08.01 Chi-squared Test for Goodness of Fit

when testing multiple proportions

hypothesis tests can be performed on one proportion to gain evidence about the population

the Ho & Ha are always the same w/a Goodness of fit test

$$\underset{\text{test statistic "Chi-squared"}}{X^2} = \sum \frac{(\overset{\text{observed count}}{O} - \overset{\text{expected count}}{E})^2}{E}$$

df = (# of categories) − 1

p-value = x^2cdf (x^2, 9999, df)

not normal distribution, chi-squared distribution

Conditions:

- if all counts are greater than 5

Ho: observed = expected

Ha: observed ≠ expected

properties:

- not negative
- skewed to the right
- always 1-tail
- df = n − 1

08.02 Goodness of Fit & Calculator

$$E = \frac{(\text{row total})(\text{column total})}{\text{total \# surveyed}}$$

if a > p-value, reject Ho

08.03 Review

08.04 Review

08.05 Inference for Regression: Estimating Slope

conditions:

- for any x value, y varies according to normal distribution & is independent
- mean response of y has a straight line relationship with x
- the stdev of y is the same for all values of x and is unknown

confidence interval for slope:

- critical value is based on a t score w/ n-2 degrees of freedom
- find margin of error

Sample statistic ± margin of error

↑ "Sample coefficient" ↑ critical value × standard error

08.06 Regression and Testing Slope

determines whether or not there is a significant linear relationship between x & y

conditions

- y has a linear relationship to x
- for each x, the probability distribution of y has the same stdev
- y is independent & roughly normally distributed (↑ n)

if there is a significant linear relationship between x & y - the slope will not = 0

$H_0: B_1 = 0$

$H_a: B_1 \neq 0$

use t test to see whether the slope of the regression differs significantly from 0

$df = n-2$ $\quad t = \frac{b_1}{SE}$ $\quad$ p-value = tcdf