**6304 Module 2 Lecture**

**R Script File**

**rm(list=ls())**

**# R as a Z Table**

**pnorm(36,72,14)**

**pnorm(48,72,14)**

**pnorm(48,78,14)**

**pnorm(48,72,9)**

**dnorm(48,78,14)**

**# Getting R to Draw Theoretical Normal Curves**

**curve(dnorm(x,72,14),from=30,to=120,lwd=3,ylim=c(0,.05),**

**main="Comparing Old and New Battery Designs")**

**curve(dnorm(x,78,9),from=30,to=120,lwd=3,col="red",add=TRUE)**

**abline(v=48,lwd=3,col="blue")**

**# Normally Distributed Random Variates**

**my.norms=rnorm(5000,72,14)**

**mean(my.norms)**

**sd(my.norms)**

**# Histogram**

**hist(my.norms,col="red",main="My Little Red Histogram")**

**# Density Plot**

**plot(density(my.norms),lwd=3,main="My Little Black Density Plot")**

**# Histogram and Density Plot Together**

**hist(my.norms,col="red",main="My Histogram and Density Plot",**

**ylim=c(0,.03),**

**probability = TRUE)**

**lines(density(my.norms),lwd=3,col="blue")**

**# QQ Plot**

**qqnorm(my.norms,pch=19,**

**main="My QQ Plot")**

**qqline(my.norms,col="red",lwd=3)**

**# My Distribution v. Theory**

**plot(density(my.norms),**

**main="Comparing My Data and Theory",**

**col="red",lwd=3,ylim=c(0,.03))**

**curve(dnorm(x,72,14),from=min(my.norms),**

**to=max(my.norms),**

**lwd=3,col="blue",add=TRUE)**

**# Comparing Standard Deviations**

**curve(dnorm(x,72,14),from=30,to=120,lwd=3,ylim=c(0,.05),**

**main="Comparing Standard Deviations")**

**for(i in 8:13){**

**curve(dnorm(x,72,i),from=30,to=120,lwd=3,add=TRUE)**

**}**

**# What About Uniform Distributions?**

**my.uniforms=runif(10000,0,1)**

**hist(my.uniforms, col="red")**

**plot(density(my.uniforms),lwd=3)**

**qqnorm(my.uniforms,pch=19)**

**qqline(my.uniforms,col="red",lwd=3)**

**# What About Objective Measures?**

**moments::skewness(my.uniforms)**

**moments::kurtosis(my.uniforms)**

**# Slicing Up the Uniform Distribution**

**punif(.4,0,1)**

**punif(.4,0,2)**

**punif(.4,0,2,lower.tail=FALSE)**

**# A Theoretical Uniform Distribution**

**curve(dunif(x,0,1),from=-.2,to=1.2,**

**main="Theoretical Uniform Distribution",**

**ylim=c(0,1.2),**

**lwd=3)**

**# Theory and Reality with Uniforms**

**hist(my.uniforms,col="red",prob=TRUE)**

**curve(dunif(x,0,1),from=-.2,to=1.2,**

**main="Theoretical Uniform Distribution",**

**ylim=c(0,1.2),**

**lwd=3,col="blue",**

**add=TRUE)**

**# Working with Data Frames**

**gilligan=data.frame()**

**for(i in 1:1000){**

**gilligan[i,1]=i**

**gilligan[i,2]=i^2**

**}**

**colnames(gilligan)=c("First","Second")**

**gilligan[750,]**

**head(gilligan)**

**tail(gilligan)**

**maryann=data.frame()**

**maryann[1,1]=1001**

**maryann[1,2]=maryann[1,1]^2**

**colnames(maryann)=c("First","Second")**

**gilligan=rbind(gilligan,maryann)**

**gilligan[1001,]**

**tail(gilligan)**

**# A Scatterplot**

**plot(gilligan,col="red",**

**main="My Little Red Exponential Curve",**

**sub="This One is 1001 Discrete Points",pch=19)**

**# A Scatterplot Presented as a Line**

**plot(gilligan,col="red",**

**main="My Little Red Exponential Curve",**

**type="l",lwd=3,**

**sub="This One is 1001 Points Converted to a Line")**

**# Writing Out Data You've Created**

**# We're using RIO to write out data.**

**# This writes to the working directory.**

**rio::export(gilligan,"C:/Users/rsatt/Desktop/gilligan.xlsx")**