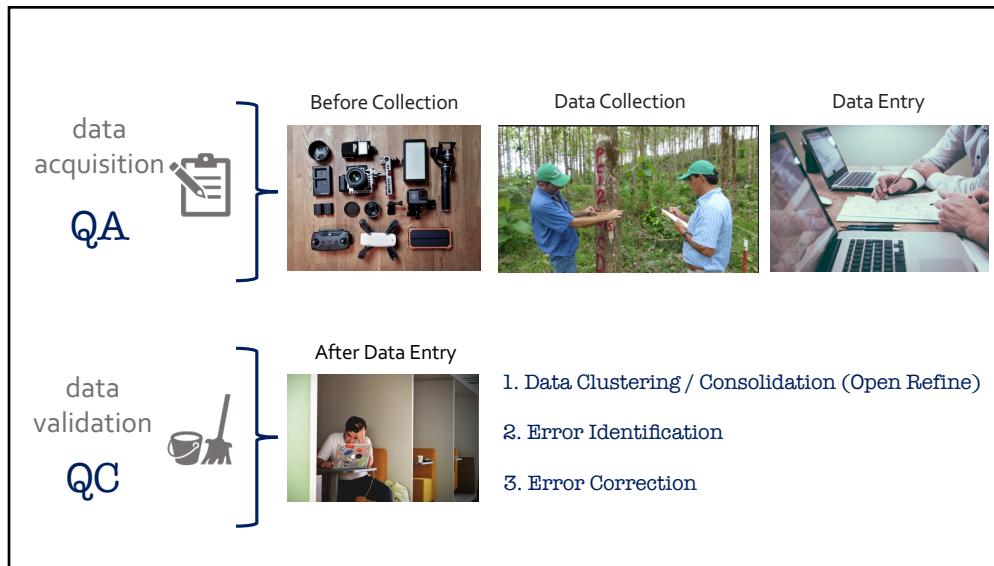


1



2

1



3



4

How can we find errors?

Manual Review	Data Summaries & Exploratory Visualization	Automated Review
	\bar{x} σ 	

5

Two types of error in particular....

1. Outliers

(relevant stock images get weird fast...)

6

3



7



8



9



10

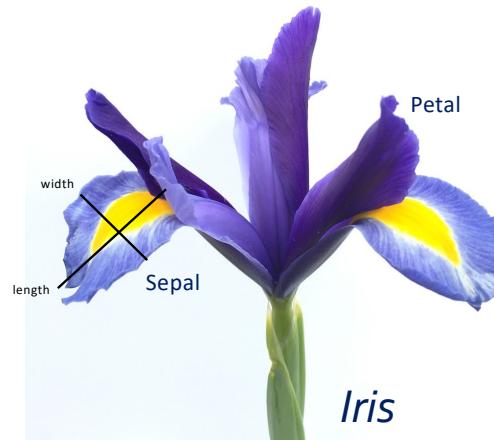
2. Systematic (structural)

11



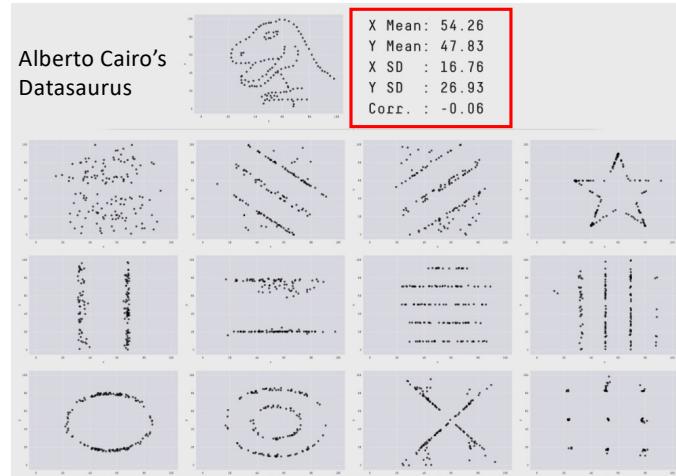
12

Sample Data for Live Coding

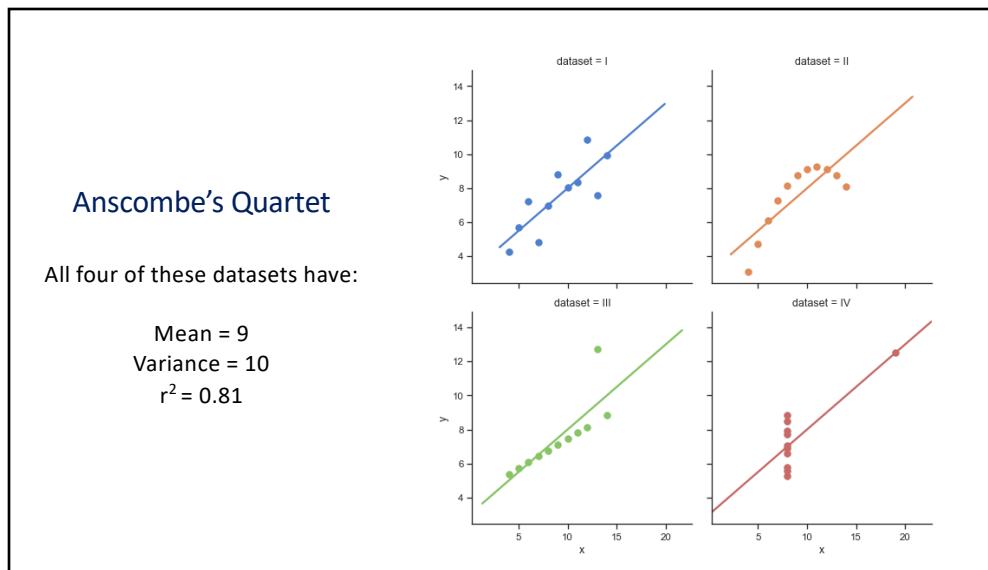


Iris

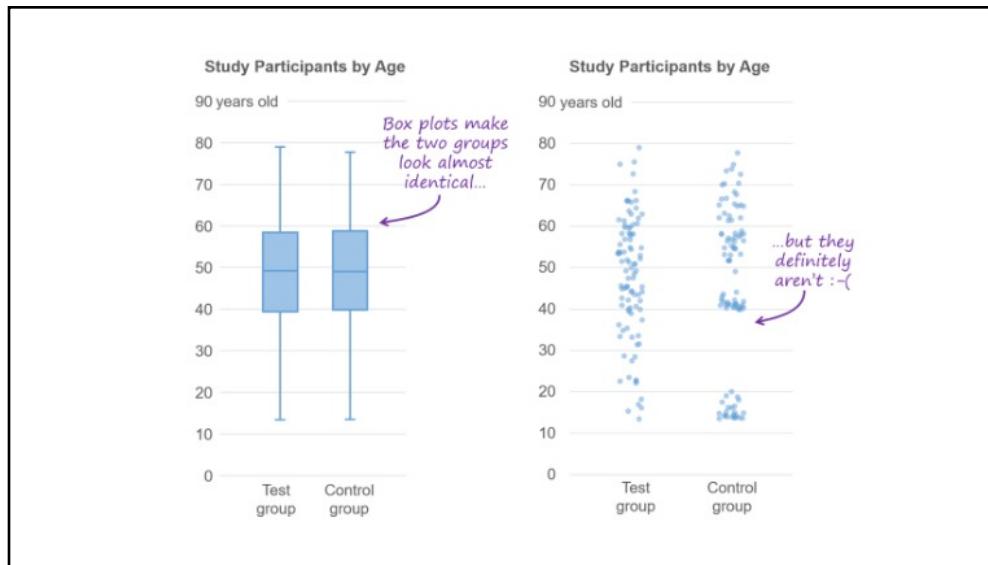
13



14



15



16

TODAY

Part 1: Summary Stats in R

base R

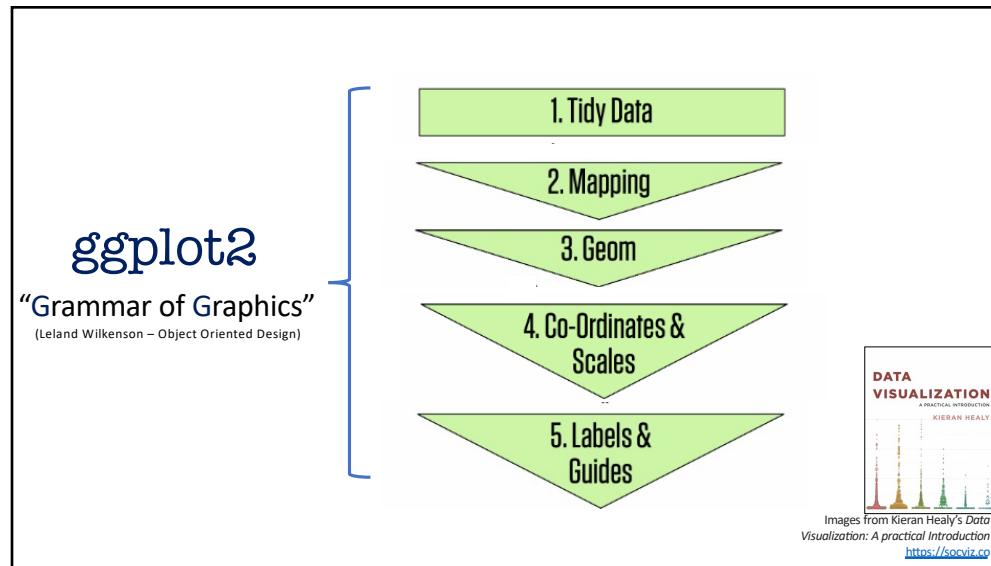
Tidyverse

Part 2: Graphing

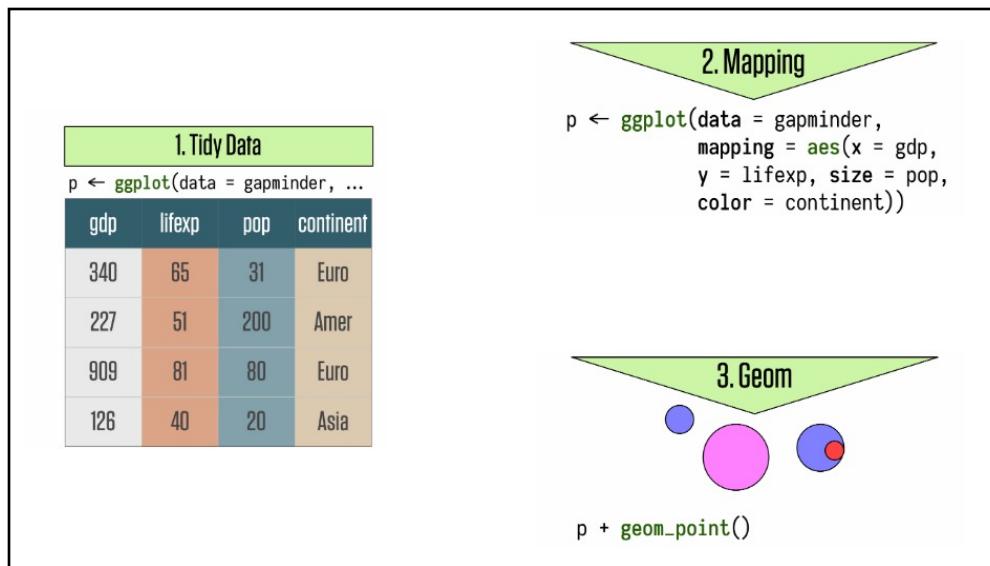
base R

Tidyverse

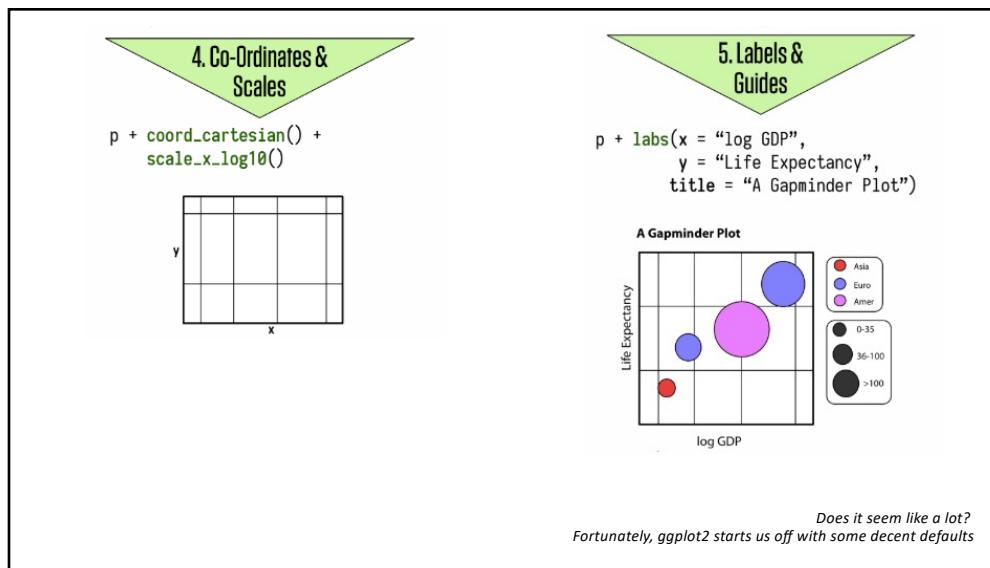
17



18



19



20

Always Plot Your Data

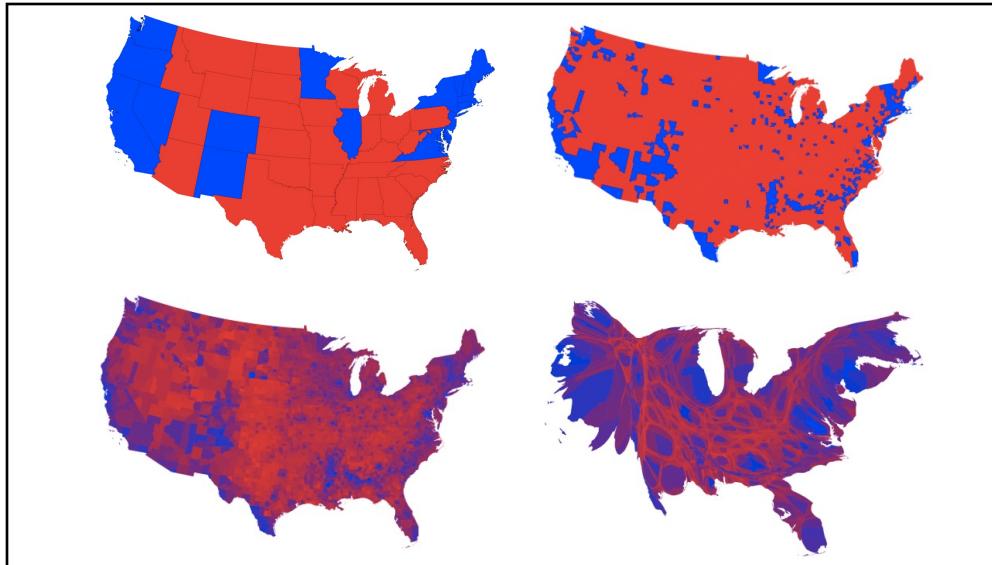
21

2) To better communicate those results.

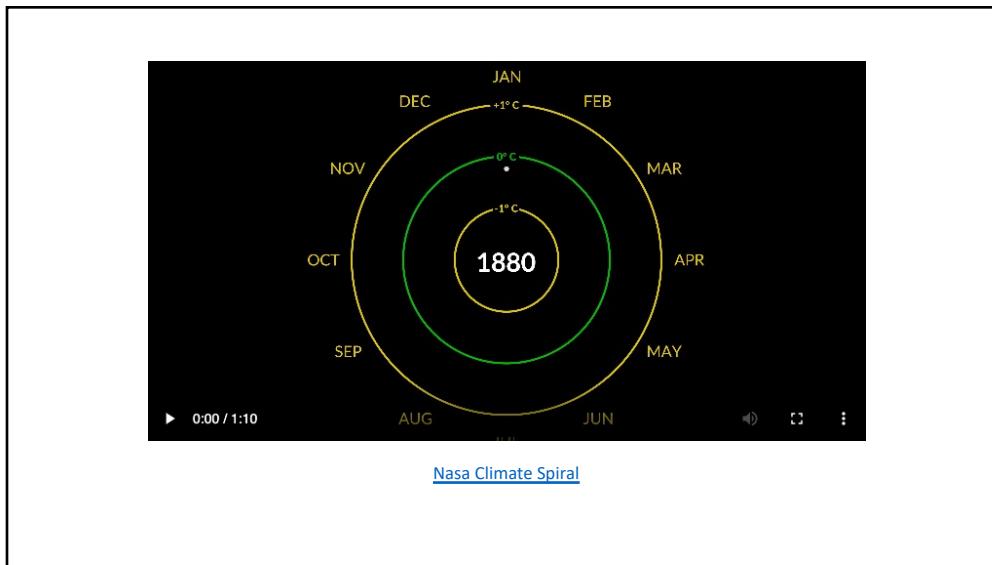
Trite but true:

A picture is worth a thousand words

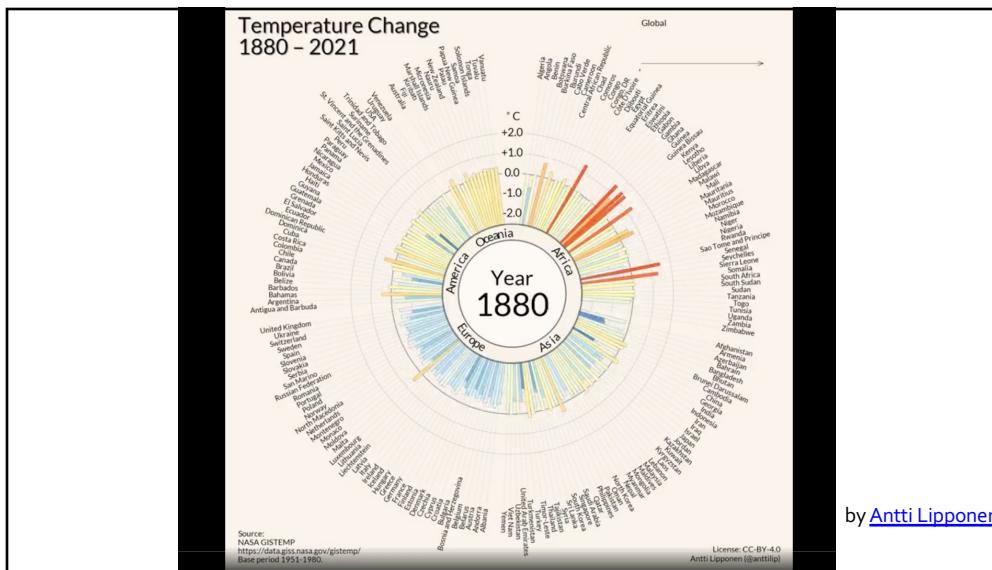
22



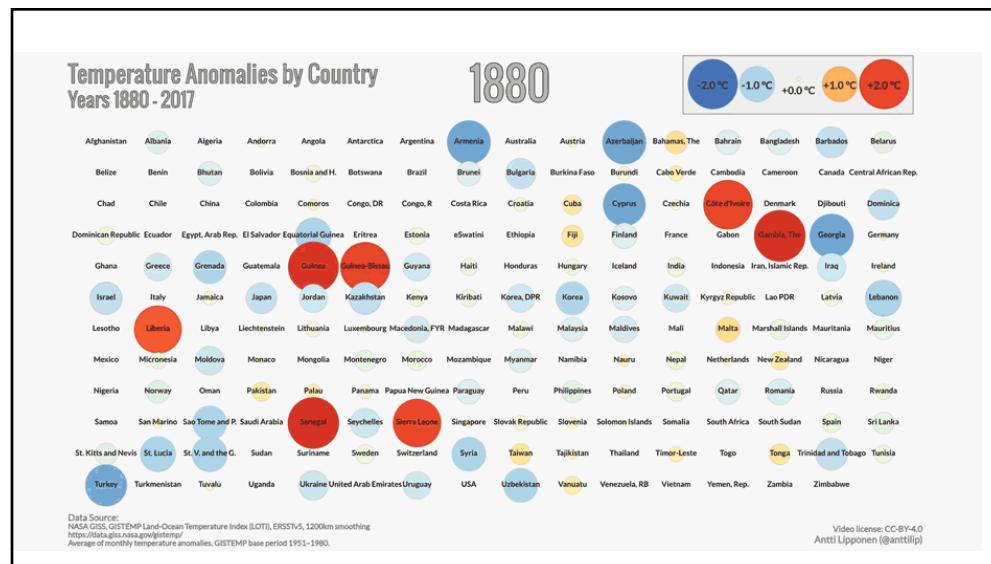
23

[Nasa Climate Spiral](#)

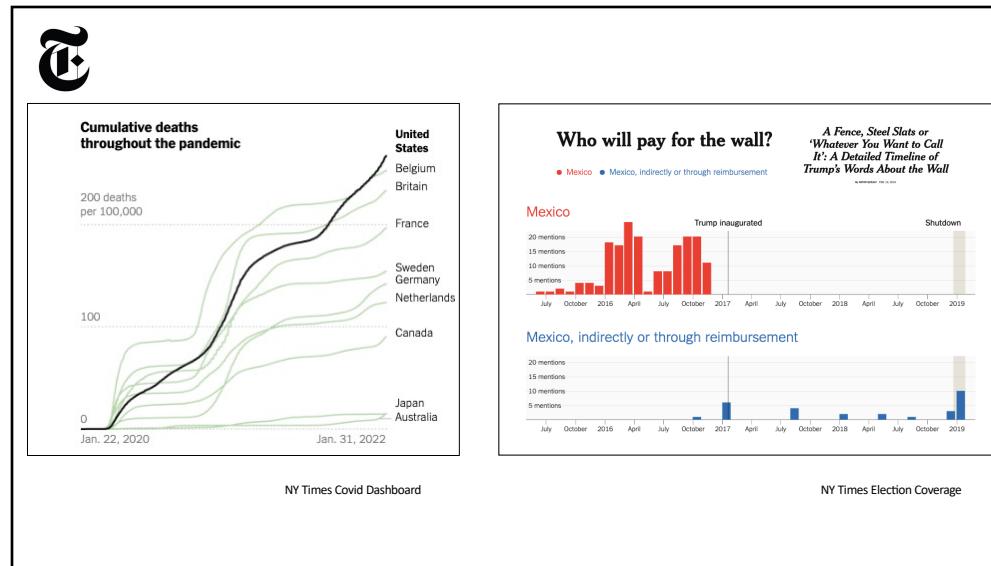
24



25



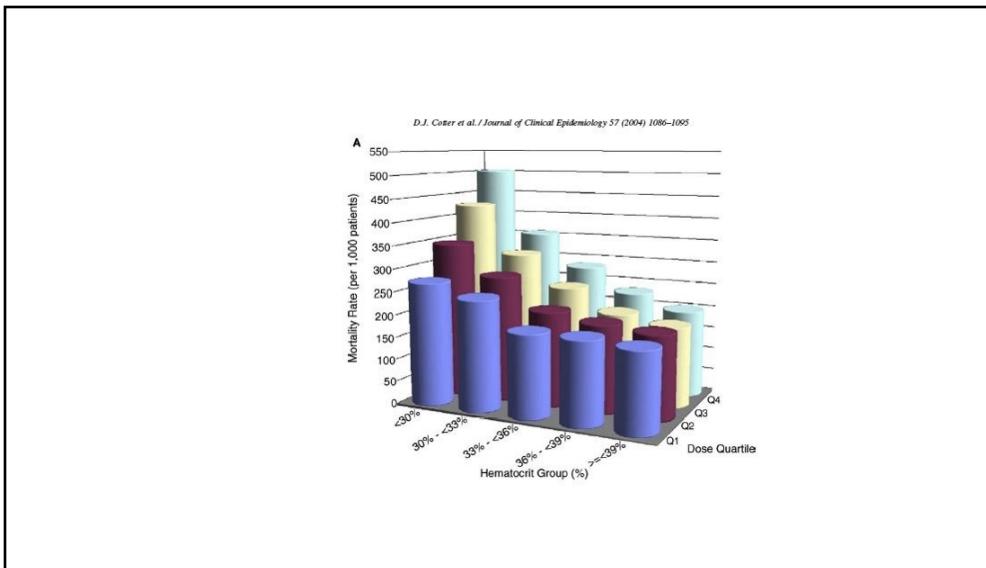
26



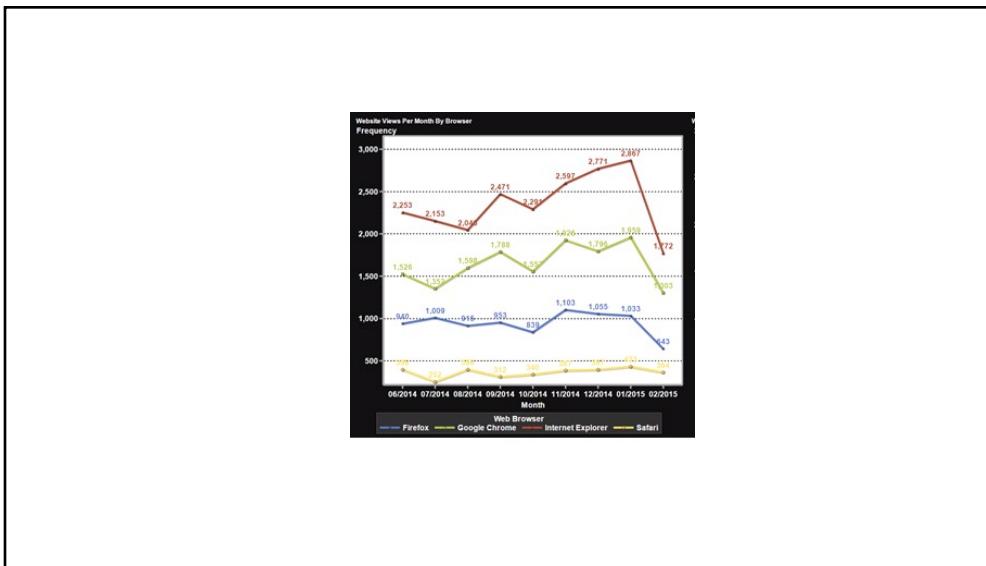
27



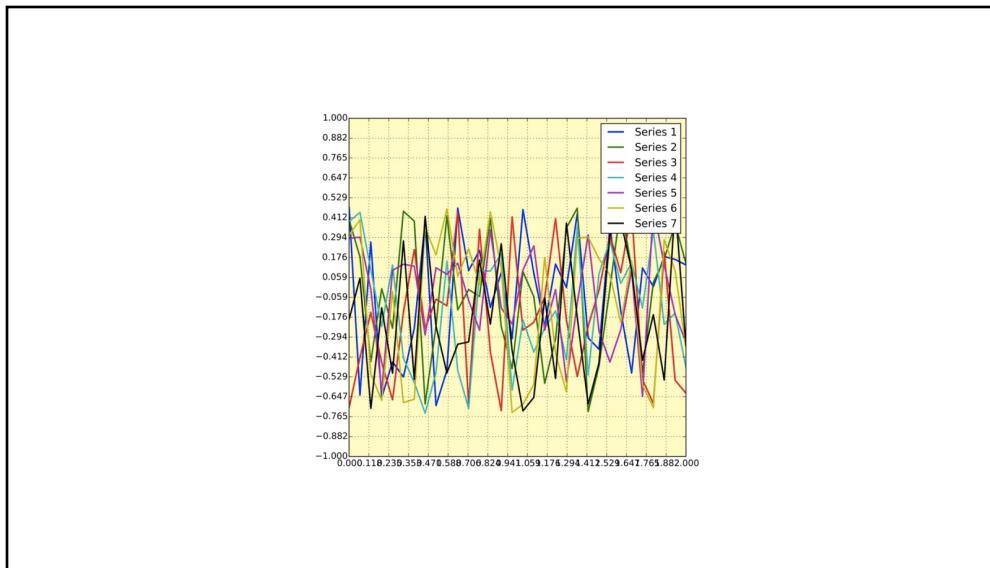
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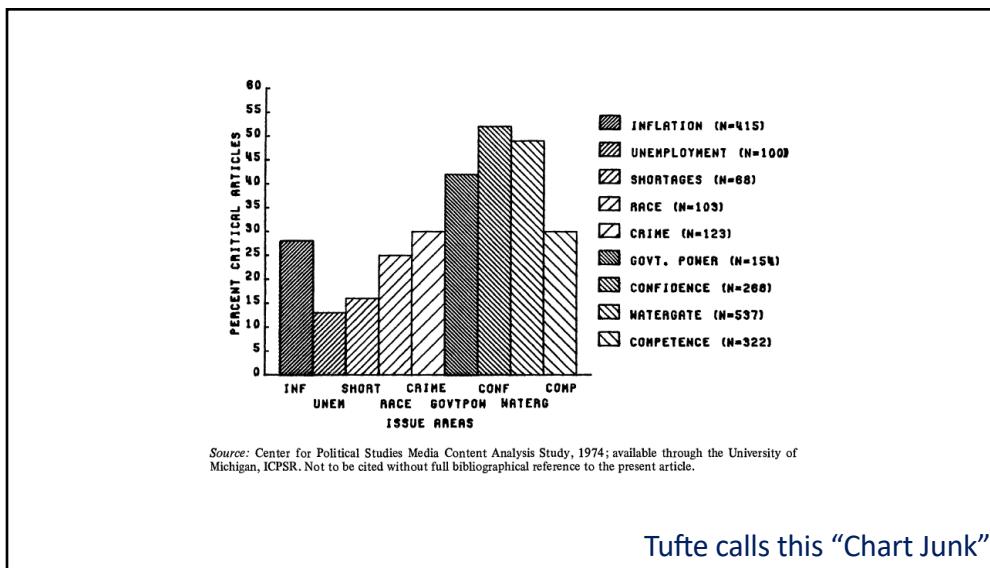
29



30



31



32

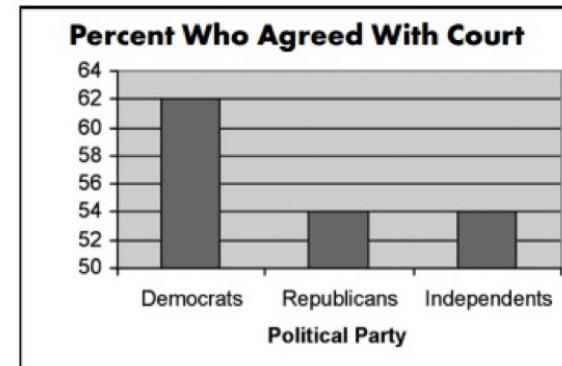
Be aware of how your visualization choices influence your ability to validate, interpret, and communicate your results.

Be aware of how decisions (or mistakes) made by others can lead you to draw incorrect conclusions.

33

Be aware.

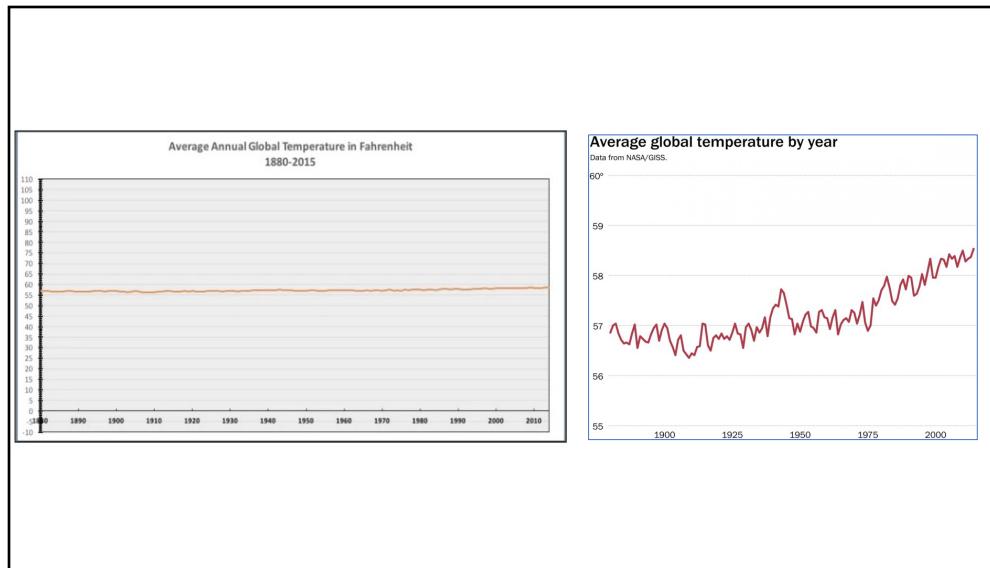
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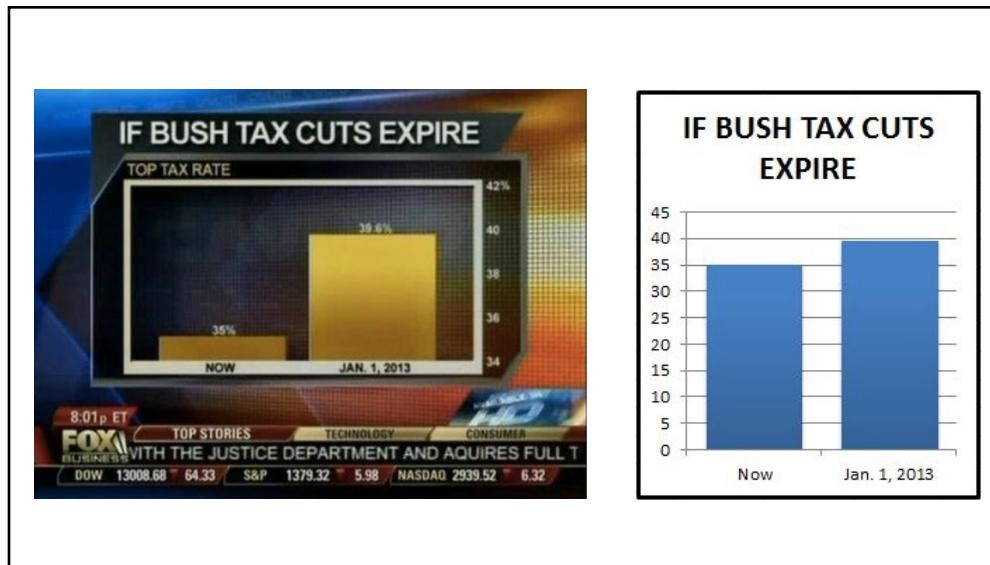
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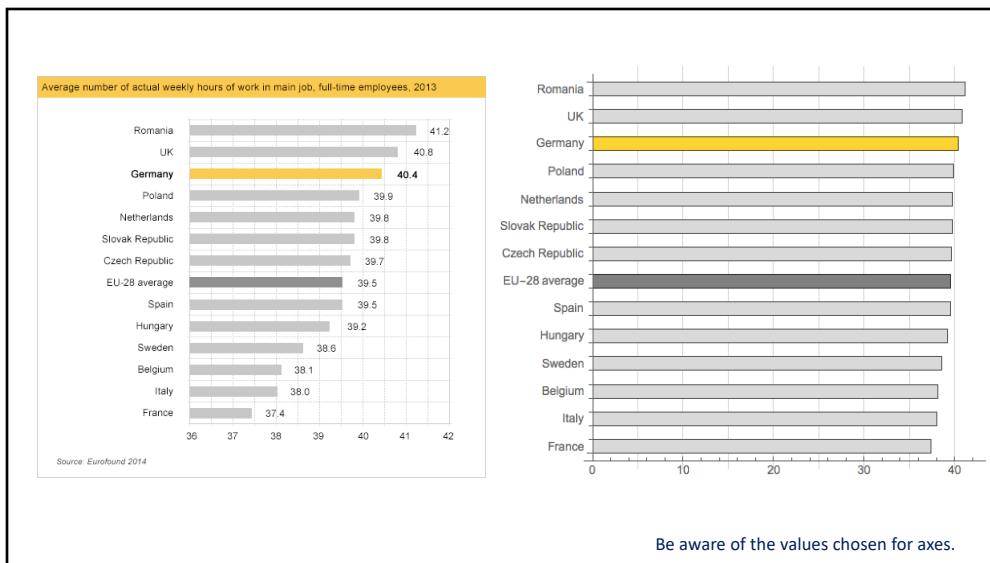
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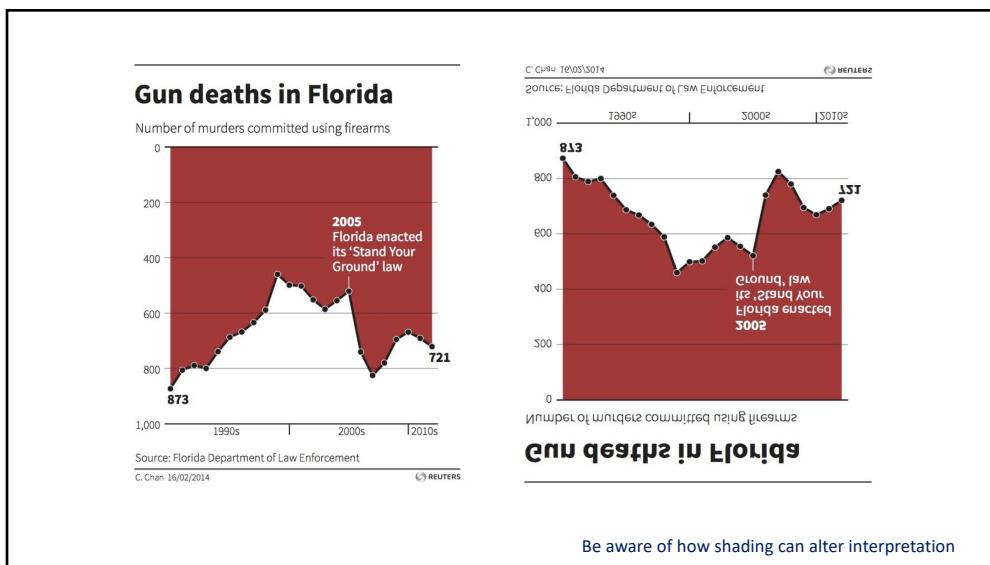
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38



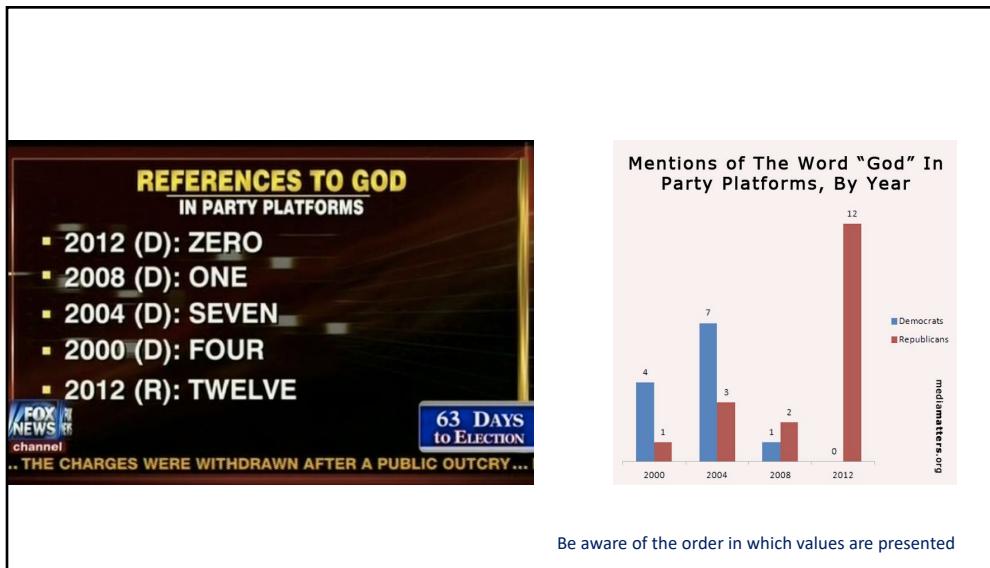
39



40



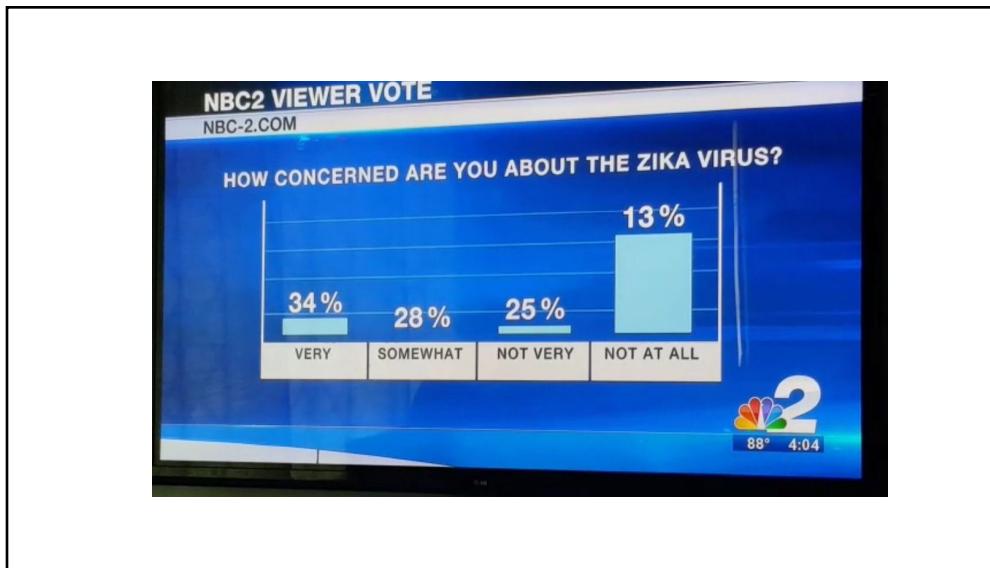
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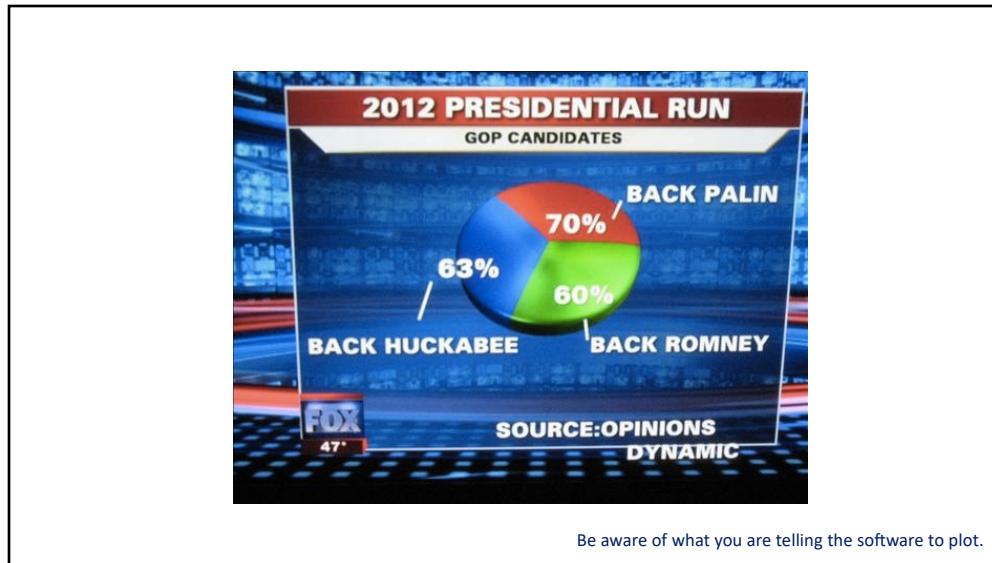
42



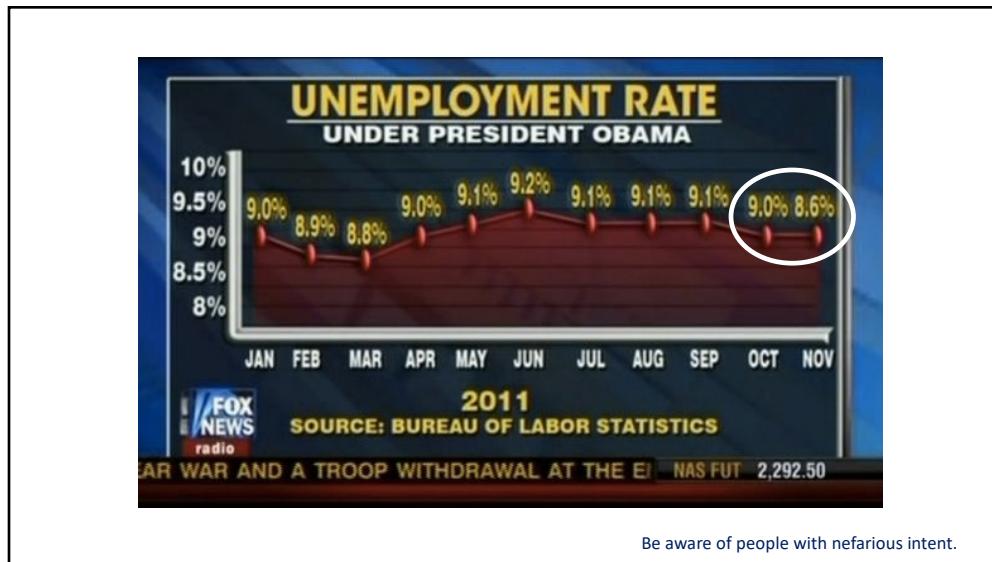
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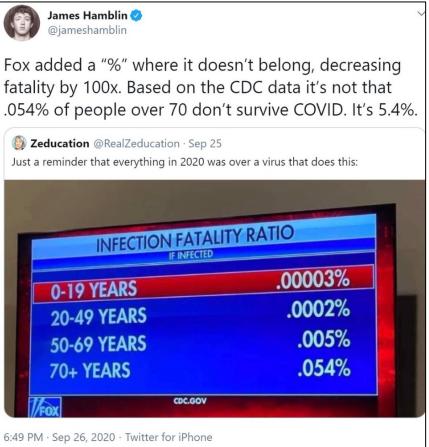
44



45



46



Fox added a "%" where it doesn't belong, decreasing fatality by 100x. Based on the CDC data it's not that .054% of people over 70 don't survive COVID. It's 5.4%.



Just a reminder that everything in 2020 was over a virus that does this:

Age Group	Fatality Rate (%)
0-19 YEARS	.00003%
20-49 YEARS	.0002%
50-69 YEARS	.005%
70+ YEARS	.054%

6:49 PM · Sep 26, 2020 · Twitter for iPhone

Be aware of the difference between proportions and percentages.

47



11:31 AM ET

Governor Andrew M. Cuomo

WE KNOW LOCAL RESPONSE MATTERS

1918 SPANISH FLU

ST. LOUIS

PHILADELPHIA

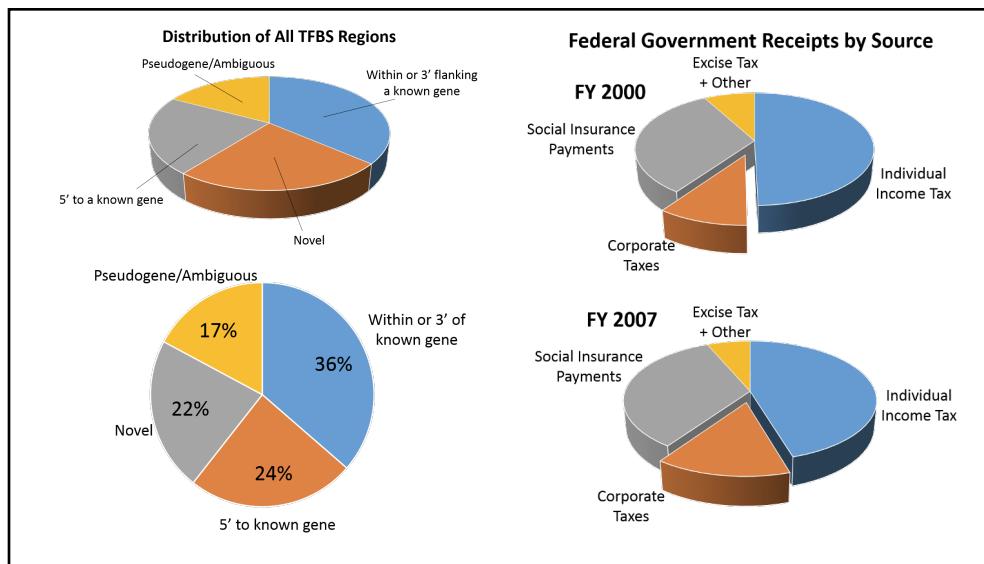
NY GOV CUOMO: 18% OF 7,102 CORONAVIRUS

Be aware of whatever this is.

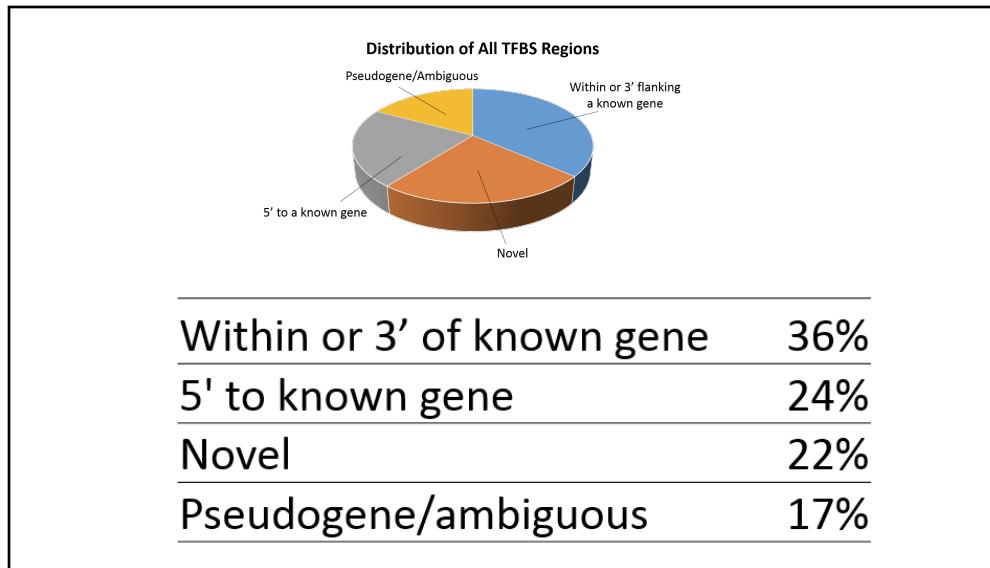
48

Be aware
of pie charts.

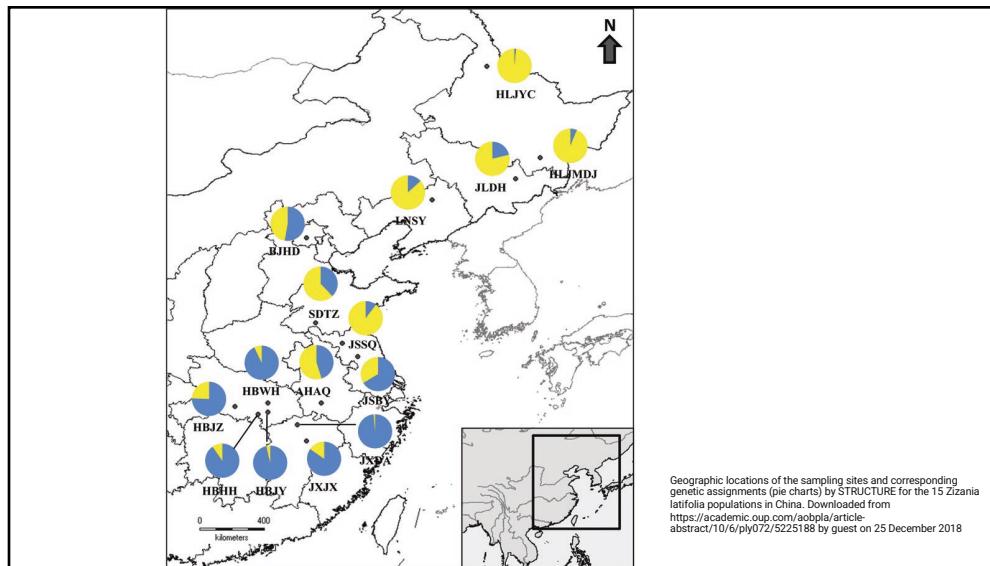
49



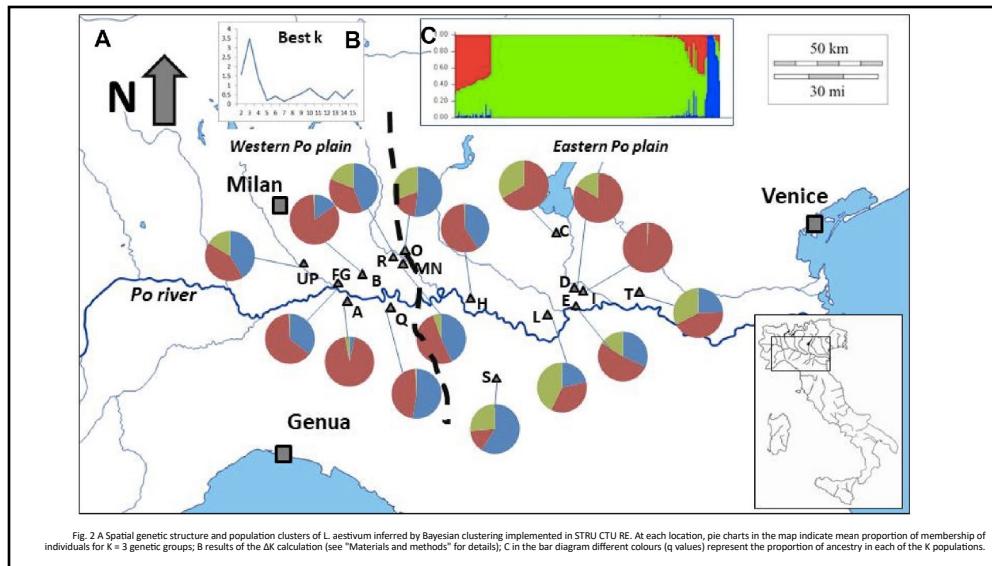
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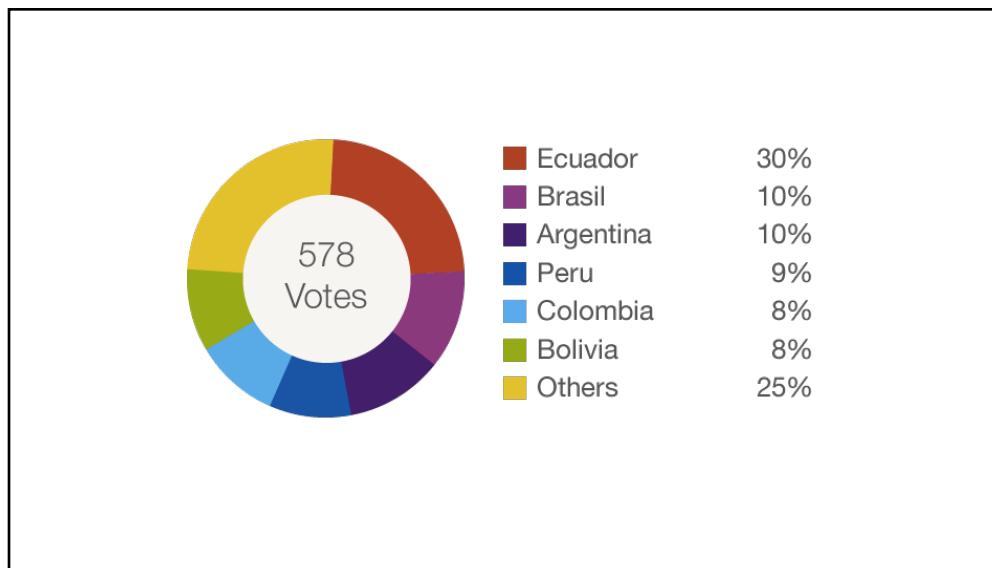
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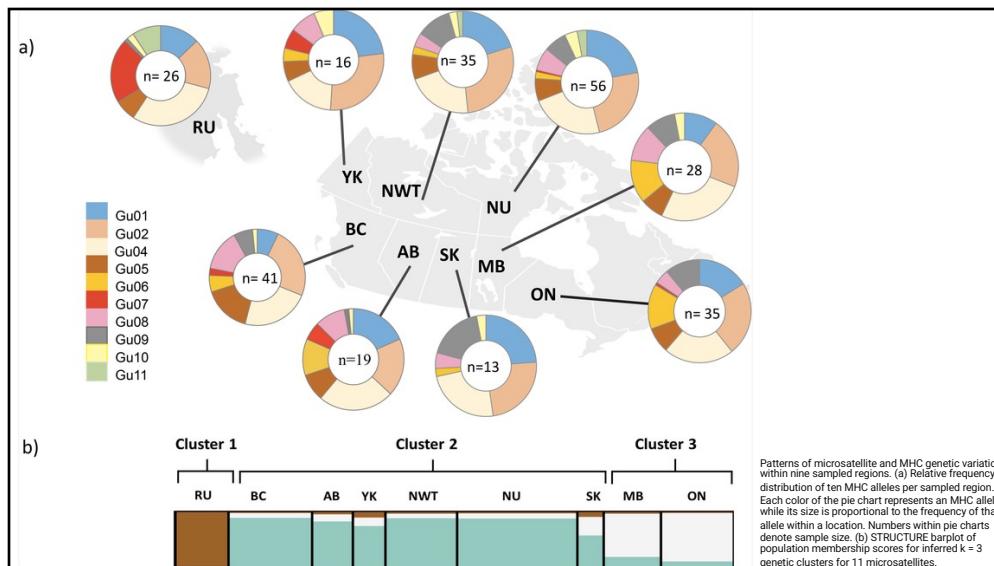
52



53



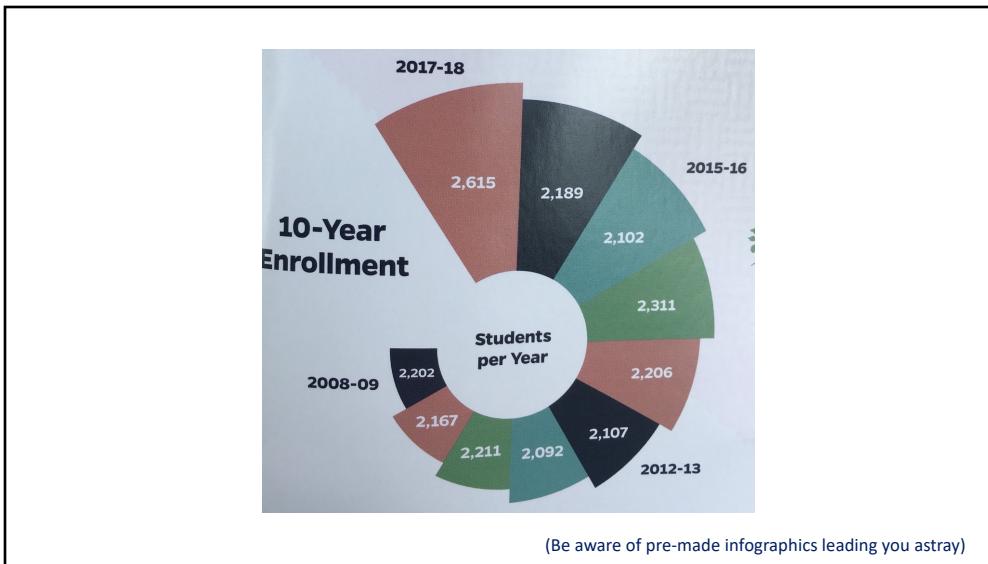
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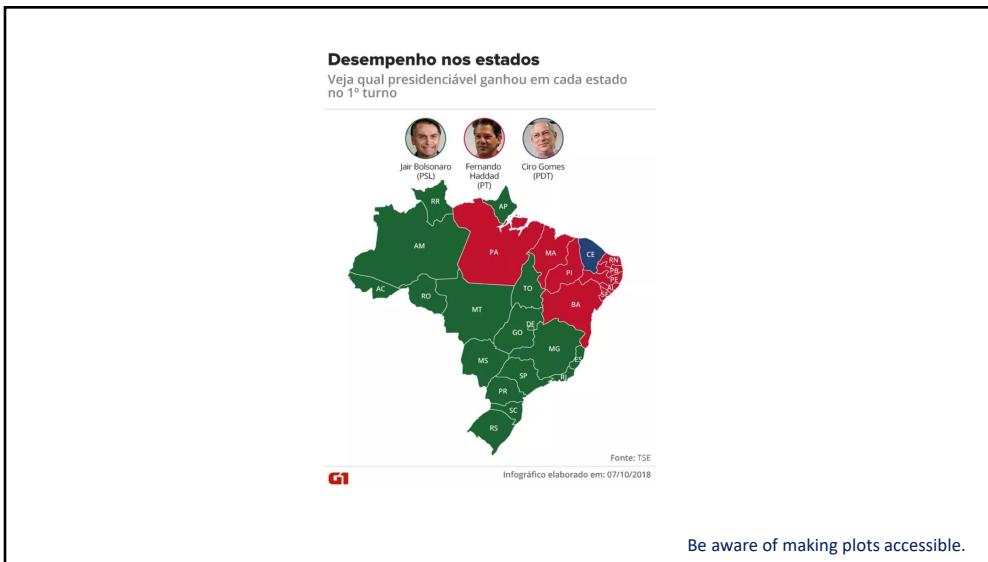
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58

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