**Statistics – Sample Questions**

1. State, in your own words, what the following terms mean
   a) Chi-Square
   b) p-value for Chi-Square test
   c) expected value
   d) rule of thumb for chi-square test
   e) two variables are independent

2. Decide if the following statements are true or false.
   a) If the p-value of a Chi-Square test comes out 0.45, there is a relation between the two variables
   b) If an expected value in a contingency table is less than 5, and the p-value of a Chi-Square test is equal to 0.001, then the two variables are dependent

3. Use StatCrunch to compute a contingency table for religious preference versus political opinion, using data from the "General Social Survey (GSS)".
   a. Is any expected value less than 5?
   b. Compute the p-value using the Chi-Square test
   c. What is your conclusion based on the p-value computed before

4. To investigate whether a relation exists between affiliation with a particular political party and the opinion on gun permits we used Excel to create the following contingency, or crosstabs, table, showing row percentages.

**FAVOR OR OPPOSE GUN PERMITS * Party Affiliation Crosstabulation**

% within FAVOR OR OPPOSE GUN PERMITS

| | | Party Affiliation | | | | |
|---|---|---|---|---|---|---|
| | | Democrat | Independent | Republican | Other | Total |
| FAVOR OR OPPOSE GUN PERMITS | FAVOR | 35.7% | 36.5% | 26.5% | 1.3% | 100.0% |
| | OPPOSE | 23.4% | 39.5% | 34.7% | 2.4% | 100.0% |
| Total | | 33.5% | 37.0% | 28.0% | 1.5% | 100.0% |

   a) Based on that table, do you think there is strong evidence that the two variables associated? Use common sense (which will likely be somewhat ambiguous), not mathematics
   b) Based on your answer, what would be an approximate p-value if we conducted a Chi-Square test? Again, no math, base your answer on part (a)
   c) Why could you not use the above table to compute expected values?

5. Suppose a contingency table has been created from a survey questioning people about their sex (gender) and opinion on gun control. The (fictitious) table is as follows:

| | **For** | **Against** |
|---|---|---|
| **Female** | 60 | 40 |
| **Male** | 50 | 80 |

   Is any expected value less than 5?