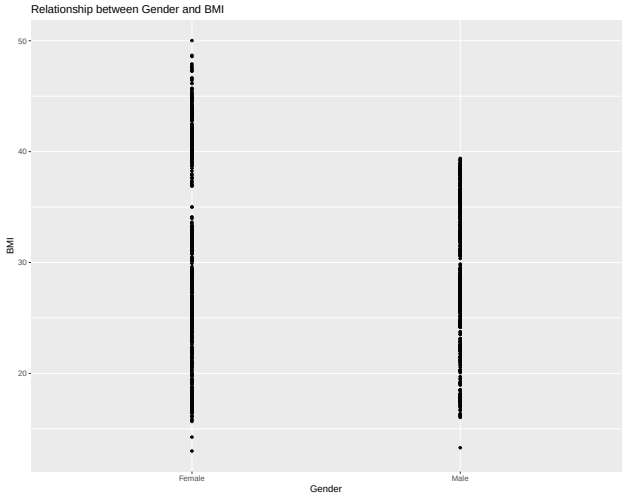
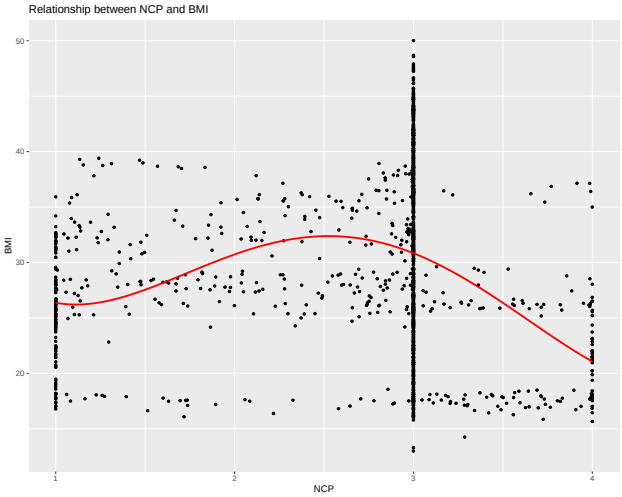
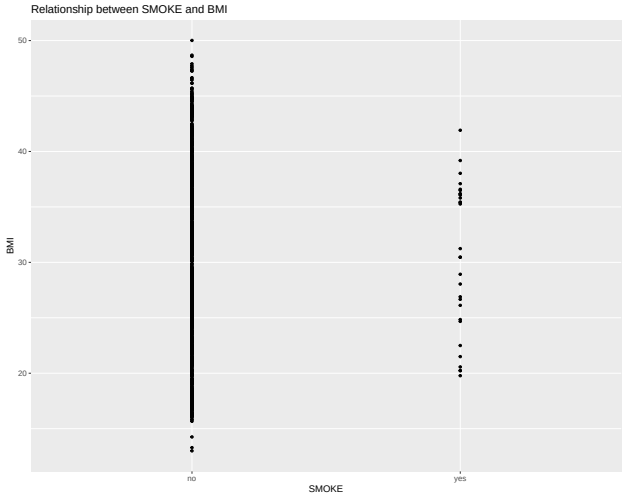
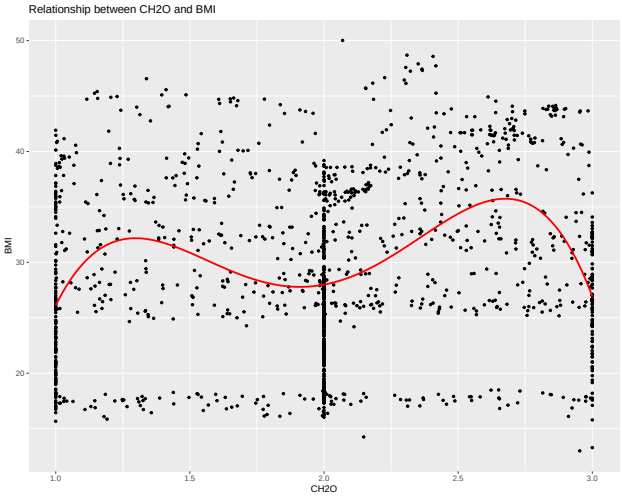
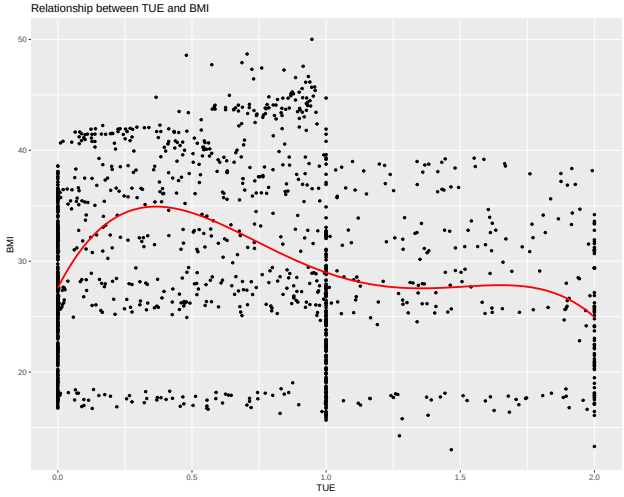
```
## [1] "These are the error rates for each variable in predicting BMI with Linear Regression:"

##
## Gender = 7.933141
## Age = 8.138466
## History of overweight = 8.732148
## Freq consumption of high caloric food = 8.245465
## Freq consumption of vegetables = 8.07324
## Number of main meals = 7.960129
## Consumption of food between meals = 8.789884
## Smoke = 7.956062
## Consumption of water = 7.990943
## Calorie consumption monitoring = 8.083427
## Freq of physical activity = 8.094464
## Time using electronics = 7.972349
## Consumption of alcohol = 8.203673
## Transportation used = 8.012741

##
##
## As we can see, the most accurate are gender,
## number of main meals, smoke, consumption of water,
## and time using electronics. Lets see if we can get
## these to be more precise with different regression approaches.

## [1] "These are the error rates for each numerical variable in predicting BMI with Spline Regression:"

##
## Number of main meals = 8.324037
## Consumption of water = 8.504096
## Time using electronics = 8.341119

##
##
## As we can see from the results, spline regression is
## not a better predictor of the error rate so we will try
## something else.

## [1] "The error when using lasso regression is: "

## 8.052512
## Which is still not as low as linear regressin got us

## [1] "Lets graph the cubic regression models"
```












```
## [1] "Testing for multicollinearity"
```

```
##                Age      Height      Weight        FCVC        NCP       CH2O
## Age    1.00000000 0.01555651 0.21494001 0.01345416 0.04805070 0.03023442
## Height 0.01555651 1.00000000 0.47396384 0.04823320 0.25017984 0.21371043
```

```
## Weight 0.21494001 0.47396384 1.00000000 0.18919722 0.11747780 0.19467337
## FCVC   0.01345416 0.04823320 0.18919722 1.00000000 0.04056444 0.04918938
## NCP    0.04805070 0.25017984 0.11747780 0.04056444 1.00000000 0.04798084
## CH2O   0.03023442 0.21371043 0.19467337 0.04918938 0.04798084 1.00000000
## FAF    0.16042932 0.30672844 0.04791569 0.01459885 0.11402788 0.16420323
## TUE    0.29767209 0.04499977 0.06998433 0.10122476 0.04963573 0.01840231
##               FAF        TUE
## Age    0.16042932 0.29767209
## Height 0.30672844 0.04499977
## Weight 0.04791569 0.06998433
## FCVC   0.01459885 0.10122476
## NCP    0.11402788 0.04963573
## CH2O   0.16420323 0.01840231
## FAF    1.00000000 0.06829046
## TUE    0.06829046 1.00000000
```

```
## [1] "There is no evidence of multicollinearity"
```