**Instructions:** This is the last project before your final project is due. This is one last chance to practice making a great project.

In this project, you will perform chi-square test for independence using StatCrunch on a sample of students from StatCrunchU.

Spend 5 minutes analyzing the question, and preparing a StatCrunch analysis. Then you will speed date about your analysis two times, record the suggestions from the speed dating and rewrite your analysis. Your instructor will then call on individuals to present their final analysis to the class.

For this question, your analysis should include the following…

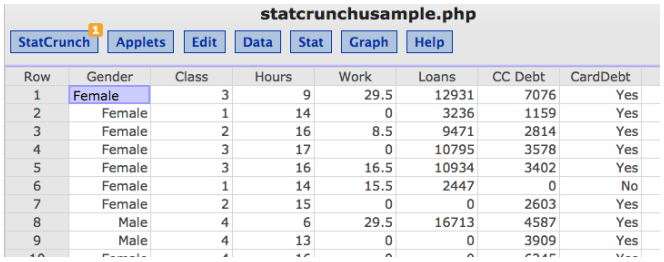
- Your name.
- A statement of the research question.
- Confirmation that the conditions for the chi-square test are satisfied (this will be easier if you first run the StatCrunch analysis).
- A screenshot of your StatCrunch results that contains both the observed and expected counts, and the P-value for the test.
- A hypothesis test in our four-step format that addresses the question. Your conclusion must include an interpretation of the P-value.
- A sentence interpreting the conclusion in terms a member of the public could understand.
- A summary of the feedback you received during speed-dating.

**Project Question**

1) For students, is having credit card debt related to having student loan debt, or are they independent? Define the necessary categorical variables using ifelse statements and conduct a chi-square test on a sample of 500 StatCrunch U students.

**StatCrunch for Contingency Tables with Details: An example.**

Is carrying a student load independent of academic class? We run a chi-square test on a sample of 500 StatCrunchU students, and add a categorical data column for credit card debt.

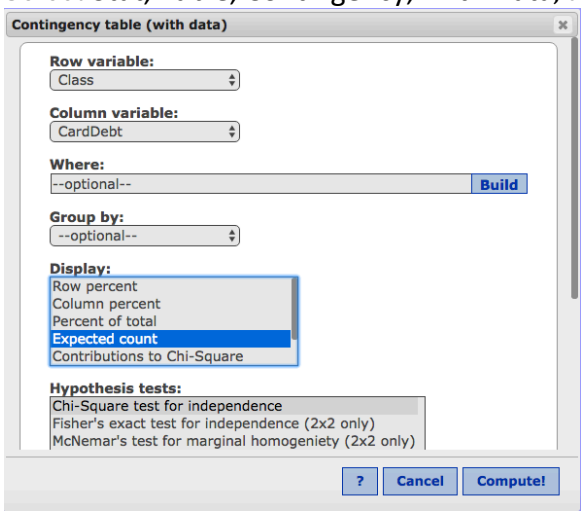


statcrunchusample.php

StatCrunch | Applets | Edit | Data | Stat | Graph | Help

| Row | Gender | Class | Hours | Work | Loans | CC Debt | CardDebt |
|---|---|---|---|---|---|---|---|
| 1 | Female | 3 | 9 | 29.5 | 12931 | 7076 | Yes |
| 2 | Female | 1 | 14 | 0 | 3236 | 1159 | Yes |
| 3 | Female | 2 | 16 | 8.5 | 9471 | 2814 | Yes |
| 4 | Female | 3 | 17 | 0 | 10795 | 3578 | Yes |
| 5 | Female | 3 | 16 | 16.5 | 10934 | 3402 | Yes |
| 6 | Female | 1 | 14 | 15.5 | 2447 | 0 | No |
| 7 | Female | 2 | 15 | 0 | 0 | 2603 | Yes |
| 8 | Male | 4 | 6 | 29.5 | 16713 | 4587 | Yes |
| 9 | Male | 4 | 13 | 0 | 0 | 3909 | Yes |

Select Stat, Table, Contingency, With Data, and complete the form as shown below.



Contingency table (with data)

**Row variable:** Class

**Column variable:** CardDebt

**Where:** --optional-- Build

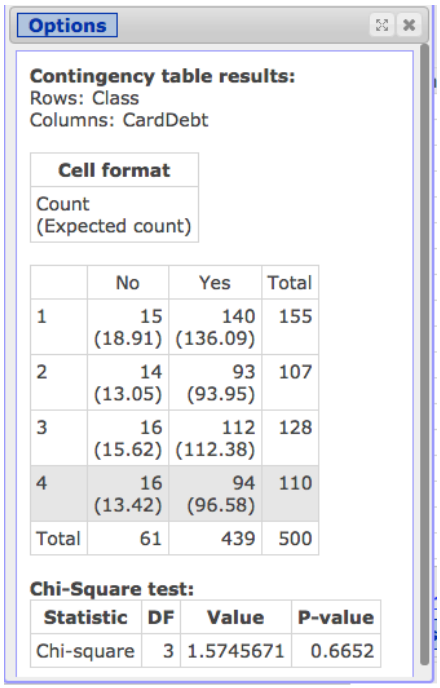
**Group by:** --optional--

**Display:**
Row percent
Column percent
Percent of total
Expected count
Contributions to Chi-Square

**Hypothesis tests:**
Chi-Square test for independence
Fisher's exact test for independence (2x2 only)
McNemar's test for marginal homogeniety (2x2 only)

? | Cancel | Compute!

Click Compute!



Options

**Contingency table results:**
Rows: Class
Columns: CardDebt

| Cell format |
|---|
| Count<br>(Expected count) |

| | No | Yes | Total |
|---|---|---|---|
| 1 | 15<br>(18.91) | 140<br>(136.09) | 155 |
| 2 | 14<br>(13.05) | 93<br>(93.95) | 107 |
| 3 | 16<br>(15.62) | 112<br>(112.38) | 128 |
| 4 | 16<br>(13.42) | 94<br>(96.58) | 110 |
| Total | 61 | 439 | 500 |

**Chi-Square test:**

| Statistic | DF | Value | P-value |
|---|---|---|---|
| Chi-square | 3 | 1.5745671 | 0.6652 |