

M358K: September 9<sup>th</sup>, 2020.

## What is statistics?

1<sup>st</sup> Identify the broad population of interest about which you're trying to draw conclusions:

e.g.,

- cats;
- voters in the US;
- math majors;
- snakes;
- bacteria in Petri dish;
- Harry Potter fans;
- Policy-holders;
- Coronavirus infected
- middle schools in AISD

2<sup>nd</sup> What are you trying to measure?

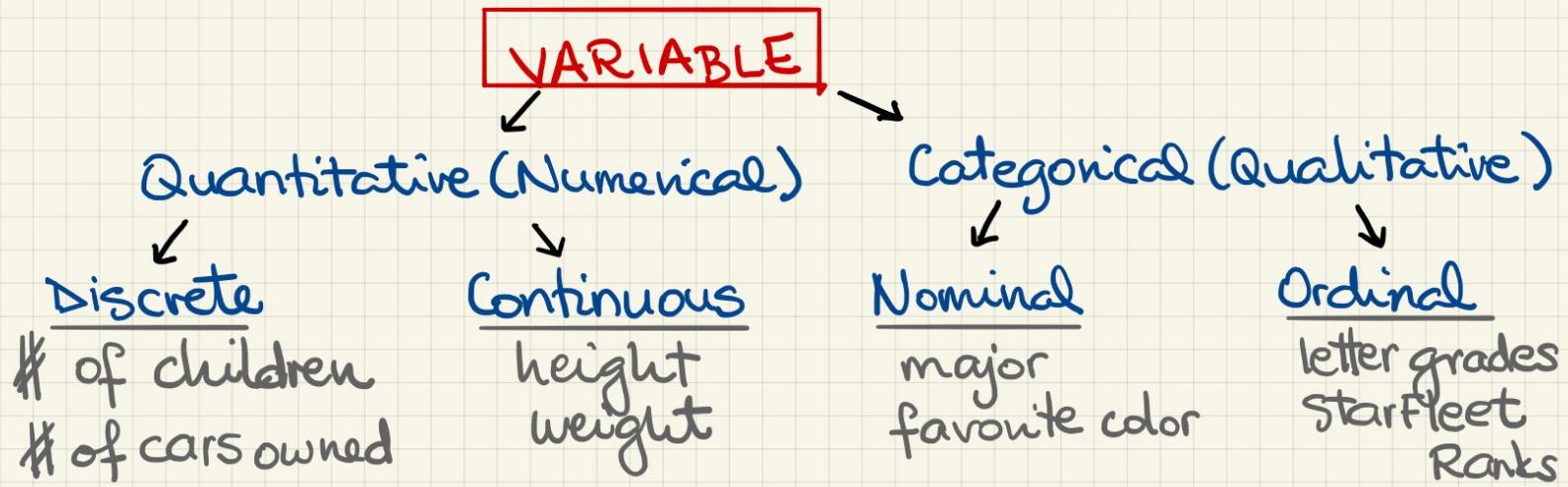
e.g.: color, breed, hrs of sleep, ...

- age, how they vote, education, ...
- length, venomous or not, ...
- how many survived after a week of treatments, ...
- house, ...
- number of claims, ...
- age, where, recovery time, ...
- # of students w/ free lunches, ...

3<sup>rd</sup> The members of your population which you measure or survey:



4<sup>th</sup> For every case we measure a set of quantities or outcomes:



Focus: Figuring out a model for relative likelihoods of a particular variable.

### Named Distributions w/ parameters

e.g., Binomial ( $n, p$ )

usually the parameter  
of interest;

Poisson ( $\lambda$ )

Pareto

Normal (mean =  $\mu$ , var =  $\sigma^2$ )

\*\*\* Even w/out a name for the dist'n,  
we can be interested in the average  
behavior, i.e., the estimate of the mean. \*\*\*

5<sup>th</sup> Collect your data and analyze  
your data to figure out an  
appropriate SHAPE of the dist'n in  
the model and/or values of interest  
(estimates).