Consider a study done by Timonen et al. that investigating the risk of suicide and it possible relationship with income level. This study was done in Finland because it has one of the highest death rates from suicide and treatment methods are similar across income levels (i.e. most of the population is treated similarly in public hospitals, regardless of socioeconomic status). Consider the following data from their study.

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| --- | --- |
| Violent\* vs. Non Violent Across Occupations    \*Violent Includes: Hanging, drowning, shooting, wrist cutting, jumping from a height | |

Source: Timonen, M., Viilo, K., Hakko, H., Väisänen, E., Räsänen, P., and Särkioja, T. (2001). “*Risk of suicide related to income level in mental illness: Psychiatric disorders are more severe among suicide victims of higher occupational level*.” British Medical Journal, Vol. 323 (7306) : 232.

Consider the relationship between Violent/Non Violent Suicide and a person Occupation.

1. Enter this data into JMP and obtain a mosaic plot and its associated contingency table.

*<Copy and paste relevant JMP output here>*

Describe the patterns present in the mosaic plot. For example, which Occupation has the largest proportion of violent suicides? Lowest proportion? Etc. (5 pts)

1. Conduct a Chi-Square Test of Independence to answer the following research question.

Research Question: Is there an association between whether or not a suicide is violent in nature and one’s occupation?

*<Copy and paste relevant JMP output here>*

What is the conclusion for your test? Write this conclusion in laymen’s terms. (3 pts)

1. From the red drop-down menu on the Continency Table, select Expected. Show the math for how the Expected quantity is computed. (You only need to do this for one cell). (3 pts)
2. From the red drop-down menu on the Continency Table, select Cell Chi Square. Which cells contribute to the overall Chi Square value the most? Discuss. (3 pts)
3. There is likely to be a larger difference in age for Occupation = Student compared the other Occupations provided here. Rerun the statistical test without Occupation = Student. Does removing this group change the conclusion of the research question? Discuss. (4 pts)

Research Question: Is there an association between whether or not a suicide is violent in nature and one’s occupation?

Consider another dataset provided by Timonen et al. Conduct a Chi-Square Test of Independence on this data.

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| Reason for Admission into Treatment  Across Occupations |

1. Write out the appropriate research question for your analysis. (3 pts)

Research Question:

1. Write a conclusion for your research question, in laymen’s language. (4 pts)