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Statement: Generative AI was used in this assignment

- ChatGPT was used to help to retify an error in generating barchart by providing potential errors and solution. Prompt used was the error message shown after code has been runned. Output was how the code was modified to change and add dataframe before the barchart was generated.
- BingAI was used to bring an idea to code. Prompt used was to combine 2 columns described to the AI as an example and to combine the data in the cells under the columns to be within only 1 cell of a new column. Output was an example code.
- ChatGPT was used to find on how t-value will affect the confidence of the coefficient as a predictor. Prompt used was 'how t-value is used to get the best predictor'. Output: Generally, any t-value greater than +2 or less than - 2 is acceptable. The higher the t-value, the greater the confidence we have in the coefficient as a predictor. Low t-values are indications of low reliability of the predictive power of that coefficient.

Set working directory

```
setwd("C:/Monash/FIT3152")
```

Install and load the libraries used

```
library(ggplot2)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(tidyr)
library(factoextra)
```

```
## Welcome! Want to learn more? See two factoextra-related books at https://goo.gl/ve3WBa
```

```
library(ggpubr)
library(corrplot)
```

```
## corrplot 0.92 loaded
```

```
library(reshape)
```

```
##
## Attaching package: 'reshape'

## The following objects are masked from 'package:tidyr':
##
##     expand, smiths

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

Load data in PsyCoronaBaselineExtract.csv

```
rm(list = ls())
set.seed(33085625)
cvbase = read.csv("PsyCoronaBaselineExtract.csv", header = TRUE)
cvbase <- cvbase[sample(nrow(cvbase), 40000), ] # 40000 rows
```

Question 1a: Basic pre-processing and descriptive analysis for the corona dataset

```
dim(cvbase)

## [1] 40000    52
```

There is a total of 40,000 rows and 52 columns present in the dataset.

```
names(cvbase)

##  [1] "employstatus_1"      "employstatus_2"      "employstatus_3"
##  [4] "employstatus_4"      "employstatus_5"      "employstatus_6"
##  [7] "employstatus_7"      "employstatus_8"      "employstatus_9"
## [10] "employstatus_10"     "isoFriends_inPerson" "isoOthPpl_inPerson"
## [13] "isoFriends_online"   "isoOthPpl_online"    "lone01"
## [16] "lone02"              "lone03"              "happy"
## [19] "lifeSat"             "MLQ"                 "bor01"
## [22] "bor02"               "bor03"               "consp01"
## [25] "consp02"             "consp03"             "rankOrdLife_1"
## [28] "rankOrdLife_2"       "rankOrdLife_3"       "rankOrdLife_4"
## [31] "rankOrdLife_5"       "rankOrdLife_6"       "c19perBeh01"
## [34] "c19perBeh02"         "c19perBeh03"         "c19RCA01"
## [37] "c19RCA02"            "c19RCA03"            "coronaClose_1"
## [40] "coronaClose_2"       "coronaClose_3"       "coronaClose_4"
## [43] "coronaClose_5"       "coronaClose_6"       "gender"
## [46] "age"                 "edu"                 "coded_country"
## [49] "c19ProSo01"          "c19ProSo02"          "c19ProSo03"
## [52] "c19ProSo04"
```

The 52 variables included in the dataset are employstatus_1, employstatus_2, employstatus_3, employstatus_4, employstatus_5, employstatus_6, employstatus_7, employstatus_8, employstatus_9, employstatus_10, isoFriends_inPerson, isoOthPpl_inPerson, isoFriends_online, isoOthPpl_online, lone01, lone02, lone03, happy, lifeSat, MLQ, bor01, bor02, bor03, consp01, consp02, consp03, rankOrdLife_1, rankOrdLife_2, rankOrdLife_3, rankOrdLife_4, rankOrdLife_5, rankOrdLife_6, c19perBeh01, c19perBeh02, c19perBeh03, c19RCA01, c19RCA02, c19RCA03, coronaClose_1, coronaClose_2, coronaClose_3, coronaClose_4, coronaClose_5, coronaClose_6, gender, age, edu, coded_country, c19ProSo01, c19ProSo02, c19ProSo03 and c19ProSo04.

```
# Summary is used to obtain basic summary of each column present in the dataset 'cvbase'
# summary(cvbase)
# str(cvbase)
# The commented code above has been run in appendix section
```

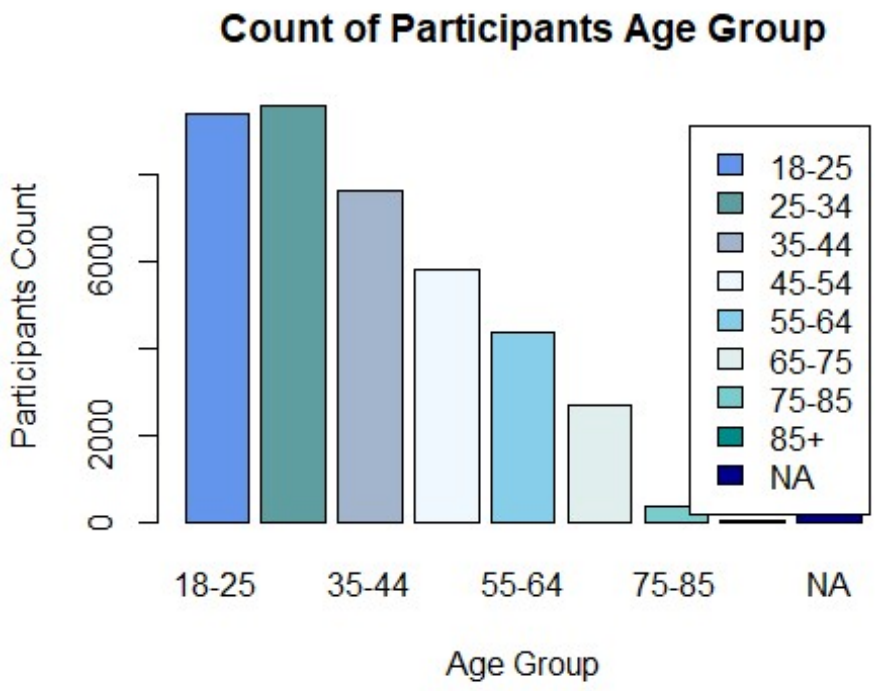
From the code above, we can see that there is some missing values ("NA") present in the dataset.

Most missing values are found in the columns employstatus_1, employstatus_2, employstatus_3, employstatus_4, employstatus_5, employstatus_6, employstatus_7, employstatus_8, employstatus_9 and employstatus_10 as these few columns ask on the concept of the employment status of the participants. Each options represents different employment status the participants might be in. Participants might only choose 1 of the many options provided even though they are allowed to choose multiple.

The Corona Proximity concept columns consisted of coronaClose_1, coronaClose_2, coronaClose_3, coronaClose_4, coronaClose_5 and coronaClose_6 which is also where the majority of the missing values are found in the dataset. These few columns ask the participants on whether they know people who have corona virus and each option represents different groups of people that have the corona virus and also a choice on not knowing anyone who have the corona virus.

Most of the responses is numerical except for rankOrdLife_1, rankOrdLife_2, rankOrdLife_3, rankOrdLife_4, rankOrdLife_5 and rankOrdLife_6 which responses came in alphabets and also coded_country which is the participants response on the country they currently live in or the country they spent most of their time in.

```
participants_age = cvbase %>% group_by(age) %>% summarise(COUNT = n())
participants_age <- as.data.frame(participants_age, row.names = NULL, optional = FALSE)
participants_age_barchart = participants_age$COUNT
names(participants_age_barchart) <- c("18-25", "25-34", "35-44", "45-54", "55-64", "65-75",
"75-85", "85+", "NA")
barplot(participants_age_barchart, main = "Count of Participants Age Group", xlab = "Age Gr
oup", ylab = "Participants Count", col = c("cornflowerblue", "cadetblue", "lightsteelblue3"
, "aliceblue", "skyblue", "azure2", "darkslategray3", "darkcyan", "darkblue"), border = "bl
ack", legend=TRUE)
```



The code above produce a bar chart that displayed the age range of the participants. From the bar chart, we can see that most participants are at the age range os 25-34 but the age range 18-25 is also quite high. This shows that most participants are teenagers or young adults and these people are the people that mostly spent their time on their devices.

Question 1b:

```
# Add one new column to the dataset named employment_status
# If employstatus_1 then under employment_status column put a 1
# If employstatus_1 and employstatus_2 then under employment_status column put 1, 2
# Once done, remove the columns for employstatus_1, employstatus_2, employstatus_3, employs
tatus_4, employstatus_5, employstatus_6, employstatus_7, employstatus_8, employstatus_9 and
employstatus_10

# Adding the new column and populate it
employment_columns <- c("employstatus_1", "employstatus_2", "employstatus_3", "employstatus
_4", "employstatus_5", "employstatus_6", "employstatus_7", "employstatus_8", "employstatus_
9", "employstatus_10")
cvbase$employment_status <- NA
cvbase$employment_status <- apply(cvbase[, employment_columns], 1, function(row) {
  not_na <- which(!is.na(row))
  if (length(not_na) > 0) {
    paste(not_na, collapse = ", ")
  } else {
    NA
  }
})
head(cvbase$employment_status)

## [1] "4"  "9"  "9"  "3"  "10" "2"

# Removing the columns
cvbase = subset(cvbase, select = -c(employstatus_1, employstatus_2, employstatus_3, employs
tatus_4, employstatus_5, employstatus_6, employstatus_7, employstatus_8, employstatus_9, em
ploystatus_10))

# Add one new column to the dataset named corona_close
# If coronaClose_1 then under corona_close column put a 1
# If coronaClose_1 and coronaClose_2 then under corona_close column put 1, 2
# Once done, remove the columns for coronaClose_1, coronaClose_2, coronaClose_3, coronaClos
e_4, coronaClose_5 and coronaClose_6

# Adding the new column and populate it
close_contact_column <- c("coronaClose_1", "coronaClose_2", "coronaClose_3", "coronaClose_4
", "coronaClose_5", "coronaClose_6")
cvbase$corona_close <- NA
cvbase$corona_close <- apply(cvbase[, close_contact_column], 1, function(row) {
  not_na <- which(!is.na(row))
  if (length(not_na) > 0) {
    paste(not_na, collapse = ", ")
  } else {
    NA
  }
})
head(cvbase$corona_close)

## [1] "6" "6" "6" "6" "5" "6"

# Removing the columns
cvbase = subset(cvbase, select = -c(coronaClose_1, coronaClose_2, coronaClose_3, coronaClos
e_4, coronaClose_5, coronaClose_6))
```

Question 2a: Focus country by Student ID 33085625 is Malaysia

```
# Group 1 --> Participants from Malaysia
msia = cvbase %>% filter(coded_country == "Malaysia")
dim(msia)

## [1] 548  38

# Group 2 --> Participants not from Malaysia
not_msia = cvbase %>% filter(coded_country != "Malaysia")
dim(not_msia)

## [1] 39452    38
```

After filtering the newly processed dataset, another filter is applied to pinpoint the responses has its coded_country listed as Malaysia or not Malaysia. Not Malaysia includes all the other countries that is not named Malaysia like Japan, Russia and more.

After future filtering, it is known that there is 548 rows and 38 columns for responses with focus country listed as Malaysia. Whereas on the other hand, there is 39452 rows and 38 columns for responses with focus country not listed as Malaysia.

```
# head() is used to get a glimpse of the data
covid19ProSo <- cvbase[, c("coded_country", "c19ProSo01", "c19ProSo02", "c19ProSo03", "c19P
roSo04")]
head(covid19ProSo)

##       coded_country c19ProSo01 c19ProSo02 c19ProSo03 c19ProSo04
## 24995        Greece          2          0          2         -2
## 47631         Egypt          1          1          1          1
## 33923       Romania          3          0          0          3
## 4530          Italy          0          0         -1          0
## 3978          China          3          3          3          2
## 36761   Netherlands          2         -2          2          3

prosocial_msia <- covid19ProSo[covid19ProSo$coded_country == "Malaysia", ]
head(prosocial_msia)

##       coded_country c19ProSo01 c19ProSo02 c19ProSo03 c19ProSo04
## 24272      Malaysia          0          0          0          1
## 52597      Malaysia          0          0          0          3
## 28793      Malaysia          0          2          1          1
## 43389      Malaysia          2          3          0          0
## 54798      Malaysia          1          1          0          2
## 301        Malaysia         -3          2          2          2
```

First, before filtering the pro-social attitudes of the participants according to country, the columns that store participants' country and their pro-social attitudes is moved to a new dataframe 'covid19ProSo' for easy view of the participants' responses. This is also to not touch on the newly processed dataset to prevent any mistakes done that would change the original dataset.

prosocial_msia stores the Malaysian participants' pros-social attitudes responses.

```
covid19ProSo <- cvbase[, c("coded_country", "c19ProSo01", "c19ProSo02", "c19ProSo03", "c19P
roSo04")]

prosocial_not_msia <- covid19ProSo[covid19ProSo$coded_country != "Malaysia", ]
head(prosocial_not_msia)
```

```
##       coded_country c19ProSo01 c19ProSo02 c19ProSo03 c19ProSo04
## 24995        Greece          2          0          2         -2
## 47631         Egypt          1          1          1          1
## 33923       Romania          3          0          0          3
## 4530          Italy          0          0         -1          0
## 3978          China          3          3          3          2
## 36761   Netherlands          2         -2          2          3
```

prosocial_not_msia stores the non-Malaysian participants' pros-social attitudes responses.

```
# Malaysia Pro-Social Attitude
paste("Malaysia Pro-Social Attitude")

## [1] "Malaysia Pro-Social Attitude"

# msia c19ProSo01
paste("c19ProSo01")

## [1] "c19ProSo01"

c19ProSo01_count_values <- table(prosocial_msia$c19ProSo01)
c19ProSo01_count_values

##
##  -3  -2  -1   0   1   2   3
##  10   8  18  88 130 213  80

# msia c19ProSo02
paste("c19ProSo02")

## [1] "c19ProSo02"

c19ProSo02_count_values <- table(prosocial_msia$c19ProSo02)
c19ProSo02_count_values

##
##  -3  -2  -1   0   1   2   3
##  10   8  11  68 116 221 113

# msia c19ProSo03
paste("c19ProSo03")

## [1] "c19ProSo03"

c19ProSo03_count_values <- table(prosocial_msia$c19ProSo03)
c19ProSo03_count_values

##
##  -3  -2  -1   0   1   2   3
##   7  15  36 127 152 142  68

# msia c19ProSo04
paste("c19ProSo04")

## [1] "c19ProSo04"

c19ProSo04_count_values <- table(prosocial_msia$c19ProSo04)
c19ProSo04_count_values
```

```
##
##  -3  -2  -1   0   1   2   3
##   7  28  23 100 114 166 109
```

```
# Non-Malaysia Pro-Social Attitude
paste("Non-Malaysia Pro-Social Attitude")
```

```
## [1] "Non-Malaysia Pro-Social Attitude"
```

```
# not msia c19ProSo01
paste("c19ProSo01")
```

```
## [1] "c19ProSo01"
```

```
c19ProSo01_count_values <- table(prosocial_not_msia$c19ProSo01)
c19ProSo01_count_values
```

```
##
##    -3    -2    -1     0     1     2     3
##  1173  1996  2397  7482  9742 11552  4982
```

```
# not msia c19ProSo02
paste("c19ProSo02")
```

```
## [1] "c19ProSo02"
```

```
c19ProSo02_count_values <- table(prosocial_not_msia$c19ProSo02)
c19ProSo02_count_values
```

```
##
##    -3    -2    -1     0     1     2     3
##  2111  3300  2942  7982  8517 10065  4402
```

```
# not msia c19ProSo03
paste("c19ProSo03")
```

```
## [1] "c19ProSo03"
```

```
c19ProSo03_count_values <- table(prosocial_not_msia$c19ProSo03)
c19ProSo03_count_values
```

```
##
##   -3   -2   -1    0    1    2    3
## 2162 3766 3625 8445 8251 8531 4524
```

```
# not msia c19ProSo04
paste("c19ProSo04")
```

```
## [1] "c19ProSo04"
```

```
c19ProSo04_count_values <- table(prosocial_not_msia$c19ProSo04)
c19ProSo04_count_values
```

```
##
##    -3    -2    -1     0     1     2     3
##  1228  1891  2000  5375  7395 11755  9659
```

From the code above, we can see that there is a total of 7 kinds of responses from the range of -3 to 3. The 7 types of responses are Strongly disagree, Disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree, Agree, Strongly agree.

If the response is -3, then the response is “Strongly disagree”.

If the response is -2, then the response is “Disagree”.

If the response is -1, then the response is “Somewhat disagree”.

If the response is 0, then the response is “Neither agree nor disagree”.

If the response is 1, then the response is “Somewhat agree”.

If the response is 2, then the response is “Agree”.

If the response is 3, then the response is “Strongly agree”.

We can see that from c19ProSo01 column, responses from Malaysia is mostly at ‘2’ where 213 “Agree” to the statement that “I am willing to help others who suffer from coronavirus.” We can also see that responses by participants not from Malaysia also mostly chose ‘2’ whereby the 11552 participants also “Agree” to the statement that “I am willing to help others who suffer from coronavirus.”

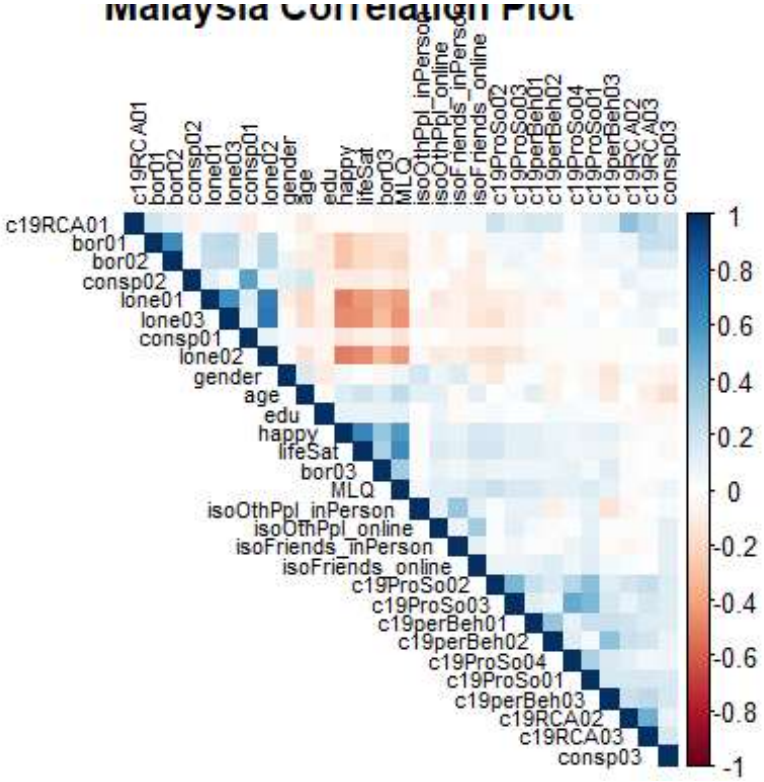
Next, it would be the c19ProSo02 column. 221 participants from Malaysia responded ‘2’ which is that they “Agree” to the statement that “I am willing to make donations to help others that suffer from coronavirus.” We can also see that responses by participants not from Malaysia also mostly chose ‘2’ whereby the 10065 participants also “Agree” to the statement that “I am willing to make donations to help others that suffer from coronavirus.”

From the c19ProSo03 column, 152 participants from Malaysia responded ‘1’ where they “Somewhat agree” to the statement that “I am willing to protect vulnerable groups from coronavirus even at my own expense.” There is a slight difference here whereby 8531 participants not from Malaysia responded that they “Agree” to the statement “I am willing to protect vulnerable groups from coronavirus even at my own expense.” But there are also a high number of participants not from Malaysia responded that they “Neither agree nor disagree” to the same statement.

Last but not least, the c19ProSo04 column. 166 participants from Malaysia responded ‘2’ which is that they “Agree” to the statement that “I am willing to make personal sacrifices to prevent the spread of coronavirus.” Most of the non-Malaysian participants which is 11755 participants also have the same response.

Question 2b:

```
msia_corr <- msia
msia_corr = subset(msia_corr, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife_3, rank
OrdLife_4, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_close))

# Compute the correlation matrix
cor_matrix <- cor(msia_corr, use = "complete.obs")  # Omit NA values

# Create a correlation plot
corrplot(cor_matrix, method = "color", order = "AOE", tl.cex = 0.7, tl.col = "black",
         title = "Malaysia Correlation Plot", type = "upper")

# Add a legend
legend("bottomleft", legend = c("Low correlation", "High correlation"),
       fill = c("white", "blue"), bty = "n", cex = 0.8, title = "Correlation Level")
```



Above presents the correlation plot for each of the predictors for Malaysia. The darker the color, the higher correlation the predictors have.

```
str(msia)
```

```
## 'data.frame':    548 obs. of  38 variables:
##  $ isoFriends_inPerson: int  0 0 0 0 0 0 0 0 0 1 ...
##  $ isoOthPpl_inPerson : int  0 0 1 1 1 0 2 0 0 1 ...
##  $ isoFriends_online  : int  4 0 7 7 0 3 1 7 5 5 ...
##  $ isoOthPpl_online   : int  1 1 0 0 0 0 3 4 3 6 ...
##  $ lone01             : int  2 1 1 1 4 3 2 2 3 3 ...
##  $ lone02             : int  1 1 1 1 5 1 2 2 3 2 ...
##  $ lone03             : int  1 1 1 1 4 1 2 2 3 1 ...
##  $ happy              : int  7 7 9 6 3 3 7 5 6 7 ...
##  $ lifeSat            : int  5 4 5 5 2 2 4 4 4 5 ...
##  $ MLQ                : int  2 3 2 3 -2 -2 1 0 2 2 ...
##  $ bor01              : int  1 -2 3 -2 3 3 1 2 1 3 ...
##  $ bor02              : int  -1 -2 2 -2 2 3 0 -2 1 2 ...
##  $ bor03              : int  1 2 1 0 1 1 1 0 -2 2 ...
##  $ consp01            : int  5 10 4 5 7 10 6 NA 9 3 ...
##  $ consp02            : int  6 10 4 7 8 8 8 NA 8 8 ...
##  $ consp03            : int  5 6 5 3 8 5 8 NA 6 6 ...
##  $ rankOrdLife_1      : chr  "F" NA "F" "D" ...
##  $ rankOrdLife_2      : chr  "D" NA "D" "E" ...
##  $ rankOrdLife_3      : chr  "E" NA "E" "F" ...
##  $ rankOrdLife_4      : chr  "B" NA "C" "C" ...
##  $ rankOrdLife_5      : chr  "C" NA "A" "A" ...
##  $ rankOrdLife_6      : chr  "A" NA "B" "B" ...
##  $ c19perBeh01        : int  2 2 3 3 3 2 3 3 1 2 ...
##  $ c19perBeh02        : int  2 2 3 3 2 2 3 3 3 3 ...
##  $ c19perBeh03        : int  2 2 3 -2 -1 3 2 3 3 2 ...
##  $ c19RCA01           : int  2 0 3 3 3 3 3 3 -3 3 ...
##  $ c19RCA02           : int  2 2 3 3 3 3 3 3 3 2 ...
##  $ c19RCA03           : int  2 2 3 2 3 3 1 2 2 3 ...
```

```
##  $ gender             : int  1 2 1 1 2 1 2 1 1 1 ...
##  $ age                : int  5 4 3 5 3 2 3 3 4 4 ...
##  $ edu                : int  5 2 5 6 5 5 5 5 7 6 ...
##  $ coded_country      : chr  "Malaysia" "Malaysia" "Malaysia" "Malaysia" ...
##  $ c19ProSo01         : int  0 0 0 2 1 -3 1 1 1 0 ...
##  $ c19ProSo02         : int  0 0 2 3 1 2 2 -1 0 3 ...
##  $ c19ProSo03         : int  0 0 1 0 0 2 1 2 2 2 ...
##  $ c19ProSo04         : int  1 3 1 0 2 2 1 -1 3 3 ...
##  $ employment_status  : chr  "5" "5" "1" "1, 10" ...
##  $ corona_close       : chr  "6" "6" "5" "6" ...

msia_q2b <- msia
msia_q2b = subset(msia_q2b, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife_3, rankOr
dLife_4, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_close))



# Best predictor for c19ProSo01
# Fit the linear model for c19ProSo01
c19ProSo01_best <- lm(c19ProSo01 ~., data = msia_q2b)
# Extract coefficients and p-values
c19ProSo01_best_summary <- summary(c19ProSo01_best)$coefficients
# Find significant predictors (p-value < 0.05)
c19ProSo01_significant_predictors <- c19ProSo01_best_summary[c19ProSo01_best_summary[, "Pr(
>|t|)"] < 0.05, ]
# Sort predictors by absolute coefficient magnitude (significant)
c19ProSo01_strongest_predictors <- c19ProSo01_significant_predictors[order(abs(c19ProSo01_s
ignificant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
# Display the 2 highest/strongest predictors (those with ***)
c19ProSo01_strongest_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo02 0.2559605 0.04819536 5.310895 1.723252e-07
## c19ProSo03 0.2469945 0.04894136 5.046745 6.551011e-07

# Get the R-Squared value
summary(c19ProSo01_best)

##
## Call:
## lm(formula = c19ProSo01 ~ ., data = msia_q2b)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.5360 -0.4580  0.1606  0.6137  3.3645
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.578096   0.569329  -1.015  0.31047
## isoFriends_inPerson  0.052118   0.023262   2.240  0.02555 *
## isoOthPpl_inPerson   0.011132   0.028188   0.395  0.69310
## isoFriends_online    0.030434   0.023507   1.295  0.19611
## isoOthPpl_online     0.014629   0.021591   0.678  0.49840
## lone01               0.008974   0.068040   0.132  0.89513
## lone02              -0.019923   0.072058  -0.276  0.78231
## lone03               0.173299   0.068569   2.527  0.01184 *
## happy                0.033681   0.039496   0.853  0.39425
## lifeSat             -0.046903   0.063441  -0.739  0.46010
```

```
## MLQ                  0.050256   0.049029   1.025  0.30590
## bor01                0.005426   0.037210   0.146  0.88413
## bor02               -0.006778   0.037889  -0.179  0.85811
## bor03               -0.006643   0.037946  -0.175  0.86112
## consp01              0.016603   0.024270   0.684  0.49426
## consp02              0.007456   0.027997   0.266  0.79011
## consp03              0.018221   0.023081   0.789  0.43028
## c19perBeh01          0.178897   0.060762   2.944  0.00341 **
## c19perBeh02         -0.310739   0.104257  -2.981  0.00303 **
## c19perBeh03          0.112181   0.053571   2.094  0.03682 *
## c19RCA01            -0.036373   0.041648  -0.873  0.38295
## c19RCA02             0.136828   0.083725   1.634  0.10291
## c19RCA03             0.002407   0.049751   0.048  0.96143
## gender              -0.111604   0.119466  -0.934  0.35071
## age                  0.035402   0.044815   0.790  0.42996
## edu                  0.027532   0.046272   0.595  0.55214
## c19ProSo02           0.255961   0.048195   5.311 1.72e-07 ***
## c19ProSo03           0.246995   0.048941   5.047 6.55e-07 ***
## c19ProSo04           0.072733   0.044153   1.647  0.10020
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.062 on 447 degrees of freedom
##   (72 observations deleted due to missingness)
## Multiple R-squared:  0.3358, Adjusted R-squared:  0.2941
## F-statistic: 8.069 on 28 and 447 DF,  p-value: < 2.2e-16
```

```
# Best predictor for c19ProSo02
c19ProSo02_best <- lm(c19ProSo02 ~., data = msia_q2b)
c19ProSo02_best_summary <- summary(c19ProSo02_best)$coefficients
c19ProSo02_significant_predictors <- c19ProSo02_best_summary[c19ProSo02_best_summary[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo02_strongest_predictors <- c19ProSo02_significant_predictors[order(abs(c19ProSo02_s
ignificant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo02_strongest_predictors[1:2, ]
```

```
##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo03 0.2532347 0.04637006 5.461167 7.863349e-08
## c19ProSo01 0.2318894 0.04366296 5.310895 1.723252e-07
```

```
summary(c19ProSo02_best)
```

```
##
## Call:
## lm(formula = c19ProSo02 ~ ., data = msia_q2b)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.3334 -0.4782  0.1387  0.5467  3.0780
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)          5.843e-01  5.418e-01   1.078  0.28143
## isoFriends_inPerson -2.080e-02  2.224e-02  -0.935  0.35014
## isoOthPpl_inPerson  -3.295e-03  2.683e-02  -0.123  0.90232
## isoFriends_online   -6.813e-05  2.242e-02  -0.003  0.99758
## isoOthPpl_online    -1.893e-02  2.054e-02  -0.922  0.35716
```

```
## lone01               7.366e-03  6.476e-02   0.114  0.90950
## lone02              -4.826e-03  6.859e-02  -0.070  0.94394
## lone03              -1.347e-01  6.542e-02  -2.059  0.04003 *
## happy               -6.661e-03  3.762e-02  -0.177  0.85955
## lifeSat              6.880e-02  6.033e-02   1.140  0.25474
## MLQ                  6.328e-02  4.663e-02   1.357  0.17537
## bor01                9.240e-04  3.542e-02   0.026  0.97920
## bor02                2.553e-02  3.604e-02   0.708  0.47915
## bor03               -1.594e-02  3.611e-02  -0.442  0.65903
## consp01             -8.978e-03  2.311e-02  -0.389  0.69781
## consp02              1.299e-02  2.664e-02   0.488  0.62611
## consp03              4.767e-03  2.198e-02   0.217  0.82841
## c19perBeh01          8.469e-02  5.826e-02   1.454  0.14669
## c19perBeh02          1.212e-01  1.001e-01   1.211  0.22639
## c19perBeh03         -9.485e-02  5.104e-02  -1.858  0.06379 .
## c19RCA01             9.213e-02  3.944e-02   2.336  0.01992 *
## c19RCA02             4.668e-02  7.990e-02   0.584  0.55938
## c19RCA03             9.665e-02  4.713e-02   2.051  0.04089 *
## gender              -2.966e-01  1.130e-01  -2.625  0.00895 **
## age                 -2.868e-02  4.266e-02  -0.672  0.50174
## edu                  6.858e-03  4.406e-02   0.156  0.87637
## c19ProSo01           2.319e-01  4.366e-02   5.311 1.72e-07 ***
## c19ProSo03           2.532e-01  4.637e-02   5.461 7.86e-08 ***
## c19ProSo04           4.560e-02  4.210e-02   1.083  0.27927
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.011 on 447 degrees of freedom
##   (72 observations deleted due to missingness)
## Multiple R-squared:  0.3549, Adjusted R-squared:  0.3145
## F-statistic: 8.782 on 28 and 447 DF,  p-value: < 2.2e-16
```

```
# Best predictor for c19ProSo03
c19ProSo03_best <- lm(c19ProSo03 ~., data = msia_q2b)
c19ProSo03_best_summary <- summary(c19ProSo03_best)$coefficients
c19ProSo03_significant_predictors <- c19ProSo03_best_summary[c19ProSo03_best_summary[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo03_strongest_predictors <- c19ProSo03_significant_predictors[order(abs(c19ProSo03_s
ignificant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo03_strongest_predictors[1:2, ]
```

```
##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo04 0.3753915 0.03765420 9.969445 2.846259e-21
## c19ProSo02 0.2469957 0.04522763 5.461167 7.863349e-08
```

```
summary(c19ProSo03_best)
```

```
##
## Call:
## lm(formula = c19ProSo03 ~ ., data = msia_q2b)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.1859 -0.4924  0.1367  0.5983  3.6586
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)          0.497121   0.535282   0.929   0.3535
## isoFriends_inPerson -0.025947   0.021955  -1.182   0.2379
## isoOthPpl_inPerson   0.034794   0.026450   1.315   0.1890
## isoFriends_online   -0.012809   0.022131  -0.579   0.5630
## isoOthPpl_online     0.037022   0.020231   1.830   0.0679 .
## lone01              -0.033731   0.063940  -0.528   0.5981
## lone02              -0.067802   0.067665  -1.002   0.3169
## lone03              -0.037022   0.064892  -0.571   0.5686
## happy               -0.007895   0.037155  -0.212   0.8318
## lifeSat             -0.011119   0.059670  -0.186   0.8523
## MLQ                  0.007668   0.046141   0.166   0.8681
## bor01               -0.010007   0.034976  -0.286   0.7749
## bor02                0.045973   0.035552   1.293   0.1966
## bor03               -0.030996   0.035641  -0.870   0.3849
## consp01             -0.032628   0.022774  -1.433   0.1526
## consp02              0.006595   0.026318   0.251   0.8022
## consp03              0.016865   0.021697   0.777   0.4374
## c19perBeh01         -0.030532   0.057651  -0.530   0.5967
## c19perBeh02         -0.066186   0.098923  -0.669   0.5038
## c19perBeh03          0.086437   0.050439   1.714   0.0873 .
## c19RCA01             0.044679   0.039126   1.142   0.2541
## c19RCA02            -0.184843   0.078453  -2.356   0.0189 *
## c19RCA03             0.092406   0.046563   1.985   0.0478 *
## gender               0.106968   0.112296   0.953   0.3413
## age                  0.000315   0.042156   0.007   0.9940
## edu                 -0.031452   0.043488  -0.723   0.4699
## c19ProSo01           0.218254   0.043246   5.047 6.55e-07 ***
## c19ProSo02           0.246996   0.045228   5.461 7.86e-08 ***
## c19ProSo04           0.375391   0.037654   9.969  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9981 on 447 degrees of freedom
##   (72 observations deleted due to missingness)
## Multiple R-squared:  0.4445, Adjusted R-squared:  0.4097
## F-statistic: 12.78 on 28 and 447 DF,  p-value: < 2.2e-16

# Best predictor for c19ProSo04
c19ProSo04_best <- lm(c19ProSo04 ~., data = msia_q2b)
c19ProSo04_best_summary <- summary(c19ProSo04_best)$coefficients
c19ProSo04_significant_predictors <- c19ProSo04_best_summary[c19ProSo04_best_summary[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo04_strongest_predictors <- c19ProSo04_significant_predictors[order(abs(c19ProSo04_s
ignificant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo04_strongest_predictors[1:2, ]

##              Estimate Std. Error   t value     Pr(>|t|)
## c19ProSo03  0.4845682 0.04860533  9.969445 2.846259e-21
## c19RCA03   -0.1187091 0.05283717 -2.246697 2.514670e-02

summary(c19ProSo04_best)

##
## Call:
## lm(formula = c19ProSo04 ~ ., data = msia_q2b)
##
## Residuals:
```

```
##     Min      1Q  Median      3Q     Max
## -3.7859 -0.6533  0.1128  0.6938  2.9062
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.9382774  0.6071262  -1.545   0.1229
## isoFriends_inPerson  0.0281572  0.0249473   1.129   0.2596
## isoOthPpl_inPerson  -0.0057822  0.0301085  -0.192   0.8478
## isoFriends_online    0.0139947  0.0251444   0.557   0.5781
## isoOthPpl_online    -0.0357561  0.0230089  -1.554   0.1209
## lone01               0.0663410  0.0726000   0.914   0.3613
## lone02               0.0448717  0.0769350   0.583   0.5600
## lone03               0.0791968  0.0736582   1.075   0.2829
## happy                0.0043484  0.0422156   0.103   0.9180
## lifeSat             -0.0056451  0.0677962  -0.083   0.9337
## MLQ                  0.0345365  0.0523988   0.659   0.5102
## bor01               -0.0141496  0.0397356  -0.356   0.7219
## bor02               -0.0092274  0.0404650  -0.228   0.8197
## bor03                0.0727636  0.0403811   1.802   0.0722 .
## consp01              0.0309582  0.0258924   1.196   0.2325
## consp02             -0.0144204  0.0298952  -0.482   0.6298
## consp03             -0.0008683  0.0246677  -0.035   0.9719
## c19perBeh01         -0.0385479  0.0654951  -0.589   0.5565
## c19perBeh02          0.2041366  0.1120322   1.822   0.0691 .
## c19perBeh03          0.0321575  0.0574736   0.560   0.5761
## c19RCA01            -0.0665195  0.0444068  -1.498   0.1348
## c19RCA02             0.1986267  0.0891923   2.227   0.0264 *
## c19RCA03            -0.1187091  0.0528372  -2.247   0.0251 *
## gender               0.1042333  0.1276198   0.817   0.4145
## age                  0.0009672  0.0478955   0.020   0.9839
## edu                  0.0413589  0.0493995   0.837   0.4029
## c19ProSo01           0.0829613  0.0503622   1.647   0.1002
## c19ProSo02           0.0574158  0.0530024   1.083   0.2793
## c19ProSo03           0.4845682  0.0486053   9.969   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.134 on 447 degrees of freedom
##   (72 observations deleted due to missingness)
## Multiple R-squared:  0.319,  Adjusted R-squared:  0.2764
## F-statistic: 7.478 on 28 and 447 DF,  p-value: < 2.2e-16
```

Due to some of the variables having data of not being non-numerical type, the non-numerical columns are removed so a linear regression model (lm) could be used to determine which of the variables are the best predictors by the number of * present at the most right-side as the more * there is on the rightmost side the more significant the variables are.

The linear model generated for c19ProSo01 have an R-Square value is 0.3225 which means that 32.25% of the participants from Malaysia can be explained by the independent variable when these participants from Malaysia are willing to help others who suffered from Covid19. This R-squared value of 0.3225 strongly suggests that this linear model's ability to predict is somewhat limited as while it does provide some insight, it's not highly reliable but it still have some significant predictive ability.

The linear model generated for c19ProSo02 have an R-Square value is 0.3834 which means that 38.34% of the participants from Malaysia can be explained by the independent variable when these participants from Malaysia are willing to help others who suffered from Covid19 in a form of donations. This R-squared value

of 0.3834 strongly suggests that this linear model's ability to predict is somewhat limited as while it does provide some insight, it's not highly reliable but it have a more significant predictive ability than the linear model for c19ProSo01.

The linear model generated for c19ProSo03 have an R-Square value is 0.4369 which means that 43.69% of the participants from Malaysia can be explained by the independent variable when these participants from Malaysia are willing to protect others who suffered from Covid19 with their own expenses. This R-squared value of 0.4369 strongly suggests that this linear model's ability to predict is somewhat moderate where it can explain almost half of the variability observed.

The linear model generated for c19ProSo04 have an R-Square value is 0.3023 which means that 30.23% of the participants from Malaysia can be explained by the independent variable when these participants from Malaysia are willing to make personal sacrifice to prevent spread of Covid19 virus. This R-squared value of 0.3023 strongly suggests that this linear model's ability to predict is very limited and the lowest between all 4 pro-social attribute.

When the linear model was generated for c19ProSo01 there were more than 1 predictors and/or variables that have *** present so indices was used to get the top 2 best predictors and/or variables for each c19ProSo01, c19ProSo02, c19ProSo03, c19ProSo04. 2 best predictors was displayed as if only 1 was displayed, there will be no variable name shown at output.

For the focus country Malaysia, for c19ProSo01, the best predictor is c19ProSo02 as it has the lowest p-value when compared to the other variables/predictors present. The p_value is 2.637061e-13 which is extremely small as it is smaller than 0.05 which strongly suggest that c19ProSo02 is significantly related to c19ProSo01.

For the focus country Malaysia, for c19ProSo02, the best predictor is c19ProSo03 as it has the lowest p-value when compared to the other variables/predictors present. The p_value is 1.508749e-14 which is extremely small as it is smaller than 0.05 which strongly suggest that c19ProSo03 is significantly related to c19ProSo02.

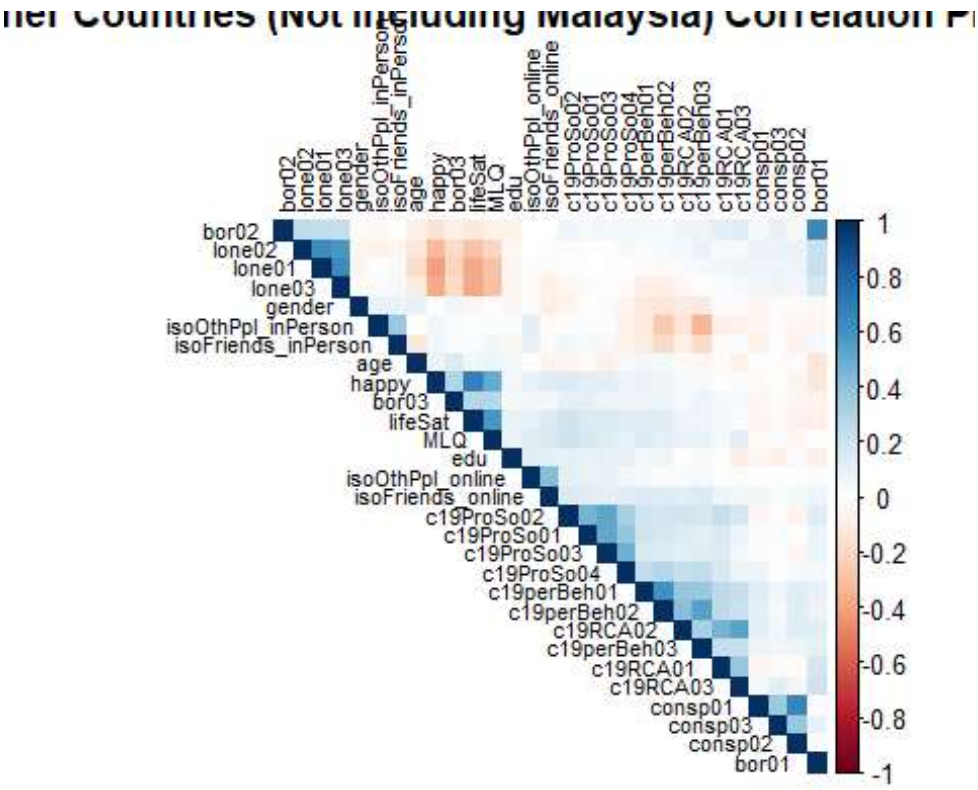
For the focus country Malaysia, for c19ProSo03, the best predictor is c19ProSo04. c19ProSo04 is a better predictor than c19ProSo02 because its coefficient estimate is higher so it indicated that c19ProSo04 has a stronger impact on c19ProSo03 than c19ProSo02 does impact on c19ProSo03. The t-value for c19ProSo04 is higher than that for c19ProSo02 and a higher t value indicates that the greater the confidence in c19ProSo04 as a predictor than c19ProSo02.

For the focus country Malaysia, for c19ProSo04, the best predictor is c19ProSo03. c19ProSo03 is a better predictor than c19RCA03 because its coefficient estimate is higher so it indicated that c19ProSo03 has a stronger impact on c19ProSo04 than c19RCA03 does impact on c19ProSo04. The t-value for c19ProSo03 is higher than that for c19RCA03 and a higher t value indicates that the greater the confidence in c19ProSo04 as a predictor than c19RCA03.

Question 2c:

```
not_msia_corr <- not_msia
not_msia_corr = subset(not_msia_corr, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife
_3, rankOrdLife_4, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_c
lose))

# Compute the correlation matrix
cor_matrix <- cor(not_msia_corr, use = "complete.obs")  # Omit NA values

# Create a correlation plot
corrplot(cor_matrix, method = "color", order = "AOE", tl.cex = 0.7, tl.col = "black",
         title = "Other Countries (Not including Malaysia) Correlation Plot", type = "upper
")
```

```
# Add a legend
legend("bottomleft", legend = c("Low correlation", "High correlation"),
       fill = c("white", "blue"), bty = "n", cex = 0.8, title = "Correlation Level")
```



Above presents the correlation plot for each of the predictors for other countries not including Malaysia. The darker the color, the higher correlation the predictors have.

```
str(not_msia)
```

```
## 'data.frame':    39452 obs. of  38 variables:
##  $ isoFriends_inPerson: int  2 3 4 2 4 7 2 7 3 1 ...
##  $ isoOthPpl_inPerson : int  0 0 3 0 2 4 3 7 3 0 ...
##  $ isoFriends_online  : int  7 0 5 4 3 4 5 7 4 7 ...
##  $ isoOthPpl_online   : int  7 0 0 4 6 0 0 7 0 3 ...
##  $ lone01             : int  3 2 1 3 1 2 2 1 3 2 ...
##  $ lone02             : int  2 2 1 4 1 4 4 1 3 1 ...
##  $ lone03             : int  2 2 1 4 1 3 1 1 2 1 ...
##  $ happy              : int  1 6 10 7 8 2 7 7 6 8 ...
##  $ lifeSat            : int  1 4 6 4 6 2 5 4 4 4 ...
##  $ MLQ                : int  0 2 3 0 3 -2 1 1 -1 -1 ...
##  $ bor01              : int  0 2 -3 0 -2 -1 3 2 0 1 ...
##  $ bor02              : int  -1 1 -3 1 -2 -1 1 2 1 0 ...
##  $ bor03              : int  -1 -1 3 1 3 -1 2 -1 1 -1 ...
##  $ consp01            : int  10 5 8 7 NA 2 3 NA 10 4 ...
##  $ consp02            : int  10 10 8 7 NA 2 3 NA 10 6 ...
##  $ consp03            : int  0 5 8 7 NA 7 1 NA 9 5 ...
##  $ rankOrdLife_1      : chr  "D" "C" "B" "A" ...
##  $ rankOrdLife_2      : chr  "E" "D" "F" "C" ...
##  $ rankOrdLife_3      : chr  "C" "E" "C" "D" ...
##  $ rankOrdLife_4      : chr  "A" "B" "D" "E" ...
##  $ rankOrdLife_5      : chr  "B" "A" "A" "B" ...
##  $ rankOrdLife_6      : chr  "F" "F" "E" "F" ...
##  $ c19perBeh01        : int  3 2 2 0 3 2 3 3 2 2 ...
##  $ c19perBeh02        : int  -2 2 3 0 3 3 3 3 2 3 ...
```

```
##  $ c19perBeh03        : int  -2 1 3 1 3 3 3 2 2 3 ...
##  $ c19RCA01           : int  -3 -2 -3 0 3 1 3 2 -3 1 ...
##  $ c19RCA02           : int  -1 2 -1 1 3 1 3 3 -2 3 ...
##  $ c19RCA03           : int  -3 2 -2 0 3 -1 1 2 1 3 ...
##  $ gender             : int  2 1 2 2 2 1 1 2 2 1 ...
##  $ age                : int  3 1 2 3 2 2 2 3 2 1 ...
##  $ edu                : int  3 4 4 5 6 7 3 5 4 4 ...
##  $ coded_country      : chr  "Greece" "Egypt" "Romania" "Italy" ...
##  $ c19ProSo01         : int  2 1 3 0 3 2 0 0 1 -2 ...
##  $ c19ProSo02         : int  0 1 0 0 3 -2 1 2 1 1 ...
##  $ c19ProSo03         : int  2 1 0 -1 3 2 0 2 0 1 ...
##  $ c19ProSo04         : int  -2 1 3 0 2 3 3 1 2 3 ...
##  $ employment_status  : chr  "4" "9" "9" "3" ...
##  $ corona_close       : chr  "6" "6" "6" "6" ...

msia_q2c <- not_msia
msia_q2c = subset(msia_q2c, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife_3, rankOr
dLife_4, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_close))

# Best predictor for c19ProSo01
c19ProSo01_best <- lm(c19ProSo01 ~., data = msia_q2c)
c19ProSo01_best_summary <- summary(c19ProSo01_best)$coefficients
c19ProSo01_significant_predictors <- c19ProSo01_best_summary[c19ProSo01_best_summary[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo01_strongest_predictors <- c19ProSo01_significant_predictors[order(abs(c19ProSo01_s
ignificant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo02_strongest_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo03 0.2532347 0.04637006 5.461167 7.863349e-08
## c19ProSo01 0.2318894 0.04366296 5.310895 1.723252e-07

summary(c19ProSo01_best)

##
## Call:
## lm(formula = c19ProSo01 ~ ., data = msia_q2c)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -5.7121 -0.6055  0.1400  0.7220  4.3658
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.251897   0.055826  -4.512 6.44e-06 ***
## isoFriends_inPerson  0.003886   0.002907   1.337  0.18126
## isoOthPpl_inPerson   0.019609   0.003272   5.994 2.07e-09 ***
## isoFriends_online    0.011816   0.002918   4.049 5.15e-05 ***
## isoOthPpl_online     0.002497   0.002673   0.934  0.35011
## lone01               0.055512   0.007928   7.002 2.57e-12 ***
## lone02              -0.014326   0.006970  -2.055  0.03986 *
## lone03              -0.014190   0.007534  -1.884  0.05963 .
## happy                0.014078   0.004457   3.158  0.00159 **
## lifeSat             -0.019449   0.007690  -2.529  0.01144 *
## MLQ                  0.048934   0.005166   9.472  < 2e-16 ***
## bor01                0.010262   0.004471   2.295  0.02172 *
## bor02               -0.001008   0.004471  -0.226  0.82157
```

```
## bor03                0.024173   0.004162   5.808 6.39e-09 ***
## consp01              0.013665   0.003275   4.172 3.02e-05 ***
## consp02              0.004232   0.003439   1.231  0.21851
## consp03              0.005829   0.002597   2.245  0.02479 *
## c19perBeh01          0.075607   0.007499  10.083  < 2e-16 ***
## c19perBeh02          0.040660   0.008992   4.522 6.15e-06 ***
## c19perBeh03         -0.036014   0.005306  -6.788 1.16e-11 ***
## c19RCA01             0.020596   0.004023   5.120 3.08e-07 ***
## c19RCA02             0.005333   0.006414   0.831  0.40574
## c19RCA03            -0.022928   0.004277  -5.360 8.35e-08 ***
## gender               0.069741   0.012957   5.383 7.39e-08 ***
## age                  0.004622   0.004137   1.117  0.26397
## edu                  0.012099   0.004521   2.676  0.00745 **
## c19ProSo02           0.210313   0.004698  44.765  < 2e-16 ***
## c19ProSo03           0.271932   0.004794  56.727  < 2e-16 ***
## c19ProSo04           0.121185   0.004820  25.141  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.184 on 35932 degrees of freedom
##   (3491 observations deleted due to missingness)
## Multiple R-squared:  0.3529, Adjusted R-squared:  0.3524
## F-statistic:   700 on 28 and 35932 DF,  p-value: < 2.2e-16
```

```
# Best predictor for c19ProSo02
c19ProSo02_best <- lm(c19ProSo02 ~., data = msia_q2c)
c19ProSo02_best_summary <- summary(c19ProSo02_best)$coefficients
c19ProSo02_significant_predictors <- c19ProSo02_best_summary[c19ProSo02_best_summary[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo02_strongest_predictors <- c19ProSo02_significant_predictors[order(abs(c19ProSo02_s
ignificant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo02_strongest_predictors[1:2, ]
```

```
##             Estimate  Std. Error  t value Pr(>|t|)
## c19ProSo01 0.2511643 0.005610749 44.76485        0
## c19ProSo03 0.3333816 0.005177592 64.38931        0
```

```
summary(c19ProSo02_best)
```

```
##
## Call:
## lm(formula = c19ProSo02 ~ ., data = msia_q2c)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -5.7407 -0.6920  0.1544  0.8176  5.4181
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.598424   0.060943  -9.819  < 2e-16 ***
## isoFriends_inPerson  0.025068   0.003174   7.899 2.90e-15 ***
## isoOthPpl_inPerson  -0.012940   0.003577  -3.618 0.000297 ***
## isoFriends_online    0.011802   0.003189   3.701 0.000215 ***
## isoOthPpl_online     0.017238   0.002919   5.905 3.56e-09 ***
## lone01               0.039201   0.008668   4.523 6.13e-06 ***
## lone02              -0.022160   0.007617  -2.909 0.003623 **
## lone03               0.005482   0.008233   0.666 0.505511
```

```
## happy                0.015924   0.004871   3.269 0.001080 **
## lifeSat              0.071850   0.008396   8.558  < 2e-16 ***
## MLQ                  0.056314   0.005645   9.976  < 2e-16 ***
## bor01                0.044335   0.004881   9.084  < 2e-16 ***
## bor02               -0.008400   0.004886  -1.719 0.085553 .
## bor03                0.005069   0.004551   1.114 0.265338
## consp01             -0.021403   0.003578  -5.982 2.23e-09 ***
## consp02             -0.015563   0.003757  -4.142 3.45e-05 ***
## consp03              0.006589   0.002838   2.322 0.020239 *
## c19perBeh01          0.037122   0.008204   4.525 6.06e-06 ***
## c19perBeh02          0.014409   0.009829   1.466 0.142663
## c19perBeh03          0.028585   0.005800   4.929 8.32e-07 ***
## c19RCA01             0.067103   0.004384  15.308  < 2e-16 ***
## c19RCA02            -0.005278   0.007009  -0.753 0.451456
## c19RCA03             0.072639   0.004660  15.587  < 2e-16 ***
## gender              -0.084679   0.014158  -5.981 2.24e-09 ***
## age                 -0.016314   0.004521  -3.609 0.000308 ***
## edu                  0.045601   0.004935   9.240  < 2e-16 ***
## c19ProSo01           0.251164   0.005611  44.765  < 2e-16 ***
## c19ProSo03           0.333382   0.005178  64.389  < 2e-16 ***
## c19ProSo04           0.032707   0.005311   6.158 7.43e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.294 on 35932 degrees of freedom
##   (3491 observations deleted due to missingness)
## Multiple R-squared:  0.3834, Adjusted R-squared:  0.3829
## F-statistic: 797.9 on 28 and 35932 DF,  p-value: < 2.2e-16

# Best predictor for c19ProSo03
c19ProSo03_best <- lm(c19ProSo03 ~., data = msia_q2c)
c19ProSo03_best_summary <- summary(c19ProSo03_best)$coefficients
c19ProSo03_significant_predictors <- c19ProSo03_best_summary[c19ProSo03_best_summary[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo03_strongest_predictors <- c19ProSo03_significant_predictors[order(abs(c19ProSo03_s
ignificant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo03_strongest_predictors[1:2, ]

##             Estimate  Std. Error  t value Pr(>|t|)
## c19ProSo01 0.3022665 0.005328433 56.72708        0
## c19ProSo02 0.3102988 0.004819104 64.38931        0

summary(c19ProSo03_best)

##
## Call:
## lm(formula = c19ProSo03 ~ ., data = msia_q2c)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -5.4704 -0.7121  0.1728  0.7290  6.0624
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.214205   0.058863  -3.639 0.000274 ***
## isoFriends_inPerson  0.008083   0.003064   2.638 0.008349 **
## isoOthPpl_inPerson   0.010258   0.003451   2.973 0.002954 **
```

```
## isoFriends_online   -0.004786   0.003077  -1.555 0.119897
## isoOthPpl_online     0.013027   0.002817   4.625 3.77e-06 ***
## lone01              -0.016180   0.008364  -1.934 0.053071 .
## lone02              -0.006938   0.007349  -0.944 0.345120
## lone03               0.043352   0.007940   5.460 4.79e-08 ***
## happy               -0.002980   0.004700  -0.634 0.526068
## lifeSat              0.035160   0.008106   4.337 1.45e-05 ***
## MLQ                 -0.008942   0.005453  -1.640 0.101051
## bor01               -0.002725   0.004714  -0.578 0.563154
## bor02                0.014114   0.004713   2.995 0.002749 **
## bor03                0.006763   0.004390   1.541 0.123435
## consp01             -0.003544   0.003454  -1.026 0.304770
## consp02             -0.020259   0.003624  -5.590 2.29e-08 ***
## consp03              0.004290   0.002738   1.567 0.117180
## c19perBeh01         -0.006198   0.007917  -0.783 0.433734
## c19perBeh02         -0.019882   0.009483  -2.097 0.036024 *
## c19perBeh03          0.002620   0.005597   0.468 0.639749
## c19RCA01             0.004665   0.004243   1.100 0.271539
## c19RCA02            -0.021963   0.006761  -3.248 0.001162 **
## c19RCA03            -0.028774   0.004509  -6.382 1.77e-10 ***
## gender               0.020823   0.013666   1.524 0.127571
## age                 -0.067999   0.004347 -15.641  < 2e-16 ***
## edu                  0.019132   0.004766   4.015 5.97e-05 ***
## c19ProSo01           0.302266   0.005328  56.727  < 2e-16 ***
## c19ProSo02           0.310299   0.004819  64.389  < 2e-16 ***
## c19ProSo04           0.309957   0.004859  63.794  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.248 on 35932 degrees of freedom
##   (3491 observations deleted due to missingness)
## Multiple R-squared:  0.4451, Adjusted R-squared:  0.4447
## F-statistic:  1029 on 28 and 35932 DF,  p-value: < 2.2e-16
```

```
# Best predictor for c19ProSo04
c19ProSo04_best <- lm(c19ProSo04 ~., data = msia_q2c)
c19ProSo04_best_summary <- summary(c19ProSo04_best)$coefficients
c19ProSo04_significant_predictors <- c19ProSo04_best_summary[c19ProSo04_best_summary[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo04_strongest_predictors <- c19ProSo04_significant_predictors[order(abs(c19ProSo04_s
ignificant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo04_strongest_predictors[1:2, ]
```

```
##             Estimate  Std. Error  t value      Pr(>|t|)
## c19ProSo03 0.3282302 0.005145169 63.79386  0.000000e+00
## c19ProSo01 0.1426455 0.005673833 25.14094 2.794645e-138
```

```
summary(c19ProSo04_best)
```

```
##
## Call:
## lm(formula = c19ProSo04 ~ ., data = msia_q2c)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -5.6813 -0.6761  0.1383  0.8036  5.1885
##
```

```
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.378255   0.060552  -6.247 4.24e-10 ***
## isoFriends_inPerson -0.018458   0.003152  -5.856 4.79e-09 ***
## isoOthPpl_inPerson   0.004468   0.003551   1.258 0.208333
## isoFriends_online    0.019428   0.003165   6.138 8.44e-10 ***
## isoOthPpl_online    -0.010055   0.002899  -3.468 0.000525 ***
## lone01              -0.035174   0.008606  -4.087 4.37e-05 ***
## lone02               0.046010   0.007559   6.087 1.16e-09 ***
## lone03               0.020703   0.008173   2.533 0.011313 *
## happy               -0.009097   0.004836  -1.881 0.059999 .
## lifeSat              0.041340   0.008341   4.956 7.22e-07 ***
## MLQ                 -0.016540   0.005611  -2.948 0.003204 **
## bor01               -0.019673   0.004850  -4.056 5.00e-05 ***
## bor02                0.019305   0.004850   3.981 6.89e-05 ***
## bor03                0.009225   0.004518   2.042 0.041169 *
## consp01              0.026531   0.003551   7.471 8.15e-14 ***
## consp02             -0.004384   0.003731  -1.175 0.239979
## consp03             -0.009806   0.002817  -3.481 0.000500 ***
## c19perBeh01          0.041610   0.008144   5.109 3.25e-07 ***
## c19perBeh02          0.143853   0.009729  14.786  < 2e-16 ***
## c19perBeh03          0.085087   0.005743  14.817  < 2e-16 ***
## c19RCA01             0.015992   0.004365   3.663 0.000249 ***
## c19RCA02             0.124097   0.006928  17.913  < 2e-16 ***
## c19RCA03            -0.060113   0.004631 -12.979  < 2e-16 ***
## gender              -0.034695   0.014062  -2.467 0.013616 *
## age                  0.057287   0.004479  12.791  < 2e-16 ***
## edu                  0.028752   0.004903   5.864 4.55e-09 ***
## c19ProSo01           0.142645   0.005674  25.141  < 2e-16 ***
## c19ProSo02           0.032237   0.005235   6.158 7.43e-10 ***
## c19ProSo03           0.328230   0.005145  63.794  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.285 on 35932 degrees of freedom
##   (3491 observations deleted due to missingness)
## Multiple R-squared:  0.3233, Adjusted R-squared:  0.3228
## F-statistic: 613.2 on 28 and 35932 DF,  p-value: < 2.2e-16
```

The linear model generated for c19ProSo01 have an R-Square value is 0.3527 which means that 35.27% of the participants not from Malaysia can be explained by the independent variable when these participants not from Malaysia are willing to help others who suffered from Covid19. This R-squared value of 0.3527 strongly suggests that this linear model's ability to predict is somewhat limited as while it does provide some insight, it's not highly reliable but it still have some significant predictive ability.

The linear model generated for c19ProSo01 have an R-Square value is 0.383 which means that 38.3% of the participants not from Malaysia can be explained by the independent variable when these participants not from Malaysia are willing to help others who suffered from Covid19 in a form of donations. This R-squared value of 0.383 strongly suggests that this linear model's ability to predict is somewhat limited as while it does provide some insight, it's not highly reliable but it have a more significant predictive ability than the linear model for c19ProSo01.

The linear model generated for c19ProSo03 have an R-Square value is 0.4475 which means that 44.75% of the participants not from Malaysia can be explained by the independent variable when these participants not from Malaysia are willing to protect others who suffered from Covid19 with their own expenses. This R-

squared value of 0.4475 strongly suggests that this linear model's ability to predict is somewhat moderate where it can explain almost half of the variability observed.

The linear model generated for c19ProSo04 have an R-Square value is 0.3213 which means that 32.13% of the participants not from Malaysia can be explained by the independent variable when these participants not from Malaysia are willing to make personal sacrifice to prevent spread of Covid19 virus. This R-squared value of 0.3213 strongly suggests that this linear model's ability to predict is very limited and the lowest between all 4 pro-social attribute.

For the other countries, for c19ProSo01, the best predictor is c19ProSo03 as it has the lowest p-value when compared to the other variables/predictors present. The p_value is 1.508749e-14 which is extremely small as it is smaller than 0.05 which strongly suggest that c19ProSo03 is significantly related to c19ProSo01.

For the other countries, for c19ProSo02, the best predictor is c19ProSo01. The reason on why c19ProSo03 is not the better predictor than c19ProSo01 other than the ordering is that c19ProSo03 have a larger t value than c19ProSo01 which shows that c19ProSo03 have a less stable relationship with c19ProSo02 compared to c19ProSo01 which have a lower t value which indicated that c19ProSo01 have a more stable variable relationship with c19ProSo02. The t value of c19ProSo01 is 53.75890 which is smaller than the t value of c19ProSo03 which is 77.95488.

For the other countries, for c19ProSo03, the best predictor is c19ProSo01. The reason on why c19ProSo02 is not the better predictor than c19ProSo01 other than the ordering is that c19ProSo02 have a larger t value than c19ProSo01 which shows that c19ProSo02 have a less stable relationship with c19ProSo03 compared to c19ProSo01 which have a lower t value which indicated that c19ProSo01 have a more stable variable relationship with c19ProSo03. The t value of c19ProSo01 is 68.26182 which is smaller than the t value of c19ProSo02 which is 77.95488.

For the other countries, for c19ProSo04, the best predictor is c19ProSo03 as it has the lowest p-value when compared to the other variables/predictors present. The p_value is 0.000000e+00 which is extremely small as it is smaller than 0.05 which strongly suggests that c19ProSo03 is significantly related to c19ProSo04.

Question 3a:

```
unique(cvbase$coded_country)
```

```
##   [1] "Greece"                    "Egypt"
##   [3] "Romania"                   "Italy"
##   [5] "China"                     "Netherlands"
##   [7] "Spain"                     "South Africa"
##   [9] "Argentina"                 "Peru"
##  [11] "United States of America" "Canada"
##  [13] "United Kingdom"            "Germany"
##  [15] "Russia"                    "France"
##  [17] "South Korea"               "Algeria"
##  [19] "Ukraine"                   "Brazil"
##  [21] "Turkey"                    "Malaysia"
##  [23] "Poland"                    "Montenegro"
##  [25] "Philippines"               "Saudi Arabia"
##  [27] "Singapore"                 "Chile"
##  [29] "Australia"                 "Republic of Serbia"
##  [31] "Iran"                      "Indonesia"
##  [33] "Japan"                     "Croatia"
##  [35] "Pakistan"                  "New Zealand"
##  [37] "Kosovo"                    "Venezuela"
##  [39] "Kazakhstan"                "Cyprus"
##  [41] "Taiwan"                    "Hong Kong S.A.R."
##  [43] "Hungary"                   "Morocco"
```

```
##  [45] "Trinidad and Tobago"      "Moldova"
##  [47] "Bangladesh"               "Iraq"
##  [49] "Austria"                  ""
##  [51] "Colombia"                 "Vietnam"
##  [53] "India"                    "Portugal"
##  [55] "Tunisia"                  "El Salvador"
##  [57] "Czech Republic"           "Norway"
##  [59] "Belgium"                  "Israel"
##  [61] "Thailand"                 "Sweden"
##  [63] "Palestine"                "Myanmar"
##  [65] "Mexico"                   "Jamaica"
##  [67] "United Arab Emirates"     "Lebanon"
##  [69] "Lithuania"                "Mali"
##  [71] "Slovakia"                 "Bulgaria"
##  [73] "Dominican Republic"       "Laos"
##  [75] "Finland"                  "Guatemala"
##  [77] "Switzerland"              "Georgia"
##  [79] "Libya"                    "Uruguay"
##  [81] "Kuwait"                   "Bosnia and Herzegovina"
##  [83] "Luxembourg"               "Oman"
##  [85] "Armenia"                  "Ireland"
##  [87] "Ecuador"                  "Denmark"
##  [89] "Bahrain"                  "Slovenia"
##  [91] "Albania"                  "Ethiopia"
##  [93] "Panama"                   "Nigeria"
##  [95] "Malta"                    "Jordan"
##  [97] "Belarus"                  "Estonia"
##  [99] "Cameroon"                 "Benin"
## [101] "Nepal"                    "Azerbaijan"
## [103] "Iceland"                  "Uzbekistan"
## [105] "Mauritius"                "Cambodia"
## [107] "Costa Rica"               "Kenya"
## [109] "Brunei"                   "Kyrgyzstan"
## [111] "Botswana"                 "Mongolia"
## [113] "Andorra"
```

From the output above we can see that there are 113 unique countries present in the dataset provided to complete this assignment.

```r
# Load in external dataset
corona = read.csv("2021-GHS-Index-April-2022.csv", header = TRUE)

# Remove NA from corona dataset
corona <- na.omit(corona)

# Identify unique countries
# Refer to appendix

# Identify potential indicators
# Refer to appendix
```

The social, economic, health and political indicators used to identify similar countries from Malaysia is listed down as below with the column number and what are the data recorded in each of the columns.

Indicators used:

- [59] “X1.6.1..Vaccination.rates”

- [98] "X2.5.1a..National.support.to.conduct.contact.tracing.in.the.event.of.a.public.health.emergency"
- [270] "X6.2..Socio.economic.resilience"
- [309] "X6.5.3..Public.healthcare.spending.levels.per.capita"
- [311] "X6.5.4..Trust.in.medical.and.health.advice"

```
# Columns 59, 98, 270, 309 and 311 from the corona dataset is to be used in the clustering
process
corona_kmeans <- kmeans(corona[, c(59, 98, 270, 309, 311)], 6, nstart = 75)
corona_kmeans_cluster <- corona_kmeans$cluster

# Dataframe is used to store the countries and the cluster numbers
cluster_df <- data.frame(Value = as.vector(t(corona$Country)), Cluster = corona_kmeans_clus
ter)
head(cluster_df)
```

```
##                Value Cluster
## 1        Afghanistan       4
## 2            Albania       3
## 3            Algeria       4
## 4            Andorra       3
## 5             Angola       4
## 6 Antigua & Barbuda       4
```

```
# Find which cluster is the country Malaysia is in
msia_cluster = unique(subset(cluster_df, grepl("Malaysia", Value))$Cluster)
msia_cluster
```

```
## [1] 2
```

```
# Identify all countries in the same cluster as Malaysia
unique(subset(cluster_df, grepl(msia_cluster, Cluster))$Value)
```

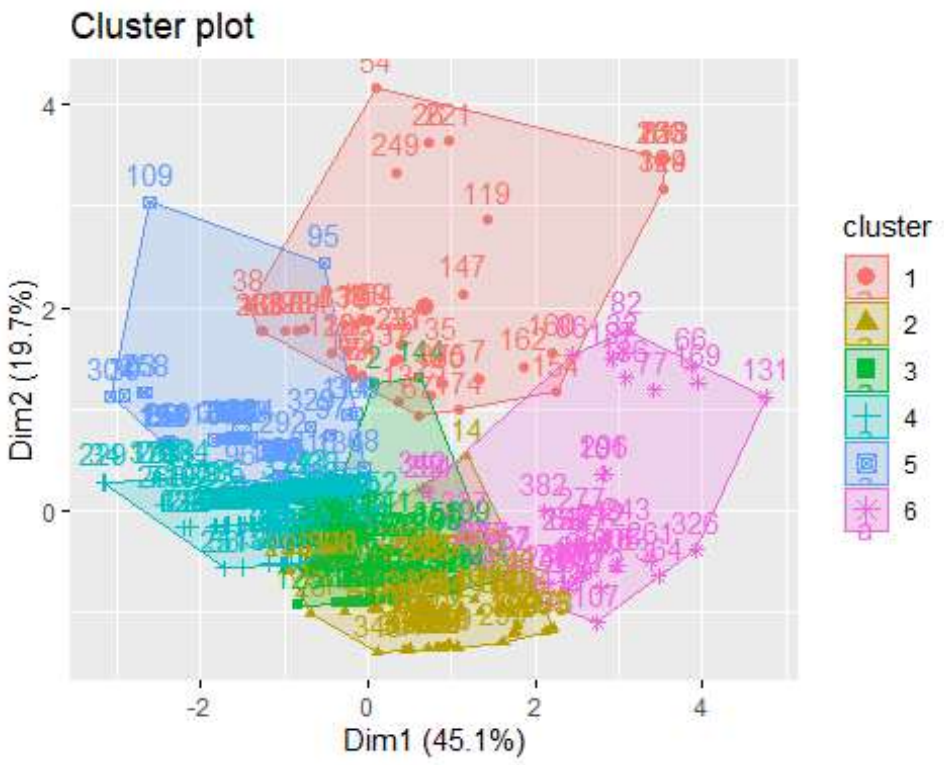
```
##  [1] "Azerbaijan"           "Bangladesh"           "Burundi"
##  [4] "Costa Rica"           "Egypt"                "Georgia"
##  [7] "Hungary"              "India"                "Iran"
## [10] "Israel"               "Jordan"               "Kyrgyz Republic"
## [13] "Malawi"               "Malaysia"             "Mongolia"
## [16] "Philippines"          "Poland"               "Rwanda"
## [19] "Saudi Arabia"         "Serbia"               "Slovakia"
## [22] "Sri Lanka"            "Tajikistan"           "Tanzania"
## [25] "Turkmenistan"         "United Arab Emirates" "Uruguay"
## [28] "Uzbekistan"           "Zimbabwe"             "Argentina"
## [31] "Ethiopia"             "Gambia"               "Ghana"
## [34] "Kuwait"               "Myanmar"              "Portugal"
## [37] "Singapore"            "South Korea"          "Thailand"
```

There are 39 countries in the same cluster as Malaysia which is cluster 1. The 5 similar countries selected are Hungary, Iran, Philippines, Poland, and Saudi Arabia as these 5 countries are the countries positioned near Malaysia within the cluster and these countries also exist in the 'cvbase' dataset.

K-means clustering is used on the external dataset 'corona' with the columns 59, 98, 270, 309 and 311 is used in the clustering process. Columns 59, 98, 270, 309 and 311 from the corona dataset are the indicators selected from before. Then a dataframe is used to store the countries and the cluster numbers for easy manipulation of data on the later step. From the dataframe, I then find which cluster is the country Malaysia is in and Malaysia is in the first cluster. After that, I identify all countries in the same cluster as Malaysia as these

countries are like Malaysia for them to end up in the same cluster as Malaysia. Below is a plot on the cluster for visualisation purposes.

```
# Plot out the kmeans cluster
fviz_cluster(list(data = corona[, c(59, 98, 270, 309, 311)], cluster = corona_kmeans_cluste
r))
```

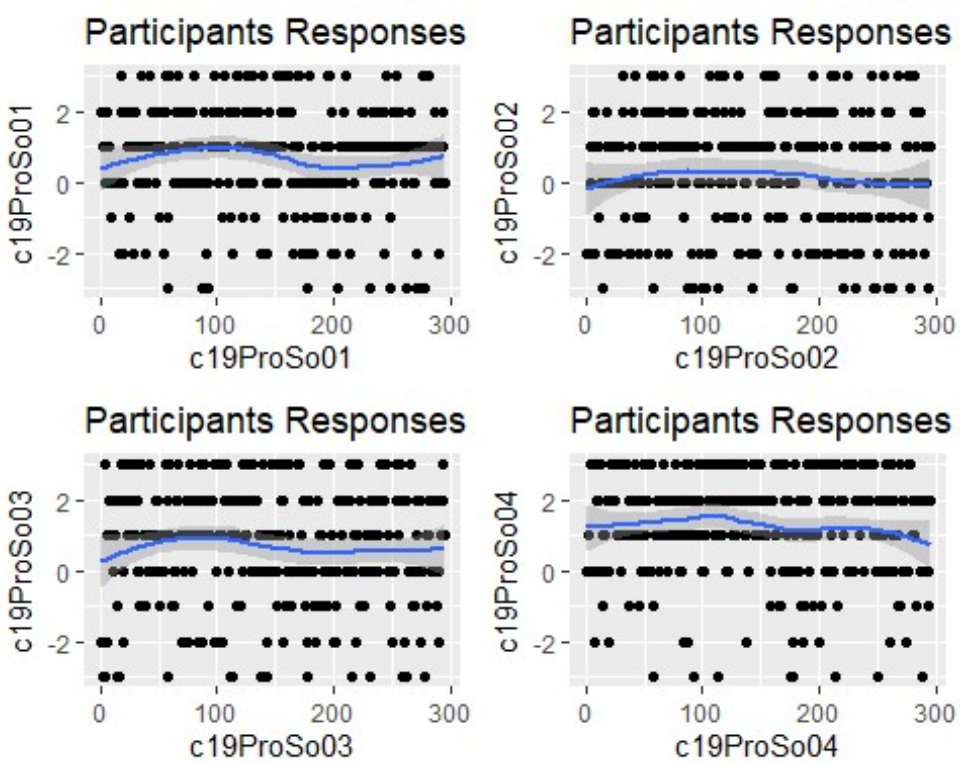


Question 3b:

```
hungary = cvbase %>% filter(coded_country == "Hungary")
hungary <- subset(hungary, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife_3, rankOrd
Life_4, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_close))

# Linear Model
hungary_lm_1 <- lm(c19ProSo01 ~., data = hungary)
# Best Predictors
# c19ProSo01
c19ProSo01_coefficients <- summary(hungary_lm_1)$coefficients
c19ProSo01_significant_predictors <- c19ProSo01_coefficients[c19ProSo01_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo01_best_predictors <- c19ProSo01_significant_predictors[order(abs(c19ProSo01_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo01_best_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo02 0.3686228 0.04926850 7.481916 1.110286e-12
## c19ProSo03 0.2511636 0.05065207 4.958606 1.277359e-06

# Plot responses from Hungary
hungary_plot_1 <- qplot(seq_along(hungary$c19ProSo01), hungary$c19ProSo01, main = "Particip
ants Responses for c19ProSo01 for Hungary", xlab = "c19ProSo01", ylab = "c19ProSo01") + geo
m_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

## Warning: `qplot()` was deprecated in ggplot2 3.4.0.
## This warning is displayed once every 8 hours.
```

```
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.

# c19ProSo02
hungary_lm_2 <- lm(c19ProSo02 ~., data = hungary)
c19ProSo02_coefficients <- summary(hungary_lm_2)$coefficients
c19ProSo02_significant_predictors <- c19ProSo02_coefficients[c19ProSo02_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo02_best_predictors <- c19ProSo02_significant_predictors[order(abs(c19ProSo02_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo01_best_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo02 0.3686228 0.04926850 7.481916 1.110286e-12
## c19ProSo03 0.2511636 0.05065207 4.958606 1.277359e-06

hungary_plot_2 <- qplot(seq_along(hungary$c19ProSo02), hungary$c19ProSo02, main = "Particip
ants Responses for c19ProSo02 for Hungary", xlab = "c19ProSo02", ylab = "c19ProSo02") + geo
m_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

# c19ProSo03
hungary_lm_3 <- lm(c19ProSo03 ~., data = hungary)
c19ProSo03_coefficients <- summary(hungary_lm_3)$coefficients
c19ProSo03_significant_predictors <- c19ProSo03_coefficients[c19ProSo03_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo03_best_predictors <- c19ProSo03_significant_predictors[order(abs(c19ProSo03_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo03_best_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo01 0.3415897 0.06888826 4.958606 1.277359e-06
## c19ProSo04 0.2873640 0.06051383 4.748733 3.373682e-06

hungary_plot_3 <- qplot(seq_along(hungary$c19ProSo03), hungary$c19ProSo03, main = "Particip
ants Responses for c19ProSo03 for Hungary", xlab = "c19ProSo03", ylab = "c19ProSo03") + geo
m_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

# c19ProSo04
hungary_lm_4 <- lm(c19ProSo04 ~., data = hungary)
c19ProSo04_coefficients <- summary(hungary_lm_4)$coefficients
c19ProSo04_significant_predictors <- c19ProSo04_coefficients[c19ProSo04_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo04_best_predictors <- c19ProSo04_significant_predictors[order(abs(c19ProSo04_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo04_best_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo03 0.2757806 0.05807458 4.748733 3.373682e-06
## c19ProSo01 0.1829573 0.06967026 2.626046 9.146617e-03

hungary_plot_4 <- qplot(seq_along(hungary$c19ProSo04), hungary$c19ProSo04, main = "Particip
ants Responses for c19ProSo04 for Hungary", xlab = "c19ProSo04", ylab = "c19ProSo04") + geo
m_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

ggarrange(hungary_plot_1, hungary_plot_2, hungary_plot_3, hungary_plot_4, ncol = 2, nrow =
2)
```

```
## Warning: Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).

## Warning: Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).
```



For c19ProSo01, participants from Hungary responses fluctuated between 0 and 1, which means that most participants from Hungary either "Neither agree nor disagree" or "Somewhat agree" to the statement that "I am willing to help others who suffer from coronavirus."

For c19ProSo02, participants from Hungary responded 0, which means that most participants from Hungary "Neither agree nor disagree" to the statement that "I am willing to make donations to help others that suffer from coronavirus."

For c19ProSo03, participants from Hungary responses fluctuated between 0 and 1, which means that most participants from Hungary either "Neither agree nor disagree" or "Somewhat agree" to the statement that "I am willing to protect vulnerable groups from coronavirus even at my own expense."

For c19ProSo04, participants from Hungary responses fluctuated between 1 and 2, which means that most participants from Hungary either "Somewhat agree" or "Agree" to the statement that "I am willing to make personal sacrifices to prevent the spread of coronavirus."

Best Predictors for Hungary:

- The best predictor for c19ProSo01 is c19ProSo02 with a p-value of 1.110286e-12 which is less than 0.05.
- The best predictor for c19ProSo02 is c19ProSo02 with a p-value of 1.110286e-12 which is less than 0.05. But c19ProSo02 can't be its own best predictor so c19ProSo03 would be the best predictor for c19ProSo02 instead with a p-value of 1.277359e-06 which is still less than 0.05 so its still a strong predictor for c19ProSo02.

- The best predictor for c19ProSo03 is c19ProSo01 with a p-value of 1.277359e-06 which is less than 0.05.
- The best predictor for c19ProSo04 is c19ProSo02 with a p-value of 3.373682e-06 which is less than 0.05.

```
iran = cvbase %>% filter(coded_country == "Iran")
iran <- subset(iran, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife_3, rankOrdLife_4
, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_close))

iran_lm_1 <- lm(c19ProSo01 ~., data = iran)
c19ProSo01_coefficients <- summary(iran_lm_1)$coefficients
c19ProSo01_significant_predictors <- c19ProSo01_coefficients[c19ProSo01_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo01_best_predictors <- c19ProSo01_significant_predictors[order(abs(c19ProSo01_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo01_best_predictors[1:2, ]
```

```
##           Estimate Std. Error   t value    Pr(>|t|)
## consp02 -0.3550268  0.1057367 -3.357651 0.001033475
## age      0.2486805  0.1012302  2.456585 0.015355829
```

```
iran_plot_1 <- qplot(seq_along(iran$c19ProSo01), iran$c19ProSo01, main = "Participants Resp
onses for c19ProSo01 for Iran", xlab = "c19ProSo01", ylab = "c19ProSo01") + geom_smooth(met
hod = "loess", formula = y ~ x, na.rm = TRUE)

iran_lm_2 <- lm(c19ProSo02 ~., data = iran)
c19ProSo02_coefficients <- summary(iran_lm_2)$coefficients
c19ProSo02_significant_predictors <- c19ProSo02_coefficients[c19ProSo02_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo02_best_predictors <- c19ProSo02_significant_predictors[order(abs(c19ProSo02_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo02_best_predictors[1:2, ]
```

```
##             Estimate Std. Error   t value     Pr(>|t|)
## c19ProSo03 0.7540213 0.06181530 12.197973 3.103176e-23
## consp02    0.2008956 0.07588172  2.647484 9.120422e-03
```

```
iran_plot_2 <- qplot(seq_along(iran$c19ProSo02), iran$c19ProSo02, main = "Participants Resp
onses for c19ProSo02 for Iran", xlab = "c19ProSo02", ylab = "c19ProSo02") + geom_smooth(met
hod = "loess", formula = y ~ x, na.rm = TRUE)

iran_lm_3 <- lm(c19ProSo03 ~., data = iran)
c19ProSo03_coefficients <- summary(iran_lm_3)$coefficients
c19ProSo03_significant_predictors <- c19ProSo03_coefficients[c19ProSo03_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo03_best_predictors <- c19ProSo03_significant_predictors[order(abs(c19ProSo03_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo03_best_predictors[1:2, ]
```

```
##                   Estimate Std. Error   t value     Pr(>|t|)
## c19ProSo02       0.7103530 0.05823534 12.197973 3.103176e-23
## isoOthPpl_online 0.1010448 0.03942672  2.562851 1.152980e-02
```

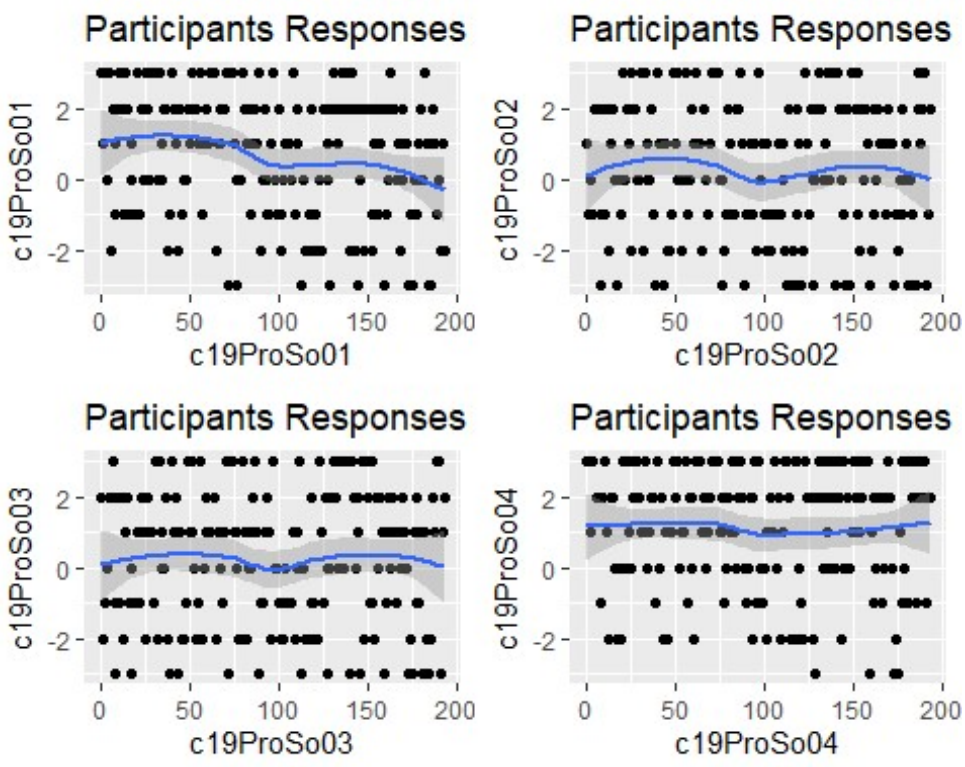
```
iran_plot_3 <- qplot(seq_along(iran$c19ProSo03), iran$c19ProSo03, main = "Participants Resp
onses for c19ProSo03 for Iran", xlab = "c19ProSo03", ylab = "c19ProSo03") + geom_smooth(met
hod = "loess", formula = y ~ x, na.rm = TRUE)
```

```
iran_lm_4 <- lm(c19ProSo04 ~., data = iran)
c19ProSo04_coefficients <- summary(iran_lm_4)$coefficients
c19ProSo04_significant_predictors <- c19ProSo04_coefficients[c19ProSo04_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo04_best_predictors <- c19ProSo04_significant_predictors[order(abs(c19ProSo04_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo04_best_predictors[1:2, ]
```

```
##             Estimate Std. Error  t value   Pr(>|t|)
## c19ProSo01 0.2071479 0.08471397 2.445262 0.01582383
## c19ProSo02 0.2890333 0.11995751 2.409464 0.01738797
```

```
iran_plot_4 <- qplot(seq_along(iran$c19ProSo04), iran$c19ProSo04, main = "Participants Resp
onses for c19ProSo04 for Iran", xlab = "c19ProSo04", ylab = "c19ProSo04") + geom_smooth(met
hod = "loess", formula = y ~ x, na.rm = TRUE)

ggarrange(iran_plot_1, iran_plot_2, iran_plot_3, iran_plot_4, ncol = 2, nrow = 2)
```

```
## Warning: Removed 3 rows containing missing values or values outside the scale range
## (`geom_point()`).

## Warning: Removed 2 rows containing missing values or values outside the scale range
## (`geom_point()`).

## Warning: Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).

## Warning: Removed 3 rows containing missing values or values outside the scale range
## (`geom_point()`).
```



For c19ProSo01, participants from Iran responses fluctuated between 0 and 1, which means that most participants from Iran either “Neither agree nor disagree” or “Somewhat agree” to the statement that “I am willing to help others who suffer from coronavirus.”

For c19ProSo02, participants from Iran responded 0, which means that most participants from Iran "Neither agree nor disagree" to the statement that "I am willing to make donations to help others that suffer from coronavirus."

For c19ProSo03, participants from Iran responded 0 which means that most participants from Iran "Neither agree nor disagree" to the statement that "I am willing to protect vulnerable groups from coronavirus even at my own expense."

For c19ProSo04, participants from Iran responded 1, which means that most participants from Iran "Somewhat agree" to the statement that "I am willing to make personal sacrifices to prevent the spread of coronavirus."

Best Predictors for Iran:

- The best predictor for c19ProSo01 is consp02 with a p-value of 0.001033475 which is less than 0.05.
- The best predictor for c19ProSo02 is c19ProSo03 with a p-value of 3.103176e-23 which is less than 0.05.
- The best predictor for c19ProSo03 is c19ProSo02 with a p-value of 3.103176e-23 which is less than 0.05.
- The best predictor for c19ProSo04 is c19ProSo01 with a p-value of 0.01582383 which is less than 0.05.

```
philippines = cvbase %>% filter(coded_country == "Philippines")
philippines <- subset(philippines, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife_3,
rankOrdLife_4, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_close
))

philippines_lm_1 <- lm(c19ProSo01 ~., data = philippines)
c19ProSo01_coefficients <- summary(philippines_lm_1)$coefficients
c19ProSo01_significant_predictors <- c19ProSo01_coefficients[c19ProSo01_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo01_best_predictors <- c19ProSo01_significant_predictors[order(abs(c19ProSo01_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo01_best_predictors[1:2, ]

##             Estimate Std. Error   t value     Pr(>|t|)
## c19ProSo02 0.3403081 0.03307542 10.288852 1.568513e-23
## c19ProSo03 0.2028857 0.02874132  7.059025 3.385106e-12

philippines_plot_1 <- qplot(seq_along(philippines$c19ProSo01), philippines$c19ProSo01, main
= "Participants Responses for c19ProSo01 for Philippines", xlab = "c19ProSo01", ylab = "c19
ProSo01") + geom_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

philippines_lm_2 <- lm(c19ProSo02 ~., data = philippines)
c19ProSo02_coefficients <- summary(philippines_lm_2)$coefficients
c19ProSo02_significant_predictors <- c19ProSo02_coefficients[c19ProSo02_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo02_best_predictors <- c19ProSo02_significant_predictors[order(abs(c19ProSo02_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo02_best_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo03 0.2857587 0.02668230 10.70967 2.977494e-25
## c19ProSo01 0.3136252 0.03048204 10.28885 1.568513e-23

philippines_plot_2 <- qplot(seq_along(philippines$c19ProSo02), philippines$c19ProSo02, main
= "Participants Responses for c19ProSo02 for Philippines", xlab = "c19ProSo02", ylab = "c19
ProSo02") + geom_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)
```

```r
philippines_lm_3 <- lm(c19ProSo03 ~., data = philippines)
c19ProSo03_coefficients <- summary(philippines_lm_3)$coefficients
c19ProSo03_significant_predictors <- c19ProSo03_coefficients[c19ProSo03_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo03_best_predictors <- c19ProSo03_significant_predictors[order(abs(c19ProSo03_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo03_best_predictors[1:2, ]
```

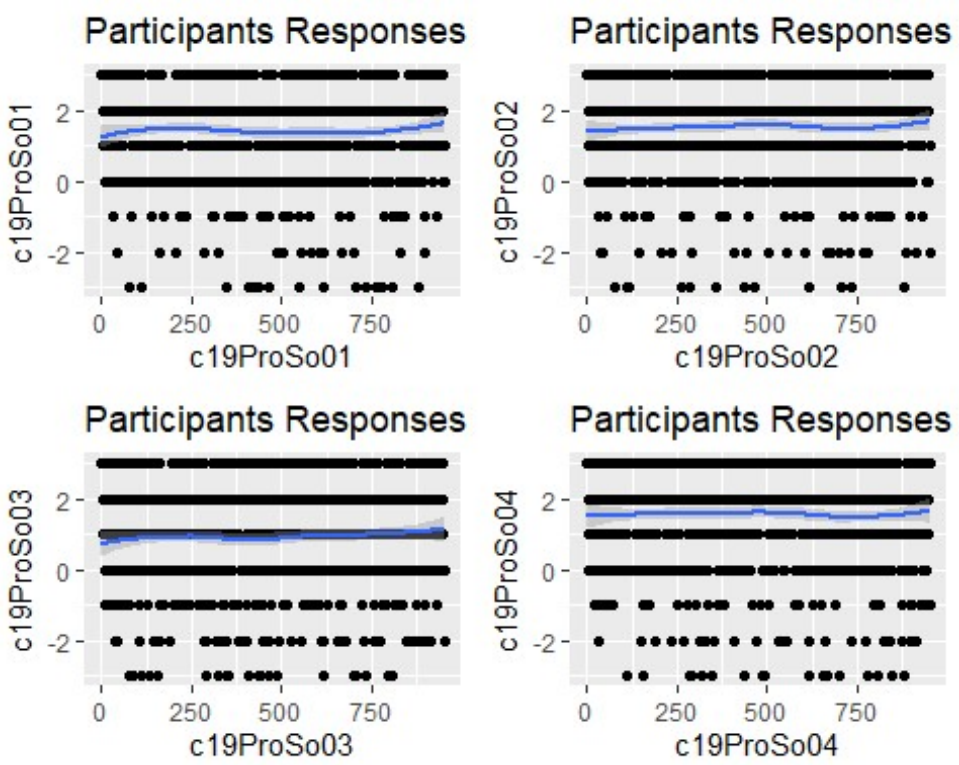
```
##             Estimate Std. Error   t value     Pr(>|t|)
## c19ProSo02 0.4010978 0.03745192 10.709672 2.977494e-25
## c19ProSo04 0.2349850 0.03040284  7.729046 2.934349e-14
```

```r
philippines_plot_3 <- qplot(seq_along(philippines$c19ProSo03), philippines$c19ProSo03, main
= "Participants Responses for c19ProSo03 for Philippines", xlab = "c19ProSo03", ylab = "c19
ProSo03") + geom_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

philippines_lm_4 <- lm(c19ProSo04 ~., data = philippines)
c19ProSo04_coefficients <- summary(philippines_lm_4)$coefficients
c19ProSo04_significant_predictors <- c19ProSo04_coefficients[c19ProSo04_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo04_best_predictors <- c19ProSo04_significant_predictors[order(abs(c19ProSo04_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo04_best_predictors[1:2, ]
```

```
##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo03 0.2688072 0.03477883 7.729046 2.934349e-14
## c19ProSo01 0.2129773 0.04023628 5.293165 1.516511e-07
```

```r
philippines_plot_4 <- qplot(seq_along(philippines$c19ProSo04), philippines$c19ProSo04, main
= "Participants Responses for c19ProSo04 for Philippines", xlab = "c19ProSo04", ylab = "c19
ProSo04") + geom_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

ggarrange(philippines_plot_1, philippines_plot_2, philippines_plot_3, philippines_plot_4, n
col = 2, nrow = 2)
```

```
## Warning: Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).
```



For c19ProSo01, participants from Philippines responses fluctuated between 1 and 2, which means that most participants from Philippines either "Somewhat agree" or "Agree" to the statement that "I am willing to help others who suffer from coronavirus."

For c19ProSo02, participants from Philippines responses fluctuated between 1 and 2, which means that most participants from Philippines either "Somewhat agree" or "Agree" to the statement that "I am willing to make donations to help others that suffer from coronavirus."

For c19ProSo03, participants from Philippines responded 1 which means that most participants from Philippines "Somewhat agree" to the statement that "I am willing to protect vulnerable groups from coronavirus even at my own expense."

For c19ProSo04, participants from Philippines responses fluctuated between 1 and 2, which means that most participants from Philippines either "Somewhat agree" or "Agree" to the statement that "I am willing to make personal sacrifices to prevent the spread of coronavirus."

Best Predictors for Philippines:

- The best predictor for c19ProSo01 is c19ProSo02 with a p-value of 1.568513e-23 which is less than 0.05.
- The best predictor for c19ProSo02 is c19ProSo03 with a p-value of 2.977494e-25 which is less than 0.05.
- The best predictor for c19ProSo03 is c19ProSo02 with a p-value of 2.977494e-25 which is less than 0.05.
- The best predictor for c19ProSo04 is c19ProSo03 with a p-value of 2.934349e-14 which is less than 0.05.

```
poland = cvbase %>% filter(coded_country == "Poland")
poland <- subset(poland, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife_3, rankOrdLi
fe_4, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_close))

poland_lm_1 <- lm(c19ProSo01 ~., data = poland)
```

```r
c19ProSo01_coefficients <- summary(poland_lm_1)$coefficients
c19ProSo01_significant_predictors <- c19ProSo01_coefficients[c19ProSo01_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo01_best_predictors <- c19ProSo01_significant_predictors[order(abs(c19ProSo01_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo01_best_predictors[1:2, ]
```

```
##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo03 0.2609982 0.04048517 6.446761 3.262814e-10
## c19ProSo02 0.2136891 0.03589277 5.953540 5.703087e-09
```

```r
poland_plot_1 <- qplot(seq_along(poland$c19ProSo01), poland$c19ProSo01, main = "Participant
s Responses for c19ProSo01 for Poland", xlab = "c19ProSo01", ylab = "c19ProSo01") + geom_sm
ooth(method = "loess", formula = y ~ x, na.rm = TRUE)

poland_lm_2 <- lm(c19ProSo02 ~., data = poland)
c19ProSo02_coefficients <- summary(poland_lm_2)$coefficients
c19ProSo02_significant_predictors <- c19ProSo02_coefficients[c19ProSo02_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo02_best_predictors <- c19ProSo02_significant_predictors[order(abs(c19ProSo02_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo02_best_predictors[1:2, ]
```

```
##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo01 0.3774541 0.06339993 5.953540 5.703087e-09
## edu        0.1641470 0.04658746 3.523417 4.747146e-04
```

```r
poland_plot_2 <- qplot(seq_along(poland$c19ProSo02), poland$c19ProSo02, main = "Participant
s Responses for c19ProSo02 for Poland", xlab = "c19ProSo02", ylab = "c19ProSo02") + geom_sm
ooth(method = "loess", formula = y ~ x, na.rm = TRUE)

poland_lm_3 <- lm(c19ProSo03 ~., data = poland)
c19ProSo03_coefficients <- summary(poland_lm_3)$coefficients
c19ProSo03_significant_predictors <- c19ProSo03_coefficients[c19ProSo03_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo03_best_predictors <- c19ProSo03_significant_predictors[order(abs(c19ProSo03_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo03_best_predictors[1:2, ]
```

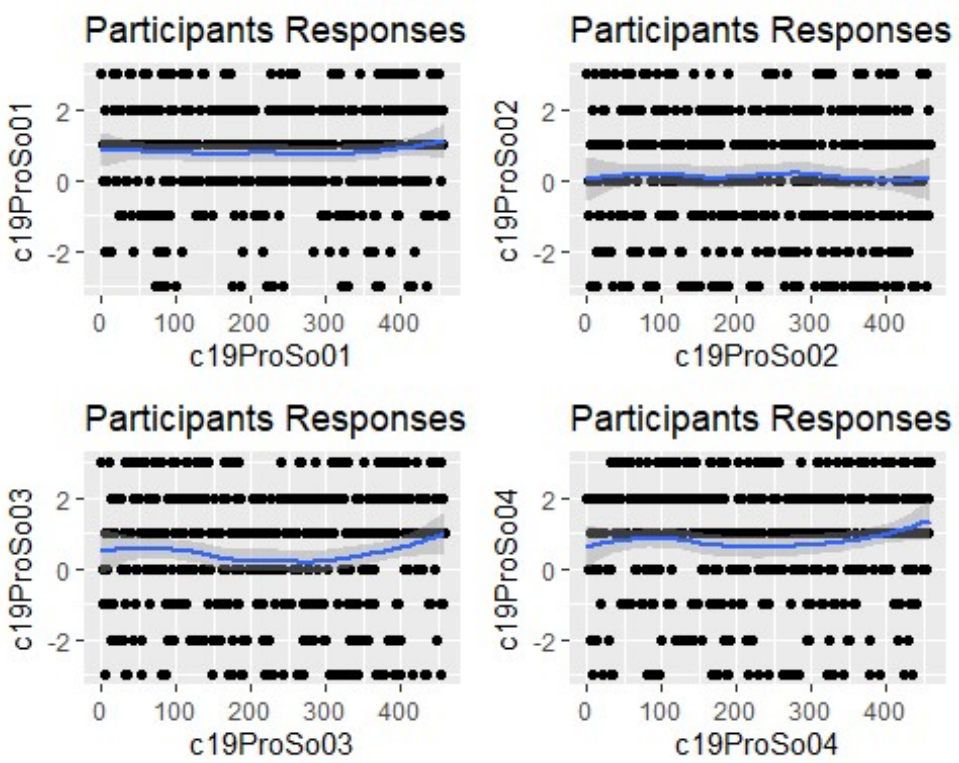
```
##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo04 0.4643751 0.04670357 9.943032 5.539451e-21
## c19ProSo01 0.3573870 0.05543667 6.446761 3.262814e-10
```

```r
poland_plot_3 <- qplot(seq_along(poland$c19ProSo03), poland$c19ProSo03, main = "Participant
s Responses for c19ProSo03 for Poland", xlab = "c19ProSo03", ylab = "c19ProSo03") + geom_sm
ooth(method = "loess", formula = y ~ x, na.rm = TRUE)

poland_lm_4 <- lm(c19ProSo04 ~., data = poland)
c19ProSo04_coefficients <- summary(poland_lm_4)$coefficients
c19ProSo04_significant_predictors <- c19ProSo04_coefficients[c19ProSo04_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo04_best_predictors <- c19ProSo04_significant_predictors[order(abs(c19ProSo04_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo04_best_predictors[1:2, ]
```

```
##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo03 0.4233683 0.04257939 9.943032 5.539451e-21
## c19RCA02   0.1762937 0.06408186 2.751070 6.207325e-03
```

```
poland_plot_4 <- qplot(seq_along(poland$c19ProSo04), poland$c19ProSo04, main = "Participant
s Responses for c19ProSo04 for Poland", xlab = "c19ProSo04", ylab = "c19ProSo04") + geom_sm
ooth(method = "loess", formula = y ~ x, na.rm = TRUE)

ggarrange(poland_plot_1, poland_plot_2, poland_plot_3, poland_plot_4, ncol = 2, nrow = 2)
```

```
## Warning: Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).
```



For c19ProSo01, participants from Poland responded 1, which means that most participants from Poland "Agree" to the statement that "I am willing to help others who suffer from coronavirus."

For c19ProSo02, participants from Poland responded 0, which means that most participants from Poland "Neither agree nor disagree" to the statement that "I am willing to make donations to help others that suffer from coronavirus."

For c19ProSo03, participants from Poland responses fluctuated between 0 and 1 which means that most participants from Poland either "Neither agree nor disagree" or "Somewhat agree" to the statement that "I am willing to protect vulnerable groups from coronavirus even at my own expense."

For c19ProSo04, participants from Poland responses fluctuated around 1, which means that most participants from Poland "Somewhat agree" to the statement that "I am willing to make personal sacrifices to prevent the spread of coronavirus."

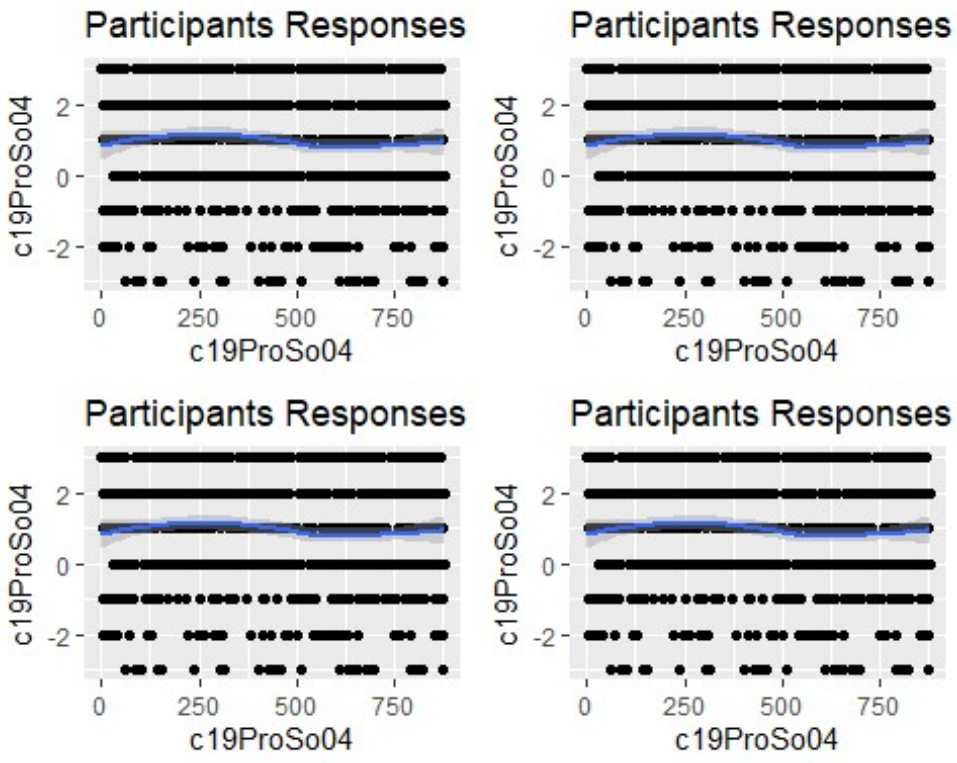
Best Predictors for Poland:

- The best predictor for c19ProSo01 is c19ProSo03 with a p-value of 3.262814e-10 which is less than 0.05.

- The best predictor for c19ProSo02 is c19ProSo01 with a p-value of 5.703087e-09 which is less than 0.05.
- The best predictor for c19ProSo03 is c19ProSo04 with a p-value of 5.539451e-21 which is less than 0.05.
- The best predictor for c19ProSo04 is c19ProSo03 with a p-value of 5.539451e-21 which is less than 0.05.

```
saudi_arabia = cvbase %>% filter(coded_country == "Saudi Arabia")
saudi_arabia <- subset(saudi_arabia, select = -c(rankOrdLife_1, rankOrdLife_2, rankOrdLife_
3, rankOrdLife_4, rankOrdLife_5, rankOrdLife_6, coded_country, employment_status, corona_cl
ose))

saudi_arabia_lm_1 <- lm(c19ProSo01 ~., data = saudi_arabia)
c19ProSo01_coefficients <- summary(saudi_arabia_lm_1)$coefficients
c19ProSo01_significant_predictors <- c19ProSo01_coefficients[c19ProSo01_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo01_best_predictors <- c19ProSo01_significant_predictors[order(abs(c19ProSo01_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo01_best_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo02 0.3813108 0.04294421 8.879214 4.560679e-18
## c19ProSo04 0.2224086 0.03626050 6.133635 1.363727e-09

saudi_arabia_plot_1 <- qplot(seq_along(saudi_arabia$c19ProSo04), saudi_arabia$c19ProSo04, m
ain = "Participants Responses for c19ProSo04 for Saudi Arabia", xlab = "c19ProSo04", ylab =
"c19ProSo04") + geom_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

saudi_arabia_lm_2 <- lm(c19ProSo02 ~., data = saudi_arabia)
c19ProSo02_coefficients <- summary(saudi_arabia_lm_2)$coefficients
c19ProSo02_significant_predictors <- c19ProSo02_coefficients[c19ProSo02_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo02_best_predictors <- c19ProSo02_significant_predictors[order(abs(c19ProSo02_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo02_best_predictors[1:2, ]

##             Estimate Std. Error  t value     Pr(>|t|)
## c19ProSo03 0.2916364 0.02938128 9.925926 5.998479e-22
## c19ProSo01 0.2404651 0.02708180 8.879214 4.560679e-18

saudi_arabia_plot_2 <- qplot(seq_along(saudi_arabia$c19ProSo04), saudi_arabia$c19ProSo04, m
ain = "Participants Responses for c19ProSo04 for Saudi Arabia", xlab = "c19ProSo04", ylab =
"c19ProSo04") + geom_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

saudi_arabia_lm_3 <- lm(c19ProSo03 ~., data = saudi_arabia)
c19ProSo03_coefficients <- summary(saudi_arabia_lm_3)$coefficients
c19ProSo03_significant_predictors <- c19ProSo03_coefficients[c19ProSo03_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo03_best_predictors <- c19ProSo03_significant_predictors[order(abs(c19ProSo03_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo03_best_predictors[1:2, ]

##             Estimate Std. Error   t value     Pr(>|t|)
## c19ProSo04 0.3600643 0.03128383 11.509597 1.997604e-28
## c19ProSo02 0.3841074 0.03869739  9.925926 5.998479e-22
```

```
saudi_arabia_plot_3 <- qplot(seq_along(saudi_arabia$c19ProSo04), saudi_arabia$c19ProSo04, m
ain = "Participants Responses for c19ProSo04 for Saudi Arabia", xlab = "c19ProSo04", ylab =
"c19ProSo04") + geom_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

saudi_arabia_lm_4 <- lm(c19ProSo04 ~., data = saudi_arabia)
c19ProSo04_coefficients <- summary(saudi_arabia_lm_4)$coefficients
c19ProSo04_significant_predictors <- c19ProSo04_coefficients[c19ProSo04_coefficients[, "Pr(
>|t|)"] < 0.05, ]
c19ProSo04_best_predictors <- c19ProSo04_significant_predictors[order(abs(c19ProSo04_signif
icant_predictors[, "Pr(>|t|)"]), decreasing = FALSE), ]
c19ProSo04_best_predictors[1:2, ]

##             Estimate Std. Error   t value     Pr(>|t|)
## c19ProSo03 0.4027592 0.03499334 11.509597 1.997604e-28
## c19ProSo01 0.2066336 0.03368861  6.133635 1.363727e-09

saudi_arabia_plot_4 <- qplot(seq_along(saudi_arabia$c19ProSo04), saudi_arabia$c19ProSo04, m
ain = "Participants Responses for c19ProSo04 for Saudi Arabia", xlab = "c19ProSo04", ylab =
"c19ProSo04") + geom_smooth(method = "loess", formula = y ~ x, na.rm = TRUE)

ggarrange(saudi_arabia_plot_1, saudi_arabia_plot_2, saudi_arabia_plot_3, saudi_arabia_plot_
4, ncol = 2, nrow = 2)

## Warning: Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).
## Removed 4 rows containing missing values or values outside the scale range
## (`geom_point()`).
```



For c19ProSo01, participants from Saudi Arabia responded 1, which means that most participants from Saudi Arabia “Somewhat agree” to the statement that “I am willing to help others who suffer from coronavirus.”

For c19ProSo02, participants from Saudi Arabia responded 1, which means that most participants from Saudi Arabia "Somewhat agree" to the statement that "I am willing to make donations to help others that suffer from coronavirus."

For c19ProSo03, participants from Saudi Arabia responded 1 which means that most participants from Saudi Arabia "Somewhat agree" to the statement that "I am willing to protect vulnerable groups from coronavirus even at my own expense."

For c19ProSo04, participants from Saudi Arabia responded 1, which means that most participants from Saudi Arabia "Somewhat agree" to the statement that "I am willing to make personal sacrifices to prevent the spread of coronavirus."

Best Predictors for Saudi Arabia:

- The best predictor for c19ProSo01 is c19ProSo02 with a p-value of 4.560679e-18 which is less than 0.05.
- The best predictor for c19ProSo02 is c19ProSo03 with a p-value of 5.998479e-22 which is less than 0.05.
- The best predictor for c19ProSo03 is c19ProSo04 with a p-value of 1.997604e-28 which is less than 0.05.
- The best predictor for c19ProSo04 is c19ProSo03 with a p-value of 1.997604e-28 which is less than 0.05.

Appendix

Summary of cvbase

```
summary(cvbase)
```

```
##  isoFriends_inPerson isoOthPpl_inPerson isoFriends_online isoOthPpl_online
##  Min.   :0.000       Min.   :0.000      Min.   :0.000     Min.   :0.00
##  1st Qu.:0.000       1st Qu.:0.000      1st Qu.:2.000     1st Qu.:0.00
##  Median :1.000       Median :1.000      Median :5.000     Median :2.00
##  Mean   :2.074       Mean   :1.952      Mean   :4.414     Mean   :2.87
##  3rd Qu.:4.000       3rd Qu.:3.000      3rd Qu.:7.000     3rd Qu.:5.00
##  Max.   :7.000       Max.   :7.000      Max.   :7.000     Max.   :7.00
##  NA's   :331         NA's   :516        NA's   :949       NA's   :1162
##      lone01          lone02          lone03          happy
##  Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   : 1.000
##  1st Qu.:1.000   1st Qu.:2.000   1st Qu.:1.000   1st Qu.: 5.000
##  Median :2.000   Median :3.000   Median :2.000   Median : 7.000
##  Mean   :2.422   Mean   :2.667   Mean   :2.084   Mean   : 6.337
##  3rd Qu.:3.000   3rd Qu.:4.000   3rd Qu.:3.000   3rd Qu.: 8.000
##  Max.   :5.000   Max.   :5.000   Max.   :5.000   Max.   :10.000
##  NA's   :86      NA's   :127     NA's   :140     NA's   :514
##     lifeSat           MLQ              bor01             bor02
##  Min.   :1.000   Min.   :-3.0000   Min.   :-3.0000   Min.   :-3.00000
##  1st Qu.:3.000   1st Qu.: 0.0000   1st Qu.:-1.0000   1st Qu.:-2.00000
##  Median :4.000   Median : 1.0000   Median : 0.0000   Median : 0.00000
##  Mean   :4.139   Mean   : 0.8472   Mean   : 0.3251   Mean   : 0.03983
##  3rd Qu.:5.000   3rd Qu.: 2.0000   3rd Qu.: 2.0000   3rd Qu.: 2.00000
##  Max.   :6.000   Max.   : 3.0000   Max.   : 3.0000   Max.   : 3.00000
##  NA's   :111     NA's   :119       NA's   :163       NA's   :176
##      bor03            consp01          consp02          consp03
##  Min.   :-3.0000   Min.   : 0.000   Min.   : 0.000   Min.   : 0.000
##  1st Qu.:-1.0000   1st Qu.: 5.000   1st Qu.: 5.000   1st Qu.: 4.000
##  Median : 0.0000   Median : 7.000   Median : 8.000   Median : 5.000
##  Mean   : 0.3145   Mean   : 6.839   Mean   : 7.163   Mean   : 5.591
##  3rd Qu.: 2.0000   3rd Qu.: 9.000   3rd Qu.: 9.000   3rd Qu.: 8.000
##  Max.   : 3.0000   Max.   :10.000   Max.   :10.000   Max.   :10.000
##  NA's   :177       NA's   :1510     NA's   :1535     NA's   :1555
##  rankOrdLife_1      rankOrdLife_2      rankOrdLife_3      rankOrdLife_4
##  Length:40000       Length:40000       Length:40000       Length:40000
##  Class :character   Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character   Mode  :character
##
##
##
##
##  rankOrdLife_5      rankOrdLife_6       c19perBeh01      c19perBeh02
##  Length:40000       Length:40000       Min.   :-3.000   Min.   :-3.00
##  Class :character   Class :character   1st Qu.: 2.000   1st Qu.: 2.00
```

```
##  Mode  :character   Mode  :character   Median : 3.000   Median : 3.00
##                                        Mean   : 2.315   Mean   : 2.43
##                                        3rd Qu.: 3.000   3rd Qu.: 3.00
##                                        Max.   : 3.000   Max.   : 3.00
##                                        NA's   :127      NA's   :135
##   c19perBeh03       c19RCA01         c19RCA02         c19RCA03
##  Min.   :-3.00   Min.   :-3.000   Min.   :-3.000   Min.   :-3.000
##  1st Qu.: 1.00   1st Qu.: 0.000   1st Qu.: 2.000   1st Qu.: 0.000
##  Median : 2.00   Median : 2.000   Median : 3.000   Median : 2.000
##  Mean   : 1.84   Mean   : 1.268   Mean   : 2.053   Mean   : 1.161
##  3rd Qu.: 3.00   3rd Qu.: 3.000   3rd Qu.: 3.000   3rd Qu.: 3.000
##  Max.   : 3.00   Max.   : 3.000   Max.   : 3.000   Max.   : 3.000
##  NA's   :134     NA's   :134      NA's   :142      NA's   :149
##      gender           age             edu        coded_country
##  Min.   :1.000   Min.   :1.000   Min.   :1.000   Length:40000
##  1st Qu.:1.000   1st Qu.:2.000   1st Qu.:4.000   Class :character
##  Median :1.000   Median :3.000   Median :5.000   Mode  :character
##  Mean   :1.389   Mean   :2.892   Mean   :4.404
##  3rd Qu.:2.000   3rd Qu.:4.000   3rd Qu.:5.000
##  Max.   :3.000   Max.   :8.000   Max.   :7.000
##  NA's   :221     NA's   :240     NA's   :272
##    c19ProSo01        c19ProSo02        c19ProSo03        c19ProSo04
##  Min.   :-3.0000   Min.   :-3.0000   Min.   :-3.0000   Min.   :-3.000
##  1st Qu.: 0.0000   1st Qu.: 0.0000   1st Qu.: 0.0000   1st Qu.: 0.000
##  Median : 1.0000   Median : 1.0000   Median : 1.0000   Median : 2.000
##  Mean   : 0.9685   Mean   : 0.6727   Mean   : 0.5469   Mean   : 1.282
##  3rd Qu.: 2.0000   3rd Qu.: 2.0000   3rd Qu.: 2.0000   3rd Qu.: 2.000
##  Max.   : 3.0000   Max.   : 3.0000   Max.   : 3.0000   Max.   : 3.000
##  NA's   :129       NA's   :134       NA's   :149       NA's   :150
##  employment_status  corona_close
##  Length:40000       Length:40000
##  Class :character   Class :character
##  Mode  :character   Mode  :character
##
##
##
##
```

```
str(cvbase)
```

```
## 'data.frame':    40000 obs. of  38 variables:
##  $ isoFriends_inPerson: int  2 3 4 2 4 7 2 7 3 1 ...
##  $ isoOthPpl_inPerson : int  0 0 3 0 2 4 3 7 3 0 ...
##  $ isoFriends_online  : int  7 0 5 4 3 4 5 7 4 7 ...
##  $ isoOthPpl_online   : int  7 0 0 4 6 0 0 7 0 3 ...
##  $ lone01             : int  3 2 1 3 1 2 2 1 3 2 ...
##  $ lone02             : int  2 2 1 4 1 4 4 1 3 1 ...
##  $ lone03             : int  2 2 1 4 1 3 1 1 2 1 ...
##  $ happy              : int  1 6 10 7 8 2 7 7 6 8 ...
##  $ lifeSat            : int  1 4 6 4 6 2 5 4 4 4 ...
##  $ MLQ                : int  0 2 3 0 3 -2 1 1 -1 -1 ...
##  $ bor01              : int  0 2 -3 0 -2 -1 3 2 0 1 ...
##  $ bor02              : int  -1 1 -3 1 -2 -1 1 2 1 0 ...
##  $ bor03              : int  -1 -1 3 1 3 -1 2 -1 1 -1 ...
##  $ consp01            : int  10 5 8 7 NA 2 3 NA 10 4 ...
##  $ consp02            : int  10 10 8 7 NA 2 3 NA 10 6 ...
##  $ consp03            : int  0 5 8 7 NA 7 1 NA 9 5 ...
```

```
##  $ rankOrdLife_1      : chr  "D" "C" "B" "A" ...
##  $ rankOrdLife_2      : chr  "E" "D" "F" "C" ...
##  $ rankOrdLife_3      : chr  "C" "E" "C" "D" ...
##  $ rankOrdLife_4      : chr  "A" "B" "D" "E" ...
##  $ rankOrdLife_5      : chr  "B" "A" "A" "B" ...
##  $ rankOrdLife_6      : chr  "F" "F" "E" "F" ...
##  $ c19perBeh01        : int  3 2 2 0 3 2 3 3 2 2 ...
##  $ c19perBeh02        : int  -2 2 3 0 3 3 3 3 2 3 ...
##  $ c19perBeh03        : int  -2 1 3 1 3 3 3 2 2 3 ...
##  $ c19RCA01           : int  -3 -2 -3 0 3 1 3 2 -3 1 ...
##  $ c19RCA02           : int  -1 2 -1 1 3 1 3 3 -2 3 ...
##  $ c19RCA03           : int  -3 2 -2 0 3 -1 1 2 1 3 ...
##  $ gender             : int  2 1 2 2 2 1 1 2 2 1 ...
##  $ age                : int  3 1 2 3 2 2 2 3 2 1 ...
##  $ edu                : int  3 4 4 5 6 7 3 5 4 4 ...
##  $ coded_country      : chr  "Greece" "Egypt" "Romania" "Italy" ...
##  $ c19ProSo01         : int  2 1 3 0 3 2 0 0 1 -2 ...
##  $ c19ProSo02         : int  0 1 0 0 3 -2 1 2 1 1 ...
##  $ c19ProSo03         : int  2 1 0 -1 3 2 0 2 0 1 ...
##  $ c19ProSo04         : int  -2 1 3 0 2 3 3 1 2 3 ...
##  $ employment_status  : chr  "4" "9" "9" "3" ...
##  $ corona_close       : chr  "6" "6" "6" "6" ...
```

Head of the external csv file

```
# Take a look of the dataset
head(corona)
```

```
##             Country Year OVERALL.SCORE
## 1       Afghanistan 2021          28.8
## 2           Albania 2021          45.0
## 3           Algeria 2021          26.2
## 4           Andorra 2021          34.7
## 5            Angola 2021          29.1
## 6 Antigua & Barbuda 2021          30.0
##   X1..PREVENTION.OF.THE.EMERGENCE.OR.RELEASE.OF.PATHOGENS
## 1                                                    12.0
## 2                                                    42.0
## 3                                                    15.3
## 4                                                    27.1
## 5                                                    14.7
## 6                                                    16.7
##   X1.1..Antimicrobial.resistance..AMR.
## 1                                 16.7
## 2                                 33.3
## 3                                 33.3
## 4                                  0.0
## 5                                 33.3
## 6                                 50.0
##   X1.1.1..AMR.surveillance..detection.and.reporting
## 1                                              33.3
## 2                                              16.7
## 3                                              16.7
## 4                                               0.0
## 5                                              16.7
## 6                                               0.0
##   X1.1.1a..National.plan.for.AMR.priority.pathogens
## 1                                                50
```

```
## 2                                                 0
## 3                                                 0
## 4                                                 0
## 5                                                 0
## 6                                                 0
##   X1.1.1b..Capacity.of.national.lab.lab.system.to.test.for.AMR.priority.pathogens
## 1                                                                              50
## 2                                                                              50
## 3                                                                              50
## 4                                                                               0
## 5                                                                              50
## 6                                                                               0
##   X1.1.1c..National.environmental.surveillance.for.AMR.residues.organisms
## 1                                                                       0
## 2                                                                       0
## 3                                                                       0
## 4                                                                       0
## 5                                                                       0
## 6                                                                       0
##   X1.1.2..Antimicrobial.control
## 1                             0
## 2                            50
## 3                            50
## 4                             0
## 5                            50
## 6                           100
##   X1.1.2a..National.law.s..requiring.prescription.for.antibiotic.use..humans.
## 1                                                                           0
## 2                                                                         100
## 3                                                                         100
## 4                                                                           0
## 5                                                                         100
## 6                                                                         100
##   X1.1.2b..National.law.s..requiring.prescription.for.antibiotic.use..animals.
## 1                                                                           0
## 2                                                                           0
## 3                                                                           0
## 4                                                                           0
## 5                                                                           0
## 6                                                                         100
##   X1.2..Zoonotic.disease
## 1                    5.5
## 2                   24.6
## 3                    8.4
## 4                   42.4
## 5                    5.1
## 6                    0.0
##   X1.2.1..National.planning.for.zoonotic.diseases.pathogens
## 1                                                        25
## 2                                                        50
## 3                                                         0
## 4                                                        50
## 5                                                        25
## 6                                                         0
##   X1.2.1a..Laws.plans.on.zoonotic.disease
## 1                                     100
## 2                                     100
```

```
## 3                                        0
## 4                                      100
## 5                                      100
## 6                                        0
##   X1.2.1b..Laws.plans.on.zoonotic.disease.spillover.from.animals.to.humans
## 1                                                                        0
## 2                                                                        0
## 3                                                                        0
## 4                                                                        0
## 5                                                                        0
## 6                                                                        0
##   X1.2.1c..Laws.plans.for.surveillance...control.of.multiple.zoonotic.pathogens
## 1                                                                             0
## 2                                                                           100
## 3                                                                             0
## 4                                                                           100
## 5                                                                             0
## 6                                                                             0
##   X1.2.1d..Cross.ministerial.department.agency.unit.for.zoonotic.disease
## 1                                                                      0
## 2                                                                      0
## 3                                                                      0
## 4                                                                      0
## 5                                                                      0
## 6                                                                      0
##   X1.2.2..Surveillance.systems.for.zoonotic.diseases.pathogens
## 1                                                          0.0
## 2                                                         66.7
## 3                                                         33.3
## 4                                                         33.3
## 5                                                          0.0
## 6                                                          0.0
##   X1.2.2a..Surveillance.reporting.mechanism.for.zoonotic.disease.for.livestock.owners
## 1                                                                                   0
## 2                                                                                 100
## 3                                                                                 100
## 4                                                                                   0
## 5                                                                                   0
## 6                                                                                   0
##   X1.2.2b..Laws.regulations.on.data.confidentiality.to.protect.livestock.owners
## 1                                                                             0
## 2                                                                           100
## 3                                                                             0
## 4                                                                             0
## 5                                                                             0
## 6                                                                             0
##   X1.2.2c..Wildlife.zoonotic.disease.surveillance
## 1                                               0
## 2                                               0
## 3                                               0
## 4                                             100
## 5                                               0
## 6                                               0
##   X1.2.3..International.reporting.of.animal.disease.outbreaks
## 1                                                           0
## 2                                                           0
## 3                                                           0
```

```
## 4                                                                 100
## 5                                                                   0
## 6                                                                   0
##   X1.2.3a..Annual.reporting.to.OIE.on.zoonotic.disease.incidence
## 1                                                               0
## 2                                                               0
## 3                                                               0
## 4                                                             100
## 5                                                               0
## 6                                                               0
##   X1.2.4..Animal.health.workforce
## 1                             2.7
## 2                             6.3
## 3                             8.5
## 4                            28.5
## 5                             0.7
## 6                             0.0
##   X1.2.4a..Number.of.veterinarians.per.100.000.people
## 1                                                1.3
## 2                                               12.6
## 3                                               17.0
## 4                                               25.1
## 5                                                0.4
## 6                                                0.0
##   X1.2.4b..Number.of.veterinary.para.professionals.per.100.000.people
## 1                                                                 4.1
## 2                                                                 0.0
## 3                                                                 0.0
## 4                                                                32.0
## 5                                                                 1.0
## 6                                                                 0.0
##   X1.2.5..Private.sector.and.zoonotic.disease
## 1                                           0
## 2                                           0
## 3                                           0
## 4                                           0
## 5                                           0
## 6                                           0
##   X1.2.5a..Inclusion.of.private.sector.in.national.plan.law.on.zoonotic.disease
## 1                                                                             0
## 2                                                                             0
## 3                                                                             0
## 4                                                                             0
## 5                                                                             0
## 6                                                                             0
##   X1.3..Biosecurity X1.3.1..Whole.of.government.biosecurity.systems
## 1                 0                                               0
## 2                44                                              20
## 3                 0                                               0
## 4                20                                               0
## 5                 0                                               0
## 6                 0                                               0
##   X1.3.1a..Updated.national.records.of.especially.dangerous.pathogen.toxin.inventories
## 1                                                                                     0
## 2                                                                                   100
## 3                                                                                     0
## 4                                                                                     0
```

```
## 5                                                                                      0
## 6                                                                                      0
##   X1.3.1b..Biosecurity.laws.on.facility.security.for.especially.dangerous.pathogens
## 1                                                                                   0
## 2                                                                                   0
## 3                                                                                   0
## 4                                                                                   0
## 5                                                                                   0
## 6                                                                                   0
##   X1.3.1c..Agency.for.enforcement.of.biosecurity.laws.regulations
## 1                                                               0
## 2                                                               0
## 3                                                               0
## 4                                                               0
## 5                                                               0
## 6                                                               0
##   X1.3.1d..Consolidation.of.especially.dangerous.pathogens.into.minimum...of.facilities
## 1                                                                                       0
## 2                                                                                       0
## 3                                                                                       0
## 4                                                                                       0
## 5                                                                                       0
## 6                                                                                       0
##   X1.3.1e..Capacity.to.conduct.tests.for.anthrax.Ebola.without.culturing.live.pathogens
## 1                                                                                       0
## 2                                                                                       0
## 3                                                                                       0
## 4                                                                                       0
## 5                                                                                       0
## 6                                                                                       0
##   X1.3.2..Biosecurity.training.and.practices
## 1                                          0
## 2                                          0
## 3                                          0
## 4                                          0
## 5                                          0
## 6                                          0
##   X1.3.2a..Biosecurity.training.using.a.standardised..required.approach
## 1                                                                     0
## 2                                                                     0
## 3                                                                     0
## 4                                                                     0
## 5                                                                     0
## 6                                                                     0
##   X1.3.3..Personnel.vetting..regulating.access.to.sensitive.locations
## 1                                                                   0
## 2                                                                   0
## 3                                                                   0
## 4                                                                   0
## 5                                                                   0
## 6                                                                   0
##   X1.3.3a..Personnel.checks.for.permission.to.access.to.especially.dangerous.pathogens
## 1                                                                                      0
## 2                                                                                      0
## 3                                                                                      0
## 4                                                                                      0
## 5                                                                                      0
```

```
## 6                                                                                 0
##   X1.3.4..Transportation.security
## 1                               0
## 2                             100
## 3                               0
## 4                             100
## 5                               0
## 6                               0
##   X1.3.4a..National.transport.regulations.for.Category.A.and.B.infectious.substances
## 1                                                                                  0
## 2                                                                                100
## 3                                                                                  0
## 4                                                                                100
## 5                                                                                  0
## 6                                                                                  0
##   X1.3.5..Cross.border.transfer.and.end.user.screening
## 1                                                    0
## 2                                                  100
## 3                                                    0
## 4                                                    0
## 5                                                    0
## 6                                                    0
##   X1.3.5a..Laws.regulations.on.cross.border.transfer.and.end.user.screening
## 1                                                                         0
## 2                                                                       100
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X1.4..Biosafety X1.4.1..Whole.of.government.biosafety.systems
## 1               0                                             0
## 2              50                                           100
## 3               0                                             0
## 4               0                                             0
## 5               0                                             0
## 6               0                                             0
##   X1.4.1a..Biosafety.laws.regulations
## 1                                   0
## 2                                 100
## 3                                   0
## 4                                   0
## 5                                   0
## 6                                   0
##   X1.4.1b..Agency.for.enforcement.of.biosafety.laws.regulations
## 1                                                             0
## 2                                                           100
## 3                                                             0
## 4                                                             0
## 5                                                             0
## 6                                                             0
##   X1.4.2..Biosafety.training.and.practices
## 1                                        0
## 2                                        0
## 3                                        0
## 4                                        0
## 5                                        0
## 6                                        0
```

```
##   X1.4.2a..Biosafety.training.using.a.standardised..required.approach
## 1                                                                   0
## 2                                                                   0
## 3                                                                   0
## 4                                                                   0
## 5                                                                   0
## 6                                                                   0
##   X1.5..Dual.use.research.and.culture.of.responsible.science
## 1                                                          0
## 2                                                          0
## 3                                                          0
## 4                                                          0
## 5                                                          0
## 6                                                          0
##   X1.5.1..Oversight.of.dual.use.research
## 1                                      0
## 2                                      0
## 3                                      0
## 4                                      0
## 5                                      0
## 6                                      0
##   X1.5.1a..Evidence.of.national.assessment.of.dual.use.research
## 1                                                             0
## 2                                                             0
## 3                                                             0
## 4                                                             0
## 5                                                             0
## 6                                                             0
##   X1.5.1b..National.law.regulation.on.oversight.of.dual.use.research
## 1                                                                 0
## 2                                                                 0
## 3                                                                 0
## 4                                                                 0
## 5                                                                 0
## 6                                                                 0
##   X1.5.1c..Existence.of.agency.responsible.for.oversight.of.dual.use.research
## 1                                                                           0
## 2                                                                           0
## 3                                                                           0
## 4                                                                           0
## 5                                                                           0
## 6                                                                           0
##   X1.5.2..Screening.requirements.for.providers.of.genetic.material
## 1                                                                0
## 2                                                                0
## 3                                                                0
## 4                                                                0
## 5                                                                0
## 6                                                                0
##   X1.5.2a..Requirement.to.screen.synthesised.DNA.against.list.prior.to.sale
## 1                                                                         0
## 2                                                                         0
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X1.6..Immunization X1.6.1..Vaccination.rates
```

```
## 1                  50                           50
## 2                 100                          100
## 3                  50                           50
## 4                 100                          100
## 5                  50                           50
## 6                  50                           50
##   X1.6.1a..Immunization.rate.for.humans..measles.MCV2.
## 1                                                    0
## 2                                                  100
## 3                                                    0
## 4                                                  100
## 5                                                    0
## 6                                                  100
##   X1.6.1b..Availability.of.vaccination.figures.for.livestock..FMD..through.OIE.database
## 1                                                                                    100
## 2                                                                                    100
## 3                                                                                    100
## 4                                                                                    100
## 5                                                                                    100
## 6                                                                                      0
##   X2..EARLY.DETECTION...REPORTING.FOR.EPIDEMICS.OF.POTENTIAL.INT.L.CONCERN
## 1                                                                    20.6
## 2                                                                    40.0
## 3                                                                    12.6
## 4                                                                     2.2
## 5                                                                    13.3
## 6                                                                     5.8
##   X2.1..Laboratory.systems.strength.and.quality
## 1                                          12.5
## 2                                          50.0
## 3                                          25.0
## 4                                           0.0
## 5                                          25.0
## 6                                           0.0
##   X2.1.1..Lab.capacity.for.detecting.priority.diseases
## 1                                                   25
## 2                                                   50
## 3                                                    0
## 4                                                    0
## 5                                                    0
## 6                                                    0
##   X2.1.1a..Capacity.of.national.lab.system.to.conduct.5.or.more.WHO.core.tests
## 1                                                                           50
## 2                                                                          100
## 3                                                                            0
## 4                                                                            0
## 5                                                                            0
## 6                                                                            0
##   X2.1.1b..Plan.to.conduct.testing.during.a.public.health.emergency
## 1                                                                 0
## 2                                                                 0
## 3                                                                 0
## 4                                                                 0
## 5                                                                 0
## 6                                                                 0
##   X2.1.2..Laboratory.quality.systems
## 1                                  0
```

```
## 2                                  50
## 3                                  50
## 4                                   0
## 5                                  50
## 6                                   0
##   X2.1.2a..Existence.of.an.accredited.national.lab.serving.as.a.reference.facility
## 1                                                                               0
## 2                                                                               0
## 3                                                                             100
## 4                                                                               0
## 5                                                                               0
## 6                                                                               0
##   X2.1.2b..External.quality.assurance.of.a.national.lab.serving.as.a.reference.facility
## 1                                                                                     0
## 2                                                                                   100
## 3                                                                                     0
## 4                                                                                     0
## 5                                                                                   100
## 6                                                                                     0
##   X2.2..Laboratory.supply.chains X2.2.1..Specimen.referral.and.transport.system
## 1                              0                                              0
## 2                              0                                              0
## 3                              0                                              0
## 4                              0                                              0
## 5                              0                                              0
## 6                              0                                              0
##   X2.2.1a..Is.there.a.nationwide.specimen.transport.system.
## 1                                                         0
## 2                                                         0
## 3                                                         0
## 4                                                         0
## 5                                                         0
## 6                                                         0
##   X2.2.2..Laboratory.cooperation.and.coordination
## 1                                               0
## 2                                               0
## 3                                               0
## 4                                               0
## 5                                               0
## 6                                               0
##   X2.2.2a..Plan.to.rapidly.authorize.license.laboratories.to.scale.up.testing.during.an.
outbreak
## 1
0
## 2
0
## 3
0
## 4
0
## 5
0
## 6
0
##   X2.3..Real.time.surveillance.and.reporting
## 1                                       37.5
## 2                                       12.5
```

```
## 3                                        37.5
## 4                                         0.0
## 5                                         0.0
## 6                                         0.0
##   X2.3.1..Indicator.and.event.based.surveillance.and.reporting.systems
## 1                                                                  25
## 2                                                                  25
## 3                                                                  75
## 4                                                                   0
## 5                                                                   0
## 6                                                                   0
##   X2.3.1a..Evidence.of.ongoing.event.based.surveillance.and.analysis
## 1                                                                 50
## 2                                                                 50
## 3                                                                 50
## 4                                                                  0
## 5                                                                  0
## 6                                                                  0
##   X2.3.1b..Evidence.of.reporting.a.potential.PHEIC.to.the.WHO..last.2.years.
## 1                                                                         0
## 2                                                                         0
## 3                                                                       100
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X2.3.2..Interoperable..interconnected..electronic.real.time.reporting.systems
## 1                                                                            50
## 2                                                                             0
## 3                                                                             0
## 4                                                                             0
## 5                                                                             0
## 6                                                                             0
##   X2.3.2a..Electronic.national.and.sub.national.reporting.surveillance.system
## 1                                                                        100
## 2                                                                          0
## 3                                                                          0
## 4                                                                          0
## 5                                                                          0
## 6                                                                          0
##   X2.3.2b..Collection.of.ongoing.real.time.lab.data.by.electronic.surveillance.system
## 1                                                                                   0
## 2                                                                                   0
## 3                                                                                   0
## 4                                                                                   0
## 5                                                                                   0
## 6                                                                                   0
##   X2.4..Surveillance.data.accessibility.and.transparency
## 1                                                   23.3
## 2                                                   40.0
## 3                                                   13.3
## 4                                                   13.3
## 5                                                   30.0
## 6                                                   10.0
##   X2.4.1..Coverage.and.use.of.electronic.health.records
## 1                                                  16.7
## 2                                                   0.0
## 3                                                  16.7
```

```
## 4                                                 16.7
## 5                                                  0.0
## 6                                                  0.0
##   X2.4.1a..Common.usage.of.electronic.health.records
## 1                                                  50
## 2                                                   0
## 3                                                  50
## 4                                                  50
## 5                                                   0
## 6                                                   0
##   X2.4.1b..Public.health.system.access.to.individual.electronic.health.records
## 1                                                                             0
## 2                                                                             0
## 3                                                                             0
## 4                                                                             0
## 5                                                                             0
## 6                                                                             0
##   X2.4.1c..Existence.of.data.standards.for.health.record.data.comparability
## 1                                                                         0
## 2                                                                         0
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X2.4.2..Data.integration.between.human..animal.and.environmental.health.sectors
## 1                                                                             100
## 2                                                                             100
## 3                                                                               0
## 4                                                                               0
## 5                                                                               0
## 6                                                                               0
##   X2.4.2a..Data.sharing.mechanisms X2.4.3..Transparency.of.surveillance.data
## 1                              100                                         0
## 2                              100                                         0
## 3                                0                                         0
## 4                                0                                         0
## 5                                0                                         0
## 6                                0                                         0
##   X2.4.3a..Availability.of.de.identified.health.surveillance.data.on.disease.outbreaks
## 1                                                                                   0
## 2                                                                                   0
## 3                                                                                   0
## 4                                                                                   0
## 5                                                                                   0
## 6                                                                                   0
##   X2.4.4..Ethical.considerations.during.surveillance
## 1                                                   0
## 2                                                 100
## 3                                                  50
## 4                                                  50
## 5                                                  50
## 6                                                  50
##   X2.4.4a..Confidentiality.legislation.regulations.for.identifiable.health.information
## 1                                                                                   0
## 2                                                                                 100
## 3                                                                                 100
## 4                                                                                 100
```

```
## 5                                                                                100
## 6                                                                                100
##   X2.4.4b..Inclusion.of.cyber.protections.in.health.data.confidentiality.law.regulation
## 1                                                                                   0
## 2                                                                                 100
## 3                                                                                   0
## 4                                                                                   0
## 5                                                                                   0
## 6                                                                                   0
##   X2.4.5..International.data.sharing
## 1                                  0
## 2                                  0
## 3                                  0
## 4                                  0
## 5                                100
## 6                                  0
##   X2.4.5a..Cooperative.commitments.or.agreements.within.regions
## 1                                                             0
## 2                                                             0
## 3                                                             0
## 4                                                             0
## 5                                                           100
## 6                                                             0
##   X2.5..Case.based.investigation X2.5.1..Case.investigation.and.contact.tracing
## 1                            0.0                                              0
## 2                           37.5                                             25
## 3                            0.0                                              0
## 4                            0.0                                              0
## 5                            0.0                                              0
## 6                            0.0                                              0
##   X2.5.1a..National.support.to.conduct.contact.tracing.in.the.event.of.a.public.health.e
mergency
## 1
0
## 2
50
## 3
0
## 4
0
## 5
0
## 6
0
##   X2.5.1b..Provision.of.wraparound.services.to.enable.self.isolation.quarantine.as.recom
mended
## 1
0
## 2
0
## 3
0
## 4
0
## 5
0
## 6
```

```
##   X2.5.2..Point.of.entry.management
## 1                                 0
## 2                                50
## 3                                 0
## 4                                 0
## 5                                 0
## 6                                 0
##   X2.5.2a..Strategy.for.tracing.and.quarantining.international.travelers
## 1                                                                      0
## 2                                                                     50
## 3                                                                      0
## 4                                                                      0
## 5                                                                      0
## 6                                                                      0
##   X2.6..Epidemiology.workforce
## 1                           50
## 2                          100
## 3                            0
## 4                            0
## 5                           25
## 6                           25
##   X2.6.1..Existence.of.applied.epidemiology.training.program.such.FETP.and.FETPV
## 1                                                                            100
## 2                                                                            100
## 3                                                                              0
## 4                                                                              0
## 5                                                                             50
## 6                                                                             50
##   X2.6.1a..Access.to.field.epidemiology.training.program.in.country.and.or.abroad
## 1                                                                             100
## 2                                                                             100
## 3                                                                               0
## 4                                                                               0
## 5                                                                             100
## 6                                                                             100
##   X2.6.1b..Existence.of.field.epidemiology.training.for.animal.health.professionals
## 1                                                                               100
## 2                                                                               100
## 3                                                                                 0
## 4                                                                                 0
## 5                                                                                 0
## 6                                                                                 0
##   X2.6.2..Epidemiology.workforce.capacity
## 1                                       0
## 2                                     100
## 3                                       0
## 4                                       0
## 5                                       0
## 6                                       0
##   X2.6.2a..Evidence.of.at.least.1.trained.field.epidemiologist.per.200.000.people
## 1                                                                               0
## 2                                                                             100
## 3                                                                               0
## 4                                                                               0
## 5                                                                               0
## 6                                                                               0
```

```
##   X3..RAPID.RESPONSE.TO.AND.MITIGATION.OF.THE.SPREAD.OF.AN.EPIDEMIC
## 1                                                                24.5
## 2                                                                38.1
## 3                                                                25.6
## 4                                                                39.5
## 5                                                                31.6
## 6                                                                32.1
##   X3.1..Emergency.preparedness.and.response.planning
## 1                                               20.8
## 2                                               16.7
## 3                                               16.7
## 4                                               20.8
## 5                                               16.7
## 6                                               16.7
##   X3.1.1..National.public.health.emergency.preparedness.and.response.plan
## 1                                                                    12.5
## 2                                                                     0.0
## 3                                                                     0.0
## 4                                                                    12.5
## 5                                                                     0.0
## 6                                                                     0.0
##   X3.1.1a..National.emergency.response.plan.for.diseases.with.pandemic.potential
## 1                                                                             50
## 2                                                                              0
## 3                                                                              0
## 4                                                                             50
## 5                                                                              0
## 6                                                                              0
##   X3.1.1b..National.public.health.emergency.response.plan.updated.in.past.3.years
## 1                                                                               0
## 2                                                                               0
## 3                                                                               0
## 4                                                                               0
## 5                                                                               0
## 6                                                                               0
##   X3.1.1c..Vulnerable.populations.in.national.public.health.emergency.response.plan
## 1                                                                                 0
## 2                                                                                 0
## 3                                                                                 0
## 4                                                                                 0
## 5                                                                                 0
## 6                                                                                 0
##   X3.1.1d..Existence.of.public.pandemic.influenza.preparedness.plan.updated.since.2009
## 1                                                                                    0
## 2                                                                                    0
## 3                                                                                    0
## 4                                                                                    0
## 5                                                                                    0
## 6                                                                                    0
##   X3.1.2..Private.sector.involvement.in.response.planning
## 1                                                       0
## 2                                                       0
## 3                                                       0
## 4                                                       0
## 5                                                       0
## 6                                                       0
##   X3.1.2a..Mechanism.to.engage.private.sector.in.outbreak.preparedness.response
```

```
## 1                                                                         0
## 2                                                                         0
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X3.1.3..Non.pharmaceutical.interventions.planning
## 1                                                50
## 2                                                50
## 3                                                50
## 4                                                50
## 5                                                50
## 6                                                50
##   X3.1.3a..Policy.plan.guidelines.in.place.to.implement.non.pharmaceutical.interventions
..NPIs.
## 1
50
## 2
50
## 3
50
## 4
50
## 5
50
## 6
50
##   X3.2..Exercising.response.plans X3.2.1..Activating.response.plans
## 1                              25                                50
## 2                              25                                50
## 3                              25                                50
## 4                              25                                50
## 5                              25                                50
## 6                               0                                 0
##   X3.2.1a..Completion.of.biological.focused.IHR.exercise.with.the.WHO.in.past.year
## 1                                                                              100
## 2                                                                              100
## 3                                                                              100
## 4                                                                              100
## 5                                                                              100
## 6                                                                                0
##   X3.2.1b..Evidence.of.bio.focused.exercise.to.identify.gaps.best.practices
## 1                                                                         0
## 2                                                                         0
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X3.2.2..Private.sector.engagement.in.exercises
## 1                                              0
## 2                                              0
## 3                                              0
## 4                                              0
## 5                                              0
## 6                                              0
##   X3.2.2a..Evidence.of.national.level.biological.threat.focused.exercise.that.includes.p
rivate.sector
```

```
## 1
0
## 2
0
## 3
0
## 4
0
## 5
0
## 6
0
##   X3.3..Emergency.response.operation X3.3.1..Emergency.response.operation
## 1                               33.3                                 33.3
## 2                               33.3                                 33.3
## 3                               33.3                                 33.3
## 4                                0.0                                  0.0
## 5                                0.0                                  0.0
## 6                               33.3                                 33.3
##   X3.3.1a..Existence.of.Emergency.Operations.Center..EOC.
## 1                                                     100
## 2                                                     100
## 3                                                     100
## 4                                                       0
## 5                                                       0
## 6                                                     100
##   X3.3.1b..Requirement.for.EOC.to.conduct.evidence.EOC.conducts.at.least.annual.drills
## 1                                                                                    0
## 2                                                                                    0
## 3                                                                                    0
## 4                                                                                    0
## 5                                                                                    0
## 6                                                                                    0
##   X3.3.1c..EOC.activation.within.120.minutes.of.identification.of.emergency.scenario
## 1                                                                                  0
## 2                                                                                  0
## 3                                                                                  0
## 4                                                                                  0
## 5                                                                                  0
## 6                                                                                  0
##   X3.4..Linking.public.health.and.security.authorities
## 1                                                    0
## 2                                                    0
## 3                                                    0
## 4                                                    0
## 5                                                    0
## 6                                                    0
##   X3.4.1..Public.health.and.security.authorities.linked.for.a.biological.event
## 1                                                                           0
## 2                                                                           0
## 3                                                                           0
## 4                                                                           0
## 5                                                                           0
## 6                                                                           0
##   X3.4.1a..Joint.exercise.procedures.for.potential.deliberate.biological.events
## 1                                                                             0
## 2                                                                             0
```

```
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X3.5..Risk.communication X3.5.1..Risk.communication.planning
## 1                     25.0                                   0
## 2                    100.0                                 100
## 3                     37.5                                   0
## 4                     50.0                                   0
## 5                     87.5                                 100
## 6                     37.5                                   0
##   X3.5.1a..Risk.communication.plan.for.specific.use.during.a.public.health.emergency
## 1                                                                                  0
## 2                                                                                100
## 3                                                                                  0
## 4                                                                                  0
## 5                                                                                100
## 6                                                                                  0
##   X3.5.1b..Inclusion.of.different.population...sector.needs.in.risk.communication.plan
## 1                                                                                    0
## 2                                                                                  100
## 3                                                                                    0
## 4                                                                                    0
## 5                                                                                  100
## 6                                                                                    0
##   X3.5.1c..Designation.of.a.specific.government.spokesperson.during.a.public.health.emer
gency
## 1
0
## 2
100
## 3
0
## 4
0
## 5
100
## 6
0
##   X3.5.2..Public.health.systems.communication
## 1                                          50
## 2                                         100
## 3                                          75
## 4                                         100
## 5                                          75
## 6                                          75
##   X3.5.2a..Government.use.of.media.platforms.to.share.info.on.public.health.emergencies
## 1                                                                                     0
## 2                                                                                   100
## 3                                                                                    50
## 4                                                                                   100
## 5                                                                                    50
## 6                                                                                    50
##   X3.5.2b..Evidence.that.senior.leaders.have.shared.mis.disinformation.on.infectious.dis
eases
## 1
100
```

```
## 2
100
## 3
100
## 4
100
## 5
100
## 6
100
##   X3.6..Access.to.communications.infrastructure X3.6.1..Internet.users
## 1                                          17.4                   13.5
## 2                                          66.4                   69.8
## 3                                          66.4                   59.8
## 4                                          81.0                   91.9
## 5                                          41.7                   14.3
## 6                                          87.1                   76.2
##   X3.6.1a..Percentage.of.households.with.Internet X3.6.2..Mobile.subscribers
## 1                                            13.5                       23.9
## 2                                            69.8                       41.1
## 3                                            59.8                       50.9
## 4                                            91.9                       53.3
## 5                                            14.3                       17.0
## 6                                            76.2                       95.8
##   X3.6.2a..Mobile.cellular.telephone.subscriptions.per.100.inhabitants
## 1                                                                 23.9
## 2                                                                 41.1
## 3                                                                 50.9
## 4                                                                 53.3
## 5                                                                 17.0
## 6                                                                 95.8
##   X3.6.3..Female.access.to.a.mobile.phone
## 1                                    11.4
## 2                                    79.5
## 3                                    84.1
## 4                                    95.5
## 5                                    77.3
## 6                                    93.2
##   X3.6.3a..Gender.gap.in.access.to.a.mobile.phone..percentage.points.
## 1                                                                11.4
## 2                                                                79.5
## 3                                                                84.1
## 4                                                                95.5
## 5                                                                77.3
## 6                                                                93.2
##   X3.6.4..Female.access.to.the.Internet
## 1                                  20.8
## 2                                  75.0
## 3                                  70.8
## 4                                  83.3
## 5                                  58.3
## 6                                  83.3
##   X3.6.4a..Gender.gap.in.access.to.the.Internet..percentage.points.
## 1                                                              20.8
## 2                                                              75.0
## 3                                                              70.8
## 4                                                              83.3
```

```
## 5                                                                  58.3
## 6                                                                  83.3
##   X3.7..Trade.and.travel.restrictions X3.7.1..Trade.restrictions
## 1                                  50                        100
## 2                                  25                         50
## 3                                   0                          0
## 4                                 100                        100
## 5                                  50                        100
## 6                                  50                        100
##   X3.7.1a..Restrictions.on.export.import.of.medical.goods.due.to.an.infectious.disease.o
utbreak
## 1
100
## 2
0
## 3
0
## 4
100
## 5
100
## 6
100
##   X3.7.1b..Restrictions.on.movement.and.or.exports.imports.due.to.disease.outbreak
## 1                                                                              100
## 2                                                                              100
## 3                                                                                0
## 4                                                                              100
## 5                                                                              100
## 6                                                                              100
##   X3.7.2..Travel.restrictions
## 1                           0
## 2                           0
## 3                           0
## 4                         100
## 5                           0
## 6                           0
##   X3.7.2a..Evidence.of.travel.ban.due.to.an.infectious.disease.outbreak
## 1                                                                     0
## 2                                                                     0
## 3                                                                     0
## 4                                                                   100
## 5                                                                     0
## 6                                                                     0
##   X4..SUFFICIENT...ROBUST.HEALTH.SECTOR.TO.TREAT.THE.SICK...PROTECT.HEALTH.WORKERS
## 1                                                                             23.0
## 2                                                                             47.4
## 3                                                                             15.0
## 4                                                                             15.4
## 5                                                                             23.1
## 6                                                                             16.7
##   X4.1..Health.capacity.in.clinics..hospitals.and.community.care.centers
## 1                                                                   51.0
## 2                                                                   42.1
## 3                                                                   23.5
## 4                                                                   29.4
## 5                                                                   18.2
```

```
## 6                                                                    46.2
##   X4.1.1..Available.human.resources.for.the.broader.healthcare.system
## 1                                                                34.5
## 2                                                                10.7
## 3                                                                 9.2
## 4                                                                19.7
## 5                                                                 1.4
## 6                                                                19.0
##   X4.1.1a..Doctors.per.100.000.people
## 1                                 3.1
## 2                                14.3
## 3                                20.3
## 4                                39.5
## 5                                 2.4
## 6                                35.0
##   X4.1.1b..Nurses.and.midwives.per.100.000.people
## 1                                             0.5
## 2                                            17.8
## 3                                             7.3
## 4                                            19.6
## 5                                             1.7
## 6                                            22.1
##   X4.1.1c..Updated.health.workforce.strategy.to.address.human.resource.shortfalls
## 1                                                                              100
## 2                                                                                0
## 3                                                                                0
## 4                                                                                0
## 5                                                                                0
## 6                                                                                0
##   X4.1.2..Facilities.capacity X4.1.2a..Hospital.beds.per.100.000.people
## 1                        67.4                                       2.1
## 2                        73.5                                      20.4
## 3                        37.7                                      13.1
## 4                        39.2                                      17.5
## 5                        35.0                                       5.1
## 6                        73.5                                      20.4
##   X4.1.2b..In.country.capacity.to.isolate.patients.with.highly.communicable.diseases
## 1                                                                                100
## 2                                                                                100
## 3                                                                                  0
## 4                                                                                100
## 5                                                                                  0
## 6                                                                                100
##   X4.1.2c..Demonstrated.capacity...evidence.of.plan.to.expand.isolation.capacity
## 1                                                                            100
## 2                                                                            100
## 3                                                                            100
## 4                                                                              0
## 5                                                                            100
## 6                                                                            100
##   X4.2..Supply.chain.for.health.system.and.healthcare.workers
## 1                                                         0.0
## 2                                                        77.8
## 3                                                         0.0
## 4                                                        33.3
## 5                                                        61.1
## 6                                                        16.7
```

```
##   X4.2.1..Routine.health.care.and.laboratory.system.supply
## 1                                                        0
## 2                                                      100
## 3                                                        0
## 4                                                      100
## 5                                                      100
## 6                                                       50
##   X4.2.1a..National.procurement.protocol.for.the.acquisition.of.routine.laboratory.medic
al.supplies
## 1
0
## 2
100
## 3
0
## 4
100
## 5
100
## 6
50
##   X4.2.2..Stockpiling.for.emergencies
## 1                                0.0
## 2                               33.3
## 3                                0.0
## 4                                0.0
## 5                               33.3
## 6                                0.0
##   X4.2.2a..Stockpile.of.medical.supplies.for.national.use.during.a.public.health.emergen
cy
## 1
0
## 2                                                                                       1
00
## 3
0
## 4
0
## 5                                                                                       1
00
## 6
0
##   X4.2.2b..Stockpile.of.laboratory.supplies.for.national.use.during.a.public.health.emer
gency
## 1
0
## 2
0
## 3
0
## 4
0
## 5
0
## 6
0
##   X4.2.2c..Annual.review.of.national.stockpile.to.ensure.sufficient.supply
```

```
## 1                                                                         0
## 2                                                                         0
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X4.2.3..Manufacturing.and.procurement.for.emergencies
## 1                                                     0
## 2                                                   100
## 3                                                     0
## 4                                                     0
## 5                                                    50
## 6                                                     0
##   X4.2.3a..Plan.agreement.to.produce.procure.medical.supplies.during.a.public.health.eme
rgency
## 1
0
## 2
100
## 3
0
## 4
0
## 5
100
## 6
0
##   X4.2.3b..Plan.agreement.to.produce.procure.lab.supplies.during.a.public.health.emergen
cy
## 1
0
## 2                                                                                     1
00
## 3
0
## 4
0
## 5
0
## 6
0
##   X4.3..Medical.countermeasures.and.personnel.deployment
## 1                                                      0
## 2                                                     50
## 3                                                      0
## 4                                                      0
## 5                                                      0
## 6                                                      0
##   X4.3.1..System.for.dispensing.MCMs.during.a.public.health.emergency
## 1                                                                   0
## 2                                                                   0
## 3                                                                   0
## 4                                                                   0
## 5                                                                   0
## 6                                                                   0
##   X4.3.1a..Plan.program.guidelines.for.dispensing.MCMs.during.a.public.health.emergency
## 1                                                                                     0
```

```
## 2                                                                                  0
## 3                                                                                  0
## 4                                                                                  0
## 5                                                                                  0
## 6                                                                                  0
##   X4.3.2..System.for.receiving.foreign.health.personnel.during.a.public.health.emergency
## 1                                                                                      0
## 2                                                                                    100
## 3                                                                                      0
## 4                                                                                      0
## 5                                                                                      0
## 6                                                                                      0
##   X4.3.2a..Plan.to.receive.foreign.health.personnel.during.a.public.health.emergency
## 1                                                                                  0
## 2                                                                                100
## 3                                                                                  0
## 4                                                                                  0
## 5                                                                                  0
## 6                                                                                  0
##   X4.4..Healthcare.access X4.4.1..Access.to.healthcare
## 1                    60.0                         79.9
## 2                    61.8                         85.4
## 3                    56.4                         69.3
## 4                    45.2                         35.7
## 5                    57.4                         72.2
## 6                    53.8                         61.4
##   X4.4.1a..Constitutional.guarantee.of.citizens..right.to.medical.care
## 1                                                                  100
## 2                                                                   75
## 3                                                                   25
## 4                                                                    0
## 5                                                                   75
## 6                                                                    0
##   X4.4.1b..Access.to.skilled.birth.attendants....of.population.
## 1                                                          45.4
## 2                                                          99.8
## 3                                                          96.2
## 4                                                          99.0
## 5                                                          44.4
## 6                                                         100.0
##   X4.4.1c..Out.of.pocket.health.expenditures.per.capita..PPP..current.international...
## 1                                                                                 94.4
## 2                                                                                 81.5
## 3                                                                                 86.7
## 4                                                                                  8.0
## 5                                                                                 97.3
## 6                                                                                 84.3
##   X4.4.2..Paid.medical.leave X4.4.2a..Guaranteed.paid.sick.leave
## 1                        100                                 100
## 2                        100                                 100
## 3                        100                                 100
## 4                        100                                 100
## 5                        100                                 100
## 6                        100                                 100
##   X4.4.3..Healthcare.worker.access.to.healthcare
## 1                                              0
## 2                                              0
```

```
## 3                                                 0
## 4                                                 0
## 5                                                 0
## 6                                                 0
##   X4.4.3a..Government.prioritisation.of.care.for.healthcare.workers.during.response
## 1                                                                                 0
## 2                                                                                 0
## 3                                                                                 0
## 4                                                                                 0
## 5                                                                                 0
## 6                                                                                 0
##   X4.5..Communications.with.healthcare.workers.during.a.public.health.emergency
## 1                                                                              0
## 2                                                                             50
## 3                                                                              0
## 4                                                                              0
## 5                                                                              0
## 6                                                                              0
##   X4.5.1..Communication.with.healthcare.workers
## 1                                             0
## 2                                            50
## 3                                             0
## 4                                             0
## 5                                             0
## 6                                             0
##   X4.5.1a..Existence.of.system.for.communication.during.a.public.health.emergency
## 1                                                                               0
## 2                                                                             100
## 3                                                                               0
## 4                                                                               0
## 5                                                                               0
## 6                                                                               0
##   X4.5.1b..Inclusion.of.public.and.private.sector.in.healthcare.communication.system
## 1                                                                                 0
## 2                                                                                 0
## 3                                                                                 0
## 4                                                                                 0
## 5                                                                                 0
## 6                                                                                 0
##   X4.6..Infection.control.practices
## 1                                 0
## 2                                 0
## 3                                 0
## 4                                 0
## 5                                 0
## 6                                 0
##   X4.6.1..Healthcare.associated.infection..HCAI..monitoring
## 1                                                         0
## 2                                                         0
## 3                                                         0
## 4                                                         0
## 5                                                         0
## 6                                                         0
##   X4.6.1a..Evidence.of.national.public.health.system.monitoring.and.tracking.of.HCAIs
## 1                                                                                  0
## 2                                                                                  0
## 3                                                                                  0
```

```
## 4                                                                                                  0
## 5                                                                                                  0
## 6                                                                                                  0
##   X4.7..Capacity.to.test.and.approve.new.medical.countermeasures
## 1                                                             50
## 2                                                             50
## 3                                                             25
## 4                                                              0
## 5                                                             25
## 6                                                              0
##   X4.7.1..Regulatory.process.for.clinical.trials.of.unregistered.interventions
## 1                                                                           50
## 2                                                                           50
## 3                                                                           50
## 4                                                                            0
## 5                                                                            0
## 6                                                                            0
##   X4.7.1a..Requirement.for.ethical.review.before.beginning.a.clinical.trial
## 1                                                                       100
## 2                                                                       100
## 3                                                                       100
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X4.7.1b..Expedited.approval.for.clinical.trials.of.unregistered.MCMs.during.epidemics
## 1                                                                                     0
## 2                                                                                     0
## 3                                                                                     0
## 4                                                                                     0
## 5                                                                                     0
## 6                                                                                     0
##   X4.7.2..Regulatory.process.for.approving.medical.countermeasures
## 1                                                               50
## 2                                                               50
## 3                                                                0
## 4                                                                0
## 5                                                               50
## 6                                                                0
##   X4.7.2a..Existence.of.agency.responsible.for.approving.new.human.MCMs
## 1                                                                   100
## 2                                                                   100
## 3                                                                     0
## 4                                                                     0
## 5                                                                   100
## 6                                                                     0
##   X4.7.2b..Expedited.approval.for.human.MCMs.during.public.health.emergencies
## 1                                                                           0
## 2                                                                           0
## 3                                                                           0
## 4                                                                           0
## 5                                                                           0
## 6                                                                           0
##   X5..COMMITMENTS.TO.IMPROVING.NATIONAL.CAPACITY..FINANCING.AND.ADHERENCE.TO.NORMS
## 1                                                                             60.9
## 2                                                                             52.1
## 3                                                                             38.9
## 4                                                                             43.2
```

```
## 5                                                                               47.7
## 6                                                                               45.5
##   X5.1..IHR.reporting.compliance.and.disaster.risk.reduction
## 1                                                         50
## 2                                                         50
## 3                                                         50
## 4                                                        100
## 5                                                         50
## 6                                                         50
##   X5.1.1..Official.IHR.reporting
## 1                            100
## 2                            100
## 3                            100
## 4                            100
## 5                            100
## 6                              0
##   X5.1.1a..Submission.of.IHR.reports.to.the.WHO.in.past.year
## 1                                                        100
## 2                                                        100
## 3                                                        100
## 4                                                        100
## 5                                                        100
## 6                                                          0
##   X5.1.2..Integration.of.health.into.disaster.risk.reduction
## 1                                                          0
## 2                                                          0
## 3                                                          0
## 4                                                        100
## 5                                                          0
## 6                                                        100
##   X5.1.2a..Existence.of.specific.risk.reduction.strategies.for.epidemics.and.pandemics
## 1                                                                                    0
## 2                                                                                    0
## 3                                                                                    0
## 4                                                                                  100
## 5                                                                                    0
## 6                                                                                  100
##   X5.2..Cross.border.agreements.on.public.health.and.animal.health.emergency.response
## 1                                                                                  50
## 2                                                                                 100
## 3                                                                                  50
## 4                                                                                  50
## 5                                                                                  50
## 6                                                                                 100
##   X5.2.1..Cross.border.agreements
## 1                              50
## 2                             100
## 3                              50
## 4                              50
## 5                              50
## 6                             100
##   X5.2.1a..Existence.of.public.health.emergency.agreements.with.regional.neighbors
## 1                                                                              100
## 2                                                                              100
## 3                                                                              100
## 4                                                                              100
## 5                                                                              100
```

```
## 6                                                                              100
##   X5.2.1b..Existence.of.animal.health.emergency.agreements.with.regional.neighbors
## 1                                                                                0
## 2                                                                              100
## 3                                                                                0
## 4                                                                                0
## 5                                                                                0
## 6                                                                              100
##   X5.3..International.commitments
## 1                            90.6
## 2                            37.5
## 3                            50.0
## 4                            34.4
## 5                            28.1
## 6                            31.3
##   X5.3.1..Participation.in.international.agreements
## 1                                              81.3
## 2                                              75.0
## 3                                             100.0
## 4                                              68.8
## 5                                              56.3
## 6                                              62.5
##   X5.3.1a..Biological.and.Toxin.Weapons.Convention.status
## 1                                                     100
## 2                                                     100
## 3                                                     100
## 4                                                     100
## 5                                                     100
## 6                                                     100
##   X5.3.1b..Submission.of.CBMs.to.the.Biological.and.Toxin.Weapons.Convention
## 1                                                                        100
## 2                                                                          0
## 3                                                                        100
## 4                                                                          0
## 5                                                                          0
## 6                                                                          0
##   X5.3.1c..Submission.of.UNSCR.1540.reports
## 1                                       100
## 2                                       100
## 3                                       100
## 4                                       100
## 5                                       100
## 6                                       100
##   X5.3.1d..Extent.of.UNSCR.1540.implementation.on.public.health.emergencies
## 1                                                                        25
## 2                                                                       100
## 3                                                                       100
## 4                                                                        75
## 5                                                                        25
## 6                                                                        50
##   X5.3.2..Voluntary.memberships
## 1                           100
## 2                             0
## 3                             0
## 4                             0
## 5                             0
## 6                             0
```

```
##   X5.3.2a..Membership.in.global.health.security.and.or.biological.weapons.agreements
## 1                                                                                 100
## 2                                                                                   0
## 3                                                                                   0
## 4                                                                                   0
## 5                                                                                   0
## 6                                                                                   0
##   X5.4..JEE.and.PVS
## 1                75
## 2                25
## 3                 0
## 4                 0
## 5                25
## 6                 0
##   X5.4.1..Completion.and.publication.of.a.JEE.assessment.and.gap.analysis
## 1                                                                     100
## 2                                                                      50
## 3                                                                       0
## 4                                                                       0
## 5                                                                      50
## 6                                                                       0
##   X5.4.1a..Completion.and.publication.of.JEE..or.GHSA.pilot.external.assessment..report
## 1                                                                                   100
## 2                                                                                   100
## 3                                                                                     0
## 4                                                                                     0
## 5                                                                                   100
## 6                                                                                     0
##   X5.4.1b..Completion.and.publication.of.a.NAPHS.or.GHSA.roadmap
## 1                                                           100
## 2                                                             0
## 3                                                             0
## 4                                                             0
## 5                                                             0
## 6                                                             0
##   X5.4.2..Completion.and.publication.of.a.PVS.assessment.and.gap.analysis
## 1                                                                      50
## 2                                                                       0
## 3                                                                       0
## 4                                                                       0
## 5                                                                       0
## 6                                                                       0
##   X5.4.2a..Completion.and.publication.of.PVS.report..past.five.years.
## 1                                                                 100
## 2                                                                   0
## 3                                                                   0
## 4                                                                   0
## 5                                                                   0
## 6                                                                   0
##   X5.4.2b..Completion.and.publication.of.PVS.gap.analysis..past.five.years.
## 1                                                                         0
## 2                                                                         0
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X5.5..Financing X5.5.1..National.financing.for.epidemic.preparedness
```

```
## 1            33.3                                                    0
## 2            33.3                                                    0
## 3            16.7                                                    0
## 4             8.3                                                    0
## 5            66.7                                                  100
## 6            25.0                                                    0
##   X5.5.1a..Evidence.of.allocated.national.funds.to.improve.capacity.to.address.epidemic.
threats
## 1
0
## 2
0
## 3
0
## 4
0
## 5
100
## 6
0
##   X5.5.2..Financing.under.JEE.and.PVS.reports.and.gap.analyses
## 1                                                           0
## 2                                                           0
## 3                                                           0
## 4                                                           0
## 5                                                           0
## 6                                                           0
##   X5.5.2a..National.budget.to.address.gaps.identified.in.JEE..NAPHS.or.GHSA.roadmap
## 1                                                                                 0
## 2                                                                                 0
## 3                                                                                 0
## 4                                                                                 0
## 5                                                                                 0
## 6                                                                                 0
##   X5.5.2b..National.budget.to.address.gaps.identified.in.PVS.assessment.or.gap.analysis
## 1                                                                                    0
## 2                                                                                    0
## 3                                                                                    0
## 4                                                                                    0
## 5                                                                                    0
## 6                                                                                    0
##   X5.5.3..Financing.for.emergency.response
## 1                                      100
## 2                                      100
## 3                                        0
## 4                                        0
## 5                                      100
## 6                                      100
##   X5.5.3a..Emergency.public.financing.during.a.public.health.emergency
## 1                                                                  100
## 2                                                                  100
## 3                                                                    0
## 4                                                                    0
## 5                                                                  100
## 6                                                                  100
##   X5.5.4..Accountability.for.international.commitments.to.address.epidemic.threats
## 1                                                                             33.3
```

```
## 2                                                                                 33.3
## 3                                                                                 66.7
## 4                                                                                 33.3
## 5                                                                                 66.7
## 6                                                                                  0.0
##   X5.5.4a..Commitments.to.improve.domestic.or.foreign.capacity.for.epidemic.threats
## 1                                                                                   0
## 2                                                                                   0
## 3                                                                                   0
## 4                                                                                   0
## 5                                                                                   0
## 6                                                                                   0
##   X5.5.4b..Investments.to.improve.domestic.or.foreign.capacity.for.epidemic.threats
## 1                                                                                 100
## 2                                                                                 100
## 3                                                                                 100
## 4                                                                                   0
## 5                                                                                 100
## 6                                                                                   0
##   X5.5.4c..Evidence.that.the.country.has.fulfilled.its.full.WHO.contribution.within.the.
past.two.years
## 1
0
## 2
0
## 3
100
## 4
100
## 5
100
## 6
0
##   X5.6..Commitment.to.sharing.of.genetic...biological.data...specimens
## 1                                                                 66.7
## 2                                                                 66.7
## 3                                                                 66.7
## 4                                                                 66.7
## 5                                                                 66.7
## 6                                                                 66.7
##   X5.6.1..Commitment.to.share.data.and.specimens.in.emergency.non.emergency.research
## 1                                                                                66.7
## 2                                                                                66.7
## 3                                                                                66.7
## 4                                                                                66.7
## 5                                                                                66.7
## 6                                                                                66.7
##   X5.6.1a..Sharing.of.genetic.biological.data.and.materials.beyond.influenza
## 1                                                                         0
## 2                                                                         0
## 3                                                                         0
## 4                                                                         0
## 5                                                                         0
## 6                                                                         0
##   X5.6.1b..Evidence.of.non.compliance.with.sample.sharing.element.of.PIP.framework
## 1                                                                              100
## 2                                                                              100
```

```
## 3                                                                              100
## 4                                                                              100
## 5                                                                              100
## 6                                                                              100
##   X5.6.1c..Evidence.of.non.sharing.of.pandemic.pathogen.samples.during.an.outbreak
## 1                                                                              100
## 2                                                                              100
## 3                                                                              100
## 4                                                                              100
## 5                                                                              100
## 6                                                                              100
##   X6..OVERALL.RISK.ENVIRONMENT.AND.COUNTRY.VULNERABILITY.TO.BIOLOGICAL.THREATS
## 1                                                                         31.6
## 2                                                                         50.6
## 3                                                                         49.7
## 4                                                                         80.5
## 5                                                                         43.9
## 6                                                                         63.2
##   X6.1..Political.and.security.risk X6.1.1..Government.effectiveness
## 1                               5.0                              9.9
## 2                              62.5                             37.3
## 3                              41.6                             15.9
## 4                              92.2                             95.3
## 5                              60.2                             21.7
## 6                              83.5                             51.1
##   X6.1.1a..Policy.formation X6.1.1b..Quality.of.bureaucracy
## 1                        50                               0
## 2                        50                              25
## 3                        25                               0
## 4                       100                             100
## 5                        50                              25
## 6                        50                              50
##   X6.1.1c..Excessive.bureaucracy.red.tape X6.1.1d..Vested.interests.cronyism
## 1                                       0                                  0
## 2                                      25                                  0
## 3                                       0                                  0
## 4                                     100                                100
## 5                                       0                                 25
## 6                                      50                                 50
##   X6.1.1e..Corruption X6.1.1f..Accountability.of.public.officials
## 1                  19                                           0
## 2                  36                                          50
## 3                  36                                          25
## 4                  67                                         100
## 5                  27                                           0
## 6                  58                                          50
##   X6.1.1g..Human.rights.risk X6.1.2..Orderly.transfers.of.power
## 1                          0                                 25
## 2                         75                                 50
## 3                         25                                  0
## 4                        100                                100
## 5                         25                                 75
## 6                         50                                 75
##   X6.1.2a..Orderly.transfers.of.power X6.1.3..Risk.of.social.unrest
## 1                                  25                             0
## 2                                  50                            25
## 3                                   0                             0
```

```
## 4                                  100                             100
## 5                                   75                              50
## 6                                   75                              75
##   X6.1.3a..Risk.of.social.unrest X6.1.4..Illicit.activities.by.non.state.actors
## 1                              0                                             0.0
## 2                             25                                            50.0
## 3                              0                                            50.0
## 4                            100                                            75.0
## 5                             50                                            50.0
## 6                             75                                            83.3
##   X6.1.4a..Risk.of.terrorism
## 1                          0
## 2                         75
## 3                         50
## 4                        100
## 5                         75
## 6                        100
##   X6.1.4b..Level.of.illicit.arms.flows.within.the.country
## 1                                                        0
## 2                                                       50
## 3                                                       50
## 4                                                       25
## 5                                                        0
## 6                                                      100
##   X6.1.4c..Risk.of.organized.criminal.activity X6.1.5..Armed.conflict
## 1                                            0                      0
## 2                                           25                    100
## 3                                           50                     75
## 4                                          100                    100
## 5                                           75                     75
## 6                                           50                    100
##   X6.1.5a..Presence.or.risk.of.armed.conflict
## 1                                           0
## 2                                         100
## 3                                          75
## 4                                         100
## 5                                          75
## 6                                         100
##   X6.1.6..Government.territorial.control
## 1                                      0
## 2                                    100
## 3                                    100
## 4                                    100
## 5                                    100
## 6                                    100
##   X6.1.6a..Government.territorial.control X6.1.7..International.tensions
## 1                                       0                              0
## 2                                     100                             75
## 3                                     100                             50
## 4                                     100                             75
## 5                                     100                             50
## 6                                     100                            100
##   X6.1.7a..International.tensions X6.2..Socio.economic.resilience
## 1                               0                            46.6
## 2                              75                            62.3
## 3                              50                            56.5
## 4                              75                            84.3
```

```
## 5                              50                              40.7
## 6                             100                              58.2
##   X6.2.1..Literacy X6.2.1a..Adult.literacy.rate..15..years.old..both.sexes.
## 1             26.6                                                    26.6
## 2             97.6                                                    97.6
## 3             76.1                                                    76.1
## 4             99.9                                                    99.9
## 5             56.2                                                    56.2
## 6             98.7                                                    98.7
##   X6.2.2..Gender.equality X6.2.2a..UNDP.Gender.Inequality.Index.score
## 1                    32.5                                         32.5
## 2                    75.3                                         75.3
## 3                    49.1                                         49.1
## 4                    82.7                                         82.7
## 5                    32.1                                         32.1
## 6                    63.1                                         63.1
##   X6.2.3..Social.inclusion X6.2.3a..Poverty.gap.at..1.90.a.day..2011.PPP.....
## 1                     30.8                                              92.4
## 2                     72.1                                              99.5
## 3                     72.1                                              99.5
## 4                     99.8                                              99.5
## 5                     24.2                                              39.2
## 6                     60.9                                              99.2
##   X6.2.3b..Share.of.employment.in.the.informal.sector
## 1                                                   0
## 2                                                  50
## 3                                                  50
## 4                                                 100
## 5                                                   0
## 6                                                  50
##   X6.2.3c..Coverage.of.social.insurance.programs....of.population.
## 1                                                              0.0
## 2                                                             66.7
## 3                                                             66.7
## 4                                                            100.0
## 5                                                             33.3
## 6                                                             33.3
##   X6.2.4..Public.confidence.in.government
## 1                                       0
## 2                                       0
## 3                                       0
## 4                                      50
## 5                                      50
## 6                                      50
##   X6.2.4a..Public.confidence.in.government X6.2.5..Local.media.and.reporting
## 1                                        0                               100
## 2                                        0                                50
## 3                                        0                                50
## 4                                       50                               100
## 5                                       50                                50
## 6                                       50                                50
##   X6.2.5a..Robust..open..diverse.local.media.and.reporting X6.2.6..Inequality
## 1                                                      100               89.5
## 2                                                       50               78.9
## 3                                                       50               92.1
## 4                                                      100               73.7
## 5                                                       50               31.6
```

```
## 6                                                                 50                26.3
##   X6.2.6a..Gini.coefficient X6.3..Infrastructure.adequacy
## 1                      89.5                           0.0
## 2                      78.9                          33.3
## 3                      92.1                          41.7
## 4                      73.7                         100.0
## 5                      31.6                          33.3
## 6                      26.3                          66.7
##   X6.3.1..Adequacy.of.road.network X6.3.1a..Adequacy.of.road.network
## 1                                0                                  0
## 2                               25                                 25
## 3                               25                                 25
## 4                              100                                100
## 5                               25                                 25
## 6                               75                                 75
##   X6.3.2..Adequacy.of.airports X6.3.2a..Adequacy.of.airports
## 1                            0                             0
## 2                           50                            50
## 3                           50                            50
## 4                          100                           100
## 5                           50                            50
## 6                           75                            75
##   X6.3.3..Adequacy.of.power.network X6.3.3a..Adequacy.of.power.network
## 1                                 0                                  0
## 2                                25                                 25
## 3                                50                                 50
## 4                               100                                100
## 5                                25                                 25
## 6                                50                                 50
##   X6.4..Environmental.risks X6.4.1..Urbanisation
## 1                      61.3                 85.6
## 2                      48.4                 44.8
## 3                      59.8                 30.9
## 4                      62.4                 13.8
## 5                      45.6                 39.0
## 6                      50.6                 87.1
##   X6.4.1a..Urban.population....of.total.population. X6.4.2..Land.use
## 1                                              85.6             73.4
## 2                                              44.8             75.3
## 3                                              30.9             73.5
## 4                                              13.8             73.4
## 5                                              39.0             47.7
## 6                                              87.1             64.7
##   X6.4.2a..Change.in.forest.area..percentage.points.
## 1                                                73.4
## 2                                                75.3
## 3                                                73.5
## 4                                                73.4
## 5                                                47.7
## 6                                                64.7
##   X6.4.3..Natural.disaster.risk X6.4.3a..Natural.disaster.risk
## 1                            25                             25
## 2                            25                             25
## 3                            75                             75
## 4                           100                            100
## 5                            50                             50
## 6                             0                              0
```

```
##   X6.5..Public.health.vulnerabilities X6.5.1..Access.to.quality.healthcare
## 1                                45.1                                  61.9
## 2                                46.5                                  62.1
## 3                                49.0                                  71.0
## 4                                63.5                                  62.1
## 5                                39.6                                  70.0
## 6                                57.1                                  73.1
##   X6.5.1a..Total.life.expectancy..years. X6.5.1b..NCD.mortality.rate
## 1                                   31.9                        38.2
## 2                                   70.1                        64.9
## 3                                   65.3                        79.8
## 4                                   82.2                        77.8
## 5                                   21.8                        63.1
## 6                                   65.8                        74.6
##   X6.5.1c..Population.aged.65. X6.5.1d..Tobacco.use....of.adults.
## 1                         95.7                               49.4
## 2                         61.6                               47.3
## 3                         84.1                               68.8
## 4                         52.3                               37.8
## 5                         96.9                               78.6
## 6                         76.8                               77.1
##   X6.5.1e..Level.of.adult.obesity....
## 1                                94.2
## 2                                66.7
## 3                                57.0
## 4                                60.1
## 5                                89.6
## 6                                71.5
##   X6.5.2..Access.to.potable.water.and.sanitation
## 1                                           43.2
## 2                                           92.7
## 3                                           89.3
## 4                                          100.0
## 5                                           37.4
## 6                                           91.8
##   X6.5.2a..Access.to.potable.water
## 1                             47.1
## 2                             86.7
## 3                             91.0
## 4                            100.0
## 5                             28.4
## 6                             96.2
##   X6.5.2b..Access.to.at.least.basic.sanitation.facilities
## 1                                                     39.4
## 2                                                     98.6
## 3                                                     87.6
## 4                                                    100.0
## 5                                                     46.5
## 6                                                     87.5
##   X6.5.3..Public.healthcare.spending.levels.per.capita
## 1                                                  0.1
## 2                                                  6.4
## 3                                                 10.8
## 4                                                 42.1
## 5                                                  1.1
## 6                                                 13.3
##   X6.5.3a..Domestic.general.government.health.expenditure.per.capita..PPP.
```

```
## 1                                                                    0.1
## 2                                                                    6.4
## 3                                                                   10.8
## 4                                                                   42.1
## 5                                                                    1.1
## 6                                                                   13.3
##   X6.5.4..Trust.in.medical.and.health.advice
## 1                                         75
## 2                                         25
## 3                                         25
## 4                                         50
## 5                                         50
## 6                                         50
##   X6.5.4a..Trust.medical.and.health.advice.from.the.government
## 1                                                          100
## 2                                                            0
## 3                                                            0
## 4                                                           50
## 5                                                           50
## 6                                                           50
##   X6.5.4b..Trust.medical.and.health.advice.from.medical.workers
## 1                                                            50
## 2                                                            50
## 3                                                            50
## 4                                                            50
## 5                                                            50
## 6                                                            50
```

All countries and columns names from the external csv file

```
# List out all countries
unique(corona$Country)
```

```
##   [1] "Afghanistan"                    "Albania"
##   [3] "Algeria"                        "Andorra"
##   [5] "Angola"                         "Antigua & Barbuda"
##   [7] "Argentina"                      "Armenia"
##   [9] "Australia"                      "Austria"
##  [11] "Azerbaijan"                     "Bahamas"
##  [13] "Bahrain"                        "Bangladesh"
##  [15] "Barbados"                       "Belarus"
##  [17] "Belgium"                        "Belize"
##  [19] "Benin"                          "Bhutan"
##  [21] "Bolivia"                        "Bosnia and Hercegovina"
##  [23] "Botswana"                       "Brazil"
##  [25] "Brunei"                         "Bulgaria"
##  [27] "Burkina Faso"                   "Burundi"
##  [29] "Cabo Verde"                     "Cambodia"
##  [31] "Cameroon"                       "Canada"
##  [33] "Central African Republic"       "Chad"
##  [35] "Chile"                          "China"
##  [37] "Colombia"                       "Comoros"
##  [39] "Congo (Brazzaville)"            "Congo (Democratic Republic)"
##  [41] "Cook Islands"                   "Costa Rica"
##  [43] "Côte d'Ivoire"                  "Croatia"
##  [45] "Cuba"                           "Cyprus"
##  [47] "Czech Republic"                 "Denmark"
##  [49] "Djibouti"                       "Dominica"
```

```
##  [51] "Dominican Republic"            "Ecuador"
##  [53] "Egypt"                         "El Salvador"
##  [55] "Equatorial Guinea"             "Eritrea"
##  [57] "Estonia"                       "eSwatini"
##  [59] "Ethiopia"                      "Fiji"
##  [61] "Finland"                       "France"
##  [63] "Gabon"                         "Gambia"
##  [65] "Georgia"                       "Germany"
##  [67] "Ghana"                         "Greece"
##  [69] "Grenada"                       "Guatemala"
##  [71] "Guinea"                        "Guinea-Bissau"
##  [73] "Guyana"                        "Haiti"
##  [75] "Honduras"                      "Hungary"
##  [77] "Iceland"                       "India"
##  [79] "Indonesia"                     "Iran"
##  [81] "Iraq"                          "Ireland"
##  [83] "Israel"                        "Italy"
##  [85] "Jamaica"                       "Japan"
##  [87] "Jordan"                        "Kazakhstan"
##  [89] "Kenya"                         "Kiribati"
##  [91] "Kuwait"                        "Kyrgyz Republic"
##  [93] "Laos"                          "Latvia"
##  [95] "Lebanon"                       "Lesotho"
##  [97] "Liberia"                       "Libya"
##  [99] "Liechtenstein"                 "Lithuania"
## [101] "Luxembourg"                    "Madagascar"
## [103] "Malawi"                        "Malaysia"
## [105] "Maldives"                      "Mali"
## [107] "Malta"                         "Marshall Islands"
## [109] "Mauritania"                    "Mauritius"
## [111] "Mexico"                        "Micronesia, Federated States of"
## [113] "Moldova"                       "Monaco"
## [115] "Mongolia"                      "Montenegro"
## [117] "Morocco"                       "Mozambique"
## [119] "Myanmar"                       "Namibia"
## [121] "Nauru"                         "Nepal"
## [123] "Netherlands"                   "New Zealand"
## [125] "Nicaragua"                     "Niger"
## [127] "Nigeria"                       "Niue"
## [129] "North Korea"                   "North Macedonia"
## [131] "Norway"                        "Oman"
## [133] "Pakistan"                      "Palau"
## [135] "Panama"                        "Papua New Guinea"
## [137] "Paraguay"                      "Peru"
## [139] "Philippines"                   "Poland"
## [141] "Portugal"                      "Qatar"
## [143] "Romania"                       "Russia"
## [145] "Rwanda"                        "Samoa"
## [147] "San Marino"                    "São Tomé and Príncipe"
## [149] "Saudi Arabia"                  "Senegal"
## [151] "Serbia"                        "Seychelles"
## [153] "Sierra Leone"                  "Singapore"
## [155] "Slovakia"                      "Slovenia"
## [157] "Solomon Islands"               "Somalia"
## [159] "South Africa"                  "South Korea"
## [161] "South Sudan"                   "Spain"
## [163] "Sri Lanka"                     "St Kitts & Nevis"
```

```
## [165] "St Lucia"                          "St Vincent & The Grenadines"
## [167] "Sudan"                             "Suriname"
## [169] "Sweden"                            "Switzerland"
## [171] "Syria"                             "Tajikistan"
## [173] "Tanzania"                          "Thailand"
## [175] "Timor-Leste"                       "Togo"
## [177] "Tonga"                             "Trinidad and Tobago"
## [179] "Tunisia"                           "Turkey"
## [181] "Turkmenistan"                      "Tuvalu"
## [183] "Uganda"                            "Ukraine"
## [185] "United Arab Emirates"              "United Kingdom"
## [187] "United States of America"          "Uruguay"
## [189] "Uzbekistan"                        "Vanuatu"
## [191] "Venezuela"                         "Vietnam"
## [193] "Yemen"                             "Zambia"
## [195] "Zimbabwe"

# List out all column names to help identify potential indicators
names(corona)

##   [1] "Country"
##   [2] "Year"
##   [3] "OVERALL.SCORE"
##   [4] "X1..PREVENTION.OF.THE.EMERGENCE.OR.RELEASE.OF.PATHOGENS"
##   [5] "X1.1..Antimicrobial.resistance..AMR."
##   [6] "X1.1.1..AMR.surveillance..detection.and.reporting"
##   [7] "X1.1.1a..National.plan.for.AMR.priority.pathogens"
##   [8] "X1.1.1b..Capacity.of.national.lab.lab.system.to.test.for.AMR.priority.pathogens"
##   [9] "X1.1.1c..National.environmental.surveillance.for.AMR.residues.organisms"
##  [10] "X1.1.2..Antimicrobial.control"
##  [11] "X1.1.2a..National.law.s..requiring.prescription.for.antibiotic.use..humans."
##  [12] "X1.1.2b..National.law.s..requiring.prescription.for.antibiotic.use..animals."
##  [13] "X1.2..Zoonotic.disease"
##  [14] "X1.2.1..National.planning.for.zoonotic.diseases.pathogens"
##  [15] "X1.2.1a..Laws.plans.on.zoonotic.disease"
##  [16] "X1.2.1b..Laws.plans.on.zoonotic.disease.spillover.from.animals.to.humans"
##  [17] "X1.2.1c..Laws.plans.for.surveillance...control.of.multiple.zoonotic.pathogens"
##  [18] "X1.2.1d..Cross.ministerial.department.agency.unit.for.zoonotic.disease"
##  [19] "X1.2.2..Surveillance.systems.for.zoonotic.diseases.pathogens"
##  [20] "X1.2.2a..Surveillance.reporting.mechanism.for.zoonotic.disease.for.livestock.owne
rs"
##  [21] "X1.2.2b..Laws.regulations.on.data.confidentiality.to.protect.livestock.owners"
##  [22] "X1.2.2c..Wildlife.zoonotic.disease.surveillance"
##  [23] "X1.2.3..International.reporting.of.animal.disease.outbreaks"
##  [24] "X1.2.3a..Annual.reporting.to.OIE.on.zoonotic.disease.incidence"
##  [25] "X1.2.4..Animal.health.workforce"
##  [26] "X1.2.4a..Number.of.veterinarians.per.100.000.people"
##  [27] "X1.2.4b..Number.of.veterinary.para.professionals.per.100.000.people"
##  [28] "X1.2.5..Private.sector.and.zoonotic.disease"
##  [29] "X1.2.5a..Inclusion.of.private.sector.in.national.plan.law.on.zoonotic.disease"
##  [30] "X1.3..Biosecurity"
##  [31] "X1.3.1..Whole.of.government.biosecurity.systems"
##  [32] "X1.3.1a..Updated.national.records.of.especially.dangerous.pathogen.toxin.inventor
ies"
##  [33] "X1.3.1b..Biosecurity.laws.on.facility.security.for.especially.dangerous.pathogens
"
##  [34] "X1.3.1c..Agency.for.enforcement.of.biosecurity.laws.regulations"
```

```
##  [35] "X1.3.1d..Consolidation.of.especially.dangerous.pathogens.into.minimum...of.facili
ties"
##  [36] "X1.3.1e..Capacity.to.conduct.tests.for.anthrax.Ebola.without.culturing.live.patho
gens"
##  [37] "X1.3.2..Biosecurity.training.and.practices"
##  [38] "X1.3.2a..Biosecurity.training.using.a.standardised..required.approach"
##  [39] "X1.3.3..Personnel.vetting..regulating.access.to.sensitive.locations"
##  [40] "X1.3.3a..Personnel.checks.for.permission.to.access.to.especially.dangerous.pathog
ens"
##  [41] "X1.3.4..Transportation.security"
##  [42] "X1.3.4a..National.transport.regulations.for.Category.A.and.B.infectious.substance
s"
##  [43] "X1.3.5..Cross.border.transfer.and.end.user.screening"
##  [44] "X1.3.5a..Laws.regulations.on.cross.border.transfer.and.end.user.screening"
##  [45] "X1.4..Biosafety"
##  [46] "X1.4.1..Whole.of.government.biosafety.systems"
##  [47] "X1.4.1a..Biosafety.laws.regulations"
##  [48] "X1.4.1b..Agency.for.enforcement.of.biosafety.laws.regulations"
##  [49] "X1.4.2..Biosafety.training.and.practices"
##  [50] "X1.4.2a..Biosafety.training.using.a.standardised..required.approach"
##  [51] "X1.5..Dual.use.research.and.culture.of.responsible.science"
##  [52] "X1.5.1..Oversight.of.dual.use.research"
##  [53] "X1.5.1a..Evidence.of.national.assessment.of.dual.use.research"
##  [54] "X1.5.1b..National.law.regulation.on.oversight.of.dual.use.research"
##  [55] "X1.5.1c..Existence.of.agency.responsible.for.oversight.of.dual.use.research"
##  [56] "X1.5.2..Screening.requirements.for.providers.of.genetic.material"
##  [57] "X1.5.2a..Requirement.to.screen.synthesised.DNA.against.list.prior.to.sale"
##  [58] "X1.6..Immunization"
##  [59] "X1.6.1..Vaccination.rates"
##  [60] "X1.6.1a..Immunization.rate.for.humans..measles.MCV2."
##  [61] "X1.6.1b..Availability.of.vaccination.figures.for.livestock..FMD..through.OIE.data
base"
##  [62] "X2..EARLY.DETECTION...REPORTING.FOR.EPIDEMICS.OF.POTENTIAL.INT.L.CONCERN"
##  [63] "X2.1..Laboratory.systems.strength.and.quality"
##  [64] "X2.1.1..Lab.capacity.for.detecting.priority.diseases"
##  [65] "X2.1.1a..Capacity.of.national.lab.system.to.conduct.5.or.more.WHO.core.tests"
##  [66] "X2.1.1b..Plan.to.conduct.testing.during.a.public.health.emergency"
##  [67] "X2.1.2..Laboratory.quality.systems"
##  [68] "X2.1.2a..Existence.of.an.accredited.national.lab.serving.as.a.reference.facility"
##  [69] "X2.1.2b..External.quality.assurance.of.a.national.lab.serving.as.a.reference.faci
lity"
##  [70] "X2.2..Laboratory.supply.chains"
##  [71] "X2.2.1..Specimen.referral.and.transport.system"
##  [72] "X2.2.1a..Is.there.a.nationwide.specimen.transport.system."
##  [73] "X2.2.2..Laboratory.cooperation.and.coordination"
##  [74] "X2.2.2a..Plan.to.rapidly.authorize.license.laboratories.to.scale.up.testing.durin
g.an.outbreak"
##  [75] "X2.3..Real.time.surveillance.and.reporting"
##  [76] "X2.3.1..Indicator.and.event.based.surveillance.and.reporting.systems"
##  [77] "X2.3.1a..Evidence.of.ongoing.event.based.surveillance.and.analysis"
##  [78] "X2.3.1b..Evidence.of.reporting.a.potential.PHEIC.to.the.WHO..last.2.years."
##  [79] "X2.3.2..Interoperable..interconnected..electronic.real.time.reporting.systems"
##  [80] "X2.3.2a..Electronic.national.and.sub.national.reporting.surveillance.system"
##  [81] "X2.3.2b..Collection.of.ongoing.real.time.lab.data.by.electronic.surveillance.syst
em"
##  [82] "X2.4..Surveillance.data.accessibility.and.transparency"
##  [83] "X2.4.1..Coverage.and.use.of.electronic.health.records"
```

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##  [84] "X2.4.1a..Common.usage.of.electronic.health.records"
##  [85] "X2.4.1b..Public.health.system.access.to.individual.electronic.health.records"
##  [86] "X2.4.1c..Existence.of.data.standards.for.health.record.data.comparability"
##  [87] "X2.4.2..Data.integration.between.human..animal.and.environmental.health.sectors"
##  [88] "X2.4.2a..Data.sharing.mechanisms"
##  [89] "X2.4.3..Transparency.of.surveillance.data"
##  [90] "X2.4.3a..Availability.of.de.identified.health.surveillance.data.on.disease.outbre
aks"
##  [91] "X2.4.4..Ethical.considerations.during.surveillance"
##  [92] "X2.4.4a..Confidentiality.legislation.regulations.for.identifiable.health.informat
ion"
##  [93] "X2.4.4b..Inclusion.of.cyber.protections.in.health.data.confidentiality.law.regula
tion"
##  [94] "X2.4.5..International.data.sharing"
##  [95] "X2.4.5a..Cooperative.commitments.or.agreements.within.regions"
##  [96] "X2.5..Case.based.investigation"
##  [97] "X2.5.1..Case.investigation.and.contact.tracing"
##  [98] "X2.5.1a..National.support.to.conduct.contact.tracing.in.the.event.of.a.public.hea
lth.emergency"
##  [99] "X2.5.1b..Provision.of.wraparound.services.to.enable.self.isolation.quarantine.as.
recommended"
## [100] "X2.5.2..Point.of.entry.management"
## [101] "X2.5.2a..Strategy.for.tracing.and.quarantining.international.travelers"
## [102] "X2.6..Epidemiology.workforce"
## [103] "X2.6.1..Existence.of.applied.epidemiology.training.program.such.FETP.and.FETPV"
## [104] "X2.6.1a..Access.to.field.epidemiology.training.program.in.country.and.or.abroad"
## [105] "X2.6.1b..Existence.of.field.epidemiology.training.for.animal.health.professionals
"
## [106] "X2.6.2..Epidemiology.workforce.capacity"
## [107] "X2.6.2a..Evidence.of.at.least.1.trained.field.epidemiologist.per.200.000.people"
## [108] "X3..RAPID.RESPONSE.TO.AND.MITIGATION.OF.THE.SPREAD.OF.AN.EPIDEMIC"
## [109] "X3.1..Emergency.preparedness.and.response.planning"
## [110] "X3.1.1..National.public.health.emergency.preparedness.and.response.plan"
## [111] "X3.1.1a..National.emergency.response.plan.for.diseases.with.pandemic.potential"
## [112] "X3.1.1b..National.public.health.emergency.response.plan.updated.in.past.3.years"
## [113] "X3.1.1c..Vulnerable.populations.in.national.public.health.emergency.response.plan
"
## [114] "X3.1.1d..Existence.of.public.pandemic.influenza.preparedness.plan.updated.since.2
009"
## [115] "X3.1.2..Private.sector.involvement.in.response.planning"
## [116] "X3.1.2a..Mechanism.to.engage.private.sector.in.outbreak.preparedness.response"
## [117] "X3.1.3..Non.pharmaceutical.interventions.planning"
## [118] "X3.1.3a..Policy.plan.guidelines.in.place.to.implement.non.pharmaceutical.interven
tions..NPIs."
## [119] "X3.2..Exercising.response.plans"
## [120] "X3.2.1..Activating.response.plans"
## [121] "X3.2.1a..Completion.of.biological.focused.IHR.exercise.with.the.WHO.in.past.year"
## [122] "X3.2.1b..Evidence.of.bio.focused.exercise.to.identify.gaps.best.practices"
## [123] "X3.2.2..Private.sector.engagement.in.exercises"
## [124] "X3.2.2a..Evidence.of.national.level.biological.threat.focused.exercise.that.inclu
des.private.sector"
## [125] "X3.3..Emergency.response.operation"
## [126] "X3.3.1..Emergency.response.operation"
## [127] "X3.3.1a..Existence.of.Emergency.Operations.Center..EOC."
## [128] "X3.3.1b..Requirement.for.EOC.to.conduct.evidence.EOC.conducts.at.least.annual.dri
lls"
## [129] "X3.3.1c..EOC.activation.within.120.minutes.of.identification.of.emergency.scenari
```

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o"
## [130] "X3.4..Linking.public.health.and.security.authorities"
## [131] "X3.4.1..Public.health.and.security.authorities.linked.for.a.biological.event"
## [132] "X3.4.1a..Joint.exercise.procedures.for.potential.deliberate.biological.events"
## [133] "X3.5..Risk.communication"
## [134] "X3.5.1..Risk.communication.planning"
## [135] "X3.5.1a..Risk.communication.plan.for.specific.use.during.a.public.health.emergenc
y"
## [136] "X3.5.1b..Inclusion.of.different.population...sector.needs.in.risk.communication.p
lan"
## [137] "X3.5.1c..Designation.of.a.specific.government.spokesperson.during.a.public.health
.emergency"
## [138] "X3.5.2..Public.health.systems.communication"
## [139] "X3.5.2a..Government.use.of.media.platforms.to.share.info.on.public.health.emergen
cies"
## [140] "X3.5.2b..Evidence.that.senior.leaders.have.shared.mis.disinformation.on.infectiou
s.diseases"
## [141] "X3.6..Access.to.communications.infrastructure"
## [142] "X3.6.1..Internet.users"
## [143] "X3.6.1a..Percentage.of.households.with.Internet"
## [144] "X3.6.2..Mobile.subscribers"
## [145] "X3.6.2a..Mobile.cellular.telephone.subscriptions.per.100.inhabitants"
## [146] "X3.6.3..Female.access.to.a.mobile.phone"
## [147] "X3.6.3a..Gender.gap.in.access.to.a.mobile.phone..percentage.points."
## [148] "X3.6.4..Female.access.to.the.Internet"
## [149] "X3.6.4a..Gender.gap.in.access.to.the.Internet..percentage.points."
## [150] "X3.7..Trade.and.travel.restrictions"
## [151] "X3.7.1..Trade.restrictions"
## [152] "X3.7.1a..Restrictions.on.export.import.of.medical.goods.due.to.an.infectious.dise
ase.outbreak"
## [153] "X3.7.1b..Restrictions.on.movement.and.or.exports.imports.due.to.disease.outbreak"
## [154] "X3.7.2..Travel.restrictions"
## [155] "X3.7.2a..Evidence.of.travel.ban.due.to.an.infectious.disease.outbreak"
## [156] "X4..SUFFICIENT...ROBUST.HEALTH.SECTOR.TO.TREAT.THE.SICK...PROTECT.HEALTH.WORKERS"
## [157] "X4.1..Health.capacity.in.clinics..hospitals.and.community.care.centers"
## [158] "X4.1.1..Available.human.resources.for.the.broader.healthcare.system"
## [159] "X4.1.1a..Doctors.per.100.000.people"
## [160] "X4.1.1b..Nurses.and.midwives.per.100.000.people"
## [161] "X4.1.1c..Updated.health.workforce.strategy.to.address.human.resource.shortfalls"
## [162] "X4.1.2..Facilities.capacity"
## [163] "X4.1.2a..Hospital.beds.per.100.000.people"
## [164] "X4.1.2b..In.country.capacity.to.isolate.patients.with.highly.communicable.disease
s"
## [165] "X4.1.2c..Demonstrated.capacity...evidence.of.plan.to.expand.isolation.capacity"
## [166] "X4.2..Supply.chain.for.health.system.and.healthcare.workers"
## [167] "X4.2.1..Routine.health.care.and.laboratory.system.supply"
## [168] "X4.2.1a..National.procurement.protocol.for.the.acquisition.of.routine.laboratory.
medical.supplies"
## [169] "X4.2.2..Stockpiling.for.emergencies"
## [170] "X4.2.2a..Stockpile.of.medical.supplies.for.national.use.during.a.public.health.em
ergency"
## [171] "X4.2.2b..Stockpile.of.laboratory.supplies.for.national.use.during.a.public.health
.emergency"
## [172] "X4.2.2c..Annual.review.of.national.stockpile.to.ensure.sufficient.supply"
## [173] "X4.2.3..Manufacturing.and.procurement.for.emergencies"
## [174] "X4.2.3a..Plan.agreement.to.produce.procure.medical.supplies.during.a.public.healt
h.emergency"
```

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## [175] "X4.2.3b..Plan.agreement.to.produce.procure.lab.supplies.during.a.public.health.em
ergency"
## [176] "X4.3..Medical.countermeasures.and.personnel.deployment"
## [177] "X4.3.1..System.for.dispensing.MCMs.during.a.public.health.emergency"
## [178] "X4.3.1a..Plan.program.guidelines.for.dispensing.MCMs.during.a.public.health.emerg
ency"
## [179] "X4.3.2..System.for.receiving.foreign.health.personnel.during.a.public.health.emer
gency"
## [180] "X4.3.2a..Plan.to.receive.foreign.health.personnel.during.a.public.health.emergenc
y"
## [181] "X4.4..Healthcare.access"
## [182] "X4.4.1..Access.to.healthcare"
## [183] "X4.4.1a..Constitutional.guarantee.of.citizens..right.to.medical.care"
## [184] "X4.4.1b..Access.to.skilled.birth.attendants....of.population."
## [185] "X4.4.1c..Out.of.pocket.health.expenditures.per.capita..PPP..current.international
..."
## [186] "X4.4.2..Paid.medical.leave"
## [187] "X4.4.2a..Guaranteed.paid.sick.leave"
## [188] "X4.4.3..Healthcare.worker.access.to.healthcare"
## [189] "X4.4.3a..Government.prioritisation.of.care.for.healthcare.workers.during.response
"
## [190] "X4.5..Communications.with.healthcare.workers.during.a.public.health.emergency"
## [191] "X4.5.1..Communication.with.healthcare.workers"
## [192] "X4.5.1a..Existence.of.system.for.communication.during.a.public.health.emergency"
## [193] "X4.5.1b..Inclusion.of.public.and.private.sector.in.healthcare.communication.syste
m"
## [194] "X4.6..Infection.control.practices"
## [195] "X4.6.1..Healthcare.associated.infection..HCAI..monitoring"
## [196] "X4.6.1a..Evidence.of.national.public.health.system.monitoring.and.tracking.of.HCA
Is"
## [197] "X4.7..Capacity.to.test.and.approve.new.medical.countermeasures"
## [198] "X4.7.1..Regulatory.process.for.clinical.trials.of.unregistered.interventions"
## [199] "X4.7.1a..Requirement.for.ethical.review.before.beginning.a.clinical.trial"
## [200] "X4.7.1b..Expedited.approval.for.clinical.trials.of.unregistered.MCMs.during.epide
mics"
## [201] "X4.7.2..Regulatory.process.for.approving.medical.countermeasures"
## [202] "X4.7.2a..Existence.of.agency.responsible.for.approving.new.human.MCMs"
## [203] "X4.7.2b..Expedited.approval.for.human.MCMs.during.public.health.emergencies"
## [204] "X5..COMMITMENTS.TO.IMPROVING.NATIONAL.CAPACITY..FINANCING.AND.ADHERENCE.TO.NORMS"
## [205] "X5.1..IHR.reporting.compliance.and.disaster.risk.reduction"
## [206] "X5.1.1..Official.IHR.reporting"
## [207] "X5.1.1a..Submission.of.IHR.reports.to.the.WHO.in.past.year"
## [208] "X5.1.2..Integration.of.health.into.disaster.risk.reduction"
## [209] "X5.1.2a..Existence.of.specific.risk.reduction.strategies.for.epidemics.and.pandem
ics"
## [210] "X5.2..Cross.border.agreements.on.public.health.and.animal.health.emergency.respon
se"
## [211] "X5.2.1..Cross.border.agreements"
## [212] "X5.2.1a..Existence.of.public.health.emergency.agreements.with.regional.neighbors"
## [213] "X5.2.1b..Existence.of.animal.health.emergency.agreements.with.regional.neighbors"
## [214] "X5.3..International.commitments"
## [215] "X5.3.1..Participation.in.international.agreements"
## [216] "X5.3.1a..Biological.and.Toxin.Weapons.Convention.status"
## [217] "X5.3.1b..Submission.of.CBMs.to.the.Biological.and.Toxin.Weapons.Convention"
## [218] "X5.3.1c..Submission.of.UNSCR.1540.reports"
## [219] "X5.3.1d..Extent.of.UNSCR.1540.implementation.on.public.health.emergencies"
## [220] "X5.3.2..Voluntary.memberships"
```

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## [221] "X5.3.2a..Membership.in.global.health.security.and.or.biological.weapons.agreement
s"
## [222] "X5.4..JEE.and.PVS"
## [223] "X5.4.1..Completion.and.publication.of.a.JEE.assessment.and.gap.analysis"
## [224] "X5.4.1a..Completion.and.publication.of.JEE..or.GHSA.pilot.external.assessment..re
port"
## [225] "X5.4.1b..Completion.and.publication.of.a.NAPHS.or.GHSA.roadmap"
## [226] "X5.4.2..Completion.and.publication.of.a.PVS.assessment.and.gap.analysis"
## [227] "X5.4.2a..Completion.and.publication.of.PVS.report..past.five.years."
## [228] "X5.4.2b..Completion.and.publication.of.PVS.gap.analysis..past.five.years."
## [229] "X5.5..Financing"
## [230] "X5.5.1..National.financing.for.epidemic.preparedness"
## [231] "X5.5.1a..Evidence.of.allocated.national.funds.to.improve.capacity.to.address.epid
emic.threats"
## [232] "X5.5.2..Financing.under.JEE.and.PVS.reports.and.gap.analyses"
## [233] "X5.5.2a..National.budget.to.address.gaps.identified.in.JEE..NAPHS.or.GHSA.roadmap
"
## [234] "X5.5.2b..National.budget.to.address.gaps.identified.in.PVS.assessment.or.gap.anal
ysis"
## [235] "X5.5.3..Financing.for.emergency.response"
## [236] "X5.5.3a..Emergency.public.financing.during.a.public.health.emergency"
## [237] "X5.5.4..Accountability.for.international.commitments.to.address.epidemic.threats"
## [238] "X5.5.4a..Commitments.to.improve.domestic.or.foreign.capacity.for.epidemic.threats
"
## [239] "X5.5.4b..Investments.to.improve.domestic.or.foreign.capacity.for.epidemic.threats
"
## [240] "X5.5.4c..Evidence.that.the.country.has.fulfilled.its.full.WHO.contribution.within
.the.past.two.years"
## [241] "X5.6..Commitment.to.sharing.of.genetic...biological.data...specimens"
## [242] "X5.6.1..Commitment.to.share.data.and.specimens.in.emergency.non.emergency.researc
h"
## [243] "X5.6.1a..Sharing.of.genetic.biological.data.and.materials.beyond.influenza"
## [244] "X5.6.1b..Evidence.of.non.compliance.with.sample.sharing.element.of.PIP.framework"
## [245] "X5.6.1c..Evidence.of.non.sharing.of.pandemic.pathogen.samples.during.an.outbreak"
## [246] "X6..OVERALL.RISK.ENVIRONMENT.AND.COUNTRY.VULNERABILITY.TO.BIOLOGICAL.THREATS"
## [247] "X6.1..Political.and.security.risk"
## [248] "X6.1.1..Government.effectiveness"
## [249] "X6.1.1a..Policy.formation"
## [250] "X6.1.1b..Quality.of.bureaucracy"
## [251] "X6.1.1c..Excessive.bureaucracy.red.tape"
## [252] "X6.1.1d..Vested.interests.cronyism"
## [253] "X6.1.1e..Corruption"
## [254] "X6.1.1f..Accountability.of.public.officials"
## [255] "X6.1.1g..Human.rights.risk"
## [256] "X6.1.2..Orderly.transfers.of.power"
## [257] "X6.1.2a..Orderly.transfers.of.power"
## [258] "X6.1.3..Risk.of.social.unrest"
## [259] "X6.1.3a..Risk.of.social.unrest"
## [260] "X6.1.4..Illicit.activities.by.non.state.actors"
## [261] "X6.1.4a..Risk.of.terrorism"
## [262] "X6.1.4b..Level.of.illicit.arms.flows.within.the.country"
## [263] "X6.1.4c..Risk.of.organized.criminal.activity"
## [264] "X6.1.5..Armed.conflict"
## [265] "X6.1.5a..Presence.or.risk.of.armed.conflict"
## [266] "X6.1.6..Government.territorial.control"
## [267] "X6.1.6a..Government.territorial.control"
## [268] "X6.1.7..International.tensions"
```

```
## [269] "X6.1.7a..International.tensions"
## [270] "X6.2..Socio.economic.resilience"
## [271] "X6.2.1..Literacy"
## [272] "X6.2.1a..Adult.literacy.rate..15..years.old..both.sexes."
## [273] "X6.2.2..Gender.equality"
## [274] "X6.2.2a..UNDP.Gender.Inequality.Index.score"
## [275] "X6.2.3..Social.inclusion"
## [276] "X6.2.3a..Poverty.gap.at..1.90.a.day..2011.PPP....."
## [277] "X6.2.3b..Share.of.employment.in.the.informal.sector"
## [278] "X6.2.3c..Coverage.of.social.insurance.programs....of.population."
## [279] "X6.2.4..Public.confidence.in.government"
## [280] "X6.2.4a..Public.confidence.in.government"
## [281] "X6.2.5..Local.media.and.reporting"
## [282] "X6.2.5a..Robust..open..diverse.local.media.and.reporting"
## [283] "X6.2.6..Inequality"
## [284] "X6.2.6a..Gini.coefficient"
## [285] "X6.3..Infrastructure.adequacy"
## [286] "X6.3.1..Adequacy.of.road.network"
## [287] "X6.3.1a..Adequacy.of.road.network"
## [288] "X6.3.2..Adequacy.of.airports"
## [289] "X6.3.2a..Adequacy.of.airports"
## [290] "X6.3.3..Adequacy.of.power.network"
## [291] "X6.3.3a..Adequacy.of.power.network"
## [292] "X6.4..Environmental.risks"
## [293] "X6.4.1..Urbanisation"
## [294] "X6.4.1a..Urban.population....of.total.population."
## [295] "X6.4.2..Land.use"
## [296] "X6.4.2a..Change.in.forest.area..percentage.points."
## [297] "X6.4.3..Natural.disaster.risk"
## [298] "X6.4.3a..Natural.disaster.risk"
## [299] "X6.5..Public.health.vulnerabilities"
## [300] "X6.5.1..Access.to.quality.healthcare"
## [301] "X6.5.1a..Total.life.expectancy..years."
## [302] "X6.5.1b..NCD.mortality.rate"
## [303] "X6.5.1c..Population.aged.65."
## [304] "X6.5.1d..Tobacco.use....of.adults."
## [305] "X6.5.1e..Level.of.adult.obesity...."
## [306] "X6.5.2..Access.to.potable.water.and.sanitation"
## [307] "X6.5.2a..Access.to.potable.water"
## [308] "X6.5.2b..Access.to.at.least.basic.sanitation.facilities"
## [309] "X6.5.3..Public.healthcare.spending.levels.per.capita"
## [310] "X6.5.3a..Domestic.general.government.health.expenditure.per.capita..PPP."
## [311] "X6.5.4..Trust.in.medical.and.health.advice"
## [312] "X6.5.4a..Trust.medical.and.health.advice.from.the.government"
## [313] "X6.5.4b..Trust.medical.and.health.advice.from.medical.workers"
```

Linear Regression Model Summary for Hungary

```
# c19ProSo01
summary(hungary_lm_1)

##
## Call:
## lm(formula = c19ProSo01 ~ ., data = hungary)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.4128 -0.6822  0.0828  0.8160  2.9709
```

```
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.537065   0.744220  -0.722  0.47115
## isoFriends_inPerson -0.003361   0.035583  -0.094  0.92481
## isoOthPpl_inPerson   0.025086   0.044807   0.560  0.57606
## isoFriends_online   -0.001576   0.036624  -0.043  0.96571
## isoOthPpl_online     0.018149   0.031239   0.581  0.56176
## lone01               0.059990   0.085708   0.700  0.48459
## lone02               0.071697   0.080936   0.886  0.37651
## lone03               0.119393   0.066558   1.794  0.07399 .
## happy                0.083205   0.067669   1.230  0.21995
## lifeSat             -0.099637   0.111948  -0.890  0.37427
## MLQ                  0.035464   0.055372   0.640  0.52243
## bor01               -0.065040   0.060728  -1.071  0.28515
## bor02               -0.050790   0.057352  -0.886  0.37665
## bor03               -0.017900   0.046996  -0.381  0.70359
## consp01              0.010677   0.041670   0.256  0.79797
## consp02             -0.008935   0.049111  -0.182  0.85577
## consp03             -0.014531   0.033621  -0.432  0.66596
## c19perBeh01          0.067436   0.101904   0.662  0.50871
## c19perBeh02          0.006086   0.114513   0.053  0.95765
## c19perBeh03         -0.130814   0.059468  -2.200  0.02870 *
## c19RCA01             0.054025   0.044564   1.212  0.22649
## c19RCA02            -0.172794   0.075222  -2.297  0.02240 *
## c19RCA03             0.100427   0.045425   2.211  0.02791 *
## gender               0.392598   0.207754   1.890  0.05990 .
## age                 -0.010432   0.071696  -0.146  0.88443
## edu                 -0.032338   0.050036  -0.646  0.51866
## c19ProSo02           0.368623   0.049268   7.482 1.11e-12 ***
## c19ProSo03           0.251164   0.050652   4.959 1.28e-06 ***
## c19ProSo04           0.140175   0.053379   2.626  0.00915 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.182 on 262 degrees of freedom
##   (4 observations deleted due to missingness)
## Multiple R-squared:  0.4288, Adjusted R-squared:  0.3678
## F-statistic: 7.026 on 28 and 262 DF,  p-value: < 2.2e-16
```

```
# c19ProSo02
summary(hungary_lm_2)
```

```
##
## Call:
## lm(formula = c19ProSo02 ~ ., data = hungary)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.8149 -0.8350  0.1270  0.8957  4.0590
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)          0.268244   0.847776   0.316 0.751944
## isoFriends_inPerson  0.010136   0.040497   0.250 0.802566
## isoOthPpl_inPerson   0.001412   0.051031   0.028 0.977949
## isoFriends_online    0.066677   0.041483   1.607 0.109185
```

```
## isoOthPpl_online     0.024556   0.035548   0.691 0.490316
## lone01              -0.027751   0.097632  -0.284 0.776453
## lone02              -0.042667   0.092224  -0.463 0.644002
## lone03              -0.080953   0.076058  -1.064 0.288143
## happy               -0.062491   0.077148  -0.810 0.418666
## lifeSat              0.169652   0.127185   1.334 0.183394
## MLQ                 -0.059560   0.062969  -0.946 0.345091
## bor01                0.073666   0.069124   1.066 0.287533
## bor02               -0.024513   0.065360  -0.375 0.707926
## bor03                0.003075   0.053507   0.057 0.954213
## consp01              0.011280   0.047431   0.238 0.812207
## consp02             -0.031994   0.055869  -0.573 0.567361
## consp03              0.039227   0.038206   1.027 0.305499
## c19perBeh01          0.020084   0.116081   0.173 0.862770
## c19perBeh02         -0.097068   0.130205  -0.746 0.456636
## c19perBeh03          0.252495   0.066506   3.797 0.000182 ***
## c19RCA01             0.004715   0.050865   0.093 0.926213
## c19RCA02             0.044861   0.086433   0.519 0.604179
## c19RCA03            -0.004902   0.052183  -0.094 0.925229
## gender              -0.997763   0.229961  -4.339 2.05e-05 ***
## age                 -0.024762   0.081595  -0.303 0.761769
## edu                  0.038569   0.056949   0.677 0.498841
## c19ProSo01           0.477579   0.063831   7.482 1.11e-12 ***
## c19ProSo03           0.180631   0.059257   3.048 0.002537 **
## c19ProSo04          -0.123236   0.061079  -2.018 0.044648 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.345 on 262 degrees of freedom
##   (4 observations deleted due to missingness)
## Multiple R-squared:  0.4203, Adjusted R-squared:  0.3583
## F-statistic: 6.784 on 28 and 262 DF,  p-value: < 2.2e-16
```

```
# c19ProSo03
summary(hungary_lm_3)
```

```
##
## Call:
## lm(formula = c19ProSo03 ~ ., data = hungary)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.8815 -0.8505  0.0540  0.9075  3.8196
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)          0.403739   0.868416   0.465  0.64238
## isoFriends_inPerson -0.034106   0.041444  -0.823  0.41130
## isoOthPpl_inPerson   0.007776   0.052283   0.149  0.88188
## isoFriends_online   -0.056233   0.042570  -1.321  0.18767
## isoOthPpl_online    -0.051478   0.036316  -1.418  0.15752
## lone01              -0.109270   0.099818  -1.095  0.27466
## lone02               0.090912   0.094362   0.963  0.33621
## lone03              -0.097374   0.077863  -1.251  0.21220
## happy               -0.017392   0.079136  -0.220  0.82622
## lifeSat             -0.060861   0.130697  -0.466  0.64184
## MLQ                  0.114031   0.064241   1.775  0.07705 .
```

```
## bor01                0.111589   0.070640   1.580  0.11538
## bor02                0.018868   0.066974   0.282  0.77838
## bor03               -0.026882   0.054797  -0.491  0.62414
## consp01              0.043358   0.048528   0.893  0.37242
## consp02             -0.022835   0.057260  -0.399  0.69036
## consp03             -0.021492   0.039201  -0.548  0.58398
## c19perBeh01          0.145690   0.118599   1.228  0.22039
## c19perBeh02         -0.042119   0.133521  -0.315  0.75267
## c19perBeh03          0.012258   0.069985   0.175  0.86110
## c19RCA01            -0.043692   0.052046  -0.839  0.40196
## c19RCA02             0.026643   0.088587   0.301  0.76384
## c19RCA03            -0.056126   0.053354  -1.052  0.29379
## gender               0.144932   0.243765   0.595  0.55265
## age                  0.002143   0.083615   0.026  0.97958
## edu                  0.037244   0.058354   0.638  0.52387
## c19ProSo01           0.341590   0.068888   4.959 1.28e-06 ***
## c19ProSo02           0.189617   0.062205   3.048  0.00254 **
## c19ProSo04           0.287364   0.060514   4.749 3.37e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.378 on 262 degrees of freedom
##   (4 observations deleted due to missingness)
## Multiple R-squared:  0.3774, Adjusted R-squared:  0.3109
## F-statistic: 5.672 on 28 and 262 DF,  p-value: 4.343e-15

# c19ProSo04
summary(hungary_lm_4)

##
## Call:
## lm(formula = c19ProSo04 ~ ., data = hungary)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.5427 -0.7955  0.1450  0.8939  2.6945
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -1.323534   0.847147  -1.562  0.11941
## isoFriends_inPerson -0.003754   0.040652  -0.092  0.92649
## isoOthPpl_inPerson   0.051247   0.051123   1.002  0.31706
## isoFriends_online    0.034182   0.041788   0.818  0.41412
## isoOthPpl_online     0.052265   0.035566   1.470  0.14289
## lone01               0.047754   0.097965   0.487  0.62634
## lone02              -0.049702   0.092553  -0.537  0.59172
## lone03               0.048399   0.076446   0.633  0.52721
## happy               -0.004001   0.077531  -0.052  0.95888
## lifeSat              0.114235   0.127895   0.893  0.37257
## MLQ                  0.013587   0.063305   0.215  0.83023
## bor01               -0.074513   0.069378  -1.074  0.28380
## bor02                0.037899   0.065578   0.578  0.56381
## bor03               -0.047462   0.053626  -0.885  0.37693
## consp01             -0.013393   0.047605  -0.281  0.77867
## consp02             -0.044769   0.056043  -0.799  0.42511
## consp03              0.034519   0.038365   0.900  0.36908
## c19perBeh01          0.151759   0.116140   1.307  0.19247
```

```
## c19perBeh02          0.140805   0.130537   1.079  0.28173
## c19perBeh03          0.139404   0.068021   2.049  0.04142 *
## c19RCA01             0.050217   0.050960   0.985  0.32533
## c19RCA02             0.086538   0.086634   0.999  0.31877
## c19RCA03            -0.078913   0.052150  -1.513  0.13144
## gender               0.069096   0.238924   0.289  0.77266
## age                 -0.072376   0.081790  -0.885  0.37703
## edu                  0.123457   0.056699   2.177  0.03034 *
## c19ProSo01           0.182957   0.069670   2.626  0.00915 **
## c19ProSo02          -0.124152   0.061533  -2.018  0.04465 *
## c19ProSo03           0.275781   0.058075   4.749 3.37e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.35 on 262 degrees of freedom
##   (4 observations deleted due to missingness)
## Multiple R-squared:  0.2899, Adjusted R-squared:  0.2141
## F-statistic: 3.821 on 28 and 262 DF,  p-value: 4.652e-09
```

Linear Regression Model Summary for Iran

```
# c19ProSo01
summary(iran_lm_1)

##
## Call:
## lm(formula = c19ProSo01 ~ ., data = iran)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.5637 -0.6521  0.0318  0.6792  3.2221
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.940052   1.274946  -0.737  0.46226
## isoFriends_inPerson -0.052906   0.073489  -0.720  0.47288
## isoOthPpl_inPerson  -0.080835   0.076686  -1.054  0.29381
## isoFriends_online    0.095419   0.059628   1.600  0.11199
## isoOthPpl_online    -0.034935   0.058848  -0.594  0.55378
## lone01               0.122141   0.136719   0.893  0.37332
## lone02              -0.203357   0.151838  -1.339  0.18283
## lone03               0.287910   0.148037   1.945  0.05397 .
## happy                0.156337   0.088735   1.762  0.08046 .
## lifeSat              0.021520   0.134231   0.160  0.87288
## MLQ                 -0.222778   0.112597  -1.979  0.05000 *
## bor01                0.172221   0.106753   1.613  0.10913
## bor02               -0.053558   0.113654  -0.471  0.63827
## bor03               -0.115502   0.081769  -1.413  0.16020
## consp01              0.218288   0.091130   2.395  0.01804 *
## consp02             -0.355027   0.105737  -3.358  0.00103 **
## consp03              0.078419   0.044499   1.762  0.08039 .
## c19perBeh01         -0.005881   0.133362  -0.044  0.96489
## c19perBeh02          0.025094   0.206797   0.121  0.90361
## c19perBeh03         -0.072113   0.116577  -0.619  0.53728
## c19RCA01             0.133601   0.137777   0.970  0.33401
## c19RCA02             0.106121   0.119650   0.887  0.37677
## c19RCA03            -0.158816   0.148284  -1.071  0.28616
## gender               0.441586   0.244201   1.808  0.07289 .
```

```
## age                  0.248680   0.101230   2.457  0.01536 *
## edu                 -0.129005   0.091120  -1.416  0.15925
## c19ProSo02           0.219329   0.123089   1.782  0.07712 .
## c19ProSo03           0.293931   0.125731   2.338  0.02094 *
## c19ProSo04           0.213847   0.087454   2.445  0.01582 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.279 on 129 degrees of freedom
##   (35 observations deleted due to missingness)
## Multiple R-squared:  0.585,  Adjusted R-squared:  0.495
## F-statistic: 6.495 on 28 and 129 DF,  p-value: 5.065e-14
```

```
# c19ProSo02
summary(iran_lm_2)
```

```
##
## Call:
## lm(formula = c19ProSo02 ~ ., data = iran)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.5325 -0.4252  0.0139  0.3347  4.9936
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.2901908  0.9024814  -0.322  0.74832
## isoFriends_inPerson  0.0506096  0.0518442   0.976  0.33080
## isoOthPpl_inPerson  -0.0734752  0.0540377  -1.360  0.17630
## isoFriends_online   -0.0600332  0.0422227  -1.422  0.15749
## isoOthPpl_online    -0.0417446  0.0414793  -1.006  0.31611
## lone01               0.0750293  0.0966863   0.776  0.43917
## lone02              -0.0524491  0.1079415  -0.486  0.62786
## lone03              -0.0155143  0.1061250  -0.146  0.88400
## happy                0.0265838  0.0634116   0.419  0.67575
## lifeSat             -0.0207892  0.0948470  -0.219  0.82685
## MLQ                  0.0001555  0.0807653   0.002  0.99847
## bor01               -0.0967371  0.0757172  -1.278  0.20368
## bor02                0.0926709  0.0799684   1.159  0.24866
## bor03               -0.0461478  0.0580860  -0.794  0.42838
## consp01             -0.1364780  0.0647079  -2.109  0.03687 *
## consp02              0.2008956  0.0758817   2.647  0.00912 **
## consp03             -0.0337677  0.0316825  -1.066  0.28850
## c19perBeh01         -0.0868101  0.0939314  -0.924  0.35711
## c19perBeh02          0.0561446  0.1460586   0.384  0.70132
## c19perBeh03          0.0267954  0.0824678   0.325  0.74577
## c19RCA01             0.0166789  0.0977038   0.171  0.86472
## c19RCA02             0.0867918  0.0844636   1.028  0.30608
## c19RCA03            -0.1410430  0.1045151  -1.349  0.17954
## gender              -0.0040061  0.1747389  -0.023  0.98174
## age                 -0.0279067  0.0731477  -0.382  0.70345
## edu                  0.0235847  0.0648553   0.364  0.71671
## c19ProSo01           0.1095245  0.0614657   1.782  0.07712 .
## c19ProSo03           0.7540213  0.0618153  12.198  < 2e-16 ***
## c19ProSo04           0.1489997  0.0618393   2.409  0.01739 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Residual standard error: 0.9037 on 129 degrees of freedom
##   (35 observations deleted due to missingness)
## Multiple R-squared:  0.8143, Adjusted R-squared:  0.7739
## F-statistic:  20.2 on 28 and 129 DF,  p-value: < 2.2e-16
```

```
# c19ProSo03
summary(iran_lm_3)
```

```
##
## Call:
## lm(formula = c19ProSo03 ~ ., data = iran)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.5870 -0.3779  0.1175  0.3867  3.0163
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)          0.125569   0.876240   0.143   0.8863
## isoFriends_inPerson -0.055208   0.050272  -1.098   0.2742
## isoOthPpl_inPerson   0.072229   0.052440   1.377   0.1708
## isoFriends_online    0.023618   0.041249   0.573   0.5679
## isoOthPpl_online     0.101045   0.039427   2.563   0.0115 *
## lone01              -0.135270   0.093307  -1.450   0.1496
## lone02               0.020875   0.104849   0.199   0.8425
## lone03               0.083592   0.102751   0.814   0.4174
## happy               -0.117435   0.060716  -1.934   0.0553 .
## lifeSat              0.085255   0.091770   0.929   0.3546
## MLQ                  0.090597   0.077985   1.162   0.2475
## bor01                0.055338   0.073795   0.750   0.4547
## bor02               -0.111449   0.077402  -1.440   0.1523
## bor03                0.081732   0.056057   1.458   0.1473
## consp01              0.080052   0.063490   1.261   0.2096
## consp02             -0.083176   0.075271  -1.105   0.2712
## consp03             -0.019182   0.030840  -0.622   0.5351
## c19perBeh01          0.041058   0.091401   0.449   0.6540
## c19perBeh02         -0.029125   0.141824  -0.205   0.8376
## c19perBeh03         -0.053113   0.079940  -0.664   0.5076
## c19RCA01             0.054012   0.094724   0.570   0.5695
## c19RCA02            -0.102143   0.081823  -1.248   0.2142
## c19RCA03             0.199283   0.100639   1.980   0.0498 *
## gender              -0.027756   0.169586  -0.164   0.8702
## age                 -0.045716   0.070924  -0.645   0.5203
## edu                  0.002974   0.062981   0.047   0.9624
## c19ProSo01           0.138277   0.059149   2.338   0.0209 *
## c19ProSo02           0.710353   0.058235  12.198   <2e-16 ***
## c19ProSo04           0.040912   0.061252   0.668   0.5054
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8772 on 129 degrees of freedom
##   (35 observations deleted due to missingness)
## Multiple R-squared:  0.8236, Adjusted R-squared:  0.7854
## F-statistic: 21.52 on 28 and 129 DF,  p-value: < 2.2e-16
```

```
# c19ProSo04
summary(iran_lm_4)

##
## Call:
## lm(formula = c19ProSo04 ~ ., data = iran)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.4950 -0.8429  0.0637  0.6127  4.1923
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -1.1460182  1.2534033  -0.914   0.3623
## isoFriends_inPerson  0.0721899  0.0721943   1.000   0.3192
## isoOthPpl_inPerson  -0.0002026  0.0757999  -0.003   0.9979
## isoFriends_online    0.0295725  0.0592086   0.499   0.6183
## isoOthPpl_online    -0.0430766  0.0578735  -0.744   0.4580
## lone01              -0.0138495  0.1349708  -0.103   0.9184
## lone02               0.0536090  0.1504018   0.356   0.7221
## lone03              -0.1359245  0.1473354  -0.923   0.3580
## happy               -0.0548411  0.0882463  -0.621   0.5354
## lifeSat              0.1715235  0.1312593   1.307   0.1936
## MLQ                  0.0826761  0.1122522   0.737   0.4628
## bor01               -0.0394522  0.1060653  -0.372   0.7105
## bor02                0.0042714  0.1119556   0.038   0.9696
## bor03                0.0034996  0.0810979   0.043   0.9656
## consp01              0.0844814  0.0913621   0.925   0.3569
## consp02             -0.0908287  0.1082244  -0.839   0.4029
## consp03              0.0241399  0.0442695   0.545   0.5865
## c19perBeh01          0.2055807  0.1300038   1.581   0.1162
## c19perBeh02          0.0644901  0.2034642   0.317   0.7518
## c19perBeh03          0.0916933  0.1146222   0.800   0.4252
## c19RCA01             0.1176021  0.1357004   0.867   0.3878
## c19RCA02            -0.0003563  0.1181193  -0.003   0.9976
## c19RCA03             0.0251999  0.1465732   0.172   0.8638
## gender              -0.1166084  0.2431560  -0.480   0.6324
## age                 -0.0183108  0.1019230  -0.180   0.8577
## edu                  0.1209002  0.0897461   1.347   0.1803
## c19ProSo01           0.2071479  0.0847140   2.445   0.0158 *
## c19ProSo02           0.2890333  0.1199575   2.409   0.0174 *
## c19ProSo03           0.0842398  0.1261222   0.668   0.5054
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.259 on 129 degrees of freedom
##   (35 observations deleted due to missingness)
## Multiple R-squared:  0.5449, Adjusted R-squared:  0.4461
## F-statistic: 5.516 on 28 and 129 DF,  p-value: 7.958e-12
```

Linear Regression Model Summary for Philippines

```
# c19ProSo01
summary(philippines_lm_1)

##
## Call:
## lm(formula = c19ProSo01 ~ ., data = philippines)
```

```
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -5.0508 -0.4552  0.0883  0.5464  3.2577
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.126312   0.311646  -0.405   0.6854
## isoFriends_inPerson  0.034287   0.013435   2.552   0.0109 *
## isoOthPpl_inPerson   0.014853   0.016149   0.920   0.3580
## isoFriends_online   -0.018952   0.014983  -1.265   0.2062
## isoOthPpl_online     0.015074   0.013717   1.099   0.2721
## lone01               0.064874   0.040170   1.615   0.1067
## lone02               0.030553   0.040090   0.762   0.4462
## lone03              -0.093879   0.041910  -2.240   0.0253 *
## happy               -0.005624   0.022611  -0.249   0.8036
## lifeSat             -0.076935   0.039614  -1.942   0.0524 .
## MLQ                  0.049915   0.028138   1.774   0.0764 .
## bor01                0.016562   0.024986   0.663   0.5076
## bor02                0.013738   0.024331   0.565   0.5725
## bor03                0.048516   0.023937   2.027   0.0430 *
## consp01              0.037644   0.016675   2.257   0.0242 *
## consp02             -0.010541   0.016834  -0.626   0.5314
## consp03              0.003004   0.013073   0.230   0.8183
## c19perBeh01         -0.010685   0.053131  -0.201   0.8407
## c19perBeh02          0.155613   0.061507   2.530   0.0116 *
## c19perBeh03         -0.040486   0.041809  -0.968   0.3331
## c19RCA01             0.025666   0.031779   0.808   0.4195
## c19RCA02            -0.014016   0.051728  -0.271   0.7865
## c19RCA03             0.058390   0.038264   1.526   0.1274
## gender               0.049688   0.063437   0.783   0.4337
## age                 -0.056344   0.024735  -2.278   0.0230 *
## edu                  0.035255   0.028811   1.224   0.2214
## c19ProSo02           0.340308   0.033075  10.289  < 2e-16 ***
## c19ProSo03           0.202886   0.028741   7.059 3.39e-12 ***
## c19ProSo04           0.143927   0.027191   5.293 1.52e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9448 on 886 degrees of freedom
##   (35 observations deleted due to missingness)
## Multiple R-squared:  0.4566, Adjusted R-squared:  0.4394
## F-statistic: 26.58 on 28 and 886 DF,  p-value: < 2.2e-16
```

```
# c19ProSo02
summary(philippines_lm_2)
```

```
##
## Call:
## lm(formula = c19ProSo02 ~ ., data = philippines)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.9843 -0.4184  0.0260  0.5432  3.3934
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept)         -0.2814730  0.2990572  -0.941   0.3469
## isoFriends_inPerson -0.0114959  0.0129393  -0.888   0.3745
## isoOthPpl_inPerson  -0.0142390  0.0155030  -0.918   0.3586
## isoFriends_online    0.0304160  0.0143602   2.118   0.0344 *
## isoOthPpl_online    -0.0050695  0.0131764  -0.385   0.7005
## lone01               0.0054583  0.0386191   0.141   0.8876
## lone02               0.0551865  0.0384540   1.435   0.1516
## lone03              -0.0824222  0.0402518  -2.048   0.0409 *
## happy                0.0335277  0.0216784   1.547   0.1223
## lifeSat              0.0930807  0.0379821   2.451   0.0145 *
## MLQ                  0.0254954  0.0270464   0.943   0.3461
## bor01               -0.0391016  0.0239560  -1.632   0.1030
## bor02                0.0134780  0.0233577   0.577   0.5641
## bor03               -0.0014918  0.0230321  -0.065   0.9484
## consp01             -0.0198769  0.0160403  -1.239   0.2156
## consp02              0.0202453  0.0161500   1.254   0.2103
## consp03             -0.0003211  0.0125503  -0.026   0.9796
## c19perBeh01          0.0031294  0.0510063   0.061   0.9511
## c19perBeh02          0.0968775  0.0591697   1.637   0.1019
## c19perBeh03          0.0310043  0.0401440   0.772   0.4401
## c19RCA01            -0.0014693  0.0305187  -0.048   0.9616
## c19RCA02             0.0016777  0.0496603   0.034   0.9731
## c19RCA03             0.0468227  0.0367479   1.274   0.2029
## gender              -0.1371032  0.0607455  -2.257   0.0243 *
## age                 -0.0219086  0.0238032  -0.920   0.3576
## edu                  0.0477125  0.0276352   1.727   0.0846 .
## c19ProSo01           0.3136252  0.0304820  10.289   <2e-16 ***
## c19ProSo03           0.2857587  0.0266823  10.710   <2e-16 ***
## c19ProSo04           0.0311163  0.0264923   1.175   0.2405
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9071 on 886 degrees of freedom
##   (35 observations deleted due to missingness)
## Multiple R-squared:  0.4827, Adjusted R-squared:  0.4663
## F-statistic: 29.52 on 28 and 886 DF,  p-value: < 2.2e-16
```

```
# c19ProSo03
summary(philippines_lm_3)
```

```
##
## Call:
## lm(formula = c19ProSo03 ~ ., data = philippines)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.3053 -0.5298  0.1922  0.6276  6.2053
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.280213   0.354359  -0.791  0.42930
## isoFriends_inPerson  0.020487   0.015321   1.337  0.18152
## isoOthPpl_inPerson  -0.008171   0.018374  -0.445  0.65665
## isoFriends_online    0.032385   0.017021   1.903  0.05742 .
## isoOthPpl_online    -0.008655   0.015609  -0.554  0.57938
## lone01              -0.027060   0.045745  -0.592  0.55431
## lone02              -0.065354   0.045558  -1.435  0.15178
```

```
## lone03               0.138314   0.047574   2.907  0.00374 **
## happy               -0.006101   0.025717  -0.237  0.81254
## lifeSat             -0.006020   0.045151  -0.133  0.89396
## MLQ                  0.006841   0.032058   0.213  0.83106
## bor01                0.066559   0.028336   2.349  0.01905 *
## bor02               -0.020404   0.027670  -0.737  0.46105
## bor03               -0.017883   0.027281  -0.656  0.51231
## consp01              0.007578   0.019018   0.398  0.69038
## consp02             -0.035182   0.019114  -1.841  0.06601 .
## consp03              0.016770   0.014858   1.129  0.25933
## c19perBeh01         -0.059865   0.060396  -0.991  0.32185
## c19perBeh02         -0.012007   0.070206  -0.171  0.86424
## c19perBeh03          0.057929   0.047537   1.219  0.22332
## c19RCA01            -0.015740   0.036153  -0.435  0.66339
## c19RCA02            -0.021560   0.058830  -0.366  0.71410
## c19RCA03             0.020148   0.043572   0.462  0.64389
## gender               0.094890   0.072104   1.316  0.18851
## age                 -0.035329   0.028189  -1.253  0.21044
## edu                 -0.036940   0.032772  -1.127  0.25998
## c19ProSo01           0.262447   0.037179   7.059 3.39e-12 ***
## c19ProSo02           0.401098   0.037452  10.710  < 2e-16 ***
## c19ProSo04           0.234985   0.030403   7.729 2.93e-14 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.075 on 886 degrees of freedom
##   (35 observations deleted due to missingness)
## Multiple R-squared:  0.4435, Adjusted R-squared:  0.4259
## F-statistic: 25.22 on 28 and 886 DF,  p-value: < 2.2e-16
```

```
# c19ProSo04
summary(philippines_lm_4)
```

```
##
## Call:
## lm(formula = c19ProSo04 ~ ., data = philippines)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.5315 -0.5840  0.1037  0.7338  3.5395
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.205584   0.379075  -0.542  0.58773
## isoFriends_inPerson -0.044794   0.016334  -2.742  0.00622 **
## isoOthPpl_inPerson   0.036451   0.019616   1.858  0.06346 .
## isoFriends_online    0.007661   0.018241   0.420  0.67460
## isoOthPpl_online    -0.012909   0.016692  -0.773  0.43952
## lone01              -0.015196   0.048934  -0.311  0.75622
## lone02               0.054726   0.048749   1.123  0.26191
## lone03              -0.003609   0.051125  -0.071  0.94374
## happy                0.026120   0.027493   0.950  0.34233
## lifeSat             -0.029247   0.048282  -0.606  0.54484
## MLQ                 -0.009518   0.034287  -0.278  0.78140
## bor01                0.010481   0.030399   0.345  0.73034
## bor02               -0.014513   0.029599  -0.490  0.62402
## bor03                0.070441   0.029089   2.422  0.01565 *
```

```
## consp01             -0.013334   0.020338  -0.656  0.51224
## consp02              0.012062   0.020478   0.589  0.55599
## consp03             -0.011284   0.015898  -0.710  0.47803
## c19perBeh01          0.188895   0.064320   2.937  0.00340 **
## c19perBeh02         -0.173880   0.074862  -2.323  0.02042 *
## c19perBeh03          0.136399   0.050679   2.691  0.00725 **
## c19RCA01             0.045226   0.038642   1.170  0.24216
## c19RCA02             0.155264   0.062710   2.476  0.01348 *
## c19RCA03            -0.071239   0.046546  -1.530  0.12625
## gender               0.036470   0.077184   0.473  0.63668
## age                  0.056477   0.030117   1.875  0.06109 .
## edu                  0.041264   0.035049   1.177  0.23939
## c19ProSo01           0.212977   0.040236   5.293 1.52e-07 ***
## c19ProSo02           0.049962   0.042537   1.175  0.24049
## c19ProSo03           0.268807   0.034779   7.729 2.93e-14 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.149 on 886 degrees of freedom
##   (35 observations deleted due to missingness)
## Multiple R-squared:  0.3143, Adjusted R-squared:  0.2927
## F-statistic: 14.51 on 28 and 886 DF,  p-value: < 2.2e-16
```

Linear Regression Model Summary for Poland

```
# c19ProSo01
summary(poland_lm_1)

##
## Call:
## lm(formula = c19ProSo01 ~ ., data = poland)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.4518 -0.6726  0.1044  0.7612  2.7087
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)          0.0619394  0.5294751   0.117   0.9069
## isoFriends_inPerson -0.0001390  0.0247658  -0.006   0.9955
## isoOthPpl_inPerson   0.0583424  0.0270508   2.157   0.0316 *
## isoFriends_online    0.0145846  0.0247714   0.589   0.5563
## isoOthPpl_online    -0.0000155  0.0224665  -0.001   0.9994
## lone01              -0.0148865  0.0696908  -0.214   0.8310
## lone02               0.0412552  0.0592717   0.696   0.4868
## lone03               0.0177875  0.0651293   0.273   0.7849
## happy                0.0236868  0.0460780   0.514   0.6075
## lifeSat              0.0402940  0.0726152   0.555   0.5793
## MLQ                  0.0351039  0.0407955   0.860   0.3900
## bor01                0.0085054  0.0417875   0.204   0.8388
## bor02               -0.0485348  0.0432423  -1.122   0.2624
## bor03               -0.0826233  0.0401409  -2.058   0.0402 *
## consp01             -0.0452017  0.0298010  -1.517   0.1301
## consp02              0.0519395  0.0304983   1.703   0.0893 .
## consp03              0.0165675  0.0273899   0.605   0.5456
## c19perBeh01          0.0331601  0.0607165   0.546   0.5853
## c19perBeh02         -0.1458766  0.0644175  -2.265   0.0241 *
## c19perBeh03          0.0291977  0.0335592   0.870   0.3848
```

```
## c19RCA01            -0.0323752  0.0303495  -1.067   0.2867
## c19RCA02             0.0371159  0.0578588   0.641   0.5216
## c19RCA03            -0.0007031  0.0401517  -0.018   0.9860
## gender              -0.0573169  0.1469548  -0.390   0.6967
## age                  0.0766131  0.0482090   1.589   0.1128
## edu                 -0.0631875  0.0354486  -1.783   0.0754 .
## c19ProSo02           0.2136891  0.0358928   5.954 5.70e-09 ***
## c19ProSo03           0.2609982  0.0404852   6.447 3.26e-10 ***
## c19ProSo04           0.0918444  0.0442930   2.074   0.0388 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.14 on 404 degrees of freedom
##   (25 observations deleted due to missingness)
## Multiple R-squared:  0.3718, Adjusted R-squared:  0.3282
## F-statistic: 8.538 on 28 and 404 DF,  p-value: < 2.2e-16

# c19ProSo02
summary(poland_lm_2)

##
## Call:
## lm(formula = c19ProSo02 ~ ., data = poland)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.2255 -1.0782  0.1504  1.0815  4.1301
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -1.717085   0.698506  -2.458 0.014381 *
## isoFriends_inPerson  0.064393   0.032759   1.966 0.050022 .
## isoOthPpl_inPerson  -0.048163   0.036079  -1.335 0.182649
## isoFriends_online    0.018442   0.032924   0.560 0.575687
## isoOthPpl_online    -0.007113   0.029857  -0.238 0.811819
## lone01              -0.060677   0.092578  -0.655 0.512574
## lone02               0.024255   0.078813   0.308 0.758426
## lone03               0.026230   0.086558   0.303 0.762022
## happy                0.022666   0.061250   0.370 0.711534
## lifeSat             -0.029367   0.096535  -0.304 0.761122
## MLQ                 -0.005506   0.054268  -0.101 0.919241
## bor01                0.035958   0.055512   0.648 0.517514
## bor02                0.040492   0.057525   0.704 0.481901
## bor03                0.047082   0.053577   0.879 0.380047
## consp01              0.011723   0.039715   0.295 0.768003
## consp02             -0.033859   0.040644  -0.833 0.405303
## consp03              0.024010   0.036399   0.660 0.509868
## c19perBeh01         -0.006199   0.080724  -0.077 0.938825
## c19perBeh02          0.219335   0.085462   2.566 0.010634 *
## c19perBeh03         -0.037983   0.044604  -0.852 0.394959
## c19RCA01             0.033790   0.040358   0.837 0.402942
## c19RCA02             0.067836   0.076862   0.883 0.377994
## c19RCA03            -0.043600   0.053320  -0.818 0.414002
## gender              -0.059854   0.195324  -0.306 0.759432
## age                  0.074633   0.064165   1.163 0.245456
## edu                  0.164147   0.046587   3.523 0.000475 ***
## c19ProSo01           0.377454   0.063400   5.954  5.7e-09 ***
```

```
## c19ProSo03           0.116811   0.056207   2.078 0.038318 *
## c19ProSo04           0.149511   0.058711   2.547 0.011249 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.516 on 404 degrees of freedom
##   (25 observations deleted due to missingness)
## Multiple R-squared:  0.3217, Adjusted R-squared:  0.2747
## F-statistic: 6.844 on 28 and 404 DF,  p-value: < 2.2e-16
```

```
# c19ProSo03
summary(poland_lm_3)
```

```
##
## Call:
## lm(formula = c19ProSo03 ~ ., data = poland)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.4694 -0.6472  0.1660  0.7682  4.1094
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)          0.3455072  0.6193502   0.558   0.5773
## isoFriends_inPerson  0.0020863  0.0289802   0.072   0.9426
## isoOthPpl_inPerson  -0.0020719  0.0318357  -0.065   0.9481
## isoFriends_online   -0.0176009  0.0289861  -0.607   0.5440
## isoOthPpl_online     0.0050068  0.0262885   0.190   0.8490
## lone01               0.1008983  0.0814003   1.240   0.2159
## lone02              -0.0536531  0.0693485  -0.774   0.4396
## lone03              -0.0342548  0.0762006  -0.450   0.6533
## happy                0.0294171  0.0539171   0.546   0.5856
## lifeSat             -0.0821250  0.0849065  -0.967   0.3340
## MLQ                  0.0904262  0.0475694   1.901   0.0580 .
## bor01               -0.0556721  0.0488226  -1.140   0.2548
## bor02                0.0461041  0.0506279   0.911   0.3630
## bor03               -0.0263572  0.0471993  -0.558   0.5769
## consp01              0.0000684  0.0349715   0.002   0.9984
## consp02             -0.0562930  0.0357065  -1.577   0.1157
## consp03             -0.0298711  0.0320310  -0.933   0.3516
## c19perBeh01          0.1222752  0.0708143   1.727   0.0850 .
## c19perBeh02         -0.0607079  0.0757964  -0.801   0.4236
## c19perBeh03         -0.0226724  0.0392907  -0.577   0.5642
## c19RCA01             0.0079215  0.0355620   0.223   0.8238
## c19RCA02            -0.0934903  0.0675794  -1.383   0.1673
## c19RCA03            -0.0310457  0.0469591  -0.661   0.5089
## gender               0.0996675  0.1719236   0.580   0.5624
## age                 -0.0206052  0.0565797  -0.364   0.7159
## edu                  0.0613631  0.0415318   1.477   0.1403
## c19ProSo01           0.3573870  0.0554367   6.447 3.26e-10 ***
## c19ProSo02           0.0905534  0.0435722   2.078   0.0383 *
## c19ProSo04           0.4643751  0.0467036   9.943  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.335 on 404 degrees of freedom
##   (25 observations deleted due to missingness)
```

```
## Multiple R-squared:  0.4708, Adjusted R-squared:  0.4341
## F-statistic: 12.83 on 28 and 404 DF,  p-value: < 2.2e-16

# c19ProSo04
summary(poland_lm_4)

##
## Call:
## lm(formula = c19ProSo04 ~ ., data = poland)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.5891 -0.7387  0.1006  0.7533  3.9810
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.070887   0.591590  -0.120  0.90468
## isoFriends_inPerson -0.011728   0.027665  -0.424  0.67185
## isoOthPpl_inPerson   0.012094   0.030392   0.398  0.69088
## isoFriends_online    0.022076   0.027668   0.798  0.42539
## isoOthPpl_online     0.012044   0.025095   0.480  0.63153
## lone01              -0.043093   0.077841  -0.554  0.58016
## lone02              -0.092011   0.066107  -1.392  0.16473
## lone03               0.094330   0.072625   1.299  0.19473
## happy               -0.053850   0.051431  -1.047  0.29571
## lifeSat              0.089626   0.081042   1.106  0.26942
## MLQ                 -0.006669   0.045622  -0.146  0.88386
## bor01               -0.017158   0.046684  -0.368  0.71341
## bor02                0.022522   0.048377   0.466  0.64178
## bor03               -0.006898   0.045083  -0.153  0.87847
## consp01              0.016857   0.033381   0.505  0.61386
## consp02             -0.002092   0.034198  -0.061  0.95125
## consp03             -0.011468   0.030612  -0.375  0.70812
## c19perBeh01         -0.003251   0.067864  -0.048  0.96182
## c19perBeh02          0.108276   0.072229   1.499  0.13464
## c19perBeh03          0.094329   0.037237   2.533  0.01168 *
## c19RCA01             0.039733   0.033900   1.172  0.24186
## c19RCA02             0.176294   0.064082   2.751  0.00621 **
## c19RCA03            -0.045351   0.044805  -1.012  0.31206
## gender               0.051491   0.164206   0.314  0.75400
## age                 -0.061078   0.053947  -1.132  0.25823
## edu                 -0.015232   0.039755  -0.383  0.70182
## c19ProSo01           0.114658   0.055295   2.074  0.03875 *
## c19ProSo02           0.105667   0.041494   2.547  0.01125 *
## c19ProSo03           0.423368   0.042579   9.943  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.274 on 404 degrees of freedom
##   (25 observations deleted due to missingness)
## Multiple R-squared:  0.4453, Adjusted R-squared:  0.4069
## F-statistic: 11.58 on 28 and 404 DF,  p-value: < 2.2e-16
```

Linear Regression Model Summary for Saudi Arabia

```
# c19ProSo01
summary(saudi_arabia_lm_1)
```

```
##
## Call:
## lm(formula = c19ProSo01 ~ ., data = saudi_arabia)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -5.8594 -0.5807  0.1711  0.6790  3.9568
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.4956397  0.3328395  -1.489   0.1369
## isoFriends_inPerson -0.0258141  0.0193290  -1.336   0.1821
## isoOthPpl_inPerson   0.0387136  0.0238568   1.623   0.1050
## isoFriends_online    0.0162002  0.0236766   0.684   0.4940
## isoOthPpl_online     0.0287673  0.0209157   1.375   0.1694
## lone01               0.0923320  0.0502466   1.838   0.0665 .
## lone02              -0.0841890  0.0499563  -1.685   0.0923 .
## lone03               0.0493910  0.0467846   1.056   0.2914
## happy               -0.0371072  0.0265880  -1.396   0.1632
## lifeSat              0.0464417  0.0528960   0.878   0.3802
## MLQ                  0.0002888  0.0375085   0.008   0.9939
## bor01               -0.0171767  0.0309849  -0.554   0.5795
## bor02               -0.0272151  0.0244200  -1.114   0.2654
## bor03                0.0552106  0.0292643   1.887   0.0596 .
## consp01              0.0327970  0.0226459   1.448   0.1479
## consp02             -0.0237085  0.0225194  -1.053   0.2928
## consp03              0.0017772  0.0176422   0.101   0.9198
## c19perBeh01          0.0690105  0.0483269   1.428   0.1537
## c19perBeh02          0.1328871  0.0624534   2.128   0.0337 *
## c19perBeh03          0.0182985  0.0449993   0.407   0.6844
## c19RCA01             0.0341827  0.0356236   0.960   0.3376
## c19RCA02             0.0352244  0.0527703   0.668   0.5046
## c19RCA03            -0.0486496  0.0507745  -0.958   0.3383
## gender               0.1217558  0.0930248   1.309   0.1910
## age                 -0.0516122  0.0388731  -1.328   0.1847
## edu                 -0.0186443  0.0319841  -0.583   0.5601
## c19ProSo02           0.3813108  0.0429442   8.879  < 2e-16 ***
## c19ProSo03           0.0736609  0.0391743   1.880   0.0604 .
## c19ProSo04           0.2224086  0.0362605   6.134 1.36e-09 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.234 on 781 degrees of freedom
##   (67 observations deleted due to missingness)
## Multiple R-squared:  0.444,  Adjusted R-squared:  0.4241
## F-statistic: 22.27 on 28 and 781 DF,  p-value: < 2.2e-16
```

```
# c19ProSo02
summary(saudi_arabia_lm_2)
```

```
##
## Call:
## lm(formula = c19ProSo02 ~ ., data = saudi_arabia)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.5220 -0.5447  0.0272  0.5405  2.7697
```

```
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.173157   0.264617  -0.654  0.51307
## isoFriends_inPerson  0.035419   0.015315   2.313  0.02099 *
## isoOthPpl_inPerson  -0.055660   0.018872  -2.949  0.00328 **
## isoFriends_online    0.027872   0.018781   1.484  0.13820
## isoOthPpl_online    -0.009744   0.016626  -0.586  0.55801
## lone01              -0.039931   0.039962  -0.999  0.31801
## lone02              -0.007143   0.039743  -0.180  0.85741
## lone03              -0.036823   0.037156  -0.991  0.32197
## happy               -0.008859   0.021138  -0.419  0.67525
## lifeSat              0.097886   0.041880   2.337  0.01968 *
## MLQ                 -0.015454   0.029781  -0.519  0.60396
## bor01                0.049337   0.024547   2.010  0.04479 *
## bor02               -0.011138   0.019404  -0.574  0.56613
## bor03                0.021560   0.023279   0.926  0.35466
## consp01              0.007114   0.018006   0.395  0.69289
## consp02              0.019131   0.017883   1.070  0.28505
## consp03              0.008731   0.014007   0.623  0.53324
## c19perBeh01          0.051954   0.038382   1.354  0.17626
## c19perBeh02         -0.028415   0.049729  -0.571  0.56789
## c19perBeh03         -0.003205   0.035738  -0.090  0.92856
## c19RCA01             0.026511   0.028290   0.937  0.34899
## c19RCA02            -0.035342   0.041899  -0.844  0.39921
## c19RCA03             0.100498   0.040184   2.501  0.01259 *
## gender              -0.025357   0.073948  -0.343  0.73176
## age                  0.038836   0.030874   1.258  0.20880
## edu                  0.016214   0.025398   0.638  0.52341
## c19ProSo01           0.240465   0.027082   8.879  < 2e-16 ***
## c19ProSo03           0.291636   0.029381   9.926  < 2e-16 ***
## c19ProSo04           0.127409   0.029126   4.374 1.38e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.98 on 781 degrees of freedom
##   (67 observations deleted due to missingness)
## Multiple R-squared:  0.5567, Adjusted R-squared:  0.5408
## F-statistic: 35.03 on 28 and 781 DF,  p-value: < 2.2e-16
```

```
# c19ProSo03
summary(saudi_arabia_lm_3)
```

```
##
## Call:
## lm(formula = c19ProSo03 ~ ., data = saudi_arabia)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.6445 -0.5925  0.2198  0.6174  3.4117
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.36108    0.30349  -1.190   0.2345
## isoFriends_inPerson -0.01169    0.01763  -0.663   0.5074
## isoOthPpl_inPerson   0.01521    0.02177   0.699   0.4850
## isoFriends_online   -0.02764    0.02156  -1.282   0.2002
```

```
## isoOthPpl_online     0.03527    0.01904   1.852   0.0644 .
## lone01               0.03690    0.04587   0.804   0.4214
## lone02              -0.04275    0.04559  -0.938   0.3487
## lone03               0.02802    0.04266   0.657   0.5114
## happy               -0.02051    0.02425  -0.846   0.3979
## lifeSat              0.00628    0.04823   0.130   0.8964
## MLQ                  0.04145    0.03415   1.214   0.2253
## bor01               -0.03462    0.02822  -1.227   0.2203
## bor02                0.03522    0.02224   1.584   0.1137
## bor03                0.04680    0.02668   1.754   0.0798 .
## consp01              0.01483    0.02066   0.718   0.4729
## consp02             -0.01987    0.02053  -0.968   0.3334
## consp03             -0.01234    0.01607  -0.768   0.4427
## c19perBeh01          0.02130    0.04409   0.483   0.6293
## c19perBeh02          0.01427    0.05708   0.250   0.8027
## c19perBeh03          0.09345    0.04088   2.286   0.0225 *
## c19RCA01             0.01542    0.03248   0.475   0.6352
## c19RCA02             0.07976    0.04802   1.661   0.0972 .
## c19RCA03            -0.03867    0.04628  -0.836   0.4037
## gender               0.07530    0.08483   0.888   0.3750
## age                  0.01236    0.03547   0.348   0.7276
## edu                 -0.02636    0.02914  -0.905   0.3659
## c19ProSo01           0.06118    0.03254   1.880   0.0604 .
## c19ProSo02           0.38411    0.03870   9.926   <2e-16 ***
## c19ProSo04           0.36006    0.03128  11.510   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.125 on 781 degrees of freedom
##   (67 observations deleted due to missingness)
## Multiple R-squared:  0.5375, Adjusted R-squared:  0.5209
## F-statistic: 32.42 on 28 and 781 DF,  p-value: < 2.2e-16
```

```
# c19ProSo04
summary(saudi_arabia_lm_4)
```

```
##
## Call:
## lm(formula = c19ProSo04 ~ ., data = saudi_arabia)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.4795 -0.6778  0.0889  0.6539  4.7978
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)         -0.1170321  0.3212464  -0.364   0.7157
## isoFriends_inPerson -0.0142923  0.0186452  -0.767   0.4436
## isoOthPpl_inPerson   0.0499473  0.0229645   2.175   0.0299 *
## isoFriends_online   -0.0102641  0.0228254  -0.450   0.6531
## isoOthPpl_online    -0.0028485  0.0201844  -0.141   0.8878
## lone01              -0.0550581  0.0484964  -1.135   0.2566
## lone02               0.0770319  0.0481607   1.599   0.1101
## lone03              -0.0017794  0.0451271  -0.039   0.9686
## happy                0.0600460  0.0255696   2.348   0.0191 *
## lifeSat             -0.0955239  0.0508961  -1.877   0.0609 .
## MLQ                  0.0459903  0.0361164   1.273   0.2033
```

```
## bor01               -0.0120558  0.0298686  -0.404   0.6866
## bor02               -0.0022310  0.0235566  -0.095   0.9246
## bor03               -0.0602672  0.0281892  -2.138   0.0328 *
## consp01             -0.0088067  0.0218550  -0.403   0.6871
## consp02             -0.0103927  0.0217183  -0.479   0.6324
## consp03              0.0030332  0.0170048   0.178   0.8585
## c19perBeh01         -0.0197193  0.0466369  -0.423   0.6725
## c19perBeh02         -0.0489461  0.0603466  -0.811   0.4176
## c19perBeh03         -0.0354441  0.0433601  -0.817   0.4139
## c19RCA01             0.0216052  0.0343486   0.629   0.5295
## c19RCA02             0.0209498  0.0508735   0.412   0.6806
## c19RCA03             0.1100056  0.0488110   2.254   0.0245 *
## gender               0.0284476  0.0897576   0.317   0.7514
## age                 -0.0003275  0.0375114  -0.009   0.9930
## edu                  0.0486840  0.0307864   1.581   0.1142
## c19ProSo01           0.2066336  0.0336886   6.134 1.36e-09 ***
## c19ProSo02           0.1877049  0.0429098   4.374 1.38e-05 ***
## c19ProSo03           0.4027592  0.0349933  11.510  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.19 on 781 degrees of freedom
##   (67 observations deleted due to missingness)
## Multiple R-squared:  0.4809, Adjusted R-squared:  0.4623
## F-statistic: 25.84 on 28 and 781 DF,  p-value: < 2.2e-16
```