Scatter plots

DATA VISUALIZATION FOR EVERYONE



Richie Cotton

Learning Solutions Architect at DataCamp



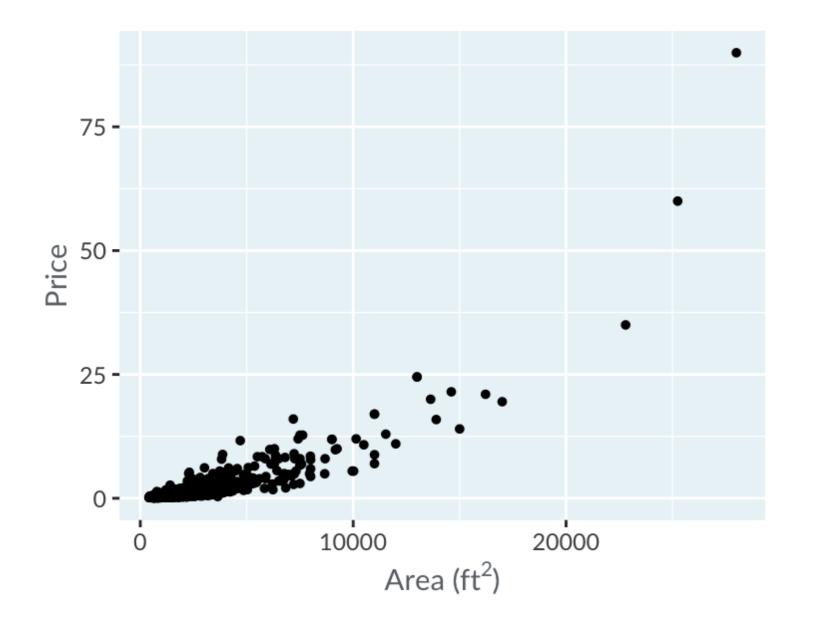
When should you use a scatter plot?

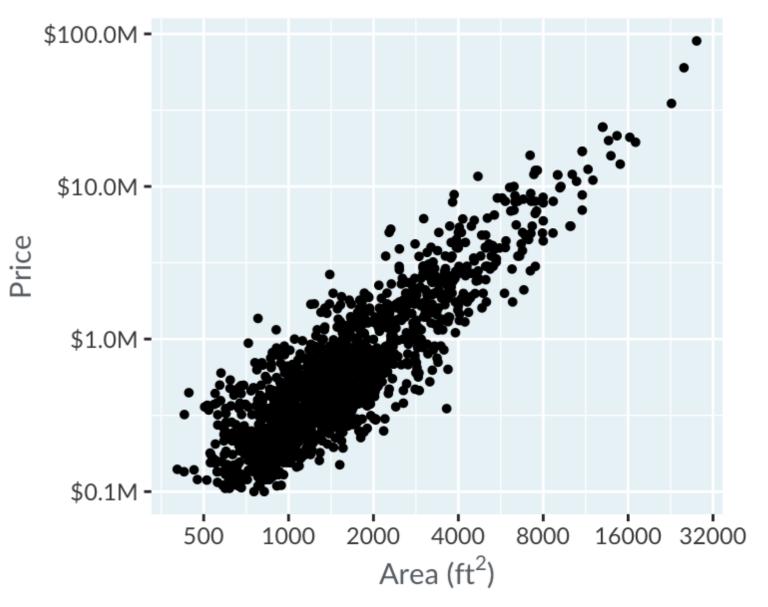
- 1. You have two continuous variables.
- 2. You want to answer questions about the relationship between the two variables.

Los Angeles County home prices

city	n_beds	price_musd	area_sqft
Long Beach	1	0.3250	846
Beverly Hills	3	2.1950	2930
Santa Monica	2	0.5740	1037
Santa Monica	1	0.5990	576
Beverly Hills	5	3.9500	5600
Long Beach	4	0.2999	1571
Westwood	3	0.6950	1913

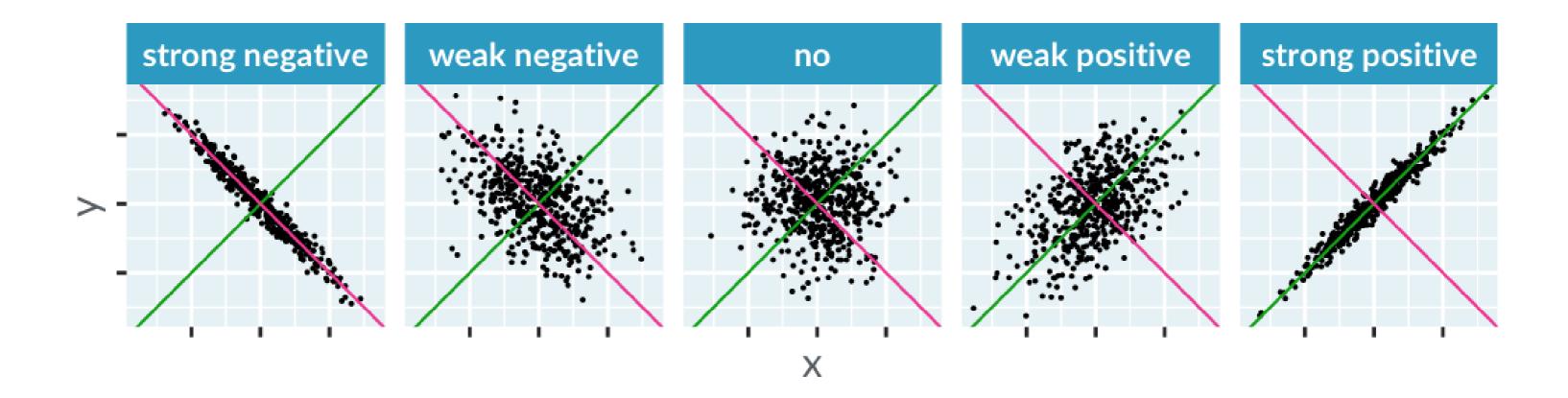
Prices vs. area



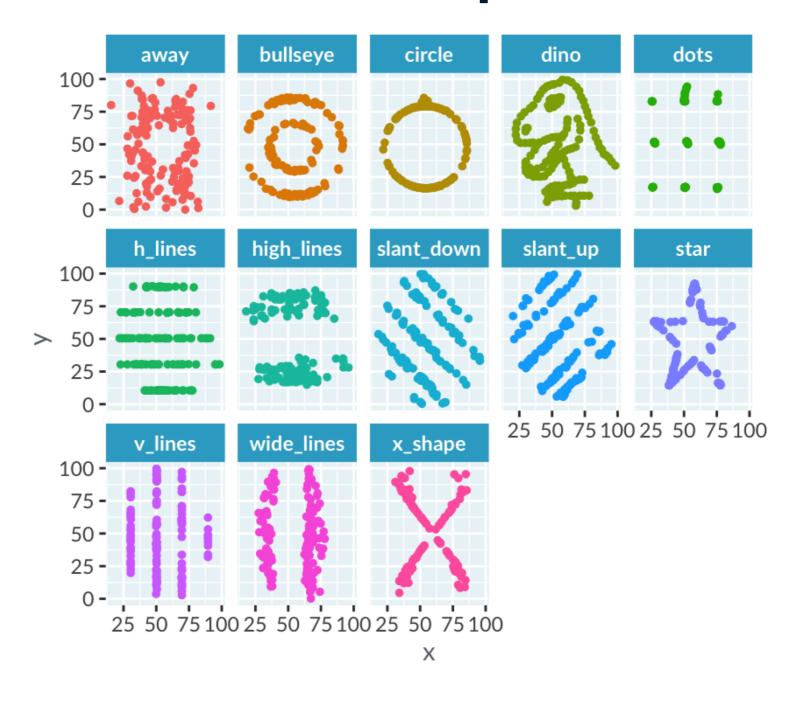


Correlation

How close are you to being able to fit a straight line through the points?

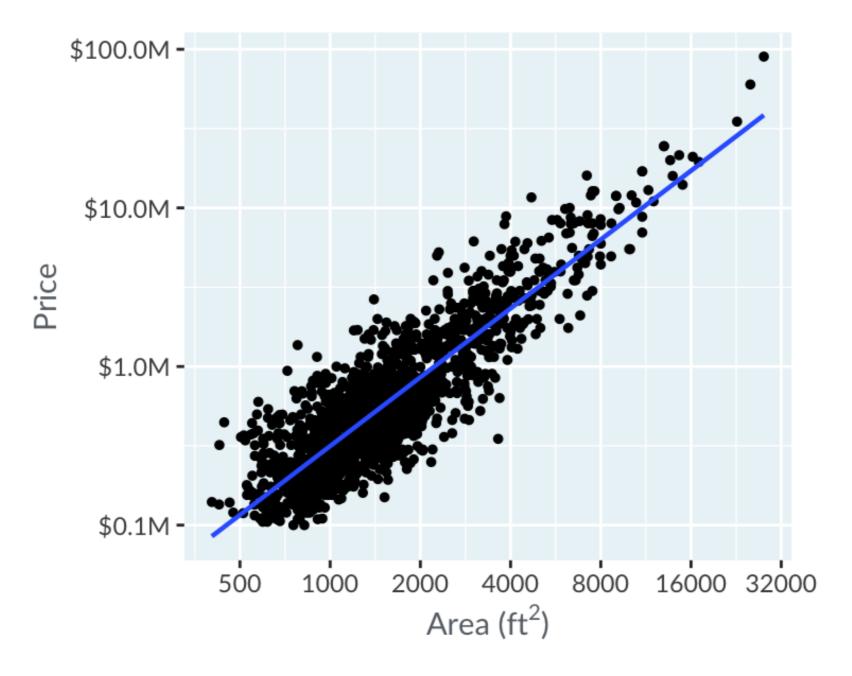


Sometimes correlation isn't helpful



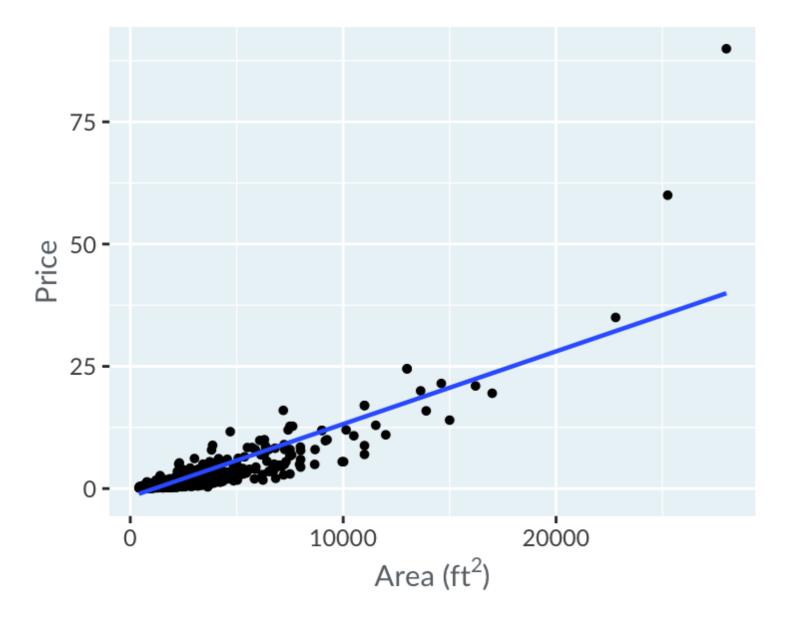


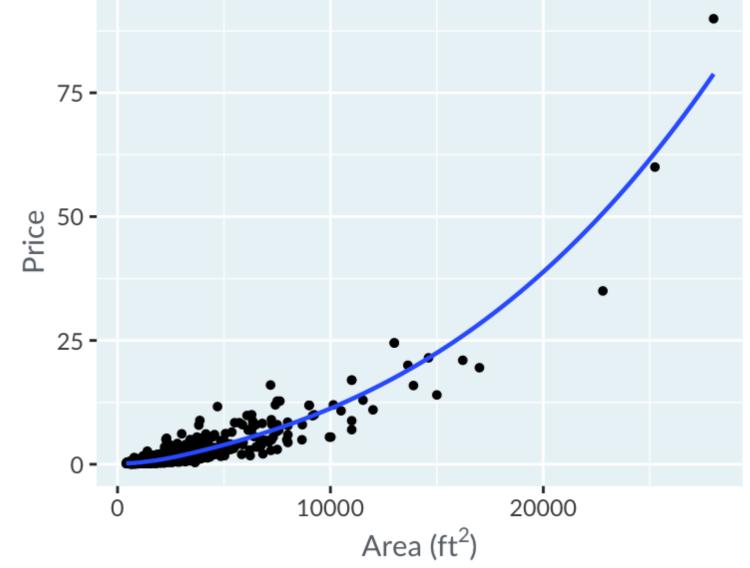
Adding trend lines





Adding smooth trend lines





Let's practice!

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Line plots

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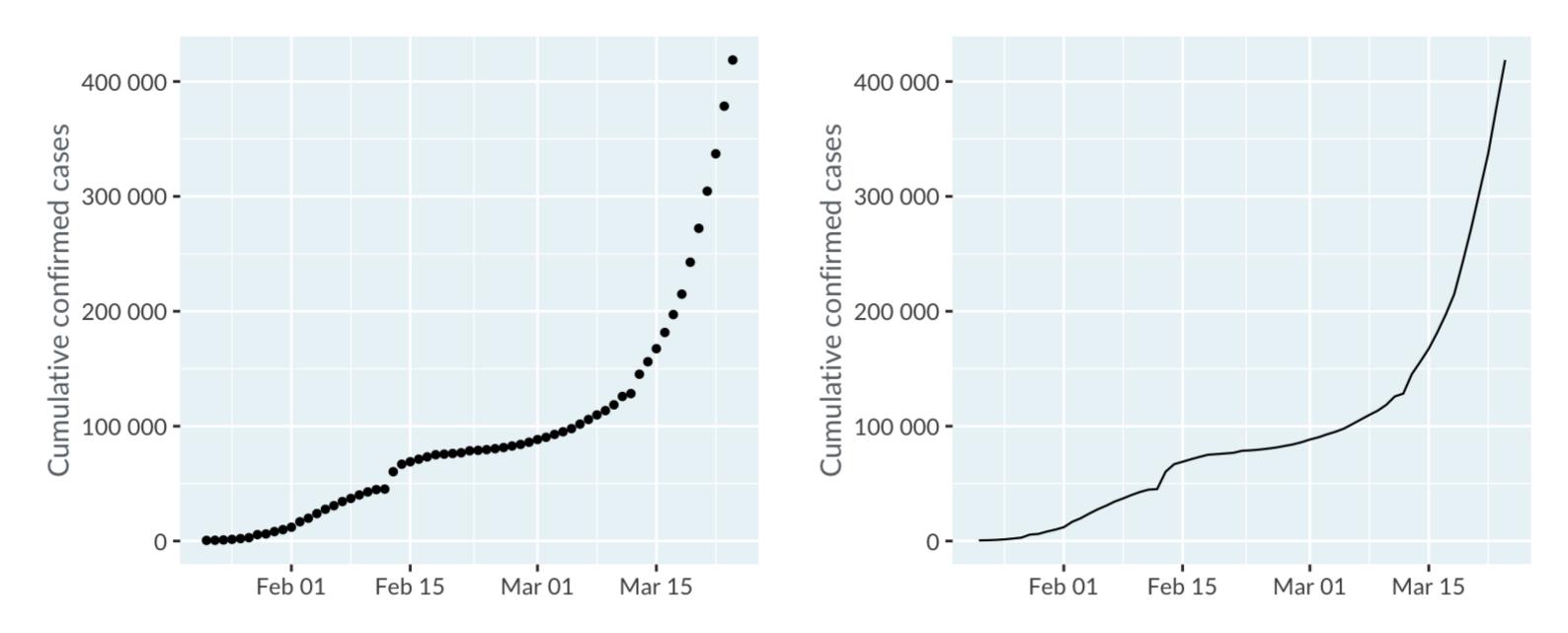


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Worldwide COVID-19 coronavirus cases



¹ https://github.com/RamiKrispin/coronavirus

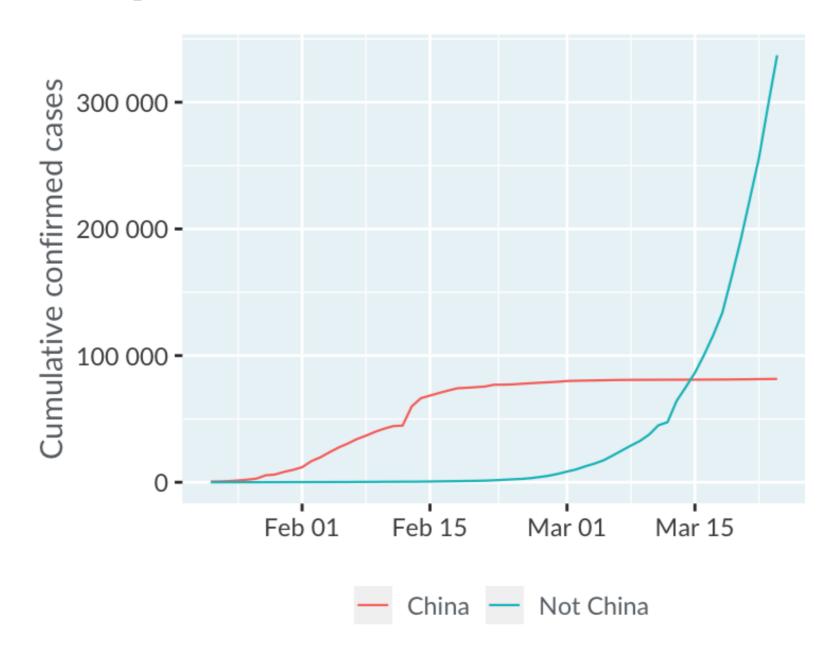


When should you use a line plot?

- 1. You have two continuous variables.
- 2. You want to answer questions about their relationship.
- 3. Consecutive observations are connected somehow.

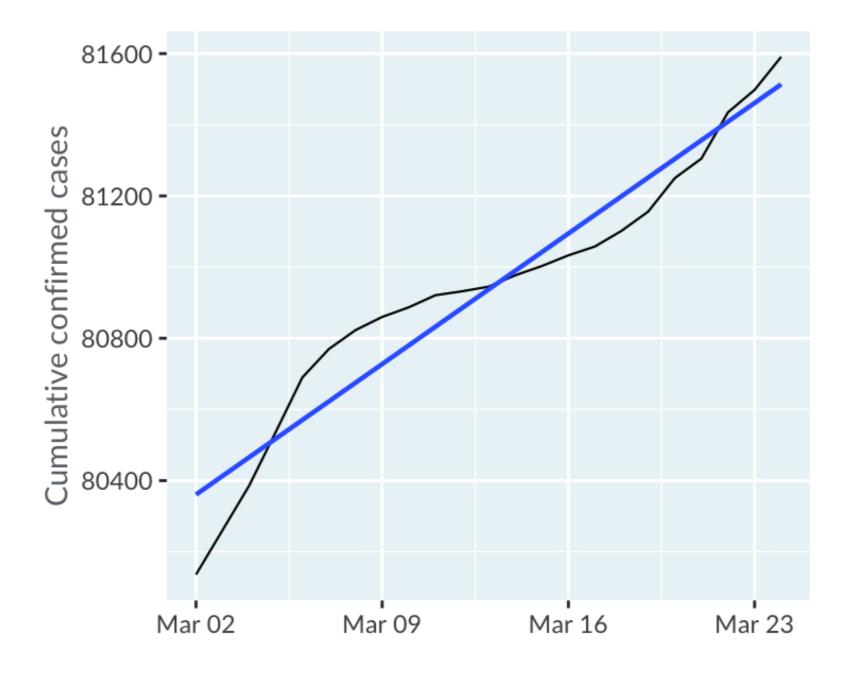
Usually, but not always, the x-axis is dates or times.

Comparing multiple lines

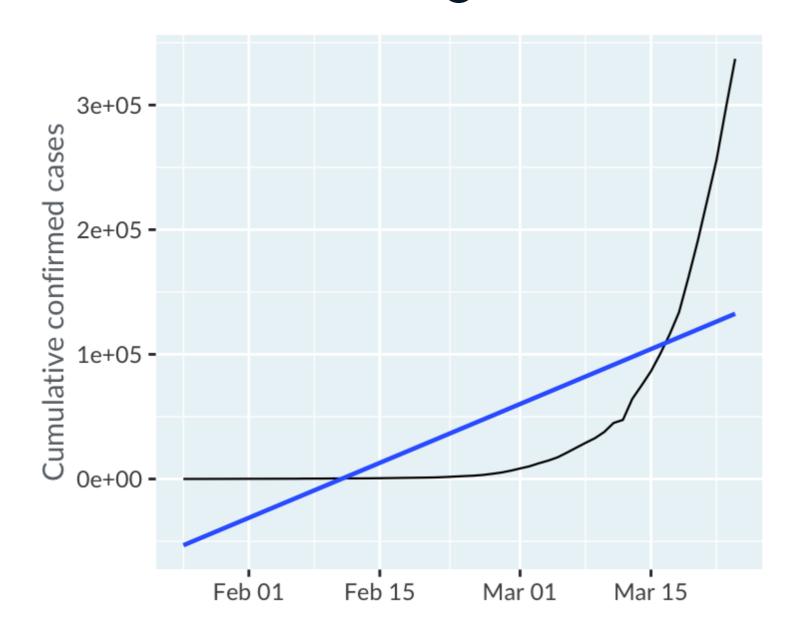


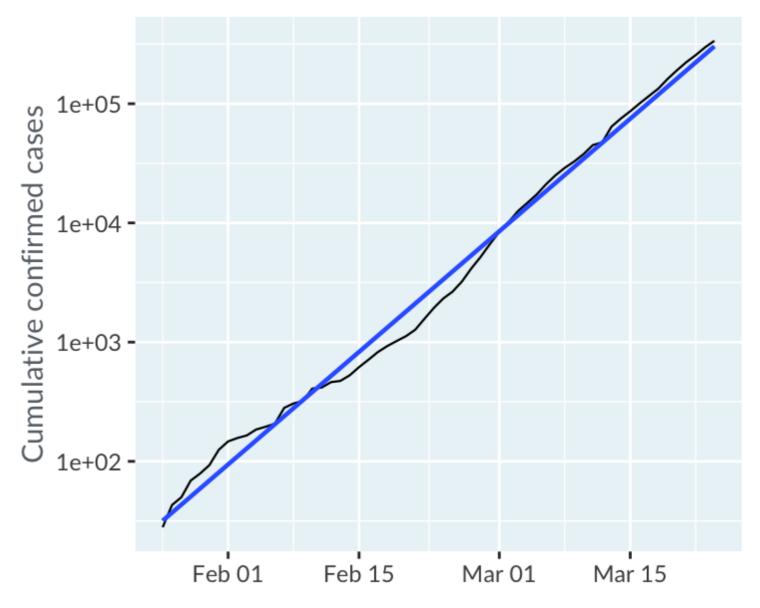


Trend lines



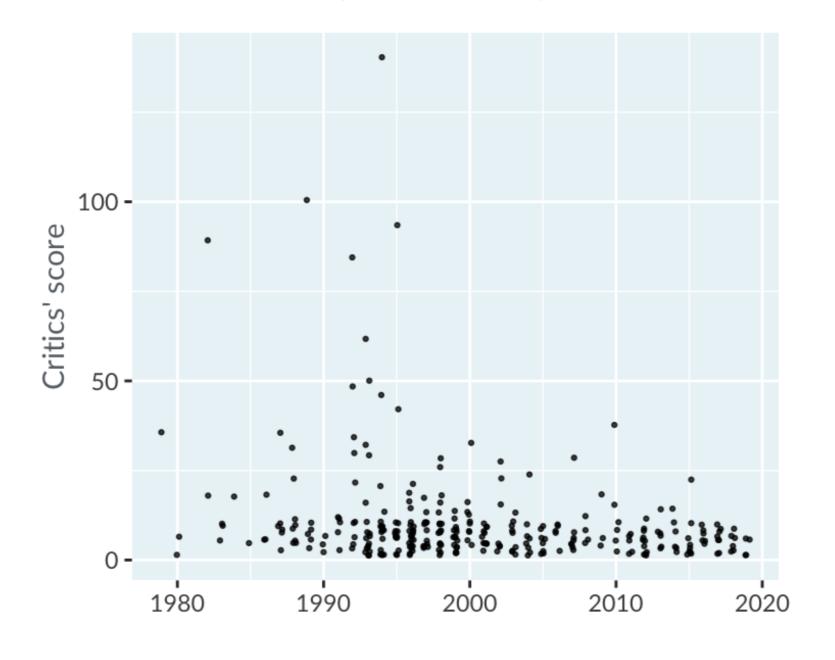
Trend lines + log scale







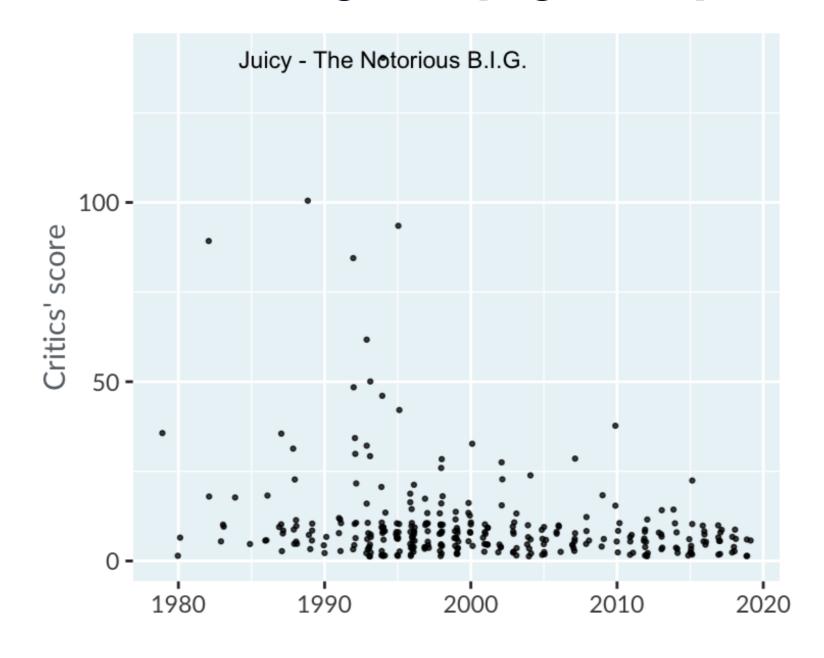
Time x-axis doesn't always imply line plot



¹ https://blog.datawrapper.de/best-hip-hop-songs-of-all-time-visualized



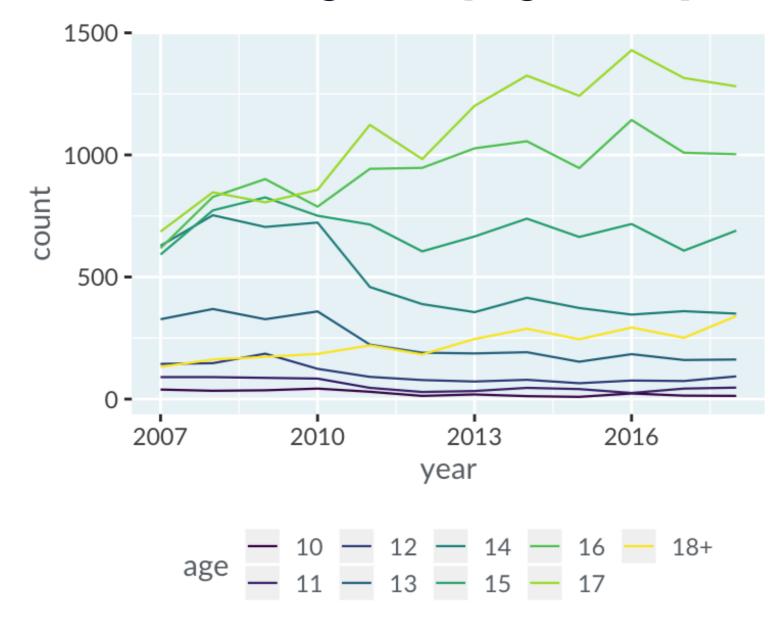
Time x-axis doesn't always imply line plot



¹ https://blog.datawrapper.de/best-hip-hop-songs-of-all-time-visualized



Time x-axis doesn't always imply line plot



¹ https://opendata.swiss/en/dataset/statistik-der-jugendstrafrechtspflege-des-kantons-zuerich/resource/41430d20-d449-4a9b-bf91-3f9a16c9f229



Let's practice!

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Bar plots

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When should you use a bar plot?

Most common cases:

- 1. You have a categorical variable.
- 2. You want counts or percentages for each category.

Occasionally:

1. You want another numeric score for each category, and need to include zero in the plot.

When will I, will I be famous?
I can't answer, I can't answer that

Bros - "When will I be famous?"



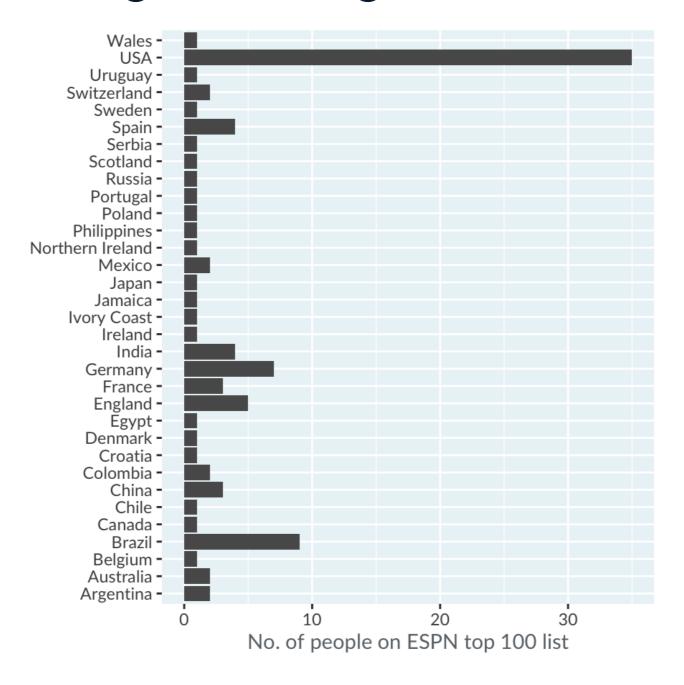
ESPN 100 most famous athletes from 2017

Rank	Last Name	First Name	Sport	Country
1	Ronaldo	Cristiano	Soccer	Portugal
2	James	LeBron	Basketball	USA
3	Messi	Lionel	Soccer	Argentina
4	Federer	Roger	Tennis	Switzerland
5	Mickelson	Phil	Golf	USA
•••	•••	•••	•••	•••

¹ https://data.world/wesmagee/2017-espn-world-fame-100

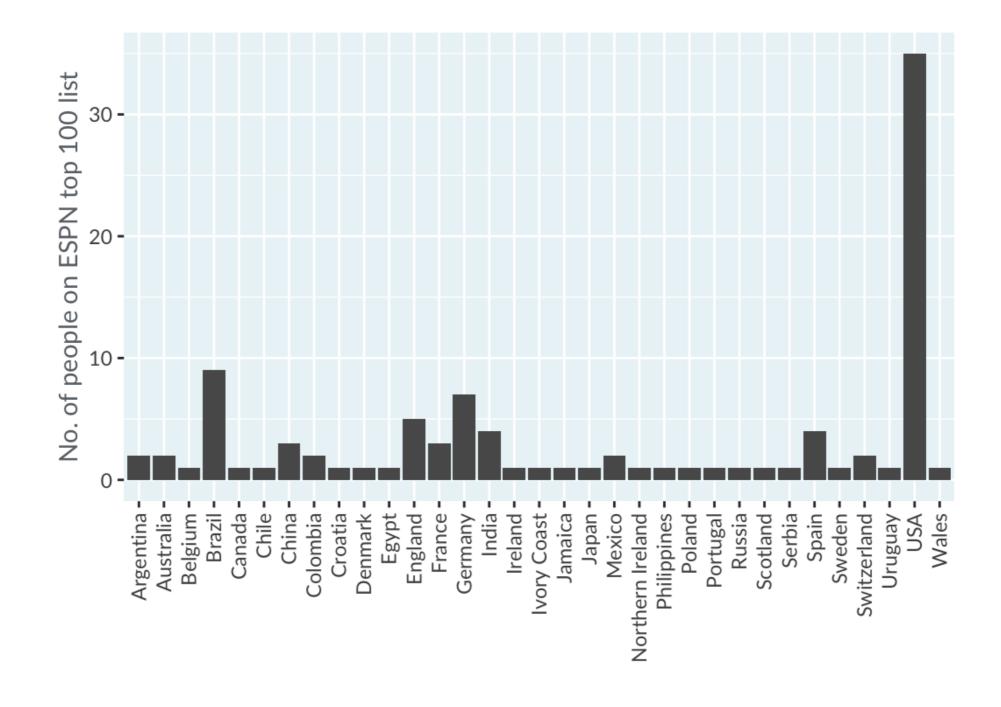


Bar plot of counts by country



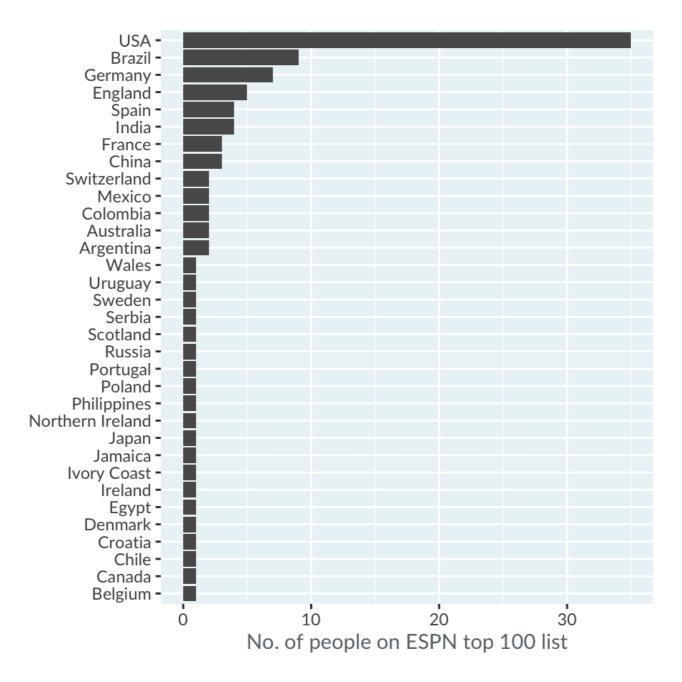


Vertical bars





Sorting by count



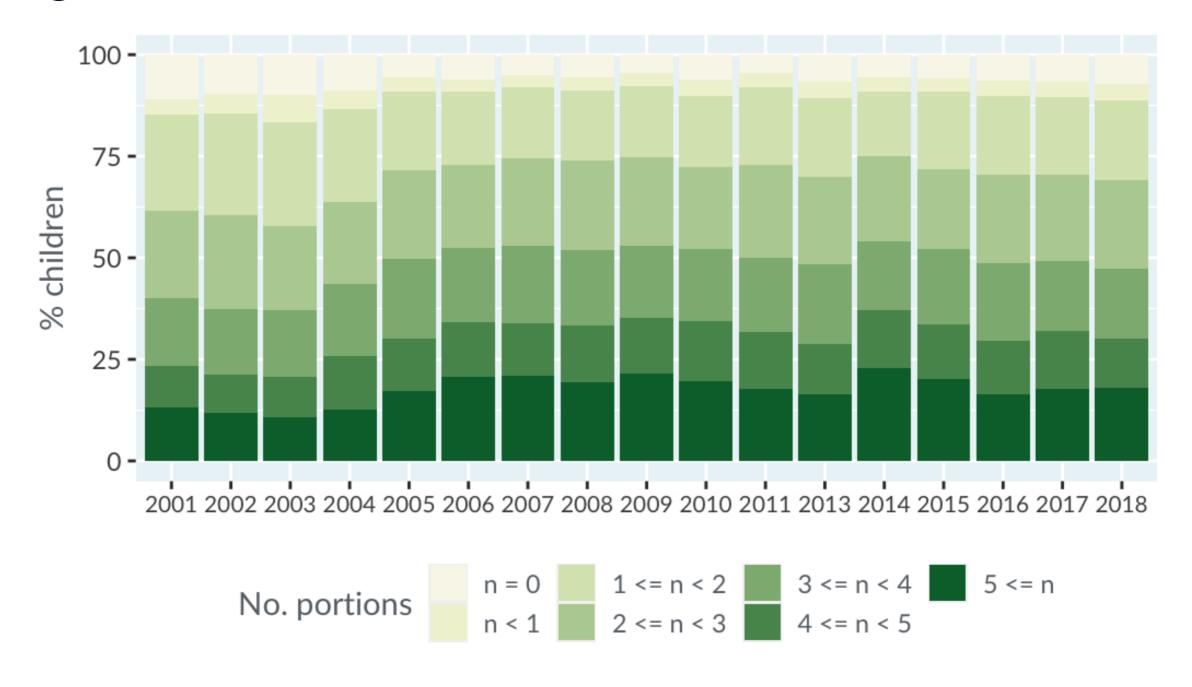
Children's fruit and veg consumption

n_portions	year	pct_children
n = 0	2001	10.921779
n < 1	2001	3.843093
1<= n < 2	2001	23.659102
•••	•••	•••
4 <= n < 5	2018	12.28728
5 <= n	2018	17.87497

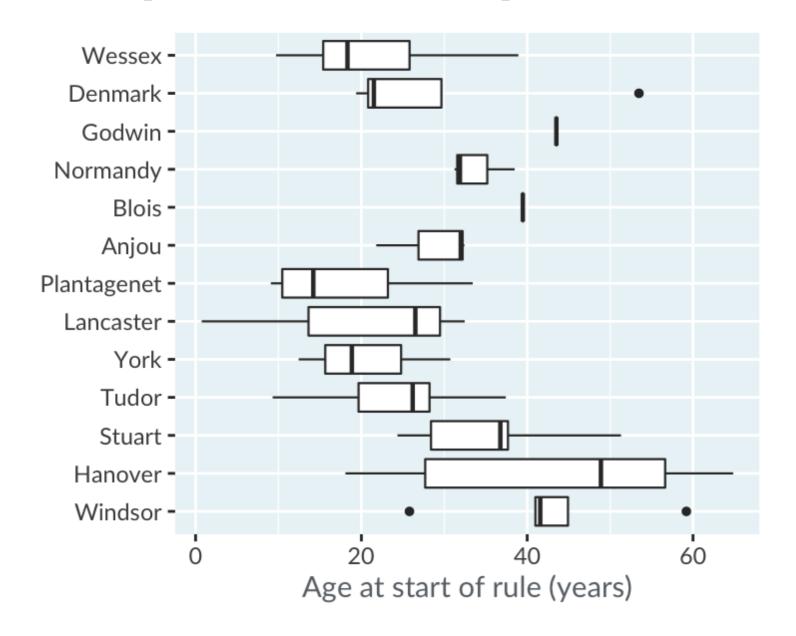
¹ https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2018/health-survey-for-england-2018-data-tables

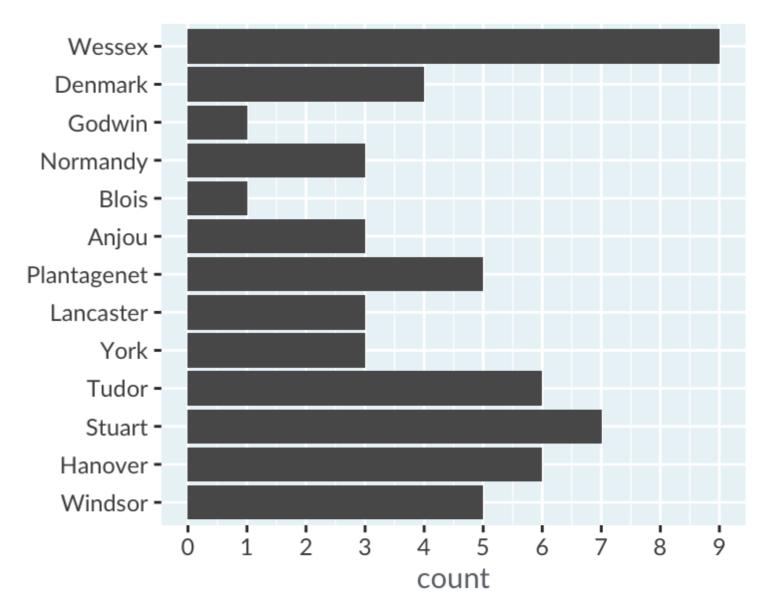


Stacking bars



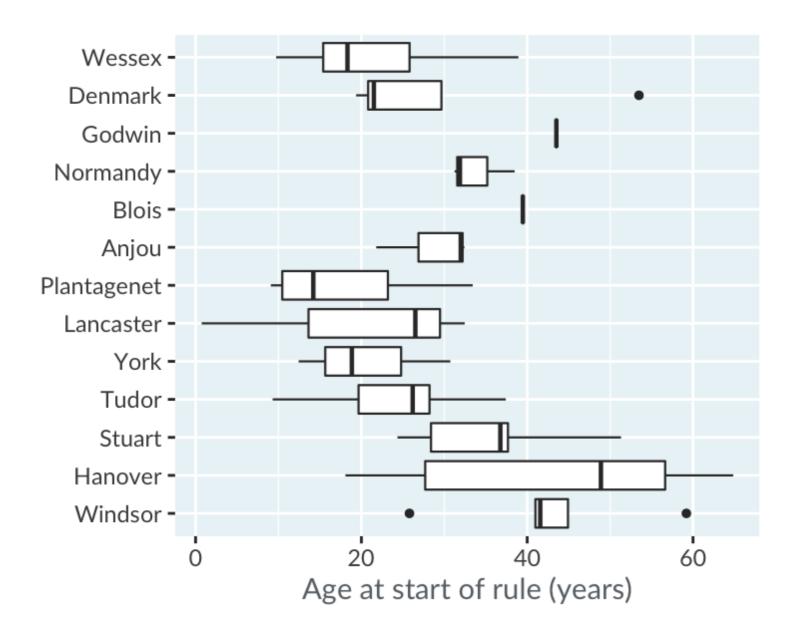
Bar plots vs. box plots

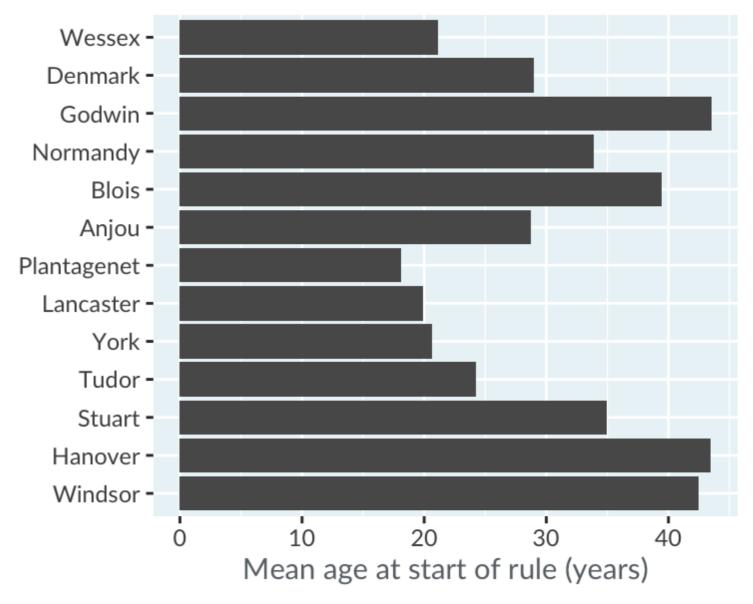






Other metrics than counts







Let's practice!

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Dot plots

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When should you use a dot plot?

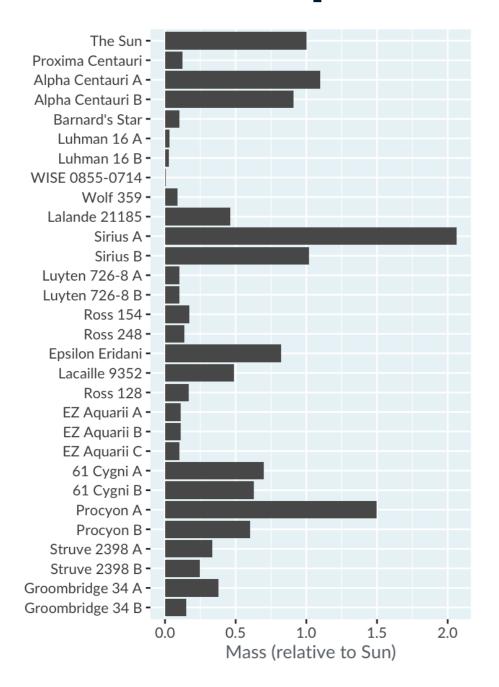
- 1. You have a categorical variable.
- 2. You want to display numeric scores for each category on a log scale, or
- 3. You want to display multiple numeric scores for each category.

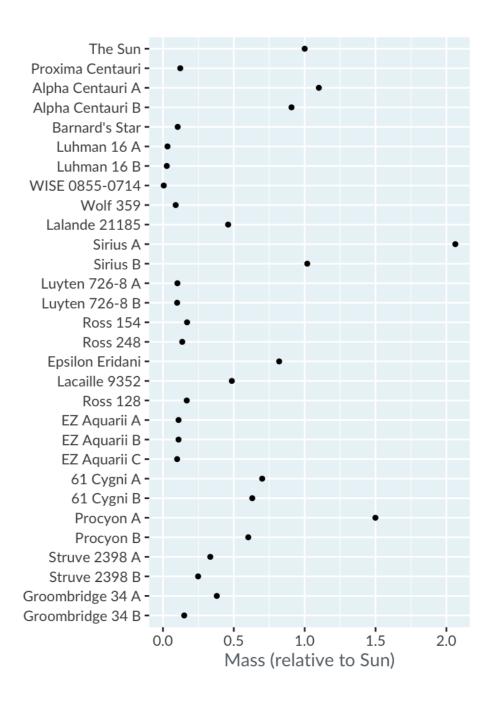
Nearby stars and brown dwarfs

star	distance_ly	mass_sm
The Sun	0.0000158	1.0000
Proxima Centauri	4.2441000	0.1221
Alpha Centauri A	4.3650000	1.1000
Alpha Centauri B	4.3650000	0.9070
Barnard's Star	5.9577000	0.1040
Luhman 16 A	6.5029000	0.0320
•••	•••	•••



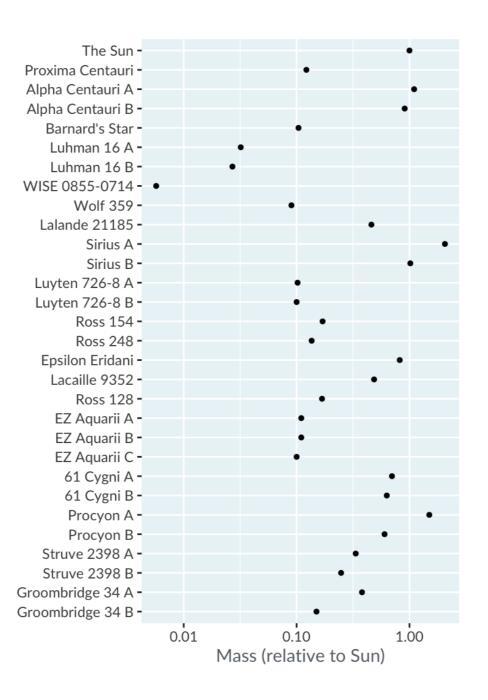
Bar plot vs. dot plot





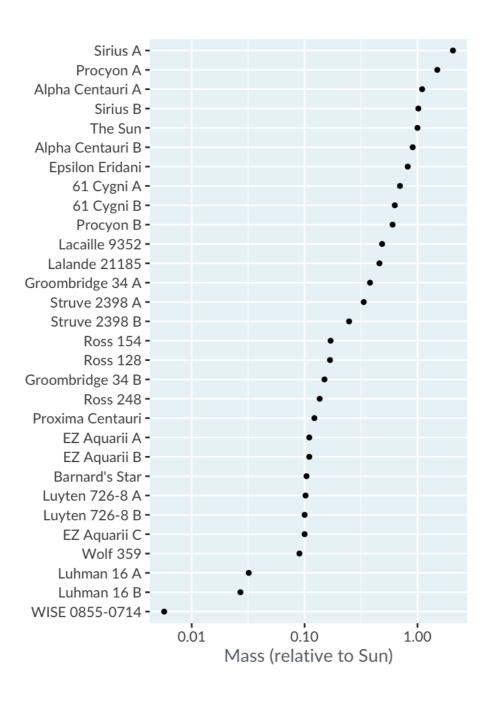


Log scales





Sorting rows





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