**Homework Assessing Statistical Techniques**

**For all simulations, use the seed 54321.**

**Simulating Correlated Bivariate normals**

There are several ways to generate multivariate normals in SAS. If one is only interested in examining correlation, then there is a simple result that can be used to generate bivariate normal observations from a population with a specified correlation ρ:

 

1. Use this result to simulate a sample of size 100 containing correlated bivariate normal observations with ρ=.9
2. Check your results using PROC CORR to estimate the correlation in the sample.

1. Check your result using PROC SGPLOT to obtain a scatter plot of the simulated sample.
2. Simulate 1,000 samples of size 50 containing correlated bivariate normal observations with ρ=.9
3. A method often used to obtain confidence intervals for an estimated coefficient is to use a transformation, Fisher’s z.

 

 

 

1. PROC CORR has the ability to produce confidence limits based on Fisher’s z. Use PROC CORR to obtain the 1,000 estimated correlation coefficients for the samples. Use an ods output statement to create a table contain the estimated correlations and the 95% confidence intervals based on Fisher’s z for the 1,000 samples. (Refer to PROC CORR documentation). **Do not forget to suppress output when this step is run.**

Examine the first 10 observations on the data set you created with a PROC PRINT step.

1. Calculate the coverage probability achieved in the samples.