Correlation Analysis in SPSS

1. Value of Correlation
   a. Allows the researcher to determine if there is a relationship or association between two or more variables. Do changes in the value of one variable tend to correspond to changes in another?

2. Different Measures of Correlation
   a. SPSS has the ability to provide several different measures of correlation, including all of those introduced in the text for this class.
   b. Use the decision graphics to determine the appropriate measure of correlation for a given research scenario

3. Pearson's Correlation Coefficient \( (r) \)
   a. Used to measure correlation between two or more interval variables.
   b. Procedure
      i. Select analyze \( \rightarrow \) correlate \( \rightarrow \) bivariate
      ii. Move the variables under consideration into the box labeled “Variables”
      iii. In the section titled “Correlation Coefficients,” make sure the box labeled “Pearson” is checked
      iv. Choose options and check the box marked “means and standard deviations”
      v. Select continue
      vi. Select ok
   c. Interpreting the results
      i. SPSS will output a cross tabulation table that includes a value for Pearson's Correlation and a 2-tailed significance value.
         (1) If the value of “Sig.” reported is equal to or less than .05 (at the 95% level of confidence) or .01 (at the 99% level of confidence), the correlation is statistically significant and the null hypothesis is rejected
         (2) If the value of “Sig.” reported is greater than .05 (at the 95% level of confidence) or .01 (at the 99% level of confidence), the correlation is not statistically significant and the null hypothesis must be accepted

4. Spearman's Rho \( (r_s) \)
   a. Used to measure correlation when dealing with relatively precise ordinal data
   b. Procedure
      i. Very similar to that employed with Pearson's Correlation Coefficient
      ii. Select analyze \( \rightarrow \) correlate \( \rightarrow \) bivariate
      iii. Move the variables under consideration into the box labeled “Variables”
      iv. In the section titled “Correlation Coefficients,” make sure the box labeled “Spearman” is checked
      v. Select continue
      vi. Select ok
   c. Interpreting the results
      i. SPSS will output a cross tabulation table that includes a value for Spearman's Rho and a 2-tailed significance value.
         (1) If the value of “Sig.” reported is equal to or less than .05 (at the 95% level of confidence) or .01 (at the 99% level of confidence), the correlation is statistically significant and the null hypothesis is rejected
         (2) If the value of “Sig.” reported is greater than .05 (at the 95% level of confidence) or .01 (at the 99% level of confidence), the correlation is not statistically significant and the null hypothesis must be accepted
5. Gamma
   a. Used to measure correlation when working with extremely crude ordinal measures (i.e. 5 point agree/disagree scales)
   b. Procedure
      i. Select analyze → descriptive statistics → crosstabs
      ii. Place one variable in the row box and the other in the box labeled column
      iii. Select “statistics”
      iv. Check the box labeled “gamma” in the second column under the heading “ordinal”
      v. Select continue
      vi. Select ok
   c. Interpreting the results
      i. SPSS will output a set of 3 tables
      ii. The value for Gamma is included in the first column of the table labeled “Symmetric Measures”
      iii. The value for significance is labeled as “Approx. Sig.” and should be found in the final column of the same table
         (1) If the value of “Sig.” reported is equal to or less than .05 (at the 95% level of confidence) or .01 (at the 99% level of confidence), the correlation is statistically significant and the null hypothesis is rejected
         (2) If the value of “Sig.” reported is greater than .05 (at the 95% level of confidence) or .01 (at the 99% level of confidence), the correlation is not statistically significant and the null hypothesis must be accepted

6. Contingency Coefficient, Cramer's V, and Phi
   a. These are nominal measures of correlation. The appropriate nominal measure should be determined using the decision graphics that have been provided.
   b. Procedure
      i. The procedures for determining these statistics in SPSS are virtually identical, so they are explained as a group
      ii. Select analyze → descriptive statistics → crosstabs
      iii. Place one variable in the row box and the other in the box labeled column
      iv. Select “statistics”
      v. Check the box labeled “chi-square”
      vi. In the first column, select the box for the statistic you need to calculate
      vii. Select continue
      viii. Select ok
   c. Interpreting the results
      i. SPSS will output a set of tables
      ii. The value for the selected nominal measure of correlation is included in the first column of the table labeled “Symmetric Measures”
      iii. The value for significance is labeled as “Approx. Sig.” and should be found in the final column of the same table
         (1) If the value of “Sig.” reported is equal to or less than .05 (at the 95% level of confidence) or .01 (at the 99% level of confidence), the correlation is statistically significant and the null hypothesis is rejected
         (2) If the value of “Sig.” reported is greater than .05 (at the 95% level of confidence) or .01 (at the 99% level of confidence), the correlation is not statistically significant and the null hypothesis must be accepted