Inspiring Greatness

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

AP stats / estimating slopes

May 20, 2020

Lesson: May 20, 2020

Objective/Learning Target:
Students will apply t-procedures to construct confidence intervals of slopes.

Review #1

We take a random sample of US adults and want to know if education level affects the preference in music. We obtain the following table

	Rock	Rap	Country	Classical
Highschool	20	15	10	5
College	15	20	8	10
Graduate school	10	17	5	12

What test should be used on this data, and do we meet all conditions?

Review #2

	Rock	Rap	Country	Classical
Highschool	20	15	10	5
College	15	20	8	10
Graduate school	10	17	5	12

Using the data from the last question, what is the chi-squared test statistic? What can we conclude from this value?

Answers

1. Since this is a single sample measuring two different variables, we should use the test of association. The sample is random, all counts are 5 or more, n=133 is safely under the 10% condition of all Americans. Thus we meet the conditions for the test.
2. We use the TI-84 calculator to run a chi squared test. We enter the table values into 3x4 matrix. Then run the test. It gives us the test statistics of 7.99 with 6 degrees of freedom. This corresponds to a p-value of 0.2385. This is not significant so we cannot conclude any association between the variables. The calculator also outputs a list of expected counts in a new matrix. You have to go to the matrix list to see it.

Regression slopes

When we create LSRL from a sample, we are only estimating what the a and b values are in the y = a+bx equation. Just like estimating means and proportions, these are point estimates. We know that a single point is not a great guess. Just like with means and proportions we can also calculate a confidence intervals on the slope and intercept of a LSRL. The methods for estimating slopes are outlined in the following video, but a similar method is available for the intercept.

Confidence Intervals for slopes

Extra Practice

Reading: pg 739-758

HW: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19