

AMS 5

STATISTICS

ams005 - winter 16 - 02. courses. soe. ucsc. edu

- population - the entire set of interest
- all registered voters
 - all UCSC students
 - all chocolate chip cookies

- sample - the part of the population about which we have collected data.
- those who responded to an opinion poll
 - those students whose heights we recorded
 - the chocolate chip cookies we ate in class.

Probability - theoretical aspects of randomness

Inference. - learning from data, taking randomness into account.

concepts / terminology.

Descriptive statistics - describes the available data
computed from the data you have collected.
no uncertainty.

Inferential statistics - making educated guesses based on data.

eg what can we say about the % of UCSC students who are econ majors based on the % of AMS 5 students who are econ majors

Variability

Randomness

Uncertainty

examples.

Rainfall - very variable, easy to measure accurately
heights of students

of deer on campus. - hard to measure

chocolate chips in a cookie

is a new drug more effective than an old one?

How to design a trial to test a new drug?

Opinion polls.

- will the student sitting next to you say yes if you ask them on a date?
- should you ask them?

- how might you decide whether they are different
- Is there any connection between how tall you are, and the total # tips you rolled?

Questions

- Dice
- what values do we expect?
 - what should the most common value be?
 - how often do we expect each value between 1 and 60 to appear?
 - how much variability do we expect?
 - how do we know when the values we have are reasonable?
 - Do the totals we get from the white dice differ in important ways from the totals we get from the red dice?
 - ↳ how do we use this as a model for more interesting situations.

Roll the die 10 times

Record the total number

of pips on the 10 rolls.

4, 1, 3, 6, 3, 6, 2, 1, 2, 1 = 29.

tinyurl.com / AMS5 - class 1.