# stats-101a-project-markdown

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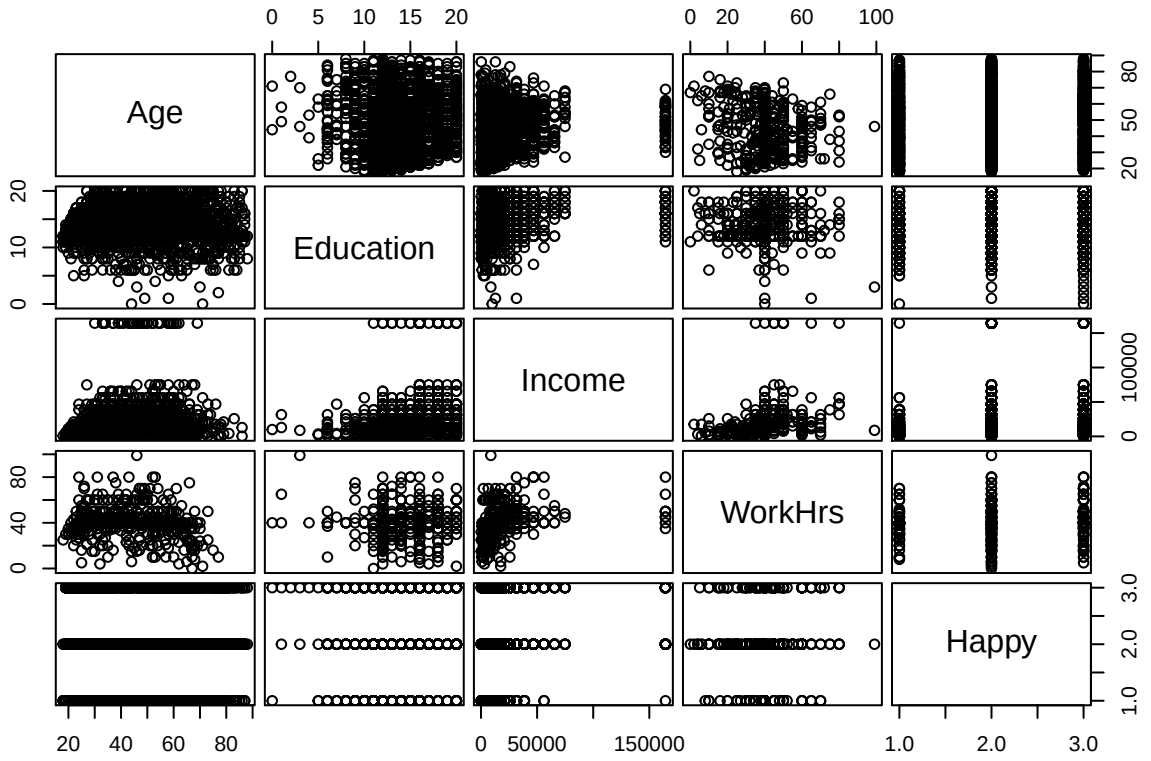
```
#data cleanup
happiness_data <- read.table("Happiness.txt", header = TRUE)
head(happiness_data)
```

```
##   Household Health OwnHome Instagram Marital Sex Age Children Education
## 3         2      2       0         2       1   1  72        2        16
## 4         4      2       1         0       1   2  43        4        12
## 5         3      1       0         1       1   2  55        2        18
## 6         2      0       1         1       1   2  53        2        14
## 7         3      4       1         0       1   1  50        2        14
## 8         2      2       0         1       1   2  23        3        11
##   JobSat Income WorkHrs Happy
## 3      0      0      -1     1
## 4      0   5265      -1     2
## 5      3    936      15     1
## 6      0      0      -1     1
## 7      0 164382      -1     2
## 8      2   7605      30     1
```

```
happiness_data$Household[happiness_data$Household == 8 | happiness_data$Household == 9] <- NA

happiness_data$Health[happiness_data$Health == 8 | happiness_data$Health == 9 |  happiness_data$Health =
happiness_data$Health[happiness_data$Health == 1] <- 400
happiness_data$Health[happiness_data$Health == 2] <- 300
happiness_data$Health[happiness_data$Health == 3] <- 2
happiness_data$Health[happiness_data$Health == 4] <- 1
happiness_data$Health[happiness_data$Health == 400] <- 4
happiness_data$Health[happiness_data$Health == 300] <- 3

happiness_data$OwnHome[happiness_data$OwnHome == 0 | happiness_data$OwnHome == 8 | happiness_data$OwnHo

happiness_data$Instagram[happiness_data$Instagram == 0 | happiness_data$Instagram == 8 | happiness_data

happiness_data$Marital[happiness_data$Marital == 9] <- NA

happiness_data$Age[happiness_data$Age == 89 | happiness_data$Age == 98 | happiness_data$Age == 99] <- N

happiness_data$Children[happiness_data$Children == 8 | happiness_data$Children == 9] <- NA

happiness_data$Education[happiness_data$Education == 97 | happiness_data$Education == 98 | happiness_da

happiness_data$JobSat[happiness_data$JobSat == 0 | happiness_data$JobSat == 8 | happiness_data$JobSat =

happiness_data$Income[happiness_data$Income == 0 | happiness_data$Income == 999998 | happiness_data$Inc

happiness_data$WorkHrs[happiness_data$WorkHrs == -1 | happiness_data$WorkHrs == 998 | happiness_data$Wo

happiness_data$Happy[happiness_data$Happy == 0 | happiness_data$Happy == 8 | happiness_data$Happy == 9]
```

```r
happiness_data$Happy[happiness_data$Happy == 1] <- 100
happiness_data$Happy[happiness_data$Happy == 3] <- 1
happiness_data$Happy[happiness_data$Happy == 100] <- 3

#exploring data
pairs(happiness_data[, -c(1,2,3,4,5,6,8,10)], gap=0.4,cex.labels=1.5)
```

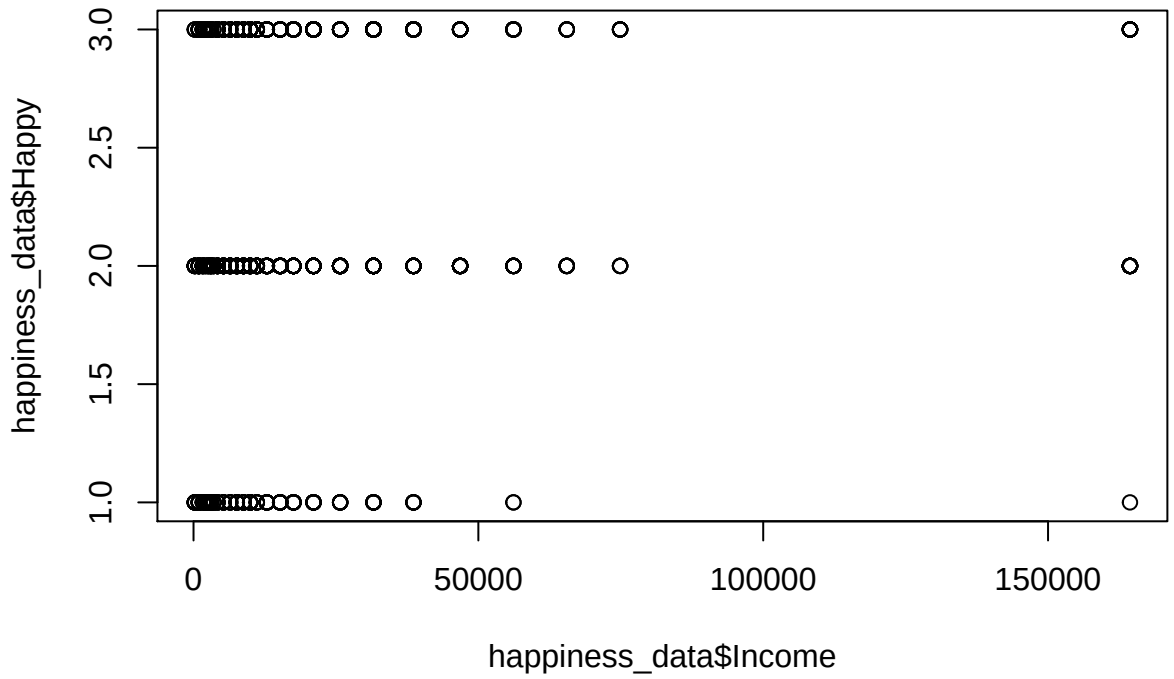



```r
m1 <- lm(happiness_data$Happy ~ happiness_data$Age + happiness_data$Education + happiness_data$Income +

summary(m1)
```

```
##
## Call:
## lm(formula = happiness_data$Happy ~ happiness_data$Age + happiness_data$Education +
##     happiness_data$Income + happiness_data$WorkHrs)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1.5164 -0.2267 -0.1453  0.7486  0.9651
##
## Coefficients:
##                              Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 1.915e+00  2.240e-01   8.546 3.04e-16 ***
## happiness_data$Age          2.136e-03  2.470e-03   0.865    0.388
## happiness_data$Education -2.974e-03  1.052e-02  -0.283    0.778
## happiness_data$Income       1.950e-06  1.412e-06   1.381    0.168
## happiness_data$WorkHrs      4.098e-03  2.552e-03   1.606    0.109
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Residual standard error: 0.6347 on 384 degrees of freedom
##   (1978 observations deleted due to missingness)
## Multiple R-squared:  0.01724,    Adjusted R-squared:  0.007001
## F-statistic: 1.684 on 4 and 384 DF,  p-value: 0.1529
```

```
m2 <- lm(happiness_data$Happy ~ happiness_data$Income)
plot(happiness_data$Happy ~ happiness_data$Income)
```




```
summary(m2)
```

```
##
## Call:
## lm(formula = happiness_data$Happy ~ happiness_data$Income)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1.6110 -0.1944 -0.1302  0.7579  0.9039
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)            2.095e+00  2.170e-02   96.57  < 2e-16 ***
## happiness_data$Income 3.137e-06  5.852e-07    5.36 9.78e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6137 on 1326 degrees of freedom
##   (1039 observations deleted due to missingness)
## Multiple R-squared:  0.02121,    Adjusted R-squared:  0.02047
## F-statistic: 28.73 on 1 and 1326 DF,  p-value: 9.783e-08
```

```
#adding factors/levels
HappyCat <- factor(happiness_data$Happy)
levels(HappyCat)
```

```
## [1] "1" "2" "3"
```

```
#m4 <- lm(HappyCat ~ happiness_data$Income)
#summary(m4)
#plot(HappyCat ~ happiness_data$Income)

#m5 <- lm(happiness_data$Income ~ HappyCat)
#summary(m5)
#plot(happiness_data$Income ~ HappyCat)

#transforming linear income
mean_income <- mean(happiness_data$Income, na.rm=TRUE)
tIncome <- happiness_data$Income/mean_income
m6 <- lm(happiness_data$Happy ~ tIncome)
summary(m6)
```

```
##
## Call:
## lm(formula = happiness_data$Happy ~ tIncome)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1.6110 -0.1944 -0.1302  0.7579  0.9039
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  2.09534    0.02170   96.57  < 2e-16 ***
## tIncome      0.07334    0.01368    5.36 9.78e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.6137 on 1326 degrees of freedom
##   (1039 observations deleted due to missingness)
## Multiple R-squared:  0.02121,    Adjusted R-squared:  0.02047
## F-statistic: 28.73 on 1 and 1326 DF,  p-value: 9.783e-08
```

```
#transforming inverse income
inverse_income <- 1/(happiness_data$Income)
m7 <- lm(happiness_data$Happy ~ inverse_income)
summary(m7)
```

```
##
## Call:
## lm(formula = happiness_data$Happy ~ inverse_income)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -1.1918 -0.1889 -0.1821  0.8099  1.3017
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)       2.19252    0.01796 122.051  < 2e-16 ***
## inverse_income -115.64146   29.23653  -3.955 8.05e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Residual standard error: 0.6167 on 1326 degrees of freedom
##   (1039 observations deleted due to missingness)
## Multiple R-squared:  0.01166,    Adjusted R-squared:  0.01092
## F-statistic: 15.64 on 1 and 1326 DF,  p-value: 8.046e-05
```