Practice Problems Section 4E

1. If the proportions for a categorical variable from one group are significantly different from another group, what does that indicate about the relationship between that variable and the groups?

2. If the proportions for a categorical variable from one group are almost the same as another group, what does that indicate about the relationship between that variable and the groups?

(#3-10) Open the math 140 fall 2015 survey data at www.matt-teachout.org. Copy and paste the smoking status column and the type of transportation column next to each other in a new excel spread sheet. Then copy both columns together. Open StatKey at www.lock5stat.com. Under the "Descriptive Statistics and Graphs" menu, click on "Two Categorical Variables". Paste the two columns into StatKey. Be sure to check the boxes for "Raw Data" and "Header Row" and push "OK". Use StatKey to create a contingency table for smoking status and transportation. Use the table to answer the following questions.

3. What percent of the math 140 students smoke?

4. What proportion of the math 140 students drive alone to school?

5. What percent of the math 140 students both carpool and do not smoke?

6. What proportion of the math 140 students both smoke and drive alone to school?

7. What percent of the math 140 students either do not smoke or are dropped off by someone?

8. What proportion of the math 140 students either walk to school or smoke?

9. What percent of the smoking math 140 students carpool? What percent of the non-smoking math 140 students carpool? Do the proportions appear to be close or significantly different? What does this tell us about the relationship between smoking and carpooling to school?

10. What proportion of the drive alone math 140 students smoke? What proportion of the dropped off math 140 students smoke? Do the proportions appear to be close or significantly different?
     What does this tell us about the relationship between smoking and the type of transportation?

(#11-18) Open the math 140 fall 2015 survey data at www.matt-teachout.org. Copy and paste the texting and driving column and the car accident column next to each other in a new excel spreadsheet. Then copy both columns together. Open StatKey at www.lock5stat.com. Under the "Descriptive Statistics and Graphs" menu, click on "Two Categorical Variables". Paste the two columns into StatKey. Be sure to check the boxes for "Raw Data" and "Header Row" and push "OK". Use StatKey to create a contingency table for texting and driving and car accidents. Use the table to answer the following questions.

11. What percent of the math 140 students text and drive?

12. What proportion of the math 140 students have been in a car accident?

13. What percent of the math 140 students both text and drive and have been in a car accident?

14. What proportion of the math 140 students do not text and drive and have not been in a car accident?

15. What percent of the math 140 students either text and drive or have not been in a car accident?

16. What proportion of the math 140 students either do not text and drive or have been in a car accident?

17. What percent of the text and drive math 140 students have been in a car accident? What percent of the not text and drive math 140 students have been in a car accident? Do the proportions appear to be close or significantly different?   What does this tell us about the relationship between texting and driving and car accidents?

18. What proportion of the car accident math 140 students text and drive? What proportion of the no car accident math 140 students text and drive?   Do the proportions appear to be close or significantly different? What does this tell us about the relationship between texting and driving and car accidents?

(#19-26) Open the math 140 fall 2015 survey data at www.matt-teachout.org. Copy and paste the tattoos column and the favorite social media column next to each other in a new excel spread sheet. Then copy both columns together. Open StatKey at www.lock5stat.com. Under the "Descriptive Statistics and Graphs" menu, click on "Two Categorical Variables". Paste the two columns into StatKey. Be sure to check the boxes for "Raw Data" and "Header Row" and push "OK". Use StatKey to create a contingency table for tattoos and favorite social media. Use the table to answer the following questions.

19. What percent of the math 140 students have a tattoo?

20. What proportion of the math 140 students prefer snapchat?

21. What percent of the math 140 students both prefer Facebook and do not have a tattoo?

22. What proportion of the math 140 students both have a tattoo and prefer twitter?

23. What percent of the math 140 students either prefer Instagram or have a tattoo?

24. What proportion of the math 140 students either prefer twitter or do not have a tattoo?

25. What percent of the tattoo math 140 students prefer twitter? What percent of the no tattoo math 140 students prefer twitter? Do the proportions appear to be close or significantly different? What does this tell us about the relationship between liking twitter and having a tattoo?

26. What proportion of the Instagram math 140 students have a tattoo? What proportion of the Facebook math 140 students have a tattoo?   Do the proportions appear to be close or significantly different? What does this tell us about the relationship between social media and having a tattoo?

(#27-34) Open the car data at www.matt-teachout.org. Copy and paste the country column and the cylinders column next to each other in a new excel spread sheet. Then copy both columns together. Open StatKey at www.lock5stat.com. Under the "Descriptive Statistics and Graphs" menu, click on "Two Categorical Variables". Paste the two columns into StatKey. Be sure to check the boxes for "Raw Data" and "Header Row" and push "OK". Use StatKey to create a contingency table for the country and cylinders. Use the table to answer the following questions.

27. What percent of the cars were made in Germany?

28. What proportion of the cars have six cylinders?

29. What percent of the cars have four cylinders and are made in Japan?

30. What proportion of the cars have eight cylinders and are made in the U.S.?

31. What percent of the cars either have six cylinders or are made in Germany?

32. What proportion of the cars either have six cylinders or are made in the Japan?

33. What proportion of the cars made in Japan have four cylinders? What proportion of cars made in Germany have four cylinders? Are the proportions appear to be close or significantly different? What does this tell us about the relationship between the country and the number of cylinders?

34. What proportion of the cars with six cylinders were made in the U.S.A? What proportion of the cars with eight cylinders were made in the U.S.A? Are the proportions appear to be close or significantly different? What does this tell us about the relationship between cars made in the U.S.A and the number of cylinders?