

Statistics Lesson 66 – Goodness of Fit

The chi-square test for homogeneity of populations (Goodness of Fit)

- Independent SRSs are drawn from each of several populations and each observation is classified according to a categorical variable of interest.
- The null hypothesis is that the distribution of observations for a categorical variable matches what is expected/claimed.
- The alternate hypothesis is that the distribution is not the same for all populations.
- One common use is to compare several population proportions.

Daily Data Collection

My claim: If the presidential election were held today, here is how this class would vote:

33% would vote for the winner

33% would vote for the loser

33% would vote for anyone else.

Ho:

Ha:

	Observed	Expected	χ^2
Winner =			
Loser =			
Other =			

Total χ^2 Value:

P-value:

Conclusion:

Ex 1 - Chi-Squares in Biology:

Consider the Punnett square for a dominant gene (G) and recessive gene (g)

		Parent 2		
		G	g	Results
	G	GG	Gg	GG = Green
Parent 1	g	Gg	gg	Gg = Yellow-green
				gg = albino

A sample of 84 plants is selected with distribution 23 Green, 50 Yellow-green, and 11 albino. Does the distribution fit the expectation? Explain.

Ex 2 – A principal feels the distribution of ACT scores is normally distributed for the students enrolled at her school. The ACT is known to have a mean of 21 with standard deviation of 5. The distribution of scores for the school's students from the last administration of the ACT is shown below.

Score	Count
Less than 11	4
11-15	19
16-20	39
21-25	34
26-30	11
over 30	8

Can we say that the distribution of ACT scores follows a normal distribution?