Final Report

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```
library(tidyverse)
```

```
## Warning in system("timedatectl", intern = TRUE): running command 'timedatectl'
## had status 1

## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.5     v dplyr   1.0.7
## v tidyr   1.1.4     v stringr 1.4.0
## v readr   2.0.2     v forcats 0.5.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(tidymodels)
```

```
## Registered S3 method overwritten by 'tune':
##   method                   from
##   required_pkgs.model_spec parsnip

## -- Attaching packages -------------------------------------- tidymodels 0.1.4 --

## v broom        0.7.9      v rsample      0.1.0
## v dials        0.0.10     v tune         0.1.6
## v infer        1.0.0      v workflows    0.2.4
## v modeldata    0.1.1      v workflowsets 0.1.0
## v parsnip      0.1.7      v yardstick    0.0.8
## v recipes      0.1.17

## -- Conflicts ----------------------------------------- tidymodels_conflicts() --
## x scales::discard() masks purrr::discard()
## x dplyr::filter()   masks stats::filter()
## x recipes::fixed()  masks stringr::fixed()
## x dplyr::lag()      masks stats::lag()
## x yardstick::spec() masks readr::spec()
## x recipes::step()   masks stats::step()
## * Learn how to get started at https://www.tidymodels.org/start/
```

```
library(ggplot2)
#setwd("/home/guest/R/project01")

#working directory is different based on user, just comment out the below line if you renamed the proje
# to anything else that's not save-the-best-for-last
```

```
setwd('/home/guest/save-the-best-for-last')

student <- readr::read_csv("data/student-mat.csv")
```

```
## Rows: 395 Columns: 33

## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (17): school, sex, address, famsize, Pstatus, Mjob, Fjob, reason, guardi...
## dbl (16): age, Medu, Fedu, traveltime, studytime, failures, famrel, freetime...

##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
student_binger <- student %>%
   mutate(binger = ifelse(sex == "F", ifelse(Dalc >= 3,1,0), ifelse(Dalc >= 4, 1, 0)))

student_binger$binger=factor(student_binger$binger,levels=c(1,0),labels=c("Yes","No"))
student_binger$binger=relevel(student_binger$binger, ref = "No")
```

```
student_logit <- student_binger %>%
  mutate(urban = ifelse(address == "U", 1, 0)) %>%
  mutate(famlarge = ifelse(famsize == "GT3", 1, 0)) %>%
  mutate(parents_together = ifelse(Pstatus == "T", 1, 0)) %>%
  mutate(mother_secondary = ifelse(Medu >= 3, 1, 0)) %>%
  mutate(father_secondary = ifelse(Fedu >= 3, 1, 0)) %>%
  mutate(school_support = ifelse(schoolsup == "yes", 1, 0)) %>%
  mutate(family_support = ifelse(famsup == "yes", 1, 0)) %>%
  mutate(extra_tutoring = ifelse(paid == "yes", 1, 0)) %>%
  mutate(alcoholic = ifelse(binger == "Yes", 1, 0))

student_logit_fit <- logistic_reg() %>%
  set_engine("glm") %>%
  fit(binger ~ urban + famlarge + parents_together + mother_secondary + father_secondary + school_suppo

tidy(student_logit_fit, conf.int=TRUE, exponentiate = TRUE)
```

```
## # A tibble: 9 x 7
##   term             estimate std.error statistic  p.value conf.low conf.high
##   <chr>               <dbl>     <dbl>     <dbl>    <dbl>    <dbl>     <dbl>
## 1 (Intercept)        0.0447     0.913   -3.41   0.000660  0.00630     0.235
## 2 urban              0.930      0.529   -0.137  0.891     0.351       2.92
## 3 famlarge           0.764      0.468   -0.576  0.565     0.312       2.00
## 4 parents_together   0.771      0.673   -0.387  0.699     0.232       3.53
## 5 mother_secondary   1.26       0.546    0.426  0.670     0.436       3.77
## 6 father_secondary   0.952      0.511   -0.0965 0.923     0.353       2.65
## 7 school_support     1.14       0.660    0.198  0.843     0.254       3.68
## 8 family_support     0.800      0.486   -0.459  0.646     0.315       2.16
## 9 extra_tutoring     3.84       0.511    2.63   0.00847   1.48       11.3
```

#Clearing Missing Data

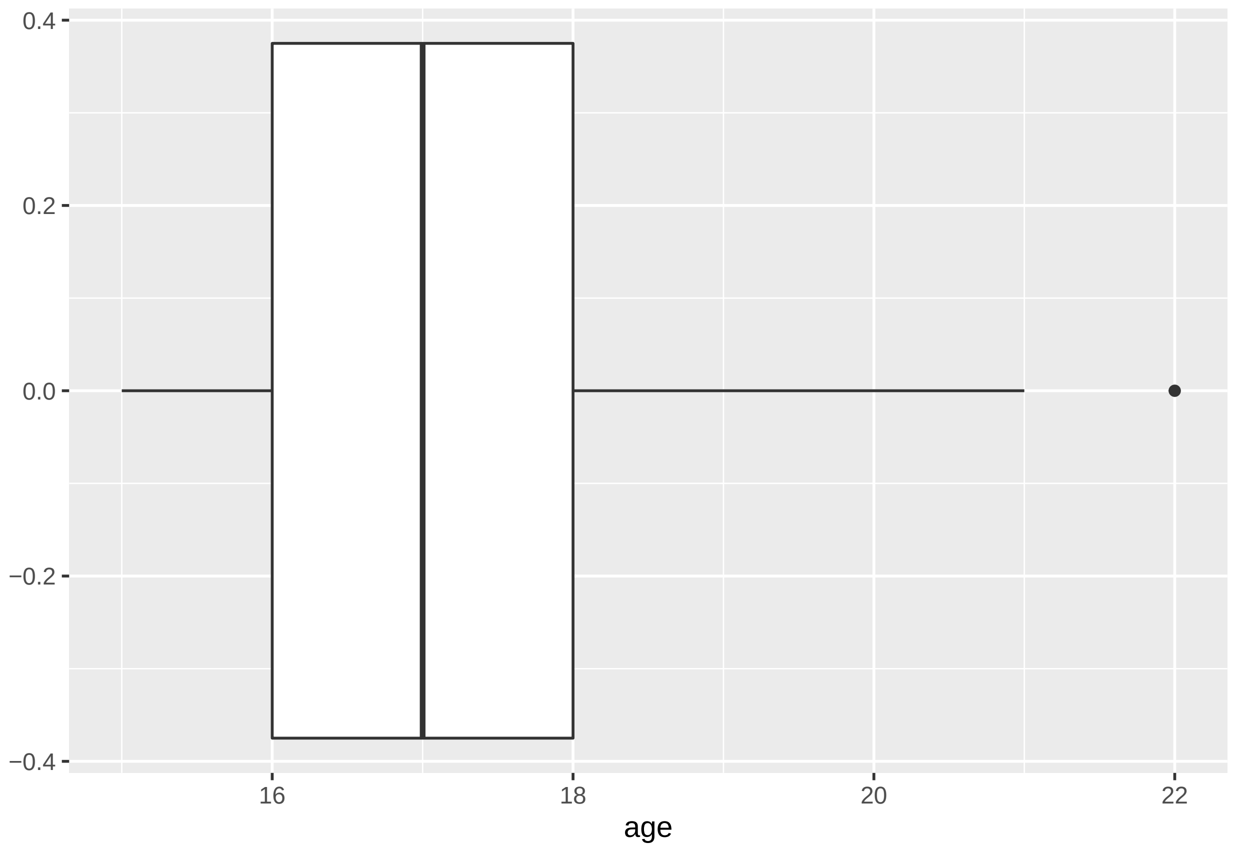
```
missingval <- is.na(student)
head(missingval)
```

```
##      school   sex   age address famsize Pstatus  Medu  Fedu  Mjob  Fjob reason
## [1,]  FALSE FALSE FALSE   FALSE   FALSE   FALSE FALSE FALSE FALSE FALSE  FALSE
## [2,]  FALSE FALSE FALSE   FALSE   FALSE   FALSE FALSE FALSE FALSE FALSE  FALSE
## [3,]  FALSE FALSE FALSE   FALSE   FALSE   FALSE FALSE FALSE FALSE FALSE  FALSE
## [4,]  FALSE FALSE FALSE   FALSE   FALSE   FALSE FALSE FALSE FALSE FALSE  FALSE
## [5,]  FALSE FALSE FALSE   FALSE   FALSE   FALSE FALSE FALSE FALSE FALSE  FALSE
## [6,]  FALSE FALSE FALSE   FALSE   FALSE   FALSE FALSE FALSE FALSE FALSE  FALSE
##      guardian traveltime studytime failures schoolsup famsup  paid activities
## [1,]    FALSE      FALSE     FALSE    FALSE     FALSE  FALSE FALSE      FALSE
## [2,]    FALSE      FALSE     FALSE    FALSE     FALSE  FALSE FALSE      FALSE
## [3,]    FALSE      FALSE     FALSE    FALSE     FALSE  FALSE FALSE      FALSE
## [4,]    FALSE      FALSE     FALSE    FALSE     FALSE  FALSE FALSE      FALSE
## [5,]    FALSE      FALSE     FALSE    FALSE     FALSE  FALSE FALSE      FALSE
## [6,]    FALSE      FALSE     FALSE    FALSE     FALSE  FALSE FALSE      FALSE
##      nursery higher internet romantic famrel freetime goout  Dalc  Walc health
## [1,]   FALSE  FALSE    FALSE    FALSE  FALSE    FALSE FALSE FALSE FALSE  FALSE
## [2,]   FALSE  FALSE    FALSE    FALSE  FALSE    FALSE FALSE FALSE FALSE  FALSE
## [3,]   FALSE  FALSE    FALSE    FALSE  FALSE    FALSE FALSE FALSE FALSE  FALSE
## [4,]   FALSE  FALSE    FALSE    FALSE  FALSE    FALSE FALSE FALSE FALSE  FALSE
## [5,]   FALSE  FALSE    FALSE    FALSE  FALSE    FALSE FALSE FALSE FALSE  FALSE
## [6,]   FALSE  FALSE    FALSE    FALSE  FALSE    FALSE FALSE FALSE FALSE  FALSE
##      absences    G1    G2    G3
## [1,]    FALSE FALSE FALSE FALSE
## [2,]    FALSE FALSE FALSE FALSE
## [3,]    FALSE FALSE FALSE FALSE
## [4,]    FALSE FALSE FALSE FALSE
## [5,]    FALSE FALSE FALSE FALSE
## [6,]    FALSE FALSE FALSE FALSE
```

As you can see from this quick check. There are no missing values in our data. Therefore we can move on with further analysis and no clearing of variables needs to be done. I put only the head of the data because it was too long to visually see the whole thing however it is all false.

#Data Wrangling There are two big questions that we want answered with this data set: whether a students average alcohol consumption is correlated with their family circumstances and whether alcohol consumption has an effect on student life. Lets first look at some geographics of our students.

```
student%>%
  ggplot(aes(x = age)) +
  geom_boxplot()
```



We can see from the data that the average age of the students tested was about 17 and there was an out liar at age 22.

```
table(student$age)
```

```
##
##  15  16  17  18  19  20  21  22
##  82 104  98  82  24   3   1   1
```

```
table(student$school)
```

```
##
##  GP  MS
## 349  46
```

```
table(student$ sex)
```

```
##
##   F   M
## 208 187
```

```
table(student$address)
```

```
##
##   R   U
##  88 307
```

```
table(student$famsize)
```

```
##
## GT3 LE3
## 281 114
```

```
table(student$Pstatus)
```

```
##
##   A   T
##  41 354
```

```
table(student$Medu)
```

```
##
##   0   1   2   3   4
##   3  59 103  99 131
```

```
table(student$Fedu)
```

```
##
##   0   1   2   3   4
##   2  82 115 100  96
```

```
table(student$Mjob)
```

```
##
##  at_home   health    other services  teacher
##       59       34      141      103       58
```

```
table(student$reason)
```

```
##
##     course       home      other reputation
##        145        109         36        105
```

```
table(student$guardian)
```

```
##
## father mother  other
##     90    273     32
```

```
table(student$famsup)
```

```
##
##  no yes
## 153 242
```

```
table(student$internet)
```

```
##
##  no yes
##  66 329
```