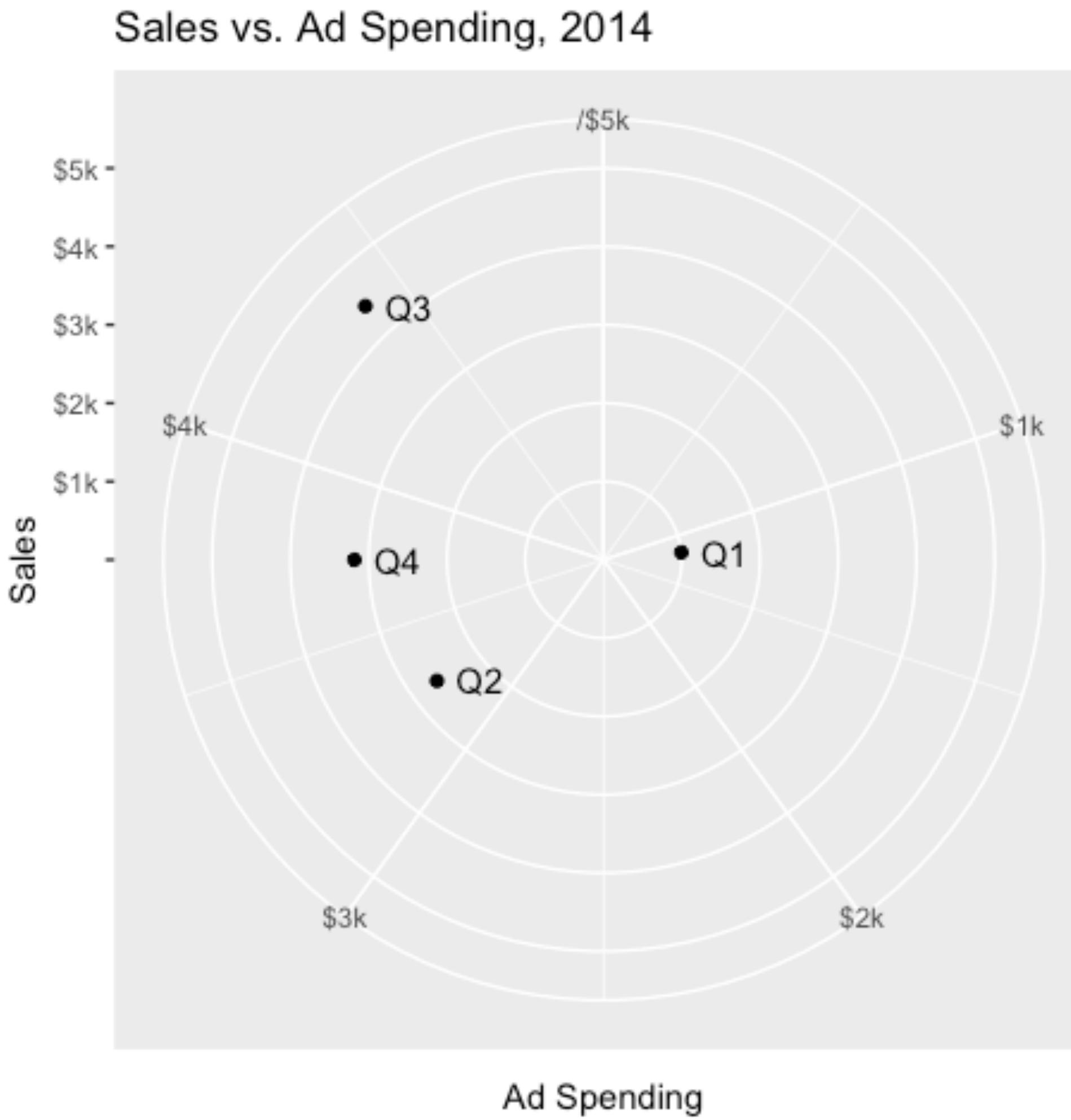
X	Y	Size
1	1	100
2	2	400

Keynote

ggplot2

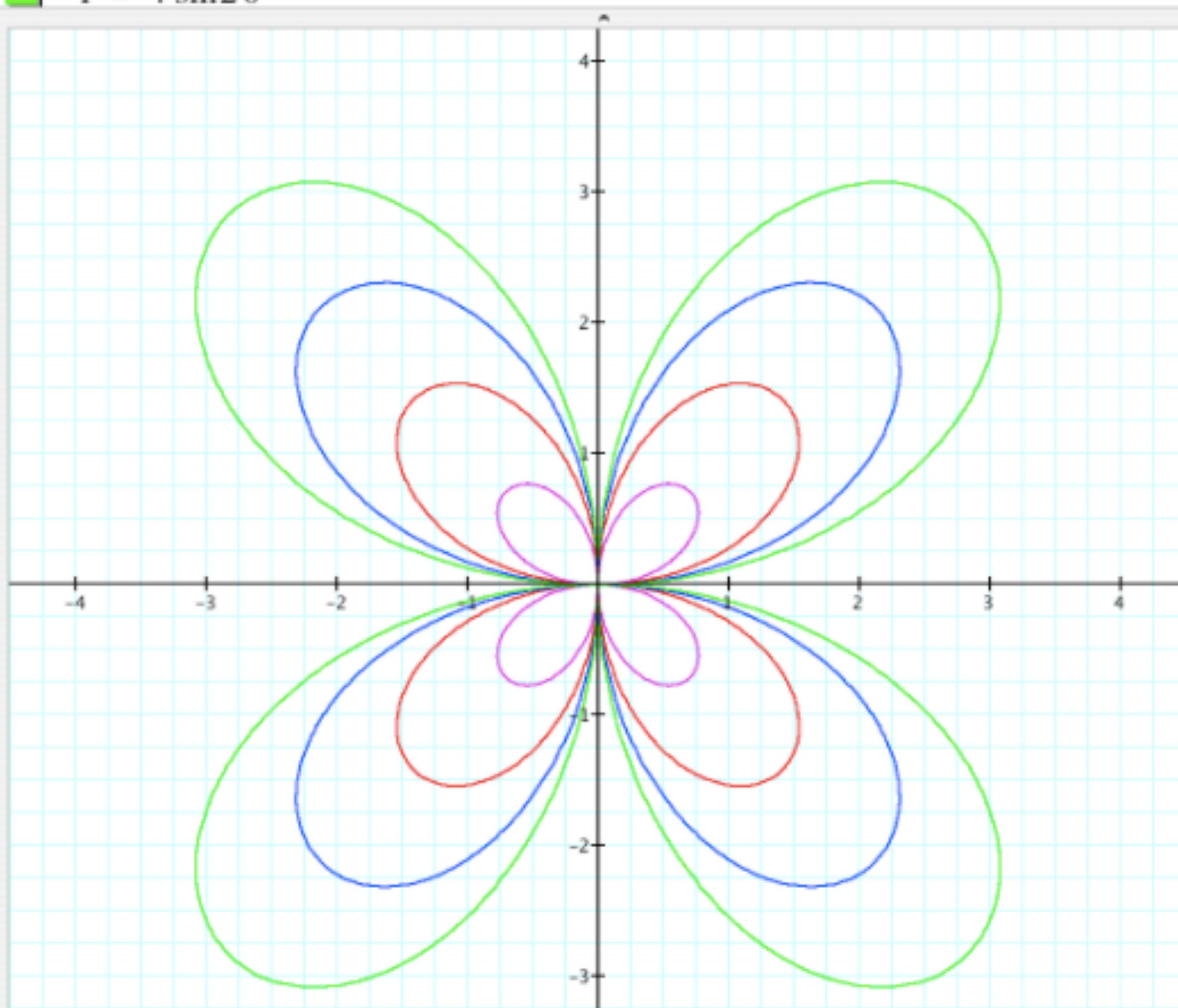


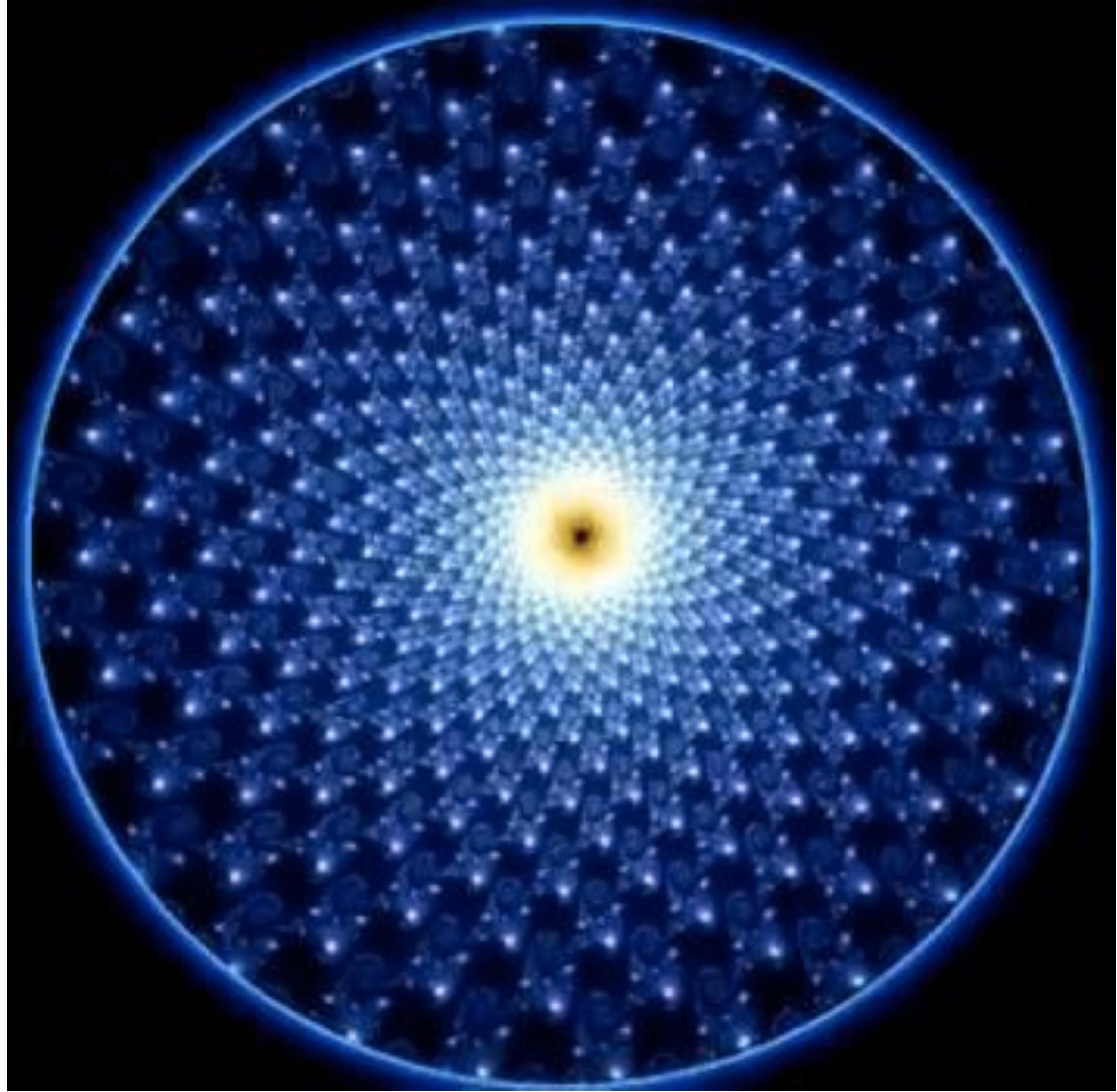
polar coordinates



- [purple square] $r = \sin 2\theta$
- [red square] $r = 2 \sin 2\theta$
- [blue square] $r = 3 \sin 2\theta$
- [green square] $r = 4 \sin 2\theta$

$\theta : 0 \dots 2\pi$









Thomas Lin Pedersen
@thomasp85

Following



More spirograph fun...

#ggforce #ggplot2 #rstats #dataart #gif



GIF

www.datam-imagine.com

RETWEETS LIKES
9 32



1:53 AM - 17 Jan 2017

4 1 t3 9 32

Polar coordinates

Description

The polar coordinate system is most commonly used for pie charts, which are a stacked bar chart in polar coordinates.

Usage

```
coord_polar(theta = "x", start = 0, direction = 1)
```

Arguments

theta variable to map angle to (x or y)

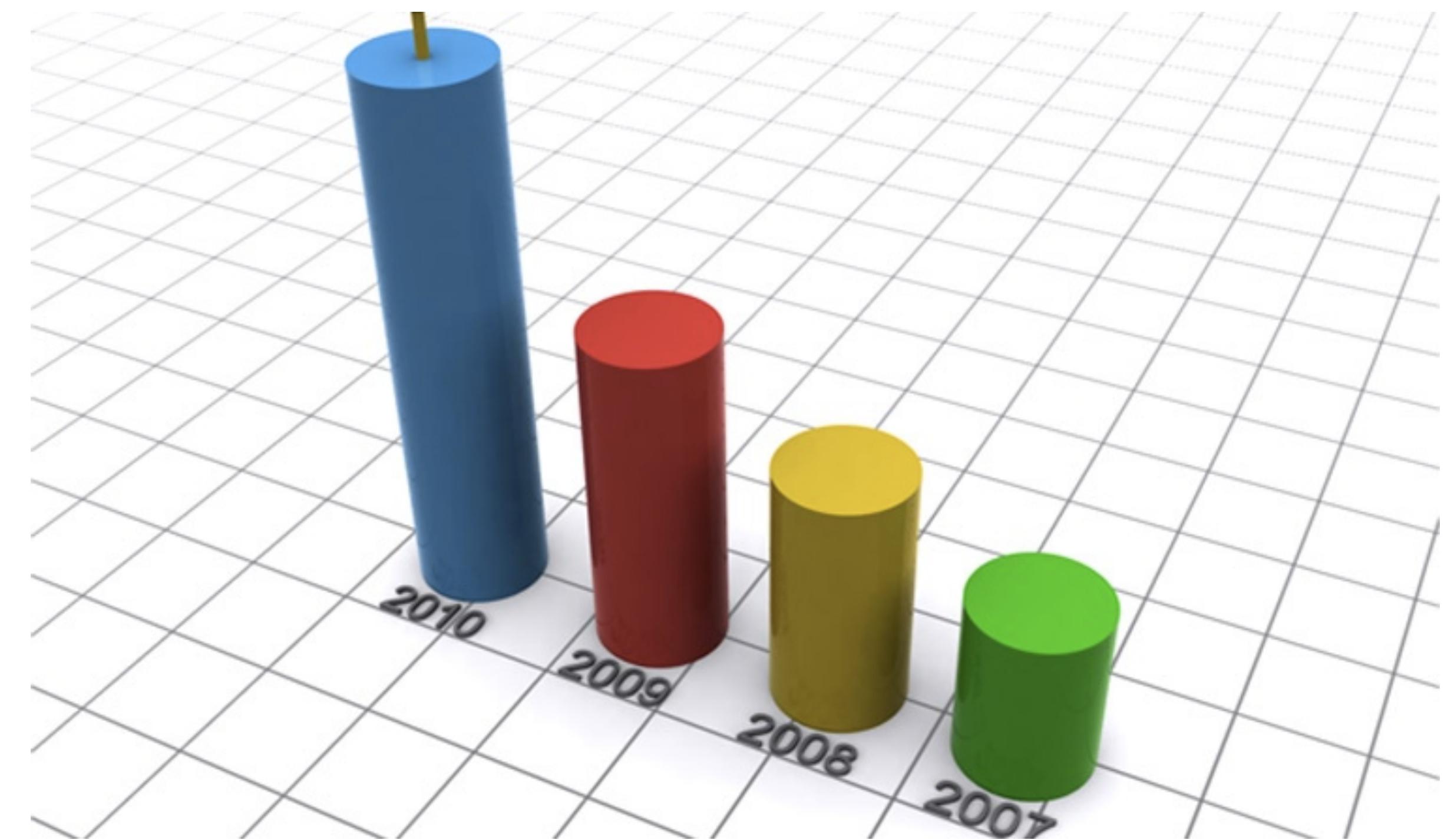
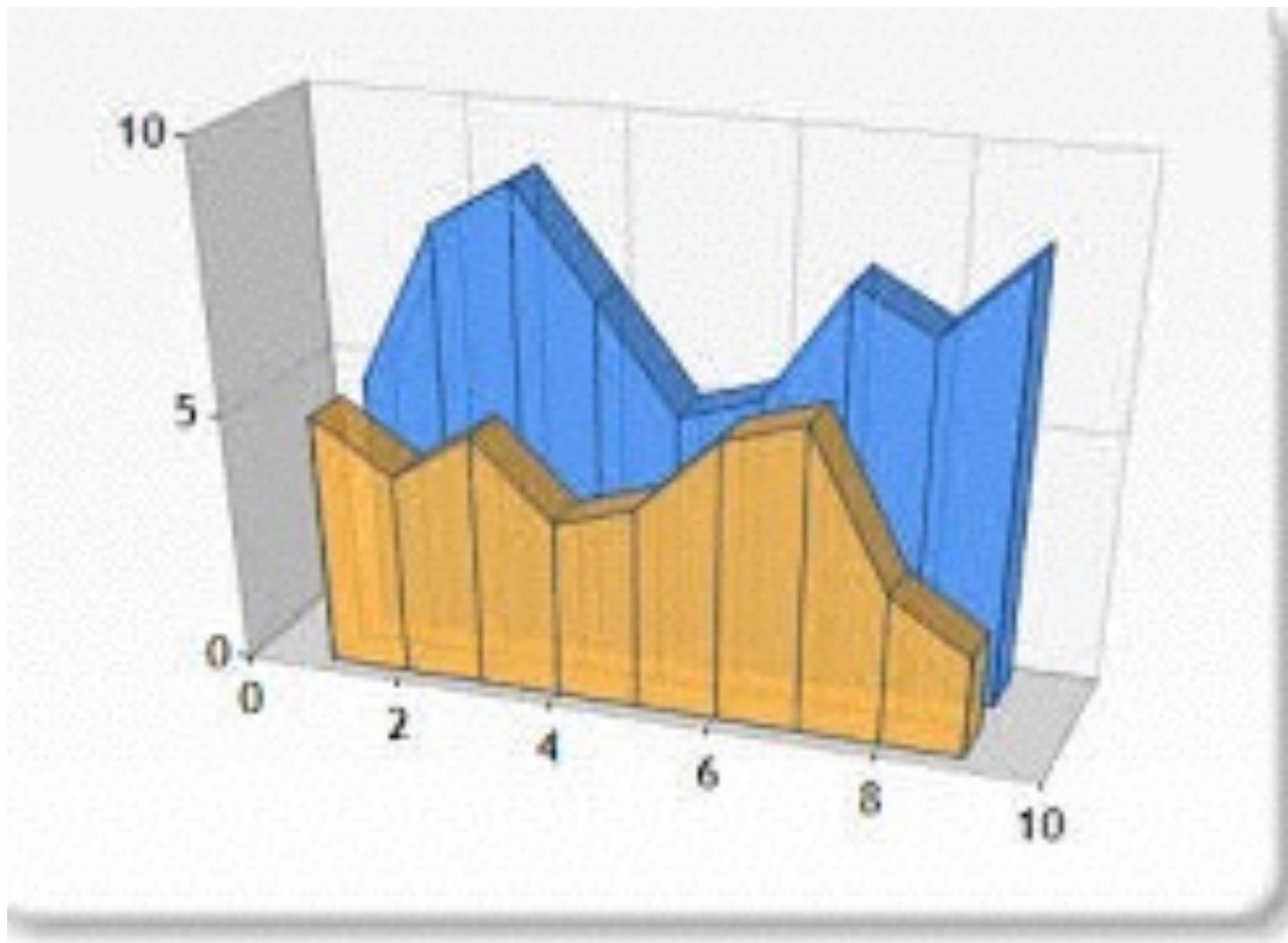
start offset of starting point from 12 o'clock in radians

direction 1, clockwise; -1, anticlockwise

Examples

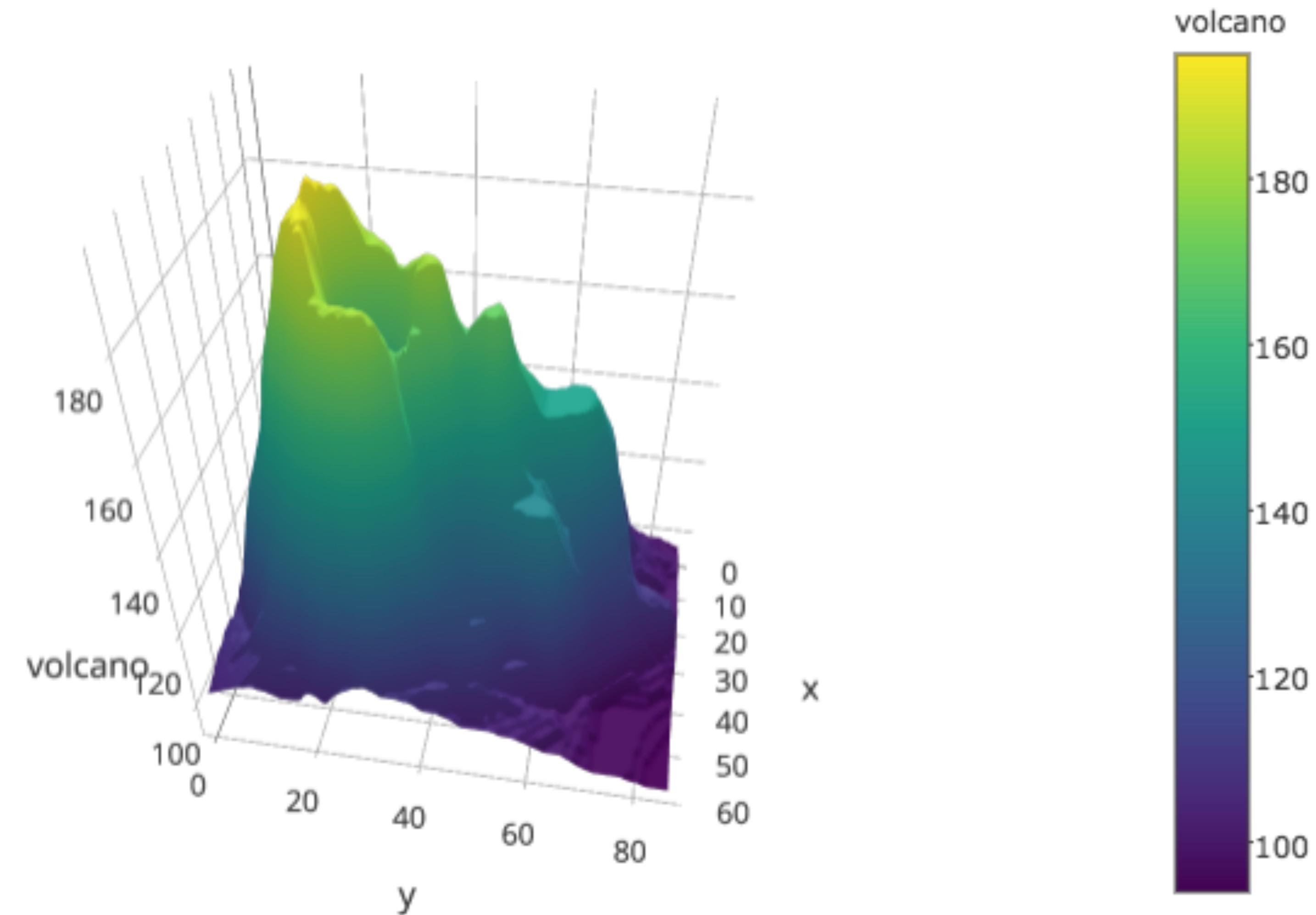
```
# NOTE: Use these plots with caution - polar coordinates has  
# major perceptual problems. The main point of these examples is  
# to demonstrate how these common plots can be described in the  
# grammar. Use with EXTREME caution.
```

Pseudo 3D charts





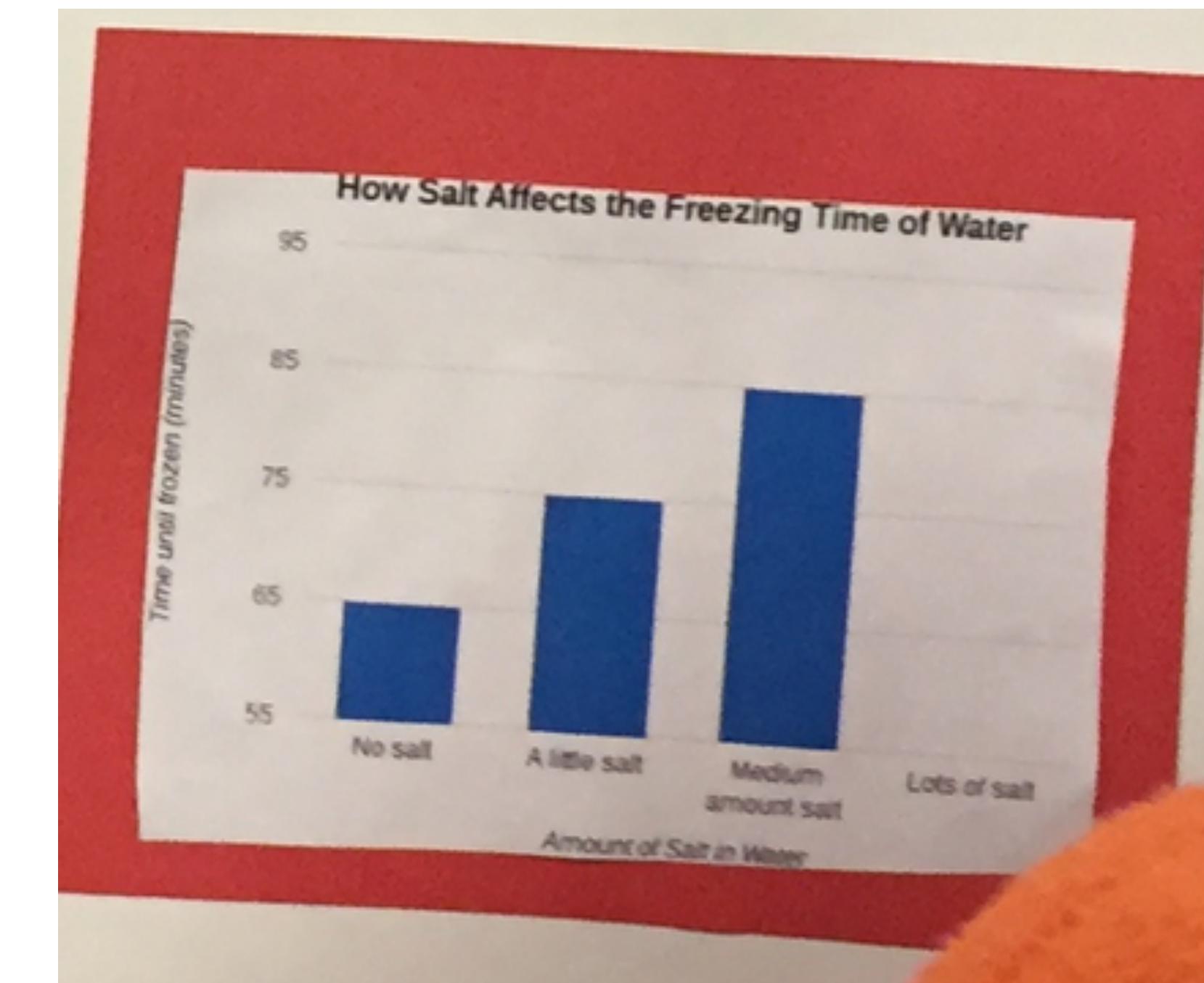
Real 3D



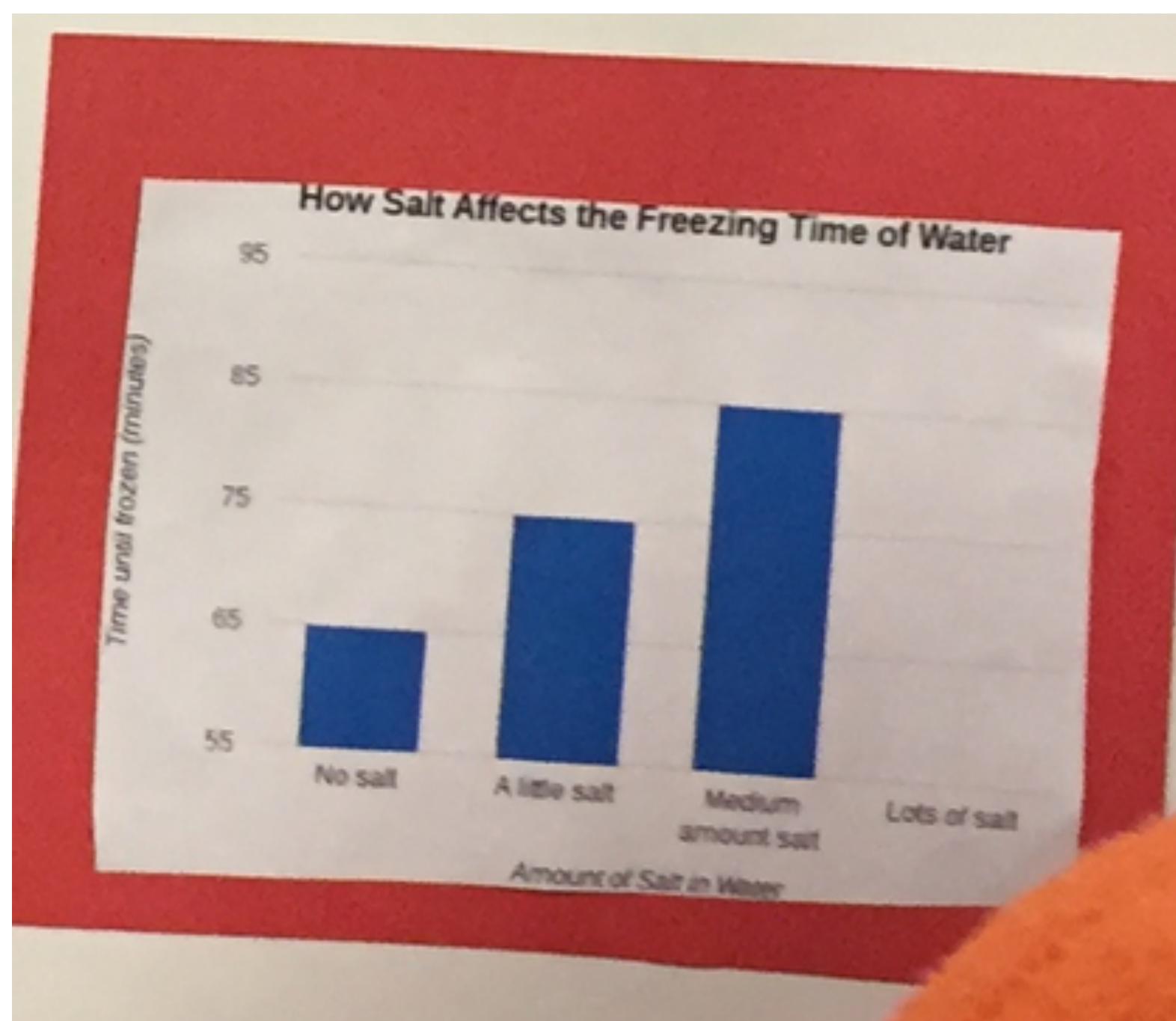
<https://plot.ly/r/3d-surface-plots/>

<https://plot.ly/python/3d-surface-plots/>

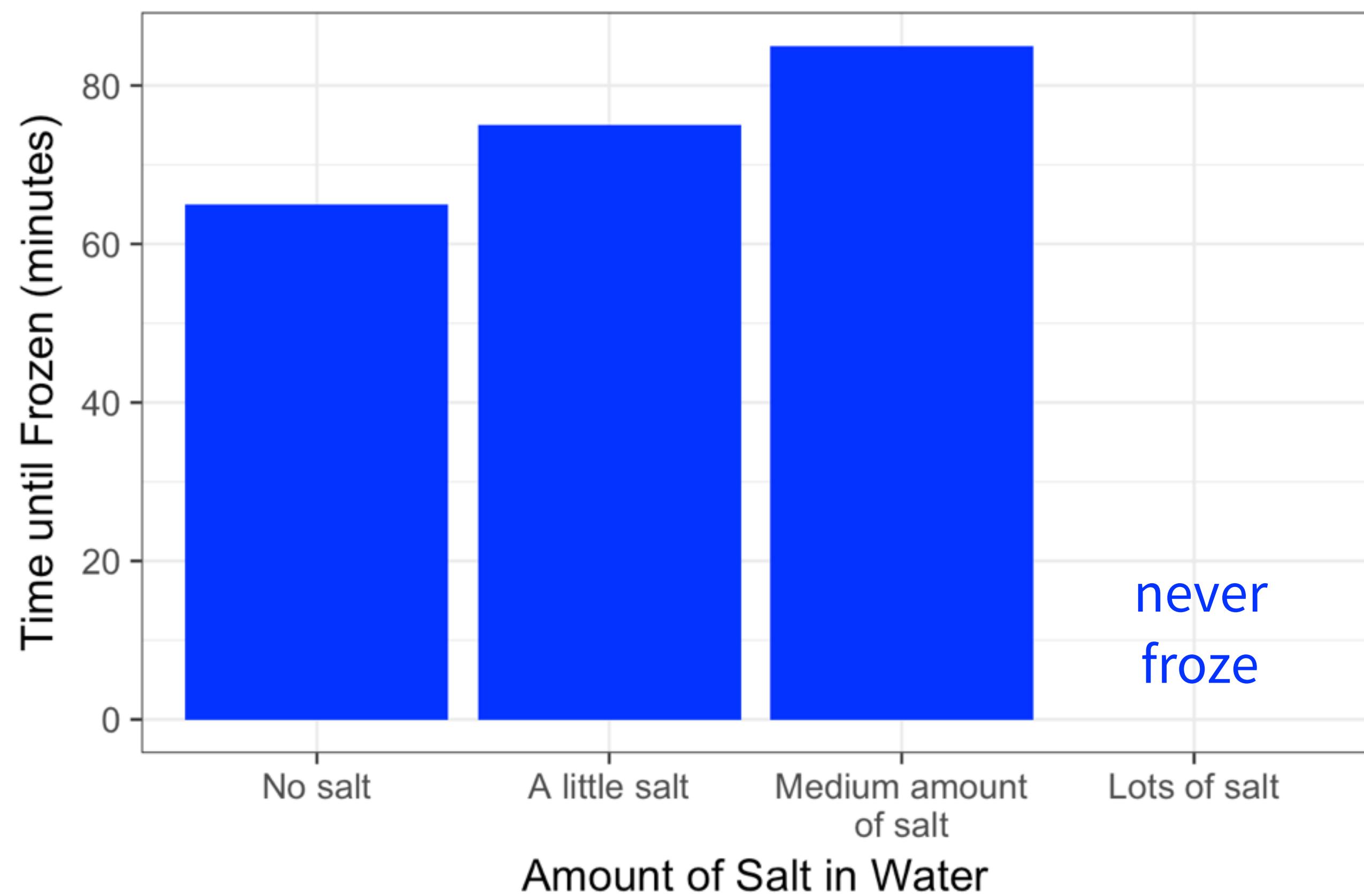
Bar charts must start at zero



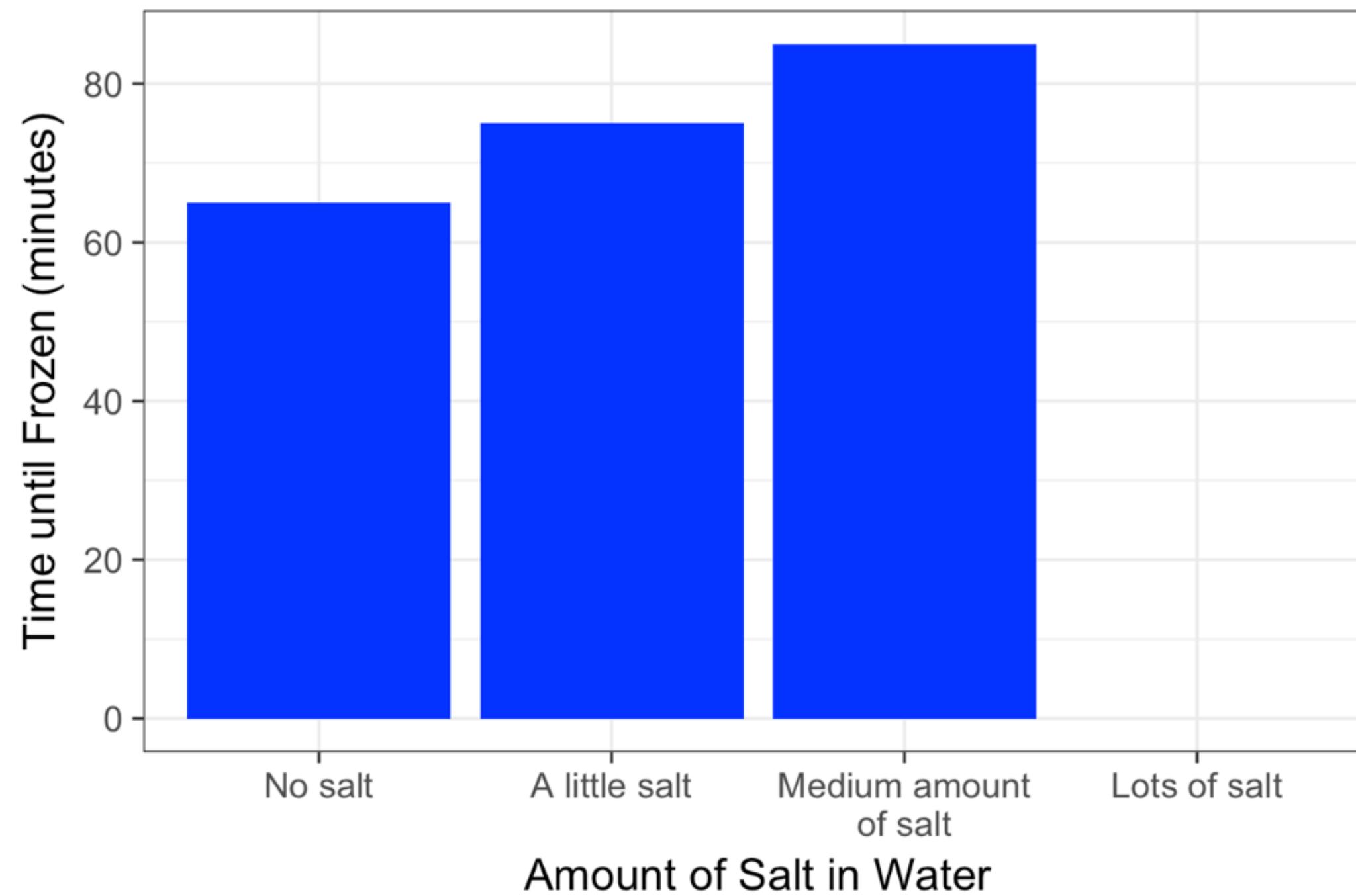
Amount of Salt in Water	Time until frozen
No salt	65
A little salt	75
Medium amount salt	85
Lots of salt	never froze



How Salt Affects the Freezing Time of Water



How Salt Affects the Freezing Time of Water



How Salt Affects the Freezing Time of Water

