PO12Q - Introduction to Quantitative Political Analysis II:
Worksheet Week 1 - Solutions

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1 | Calculations by Hand

Expected Values:

	Mode of Transport			
Year of Study	Bike	Bus	Car	Total
Fresher	7.2	6.8	6	20
Finalist	10.8	10.2	9	30
Total	18	17	15	50

- Calculate the χ^2-value **(2.8867)**
- How many degrees of freedom does this table have? Why? **(2)**
- Using the χ^2 Table, what is the p-value? **(0.236, or between 0.90 and 0.10)**
- Are mode of transport and departmental assignment independent in the population? **(Yes)**

2 | Cross-Tabulations in R – Exercises

1. Let is find out whether the completion of primary school influences youth unemployment rates.
    a. State the null and directional alternative hypothesis for this test.
    b. Create a new variable primary_fac using the primarycom variable. Cut it into three categories "low", "medium", and "high", cutting primarycom at its first quartile, and its mean.

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
##   37.50   90.71   98.27   92.74  101.50  114.27      83
```

c. Apply the same procedure to unemploy, creating a new variable called unemp_fac.

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
##   0.170   3.555   6.100   7.646   9.908  27.690      25
```

d. Create a cross-tabulation assessing the dependence of youth unemployment on primary completion rate.

e. Test whether the dependence is statistically significant.

```
##
##  Pearson's Chi-squared test
##
## data:  ex1_table
## X-squared = 7.0878, df = 4, p-value = 0.1313
```