Interpreting Statistical Significance and Measures of Association
PS 348

- Decide if you have nominal, ordinal or interval data
  - If you have nominal data:
    - Run a crosstab with a chi square and a Lambda
    - Look at the crosstab. Do you see a relationship?
    - Look at the chi square. Is this significance less than .1?
      - If so, we can be more than 90% certain that the relationship we observe occurs in the real world. Stated differently, we are more than 90% certain that we are not committing a type I error. We can safely reject the null hypothesis.
      - If not, the relationship is not statistically significant. In other words, we cannot be certain that the relationship we observe is “true.” We cannot reject the null hypothesis. Do not move on to the Lambda.
    - If the chi square is significant, then look at the value for the Lambda (not the significance). This value can vary from 0-1. This tells you how strong the relationship is—the closer to one, the stronger the relationship (.3 and above is strong, under .1 is very weak).
  - If you have ordinal data:
    - Run a crosstab with a chi square and a Gamma
    - Look at the crosstab. Do you see a relationship?
    - Look at the chi square. Is this significance less than .1?
      - If so, we can be more than 90% certain that the relationship we observe occurs in the real world. Stated differently, we are more than 90% certain that we are not committing a type I error. We can safely reject the null hypothesis.
      - If not, the relationship is not statistically significant. In other words, we cannot be certain that the relationship we observe is “true.” We cannot reject the null hypothesis. Do not move on to the Gamma.
    - If the chi square is significant, then look at the value for the Gamma (not the significance). This value can vary from -1-1. This tells you how strong the relationship is as well as the direction of the relationship. -1 suggests that it is a perfect negative relationship. 1 suggests that it is a perfect positive relationship. 0 means that there is no relationship. This is a PRE measure, meaning that you can interpret it fairly easily. By changing it into a % (e.g. .37 would be 37%), you can determine how much better off you are knowing the independent variable. For instance, a Gamma of .37 suggests that by knowing the independent variable, you have reduced the error in guessing by 37%.
  - If you have interval level data
    - DO NOT run a crosstab. Instead run a Pearson’s r. This gives you a test of significance and a measures of association at the same time. Interpret the significance as you would the chi square. If it is significant, then interpret the chi square value as you would the Gamma.