

# Chi-Squared Test for Gender vs Academic Year (Lab 5&6)

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4:05 PM

	Freshman	Sophomore	Junior	Senior	Total
Female	3	10	2	5	20
Male	0	26	10	9	45
Prefer not to say	0	2	0	0	2
Total	3	38	12	14	67

Null hypothesis: No correlation between gender and year of education.

significance level: 0.05

Expected value	0.89	11.34	3.58	4.17
calculation:	2.01	25.52	8.05	9.40
	0.08	1.13	0.35	0.41

Chi-squared calculation: 
$$\sum \frac{(\text{Observed} - \text{Expected})^2}{\text{Expected}}$$

$$\approx 9.39$$

Degree of Freedom:  $(3-1) \cdot (4-1) \Rightarrow (2)(3) = 6$

With 6 degrees of freedom and our test statistic of 9.39, our p-value is  $0.1 < p < 0.2$ . This means our p-value is greater than our significance level of 5%, meaning we fail to reject the null hypothesis and there's no correlation between gender and year of education.