**Logistic Regression Video Lecture**

**R Script File**

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

**library(readxl)**

**gavin=read\_excel("6304 Module 8 Data Sets.xlsx",sheet="Gavin Fishing")**

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

**attach(gavin)**

**# Parameterizing Model Combinations.**

**output0=glm(success~1,data=gavin,family=binomial)**

**output1=glm(success~place,data=gavin,family=binomial)**

**output2=glm(success~bait,data=gavin,family=binomial)**

**output3=glm(success~place+bait,data=gavin,family=binomial)**

**summary(output0)**

**summary(output1)**

**summary(output2)**

**summary(output3)**

**# Getting beta coefficients and confidence intervals.**

**coef(output3)**

**confint(output3)**

**# Building data frame of output**

**gavin.coefficients=cbind("Beta Coef"=coef(output3),confint(output3))**

**gavin.coefficients**

**#Creating data frame of variable combinations.**

**#Note UNIQUE function for levels of factor variables.**

**gavin.predictions=expand.grid(bait=unique(gavin$bait),place=unique(gavin$place))**

**#Adds new column to data frame which is probability predictions.**

**gavin.predictions$pred\_prob=predict(output3,newdata=gavin.predictions,type="response")**

**gavin.predictions**

**# Shifting to Myopia data.**

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

**myopia=read\_excel("6304 Module 8 Data Sets.xlsx",sheet="Myopia",skip=2)**

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

**attach(myopia)**

**str(myopia)**

**# Converting some variables to factors.**

**myopia$myopic=as.factor(myopia$myopic)**

**myopia$gender=as.factor(myopia$gender)**

**myopia$mommy=as.factor(myopia$mommy)**

**myopia$dadmy=as.factor(myopia$dadmy)**

**# Conducting the logistic regression.**

**myopia.out=glm(myopic~age+gender+mommy+dadmy+tvhr)**

**summary(myopia.out)**

**# Easier reporting of beta coefficients and confidence intervals.**

**beta.stuff=cbind("beta"=coef(myopia.out),confint(myopia.out))**

**beta.stuff**

**# Now Comes Predictions.**

**pred.data=expand.grid(age=c(5,6,7,8,9),gender=unique(myopia$gender),**

**mommy=unique(myopia$mommy),dadmy=unique(myopia$dadmy),**

**tvhr=quantile(myopia$tvhr,c(.2,.4,.6,.8)))**

**#pred.data$mommy=as.factor(pred.data$mommy)**

**pred.data$probability=predict(myopia.out,**

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