Stat 145, Wed 5-May-2021 -- Wed 5-May-2021
Biostatistics
Spring 2021

Wednesday, May 5th 2021

Wk 14, We
Topic:: Q and A for Test 3

- How do you physically
  - draw a randomization sample in goodness-of-fit testing?

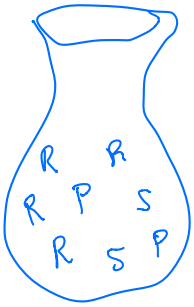
7.1

Orig. Sample
Rock
Rock
Scis.
Rock
Paper
Paper
Scis.
Rock

Altered bag for randomization

composition of slips should match null hypothesis

Original Data



w/ replacement to get bootstrap sample

$H_0: p_R = p_P = p_S = 1/3$

New draw: 3R, 3S, 2P $\rightarrow \sum \frac{(\text{observed} - \text{exp})^2}{\text{exp}}$

  - produce a randomization χ^2-statistic in the test for association? `shuffle()`?

Case → value for var. 1 and var. 2

var. 1	var. 2
E	soph.
I	jun.
E	jun.
O	sen.
U	freshman
⋮	⋮

→ two-way table

vowel \ Class standing	f	so	jr	se
A	obs.	obs.	–	–
B	–	–	–	–
C	–	–	–	–
D	–	–	–	–
E	–	–	–	–

shuffle var. 2

var. 1
E
I
E
O
U
⋮

  - produce a randomization sample in the case of data such as **SandwichAnts**?

  - produce a randomization sample in the case of data such as **RestaurantTips**?

- To which inference procedure studied earlier in the course does the given one represent an extension?
  - Chi-square test for association
    generalizes 2-proportion
  - One-way ANOVA
    2-sample t

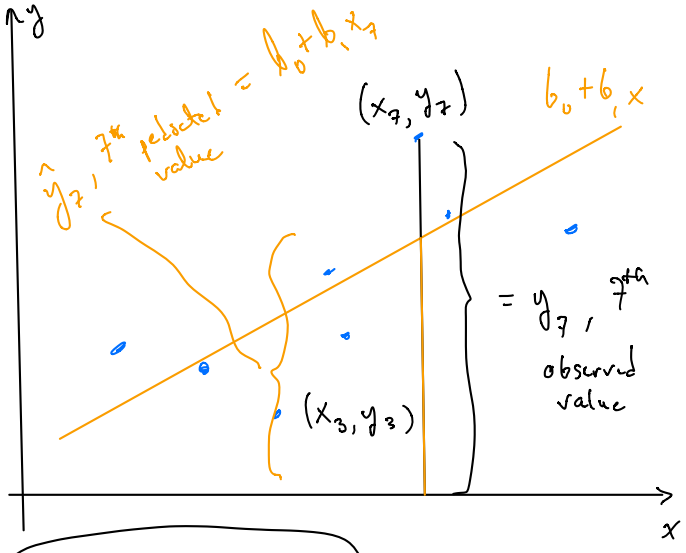
  - goodness-of-fit
    like 1-proportion, but allows for nonbinary data

Party	Dem	Rep.	
Christian			
Y	15	18	33
N	35	54	89
	50	72	

- Why is it called
  - ANOVA?
    Analysis of Variance
  - One-way?

- When you introduce a linear model (regress) on a set of of (x, y)-pairs (i.e., fodder for a scatterplot), what is
  - an observed value
  - a fitted (or predicted) value
  - a residual

    residual = observed − predicted



- How are the ANOVA table, correlation, slope, and coefficient of determination interrelated?

$$R^2 = (\text{correlation})^2 = \frac{SS\,Model}{SS\,Total} \Big\} \text{ found on an ANOVA table}$$

$= R^2$

correlation and slope always have same sign

- When doing the model utility test, do you use t or F?