**6304 Module 8 Live Lecture**

**R Script File**

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

**library(rio)**

**# Civil War Soldiers**

**soldiers=import("6304 Module 8 Data Sets.xlsx",**

**which="Union Soldiers",skip=2)**

**colnames(soldiers)=tolower(make.names(colnames(soldiers)))**

**attach(soldiers)**

**soldiers1.out=glm(any\_mor~private+infantry,**

**data=soldiers,**

**family="binomial")**

**summary(soldiers1.out)**

**soldiers2.out=glm(ill\_mor~private+infantry,**

**data=soldiers,**

**family="binomial")**

**summary(soldiers2.out)**

**soldiers3.out=glm(inj\_mor~private+infantry,**

**data=soldiers,**

**family="binomial")**

**summary(soldiers3.out)**

**pred.data=expand.grid(private=unique(soldiers$private),**

**infantry=unique(soldiers$infantry))**

**any.mortality.predictions=predict(soldiers1.out,**

**newdata=pred.data,type="response")**

**any.mortality.predictions=cbind(pred.data,**

**any.mortality.predictions)**

**any.mortality.predictions**

**illness.mortality.predictions=predict(soldiers2.out,**

**newdata=pred.data,type="response")**

**illness.mortality.predictions=cbind(pred.data,**

**illness.mortality.predictions)**

**illness.mortality.predictions**

**injury.mortality.predictions=predict(soldiers3.out,**

**newdata = pred.data,type="response")**

**injury.mortality.predictions=cbind(pred.data,**

**injury.mortality.predictions)**

**injury.mortality.predictions**

**# Comparing all three mortality scenarios.**

**any.mortality.predictions**

**illness.mortality.predictions**

**injury.mortality.predictions**

**# Slasher Movies**

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

**slasher=import("6304 Module 8 Data Sets.xlsx",**

**which="Slasher Movies",skip=2)**

**colnames(slasher)=tolower(make.names(colnames(slasher)))**

**attach(slasher)**

**slasher.out=glm(survival~female+sexual.activity,**

**data=slasher,family="binomial")**

**summary(slasher.out)**

**pred.data=expand.grid(female=unique(slasher$female),**

**sexual.activity=unique(slasher$sexual.activity))**

**pred.data**

**slasher.predictions=predict(slasher.out,**

**newdata=pred.data,type="response")**

**slasher.predictions=cbind(pred.data,slasher.predictions)**

**slasher.predictions**

**slasher.predictions=round(predict(slasher.out,**

**newdata=pred.data,type="response"),4)**

**slasher.predictions=cbind(pred.data,slasher.predictions)**

**slasher.predictions**

**# Childhood Myopia**

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

**myopia=import("6304 Module 8 Data Sets.xlsx",**

**sheet="Myopia",skip=2)**

**colnames(myopia)=tolower(make.names(colnames(myopia)))**

**attach(myopia)**

**# Full Myopia Model**

**myopia.full=glm(myopic~.-id-studyyear,**

**family="binomial",data=myopia)**

**# Reduced Myopia Model**

**myopia.reduced=glm(myopic~sporthr+readhr+mommy+dadmy,**

**family="binomial",data=myopia)**

**summary(myopia.full)**

**summary(myopia.reduced)**

**# Myopia Predictiion on Reduced Model**

**pred.data=expand.grid(sporthr=quantile(sporthr,**

**c(0,.25,.5,.75,1)),**

**readhr=quantile(readhr,**

**c(0,.25,.5,.75,1)),**

**mommy=unique(mommy),**

**dadmy=unique(dadmy))**

**pred.probs=round(predict(myopia.reduced,**

**newdata=pred.data,**

**type="response"),4)**

**myopia.predictions=cbind(pred.data,pred.probs)**

**plot(myopia.predictions$pred.probs,pch=19,**

**main="Myopia Probabilities")**

**myopia.predictions=**

**myopia.predictions[order(myopia.predictions$pred.probs),]**

**plot(myopia.predictions$pred.probs,pch=19,**

**main="Myopia Probabilities")**

**myopia.predictions=**

**myopia.predictions[order(-myopia.predictions$pred.probs),]**

**plot(myopia.predictions$pred.probs,pch=19,**

**main="Myopia Probabilities")**

**myopia.predictions=**

**myopia.predictions[order(myopia.predictions$pred.probs),]**

**plot(myopia.predictions$pred.probs,pch=19,**

**main="Myopia Probabilities")**

**myopia.predictions[which.max**

**(myopia.predictions$pred.probs),]**

**myopia.predictions[which.min**

**(myopia.predictions$pred.probs),]**

**# Actuals v. Fitteds**

**plot(myopia$myopic,myopia.reduced$fitted.values,**

**pch=19,**

**main="Actual Binaries & Fitted Probabilities - Myopia")**

**max(myopia.reduced$fitted.values)**

**myopia[which.max(myopia.reduced$fitted.values),]**

**# Stepwise Logistic Regression**

**myopia.step=step(glm(myopic~.-id-studyyear,family="binomial",**

**data=myopia),direction="both")**

**summary(myopia.step)**