library(readxl)

library(survival)

library(ranger)

library(ggplot2)

library(dplyr)

library(ggfortify)

library(survminer)

DiabeticPatients<- read\_excel("C:/Users/ogwur/Documents/Spring Courses/Survival Analysis Course Files/Survival Analysis Project File/Survival Analysis Project Main Data.xlsx")

DiabeticPatients

head(DiabeticPatients)

xkm <- with(DiabeticPatients, Surv(SurvivalTimeInYr, Status))

xkm

str(DiabeticPatients)

summary(DiabeticPatients)

?cut

attach(DiabeticPatients)

names(DiabeticPatients)

class(AgeInyr)

AgeInyrlevel<-cut(AgeInyr, breaks=c(0, 50, 90), labels = c("<50", "above50"))

AgeInyrlevel[1:149]

km\_AgeInyrlevel\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ AgeInyrlevel, data=DiabeticPatients)

km\_AgeInyrlevel\_fit

summary(km\_AgeInyrlevel\_fit)

ggsurvplot(km\_AgeInyrlevel\_fit, legend.labs=c("<50", "above50"), xlab="Time In Years", legend.title="AgeInyr",title="Kaplan-Meier Plot for Diabetic Survival using AgeInyr")

ggsurvplot(km\_AgeInyrlevel\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("<50", "above50"), xlab="Time In Years", legend.title="AgeInyr", palette=c("purple", "red"),

title="Kaplan-Meier Plot for Diabetic Survival using Smoking AgeInyr with Risk Table", risk.table.height=.20)

AgeAtDiagnosisInyrlevel<-cut(AgeAtDiagnosisInyr, breaks=c(0, 50, 90), labels = c("<50", "above50"))

AgeAtDiagnosisInyrlevel[1:149]

km\_AgeAtDiagnosisInyrlevel\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ AgeInyrlevel, data=DiabeticPatients)

km\_AgeAtDiagnosisInyrlevel\_fit

summary(km\_AgeAtDiagnosisInyrlevel\_fit)

ggsurvplot(km\_AgeAtDiagnosisInyrlevel\_fit, legend.labs=c("<50", "above50"), xlab="Time In Years", legend.title="AgeAtDiagnosisInyr",title="Kaplan-Meier Plot for Diabetic Survival using AgeAtDiagnosisInyr")

ggsurvplot(km\_AgeAtDiagnosisInyrlevel\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("<50", "above50"), xlab="Time In Years", legend.title="AgeAtDiagnosisInyr", palette=c("Red", "blue"),

title="Kaplan-Meier Plot for Diabetic Survival using AgeAtDiagnosisInyr with Risk Table", risk.table.height=.20)

SBPlevel<-cut(SBPInmmHg, breaks=c(0, 119, 120, 250), labels = c("<119(Low)", "=120(Normal)", ">120(High)"))

SBPlevel[1:149]

km\_SBPlevel\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ SBPlevel, data=DiabeticPatients)

km\_SBPlevel\_fit

summary(km\_SBPlevel\_fit)

ggsurvplot(km\_SBPlevel\_fit, legend.labs=c("<119(Low)", "=120(Normal)", ">120(High)"), xlab="Time In Years", legend.title="SBPmmHg",title="Kaplan-Meier Plot for Diabetic Survival using SBP in mmHg")

ggsurvplot(km\_SBPlevel\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("<119(Low)", "=120(Normal)", ">120(High)", xlab="Time In Years", legend.title="SBPmmHg", palette=c("Red", "blue", "yellow"),

title="Kaplan-Meier Plot for Diabetic Survival using SBP in mmHg with Risk Table", risk.table.height=.20)

DBPlevel<-cut(DBPInmmHg, breaks=c(0, 79, 80, 120), labels = c("<79(Low)", "=80(Normal)", ">80(High)"))

DBPlevel[1:149]

km\_DBPlevel\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ DBPlevel, data=DiabeticPatients)

km\_DBPlevel\_fit

summary(km\_DBPlevel\_fit)

ggsurvplot(km\_DBPlevel\_fit, legend.labs=c("<79(Low)", "=80(Normal)", ">80(High)"), xlab="Time In Years", legend.title="DBPmmHg",title="Kaplan-Meier Plot for Diabetic Survival using DBP in mmHg")

ggsurvplot(km\_DBPlevel\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("<79(Low)", "=80(Normal)", ">80(High)", xlab="Time In Years", legend.title="DBPmmHg", palette=c("Red", "blue", "green"),

title="Kaplan-Meier Plot for Diabetic Survival using DBP in mmHg with Risk Table", risk.table.height=.20)

km\_SBPInmmHg\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg, data=DiabeticPatients)

km\_SBPInmmHg\_fit

summary(km\_SBPInmmHg\_fit)

ggsurvplot(km\_SBPInmmHg\_fit, xlab="Time In Years", legend.title="SDPInmmHg",title="Kaplan-Meier Plot for Diabetic Survival using SBP")

ggsurvplot(km\_SBPInmmHg\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE, xlab="Time In Years", legend.title="SDPInmmHg",

title="Kaplan-Meier Plot for Diabetic Survival using Smoking Status Group with Risk Table", risk.table.height=.20)

km<- survfit(Surv(SurvivalTimeInYr, Status) ~ 1, data=DiabeticPatients)

km

ggsurvplot(km,title="Overall Kaplan-Meier Plot for Diabetic Survival", xlab = "Time In Years")

ggsurvplot(km, conf.int=TRUE, pval=TRUE, xlab = "Time In Years", risk.table=TRUE, palette=c("dodgerblue2"),

title="Overall Kaplan-Meier Plot for Diabetic Survival with Risk Table", risk.table.height=.20)

km\_SmokingStatus\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ SmokingStatus, data=DiabeticPatients)

km\_SmokingStatus\_fit

summary(km\_SmokingStatus\_fit)

ggsurvplot(km\_SmokingStatus\_fit, xlab="Time In Years", legend.title="Smoking Status",title="Kaplan-Meier Plot for Diabetic Survival using Smoking Status")

ggsurvplot(km\_SmokingStatus\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("0", "1", "2"), xlab="Time In Years", legend.title="Smoking Status", palette=c("dodgerblue2", "orchid2", "green"),

title="Kaplan-Meier Plot for Diabetic Survival using Smoking Status Group with Risk Table", risk.table.height=.20)

km\_ECG\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ ECG, data=DiabeticPatients)

km\_ECG\_fit

summary(km\_ECG\_fit)

ggsurvplot(km\_ECG\_fit,legend.title="ECG", xlab="Time In Years", title="Kaplan-Meier Plot for Diabetic Survival using ECG Group")

ggsurvplot(km\_ECG\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("1", "2", "3"), xlab="Time In Years", legend.title="ECG", palette=c("dodgerblue2", "orchid2", "green"),

title="Kaplan-Meier Plot for Diabetic Survival using ECG Group with Risk Table", risk.table.height=.20)

km\_CHD\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ CHD, data=DiabeticPatients)

km\_CHD\_fit

summary(km\_CHD\_fit)

ggsurvplot(km\_CHD\_fit, xlab="Time In Years", legend.title="CHD",title="Kaplan-Meier Plot for Diabetic Survival using CHD Group")

ggsurvplot(km\_CHD\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("0", "1"), xlab="Time In Years", legend.title="CHD", palette=c("dodgerblue2", "orchid2"),

title="Kaplan-Meier Plot for Diabetic Survival using CHD Group with Risk Table", risk.table.height=.20)

logranktestSBPlevel<-survdiff(Surv(SurvivalTimeInYr, Status) ~ SBPlevel, data=DiabeticPatients, rho=0)

logranktestSBPlevel

logranktestDBPlevel<-survdiff(Surv(SurvivalTimeInYr, Status) ~ DBPlevel, data=DiabeticPatients, rho=0)

logranktestDBPlevel

#Comparing the 3 levels of Smoking Status

logranktestSmokingStatus<-survdiff(Surv(SurvivalTimeInYr, Status) ~ SmokingStatus, data=DiabeticPatients, rho=0)

logranktestSmokingStatus

#Comparing the 3 levels of ECG

logranktestECG<-survdiff(Surv(SurvivalTimeInYr, Status) ~ ECG, data=DiabeticPatients, rho=0)

logranktestECG

#testing pair difference

compare1and2<-survdiff(Surv(SurvivalTimeInYr, Status) ~ ECG, data=(DiabeticPatients[DiabeticPatients$ECG!=3,]), rho=0)

compare1and2

compare0and2<-survdiff(Surv(SurvivalTimeInYr, Status) ~ ECG, data=(DiabeticPatients[DiabeticPatients$ECG!=2,]), rho=0)

compare0and2

compare1and2<-survdiff(Surv(SurvivalTimeInYr, Status) ~ ECG, data=(DiabeticPatients[DiabeticPatients$ECG!=1,]), rho=0)

compare1and2

#Comparing the 2 levels of CHD

logranktestCHD<-survdiff(Surv(SurvivalTimeInYr, Status) ~ CHD, data=DiabeticPatients, rho=0)

logranktestCHD

coxSmokingStatus<- coxph(Surv(SurvivalTimeInYr, Status) ~ SmokingStatus, data = DiabeticPatients)

coxSmokingStatus

coxECG<- coxph(Surv(SurvivalTimeInYr, Status) ~ ECG, data = DiabeticPatients)

coxECG

coxCHD<- coxph(Surv(SurvivalTimeInYr, Status) ~ CHD, data = DiabeticPatients)

coxCHD

coxDiabeticPatients<- coxph(Surv(SurvivalTimeInYr, Status) ~ AgeInyr+ BMI + AgeAtDiagnosisInyr + SmokingStatus +

SBPInmmHg + DBPInmmHg + ECG + CHD , data = DiabeticPatients)

summary(coxDiabeticPatients)

coxDiabeticPatients

coxDiabeticPatientsfit <-survfit(coxDiabeticPatients)

coxDiabeticPatientsfit

aa\_fit\_DiabeticPatients <-aareg(Surv(SurvivalTimeInYr, Status) ~ AgeInyr+ BMI + AgeAtDiagnosisInyr + SmokingStatus +

SBPInmmHg + DBPInmmHg + ECG + CHD , data = DiabeticPatients)

aa\_fit\_DiabeticPatients

summary(aa\_fit\_DiabeticPatients)

autoplot(aa\_fit\_DiabeticPatients)

ranger\_DiabeticPatients\_fit <- ranger(Surv(SurvivalTimeInYr, Status) ~ AgeInyr+ BMI + AgeAtDiagnosisInyr + SmokingStatus +

SBPInmmHg + DBPInmmHg + ECG + CHD , data = DiabeticPatients,

mtry = 4,

importance = "permutation",

splitrule = "extratrees",

verbose = TRUE)

ranger\_DiabeticPatients\_fit

death\_times <- ranger\_DiabeticPatients\_fit$unique.death.times

surv\_prob <- data.frame(ranger\_DiabeticPatients\_fit$survival)

avg\_prob <- sapply(surv\_prob,mean)

plot(ranger\_DiabeticPatients\_fit$unique.death.times,ranger\_DiabeticPatients\_fit$survival[1,],

type = "l",

ylim = c(0,1),

col = "red",

xlab = "Years",

ylab = "survival",

main = "Patient Survival Curves")

cols <- colors()

for (n in sample(c(2:dim(vet)[1]), 20)){

lines(ranger\_DiabeticPatients\_fit$unique.death.times, ranger\_DiabeticPatients\_fit$survival[n,], type = "l", col = cols[n])

lines(death\_times, avg\_prob, lwd = 2)

legend(500, 0.7, legend = c('Average = black'))

vi\_DiabeticPatients <- data.frame(sort(round(ranger\_DiabeticPatients\_fit$variable.importance, 4), decreasing = TRUE))

names(vi\_DiabeticPatients) <- "importance"

head(vi\_DiabeticPatients)

vi\_DiabeticPatients

kmi <- rep("KM",length(km$SurvivalTimeInYr))

km\_df <- data.frame(km$SurvivalTimeInYr,km$surv,kmi)

names(km\_df) <- c("Time","Surv","Model")

coxi <- rep("Cox",length(coxDiabeticPatients$SurvivalTimeInYr))

cox\_df <- data.frame(coxDiabeticPatientsfit$SurvivalTimeInYr,coxDiabeticPatientsfit$surv,coxi)

names(cox\_df) <- c("Time","Surv","Model")

rfi <- rep("RF",length(ranger\_DiabeticPatients\_fit$unique.death.times))

rf\_df <- data.frame(ranger\_DiabeticPatients\_fit$unique.death.times,avg\_prob,rfi)

names(rf\_df) <- c("Time","Surv","Model")

plot\_df <- rbind(km\_df,cox\_df,rf\_df)

p <- ggplot(plot\_df, aes(x = Time, y = Surv, color = Model))

p + geom\_line()

fit<-coxph(Surv(SurvivalTimeInYr, Status)~ SBPInmmHg + DBPInmmHg + ECG, data = DiabeticPatients)

fit

library(readxl)

library(survival)

library(ranger)

library(ggplot2)

library(dplyr)

library(ggfortify)

library(survminer)

library(tidyverse)

DiabeticPatients<- read\_excel("C:/Users/ogwur/Documents/Spring Courses/Survival Analysis Course Files/Survival Analysis Project File/Survival Analysis Project Main Data.xlsx")

DiabeticPatients

head(DiabeticPatients)

xkm <- with(DiabeticPatients, Surv(SurvivalTimeInYr, Status))

xkm

str(DiabeticPatients)

summary(DiabeticPatients)

my\_cor\_data <- DiabeticPatients[, c(3,4,5,6,8,9)]

my\_cor\_data

my\_cor\_plot <- cor(my\_cor\_data)

my\_cor\_plot

corrplot(my\_cor\_plot, type = "upper", tl.pos = "td",

method = "circle", tl.cex = 0.5, tl.col = 'black',

order = "hclust", diag = FALSE)

corrplot

attach(DiabeticPatients)

names(DiabeticPatients)

class(AgeInyr)

AgeInyrlevel<-cut(AgeInyr, breaks=c(0, 50, 90), labels = c("<50", "above50"))

AgeInyrlevel[1:149]

km0 <- survfit(Surv(SurvivalTimeInYr, Status) ~ 0)

km0

summary(km0)

km1<- survfit(Surv(SurvivalTimeInYr, Status) ~ 1)

km1

summary(km1)

km\_AgeInyrlevel\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ AgeInyrlevel, data=DiabeticPatients)

km\_AgeInyrlevel\_fit

summary(km\_AgeInyrlevel\_fit)

ggsurvplot(km\_AgeInyrlevel\_fit, legend.labs=c("<50", "above50"), xlab="Time In Years", legend.title="AgeInyr",title="Kaplan-Meier Plot for Diabetic Survival using AgeInyr")

ggsurvplot(km\_AgeInyrlevel\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("<50", "above50"), xlab="Time In Years", legend.title="AgeInyr", palette=c("purple", "red"),

title="Kaplan-Meier Plot for Diabetic Survival using Smoking AgeInyr with Risk Table", risk.table.height=.20)

AgeAtDiagnosisInyrlevel<-cut(AgeAtDiagnosisInyr, breaks=c(0, 50, 90), labels = c("<50", "above50"))

AgeAtDiagnosisInyrlevel[1:149]

km\_AgeAtDiagnosisInyrlevel\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ AgeAtDiagnosisInyrlevel, data=DiabeticPatients)

km\_AgeAtDiagnosisInyrlevel\_fit

summary(km\_AgeAtDiagnosisInyrlevel\_fit)

ggsurvplot(km\_AgeAtDiagnosisInyrlevel\_fit, legend.labs=c("<50", "above50"), xlab="Time In Years", legend.title="AgeAtDiagnosisInyr",title="Kaplan-Meier Plot for Diabetic Survival using AgeAtDiagnosisInyr")

ggsurvplot(km\_AgeAtDiagnosisInyrlevel\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("<50", "above50"), xlab="Time In Years", legend.title="AgeAtDiagnosisInyr", palette=c("Red", "blue"),

title="Kaplan-Meier Plot for Diabetic Survival using AgeAtDiagnosisInyr with Risk Table", risk.table.height=.20)

SBPlevel<-cut(SBPInmmHg, breaks=c(0, 119, 120, 250), labels = c("<119(Low)", "=120(Normal)", ">120(High)"))

SBPlevel[1:149]

km\_SBPlevel\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ SBPlevel, data=DiabeticPatients)

km\_SBPlevel\_fit

summary(km\_SBPlevel\_fit)

ggsurvplot(km\_SBPlevel\_fit, legend.labs=c("<119(Low)", "=120(Normal)", ">120(High)"), xlab="Time In Years", legend.title="SBPmmHg",title="Kaplan-Meier Plot for Diabetic Survival using SBP in mmHg")

ggsurvplot(km\_SBPlevel\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("<119(Low)", "=120(Normal)", ">120(High)", xlab="Time In Years", legend.title="SBPmmHg", palette=c("Red", "blue", "yellow"),

title="Kaplan-Meier Plot for Diabetic Survival using SBP in mmHg with Risk Table", risk.table.height=.20)

DBPlevel<-cut(DBPInmmHg, breaks=c(0, 79, 80, 120), labels = c("<79(Low)", "=80(Normal)", ">80(High)"))

DBPlevel[1:149]

km\_DBPlevel\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ DBPlevel, data=DiabeticPatients)

km\_DBPlevel\_fit

summary(km\_DBPlevel\_fit)

ggsurvplot(km\_DBPlevel\_fit, legend.labs=c("<79(Low)", "=80(Normal)", ">80(High)"), xlab="Time In Years", legend.title="DBPmmHg",title="Kaplan-Meier Plot for Diabetic Survival using DBP in mmHg")

ggsurvplot(km\_DBPlevel\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("<79(Low)", "=80(Normal)", ">80(High)", xlab="Time In Years", legend.title="DBPmmHg", palette=c("Red", "blue", "green"),

title="Kaplan-Meier Plot for Diabetic Survival using DBP in mmHg with Risk Table", risk.table.height=.20)

km\_SBPInmmHg\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg, data=DiabeticPatients)

km\_SBPInmmHg\_fit

summary(km\_SBPInmmHg\_fit)

ggsurvplot(km\_SBPInmmHg\_fit, xlab="Time In Years", legend.title="SDPInmmHg",title="Kaplan-Meier Plot for Diabetic Survival using SBP")

ggsurvplot(km\_SBPInmmHg\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE, xlab="Time In Years", legend.title="SDPInmmHg",

title="Kaplan-Meier Plot for Diabetic Survival using Smoking Status Group with Risk Table", risk.table.height=.20)

km<- survfit(Surv(SurvivalTimeInYr, Status) ~ 1, data=DiabeticPatients)

km

ggsurvplot(km,title="Overall Kaplan-Meier Plot for Diabetic Survival", xlab = "Time In Years")

ggsurvplot(km, conf.int=TRUE, pval=TRUE, xlab = "Time In Years", risk.table=TRUE, palette=c("dodgerblue2"),

title="Overall Kaplan-Meier Plot for Diabetic Survival with Risk Table", risk.table.height=.20)

km\_SmokingStatus\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ SmokingStatus, data=DiabeticPatients)

km\_SmokingStatus\_fit

summary(km\_SmokingStatus\_fit)

ggsurvplot(km\_SmokingStatus\_fit, xlab="Time In Years", legend.title="Smoking Status",title="Kaplan-Meier Plot for Diabetic Survival using Smoking Status")

ggsurvplot(km\_SmokingStatus\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("0", "1", "2"), xlab="Time In Years", legend.title="Smoking Status", palette=c("dodgerblue2", "orchid2", "green"),

title="Kaplan-Meier Plot for Diabetic Survival using Smoking Status Group with Risk Table", risk.table.height=.20)

km\_ECG\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ ECG, data=DiabeticPatients)

km\_ECG\_fit

summary(km\_ECG\_fit)

ggsurvplot(km\_ECG\_fit,legend.title="ECG", xlab="Time In Years", title="Kaplan-Meier Plot for Diabetic Survival using ECG Group")

ggsurvplot(km\_ECG\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("1", "2", "3"), xlab="Time In Years", legend.title="ECG", palette=c("dodgerblue2", "orchid2", "green"),

title="Kaplan-Meier Plot for Diabetic Survival using ECG Group with Risk Table", risk.table.height=.20)

km\_CHD\_fit <- survfit(Surv(SurvivalTimeInYr, Status) ~ CHD, data=DiabeticPatients)

km\_CHD\_fit

summary(km\_CHD\_fit)

ggsurvplot(km\_CHD\_fit, xlab="Time In Years", legend.title="CHD",title="Kaplan-Meier Plot for Diabetic Survival using CHD Group")

ggsurvplot(km\_CHD\_fit, conf.int=TRUE, pval=TRUE, risk.table=TRUE,

legend.labs=c("0", "1"), xlab="Time In Years", legend.title="CHD", palette=c("dodgerblue2", "orchid2"),

title="Kaplan-Meier Plot for Diabetic Survival using CHD Group with Risk Table", risk.table.height=.20)

logranktestSBPlevel<-survdiff(Surv(SurvivalTimeInYr, Status) ~ SBPlevel, data=DiabeticPatients, rho=0)

logranktestSBPlevel

logranktestDBPlevel<-survdiff(Surv(SurvivalTimeInYr, Status) ~ DBPlevel, data=DiabeticPatients, rho=0)

logranktestDBPlevel

#Comparing the 3 levels of Smoking Status

logranktestSmokingStatus<-survdiff(Surv(SurvivalTimeInYr, Status) ~ SmokingStatus, data=DiabeticPatients, rho=0)

logranktestSmokingStatus

#Comparing the 3 levels of ECG

logranktestECG<-survdiff(Surv(SurvivalTimeInYr, Status) ~ ECG, data=DiabeticPatients, rho=0)

logranktestECG

#testing pair difference

compare1and2<-survdiff(Surv(SurvivalTimeInYr, Status) ~ ECG, data=(DiabeticPatients[DiabeticPatients$ECG!=3,]), rho=0)

compare1and2

compare0and2<-survdiff(Surv(SurvivalTimeInYr, Status) ~ ECG, data=(DiabeticPatients[DiabeticPatients$ECG!=2,]), rho=0)

compare0and2

compare1and2<-survdiff(Surv(SurvivalTimeInYr, Status) ~ ECG, data=(DiabeticPatients[DiabeticPatients$ECG!=1,]), rho=0)

compare1and2

#Comparing the 2 levels of CHD

logranktestCHD<-survdiff(Surv(SurvivalTimeInYr, Status) ~ CHD, data=DiabeticPatients, rho=0)

logranktestCHD

coxSmokingStatus<- coxph(Surv(SurvivalTimeInYr, Status) ~ SmokingStatus, data = DiabeticPatients)

coxSmokingStatus

coxECG<- coxph(Surv(SurvivalTimeInYr, Status) ~ ECG, data = DiabeticPatients)

coxECG

coxCHD<- coxph(Surv(SurvivalTimeInYr, Status) ~ CHD, data = DiabeticPatients)

coxCHD

cox<- coxph(Surv(SurvivalTimeInYr, Status) ~ AgeInyr+ BMI + AgeInyrlevel + AgeAtDiagnosisInyrlevel + SmokingStatus +

SBPlevel + DBPlevel + ECG + CHD , data = DiabeticPatients)

cox

summary(cox)

cox1<- coxph(Surv(SurvivalTimeInYr, Status) ~ AgeInyr+ BMI + AgeInyr + AgeAtDiagnosisInyr + SmokingStatus +

SBPInmmHg + DBPInmmHg + ECG + CHD , data = DiabeticPatients)

cox1

summary(cox1)

cox2<- coxph(Surv(SurvivalTimeInYr, Status) ~ AgeInyrlevel+ BMI + AgeAtDiagnosisInyrlevel + SmokingStatus +

SBPlevel + DBPlevel + ECG + CHD , data = DiabeticPatients)

cox2

summary(cox2)

cox\_fit <-survfit(cox)

cox\_fit

#Model Building

originalmodel<-coxph(Surv(SurvivalTimeInYr, Status) ~ AgeInyr + BMI + AgeAtDiagnosisInyr + SmokingStatus + SBPInmmHg+ DBPInmmHg + ECG + CHD, data = DiabeticPatients, method="breslow")

summary(originalmodel)

model1<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG, data = DiabeticPatients, method="breslow")

model1

model2<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG + AgeInyr, data = DiabeticPatients, method="breslow")

model2

model3<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG + BMI, data = DiabeticPatients, method="breslow")

model3

model4<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG + AgeAtDiagnosisInyr , method="breslow")

model4

model5<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG + CHD , method="breslow")

model5

model6<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG + AgeInyr + BMI , data = DiabeticPatients, method="breslow")

model6

model7<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG + AgeInyr + BMI + AgeAtDiagnosisInyr , data = DiabeticPatients, method="breslow")

model7

model8<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG + AgeInyr + BMI + AgeAtDiagnosisInyr + SmokingStatus, data = DiabeticPatients, method="breslow")

model8

model8<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG + AgeInyr + BMI + AgeAtDiagnosisInyr + SmokingStatus + CHD, data = DiabeticPatients, method="breslow")

model8

#Final Model

FinalModel<-coxph(Surv(SurvivalTimeInYr, Status) ~ SBPInmmHg+ DBPInmmHg +ECG , data = DiabeticPatients, method="breslow")

FinalModel