Supplemental Digital Content 3

SDC3_R code for data analysis

```
getwd()

setwd("D:/Rwork")

######## import csv data

A<-read.csv("D:/Rwork/2016.csv")

########Overview of datasets

View(A)

View(total)

names(total)

dim(total)

summ(total)

str(total

print(str(total))

##chisq.test(data)

mytable<-read.csv("D:/Rwork/A.csv") #import csv data

View(mytable)

mytable <- data.frame(mytalbe)

mytable <- data.frame(mytalbe$AirBags, mytalbe$Type)

chisq.test(mytable)

# Load the library.

library("MASS")


# Create a data frame from the main data set.

car.data <- data.frame(Cars93$AirBags, Cars93$Type)
```

```
# Create a table with the needed variables.

car.data = table(Cars93$AirBags, Cars93$Type)

print(car.data)

# Perform the Chi-Square test.

print(chisq.test(car.data))

#########import csv data

Het<-read.csv("D:/Rwork/Het.csv") #import csv data

Hom<-read.csv("D:/Rwork/Hom.csv") #import csv data

Com<-read.csv("D:/Rwork/Com.csv#import csv data

View(Het)

View(Hom)

View(Com)

##################################

#Extract data to generate new data set Het2

Het2<-Het[,c(1:2,10:29,31)]

View(Het2)

#Extract data to generate new data set Hom2

Hom2<-Hom[,c(1:2,10:29,31)]

View(Hom2)

#Extract data to generate new data set Com2

Com2<-Com[,c(1:2,10:29,31)]

View(Com2)

#######Recoding of classification variables

#Modify field name

names(Het2)
```

```
names(Het2)<-c("No","source","A1","A2",   "A3",   "A4","A5","C1","C2","B1","B2",   "B3",
"B4","B5","B6","B7", "B8", "B9","B10","B11","M1","M2","Cases")
View(Het2)
names(Hom2)
names(Hom2)<-c("No","source","A1","A2",  "A3",  "A4","A5","C1","C2","B1","B2",  "B3",
"B4","B5","B6","B7", "B8", "B9","B10","B11","M1","M2","Cases")
View(Hom2)
names(Com2)
names(Com2)<-c("No","source","A1","A2",  "A3",  "A4","A5","C1","C2","B1","B2",  "B3",
"B4","B5","B6","B7", "B8", "B9","B10","B11","M1","M2","Cases")
View(Com2)
#########Merging data sets
###total<-rbind.data.frame(A,B)
total<-rbind.data.frame(Het2,Hom2,Com2)
View(total)
#########Data set de duplication
index<-duplicated(total$No)
index
newdata<-total[!index,]
newdata
View(newdata)
write.csv(newdata,file="newdata.csv") #export newdata


#######assignment
```

#######assignment *GJB2*

```
newdata$"A1"<-
ifelse(newdata$"A1"=="DEL.DEL"|newdata$"A1"=="DEL",2,ifelse(newdata$"A1"=="G.D
EL",1,0)) ##35delGassignment
newdata$"A2"<-
ifelse(newdata$"A2"=="DEL.DEL"|newdata$"A2"=="DEL",2,ifelse(newdata$"A2"=="T.DE
L"|newdata$"A2"=="DEL.T",1,0)) ##167delTassignment
newdata$"A3"<-
ifelse(newdata$"A3"=="DEL.DEL"|newdata$"A3"=="DEL",2,ifelse(newdata$"A3"=="DEL.
GCTGCAAGAACGTGTG"|newdata$"A3"=="GCTGCAAGAACGTGTG.DEL",1,0))##176
_191del16#
newdata$"A4"<-
ifelse(newdata$"A4"=="DEL.DEL"|newdata$"A4"=="DEL",2,ifelse(newdata$"A4"=="C.DE
L",1,0)) ##235delGassignment
newdata$"A5"<-
ifelse(newdata$"A5"=="DEL.DEL"|newdata$"A5"=="DEL",2,ifelse(newdata$"A5"=="AT.
DEL",1,0)) ##299_300delATassignment
#######assignment GJB3
newdata$"C1"<-ifelse(newdata$"C1"=="T",2,ifelse(newdata$"C1"=="CT",1,0))
##538C>Tassignment
newdata$"C2"<-
ifelse(newdata$"C2"=="A",2,ifelse(newdata$"C2"=="GA"|newdata$"C2"=="AG",1,0))
##547G>Aassignment
#######assignment SLC26A4
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```
newdata$"B1"<-
ifelse(newdata$"B1"=="TT"|newdata$"B1"=="T",2,ifelse(newdata$"B1"=="CT"|newdata$"
B1"=="TC",1,0)) ##281C>Tassignment
newdata$"B2"<-
ifelse(newdata$"B2"=="AA"|newdata$"B2"=="A",2,ifelse(newdata$"B2"=="AG"|newdata$"
B2"=="GA",1,0)) ##589G>Aassignment
newdata$"B3"<-
ifelse(newdata$"B3"=="GG"|newdata$"B3"=="G",2,ifelse(newdata$"B3"=="AG"|newdata$"
B3"=="GA",1,0)) ##919-2A>Gassignment
newdata$"B4"<-
ifelse(newdata$"B4"=="TT"|newdata$"B4"=="T",2,ifelse(newdata$"B4"=="AT"|newdata$"
B4"=="TA",1,0)) ##1174A>Tassignment
newdata$"B5"<-
ifelse(newdata$"B5"=="AA"|newdata$"B5"=="A",2,ifelse(newdata$"B5"=="AG"|newdata$"
B5"=="GA",1,0)) ##1226G>Aassignment
newdata$"B6"<-
ifelse(newdata$"B6"=="TT"|newdata$"B6"=="T",2,ifelse(newdata$"B6"=="CT"|newdata$"
B6"=="TC",1,0)) ##1229C>Tassignment
newdata$"B7"<-
ifelse(newdata$"B7"=="AA"|newdata$"B7"=="A",2,ifelse(newdata$"B7"=="AG"|newdata$"
B7"=="GA",1,0)) ##1707+5G>Aassignment
newdata$"B8"<-
ifelse(newdata$"B8"=="CC"|newdata$"B8"=="C",2,ifelse(newdata$"B8"=="CG"|newdata$"
B8"=="GC",1,0)) ##1975G>Cassignment
```

```
newdata$"B9"<-
ifelse(newdata$"B9"=="AA"|newdata$"B9"=="A",2,ifelse(newdata$"B9"=="AT"|newdata$"
B9"=="TA",1,0)) ##1229C>Tassignment
newdata$"B10"<-
ifelse(newdata$"B10"=="TT"|newdata$"B10"=="T",2,ifelse(newdata$"B10"=="CT"|newdat
a$"B10"=="TC",1,0)) ##2162C>Tassignment
newdata$"B11"<-
ifelse(newdata$"B11"=="GG"|newdata$"B11"=="G",2,ifelse(newdata$"B11"=="AG"|newda
ta$"B11"=="GA",1,0)) ##2168A>Gassignment
#######assignment MT-RNR
newdata$"M1"<-
ifelse(newdata$"M1"=="TT"|newdata$"M1"=="T",2,ifelse(newdata$"M1"=="CT"|newdata$
"M1"=="TC",1,0)) ##1494C>Tassignment
newdata$"M2"<-
ifelse(newdata$"M2"=="GG"|newdata$"M2"=="G",2,ifelse(newdata$"M2"=="AG"|newdata
$"M2"=="GA",1,0)) ##1555A>Gassignment


######Statistics
#Statistics of GJB2
table(newdata$"A1") #35delG
table(newdata$"A2") #167delT
table(newdata$"A3") #176_191del16
table(newdata$"A4") #235delC
table(newdata$"A5") #299_300delAT
#Statistics of GJB3
```

```
table(newdata$"C1") #538C>T
table(newdata$"C2") #547G>A

#Statistics of SLC26A4
table(newdata$"B1") #281C>T
table(newdata$"B2") #589G>A
table(newdata$"B3") #919-2A>G
table(newdata$"B4") #1174A>T
table(newdata$"B5") #1226G>A
table(newdata$"B6") #1229C>T
table(newdata$"B7") #1707+5G>A
table(newdata$"B8") #1975G>C
table(newdata$"B9") #2027T>A
table(newdata$"B10") #2162C>T
table(newdata$"B11") #2168A>G

#Statistics of MT-RNR
table(newdata$"M1") #1494C>T
table(newdata$"M2") #1555A>G


########Create a new variable and assign a value
newdata$A<-
ifelse(newdata$A1==2|newdata$A2==2|newdata$A3==2|newdata$A4==2|newdata$A5==2,2
```

```
,ifelse(newdata$A1==1|newdata$A2==1|newdata$A3==1|newdata$A4==1|newdata$A5==1,
1,0))
newdata$B<-
ifelse(newdata$B1==2|newdata$B2==2|newdata$B3==2|newdata$B4==2|newdata$B5==2|ne
wdata$B6==2|newdata$B7==2|newdata$B8==2|newdata$B9==2|newdata$B10==2|newdata$
B11==2,2,ifelse(newdata$B1==1|newdata$B2==1|newdata$B3==1|newdata$B4==1|newdata
$B5==1|newdata$B6==1|newdata$B7==1|newdata$B8==1|newdata$B9==1|newdata$B10==
1|newdata$B11==1,1,0))
newdata$C<-
ifelse(newdata$C1==2|newdata$C2==2,2,ifelse(newdata$C1==1|newdata$C2==1,1,0))
newdata$M<-
ifelse(newdata$M1==2|newdata$M2==2,2,ifelse(newdata$M1==1|newdata$M2==1,1,0))

#Statistics of GJB2-SLC26A4-GJB3-MT-RNR
table(newdata$A)
table(newdata$B)
table(newdata$C)
table(newdata$M)

##################
##################
#Cut-off Valve = 0.0001
##################
getwd()
setwd("D:/Rwork")
```

```
#download R VennDiagram
#install.packages("VennDiagram")
#load VennDiagram
library(VennDiagram)
library(grid)
library(futile.logger)

##Generate five different combinations
A <- c("A1", "A3", "A4", "A5")
B <- c("A1", "A4")
##C <- c("A1")
D <- c("A1", "A2", "A4")
E <- c("A1", "A2")
##F <- c("A1")
G <- c("A1", "A2")

#######
venn.diagram(x=list("East Asian"=A, "South Asian"=B,"Ashkenazi Jewish"=E,"European (non-Finnish)"=D, "Latino/Admixed American"=G),
        filename ="A3-0.tiff",
        imagetype="tiff",
        height = 4800, width = 4800, resolution =600,
        col="black",
        #cat.col = c('red', 'yellow','blue', 'green', 'orange'),
        cat.col = 'black',
```

```
        fill=c('red', 'yellow','blue', 'green', 'orange')
        alpha = 0.25,
        cex=1,
        cat.cex = 1
        cat.fontfamily = "serif",cat.fontface = "bold"
        cat.default.pos = "outer"
        cat.dist = c(0.18, 0.26, 0.19, 0.2, 0.35)
        margin = 0.24,
)
################################
```