

STA302 Part 3 Final Code

Project Group 42

```
# After reading the description of the variables within the dataset, we chose to generate the variables
df <- NHANES[ , c("ID",
  "DaysMentHlthBad",
  "Age",
  "SleepHrsNight",
  "PhysActiveDays",
  "nPregnancies",
  "AgeFirstMarij",
  "SmokeAge",
  "SameSex",
  "SexNumPartnLife",
  "AlcoholYear",
  "HardDrugs",
  "RegularMarij",
  "MaritalStatus",
  "SleepTrouble",
  "AlcoholDay",
  "Gender",
  "LittleInterest",
  "HHIncomeMid"
)]

# Remove Duplicate Rows
df <- df %>% distinct(ID, .keep_all = TRUE)

# Set nPregnancies vals to: NA values
df$nPregnancies <- ifelse(is.na(df$nPregnancies), 0, df$nPregnancies)

# Remove rows containing NA values
df <- na.omit(df)

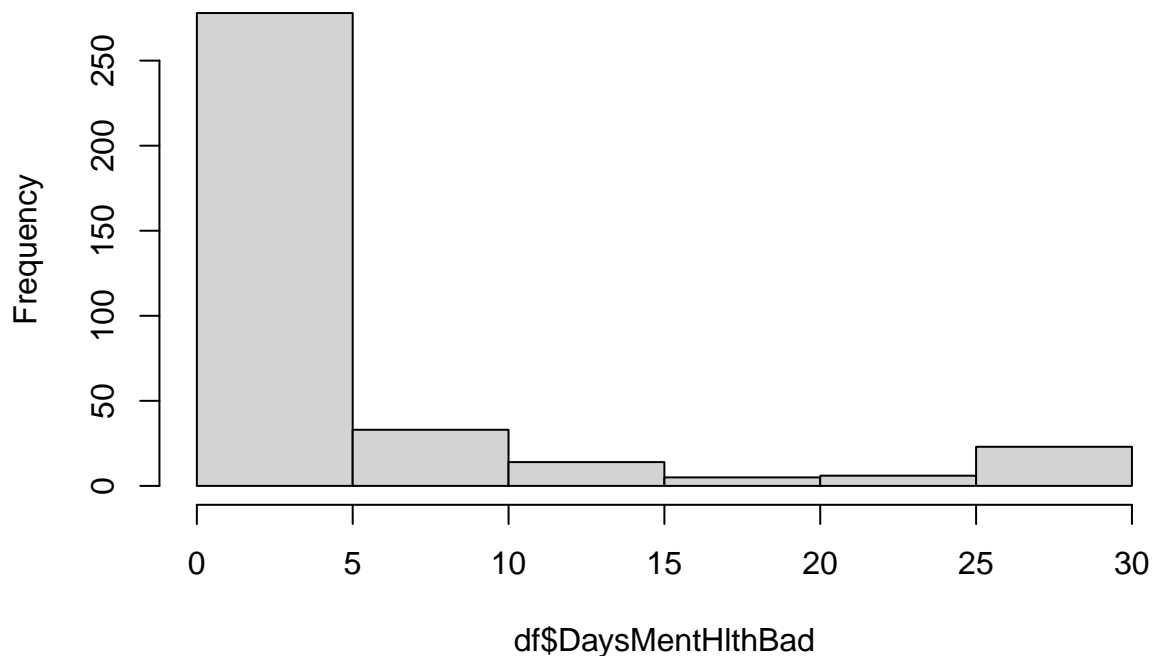
summary(df)
```

##	ID	DaysMentHlthBad	Age	SleepHrsNight	
##	Min. :51732	Min. : 0.000	Min. :20.00	Min. : 3.000	
##	1st Qu.:55554	1st Qu.: 0.000	1st Qu.:29.00	1st Qu.: 6.000	
##	Median :60367	Median : 1.000	Median :38.00	Median : 7.000	
##	Mean :60978	Mean : 4.811	Mean :38.12	Mean : 6.688	
##	3rd Qu.:66370	3rd Qu.: 5.000	3rd Qu.:47.00	3rd Qu.: 8.000	
##	Max. :71847	Max. :30.000	Max. :59.00	Max. :12.000	
##	PhysActiveDays	nPregnancies	AgeFirstMarij	SmokeAge	SameSex
##	Min. :1.000	Min. :0.0000	Min. : 1.00	Min. : 7.00	No :309
##	1st Qu.:2.000	1st Qu.:0.0000	1st Qu.:14.00	1st Qu.:15.00	Yes: 50
##	Median :3.000	Median :0.0000	Median :16.00	Median :17.00	

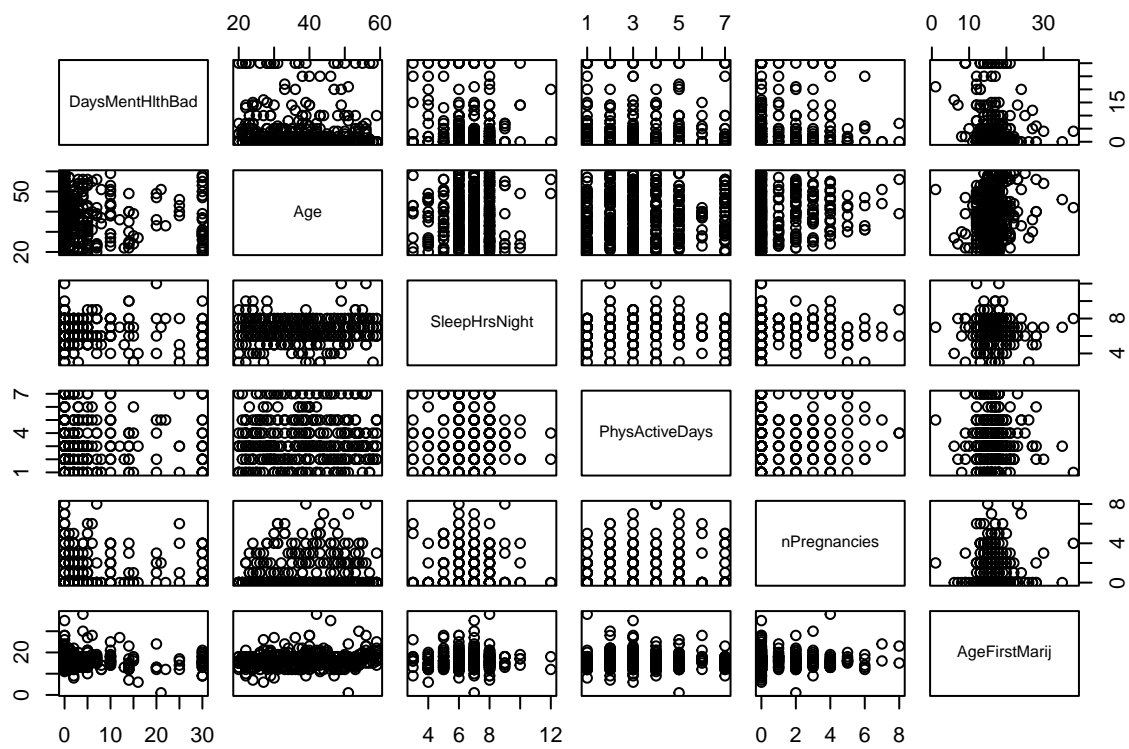
```
## Mean :3.396 Mean :0.9359 Mean :16.25 Mean :17.33
## 3rd Qu.:5.000 3rd Qu.:2.0000 3rd Qu.:18.00 3rd Qu.:19.00
## Max. :7.000 Max. :8.0000 Max. :38.00 Max. :45.00
## SexNumPartnLife AlcoholYear HardDrugs RegularMarij MaritalStatus
## Min. : 0.00 Min. : 1.0 No :208 No :128 Divorced : 38
## 1st Qu.: 6.00 1st Qu.: 20.5 Yes:151 Yes:231 LivePartner : 61
## Median : 10.00 Median : 72.0 Married :146
## Mean : 23.94 Mean :103.6 NeverMarried: 97
## 3rd Qu.: 23.50 3rd Qu.:156.0 Separated : 13
## Max. :600.00 Max. :364.0 Widowed : 4
## SleepTrouble AlcoholDay Gender LittleInterest HHIncomeMid
## No :253 Min. : 1.000 female:142 None :269 Min. : 2500
## Yes:106 1st Qu.: 2.000 male :217 Several: 70 1st Qu.: 22500
## Median : 3.000 Most : 20 Median : 50000
## Mean : 3.791 Mean : 57514
## 3rd Qu.: 5.000 3rd Qu.:100000
## Max. :36.000 Max. :100000
```

```
# Create a histogram of the response variable to look for presence of a skew
hist(df$DaysMentHlthBad)
```

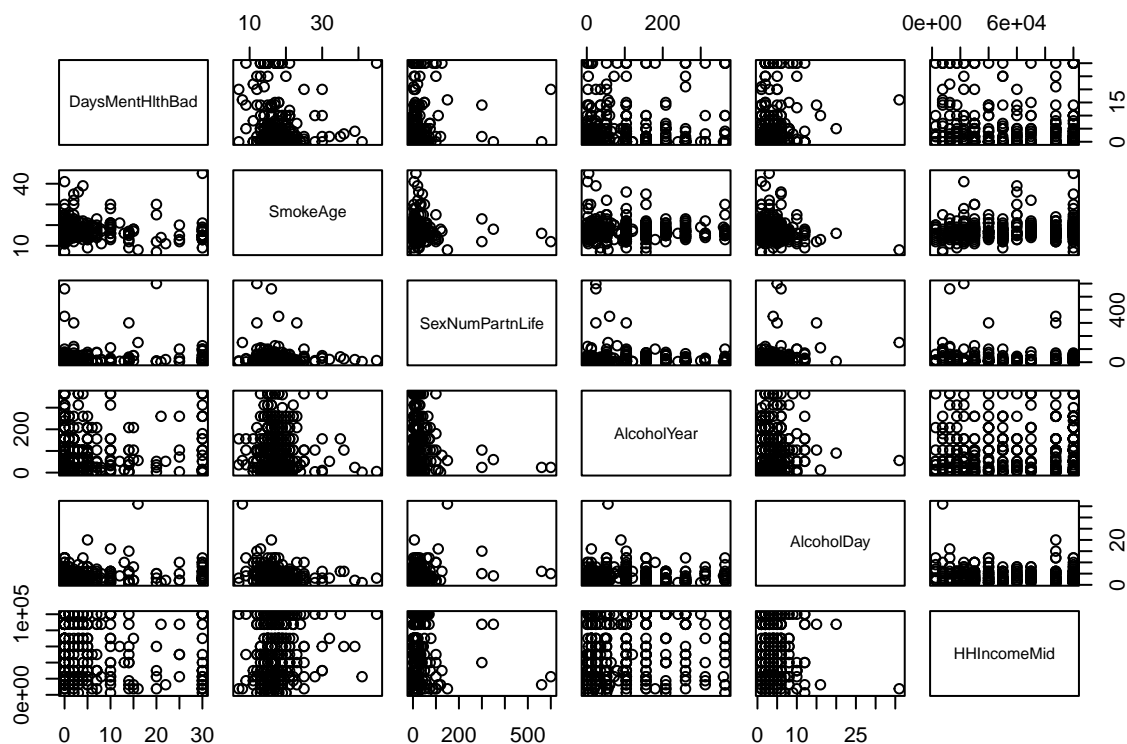
Histogram of df\$DaysMentHlthBad



```
# Create scatterplots and a correlation matrix, to determine relevant variables to include in the regression
plot(df[, c(2,3,4,5,6,7)])
```



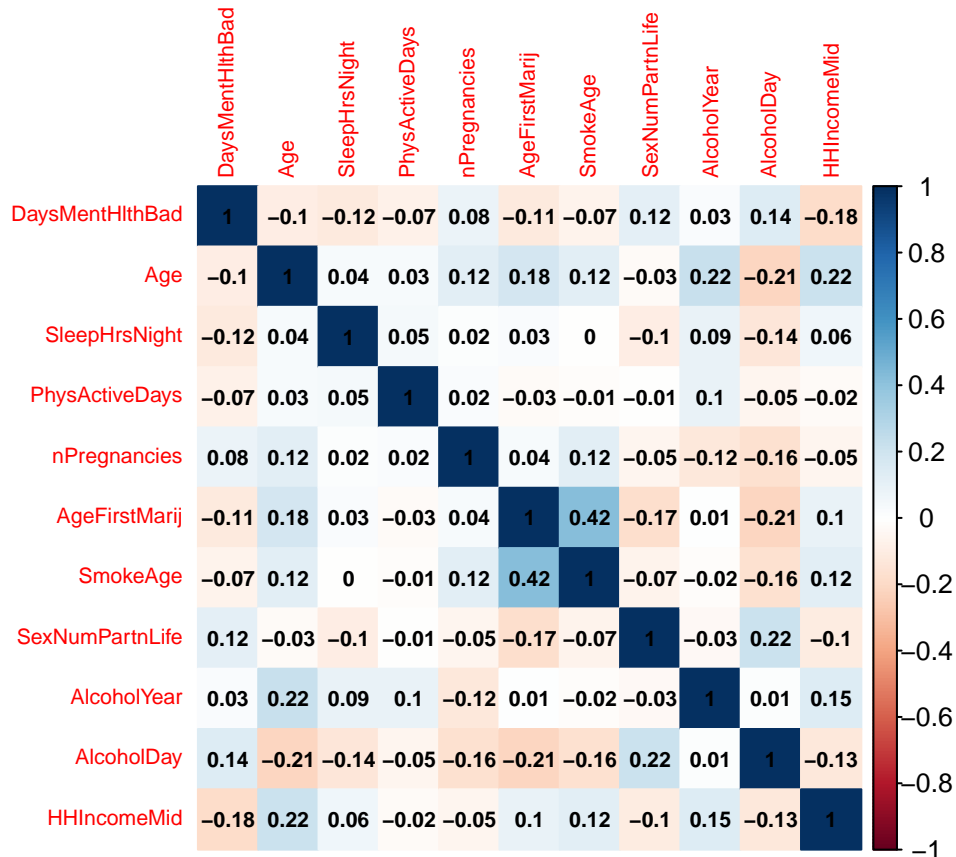
```
plot(df[, c(2,8,10,11,16,19)])
```



```
# Chosen relevant variables
selected_columns <- c(2, 3,4,5,6,7,8,10,11,16,19)
selected_variables <- df[, selected_columns]

# Create a correlation matrix for the selected variables
correlation_matrix <- cor(selected_variables)

# Create a heatmap using the corrplot package
corrplot(correlation_matrix, method='color', addCoef.col='black', number.cex=0.7, tl.cex=0.7)
```



```

model <- lm(DaysMentHlthBad ~ nPregnancies + AgeFirstMarij + SexNumPartnLife, data = df)

# Get leverage values
leverage_values <- hatvalues(model)

# Set a threshold for leverage (2 times the average leverage)
leverage_threshold <- 2 * mean(leverage_values)

# Subset data to exclude high leverage points
df_no_high_leverage <- df[leverage_values <= leverage_threshold, ]

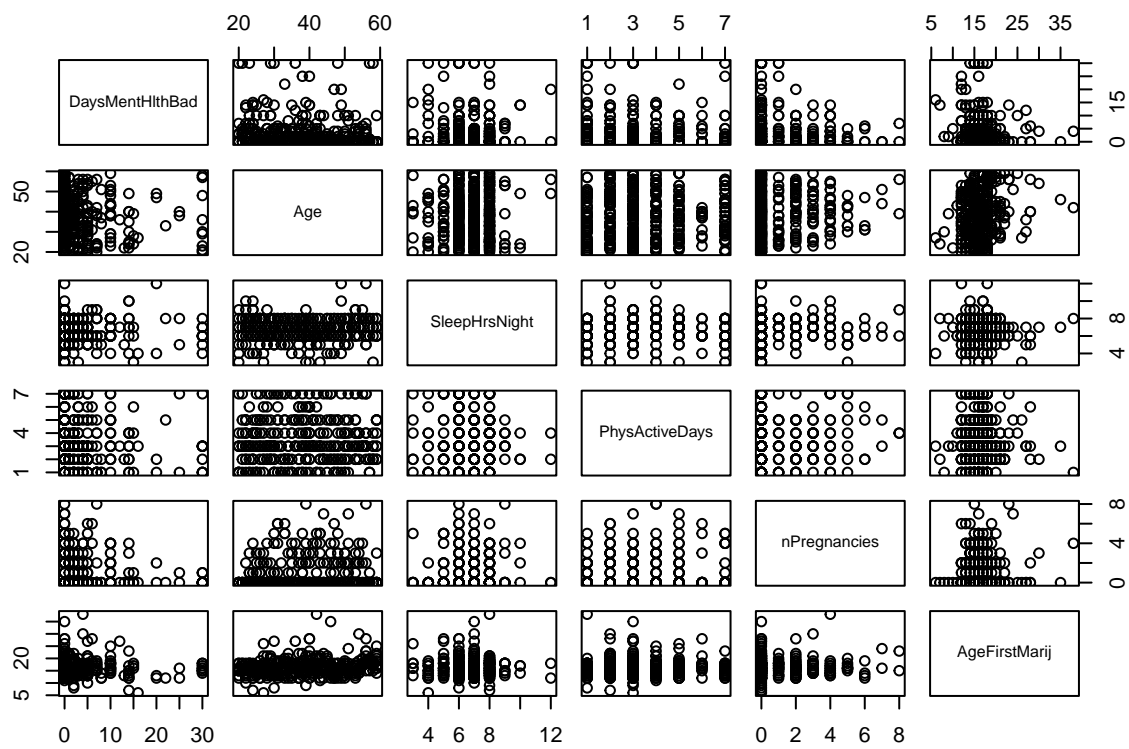
# Get Cook's distances
influential_points <- influence.measures(model)$infmat[, "cook.d"]

# Set a threshold for Cook's distance (e.g., 4 times the mean)
cook_threshold <- 4 * mean(influential_points)

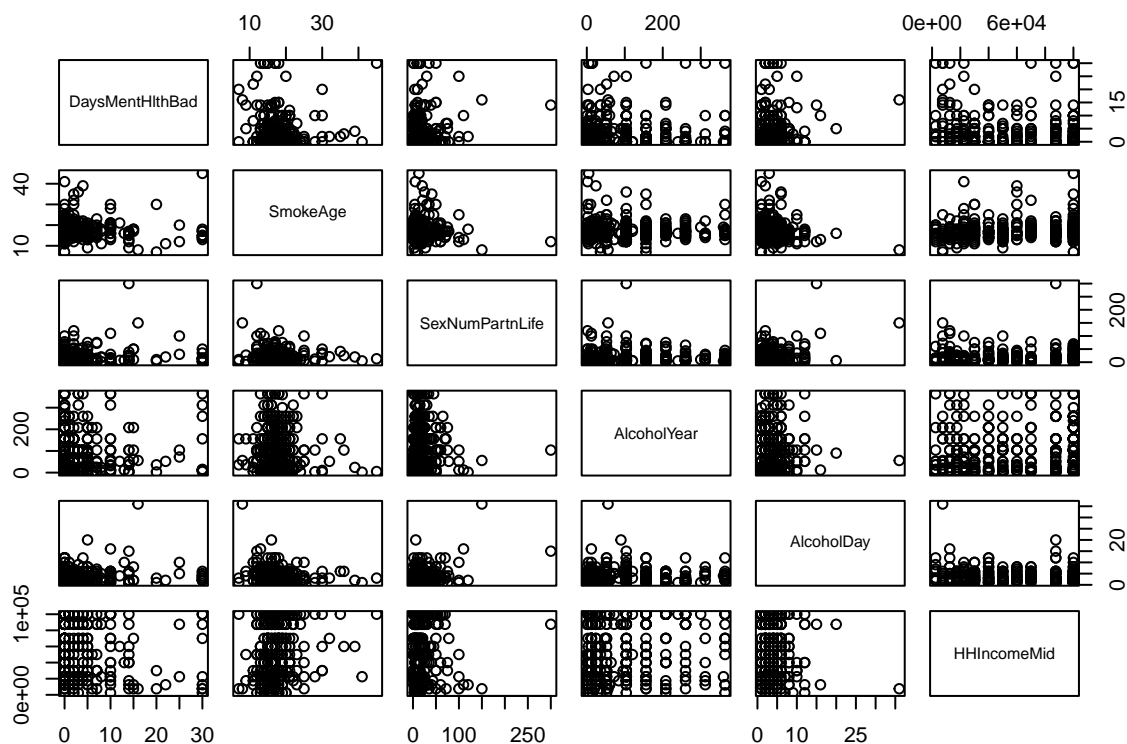
# Subset data to exclude influential points
df_no_influential <- df[influential_points <= cook_threshold, ]

plot(df_no_influential[, c(2,3,4,5,6,7)])

```



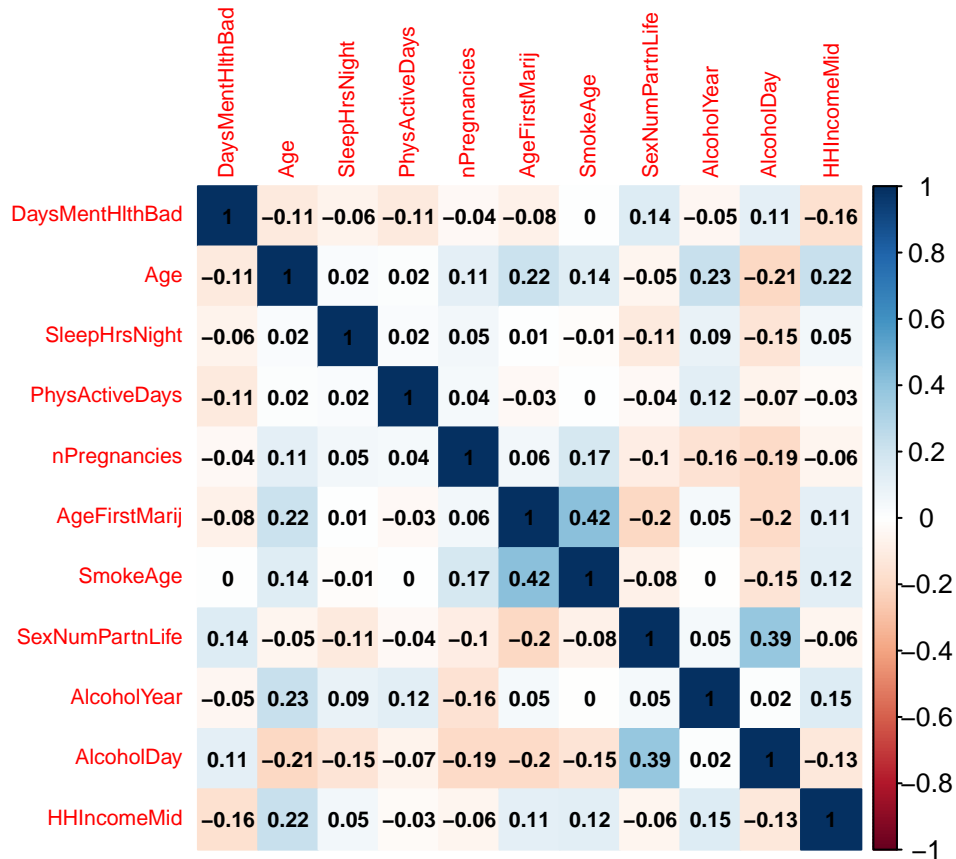
```
plot(df_no_influential[, c(2,8,10,11,16,19)])
```



```
selected_columns <- c(2, 3,4,5,6,7,8,10,11,16,19)
selected_variables1 <- df_no_influential[, selected_columns]

# Create a correlation matrix for the selected variables
correlation_matrix1 <- cor(selected_variables1)

# Create a heatmap using the corrplot package
corrplot(correlation_matrix1, method='color', addCoef.col='black', number.cex=0.7, tl.cex=0.7)
```



```
# Convert Categorical Vars to Numerical
df$SameSex <- ifelse(df$SameSex == "Yes", 1, 0)
df$HardDrugs <- ifelse(df$HardDrugs == "Yes", 1, 0)
df$RegularMarij <- ifelse(df$RegularMarij == "Yes", 1, 0)

df$male <- ifelse(df$Gender == "male", 1, 0)
df$n <- ifelse(df$Gender == "male", 1, 0)

m <- fit0 <- lm((DaysMentHlthBad) ~
                SleepHrsNight*PhysActiveDays*nPregnancies*AgeFirstMarij*SexNumPartnLife*AlcoholYear*SameSex,
                ,data = df)

n <- nrow(df)
stepfit = step(m, direction="both", k = log(n), trace=0)
summary(stepfit)
```

```
##
## Call:
## lm(formula = (DaysMentHlthBad) ~ SleepHrsNight + PhysActiveDays +
##   nPregnancies + AgeFirstMarij + SexNumPartnLife + AlcoholYear +
##   SameSex + male + SleepHrsNight:PhysActiveDays + SleepHrsNight:nPregnancies +
##   PhysActiveDays:nPregnancies + SleepHrsNight:AgeFirstMarij +
##   PhysActiveDays:AgeFirstMarij + nPregnancies:AgeFirstMarij +
##   SleepHrsNight:SexNumPartnLife + PhysActiveDays:SexNumPartnLife +
##   nPregnancies:SexNumPartnLife + AgeFirstMarij:SexNumPartnLife +
```



```

## SleepHrsNight:AlcoholYear + PhysActiveDays:AlcoholYear +
## nPregnancies:AlcoholYear + AgeFirstMarij:AlcoholYear + SexNumPartnLife:AlcoholYear +
## SleepHrsNight:SameSex + PhysActiveDays:SameSex + nPregnancies:SameSex +
## AgeFirstMarij:SameSex + SexNumPartnLife:SameSex + AlcoholYear:SameSex +
## SleepHrsNight:male + PhysActiveDays:male + AgeFirstMarij:male +
## SexNumPartnLife:male + AlcoholYear:male + SameSex:male +
## SleepHrsNight:PhysActiveDays:nPregnancies + SleepHrsNight:PhysActiveDays:AgeFirstMarij +
## SleepHrsNight:nPregnancies:AgeFirstMarij + PhysActiveDays:nPregnancies:AgeFirstMarij +
## SleepHrsNight:PhysActiveDays:SexNumPartnLife + SleepHrsNight:nPregnancies:SexNumPartnLife +
## PhysActiveDays:nPregnancies:SexNumPartnLife + SleepHrsNight:AgeFirstMarij:SexNumPartnLife +
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife + nPregnancies:AgeFirstMarij:SexNumPartnLife +
## SleepHrsNight:PhysActiveDays:AlcoholYear + SleepHrsNight:nPregnancies:AlcoholYear +
## PhysActiveDays:nPregnancies:AlcoholYear + SleepHrsNight:AgeFirstMarij:AlcoholYear +
## PhysActiveDays:AgeFirstMarij:AlcoholYear + nPregnancies:AgeFirstMarij:AlcoholYear +
## SleepHrsNight:SexNumPartnLife:AlcoholYear + PhysActiveDays:SexNumPartnLife:AlcoholYear +
## nPregnancies:SexNumPartnLife:AlcoholYear + AgeFirstMarij:SexNumPartnLife:AlcoholYear +
## SleepHrsNight:PhysActiveDays:SameSex + SleepHrsNight:nPregnancies:SameSex +
## PhysActiveDays:nPregnancies:SameSex + SleepHrsNight:AgeFirstMarij:SameSex +
## PhysActiveDays:AgeFirstMarij:SameSex + nPregnancies:AgeFirstMarij:SameSex +
## SleepHrsNight:SexNumPartnLife:SameSex + PhysActiveDays:SexNumPartnLife:SameSex +
## nPregnancies:SexNumPartnLife:SameSex + AgeFirstMarij:SexNumPartnLife:SameSex +
## SleepHrsNight:AlcoholYear:SameSex + PhysActiveDays:AlcoholYear:SameSex +
## nPregnancies:AlcoholYear:SameSex + AgeFirstMarij:AlcoholYear:SameSex +
## SexNumPartnLife:AlcoholYear:SameSex + SleepHrsNight:PhysActiveDays:male +
## SleepHrsNight:AgeFirstMarij:male + PhysActiveDays:AgeFirstMarij:male +
## SleepHrsNight:SexNumPartnLife:male + PhysActiveDays:SexNumPartnLife:male +
## AgeFirstMarij:SexNumPartnLife:male + SleepHrsNight:AlcoholYear:male +
## PhysActiveDays:AlcoholYear:male + AgeFirstMarij:AlcoholYear:male +
## SexNumPartnLife:AlcoholYear:male + SleepHrsNight:SameSex:male +
## PhysActiveDays:SameSex:male + AgeFirstMarij:SameSex:male +
## AlcoholYear:SameSex:male + SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij +
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife +
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife +
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife +
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife +
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear + SleepHrsNight:PhysActiveDays:AgeFirstMarij:
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear + PhysActiveDays:nPregnancies:AgeFirstMarij:
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear +
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear +
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear +
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear +
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear +
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear +
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SameSex + PhysActiveDays:nPregnancies:AgeFirstMarij:SameSex
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:SameSex + SleepHrsNight:nPregnancies:SexNumPartnLife:SameSex
## PhysActiveDays:nPregnancies:SexNumPartnLife:SameSex + nPregnancies:AgeFirstMarij:SexNumPartnLife:SameSex
## SleepHrsNight:nPregnancies:AlcoholYear:SameSex + PhysActiveDays:nPregnancies:AlcoholYear:SameSex
## SleepHrsNight:AgeFirstMarij:AlcoholYear:SameSex + PhysActiveDays:AgeFirstMarij:AlcoholYear:SameSex
## nPregnancies:AgeFirstMarij:AlcoholYear:SameSex + nPregnancies:SexNumPartnLife:AlcoholYear:SameSex
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:male + SleepHrsNight:PhysActiveDays:SexNumPartnLife:male
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:male + PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male
## SleepHrsNight:PhysActiveDays:AlcoholYear:male + PhysActiveDays:AgeFirstMarij:AlcoholYear:male +
## PhysActiveDays:SexNumPartnLife:AlcoholYear:male + AgeFirstMarij:SexNumPartnLife:AlcoholYear:male
## SleepHrsNight:PhysActiveDays:SameSex:male + SleepHrsNight:AgeFirstMarij:SameSex:male +

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## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife +
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear +
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear +
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear +
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear +
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear +
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male +
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear:male +
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear,
## data = df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -9.5856 -2.4167 -0.4768  0.9447 28.8312
##
## Coefficients:
##                                     Estimate
## (Intercept)                        9.182e+02
## SleepHrsNight                      -1.183e+02
## PhysActiveDays                     -2.902e+02
## nPregnancies                      -1.533e+02
## AgeFirstMarij                     -5.697e+01
## SexNumPartnLife                   -8.814e+01
## AlcoholYear                       -3.085e+00
## SameSex                           3.845e+03
## male                             -8.662e+02
## SleepHrsNight:PhysActiveDays        4.048e+01
## SleepHrsNight:nPregnancies          1.397e+01
## PhysActiveDays:nPregnancies          2.171e+01
## SleepHrsNight:AgeFirstMarij         7.379e+00
## PhysActiveDays:AgeFirstMarij         1.918e+01
## nPregnancies:AgeFirstMarij          9.451e+00
## SleepHrsNight:SexNumPartnLife        1.178e+01
## PhysActiveDays:SexNumPartnLife        3.179e+01
## nPregnancies:SexNumPartnLife          2.970e+00
## AgeFirstMarij:SexNumPartnLife         5.633e+00
## SleepHrsNight:AlcoholYear           -6.782e-03
## PhysActiveDays:AlcoholYear            6.996e-01
## nPregnancies:AlcoholYear              3.995e-01
## AgeFirstMarij:AlcoholYear             2.295e-01
## SexNumPartnLife:AlcoholYear           4.627e-01
## SleepHrsNight:SameSex               -6.172e+02
## PhysActiveDays:SameSex               -9.903e+02
## nPregnancies:SameSex                 -2.273e+02
## AgeFirstMarij:SameSex                -2.288e+02
## SexNumPartnLife:SameSex              -5.960e+01
## AlcoholYear:SameSex                  2.433e+01
## SleepHrsNight:male                   1.115e+02
## PhysActiveDays:male                   2.747e+02
## AgeFirstMarij:male                   5.454e+01
## SexNumPartnLife:male                  8.730e+01
## AlcoholYear:male                     2.256e+00
## SameSex:male                        -3.876e+03
## SleepHrsNight:PhysActiveDays:nPregnancies -2.448e+00

```

## SleepHrsNight:PhysActiveDays:AgeFirstMarij	-2.651e+00
## SleepHrsNight:nPregnancies:AgeFirstMarij	-8.776e-01
## PhysActiveDays:nPregnancies:AgeFirstMarij	-1.590e+00
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	-4.610e+00
## SleepHrsNight:nPregnancies:SexNumPartnLife	-5.107e-02
## PhysActiveDays:nPregnancies:SexNumPartnLife	3.303e-01
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife	-7.523e-01
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife	-2.078e+00
## nPregnancies:AgeFirstMarij:SexNumPartnLife	-1.662e-01
## SleepHrsNight:PhysActiveDays:AlcoholYear	2.853e-03
## SleepHrsNight:nPregnancies:AlcoholYear	1.383e-01
## PhysActiveDays:nPregnancies:AlcoholYear	1.545e-01
## SleepHrsNight:AgeFirstMarij:AlcoholYear	-6.424e-03
## PhysActiveDays:AgeFirstMarij:AlcoholYear	-5.860e-02
## nPregnancies:AgeFirstMarij:AlcoholYear	-3.843e-02
## SleepHrsNight:SexNumPartnLife:AlcoholYear	-1.073e-03
## PhysActiveDays:SexNumPartnLife:AlcoholYear	-1.295e-01
## nPregnancies:SexNumPartnLife:AlcoholYear	2.342e-01
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	-2.767e-02
## SleepHrsNight:PhysActiveDays:SameSex	1.797e+02
## SleepHrsNight:nPregnancies:SameSex	-1.496e+01
## PhysActiveDays:nPregnancies:SameSex	5.840e+01
## SleepHrsNight:AgeFirstMarij:SameSex	3.444e+01
## PhysActiveDays:AgeFirstMarij:SameSex	5.340e+01
## nPregnancies:AgeFirstMarij:SameSex	3.198e+01
## SleepHrsNight:SexNumPartnLife:SameSex	5.327e+00
## PhysActiveDays:SexNumPartnLife:SameSex	2.009e+01
## nPregnancies:SexNumPartnLife:SameSex	-3.428e+00
## AgeFirstMarij:SexNumPartnLife:SameSex	1.819e+00
## SleepHrsNight:AlcoholYear:SameSex	-2.111e+00
## PhysActiveDays:AlcoholYear:SameSex	-4.205e+00
## nPregnancies:AlcoholYear:SameSex	7.762e-01
## AgeFirstMarij:AlcoholYear:SameSex	-1.433e+00
## SexNumPartnLife:AlcoholYear:SameSex	-8.390e-02
## SleepHrsNight:PhysActiveDays:male	-3.822e+01
## SleepHrsNight:AgeFirstMarij:male	-7.040e+00
## PhysActiveDays:AgeFirstMarij:male	-1.821e+01
## SleepHrsNight:SexNumPartnLife:male	-1.162e+01
## PhysActiveDays:SexNumPartnLife:male	-3.175e+01
## AgeFirstMarij:SexNumPartnLife:male	-5.571e+00
## SleepHrsNight:AlcoholYear:male	1.318e-01
## PhysActiveDays:AlcoholYear:male	-4.617e-01
## AgeFirstMarij:AlcoholYear:male	-1.876e-01
## SexNumPartnLife:AlcoholYear:male	-4.566e-01
## SleepHrsNight:SameSex:male	6.201e+02
## PhysActiveDays:SameSex:male	4.042e+02
## AgeFirstMarij:SameSex:male	2.248e+02
## AlcoholYear:SameSex:male	-9.850e-01
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij	1.825e-01
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife	3.512e-02
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife	2.972e-01
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife	1.568e-03
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	-1.511e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear	-6.162e-02

## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear	2.142e-03
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear	-6.403e-03
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	-4.476e-03
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	1.306e-04
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear	-5.731e-02
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	-8.265e-02
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear	7.483e-05
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	7.950e-03
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-1.565e-02
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SameSex	-9.597e+00
## PhysActiveDays:nPregnancies:AgeFirstMarij:SameSex	-5.696e+00
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:SameSex	-2.701e+00
## SleepHrsNight:nPregnancies:SexNumPartnLife:SameSex	2.370e+00
## PhysActiveDays:nPregnancies:SexNumPartnLife:SameSex	-4.753e-01
## nPregnancies:AgeFirstMarij:SexNumPartnLife:SameSex	-1.031e+00
## SleepHrsNight:nPregnancies:AlcoholYear:SameSex	-1.258e-01
## PhysActiveDays:nPregnancies:AlcoholYear:SameSex	2.885e-01
## SleepHrsNight:AgeFirstMarij:AlcoholYear:SameSex	1.472e-01
## PhysActiveDays:AgeFirstMarij:AlcoholYear:SameSex	2.195e-01
## nPregnancies:AgeFirstMarij:AlcoholYear:SameSex	-7.095e-02
## nPregnancies:SexNumPartnLife:AlcoholYear:SameSex	2.788e-02
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:male	2.508e+00
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:male	4.587e+00
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:male	7.413e-01
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male	2.070e+00
## SleepHrsNight:PhysActiveDays:AlcoholYear:male	-3.944e-02
## PhysActiveDays:AgeFirstMarij:AlcoholYear:male	4.452e-02
## PhysActiveDays:SexNumPartnLife:AlcoholYear:male	1.293e-01
## AgeFirstMarij:SexNumPartnLife:AlcoholYear:male	2.723e-02
## SleepHrsNight:PhysActiveDays:SameSex:male	-5.747e+01
## SleepHrsNight:AgeFirstMarij:SameSex:male	-3.556e+01
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	-4.308e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	3.097e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	1.762e-02
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-1.981e-05
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	3.718e-03
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	5.215e-03
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male	-2.950e-01
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear:male	-7.840e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-1.110e-03
##	Std. Error
## (Intercept)	3.469e+02
## SleepHrsNight	4.957e+01
## PhysActiveDays	1.169e+02
## nPregnancies	1.663e+02
## AgeFirstMarij	2.232e+01
## SexNumPartnLife	3.265e+01
## AlcoholYear	1.098e+00
## SameSex	1.042e+03
## male	3.481e+02
## SleepHrsNight:PhysActiveDays	1.668e+01
## SleepHrsNight:nPregnancies	2.410e+01
## PhysActiveDays:nPregnancies	5.400e+01
## SleepHrsNight:AgeFirstMarij	3.175e+00

## PhysActiveDays:AgeFirstMarij	7.596e+00
## nPregnancies:AgeFirstMarij	1.047e+01
## SleepHrsNight:SexNumPartnLife	4.803e+00
## PhysActiveDays:SexNumPartnLife	1.126e+01
## nPregnancies:SexNumPartnLife	1.421e+01
## AgeFirstMarij:SexNumPartnLife	2.140e+00
## SleepHrsNight:AlcoholYear	1.012e-01
## PhysActiveDays:AlcoholYear	2.812e-01
## nPregnancies:AlcoholYear	1.206e+00
## AgeFirstMarij:AlcoholYear	6.663e-02
## SexNumPartnLife:AlcoholYear	1.275e-01
## SleepHrsNight:SameSex	1.703e+02
## PhysActiveDays:SameSex	2.892e+02
## nPregnancies:SameSex	5.877e+01
## AgeFirstMarij:SameSex	5.925e+01
## SexNumPartnLife:SameSex	1.655e+01
## AlcoholYear:SameSex	5.304e+00
## SleepHrsNight:male	4.981e+01
## PhysActiveDays:male	1.169e+02
## AgeFirstMarij:male	2.240e+01
## SexNumPartnLife:male	3.263e+01
## AlcoholYear:male	9.200e-01
## SameSex:male	8.535e+02
## SleepHrsNight:PhysActiveDays:nPregnancies	7.686e+00
## SleepHrsNight:PhysActiveDays:AgeFirstMarij	1.080e+00
## SleepHrsNight:nPregnancies:AgeFirstMarij	1.503e+00
## PhysActiveDays:nPregnancies:AgeFirstMarij	3.424e+00
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	1.659e+00
## SleepHrsNight:nPregnancies:SexNumPartnLife	2.026e+00
## PhysActiveDays:nPregnancies:SexNumPartnLife	5.660e+00
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife	3.139e-01
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife	7.305e-01
## nPregnancies:AgeFirstMarij:SexNumPartnLife	9.158e-01
## SleepHrsNight:PhysActiveDays:AlcoholYear	2.736e-02
## SleepHrsNight:nPregnancies:AlcoholYear	1.778e-01
## PhysActiveDays:nPregnancies:AlcoholYear	3.604e-01
## SleepHrsNight:AgeFirstMarij:AlcoholYear	5.707e-03
## PhysActiveDays:AgeFirstMarij:AlcoholYear	1.667e-02
## nPregnancies:AgeFirstMarij:AlcoholYear	7.953e-02
## SleepHrsNight:SexNumPartnLife:AlcoholYear	3.171e-03
## PhysActiveDays:SexNumPartnLife:AlcoholYear	3.815e-02
## nPregnancies:SexNumPartnLife:AlcoholYear	1.126e-01
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	7.597e-03
## SleepHrsNight:PhysActiveDays:SameSex	5.132e+01
## SleepHrsNight:nPregnancies:SameSex	3.829e+00
## PhysActiveDays:nPregnancies:SameSex	1.862e+01
## SleepHrsNight:AgeFirstMarij:SameSex	9.253e+00
## PhysActiveDays:AgeFirstMarij:SameSex	1.571e+01
## nPregnancies:AgeFirstMarij:SameSex	6.150e+00
## SleepHrsNight:SexNumPartnLife:SameSex	1.852e+00
## PhysActiveDays:SexNumPartnLife:SameSex	4.954e+00
## nPregnancies:SexNumPartnLife:SameSex	2.014e+00
## AgeFirstMarij:SexNumPartnLife:SameSex	3.652e-01
## SleepHrsNight:AlcoholYear:SameSex	5.830e-01

## PhysActiveDays:AlcoholYear:SameSex	8.567e-01
## nPregnancies:AlcoholYear:SameSex	4.978e-01
## AgeFirstMarij:AlcoholYear:SameSex	3.130e-01
## SexNumPartnLife:AlcoholYear:SameSex	1.544e-02
## SleepHrsNight:PhysActiveDays:male	1.669e+01
## SleepHrsNight:AgeFirstMarij:male	3.191e+00
## PhysActiveDays:AgeFirstMarij:male	7.598e+00
## SleepHrsNight:SexNumPartnLife:male	4.802e+00
## PhysActiveDays:SexNumPartnLife:male	1.126e+01
## AgeFirstMarij:SexNumPartnLife:male	2.139e+00
## SleepHrsNight:AlcoholYear:male	4.649e-02
## PhysActiveDays:AlcoholYear:male	2.324e-01
## AgeFirstMarij:AlcoholYear:male	5.439e-02
## SexNumPartnLife:AlcoholYear:male	1.249e-01
## SleepHrsNight:SameSex:male	1.390e+02
## PhysActiveDays:SameSex:male	1.146e+02
## AgeFirstMarij:SameSex:male	4.734e+01
## AlcoholYear:SameSex:male	2.269e-01
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij	4.850e-01
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife	7.903e-01
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife	1.073e-01
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife	1.292e-01
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	3.622e-01
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear	5.349e-02
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear	1.518e-03
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear	1.163e-02
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	2.301e-02
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	8.600e-04
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear	1.803e-02
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	2.995e-02
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear	2.123e-04
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	2.257e-03
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	7.899e-03
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SameSex	2.746e+00
## PhysActiveDays:nPregnancies:AgeFirstMarij:SameSex	1.263e+00
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:SameSex	6.978e-01
## SleepHrsNight:nPregnancies:SexNumPartnLife:SameSex	4.528e-01
## PhysActiveDays:nPregnancies:SexNumPartnLife:SameSex	1.341e-01
## nPregnancies:AgeFirstMarij:SexNumPartnLife:SameSex	2.001e-01
## SleepHrsNight:nPregnancies:AlcoholYear:SameSex	5.480e-02
## PhysActiveDays:nPregnancies:AlcoholYear:SameSex	5.966e-02
## SleepHrsNight:AgeFirstMarij:AlcoholYear:SameSex	3.591e-02
## PhysActiveDays:AgeFirstMarij:AlcoholYear:SameSex	4.594e-02
## nPregnancies:AgeFirstMarij:AlcoholYear:SameSex	2.115e-02
## nPregnancies:SexNumPartnLife:AlcoholYear:SameSex	5.146e-03
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:male	1.081e+00
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:male	1.659e+00
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:male	3.139e-01
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male	7.304e-01
## SleepHrsNight:PhysActiveDays:AlcoholYear:male	1.333e-02
## PhysActiveDays:AgeFirstMarij:AlcoholYear:male	1.320e-02
## PhysActiveDays:SexNumPartnLife:AlcoholYear:male	3.756e-02
## AgeFirstMarij:SexNumPartnLife:AlcoholYear:male	7.388e-03
## SleepHrsNight:PhysActiveDays:SameSex:male	1.733e+01

## SleepHrsNight:AgeFirstMarij:SameSex:male	7.567e+00
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	5.043e-02
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	3.389e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	4.589e-03
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	5.812e-05
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	1.257e-03
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	1.962e-03
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male	1.073e-01
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear:male	2.209e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	3.013e-04
##	t value
## (Intercept)	2.647
## SleepHrsNight	-2.386
## PhysActiveDays	-2.483
## nPregnancies	-0.922
## AgeFirstMarij	-2.552
## SexNumPartnLife	-2.700
## AlcoholYear	-2.809
## SameSex	3.690
## male	-2.489
## SleepHrsNight:PhysActiveDays	2.427
## SleepHrsNight:nPregnancies	0.580
## PhysActiveDays:nPregnancies	0.402
## SleepHrsNight:AgeFirstMarij	2.324
## PhysActiveDays:AgeFirstMarij	2.525
## nPregnancies:AgeFirstMarij	0.903
## SleepHrsNight:SexNumPartnLife	2.453
## PhysActiveDays:SexNumPartnLife	2.822
## nPregnancies:SexNumPartnLife	0.209
## AgeFirstMarij:SexNumPartnLife	2.632
## SleepHrsNight:AlcoholYear	-0.067
## PhysActiveDays:AlcoholYear	2.488
## nPregnancies:AlcoholYear	0.331
## AgeFirstMarij:AlcoholYear	3.444
## SexNumPartnLife:AlcoholYear	3.629
## SleepHrsNight:SameSex	-3.625
## PhysActiveDays:SameSex	-3.424
## nPregnancies:SameSex	-3.867
## AgeFirstMarij:SameSex	-3.862
## SexNumPartnLife:SameSex	-3.601
## AlcoholYear:SameSex	4.587
## SleepHrsNight:male	2.239
## PhysActiveDays:male	2.350
## AgeFirstMarij:male	2.435
## SexNumPartnLife:male	2.675
## AlcoholYear:male	2.452
## SameSex:male	-4.541
## SleepHrsNight:PhysActiveDays:nPregnancies	-0.319
## SleepHrsNight:PhysActiveDays:AgeFirstMarij	-2.456
## SleepHrsNight:nPregnancies:AgeFirstMarij	-0.584
## PhysActiveDays:nPregnancies:AgeFirstMarij	-0.464
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	-2.779
## SleepHrsNight:nPregnancies:SexNumPartnLife	-0.025
## PhysActiveDays:nPregnancies:SexNumPartnLife	0.058

## SleepHrsNight:AgeFirstMarij:SexNumPartnLife	-2.396
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife	-2.845
## nPregnancies:AgeFirstMarij:SexNumPartnLife	-0.181
## SleepHrsNight:PhysActiveDays:AlcoholYear	0.104
## SleepHrsNight:nPregnancies:AlcoholYear	0.778
## PhysActiveDays:nPregnancies:AlcoholYear	0.429
## SleepHrsNight:AgeFirstMarij:AlcoholYear	-1.126
## PhysActiveDays:AgeFirstMarij:AlcoholYear	-3.516
## nPregnancies:AgeFirstMarij:AlcoholYear	-0.483
## SleepHrsNight:SexNumPartnLife:AlcoholYear	-0.339
## PhysActiveDays:SexNumPartnLife:AlcoholYear	-3.395
## nPregnancies:SexNumPartnLife:AlcoholYear	2.080
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	-3.643
## SleepHrsNight:PhysActiveDays:SameSex	3.502
## SleepHrsNight:nPregnancies:SameSex	-3.908
## PhysActiveDays:nPregnancies:SameSex	3.136
## SleepHrsNight:AgeFirstMarij:SameSex	3.722
## PhysActiveDays:AgeFirstMarij:SameSex	3.399
## nPregnancies:AgeFirstMarij:SameSex	5.200
## SleepHrsNight:SexNumPartnLife:SameSex	2.877
## PhysActiveDays:SexNumPartnLife:SameSex	4.056
## nPregnancies:SexNumPartnLife:SameSex	-1.702
## AgeFirstMarij:SexNumPartnLife:SameSex	4.982
## SleepHrsNight:AlcoholYear:SameSex	-3.621
## PhysActiveDays:AlcoholYear:SameSex	-4.908
## nPregnancies:AlcoholYear:SameSex	1.559
## AgeFirstMarij:AlcoholYear:SameSex	-4.577
## SexNumPartnLife:AlcoholYear:SameSex	-5.435
## SleepHrsNight:PhysActiveDays:male	-2.290
## SleepHrsNight:AgeFirstMarij:male	-2.206
## PhysActiveDays:AgeFirstMarij:male	-2.396
## SleepHrsNight:SexNumPartnLife:male	-2.421
## PhysActiveDays:SexNumPartnLife:male	-2.819
## AgeFirstMarij:SexNumPartnLife:male	-2.605
## SleepHrsNight:AlcoholYear:male	2.836
## PhysActiveDays:AlcoholYear:male	-1.987
## AgeFirstMarij:AlcoholYear:male	-3.450
## SexNumPartnLife:AlcoholYear:male	-3.657
## SleepHrsNight:SameSex:male	4.462
## PhysActiveDays:SameSex:male	3.529
## AgeFirstMarij:SameSex:male	4.748
## AlcoholYear:SameSex:male	-4.341
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij	0.376
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife	0.044
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife	2.770
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife	0.012
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	-0.004
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear	-1.152
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear	1.411
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear	-0.551
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	-0.194
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	0.152
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear	-3.178
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	-2.760

## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.353
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	3.522
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-1.981
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SameSex	-3.495
## PhysActiveDays:nPregnancies:AgeFirstMarij:SameSex	-4.509
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:SameSex	-3.870
## SleepHrsNight:nPregnancies:SexNumPartnLife:SameSex	5.235
## PhysActiveDays:nPregnancies:SexNumPartnLife:SameSex	-3.544
## nPregnancies:AgeFirstMarij:SexNumPartnLife:SameSex	-5.150
## SleepHrsNight:nPregnancies:AlcoholYear:SameSex	-2.296
## PhysActiveDays:nPregnancies:AlcoholYear:SameSex	4.835
## SleepHrsNight:AgeFirstMarij:AlcoholYear:SameSex	4.100
## PhysActiveDays:AgeFirstMarij:AlcoholYear:SameSex	4.778
## nPregnancies:AgeFirstMarij:AlcoholYear:SameSex	-3.355
## nPregnancies:SexNumPartnLife:AlcoholYear:SameSex	5.417
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:male	2.321
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:male	2.765
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:male	2.362
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male	2.834
## SleepHrsNight:PhysActiveDays:AlcoholYear:male	-2.959
## PhysActiveDays:AgeFirstMarij:AlcoholYear:male	3.372
## PhysActiveDays:SexNumPartnLife:AlcoholYear:male	3.442
## AgeFirstMarij:SexNumPartnLife:AlcoholYear:male	3.686
## SleepHrsNight:PhysActiveDays:SameSex:male	-3.317
## SleepHrsNight:AgeFirstMarij:SameSex:male	-4.699
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	-0.085
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	0.914
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	3.840
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-0.341
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	2.957
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	2.658
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male	-2.749
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear:male	-3.549
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-3.682
##	Pr(> t)
## (Intercept)	0.008693
## SleepHrsNight	0.017834
## PhysActiveDays	0.013744
## nPregnancies	0.357596
## AgeFirstMarij	0.011361
## SexNumPartnLife	0.007463
## AlcoholYear	0.005395
## SameSex	0.000280
## male	0.013542
## SleepHrsNight:PhysActiveDays	0.016001
## SleepHrsNight:nPregnancies	0.562690
## PhysActiveDays:nPregnancies	0.688055
## SleepHrsNight:AgeFirstMarij	0.020999
## PhysActiveDays:AgeFirstMarij	0.012253
## nPregnancies:AgeFirstMarij	0.367457
## SleepHrsNight:SexNumPartnLife	0.014923
## PhysActiveDays:SexNumPartnLife	0.005192
## nPregnancies:SexNumPartnLife	0.834588
## AgeFirstMarij:SexNumPartnLife	0.009065

## SleepHrsNight:AlcoholYear	0.946655
## PhysActiveDays:AlcoholYear	0.013575
## nPregnancies:AlcoholYear	0.740723
## AgeFirstMarij:AlcoholYear	0.000683
## SexNumPartnLife:AlcoholYear	0.000351
## SleepHrsNight:SameSex	0.000356
## PhysActiveDays:SameSex	0.000732
## nPregnancies:SameSex	0.000144
## AgeFirstMarij:SameSex	0.000147
## SexNumPartnLife:SameSex	0.000389
## AlcoholYear:SameSex	7.41e-06
## SleepHrsNight:male	0.026151
## PhysActiveDays:male	0.019607
## AgeFirstMarij:male	0.015658
## SexNumPartnLife:male	0.008015
## AlcoholYear:male	0.014976
## SameSex:male	9.06e-06
## SleepHrsNight:PhysActiveDays:nPregnancies	0.750365
## SleepHrsNight:PhysActiveDays:AgeFirstMarij	0.014797
## SleepHrsNight:nPregnancies:AgeFirstMarij	0.559933
## PhysActiveDays:nPregnancies:AgeFirstMarij	0.642873
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	0.005900
## SleepHrsNight:nPregnancies:SexNumPartnLife	0.979913
## PhysActiveDays:nPregnancies:SexNumPartnLife	0.953520
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife	0.017370
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife	0.004843
## nPregnancies:AgeFirstMarij:SexNumPartnLife	0.856149
## SleepHrsNight:PhysActiveDays:AlcoholYear	0.917040
## SleepHrsNight:nPregnancies:AlcoholYear	0.437462
## PhysActiveDays:nPregnancies:AlcoholYear	0.668593
## SleepHrsNight:AgeFirstMarij:AlcoholYear	0.261485
## PhysActiveDays:AgeFirstMarij:AlcoholYear	0.000528
## nPregnancies:AgeFirstMarij:AlcoholYear	0.629397
## SleepHrsNight:SexNumPartnLife:AlcoholYear	0.735278
## PhysActiveDays:SexNumPartnLife:AlcoholYear	0.000810
## nPregnancies:SexNumPartnLife:AlcoholYear	0.038648
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.000334
## SleepHrsNight:PhysActiveDays:SameSex	0.000555
## SleepHrsNight:nPregnancies:SameSex	0.000123
## PhysActiveDays:nPregnancies:SameSex	0.001936
## SleepHrsNight:AgeFirstMarij:SameSex	0.000249
## PhysActiveDays:AgeFirstMarij:SameSex	0.000797
## nPregnancies:AgeFirstMarij:SameSex	4.43e-07
## SleepHrsNight:SexNumPartnLife:SameSex	0.004398
## PhysActiveDays:SexNumPartnLife:SameSex	6.85e-05
## nPregnancies:SexNumPartnLife:SameSex	0.090181
## AgeFirstMarij:SexNumPartnLife:SameSex	1.25e-06
## SleepHrsNight:AlcoholYear:SameSex	0.000362
## PhysActiveDays:AlcoholYear:SameSex	1.75e-06
## nPregnancies:AlcoholYear:SameSex	0.120301
## AgeFirstMarij:AlcoholYear:SameSex	7.75e-06
## SexNumPartnLife:AlcoholYear:SameSex	1.40e-07
## SleepHrsNight:PhysActiveDays:male	0.022962
## SleepHrsNight:AgeFirstMarij:male	0.028352

## PhysActiveDays:AgeFirstMarij:male	0.017384
## SleepHrsNight:SexNumPartnLife:male	0.016267
## PhysActiveDays:SexNumPartnLife:male	0.005240
## AgeFirstMarij:SexNumPartnLife:male	0.009802
## SleepHrsNight:AlcoholYear:male	0.004985
## PhysActiveDays:AlcoholYear:male	0.048135
## AgeFirstMarij:AlcoholYear:male	0.000668
## SexNumPartnLife:AlcoholYear:male	0.000317
## SleepHrsNight:SameSex:male	1.27e-05
## PhysActiveDays:SameSex:male	0.000505
## AgeFirstMarij:SameSex:male	3.62e-06
## AlcoholYear:SameSex:male	2.13e-05
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij	0.706983
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife	0.964596
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife	0.006074
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife	0.990328
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	0.996674
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear	0.250519
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear	0.159710
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear	0.582364
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	0.845973
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	0.879454
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear	0.001687
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	0.006252
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.724774
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.000517
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.048799
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SameSex	0.000570
## PhysActiveDays:nPregnancies:AgeFirstMarij:SameSex	1.04e-05
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:SameSex	0.000142
## SleepHrsNight:nPregnancies:SexNumPartnLife:SameSex	3.74e-07
## PhysActiveDays:nPregnancies:SexNumPartnLife:SameSex	0.000479
## nPregnancies:AgeFirstMarij:SexNumPartnLife:SameSex	5.64e-07
## SleepHrsNight:nPregnancies:AlcoholYear:SameSex	0.022570
## PhysActiveDays:nPregnancies:AlcoholYear:SameSex	2.45e-06
## SleepHrsNight:AgeFirstMarij:AlcoholYear:SameSex	5.74e-05
## PhysActiveDays:AgeFirstMarij:AlcoholYear:SameSex	3.18e-06
## nPregnancies:AgeFirstMarij:AlcoholYear:SameSex	0.000930
## nPregnancies:SexNumPartnLife:AlcoholYear:SameSex	1.53e-07
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:male	0.021187
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:male	0.006149
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:male	0.019022
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male	0.005008
## SleepHrsNight:PhysActiveDays:AlcoholYear:male	0.003410
## PhysActiveDays:AgeFirstMarij:AlcoholYear:male	0.000877
## PhysActiveDays:SexNumPartnLife:AlcoholYear:male	0.000687
## AgeFirstMarij:SexNumPartnLife:AlcoholYear:male	0.000285
## SleepHrsNight:PhysActiveDays:SameSex:male	0.001060
## SleepHrsNight:AgeFirstMarij:SameSex:male	4.53e-06
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	0.932005
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	0.361839
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	0.000159
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.733515
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.003431

```

## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.008428
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male 0.006464
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear:male 0.000469
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.000288
##
## (Intercept) **
## SleepHrsNight *
## PhysActiveDays *
## nPregnancies
## AgeFirstMarij *
## SexNumPartnLife **
## AlcoholYear **
## SameSex ***
## male *
## SleepHrsNight:PhysActiveDays *
## SleepHrsNight:nPregnancies
## PhysActiveDays:nPregnancies
## SleepHrsNight:AgeFirstMarij *
## PhysActiveDays:AgeFirstMarij *
## nPregnancies:AgeFirstMarij
## SleepHrsNight:SexNumPartnLife *
## PhysActiveDays:SexNumPartnLife **
## nPregnancies:SexNumPartnLife
## AgeFirstMarij:SexNumPartnLife **
## SleepHrsNight:AlcoholYear
## PhysActiveDays:AlcoholYear *
## nPregnancies:AlcoholYear
## AgeFirstMarij:AlcoholYear ***
## SexNumPartnLife:AlcoholYear ***
## SleepHrsNight:SameSex ***
## PhysActiveDays:SameSex ***
## nPregnancies:SameSex ***
## AgeFirstMarij:SameSex ***
## SexNumPartnLife:SameSex ***
## AlcoholYear:SameSex ***
## SleepHrsNight:male *
## PhysActiveDays:male *
## AgeFirstMarij:male *
## SexNumPartnLife:male **
## AlcoholYear:male *
## SameSex:male ***
## SleepHrsNight:PhysActiveDays:nPregnancies
## SleepHrsNight:PhysActiveDays:AgeFirstMarij *
## SleepHrsNight:nPregnancies:AgeFirstMarij
## PhysActiveDays:nPregnancies:AgeFirstMarij
## SleepHrsNight:PhysActiveDays:SexNumPartnLife **
## SleepHrsNight:nPregnancies:SexNumPartnLife
## PhysActiveDays:nPregnancies:SexNumPartnLife
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife *
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife **
## nPregnancies:AgeFirstMarij:SexNumPartnLife
## SleepHrsNight:PhysActiveDays:AlcoholYear
## SleepHrsNight:nPregnancies:AlcoholYear
## PhysActiveDays:nPregnancies:AlcoholYear

```

```

## SleepHrsNight:AgeFirstMarij:AlcoholYear
## PhysActiveDays:AgeFirstMarij:AlcoholYear ***
## nPregnancies:AgeFirstMarij:AlcoholYear
## SleepHrsNight:SexNumPartnLife:AlcoholYear
## PhysActiveDays:SexNumPartnLife:AlcoholYear ***
## nPregnancies:SexNumPartnLife:AlcoholYear *
## AgeFirstMarij:SexNumPartnLife:AlcoholYear ***
## SleepHrsNight:PhysActiveDays:SameSex ***
## SleepHrsNight:nPregnancies:SameSex ***
## PhysActiveDays:nPregnancies:SameSex **
## SleepHrsNight:AgeFirstMarij:SameSex ***
## PhysActiveDays:AgeFirstMarij:SameSex ***
## nPregnancies:AgeFirstMarij:SameSex ***
## SleepHrsNight:SexNumPartnLife:SameSex **
## PhysActiveDays:SexNumPartnLife:SameSex ***
## nPregnancies:SexNumPartnLife:SameSex .
## AgeFirstMarij:SexNumPartnLife:SameSex ***
## SleepHrsNight:AlcoholYear:SameSex ***
## PhysActiveDays:AlcoholYear:SameSex ***
## nPregnancies:AlcoholYear:SameSex
## AgeFirstMarij:AlcoholYear:SameSex ***
## SexNumPartnLife:AlcoholYear:SameSex ***
## SleepHrsNight:PhysActiveDays:male *
## SleepHrsNight:AgeFirstMarij:male *
## PhysActiveDays:AgeFirstMarij:male *
## SleepHrsNight:SexNumPartnLife:male *
## PhysActiveDays:SexNumPartnLife:male **
## AgeFirstMarij:SexNumPartnLife:male **
## SleepHrsNight:AlcoholYear:male **
## PhysActiveDays:AlcoholYear:male *
## AgeFirstMarij:AlcoholYear:male ***
## SexNumPartnLife:AlcoholYear:male ***
## SleepHrsNight:SameSex:male ***
## PhysActiveDays:SameSex:male ***
## AgeFirstMarij:SameSex:male ***
## AlcoholYear:SameSex:male ***
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife **
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear **
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear **
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear ***
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear *
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SameSex ***
## PhysActiveDays:nPregnancies:AgeFirstMarij:SameSex ***
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:SameSex ***

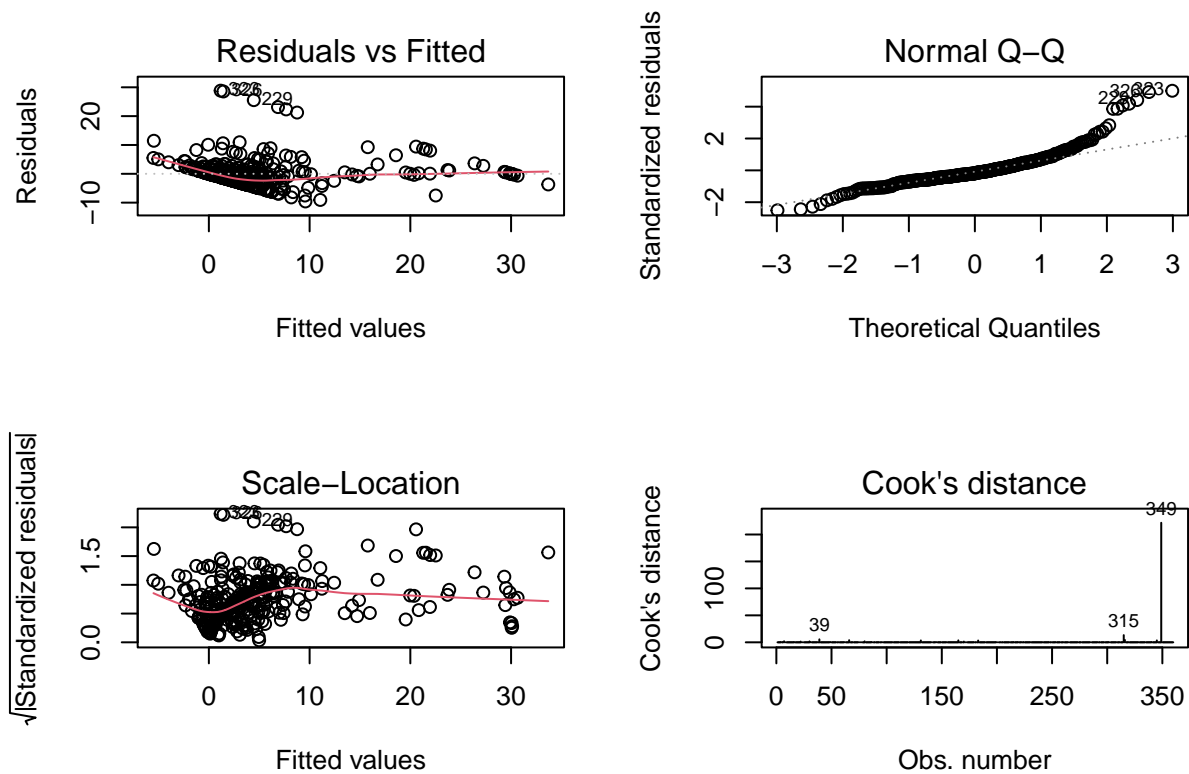
```

```

## SleepHrsNight:nPregnancies:SexNumPartnLife:SameSex ***
## PhysActiveDays:nPregnancies:SexNumPartnLife:SameSex ***
## nPregnancies:AgeFirstMarij:SexNumPartnLife:SameSex ***
## SleepHrsNight:nPregnancies:AlcoholYear:SameSex *
## PhysActiveDays:nPregnancies:AlcoholYear:SameSex ***
## SleepHrsNight:AgeFirstMarij:AlcoholYear:SameSex ***
## PhysActiveDays:AgeFirstMarij:AlcoholYear:SameSex ***
## nPregnancies:AgeFirstMarij:AlcoholYear:SameSex ***
## nPregnancies:SexNumPartnLife:AlcoholYear:SameSex ***
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:male *
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:male **
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:male *
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male **
## SleepHrsNight:PhysActiveDays:AlcoholYear:male **
## PhysActiveDays:AgeFirstMarij:AlcoholYear:male ***
## PhysActiveDays:SexNumPartnLife:AlcoholYear:male ***
## AgeFirstMarij:SexNumPartnLife:AlcoholYear:male ***
## SleepHrsNight:PhysActiveDays:SameSex:male **
## SleepHrsNight:AgeFirstMarij:SameSex:male ***
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear ***
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear **
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear **
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:male **
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear:male ***
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 5.866 on 228 degrees of freedom
## Multiple R-squared:  0.6741, Adjusted R-squared:  0.4883
## F-statistic: 3.628 on 130 and 228 DF,  p-value: < 2.2e-16

# Check the final model assumptions
par(mfrow = c(2, 2))
plot(stepfit, which = c(1, 2, 3, 4))

```



```
# Apply Box-Cox transformation
library(MASS)
```

```
##
## Attaching package: 'MASS'
```

```
## The following object is masked from 'package:dplyr':
##
## select
```

```
df$newDaysMentHlthBad <- df$DaysMentHlthBad +1

bc <- boxcox((df$newDaysMentHlthBad) ~ SleepHrsNight * PhysActiveDays *
  nPregnancies * AgeFirstMarij * SexNumPartnLife * AlcoholYear,
  data = df)
  lambda = seq(-2, 2, by = 0.1)

best_lambda <- bc$x[which.max(bc$y)]

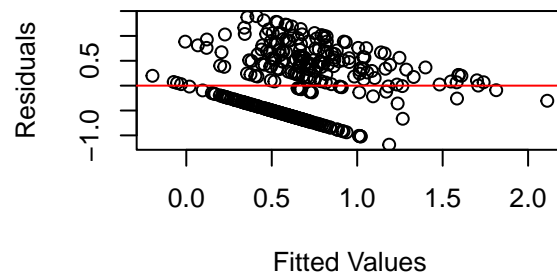
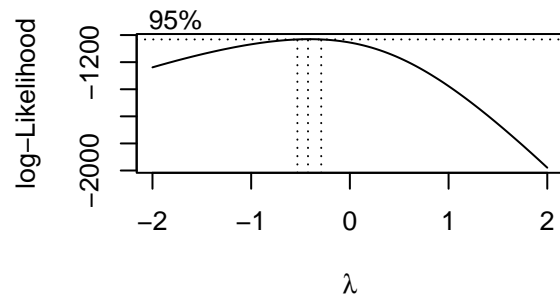
df$TransformedDaysMentHlthBad <- (df$newDaysMentHlthBad^best_lambda - 1) / best_lambda

# Fit the linear model with the transformed variable
fit <- lm(TransformedDaysMentHlthBad ~ SleepHrsNight * PhysActiveDays *
  nPregnancies * AgeFirstMarij * SexNumPartnLife * AlcoholYear,
  data = df)
```

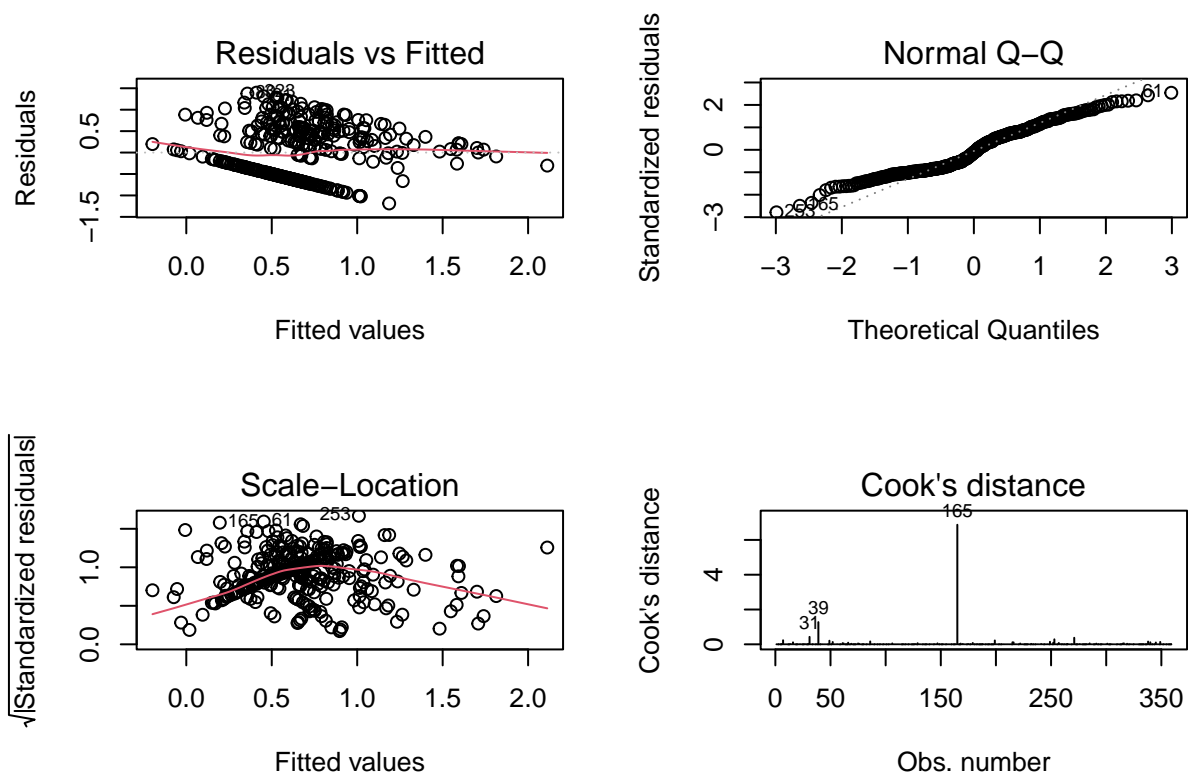
```
# Plot residuals vs fitted values
plot(fitted(fit), residuals(fit),
     xlab = "Fitted Values",
     ylab = "Residuals")

abline(h = 0, col = "red")

par(mfrow = c(2, 2))
```



```
plot(fit, which = c(1, 2, 3, 4))
```

```
summary(fit)
```

```
##
## Call:
## lm(formula = TransformedDaysMentHlthBad ~ SleepHrsNight * PhysActiveDays *
##     nPregnancies * AgeFirstMarij * SexNumPartnLife * AlcoholYear,
##     data = df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.18701 -0.54454 -0.05449  0.49089  1.39717
##
## Coefficients:
##                                     Estimate
## (Intercept)                       -7.048e-01
## SleepHrsNight                      3.436e-01
## PhysActiveDays                     2.016e-01
## nPregnancies                       4.288e-01
## AgeFirstMarij                      1.442e-01
## SexNumPartnLife                    -1.554e-02
## AlcoholYear                        -2.191e-02
## SleepHrsNight:PhysActiveDays        -7.410e-02
## SleepHrsNight:nPregnancies          -3.642e-01
## PhysActiveDays:nPregnancies          1.753e-01
## SleepHrsNight:AgeFirstMarij         -2.814e-02
```

## PhysActiveDays:AgeFirstMarij	-1.540e-02
## nPregnancies:AgeFirstMarij	-5.580e-02
## SleepHrsNight:SexNumPartnLife	2.690e-03
## PhysActiveDays:SexNumPartnLife	1.237e-02
## nPregnancies:SexNumPartnLife	1.186e-02
## AgeFirstMarij:SexNumPartnLife	1.840e-03
## SleepHrsNight:AlcoholYear	3.654e-03
## PhysActiveDays:AlcoholYear	5.815e-03
## nPregnancies:AlcoholYear	6.120e-02
## AgeFirstMarij:AlcoholYear	1.269e-03
## SexNumPartnLife:AlcoholYear	9.359e-04
## SleepHrsNight:PhysActiveDays:nPregnancies	3.470e-02
## SleepHrsNight:PhysActiveDays:AgeFirstMarij	4.732e-03
## SleepHrsNight:nPregnancies:AgeFirstMarij	2.778e-02
## PhysActiveDays:nPregnancies:AgeFirstMarij	-1.755e-03
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	-1.704e-03
## SleepHrsNight:nPregnancies:SexNumPartnLife	1.381e-02
## PhysActiveDays:nPregnancies:SexNumPartnLife	4.159e-03
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife	-3.423e-04
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife	-1.460e-03
## nPregnancies:AgeFirstMarij:SexNumPartnLife	2.375e-03
## SleepHrsNight:PhysActiveDays:AlcoholYear	-9.112e-04
## SleepHrsNight:nPregnancies:AlcoholYear	-6.315e-03
## PhysActiveDays:nPregnancies:AlcoholYear	-1.947e-02
## SleepHrsNight:AgeFirstMarij:AlcoholYear	-2.211e-04
## PhysActiveDays:AgeFirstMarij:AlcoholYear	-4.595e-04
## nPregnancies:AgeFirstMarij:AlcoholYear	-3.698e-03
## SleepHrsNight:SexNumPartnLife:AlcoholYear	-1.274e-04
## PhysActiveDays:SexNumPartnLife:AlcoholYear	-2.298e-04
## nPregnancies:SexNumPartnLife:AlcoholYear	6.786e-04
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	-9.035e-05
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij	-3.808e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife	-3.591e-03
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife	2.042e-04
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife	-1.390e-03
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	-1.489e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear	2.395e-03
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear	6.708e-05
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear	3.696e-04
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	1.185e-03
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	2.583e-05
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear	-2.977e-04
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	-3.625e-06
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear	1.308e-05
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	2.771e-05
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-6.677e-05
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	4.233e-04
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	-1.414e-04
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	3.936e-05
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-3.443e-06
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	2.347e-05
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	8.033e-06
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-3.903e-06
##	Std. Error

## (Intercept)	4.441e+00
## SleepHrsNight	6.951e-01
## PhysActiveDays	1.223e+00
## nPregnancies	5.032e+00
## AgeFirstMarij	2.916e-01
## SexNumPartnLife	1.119e-01
## AlcoholYear	6.149e-02
## SleepHrsNight:PhysActiveDays	1.960e-01
## SleepHrsNight:nPregnancies	7.464e-01
## PhysActiveDays:nPregnancies	1.416e+00
## SleepHrsNight:AgeFirstMarij	4.532e-02
## PhysActiveDays:AgeFirstMarij	8.063e-02
## nPregnancies:AgeFirstMarij	3.200e-01
## SleepHrsNight:SexNumPartnLife	1.856e-02
## PhysActiveDays:SexNumPartnLife	3.635e-02
## nPregnancies:SexNumPartnLife	2.985e-01
## AgeFirstMarij:SexNumPartnLife	8.414e-03
## SleepHrsNight:AlcoholYear	9.307e-03
## PhysActiveDays:AlcoholYear	1.589e-02
## nPregnancies:AlcoholYear	7.857e-02
## AgeFirstMarij:AlcoholYear	3.742e-03
## SexNumPartnLife:AlcoholYear	1.732e-03
## SleepHrsNight:PhysActiveDays:nPregnancies	2.107e-01
## SleepHrsNight:PhysActiveDays:AgeFirstMarij	1.282e-02
## SleepHrsNight:nPregnancies:AgeFirstMarij	4.755e-02
## PhysActiveDays:nPregnancies:AgeFirstMarij	8.905e-02
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	6.008e-03
## SleepHrsNight:nPregnancies:SexNumPartnLife	4.340e-02
## PhysActiveDays:nPregnancies:SexNumPartnLife	9.412e-02
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife	1.337e-03
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife	2.687e-03
## nPregnancies:AgeFirstMarij:SexNumPartnLife	2.073e-02
## SleepHrsNight:PhysActiveDays:AlcoholYear	2.440e-03
## SleepHrsNight:nPregnancies:AlcoholYear	1.150e-02
## PhysActiveDays:nPregnancies:AlcoholYear	2.061e-02
## SleepHrsNight:AgeFirstMarij:AlcoholYear	5.607e-04
## PhysActiveDays:AgeFirstMarij:AlcoholYear	9.612e-04
## nPregnancies:AgeFirstMarij:AlcoholYear	5.029e-03
## SleepHrsNight:SexNumPartnLife:AlcoholYear	2.771e-04
## PhysActiveDays:SexNumPartnLife:AlcoholYear	4.371e-04
## nPregnancies:SexNumPartnLife:AlcoholYear	5.298e-03
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	1.150e-04
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij	1.326e-02
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife	1.423e-02
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife	4.321e-04
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife	2.990e-03
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	6.396e-03
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear	3.042e-03
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear	1.463e-04
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear	7.361e-04
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	1.277e-03
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	7.033e-05
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear	7.919e-04
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	1.185e-03

## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear	1.786e-05
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	2.929e-05
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	3.789e-04
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	9.550e-04
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	1.894e-04
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	1.821e-04
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	4.534e-06
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	5.660e-05
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	8.238e-05
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	1.263e-05
##	t value
## (Intercept)	-0.159
## SleepHrsNight	0.494
## PhysActiveDays	0.165
## nPregnancies	0.085
## AgeFirstMarij	0.495
## SexNumPartnLife	-0.139
## AlcoholYear	-0.356
## SleepHrsNight:PhysActiveDays	-0.378
## SleepHrsNight:nPregnancies	-0.488
## PhysActiveDays:nPregnancies	0.124
## SleepHrsNight:AgeFirstMarij	-0.621
## PhysActiveDays:AgeFirstMarij	-0.191
## nPregnancies:AgeFirstMarij	-0.174
## SleepHrsNight:SexNumPartnLife	0.145
## PhysActiveDays:SexNumPartnLife	0.340
## nPregnancies:SexNumPartnLife	0.040
## AgeFirstMarij:SexNumPartnLife	0.219
## SleepHrsNight:AlcoholYear	0.393
## PhysActiveDays:AlcoholYear	0.366
## nPregnancies:AlcoholYear	0.779
## AgeFirstMarij:AlcoholYear	0.339
## SexNumPartnLife:AlcoholYear	0.540
## SleepHrsNight:PhysActiveDays:nPregnancies	0.165
## SleepHrsNight:PhysActiveDays:AgeFirstMarij	0.369
## SleepHrsNight:nPregnancies:AgeFirstMarij	0.584
## PhysActiveDays:nPregnancies:AgeFirstMarij	-0.020
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	-0.284
## SleepHrsNight:nPregnancies:SexNumPartnLife	0.318
## PhysActiveDays:nPregnancies:SexNumPartnLife	0.044
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife	-0.256
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife	-0.544
## nPregnancies:AgeFirstMarij:SexNumPartnLife	0.115
## SleepHrsNight:PhysActiveDays:AlcoholYear	-0.373
## SleepHrsNight:nPregnancies:AlcoholYear	-0.549
## PhysActiveDays:nPregnancies:AlcoholYear	-0.945
## SleepHrsNight:AgeFirstMarij:AlcoholYear	-0.394
## PhysActiveDays:AgeFirstMarij:AlcoholYear	-0.478
## nPregnancies:AgeFirstMarij:AlcoholYear	-0.735
## SleepHrsNight:SexNumPartnLife:AlcoholYear	-0.460
## PhysActiveDays:SexNumPartnLife:AlcoholYear	-0.526
## nPregnancies:SexNumPartnLife:AlcoholYear	0.128
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	-0.786
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij	-0.287

## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife	-0.252
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife	0.472
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife	-0.465
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	-0.233
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear	0.787
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear	0.459
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear	0.502
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	0.927
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	0.367
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear	-0.376
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	-0.003
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.732
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.946
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-0.176
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife	0.443
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear	-0.747
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear	0.216
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-0.760
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.415
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	0.098
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear	-0.309
##	Pr(> t)
## (Intercept)	0.874
## SleepHrsNight	0.621
## PhysActiveDays	0.869
## nPregnancies	0.932
## AgeFirstMarij	0.621
## SexNumPartnLife	0.890
## AlcoholYear	0.722
## SleepHrsNight:PhysActiveDays	0.706
## SleepHrsNight:nPregnancies	0.626
## PhysActiveDays:nPregnancies	0.902
## SleepHrsNight:AgeFirstMarij	0.535
## PhysActiveDays:AgeFirstMarij	0.849
## nPregnancies:AgeFirstMarij	0.862
## SleepHrsNight:SexNumPartnLife	0.885
## PhysActiveDays:SexNumPartnLife	0.734
## nPregnancies:SexNumPartnLife	0.968
## AgeFirstMarij:SexNumPartnLife	0.827
## SleepHrsNight:AlcoholYear	0.695
## PhysActiveDays:AlcoholYear	0.715
## nPregnancies:AlcoholYear	0.437
## AgeFirstMarij:AlcoholYear	0.735
## SexNumPartnLife:AlcoholYear	0.589
## SleepHrsNight:PhysActiveDays:nPregnancies	0.869
## SleepHrsNight:PhysActiveDays:AgeFirstMarij	0.712
## SleepHrsNight:nPregnancies:AgeFirstMarij	0.559
## PhysActiveDays:nPregnancies:AgeFirstMarij	0.984
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	0.777
## SleepHrsNight:nPregnancies:SexNumPartnLife	0.751
## PhysActiveDays:nPregnancies:SexNumPartnLife	0.965
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife	0.798
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife	0.587
## nPregnancies:AgeFirstMarij:SexNumPartnLife	0.909

```
## SleepHrsNight:PhysActiveDays:AlcoholYear 0.709
## SleepHrsNight:nPregnancies:AlcoholYear 0.583
## PhysActiveDays:nPregnancies:AlcoholYear 0.346
## SleepHrsNight:AgeFirstMarij:AlcoholYear 0.694
## PhysActiveDays:AgeFirstMarij:AlcoholYear 0.633
## nPregnancies:AgeFirstMarij:AlcoholYear 0.463
## SleepHrsNight:SexNumPartnLife:AlcoholYear 0.646
## PhysActiveDays:SexNumPartnLife:AlcoholYear 0.600
## nPregnancies:SexNumPartnLife:AlcoholYear 0.898
## AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.433
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij 0.774
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife 0.801
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife 0.637
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife 0.642
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife 0.816
## SleepHrsNight:PhysActiveDays:nPregnancies:AlcoholYear 0.432
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:AlcoholYear 0.647
## SleepHrsNight:nPregnancies:AgeFirstMarij:AlcoholYear 0.616
## PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear 0.354
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear 0.714
## SleepHrsNight:nPregnancies:SexNumPartnLife:AlcoholYear 0.707
## PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear 0.998
## SleepHrsNight:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.464
## PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.345
## nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.860
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife 0.658
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:AlcoholYear 0.456
## SleepHrsNight:PhysActiveDays:nPregnancies:SexNumPartnLife:AlcoholYear 0.829
## SleepHrsNight:PhysActiveDays:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.448
## SleepHrsNight:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.679
## PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.922
## SleepHrsNight:PhysActiveDays:nPregnancies:AgeFirstMarij:SexNumPartnLife:AlcoholYear 0.758
##
## Residual standard error: 0.6657 on 295 degrees of freedom
## Multiple R-squared: 0.2163, Adjusted R-squared: 0.04894
## F-statistic: 1.292 on 63 and 295 DF, p-value: 0.08337
```

```
m <- lm(TransformedDaysMentHlthBad ~
      SleepHrsNight*PhysActiveDays*nPregnancies*AgeFirstMarij*SexNumPartnLife*AlcoholYear*SameSex*mal
      data = df)

n <- nrow(df)
stepfit = step(m, direction="both", k = log(n), trace=0)
summary(stepfit)
```

```
##
## Call:
## lm(formula = TransformedDaysMentHlthBad ~ SleepHrsNight + PhysActiveDays +
##      nPregnancies + AgeFirstMarij + SexNumPartnLife + AlcoholYear +
##      SameSex + male + SleepHrsNight:PhysActiveDays + PhysActiveDays:nPregnancies +
##      SleepHrsNight:AgeFirstMarij + PhysActiveDays:AgeFirstMarij +
##      nPregnancies:AgeFirstMarij + SleepHrsNight:SexNumPartnLife +
##      PhysActiveDays:SexNumPartnLife + nPregnancies:SexNumPartnLife +
##      AgeFirstMarij:SexNumPartnLife + SleepHrsNight:AlcoholYear +
```

```

## PhysActiveDays:AlcoholYear + AgeFirstMarij:AlcoholYear +
## SexNumPartnLife:AlcoholYear + SleepHrsNight:SameSex + nPregnancies:SameSex +
## AgeFirstMarij:SameSex + SexNumPartnLife:SameSex + AlcoholYear:SameSex +
## SleepHrsNight:male + AgeFirstMarij:male + SexNumPartnLife:male +
## PhysActiveDays:nPregnancies:AgeFirstMarij + SleepHrsNight:PhysActiveDays:SexNumPartnLife +
## nPregnancies:AgeFirstMarij:SexNumPartnLife + SleepHrsNight:PhysActiveDays:AlcoholYear +
## SleepHrsNight:SexNumPartnLife:AlcoholYear + PhysActiveDays:SexNumPartnLife:AlcoholYear +
## AgeFirstMarij:SexNumPartnLife:AlcoholYear + nPregnancies:AgeFirstMarij:SameSex +
## nPregnancies:SexNumPartnLife:SameSex + AgeFirstMarij:SexNumPartnLife:SameSex +
## SleepHrsNight:AlcoholYear:SameSex + SleepHrsNight:AgeFirstMarij:male +
## SleepHrsNight:SexNumPartnLife:male + SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear,
## data = df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.4980 -0.4498 -0.1293  0.4390  1.4179
##
## Coefficients:
##                                     Estimate Std. Error
## (Intercept)                        8.455e+00  1.794e+00
## SleepHrsNight                      -1.038e+00  2.579e-01
## PhysActiveDays                     -2.018e-01  1.903e-01
## nPregnancies                      -9.763e-01  3.196e-01
## AgeFirstMarij                     -3.423e-01  1.008e-01
## SexNumPartnLife                   -1.020e-01  3.602e-02
## AlcoholYear                        3.484e-03  5.915e-03
## SameSex                          -3.852e+00  1.141e+00
## male                             -6.471e+00  2.069e+00
## SleepHrsNight:PhysActiveDays        1.071e-03  2.254e-02
## PhysActiveDays:nPregnancies         1.371e-01  5.777e-02
## SleepHrsNight:AgeFirstMarij         4.685e-02  1.428e-02
## PhysActiveDays:AgeFirstMarij        1.164e-02  8.066e-03
## nPregnancies:AgeFirstMarij         5.541e-02  1.923e-02
## SleepHrsNight:SexNumPartnLife       1.585e-02  4.733e-03
## PhysActiveDays:SexNumPartnLife     -5.442e-03  4.076e-03
## nPregnancies:SexNumPartnLife       4.982e-02  1.103e-02
## AgeFirstMarij:SexNumPartnLife     -1.031e-03  7.311e-04
## SleepHrsNight:AlcoholYear          5.592e-04  8.762e-04
## PhysActiveDays:AlcoholYear        -1.414e-03  1.546e-03
## AgeFirstMarij:AlcoholYear         -5.192e-04  1.425e-04
## SexNumPartnLife:AlcoholYear       -5.665e-04  1.952e-04
## SleepHrsNight:SameSex              4.614e-01  1.045e-01
## nPregnancies:SameSex              -9.402e-01  3.259e-01
## AgeFirstMarij:SameSex             5.645e-02  4.823e-02
## SexNumPartnLife:SameSex           9.137e-02  2.856e-02
## AlcoholYear:SameSex               2.080e-02  7.141e-03
## SleepHrsNight:male                8.335e-01  3.012e-01
## AgeFirstMarij:male                3.270e-01  1.204e-01
## SexNumPartnLife:male              1.160e-01  3.396e-02
## PhysActiveDays:nPregnancies:AgeFirstMarij -9.444e-03  3.560e-03
## SleepHrsNight:PhysActiveDays:SexNumPartnLife 5.817e-04  6.014e-04
## nPregnancies:AgeFirstMarij:SexNumPartnLife -2.475e-03  6.262e-04
## SleepHrsNight:PhysActiveDays:AlcoholYear 1.905e-04  2.275e-04
## SleepHrsNight:SexNumPartnLife:AlcoholYear 4.922e-05  3.042e-05

```

## PhysActiveDays:SexNumPartnLife:AlcoholYear	1.648e-04	5.457e-05	
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	1.929e-05	6.175e-06	
## nPregnancies:AgeFirstMarij:SameSex	6.533e-02	1.968e-02	
## nPregnancies:SexNumPartnLife:SameSex	-1.134e-02	4.416e-03	
## AgeFirstMarij:SexNumPartnLife:SameSex	-6.241e-03	1.579e-03	
## SleepHrsNight:AlcoholYear:SameSex	-2.678e-03	1.029e-03	
## SleepHrsNight:AgeFirstMarij:male	-4.502e-02	1.768e-02	
## SleepHrsNight:SexNumPartnLife:male	-1.523e-02	4.312e-03	
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	-2.381e-05	8.364e-06	
##	t value	Pr(> t)	
## (Intercept)	4.714	3.66e-06	***
## SleepHrsNight	-4.027	7.09e-05	***
## PhysActiveDays	-1.061	0.289679	
## nPregnancies	-3.055	0.002444	**
## AgeFirstMarij	-3.397	0.000768	***
## SexNumPartnLife	-2.832	0.004927	**
## AlcoholYear	0.589	0.556311	
## SameSex	-3.378	0.000823	***
## male	-3.128	0.001924	**
## SleepHrsNight:PhysActiveDays	0.048	0.962131	
## PhysActiveDays:nPregnancies	2.373	0.018261	*
## SleepHrsNight:AgeFirstMarij	3.282	0.001147	**
## PhysActiveDays:AgeFirstMarij	1.443	0.150064	
## nPregnancies:AgeFirstMarij	2.882	0.004223	**
## SleepHrsNight:SexNumPartnLife	3.350	0.000908	***
## PhysActiveDays:SexNumPartnLife	-1.335	0.182790	
## nPregnancies:SexNumPartnLife	4.516	8.93e-06	***
## AgeFirstMarij:SexNumPartnLife	-1.410	0.159439	
## SleepHrsNight:AlcoholYear	0.638	0.523768	
## PhysActiveDays:AlcoholYear	-0.914	0.361391	
## AgeFirstMarij:AlcoholYear	-3.644	0.000314	***
## SexNumPartnLife:AlcoholYear	-2.903	0.003962	**
## SleepHrsNight:SameSex	4.417	1.38e-05	***
## nPregnancies:SameSex	-2.885	0.004188	**
## AgeFirstMarij:SameSex	1.170	0.242736	
## SexNumPartnLife:SameSex	3.199	0.001518	**
## AlcoholYear:SameSex	2.913	0.003836	**
## SleepHrsNight:male	2.767	0.005988	**
## AgeFirstMarij:male	2.716	0.006967	**
## SexNumPartnLife:male	3.416	0.000718	***
## PhysActiveDays:nPregnancies:AgeFirstMarij	-2.653	0.008389	**
## SleepHrsNight:PhysActiveDays:SexNumPartnLife	0.967	0.334154	
## nPregnancies:AgeFirstMarij:SexNumPartnLife	-3.952	9.58e-05	***
## SleepHrsNight:PhysActiveDays:AlcoholYear	0.837	0.403094	
## SleepHrsNight:SexNumPartnLife:AlcoholYear	1.618	0.106680	
## PhysActiveDays:SexNumPartnLife:AlcoholYear	3.020	0.002731	**
## AgeFirstMarij:SexNumPartnLife:AlcoholYear	3.124	0.001948	**
## nPregnancies:AgeFirstMarij:SameSex	3.319	0.001008	**
## nPregnancies:SexNumPartnLife:SameSex	-2.568	0.010698	*
## AgeFirstMarij:SexNumPartnLife:SameSex	-3.952	9.56e-05	***
## SleepHrsNight:AlcoholYear:SameSex	-2.602	0.009717	**
## SleepHrsNight:AgeFirstMarij:male	-2.546	0.011365	*
## SleepHrsNight:SexNumPartnLife:male	-3.532	0.000474	***
## SleepHrsNight:PhysActiveDays:SexNumPartnLife:AlcoholYear	-2.847	0.004706	**


```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6004 on 315 degrees of freedom
## Multiple R-squared:  0.3193, Adjusted R-squared:  0.2263
## F-statistic: 3.436 on 43 and 315 DF,  p-value: 1.768e-10
```

```
# Check the final model assumptions
par(mfrow = c(2, 2))
plot(stepfit, which = c(1, 2, 3, 4))
```

