FIT3152 Assignment 1

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Report

We use the head function to double check if the data is correctly read **(Table 1.1)**

Q1

Q1a Descriptive Analysis

Dimensions:

Found using dim() function

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```
dim(cvbase)
```

```
[1] 40000    54
```

Dimensions are 40000 rows of data with 54 variables (40000 x 54)

All data types are of int type except for the country name (column name: "coded_country") which is of datatype chr **(Table 1.2)**

Summary:

The output shows the summary of the dataset, including the distribution of all numerical attributes, which gives us information on the statistics of every relevant column using the mean, median and standard deviation. **(Table 1.3)**

We can also see the number of missing values for every column of the dataset and it can be simply observed that the columns employstatus 1-10 has many missing values. **(Table 1.3)**

Analysis of Numerical Attributes:

Affect

Corona Community Injunctive norms
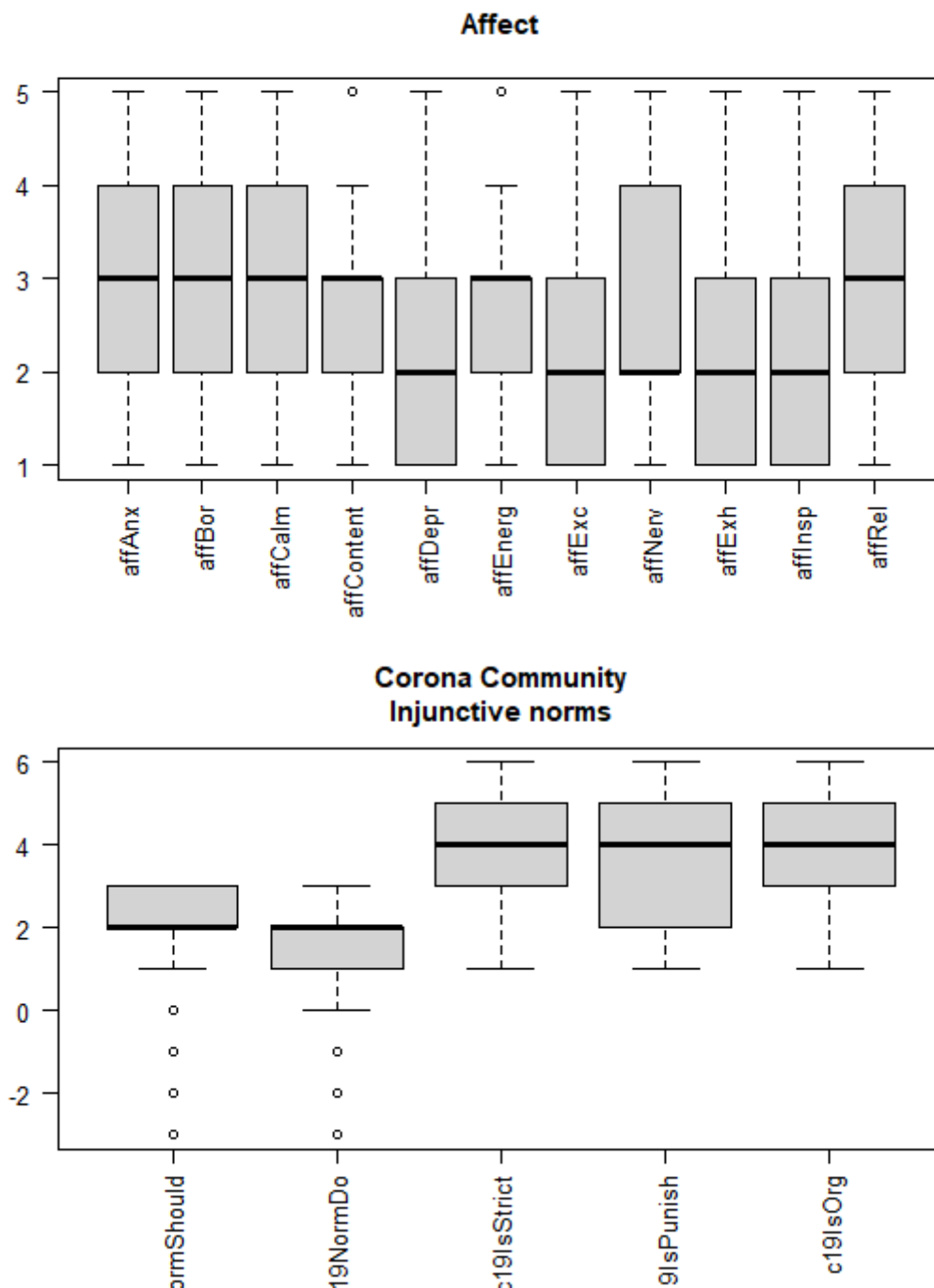
Distribution of Numerical Attributes: The boxplots provide a clear visual representation of the distribution of numerical data. They compare the distribution of numerical attributes across attributes. They are useful for identifying differences in central tendency, variability, and outliers between groups.

Boxplots of all numerical attributes **(Image 1.5-1.13)**

Q1b Preprocessing and data manipulation

Data cleaning: removing and fixing any missing or inconsistent data.

Data reduction: removing irrelevant or redundant data to improve analysis performance.

Data sampling: selecting a random representative subset of data from the large dataset for analysis.

Merging columns: (eg. employstatus_x) into 1 single column.

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```
cvbase2 = cvbase
#Merging the employstatus columns
cvbase2[21:30][is.na(cvbase[21:30])] <- 0
cvbase2$employstatus <- 0
tmp <- cvbase2[21:30]==1
cvbase2$employstatus[ row(tmp)[tmp] ] <- col(tmp)[tmp]
cvbase2 = cvbase2[, -21:-30]
employ_status <- cvbase2 %>% select(c(employstatus))
```

It can be seen in **Image 1.14** the numerical distribution of the new merged column of employment status.

Replace all NA Values with mean.

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```
cvbase2 <- cvbase2 %>%
   mutate_if(is.numeric, ~ifelse(is.na(.), mean(., na.rm = TRUE), .))
```

Table 1.4 shows the summary of the cleaned and manipulated dataset

We can also see the number of missing values for every column of the dataset is now 0 as we have replaced all NA values with its mean.

Q2

Q2a Focus Country: Hong Kong S.A.R.

Filter out the countries other Hong Kong S.A.R.

First check all the unique countries in the dataset so that there aren't different names for the same country **(Table 2.1)**

Group by and Tally

We group the data by countries and tally **(Table 2.2)**

From this we can see that there exists 197 rows of data for our focus country (Hong Kong S.A.R.)

Filter out by country name

Assigned Hong Kong S.A.R. so will filter out accordingly

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```
#Filter Hong Kong S.A.R. Data
hk_data <- subset(cvbase2, coded_country == "Hong Kong S.A.R.")
#Filter All other countries Data
other_data <- subset(cvbase2, coded_country != "Hong Kong S.A.R.")
```

Double check the dimensions to check if the data is filtered appropriately

```
dim(hk_data)
```

```
[1] 197  45
```

Comparison of Responses HK vs rest of world: As visualized below, most of the numerical attriutes of the participant responses are quite similar between Hong Kong S.A.R. and the rest of the world. A few notable differences can be seen in the following columns:

employ_status: Much hgher average in Hong Kong S.A.R. as compared to the rest of the world.

Societal Discontent: Very different values in comparison to the rest of the world.

Trust in Govt.: The rest of the world seems to trust the govt. more as compared to Hong Kong.

```
#create boxplots of  all numerical attributes for Hong Kong S.A.R. and rest of the world
hk <- hk_data %>% select(-c(coded_country))
par(mar=c(5,4,4,2)+0.1)
boxplot(hk, las = 2, main="Participant Responses in Hong Kong S.A.R.", xlab="Attributes")

others <- other_data %>% select(-c(coded_country))
par(mar=c(5,4,4,2)+0.1)
```


Participant Responses in Hong Kong S.A.R.
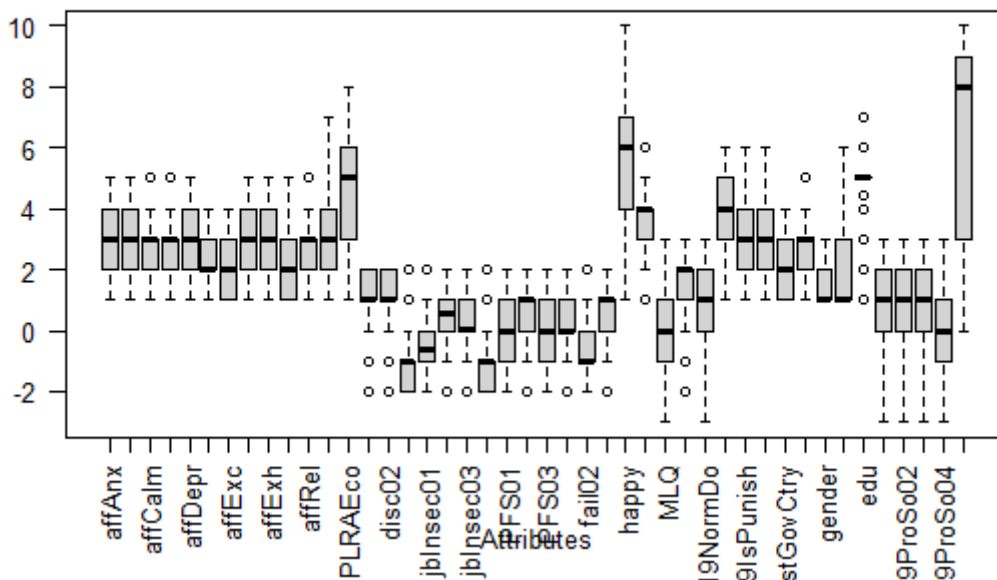
```
boxplot(others, las = 2, main="Participant Responses Rest of the World", xlab="Attributes")
```

Participant Responses Rest of the World

Hide

```r
# Extract Mean and Standard Deviation from all columns of Hong Kong S.A.R. Data
hk_means <- colMeans(hk, na.rm=TRUE)
hk_sd <- apply(hk, 2, sd, na.rm=TRUE)

# Extract Mean and Standard Deviation from all columns of Rest of The World Data
other_means <- colMeans(others, na.rm=TRUE)
other_sd <- apply(others, 2, sd, na.rm=TRUE)

# Create a dataframe to provide easier visualization for comparison
comparison <- data.frame(
  hk_means = hk_means,
  other_means = other_means,
  hk_sd = hk_sd,
  other_sd = other_sd
)
comparison
```
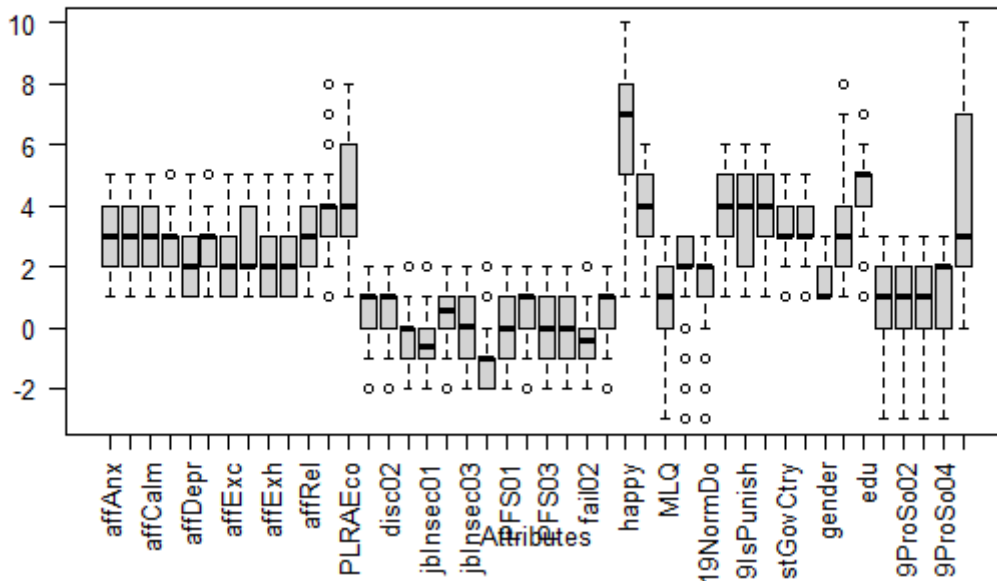
	hk_means <dbl>	other_means <dbl>	hk_sd <dbl>	other_sd <dbl>
affAnx	2.71433261	2.72356999	1.1473129	1.2360028
affBor	2.94923858	2.71740622	1.2687218	1.3094993
affCalm	2.81181486	2.92809975	0.8979249	1.0827299
affContent	2.49074037	2.67676914	0.9820170	1.0924241
affDepr	2.62050562	2.23772273	1.1070439	1.1871095
affEnerg	2.41917578	2.57841342	0.8855965	1.0857454
affExc	2.15305125	2.15108594	0.9778364	1.0924150
affNerv	2.62227670	2.58834270	1.1113110	1.2009023
affExh	2.80461657	2.50800334	1.1399969	1.2143541

	hk_means	other_means	hk_sd	other_sd
	<dbl>	<dbl>	<dbl>	<dbl>
affInsp	2.16973491	2.43910329	0.9728878	1.1296930

1-10 of 44 rows   Previous **1** 2 3 4 5 Next

Q2b: Attributes predict pro-social attitudes

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```
# Linear regression model to predict c19ProSo01 using the attributes for Hong Kong S.A.R. dat
a
hk_fit1 = lm(c19ProSo01~ affAnx+ affBor+ affCalm+ affContent+ affDepr+ affEnerg+ affExc+ affN
erv+ affExh+ affInsp +affRel+ PLRAC19+ PLRAEco+ disc01+ disc02+ disc03+jbInsec01+ jbInsec02+
jbInsec03+ jbInsec04+ PFS01+PFS02+PFS03+ fail01+fail02+fail03+ happy+ lifeSat+ MLQ+ c19NormSh
ould+ c19NormDo+ c19IsStrict+ c19IsPunish+ c19IsOrg+ trustGovCtry+ trustGovState+ gender+ age
+employstatus, data = hk_data)
```

c19ProSo01: The attributes that are the best predictors are fail01, c19IsStrict, gender as seen by the Pr(>|t|) value and indicated by the * next to it. **(Table 2.3)**

In this case, since the p-value is > 0.05, we cant reject the null hypothesis. Therefore, we can conclude that there is not enough evidence to support a significant relationship between the variables at the 5% significance level.

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```
# Linear regression model to predict c19ProSo02 using the attributes for Hong Kong S.A.R. dat
a
hk_fit2 = lm(c19ProSo02~ affAnx+ affBor+ affCalm+ affContent+ affDepr+ affEnerg+ affExc+ affN
erv+ affExh+ affInsp +affRel+ PLRAC19+ PLRAEco+ disc01+ disc02+ disc03+jbInsec01+ jbInsec02+
jbInsec03+ jbInsec04+ PFS01+PFS02+PFS03+ fail01+fail02+fail03+ happy+ lifeSat+ MLQ+ c19NormSh
ould+ c19NormDo+ c19IsStrict+ c19IsPunish+ c19IsOrg+ trustGovCtry+ trustGovState+ gender+ age
+employstatus, data = hk_data)
```

c19ProSo02: The attributes that are the best predictors are PFS03, PFS01, fail01, trustGovState as seen by the Pr(>|t|) value and indicated by the * next to it.**(Table 2.4)**

The p-value is 0.006811, which is < 0.05 which suggests that there is significant evidence to reject the null hypothesis, hence concluding that the model is useful in predicting the response variable.

Hide

```
# Linear regression model to predict c19ProSo03 using the attributes for Hong Kong S.A.R. dat
a
hk_fit3 = lm(c19ProSo01~ affAnx+ affBor+ affCalm+ affContent+ affDepr+ affEnerg+ affExc+ affN
erv+ affExh+ affInsp +affRel+ PLRAC19+ PLRAEco+ disc01+ disc02+ disc03+jbInsec01+ jbInsec02+
jbInsec03+ jbInsec04+ PFS01+PFS02+PFS03+ fail01+fail02+fail03+ happy+ lifeSat+ MLQ+ c19NormSh
ould+ c19NormDo+ c19IsStrict+ c19IsPunish+ c19IsOrg+ trustGovCtry+ trustGovState+ gender+ age
+employstatus, data = hk_data)
```

c19ProSo03: The attributes that are the best predictors are PLRAC19, MLQ as seen by the Pr(>|t|) value and indicated by the * next to it. **(Table 2.5)**

The p-value is 0.01586, which means that there is evidence to suggest that at least one of the attributes in the model is significantly related to c19ProSo03.

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```
# Linear regression model to predict c19ProSo04 using the attributes for Hong Kong S.A.R. dat
a
hk_fit4 = lm(c19ProSo01~ affAnx+ affBor+ affCalm+ affContent+ affDepr+ affEnerg+ affExc+ affN
erv+ affExh+ affInsp +affRel+ PLRAC19+ PLRAEco+ disc01+ disc02+ disc03+jbInsec01+ jbInsec02+
jbInsec03+ jbInsec04+ PFS01+PFS02+PFS03+ fail01+fail02+fail03+ happy+ lifeSat+ MLQ+ c19NormSh
ould+ c19NormDo+ c19IsStrict+ c19IsPunish+ c19IsOrg+ trustGovCtry+ trustGovState+ gender+ age
+employstatus, data = hk_data)
```

c19ProSo04: The attributes that are the best predictors are PLRAC19, c19NormShould as seen by the Pr(>|t|) value and indicated by the * next to it. **(Table 2.6)**

The p-value is 0.01586, which means that there is evidence to suggest that at least one of the attributes in the model is significantly related to c19ProSo03.

Q2c

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```
# Linear regression model to predict c19ProSo01 using the attributes for Rest of the world da
ta
other_fit1 = lm(c19ProSo01~ affAnx+ affBor+ affCalm+ affContent+ affDepr+ affEnerg+ affExc+ a
ffNerv+ affExh+ affInsp +affRel+ PLRAC19+ PLRAEco+ disc01+ disc02+ disc03+jbInsec01+ jbInsec0
2+ jbInsec03+ jbInsec04+ PFS01+PFS02+PFS03+ fail01+fail02+fail03+ happy+ lifeSat+ MLQ+ c19Nor
mShould+ c19NormDo+ c19IsStrict+ c19IsPunish+ c19IsOrg+ trustGovCtry+ trustGovState+ gender+
age+employstatus, data = other_data)
```

C19ProSo01: Many of the attributes can be seen as very good predictors of the pro-social attribute C19ProSo01, namely examples:affExc, PLRAC19, disc02, MLQ etc… **(Table 2.7)**

The multiple R-squared value of 0.09621 and adjusted R-squared value of 0.09532 indicate that only a small proportion of the variability in C19ProSo01 can be explained by the predictor variables. A very low p-value (< 2.2e-16) suggests that at least one of the predictor variables is significantly associated with C19ProSo01.

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```
# Linear regression model to predict c19ProSo02 using the attributes for Rest of the world da
ta
other_fit2 = lm(c19ProSo02~ affAnx+ affBor+ affCalm+ affContent+ affDepr+ affEnerg+ affExc+ a
ffNerv+ affExh+ affInsp +affRel+ PLRAC19+ PLRAEco+ disc01+ disc02+ disc03+jbInsec01+ jbInsec0
2+ jbInsec03+ jbInsec04+ PFS01+PFS02+PFS03+ fail01+fail02+fail03+ happy+ lifeSat+ MLQ+ c19Nor
mShould+ c19NormDo+ c19IsStrict+ c19IsPunish+ c19IsOrg+ trustGovCtry+ trustGovState+ gender+
age+employstatus, data = other_data)
```

C19ProSo02: Many of the attributes can be seen as very good predictors of the pro-social attribute C19ProSo02, namely examples: affAnx, disc02, disc03, lifeSat, MLQ, c19NormShould, trustGovState, age etc… This can be identified by the lowest values for Pr(>|t|) **(Table 2.8)**

The F-statistic suggests that the model provides a statistically significant fit to the data. Finally, the p-value of less than 2.2e-16 indicates strong evidence against the null hypothesis.

```
# Linear regression model to predict c19ProSo03 using the attributes for Rest of the world da
ta
other_fit3 = lm(c19ProSo03~ affAnx+ affBor+ affCalm+ affContent+ affDepr+ affEnerg+ affExc+ a
ffNerv+ affExh+ affInsp +affRel+ PLRAC19+ PLRAEco+ disc01+ disc02+ disc03+jbInsec01+ jbInsec0
2+ jbInsec03+ jbInsec04+ PFS01+PFS02+PFS03+ fail01+fail02+fail03+ happy+ lifeSat+ MLQ+ c19Nor
mShould+ c19NormDo+ c19IsStrict+ c19IsPunish+ c19IsOrg+ trustGovCtry+ trustGovState+ gender+
age+employstatus, data = other_data)
```

C19ProSo03: Many of the attributes can be seen as very good predictors of the pro-social attribute C19ProSo03, namely examples: disc02, disc03, lifeSat, c19NormShould, c19NormDo, c19IsOrg, trustGovState, age etc… This can be identified by the lowest values for Pr(>|t|) **(Table 2.9)**

the F-statistic is 112.1 on 39 and 39763 degrees of freedom, indicating that the model fits the data better than a null model with no predictor variables. The p-value is < 2.2e-16, which is very small, indicating strong evidence against the null hypothesis.

C19ProSo04: Many of the attributes can be seen as very good predictors of the pro-social attribute C19ProSo04, namely examples:PLRAC19, disc02, jbInsec02, lifeSat, c19NormShould etc… **(Table 2.10)**

In this case, the p-value is less than 0.05, suggesting strong evidence against the null hypothesis, and supporting the conclusion that the model has significant predictive power.

Comparing this analysis of the regression model, we can see that the model made using data from the other countries fits a lot better than that of the focus country (Hong Kong S.A.R.) and has a lot more significant predictors. This can be due to the difference in the volume of data available when comparing the 2 groups as one consists of only the focus country (Hong Kong S.A.R.) and the other consists of hundreds others and a lot more data.

Q3

select columns from the original dataset which would be used for indicating the social, economic, health and political indicators and then **(Table 3.1 & Table 3.2)**

```
# Create a dataframe using only relevant columns to be used for clustering for HK Data
hk_cluster = select(hk_data, disc01, disc02, disc03, PFS01, PFS02, PFS03, fail01, fail02, fai
l03, happy, lifeSat, MLQ, trustGovCtry, trustGovState, coded_country, c19ProSo01, c19ProSo02,
c19ProSo03, c19ProSo04)

# Create a dataframe using only relevant columns to be used for clustering for Rest of Data
other_cluster = select(other_data, disc01, disc02, disc03, PFS01, PFS02, PFS03, fail01, fail0
2, fail03, happy, lifeSat, MLQ, trustGovCtry, trustGovState, coded_country, c19ProSo01, c19Pr
oSo02, c19ProSo03, c19ProSo04)
```

Group others by countries

```
# Group others by countries
grouped_countries <- other_cluster %>% group_by(coded_country)
```

```
# k-means cluster for HK Data using all attributes except coded country and Corona ProSocial
hk_cluster[,1:14]=scale(hk_cluster[,1:14])
hk_cluster$coded_country = factor(hk_cluster$coded_country)

set.seed(9999)
hk_cluster2= hk_cluster
hk_cluster2[,1:14]=scale(hk_cluster2[,1:14])
hk_clusterfit = kmeans(hk_cluster2[,1:14],7, nstart = 20)

T1 = table(actual = hk_cluster$coded_country, fitted = hk_clusterfit$cluster)
T1
# k-means cluster for Other Data using all attributes except coded country and Corona ProSoci
al
other_cluster2 <- kmeans(grouped_countries[,1:14],7,nstart=20)
```

```
grouped_countries$coded_country = factor(grouped_countries$coded_country)

set.seed(9999)
other_cluster2= other_cluster
other_cluster2[,1:14]=scale(other_cluster2[,1:14])
other_clusterfit = kmeans(other_cluster2[,1:14],7, nstart = 20)
```

```
T2 = table(actual = other_cluster$coded_country, fitted = other_clusterfit$cluster)
#T2 = as.data.frame.matrix(T2)
T2
```

The indicators used to identify social, economic, health and political attributes are as follows: Societal Discontent: disc01, disc02, disc03, Perceived Financial Strain: PFS01, PFS02, PFS03, Disempowerment: fail01, fail02, fail03, Life Satisfaction: happy, lifeSat, MLQ, Trust in GovernmenttrustGovCtry, trustGovState.

Singapore, Taiwan, South Korea, Japan **(Table 3.3)**

These countries are similar to Hong Kong S.A.R. based on their economic, social, and political indicators. They all belong to the same cluster as Hong Kong S.A.R. in both the k-means clustering analyses**(Table 3.3)** & **(Table 3.4)**, indicating that they have similar patterns of development across these indicators.

Q3b

For Hong Kong, Looking at the absolute values of the coefficients for each attribute, the attributes that look like the strongest predictors are fail02, trustGovCtry,

trustGovState, fail03, disc02. **(Table 3.7)**

For Similar Countries, it can be seen that cluster 4 has much lower values for disc01, disc02, and PFS01 than the other clusters. Cluster 5, on the other hand, has much higher values for these variables. This suggests that these variables are strong predictors of the clustering.**(Table 3.8) (Image 3.9)**

Hide

```
# Subset the similar countries
similar_countries <- subset(other_cluster2, coded_country %in% c("Singapore",  "Taiwan", "Sou
th Korea", "Japan"))
set.seed(9999)
similar_countries2= similar_countries
# Scale the data
similar_countries2[,1:14]=scale(similar_countries2[,1:14])
# Use k-means clustering for similar countries data.
similar_countriesfit = kmeans(similar_countries2[,1:14],7, nstart = 20)

T3 = table(actual = similar_countries2$coded_country, fitted = similar_countriesfit$cluster)
T3
hk_clusterfit$centers
similar_countriesfit$centers
```

Comparison of similarity and differences between results:

Fo Hong Kong Data, in Question 2c, the strongest predictors were identified as PFS03, PFS01, fail01, and trustGovState. In this question, the strongest predictors are identified as fail02, trustGovCtry, trustGovState, fail03, and disc02. The fact that trustGovState appears in both lists suggests that it may be a particularly important predictor in the case of Hong Kong S.A.R. data.

For Similar Countries, in Question 2c, the strongest predictors were identified as PLRAC19, disc02, jbInsec02, lifeSat, c19NormShould. In this question, the strongest predictors are identified as disc01, disc02, and PFS01. We can see that they are different in terms of the variables identified as strongest predictors.

Better Match?

Overall, there are discrepancies between the predictors identified by each group, even though both groups identified some significant predictors for pro-social views in the focus country. While cluster 3(b) contains one predictor that wasn't found in the focus country, group 2(c) contains several predictors that weren't found there. Therefore, neither group provides a perfect match to the important attributes for predicting pro-social attitudes in the focus country.

Appendix

Q1

Table 1.1: Head of Base Data

	affAnx <int>	affBor <int>	affCalm <int>	affContent <int>	affDepr <int>	affEnerg <int>	affExc <int>	affNerv <int>	affExh <int>	
19216	2	5	3	1	2	1	1	3	2	
1906	5	5	2	3	4	3	2	5	4	
22379	3	5	3	3	1	3	3	4	1	
30947	4	2	1	3	3	2	2	4	3	
8878	5	3	1	2	2	2	1	4	5	
51085	1	1	1	5	1	4	1	2	2	

6 rows | 1-10 of 54 columns

Table 1.2: Structure of Data

```
'data.frame':    40000 obs. of  54 variables:
 $ affAnx         : int  2 5 3 4 5 1 1 3 4 2 ...
 $ affBor         : int  5 5 5 2 3 1 1 3 3 3 ...
 $ affCalm        : int  3 2 3 1 1 1 4 4 3 4 ...
 $ affContent     : int  1 3 3 3 2 5 3 4 3 4 ...
 $ affDepr        : int  2 4 1 3 2 1 2 3 3 1 ...
 $ affEnerg       : int  1 3 3 2 2 4 3 4 4 4 ...
 $ affExc         : int  1 2 3 2 1 1 4 4 3 3 ...
 $ affNerv        : int  3 5 4 4 4 2 1 2 2 1 ...
 $ affExh         : int  2 4 1 3 5 2 2 2 2 1 ...
 $ affInsp        : int  1 3 4 3 4 1 3 4 4 3 ...
 $ affRel         : int  3 3 3 2 1 1 4 4 3 4 ...
 $ PLRAC19        : int  6 4 3 3 3 1 1 4 3 2 ...
 $ PLRAEco        : int  6 6 3 5 3 1 3 4 5 2 ...
 $ disc01         : int  0 2 1 2 1 -2 1 1 1 1 ...
 $ disc02         : int  1 2 2 1 1 1 1 1 1 1 ...
 $ disc03         : int  -1 1 -2 -1 -1 -1 -1 1 0 -2 ...
 $ jbInsec01      : int  NA 2 NA -1 NA -1 -2 -1 0 NA ...
 $ jbInsec02      : int  NA 0 NA 0 NA 2 1 1 0 NA ...
 $ jbInsec03      : int  2 1 NA 1 NA -1 1 1 0 NA ...
 $ jbInsec04      : int  NA 0 NA -2 NA 0 -2 -1 -2 NA ...
 $ employstatus_1 : int  NA NA NA NA NA NA NA NA NA NA ...
 $ employstatus_2 : int  NA NA NA NA NA NA NA 1 1 NA ...
 $ employstatus_3 : int  NA 1 NA 1 NA NA 1 NA NA NA ...
 $ employstatus_4 : int  1 NA NA NA NA NA NA NA NA NA ...
 $ employstatus_5 : int  NA NA 1 NA NA NA NA NA NA NA ...
 $ employstatus_6 : int  NA NA NA NA 1 NA NA NA NA NA ...
 $ employstatus_7 : int  NA NA NA NA NA NA NA NA NA 1 ...
 $ employstatus_8 : int  NA NA NA NA NA NA NA NA NA NA ...
 $ employstatus_9 : int  NA NA NA NA NA 1 1 NA NA NA ...
 $ employstatus_10: int  NA NA NA NA NA NA NA NA NA NA ...
 $ PFS01          : int  1 2 0 0 0 1 -1 1 0 1 ...
 $ PFS02          : int  2 2 -2 1 1 2 1 1 0 1 ...
 $ PFS03          : int  1 1 0 0 0 -2 0 1 -2 -1 ...
 $ fail01         : int  1 -2 1 0 -1 2 -2 0 0 1 ...
 $ fail02         : int  -1 -2 0 -1 -2 0 -2 0 -1 0 ...
 $ fail03         : int  2 0 -1 1 2 -1 1 0 0 -1 ...
 $ happy          : int  4 8 6 7 10 3 10 7 7 8 ...
 $ lifeSat        : int  2 4 5 5 5 3 6 5 5 5 ...
 $ MLQ            : int  0 3 0 2 2 3 2 1 2 2 ...
 $ c19NormShould  : int  2 3 3 2 3 2 1 1 1 1 ...
 $ c19NormDo      : int  2 0 3 1 1 -1 -1 1 2 -2 ...
 $ c19IsStrict    : int  2 6 5 4 5 6 1 4 6 5 ...
 $ c19IsPunish    : int  3 6 4 4 5 4 4 4 5 3 ...
 $ c19IsOrg       : int  5 5 4 5 4 2 6 4 5 4 ...
 $ trustGovCtry   : int  NA 4 3 NA NA 5 5 2 4 3 ...
 $ trustGovState  : int  NA 4 3 NA NA 5 5 3 4 2 ...
 $ gender         : int  1 2 1 2 1 2 2 2 2 1 ...
 $ age            : int  2 2 1 3 3 1 1 5 4 6 ...
 $ edu            : int  5 6 6 3 7 6 6 2 6 4 ...
 $ coded_country  : chr  "Philippines" "Saudi Arabia" "Pakistan" "Spain" ...
 $ c19ProSo01     : int  2 3 3 2 3 0 2 1 1 1 ...
 $ c19ProSo02     : int  2 2 2 2 3 -1 2 1 1 1 ...
```

```
$ c19ProSo03     : int  3 2 2 2 -1 0 2 1 1 -2 ...
$ c19ProSo04     : int  3 0 3 3 3 -2 2 1 1 2 ...
```

Table 1.3: Summary of Data

```
    affAnx           affBor           affCalm          affContent        affDepr
Min.   :1.000    Min.   :1.000    Min.   :1.000    Min.   :1.000    Min.   :1.00
1st Qu.:2.000    1st Qu.:2.000    1st Qu.:2.000    1st Qu.:2.000    1st Qu.:1.00
Median :3.000    Median :3.000    Median :3.000    Median :3.000    Median :2.00
Mean   :2.724    Mean   :2.719    Mean   :2.928    Mean   :2.676    Mean   :2.24
3rd Qu.:4.000    3rd Qu.:4.000    3rd Qu.:4.000    3rd Qu.:3.000    3rd Qu.:3.00
Max.   :5.000    Max.   :5.000    Max.   :5.000    Max.   :5.000    Max.   :5.00
NA's   :539      NA's   :551      NA's   :537      NA's   :666      NA's   :619
    affEnerg         affExc           affNerv          affExh           affInsp
Min.   :1.000    Min.   :1.000    Min.   :1.000    Min.   :1.00     Min.   :1.000
1st Qu.:2.000    1st Qu.:1.000    1st Qu.:2.000    1st Qu.:1.00     1st Qu.:1.000
Median :3.000    Median :2.000    Median :2.000    Median :2.00     Median :2.000
Mean   :2.578    Mean   :2.151    Mean   :2.588    Mean   :2.51     Mean   :2.438
3rd Qu.:3.000    3rd Qu.:3.000    3rd Qu.:4.000    3rd Qu.:3.00     3rd Qu.:3.000
Max.   :5.000    Max.   :5.000    Max.   :5.000    Max.   :5.00     Max.   :5.000
NA's   :672      NA's   :707      NA's   :575      NA's   :641      NA's   :690
    affRel           PLRAC19          PLRAEco          disc01           disc02
Min.   :1.000    Min.   :1.00     Min.   :1.000    Min.   :-2.0000   Min.   :-2.0000
1st Qu.:2.000    1st Qu.:3.00     1st Qu.:3.000    1st Qu.: 0.0000   1st Qu.: 0.0000
Median :3.000    Median :4.00     Median :4.000    Median : 1.0000   Median : 1.0000
Mean   :2.738    Mean   :3.55     Mean   :4.405    Mean   : 0.6358   Mean   : 0.8368
3rd Qu.:4.000    3rd Qu.:4.00     3rd Qu.:6.000    3rd Qu.: 1.0000   3rd Qu.: 1.0000
Max.   :5.000    Max.   :8.00     Max.   :8.000    Max.   : 2.0000   Max.   : 2.0000
NA's   :634      NA's   :160      NA's   :167      NA's   :144       NA's   :144
    disc03           jbInsec01        jbInsec02        jbInsec03        jbInsec04
Min.   :-2.0000   Min.   :-2.000   Min.   :-2.000   Min.   :-2.000   Min.   :-2.000
1st Qu.:-1.0000   1st Qu.:-2.000   1st Qu.: 0.000   1st Qu.:-1.000   1st Qu.:-2.000
Median : 0.0000   Median :-1.000   Median : 1.000   Median : 0.000   Median :-2.000
Mean   :-0.4077   Mean   :-0.597   Mean   : 0.563   Mean   : 0.058   Mean   :-0.988
3rd Qu.: 0.0000   3rd Qu.: 0.000   3rd Qu.: 1.000   3rd Qu.: 1.000   3rd Qu.: 0.000
Max.   : 2.0000   Max.   : 2.000   Max.   : 2.000   Max.   : 2.000   Max.   : 2.000
NA's   :150       NA's   :10971    NA's   :9913     NA's   :8463     NA's   :13056
employstatus_1   employstatus_2   employstatus_3   employstatus_4   employstatus_5
Min.   :1        Min.   :1        Min.   :1        Min.   :1        Min.   :1
1st Qu.:1        1st Qu.:1        1st Qu.:1        1st Qu.:1        1st Qu.:1
Median :1        Median :1        Median :1        Median :1        Median :1
Mean   :1        Mean   :1        Mean   :1        Mean   :1        Mean   :1
3rd Qu.:1        3rd Qu.:1        3rd Qu.:1        3rd Qu.:1        3rd Qu.:1
Max.   :1        Max.   :1        Max.   :1        Max.   :1        Max.   :1
NA's   :34442    NA's   :33280    NA's   :29005    NA's   :36525    NA's   :37965
employstatus_6   employstatus_7   employstatus_8   employstatus_9   employstatus_10
Min.   :1        Min.   :1        Min.   :1        Min.   :1        Min.   :1
1st Qu.:1        1st Qu.:1        1st Qu.:1        1st Qu.:1        1st Qu.:1
Median :1        Median :1        Median :1        Median :1        Median :1
Mean   :1        Mean   :1        Mean   :1        Mean   :1        Mean   :1
3rd Qu.:1        3rd Qu.:1        3rd Qu.:1        3rd Qu.:1        3rd Qu.:1
Max.   :1        Max.   :1        Max.   :1        Max.   :1        Max.   :1
NA's   :36924    NA's   :36407    NA's   :39283    NA's   :31847    NA's   :39079
    PFS01            PFS02            PFS03            fail01
Min.   :-2.00000  Min.   :-2.0000  Min.   :-2.0000  Min.   :-2.00000
1st Qu.:-1.00000  1st Qu.: 0.0000  1st Qu.:-1.0000  1st Qu.:-1.00000
Median : 0.00000  Median : 1.0000  Median : 0.0000  Median : 0.00000
Mean   :-0.02785  Mean   : 0.5724  Mean   :-0.2536  Mean   :-0.06265
```

```
3rd Qu.: 1.00000   3rd Qu.: 1.0000   3rd Qu.: 1.0000   3rd Qu.: 1.00000
Max.   : 2.00000   Max.   : 2.0000   Max.   : 2.0000   Max.   : 2.00000
NA's   :183        NA's   :156       NA's   :150       NA's   :158
     fail02             fail03            happy             lifeSat            MLQ
Min.   :-2.0000    Min.   :-2.0000   Min.   : 1.000    Min.   :1.000    Min.   :-3.000
1st Qu.:-1.0000    1st Qu.: 0.0000   1st Qu.: 5.000    1st Qu.:3.000    1st Qu.: 0.000
Median :-1.0000    Median : 1.0000   Median : 7.000    Median :4.000    Median : 1.000
Mean   :-0.4093    Mean   : 0.3529   Mean   : 6.327    Mean   :4.141    Mean   : 0.846
3rd Qu.: 0.0000    3rd Qu.: 1.0000   3rd Qu.: 8.000    3rd Qu.:5.000    3rd Qu.: 2.000
Max.   : 2.0000    Max.   : 2.0000   Max.   :10.000    Max.   :6.000    Max.   : 3.000
NA's   :164        NA's   :144       NA's   :549       NA's   :131      NA's   :133
c19NormShould      c19NormDo         c19IsStrict       c19IsPunish       c19IsOrg
Min.   :-3.000     Min.   :-3.000    Min.   :1.000     Min.   :1.000    Min.   :1.000
1st Qu.: 2.000     1st Qu.: 1.000    1st Qu.:3.000     1st Qu.:2.000    1st Qu.:3.000
Median : 2.000     Median : 2.000    Median :4.000     Median :4.000    Median :4.000
Mean   : 2.009     Mean   : 1.297    Mean   :4.124     Mean   :3.496    Mean   :3.904
3rd Qu.: 3.000     3rd Qu.: 2.000    3rd Qu.:5.000     3rd Qu.:5.000    3rd Qu.:5.000
Max.   : 3.000     Max.   : 3.000    Max.   :6.000     Max.   :6.000    Max.   :6.000
NA's   :157        NA's   :155       NA's   :170       NA's   :183      NA's   :174
 trustGovCtry      trustGovState      gender            age               edu
Min.   :1.000     Min.   :1.000     Min.   :1.000     Min.   :1.000    Min.   :1.000
1st Qu.:2.000     1st Qu.:2.000     1st Qu.:1.000     1st Qu.:2.000    1st Qu.:4.000
Median :3.000     Median :3.000     Median :1.000     Median :3.000    Median :5.000
Mean   :3.021     Mean   :3.086     Mean   :1.388     Mean   :2.896    Mean   :4.408
3rd Qu.:4.000     3rd Qu.:4.000     3rd Qu.:2.000     3rd Qu.:4.000    3rd Qu.:5.000
Max.   :5.000     Max.   :5.000     Max.   :3.000     Max.   :8.000    Max.   :7.000
NA's   :9330      NA's   :9412      NA's   :229       NA's   :259      NA's   :297
coded_country      c19ProSo01         c19ProSo02        c19ProSo03        c19ProSo04
Length:40000       Min.   :-3.000    Min.   :-3.0000   Min.   :-3.000   Min.   :-3.000
Class :character   1st Qu.: 0.000    1st Qu.: 0.0000   1st Qu.: 0.000   1st Qu.: 0.000
Mode  :character   Median : 1.000    Median : 1.0000   Median : 1.000   Median : 2.000
                   Mean   : 0.971    Mean   : 0.6822   Mean   : 0.545   Mean   : 1.287
                   3rd Qu.: 2.000    3rd Qu.: 2.0000   3rd Qu.: 2.000   3rd Qu.: 2.000
                   Max.   : 3.000    Max.   : 3.0000   Max.   : 3.000   Max.   : 3.000
                   NA's   :140       NA's   :155       NA's   :162      NA's   :164
```

Table 1.4: Summary of Manipulated & Cleaned

Data

```
     affAnx           affBor           affCalm         affContent         affDepr
 Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.00
 1st Qu.:2.000   1st Qu.:2.000   1st Qu.:2.000   1st Qu.:2.000   1st Qu.:1.00
 Median :3.000   Median :3.000   Median :3.000   Median :3.000   Median :2.00
 Mean   :2.724   Mean   :2.719   Mean   :2.928   Mean   :2.676   Mean   :2.24
 3rd Qu.:4.000   3rd Qu.:4.000   3rd Qu.:4.000   3rd Qu.:3.000   3rd Qu.:3.00
 Max.   :5.000   Max.   :5.000   Max.   :5.000   Max.   :5.000   Max.   :5.00
     affEnerg          affExc           affNerv          affExh          affInsp
 Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000
 1st Qu.:2.000   1st Qu.:1.000   1st Qu.:2.000   1st Qu.:1.000   1st Qu.:1.000
 Median :3.000   Median :2.000   Median :2.000   Median :2.000   Median :2.000
 Mean   :2.578   Mean   :2.151   Mean   :2.589   Mean   :2.509   Mean   :2.438
 3rd Qu.:3.000   3rd Qu.:3.000   3rd Qu.:4.000   3rd Qu.:3.000   3rd Qu.:3.000
 Max.   :5.000   Max.   :5.000   Max.   :5.000   Max.   :5.000   Max.   :5.000
     affRel           PLRAC19          PLRAEco           disc01           disc02
 Min.   :1.000   Min.   :1.00    Min.   :1.000   Min.   :-2.0000   Min.   :-2.0000
 1st Qu.:2.000   1st Qu.:3.00    1st Qu.:3.000   1st Qu.: 0.0000   1st Qu.: 0.0000
 Median :3.000   Median :4.00    Median :4.000   Median : 1.0000   Median : 1.0000
 Mean   :2.738   Mean   :3.55    Mean   :4.405   Mean   : 0.6358   Mean   : 0.8368
 3rd Qu.:4.000   3rd Qu.:4.00    3rd Qu.:6.000   3rd Qu.: 1.0000   3rd Qu.: 1.0000
 Max.   :5.000   Max.   :8.00    Max.   :8.000   Max.   : 2.0000   Max.   : 2.0000
     disc03           jbInsec01         jbInsec02         jbInsec03
 Min.   :-2.0000   Min.   :-2.000   Min.   :-2.0000   Min.   :-2.00000
 1st Qu.:-1.0000   1st Qu.:-1.000   1st Qu.: 0.0000   1st Qu.:-1.00000
 Median : 0.0000   Median :-0.597   Median : 0.5628   Median : 0.05844
 Mean   :-0.4077   Mean   :-0.597   Mean   : 0.5628   Mean   : 0.05844
 3rd Qu.: 0.0000   3rd Qu.: 0.000   3rd Qu.: 1.0000   3rd Qu.: 1.00000
 Max.   : 2.0000   Max.   : 2.000   Max.   : 2.0000   Max.   : 2.00000
   jbInsec04           PFS01            PFS02             PFS03
 Min.   :-2.0000   Min.   :-2.00000   Min.   :-2.0000   Min.   :-2.0000
 1st Qu.:-2.0000   1st Qu.:-1.00000   1st Qu.: 0.0000   1st Qu.:-1.0000
 Median :-0.9885   Median : 0.00000   Median : 1.0000   Median : 0.0000
 Mean   :-0.9885   Mean   :-0.02785   Mean   : 0.5724   Mean   :-0.2536
 3rd Qu.:-0.9885   3rd Qu.: 1.00000   3rd Qu.: 1.0000   3rd Qu.: 1.0000
 Max.   : 2.0000   Max.   : 2.00000   Max.   : 2.0000   Max.   : 2.0000
     fail01            fail02            fail03            happy            lifeSat
 Min.   :-2.00000   Min.   :-2.0000   Min.   :-2.0000   Min.   : 1.000   Min.   :1.000
 1st Qu.:-1.00000   1st Qu.:-1.0000   1st Qu.: 0.0000   1st Qu.: 5.000   1st Qu.:3.000
 Median : 0.00000   Median :-0.4093   Median : 1.0000   Median : 7.000   Median :4.000
 Mean   :-0.06265   Mean   :-0.4093   Mean   : 0.3529   Mean   : 6.327   Mean   :4.141
 3rd Qu.: 1.00000   3rd Qu.: 0.0000   3rd Qu.: 1.0000   3rd Qu.: 8.000   3rd Qu.:5.000
 Max.   : 2.00000   Max.   : 2.0000   Max.   : 2.0000   Max.   :10.000   Max.   :6.000
      MLQ           c19NormShould     c19NormDo        c19IsStrict      c19IsPunish
 Min.   :-3.000   Min.   :-3.000   Min.   :-3.000   Min.   :1.000   Min.   :1.000
 1st Qu.: 0.000   1st Qu.: 2.000   1st Qu.: 1.000   1st Qu.:3.000   1st Qu.:2.000
 Median : 1.000   Median : 2.000   Median : 2.000   Median :4.000   Median :4.000
 Mean   : 0.846   Mean   : 2.009   Mean   : 1.297   Mean   :4.124   Mean   :3.496
 3rd Qu.: 2.000   3rd Qu.: 3.000   3rd Qu.: 2.000   3rd Qu.:5.000   3rd Qu.:5.000
 Max.   : 3.000   Max.   : 3.000   Max.   : 3.000   Max.   :6.000   Max.   :6.000
    c19IsOrg        trustGovCtry     trustGovState       gender            age
 Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000
 1st Qu.:3.000   1st Qu.:3.000   1st Qu.:3.000   1st Qu.:1.000   1st Qu.:2.000
 Median :4.000   Median :3.021   Median :3.000   Median :1.000   Median :3.000
```

```
 Mean    :3.904   Mean     :3.021   Mean     :3.086   Mean     :1.388   Mean      :2.896
 3rd Qu.:5.000   3rd Qu.:4.000   3rd Qu.:4.000   3rd Qu.:2.000   3rd Qu.:4.000
 Max.    :6.000   Max.     :5.000   Max.     :5.000   Max.     :3.000   Max.      :8.000
       edu            coded_country       c19ProSo01        c19ProSo02        c19ProSo03
 Min.    :1.000   Length:40000      Min.    :-3.000   Min.    :-3.0000   Min.    :-3.000
 1st Qu.:4.000   Class :character   1st Qu.: 0.000   1st Qu.: 0.0000   1st Qu.: 0.000
 Median :5.000   Mode  :character   Median : 1.000   Median : 1.0000   Median : 1.000
 Mean    :4.408                     Mean    : 0.971   Mean    : 0.6822   Mean    : 0.545
 3rd Qu.:5.000                     3rd Qu.: 2.000   3rd Qu.: 2.000   3rd Qu.: 2.000
 Max.    :7.000                     Max.    : 3.000   Max.    : 3.0000   Max.    : 3.000
   c19ProSo04        employstatus
 Min.    :-3.000   Min.    : 0.0
 1st Qu.: 0.000   1st Qu.: 2.0
 Median : 2.000   Median : 3.0
 Mean    : 1.287   Mean    : 4.7
 3rd Qu.: 2.000   3rd Qu.: 7.0
 Max.    : 3.000   Max.    :10.0
```

Image 1.5: Boxplot of Numerical Attributes Likelihood
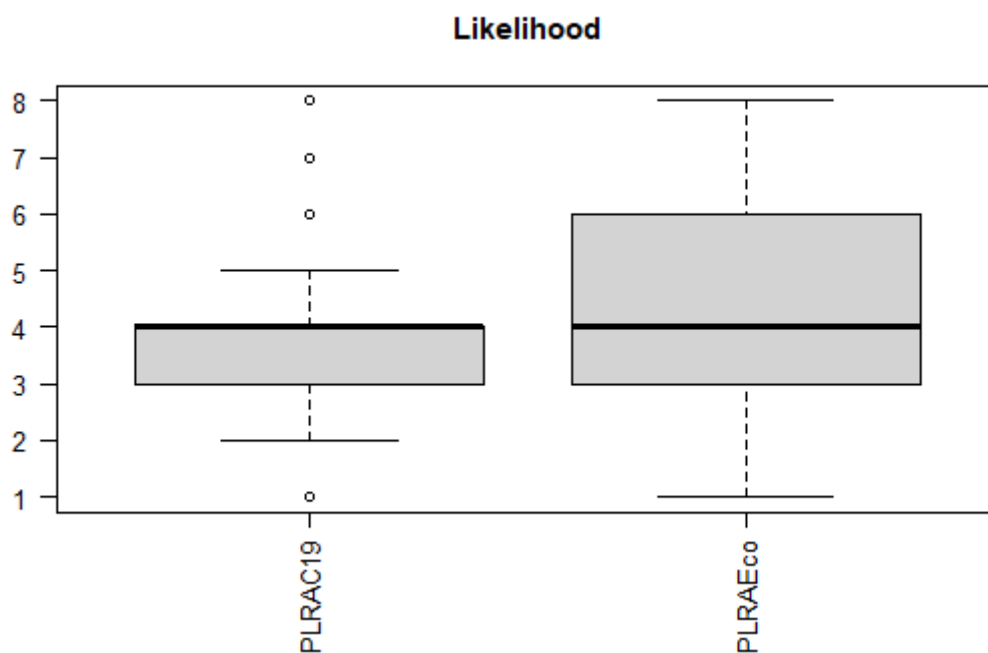
Image 1.6: Boxplot of Numerical Attributes Societal

Discontent
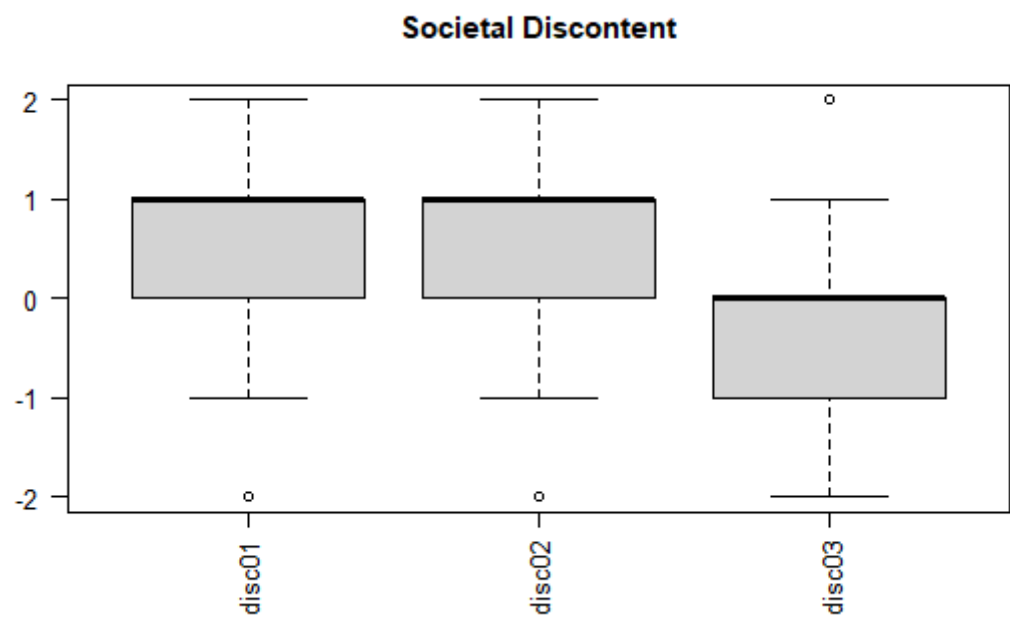
Image 1.7: Boxplot of Numerical Attributes Job Insecurity
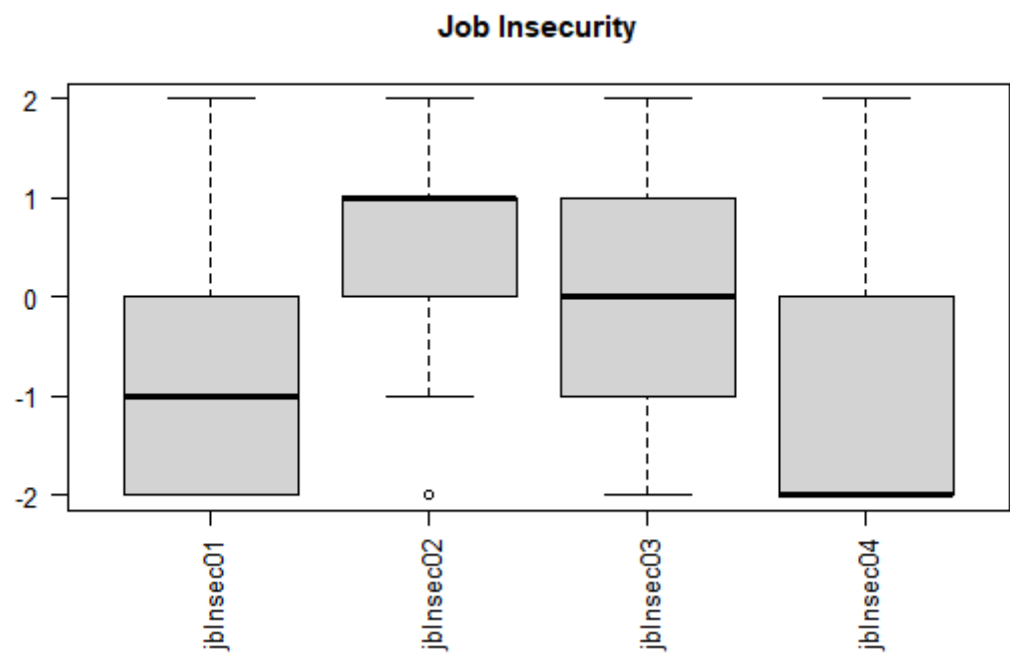
Image 1.8: Boxplot of Numerical Attributes Employ

Status

Employment Status
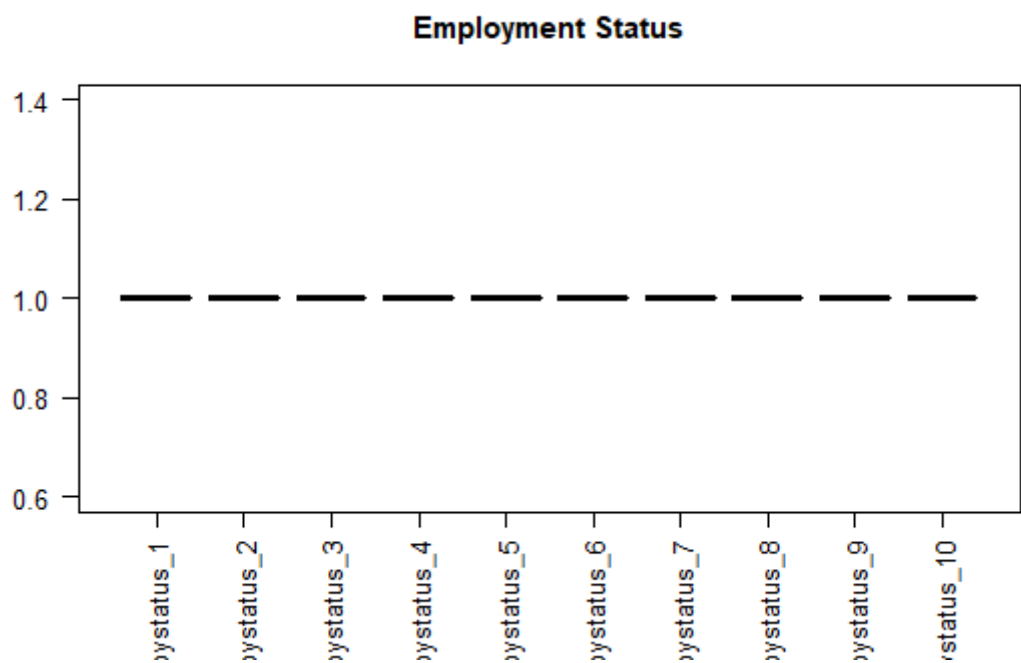
Image 1.9: Boxplot of Numerical Attributes
Perceived Financial Strain

Perceived Financial Strain

Image 1.10: Boxplot of Numerical Attributes

Disempowerment

Image 1.11: Boxplot of Numerical Attributes Life Satisfaction

Image 1.12: Boxplot of Numerical Attributes Corona

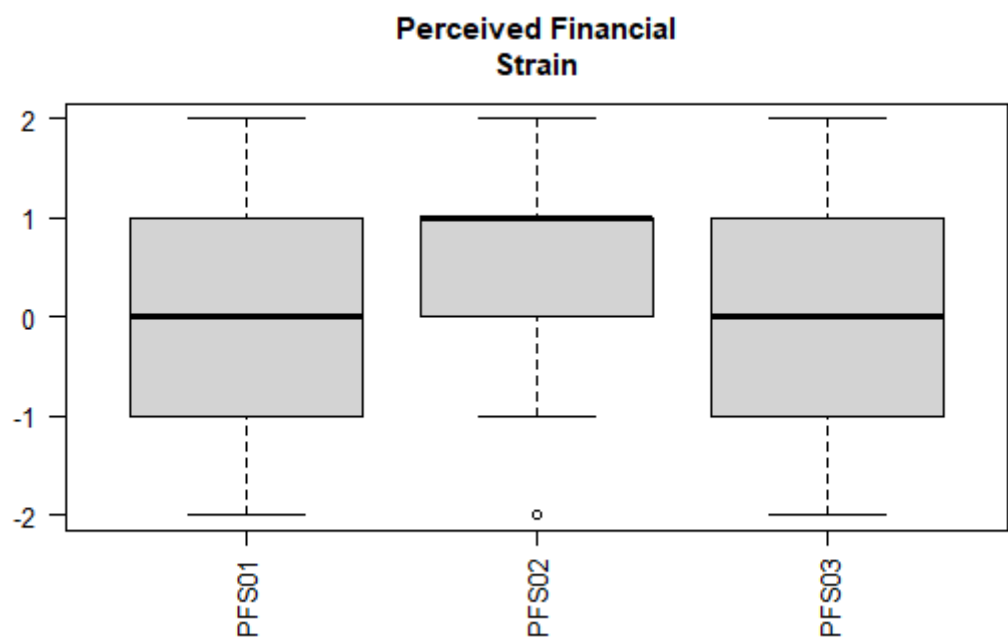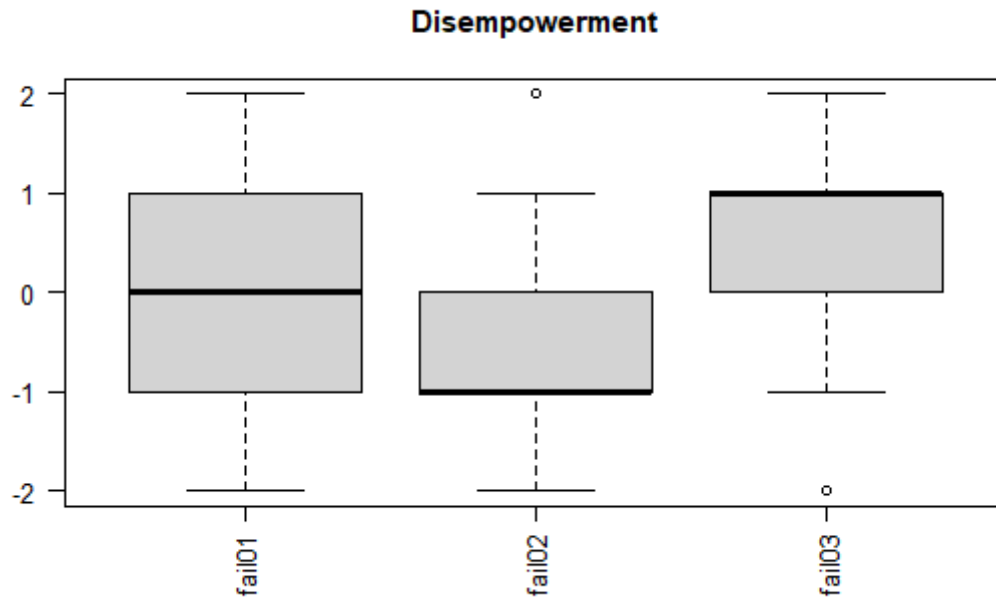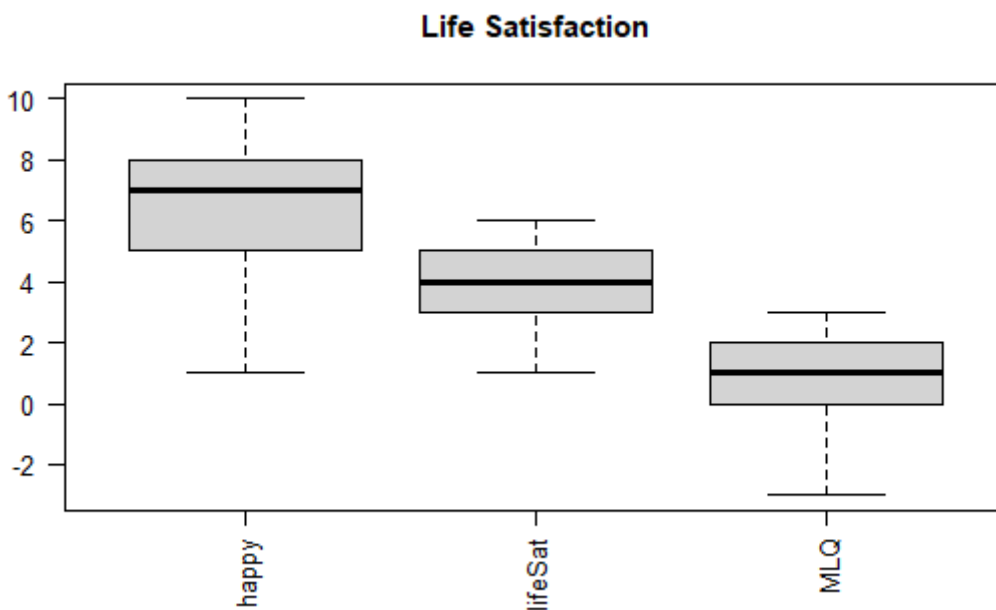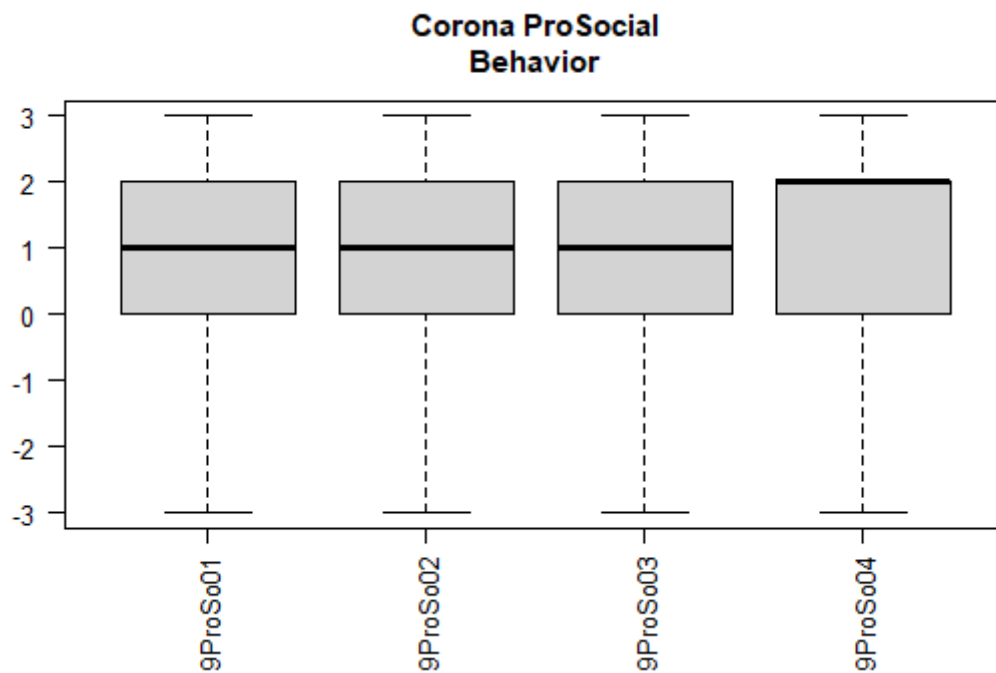# ProSocial Behavior

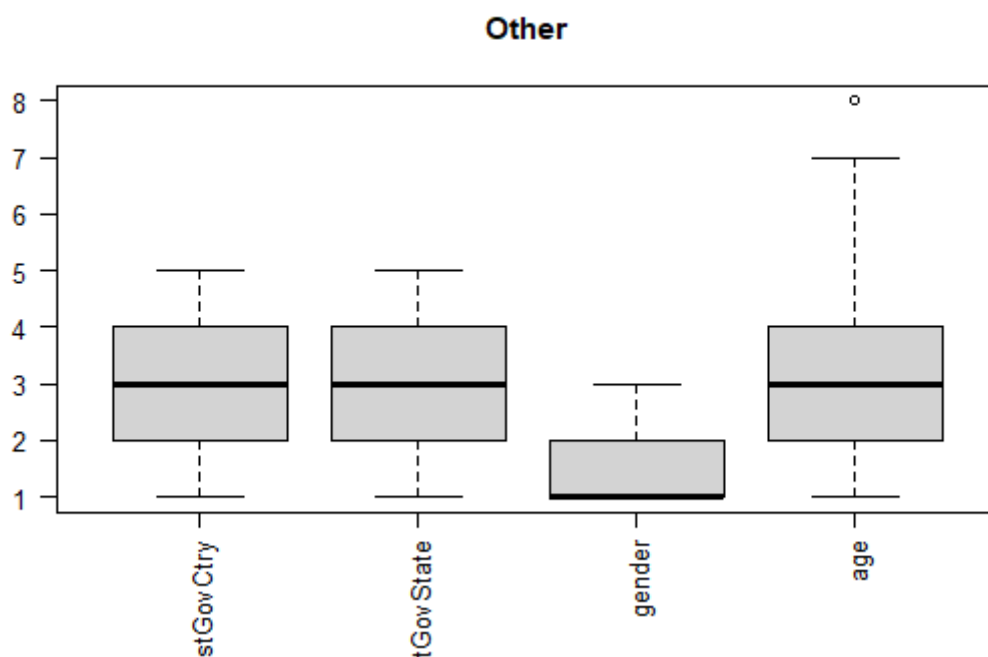Image 1.13: Boxplot of Numerical Attributes Other Attributes

Image 1.14: Boxplot of New Numerical Attribute

Employment Status
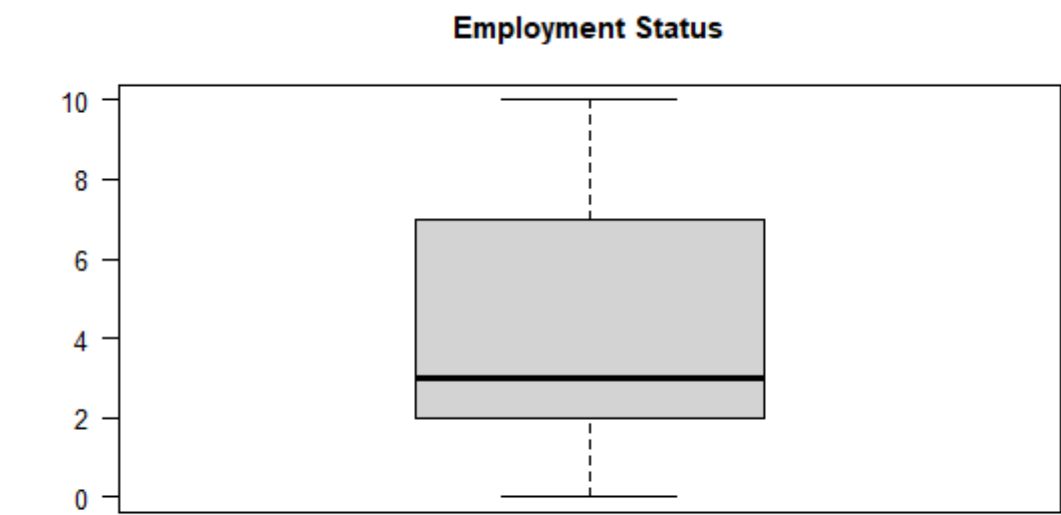
Q2

Table 2.1: Unique countries

```
unique(cvbase2$coded_country)
```

```
  [1] "Philippines"              "Saudi Arabia"
  [3] "Pakistan"                 "Spain"
  [5] "Canada"                   "Romania"
  [7] "Argentina"                "United States of America"
  [9] "China"                    "Turkey"
 [11] "Republic of Serbia"       "Italy"
 [13] "Australia"                "Hungary"
 [15] "Germany"                  "Japan"
 [17] "Egypt"                    "Greece"
 [19] "Indonesia"                "Russia"
 [21] "Brazil"                   "Croatia"
 [23] "United Kingdom"           "South Korea"
 [25] "France"                   "South Africa"
 [27] "Hong Kong S.A.R."         "Bangladesh"
 [29] "Netherlands"              "Kazakhstan"
 [31] "Peru"                     "Iran"
 [33] "Ukraine"                  "Singapore"
 [35] "Malaysia"                 "Kosovo"
 [37] "Algeria"                  "Poland"
 [39] "Chile"                    "Taiwan"
 [41] ""                         "Ireland"
 [43] "Vietnam"                  "Mexico"
 [45] "El Salvador"              "Israel"
 [47] "Tunisia"                  "Lithuania"
 [49] "India"                    "Mauritius"
 [51] "Colombia"                 "United Arab Emirates"
 [53] "Sweden"                   "Iraq"
 [55] "Cyprus"                   "Switzerland"
 [57] "Lebanon"                  "Costa Rica"
 [59] "Czech Republic"           "Bulgaria"
 [61] "Thailand"                 "Jordan"
 [63] "Moldova"                  "Portugal"
 [65] "Bosnia and Herzegovina"   "Montenegro"
 [67] "Palestine"                "Austria"
 [69] "Belgium"                  "Luxembourg"
 [71] "Nigeria"                  "Venezuela"
 [73] "Trinidad and Tobago"      "New Zealand"
 [75] "Mali"                     "Jamaica"
 [77] "Finland"                  "Bahrain"
 [79] "Panama"                   "Norway"
 [81] "Estonia"                  "Andorra"
 [83] "Morocco"                  "Slovakia"
 [85] "Uruguay"                  "Uzbekistan"
 [87] "Denmark"                  "Kuwait"
 [89] "Latvia"                   "Armenia"
 [91] "Brunei"                   "Georgia"
 [93] "Libya"                    "Belarus"
 [95] "Azerbaijan"               "Laos"
 [97] "Nepal"                    "Albania"
 [99] "Qatar"                    "Ethiopia"
[101] "Ecuador"                  "Benin"
[103] "Guatemala"                "United Republic of Tanzania"
[105] "Mongolia"                 "Malta"
[107] "Slovenia"                 "Iceland"
```

```
[109] "Dominican Republic"          "Oman"
[111] "Botswana"                     "Cameroon"
```

Table 2.2: Tally of Data by countries

```
group = cvbase2 %>% group_by(coded_country) %>%
  tally()
group
```

coded_country	n
<chr>	<int>
	147
Albania	2
Algeria	121
Andorra	2
Argentina	886
Armenia	1
Australia	774
Austria	36
Azerbaijan	2
Bahrain	5

1-10 of 112 rows   Previous **1** 2 3 4 5 6 … 12 Next

Table 2.3: Summary of Linear Regression Model for

C19ProSo01 for HK Data

```
Call:
lm(formula = c19ProSo01 ~ affAnx + affBor + affCalm + affContent +
    affDepr + affEnerg + affExc + affNerv + affExh + affInsp +
    affRel + PLRAC19 + PLRAEco + disc01 + disc02 + disc03 + jbInsec01 +
    jbInsec02 + jbInsec03 + jbInsec04 + PFS01 + PFS02 + PFS03 +
    fail01 + fail02 + fail03 + happy + lifeSat + MLQ + c19NormShould +
    c19NormDo + c19IsStrict + c19IsPunish + c19IsOrg + trustGovCtry +
    trustGovState + gender + age + employstatus, data = hk_data)

Residuals:
    Min      1Q  Median      3Q     Max
-3.7208 -0.7283  0.0920  0.8313  2.0581

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.925233   1.078951   0.858   0.3925
affAnx        -0.221384   0.154934  -1.429   0.1550
affBor         0.060968   0.084735   0.720   0.4729
affCalm       -0.102665   0.139794  -0.734   0.4638
affContent     0.151715   0.122399   1.240   0.2170
affDepr       -0.067677   0.120979  -0.559   0.5767
affEnerg       0.008344   0.131092   0.064   0.9493
affExc        -0.063703   0.126552  -0.503   0.6154
affNerv        0.075875   0.135874   0.558   0.5774
affExh         0.048963   0.109349   0.448   0.6549
affInsp       -0.087907   0.121170  -0.725   0.4692
affRel        -0.063370   0.133731  -0.474   0.6363
PLRAC19        0.185272   0.087099   2.127   0.0350 *
PLRAEco       -0.055544   0.070907  -0.783   0.4346
disc01         0.030538   0.165535   0.184   0.8539
disc02        -0.069701   0.177784  -0.392   0.6955
disc03         0.077185   0.142940   0.540   0.5900
jbInsec01      0.058044   0.147704   0.393   0.6949
jbInsec02      0.203667   0.160813   1.266   0.2072
jbInsec03      0.064587   0.136313   0.474   0.6363
jbInsec04     -0.054335   0.116175  -0.468   0.6406
PFS01          0.037960   0.143887   0.264   0.7923
PFS02          0.135593   0.135948   0.997   0.3201
PFS03         -0.183163   0.141632  -1.293   0.1978
fail01        -0.157791   0.104852  -1.505   0.1344
fail02         0.048251   0.120223   0.401   0.6887
fail03         0.027742   0.131110   0.212   0.8327
happy          0.052377   0.094946   0.552   0.5820
lifeSat       -0.057464   0.137668  -0.417   0.6770
MLQ            0.177805   0.084154   2.113   0.0362 *
c19NormShould  0.126936   0.085700   1.481   0.1406
c19NormDo     -0.110263   0.081752  -1.349   0.1794
c19IsStrict   -0.171796   0.125811  -1.366   0.1740
c19IsPunish   -0.036973   0.099581  -0.371   0.7109
c19IsOrg       0.142102   0.101769   1.396   0.1646
trustGovCtry  -0.117103   0.124736  -0.939   0.3493
trustGovState  0.242933   0.127307   1.908   0.0582 .
```

```
gender          0.071533   0.216595    0.330    0.7416
age            -0.021897   0.109090   -0.201    0.8412
employstatus   -0.057673   0.036782   -1.568    0.1189
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.256 on 157 degrees of freedom
Multiple R-squared:  0.292, Adjusted R-squared:  0.1162
F-statistic: 1.661 on 39 and 157 DF,  p-value: 0.01586
```

Table 2.4: Summary of Linear Regression Model for

C19ProSo02 for HK Data

```
Call:
lm(formula = c19ProSo02 ~ affAnx + affBor + affCalm + affContent +
    affDepr + affEnerg + affExc + affNerv + affExh + affInsp +
    affRel + PLRAC19 + PLRAEco + disc01 + disc02 + disc03 + jbInsec01 +
    jbInsec02 + jbInsec03 + jbInsec04 + PFS01 + PFS02 + PFS03 +
    fail01 + fail02 + fail03 + happy + lifeSat + MLQ + c19NormShould +
    c19NormDo + c19IsStrict + c19IsPunish + c19IsOrg + trustGovCtry +
    trustGovState + gender + age + employstatus, data = hk_data)

Residuals:
    Min      1Q  Median      3Q     Max
-3.0106 -0.8190  0.0746  0.8704  2.5942

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)    1.3589019  1.1387563   1.193  0.23454
affAnx        -0.2213581  0.1635221  -1.354  0.17778
affBor        -0.0920495  0.0894316  -1.029  0.30493
affCalm       -0.0115644  0.1475422  -0.078  0.93763
affContent     0.0254391  0.1291832   0.197  0.84414
affDepr        0.1430360  0.1276849   1.120  0.26433
affEnerg      -0.0002897  0.1383585  -0.002  0.99833
affExc        -0.2094523  0.1335669  -1.568  0.11886
affNerv        0.0057261  0.1434050   0.040  0.96820
affExh        -0.0873125  0.1154102  -0.757  0.45046
affInsp        0.1074856  0.1278858   0.840  0.40192
affRel        -0.1760129  0.1411436  -1.247  0.21424
PLRAC19        0.0659721  0.0919268   0.718  0.47403
PLRAEco       -0.0120792  0.0748370  -0.161  0.87198
disc01         0.2073744  0.1747103   1.187  0.23704
disc02        -0.3488060  0.1876386  -1.859  0.06491 .
disc03         0.0820883  0.1508633   0.544  0.58713
jbInsec01      0.0622265  0.1558915   0.399  0.69031
jbInsec02      0.1311242  0.1697266   0.773  0.44094
jbInsec03     -0.0444492  0.1438691  -0.309  0.75776
jbInsec04     -0.0560934  0.1226141  -0.457  0.64796
PFS01          0.3243281  0.1518629   2.136  0.03426 *
PFS02         -0.1561373  0.1434835  -1.088  0.27818
PFS03         -0.4174661  0.1494825  -2.793  0.00588 **
fail01        -0.2284066  0.1106643  -2.064  0.04067 *
fail02         0.1868836  0.1268868   1.473  0.14280
fail03         0.0126197  0.1383773   0.091  0.92745
happy          0.0918854  0.1002091   0.917  0.36058
lifeSat       -0.0167385  0.1452986  -0.115  0.90843
MLQ            0.1156252  0.0888189   1.302  0.19489
c19NormShould  0.0545360  0.0904504   0.603  0.54742
c19NormDo     -0.0376150  0.0862830  -0.436  0.66347
c19IsStrict    0.0095313  0.1327844   0.072  0.94287
c19IsPunish   -0.1019065  0.1051010  -0.970  0.33373
c19IsOrg       0.0662744  0.1074094   0.617  0.53811
trustGovCtry  -0.1592590  0.1316504  -1.210  0.22821
trustGovState  0.3401752  0.1343631   2.532  0.01233 *
```

```
gender        -0.3335621  0.2286003  -1.459  0.14652
age           -0.0020106  0.1151362  -0.017  0.98609
employstatus   0.0158227  0.0388206   0.408  0.68413
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.326 on 157 degrees of freedom
Multiple R-squared:  0.3075,    Adjusted R-squared:  0.1354
F-statistic: 1.787 on 39 and 157 DF,  p-value: 0.006811
```

Table 2.5: Summary of Linear Regression Model for

C19ProSo03 for HK Data

```
Call:
lm(formula = c19ProSo01 ~ affAnx + affBor + affCalm + affContent +
    affDepr + affEnerg + affExc + affNerv + affExh + affInsp +
    affRel + PLRAC19 + PLRAEco + disc01 + disc02 + disc03 + jbInsec01 +
    jbInsec02 + jbInsec03 + jbInsec04 + PFS01 + PFS02 + PFS03 +
    fail01 + fail02 + fail03 + happy + lifeSat + MLQ + c19NormShould +
    c19NormDo + c19IsStrict + c19IsPunish + c19IsOrg + trustGovCtry +
    trustGovState + gender + age + employstatus, data = hk_data)

Residuals:
    Min      1Q  Median      3Q     Max
-3.7208 -0.7283  0.0920  0.8313  2.0581

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.925233   1.078951   0.858   0.3925
affAnx        -0.221384   0.154934  -1.429   0.1550
affBor         0.060968   0.084735   0.720   0.4729
affCalm       -0.102665   0.139794  -0.734   0.4638
affContent     0.151715   0.122399   1.240   0.2170
affDepr       -0.067677   0.120979  -0.559   0.5767
affEnerg       0.008344   0.131092   0.064   0.9493
affExc        -0.063703   0.126552  -0.503   0.6154
affNerv        0.075875   0.135874   0.558   0.5774
affExh         0.048963   0.109349   0.448   0.6549
affInsp       -0.087907   0.121170  -0.725   0.4692
affRel        -0.063370   0.133731  -0.474   0.6363
PLRAC19        0.185272   0.087099   2.127   0.0350 *
PLRAEco       -0.055544   0.070907  -0.783   0.4346
disc01         0.030538   0.165535   0.184   0.8539
disc02        -0.069701   0.177784  -0.392   0.6955
disc03         0.077185   0.142940   0.540   0.5900
jbInsec01      0.058044   0.147704   0.393   0.6949
jbInsec02      0.203667   0.160813   1.266   0.2072
jbInsec03      0.064587   0.136313   0.474   0.6363
jbInsec04     -0.054335   0.116175  -0.468   0.6406
PFS01          0.037960   0.143887   0.264   0.7923
PFS02          0.135593   0.135948   0.997   0.3201
PFS03         -0.183163   0.141632  -1.293   0.1978
fail01        -0.157791   0.104852  -1.505   0.1344
fail02         0.048251   0.120223   0.401   0.6887
fail03         0.027742   0.131110   0.212   0.8327
happy          0.052377   0.094946   0.552   0.5820
lifeSat       -0.057464   0.137668  -0.417   0.6770
MLQ            0.177805   0.084154   2.113   0.0362 *
c19NormShould  0.126936   0.085700   1.481   0.1406
c19NormDo     -0.110263   0.081752  -1.349   0.1794
c19IsStrict   -0.171796   0.125811  -1.366   0.1740
c19IsPunish   -0.036973   0.099581  -0.371   0.7109
c19IsOrg       0.142102   0.101769   1.396   0.1646
trustGovCtry  -0.117103   0.124736  -0.939   0.3493
trustGovState  0.242933   0.127307   1.908   0.0582 .
```

```
gender        0.071533   0.216595   0.330   0.7416
age          -0.021897   0.109090  -0.201   0.8412
employstatus -0.057673   0.036782  -1.568   0.1189
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.256 on 157 degrees of freedom
Multiple R-squared:  0.292, Adjusted R-squared:  0.1162
F-statistic: 1.661 on 39 and 157 DF,  p-value: 0.01586
```

Table 2.6: Summary of Linear Regression Model for

C19ProSo04 for HK Data

```
Call:
lm(formula = c19ProSo01 ~ affAnx + affBor + affCalm + affContent +
    affDepr + affEnerg + affExc + affNerv + affExh + affInsp +
    affRel + PLRAC19 + PLRAEco + disc01 + disc02 + disc03 + jbInsec01 +
    jbInsec02 + jbInsec03 + jbInsec04 + PFS01 + PFS02 + PFS03 +
    fail01 + fail02 + fail03 + happy + lifeSat + MLQ + c19NormShould +
    c19NormDo + c19IsStrict + c19IsPunish + c19IsOrg + trustGovCtry +
    trustGovState + gender + age + employstatus, data = hk_data)

Residuals:
    Min      1Q  Median      3Q     Max
-3.7208 -0.7283  0.0920  0.8313  2.0581

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.925233   1.078951   0.858   0.3925
affAnx        -0.221384   0.154934  -1.429   0.1550
affBor         0.060968   0.084735   0.720   0.4729
affCalm       -0.102665   0.139794  -0.734   0.4638
affContent     0.151715   0.122399   1.240   0.2170
affDepr       -0.067677   0.120979  -0.559   0.5767
affEnerg       0.008344   0.131092   0.064   0.9493
affExc        -0.063703   0.126552  -0.503   0.6154
affNerv        0.075875   0.135874   0.558   0.5774
affExh         0.048963   0.109349   0.448   0.6549
affInsp       -0.087907   0.121170  -0.725   0.4692
affRel        -0.063370   0.133731  -0.474   0.6363
PLRAC19        0.185272   0.087099   2.127   0.0350 *
PLRAEco       -0.055544   0.070907  -0.783   0.4346
disc01         0.030538   0.165535   0.184   0.8539
disc02        -0.069701   0.177784  -0.392   0.6955
disc03         0.077185   0.142940   0.540   0.5900
jbInsec01      0.058044   0.147704   0.393   0.6949
jbInsec02      0.203667   0.160813   1.266   0.2072
jbInsec03      0.064587   0.136313   0.474   0.6363
jbInsec04     -0.054335   0.116175  -0.468   0.6406
PFS01          0.037960   0.143887   0.264   0.7923
PFS02          0.135593   0.135948   0.997   0.3201
PFS03         -0.183163   0.141632  -1.293   0.1978
fail01        -0.157791   0.104852  -1.505   0.1344
fail02         0.048251   0.120223   0.401   0.6887
fail03         0.027742   0.131110   0.212   0.8327
happy          0.052377   0.094946   0.552   0.5820
lifeSat       -0.057464   0.137668  -0.417   0.6770
MLQ            0.177805   0.084154   2.113   0.0362 *
c19NormShould  0.126936   0.085700   1.481   0.1406
c19NormDo     -0.110263   0.081752  -1.349   0.1794
c19IsStrict   -0.171796   0.125811  -1.366   0.1740
c19IsPunish   -0.036973   0.099581  -0.371   0.7109
c19IsOrg       0.142102   0.101769   1.396   0.1646
trustGovCtry  -0.117103   0.124736  -0.939   0.3493
trustGovState  0.242933   0.127307   1.908   0.0582 .
```

```
gender          0.071533   0.216595    0.330    0.7416
age            -0.021897   0.109090   -0.201    0.8412
employstatus   -0.057673   0.036782   -1.568    0.1189
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.256 on 157 degrees of freedom
Multiple R-squared:  0.292, Adjusted R-squared:  0.1162
F-statistic: 1.661 on 39 and 157 DF,  p-value: 0.01586
```

Table 2.7: Summary of Linear Regression Model for

C19ProSo01 for Other Data

```
Call:
lm(formula = c19ProSo01 ~ affAnx + affBor + affCalm + affContent +
    affDepr + affEnerg + affExc + affNerv + affExh + affInsp +
    affRel + PLRAC19 + PLRAEco + disc01 + disc02 + disc03 + jbInsec01 +
    jbInsec02 + jbInsec03 + jbInsec04 + PFS01 + PFS02 + PFS03 +
    fail01 + fail02 + fail03 + happy + lifeSat + MLQ + c19NormShould +
    c19NormDo + c19IsStrict + c19IsPunish + c19IsOrg + trustGovCtry +
    trustGovState + gender + age + employstatus, data = other_data)

Residuals:
    Min      1Q  Median      3Q     Max
-5.2204 -0.7678  0.1868  0.9788  4.2882

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)    -1.021917   0.073893 -13.830  < 2e-16 ***
affAnx         -0.008766   0.008053  -1.089 0.276368
affBor         -0.011676   0.006120  -1.908 0.056409 .
affCalm         0.015349   0.008828   1.739 0.082105 .
affContent     -0.005458   0.008159  -0.669 0.503526
affDepr         0.020835   0.008007   2.602 0.009266 **
affEnerg        0.039516   0.008271   4.778 1.78e-06 ***
affExc          0.031509   0.007750   4.066 4.79e-05 ***
affNerv        -0.009752   0.008274  -1.179 0.238584
affExh          0.030938   0.006934   4.462 8.16e-06 ***
affInsp         0.053944   0.007830   6.889 5.70e-12 ***
affRel         -0.033032   0.008686  -3.803 0.000143 ***
PLRAC19         0.066870   0.005258  12.718  < 2e-16 ***
PLRAEco         0.020346   0.004904   4.149 3.35e-05 ***
disc01          0.004449   0.009415   0.472 0.636581
disc02          0.107921   0.009569  11.278  < 2e-16 ***
disc03          0.043177   0.008157   5.293 1.21e-07 ***
jbInsec01      -0.012609   0.010028  -1.257 0.208621
jbInsec02       0.045248   0.009537   4.744 2.10e-06 ***
jbInsec03      -0.002152   0.008095  -0.266 0.790404
jbInsec04      -0.015575   0.007890  -1.974 0.048380 *
PFS01          -0.008585   0.010012  -0.857 0.391205
PFS02           0.019096   0.008169   2.338 0.019411 *
PFS03           0.022191   0.009539   2.326 0.020004 *
fail01         -0.028099   0.007634  -3.681 0.000233 ***
fail02         -0.048492   0.007685  -6.310 2.83e-10 ***
fail03          0.060412   0.007723   7.823 5.30e-15 ***
happy           0.003540   0.004953   0.715 0.474817
lifeSat         0.053510   0.008740   6.122 9.30e-10 ***
MLQ             0.083896   0.005752  14.585  < 2e-16 ***
c19NormShould   0.096662   0.006107  15.829  < 2e-16 ***
c19NormDo       0.063181   0.005385  11.732  < 2e-16 ***
c19IsStrict     0.005552   0.007144   0.777 0.437112
c19IsPunish    -0.003949   0.005533  -0.714 0.475437
c19IsOrg        0.060008   0.006915   8.678  < 2e-16 ***
trustGovCtry   -0.012537   0.007912  -1.585 0.113070
trustGovState   0.136917   0.009113  15.024  < 2e-16 ***
```

```
gender         0.053822   0.014645   3.675 0.000238 ***
age           -0.036005   0.004826  -7.460 8.83e-14 ***
employstatus   0.004076   0.002513   1.622 0.104882
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1


Residual standard error: 1.398 on 39763 degrees of freedom
Multiple R-squared:  0.09621,   Adjusted R-squared:  0.09532
F-statistic: 108.5 on 39 and 39763 DF,  p-value: < 2.2e-16
```

Table 2.8: Summary of Linear Regression Model for

C19ProSo02 for Other Data

```
Call:
lm(formula = c19ProSo02 ~ affAnx + affBor + affCalm + affContent +
    affDepr + affEnerg + affExc + affNerv + affExh + affInsp +
    affRel + PLRAC19 + PLRAEco + disc01 + disc02 + disc03 + jbInsec01 +
    jbInsec02 + jbInsec03 + jbInsec04 + PFS01 + PFS02 + PFS03 +
    fail01 + fail02 + fail03 + happy + lifeSat + MLQ + c19NormShould +
    c19NormDo + c19IsStrict + c19IsPunish + c19IsOrg + trustGovCtry +
    trustGovState + gender + age + employstatus, data = other_data)

Residuals:
    Min      1Q  Median      3Q     Max
-5.3070 -0.8861  0.2075  1.1024  4.8976

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)   -1.2948813  0.0801625 -16.153  < 2e-16 ***
affAnx         0.0783020  0.0087362   8.963  < 2e-16 ***
affBor         0.0237758  0.0066392   3.581 0.000343 ***
affCalm       -0.0177665  0.0095769  -1.855 0.063583 .
affContent    -0.0278022  0.0088508  -3.141 0.001684 **
affDepr        0.0051775  0.0086859   0.596 0.551125
affEnerg       0.0553291  0.0089724   6.167 7.04e-10 ***
affExc         0.0445064  0.0084072   5.294 1.20e-07 ***
affNerv        0.0065675  0.0089763   0.732 0.464386
affExh         0.0438648  0.0075227   5.831 5.55e-09 ***
affInsp        0.0689782  0.0084948   8.120 4.79e-16 ***
affRel        -0.0428976  0.0094232  -4.552 5.32e-06 ***
PLRAC19        0.0123777  0.0057039   2.170 0.030010 *
PLRAEco       -0.0156794  0.0053205  -2.947 0.003211 **
disc01         0.0341242  0.0102139   3.341 0.000836 ***
disc02         0.1165696  0.0103810  11.229  < 2e-16 ***
disc03         0.0852121  0.0088489   9.630  < 2e-16 ***
jbInsec01      0.0329541  0.0108785   3.029 0.002453 **
jbInsec02      0.0564019  0.0103462   5.451 5.03e-08 ***
jbInsec03     -0.0062812  0.0087820  -0.715 0.474470
jbInsec04      0.0005514  0.0085590   0.064 0.948636
PFS01         -0.1142098  0.0108614 -10.515  < 2e-16 ***
PFS02         -0.0063657  0.0088618  -0.718 0.472563
PFS03          0.0110924  0.0103483   1.072 0.283767
fail01        -0.0630751  0.0082817  -7.616 2.67e-14 ***
fail02        -0.0516808  0.0083375  -6.199 5.75e-10 ***
fail03         0.0232797  0.0083781   2.779 0.005461 **
happy          0.0008577  0.0053732   0.160 0.873181
lifeSat        0.0794843  0.0094815   8.383  < 2e-16 ***
MLQ            0.1140563  0.0062403  18.277  < 2e-16 ***
c19NormShould  0.1483182  0.0066249  22.388  < 2e-16 ***
c19NormDo      0.0372166  0.0058421   6.370 1.91e-10 ***
c19IsStrict    0.0053679  0.0077504   0.693 0.488564
c19IsPunish    0.0191639  0.0060026   3.193 0.001411 **
c19IsOrg       0.0494598  0.0075014   6.593 4.35e-11 ***
trustGovCtry   0.0281977  0.0085835   3.285 0.001020 **
trustGovState  0.1427119  0.0098861  14.436  < 2e-16 ***
```

```
gender        -0.0492217  0.0158872   -3.098 0.001948 **
age           -0.0668485  0.0052360  -12.767  < 2e-16 ***
employstatus  -0.0055824  0.0027267   -2.047 0.040633 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.516 on 39763 degrees of freedom
Multiple R-squared:  0.1375,    Adjusted R-squared:  0.1367
F-statistic: 162.6 on 39 and 39763 DF,  p-value: < 2.2e-16
```

Table 2.9: Summary of Linear Regression Model for

C19ProSo03 for Other Data

```
Call:
lm(formula = c19ProSo03 ~ affAnx + affBor + affCalm + affContent +
    affDepr + affEnerg + affExc + affNerv + affExh + affInsp +
    affRel + PLRAC19 + PLRAEco + disc01 + disc02 + disc03 + jbInsec01 +
    jbInsec02 + jbInsec03 + jbInsec04 + PFS01 + PFS02 + PFS03 +
    fail01 + fail02 + fail03 + happy + lifeSat + MLQ + c19NormShould +
    c19NormDo + c19IsStrict + c19IsPunish + c19IsOrg + trustGovCtry +
    trustGovState + gender + age + employstatus, data = other_data)

Residuals:
    Min      1Q  Median      3Q     Max
-4.8204 -0.9670  0.1615  1.1861  4.9163

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)   -1.3089971  0.0835204 -15.673  < 2e-16 ***
affAnx         0.0269355  0.0091021   2.959 0.003086 **
affBor        -0.0353664  0.0069173  -5.113 3.19e-07 ***
affCalm       -0.0011662  0.0099780  -0.117 0.906955
affContent     0.0008575  0.0092215   0.093 0.925914
affDepr        0.0360561  0.0090498   3.984 6.78e-05 ***
affEnerg       0.0320180  0.0093482   3.425 0.000615 ***
affExc         0.0378840  0.0087593   4.325 1.53e-05 ***
affNerv       -0.0035048  0.0093523  -0.375 0.707849
affExh         0.0340718  0.0078378   4.347 1.38e-05 ***
affInsp        0.0616299  0.0088506   6.963 3.37e-12 ***
affRel        -0.0429874  0.0098180  -4.378 1.20e-05 ***
PLRAC19        0.0963858  0.0059428  16.219  < 2e-16 ***
PLRAEco       -0.0051979  0.0055434  -0.938 0.348414
disc01        -0.0005123  0.0106417  -0.048 0.961605
disc02         0.1102011  0.0108158  10.189  < 2e-16 ***
disc03         0.0766603  0.0092196   8.315  < 2e-16 ***
jbInsec01      0.0269788  0.0113342   2.380 0.017303 *
jbInsec02      0.0534886  0.0107796   4.962 7.01e-07 ***
jbInsec03     -0.0158769  0.0091499  -1.735 0.082712 .
jbInsec04      0.0028730  0.0089175   0.322 0.747317
PFS01         -0.0258028  0.0113163  -2.280 0.022605 *
PFS02         -0.0012703  0.0092331  -0.138 0.890574
PFS03         -0.0100437  0.0107818  -0.932 0.351579
fail01        -0.0591695  0.0086286  -6.857 7.12e-12 ***
fail02        -0.0367049  0.0086868  -4.225 2.39e-05 ***
fail03         0.0499039  0.0087290   5.717 1.09e-08 ***
happy         -0.0024227  0.0055983  -0.433 0.665192
lifeSat        0.0814248  0.0098787   8.243  < 2e-16 ***
MLQ            0.0476548  0.0065017   7.330 2.35e-13 ***
c19NormShould  0.1182389  0.0069024  17.130  < 2e-16 ***
c19NormDo      0.0536701  0.0060868   8.817  < 2e-16 ***
c19IsStrict    0.0263817  0.0080750   3.267 0.001088 **
c19IsPunish   -0.0062970  0.0062540  -1.007 0.314005
c19IsOrg       0.0668778  0.0078156   8.557  < 2e-16 ***
trustGovCtry  -0.0399182  0.0089430  -4.464 8.08e-06 ***
trustGovState  0.1673091  0.0103002  16.243  < 2e-16 ***
```

```
gender         0.0347820  0.0165527    2.101 0.035622 *
age           -0.1102319  0.0054553  -20.206  < 2e-16 ***
employstatus  -0.0102641  0.0028409   -3.613 0.000303 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.58 on 39763 degrees of freedom
Multiple R-squared:  0.09904,   Adjusted R-squared:  0.09816
F-statistic: 112.1 on 39 and 39763 DF,  p-value: < 2.2e-16
```

Table 2.10: Summary of Linear Regression Model

for C19ProSo04 for Other Data

```
Call:
lm(formula = c19ProSo04 ~ affAnx + affBor + affCalm + affContent +
    affDepr + affEnerg + affExc + affNerv + affExh + affInsp +
    affRel + PLRAC19 + PLRAEco + disc01 + disc02 + disc03 + jbInsec01 +
    jbInsec02 + jbInsec03 + jbInsec04 + PFS01 + PFS02 + PFS03 +
    fail01 + fail02 + fail03 + happy + lifeSat + MLQ + c19NormShould +
    c19NormDo + c19IsStrict + c19IsPunish + c19IsOrg + trustGovCtry +
    trustGovState + gender + age + employstatus, data = other_data)

Residuals:
    Min      1Q  Median      3Q     Max
-5.6829 -0.7254  0.2926  1.0303  4.2987

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)   -0.7367835  0.0765685  -9.623  < 2e-16 ***
affAnx         0.0177424  0.0083445   2.126  0.03349 *
affBor        -0.0494172  0.0063415  -7.793 6.72e-15 ***
affCalm        0.0155363  0.0091475   1.698  0.08944 .
affContent    -0.0046108  0.0084539  -0.545  0.58548
affDepr       -0.0050993  0.0082965  -0.615  0.53881
affEnerg      -0.0290844  0.0085701  -3.394  0.00069 ***
affExc        -0.0134391  0.0080303  -1.674  0.09422 .
affNerv        0.0031080  0.0085739   0.362  0.71698
affExh         0.0181381  0.0071855   2.524  0.01160 *
affInsp        0.0437352  0.0081139   5.390 7.08e-08 ***
affRel        -0.0231922  0.0090008  -2.577  0.00998 **
PLRAC19        0.1025530  0.0054482  18.823  < 2e-16 ***
PLRAEco        0.0138505  0.0050820   2.725  0.00642 **
disc01        -0.0155081  0.0097560  -1.590  0.11193
disc02         0.1480094  0.0099155  14.927  < 2e-16 ***
disc03         0.0101609  0.0084522   1.202  0.22931
jbInsec01      0.0299022  0.0103908   2.878  0.00401 **
jbInsec02      0.0764978  0.0098823   7.741 1.01e-14 ***
jbInsec03      0.0044399  0.0083883   0.529  0.59660
jbInsec04      0.0093248  0.0081752   1.141  0.25404
PFS01         -0.0405214  0.0103744  -3.906 9.40e-05 ***
PFS02          0.0524678  0.0084645   6.199 5.75e-10 ***
PFS03         -0.0095081  0.0098843  -0.962  0.33609
fail01        -0.0677879  0.0079104  -8.569  < 2e-16 ***
fail02        -0.0529888  0.0079637  -6.654 2.89e-11 ***
fail03         0.0629768  0.0080024   7.870 3.64e-15 ***
happy         -0.0047781  0.0051323  -0.931  0.35187
lifeSat        0.0947262  0.0090564  10.460  < 2e-16 ***
MLQ            0.0103431  0.0059605   1.735  0.08270 .
c19NormShould  0.2670522  0.0063279  42.202  < 2e-16 ***
c19NormDo      0.0286370  0.0055802   5.132 2.88e-07 ***
c19IsStrict    0.0659325  0.0074029   8.906  < 2e-16 ***
c19IsPunish   -0.0632469  0.0057335 -11.031  < 2e-16 ***
c19IsOrg       0.0484520  0.0071651   6.762 1.38e-11 ***
trustGovCtry  -0.0147240  0.0081986  -1.796  0.07252 .
trustGovState  0.1147062  0.0094428  12.147  < 2e-16 ***
```

```
gender       -0.0485225  0.0151750  -3.198  0.00139 **
age           0.0139919  0.0050012   2.798  0.00515 **
employstatus -0.0002098  0.0026044  -0.081  0.93579
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1


Residual standard error: 1.448 on 39763 degrees of freedom
Multiple R-squared:  0.1422,    Adjusted R-squared:  0.1414
F-statistic:   169 on 39 and 39763 DF,  p-value: < 2.2e-16
```

Q3

Table 3.1: Relevant data for clustering

	disc01	disc02	disc03	PFS01	PFS02	PFS03	fai
	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<d
63662	-0.06693757	-0.2420884	1.2585800	-0.936627277	0.2733546	-0.6990776	0.5711
63412	-0.06693757	-0.2420884	-0.9954223	-1.863841214	-2.8943423	-1.6359368	1.5089
63404	1.13185344	-0.2420884	0.1315788	0.917800598	1.3292535	1.1746406	0.5711
63505	-0.06693757	-0.2420884	1.2585800	0.917800598	0.2733546	0.2377815	-0.3665
63471	-0.06693757	0.9501971	0.1315788	-0.009413339	0.2733546	0.2377815	0.5711
63633	-0.06693757	-0.2420884	0.1315788	-0.009413339	-1.8384434	-0.6990776	-0.3665
63659	-0.06693757	-0.2420884	-0.9954223	1.845014535	1.3292535	2.1114998	0.5711
63653	1.13185344	0.9501971	-0.9954223	-0.936627277	0.2733546	-0.6990776	1.5089
63555	-0.06693757	-0.2420884	0.1315788	-0.936627277	0.2733546	0.2377815	0.5711
23514	-0.06693757	-0.2420884	1.2585800	-0.936627277	-0.7825444	-1.6359368	-0.3665

1-10 of 197 rows | 1-9 of 19 columns   Previous **1** 2 3 4 5 6 … 20 Next

Table 3.2

	disc01	disc02	disc03	PFS01	PFS02	PFS03	fail01
	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
19216	0.0000000	1.0000000	-1.000000	1.00000000	2.0000000	1.000000	1.00000000
1906	2.0000000	2.0000000	1.000000	2.00000000	2.0000000	1.000000	-2.00000000
22379	1.0000000	2.0000000	-2.000000	0.00000000	-2.0000000	0.000000	1.00000000
30947	2.0000000	1.0000000	-1.000000	0.00000000	1.0000000	0.000000	0.00000000
8878	1.0000000	1.0000000	-1.000000	0.00000000	1.0000000	0.000000	-1.00000000
51085	-2.0000000	1.0000000	-1.000000	1.00000000	2.0000000	-2.000000	2.00000000
17262	1.0000000	1.0000000	-1.000000	-1.00000000	1.0000000	0.000000	-2.00000000

	disc01 <dbl>	disc02 <dbl>	disc03 <dbl>	PFS01 <dbl>	PFS02 <dbl>	PFS03 <dbl>	fail01 <dbl>
31435	1.0000000	1.0000000	1.000000	1.00000000	1.0000000	1.000000	0.00000000
22291	1.0000000	1.0000000	0.000000	0.00000000	0.0000000	-2.000000	0.00000000
9313	1.0000000	1.0000000	-2.000000	1.00000000	1.0000000	-1.000000	1.00000000

1-10 of 39,803 rows | 1-9 of 19 columns   Previous **1** 2 3 4 5 6 … 100 Next

Table of values used for clustering

Table 3.3

```
                    fitted
actual              1  2  3  4  5  6  7
  Hong Kong S.A.R. 37 30 28 32 44 18  8
```

Table 3.4:

```
                        fitted
actual                     1     2     3     4     5     6     7
                          10    17    35    20    27    25    13
  Albania                   0     0     1     0     1     0     0
  Algeria                  10    36    10    14    30     4    17
  Andorra                   1     0     0     1     0     0     0
  Argentina                65   164   276    80   113    86   102
  Armenia                   0     0     0     1     0     0     0
  Australia               115    54   142   107   106   128   122
  Austria                  10     0     2     4    16     1     3
  Azerbaijan                0     0     1     0     0     1     0
  Bahrain                   1     1     2     0     1     0     0
  Bangladesh                0    32    18    12    12     4    25
  Belarus                   0     0     2     0     0     1     0
  Belgium                   8     3     1     7    21     0     3
  Benin                     1     0     0     0     0     0     0
  Bosnia and Herzegovina    2     1     0     0     4     1     2
  Botswana                  0     0     1     0     0     0     0
  Brazil                   55   261   168    72   121    84   120
  Brunei                    0     0     1     0     1     0     1
  Bulgaria                  1     0     2     0     1     1     0
  Cameroon                  0     0     0     0     0     0     1
  Canada                  125    75   195   130   188   110   109
  Chile                     6    89    15    31    56     9    30
  China                   270    29   173   102   117   226    60
  Colombia                  2     7     5     3     6     1     2
  Costa Rica                1     0     0     1     1     0     0
  Croatia                  35    15    55    24    62    14     5
  Cyprus                    9    18     1     2    14     5     4
  Czech Republic            1     0     3     1     2     3     1
  Denmark                   2     0     0     2     5     0     0
  Dominican Republic        2     0     0     0     0     0     0
  Ecuador                   0     0     1     1     1     0     0
  Egypt                    27   153   141   110   123    54   111
  El Salvador               0     5     5     4     6     1     3
  Estonia                   1     0     0     1     0     0     0
  Ethiopia                  0     1     0     0     0     0     0
  Finland                   4     0     1     1     5     1     0
  France                   80   204   112   157   327   140    74
  Georgia                   2     0     1     1     0     0     0
  Germany                 200    82   131   136   238   151    81
  Greece                  202   307   455   187   289   203   217
  Guatemala                 0     0     0     1     1     0     0
  Hungary                  38    40    24    45    87    14    14
  Iceland                   2     0     0     0     0     0     0
  India                    11     4     8    11    20     6     4
  Indonesia               129   185   581   107   278   128    83
  Iran                     15    58    16    30    17    17    56
  Iraq                      2     4     3     0     0     2    10
  Ireland                   3     2     1     3     4     4     1
  Israel                    3     8    13     1    18     7     3
  Italy                    71   193   155   251   278   155   146
  Jamaica                   0     1     2     0     1     0     1
```

Japan	44	176	54	118	75	229	139
Jordan	1	1	1	1	1	0	3
Kazakhstan	44	98	69	84	111	34	56
Kosovo	117	36	119	25	90	88	14
Kuwait	1	1	0	0	0	0	1
Laos	0	0	0	0	0	1	0
Latvia	0	0	0	0	0	0	1
Lebanon	0	0	1	1	3	0	0
Libya	0	0	0	1	2	0	0
Lithuania	3	1	0	3	3	2	1
Luxembourg	3	0	1	3	3	0	1
Malaysia	81	37	115	92	152	41	40
Mali	1	0	5	0	1	2	1
Malta	0	0	0	1	0	0	0
Mauritius	0	0	1	0	0	0	0
Mexico	3	16	3	2	5	1	5
Moldova	0	9	1	3	3	2	1
Mongolia	0	0	1	0	0	0	0
Montenegro	2	0	1	0	3	2	0
Morocco	0	8	4	3	2	3	3
Nepal	0	0	1	1	0	0	0
Netherlands	485	113	184	229	544	277	70
New Zealand	3	0	1	1	6	2	1
Nigeria	0	1	2	1	0	1	1
Norway	1	1	0	0	3	3	1
Oman	1	0	0	0	0	0	0
Pakistan	29	63	114	65	83	93	29
Palestine	1	9	2	0	6	0	1
Panama	0	0	0	1	0	0	1
Peru	9	34	26	48	51	6	20
Philippines	83	171	293	97	105	86	132
Poland	20	107	26	96	94	26	79
Portugal	2	6	8	2	8	1	3
Qatar	0	0	1	0	1	0	0
Republic of Serbia	184	243	256	100	248	131	166
Romania	112	444	239	202	339	185	162
Russia	116	155	122	90	115	131	156
Saudi Arabia	196	29	275	70	143	138	74
Singapore	31	2	16	39	50	6	8
Slovakia	1	0	2	1	3	1	0
Slovenia	0	0	0	0	1	0	0
South Africa	46	157	227	81	102	79	217
South Korea	158	61	237	71	72	217	109
Spain	143	327	321	237	643	149	190
Sweden	16	1	0	6	17	3	0
Switzerland	10	1	3	5	16	2	1
Taiwan	22	0	28	22	28	6	3
Thailand	6	40	7	13	17	5	10
Trinidad and Tobago	2	8	3	2	3	0	1
Tunisia	3	1	5	9	11	3	10
Turkey	99	245	156	156	188	124	188
Ukraine	60	241	90	94	108	139	154
United Arab Emirates	13	1	13	12	16	5	2
United Kingdom	178	107	172	176	272	172	127
United Republic of Tanzania	0	0	1	0	0	0	0
United States of America	553	1031	1125	904	1554	643	1143

Uruguay	0	1	0	0	2	0	0
Uzbekistan	0	0	1	0	0	0	0
Venezuela	1	4	0	0	2	1	0
Vietnam	52	5	52	7	14	20	11

Image 3.5: Plot for clusters for Corona ProSocial Behavior for HK Data
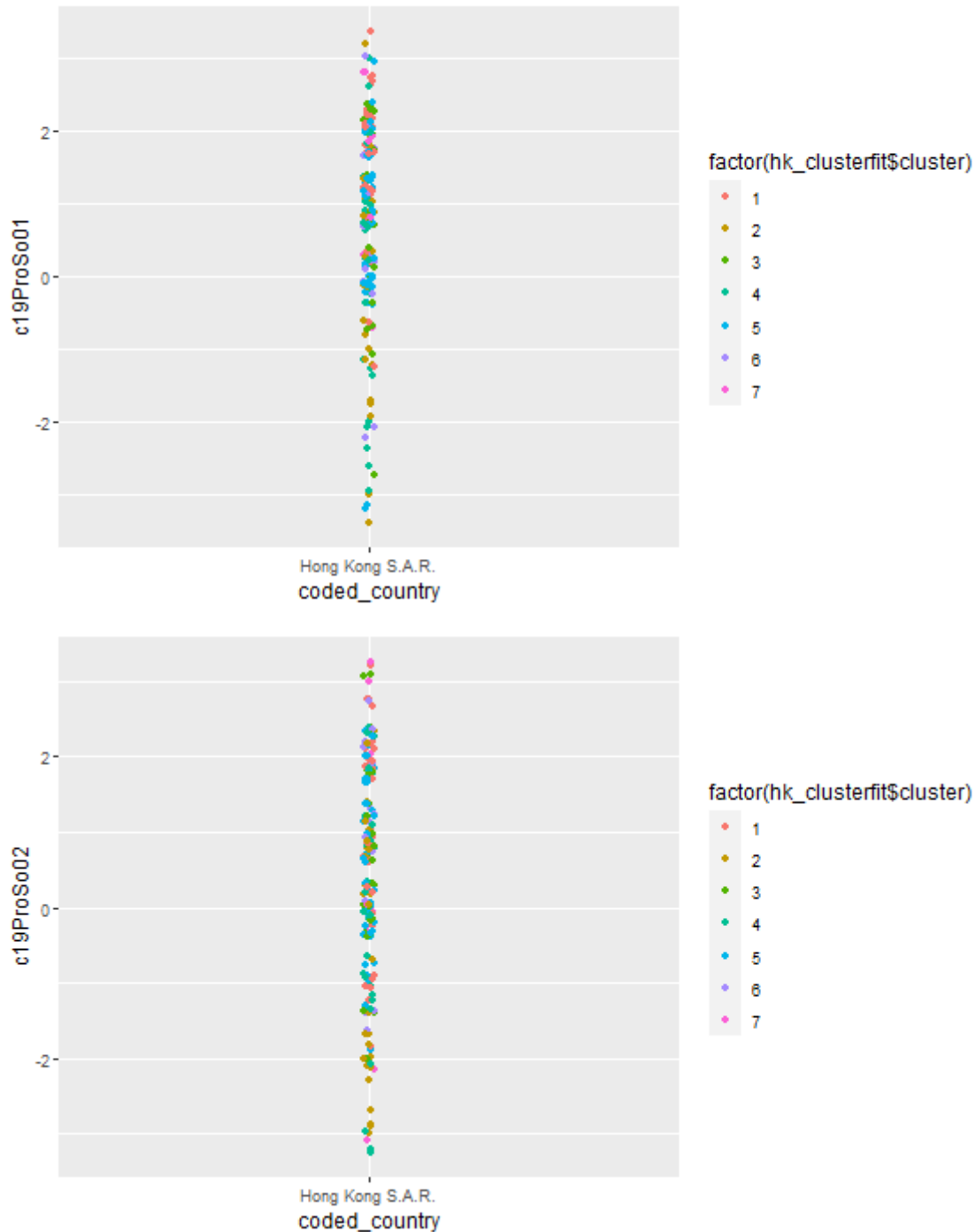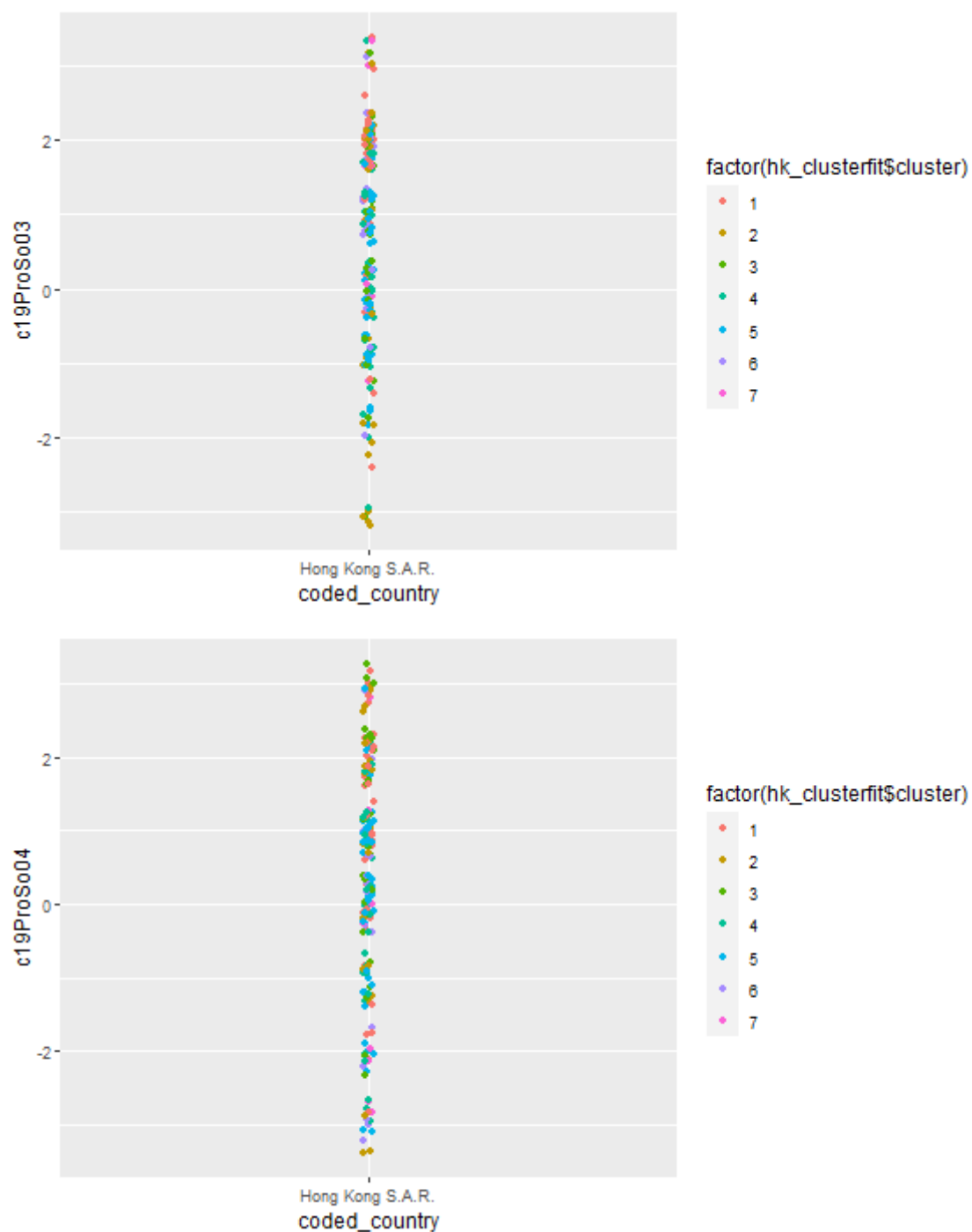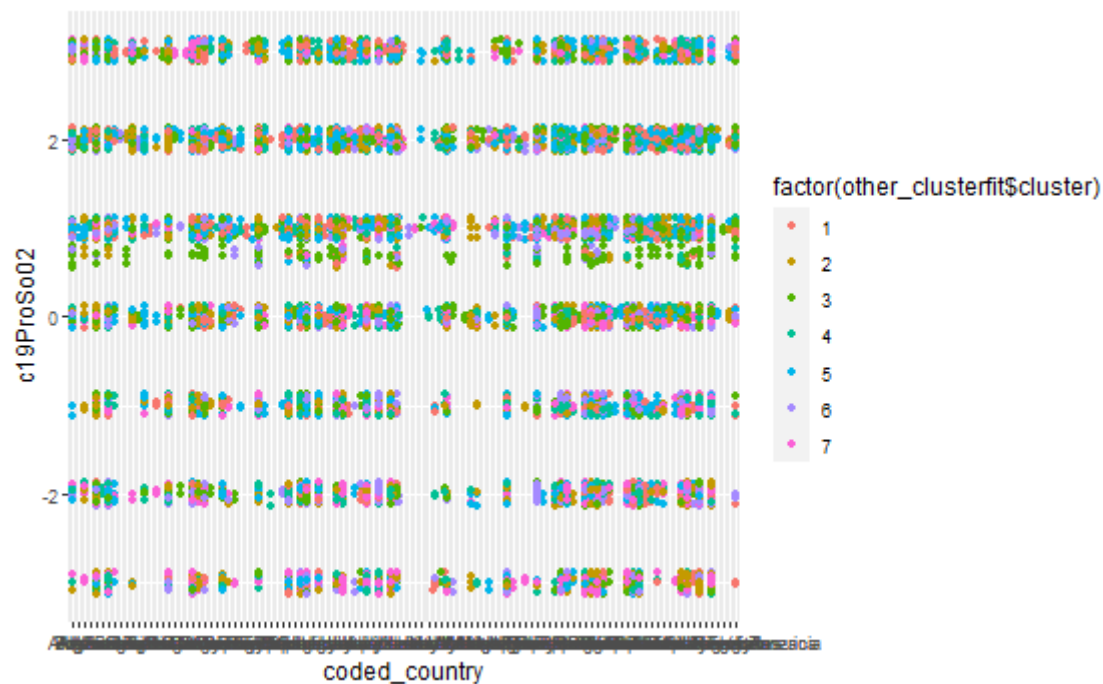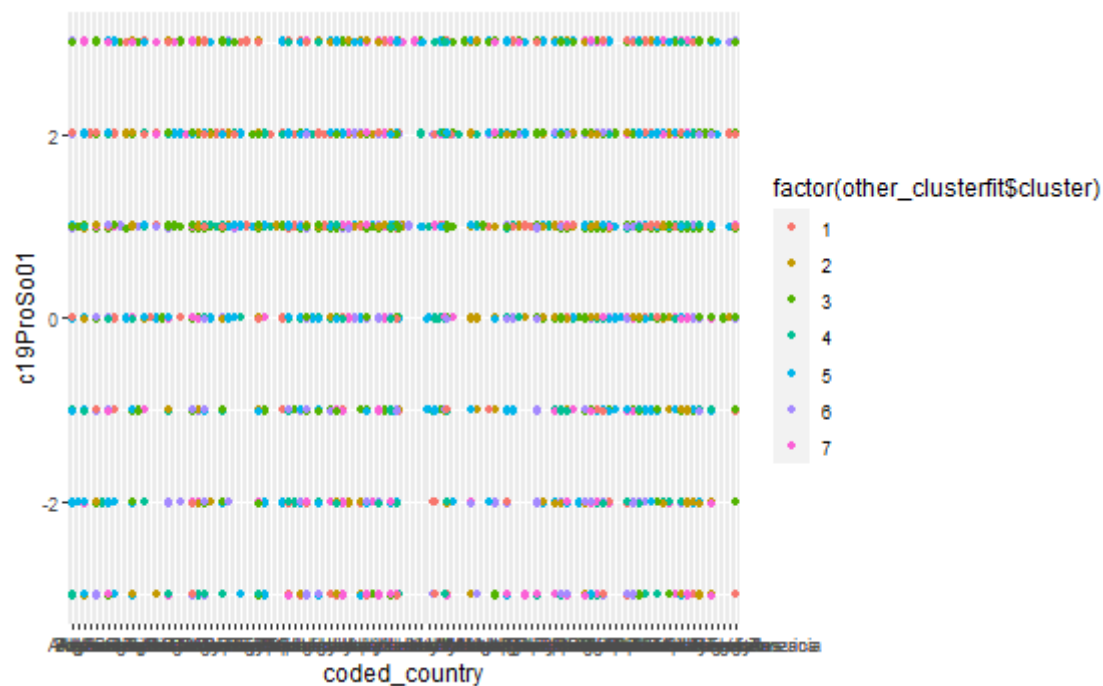
Image 3.6: Plot for clusters for Corona ProSocial
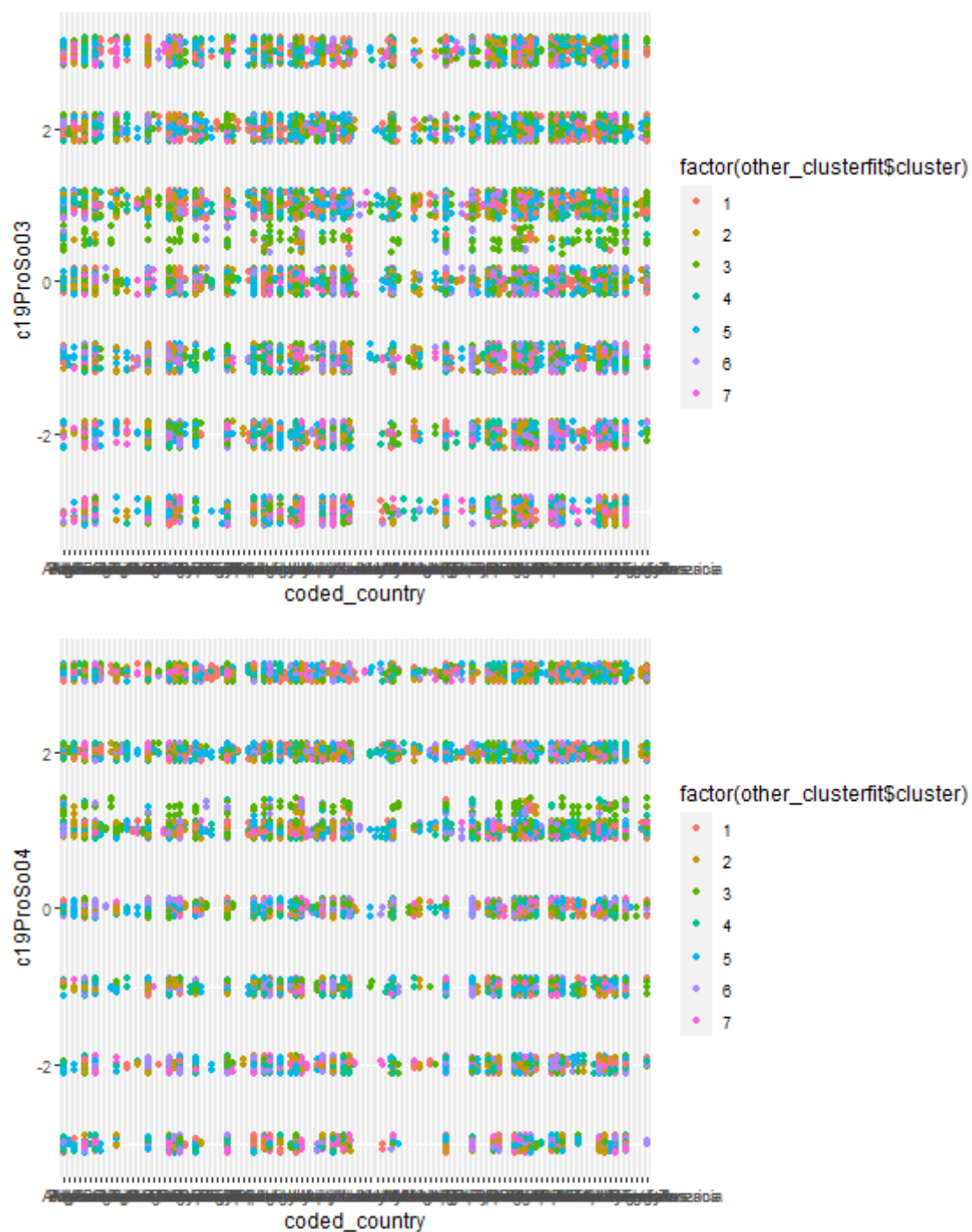
Behavior for Other Data

Table 3.7: Analysis of centroid values for Hong

Kong Cluster

	disc01	disc02	disc03	PFS01	PFS02	PFS03	fail01
1	0.09506122	0.3701663	-0.05117813	-0.7361486	-0.2117882	-0.6990776	-0.1130812
2	0.77221614	0.7514828	-0.77002210	0.7632649	0.7309108	0.6437538	0.4774240
3	-0.49507722	-0.4549966	1.09757979	0.7522267	0.3487759	0.8065888	-0.5674552
4	0.42007128	0.2422776	-0.53757812	0.6570217	0.3723451	0.7354879	0.5125882
5	-0.09418282	-0.1066014	0.20841980	-0.2201438	-0.1106087	-0.2732326	-0.2386471
6	-1.66532559	-1.7655644	0.56985704	-1.0396510	-1.5451381	-1.0634117	-0.6269925
7	0.98200457	0.6521257	-0.99542233	-1.1684308	-0.3865823	-1.0503998	1.3916933

	fail02	fail03	happy	lifeSat	MLQ	trustGovCtry	trustGovState
1	-0.47969846	0.2144360	0.5028648	0.84792613	0.6424934	0.05605683	0.3635779
2	0.19829610	0.5976883	-1.3486916	-1.31064382	-1.2233039	-0.61052435	-0.1280956
3	-0.02568425	-0.3611346	0.6312034	0.29415628	0.1804216	0.79067896	0.5575852
4	0.11093027	0.3910577	0.1407568	0.06239256	0.3631983	-0.76920760	-0.8412600
5	0.03687324	-0.1283478	-0.5394663	-0.48005597	-0.5046717	0.21366580	0.0944101
6	-0.25506171	-0.5176191	0.6982730	0.61539564	0.5753444	0.95755887	0.1924594
7	1.49225484	-1.6628008	1.3555552	0.96980645	1.0127588	-0.99001186	-0.7399863

Table 3.8: Analysis of centroid values for Similar Countries Cluster

	disc01	disc02	disc03	PFS01	PFS02	PFS03	fail01
1	0.43741980	0.52563608	-0.77150346	0.1538738	0.01709743	-0.1727022	0.32573057
2	0.46032902	0.52537349	-0.49885685	0.2236759	0.24074856	-0.1159220	0.45698683
3	0.44722810	0.36968819	0.20497672	-0.9632850	-0.56840175	-0.8830377	-0.78123194
4	-1.27226620	-1.29919836	1.04288332	-0.7132494	-0.33030417	-0.5321085	-0.79477410
5	-0.62502471	-0.64423670	0.07948419	-0.3615582	-0.62553417	-0.2163833	-0.01855492
6	0.81638888	0.83435195	-1.03428545	1.3218329	1.04392403	1.3539172	1.19574402
7	0.02980218	0.01506994	0.44225600	0.7240298	0.61028796	0.8620720	0.05014581

	fail02	fail03	happy	lifeSat	MLQ	trustGovCtry	trustGovState
1	0.13178377	0.2311333	-1.0786016	-1.10617369	-0.97423158	-0.5815294	-0.5696956
2	0.38950900	0.4649652	0.6521897	0.59725280	0.43644290	-0.8133172	-0.6223008
3	-0.80855695	-0.1960526	0.5729642	0.75352794	0.45348867	0.5014789	0.4000359
4	-0.85979297	-0.9060298	0.7764916	0.80923293	0.65328461	0.9454354	0.8198688
5	-0.07408526	-0.4470011	-0.1527731	-0.08411868	-0.27366143	-0.3293392	-0.3283594
6	1.34938595	1.0085467	-1.2800283	-1.39961970	-0.54503647	-0.8444125	-0.7670410
7	0.27086428	0.1915412	-0.1115489	-0.23311360	-0.03757213	0.7149879	0.6783730

Image 3.9: Plot for clusters for Corona ProSocial
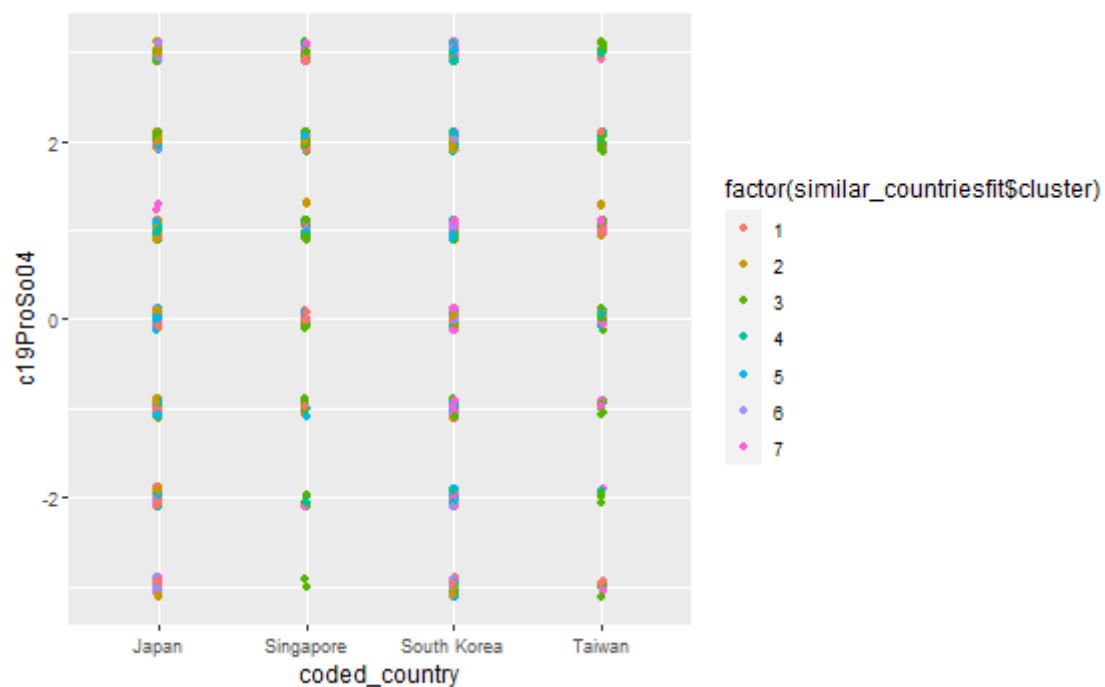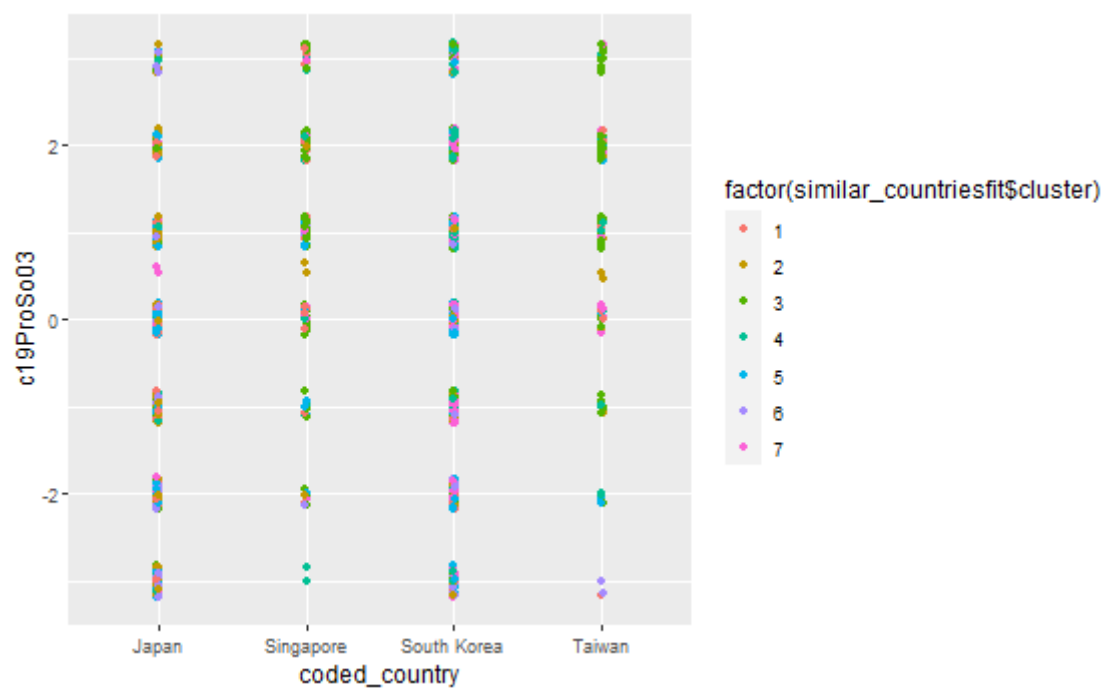
Behavior for Similar Countries.
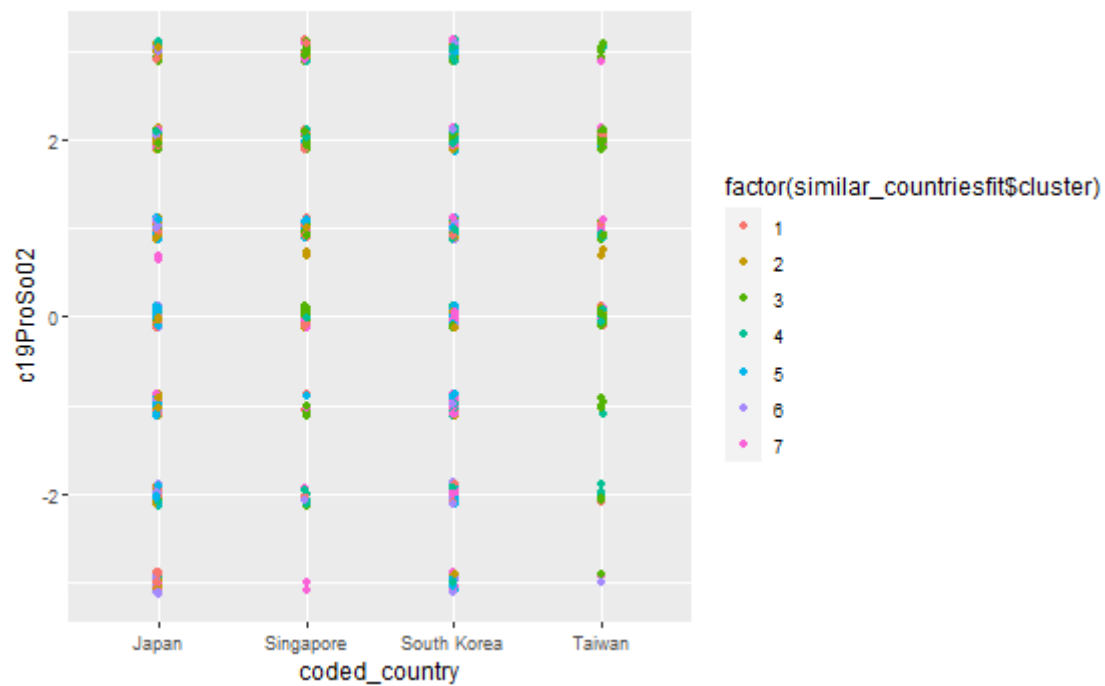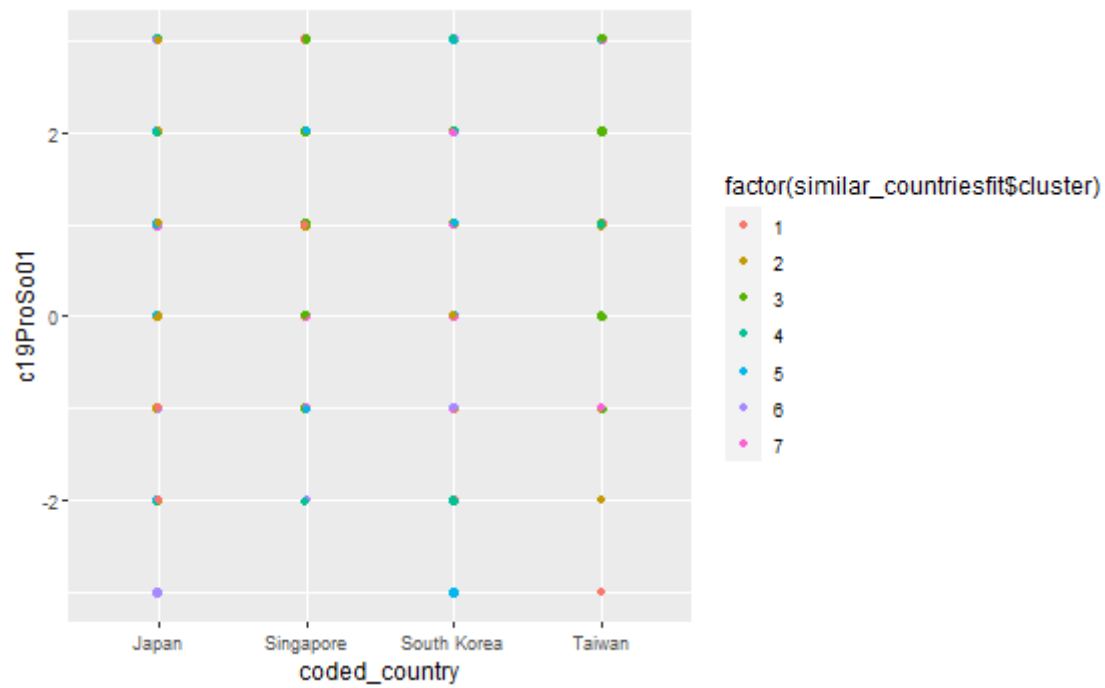
Table of values used for clustering

Table 3.10

```
           fitted
actual         1   2   3   4   5   6   7
  Japan      148 224  60  34 215 102  52
  Singapore   26   5  71  22  10   3  15
  South Korea 47  76 133 168 143  67 291
  Taiwan       9   6  51  15   5   1  22
```