

Name _____

STA2453 Statistical Consulting: Assignment Two

Due at the beginning of class Friday Oct. 16th

1. For background on this assignment, see the email to our client. For the present, we are considering only

- Alcohol in 1st trimester
- Tobacco in 1st trimester
- Alcohol in 3d trimester
- Tobacco in 3d trimester

Write a multinomial model for the data. This is very quick; it's only a line or two. For background on the multinomial distribution (far more than you need, but a nice resource) you could look at an old slide show from one of my undergraduate classes at UTM:

<http://www.utstat.utoronto.ca/~brunner/oldclass/312f12/lectures/312f12Multinomial.pdf>

2. Write the parameters of your model in the table below.

			Third Trimester			
			Alcohol	Alcohol	No Alcohol	No Alcohol
			Smoke	No Smoke	Smoke	No Smoke
First Trimester	Alcohol	Smoke				
	Alcohol	No Smoke				
	No Alcohol	Smoke				
	No Alcohol	No Smoke				

3. In words (not symbols), what is our main research question? If you are unsure, re-read the email and consult your class notes.

4. We are working toward the null hypothesis. This question may help. In terms of your model parameters,
- a) What is the probability of reported alcohol use in the first trimester?
 - b) What is the probability of reported alcohol use in the third trimester?
 - c) What is the *change* in probability of reported alcohol use from the first to the third trimester? Express your answer so that positive numbers represent a decrease in the probability.
5. We need a two sided test here. In term of the symbols from your model, what is the null hypothesis?