

## Analysis for Suicide data

```
library(fingertipsR)
library(tidyverse)
library(ggplot2)
library(ggbridges)
library(ggjoy)
library(WVPlots)
library(stringr)
library(lattice)
library(kernlab)
library(caret)
library(caretEnsemble)
library(govstyle)
library(viridisLite)
library(viridis)
library(dplyr)
library(psych)
library(GPArotation)
library(data.table)
library(QuantPsyc)
```

```
source("F:/STA496/Replication Paper/Replications/DataProcessing.R")
```

```
#Multiple regression model
fmla_new <- Suicide_Rate ~ .
```

```
mod_lm_new <- lm(fmla_new, data = analysis_final_new)
#View(mod_lm_new)
#summary(mod_lm_new)
lm_tidy_new <- broom::tidy(mod_lm_new) %>%
  filter(p.value < 0.05)
```

```
#Sort the multiple linear regression coefficients
```

```
MulLinReg_Coef<-mod_lm_new$coefficients
MulLinReg_Coef_df<-as.data.frame(MulLinReg_Coef)
MulLinReg_Coef_Only<-MulLinReg_Coef_df[-1,drop = FALSE,]
sort.MulLinReg_Coef_Only<-MulLinReg_Coef_Only[order(MulLinReg_Coef_Only$MulLinReg_Coef ,decreasing = TRUE),]

#write.csv(sort.MulLinReg_Coef_Only,file = "F:/STA496/Replication Paper/Replications/sort.MulLinReg_Coef.csv")
```

```
#Standardized multiple linear regression and sort the coefficients to see the most importance variable
```

```
lm_stan<-lm.beta(mod_lm_new)
lm_stan_df<-as.data.frame(lm_stan)
sort.lm_stan<-lm_stan_df[order(lm_stan_df$lm_stan, decreasing = TRUE), drop=FALSE,]

#write.csv(sort.lm_stan,file = "F:/STA496/Replication Paper/Replications/sort.lm_stan.csv")
```

```

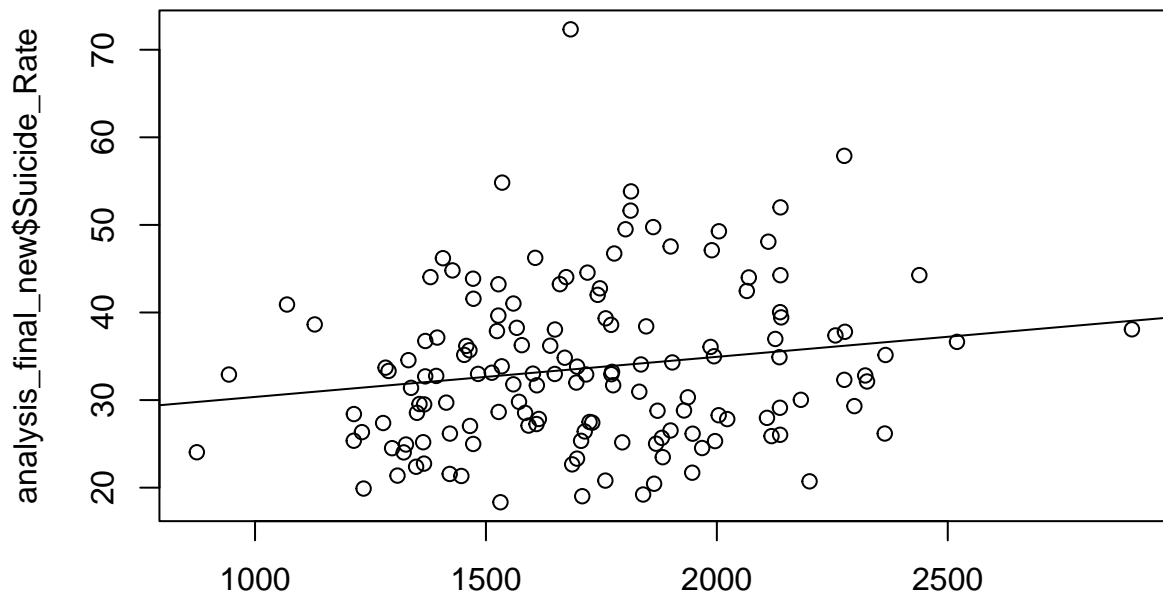
#Calculate the importance based on coefficients
modvimp_new <- varImp(mod_lm_new, scale = FALSE)
#Sort the biggest importance
sort.modvimp_new<-modvimp_new[order(modvimp_new$Overall,decreasing = TRUE), drop = FALSE,]
#write.csv(sort.modvimp_new,file ="F:/STA496/Replication Paper/Replications/sort.modvimp_new.csv")

#Linear Regression for 'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_F
LinReg_1 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Admission episodes for alcohol-rel
summary(LinReg_1)

##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Admission episodes for alcohol-re
## data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -15.133  -6.687  -0.718   4.974  38.840
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_F
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_F
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_F
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_F
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_F
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.005 on 143 degrees of freedom
## Multiple R-squared:  0.0296, Adjusted R-squared:  0.02281
## F-statistic: 4.362 on 1 and 143 DF, p-value: 0.03852

#Plot Linear Regression for Admission episodes for alcohol-related conditions (Broad): Old Method_All a
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Admission episodes for alcohol-related condi
abline(LinReg_1)

```



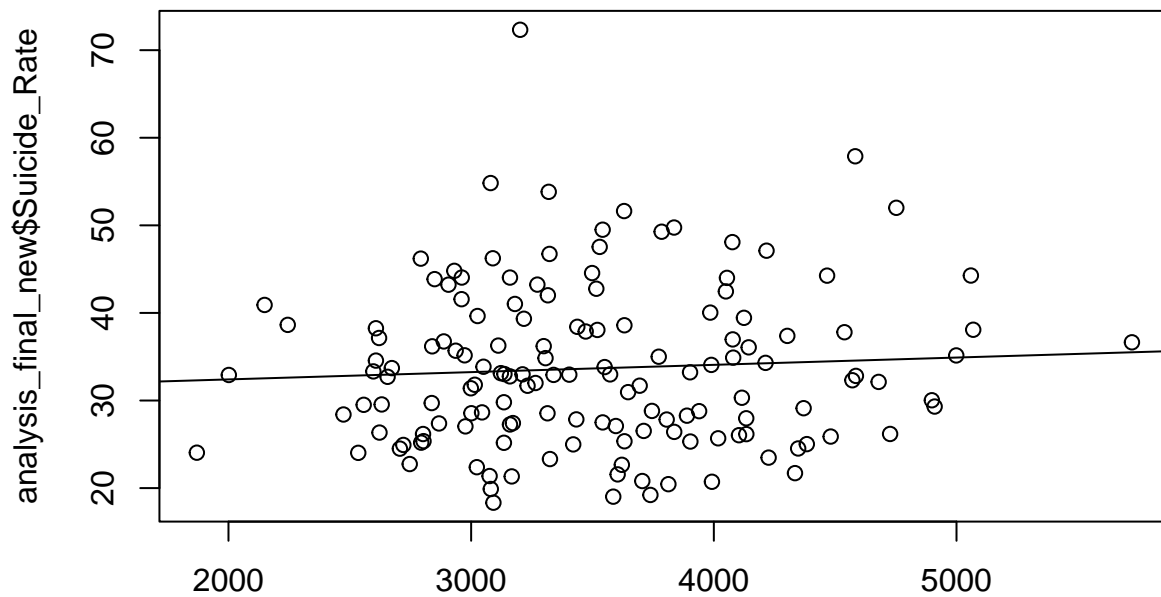
\_final\_new\$`Admission episodes for alcohol-related conditions (Broad): Old Method\_All` :

```
#Linear Regression for 'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_M
LinReg_2 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Admission episodes for alcohol-rel
summary(LinReg_2)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Admission episodes for alcohol-rel
##   data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -14.981  -6.648  -0.624   5.265  38.919
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$`Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_M
##
## (Intercept)
## analysis_final_new$`Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_M
##
## (Intercept)
## analysis_final_new$`Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_M
##
## (Intercept)
```

```
## analysis_final_new$`Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_M
##
## (Intercept)
## analysis_final_new$`Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_M
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.124 on 143 degrees of freedom
## Multiple R-squared:  0.003965,    Adjusted R-squared:  -0.003001
## F-statistic: 0.5692 on 1 and 143 DF,  p-value: 0.4518
```

```
#Plot Linear Regression for 'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_M
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Admission episodes for alcohol-related condi
abline(LinReg_2)
```



```
s_final_new$`Admission episodes for alcohol-related conditions (Broad): Old Method_AI
```

```
#Linear Regression for 'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_M
LinReg_3 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Admission episodes for alcohol-rel
summary(LinReg_3)
```

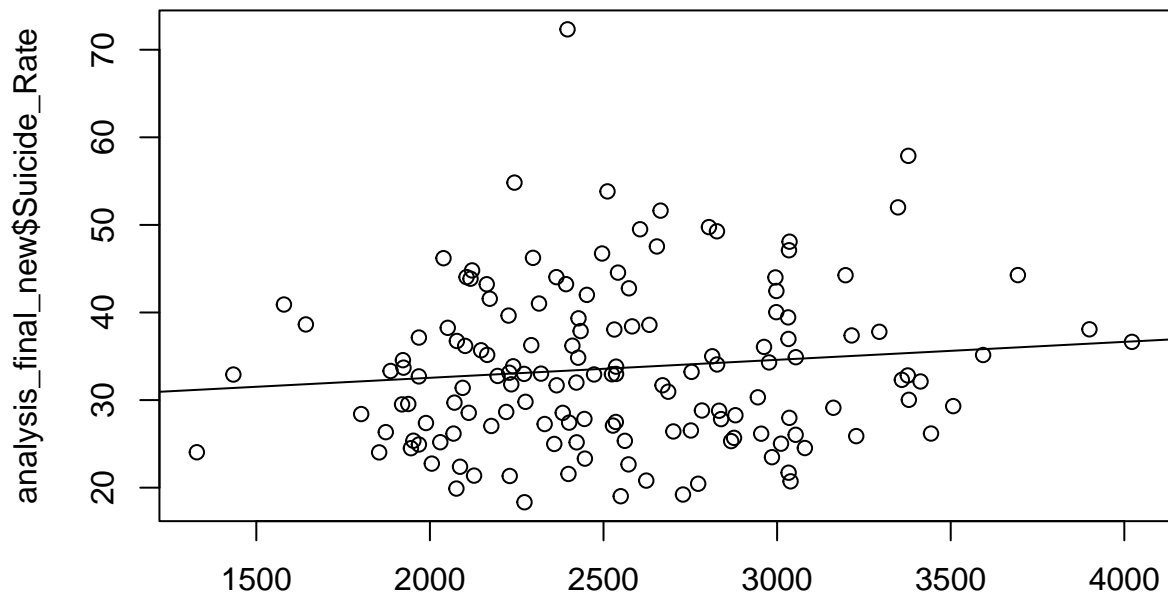
```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Admission episodes for alcohol-re
##      data = analysis_final_new)
##
## Residuals:
```

```

##      Min      1Q  Median      3Q      Max
## -14.821  -6.537  -0.666   4.781  38.971
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_P
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_P
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_P
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_P
##
## (Intercept)
## analysis_final_new$'Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_P
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.084 on 143 degrees of freedom
## Multiple R-squared:  0.01257,    Adjusted R-squared:  0.005661
## F-statistic:  1.82 on 1 and 143 DF,  p-value: 0.1795

#Plot Linear Regression for 'Admission episodes for alcohol-related conditions (Broad): Old Method_All
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Admission episodes for alcohol-related condi
abline(LinReg_3)

```



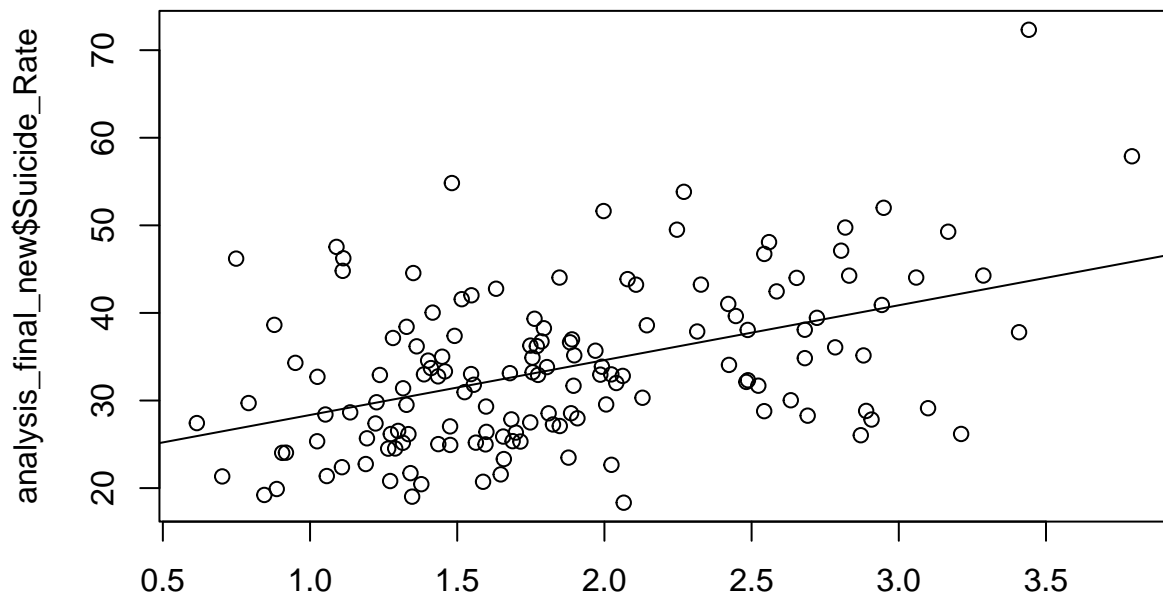
analysis\_final\_new\$`Admission episodes for alcohol-related conditions (Broad): Old Method\_All`

```
#Linear Regression for 'Adults in treatment at specialist alcohol misuse services: rate per 1000 popula
LinReg_4 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Adults in treatment at specialist a
summary(LinReg_4)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Adults in treatment at specialist
##      data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -16.6858  -5.6357  -0.5569   4.1825  28.6881
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$`Adults in treatment at specialist alcohol misuse services: rate per 1000 popula
##
## (Intercept)
## analysis_final_new$`Adults in treatment at specialist alcohol misuse services: rate per 1000 popula
##
## (Intercept)
## analysis_final_new$`Adults in treatment at specialist alcohol misuse services: rate per 1000 popula
##
## (Intercept)
```

```
## analysis_final_new$'Adults in treatment at specialist alcohol misuse services: rate per 1000 population'
##
## (Intercept)
## analysis_final_new$'Adults in treatment at specialist alcohol misuse services: rate per 1000 population'
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.13 on 143 degrees of freedom
## Multiple R-squared:  0.209, Adjusted R-squared:  0.2035
## F-statistic: 37.79 on 1 and 143 DF, p-value: 7.421e-09
```

```
#Plot Linear Regression for 'Adults in treatment at specialist alcohol misuse services: rate per 1000 population'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Adults in treatment at specialist alcohol misuse services: rate per 1000 population')
abline(LinReg_4)
```



analysis\_final\_new\$'Adults in treatment at specialist alcohol misuse services: rate per 1000 population'

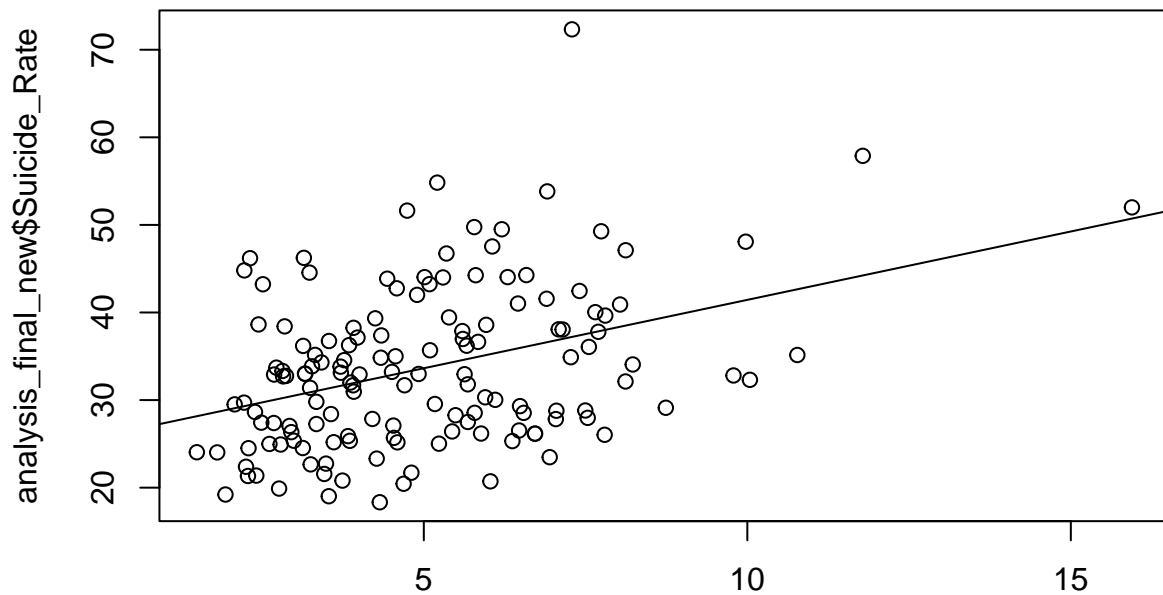
```
#Linear Regression for 'Adults in treatment at specialist alcohol misuse services: rate per 1000 population'
LinReg_5 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Adults in treatment at specialist alcohol misuse services: rate per 1000 population')
summary(LinReg_5)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Adults in treatment at specialist alcohol misuse services: rate per 1000 population', data = analysis_final_new)
##
## Residuals:
```

```
##      Min      1Q  Median      3Q      Max
## -14.520  -6.647  -0.049   4.970  35.117
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'Adults in treatment at specialist drug misuse services: rate per 1000 population,
##
## (Intercept)
## analysis_final_new$'Adults in treatment at specialist drug misuse services: rate per 1000 population,
##
## (Intercept)
## analysis_final_new$'Adults in treatment at specialist drug misuse services: rate per 1000 population,
##
## (Intercept)
## analysis_final_new$'Adults in treatment at specialist drug misuse services: rate per 1000 population,
##
## (Intercept)
## analysis_final_new$'Adults in treatment at specialist drug misuse services: rate per 1000 population,
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.447 on 143 degrees of freedom
## Multiple R-squared:  0.1462, Adjusted R-squared:  0.1402
## F-statistic: 24.48 on 1 and 143 DF,  p-value: 2.083e-06

#Plot Linear Regression for 'Adults in treatment at specialist alcohol misuse services: rate per 1000 p
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Adults in treatment at specialist drug misuse
abline(LinReg_5)
```



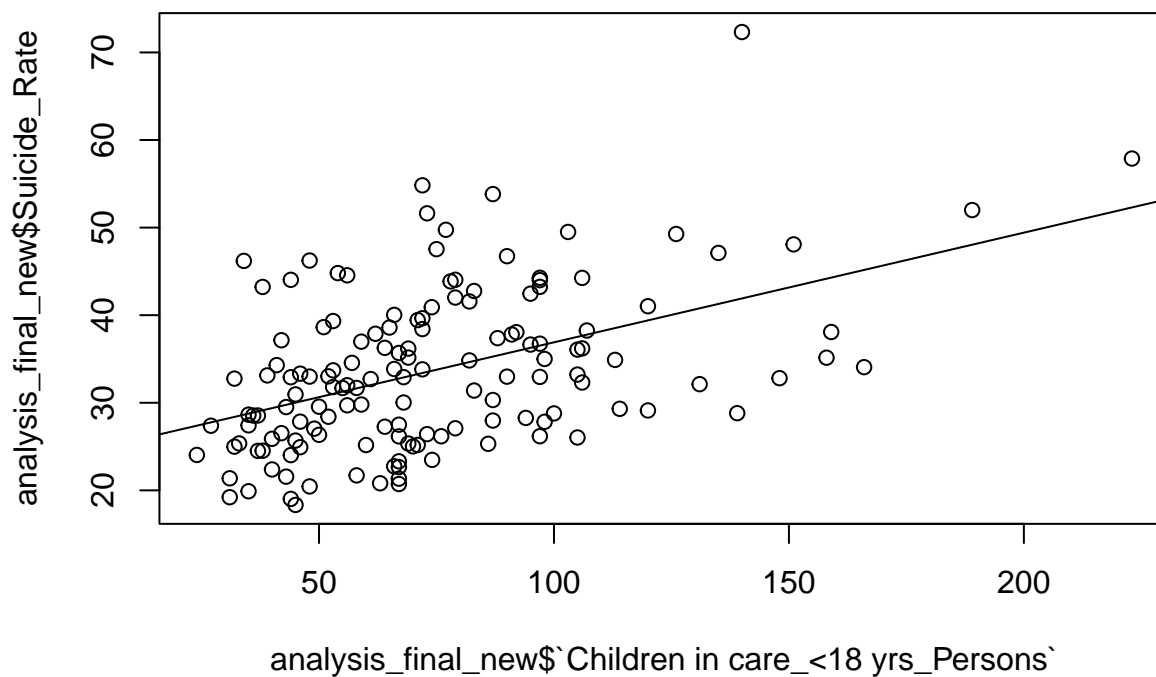


analysis\_final\_new\$Adults in treatment at specialist drug misuse services: rate per 1000 population\_

```
#Linear Regression for 'Children in care_<18 yrs_Persons'
LinReg_6 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Children in care_<18 yrs_Persons',
summary(LinReg_6)

##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Children in care_<18 yrs_Persons',
##     data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -12.9728  -6.7200  -0.3477   5.2105  30.4169
##
## Coefficients:
##              Estimate Std. Error
## (Intercept)      24.3803     1.6127
## analysis_final_new$'Children in care_<18 yrs_Persons'  0.1252     0.0198
##              t value Pr(>|t|)
## (Intercept)      15.117 < 2e-16 ***
## analysis_final_new$'Children in care_<18 yrs_Persons'  6.324 3.05e-09 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.081 on 143 degrees of freedom
## Multiple R-squared:  0.2186, Adjusted R-squared:  0.2131
## F-statistic:    40 on 1 and 143 DF,  p-value: 3.055e-09
```

```
#Plot Linear Regression for 'Children in care_<18 yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Children in care_<18 yrs_Persons',data=analysis_final_new)
abline(LinReg_6)
```



```
#Linear Regression for 'Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons'
LinReg_7 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons',data=analysis_final_new)
summary(LinReg_7)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons', data = analysis_final_new)
##
## Residuals:
```

	Min	1Q	Median	3Q	Max
	-15.555	-6.798	-1.034	4.709	38.788

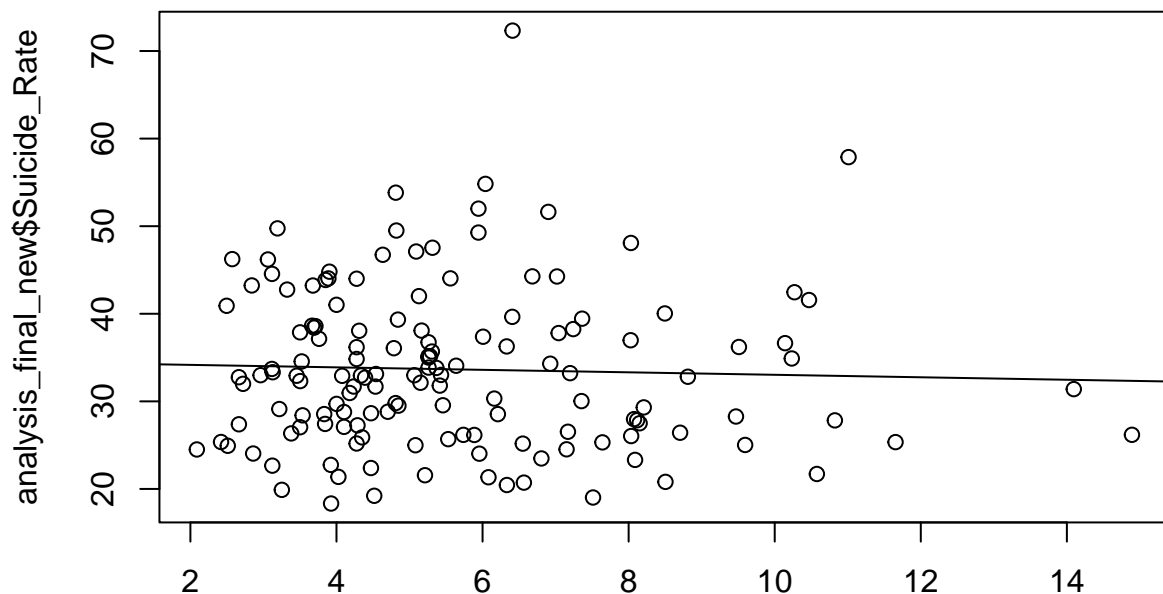
```
##
## Coefficients:
```

	Estimate	Std. Error	t value
(Intercept)	34.4467	1.9544	17.62
analysis_final_new\$'Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons'	-0.1415	0.3218	-0.44

```
##
```

```
## (Intercept) 17.62
## analysis_final_new$`Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons` -0.44
## Pr(>|t|) <2e-16
## (Intercept) ***
## analysis_final_new$`Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons` 0.661
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.136 on 143 degrees of freedom
## Multiple R-squared:  0.001349,    Adjusted R-squared:  -0.005634
## F-statistic: 0.1932 on 1 and 143 DF,  p-value: 0.6609
```

```
#Plot Linear Regression for 'Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons`)
abline(LinReg_7)
```



analysis\_final\_new\$`Children in the youth justice system (10-17 yrs)\_10-17 yrs\_Persons`

```
#Linear Regression for 'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons'
LinReg_8 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons`)
summary(LinReg_8)
```

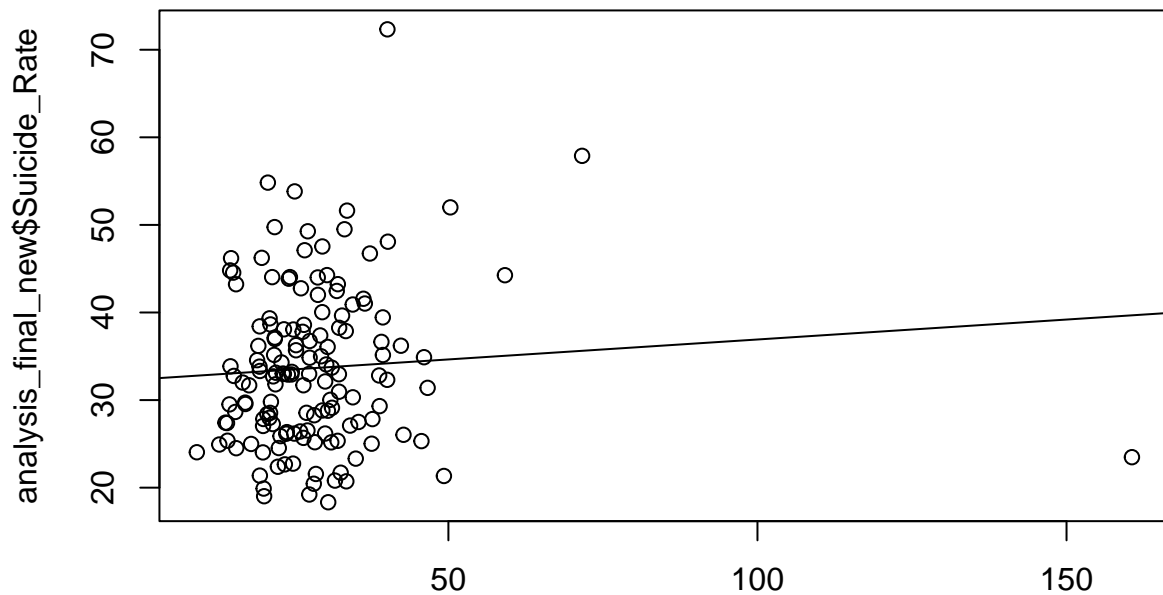
```
##
## Call:
```

```

## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons'
## data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -16.196  -7.072  -0.631   5.164  38.138
##
## Coefficients:
## (Intercept)
## analysis_final_new$'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons'
## (Intercept)
## analysis_final_new$'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons'
## (Intercept)
## analysis_final_new$'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons'
## (Intercept)
## analysis_final_new$'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons'
## (Intercept)
## analysis_final_new$'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons'
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.118 on 143 degrees of freedom
## Multiple R-squared:  0.005201, Adjusted R-squared:  -0.001756
## F-statistic: 0.7476 on 1 and 143 DF, p-value: 0.3887

#Plot Linear Regression for 'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons')
abline(LinReg_8)

```



analysis\_final\_new\$`Children leaving care: rate per 10,000 children aged under 18\_<18 yrs\_`

```
#Linear Regression for 'Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons'
```

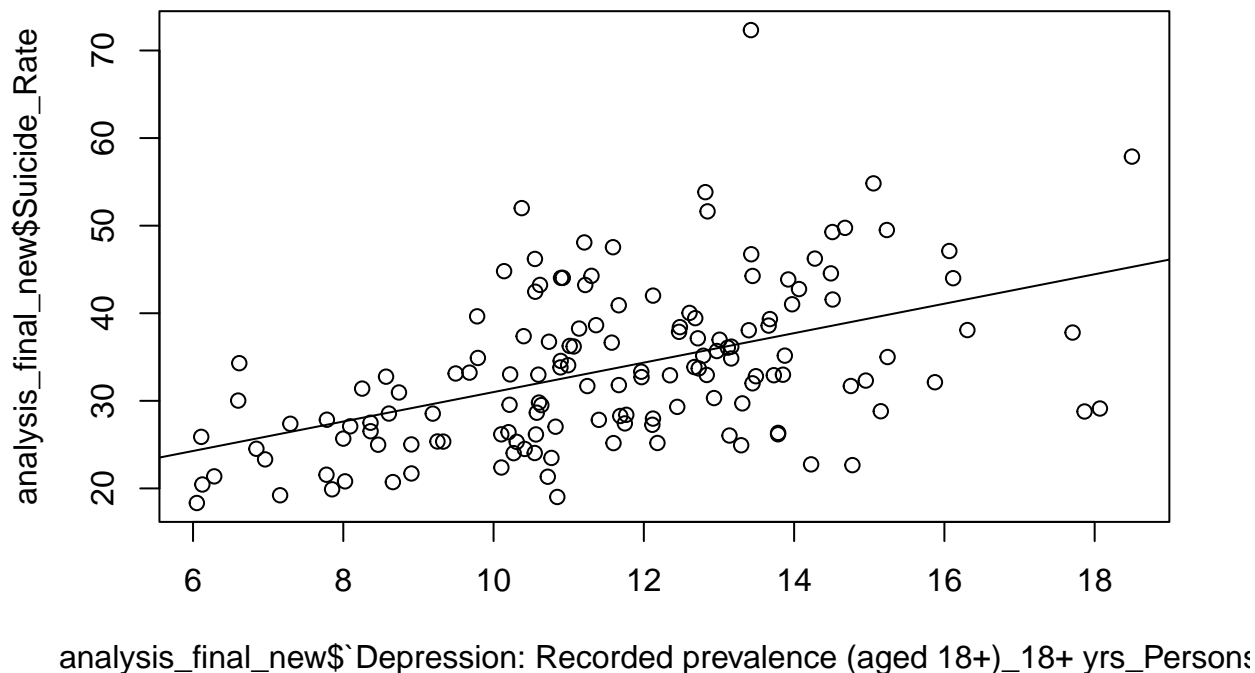
```
LinReg_9 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons`  
summary(LinReg_9)
```

```
##  
## Call:  
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons`,  
## data = analysis_final_new)  
##  
## Residuals:  
##      Min       1Q   Median       3Q      Max   
## -16.370  -5.617  -1.099   4.246  35.569   
##  
## Coefficients:  
##                                     Estimate  
## (Intercept)                        14.1853  
## analysis_final_new$`Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons` 1.6814  
##                                     Std. Error  
## (Intercept)                        3.0425  
## analysis_final_new$`Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons` 0.2564  
##                                     t value  
## (Intercept)                        4.662  
## analysis_final_new$`Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons` 6.558  
##                                     Pr(>|t|)  
## (Intercept)                        7.10e-06
```

```
## analysis_final_new$'Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons' 9.26e-10
##
## (Intercept) ***
## analysis_final_new$'Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons' ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.015 on 143 degrees of freedom
## Multiple R-squared:  0.2312, Adjusted R-squared:  0.2258
## F-statistic: 43.01 on 1 and 143 DF,  p-value: 9.262e-10
```

```
#Plot Linear Regression for 'Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons'
```

```
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons')
abline(LinReg_9)
```



```
#Linear Regression for 'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female'
```

```
LinReg_10 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female')
summary(LinReg_10)
```

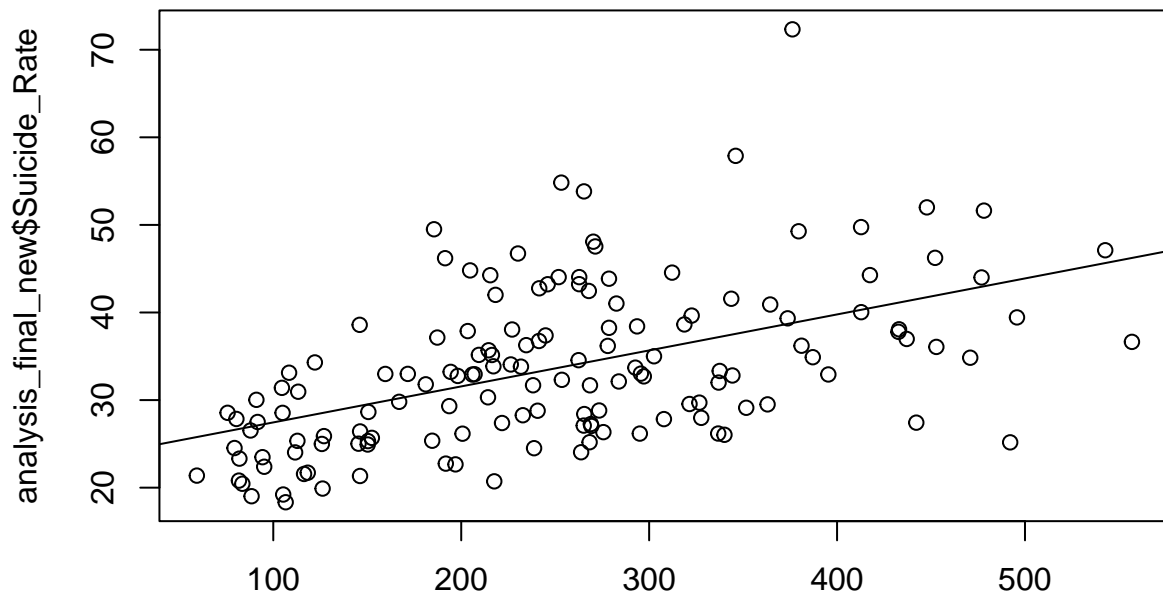
```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female',
##     data = analysis_final_new)
##
## Residuals:
```

```

##      Min      1Q  Median      3Q      Max
## -18.391 -5.565 -1.438  3.527  33.525
##
## Coefficients:
##                                     Estima
## (Intercept)                      23.3411
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female' 0.0410
##                                     Std. Er
## (Intercept)                      1.600
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female' 0.005
##                                     t value
## (Intercept)                      14.58
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female' 7.06
##                                     Pr(>|t|)
## (Intercept)                      < 2e-1
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female' 6.67e-1
##
## (Intercept)                      ***
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female' ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 7.872 on 143 degrees of freedom
## Multiple R-squared:  0.2584, Adjusted R-squared:  0.2533
## F-statistic: 49.84 on 1 and 143 DF,  p-value: 6.673e-11

#Plot Linear Regression for 'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for Intentional
abline(LinReg_10)

```



analysis\_final\_new\$Emergency Hospital Admissions for Intentional Self-Harm\_All ages\_F

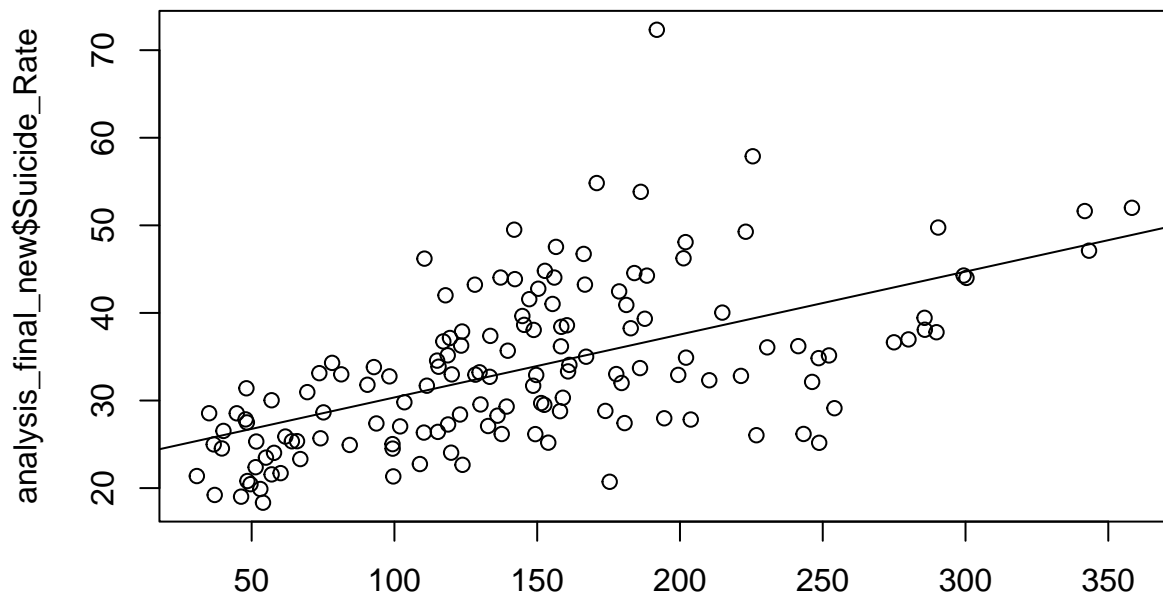
```
#Linear Regression for 'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male'
LinReg_11 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for
summary(LinReg_11)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for
##     data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -15.862  -5.281  -0.814   4.204  35.376
##
## Coefficients:
##
## (Intercept)                                Estimate
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male' 0.071827
##
## (Intercept)                                Std. Error
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male' 1.41165
##
## (Intercept)                                t value
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male' 0.00867
##
## (Intercept)                                Pr(>|t|)
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male' 8.282
##
## (Intercept)                                < 2e-16
```



```
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male' 7.85e-14
##
## (Intercept) ***
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male' ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 7.515 on 143 degrees of freedom
## Multiple R-squared:  0.3242, Adjusted R-squared:  0.3195
## F-statistic: 68.6 on 1 and 143 DF, p-value: 7.845e-14
```

```
#Plot Linear Regression for 'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for Intentional
abline(LinReg_11)
```



analysis\_final\_new\$'Emergency Hospital Admissions for Intentional Self-Harm\_All ages\_

```
#Linear Regression for 'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Persons'
LinReg_12 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for
summary(LinReg_12)
```

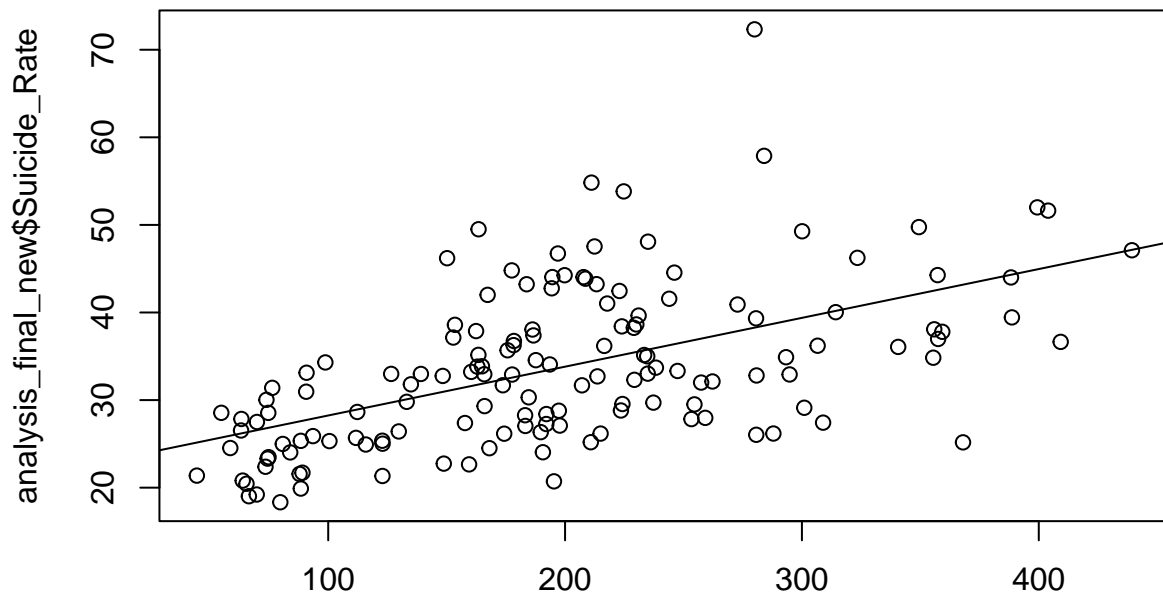
```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for
##     data = analysis_final_new)
##
## Residuals:
```

```

##      Min      1Q  Median      3Q      Max
## -18.003  -5.509  -0.745   4.102  34.056
##
## Coefficients:
##
## (Intercept)                22.668
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Persons' 0.055
##
## (Intercept)                1.54
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Persons' 0.00
##
## (Intercept)                14.67
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Persons' 7.80
##
## (Intercept)                < 2e-
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Persons' 1.14e-
##
## (Intercept)                ***
## analysis_final_new$'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Persons' ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 7.655 on 143 degrees of freedom
## Multiple R-squared:  0.2988, Adjusted R-squared:  0.2939
## F-statistic: 60.94 on 1 and 143 DF,  p-value: 1.14e-12

#Plot Linear Regression for 'Emergency Hospital Admissions for Intentional Self-Harm_All ages_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Emergency Hospital Admissions for Intentional
abline(LinReg_12)

```



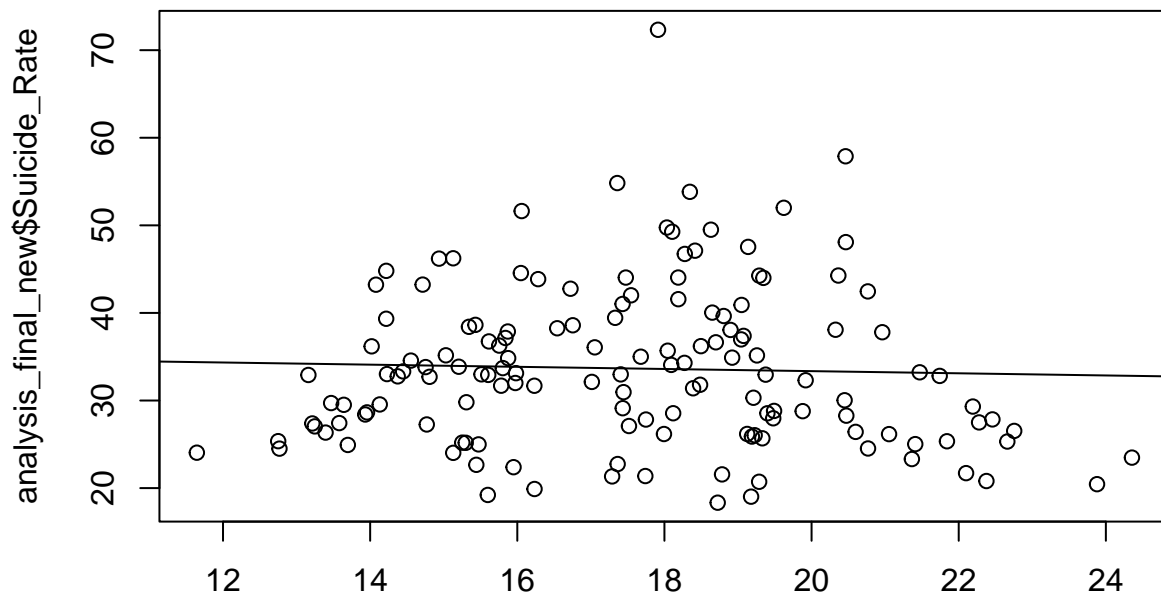
analysis\_final\_new\$Emergency Hospital Admissions for Intentional Self-Harm\_All ages\_F

```
#Linear Regression for 'Estimated prevalence of common mental disorders: % of population aged 16 & over_
LinReg_13 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Estimated prevalence of common men
summary(LinReg_13)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Estimated prevalence of common men
## data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -15.174  -6.862  -1.045   4.767  38.717
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 16 & over_
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 16 & over_
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 16 & over_
##
## (Intercept)
```

```
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 16 & over_
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 16 & over_
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.136 on 143 degrees of freedom
## Multiple R-squared:  0.001288,    Adjusted R-squared:  -0.005696
## F-statistic: 0.1845 on 1 and 143 DF,  p-value: 0.6682
```

```
#Plot Linear Regression for 'Estimated prevalence of common mental disorders: % of population aged 16 & over_
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 16 & over_
abline(LinReg_13)
```



analysis\_final\_new\$'Estimated prevalence of common mental disorders: % of population aged 16 & over\_

```
#Linear Regression for 'Estimated prevalence of common mental disorders: % of population aged 65 & over_
LinReg_14 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 65 & over_
summary(LinReg_14)
```

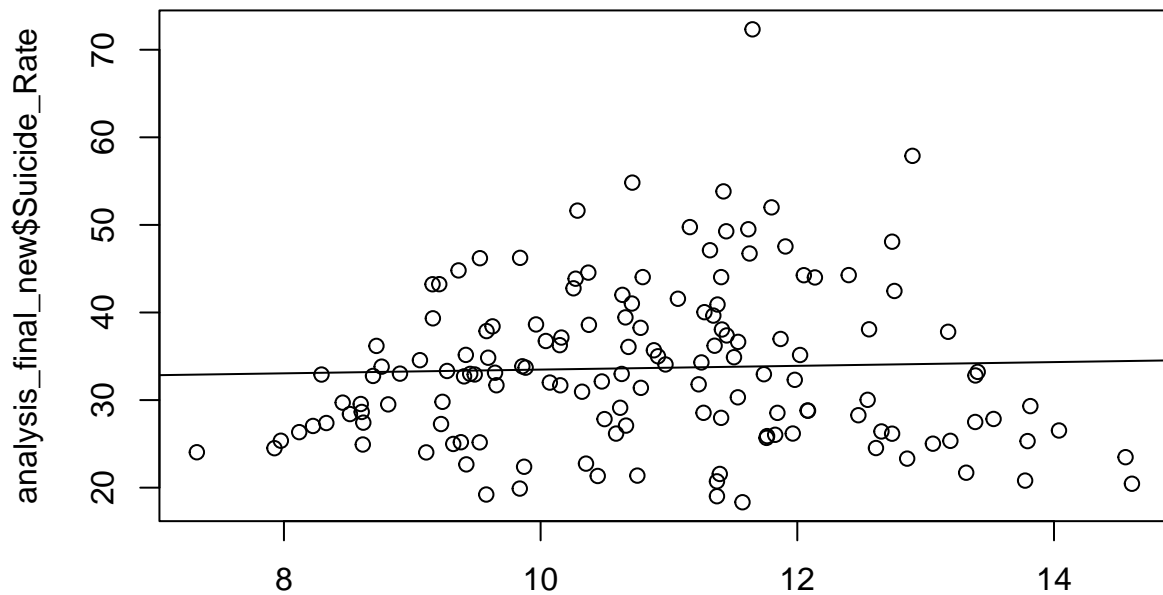
```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 65 & over_',
##     data = analysis_final_new)
##
## Residuals:
```

```

##      Min      1Q  Median      3Q      Max
## -15.482  -6.739  -0.649   5.028  38.493
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 65 & over_'
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 65 & over_'
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 65 & over_'
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 65 & over_'
##
## (Intercept)
## analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 65 & over_'
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.136 on 143 degrees of freedom
## Multiple R-squared:  0.001324,    Adjusted R-squared:  -0.00566
## F-statistic: 0.1896 on 1 and 143 DF,  p-value: 0.6639

#Plot Linear Regression for 'Estimated prevalence of common mental disorders: % of population aged 65 & over_'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Estimated prevalence of common mental disorders: % of population aged 65 & over_',
abline(LinReg_14)

```



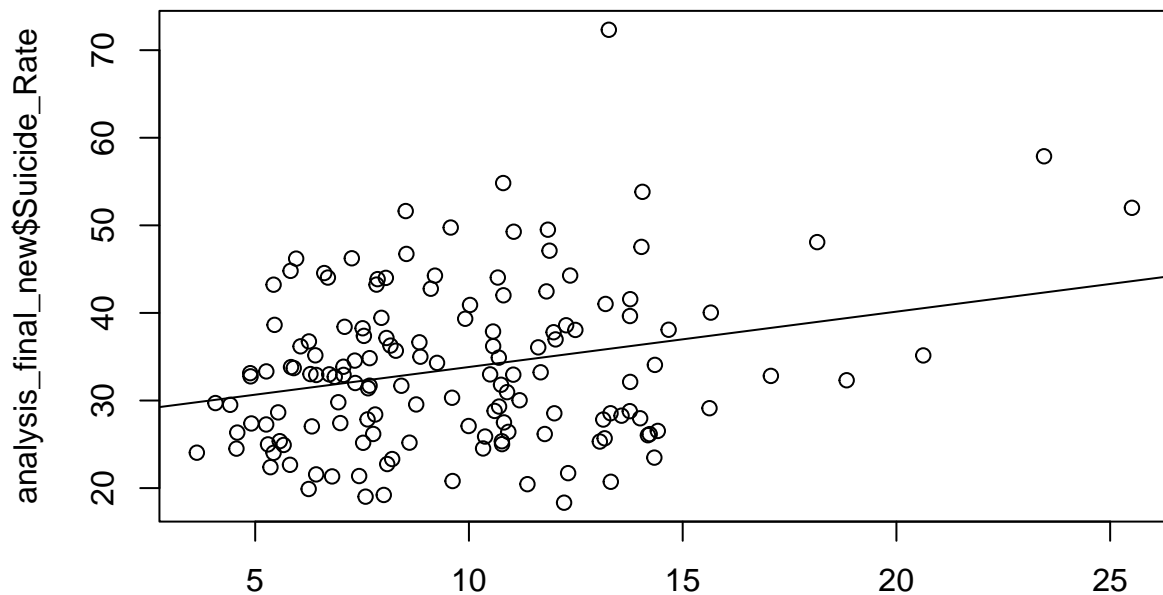
new\$ Estimated prevalence of common mental disorders: % of population aged 65 & over

```
#Linear Regression for 'Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons'
LinReg_15 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Estimated prevalence of opiate and
summary(LinReg_15)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons`,
##     data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -16.897  -6.911  -0.664   5.177  36.433
##
## Coefficients:
##              (Intercept)
## analysis_final_new$`Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons`
##              (Intercept)
## analysis_final_new$`Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons`
##              (Intercept)
## analysis_final_new$`Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons`
##              (Intercept)
```

```
## analysis_final_new$'Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons' 0.0
##
## (Intercept) ***
## analysis_final_new$'Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons' **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.824 on 143 degrees of freedom
## Multiple R-squared:  0.06825,    Adjusted R-squared:  0.06173
## F-statistic: 10.47 on 1 and 143 DF,  p-value: 0.001504
```

```
#Plot Linear Regression for 'Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons')
abline(LinReg_15)
```



analysis\_final\_new\$'Estimated prevalence of opiate and/or crack cocaine use\_15-64 yrs\_F

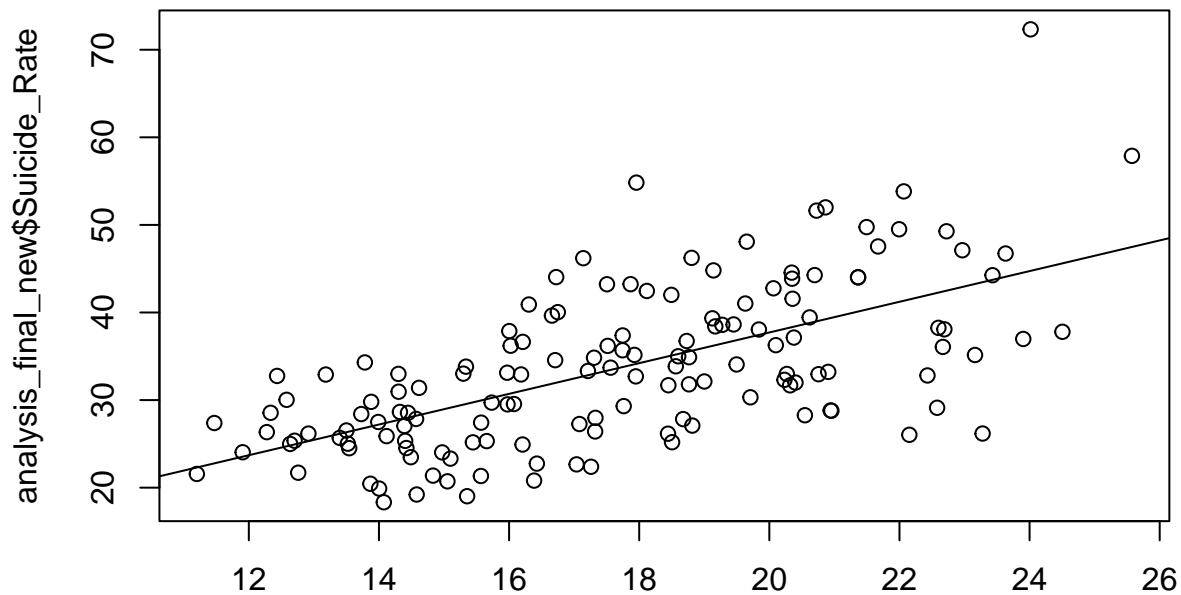
```
#Linear Regression for 'Long-term health problem or disability: % of population_All ages_Persons'
LinReg_16 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Long-term health problem or disability: % of population_All ages_Persons')
summary(LinReg_16)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Long-term health problem or disability: % of population_All ages_Persons', data = analysis_final_new)
##
## Residuals:
```

```
##      Min      1Q   Median      3Q      Max
## -17.2784  -5.3415   0.2574   4.2568  27.5744
##
## Coefficients:
##                                     Estima
## (Intercept)                        2.68
## analysis_final_new$'Long-term health problem or disability: % of population_All ages_Persons' 1.75
##                                     Std. E
## (Intercept)                        3.
## analysis_final_new$'Long-term health problem or disability: % of population_All ages_Persons' 0.
##                                     t valu
## (Intercept)                        0.82
## analysis_final_new$'Long-term health problem or disability: % of population_All ages_Persons' 9.70
##                                     Pr(>|t
## (Intercept)                        0.
## analysis_final_new$'Long-term health problem or disability: % of population_All ages_Persons' <2e-
##
## (Intercept)
## analysis_final_new$'Long-term health problem or disability: % of population_All ages_Persons' ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 7.098 on 143 degrees of freedom
## Multiple R-squared:  0.3971, Adjusted R-squared:  0.3929
## F-statistic: 94.21 on 1 and 143 DF,  p-value: < 2.2e-16

#Plot Linear Regression for 'Long-term health problem or disability: % of population_All ages_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Long-term health problem or disability: % of
abline(LinReg_16)
```





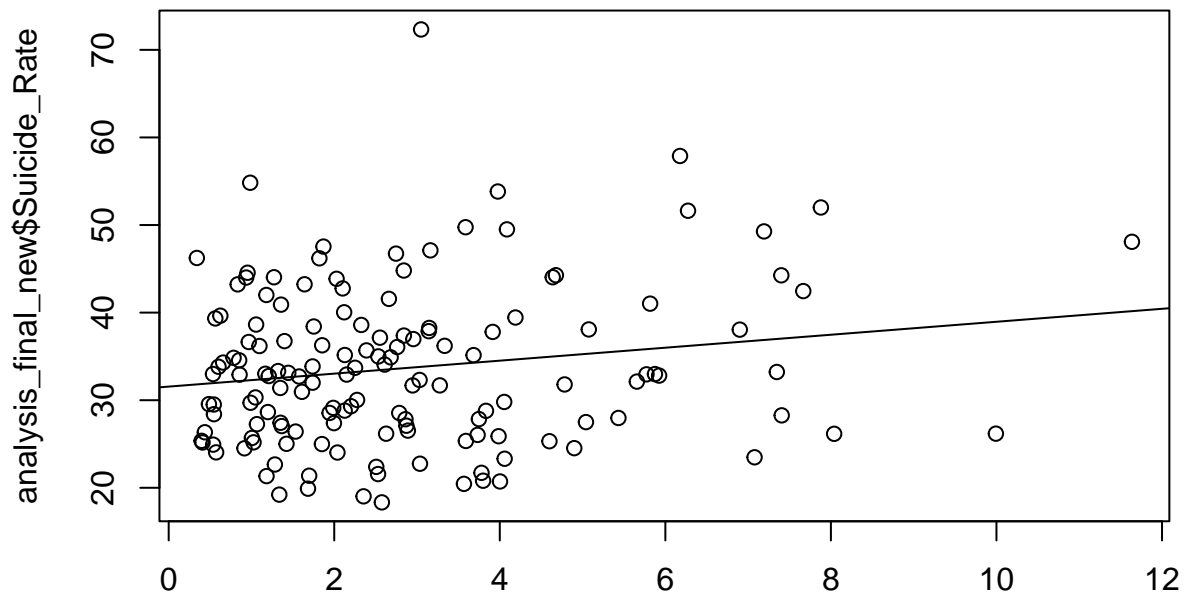
analysis\_final\_new\$`Long-term health problem or disability: % of population\_All ages\_Pe`

```
#Linear Regression for 'Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons'
LinReg_17 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons`)
summary(LinReg_17)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons`,
##     data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -15.122  -6.612  -0.839   5.165  38.518
##
## Coefficients:
##              (Intercept)              analysis_final_new$`Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons`
##              Estimate              Std. Error      t value      Pr(>|t|)
##              31.5517              1.2613      25.016      2.071e-16
##              0.7403              0.3574       2.071      0.0411
```

```
## analysis_final_new$'Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons' 0.0401
##
## (Intercept) ***
## analysis_final_new$'Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons' *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.008 on 143 degrees of freedom
## Multiple R-squared:  0.02912,    Adjusted R-squared:  0.02234
## F-statistic:  4.29 on 1 and 143 DF,  p-value: 0.04014
```

```
#Plot Linear Regression for 'Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons')
abline(LinReg_17)
```



analysis\_final\_new\$'Long term claimants of Jobseeker's Allowance\_16-64 yrs\_Persons'

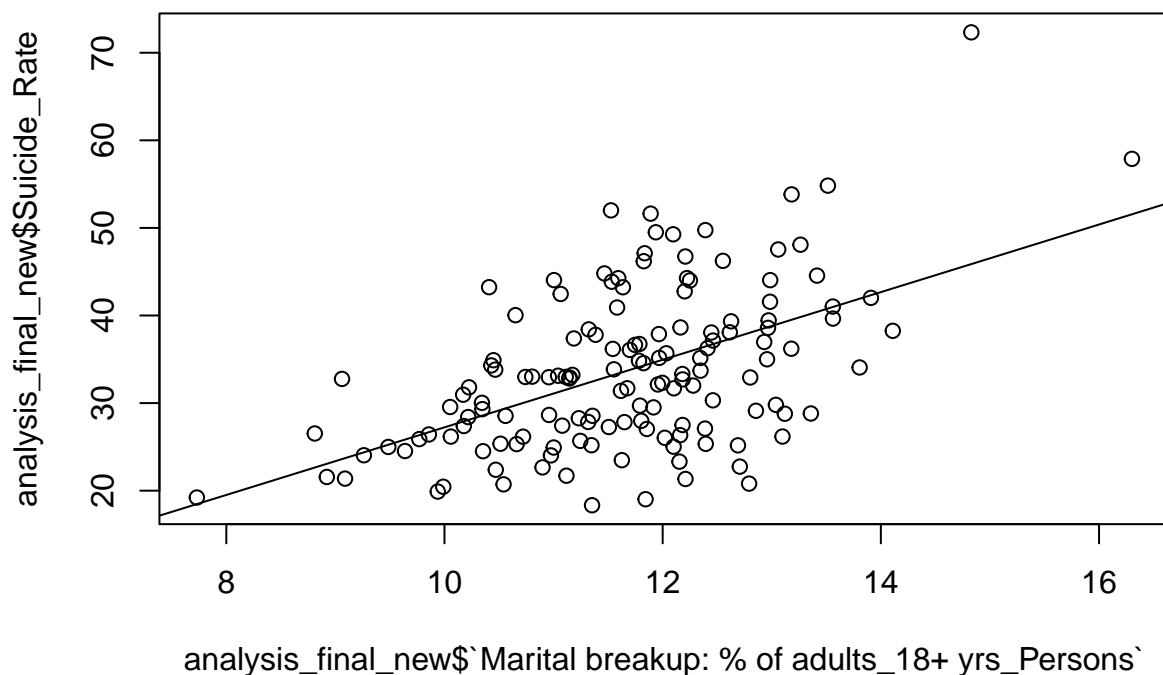
```
#Linear Regression for 'Marital breakup: % of adults_18+ yrs_Persons'
LinReg_18 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Marital breakup: % of adults_18+ yrs_Persons')
summary(LinReg_18)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Marital breakup: % of adults_18+ yrs_Persons',
##     data = analysis_final_new)
##
## Residuals:
```

```
##      Min      1Q   Median      3Q      Max
## -17.1995  -5.1172  -0.2601   3.8885  26.4580
##
## Coefficients:
##                                     Estimate
## (Intercept)                       -11.3677
## analysis_final_new$`Marital breakup: % of adults_18+ yrs_Persons`  3.8597
##                                     Std. Error
## (Intercept)                       6.1376
## analysis_final_new$`Marital breakup: % of adults_18+ yrs_Persons`  0.5232
##                                     t value
## (Intercept)                       -1.852
## analysis_final_new$`Marital breakup: % of adults_18+ yrs_Persons`  7.377
##                                     Pr(>|t|)
## (Intercept)                       0.0661 .
## analysis_final_new$`Marital breakup: % of adults_18+ yrs_Persons` 1.21e-11 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 7.78 on 143 degrees of freedom
## Multiple R-squared:  0.2756, Adjusted R-squared:  0.2706
## F-statistic: 54.41 on 1 and 143 DF,  p-value: 1.21e-11
```

```
#Plot Linear Regression for 'Marital breakup: % of adults_18+ yrs_Persons'
```

```
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Marital breakup: % of adults_18+ yrs_Persons`
abline(LinReg_18)
```



```
#Linear Regression for 'Mental Health: QOF prevalence (all ages)_All ages_Persons'
```

```
LinReg_19 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Mental Health: QOF prevalence (all ages)_All ages_Persons')
summary(LinReg_19)
```

```
##
```

```
## Call:
```

```
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Mental Health: QOF prevalence (all ages)_All ages_Persons',
```

```
## data = analysis_final_new)
```

```
##
```

```
## Residuals:
```

```
##      Min       1Q   Median       3Q      Max
```

```
## -15.228  -7.048  -0.762   4.894  38.732
```

```
##
```

```
## Coefficients:
```

```
##
```

```
## (Intercept)                                     Estimate
```

```
## analysis_final_new$'Mental Health: QOF prevalence (all ages)_All ages_Persons' -0.2132
```

```
##
```

```
## (Intercept)                                     Std. Error
```

```
## analysis_final_new$'Mental Health: QOF prevalence (all ages)_All ages_Persons' 3.8597
```

```
##
```

```
## (Intercept)                                     t value
```

```
## analysis_final_new$'Mental Health: QOF prevalence (all ages)_All ages_Persons' 8.772
```

```
##
```

```
## (Intercept)                                     Pr(>|t|)
```

```
## analysis_final_new$'Mental Health: QOF prevalence (all ages)_All ages_Persons' 4.74e-15
```

```
##
```

```
## (Intercept)                                     ***
```

```
## analysis_final_new$'Mental Health: QOF prevalence (all ages)_All ages_Persons'
```

```
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
```

```
## Residual standard error: 9.142 on 143 degrees of freedom
```

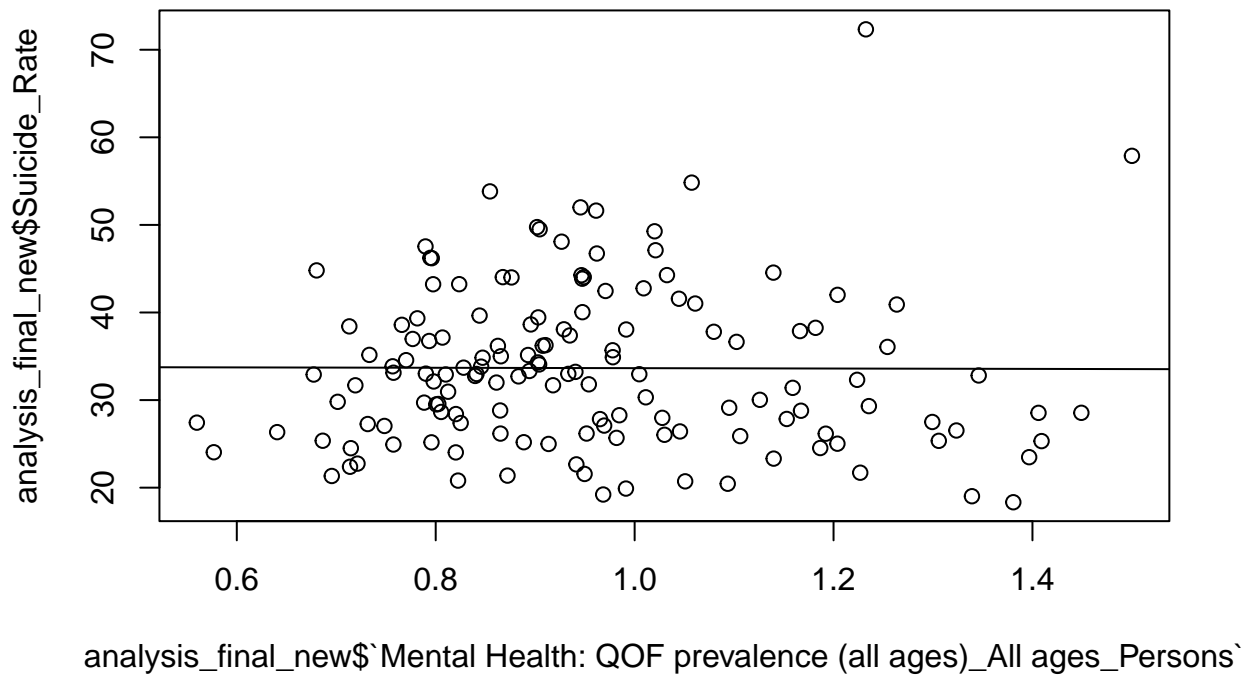
```
## Multiple R-squared:  2.02e-05, Adjusted R-squared:  -0.006973
```

```
## F-statistic: 0.002888 on 1 and 143 DF, p-value: 0.9572
```

```
#Plot Linear Regression for 'Mental Health: QOF prevalence (all ages)_All ages_Persons'
```

```
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Mental Health: QOF prevalence (all ages)_All ages_Persons')
```

```
abline(LinReg_19)
```

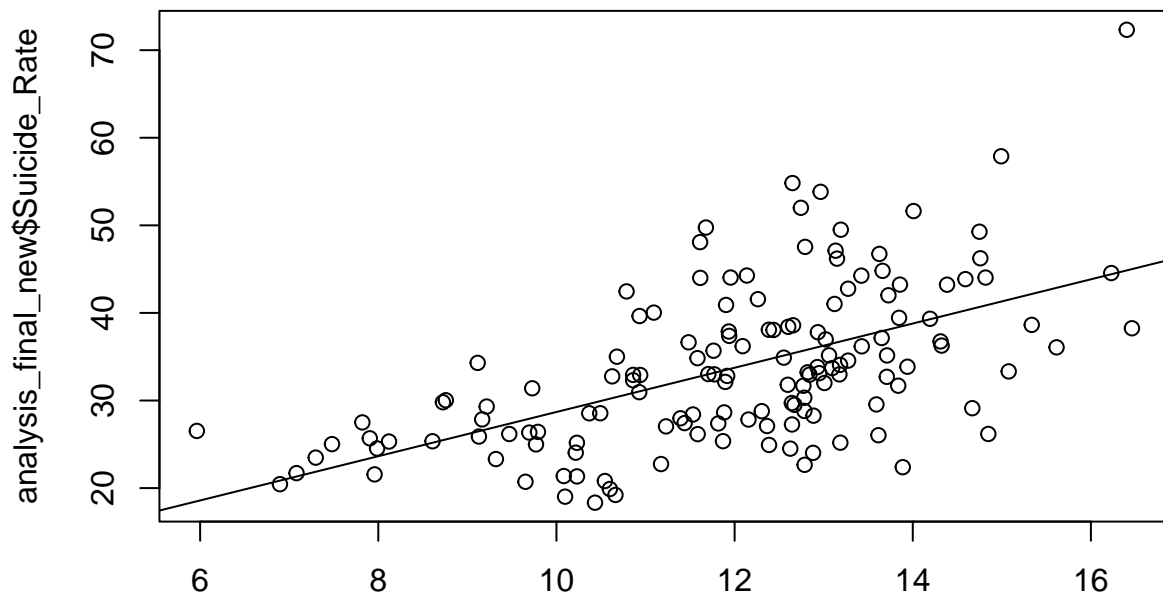


```
#Linear Regression for 'Older people living alone: % of households occupied by a single person aged 65 or over'
LinReg_20 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Older people living alone: % of households occupied by a single person aged 65 or over')
summary(LinReg_20)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Older people living alone: % of households occupied by a single person aged 65 or over',
##     data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -16.1184  -5.1927  -0.6065   3.9125  27.4734
##
## Coefficients:
## (Intercept)
## analysis_final_new$'Older people living alone: % of households occupied by a single person aged 65 or over'
##
## (Intercept)
## analysis_final_new$'Older people living alone: % of households occupied by a single person aged 65 or over'
##
## (Intercept)
## analysis_final_new$'Older people living alone: % of households occupied by a single person aged 65 or over'
##
## (Intercept)
```

```
## analysis_final_new$`Older people living alone: % of households occupied by a single person aged 65 or c
##
## (Intercept)
## analysis_final_new$`Older people living alone: % of households occupied by a single person aged 65 or c
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 7.52 on 143 degrees of freedom
## Multiple R-squared:  0.3233, Adjusted R-squared:  0.3186
## F-statistic: 68.33 on 1 and 143 DF,  p-value: 8.593e-14
```

```
#Plot Linear Regression for 'Older people living alone: % of households occupied by a single person aged 65 or c
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Older people living alone: % of households occupied by a single person aged 65 or c
abline(LinReg_20)
```



analysis\_final\_new\$`Older people living alone: % of households occupied by a single person aged 65 or c

```
#Linear Regression for 'People living alone: % of all usual residents in households occupied by a single person aged 65 or c
LinReg_21 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`People living alone: % of all usual residents in households occupied by a single person aged 65 or c
summary(LinReg_21)
```

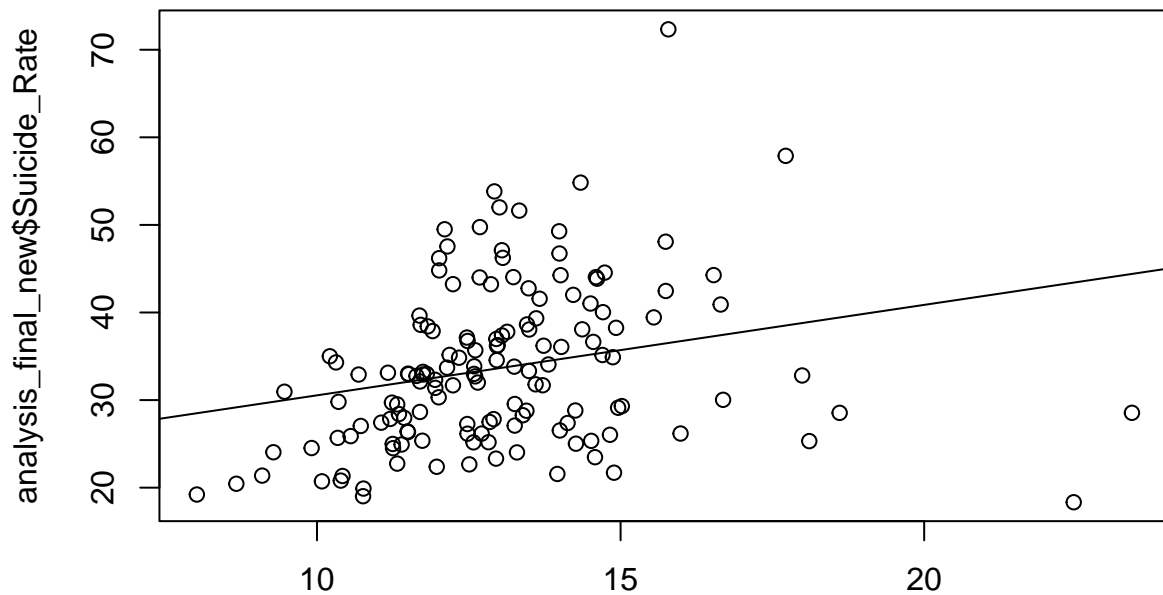
```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`People living alone: % of all usual residents in households occupied by a single person aged 65 or c
## data = analysis_final_new)
##
## Residuals:
```

```

##      Min      1Q  Median      3Q      Max
## -25.076  -6.540  -0.238   4.523  35.811
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'People living alone: % of all usual residents in households occupied by a single
##
## (Intercept)
## analysis_final_new$'People living alone: % of all usual residents in households occupied by a single
##
## (Intercept)
## analysis_final_new$'People living alone: % of all usual residents in households occupied by a single
##
## (Intercept)
## analysis_final_new$'People living alone: % of all usual residents in households occupied by a single
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.855 on 143 degrees of freedom
## Multiple R-squared:  0.06167,    Adjusted R-squared:  0.05511
## F-statistic: 9.399 on 1 and 143 DF,  p-value: 0.002597

#Plot Linear Regression for 'People living alone: % of all usual residents in households occupied by a
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'People living alone: % of all usual residents
abline(LinReg_21)

```



analysis\_final\_new\$'People living alone: % of all usual residents in households occupied by a single pers

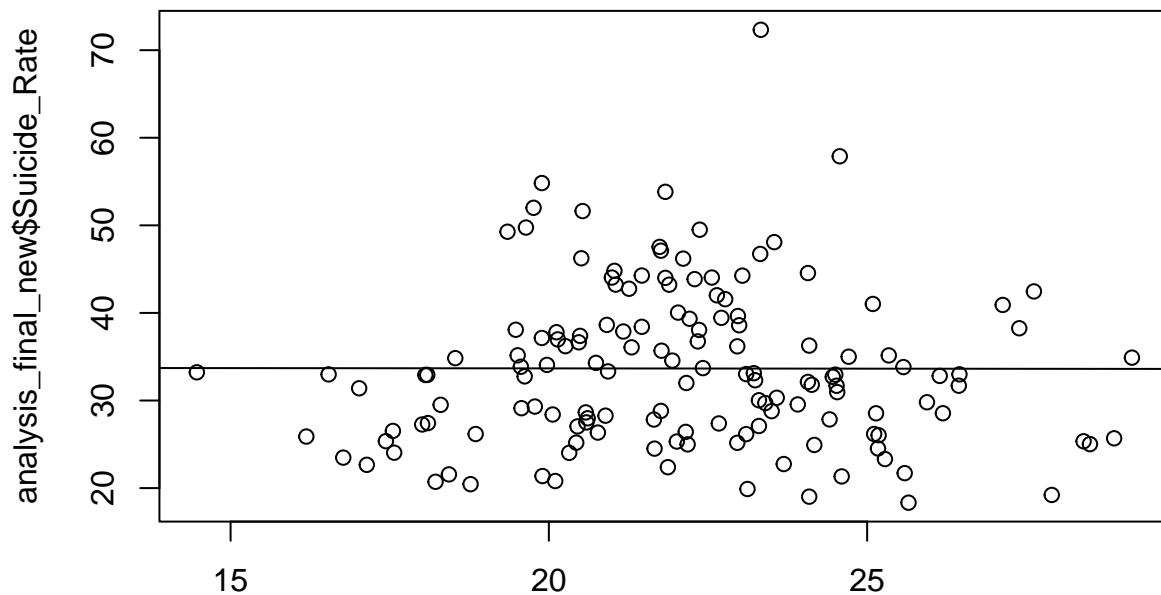
```
#Linear Regression for 'Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons'
LinReg_22 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons')
summary(LinReg_22)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons',
##     data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -15.296  -7.156  -0.765   4.940  38.680
##
## Coefficients:
## (Intercept)
## analysis_final_new$'Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons'
##
## (Intercept)
## analysis_final_new$'Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons'
##
## (Intercept)
## analysis_final_new$'Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons'
##
## (Intercept)
## analysis_final_new$'Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons'
##
## (Intercept)
```



```
## analysis_final_new$`Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons` 0
##
## (Intercept) ***
## analysis_final_new$`Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons`
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.142 on 143 degrees of freedom
## Multiple R-squared:  3.915e-06, Adjusted R-squared:  -0.006989
## F-statistic: 0.0005598 on 1 and 143 DF, p-value: 0.9812
```

```
#Plot Linear Regression for 'Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Self-reported wellbeing - people with a high
abline(LinReg_22)
```



analysis\_final\_new\$`Self-reported wellbeing - people with a high anxiety score\_16+ yrs\_F

```
#Linear Regression for 'Social Isolation: percentage of adult carers who have as much social contact as'
LinReg_23 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Social Isolation: percentage of a
summary(LinReg_23)
```

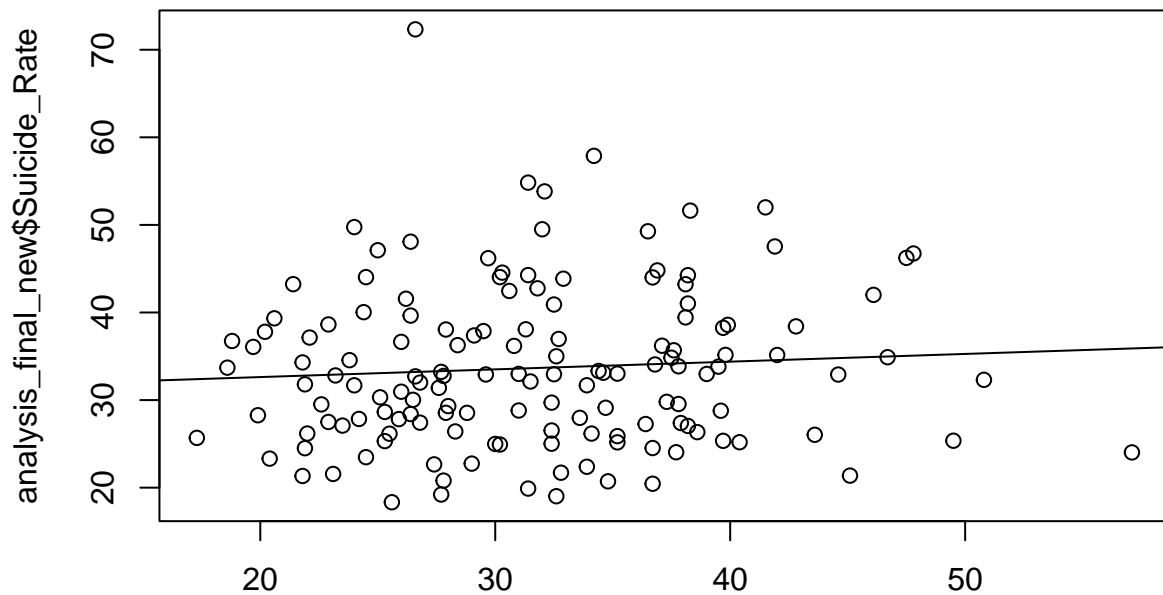
```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Social Isolation: percentage of a
## data = analysis_final_new)
##
## Residuals:
```

```

##      Min      1Q  Median      3Q      Max
## -14.785  -6.822  -0.791   5.152  39.119
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.118 on 143 degrees of freedom
## Multiple R-squared:  0.005243,    Adjusted R-squared:  -0.001714
## F-statistic: 0.7537 on 1 and 143 DF,  p-value: 0.3868

#Plot Linear Regression for 'Social Isolation: percentage of adult carers who have as much social conta
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers
abline(LinReg_23)

```



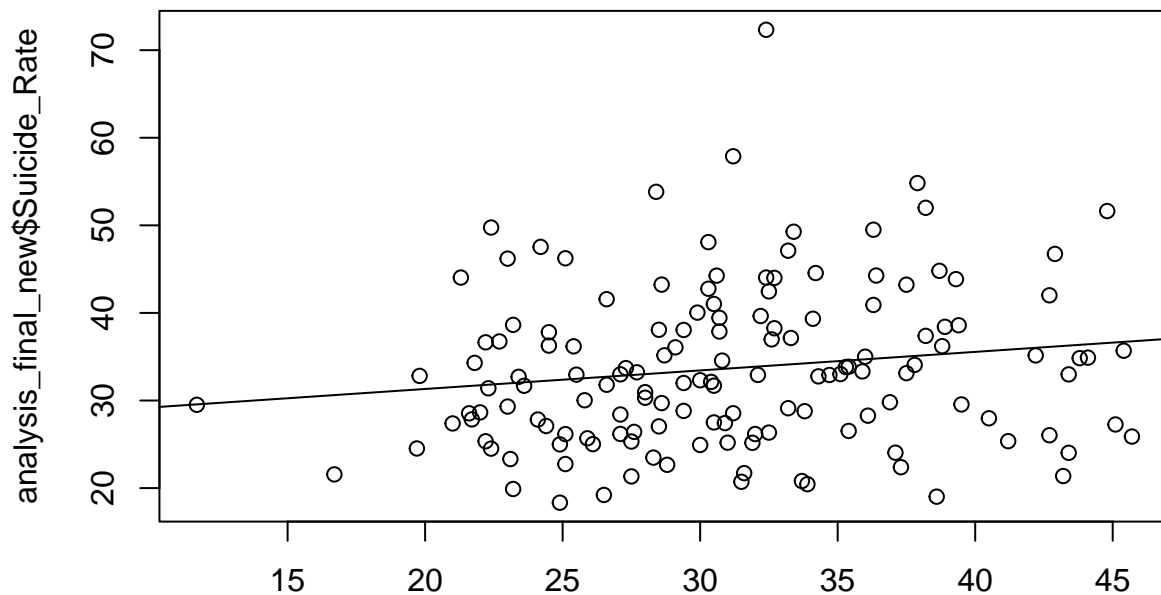
Social Isolation: percentage of adult carers who have as much social contact as they would like

```
#Linear Regression for 'Social Isolation: percentage of adult carers who have as much social contact as they would like'
LinReg_24 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like')
summary(LinReg_24)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like', data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -16.233  -6.509  -1.122   5.032  38.385
##
## Coefficients:
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like'
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like'
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like'
## (Intercept)
```

```
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like'
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like'
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.029 on 143 degrees of freedom
## Multiple R-squared:  0.0246, Adjusted R-squared:  0.01778
## F-statistic: 3.607 on 1 and 143 DF,  p-value: 0.05956
```

```
#Plot Linear Regression for 'Social Isolation: percentage of adult carers who have as much social contact as they would like'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like')
abline(LinReg_24)
```



'Social Isolation: percentage of adult carers who have as much social contact as they would like'

```
#Linear Regression for 'Social Isolation: percentage of adult carers who have as much social contact as they would like'
LinReg_25 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like')
summary(LinReg_25)
```

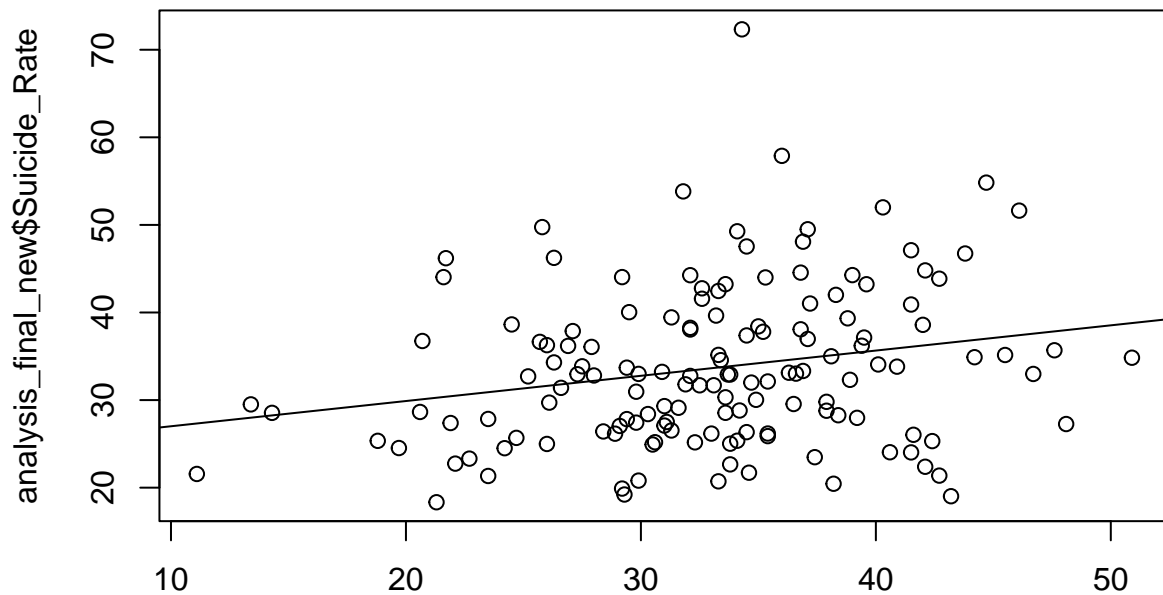
```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like',
##     data = analysis_final_new)
##
## Residuals:
```

```

##      Min      1Q  Median      3Q      Max
## -17.551  -5.972  -1.520   5.113  38.317
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.905 on 143 degrees of freedom
## Multiple R-squared:  0.05103,    Adjusted R-squared:  0.04439
## F-statistic: 7.689 on 1 and 143 DF,  p-value: 0.006297

#Plot Linear Regression for 'Social Isolation: percentage of adult carers who have as much social conta
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers
abline(LinReg_25)

```



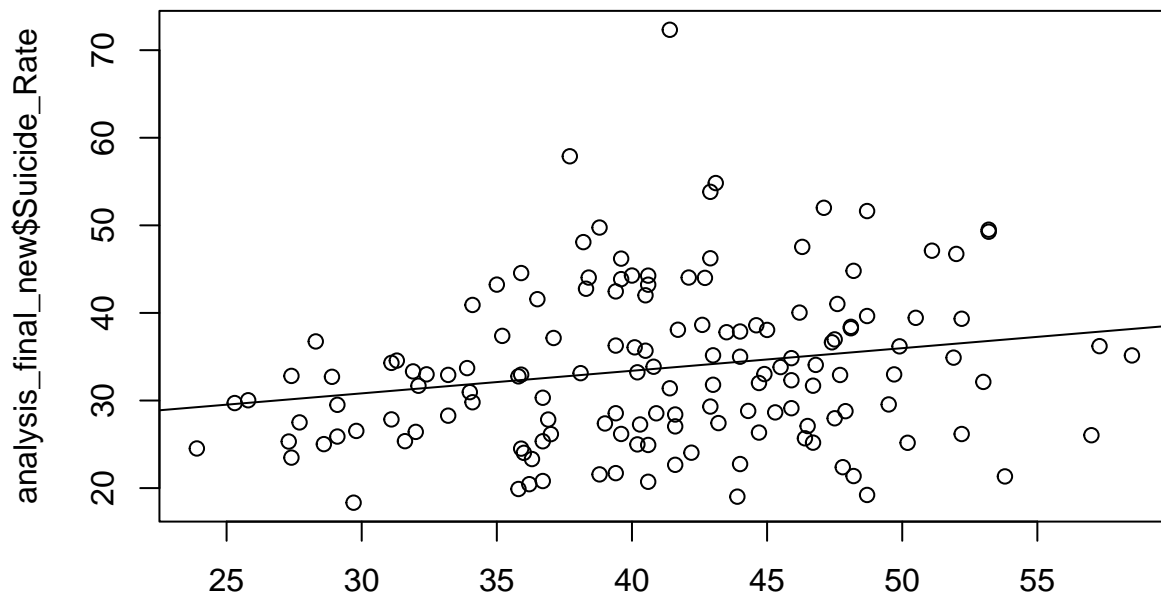
'Social Isolation: percentage of adult carers who have as much social contact as they wo

```
#Linear Regression for 'Social Isolation: percentage of adult carers who have as much social contact as they wo
LinReg_26 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they wo
summary(LinReg_26)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they wo
## data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -16.422  -6.210  -0.999   4.245  38.570
##
## Coefficients:
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they wo
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they wo
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they wo
## (Intercept)
```

```
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like'
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like'
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.945 on 143 degrees of freedom
## Multiple R-squared:  0.04247,    Adjusted R-squared:  0.03578
## F-statistic: 6.343 on 1 and 143 DF,  p-value: 0.01289
```

```
#Plot Linear Regression for 'Social Isolation: percentage of adult carers who have as much social contact as they would like'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult carers who have as much social contact as they would like')
abline(LinReg_26)
```



Social Isolation: percentage of adult carers who have as much social contact as they would like

```
#Linear Regression for 'Social Isolation: percentage of adult social care users who have as much social contact as they would like'
LinReg_27 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult social care users who have as much social contact as they would like')
summary(LinReg_27)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult social care users who have as much social contact as they would like', data = analysis_final_new)
##
## Residuals:
```

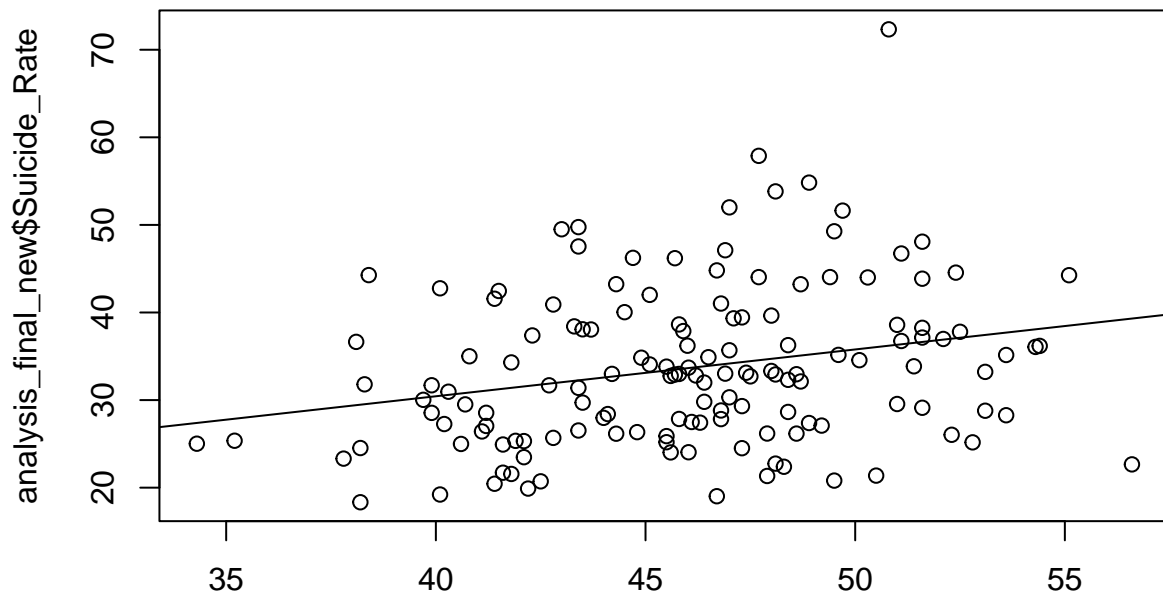
```

##      Min      1Q  Median      3Q      Max
## -16.647  -6.242  -1.275   5.646  36.121
##
## Coefficients:
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult social care users who have as much social c
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult social care users who have as much social c
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult social care users who have as much social c
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult social care users who have as much social c
##
## (Intercept)
## analysis_final_new$'Social Isolation: percentage of adult social care users who have as much social c
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.843 on 143 degrees of freedom
## Multiple R-squared:  0.0642, Adjusted R-squared:  0.05765
## F-statistic:  9.81 on 1 and 143 DF,  p-value: 0.002105

#Plot Linear Regression for 'Social Isolation: percentage of adult social care users who have as much s
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Social Isolation: percentage of adult social
abline(LinReg_27)

```





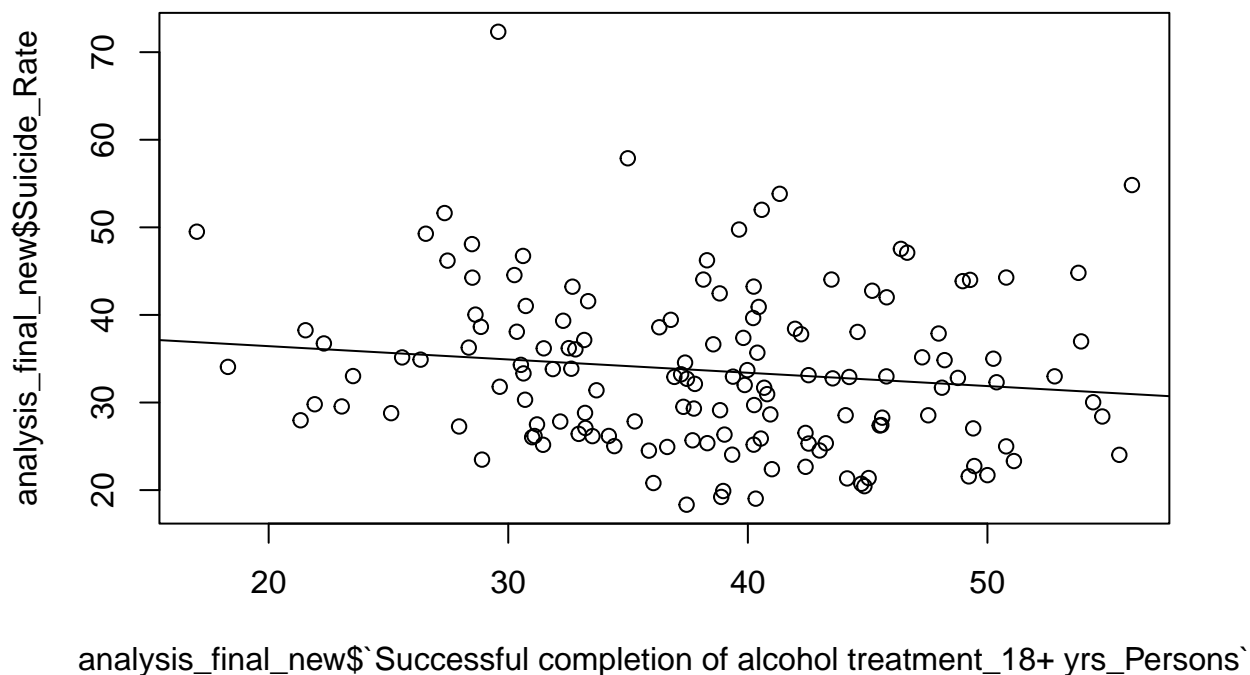
al Isolation: percentage of adult social care users who have as much social contact as the

```
#Linear Regression for 'Successful completion of alcohol treatment_18+ yrs_Persons'
LinReg_28 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Successful completion of alcohol treatment_18+ yrs_Persons')
summary(LinReg_28)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$'Successful completion of alcohol treatment_18+ yrs_Persons',
##     data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -15.448  -7.233  -0.815   5.317  37.350
##
## Coefficients:
##              (Intercept)              analysis_final_new$'Successful completion of alcohol treatment_18+ yrs_Persons'
##              Estimate              Std. Error              t value              Pr(>|t|)
##              39.47187              3.52084              11.211              <2e-16
##              -0.15192              0.08983              -1.691              0.09583
```

```
## analysis_final_new$`Successful completion of alcohol treatment_18+ yrs_Persons` 0.093
##
## (Intercept) ***
## analysis_final_new$`Successful completion of alcohol treatment_18+ yrs_Persons` .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.052 on 143 degrees of freedom
## Multiple R-squared:  0.01961,    Adjusted R-squared:  0.01275
## F-statistic:  2.86 on 1 and 143 DF,  p-value: 0.09299
```

```
#Plot Linear Regression for 'Successful completion of alcohol treatment_18+ yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Successful completion of alcohol treatment_18+ yrs_Persons`)
abline(LinReg_28)
```



```
#Linear Regression for 'Successful completion of drug treatment - non-opiate users_18+ yrs_Persons'
LinReg_29 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Successful completion of drug treatment_18+ yrs_Persons`)
summary(LinReg_29)
```

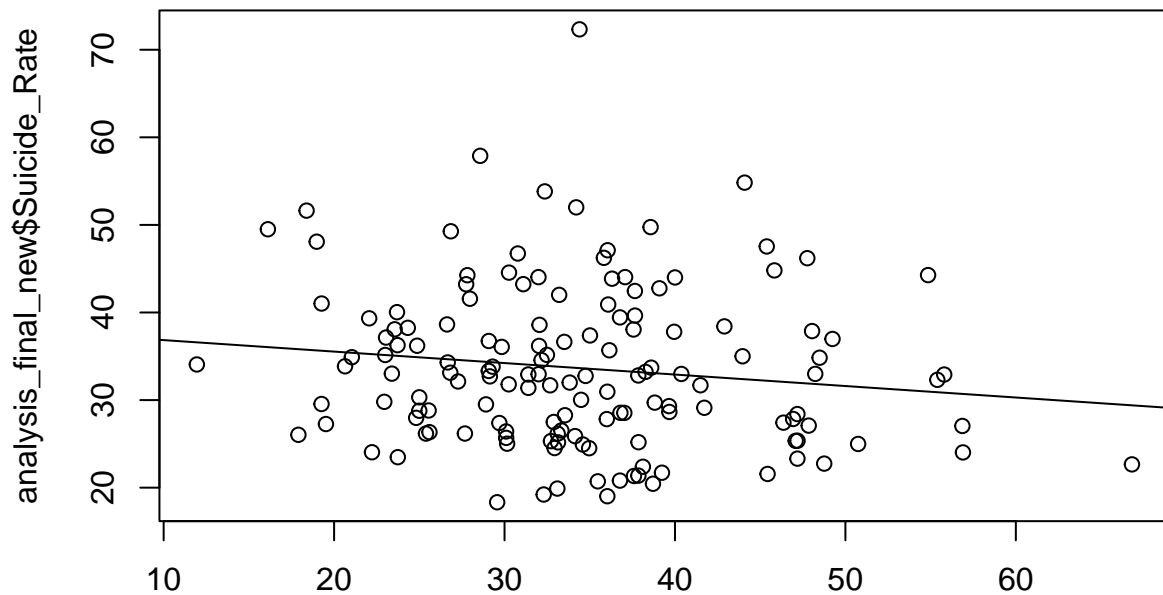
```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Successful completion of drug treatment_18+ yrs_Persons`, data = analysis_final_new)
##
## Residuals:
```

```

##      Min      1Q  Median      3Q      Max
## -15.946  -6.674  -1.119   4.984  38.679
##
## Coefficients:
##                                     Estimation
## (Intercept)                      38.11
## analysis_final_new$'Successful completion of drug treatment - non-opiate users_18+ yrs_Persons' -0.11
##                                     Std. Error
## (Intercept)                      2
## analysis_final_new$'Successful completion of drug treatment - non-opiate users_18+ yrs_Persons' 0
##                                     t value
## (Intercept)                     13.3
## analysis_final_new$'Successful completion of drug treatment - non-opiate users_18+ yrs_Persons' -1.1
##                                     Pr(>|t|)
## (Intercept)                     <2e-16
## analysis_final_new$'Successful completion of drug treatment - non-opiate users_18+ yrs_Persons' 0
##                                     ***
## analysis_final_new$'Successful completion of drug treatment - non-opiate users_18+ yrs_Persons'
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.058 on 143 degrees of freedom
## Multiple R-squared:  0.01817,    Adjusted R-squared:  0.01131
## F-statistic: 2.647 on 1 and 143 DF,  p-value: 0.106

#Plot Linear Regression for 'Successful completion of drug treatment - non-opiate users_18+ yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Successful completion of drug treatment - non-opiate users_18+ yrs_Persons')
abline(LinReg_29)

```



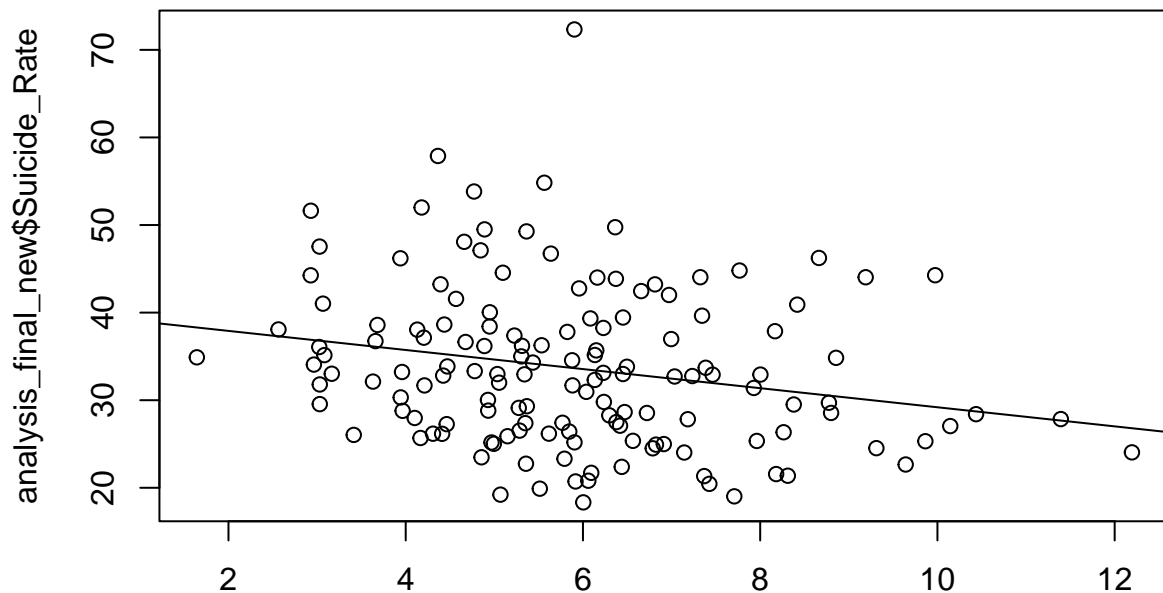
analysis\_final\_new\$`Successful completion of drug treatment - non-opiate users\_18+ yrs\_`

```
#Linear Regression for 'Successful completion of drug treatment - opiate users_18+ yrs_Persons'
LinReg_30 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Successful completion of drug treatment - non-opiate users_18+ yrs_`)
summary(LinReg_30)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Successful completion of drug treatment - non-opiate users_18+ yrs_`,
##     data = analysis_final_new)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -15.348  -6.879  -1.364   4.512  38.670
##
## Coefficients:
##              (Intercept)                   analysis_final_new$`Successful completion of drug treatment - non-opiate users_18+ yrs_`
##              Estimate              Std. Error t value Pr(>|t|)
##              40.0925              2.453      16.301  -2.745e-16
##              -1.0901              0.395       -2.745  -2.745e-16
```

```
## analysis_final_new$`Successful completion of drug treatment - opiate users_18+ yrs_Persons` 0.00684
##
## (Intercept) ***
## analysis_final_new$`Successful completion of drug treatment - opiate users_18+ yrs_Persons` **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.91 on 143 degrees of freedom
## Multiple R-squared:  0.05004,    Adjusted R-squared:  0.0434
## F-statistic: 7.533 on 1 and 143 DF,  p-value: 0.006836
```

```
#Plot Linear Regression for 'Successful completion of drug treatment - opiate users_18+ yrs_Persons'
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Successful completion of drug treatment - op
abline(LinReg_30)
```



analysis\_final\_new\$`Successful completion of drug treatment – opiate users\_18+ yrs\_Pe

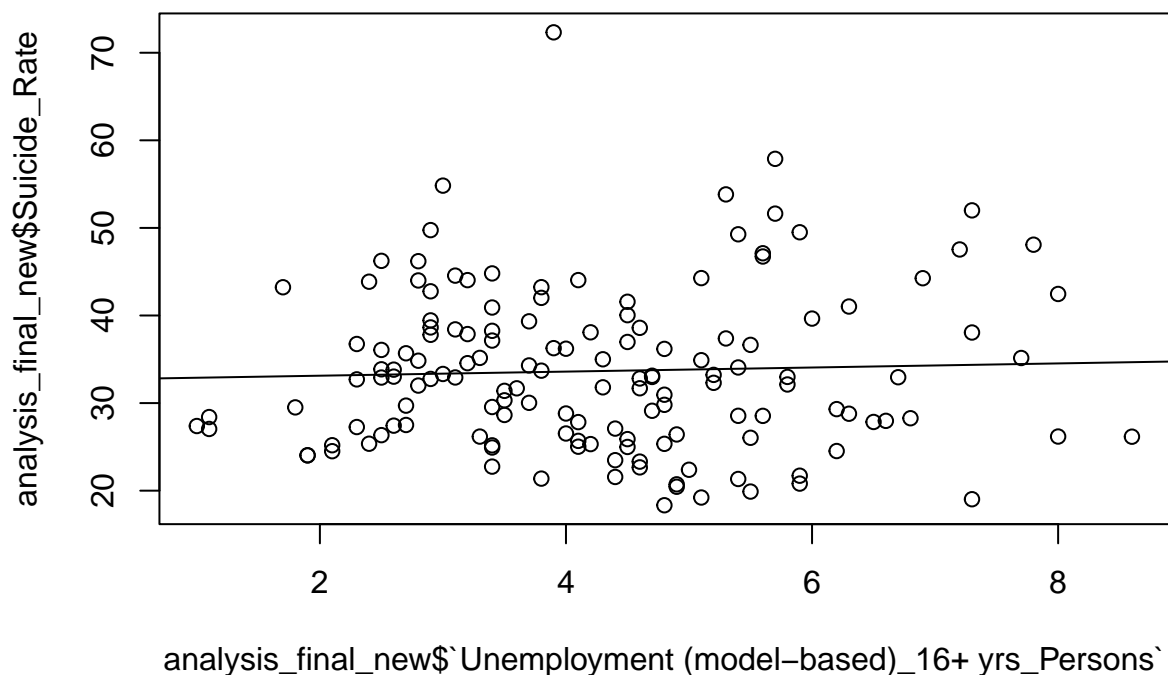
```
#Linear Regression for 'Unemployment (model-based)_16+ yrs_Persons'
LinReg_31 <- lm(analysis_final_new$Suicide_Rate ~ analysis_final_new$`Unemployment (model-based)_16+ yrs
summary(LinReg_31)
```

```
##
## Call:
## lm(formula = analysis_final_new$Suicide_Rate ~ analysis_final_new$`Unemployment (model-based)_16+ yrs
## data = analysis_final_new)
##
## Residuals:
```

```
##      Min      1Q  Median      3Q      Max
## -15.445  -6.903  -0.776   5.030  38.757
##
## Coefficients:
##                                     Estimate
## (Intercept)                       32.6588
## analysis_final_new$'Unemployment (model-based)_16+ yrs_Persons' 0.2338
##                                     Std. Error
## (Intercept)                       2.2007
## analysis_final_new$'Unemployment (model-based)_16+ yrs_Persons' 0.4849
##                                     t value
## (Intercept)                       14.840
## analysis_final_new$'Unemployment (model-based)_16+ yrs_Persons' 0.482
##                                     Pr(>|t|)
## (Intercept)                       <2e-16 ***
## analysis_final_new$'Unemployment (model-based)_16+ yrs_Persons' 0.63
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.134 on 143 degrees of freedom
## Multiple R-squared:  0.001623,    Adjusted R-squared:  -0.005358
## F-statistic: 0.2325 on 1 and 143 DF,  p-value: 0.6304
```

```
#Plot Linear Regression for 'Unemployment (model-based)_16+ yrs_Persons'
```

```
plot(analysis_final_new$Suicide_Rate ~ analysis_final_new$'Unemployment (model-based)_16+ yrs_Persons',
abline(LinReg_31))
```



```
#Assumption to do Factor Analysis:
#1. Determinant of correlation matrix must be near 0
#2. KMO test > 0.5
#3. MSA every variables > 0.5 (repeat the process if there is any variables have MSA<0.5)
#4. Bartlett test -> p-value<0.05
```

```
#Create new table, exclude suicide rate
analysis_factor_new<-analysis_final_new
analysis_factor_new$Suicide_Rate<-NULL
```

```
#Create correlation matrix and determinant of matrix correlation
cor_factor_new<-cor(analysis_factor_new, method = c("pearson"))
det(cor_factor_new)
```

```
## [1] 4.6138e-21
```

```
#Determinant value near 0 --> correlation matrix between variable is correlated
```

```
#write.csv(cor_factor_new,file ="F:/Study/PHE/cor_factor_new.csv")
#write.csv(cor_new,file ="F:/Study/PHE/cor_new.csv")
```

```
#KMO (Kaiser-Meyer-Olkin) statistic test, sampling adequacy predicts if data are likely to factor well,
KMO(analysis_factor_new)
```

```
## Kaiser-Meyer-Olkin factor adequacy
## Call: KMO(r = analysis_factor_new)
## Overall MSA = 0.77
## MSA for each item =
```

```
## Admission episodes for alcohol-related conditions (Broad): Old M
## Admission episodes for alcohol-related conditions (Broad): Old M
## Admission episodes for alcohol-related conditions (Broad): Old M
## Adults in treatment at specialist alcohol misuse services: rate per 1000 popu
## Adults in treatment at specialist drug misuse services: rate per 1000 popu
## Children in
## Children in the youth justice system (10-17 y
## Children leaving care: rate per 10,000 children aged und
## Depression: Recorded prevalence (age
## Emergency Hospital Admissions for Intentional Sel
## Emergency Hospital Admissions for Intentional S
## Emergency Hospital Admissions for Intentional Self
```

```

## Estimated prevalence of common mental disorders: % of population aged 16 &
##
## Estimated prevalence of common mental disorders: % of population aged 65 &
##
## Estimated prevalence of opiate and/or crack cocaine
##
## Long-term health problem or disability: % of popul
##
## Long term claimants of Jobseeker's Allow
##
## Marital breakup: % of a
##
## Mental Health: QOF prevalence (all a
##
## Older people living alone: % of households occupied by a single person aged 65 or
##
## People living alone: % of all usual residents in households occupied by a single p
##
## Self-reported wellbeing - people with a high anxiety
##
## Social Isolation: percentage of adult carers who have as much social contact as they would
##
## Social Isolation: percentage of adult carers who have as much social contact as they would
##
## Social Isolation: percentage of adult carers who have as much social contact as they would
##
## Social Isolation: percentage of adult carers who have as much social contact as they would
##
## Social Isolation: percentage of adult social care users who have as much social contact as they would
##
##
## Successful completion of alcohol trea
##
## Successful completion of drug treatment - non-opiate
##
## Successful completion of drug treatment - opiate
##
## Unemployment (model-1
##

```

```
#KMO=0.79, could be proceed to factor analysis since KMO>0.5
```

```
#MSA (Measures of Sampling Adequacy) --> Remove variables with MSA < 0.5
```

```
#Result-> No variables has to be removed
```

```
#Bartlett's test/homogeneity of variances
```

```
bartlett.test(analysis_factor_new)
```

```

##
## Bartlett test of homogeneity of variances
##
## data: analysis_factor_new
## Bartlett's K-squared = 28067, df = 30, p-value < 2.2e-16

```



```
#Bartlett Chi-square=23985, p-Value<2.2e-16 --> significance / reject H0 --> at least one sample has a
```

```
#Principal Component Analysis (PCA) to find how many factors  
#Criteria factor, if standard deviation(eigenvalues)>1  
pca1_new = princomp(analysis_factor_new, scores=TRUE, cor=TRUE)  
summary(pca1_new)
```

```
## Importance of components:
```

```
##           Comp.1      Comp.2      Comp.3      Comp.4      Comp.5  
## Standard deviation    3.0994833 2.3828196 1.50824581 1.45085565 1.27456391  
## Proportion of Variance 0.3098967 0.1831558 0.07338082 0.06790265 0.05240365  
## Cumulative Proportion 0.3098967 0.4930524 0.56643327 0.63433592 0.68673957  
##           Comp.6      Comp.7      Comp.8      Comp.9      Comp.10  
## Standard deviation    1.08516261 1.06859490 0.92805410 0.88739326 0.86057056  
## Proportion of Variance 0.03798638 0.03683532 0.02778337 0.02540215 0.02388973  
## Cumulative Proportion 0.72472595 0.76156128 0.78934464 0.81474680 0.83863653  
##           Comp.11     Comp.12     Comp.13     Comp.14     Comp.15  
## Standard deviation    0.79959555 0.73686804 0.7224827 0.7028142 0.65348124  
## Proportion of Variance 0.02062429 0.01751531 0.0168381 0.0159338 0.01377541  
## Cumulative Proportion 0.85926082 0.87677613 0.8936142 0.9095480 0.92332345  
##           Comp.16     Comp.17     Comp.18     Comp.19     Comp.20  
## Standard deviation    0.62820603 0.57538892 0.56116218 0.532417592 0.485579095  
## Proportion of Variance 0.01273041 0.01067976 0.01015816 0.009144145 0.007606034  
## Cumulative Proportion 0.93605386 0.94673361 0.95689177 0.966035920 0.973641954  
##           Comp.21     Comp.22     Comp.23     Comp.24  
## Standard deviation    0.437866641 0.426732293 0.401133485 0.326336181  
## Proportion of Variance 0.006184748 0.005874208 0.005190583 0.003435332  
## Cumulative Proportion 0.979826702 0.985700910 0.990891493 0.994326825  
##           Comp.25     Comp.26     Comp.27     Comp.28  
## Standard deviation    0.234709044 0.231265280 0.184110287 0.167259108  
## Proportion of Variance 0.001777043 0.001725278 0.001093439 0.000902439  
## Cumulative Proportion 0.996103869 0.997829147 0.998922586 0.999825025  
##           Comp.29     Comp.30     Comp.31  
## Standard deviation    0.0710280860 1.797283e-02 7.498516e-03  
## Proportion of Variance 0.0001627416 1.042009e-05 1.813798e-06  
## Cumulative Proportion 0.9999877661 9.999982e-01 1.000000e+00
```

```
#There are 7 factors which with eigenvalues > 1  
#These 7 factors explains 76.16% of variables
```

```
# Using 10 factors, since it can not use 7 factors as referenced by PCA  
fa1_new<-factanal(analysis_factor_new,factors=10, scores="regression",lower = 0.01)
```

```
#Loading factors  
#fa1_new$loadings  
#Select loadings factor only  
mload_new<-fa1_new$loadings
```

```
#Convert each cells to absolute number  
mload_abs_new<-abs(mload_new)  
mload_abs1_new<-mload_abs_new[,1:10]  
mloaddf_new<-as.data.frame(mload_abs1_new)
```

```
#Ordering Factor1
```

```
mload_sort_new<-mloaddf_new[order(mloaddf_new$Factor1),]
```

```
#Grouping each variables to the same factors
```

```
mload_sort_new$Max<-colnames(mload_sort_new)[max.col(mload_sort_new,ties.method="first")]
```

```
mload_sort_new$Max
```

```
## [1] "Factor4" "Factor3" "Factor2" "Factor2" "Factor6" "Factor6" "Factor4"  
## [8] "Factor7" "Factor3" "Factor4" "Factor4" "Factor3" "Factor2" "Factor6"  
## [15] "Factor2" "Factor7" "Factor2" "Factor2" "Factor1" "Factor1" "Factor5"  
## [22] "Factor1" "Factor1" "Factor1" "Factor5" "Factor5" "Factor1" "Factor1"  
## [29] "Factor1" "Factor1" "Factor1"
```

```
split(rownames(mload_sort_new),mload_sort_new[,"Max"])
```

```
## $Factor1
```

```
## [1] "Children in care_<18 yrs_Persons"
```

```
## [2] "Children leaving care: rate per 10,000 children aged under 18_<18 yrs_Persons"
```

```
## [3] "Children in the youth justice system (10-17 yrs)_10-17 yrs_Persons"
```

```
## [4] "Unemployment (model-based)_16+ yrs_Persons"
```

```
## [5] "Long term claimants of Jobseeker's Allowance_16-64 yrs_Persons"
```

```
## [6] "Adults in treatment at specialist drug misuse services: rate per 1000 population_18+ yrs_Persons"
```

```
## [7] "Mental Health: QOF prevalence (all ages)_All ages_Persons"
```

```
## [8] "Estimated prevalence of opiate and/or crack cocaine use_15-64 yrs_Persons"
```

```
## [9] "Estimated prevalence of common mental disorders: % of population aged 65 & over_65+ yrs_Persons"
```

```
## [10] "Estimated prevalence of common mental disorders: % of population aged 16 & over_16+ yrs_Persons"
```

```
##
```

```
## $Factor2
```

```
## [1] "Social Isolation: percentage of adult social care users who have as much social contact as they
```

```
## [2] "Depression: Recorded prevalence (aged 18+)_18+ yrs_Persons"
```

```
## [3] "Marital breakup: % of adults_18+ yrs_Persons"
```

```
## [4] "Long-term health problem or disability: % of population_All ages_Persons"
```

```
## [5] "Older people living alone: % of households occupied by a single person aged 65 or over_65+ yrs_Persons"
```

```
## [6] "Adults in treatment at specialist alcohol misuse services: rate per 1000 population_18+ yrs_Persons"
```

```
##
```

```
## $Factor3
```

```
## [1] "Emergency Hospital Admissions for Intentional Self-Harm_All ages_Persons"
```

```
## [2] "Emergency Hospital Admissions for Intentional Self-Harm_All ages_Female"
```

```
## [3] "Emergency Hospital Admissions for Intentional Self-Harm_All ages_Male"
```

```
##
```

```
## $Factor4
```

```
## [1] "Social Isolation: percentage of adult carers who have as much social contact as they would like,
```

```
## [2] "Social Isolation: percentage of adult carers who have as much social contact as they would like,
```

```
## [3] "Social Isolation: percentage of adult carers who have as much social contact as they would like,
```

```
## [4] "Social Isolation: percentage of adult carers who have as much social contact as they would like,
```

```
##
```

```
## $Factor5
```

```
## [1] "Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_Female"
```

```
## [2] "Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_Persons"
```

```
## [3] "Admission episodes for alcohol-related conditions (Broad): Old Method_All ages_Male"
```

```
##
```

```
## $Factor6
```

```

## [1] "Successful completion of alcohol treatment_18+ yrs_Persons"
## [2] "Successful completion of drug treatment - non-opiate users_18+ yrs_Persons"
## [3] "Successful completion of drug treatment - opiate users_18+ yrs_Persons"
##
## $Factor7
## [1] "Self-reported wellbeing - people with a high anxiety score_16+ yrs_Persons"
## [2] "People living alone: % of all usual residents in households occupied by a single person_All ages"

#Hierarchical clustering

#Table with Counties as rowname
hierclus_table<-analysis_factor_new
hierclus_table<-cbind(a = analysisnew[,1], hierclus_table)

#Make first column (AreaName) as a rowname
hierclus_table<-as.data.frame(hierclus_table[,-1], row.names=hierclus_table[,1])

#Standardizing data
stan_data<-scale(hierclus_table)

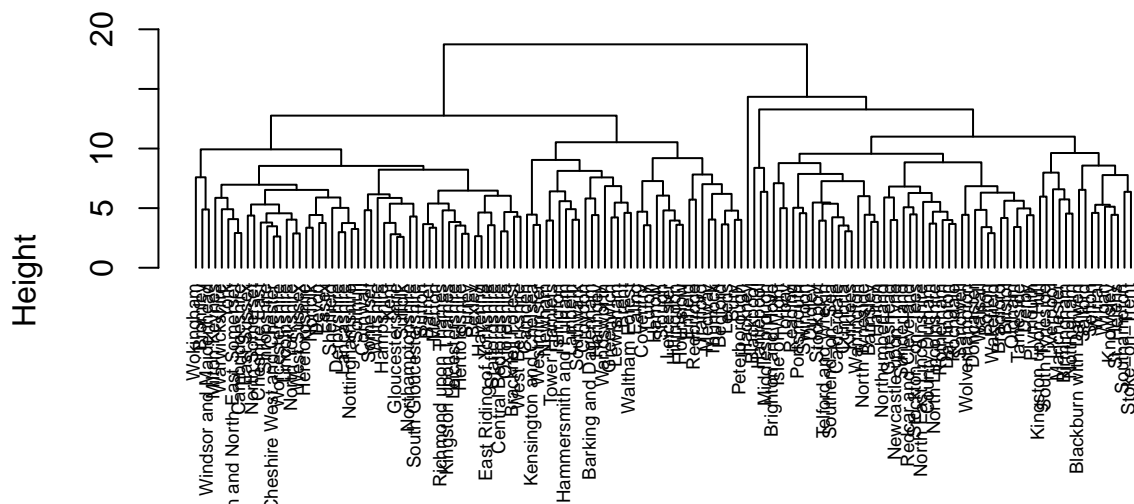
#Dissimilarity/proximities matrix with eucidean method
dis_mat <- dist(stan_data, method = "euclidean")

#Clustering
hier_clus<-hclust(dis_mat, method = "complete")

# Plot the obtained dendrogram
plot(hier_clus, cex = 0.6, hang = -1)

```

## Cluster Dendrogram



```
dis_mat
hclust (*, "complete")
```