

Chi square (χ^2) exercise

(this is in-class exercise for your own practices)

Question 1

For the following crosstab, please answer the questions

**Table 6.1. Identification with School
by Home Town Size (in frequencies
and expected frequencies)**

Identification with School	Size of Home Town		Total
	Small	Large	
High	8 ()	12 ()	20
Low	7 ()	3 ()	10
Total	15	15	30

A) State the null hypothesis

B) Computing the expected frequencies

C) Computing chi-square

D) Computing df (degree of freedom)

E) Determine the p level

F) Decision regarding the null hypothesis, type of errors committed

Question 2

The following data show crosstab between education and economic position. Based on the data, answer the following questions

	<HS	HS	College
Recycle	75	50	61
Not recycle	88	35	29

1. State the null hypothesis H_0
2. Compute the χ^2 and df
3. What is the significant (p) level?
4. What decision can be made regarding the null hypothesis and what type of error ensues?

Question 3

For the following crosstab, please answer the questions

Table 6.4. Satisfaction with Income by Race (in frequencies and expected frequencies)

Satisfaction with Income	Race		Total
	White	Black	
Pretty well	737 ()	67 ()	804
More or less	1000 ()	187 ()	1187
Not satisfied	488 ()	177 ()	665
Total	2225	431	2656

A) State the null hypothesis

B) Computing the expected frequencies

C) Computing chi-square

D) Computing df (degree of freedom)

E) Determine the p level

F) Decision regarding the null hypothesis, type of errors committed

Question 4

Answer the following questions,

What are the probabilities associated with each of the following chi squares and degrees of freedom? What decision do you make concerning the null hypothesis, and what type of error do you risk?

Chi Sq	df	p <	H ₀		Error Risk	
			Reject	Don't Reject	Type I	Type II
13.612	6	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.171	4	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.778	5	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.435	2	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.643	1	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question 5

Suppose that two values of an independent variable are switched. For example, if religion is the independent variable, switch Protestants and Catholics. What happens to the degrees of freedom, chi square, and probability ... and why?

df Increase Stay the Same Decrease It depends

chi square Increases Stays the Same Decreases It depends

p Increases Stays the Same Decreases It depends

Why?

Question 6

If cell frequencies in a bivariate frequency table are doubled, what happens to the degrees of freedom, chi square, and probability . . . and why?

df Increase Stay the Same Decrease It depends

chi square Increases Stays the Same Decreases It depends

p Increases Stays the Same Decreases It depends

Why?
