The First Day

Exercise

Say something interesting about politics based on data.

Richer countries tend to have **higher/lower** income inequality.

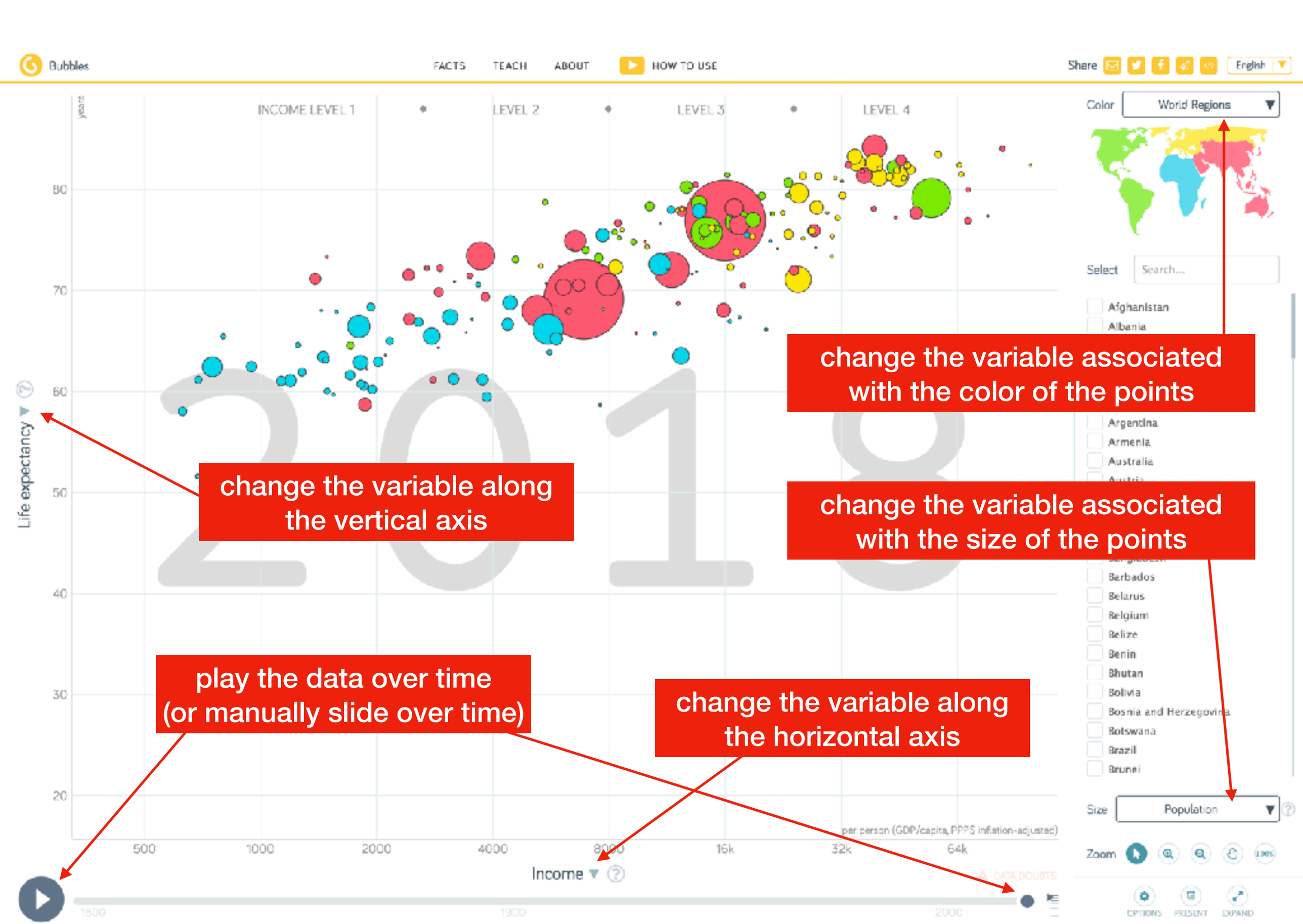
More/Less democratic countries tend to be healthier.

More/less urban countries tend to have more CO2 emissions.

Countries with **higher/lower** taxes have higher GDP growth.

Countries where the government spends a **higher/lower** percentage of health spending have higher life expectancy.

Countries with a higher percentage of billionaires have **higher/lower** human development (education, education, standard of living).


Bubbles
FACTS
TEACH
ABOUT
HOW TO USE
Share
English
INCOME LEVEL 1
LEVEL 2
LEVEL 3
LEVEL 4
years
80
70
60
50
40
30
20
Life expectancy
change the variable along the vertical axis
play the data over time (or manually slide over time)
change the variable along the horizontal axis
change the variable associated with the color of the points
change the variable associated with the size of the points
Color
World Regions
Select
Search...
Afghanistan
Albania
Argentina
Armenia
Australia
Barbados
Belarus
Belgium
Belize
Benin
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Brunei
Size
Population
Zoom
per person (GDP/capita, PPP$ inflation-adjusted)
500
1000
2000
4000
8000
16k
32k
64k
Income
DATA DOUBTS
1800
1900
2000
OPTIONS
PRESENT
EXPAND

Variables Potentially of Interest

- **Wealth**: Economy > Economic situation > GNI/capita (constant 2010 US$)
- **Income inequality**: Economy > Inequality > Gini coefficient
- **Democracy**: Society > Democracy score
- **Health**: Life expectancy
- **Urbanization**: Population > Urbanization > Urban population (% of total)
- **CO2 Emissions**: CO2 emissions
- **Taxes**: Economy > Economic situation > Tax revenue
- **GDP Growth**: Economy > Incomes & growth > GDP total, yearly growth
- **Government Health Spending**: Health > Health Economics > Govt. share of health spending
- **Percent Billionaires**: Economy > Poverty & inequality > Dollar billionaires / 1M people
- **Human Development**: Society > Human Development Index

Find a couple of variables that interest you and identify a pattern.

It might be puzzling, troubling, or predictable.

70, 53, 50, 85, 100, 85, 100, 70, 70, 98, 100, 90, 100, 95, 100, 93, 100, 70, 85, 50, 84, 100, 70, 70, 100, 90, 50, 72, 100, 85, 100, 70, 30, 50, 50, 60, 60, 70, 85, 51, 72, 100, 100, 50, 86, 100, 100, 60, 100, 88, 50, 70, 75, 85, 30, 62, 82, 50, 50, 70, 50, 50, 30, 70, 85, 94, 70, 70, 85, 40, 70, 100, 70, 85, 50, 85, 85, 70, 62, 85, 93, 70, 50, 78, 85, 100, 86, 85, 85, 51, 85, 100, 85, 70, 100, 100, 71, 50, 79, 96, 50, 71, 40, 100, 85, 30, 70, 85, 70, 85, 98, 70, 70, 50, 85, 51, 50, 100, 50, 36, 51, 100, 85, 70, 63, 70, 100, 69, 85, 86, 60, 100, 60, 100, 92, 70, 50, 85, 40, 50, 100, 60, 100, 85, 85, 86, 87, 50, 94, 90, 84, 70, 85, 41, 70, 96, 86, 98, 70, 60, 100, 100, 60, 60, 100, 85, 85, 85, 100, 100, 60, 90, 70, 99, 72, 69, 75, 30, 50, 50, 60, 99, 50, 85, 50, 85, 55, 95, 40, 100, 70, 85, 85, 70, 76, 50, 100, 40, 100, 63, 51, 94, 60, 85, 85, 88, 85, 100, 60, 85, 85, 60, 60, 78, 85, 50, 60, 70, 100, 60, 70, 60, 70, 70, 50, 85, 60, 61, 100, 87, 100, 85, 70, 85, 70, 69, 60, 100, 59, 100, 70, 85, 85, 83, 85, 70, 46, 100, 85, 80, 100, 70, 60, 100, 100, 100, 100, 85, 85, 70, 52, 100, 51, 70, 60, 85, 98, 85, 100, 100, 70, 99, 85, 100, 50, 60, 70, 85, 70, 50, 60, 85, 85, 100, 85, 40, 100, 40, 51, 100, 52, 75, 100, 70, 70, 100, 84, 85, 70, 70, 85, 85, 50, 85, 85, 18, 100, 78, 75, 85, 72, 79, 40, 90, 85, 50, 70, 66, 0, 85, 100, 90, 81, 60, 90, 63, 100, 60, 71, 98, 60, 85, 74, 90, 100, 69, 60, 70, 100, 100, 64, 100, 100, 50, 85, 85, 50, 50, 100, 70, 85, 70, 60, 100, 85, 85, 99, 70, 99, 60, 50, 51, 70, 50, 61, 85, 85, 100, 85, 61, 87, 70, 50, 96, 60, 50, 85, 100, 85, 60, 75, 60, 100, 85, 85, 85, 100, 100, 85, 50, 100, 90, 23, 50, 60, 85, 85, 100, 100, 100, 100, 100, 100, 40, 70, 100, 100, 71, 100, 85, 84, 70, 100, 100, 70, 85, 85, 85, 69, 70, 70, 100, 85, 85, 50, 85, 70, 70, 70, 55, 100, 100, 75, 84, 100, 100, 90, 51, 67, 80, 60, 85, 86, 62, 50, 100, 72, 100, 70, 70, 70, 70, 59, 88, 70, 61, 0, 100, 85, 100, 70, 100, 98, 85, 95, 100, 50, 75, 98, 85, 99, 60, 60, 70, 99, 99, 86, 85, 70, 94, 100, 85, 80, 95, 85, 99, 100, 51, 85, 100, 70, 50, 50, 60, 100, 100, 100, 70, 96, 100, 100

How do we approach these numbers?

measurement

causality

theoretical models

How do we

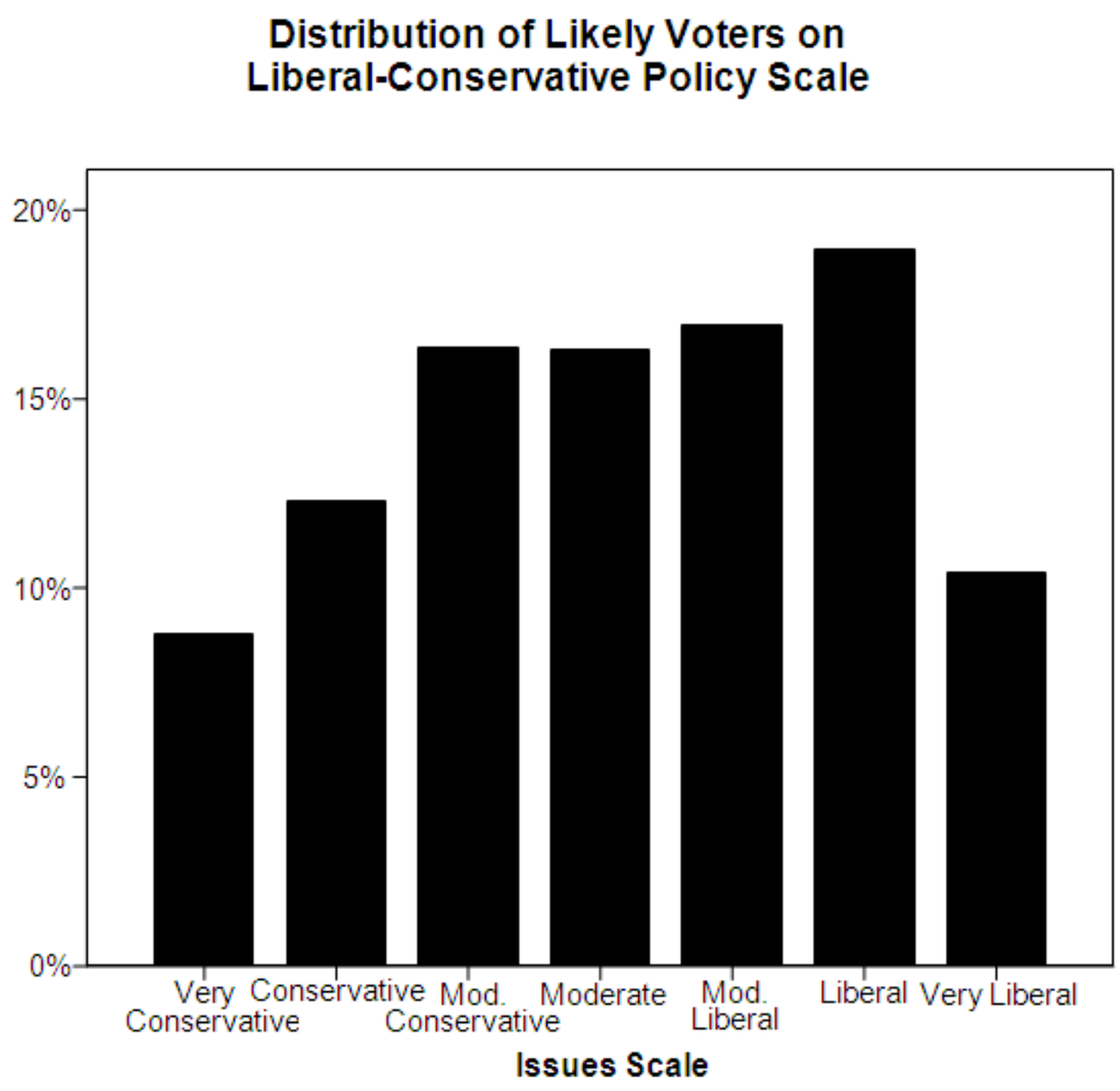
reduce

these numbers?

histograms

average and SD

scatterplots and regression



Source: Time Magazine Poll, Oct. 5-8, 2008

How do we

infer

from these numbers?

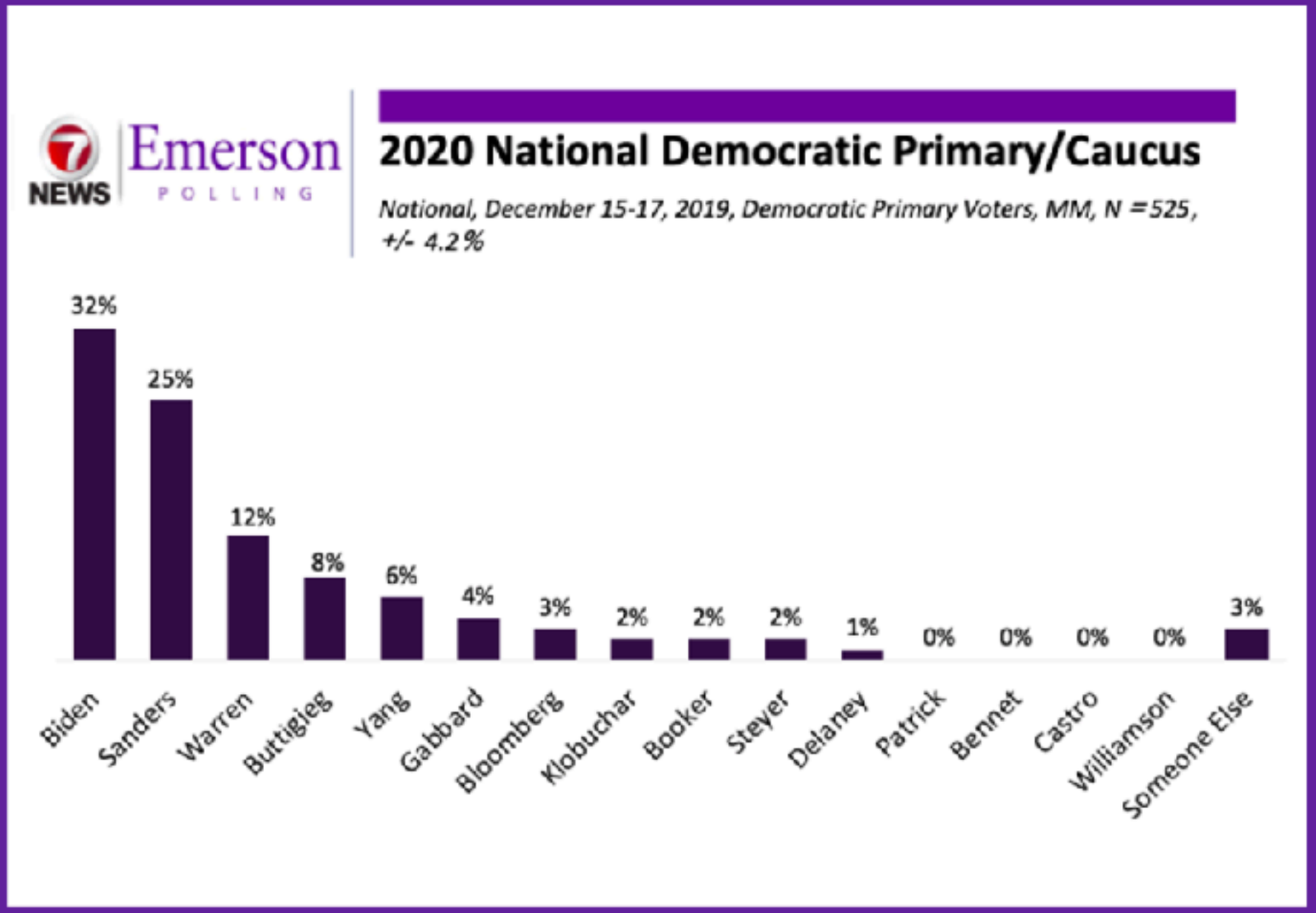
confidence intervals

hypothesis tests

DECEMBER NATIONAL POLL: BIDEN AND SANDERS PULL AWAY FROM THE PACK AS WARREN FALLS

December 18, 2019 brendan_kane Off National Polls, Polls

In the latest Emerson College/WHDH National Poll of the Democratic primary, former Vice President Joe Biden leads at 32%, followed by Senator Bernie Sanders at 25%. Senator Elizabeth Warren comes in third at 12%, followed by Mayor Pete Buttigieg at 8%, and entrepreneur Andrew Yang at 6% is rounding out the top 5 (n=525, +/- 4.2%).



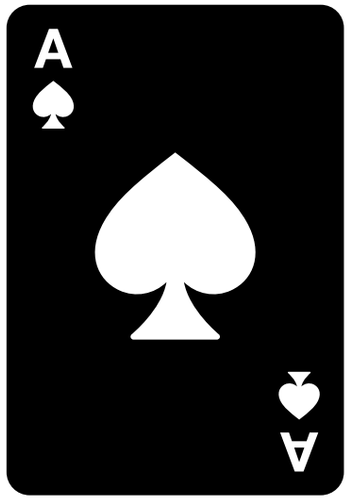
Since the Emerson November poll, Biden has increased his support by 5 points, Sanders has lost 2 points, and Warren has dropped 8 points.

The base of Sanders support is younger voters; he receives 36% support from voters under 50. Following him among this group is Biden with 22%, Warren with 12%, and Yang with 10%. With voters 50 and over, Biden has a commanding lead with 45%, followed by Warren with 14%, and Sanders and Buttigieg with 10%.

Director of Emerson Polling Spencer Kimball notes that "Warren appears to be losing to Sanders with younger voters, and losing to Biden with older voters, making it difficult for her to secure a base. With less than 50 days until the Iowa caucus, this strategy of waiting for Sanders or Biden to fall is looking shaky."

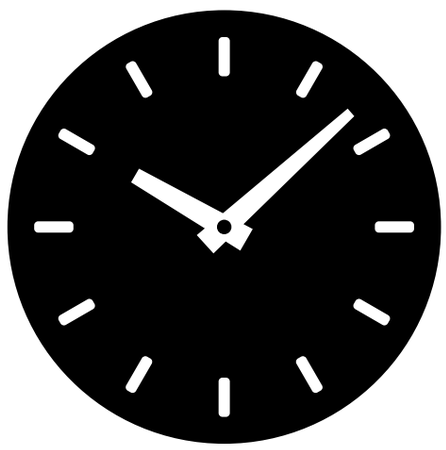
Examining racial demographics, Sanders leads among Hispanic/Latino voters with 36%, followed by Biden with 27%, and Yang with 12%. Among African-American voters, Biden holds a large lead receiving 52% support, followed by Sanders with 19%, Warren with 7% and Booker with 6%. Biden holds a small lead among white voters with 24%, followed by Sanders with 22%, Warren with 17%, and Buttigieg with 15%.

Research assistant Brendan Kane notes that "the fact that Pete Buttigieg garners absolutely no support among African-American and Hispanic voters is a major problem for his campaign as he will struggle to compete in the



about 8.6×10^{67}

you should expect it to take about this many tries to produce a particular ordering

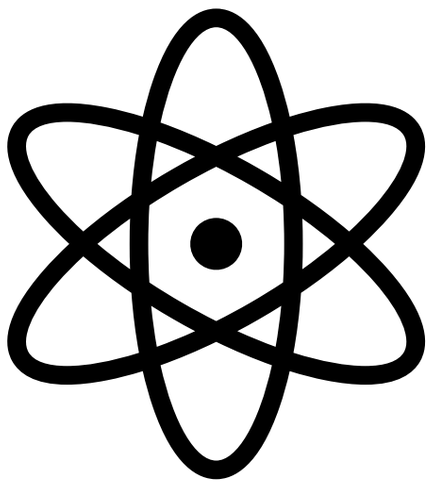


about 4.32×10^{17}

it's about 3.9×10^{11} mm to the moon

it's about 1.5×10^{14} mm to the sun

there are about 4.3×10^{19} atoms in a grain of sand



about 10^{80}

there are about 2.4×10^{67} atoms in the Milky Way

The Syllabus

Item	Weight
Exam 1	20%
Exam 2	20%
Final Exam	20%
Computing Assignment 1	5%
Computing Assignment 2	5%
Research Project	30%

the key to the class is to do the homework assignment after each class.

textbook

+

calculator

Plan to spend about six hours per week working on this class.

The 1st HW