

# mid\_project

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## R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
# Packages to be used
library(readxl)
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.2.1 --

## v ggplot2 3.2.1      v purrr  0.3.2
## v tibble  2.1.3      v dplyr  0.8.3
## v tidyr   1.0.0      v stringr 1.4.0
## v readr   1.3.1      v forcats 0.4.0

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

library(tidyr)

# install.packages("corpcor")
# install.packages("GPArotation")
# install.packages("psych")
library(corpcor);
library(GPArotation);
library(psych)

##
## Attaching package: 'psych'

## The following objects are masked from 'package:ggplot2':
##
##   %+%, alpha

# read num data
data<-read_excel("Data_Taiwan_2012_Excel_v20180912.xlsx")
my_data <- as_tibble(data)
data1<-data%>%select(5,6,7,8,9,10,11,12,24,62,106:111,161,162,163,306,307,308,309)
head(data1)
```

```
## # A tibble: 6 x 23
##   `V4: Important ~` `V5: Important ~` `V6: Important ~` `V7: Important ~`
##   <dbl>           <dbl>           <dbl>           <dbl>
## 1             1             1             1             3
## 2             1             2             2             2
## 3             1             2             2             3
## 4             1             1             1             2
## 5             1             2             2             3
## 6             1             1             1             3
## # ... with 19 more variables: `V8: Important in life: Work` <dbl>, `V9:
## #   Important in life: Religion` <dbl>, `V10: Feeling of happiness` <dbl>,
## #   `V11: State of health (subjective)` <dbl>, `V23: Satisfaction with
## #   your life` <dbl>, `V59: Satisfaction with financial situation of
## #   household` <dbl>, `V102: How much you trust: Your family` <dbl>,
## #   `V103: How much you trust: Your neighborhood` <dbl>, `V104: How much
## #   you trust: People you know personally` <dbl>, `V105: How much you
## #   trust: People you meet for the first time` <dbl>, `V106: How much you
## #   trust: People of another religion` <dbl>, `V107: How much you trust:
## #   People of another nationality` <dbl>, `V140: Importance of
## #   democracy` <dbl>, `V141: How democratically is this country being
## #   governed today` <dbl>, `V142: How much respect is there for individual
## #   human rights nowadays in this country` <dbl>, `V237: Family savings
## #   during past year` <dbl>, `V238: Social class (subjective)` <dbl>,
## #   `V239: Scale of incomes` <dbl>, `V240: Sex` <dbl>
```

```
# Correlations between variables
```

```
raqMatrix <- cor(data1)
```

```
# head(round(raqMatrix, 2))
```

```
# Then, run Bartlett's test on the correlation matrix by using cortest.bartlett() from
# psych package.
```

```
cortest.bartlett(data1)
```

```
## R was not square, finding R from data
```

```
## $chisq
```

```
## [1] 5360.358
```

```
##
```

```
## $p.value
```

```
## [1] 0
```

```
##
```

```
## $df
```

```
## [1] 253
```

```
# For these data, Bartlett's test is highly significant, p < .001, and
# therefore factor analysis is appropriate.
```

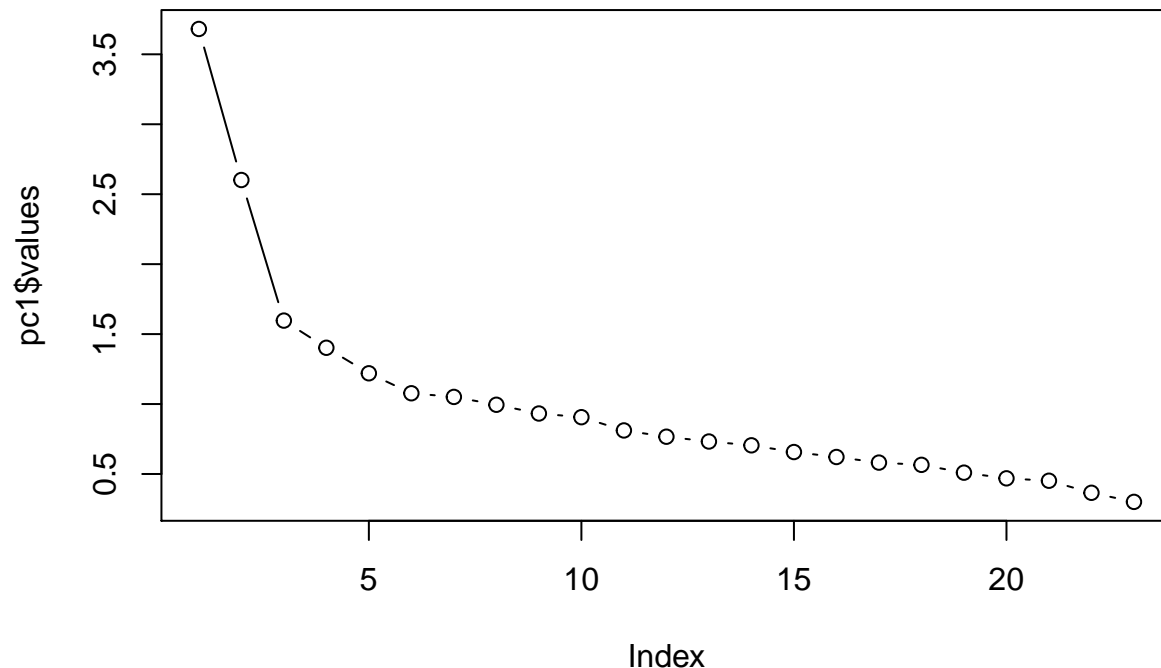
```
# Then, we could get the determinant:
```

```
det(raqMatrix)
```

```
## [1] 0.01273583
```

```
# This value is greater than the necessary value of 0.00001 (see section 17.5). As such, our
# determinant does not seem problematic.
```

```
pc1 <- principal(data1, nfactors=22, rotate="none")
plot(pc1$values, type="b")
```



```
# From the scree plot, we could find the point of inflexion (around the third point to the
# left). The evidence from the scree plot and from the eigenvalues suggests a
# fourcomponent solution may be the best.
```

```
# Redo PCA
```

```
# rerun the analysis, change nfactors = 23 to be nfactors = 4 because we now want
# only six factors.
```

```
pc2 <- principal(data1, nfactors=4, rotate="none")
```

```
# In this case, we will select oblique rotation (rotate = "oblimin")
```

```
# as we believe that there is correlation in the factors.
```

```
# We will use 'Ordinary Least Squared/Minres' factoring (fm = "minres"), as it is known to
# provide results similar to 'Maximum Likelihood' without assuming multivariate normal distribution and
# derives solutions through iterative eigendecomposition like principal axis.
```

```
fourfactor <- fa(data1, nfactors = 4, rotate = "oblimin", fm="minres")
```

```
# print(fourfactor)
```

```
# print(fourfactor$loadings, cutoff = 0.3)
```

```
# The root mean square of residuals (RMSR) is 0.04. This is acceptable as this value should be closer to
# Next we should check RMSEA (root mean square error of approximation) index. Its value, 0.07 shows
# not good model fit as it's beyond 0.05.
```

```
fivefactor <- fa(data1,nfactors = 5,rotate = "oblimin",fm="minres")
# print(fivefactor)
#
# print(fivefactor$loadings,cutoff = 0.3)
# # Next we should check RMSEA (root mean square error of approximation) index. Its value, 0.066 shows
# # not good model fit as it's beyond 0.05.
```

```
sixfactor <- fa(data1,nfactors = 6,rotate = "oblimin",fm="minres")
# print(sixfactor)
#
# print(sixfactor$loadings,cutoff = 0.3)
# Next we should check RMSEA (root mean square error of approximation) index. Its value, 0.052 shows
# not good model fit as it's beyond 0.05.
```

```
sevenfactor <- fa(data1,nfactors = 7,rotate = "oblimin",fm="minres")
print(sevenfactor)
```

```
## Factor Analysis using method = minres
## Call: fa(r = data1, nfactors = 7, rotate = "oblimin", fm = "minres")
## Standardized loadings (pattern matrix) based upon correlation matrix
##
## V4: Important in life: Family -0.07
## V5: Important in life: Friends 0.11
## V6: Important in life: Leisure time 0.05
## V7: Important in life: Politics -0.03
## V8: Important in life: Work -0.04
## V9: Important in life: Religion -0.02
## V10: Feeling of happiness -0.47
## V11: State of health (subjective) -0.40
## V23: Satisfaction with your life 0.78
## V59: Satisfaction with financial situation of household 0.62
## V102: How much you trust: Your family -0.19
## V103: How much you trust: Your neighborhood -0.06
## V104: How much you trust: People you know personally 0.04
## V105: How much you trust: People you meet for the first time 0.04
## V106: How much you trust: People of another religion -0.01
## V107: How much you trust: People of another nationality 0.08
## V140: Importance of democracy 0.04
## V141: How democratically is this country being governed today 0.14
## V142: How much respect is there for individual human rights nowadays in this country -0.01
## V237: Family savings during past year -0.14
## V238: Social class (subjective) -0.06
## V239: Scale of incomes 0.32
## V240: Sex 0.04
##
## MR1
## V4: Important in life: Family 0.01
## V5: Important in life: Friends -0.07
## V6: Important in life: Leisure time 0.00
## V7: Important in life: Politics 0.09
## V8: Important in life: Work 0.03
## V9: Important in life: Religion 0.02
## V10: Feeling of happiness 0.04
## V11: State of health (subjective) 0.06
```

## V23: Satisfaction with your life	0.01
## V59: Satisfaction with financial situation of household	0.10
## V102: How much you trust: Your family	0.04
## V103: How much you trust: Your neighborhood	0.03
## V104: How much you trust: People you know personally	0.03
## V105: How much you trust: People you meet for the first time	0.22
## V106: How much you trust: People of another religion	0.94
## V107: How much you trust: People of another nationality	0.66
## V140: Importance of democracy	0.00
## V141: How democratically is this country being governed today	0.00
## V142: How much respect is there for individual human rights nowadays in this country	0.07
## V237: Family savings during past year	0.07
## V238: Social class (subjective)	0.12
## V239: Scale of incomes	0.00
## V240: Sex	0.06
##	MR5
## V4: Important in life: Family	0.02
## V5: Important in life: Friends	0.16
## V6: Important in life: Leisure time	0.01
## V7: Important in life: Politics	-0.04
## V8: Important in life: Work	-0.07
## V9: Important in life: Religion	0.03
## V10: Feeling of happiness	0.03
## V11: State of health (subjective)	-0.03
## V23: Satisfaction with your life	0.00
## V59: Satisfaction with financial situation of household	-0.05
## V102: How much you trust: Your family	0.28
## V103: How much you trust: Your neighborhood	0.70
## V104: How much you trust: People you know personally	0.63
## V105: How much you trust: People you meet for the first time	0.40
## V106: How much you trust: People of another religion	-0.02
## V107: How much you trust: People of another nationality	0.12
## V140: Importance of democracy	0.03
## V141: How democratically is this country being governed today	0.00
## V142: How much respect is there for individual human rights nowadays in this country	0.14
## V237: Family savings during past year	-0.02
## V238: Social class (subjective)	-0.03
## V239: Scale of incomes	0.11
## V240: Sex	0.04
##	MR4
## V4: Important in life: Family	-0.09
## V5: Important in life: Friends	-0.12
## V6: Important in life: Leisure time	-0.06
## V7: Important in life: Politics	-0.02
## V8: Important in life: Work	0.00
## V9: Important in life: Religion	0.01
## V10: Feeling of happiness	0.26
## V11: State of health (subjective)	0.06
## V23: Satisfaction with your life	0.05
## V59: Satisfaction with financial situation of household	0.15
## V102: How much you trust: Your family	0.00
## V103: How much you trust: Your neighborhood	0.04
## V104: How much you trust: People you know personally	-0.03
## V105: How much you trust: People you meet for the first time	0.00

## V106: How much you trust: People of another religion	-0.03
## V107: How much you trust: People of another nationality	0.05
## V140: Importance of democracy	0.72
## V141: How democratically is this country being governed today	0.51
## V142: How much respect is there for individual human rights nowadays in this country	0.19
## V237: Family savings during past year	0.11
## V238: Social class (subjective)	0.23
## V239: Scale of incomes	0.30
## V240: Sex	0.00
##	MR3
## V4: Important in life: Family	0.14
## V5: Important in life: Friends	0.10
## V6: Important in life: Leisure time	0.22
## V7: Important in life: Politics	0.53
## V8: Important in life: Work	0.19
## V9: Important in life: Religion	0.63
## V10: Feeling of happiness	0.05
## V11: State of health (subjective)	-0.15
## V23: Satisfaction with your life	0.00
## V59: Satisfaction with financial situation of household	-0.01
## V102: How much you trust: Your family	-0.05
## V103: How much you trust: Your neighborhood	0.09
## V104: How much you trust: People you know personally	-0.08
## V105: How much you trust: People you meet for the first time	-0.06
## V106: How much you trust: People of another religion	0.02
## V107: How much you trust: People of another nationality	-0.01
## V140: Importance of democracy	0.00
## V141: How democratically is this country being governed today	0.07
## V142: How much respect is there for individual human rights nowadays in this country	0.07
## V237: Family savings during past year	-0.04
## V238: Social class (subjective)	0.04
## V239: Scale of incomes	0.23
## V240: Sex	-0.14
##	MR7
## V4: Important in life: Family	0.35
## V5: Important in life: Friends	0.52
## V6: Important in life: Leisure time	0.33
## V7: Important in life: Politics	0.04
## V8: Important in life: Work	0.27
## V9: Important in life: Religion	0.04
## V10: Feeling of happiness	0.28
## V11: State of health (subjective)	0.22
## V23: Satisfaction with your life	0.04
## V59: Satisfaction with financial situation of household	0.11
## V102: How much you trust: Your family	0.12
## V103: How much you trust: Your neighborhood	-0.09
## V104: How much you trust: People you know personally	0.14
## V105: How much you trust: People you meet for the first time	0.09
## V106: How much you trust: People of another religion	-0.03
## V107: How much you trust: People of another nationality	0.02
## V140: Importance of democracy	-0.05
## V141: How democratically is this country being governed today	-0.01
## V142: How much respect is there for individual human rights nowadays in this country	-0.01
## V237: Family savings during past year	0.06

## V238: Social class (subjective)	0.12
## V239: Scale of incomes	-0.14
## V240: Sex	0.01
##	MR6
## V4: Important in life: Family	-0.07
## V5: Important in life: Friends	0.14
## V6: Important in life: Leisure time	0.15
## V7: Important in life: Politics	0.05
## V8: Important in life: Work	-0.16
## V9: Important in life: Religion	-0.02
## V10: Feeling of happiness	-0.07
## V11: State of health (subjective)	-0.16
## V23: Satisfaction with your life	0.01
## V59: Satisfaction with financial situation of household	-0.17
## V102: How much you trust: Your family	-0.12
## V103: How much you trust: Your neighborhood	-0.05
## V104: How much you trust: People you know personally	0.03
## V105: How much you trust: People you meet for the first time	0.07
## V106: How much you trust: People of another religion	-0.01
## V107: How much you trust: People of another nationality	0.07
## V140: Importance of democracy	0.12
## V141: How democratically is this country being governed today	-0.13
## V142: How much respect is there for individual human rights nowadays in this country	0.28
## V237: Family savings during past year	0.42
## V238: Social class (subjective)	0.45
## V239: Scale of incomes	-0.16
## V240: Sex	-0.05
##	h2
## V4: Important in life: Family	0.172
## V5: Important in life: Friends	0.384
## V6: Important in life: Leisure time	0.217
## V7: Important in life: Politics	0.298
## V8: Important in life: Work	0.137
## V9: Important in life: Religion	0.428
## V10: Feeling of happiness	0.357
## V11: State of health (subjective)	0.244
## V23: Satisfaction with your life	0.622
## V59: Satisfaction with financial situation of household	0.521
## V102: How much you trust: Your family	0.151
## V103: How much you trust: Your neighborhood	0.526
## V104: How much you trust: People you know personally	0.467
## V105: How much you trust: People you meet for the first time	0.335
## V106: How much you trust: People of another religion	0.845
## V107: How much you trust: People of another nationality	0.586
## V140: Importance of democracy	0.569
## V141: How democratically is this country being governed today	0.357
## V142: How much respect is there for individual human rights nowadays in this country	0.208
## V237: Family savings during past year	0.243
## V238: Social class (subjective)	0.340
## V239: Scale of incomes	0.437
## V240: Sex	0.021
##	u2
## V4: Important in life: Family	0.83
## V5: Important in life: Friends	0.62

## V6: Important in life: Leisure time	0.78
## V7: Important in life: Politics	0.70
## V8: Important in life: Work	0.86
## V9: Important in life: Religion	0.57
## V10: Feeling of happiness	0.64
## V11: State of health (subjective)	0.76
## V23: Satisfaction with your life	0.38
## V59: Satisfaction with financial situation of household	0.48
## V102: How much you trust: Your family	0.85
## V103: How much you trust: Your neighborhood	0.47
## V104: How much you trust: People you know personally	0.53
## V105: How much you trust: People you meet for the first time	0.67
## V106: How much you trust: People of another religion	0.16
## V107: How much you trust: People of another nationality	0.41
## V140: Importance of democracy	0.43
## V141: How democratically is this country being governed today	0.64
## V142: How much respect is there for individual human rights nowadays in this country	0.79
## V237: Family savings during past year	0.76
## V238: Social class (subjective)	0.66
## V239: Scale of incomes	0.56
## V240: Sex	0.98
##	com
## V4: Important in life: Family	1.7
## V5: Important in life: Friends	1.7
## V6: Important in life: Leisure time	2.3
## V7: Important in life: Politics	1.1
## V8: Important in life: Work	2.8
## V9: Important in life: Religion	1.0
## V10: Feeling of happiness	2.4
## V11: State of health (subjective)	2.4
## V23: Satisfaction with your life	1.0
## V59: Satisfaction with financial situation of household	1.4
## V102: How much you trust: Your family	2.7
## V103: How much you trust: Your neighborhood	1.1
## V104: How much you trust: People you know personally	1.2
## V105: How much you trust: People you meet for the first time	1.8
## V106: How much you trust: People of another religion	1.0
## V107: How much you trust: People of another nationality	1.1
## V140: Importance of democracy	1.1
## V141: How democratically is this country being governed today	1.3
## V142: How much respect is there for individual human rights nowadays in this country	2.7
## V237: Family savings during past year	1.5
## V238: Social class (subjective)	1.9
## V239: Scale of incomes	4.1
## V240: Sex	2.0
##	
##	MR2 MR1 MR5 MR4 MR3 MR7 MR6
## SS loadings	1.68 1.57 1.37 1.20 1.01 0.91 0.72
## Proportion Var	0.07 0.07 0.06 0.05 0.04 0.04 0.03
## Cumulative Var	0.07 0.14 0.20 0.25 0.30 0.34 0.37
## Proportion Explained	0.20 0.19 0.16 0.14 0.12 0.11 0.09
## Cumulative Proportion	0.20 0.38 0.55 0.69 0.81 0.91 1.00
##	
## With factor correlations of	



```

##      MR2 MR1 MR5 MR4 MR3 MR7 MR6
## MR2  1.00 0.12 0.03 0.26 0.17 -0.15 -0.13
## MR1  0.12 1.00 0.50 0.27 0.27 0.11 0.13
## MR5  0.03 0.50 1.00 0.20 0.23 0.23 0.15
## MR4  0.26 0.27 0.20 1.00 0.25 0.01 0.04
## MR3  0.17 0.27 0.23 0.25 1.00 0.18 -0.01
## MR7 -0.15 0.11 0.23 0.01 0.18 1.00 0.13
## MR6 -0.13 0.13 0.15 0.04 -0.01 0.13 1.00
##
## Mean item complexity = 1.8
## Test of the hypothesis that 7 factors are sufficient.
##
## The degrees of freedom for the null model are 253 and the objective function was 4.36 with Chi Sq
## The degrees of freedom for the model are 113 and the objective function was 0.33
##
## The root mean square of the residuals (RMSR) is 0.02
## The df corrected root mean square of the residuals is 0.04
##
## The harmonic number of observations is 1238 with the empirical chi square 358.99 with prob < 2.1
## The total number of observations was 1238 with Likelihood Chi Square = 398.4 with prob < 1.8e-3
##
## Tucker Lewis Index of factoring reliability = 0.874
## RMSEA index = 0.046 and the 90 % confidence intervals are 0.04 0.05
## BIC = -406.31
## Fit based upon off diagonal values = 0.98
## Measures of factor score adequacy
##
## Correlation of (regression) scores with factors MR2 MR1 MR5 MR4 MR3
## Multiple R square of scores with factors 0.88 0.94 0.85 0.84 0.79
## Minimum correlation of possible factor scores 0.78 0.88 0.73 0.70 0.62
## Correlation of (regression) scores with factors MR7 MR6
## Multiple R square of scores with factors 0.55 0.76 0.46 0.39 0.24
## Minimum correlation of possible factor scores 0.75 0.72
## Multiple R square of scores with factors 0.57 0.51
## Minimum correlation of possible factor scores 0.13 0.02

print(sevenfactor$loadings,cutoff = 0.3)

##
## Loadings:
##
## V4: Important in life: Family MR2
## V5: Important in life: Friends
## V6: Important in life: Leisure time
## V7: Important in life: Politics
## V8: Important in life: Work
## V9: Important in life: Religion
## V10: Feeling of happiness -0.473
## V11: State of health (subjective) -0.400
## V23: Satisfaction with your life 0.776
## V59: Satisfaction with financial situation of household 0.623
## V102: How much you trust: Your family
## V103: How much you trust: Your neighborhood
## V104: How much you trust: People you know personally
## V105: How much you trust: People you meet for the first time

```

## V106: How much you trust: People of another religion	
## V107: How much you trust: People of another nationality	
## V140: Importance of democracy	
## V141: How democratically is this country being governed today	
## V142: How much respect is there for individual human rights nowadays in this country	
## V237: Family savings during past year	
## V238: Social class (subjective)	
## V239: Scale of incomes	0.319
## V240: Sex	
##	MR1
## V4: Important in life: Family	
## V5: Important in life: Friends	
## V6: Important in life: Leisure time	
## V7: Important in life: Politics	
## V8: Important in life: Work	
## V9: Important in life: Religion	
## V10: Feeling of happiness	
## V11: State of health (subjective)	
## V23: Satisfaction with your life	
## V59: Satisfaction with financial situation of household	
## V102: How much you trust: Your family	
## V103: How much you trust: Your neighborhood	
## V104: How much you trust: People you know personally	
## V105: How much you trust: People you meet for the first time	
## V106: How much you trust: People of another religion	0.937
## V107: How much you trust: People of another nationality	0.657
## V140: Importance of democracy	
## V141: How democratically is this country being governed today	
## V142: How much respect is there for individual human rights nowadays in this country	
## V237: Family savings during past year	
## V238: Social class (subjective)	
## V239: Scale of incomes	
## V240: Sex	
##	MR5
## V4: Important in life: Family	
## V5: Important in life: Friends	
## V6: Important in life: Leisure time	
## V7: Important in life: Politics	
## V8: Important in life: Work	
## V9: Important in life: Religion	
## V10: Feeling of happiness	
## V11: State of health (subjective)	
## V23: Satisfaction with your life	
## V59: Satisfaction with financial situation of household	
## V102: How much you trust: Your family	
## V103: How much you trust: Your neighborhood	0.700
## V104: How much you trust: People you know personally	0.633
## V105: How much you trust: People you meet for the first time	0.405
## V106: How much you trust: People of another religion	
## V107: How much you trust: People of another nationality	
## V140: Importance of democracy	
## V141: How democratically is this country being governed today	
## V142: How much respect is there for individual human rights nowadays in this country	
## V237: Family savings during past year	

## V238: Social class (subjective)	
## V239: Scale of incomes	
## V240: Sex	
##	MR4
## V4: Important in life: Family	
## V5: Important in life: Friends	
## V6: Important in life: Leisure time	
## V7: Important in life: Politics	
## V8: Important in life: Work	
## V9: Important in life: Religion	
## V10: Feeling of happiness	
## V11: State of health (subjective)	
## V23: Satisfaction with your life	
## V59: Satisfaction with financial situation of household	
## V102: How much you trust: Your family	
## V103: How much you trust: Your neighborhood	
## V104: How much you trust: People you know personally	
## V105: How much you trust: People you meet for the first time	
## V106: How much you trust: People of another religion	
## V107: How much you trust: People of another nationality	
## V140: Importance of democracy	0.722
## V141: How democratically is this country being governed today	0.509
## V142: How much respect is there for individual human rights nowadays in this country	
## V237: Family savings during past year	
## V238: Social class (subjective)	
## V239: Scale of incomes	
## V240: Sex	
##	MR3
## V4: Important in life: Family	
## V5: Important in life: Friends	
## V6: Important in life: Leisure time	
## V7: Important in life: Politics	0.526
## V8: Important in life: Work	
## V9: Important in life: Religion	0.631
## V10: Feeling of happiness	
## V11: State of health (subjective)	
## V23: Satisfaction with your life	
## V59: Satisfaction with financial situation of household	
## V102: How much you trust: Your family	
## V103: How much you trust: Your neighborhood	
## V104: How much you trust: People you know personally	
## V105: How much you trust: People you meet for the first time	
## V106: How much you trust: People of another religion	
## V107: How much you trust: People of another nationality	
## V140: Importance of democracy	
## V141: How democratically is this country being governed today	
## V142: How much respect is there for individual human rights nowadays in this country	
## V237: Family savings during past year	
## V238: Social class (subjective)	
## V239: Scale of incomes	
## V240: Sex	
##	MR7
## V4: Important in life: Family	0.345
## V5: Important in life: Friends	0.520

```

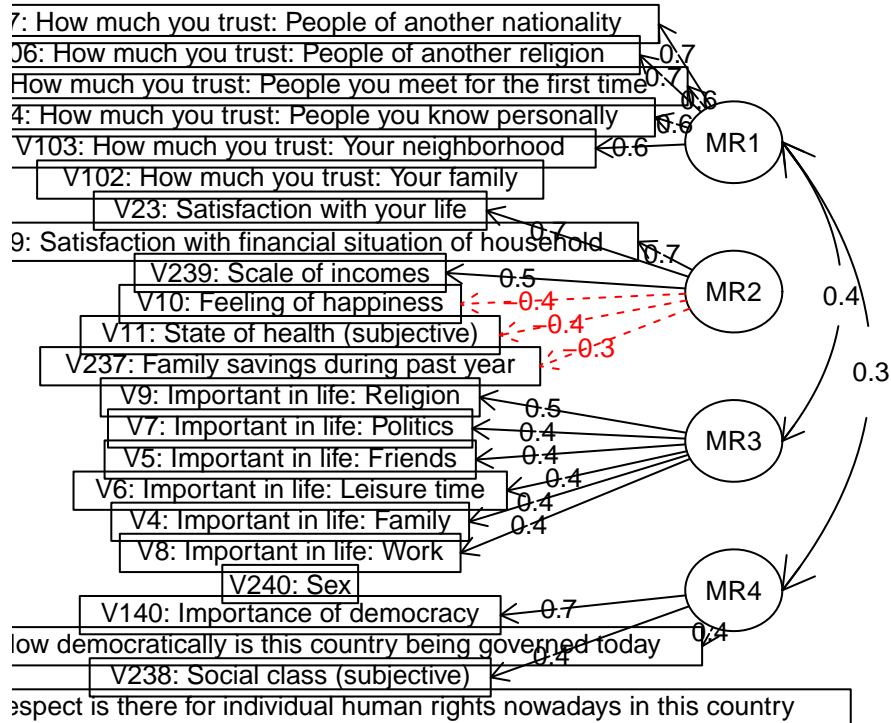
## V6: Important in life: Leisure time                                0.332
## V7: Important in life: Politics
## V8: Important in life: Work
## V9: Important in life: Religion
## V10: Feeling of happiness
## V11: State of health (subjective)
## V23: Satisfaction with your life
## V59: Satisfaction with financial situation of household
## V102: How much you trust: Your family
## V103: How much you trust: Your neighborhood
## V104: How much you trust: People you know personally
## V105: How much you trust: People you meet for the first time
## V106: How much you trust: People of another religion
## V107: How much you trust: People of another nationality
## V140: Importance of democracy
## V141: How democratically is this country being governed today
## V142: How much respect is there for individual human rights nowadays in this country
## V237: Family savings during past year
## V238: Social class (subjective)
## V239: Scale of incomes
## V240: Sex
##
## V4: Important in life: Family
## V5: Important in life: Friends
## V6: Important in life: Leisure time
## V7: Important in life: Politics
## V8: Important in life: Work
## V9: Important in life: Religion
## V10: Feeling of happiness
## V11: State of health (subjective)
## V23: Satisfaction with your life
## V59: Satisfaction with financial situation of household
## V102: How much you trust: Your family
## V103: How much you trust: Your neighborhood
## V104: How much you trust: People you know personally
## V105: How much you trust: People you meet for the first time
## V106: How much you trust: People of another religion
## V107: How much you trust: People of another nationality
## V140: Importance of democracy
## V141: How democratically is this country being governed today
## V142: How much respect is there for individual human rights nowadays in this country
## V237: Family savings during past year                                0.420
## V238: Social class (subjective)                                    0.449
## V239: Scale of incomes
## V240: Sex
##
##
##          MR2   MR1   MR5   MR4   MR3   MR7   MR6
## SS loadings   1.591 1.416 1.221 1.099 0.921 0.803 0.679
## Proportion Var 0.069 0.062 0.053 0.048 0.040 0.035 0.030
## Cumulative Var 0.069 0.131 0.184 0.232 0.272 0.307 0.336

```

*# Next we should check RMSEA (root mean square error of approximation) index. Its value, 0.047 shows*  
*# not good model fit as it's beyond 0.05.*  
*# Finally, the Tucker-Lewis Index (TLI) is 0.93 - an acceptable value considering it's over 0.9.*

```
# Hit the following to look at the factor mapping:
fa.diagram(fourfactor)
```

## Factor Analysis



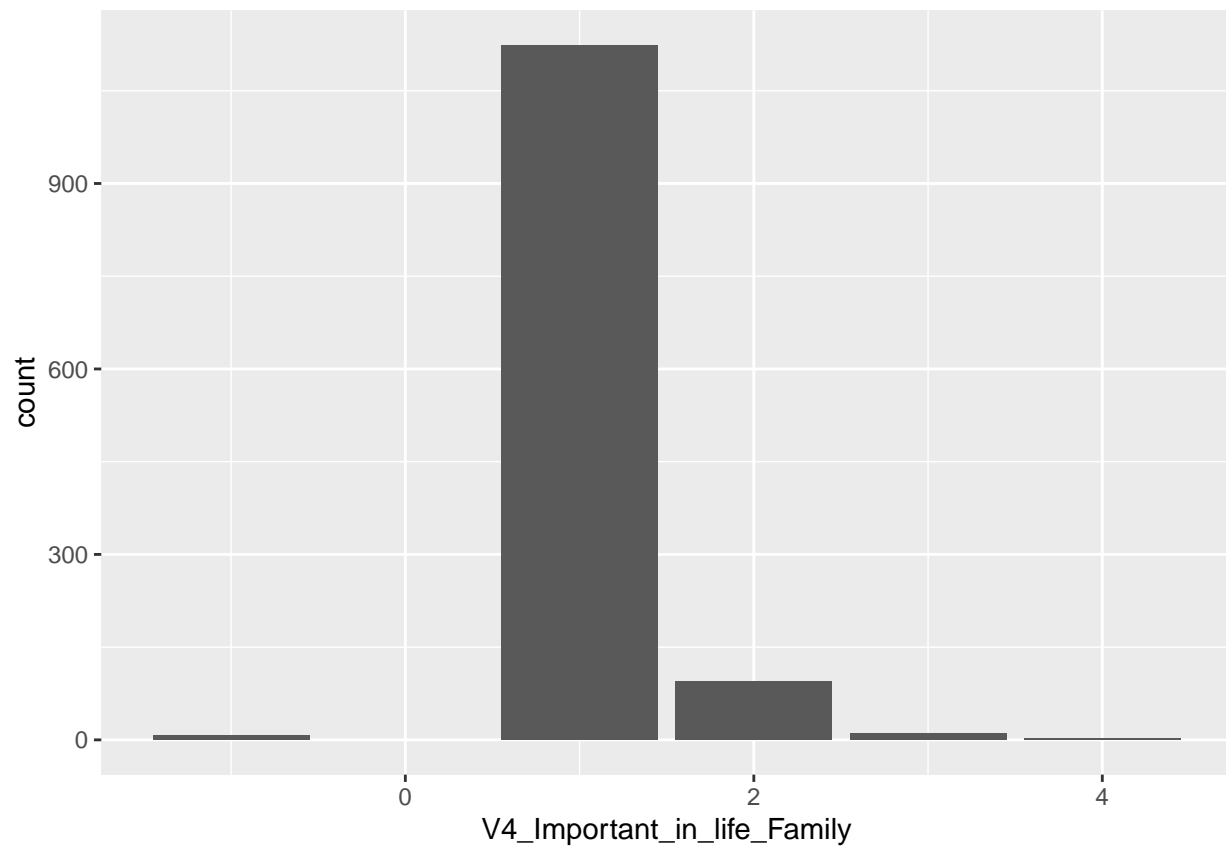
## Including Plots

```
# change column name

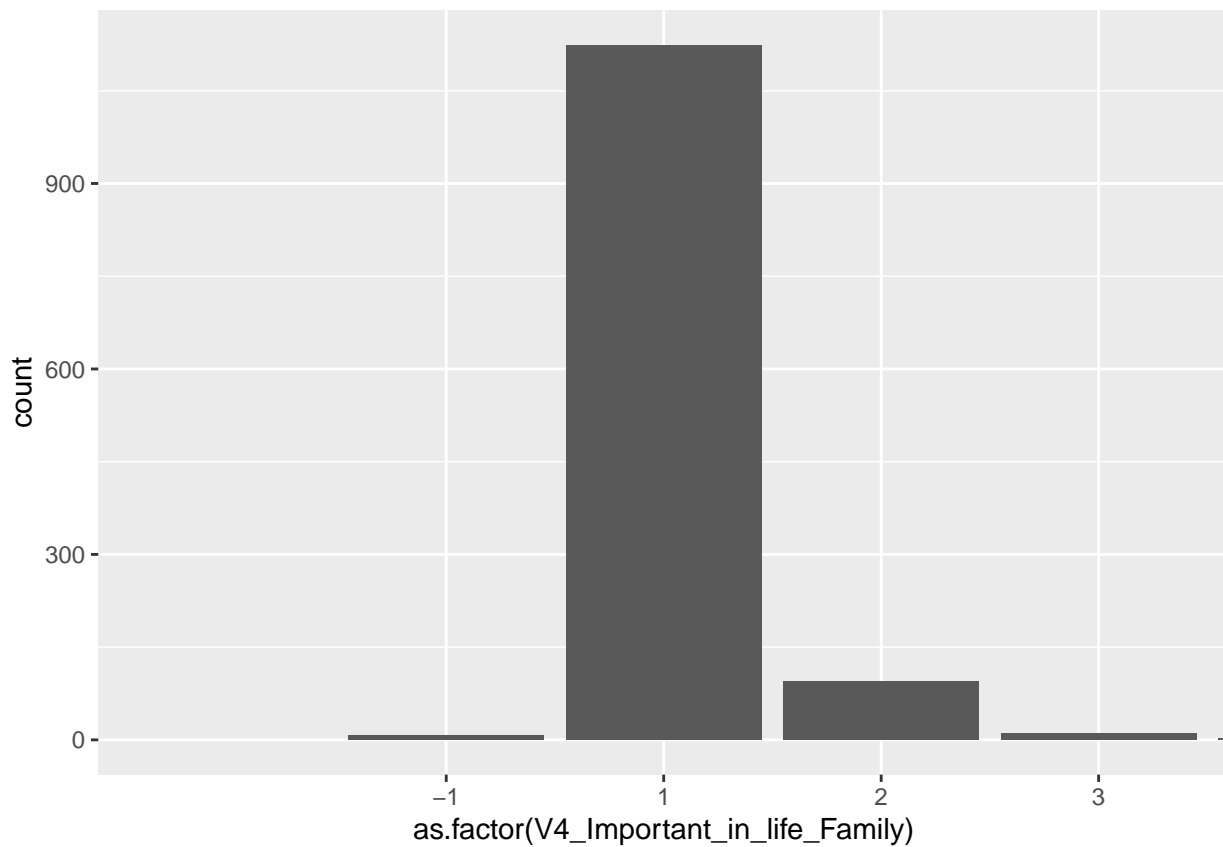
tw_select_col <- colnames(data1)

tw_select_col <- str_replace_all(tw_select_col, ": ", "_")
tw_select_col <- str_replace_all(tw_select_col, " ", "_")
colnames(data1) <- tw_select_col

ggplot(data = data1) +
  geom_bar(mapping = aes(x = V4_Important_in_life_Family, fill = V5_Important_in_life_Friends))
```



```
# view the count for question V4_Important_in_life_Family.  
ggplot(data = data1) +  
  geom_bar(mapping=aes(x=as.factor(V4_Important_in_life_Family)))+  
  coord_cartesian(xlim=c(0,4))
```



```
# view the count for each answer of the first 4 questions together.
testdf <- data1%>%select(1:4)%>%
  pivot_longer(cols = 1:4,names_to = "Question",values_to = "answer") %>%
  filter(answer>=0)

ggplot(testdf)+
  aes(x = answer)+
  geom_bar(position = "dodge")+facet_wrap(as.factor(testdf$Question),ncol = 2)
```

