Stats Support Final Exam Review
Practice questions

will be taken up in Stats Support on Tuesday December 10 and Wednesday December 11, remember you do not need to complete the questions to attend stats support

1. We are interested in the gendered experience of economic growth in a mid-sized Canadian city. We took a random sample of 286 working adults from the same city. Among other things, we measured their gender, and the increase in their total earnings since last year, organized into 'higher increase' and 'lower increase'. Of the 97 women, 56 fell into the lower category and 41 fell into the upper category. Of the 189 men, 67 of them fell into the lower category and 122 into the higher category.

In a sentence, describe the association between these two variables (1).
Is the relationship between gender and earnings increases statistically significant? (9)

2. We have gathered information looking at 5 Canadian cities with different rates of economic growth. We are interested in the extent to which higher infrastructural quality might support higher economic growth. To that end, we also have information on the completeness, moderness and state of repair of city infrastructure, organized into a scale out of 25 with a higher score indicating higher quality of infrastructure.
Here is the raw data:

City	Infrastructural quality	Economic Growth Rate (%)
1	9	0.05
2	10	0.76
3	17	3.2
4	21	6
5	14	1.8

Use this information to calculate the appropriate measure(s) of association and interpret the relationship. (10)

3. A survey was given to a random sample of investors in Canadian cities. Respondents were asked to score the city in terms of a variety of infrastructure related investment decisions. The resulting investment infrastructure index is scored out of 80. City 1 had 76 respondents and had a mean score of 62 with a standard deviation of 6. City 2 had 44 respondents and a mean score of 56 with a standard deviation of 8.

Does City 1 have a significantly higher investment infrastructure score than City 2? (10)

4. We are looking at the amount of joblessness as it currently relates to the size of various Canadian cities. Our expectation is that since bigger cities are economically growing faster, they will have less joblessness than slower growing cities. We have a random sample of urban respondents from across Canada and have noted the population size, and the amount of joblessness in the cities they live in. Here are the results:

Amount of joblessness experienced by population size of city of residence				
City size				
Joblessness	<50 000	50 to 99 999	100 000 plus	*Total*
low	185	345	555	*1085*
moderate	215	239	240	*694*
high	61	62	111	*234*
Total	*461*	*646*	*906*	*2013*

Identify cells, row marginals, column marginals, N, X and Y on this table (3)
Calculate the appropriate percentages for this table and interpret the results. (4)
Calculate maximum difference for this table and interpret it with your results. (3)

5. We have gathered information looking at 5 Canadian cities with different rates of economic growth. We are interested in the extent to which higher infrastructural quality might support higher economic growth. To that end, we also have information on the completeness, moderness and state of repair of city infrastructure, organized into a scale out of 25 with a higher score indicating higher quality of infrastructure.
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We calculated the regression line Y=a+bX to be Y=-4.24+(+.47)X.

Create a scatterplot of the this data including all of the appropriate components, and draw on the regression line. (5)
What is the predicted impact per unit increase in infrastructural quality on economic growth? (1)
What is the predicted rate of growth for the cities with the highest and lowest quality scores? (2)
What would the growth be for a score of 0? A perfect score? (2)

6. We ran a formal test on the association between city size and level of joblessness and our results were that Ns=305439 Nd=459554 and G=+.21.

Fully interpret the G (2).
Is the association statistically significant with an alpha of .01? (8)

7. We measured the following information about gender and earnings increases:

Earnings increases for men and women			
	Gender		
Earnings increases	Male	Female	Total
Lower	67	56	123
Higher	122	41	163
Total	189	97	286

We calculated a X^2 = 12.98 for this table.

Use this information to calculate the appropriate measure(s) of association and interpret the relationship. (10)

8. We ran a formal test on the correlation between the variables infrastructural quality and economic growth rates across Canadian cities. Our results were that r =+.98.

Fully interpret this result. (2)
Is the relationship statistically significant? (8)

9. We are looking at the amount of joblessness as it currently relates to the size of various Canadian cities. Our expectation is that since bigger cities are economically growing faster, they will have less joblessness than slower growing cities. We have a random sample of urban respondents from across Canada and have noted the population size, and the amount of joblessness in the cities they live in. Here are the results:

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Use this information to calculate the appropriate measure(s) of association and interpret the relationship. (10)