

What is Statistics?

1<sup>st</sup> Identify the broad population about which you want to draw conclusions.

- voters in US
- male math majors
- bacteria
- elementary school in AISD

2<sup>nd</sup> What are we interested in measuring?

- vote for? ✓
- how many problems per week?
- survived after a week of treatment ✓
- # of students w/ free lunches.

3<sup>rd</sup> The members of the population which measure/survey : CASES.



4<sup>th</sup> For every case we measure a certain quantity or record an outcome.

→ VARIABLE

Categorical (Qualitative)

Quantitative (Number: numerical)

Nominal  
e.g., major;  
favorite colors

Ordinal  
e.g., army ranks,  
letter grades,  
clothes sizes

Discrete

Continuous

e.g.,  
# of cars owned;  
# on die / dice;  
# of accidents

e.g., height,  
weight;  
Blue book value;  
loss associated w/ accident.

Relative of a model)

likelihoods of a random variable was given

of different values (the probabilistic (teacher, book, ...)).

Named distribution

w/ parameters

density function (pdf) (if continuous r.v.)

mass function (p.m.f.) (if discrete r.v.)

(cdf)

Cumulative Distribution function

# Parametric Statistics

↳ Named dist'n

② What the values of parameters should be ②

Nonparametric / semiparametric stats x