Project

Zhe Rao

20/11/2021

Prepare Data

```
# read in data

dataLife = read.csv("Life Expectancy Data.csv")

# identify the missing values
summary(dataLife)
```

```
##    Country              Year          Status          Life.expectancy
##  Length:2938        Min.   :2000   Length:2938        Min.   :36.30
##  Class :character   1st Qu.:2004   Class :character   1st Qu.:63.10
##  Mode  :character   Median :2008   Mode  :character   Median :72.10
##                     Mean   :2008                      Mean   :69.22
##                     3rd Qu.:2012                      3rd Qu.:75.70
##                     Max.   :2015                      Max.   :89.00
##                                                       NA's   :10
##  Adult.Mortality infant.deaths      Alcohol        percentage.expenditure
##  Min.   :  1.0   Min.   :   0.0   Min.   : 0.0100   Min.   :    0.000
##  1st Qu.: 74.0   1st Qu.:   0.0   1st Qu.: 0.8775   1st Qu.:    4.685
##  Median :144.0   Median :   3.0   Median : 3.7550   Median :   64.913
##  Mean   :164.8   Mean   :  30.3   Mean   : 4.6029   Mean   :  738.251
##  3rd Qu.:228.0   3rd Qu.:  22.0   3rd Qu.: 7.7025   3rd Qu.:  441.534
##  Max.   :723.0   Max.   :1800.0   Max.   :17.8700   Max.   :19479.912
##  NA's   :10                       NA's   :194
##   Hepatitis.B       Measles            BMI         under.five.deaths
##  Min.   : 1.00   Min.   :     0.0   Min.   : 1.00   Min.   :   0.00
##  1st Qu.:77.00   1st Qu.:     0.0   1st Qu.:19.30   1st Qu.:   0.00
##  Median :92.00   Median :    17.0   Median :43.50   Median :   4.00
##  Mean   :80.94   Mean   :  2419.6   Mean   :38.32   Mean   :  42.04
##  3rd Qu.:97.00   3rd Qu.:   360.2   3rd Qu.:56.20   3rd Qu.:  28.00
##  Max.   :99.00   Max.   :212183.0   Max.   :87.30   Max.   :2500.00
##  NA's   :553                        NA's   :34
##      Polio       Total.expenditure   Diphtheria       HIV.AIDS
##  Min.   : 3.00   Min.   : 0.370    Min.   : 2.00   Min.   : 0.100
##  1st Qu.:78.00   1st Qu.: 4.260    1st Qu.:78.00   1st Qu.: 0.100
##  Median :93.00   Median : 5.755    Median :93.00   Median : 0.100
##  Mean   :82.55   Mean   : 5.938    Mean   :82.32   Mean   : 1.742
##  3rd Qu.:97.00   3rd Qu.: 7.492    3rd Qu.:97.00   3rd Qu.: 0.800
##  Max.   :99.00   Max.   :17.600    Max.   :99.00   Max.   :50.600
##  NA's   :19      NA's   :226       NA's   :19
##      GDP              Population        thinness..1.19.years
```

```
##  Min.   :      1.68   Min.   :3.400e+01   Min.   : 0.10
##  1st Qu.:    463.94   1st Qu.:1.958e+05   1st Qu.: 1.60
##  Median :   1766.95   Median :1.387e+06   Median : 3.30
##  Mean   :   7483.16   Mean   :1.275e+07   Mean   : 4.84
##  3rd Qu.:   5910.81   3rd Qu.:7.420e+06   3rd Qu.: 7.20
##  Max.   :119172.74   Max.   :1.294e+09   Max.   :27.70
##  NA's   :448         NA's   :652         NA's   :34
##  thinness.5.9.years Income.composition.of.resources   Schooling
##  Min.   : 0.10      Min.   :0.0000                  Min.   : 0.00
##  1st Qu.: 1.50      1st Qu.:0.4930                  1st Qu.:10.10
##  Median : 3.30      Median :0.6770                  Median :12.30
##  Mean   : 4.87      Mean   :0.6276                  Mean   :11.99
##  3rd Qu.: 7.20      3rd Qu.:0.7790                  3rd Qu.:14.30
##  Max.   :28.60      Max.   :0.9480                  Max.   :20.70
##  NA's   :34         NA's   :167                     NA's   :163
```

```r
# drop the Hepatitis, GDP, and population predictor, and replace the remaining missing values with the m
dataLife$Life.expectancy[is.na(dataLife$Life.expectancy)] <- median(dataLife$Life.expectancy, na.rm=TRUE
dataLife$Adult.Mortality[is.na(dataLife$Adult.Mortality)] <- median(dataLife$Adult.Mortality, na.rm=TRUE
dataLife$Alcohol[is.na(dataLife$Alcohol)] <- median(dataLife$Alcohol, na.rm=TRUE)
dataLife$BMI[is.na(dataLife$BMI)] <- median(dataLife$BMI, na.rm=TRUE)
dataLife$Polio[is.na(dataLife$Polio)] <- median(dataLife$Polio, na.rm=TRUE)
dataLife$Total.expenditure[is.na(dataLife$Total.expenditure)] <- median(dataLife$Total.expenditure, na.
dataLife$Diphtheria[is.na(dataLife$Diphtheria)] <- median(dataLife$Diphtheria, na.rm=TRUE)
dataLife$thinness..1.19.years[is.na(dataLife$thinness..1.19.years)] <- median(dataLife$thinness..1.19.ye
dataLife$thinness.5.9.years[is.na(dataLife$thinness.5.9.years)] <- median(dataLife$thinness.5.9.years, n
dataLife$Income.composition.of.resources[is.na(dataLife$Income.composition.of.resources)] <- median(data
dataLife$Schooling[is.na(dataLife$Schooling)] <- median(dataLife$Schooling, na.rm=TRUE)
drop = c("Hepatitis.B","GDP","Population")
dataLife = dataLife[,!(names(dataLife) %in% drop)]
summary(dataLife)
```

```
##    Country              Year        Status          Life.expectancy
##  Length:2938        Min.   :2000   Length:2938        Min.   :36.30
##  Class :character   1st Qu.:2004   Class :character   1st Qu.:63.20
##  Mode  :character   Median :2008   Mode  :character   Median :72.10
##                     Mean   :2008                      Mean   :69.23
##                     3rd Qu.:2012                      3rd Qu.:75.60
##                     Max.   :2015                      Max.   :89.00
##  Adult.Mortality infant.deaths      Alcohol       percentage.expenditure
##  Min.   :  1.0   Min.   :   0.0   Min.   : 0.010   Min.   :    0.000
##  1st Qu.: 74.0   1st Qu.:   0.0   1st Qu.: 1.093   1st Qu.:    4.685
##  Median :144.0   Median :   3.0   Median : 3.755   Median :   64.913
##  Mean   :164.7   Mean   :  30.3   Mean   : 4.547   Mean   :  738.251
##  3rd Qu.:227.0   3rd Qu.:  22.0   3rd Qu.: 7.390   3rd Qu.:  441.534
##  Max.   :723.0   Max.   :1800.0   Max.   :17.870   Max.   :19479.912
##     Measles            BMI        under.five.deaths     Polio
##  Min.   :     0.0   Min.   : 1.00   Min.   :   0.00   Min.   : 3.00
##  1st Qu.:     0.0   1st Qu.:19.40   1st Qu.:   0.00   1st Qu.:78.00
##  Median :    17.0   Median :43.50   Median :   4.00   Median :93.00
##  Mean   :  2419.6   Mean   :38.38   Mean   :  42.04   Mean   :82.62
##  3rd Qu.:   360.2   3rd Qu.:56.10   3rd Qu.:  28.00   3rd Qu.:97.00
##  Max.   :212183.0   Max.   :87.30   Max.   :2500.00   Max.   :99.00
##  Total.expenditure   Diphtheria       HIV.AIDS       thinness..1.19.years
##  Min.   : 0.370    Min.   : 2.00   Min.   : 0.100   Min.   : 0.100
```

```
##   1st Qu.: 4.370     1st Qu.:78.00    1st Qu.: 0.100    1st Qu.: 1.600
##   Median : 5.755     Median :93.00    Median : 0.100    Median : 3.300
##   Mean   : 5.924     Mean   :82.39    Mean   : 1.742    Mean   : 4.822
##   3rd Qu.: 7.330     3rd Qu.:97.00    3rd Qu.: 0.800    3rd Qu.: 7.100
##   Max.   :17.600     Max.   :99.00    Max.   :50.600    Max.   :27.700
##   thinness.5.9.years Income.composition.of.resources   Schooling
##   Min.   : 0.100     Min.   :0.0000                   Min.   : 0.00
##   1st Qu.: 1.600     1st Qu.:0.5042                   1st Qu.:10.30
##   Median : 3.300     Median :0.6770                   Median :12.30
##   Mean   : 4.852     Mean   :0.6304                   Mean   :12.01
##   3rd Qu.: 7.200     3rd Qu.:0.7720                   3rd Qu.:14.10
##   Max.   :28.600     Max.   :0.9480                   Max.   :20.70
```

Find most predictive model

use stepwise selection

```r
# we can split the data into train and test to evaluate performance

#  now get the index of training set
set.seed(251203021)
n = nrow(dataLife)
idx_tr = sample(n,round(0.70*n),replace=FALSE)

# now separate training and testing set from the whole dataset
dataLife_tr = dataLife[idx_tr,]
dataLife_ts = dataLife[-idx_tr,]

# add records present in test set but not in training set to training set so that the model know what t
dataLife_tr = rbind(dataLife_tr, dataLife_ts[which(dataLife_ts$Country=='Cook Islands' | dataLife_ts$Cou


# now fit the stepwise selection with AIC on training set


# null model
fit_null2 = lm(Life.expectancy~1,data=dataLife_tr)

# stepwise AIC with forward selection
fit_step_AIC = step(fit_null2,direction="both",
                 scope=Life.expectancy~Year+Adult.Mortality+infant.deaths+Alcohol
                 +percentage.expenditure+Measles+BMI+under.five.deaths
                 +Polio+Total.expenditure+Diphtheria+HIV.AIDS
                 +thinness..1.19.years+thinness.5.9.years+Income.composition.of.resources
                 +Schooling+Country+Status, trace=FALSE)
#summary(fit_step_AIC)
AIC(fit_step_AIC)
```

```
## [1] 8452.656
```

```r
# stepwise BIC with forward selection
fit_step_BIC = step(fit_null2,direction="both",
```

```
                    scope=Life.expectancy~Year+Adult.Mortality+infant.deaths+Alcohol
                    +percentage.expenditure+Measles+BMI+under.five.deaths
                    +Polio+Total.expenditure+Diphtheria+HIV.AIDS
                    +thinness..1.19.years+thinness.5.9.years+Income.composition.of.resources
                    +Schooling+Country+Status, trace=FALSE,k=log(nrow(dataLife_tr)))
#summary(fit_step_BIC)
BIC(fit_step_BIC)
```

```
## [1] 9585.281
```

```
# assess the performance of stepwise with AIC and BIC
ypr_step_AIC = predict(fit_step_AIC,newdata=dataLife_ts[,-4])
mse_step_AIC = mean((ypr_step_AIC - dataLife_ts[,4])^2)
mse_step_AIC
```

```
## [1] 4.60087
```

```
ypr_step_BIC = predict(fit_step_BIC,newdata=dataLife_ts[,-4])
mse_step_BIC = mean((ypr_step_BIC - dataLife_ts[,4])^2)
mse_step_BIC
```

```
## [1] 4.6122
```

comment: they both are pretty good

use shrinkage methods

```
# fist seperate the x and y
X = model.matrix(Life.expectancy~.,dataLife)[,-1] # exclude the intercept column
y = dataLife$Life.expectancy


# define the training and testing set
X_tr = X[idx_tr,]
y_tr = y[idx_tr]

X_ts = X[-idx_tr,]
y_ts = y[-idx_tr]

# now try to use shrinkage methods

# Ridge Regression
library(glmnet)
```

```
## Loading required package: Matrix
```

```
## Loaded glmnet 4.1-3
```

```
# try to find the best lambda (strength of penalty)
fit_ridge_cv = cv.glmnet(X_tr,y_tr,alpha=0,nfolds=20)
bestlam = fit_ridge_cv$lambda.min
bestlam
```

```
## [1] 0.6801249
```

```
# plot the best lambda with ridge regression
fit_ridge = glmnet(X_tr, y_tr, alpha=0)
```

```
plot(fit_ridge, xvar="lambda",label=TRUE,lwd=2)
abline(v=log(bestlam))
```
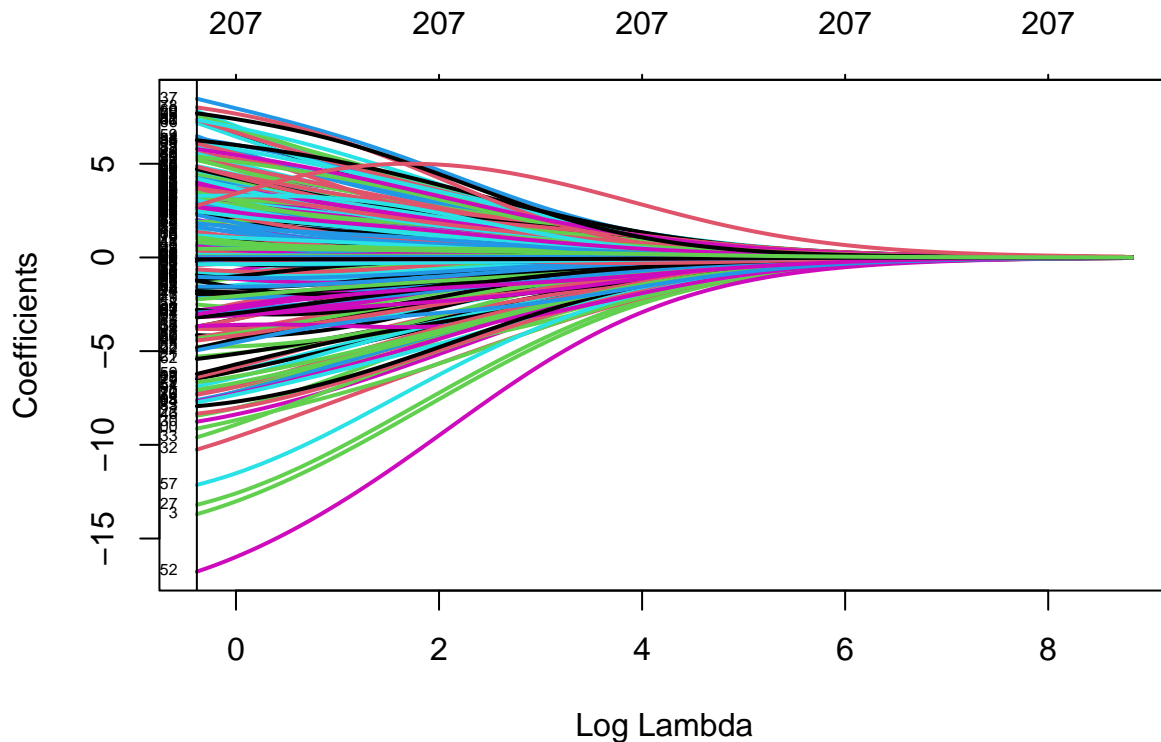


```
# now fit the data with the best lambda
fit_ridge_best = glmnet(X_tr, y_tr, alpha=0, lambda=bestlam)

# assess performance
ypr_ridge = predict(fit_ridge_best,newx=X_ts)
mse_ridge = mean((ypr_ridge - y_ts)^2)
mse_ridge
```

[1] 5.383282

comment: ridge is not better than models from stepwise selection algorithm

```
# LASSO regression

# again, find the best parameter
fit_lasso_cv = cv.glmnet(X_tr,y_tr,alpha=1,nfolds=20)
bestlam = fit_lasso_cv$lambda.min
bestlam
```

[1] 0.002501758

```
# see the plot
fit_lasso = glmnet(X_tr, y_tr, alpha=1)
plot(fit_lasso,xvar="lambda",label=TRUE,lwd=2)
abline(v=log(bestlam))
```
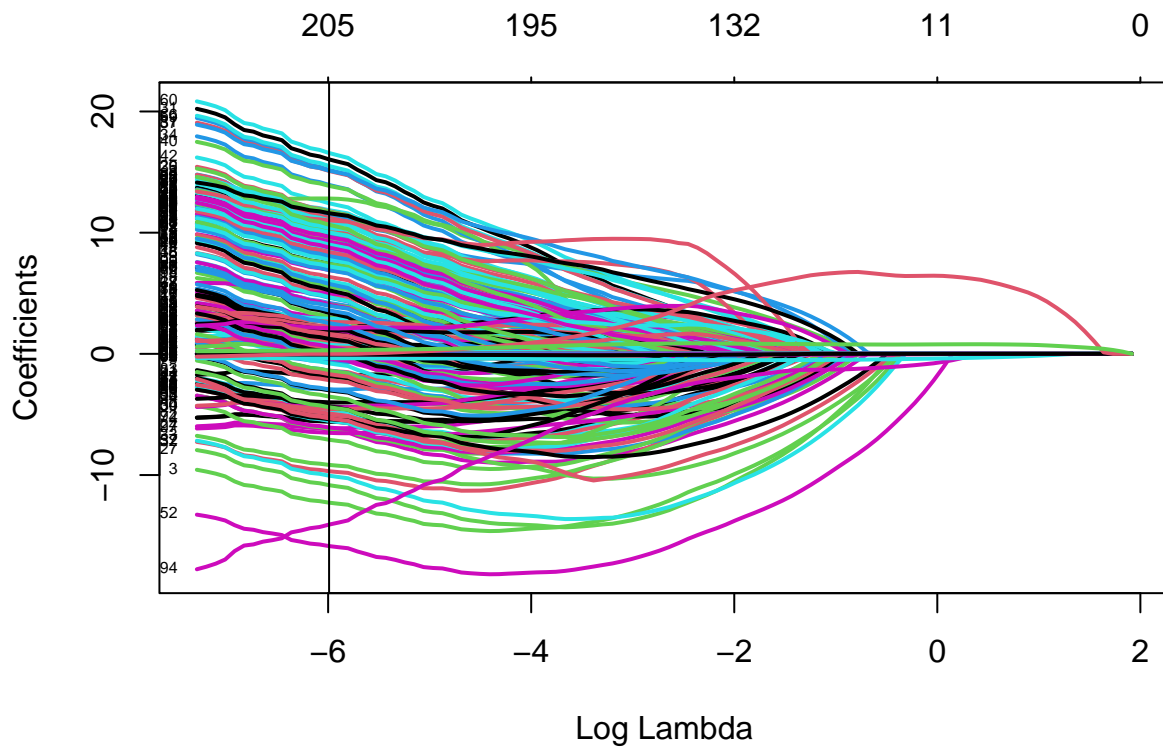
```
fit_lasso_best = glmnet(X_tr, y_tr, alpha=1, lambda=bestlam)

# assess performance
ypr_lasso = predict(fit_lasso_best,newx=X_ts)
mse_lasso = mean((ypr_lasso - y_ts)^2)
mse_lasso
```

```
## [1] 4.838293
```

comment: lasso is not better than models from step-wise selection

elastic net

```
# grid search for best alpha to use in the elastic net

set.seed(251203021)
alphas = seq(0,1,0.1)

lowest_error=1000000


for (i in alphas) {
  fit_cv = cv.glmnet(X_tr,y_tr,alpha=i,nfolds=10)
  bestlam = fit_cv$lambda.min

  fit_elastic = glmnet(X_tr, y_tr, alpha=i, lambda=bestlam)
  ypr_elastic = predict(fit_elastic,newx=X_ts)
```

```
  mse_elastic = mean((ypr_elastic - y_ts)^2)

  if (mse_elastic < lowest_error) {
    lowest_error = mse_elastic
    best_mse = mse_elastic
    best_alpha = i
    best_lambda = bestlam

  }

}
```

comment: find that around alpha = 0.2 produced lowest mse, will look into more detail

investgate further

```
# grid search for best alpha to use in the elastic net

alphas = seq(0.1,0.3,0.02)

lowest_error=1000000


for (i in alphas) {
  fit_cv = cv.glmnet(X_tr,y_tr,alpha=i,nfolds=10)
  bestlam = fit_cv$lambda.min

  fit_elastic = glmnet(X_tr, y_tr, alpha=i, lambda=bestlam)
  ypr_elastic = predict(fit_elastic,newx=X_ts)
  mse_elastic = mean((ypr_elastic - y_ts)^2)

  if (mse_elastic < lowest_error) {
    lowest_error = mse_elastic
    best_mse = mse_elastic
    best_alpha = i
    best_lambda = bestlam

  }

}

# best parameters
best_alpha
```

```
## [1] 0.3
```

```
best_lambda
```

```
## [1] 0.005237256
```

```
# fit the final elastic net model with optimum parameters and assess the performance
fit_elastic_final = glmnet(X_tr, y_tr, alpha=best_alpha,lambda=best_lambda)
ypr_elastic = predict(fit_elastic_final, newx=X_ts)
mse_elastic = mean((ypr_elastic - y_ts)^2)
```

```
mse_elastic
```

```
## [1] 4.81519
```

choose a model

```
# choose model from stepwise selection with BIC
# now fit the whole model

# null model
my_null = lm(Life.expectancy~1,data=dataLife)

# stepwise AIC with forward selection
my_fit = step(my_null,direction="both",
                  scope=Life.expectancy~Year+Adult.Mortality+infant.deaths+Alcohol
                  +percentage.expenditure+Measles+BMI+under.five.deaths
                  +Polio+Total.expenditure+Diphtheria+HIV.AIDS
                  +thinness..1.19.years+thinness.5.9.years+Income.composition.of.resources
                  +Schooling+Country+Status, trace=FALSE)
options(max.print=4000)
summary(my_fit)
```

```
##
## Call:
## lm(formula = Life.expectancy ~ Country + Year + HIV.AIDS + Schooling +
##     Diphtheria + Adult.Mortality + under.five.deaths + infant.deaths +
##     Measles + Alcohol + Polio + thinness.5.9.years + Total.expenditure +
##     percentage.expenditure, data = dataLife)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -21.9448  -0.8910  -0.2353   0.4299   9.1831
##
## Coefficients:
##                                                      Estimate
## (Intercept)                                         -4.578e+02
## CountryAlbania                                       1.610e+01
## CountryAlgeria                                       1.399e+01
## CountryAngola                                       -6.681e+00
## CountryAntigua and Barbuda                           1.664e+01
## CountryArgentina                                     1.572e+01
## CountryArmenia                                       1.449e+01
## CountryAustralia                                     2.205e+01
## CountryAustria                                       2.228e+01
## CountryAzerbaijan                                    1.178e+01
## CountryBahamas                                       1.572e+01
## CountryBahrain                                       1.604e+01
## CountryBangladesh                                    9.769e+00
## CountryBarbados                                      1.525e+01
## CountryBelarus                                       1.134e+01
## CountryBelgium                                       2.136e+01
## CountryBelize                                        1.048e+01
## CountryBenin                                         7.463e-02
## CountryBhutan                                        7.035e+00
```

```
## CountryBolivia (Plurinational State of)                  8.688e+00
## CountryBosnia and Herzegovina                            1.716e+01
## CountryBotswana                                          2.950e+00
## CountryBrazil                                            1.342e+01
## CountryBrunei Darussalam                                 1.668e+01
## CountryBulgaria                                          1.411e+01
## CountryBurkina Faso                                     -2.463e-01
## CountryBurundi                                          -1.273e+00
## CountryCÃ´te d'Ivoire                                   -6.239e+00
## CountryCabo Verde                                        1.355e+01
## CountryCambodia                                          5.802e+00
## CountryCameroon                                         -1.348e+00
## CountryCanada                                            2.228e+01
## CountryCentral African Republic                        -6.056e+00
## CountryChad                                             -4.801e+00
## CountryChile                                             2.028e+01
## CountryChina                                             1.284e+01
## CountryColombia                                          1.433e+01
## CountryComoros                                           3.052e+00
## CountryCongo                                             2.424e+00
## CountryCook Islands                                      1.150e+01
## CountryCosta Rica                                        1.969e+01
## CountryCroatia                                           1.734e+01
## CountryCuba                                              1.851e+01
## CountryCyprus                                            2.075e+01
## CountryCzechia                                           1.820e+01
## CountryDemocratic People's Republic of Korea            1.014e+01
## CountryDemocratic Republic of the Congo                -1.521e+00
## CountryDenmark                                           1.985e+01
## CountryDjibouti                                          4.082e+00
## CountryDominica                                          1.146e+01
## CountryDominican Republic                                1.389e+01
## CountryEcuador                                           1.576e+01
## CountryEgypt                                             1.188e+01
## CountryEl Salvador                                       1.289e+01
## CountryEquatorial Guinea                                -6.815e-01
## CountryEritrea                                           3.096e+00
## CountryEstonia                                           1.581e+01
## CountryEthiopia                                          4.325e+00
## CountryFiji                                              9.241e+00
## CountryFinland                                           2.127e+01
## CountryFrance                                            2.302e+01
## CountryGabon                                             6.373e+00
## CountryGambia                                            1.884e+00
## CountryGeorgia                                           1.470e+01
## CountryGermany                                           2.179e+01
## CountryGhana                                             3.250e+00
## CountryGreece                                            2.204e+01
## CountryGrenada                                           1.419e+01
## CountryGuatemala                                         1.320e+01
## CountryGuinea                                           -9.105e-01
## CountryGuinea-Bissau                                    -1.397e+00
## CountryGuyana                                            7.498e+00
## CountryHaiti                                             2.924e+00
```

```
## CountryHonduras                                  1.447e+01
## CountryHungary                                   1.495e+01
## CountryIceland                                   2.273e+01
## CountryIndia                                     3.850e+00
## CountryIndonesia                                 7.690e+00
## CountryIran (Islamic Republic of)                1.414e+01
## CountryIraq                                      1.148e+01
## CountryIreland                                   2.085e+01
## CountryIsrael                                    2.173e+01
## CountryItaly                                     2.287e+01
## CountryJamaica                                   1.574e+01
## CountryJapan                                     2.321e+01
## CountryJordan                                    1.363e+01
## CountryKazakhstan                                7.724e+00
## CountryKenya                                     2.564e+00
## CountryKiribati                                  6.348e+00
## CountryKuwait                                    1.418e+01
## CountryKyrgyzstan                                1.003e+01
## CountryLao People's Democratic Republic          4.106e+00
## CountryLatvia                                    1.465e+01
## CountryLebanon                                   1.495e+01
## CountryLesotho                                  -1.639e+00
## CountryLiberia                                   1.016e-01
## CountryLibya                                     1.278e+01
## CountryLithuania                                 1.376e+01
## CountryLuxembourg                                2.170e+01
## CountryMadagascar                                4.791e+00
## CountryMalawi                                   -2.380e+00
## CountryMalaysia                                  1.424e+01
## CountryMaldives                                  1.602e+01
## CountryMali                                     -1.236e+00
## CountryMalta                                     2.133e+01
## CountryMarshall Islands                          1.384e+01
## CountryMauritania                                4.907e+00
## CountryMauritius                                 1.335e+01
## CountryMexico                                    1.634e+01
## CountryMicronesia (Federated States of)          9.838e+00
## CountryMonaco                                    1.141e+01
## CountryMongolia                                  6.933e+00
## CountryMontenegro                                1.573e+01
## CountryMorocco                                   1.282e+01
## CountryMozambique                               -5.796e-01
## CountryMyanmar                                   5.469e+00
## CountryNamibia                                   6.260e+00
## CountryNauru                                     1.201e+01
## CountryNepal                                     7.284e+00
## CountryNetherlands                               2.157e+01
## CountryNew Zealand                               2.189e+01
## CountryNicaragua                                 1.480e+01
## CountryNiger                                     2.007e+00
## CountryNigeria                                   3.480e+00
## CountryNiue                                      1.163e+01
## CountryNorway                                    2.218e+01
## CountryOman                                      1.526e+01
```

```
## CountryPakistan                                              3.433e+00
## CountryPalau                                                  1.165e+01
## CountryPanama                                                 1.775e+01
## CountryPapua New Guinea                                       3.949e+00
## CountryParaguay                                               1.438e+01
## CountryPeru                                                   1.469e+01
## CountryPhilippines                                            8.558e+00
## CountryPoland                                                 1.653e+01
## CountryPortugal                                               2.091e+01
## CountryQatar                                                  1.747e+01
## CountryRepublic of Korea                                      2.177e+01
## CountryRepublic of Moldova                                    1.158e+01
## CountryRomania                                                1.509e+01
## CountryRussian Federation                                     9.001e+00
## CountryRwanda                                                 2.668e+00
## CountrySaint Kitts and Nevis                                  1.183e+01
## CountrySaint Lucia                                            1.510e+01
## CountrySaint Vincent and the Grenadines                       1.450e+01
## CountrySamoa                                                  1.493e+01
## CountrySan Marino                                             1.140e+01
## CountrySao Tome and Principe                                  6.743e+00
## CountrySaudi Arabia                                           1.363e+01
## CountrySenegal                                                4.723e+00
## CountrySerbia                                                 1.507e+01
## CountrySeychelles                                             1.325e+01
## CountrySierra Leone                                          -1.097e+01
## CountrySingapore                                              2.187e+01
## CountrySlovakia                                               1.590e+01
## CountrySlovenia                                               2.053e+01
## CountrySolomon Islands                                        9.283e+00
## CountrySomalia                                               -3.917e+00
## CountrySouth Africa                                           5.494e+00
## CountrySouth Sudan                                           -1.590e+00
## CountrySpain                                                  2.279e+01
## CountrySri Lanka                                              1.366e+01
## CountrySudan                                                  4.566e+00
## CountrySuriname                                               1.164e+01
## CountrySwaziland                                              3.804e+00
## CountrySweden                                                 2.308e+01
## CountrySwitzerland                                            2.284e+01
## CountrySyrian Arab Republic                                   1.201e+01
## CountryTajikistan                                             7.760e+00
## CountryThailand                                               1.392e+01
## CountryThe former Yugoslav republic of Macedonia              1.496e+01
## CountryTimor-Leste                                            5.667e+00
## CountryTogo                                                  -4.868e-01
## CountryTonga                                                  1.342e+01
## CountryTrinidad and Tobago                                    1.251e+01
## CountryTunisia                                                1.459e+01
## CountryTurkey                                                 1.453e+01
## CountryTurkmenistan                                           5.875e+00
## CountryTuvalu                                                 1.451e+01
## CountryUganda                                                 1.462e+00
## CountryUkraine                                                1.134e+01
```

```
## CountryUnited Arab Emirates                                      1.615e+01
## CountryUnited Kingdom of Great Britain and Northern Ireland  2.226e+01
## CountryUnited Republic of Tanzania                               5.641e-01
## CountryUnited States of America                                  1.939e+01
## CountryUruguay                                                   1.696e+01
## CountryUzbekistan                                                8.852e+00
## CountryVanuatu                                                   1.277e+01
## CountryVenezuela (Bolivarian Republic of)                        1.471e+01
## CountryViet Nam                                                  1.530e+01
## CountryYemen                                                     5.095e+00
## CountryZambia                                                   -8.635e-02
## CountryZimbabwe                                                  4.654e-01
## Year                                                             2.564e-01
## HIV.AIDS                                                        -3.276e-01
## Schooling                                                        1.350e-01
## Diphtheria                                                       5.015e-03
## Adult.Mortality                                                 -1.930e-03
## under.five.deaths                                               -6.298e-02
## infant.deaths                                                    8.555e-02
## Measles                                                         -1.183e-05
## Alcohol                                                         -5.608e-02
## Polio                                                            4.497e-03
## thinness.5.9.years                                               3.485e-02
## Total.expenditure                                               -3.889e-02
## percentage.expenditure                                           3.943e-05
##                                                                Std. Error t value
## (Intercept)                                                     1.981e+01 -23.102
## CountryAlbania                                                  7.688e-01  20.939
## CountryAlgeria                                                  7.296e-01  19.178
## CountryAngola                                                   7.257e-01  -9.205
## CountryAntigua and Barbuda                                      7.563e-01  22.003
## CountryArgentina                                                8.176e-01  19.232
## CountryArmenia                                                  7.560e-01  19.163
## CountryAustralia                                                8.904e-01  24.760
## CountryAustria                                                  8.323e-01  26.768
## CountryAzerbaijan                                               7.380e-01  15.957
## CountryBahamas                                                  7.807e-01  20.130
## CountryBahrain                                                  7.544e-01  21.263
## CountryBangladesh                                               6.996e-01  13.965
## CountryBarbados                                                 7.806e-01  19.542
## CountryBelarus                                                  8.186e-01  13.847
## CountryBelgium                                                  8.445e-01  25.289
## CountryBelize                                                   7.582e-01  13.825
## CountryBenin                                                    6.962e-01   0.107
## CountryBhutan                                                   6.882e-01  10.223
## CountryBolivia (Plurinational State of)                         7.729e-01  11.241
## CountryBosnia and Herzegovina                                   7.505e-01  22.871
## CountryBotswana                                                 7.660e-01   3.851
## CountryBrazil                                                   7.736e-01  17.351
## CountryBrunei Darussalam                                        7.591e-01  21.974
## CountryBulgaria                                                 7.953e-01  17.739
## CountryBurkina Faso                                             7.294e-01  -0.338
## CountryBurundi                                                  7.035e-01  -1.809
## CountryCÃ´te d'Ivoire                                           7.192e-01  -8.675
```

```
## CountryCabo Verde                                       7.200e-01  18.817
## CountryCambodia                                         6.842e-01   8.480
## CountryCameroon                                         7.190e-01  -1.875
## CountryCanada                                           8.236e-01  27.054
## CountryCentral African Republic                         7.204e-01  -8.407
## CountryChad                                             7.200e-01  -6.667
## CountryChile                                            7.976e-01  25.427
## CountryChina                                            9.809e-01  13.093
## CountryColombia                                         7.526e-01  19.045
## CountryComoros                                          7.032e-01   4.340
## CountryCongo                                            7.081e-01   3.423
## CountryCook Islands                                     1.972e+00   5.831
## CountryCosta Rica                                       7.591e-01  25.940
## CountryCroatia                                          8.115e-01  21.370
## CountryCuba                                             7.745e-01  23.898
## CountryCyprus                                           8.044e-01  25.801
## CountryCzechia                                          8.048e-01  22.616
## CountryDemocratic People's Republic of Korea            7.311e-01  13.867
## CountryDemocratic Republic of the Congo                 7.761e-01  -1.959
## CountryDenmark                                          8.490e-01  23.380
## CountryDjibouti                                         7.218e-01   5.656
## CountryDominica                                         1.963e+00   5.836
## CountryDominican Republic                               7.554e-01  18.387
## CountryEcuador                                          7.657e-01  20.577
## CountryEgypt                                            7.383e-01  16.088
## CountryEl Salvador                                      7.568e-01  17.038
## CountryEquatorial Guinea                                7.323e-01  -0.931
## CountryEritrea                                          7.152e-01   4.329
## CountryEstonia                                          8.092e-01  19.542
## CountryEthiopia                                         7.504e-01   5.764
## CountryFiji                                             7.645e-01  12.088
## CountryFinland                                          8.418e-01  25.270
## CountryFrance                                           8.444e-01  27.257
## CountryGabon                                            7.494e-01   8.504
## CountryGambia                                           7.076e-01   2.663
## CountryGeorgia                                          7.549e-01  19.473
## CountryGermany                                          8.485e-01  25.676
## CountryGhana                                            7.021e-01   4.629
## CountryGreece                                           8.193e-01  26.902
## CountryGrenada                                          7.872e-01  18.020
## CountryGuatemala                                        7.426e-01  17.779
## CountryGuinea                                           6.998e-01  -1.301
## CountryGuinea-Bissau                                    7.073e-01  -1.974
## CountryGuyana                                           7.357e-01  10.192
## CountryHaiti                                            7.264e-01   4.026
## CountryHonduras                                         7.450e-01  19.427
## CountryHungary                                          8.138e-01  18.373
## CountryIceland                                          8.499e-01  26.740
## CountryIndia                                            2.272e+00   1.695
## CountryIndonesia                                        7.593e-01  10.127
## CountryIran (Islamic Republic of)                       7.173e-01  19.708
## CountryIraq                                             7.096e-01  16.178
## CountryIreland                                          8.686e-01  24.007
## CountryIsrael                                           7.985e-01  27.218
```

```
## CountryItaly                                          8.214e-01   27.842
## CountryJamaica                                        7.617e-01   20.662
## CountryJapan                                          8.039e-01   28.877
## CountryJordan                                         7.478e-01   18.223
## CountryKazakhstan                                     7.786e-01    9.920
## CountryKenya                                          7.100e-01    3.611
## CountryKiribati                                       7.636e-01    8.314
## CountryKuwait                                         7.726e-01   18.352
## CountryKyrgyzstan                                     7.451e-01   13.465
## CountryLao People's Democratic Republic              7.116e-01    5.771
## CountryLatvia                                         8.014e-01   18.275
## CountryLebanon                                        7.444e-01   20.088
## CountryLesotho                                        7.917e-01   -2.070
## CountryLiberia                                        6.993e-01    0.145
## CountryLibya                                          7.603e-01   16.803
## CountryLithuania                                      8.235e-01   16.712
## CountryLuxembourg                                     8.362e-01   25.948
## CountryMadagascar                                     6.950e-01    6.895
## CountryMalawi                                         7.545e-01   -3.154
## CountryMalaysia                                       7.239e-01   19.674
## CountryMaldives                                       7.002e-01   22.875
## CountryMali                                           7.205e-01   -1.715
## CountryMalta                                          7.947e-01   26.843
## CountryMarshall Islands                               1.998e+00    6.927
## CountryMauritania                                     7.066e-01    6.944
## CountryMauritius                                      7.358e-01   18.139
## CountryMexico                                         7.595e-01   21.507
## CountryMicronesia (Federated States of)              7.572e-01   12.993
## CountryMonaco                                         1.962e+00    5.815
## CountryMongolia                                       7.579e-01    9.148
## CountryMontenegro                                     7.454e-01   21.106
## CountryMorocco                                        7.141e-01   17.946
## CountryMozambique                                     7.419e-01   -0.781
## CountryMyanmar                                        6.827e-01    8.010
## CountryNamibia                                        7.275e-01    8.604
## CountryNauru                                          1.966e+00    6.109
## CountryNepal                                          6.782e-01   10.740
## CountryNetherlands                                    8.374e-01   25.753
## CountryNew Zealand                                    8.653e-01   25.299
## CountryNicaragua                                      7.494e-01   19.744
## CountryNiger                                          7.499e-01    2.676
## CountryNigeria                                        1.249e+00    2.787
## CountryNiue                                           1.969e+00    5.907
## CountryNorway                                         8.372e-01   26.492
## CountryOman                                           7.356e-01   20.744
## CountryPakistan                                       9.175e-01    3.742
## CountryPalau                                          1.976e+00    5.898
## CountryPanama                                         7.645e-01   23.225
## CountryPapua New Guinea                               7.378e-01    5.352
## CountryParaguay                                       7.567e-01   19.008
## CountryPeru                                           7.709e-01   19.059
## CountryPhilippines                                    7.025e-01   12.181
## CountryPoland                                         8.056e-01   20.513
## CountryPortugal                                       8.402e-01   24.888
```

```
## CountryQatar                                                    7.562e-01  23.108
## CountryRepublic of Korea                                        7.871e-01  27.653
## CountryRepublic of Moldova                                      7.677e-01  15.085
## CountryRomania                                                  7.790e-01  19.372
## CountryRussian Federation                                       7.907e-01  11.383
## CountryRwanda                                                   7.194e-01   3.708
## CountrySaint Kitts and Nevis                                    1.970e+00   6.003
## CountrySaint Lucia                                              7.736e-01  19.522
## CountrySaint Vincent and the Grenadines                         7.636e-01  18.993
## CountrySamoa                                                    7.695e-01  19.408
## CountrySan Marino                                               1.966e+00   5.800
## CountrySao Tome and Principe                                    7.177e-01   9.395
## CountrySaudi Arabia                                             7.363e-01  18.511
## CountrySenegal                                                  7.006e-01   6.741
## CountrySerbia                                                   7.813e-01  19.283
## CountrySeychelles                                               7.474e-01  17.729
## CountrySierra Leone                                             6.998e-01 -15.677
## CountrySingapore                                                7.816e-01  27.976
## CountrySlovakia                                                 8.062e-01  19.720
## CountrySlovenia                                                 8.266e-01  24.838
## CountrySolomon Islands                                          7.446e-01  12.467
## CountrySomalia                                                  7.186e-01  -5.451
## CountrySouth Africa                                             7.581e-01   7.246
## CountrySouth Sudan                                              7.762e-01  -2.048
## CountrySpain                                                    8.332e-01  27.357
## CountrySri Lanka                                                7.128e-01  19.162
## CountrySudan                                                    7.256e-01   6.293
## CountrySuriname                                                 7.429e-01  15.664
## CountrySwaziland                                                8.712e-01   4.367
## CountrySweden                                                   8.149e-01  28.322
## CountrySwitzerland                                              8.608e-01  26.539
## CountrySyrian Arab Republic                                     7.145e-01  16.804
## CountryTajikistan                                               7.278e-01  10.663
## CountryThailand                                                 7.298e-01  19.068
## CountryThe former Yugoslav republic of Macedonia                7.554e-01  19.800
## CountryTimor-Leste                                              6.994e-01   8.103
## CountryTogo                                                     7.045e-01  -0.691
## CountryTonga                                                    7.852e-01  17.084
## CountryTrinidad and Tobago                                      7.312e-01  17.101
## CountryTunisia                                                  7.476e-01  19.518
## CountryTurkey                                                   7.309e-01  19.878
## CountryTurkmenistan                                             7.412e-01   7.926
## CountryTuvalu                                                   1.999e+00   7.258
## CountryUganda                                                   7.436e-01   1.966
## CountryUkraine                                                  7.769e-01  14.602
## CountryUnited Arab Emirates                                     7.513e-01  21.494
## CountryUnited Kingdom of Great Britain and Northern Ireland     8.035e-01  27.705
## CountryUnited Republic of Tanzania                              7.326e-01   0.770
## CountryUnited States of America                                 7.922e-01  24.479
## CountryUruguay                                                  7.927e-01  21.395
## CountryUzbekistan                                               7.388e-01  11.982
## CountryVanuatu                                                  7.486e-01  17.062
## CountryVenezuela (Bolivarian Republic of)                       7.707e-01  19.083
## CountryViet Nam                                                 6.913e-01  22.126
```

```
## CountryYemen                                         6.721e-01   7.581
## CountryZambia                                        7.344e-01  -0.118
## CountryZimbabwe                                      7.916e-01   0.588
## Year                                                 9.944e-03  25.790
## HIV.AIDS                                             1.494e-02 -21.920
## Schooling                                            3.640e-02   3.709
## Diphtheria                                           2.280e-03   2.199
## Adult.Mortality                                      4.483e-04  -4.306
## under.five.deaths                                    7.697e-03  -8.183
## infant.deaths                                        1.101e-02   7.767
## Measles                                              4.293e-06  -2.756
## Alcohol                                              2.302e-02  -2.436
## Polio                                                2.236e-03   2.011
## thinness.5.9.years                                   2.094e-02   1.664
## Total.expenditure                                    2.205e-02  -1.764
## percentage.expenditure                               2.627e-05   1.501
##                                                      Pr(>|t|)
## (Intercept)                                          < 2e-16 ***
## CountryAlbania                                       < 2e-16 ***
## CountryAlgeria                                       < 2e-16 ***
## CountryAngola                                        < 2e-16 ***
## CountryAntigua and Barbuda                           < 2e-16 ***
## CountryArgentina                                     < 2e-16 ***
## CountryArmenia                                       < 2e-16 ***
## CountryAustralia                                     < 2e-16 ***
## CountryAustria                                       < 2e-16 ***
## CountryAzerbaijan                                    < 2e-16 ***
## CountryBahamas                                       < 2e-16 ***
## CountryBahrain                                       < 2e-16 ***
## CountryBangladesh                                    < 2e-16 ***
## CountryBarbados                                      < 2e-16 ***
## CountryBelarus                                       < 2e-16 ***
## CountryBelgium                                       < 2e-16 ***
## CountryBelize                                        < 2e-16 ***
## CountryBenin                                         0.914635
## CountryBhutan                                        < 2e-16 ***
## CountryBolivia (Plurinational State of)              < 2e-16 ***
## CountryBosnia and Herzegovina                        < 2e-16 ***
## CountryBotswana                                      0.000120 ***
## CountryBrazil                                        < 2e-16 ***
## CountryBrunei Darussalam                             < 2e-16 ***
## CountryBulgaria                                      < 2e-16 ***
## CountryBurkina Faso                                  0.735579
## CountryBurundi                                       0.070546 .
## CountryCÃ´te d'Ivoire                                < 2e-16 ***
## CountryCabo Verde                                    < 2e-16 ***
## CountryCambodia                                      < 2e-16 ***
## CountryCameroon                                      0.060921 .
## CountryCanada                                        < 2e-16 ***
## CountryCentral African Republic                      < 2e-16 ***
## CountryChad                                          3.14e-11 ***
## CountryChile                                         < 2e-16 ***
## CountryChina                                         < 2e-16 ***
## CountryColombia                                      < 2e-16 ***
```

```
## CountryComoros                                            1.48e-05 ***
## CountryCongo                                              0.000628 ***
## CountryCook Islands                                       6.15e-09 ***
## CountryCosta Rica                                          < 2e-16 ***
## CountryCroatia                                             < 2e-16 ***
## CountryCuba                                                < 2e-16 ***
## CountryCyprus                                              < 2e-16 ***
## CountryCzechia                                             < 2e-16 ***
## CountryDemocratic People's Republic of Korea              < 2e-16 ***
## CountryDemocratic Republic of the Congo                  0.050188 .
## CountryDenmark                                             < 2e-16 ***
## CountryDjibouti                                           1.71e-08 ***
## CountryDominica                                           5.97e-09 ***
## CountryDominican Republic                                  < 2e-16 ***
## CountryEcuador                                             < 2e-16 ***
## CountryEgypt                                               < 2e-16 ***
## CountryEl Salvador                                         < 2e-16 ***
## CountryEquatorial Guinea                                  0.352148
## CountryEritrea                                            1.56e-05 ***
## CountryEstonia                                             < 2e-16 ***
## CountryEthiopia                                           9.13e-09 ***
## CountryFiji                                                < 2e-16 ***
## CountryFinland                                             < 2e-16 ***
## CountryFrance                                              < 2e-16 ***
## CountryGabon                                               < 2e-16 ***
## CountryGambia                                             0.007782 **
## CountryGeorgia                                             < 2e-16 ***
## CountryGermany                                             < 2e-16 ***
## CountryGhana                                              3.85e-06 ***
## CountryGreece                                              < 2e-16 ***
## CountryGrenada                                             < 2e-16 ***
## CountryGuatemala                                           < 2e-16 ***
## CountryGuinea                                             0.193319
## CountryGuinea-Bissau                                      0.048443 *
## CountryGuyana                                              < 2e-16 ***
## CountryHaiti                                              5.83e-05 ***
## CountryHonduras                                            < 2e-16 ***
## CountryHungary                                             < 2e-16 ***
## CountryIceland                                             < 2e-16 ***
## CountryIndia                                              0.090204 .
## CountryIndonesia                                           < 2e-16 ***
## CountryIran (Islamic Republic of)                          < 2e-16 ***
## CountryIraq                                                < 2e-16 ***
## CountryIreland                                             < 2e-16 ***
## CountryIsrael                                              < 2e-16 ***
## CountryItaly                                               < 2e-16 ***
## CountryJamaica                                             < 2e-16 ***
## CountryJapan                                               < 2e-16 ***
## CountryJordan                                              < 2e-16 ***
## CountryKazakhstan                                          < 2e-16 ***
## CountryKenya                                              0.000310 ***
## CountryKiribati                                            < 2e-16 ***
## CountryKuwait                                              < 2e-16 ***
## CountryKyrgyzstan                                          < 2e-16 ***
```

```
## CountryLao People's Democratic Republic              8.78e-09 ***
## CountryLatvia                                         < 2e-16 ***
## CountryLebanon                                        < 2e-16 ***
## CountryLesotho                                        0.038577 *
## CountryLiberia                                        0.884473
## CountryLibya                                          < 2e-16 ***
## CountryLithuania                                      < 2e-16 ***
## CountryLuxembourg                                     < 2e-16 ***
## CountryMadagascar                                     6.68e-12 ***
## CountryMalawi                                         0.001630 **
## CountryMalaysia                                       < 2e-16 ***
## CountryMaldives                                       < 2e-16 ***
## CountryMali                                           0.086396 .
## CountryMalta                                          < 2e-16 ***
## CountryMarshall Islands                               5.33e-12 ***
## CountryMauritania                                     4.74e-12 ***
## CountryMauritius                                      < 2e-16 ***
## CountryMexico                                         < 2e-16 ***
## CountryMicronesia (Federated States of)              < 2e-16 ***
## CountryMonaco                                         6.75e-09 ***
## CountryMongolia                                       < 2e-16 ***
## CountryMontenegro                                     < 2e-16 ***
## CountryMorocco                                        < 2e-16 ***
## CountryMozambique                                     0.434728
## CountryMyanmar                                        1.68e-15 ***
## CountryNamibia                                        < 2e-16 ***
## CountryNauru                                          1.15e-09 ***
## CountryNepal                                          < 2e-16 ***
## CountryNetherlands                                    < 2e-16 ***
## CountryNew Zealand                                    < 2e-16 ***
## CountryNicaragua                                      < 2e-16 ***
## CountryNiger                                          0.007497 **
## CountryNigeria                                        0.005350 **
## CountryNiue                                           3.93e-09 ***
## CountryNorway                                         < 2e-16 ***
## CountryOman                                           < 2e-16 ***
## CountryPakistan                                       0.000186 ***
## CountryPalau                                          4.13e-09 ***
## CountryPanama                                         < 2e-16 ***
## CountryPapua New Guinea                               9.41e-08 ***
## CountryParaguay                                       < 2e-16 ***
## CountryPeru                                           < 2e-16 ***
## CountryPhilippines                                    < 2e-16 ***
## CountryPoland                                         < 2e-16 ***
## CountryPortugal                                       < 2e-16 ***
## CountryQatar                                          < 2e-16 ***
## CountryRepublic of Korea                              < 2e-16 ***
## CountryRepublic of Moldova                            < 2e-16 ***
## CountryRomania                                        < 2e-16 ***
## CountryRussian Federation                             < 2e-16 ***
## CountryRwanda                                         0.000213 ***
## CountrySaint Kitts and Nevis                          2.20e-09 ***
## CountrySaint Lucia                                    < 2e-16 ***
## CountrySaint Vincent and the Grenadines               < 2e-16 ***
```

```
## CountrySamoa                                                         < 2e-16 ***
## CountrySan Marino                                                     7.40e-09 ***
## CountrySao Tome and Principe                                          < 2e-16 ***
## CountrySaudi Arabia                                                   < 2e-16 ***
## CountrySenegal                                                        1.91e-11 ***
## CountrySerbia                                                         < 2e-16 ***
## CountrySeychelles                                                     < 2e-16 ***
## CountrySierra Leone                                                   < 2e-16 ***
## CountrySingapore                                                      < 2e-16 ***
## CountrySlovakia                                                       < 2e-16 ***
## CountrySlovenia                                                       < 2e-16 ***
## CountrySolomon Islands                                                < 2e-16 ***
## CountrySomalia                                                        5.45e-08 ***
## CountrySouth Africa                                                   5.54e-13 ***
## CountrySouth Sudan                                                    0.040683 *
## CountrySpain                                                          < 2e-16 ***
## CountrySri Lanka                                                      < 2e-16 ***
## CountrySudan                                                          3.63e-10 ***
## CountrySuriname                                                       < 2e-16 ***
## CountrySwaziland                                                      1.31e-05 ***
## CountrySweden                                                         < 2e-16 ***
## CountrySwitzerland                                                    < 2e-16 ***
## CountrySyrian Arab Republic                                           < 2e-16 ***
## CountryTajikistan                                                     < 2e-16 ***
## CountryThailand                                                       < 2e-16 ***
## CountryThe former Yugoslav republic of Macedonia                      < 2e-16 ***
## CountryTimor-Leste                                                    8.03e-16 ***
## CountryTogo                                                           0.489667
## CountryTonga                                                          < 2e-16 ***
## CountryTrinidad and Tobago                                            < 2e-16 ***
## CountryTunisia                                                        < 2e-16 ***
## CountryTurkey                                                         < 2e-16 ***
## CountryTurkmenistan                                                   3.27e-15 ***
## CountryTuvalu                                                         5.11e-13 ***
## CountryUganda                                                         0.049442 *
## CountryUkraine                                                        < 2e-16 ***
## CountryUnited Arab Emirates                                           < 2e-16 ***
## CountryUnited Kingdom of Great Britain and Northern Ireland  < 2e-16 ***
## CountryUnited Republic of Tanzania                                    0.441431
## CountryUnited States of America                                       < 2e-16 ***
## CountryUruguay                                                        < 2e-16 ***
## CountryUzbekistan                                                     < 2e-16 ***
## CountryVanuatu                                                        < 2e-16 ***
## CountryVenezuela (Bolivarian Republic of)                             < 2e-16 ***
## CountryViet Nam                                                       < 2e-16 ***
## CountryYemen                                                          4.67e-14 ***
## CountryZambia                                                         0.906408
## CountryZimbabwe                                                       0.556636
## Year                                                                  < 2e-16 ***
## HIV.AIDS                                                              < 2e-16 ***
## Schooling                                                             0.000213 ***
## Diphtheria                                                            0.027927 *
## Adult.Mortality                                                       1.72e-05 ***
## under.five.deaths                                                     4.21e-16 ***
```

```
## infant.deaths                                      1.13e-14 ***
## Measles                                            0.005899 **
## Alcohol                                            0.014895 *
## Polio                                              0.044394 *
## thinness.5.9.years                                 0.096135 .
## Total.expenditure                                  0.077819 .
## percentage.expenditure                             0.133571
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.874 on 2732 degrees of freedom
## Multiple R-squared:  0.9639, Adjusted R-squared:  0.9612
## F-statistic: 355.5 on 205 and 2732 DF,  p-value: < 2.2e-16
```

model diagnostic

unusual observations

```r
# check for unusual observations

# check cooks distance
influencial_idx = which(cooks.distance(my_fit) > 4 / length(cooks.distance(my_fit)))

# remove the tags on influencial_idx
influencial_idx = unname(influencial_idx)

#influencial_idx
length(influencial_idx)
```

```
## [1] 190
```

residual plot

```r
# residual plot
plot(fitted(my_fit),resid(my_fit),col="grey",pch=20,
     xlab = "Fitted", ylab = "Residuals", main="Residual Plot",ylim=c(-10,10))
abline(h=0, col="red", lwd=3)
```
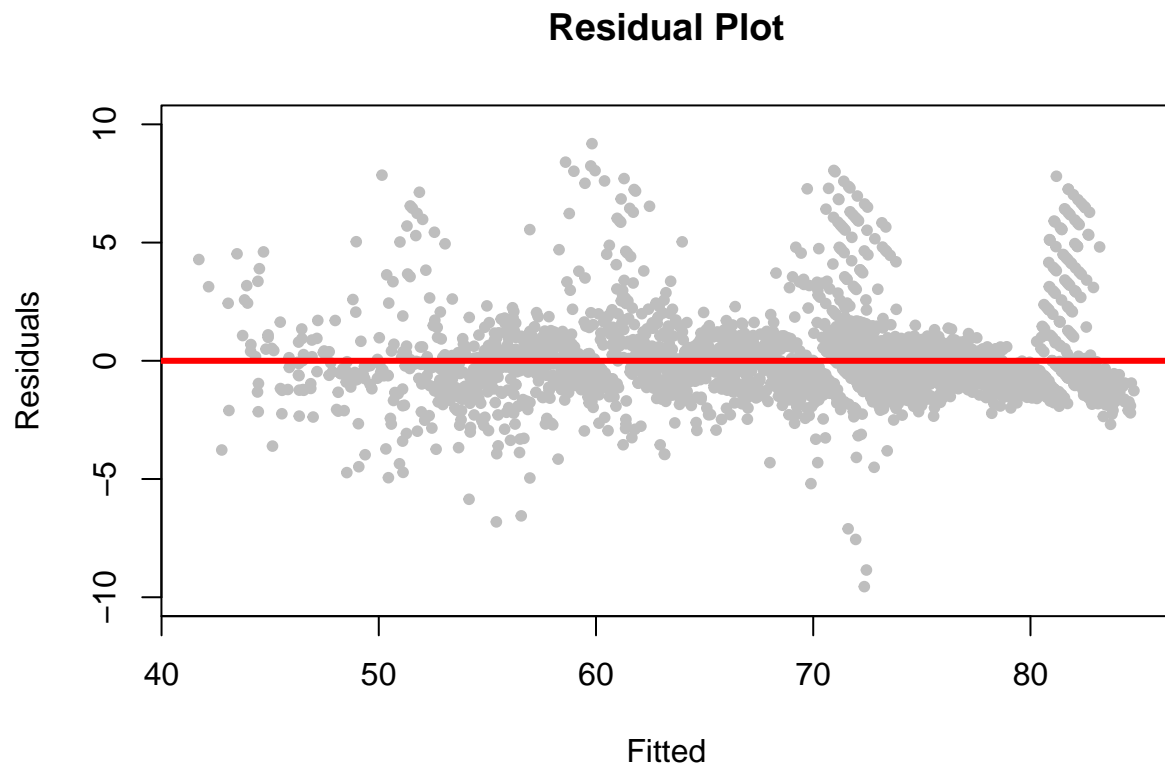
Residual Plot

comment: the residual plot shows evidence against equal variance assumption but the linearity assumtion is okay

histogram

```
# histogram of residual
hist(resid(my_fit), xlab="Residuals", main="Histogram",
     col = "darkorange",border = "dodgerblue", breaks=70)
```

Histogram
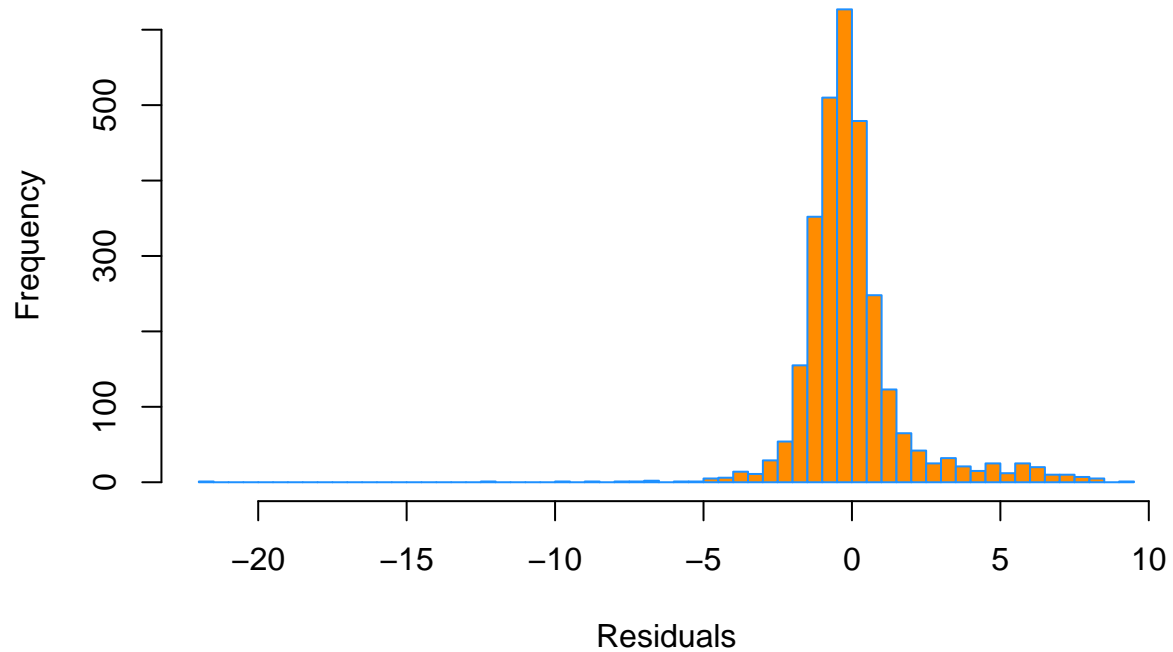

```
# the distribution is skewed to the left
```

QQ plot

```
# normal QQ plot
qqnorm(resid(my_fit),main="QQ Plot",col="grey",pch=20,
     xlab = "Theoretical Quantiles", ylab = "Actual Quantiles")
qqline(resid(my_fit),col="red")
```

QQ Plot
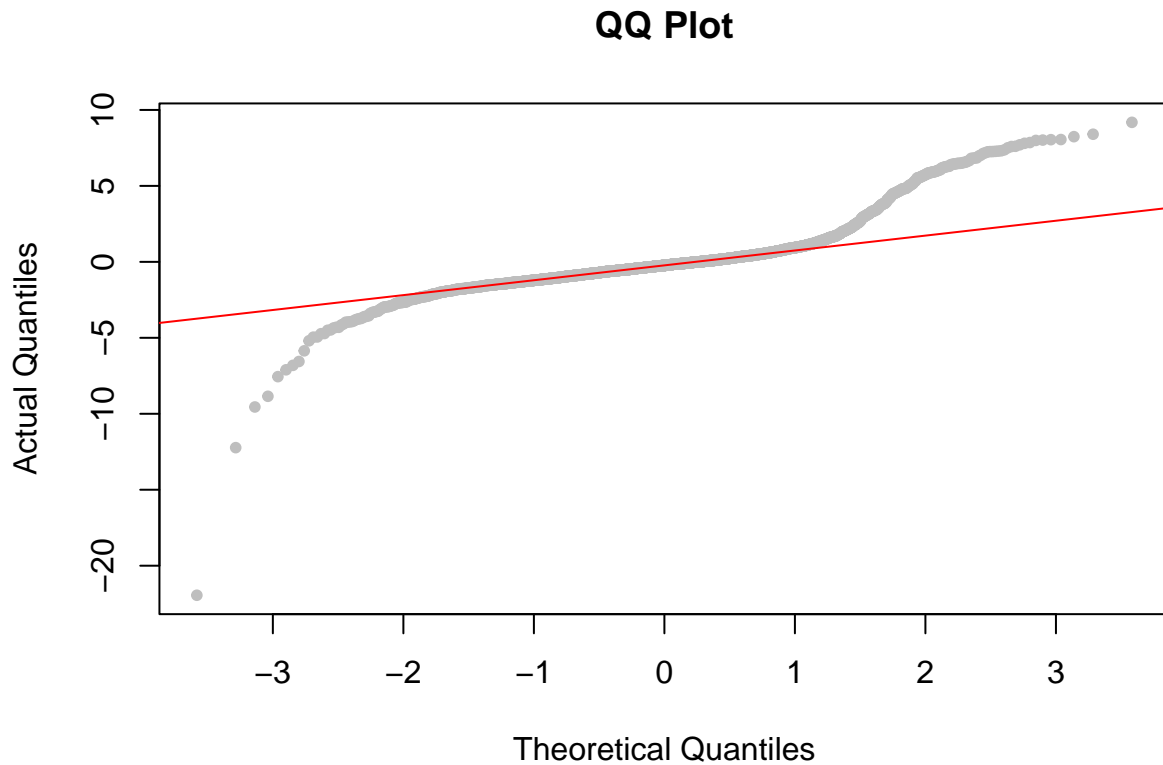
comment: the normality assumption is violated

test statistics

```r
# BP test
library(lmtest)
```

```
## Loading required package: zoo
```

```
##
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```r
bptest(my_fit)
```

```
##
##  studentized Breusch-Pagan test
##
## data:  my_fit
## BP = 381.94, df = 205, p-value = 8.445e-13
```

```r
# SW test
shapiro.test(resid(my_fit))
```

```
##
##  Shapiro-Wilk normality test
```

```
## 
## data:  resid(my_fit)
## W = 0.81617, p-value < 2.2e-16
```

comment: we reject both null hypothesis that (equal variance and normality assumption is not violated)

As there are many influential points, it should not be removed

```r
# Box-cox transformation
library(MASS)
par(mfrow=c(1,2))
boxcox(object = my_fit)
boxcox(object = my_fit, lambda = seq(1, 2, by = 0.05))
```
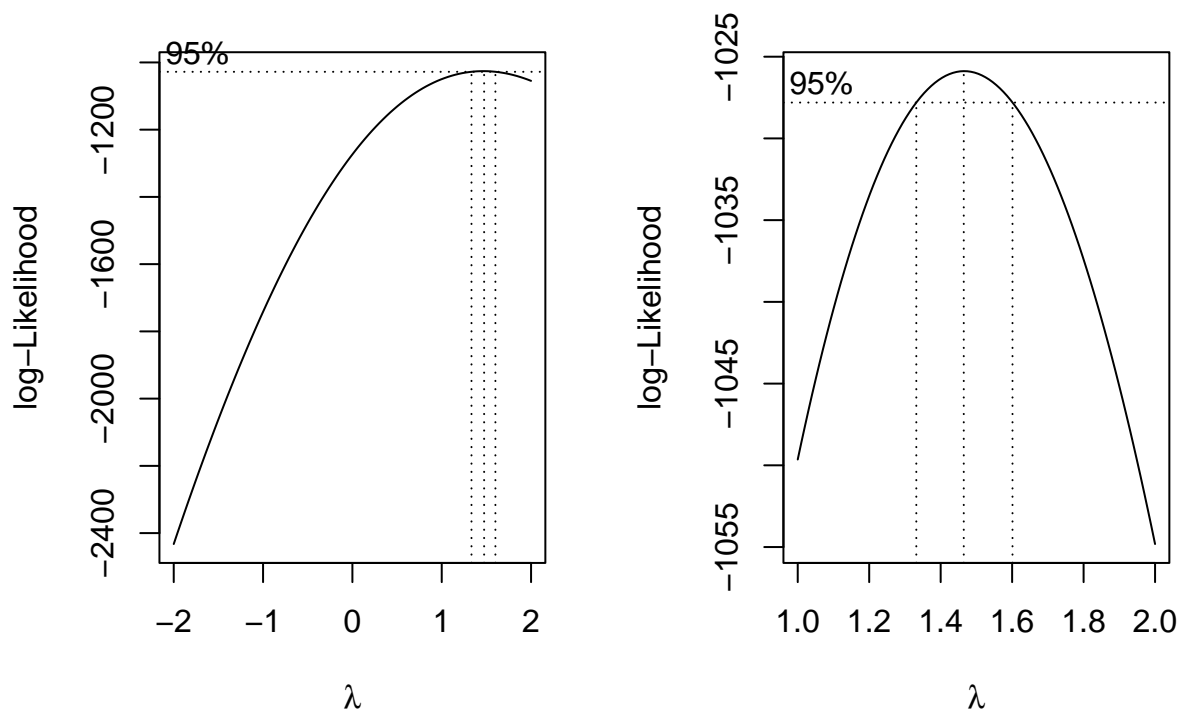


```r
# assess the result of box-cox transformation
lambda = 1.5
lm_fit_transf <- lm(((Life.expectancy^(lambda)-1)/(lambda))~Country + Year + HIV.AIDS + Schooling +
    Diphtheria + Adult.Mortality + under.five.deaths + infant.deaths +
    Measles + Alcohol + Polio + thinness.5.9.years + Total.expenditure +
    percentage.expenditure, data = dataLife)


par(mfrow=c(1,2))
plot(resid(lm_fit_transf)~fitted(lm_fit_transf), col = "grey", pch = 20,
     xlab = "Fitted", ylab = "Residuals", main = "Fitted versus Residuals")
abline(h = 0, col = "darkorange", lwd = 2)
```

```
qqnorm(resid(lm_fit_transf), main = "Normal Q-Q Plot", col = "darkgrey")
qqline(resid(lm_fit_transf), col = "dodgerblue", lwd = 2)
```
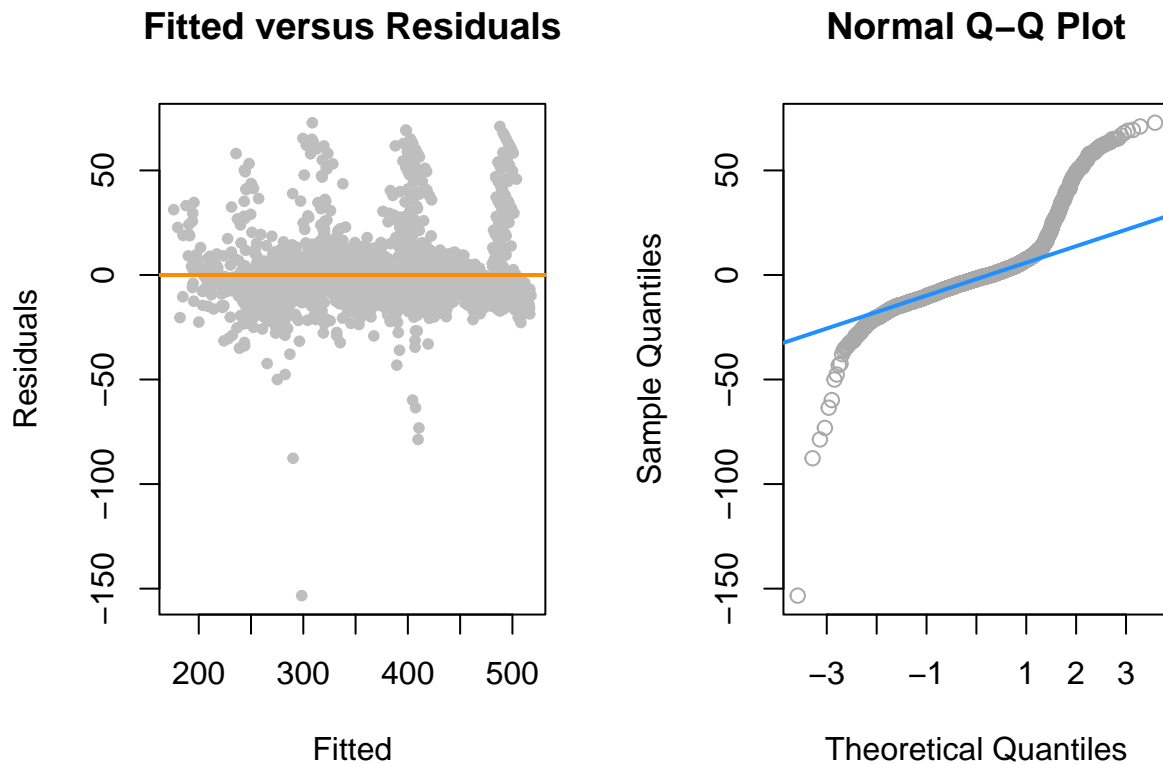

polynomial terms

```
# quadratic model
lm_quadratic <- lm(Life.expectancy ~ Country + Year + HIV.AIDS + Schooling +
    Diphtheria + Adult.Mortality + under.five.deaths + infant.deaths +
    Measles + Alcohol + Polio + thinness.5.9.years + Total.expenditure +
    percentage.expenditure + I(HIV.AIDS^2) + I(Schooling^2) + I(Diphtheria^2)
    + I(Adult.Mortality^2) + I(under.five.deaths^2) + I(infant.deaths^2) + I(Measles^2) + I(Alcohol^2) +
summary(lm_quadratic)
```

```
##
## Call:
## lm(formula = Life.expectancy ~ Country + Year + HIV.AIDS + Schooling +
##     Diphtheria + Adult.Mortality + under.five.deaths + infant.deaths +
##     Measles + Alcohol + Polio + thinness.5.9.years + Total.expenditure +
##     percentage.expenditure + I(HIV.AIDS^2) + I(Schooling^2) +
##     I(Diphtheria^2) + I(Adult.Mortality^2) + I(under.five.deaths^2) +
##     I(infant.deaths^2) + I(Measles^2) + I(Alcohol^2) + I(Polio^2) +
##     I(thinness.5.9.years^2) + I(Total.expenditure^2) + I(percentage.expenditure^2),
##     data = dataLife)
##
## Residuals:
```

```
##      Min      1Q   Median      3Q      Max
## -15.0929  -0.8377  -0.2260   0.3786   8.1598
##
## Coefficients:
##                                               Estimate
## (Intercept)                                   -4.009e+02
## CountryAlbania                                 1.521e+01
## CountryAlgeria                                 1.266e+01
## CountryAngola                                 -4.537e+00
## CountryAntigua and Barbuda                     1.512e+01
## CountryArgentina                               1.453e+01
## CountryArmenia                                 1.337e+01
## CountryAustralia                               2.121e+01
## CountryAustria                                 2.157e+01
## CountryAzerbaijan                              1.105e+01
## CountryBahamas                                 1.446e+01
## CountryBahrain                                 1.486e+01
## CountryBangladesh                              8.560e+00
## CountryBarbados                                1.450e+01
## CountryBelarus                                 9.979e+00
## CountryBelgium                                 2.029e+01
## CountryBelize                                  9.210e+00
## CountryBenin                                   9.714e-02
## CountryBhutan                                  5.504e+00
## CountryBolivia (Plurinational State of)        7.800e+00
## CountryBosnia and Herzegovina                  1.647e+01
## CountryBotswana                                2.962e+00
## CountryBrazil                                  1.081e+01
## CountryBrunei Darussalam                       1.551e+01
## CountryBulgaria                                1.300e+01
## CountryBurkina Faso                            1.234e+00
## CountryBurundi                                -1.387e+00
## CountryCÃ´te d'Ivoire                         -4.845e+00
## CountryCabo Verde                              1.229e+01
## CountryCambodia                                4.774e+00
## CountryCameroon                                2.809e-01
## CountryCanada                                  2.135e+01
## CountryCentral African Republic               -4.811e+00
## CountryChad                                   -2.729e+00
## CountryChile                                   1.939e+01
## CountryChina                                   9.517e+00
## CountryColombia                                1.321e+01
## CountryComoros                                 2.070e+00
## CountryCongo                                   2.386e+00
## CountryCook Islands                            1.026e+01
## CountryCosta Rica                              1.887e+01
## CountryCroatia                                 1.636e+01
## CountryCuba                                    1.751e+01
## CountryCyprus                                  1.982e+01
## CountryCzechia                                 1.725e+01
## CountryDemocratic People's Republic of Korea   9.016e+00
## CountryDemocratic Republic of the Congo       -6.429e-01
## CountryDenmark                                 1.890e+01
## CountryDjibouti                                3.630e+00
```

```
## CountryDominica                                          1.032e+01
## CountryDominican Republic                                 1.319e+01
## CountryEcuador                                            1.471e+01
## CountryEgypt                                              9.925e+00
## CountryEl Salvador                                        1.177e+01
## CountryEquatorial Guinea                                 -8.547e-01
## CountryEritrea                                            2.154e+00
## CountryEstonia                                            1.462e+01
## CountryEthiopia                                           7.812e+00
## CountryFiji                                               8.044e+00
## CountryFinland                                            2.013e+01
## CountryFrance                                             2.173e+01
## CountryGabon                                              6.347e+00
## CountryGambia                                             9.900e-01
## CountryGeorgia                                            1.374e+01
## CountryGermany                                            2.067e+01
## CountryGhana                                              3.201e+00
## CountryGreece                                             2.094e+01
## CountryGrenada                                            1.283e+01
## CountryGuatemala                                          1.241e+01
## CountryGuinea                                            -2.404e-01
## CountryGuinea-Bissau                                     -1.337e+00
## CountryGuyana                                             6.303e+00
## CountryHaiti                                              3.445e+00
## CountryHonduras                                           1.321e+01
## CountryHungary                                            1.358e+01
## CountryIceland                                            2.179e+01
## CountryIndia                                              4.635e+00
## CountryIndonesia                                          6.117e+00
## CountryIran (Islamic Republic of)                         1.247e+01
## CountryIraq                                               1.078e+01
## CountryIreland                                            2.008e+01
## CountryIsrael                                             2.087e+01
## CountryItaly                                              2.193e+01
## CountryJamaica                                            1.456e+01
## CountryJapan                                              2.220e+01
## CountryJordan                                             1.218e+01
## CountryKazakhstan                                         6.204e+00
## CountryKenya                                              3.553e+00
## CountryKiribati                                           5.579e+00
## CountryKuwait                                             1.290e+01
## CountryKyrgyzstan                                         8.636e+00
## CountryLao People's Democratic Republic                   3.573e+00
## CountryLatvia                                             1.342e+01
## CountryLebanon                                            1.455e+01
## CountryLesotho                                           -8.337e-01
## CountryLiberia                                           -3.579e-01
## CountryLibya                                              1.131e+01
## CountryLithuania                                          1.281e+01
## CountryLuxembourg                                         2.074e+01
## CountryMadagascar                                         4.644e+00
## CountryMalawi                                            -7.926e-01
## CountryMalaysia                                           1.285e+01
## CountryMaldives                                           1.458e+01
```

```
## CountryMali                                          9.828e-01
## CountryMalta                                         2.063e+01
## CountryMarshall Islands                              1.224e+01
## CountryMauritania                                    4.565e+00
## CountryMauritius                                     1.179e+01
## CountryMexico                                        1.468e+01
## CountryMicronesia (Federated States of)             8.919e+00
## CountryMonaco                                        1.006e+01
## CountryMongolia                                      5.524e+00
## CountryMontenegro                                    1.475e+01
## CountryMorocco                                       1.130e+01
## CountryMozambique                                    8.551e-01
## CountryMyanmar                                       4.883e+00
## CountryNamibia                                       5.882e+00
## CountryNauru                                         1.132e+01
## CountryNepal                                         6.316e+00
## CountryNetherlands                                   2.043e+01
## CountryNew Zealand                                   2.100e+01
## CountryNicaragua                                     1.357e+01
## CountryNiger                                         5.257e+00
## CountryNigeria                                       1.036e+01
## CountryNiue                                          1.039e+01
## CountryNorway                                        2.130e+01
## CountryOman                                          1.401e+01
## CountryPakistan                                      1.933e+00
## CountryPalau                                         1.028e+01
## CountryPanama                                        1.675e+01
## CountryPapua New Guinea                              3.787e+00
## CountryParaguay                                      1.330e+01
## CountryPeru                                          1.369e+01
## CountryPhilippines                                   7.330e+00
## CountryPoland                                        1.527e+01
## CountryPortugal                                      1.996e+01
## CountryQatar                                         1.629e+01
## CountryRepublic of Korea                             2.076e+01
## CountryRepublic of Moldova                           1.009e+01
## CountryRomania                                       1.370e+01
## CountryRussian Federation                            7.516e+00
## CountryRwanda                                        2.427e+00
## CountrySaint Kitts and Nevis                         1.063e+01
## CountrySaint Lucia                                   1.383e+01
## CountrySaint Vincent and the Grenadines              1.303e+01
## CountrySamoa                                         1.459e+01
## CountrySan Marino                                    1.122e+01
## CountrySao Tome and Principe                         5.434e+00
## CountrySaudi Arabia                                  1.249e+01
## CountrySenegal                                       4.657e+00
## CountrySerbia                                        1.377e+01
## CountrySeychelles                                    1.165e+01
## CountrySierra Leone                                 -1.009e+01
## CountrySingapore                                     2.083e+01
## CountrySlovakia                                      1.461e+01
## CountrySlovenia                                      1.953e+01
## CountrySolomon Islands                               8.326e+00
```

```
## CountrySomalia                                               -2.723e+00
## CountrySouth Africa                                            6.124e+00
## CountrySouth Sudan                                            -1.297e+00
## CountrySpain                                                   2.177e+01
## CountrySri Lanka                                               1.189e+01
## CountrySudan                                                   4.877e+00
## CountrySuriname                                                1.090e+01
## CountrySwaziland                                               5.337e-01
## CountrySweden                                                  2.187e+01
## CountrySwitzerland                                             2.200e+01
## CountrySyrian Arab Republic                                    1.113e+01
## CountryTajikistan                                              6.553e+00
## CountryThailand                                                1.210e+01
## CountryThe former Yugoslav republic of Macedonia              1.415e+01
## CountryTimor-Leste                                             4.771e+00
## CountryTogo                                                   -4.677e-01
## CountryTonga                                                   1.264e+01
## CountryTrinidad and Tobago                                     1.126e+01
## CountryTunisia                                                 1.377e+01
## CountryTurkey                                                  1.328e+01
## CountryTurkmenistan                                            4.262e+00
## CountryTuvalu                                                  1.234e+01
## CountryUganda                                                  4.327e+00
## CountryUkraine                                                 1.032e+01
## CountryUnited Arab Emirates                                    1.505e+01
## CountryUnited Kingdom of Great Britain and Northern Ireland    2.144e+01
## CountryUnited Republic of Tanzania                             2.276e+00
## CountryUnited States of America                                1.762e+01
## CountryUruguay                                                 1.572e+01
## CountryUzbekistan                                              7.007e+00
## CountryVanuatu                                                 1.242e+01
## CountryVenezuela (Bolivarian Republic of)                      1.380e+01
## CountryViet Nam                                                1.378e+01
## CountryYemen                                                   4.465e+00
## CountryZambia                                                  1.400e+00
## CountryZimbabwe                                                1.613e+00
## Year                                                           2.288e-01
## HIV.AIDS                                                      -4.315e-01
## Schooling                                                      9.682e-02
## Diphtheria                                                    -4.140e-02
## Adult.Mortality                                                7.489e-03
## under.five.deaths                                             -1.710e-01
## infant.deaths                                                  2.256e-01
## Measles                                                       -1.264e-05
## Alcohol                                                       -3.213e-02
## Polio                                                         -1.202e-02
## thinness.5.9.years                                             6.002e-02
## Total.expenditure                                             -1.412e-01
## percentage.expenditure                                         8.584e-05
## I(HIV.AIDS^2)                                                  4.909e-03
## I(Schooling^2)                                                 1.424e-03
## I(Diphtheria^2)                                                4.520e-04
## I(Adult.Mortality^2)                                          -2.184e-05
## I(under.five.deaths^2)                                         4.382e-05
```

```
## I(infant.deaths^2)                                          -7.628e-05
## I(Measles^2)                                                 4.651e-11
## I(Alcohol^2)                                                -2.155e-03
## I(Polio^2)                                                   1.476e-04
## I(thinness.5.9.years^2)                                     -3.394e-04
## I(Total.expenditure^2)                                       8.042e-03
## I(percentage.expenditure^2)                                 -3.769e-09
##                                                             Std. Error t value
## (Intercept)                                                 2.081e+01 -19.267
## CountryAlbania                                              8.329e-01  18.257
## CountryAlgeria                                              7.981e-01  15.859
## CountryAngola                                               7.753e-01  -5.852
## CountryAntigua and Barbuda                                  8.622e-01  17.538
## CountryArgentina                                            8.985e-01  16.174
## CountryArmenia                                              8.163e-01  16.373
## CountryAustralia                                            1.121e+00  18.914
## CountryAustria                                              9.043e-01  23.856
## CountryAzerbaijan                                           7.908e-01  13.974
## CountryBahamas                                              8.373e-01  17.273
## CountryBahrain                                              8.678e-01  17.119
## CountryBangladesh                                           7.528e-01  11.371
## CountryBarbados                                             8.756e-01  16.564
## CountryBelarus                                              8.920e-01  11.187
## CountryBelgium                                              9.417e-01  21.548
## CountryBelize                                               8.386e-01  10.983
## CountryBenin                                                7.746e-01   0.125
## CountryBhutan                                               7.293e-01   7.548
## CountryBolivia (Plurinational State of)                     8.121e-01   9.604
## CountryBosnia and Herzegovina                               8.264e-01  19.930
## CountryBotswana                                             8.891e-01   3.331
## CountryBrazil                                               8.266e-01  13.080
## CountryBrunei Darussalam                                    8.679e-01  17.870
## CountryBulgaria                                             8.494e-01  15.311
## CountryBurkina Faso                                         8.119e-01   1.520
## CountryBurundi                                              7.932e-01  -1.749
## CountryCÃ´te d'Ivoire                                       7.711e-01  -6.284
## CountryCabo Verde                                           8.324e-01  14.764
## CountryCambodia                                             7.513e-01   6.354
## CountryCameroon                                             7.924e-01   0.355
## CountryCanada                                               8.969e-01  23.805
## CountryCentral African Republic                             8.289e-01  -5.804
## CountryChad                                                 7.901e-01  -3.454
## CountryChile                                                8.609e-01  22.529
## CountryChina                                                1.349e+00   7.056
## CountryColombia                                             7.924e-01  16.674
## CountryComoros                                              8.025e-01   2.580
## CountryCongo                                                8.204e-01   2.908
## CountryCook Islands                                         1.893e+00   5.419
## CountryCosta Rica                                           8.193e-01  23.032
## CountryCroatia                                              8.626e-01  18.969
## CountryCuba                                                 8.751e-01  20.004
## CountryCyprus                                               8.506e-01  23.304
## CountryCzechia                                              8.567e-01  20.129
## CountryDemocratic People's Republic of Korea                8.222e-01  10.965
```

```
## CountryDemocratic Republic of the Congo          9.472e-01  -0.679
## CountryDenmark                                    9.564e-01  19.765
## CountryDjibouti                                   8.282e-01   4.383
## CountryDominica                                   1.894e+00   5.448
## CountryDominican Republic                         8.211e-01  16.066
## CountryEcuador                                    8.060e-01  18.253
## CountryEgypt                                      7.563e-01  13.123
## CountryEl Salvador                                8.094e-01  14.546
## CountryEquatorial Guinea                          8.275e-01  -1.033
## CountryEritrea                                    8.105e-01   2.658
## CountryEstonia                                    9.026e-01  16.197
## CountryEthiopia                                   8.851e-01   8.826
## CountryFiji                                       8.561e-01   9.396
## CountryFinland                                    9.559e-01  21.061
## CountryFrance                                     9.157e-01  23.733
## CountryGabon                                      8.774e-01   7.234
## CountryGambia                                     8.124e-01   1.219
## CountryGeorgia                                    8.230e-01  16.692
## CountryGermany                                    9.395e-01  22.002
## CountryGhana                                      7.677e-01   4.169
## CountryGreece                                     8.994e-01  23.277
## CountryGrenada                                    8.879e-01  14.444
## CountryGuatemala                                  7.694e-01  16.134
## CountryGuinea                                     7.674e-01  -0.313
## CountryGuinea-Bissau                              8.179e-01  -1.635
## CountryGuyana                                     8.309e-01   7.587
## CountryHaiti                                      7.940e-01   4.338
## CountryHonduras                                   8.047e-01  16.416
## CountryHungary                                    8.850e-01  15.344
## CountryIceland                                    1.000e+00  21.784
## CountryIndia                                      3.219e+00   1.440
## CountryIndonesia                                  8.320e-01   7.353
## CountryIran (Islamic Republic of)                 7.965e-01  15.660
## CountryIraq                                       7.524e-01  14.322
## CountryIreland                                    9.777e-01  20.538
## CountryIsrael                                     8.763e-01  23.811
## CountryItaly                                      8.972e-01  24.446
## CountryJamaica                                    8.211e-01  17.737
## CountryJapan                                      8.791e-01  25.246
## CountryJordan                                     8.257e-01  14.755
## CountryKazakhstan                                 8.475e-01   7.321
## CountryKenya                                      7.895e-01   4.500
## CountryKiribati                                   8.033e-01   6.946
## CountryKuwait                                     8.542e-01  15.106
## CountryKyrgyzstan                                 8.169e-01  10.573
## CountryLao People's Democratic Republic           7.774e-01   4.597
## CountryLatvia                                     8.880e-01  15.109
## CountryLebanon                                    8.372e-01  17.379
## CountryLesotho                                    9.258e-01  -0.900
## CountryLiberia                                    8.016e-01  -0.447
## CountryLibya                                      8.690e-01  13.012
## CountryLithuania                                  9.210e-01  13.911
## CountryLuxembourg                                 8.843e-01  23.456
## CountryMadagascar                                 7.579e-01   6.128
```

```
## CountryMalawi                                      8.773e-01  -0.904
## CountryMalaysia                                     8.289e-01  15.497
## CountryMaldives                                     7.783e-01  18.731
## CountryMali                                         7.922e-01   1.241
## CountryMalta                                        8.484e-01  24.314
## CountryMarshall Islands                             2.065e+00   5.926
## CountryMauritania                                   7.882e-01   5.792
## CountryMauritius                                    8.520e-01  13.839
## CountryMexico                                       7.768e-01  18.894
## CountryMicronesia (Federated States of)            8.116e-01  10.990
## CountryMonaco                                       1.898e+00   5.304
## CountryMongolia                                     8.251e-01   6.695
## CountryMontenegro                                   8.284e-01  17.806
## CountryMorocco                                      7.863e-01  14.376
## CountryMozambique                                   8.074e-01   1.059
## CountryMyanmar                                      6.977e-01   6.999
## CountryNamibia                                      8.469e-01   6.946
## CountryNauru                                        1.884e+00   6.007
## CountryNepal                                        6.739e-01   9.373
## CountryNetherlands                                  9.457e-01  21.607
## CountryNew Zealand                                  1.036e+00  20.272
## CountryNicaragua                                    8.029e-01  16.902
## CountryNiger                                        8.767e-01   5.996
## CountryNigeria                                      1.880e+00   5.512
## CountryNiue                                         1.891e+00   5.497
## CountryNorway                                       9.591e-01  22.210
## CountryOman                                         8.444e-01  16.589
## CountryPakistan                                     1.431e+00   1.351
## CountryPalau                                        1.903e+00   5.399
## CountryPanama                                       8.243e-01  20.324
## CountryPapua New Guinea                             7.683e-01   4.929
## CountryParaguay                                     8.112e-01  16.400
## CountryPeru                                         8.077e-01  16.946
## CountryPhilippines                                  7.468e-01   9.814
## CountryPoland                                       8.842e-01  17.268
## CountryPortugal                                     9.087e-01  21.963
## CountryQatar                                        8.499e-01  19.171
## CountryRepublic of Korea                            8.282e-01  25.060
## CountryRepublic of Moldova                          8.378e-01  12.039
## CountryRomania                                      8.535e-01  16.055
## CountryRussian Federation                           8.324e-01   9.028
## CountryRwanda                                       8.120e-01   2.989
## CountrySaint Kitts and Nevis                        1.908e+00   5.571
## CountrySaint Lucia                                  8.489e-01  16.289
## CountrySaint Vincent and the Grenadines             8.514e-01  15.307
## CountrySamoa                                        8.030e-01  18.168
## CountrySan Marino                                   1.907e+00   5.884
## CountrySao Tome and Principe                        8.265e-01   6.575
## CountrySaudi Arabia                                 8.360e-01  14.940
## CountrySenegal                                      7.595e-01   6.131
## CountrySerbia                                       8.460e-01  16.277
## CountrySeychelles                                   8.534e-01  13.656
## CountrySierra Leone                                 7.859e-01 -12.841
## CountrySingapore                                    8.527e-01  24.432
```

```
## CountrySlovakia                                                    8.653e-01  16.887
## CountrySlovenia                                                    9.221e-01  21.184
## CountrySolomon Islands                                             7.944e-01  10.482
## CountrySomalia                                                     7.832e-01  -3.477
## CountrySouth Africa                                                8.182e-01   7.484
## CountrySouth Sudan                                                 8.486e-01  -1.528
## CountrySpain                                                       9.112e-01  23.888
## CountrySri Lanka                                                   7.786e-01  15.270
## CountrySudan                                                       7.444e-01   6.552
## CountrySuriname                                                    8.180e-01  13.323
## CountrySwaziland                                                   9.577e-01   0.557
## CountrySweden                                                      9.093e-01  24.049
## CountrySwitzerland                                                 9.300e-01  23.658
## CountrySyrian Arab Republic                                        7.989e-01  13.930
## CountryTajikistan                                                  7.851e-01   8.347
## CountryThailand                                                    8.305e-01  14.570
## CountryThe former Yugoslav republic of Macedonia                   8.213e-01  17.223
## CountryTimor-Leste                                                 7.971e-01   5.985
## CountryTogo                                                        7.985e-01  -0.586
## CountryTonga                                                       8.255e-01  15.312
## CountryTrinidad and Tobago                                         8.386e-01  13.431
## CountryTunisia                                                     8.582e-01  16.051
## CountryTurkey                                                      7.860e-01  16.892
## CountryTurkmenistan                                                8.122e-01   5.248
## CountryTuvalu                                                      2.041e+00   6.047
## CountryUganda                                                      8.072e-01   5.361
## CountryUkraine                                                     8.490e-01  12.160
## CountryUnited Arab Emirates                                        8.459e-01  17.788
## CountryUnited Kingdom of Great Britain and Northern Ireland        8.266e-01  25.934
## CountryUnited Republic of Tanzania                                 8.096e-01   2.811
## CountryUnited States of America                                    9.569e-01  18.411
## CountryUruguay                                                     8.719e-01  18.033
## CountryUzbekistan                                                  7.842e-01   8.935
## CountryVanuatu                                                     7.953e-01  15.612
## CountryVenezuela (Bolivarian Republic of)                          8.064e-01  17.114
## CountryViet Nam                                                    7.131e-01  19.323
## CountryYemen                                                       6.888e-01   6.482
## CountryZambia                                                      8.430e-01   1.661
## CountryZimbabwe                                                    8.770e-01   1.839
## Year                                                               1.034e-02  22.126
## HIV.AIDS                                                           4.134e-02 -10.438
## Schooling                                                          8.237e-02   1.175
## Diphtheria                                                         1.151e-02  -3.596
## Adult.Mortality                                                    1.008e-03   7.426
## under.five.deaths                                                  1.492e-02 -11.457
## infant.deaths                                                      2.151e-02  10.488
## Measles                                                            8.792e-06  -1.438
## Alcohol                                                            5.015e-02  -0.641
## Polio                                                              1.138e-02  -1.056
## thinness.5.9.years                                                 5.777e-02   1.039
## Total.expenditure                                                  8.009e-02  -1.763
## percentage.expenditure                                             5.299e-05   1.620
## I(HIV.AIDS^2)                                                      8.690e-04   5.649
## I(Schooling^2)                                                     4.683e-03   0.304
```

```
## I(Diphtheria^2)                                    1.219e-04   3.707
## I(Adult.Mortality^2)                               2.248e-06  -9.717
## I(under.five.deaths^2)                             4.784e-06   9.161
## I(infant.deaths^2)                                 9.106e-06  -8.377
## I(Measles^2)                                       5.703e-11   0.816
## I(Alcohol^2)                                       3.932e-03  -0.548
## I(Polio^2)                                         1.209e-04   1.221
## I(thinness.5.9.years^2)                            3.301e-03  -0.103
## I(Total.expenditure^2)                             6.140e-03   1.310
## I(percentage.expenditure^2)                        3.965e-09  -0.951
##                                                    Pr(>|t|)
## (Intercept)                                        < 2e-16 ***
## CountryAlbania                                     < 2e-16 ***
## CountryAlgeria                                     < 2e-16 ***
## CountryAngola                                      5.43e-09 ***
## CountryAntigua and Barbuda                         < 2e-16 ***
## CountryArgentina                                   < 2e-16 ***
## CountryArmenia                                     < 2e-16 ***
## CountryAustralia                                   < 2e-16 ***
## CountryAustria                                     < 2e-16 ***
## CountryAzerbaijan                                  < 2e-16 ***
## CountryBahamas                                     < 2e-16 ***
## CountryBahrain                                     < 2e-16 ***
## CountryBangladesh                                  < 2e-16 ***
## CountryBarbados                                    < 2e-16 ***
## CountryBelarus                                     < 2e-16 ***
## CountryBelgium                                     < 2e-16 ***
## CountryBelize                                      < 2e-16 ***
## CountryBenin                                       0.900208
## CountryBhutan                                      6.01e-14 ***
## CountryBolivia (Plurinational State of)            < 2e-16 ***
## CountryBosnia and Herzegovina                      < 2e-16 ***
## CountryBotswana                                    0.000877 ***
## CountryBrazil                                      < 2e-16 ***
## CountryBrunei Darussalam                           < 2e-16 ***
## CountryBulgaria                                    < 2e-16 ***
## CountryBurkina Faso                                0.128578
## CountryBurundi                                     0.080422 .
## CountryCÃ´te d'Ivoire                              3.84e-10 ***
## CountryCabo Verde                                  < 2e-16 ***
## CountryCambodia                                    2.45e-10 ***
## CountryCameroon                                    0.722968
## CountryCanada                                      < 2e-16 ***
## CountryCentral African Republic                    7.23e-09 ***
## CountryChad                                        0.000560 ***
## CountryChile                                       < 2e-16 ***
## CountryChina                                       2.16e-12 ***
## CountryColombia                                    < 2e-16 ***
## CountryComoros                                     0.009927 **
## CountryCongo                                       0.003666 **
## CountryCook Islands                                6.52e-08 ***
## CountryCosta Rica                                  < 2e-16 ***
## CountryCroatia                                     < 2e-16 ***
## CountryCuba                                        < 2e-16 ***
```

```
## CountryCyprus                                      < 2e-16 ***
## CountryCzechia                                      < 2e-16 ***
## CountryDemocratic People's Republic of Korea        < 2e-16 ***
## CountryDemocratic Republic of the Congo             0.497338
## CountryDenmark                                       < 2e-16 ***
## CountryDjibouti                                      1.21e-05 ***
## CountryDominica                                      5.54e-08 ***
## CountryDominican Republic                            < 2e-16 ***
## CountryEcuador                                       < 2e-16 ***
## CountryEgypt                                         < 2e-16 ***
## CountryEl Salvador                                   < 2e-16 ***
## CountryEquatorial Guinea                             0.301739
## CountryEritrea                                       0.007915 **
## CountryEstonia                                       < 2e-16 ***
## CountryEthiopia                                      < 2e-16 ***
## CountryFiji                                          < 2e-16 ***
## CountryFinland                                       < 2e-16 ***
## CountryFrance                                        < 2e-16 ***
## CountryGabon                                         6.05e-13 ***
## CountryGambia                                        0.223113
## CountryGeorgia                                       < 2e-16 ***
## CountryGermany                                       < 2e-16 ***
## CountryGhana                                         3.15e-05 ***
## CountryGreece                                        < 2e-16 ***
## CountryGrenada                                       < 2e-16 ***
## CountryGuatemala                                     < 2e-16 ***
## CountryGuinea                                        0.754077
## CountryGuinea-Bissau                                 0.102236
## CountryGuyana                                        4.48e-14 ***
## CountryHaiti                                         1.49e-05 ***
## CountryHonduras                                      < 2e-16 ***
## CountryHungary                                       < 2e-16 ***
## CountryIceland                                       < 2e-16 ***
## CountryIndia                                         0.150000
## CountryIndonesia                                     2.55e-13 ***
## CountryIran (Islamic Republic of)                    < 2e-16 ***
## CountryIraq                                          < 2e-16 ***
## CountryIreland                                       < 2e-16 ***
## CountryIsrael                                        < 2e-16 ***
## CountryItaly                                         < 2e-16 ***
## CountryJamaica                                       < 2e-16 ***
## CountryJapan                                         < 2e-16 ***
## CountryJordan                                        < 2e-16 ***
## CountryKazakhstan                                    3.24e-13 ***
## CountryKenya                                         7.08e-06 ***
## CountryKiribati                                      4.70e-12 ***
## CountryKuwait                                        < 2e-16 ***
## CountryKyrgyzstan                                    < 2e-16 ***
## CountryLao People's Democratic Republic              4.49e-06 ***
## CountryLatvia                                        < 2e-16 ***
## CountryLebanon                                       < 2e-16 ***
## CountryLesotho                                       0.367957
## CountryLiberia                                       0.655263
## CountryLibya                                         < 2e-16 ***
```

```
## CountryLithuania                                 < 2e-16 ***
## CountryLuxembourg                                 < 2e-16 ***
## CountryMadagascar                                1.02e-09 ***
## CountryMalawi                                    0.366329
## CountryMalaysia                                   < 2e-16 ***
## CountryMaldives                                   < 2e-16 ***
## CountryMali                                       0.214856
## CountryMalta                                      < 2e-16 ***
## CountryMarshall Islands                          3.51e-09 ***
## CountryMauritania                                7.76e-09 ***
## CountryMauritius                                  < 2e-16 ***
## CountryMexico                                     < 2e-16 ***
## CountryMicronesia (Federated States of)          < 2e-16 ***
## CountryMonaco                                    1.23e-07 ***
## CountryMongolia                                  2.62e-11 ***
## CountryMontenegro                                 < 2e-16 ***
## CountryMorocco                                    < 2e-16 ***
## CountryMozambique                                0.289655
## CountryMyanmar                                   3.24e-12 ***
## CountryNamibia                                   4.69e-12 ***
## CountryNauru                                     2.14e-09 ***
## CountryNepal                                      < 2e-16 ***
## CountryNetherlands                                < 2e-16 ***
## CountryNew Zealand                                < 2e-16 ***
## CountryNicaragua                                  < 2e-16 ***
## CountryNiger                                     2.29e-09 ***
## CountryNigeria                                   3.87e-08 ***
## CountryNiue                                      4.23e-08 ***
## CountryNorway                                     < 2e-16 ***
## CountryOman                                       < 2e-16 ***
## CountryPakistan                                  0.176751
## CountryPalau                                     7.27e-08 ***
## CountryPanama                                     < 2e-16 ***
## CountryPapua New Guinea                          8.76e-07 ***
## CountryParaguay                                   < 2e-16 ***
## CountryPeru                                       < 2e-16 ***
## CountryPhilippines                                < 2e-16 ***
## CountryPoland                                     < 2e-16 ***
## CountryPortugal                                   < 2e-16 ***
## CountryQatar                                      < 2e-16 ***
## CountryRepublic of Korea                          < 2e-16 ***
## CountryRepublic of Moldova                        < 2e-16 ***
## CountryRomania                                    < 2e-16 ***
## CountryRussian Federation                         < 2e-16 ***
## CountryRwanda                                    0.002823 **
## CountrySaint Kitts and Nevis                     2.78e-08 ***
## CountrySaint Lucia                                < 2e-16 ***
## CountrySaint Vincent and the Grenadines           < 2e-16 ***
## CountrySamoa                                      < 2e-16 ***
## CountrySan Marino                                4.51e-09 ***
## CountrySao Tome and Principe                     5.80e-11 ***
## CountrySaudi Arabia                               < 2e-16 ***
## CountrySenegal                                   9.98e-10 ***
## CountrySerbia                                     < 2e-16 ***
```

```
## CountrySeychelles                                               < 2e-16 ***
## CountrySierra Leone                                             < 2e-16 ***
## CountrySingapore                                                < 2e-16 ***
## CountrySlovakia                                                 < 2e-16 ***
## CountrySlovenia                                                 < 2e-16 ***
## CountrySolomon Islands                                          < 2e-16 ***
## CountrySomalia                                                  0.000515 ***
## CountrySouth Africa                                             9.67e-14 ***
## CountrySouth Sudan                                              0.126553
## CountrySpain                                                    < 2e-16 ***
## CountrySri Lanka                                                < 2e-16 ***
## CountrySudan                                                    6.78e-11 ***
## CountrySuriname                                                 < 2e-16 ***
## CountrySwaziland                                                0.577402
## CountrySweden                                                   < 2e-16 ***
## CountrySwitzerland                                              < 2e-16 ***
## CountrySyrian Arab Republic                                     < 2e-16 ***
## CountryTajikistan                                               < 2e-16 ***
## CountryThailand                                                 < 2e-16 ***
## CountryThe former Yugoslav republic of Macedonia               < 2e-16 ***
## CountryTimor-Leste                                              2.44e-09 ***
## CountryTogo                                                     0.558088
## CountryTonga                                                    < 2e-16 ***
## CountryTrinidad and Tobago                                      < 2e-16 ***
## CountryTunisia                                                  < 2e-16 ***
## CountryTurkey                                                   < 2e-16 ***
## CountryTurkmenistan                                             1.66e-07 ***
## CountryTuvalu                                                   1.68e-09 ***
## CountryUganda                                                   8.97e-08 ***
## CountryUkraine                                                  < 2e-16 ***
## CountryUnited Arab Emirates                                     < 2e-16 ***
## CountryUnited Kingdom of Great Britain and Northern Ireland  < 2e-16 ***
## CountryUnited Republic of Tanzania                             0.004981 **
## CountryUnited States of America                                < 2e-16 ***
## CountryUruguay                                                  < 2e-16 ***
## CountryUzbekistan                                               < 2e-16 ***
## CountryVanuatu                                                  < 2e-16 ***
## CountryVenezuela (Bolivarian Republic of)                      < 2e-16 ***
## CountryViet Nam                                                 < 2e-16 ***
## CountryYemen                                                    1.07e-10 ***
## CountryZambia                                                   0.096855 .
## CountryZimbabwe                                                 0.066029 .
## Year                                                            < 2e-16 ***
## HIV.AIDS                                                        < 2e-16 ***
## Schooling                                                       0.239939
## Diphtheria                                                      0.000329 ***
## Adult.Mortality                                                 1.49e-13 ***
## under.five.deaths                                               < 2e-16 ***
## infant.deaths                                                   < 2e-16 ***
## Measles                                                         0.150627
## Alcohol                                                         0.521783
## Polio                                                           0.291091
## thinness.5.9.years                                              0.298965
## Total.expenditure                                               0.077951 .
```

```
## percentage.expenditure                              0.105370
## I(HIV.AIDS^2)                                        1.78e-08 ***
## I(Schooling^2)                                       0.761076
## I(Diphtheria^2)                                      0.000214 ***
## I(Adult.Mortality^2)                                  < 2e-16 ***
## I(under.five.deaths^2)                                < 2e-16 ***
## I(infant.deaths^2)                                    < 2e-16 ***
## I(Measles^2)                                         0.414854
## I(Alcohol^2)                                         0.583639
## I(Polio^2)                                           0.222147
## I(thinness.5.9.years^2)                              0.918135
## I(Total.expenditure^2)                               0.190385
## I(percentage.expenditure^2)                          0.341914
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.768 on 2720 degrees of freedom
## Multiple R-squared:  0.968,  Adjusted R-squared:  0.9654
## F-statistic: 378.9 on 217 and 2720 DF,  p-value: < 2.2e-16
```

```r
# Residual plot
par(mfrow=c(1,2))
plot(resid(lm_quadratic)~fitted(lm_quadratic), col = "grey", pch = 20,
     xlab = "Fitted", ylab = "Residuals", main = "Fitted versus Residuals")
abline(h = 0, col = "darkorange", lwd = 2)

# Normal qq plot
qqnorm(resid(lm_quadratic), main = "Normal Q-Q Plot", col = "darkgrey")
qqline(resid(lm_quadratic), col = "dodgerblue", lwd = 2)
```
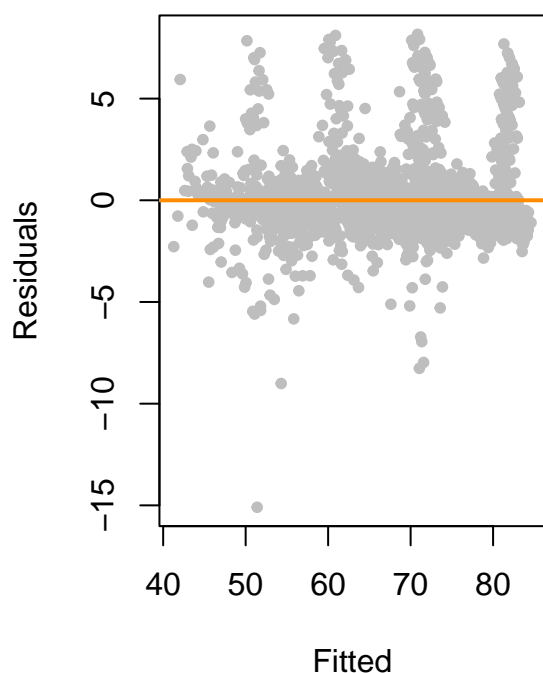
Fitted versus Residuals   **Normal Q–Q Plot**
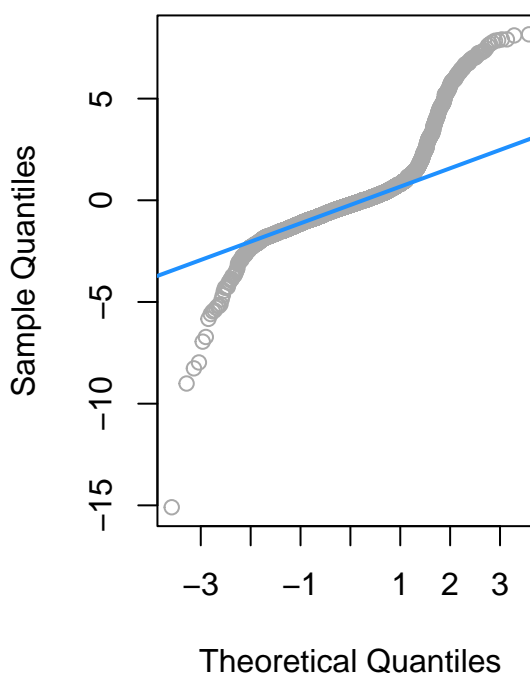
```
# cubic model
lm_cubic <- lm(Life.expectancy ~ Country + Year + HIV.AIDS + Schooling +
    Diphtheria + Adult.Mortality + under.five.deaths + infant.deaths +
    Measles + Alcohol + Polio + thinness.5.9.years + Total.expenditure +
    percentage.expenditure + I(HIV.AIDS^2) + I(Schooling^2) + I(Diphtheria^2)
    + I(Adult.Mortality^2) + I(under.five.deaths^2) + I(infant.deaths^2) + I(Measles^2) + I(Alcohol^2) +
    + I(HIV.AIDS^3) + I(Schooling^3) + I(Diphtheria^3)
    + I(Adult.Mortality^3) + I(under.five.deaths^3) + I(infant.deaths^3) + I(Measles^3) + I(Alcohol^3) +
summary(lm_cubic)
```

```
##
## Call:
## lm(formula = Life.expectancy ~ Country + Year + HIV.AIDS + Schooling +
##     Diphtheria + Adult.Mortality + under.five.deaths + infant.deaths +
##     Measles + Alcohol + Polio + thinness.5.9.years + Total.expenditure +
##     percentage.expenditure + I(HIV.AIDS^2) + I(Schooling^2) +
##     I(Diphtheria^2) + I(Adult.Mortality^2) + I(under.five.deaths^2) +
##     I(infant.deaths^2) + I(Measles^2) + I(Alcohol^2) + I(Polio^2) +
##     I(thinness.5.9.years^2) + I(Total.expenditure^2) + I(percentage.expenditure^2) +
##     I(HIV.AIDS^3) + I(Schooling^3) + I(Diphtheria^3) + I(Adult.Mortality^3) +
##     I(under.five.deaths^3) + I(infant.deaths^3) + I(Measles^3) +
##     I(Alcohol^3) + I(Polio^3) + I(thinness.5.9.years^3) + I(Total.expenditure^3) +
##     I(percentage.expenditure^3), data = dataLife)
##
## Residuals:
##     Min      1Q   Median      3Q      Max
```

```
## -12.6332  -0.8243  -0.2088   0.3708   8.1634
##
## Coefficients:
##                                                   Estimate
## (Intercept)                                      -3.883e+02
## CountryAlbania                                    1.478e+01
## CountryAlgeria                                    1.207e+01
## CountryAngola                                    -3.586e+00
## CountryAntigua and Barbuda                        1.450e+01
## CountryArgentina                                  1.365e+01
## CountryArmenia                                    1.290e+01
## CountryAustralia                                  1.951e+01
## CountryAustria                                    2.064e+01
## CountryAzerbaijan                                 1.037e+01
## CountryBahamas                                    1.370e+01
## CountryBahrain                                    1.456e+01
## CountryBangladesh                                 9.110e+00
## CountryBarbados                                   1.366e+01
## CountryBelarus                                    9.550e+00
## CountryBelgium                                    1.943e+01
## CountryBelize                                     8.703e+00
## CountryBenin                                     -2.753e-02
## CountryBhutan                                     5.010e+00
## CountryBolivia (Plurinational State of)           7.350e+00
## CountryBosnia and Herzegovina                     1.578e+01
## CountryBotswana                                   2.691e+00
## CountryBrazil                                     1.025e+01
## CountryBrunei Darussalam                          1.505e+01
## CountryBulgaria                                   1.219e+01
## CountryBurkina Faso                               1.862e+00
## CountryBurundi                                   -1.594e+00
## CountryCÃ´te d'Ivoire                            -4.377e+00
## CountryCabo Verde                                 1.193e+01
## CountryCambodia                                   4.271e+00
## CountryCameroon                                   1.072e+00
## CountryCanada                                     2.045e+01
## CountryCentral African Republic                  -4.694e+00
## CountryChad                                      -1.608e+00
## CountryChile                                      1.872e+01
## CountryChina                                      9.867e+00
## CountryColombia                                   1.270e+01
## CountryComoros                                    1.086e+00
## CountryCongo                                      2.218e+00
## CountryCook Islands                               9.901e+00
## CountryCosta Rica                                 1.830e+01
## CountryCroatia                                    1.574e+01
## CountryCuba                                       1.688e+01
## CountryCyprus                                     1.922e+01
## CountryCzechia                                    1.672e+01
## CountryDemocratic People's Republic of Korea      8.538e+00
## CountryDemocratic Republic of the Congo           6.303e-01
## CountryDenmark                                    1.779e+01
## CountryDjibouti                                   2.831e+00
## CountryDominica                                   9.851e+00
```

```
## CountryDominican Republic                                   1.274e+01
## CountryEcuador                                              1.428e+01
## CountryEgypt                                                9.637e+00
## CountryEl Salvador                                          1.131e+01
## CountryEquatorial Guinea                                   -1.152e+00
## CountryEritrea                                              1.262e+00
## CountryEstonia                                              1.432e+01
## CountryEthiopia                                             9.538e+00
## CountryFiji                                                 7.572e+00
## CountryFinland                                              1.924e+01
## CountryFrance                                               2.108e+01
## CountryGabon                                                6.192e+00
## CountryGambia                                               6.414e-01
## CountryGeorgia                                              1.303e+01
## CountryGermany                                              1.977e+01
## CountryGhana                                                3.496e+00
## CountryGreece                                               2.020e+01
## CountryGrenada                                              1.208e+01
## CountryGuatemala                                            1.184e+01
## CountryGuinea                                              -2.708e-01
## CountryGuinea-Bissau                                       -1.464e+00
## CountryGuyana                                               5.643e+00
## CountryHaiti                                                3.307e+00
## CountryHonduras                                             1.291e+01
## CountryHungary                                              1.300e+01
## CountryIceland                                              2.069e+01
## CountryIndia                                                2.899e+00
## CountryIndonesia                                            5.922e+00
## CountryIran (Islamic Republic of)                          1.204e+01
## CountryIraq                                                 1.002e+01
## CountryIreland                                              1.914e+01
## CountryIsrael                                               2.038e+01
## CountryItaly                                                2.110e+01
## CountryJamaica                                              1.440e+01
## CountryJapan                                                2.152e+01
## CountryJordan                                               1.168e+01
## CountryKazakhstan                                           5.477e+00
## CountryKenya                                                4.331e+00
## CountryKiribati                                             4.789e+00
## CountryKuwait                                               1.256e+01
## CountryKyrgyzstan                                           8.149e+00
## CountryLao People's Democratic Republic                    2.929e+00
## CountryLatvia                                               1.259e+01
## CountryLebanon                                              1.384e+01
## CountryLesotho                                             -1.524e+00
## CountryLiberia                                             -7.098e-01
## CountryLibya                                                1.077e+01
## CountryLithuania                                            1.206e+01
## CountryLuxembourg                                           2.023e+01
## CountryMadagascar                                           4.349e+00
## CountryMalawi                                              -5.608e-01
## CountryMalaysia                                             1.244e+01
## CountryMaldives                                             1.434e+01
## CountryMali                                                 1.830e+00
```

```
## CountryMalta                                              1.995e+01
## CountryMarshall Islands                                   1.213e+01
## CountryMauritania                                         3.881e+00
## CountryMauritius                                          1.144e+01
## CountryMexico                                             1.436e+01
## CountryMicronesia (Federated States of)                  8.288e+00
## CountryMonaco                                             9.697e+00
## CountryMongolia                                           4.959e+00
## CountryMontenegro                                         1.403e+01
## CountryMorocco                                            1.079e+01
## CountryMozambique                                         1.489e+00
## CountryMyanmar                                            4.613e+00
## CountryNamibia                                            5.092e+00
## CountryNauru                                              1.058e+01
## CountryNepal                                              5.960e+00
## CountryNetherlands                                        1.949e+01
## CountryNew Zealand                                        1.961e+01
## CountryNicaragua                                          1.311e+01
## CountryNiger                                              6.546e+00
## CountryNigeria                                            8.309e+00
## CountryNiue                                               1.003e+01
## CountryNorway                                             2.038e+01
## CountryOman                                               1.355e+01
## CountryPakistan                                           2.749e+00
## CountryPalau                                              1.004e+01
## CountryPanama                                             1.618e+01
## CountryPapua New Guinea                                   2.980e+00
## CountryParaguay                                           1.263e+01
## CountryPeru                                               1.340e+01
## CountryPhilippines                                        7.080e+00
## CountryPoland                                             1.461e+01
## CountryPortugal                                           1.925e+01
## CountryQatar                                              1.588e+01
## CountryRepublic of Korea                                  2.007e+01
## CountryRepublic of Moldova                                9.143e+00
## CountryRomania                                            1.299e+01
## CountryRussian Federation                                 6.671e+00
## CountryRwanda                                             2.423e+00
## CountrySaint Kitts and Nevis                              9.969e+00
## CountrySaint Lucia                                        1.311e+01
## CountrySaint Vincent and the Grenadines                   1.261e+01
## CountrySamoa                                              1.419e+01
## CountrySan Marino                                         1.046e+01
## CountrySao Tome and Principe                              4.865e+00
## CountrySaudi Arabia                                       1.196e+01
## CountrySenegal                                            4.395e+00
## CountrySerbia                                             1.299e+01
## CountrySeychelles                                         1.112e+01
## CountrySierra Leone                                      -1.037e+01
## CountrySingapore                                          2.052e+01
## CountrySlovakia                                           1.395e+01
## CountrySlovenia                                           1.859e+01
## CountrySolomon Islands                                    7.525e+00
## CountrySomalia                                           -2.193e+00
```

```
## CountrySouth Africa                                              5.573e+00
## CountrySouth Sudan                                              -1.245e+00
## CountrySpain                                                     2.096e+01
## CountrySri Lanka                                                 1.178e+01
## CountrySudan                                                     4.975e+00
## CountrySuriname                                                  1.029e+01
## CountrySwaziland                                                 2.492e-01
## CountrySweden                                                    2.126e+01
## CountrySwitzerland                                               2.119e+01
## CountrySyrian Arab Republic                                      1.051e+01
## CountryTajikistan                                                5.906e+00
## CountryThailand                                                  1.171e+01
## CountryThe former Yugoslav republic of Macedonia                1.362e+01
## CountryTimor-Leste                                               3.939e+00
## CountryTogo                                                     -6.551e-01
## CountryTonga                                                     1.209e+01
## CountryTrinidad and Tobago                                       1.075e+01
## CountryTunisia                                                   1.328e+01
## CountryTurkey                                                    1.285e+01
## CountryTurkmenistan                                              3.742e+00
## CountryTuvalu                                                    1.213e+01
## CountryUganda                                                    5.449e+00
## CountryUkraine                                                   9.577e+00
## CountryUnited Arab Emirates                                      1.465e+01
## CountryUnited Kingdom of Great Britain and Northern Ireland     2.057e+01
## CountryUnited Republic of Tanzania                               3.674e+00
## CountryUnited States of America                                  1.745e+01
## CountryUruguay                                                   1.513e+01
## CountryUzbekistan                                                6.708e+00
## CountryVanuatu                                                   1.177e+01
## CountryVenezuela (Bolivarian Republic of)                        1.298e+01
## CountryViet Nam                                                  1.367e+01
## CountryYemen                                                     3.851e+00
## CountryZambia                                                    1.872e+00
## CountryZimbabwe                                                  1.728e+00
## Year                                                             2.235e-01
## HIV.AIDS                                                        -6.485e-01
## Schooling                                                        1.841e-01
## Diphtheria                                                      -1.046e-01
## Adult.Mortality                                                  2.479e-03
## under.five.deaths                                               -2.346e-01
## infant.deaths                                                    2.984e-01
## Measles                                                         -2.643e-06
## Alcohol                                                         -1.889e-01
## Polio                                                           -1.039e-02
## thinness.5.9.years                                               8.473e-02
## Total.expenditure                                               -3.177e-01
## percentage.expenditure                                           1.968e-05
## I(HIV.AIDS^2)                                                    2.035e-02
## I(Schooling^2)                                                  -1.790e-02
## I(Diphtheria^2)                                                  1.981e-03
## I(Adult.Mortality^2)                                             6.189e-06
## I(under.five.deaths^2)                                           1.219e-04
## I(infant.deaths^2)                                              -1.922e-04
```

```
## I(Measles^2)                                               -2.707e-11
## I(Alcohol^2)                                                3.458e-02
## I(Polio^2)                                                  5.273e-05
## I(thinness.5.9.years^2)                                    -2.664e-03
## I(Total.expenditure^2)                                      3.636e-02
## I(percentage.expenditure^2)                                 7.208e-09
## I(HIV.AIDS^3)                                               -2.382e-04
## I(Schooling^3)                                               8.094e-04
## I(Diphtheria^3)                                             -9.767e-06
## I(Adult.Mortality^3)                                        -3.452e-08
## I(under.five.deaths^3)                                      -2.028e-08
## I(infant.deaths^3)                                           3.910e-08
## I(Measles^3)                                                 1.801e-17
## I(Alcohol^3)                                                -1.886e-03
## I(Polio^3)                                                   8.859e-07
## I(thinness.5.9.years^3)                                      2.083e-05
## I(Total.expenditure^3)                                      -1.283e-03
## I(percentage.expenditure^3)                                 -4.415e-13
##                                                   Std. Error t value
## (Intercept)                                         2.128e+01 -18.244
## CountryAlbania                                      9.380e-01  15.751
## CountryAlgeria                                      9.105e-01  13.259
## CountryAngola                                       8.204e-01  -4.371
## CountryAntigua and Barbuda                          1.021e+00  14.204
## CountryArgentina                                    9.600e-01  14.223
## CountryArmenia                                      9.399e-01  13.722
## CountryAustralia                                    1.264e+00  15.437
## CountryAustria                                      1.020e+00  20.232
## CountryAzerbaijan                                   9.207e-01  11.264
## CountryBahamas                                      9.679e-01  14.159
## CountryBahrain                                      1.040e+00  14.002
## CountryBangladesh                                   8.145e-01  11.184
## CountryBarbados                                     1.041e+00  13.119
## CountryBelarus                                      1.014e+00   9.419
## CountryBelgium                                      1.024e+00  18.973
## CountryBelize                                       9.950e-01   8.746
## CountryBenin                                        8.881e-01  -0.031
## CountryBhutan                                       8.278e-01   6.052
## CountryBolivia (Plurinational State of)             8.986e-01   8.180
## CountryBosnia and Herzegovina                       9.753e-01  16.177
## CountryBotswana                                     1.056e+00   2.548
## CountryBrazil                                       8.776e-01  11.684
## CountryBrunei Darussalam                            1.036e+00  14.518
## CountryBulgaria                                     9.674e-01  12.597
## CountryBurkina Faso                                 9.280e-01   2.007
## CountryBurundi                                      9.094e-01  -1.753
## CountryCÃ´te d'Ivoire                               8.862e-01  -4.940
## CountryCabo Verde                                   9.787e-01  12.191
## CountryCambodia                                     8.116e-01   5.262
## CountryCameroon                                     9.189e-01   1.167
## CountryCanada                                       9.741e-01  20.996
## CountryCentral African Republic                     9.722e-01  -4.828
## CountryChad                                         8.842e-01  -1.818
## CountryChile                                        9.475e-01  19.758
```

```
## CountryChina                                          1.460e+00   6.759
## CountryColombia                                       8.824e-01  14.397
## CountryComoros                                        9.566e-01   1.136
## CountryCongo                                          9.755e-01   2.274
## CountryCook Islands                                   1.912e+00   5.180
## CountryCosta Rica                                     9.424e-01  19.415
## CountryCroatia                                        9.680e-01  16.263
## CountryCuba                                           1.022e+00  16.508
## CountryCyprus                                         9.410e-01  20.426
## CountryCzechia                                        9.650e-01  17.322
## CountryDemocratic People's Republic of Korea         9.718e-01   8.786
## CountryDemocratic Republic of the Congo              1.083e+00   0.582
## CountryDenmark                                        1.044e+00  17.044
## CountryDjibouti                                       1.025e+00   2.761
## CountryDominica                                       1.935e+00   5.092
## CountryDominican Republic                             9.730e-01  13.093
## CountryEcuador                                        8.977e-01  15.908
## CountryEgypt                                          7.996e-01  12.053
## CountryEl Salvador                                    9.210e-01  12.281
## CountryEquatorial Guinea                              9.653e-01  -1.194
## CountryEritrea                                        9.406e-01   1.342
## CountryEstonia                                        1.032e+00  13.878
## CountryEthiopia                                       9.459e-01  10.084
## CountryFiji                                           1.020e+00   7.424
## CountryFinland                                        1.037e+00  18.558
## CountryFrance                                         9.821e-01  21.468
## CountryGabon                                          1.085e+00   5.707
## CountryGambia                                         9.565e-01   0.671
## CountryGeorgia                                        9.669e-01  13.475
## CountryGermany                                        1.019e+00  19.396
## CountryGhana                                          8.567e-01   4.081
## CountryGreece                                         9.825e-01  20.557
## CountryGrenada                                        1.049e+00  11.508
## CountryGuatemala                                      8.419e-01  14.068
## CountryGuinea                                         8.580e-01  -0.316
## CountryGuinea-Bissau                                  9.753e-01  -1.501
## CountryGuyana                                         1.001e+00   5.639
## CountryHaiti                                          9.401e-01   3.518
## CountryHonduras                                       9.230e-01  13.989
## CountryHungary                                        9.928e-01  13.090
## CountryIceland                                        1.087e+00  19.043
## CountryIndia                                          4.616e+00   0.628
## CountryIndonesia                                      9.461e-01   6.260
## CountryIran (Islamic Republic of)                     8.683e-01  13.862
## CountryIraq                                           8.461e-01  11.843
## CountryIreland                                        1.055e+00  18.141
## CountryIsrael                                         9.731e-01  20.946
## CountryItaly                                          9.697e-01  21.762
## CountryJamaica                                        9.411e-01  15.302
## CountryJapan                                          9.737e-01  22.097
## CountryJordan                                         9.716e-01  12.026
## CountryKazakhstan                                     9.594e-01   5.709
## CountryKenya                                          8.783e-01   4.931
## CountryKiribati                                       8.939e-01   5.357
```

```
## CountryKuwait                                        1.004e+00  12.513
## CountryKyrgyzstan                                    9.588e-01   8.499
## CountryLao People's Democratic Republic              8.694e-01   3.369
## CountryLatvia                                        1.018e+00  12.368
## CountryLebanon                                       1.018e+00  13.596
## CountryLesotho                                       1.110e+00  -1.373
## CountryLiberia                                       9.331e-01  -0.761
## CountryLibya                                         1.033e+00  10.432
## CountryLithuania                                     1.058e+00  11.400
## CountryLuxembourg                                    9.696e-01  20.866
## CountryMadagascar                                    8.458e-01   5.142
## CountryMalawi                                        1.041e+00  -0.539
## CountryMalaysia                                      9.540e-01  13.036
## CountryMaldives                                      8.760e-01  16.376
## CountryMali                                          8.914e-01   2.053
## CountryMalta                                         9.398e-01  21.225
## CountryMarshall Islands                              2.258e+00   5.372
## CountryMauritania                                    9.133e-01   4.250
## CountryMauritius                                     1.009e+00  11.335
## CountryMexico                                        8.074e-01  17.787
## CountryMicronesia (Federated States of)              9.105e-01   9.103
## CountryMonaco                                        1.945e+00   4.986
## CountryMongolia                                      9.506e-01   5.217
## CountryMontenegro                                    9.597e-01  14.614
## CountryMorocco                                       8.839e-01  12.209
## CountryMozambique                                    9.213e-01   1.616
## CountryMyanmar                                       7.116e-01   6.483
## CountryNamibia                                       9.711e-01   5.243
## CountryNauru                                         1.907e+00   5.550
## CountryNepal                                         7.150e-01   8.336
## CountryNetherlands                                   1.025e+00  19.011
## CountryNew Zealand                                   1.131e+00  17.338
## CountryNicaragua                                     9.125e-01  14.364
## CountryNiger                                         1.015e+00   6.452
## CountryNigeria                                       2.150e+00   3.865
## CountryNiue                                          1.907e+00   5.257
## CountryNorway                                        1.041e+00  19.570
## CountryOman                                          9.942e-01  13.630
## CountryPakistan                                      1.535e+00   1.792
## CountryPalau                                         1.923e+00   5.221
## CountryPanama                                        9.464e-01  17.096
## CountryPapua New Guinea                              8.510e-01   3.502
## CountryParaguay                                      9.287e-01  13.602
## CountryPeru                                          8.907e-01  15.042
## CountryPhilippines                                   7.718e-01   9.174
## CountryPoland                                        1.005e+00  14.543
## CountryPortugal                                      9.848e-01  19.548
## CountryQatar                                         1.021e+00  15.557
## CountryRepublic of Korea                             9.148e-01  21.942
## CountryRepublic of Moldova                           9.787e-01   9.342
## CountryRomania                                       9.997e-01  12.989
## CountryRussian Federation                            9.158e-01   7.285
## CountryRwanda                                        9.517e-01   2.546
## CountrySaint Kitts and Nevis                         1.960e+00   5.086
```

```
## CountrySaint Lucia                                            1.010e+00  12.977
## CountrySaint Vincent and the Grenadines                       1.009e+00  12.502
## CountrySamoa                                                  8.972e-01  15.812
## CountrySan Marino                                              1.963e+00   5.327
## CountrySao Tome and Principe                                  9.851e-01   4.939
## CountrySaudi Arabia                                           9.589e-01  12.475
## CountrySenegal                                                8.492e-01   5.176
## CountrySerbia                                                 9.729e-01  13.350
## CountrySeychelles                                             1.016e+00  10.941
## CountrySierra Leone                                           8.711e-01 -11.908
## CountrySingapore                                              9.811e-01  20.914
## CountrySlovakia                                               9.671e-01  14.428
## CountrySlovenia                                               1.028e+00  18.081
## CountrySolomon Islands                                        9.001e-01   8.360
## CountrySomalia                                                8.949e-01  -2.451
## CountrySouth Africa                                           9.013e-01   6.184
## CountrySouth Sudan                                            9.757e-01  -1.276
## CountrySpain                                                  9.832e-01  21.318
## CountrySri Lanka                                              8.728e-01  13.494
## CountrySudan                                                  8.162e-01   6.095
## CountrySuriname                                               9.834e-01  10.466
## CountrySwaziland                                              1.226e+00   0.203
## CountrySweden                                                 1.004e+00  21.180
## CountrySwitzerland                                            1.010e+00  20.971
## CountrySyrian Arab Republic                                   9.471e-01  11.099
## CountryTajikistan                                             9.153e-01   6.452
## CountryThailand                                               9.236e-01  12.675
## CountryThe former Yugoslav republic of Macedonia             9.526e-01  14.302
## CountryTimor-Leste                                            8.892e-01   4.430
## CountryTogo                                                   9.437e-01  -0.694
## CountryTonga                                                  9.256e-01  13.060
## CountryTrinidad and Tobago                                    1.009e+00  10.654
## CountryTunisia                                                1.011e+00  13.138
## CountryTurkey                                                 8.930e-01  14.391
## CountryTurkmenistan                                           9.455e-01   3.958
## CountryTuvalu                                                 2.168e+00   5.595
## CountryUganda                                                 9.203e-01   5.921
## CountryUkraine                                                9.739e-01   9.834
## CountryUnited Arab Emirates                                   1.018e+00  14.396
## CountryUnited Kingdom of Great Britain and Northern Ireland  9.018e-01  22.806
## CountryUnited Republic of Tanzania                            9.144e-01   4.018
## CountryUnited States of America                               1.105e+00  15.794
## CountryUruguay                                                9.804e-01  15.431
## CountryUzbekistan                                             8.727e-01   7.686
## CountryVanuatu                                                9.080e-01  12.965
## CountryVenezuela (Bolivarian Republic of)                    8.975e-01  14.467
## CountryViet Nam                                               7.604e-01  17.978
## CountryYemen                                                  7.218e-01   5.335
## CountryZambia                                                 1.018e+00   1.839
## CountryZimbabwe                                               1.033e+00   1.672
## Year                                                          1.054e-02  21.214
## HIV.AIDS                                                      7.884e-02  -8.225
## Schooling                                                     1.819e-01   1.013
## Diphtheria                                                    3.487e-02  -3.001
```

```
## Adult.Mortality                             1.966e-03   1.261
## under.five.deaths                           2.246e-02 -10.445
## infant.deaths                               3.384e-02   8.818
## Measles                                     1.338e-05  -0.198
## Alcohol                                     8.331e-02  -2.268
## Polio                                       3.629e-02  -0.286
## thinness.5.9.years                          2.031e-01   0.417
## Total.expenditure                           1.915e-01  -1.659
## percentage.expenditure                      9.641e-05   0.204
## I(HIV.AIDS^2)                               4.123e-03   4.937
## I(Schooling^2)                              2.258e-02  -0.793
## I(Diphtheria^2)                             7.934e-04   2.496
## I(Adult.Mortality^2)                        9.290e-06   0.666
## I(under.five.deaths^2)                      1.975e-05   6.174
## I(infant.deaths^2)                          4.298e-05  -4.471
## I(Measles^2)                                2.286e-10  -0.118
## I(Alcohol^2)                                1.529e-02   2.262
## I(Polio^2)                                  8.228e-04   0.064
## I(thinness.5.9.years^2)                     2.521e-02  -0.106
## I(Total.expenditure^2)                      2.839e-02   1.281
## I(percentage.expenditure^2)                 1.666e-08   0.433
## I(HIV.AIDS^3)                               5.947e-05  -4.006
## I(Schooling^3)                              7.630e-04   1.061
## I(Diphtheria^3)                             4.951e-06  -1.973
## I(Adult.Mortality^3)                        1.091e-08  -3.164
## I(under.five.deaths^3)                      4.900e-09  -4.139
## I(infant.deaths^3)                          1.472e-08   2.656
## I(Measles^3)                                9.313e-16   0.019
## I(Alcohol^3)                                7.354e-04  -2.564
## I(Polio^3)                                  5.107e-06   0.173
## I(thinness.5.9.years^3)                     7.966e-04   0.026
## I(Total.expenditure^3)                      1.236e-03  -1.039
## I(percentage.expenditure^3)                 6.955e-13  -0.635
##                                             Pr(>|t|)
## (Intercept)                                 < 2e-16 ***
## CountryAlbania                              < 2e-16 ***
## CountryAlgeria                              < 2e-16 ***
## CountryAngola                               1.28e-05 ***
## CountryAntigua and Barbuda                  < 2e-16 ***
## CountryArgentina                            < 2e-16 ***
## CountryArmenia                              < 2e-16 ***
## CountryAustralia                            < 2e-16 ***
## CountryAustria                              < 2e-16 ***
## CountryAzerbaijan                           < 2e-16 ***
## CountryBahamas                              < 2e-16 ***
## CountryBahrain                              < 2e-16 ***
## CountryBangladesh                           < 2e-16 ***
## CountryBarbados                             < 2e-16 ***
## CountryBelarus                              < 2e-16 ***
## CountryBelgium                              < 2e-16 ***
## CountryBelize                               < 2e-16 ***
## CountryBenin                                0.975274
## CountryBhutan                               1.63e-09 ***
## CountryBolivia (Plurinational State of)     4.31e-16 ***
```

```
## CountryBosnia and Herzegovina                        < 2e-16 ***
## CountryBotswana                                       0.010904 *
## CountryBrazil                                         < 2e-16 ***
## CountryBrunei Darussalam                              < 2e-16 ***
## CountryBulgaria                                       < 2e-16 ***
## CountryBurkina Faso                                   0.044877 *
## CountryBurundi                                        0.079797 .
## CountryCÃ´te d'Ivoire                                 8.30e-07 ***
## CountryCabo Verde                                     < 2e-16 ***
## CountryCambodia                                       1.53e-07 ***
## CountryCameroon                                       0.243263
## CountryCanada                                         < 2e-16 ***
## CountryCentral African Republic                      1.45e-06 ***
## CountryChad                                           0.069131 .
## CountryChile                                          < 2e-16 ***
## CountryChina                                          1.70e-11 ***
## CountryColombia                                       < 2e-16 ***
## CountryComoros                                        0.256147
## CountryCongo                                          0.023069 *
## CountryCook Islands                                   2.38e-07 ***
## CountryCosta Rica                                     < 2e-16 ***
## CountryCroatia                                        < 2e-16 ***
## CountryCuba                                           < 2e-16 ***
## CountryCyprus                                         < 2e-16 ***
## CountryCzechia                                        < 2e-16 ***
## CountryDemocratic People's Republic of Korea         < 2e-16 ***
## CountryDemocratic Republic of the Congo              0.560745
## CountryDenmark                                        < 2e-16 ***
## CountryDjibouti                                       0.005808 **
## CountryDominica                                       3.78e-07 ***
## CountryDominican Republic                             < 2e-16 ***
## CountryEcuador                                        < 2e-16 ***
## CountryEgypt                                          < 2e-16 ***
## CountryEl Salvador                                    < 2e-16 ***
## CountryEquatorial Guinea                              0.232714
## CountryEritrea                                        0.179817
## CountryEstonia                                        < 2e-16 ***
## CountryEthiopia                                       < 2e-16 ***
## CountryFiji                                           1.51e-13 ***
## CountryFinland                                        < 2e-16 ***
## CountryFrance                                         < 2e-16 ***
## CountryGabon                                          1.27e-08 ***
## CountryGambia                                         0.502510
## CountryGeorgia                                        < 2e-16 ***
## CountryGermany                                        < 2e-16 ***
## CountryGhana                                          4.61e-05 ***
## CountryGreece                                         < 2e-16 ***
## CountryGrenada                                        < 2e-16 ***
## CountryGuatemala                                      < 2e-16 ***
## CountryGuinea                                         0.752299
## CountryGuinea-Bissau                                  0.133523
## CountryGuyana                                         1.88e-08 ***
## CountryHaiti                                          0.000442 ***
## CountryHonduras                                       < 2e-16 ***
```

```
## CountryHungary                                          < 2e-16 ***
## CountryIceland                                          < 2e-16 ***
## CountryIndia                                            0.530013
## CountryIndonesia                                        4.47e-10 ***
## CountryIran (Islamic Republic of)                       < 2e-16 ***
## CountryIraq                                             < 2e-16 ***
## CountryIreland                                          < 2e-16 ***
## CountryIsrael                                           < 2e-16 ***
## CountryItaly                                            < 2e-16 ***
## CountryJamaica                                          < 2e-16 ***
## CountryJapan                                            < 2e-16 ***
## CountryJordan                                           < 2e-16 ***
## CountryKazakhstan                                       1.26e-08 ***
## CountryKenya                                            8.69e-07 ***
## CountryKiribati                                         9.15e-08 ***
## CountryKuwait                                           < 2e-16 ***
## CountryKyrgyzstan                                       < 2e-16 ***
## CountryLao People's Democratic Republic                 0.000764 ***
## CountryLatvia                                           < 2e-16 ***
## CountryLebanon                                          < 2e-16 ***
## CountryLesotho                                          0.170017
## CountryLiberia                                          0.446954
## CountryLibya                                            < 2e-16 ***
## CountryLithuania                                        < 2e-16 ***
## CountryLuxembourg                                       < 2e-16 ***
## CountryMadagascar                                       2.92e-07 ***
## CountryMalawi                                           0.589976
## CountryMalaysia                                         < 2e-16 ***
## CountryMaldives                                         < 2e-16 ***
## CountryMali                                             0.040179 *
## CountryMalta                                            < 2e-16 ***
## CountryMarshall Islands                                 8.46e-08 ***
## CountryMauritania                                       2.21e-05 ***
## CountryMauritius                                        < 2e-16 ***
## CountryMexico                                           < 2e-16 ***
## CountryMicronesia (Federated States of)                 < 2e-16 ***
## CountryMonaco                                           6.57e-07 ***
## CountryMongolia                                         1.96e-07 ***
## CountryMontenegro                                       < 2e-16 ***
## CountryMorocco                                          < 2e-16 ***
## CountryMozambique                                       0.106159
## CountryMyanmar                                          1.06e-10 ***
## CountryNamibia                                          1.70e-07 ***
## CountryNauru                                            3.13e-08 ***
## CountryNepal                                            < 2e-16 ***
## CountryNetherlands                                      < 2e-16 ***
## CountryNew Zealand                                      < 2e-16 ***
## CountryNicaragua                                        < 2e-16 ***
## CountryNiger                                            1.30e-10 ***
## CountryNigeria                                          0.000114 ***
## CountryNiue                                             1.58e-07 ***
## CountryNorway                                           < 2e-16 ***
## CountryOman                                             < 2e-16 ***
## CountryPakistan                                         0.073304 .
```

```
## CountryPalau                                             1.91e-07 ***
## CountryPanama                                            < 2e-16 ***
## CountryPapua New Guinea                                  0.000470 ***
## CountryParaguay                                          < 2e-16 ***
## CountryPeru                                              < 2e-16 ***
## CountryPhilippines                                       < 2e-16 ***
## CountryPoland                                            < 2e-16 ***
## CountryPortugal                                          < 2e-16 ***
## CountryQatar                                             < 2e-16 ***
## CountryRepublic of Korea                                 < 2e-16 ***
## CountryRepublic of Moldova                               < 2e-16 ***
## CountryRomania                                           < 2e-16 ***
## CountryRussian Federation                                4.21e-13 ***
## CountryRwanda                                            0.010966 *
## CountrySaint Kitts and Nevis                             3.91e-07 ***
## CountrySaint Lucia                                       < 2e-16 ***
## CountrySaint Vincent and the Grenadines                  < 2e-16 ***
## CountrySamoa                                             < 2e-16 ***
## CountrySan Marino                                        1.08e-07 ***
## CountrySao Tome and Principe                             8.33e-07 ***
## CountrySaudi Arabia                                      < 2e-16 ***
## CountrySenegal                                           2.44e-07 ***
## CountrySerbia                                            < 2e-16 ***
## CountrySeychelles                                        < 2e-16 ***
## CountrySierra Leone                                      < 2e-16 ***
## CountrySingapore                                         < 2e-16 ***
## CountrySlovakia                                          < 2e-16 ***
## CountrySlovenia                                          < 2e-16 ***
## CountrySolomon Islands                                   < 2e-16 ***
## CountrySomalia                                           0.014318 *
## CountrySouth Africa                                      7.21e-10 ***
## CountrySouth Sudan                                       0.202188
## CountrySpain                                             < 2e-16 ***
## CountrySri Lanka                                         < 2e-16 ***
## CountrySudan                                             1.25e-09 ***
## CountrySuriname                                          < 2e-16 ***
## CountrySwaziland                                         0.838933
## CountrySweden                                            < 2e-16 ***
## CountrySwitzerland                                       < 2e-16 ***
## CountrySyrian Arab Republic                              < 2e-16 ***
## CountryTajikistan                                        1.30e-10 ***
## CountryThailand                                          < 2e-16 ***
## CountryThe former Yugoslav republic of Macedonia         < 2e-16 ***
## CountryTimor-Leste                                       9.80e-06 ***
## CountryTogo                                              0.487635
## CountryTonga                                             < 2e-16 ***
## CountryTrinidad and Tobago                               < 2e-16 ***
## CountryTunisia                                           < 2e-16 ***
## CountryTurkey                                            < 2e-16 ***
## CountryTurkmenistan                                      7.76e-05 ***
## CountryTuvalu                                            2.42e-08 ***
## CountryUganda                                            3.60e-09 ***
## CountryUkraine                                           < 2e-16 ***
## CountryUnited Arab Emirates                              < 2e-16 ***
```

```
## CountryUnited Kingdom of Great Britain and Northern Ireland  < 2e-16 ***
## CountryUnited Republic of Tanzania                           6.03e-05 ***
## CountryUnited States of America                              < 2e-16 ***
## CountryUruguay                                               < 2e-16 ***
## CountryUzbekistan                                            2.10e-14 ***
## CountryVanuatu                                               < 2e-16 ***
## CountryVenezuela (Bolivarian Republic of)                    < 2e-16 ***
## CountryViet Nam                                              < 2e-16 ***
## CountryYemen                                                 1.03e-07 ***
## CountryZambia                                                0.066043 .
## CountryZimbabwe                                              0.094600 .
## Year                                                         < 2e-16 ***
## HIV.AIDS                                                     2.99e-16 ***
## Schooling                                                    0.311371
## Diphtheria                                                   0.002720 **
## Adult.Mortality                                              0.207309
## under.five.deaths                                            < 2e-16 ***
## infant.deaths                                                < 2e-16 ***
## Measles                                                      0.843404
## Alcohol                                                      0.023425 *
## Polio                                                        0.774674
## thinness.5.9.years                                           0.676572
## Total.expenditure                                            0.097263 .
## percentage.expenditure                                       0.838295
## I(HIV.AIDS^2)                                                8.43e-07 ***
## I(Schooling^2)                                               0.428076
## I(Diphtheria^2)                                              0.012604 *
## I(Adult.Mortality^2)                                         0.505351
## I(under.five.deaths^2)                                       7.67e-10 ***
## I(infant.deaths^2)                                           8.11e-06 ***
## I(Measles^2)                                                 0.905742
## I(Alcohol^2)                                                 0.023804 *
## I(Polio^2)                                                   0.948910
## I(thinness.5.9.years^2)                                      0.915851
## I(Total.expenditure^2)                                       0.200458
## I(percentage.expenditure^2)                                  0.665243
## I(HIV.AIDS^3)                                                6.34e-05 ***
## I(Schooling^3)                                               0.288904
## I(Diphtheria^3)                                              0.048617 *
## I(Adult.Mortality^3)                                         0.001573 **
## I(under.five.deaths^3)                                       3.59e-05 ***
## I(infant.deaths^3)                                           0.007963 **
## I(Measles^3)                                                 0.984573
## I(Alcohol^3)                                                 0.010397 *
## I(Polio^3)                                                   0.862288
## I(thinness.5.9.years^3)                                      0.979144
## I(Total.expenditure^3)                                       0.299113
## I(percentage.expenditure^3)                                  0.525666
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.744 on 2708 degrees of freedom
## Multiple R-squared:  0.969,  Adjusted R-squared:  0.9664
## F-statistic: 369.5 on 229 and 2708 DF,  p-value: < 2.2e-16
```

```
# Residual plot
par(mfrow=c(1,2))
plot(resid(lm_cubic)~fitted(lm_cubic), col = "grey", pch = 20,
     xlab = "Fitted", ylab = "Residuals", main = "Fitted versus Residuals")
abline(h = 0, col = "darkorange", lwd = 2)

# Normal qq plot
qqnorm(resid(lm_cubic), main = "Normal Q-Q Plot", col = "darkgrey")
qqline(resid(lm_cubic), col = "dodgerblue", lwd = 2)
```
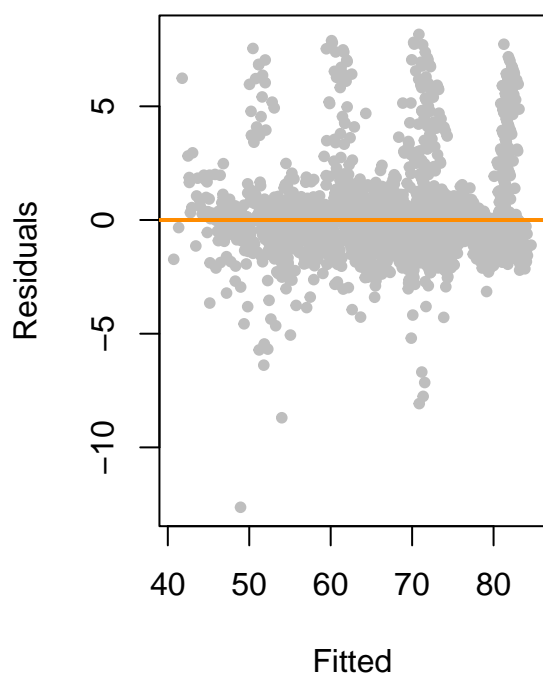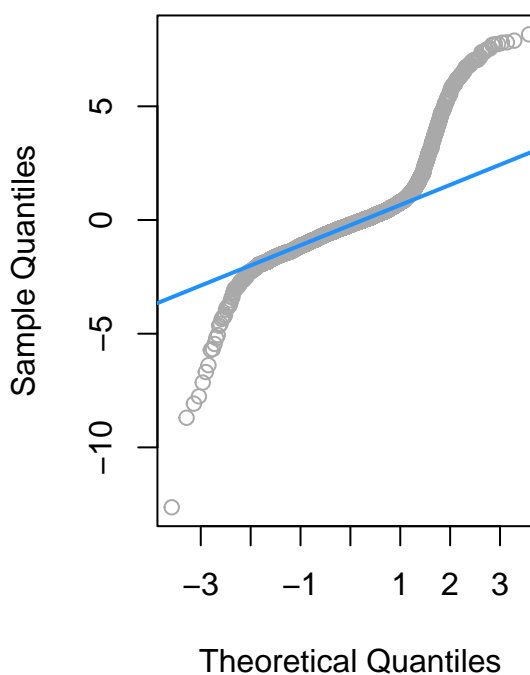

multicollinearity

```
# finding predictors with VIF larger than 20

library(faraway)

vifs=vif(my_fit)
corr = which(vifs>20)
vifs[corr]
```

```
##      CountryIndia under.five.deaths      infant.deaths
##          23.38002         1275.47498         1410.81118
```

```
# drop variables with high VIF
drop = c("under.five.deaths","infant.deaths")
```

```
dataLife = dataLife[,!(names(dataLife) %in% drop)]

# fit the model without the predictors with high VIF

final_null = lm(Life.expectancy~1,data=dataLife)
final_fit = step(final_null,direction="both",
                 scope=Life.expectancy~Year+Adult.Mortality+Alcohol
                 +percentage.expenditure+Measles+BMI
                 +Polio+Total.expenditure+Diphtheria+HIV.AIDS
                 +thinness..1.19.years+thinness.5.9.years+Income.composition.of.resources
                 +Schooling+Country+Status, trace=FALSE)
options(max.print=4000)
summary(final_fit)

##
## Call:
## lm(formula = Life.expectancy ~ Country + Year + HIV.AIDS + Schooling +
##     Diphtheria + Adult.Mortality + Measles + Alcohol + Polio +
##     Total.expenditure + percentage.expenditure, data = dataLife)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -23.6167 -0.8866 -0.2421  0.4584  9.8300
##
## Coefficients:
##                                            Estimate
## (Intercept)                               -4.693e+02
## CountryAlbania                             1.557e+01
## CountryAlgeria                             1.387e+01
## CountryAngola                             -8.071e+00
## CountryAntigua and Barbuda                 1.621e+01
## CountryArgentina                           1.525e+01
## CountryArmenia                             1.401e+01
## CountryAustralia                           2.137e+01
## CountryAustria                             2.173e+01
## CountryAzerbaijan                          1.139e+01
## CountryBahamas                             1.520e+01
## CountryBahrain                             1.562e+01
## CountryBangladesh                          1.019e+01
## CountryBarbados                            1.477e+01
## CountryBelarus                             1.078e+01
## CountryBelgium                             2.068e+01
## CountryBelize                              1.001e+01
## CountryBenin                              -4.643e-01
## CountryBhutan                              7.096e+00
## CountryBolivia (Plurinational State of)    8.158e+00
## CountryBosnia and Herzegovina              1.670e+01
## CountryBotswana                            2.690e+00
## CountryBrazil                              1.387e+01
## CountryBrunei Darussalam                   1.626e+01
## CountryBulgaria                            1.359e+01
## CountryBurkina Faso                       -1.650e+00
## CountryBurundi                            -1.737e+00
## CountryCÃ´te d'Ivoire                     -6.746e+00
```

```
## CountryCabo Verde                                     1.326e+01
## CountryCambodia                                        5.811e+00
## CountryCameroon                                       -2.308e+00
## CountryCanada                                          2.171e+01
## CountryCentral African Republic                       -6.303e+00
## CountryChad                                           -5.985e+00
## CountryChile                                           1.972e+01
## CountryChina                                           1.574e+01
## CountryColombia                                        1.399e+01
## CountryComoros                                         2.805e+00
## CountryCongo                                           2.177e+00
## CountryCook Islands                                    1.087e+01
## CountryCosta Rica                                      1.921e+01
## CountryCroatia                                         1.678e+01
## CountryCuba                                            1.802e+01
## CountryCyprus                                          2.017e+01
## CountryCzechia                                         1.768e+01
## CountryDemocratic People's Republic of Korea          9.794e+00
## CountryDemocratic Republic of the Congo              -1.944e+00
## CountryDenmark                                         1.923e+01
## CountryDjibouti                                        3.854e+00
## CountryDominica                                        1.091e+01
## CountryDominican Republic                              1.349e+01
## CountryEcuador                                         1.529e+01
## CountryEgypt                                           1.195e+01
## CountryEl Salvador                                     1.241e+01
## CountryEquatorial Guinea                              -8.418e-01
## CountryEritrea                                         2.893e+00
## CountryEstonia                                         1.524e+01
## CountryEthiopia                                        2.033e+00
## CountryFiji                                            8.757e+00
## CountryFinland                                         2.063e+01
## CountryFrance                                          2.243e+01
## CountryGabon                                           6.112e+00
## CountryGambia                                          1.533e+00
## CountryGeorgia                                         1.425e+01
## CountryGermany                                         2.119e+01
## CountryGhana                                           2.700e+00
## CountryGreece                                          2.140e+01
## CountryGrenada                                         1.368e+01
## CountryGuatemala                                       1.282e+01
## CountryGuinea                                         -1.480e+00
## CountryGuinea-Bissau                                  -1.662e+00
## CountryGuyana                                          7.116e+00
## CountryHaiti                                           2.524e+00
## CountryHonduras                                        1.402e+01
## CountryHungary                                         1.436e+01
## CountryIceland                                         2.209e+01
## CountryIndia                                           7.181e+00
## CountryIndonesia                                       8.501e+00
## CountryIran (Islamic Republic of)                      1.410e+01
## CountryIraq                                            1.144e+01
## CountryIreland                                         2.021e+01
## CountryIsrael                                          2.115e+01
```

```
## CountryItaly                                      2.227e+01
## CountryJamaica                                    1.524e+01
## CountryJapan                                      2.265e+01
## CountryJordan                                     1.324e+01
## CountryKazakhstan                                 7.288e+00
## CountryKenya                                      1.810e+00
## CountryKiribati                                   5.802e+00
## CountryKuwait                                     1.365e+01
## CountryKyrgyzstan                                 9.614e+00
## CountryLao People's Democratic Republic           3.819e+00
## CountryLatvia                                     1.408e+01
## CountryLebanon                                    1.457e+01
## CountryLesotho                                   -1.826e+00
## CountryLiberia                                   -1.001e-01
## CountryLibya                                      1.236e+01
## CountryLithuania                                  1.322e+01
## CountryLuxembourg                                 2.112e+01
## CountryMadagascar                                 4.361e+00
## CountryMalawi                                    -3.098e+00
## CountryMalaysia                                   1.396e+01
## CountryMaldives                                   1.592e+01
## CountryMali                                      -2.754e+00
## CountryMalta                                      2.074e+01
## CountryMarshall Islands                           1.343e+01
## CountryMauritania                                 4.612e+00
## CountryMauritius                                  1.299e+01
## CountryMexico                                     1.626e+01
## CountryMicronesia (Federated States of)           9.297e+00
## CountryMonaco                                     1.089e+01
## CountryMongolia                                   6.423e+00
## CountryMontenegro                                 1.525e+01
## CountryMorocco                                    1.274e+01
## CountryMozambique                                -1.224e+00
## CountryMyanmar                                    5.447e+00
## CountryNamibia                                    6.152e+00
## CountryNauru                                      1.144e+01
## CountryNepal                                      7.472e+00
## CountryNetherlands                                2.096e+01
## CountryNew Zealand                                2.125e+01
## CountryNicaragua                                  1.432e+01
## CountryNiger                                     -1.776e-01
## CountryNigeria                                   -4.300e+00
## CountryNiue                                       1.100e+01
## CountryNorway                                     2.155e+01
## CountryOman                                       1.493e+01
## CountryPakistan                                   5.959e+00
## CountryPalau                                      1.099e+01
## CountryPanama                                     1.724e+01
## CountryPapua New Guinea                           3.554e+00
## CountryParaguay                                   1.391e+01
## CountryPeru                                       1.421e+01
## CountryPhilippines                                8.623e+00
## CountryPoland                                     1.599e+01
## CountryPortugal                                   2.027e+01
```

```
## CountryQatar                                                   1.705e+01
## CountryRepublic of Korea                                       2.124e+01
## CountryRepublic of Moldova                                     1.115e+01
## CountryRomania                                                 1.463e+01
## CountryRussian Federation                                      8.681e+00
## CountryRwanda                                                  2.139e+00
## CountrySaint Kitts and Nevis                                   1.131e+01
## CountrySaint Lucia                                             1.467e+01
## CountrySaint Vincent and the Grenadines                        1.402e+01
## CountrySamoa                                                   1.440e+01
## CountrySan Marino                                              1.089e+01
## CountrySao Tome and Principe                                   6.412e+00
## CountrySaudi Arabia                                            1.339e+01
## CountrySenegal                                                 4.126e+00
## CountrySerbia                                                  1.456e+01
## CountrySeychelles                                              1.286e+01
## CountrySierra Leone                                           -1.150e+01
## CountrySingapore                                               2.132e+01
## CountrySlovakia                                                1.531e+01
## CountrySlovenia                                                1.994e+01
## CountrySolomon Islands                                         8.821e+00
## CountrySomalia                                                -4.954e+00
## CountrySouth Africa                                            5.190e+00
## CountrySouth Sudan                                            -2.212e+00
## CountrySpain                                                   2.218e+01
## CountrySri Lanka                                               1.363e+01
## CountrySudan                                                   3.662e+00
## CountrySuriname                                                1.119e+01
## CountrySwaziland                                               3.680e+00
## CountrySweden                                                  2.247e+01
## CountrySwitzerland                                             2.223e+01
## CountrySyrian Arab Republic                                    1.181e+01
## CountryTajikistan                                              7.444e+00
## CountryThailand                                                1.378e+01
## CountryThe former Yugoslav republic of Macedonia               1.445e+01
## CountryTimor-Leste                                             5.567e+00
## CountryTogo                                                   -8.718e-01
## CountryTonga                                                   1.284e+01
## CountryTrinidad and Tobago                                     1.217e+01
## CountryTunisia                                                 1.424e+01
## CountryTurkey                                                  1.441e+01
## CountryTurkmenistan                                            5.484e+00
## CountryTuvalu                                                  1.422e+01
## CountryUganda                                                  1.538e-01
## CountryUkraine                                                 1.092e+01
## CountryUnited Arab Emirates                                    1.575e+01
## CountryUnited Kingdom of Great Britain and Northern Ireland  2.175e+01
## CountryUnited Republic of Tanzania                           -5.662e-01
## CountryUnited States of America                               1.912e+01
## CountryUruguay                                                 1.638e+01
## CountryUzbekistan                                              8.629e+00
## CountryVanuatu                                                 1.232e+01
## CountryVenezuela (Bolivarian Republic of)                     1.433e+01
## CountryViet Nam                                                1.547e+01
```

```
## CountryYemen                                    5.197e+00
## CountryZambia                                   -7.526e-01
## CountryZimbabwe                                  1.898e-02
## Year                                             2.623e-01
## HIV.AIDS                                        -3.340e-01
## Schooling                                        1.506e-01
## Diphtheria                                       6.644e-03
## Adult.Mortality                                 -1.870e-03
## Measles                                         -1.417e-05
## Alcohol                                         -5.609e-02
## Polio                                            4.580e-03
## Total.expenditure                              -3.807e-02
## percentage.expenditure                          3.839e-05
##                                                Std. Error t value
## (Intercept)                                     1.985e+01 -23.635
## CountryAlbania                                  7.125e-01  21.846
## CountryAlgeria                                  7.066e-01  19.629
## CountryAngola                                   6.917e-01 -11.669
## CountryAntigua and Barbuda                      7.129e-01  22.744
## CountryArgentina                                7.618e-01  20.021
## CountryArmenia                                  7.017e-01  19.969
## CountryAustralia                                8.356e-01  25.578
## CountryAustria                                  7.836e-01  27.728
## CountryAzerbaijan                               6.905e-01  16.497
## CountryBahamas                                  7.324e-01  20.758
## CountryBahrain                                  7.274e-01  21.481
## CountryBangladesh                               6.916e-01  14.740
## CountryBarbados                                 7.426e-01  19.887
## CountryBelarus                                  7.717e-01  13.966
## CountryBelgium                                  7.871e-01  26.276
## CountryBelize                                   7.147e-01  14.002
## CountryBenin                                    6.786e-01  -0.684
## CountryBhutan                                   6.862e-01  10.341
## CountryBolivia (Plurinational State of)         7.136e-01  11.433
## CountryBosnia and Herzegovina                   7.014e-01  23.805
## CountryBotswana                                 7.418e-01   3.626
## CountryBrazil                                   7.302e-01  18.994
## CountryBrunei Darussalam                        7.303e-01  22.263
## CountryBulgaria                                 7.456e-01  18.224
## CountryBurkina Faso                             6.930e-01  -2.381
## CountryBurundi                                  6.864e-01  -2.530
## CountryCÃ´te d'Ivoire                           6.977e-01  -9.669
## CountryCabo Verde                               7.023e-01  18.887
## CountryCambodia                                 6.804e-01   8.541
## CountryCameroon                                 6.898e-01  -3.345
## CountryCanada                                   7.620e-01  28.488
## CountryCentral African Republic                 6.953e-01  -9.065
## CountryChad                                     6.869e-01  -8.713
## CountryChile                                    7.375e-01  26.744
## CountryChina                                    7.554e-01  20.841
## CountryColombia                                 7.015e-01  19.948
## CountryComoros                                  6.798e-01   4.126
## CountryCongo                                    6.887e-01   3.161
## CountryCook Islands                             1.967e+00   5.526
```

```
## CountryCosta Rica                                      7.040e-01  27.282
## CountryCroatia                                         7.597e-01  22.093
## CountryCuba                                            7.314e-01  24.635
## CountryCyprus                                          7.456e-01  27.057
## CountryCzechia                                         7.557e-01  23.390
## CountryDemocratic People's Republic of Korea           7.020e-01  13.951
## CountryDemocratic Republic of the Congo                7.252e-01  -2.680
## CountryDenmark                                         7.934e-01  24.238
## CountryDjibouti                                        6.894e-01   5.590
## CountryDominica                                        1.966e+00   5.550
## CountryDominican Republic                              7.120e-01  18.952
## CountryEcuador                                         7.066e-01  21.631
## CountryEgypt                                           6.983e-01  17.110
## CountryEl Salvador                                     6.994e-01  17.736
## CountryEquatorial Guinea                               7.058e-01  -1.193
## CountryEritrea                                         6.972e-01   4.149
## CountryEstonia                                         7.593e-01  20.066
## CountryEthiopia                                        6.795e-01   2.992
## CountryFiji                                            7.233e-01  12.107
## CountryFinland                                         7.843e-01  26.298
## CountryFrance                                          7.862e-01  28.526
## CountryGabon                                           7.234e-01   8.449
## CountryGambia                                          6.851e-01   2.238
## CountryGeorgia                                         7.075e-01  20.138
## CountryGermany                                         7.943e-01  26.681
## CountryGhana                                           6.844e-01   3.945
## CountryGreece                                          7.591e-01  28.195
## CountryGrenada                                         7.496e-01  18.250
## CountryGuatemala                                       6.836e-01  18.751
## CountryGuinea                                          6.797e-01  -2.177
## CountryGuinea-Bissau                                   6.841e-01  -2.430
## CountryGuyana                                          7.046e-01  10.100
## CountryHaiti                                           6.877e-01   3.670
## CountryHonduras                                        6.924e-01  20.249
## CountryHungary                                         7.633e-01  18.820
## CountryIceland                                         7.938e-01  27.826
## CountryIndia                                           7.102e-01  10.111
## CountryIndonesia                                       6.980e-01  12.179
## CountryIran (Islamic Republic of)                      7.054e-01  19.989
## CountryIraq                                            6.815e-01  16.781
## CountryIreland                                         8.087e-01  24.986
## CountryIsrael                                          7.393e-01  28.615
## CountryItaly                                           7.602e-01  29.297
## CountryJamaica                                         7.036e-01  21.666
## CountryJapan                                           7.490e-01  30.235
## CountryJordan                                          7.082e-01  18.691
## CountryKazakhstan                                      7.312e-01   9.967
## CountryKenya                                           6.924e-01   2.614
## CountryKiribati                                        6.908e-01   8.398
## CountryKuwait                                          7.270e-01  18.779
## CountryKyrgyzstan                                      7.011e-01  13.713
## CountryLao People's Democratic Republic                6.866e-01   5.563
## CountryLatvia                                          7.534e-01  18.692
## CountryLebanon                                         7.095e-01  20.536
```

```
## CountryLesotho                                            7.610e-01   -2.399
## CountryLiberia                                            6.805e-01   -0.147
## CountryLibya                                              7.306e-01   16.919
## CountryLithuania                                          7.820e-01   16.900
## CountryLuxembourg                                         7.801e-01   27.072
## CountryMadagascar                                         6.786e-01    6.426
## CountryMalawi                                             7.248e-01   -4.275
## CountryMalaysia                                           7.090e-01   19.694
## CountryMaldives                                           7.004e-01   22.734
## CountryMali                                               6.786e-01   -4.058
## CountryMalta                                              7.321e-01   28.333
## CountryMarshall Islands                                   1.995e+00    6.728
## CountryMauritania                                         6.819e-01    6.764
## CountryMauritius                                          7.159e-01   18.142
## CountryMexico                                             7.093e-01   22.923
## CountryMicronesia (Federated States of)                  6.855e-01   13.561
## CountryMonaco                                             1.967e+00    5.537
## CountryMongolia                                           7.051e-01    9.109
## CountryMontenegro                                         6.907e-01   22.081
## CountryMorocco                                            6.927e-01   18.389
## CountryMozambique                                         6.968e-01   -1.756
## CountryMyanmar                                            6.893e-01    7.903
## CountryNamibia                                            7.179e-01    8.570
## CountryNauru                                              1.962e+00    5.834
## CountryNepal                                              6.822e-01   10.953
## CountryNetherlands                                        7.811e-01   26.829
## CountryNew Zealand                                        8.053e-01   26.384
## CountryNicaragua                                          6.929e-01   20.664
## CountryNiger                                              6.927e-01   -0.256
## CountryNigeria                                            7.393e-01   -5.816
## CountryNiue                                               1.965e+00    5.599
## CountryNorway                                             7.782e-01   27.687
## CountryOman                                               7.129e-01   20.939
## CountryPakistan                                           6.874e-01    8.668
## CountryPalau                                              1.971e+00    5.575
## CountryPanama                                             7.103e-01   24.268
## CountryPapua New Guinea                                   6.756e-01    5.260
## CountryParaguay                                           7.035e-01   19.779
## CountryPeru                                               7.123e-01   19.948
## CountryPhilippines                                        6.993e-01   12.331
## CountryPoland                                             7.585e-01   21.075
## CountryPortugal                                           7.806e-01   25.968
## CountryQatar                                              7.201e-01   23.672
## CountryRepublic of Korea                                  7.270e-01   29.212
## CountryRepublic of Moldova                                7.238e-01   15.403
## CountryRomania                                            7.385e-01   19.812
## CountryRussian Federation                                 7.475e-01   11.614
## CountryRwanda                                             6.944e-01    3.080
## CountrySaint Kitts and Nevis                              1.977e+00    5.719
## CountrySaint Lucia                                        7.390e-01   19.854
## CountrySaint Vincent and the Grenadines                   7.215e-01   19.425
## CountrySamoa                                              6.978e-01   20.630
## CountrySan Marino                                         1.971e+00    5.524
## CountrySao Tome and Principe                              6.922e-01    9.264
```

```
## CountrySaudi Arabia                                               7.188e-01  18.626
## CountrySenegal                                                    6.816e-01   6.053
## CountrySerbia                                                     7.324e-01  19.878
## CountrySeychelles                                                 7.224e-01  17.802
## CountrySierra Leone                                               6.784e-01 -16.953
## CountrySingapore                                                  7.285e-01  29.272
## CountrySlovakia                                                   7.508e-01  20.386
## CountrySlovenia                                                   7.764e-01  25.679
## CountrySolomon Islands                                            6.812e-01  12.950
## CountrySomalia                                                    6.919e-01  -7.160
## CountrySouth Africa                                               7.538e-01   6.885
## CountrySouth Sudan                                                7.333e-01  -3.016
## CountrySpain                                                      7.729e-01  28.692
## CountrySri Lanka                                                  7.153e-01  19.050
## CountrySudan                                                      6.812e-01   5.376
## CountrySuriname                                                   6.978e-01  16.043
## CountrySwaziland                                                  8.376e-01   4.393
## CountrySweden                                                     7.595e-01  29.591
## CountrySwitzerland                                                8.019e-01  27.724
## CountrySyrian Arab Republic                                       6.890e-01  17.146
## CountryTajikistan                                                 6.875e-01  10.828
## CountryThailand                                                   7.194e-01  19.147
## CountryThe former Yugoslav republic of Macedonia                 7.039e-01  20.529
## CountryTimor-Leste                                                6.946e-01   8.014
## CountryTogo                                                       6.841e-01  -1.274
## CountryTonga                                                      7.143e-01  17.972
## CountryTrinidad and Tobago                                        7.062e-01  17.235
## CountryTunisia                                                    7.240e-01  19.666
## CountryTurkey                                                     7.015e-01  20.542
## CountryTurkmenistan                                               6.969e-01   7.869
## CountryTuvalu                                                     1.997e+00   7.120
## CountryUganda                                                     7.068e-01   0.218
## CountryUkraine                                                    7.294e-01  14.970
## CountryUnited Arab Emirates                                       7.182e-01  21.930
## CountryUnited Kingdom of Great Britain and Northern Ireland      7.420e-01  29.307
## CountryUnited Republic of Tanzania                               7.055e-01  -0.803
## CountryUnited States of America                                  7.363e-01  25.965
## CountryUruguay                                                    7.369e-01  22.232
## CountryUzbekistan                                                 6.971e-01  12.378
## CountryVanuatu                                                    6.870e-01  17.932
## CountryVenezuela (Bolivarian Republic of)                        7.156e-01  20.023
## CountryViet Nam                                                   6.978e-01  22.172
## CountryYemen                                                      6.774e-01   7.671
## CountryZambia                                                     7.052e-01  -1.067
## CountryZimbabwe                                                   7.623e-01   0.025
## Year                                                              9.983e-03  26.272
## HIV.AIDS                                                          1.494e-02 -22.349
## Schooling                                                         3.678e-02   4.096
## Diphtheria                                                        2.301e-03   2.888
## Adult.Mortality                                                   4.538e-04  -4.121
## Measles                                                           4.329e-06  -3.274
## Alcohol                                                           2.325e-02  -2.413
## Polio                                                             2.264e-03   2.023
## Total.expenditure                                                 2.233e-02  -1.705
```

```
## percentage.expenditure                                 2.661e-05    1.443
##                                                         Pr(>|t|)
## (Intercept)                                              < 2e-16 ***
## CountryAlbania                                           < 2e-16 ***
## CountryAlgeria                                           < 2e-16 ***
## CountryAngola                                            < 2e-16 ***
## CountryAntigua and Barbuda                               < 2e-16 ***
## CountryArgentina                                         < 2e-16 ***
## CountryArmenia                                           < 2e-16 ***
## CountryAustralia                                         < 2e-16 ***
## CountryAustria                                           < 2e-16 ***
## CountryAzerbaijan                                        < 2e-16 ***
## CountryBahamas                                           < 2e-16 ***
## CountryBahrain                                           < 2e-16 ***
## CountryBangladesh                                        < 2e-16 ***
## CountryBarbados                                          < 2e-16 ***
## CountryBelarus                                           < 2e-16 ***
## CountryBelgium                                           < 2e-16 ***
## CountryBelize                                            < 2e-16 ***
## CountryBenin                                            0.493881
## CountryBhutan                                            < 2e-16 ***
## CountryBolivia (Plurinational State of)                 < 2e-16 ***
## CountryBosnia and Herzegovina                           < 2e-16 ***
## CountryBotswana                                         0.000293 ***
## CountryBrazil                                            < 2e-16 ***
## CountryBrunei Darussalam                                < 2e-16 ***
## CountryBulgaria                                          < 2e-16 ***
## CountryBurkina Faso                                     0.017333 *
## CountryBurundi                                          0.011463 *
## CountryCÃ´te d'Ivoire                                    < 2e-16 ***
## CountryCabo Verde                                        < 2e-16 ***
## CountryCambodia                                          < 2e-16 ***
## CountryCameroon                                         0.000834 ***
## CountryCanada                                            < 2e-16 ***
## CountryCentral African Republic                         < 2e-16 ***
## CountryChad                                              < 2e-16 ***
## CountryChile                                             < 2e-16 ***
## CountryChina                                             < 2e-16 ***
## CountryColombia                                          < 2e-16 ***
## CountryComoros                                          3.80e-05 ***
## CountryCongo                                            0.001587 **
## CountryCook Islands                                     3.58e-08 ***
## CountryCosta Rica                                        < 2e-16 ***
## CountryCroatia                                           < 2e-16 ***
## CountryCuba                                              < 2e-16 ***
## CountryCyprus                                            < 2e-16 ***
## CountryCzechia                                           < 2e-16 ***
## CountryDemocratic People's Republic of Korea            < 2e-16 ***
## CountryDemocratic Republic of the Congo                0.007408 **
## CountryDenmark                                           < 2e-16 ***
## CountryDjibouti                                         2.49e-08 ***
## CountryDominica                                         3.14e-08 ***
## CountryDominican Republic                                < 2e-16 ***
## CountryEcuador                                           < 2e-16 ***
```

```
## CountryEgypt                                          < 2e-16 ***
## CountryEl Salvador                                     < 2e-16 ***
## CountryEquatorial Guinea                               0.233104
## CountryEritrea                                         3.44e-05 ***
## CountryEstonia                                         < 2e-16 ***
## CountryEthiopia                                        0.002795 **
## CountryFiji                                            < 2e-16 ***
## CountryFinland                                         < 2e-16 ***
## CountryFrance                                          < 2e-16 ***
## CountryGabon                                           < 2e-16 ***
## CountryGambia                                          0.025297 *
## CountryGeorgia                                         < 2e-16 ***
## CountryGermany                                         < 2e-16 ***
## CountryGhana                                           8.17e-05 ***
## CountryGreece                                          < 2e-16 ***
## CountryGrenada                                         < 2e-16 ***
## CountryGuatemala                                       < 2e-16 ***
## CountryGuinea                                          0.029587 *
## CountryGuinea-Bissau                                   0.015168 *
## CountryGuyana                                          < 2e-16 ***
## CountryHaiti                                           0.000247 ***
## CountryHonduras                                        < 2e-16 ***
## CountryHungary                                         < 2e-16 ***
## CountryIceland                                         < 2e-16 ***
## CountryIndia                                           < 2e-16 ***
## CountryIndonesia                                       < 2e-16 ***
## CountryIran (Islamic Republic of)                      < 2e-16 ***
## CountryIraq                                            < 2e-16 ***
## CountryIreland                                         < 2e-16 ***
## CountryIsrael                                          < 2e-16 ***
## CountryItaly                                           < 2e-16 ***
## CountryJamaica                                         < 2e-16 ***
## CountryJapan                                           < 2e-16 ***
## CountryJordan                                          < 2e-16 ***
## CountryKazakhstan                                      < 2e-16 ***
## CountryKenya                                           0.009003 **
## CountryKiribati                                        < 2e-16 ***
## CountryKuwait                                          < 2e-16 ***
## CountryKyrgyzstan                                      < 2e-16 ***
## CountryLao People's Democratic Republic                2.91e-08 ***
## CountryLatvia                                          < 2e-16 ***
## CountryLebanon                                         < 2e-16 ***
## CountryLesotho                                         0.016517 *
## CountryLiberia                                         0.883002
## CountryLibya                                           < 2e-16 ***
## CountryLithuania                                       < 2e-16 ***
## CountryLuxembourg                                      < 2e-16 ***
## CountryMadagascar                                      1.54e-10 ***
## CountryMalawi                                          1.98e-05 ***
## CountryMalaysia                                        < 2e-16 ***
## CountryMaldives                                        < 2e-16 ***
## CountryMali                                            5.08e-05 ***
## CountryMalta                                           < 2e-16 ***
## CountryMarshall Islands                                2.08e-11 ***
```

```
## CountryMauritania                               1.64e-11 ***
## CountryMauritius                                 < 2e-16 ***
## CountryMexico                                    < 2e-16 ***
## CountryMicronesia (Federated States of)          < 2e-16 ***
## CountryMonaco                                    3.38e-08 ***
## CountryMongolia                                  < 2e-16 ***
## CountryMontenegro                                < 2e-16 ***
## CountryMorocco                                   < 2e-16 ***
## CountryMozambique                                0.079150 .
## CountryMyanmar                                   3.92e-15 ***
## CountryNamibia                                   < 2e-16 ***
## CountryNauru                                     6.06e-09 ***
## CountryNepal                                     < 2e-16 ***
## CountryNetherlands                               < 2e-16 ***
## CountryNew Zealand                               < 2e-16 ***
## CountryNicaragua                                 < 2e-16 ***
## CountryNiger                                     0.797698
## CountryNigeria                                   6.71e-09 ***
## CountryNiue                                      2.37e-08 ***
## CountryNorway                                    < 2e-16 ***
## CountryOman                                      < 2e-16 ***
## CountryPakistan                                  < 2e-16 ***
## CountryPalau                                     2.72e-08 ***
## CountryPanama                                    < 2e-16 ***
## CountryPapua New Guinea                          1.55e-07 ***
## CountryParaguay                                  < 2e-16 ***
## CountryPeru                                      < 2e-16 ***
## CountryPhilippines                               < 2e-16 ***
## CountryPoland                                    < 2e-16 ***
## CountryPortugal                                  < 2e-16 ***
## CountryQatar                                     < 2e-16 ***
## CountryRepublic of Korea                         < 2e-16 ***
## CountryRepublic of Moldova                       < 2e-16 ***
## CountryRomania                                   < 2e-16 ***
## CountryRussian Federation                        < 2e-16 ***
## CountryRwanda                                    0.002088 **
## CountrySaint Kitts and Nevis                     1.19e-08 ***
## CountrySaint Lucia                               < 2e-16 ***
## CountrySaint Vincent and the Grenadines          < 2e-16 ***
## CountrySamoa                                     < 2e-16 ***
## CountrySan Marino                                3.62e-08 ***
## CountrySao Tome and Principe                     < 2e-16 ***
## CountrySaudi Arabia                              < 2e-16 ***
## CountrySenegal                                   1.61e-09 ***
## CountrySerbia                                    < 2e-16 ***
## CountrySeychelles                                < 2e-16 ***
## CountrySierra Leone                              < 2e-16 ***
## CountrySingapore                                 < 2e-16 ***
## CountrySlovakia                                  < 2e-16 ***
## CountrySlovenia                                  < 2e-16 ***
## CountrySolomon Islands                           < 2e-16 ***
## CountrySomalia                                   1.03e-12 ***
## CountrySouth Africa                              7.14e-12 ***
## CountrySouth Sudan                               0.002584 **
```

```
## CountrySpain                                                 < 2e-16 ***
## CountrySri Lanka                                             < 2e-16 ***
## CountrySudan                                                 8.27e-08 ***
## CountrySuriname                                              < 2e-16 ***
## CountrySwaziland                                             1.16e-05 ***
## CountrySweden                                                < 2e-16 ***
## CountrySwitzerland                                           < 2e-16 ***
## CountrySyrian Arab Republic                                  < 2e-16 ***
## CountryTajikistan                                            < 2e-16 ***
## CountryThailand                                              < 2e-16 ***
## CountryThe former Yugoslav republic of Macedonia            < 2e-16 ***
## CountryTimor-Leste                                           1.63e-15 ***
## CountryTogo                                                  0.202688
## CountryTonga                                                 < 2e-16 ***
## CountryTrinidad and Tobago                                   < 2e-16 ***
## CountryTunisia                                               < 2e-16 ***
## CountryTurkey                                                < 2e-16 ***
## CountryTurkmenistan                                          5.09e-15 ***
## CountryTuvalu                                                1.38e-12 ***
## CountryUganda                                                0.827733
## CountryUkraine                                               < 2e-16 ***
## CountryUnited Arab Emirates                                  < 2e-16 ***
## CountryUnited Kingdom of Great Britain and Northern Ireland  < 2e-16 ***
## CountryUnited Republic of Tanzania                           0.422281
## CountryUnited States of America                              < 2e-16 ***
## CountryUruguay                                               < 2e-16 ***
## CountryUzbekistan                                            < 2e-16 ***
## CountryVanuatu                                               < 2e-16 ***
## CountryVenezuela (Bolivarian Republic of)                    < 2e-16 ***
## CountryViet Nam                                              < 2e-16 ***
## CountryYemen                                                 2.35e-14 ***
## CountryZambia                                                0.285981
## CountryZimbabwe                                              0.980134
## Year                                                         < 2e-16 ***
## HIV.AIDS                                                     < 2e-16 ***
## Schooling                                                    4.33e-05 ***
## Diphtheria                                                   0.003910 **
## Adult.Mortality                                              3.89e-05 ***
## Measles                                                      0.001073 **
## Alcohol                                                      0.015890 *
## Polio                                                        0.043141 *
## Total.expenditure                                            0.088285 .
## percentage.expenditure                                       0.149169
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.898 on 2735 degrees of freedom
## Multiple R-squared:  0.9629, Adjusted R-squared:  0.9602
## F-statistic: 351.4 on 202 and 2735 DF,  p-value: < 2.2e-16
# assess performance

set.seed(251203021)
n = nrow(dataLife)
```

```
idx_tr = sample(n,round(0.70*n),replace=FALSE)

dataLife_tr = dataLife[idx_tr,]
dataLife_ts = dataLife[-idx_tr,]

dataLife_tr = rbind(dataLife_tr, dataLife_ts[which(dataLife_ts$Country=='Cook Islands' | dataLife_ts$Co


ypr = predict(final_fit,newdata=dataLife_ts)
mse = mean((ypr - dataLife_ts[,4])^2)
mse
```

```
## [1] 3.946655
```

```
# check model assumption

# Residual plot
par(mfrow=c(1,2))
plot(resid(final_fit)~fitted(final_fit), col = "grey", pch = 20,
     xlab = "Fitted", ylab = "Residuals", main = "Fitted versus Residuals")
abline(h = 0, col = "darkorange", lwd = 2)

# Normal qq plot
qqnorm(resid(final_fit), main = "Normal Q-Q Plot", col = "darkgrey")
qqline(resid(final_fit), col = "dodgerblue", lwd = 2)
```
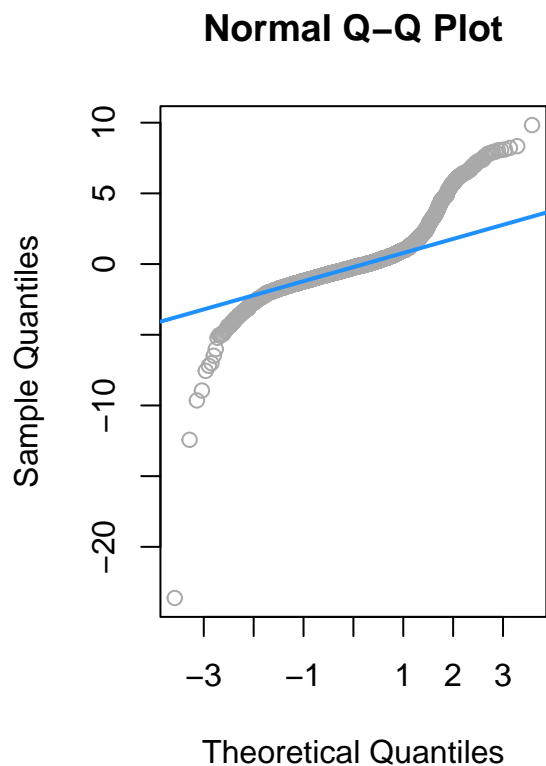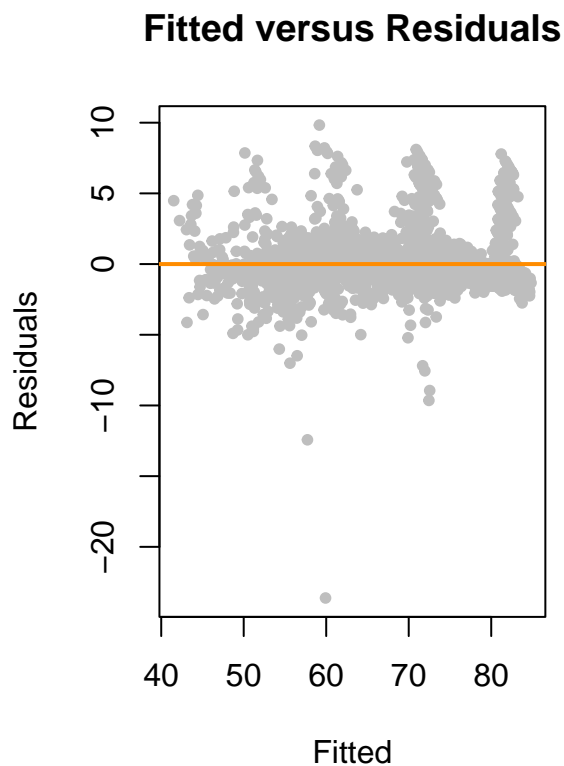
interactions

```
# considering interactions between countries and other predictors
my_fit_interaction = lm(Life.expectancy ~ Country*Year + HIV.AIDS*Country + Schooling*Country + Diphthe
```

```
summary(my_fit_interaction)
```

```
##
## Call:
## lm(formula = Life.expectancy ~ Country * Year + HIV.AIDS * Country +
##     Schooling * Country + Diphtheria * Country + Adult.Mortality *
##     Country + Measles * Country + Alcohol * Country + Polio *
##     Country + thinness.5.9.years * Country + Total.expenditure *
##     Country + percentage.expenditure * Country, data = dataLife)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.2342 -0.1439  0.0000  0.1303  5.5768
##
## Coefficients: (291 not defined because of singularities)
##                                                           Estimate
## (Intercept)                                              -5.100e+02
## CountryAlbania                                           -2.113e+03
## CountryAlgeria                                           -8.495e+00
## CountryAngola                                            -5.135e+03
## CountryAntigua and Barbuda                                2.536e+02
## CountryArgentina                                          9.807e+01
## CountryArmenia                                            1.847e+02
## CountryAustralia                                          4.705e+02
## CountryAustria                                           -1.510e+02
## CountryAzerbaijan                                        -2.549e+03
## CountryBahamas                                            5.233e+02
## CountryBahrain                                            2.518e+02
## CountryBangladesh                                         1.547e+03
## CountryBarbados                                           2.424e+02
## CountryBelarus                                            9.333e+02
## CountryBelgium                                           -7.551e+02
## CountryBelize                                             2.703e+02
## CountryBenin                                              2.811e+02
## CountryBhutan                                            -4.967e+02
## CountryBolivia (Plurinational State of)                  -4.386e+03
## CountryBosnia and Herzegovina                            1.034e+03
## CountryBotswana                                          -1.230e+03
## CountryBrazil                                             2.371e+03
## CountryBrunei Darussalam                                 -1.504e+03
## CountryBulgaria                                           1.464e+02
## CountryBurkina Faso                                      -4.738e+02
## CountryBurundi                                           -4.286e+02
## CountryCÃ´te d'Ivoire                                     -4.440e+03
## CountryCabo Verde                                        -1.238e+03
## CountryCambodia                                           3.781e+01
## CountryCameroon                                           6.649e+02
## CountryCanada                                             6.757e+02
```

```
## CountryCentral African Republic                                       -1.716e+02
## CountryChad                                                           -2.286e+03
## CountryChile                                                           2.820e+02
## CountryChina                                                          -1.041e+03
## CountryColombia                                                       -1.931e+02
## CountryComoros                                                        -1.048e+05
## CountryCongo                                                          -3.837e+03
## CountryCook Islands                                                    1.378e+01
## CountryCosta Rica                                                      4.814e+02
## CountryCroatia                                                        -3.637e+02
## CountryCuba                                                            3.736e+02
## CountryCyprus                                                         -3.052e+00
## CountryCzechia                                                        -4.690e+01
## CountryDemocratic People's Republic of Korea                         -1.105e+03
## CountryDemocratic Republic of the Congo                              -5.637e+02
## CountryDenmark                                                         5.879e+02
## CountryDjibouti                                                        7.574e+03
## CountryDominica                                                        1.332e+01
## CountryDominican Republic                                             -6.628e+03
## CountryEcuador                                                         4.621e+01
## CountryEgypt                                                           1.873e+03
## CountryEl Salvador                                                    -7.764e+01
## CountryEquatorial Guinea                                             -1.595e+02
## CountryEritrea                                                       -5.809e+03
## CountryEstonia                                                        -2.909e+03
## CountryEthiopia                                                        6.220e+02
## CountryFiji                                                            3.173e+02
## CountryFinland                                                        -6.764e+02
## CountryFrance                                                          5.224e+02
## CountryGabon                                                          -7.149e+03
## CountryGambia                                                          7.679e+01
## CountryGeorgia                                                         3.635e+02
## CountryGermany                                                        -5.318e+02
## CountryGhana                                                          -2.251e+02
## CountryGreece                                                         -1.378e+03
## CountryGrenada                                                        -1.220e+03
## CountryGuatemala                                                       1.912e+03
## CountryGuinea                                                         -8.217e+02
## CountryGuinea-Bissau                                                  -1.278e+03
## CountryGuyana                                                          2.847e+02
## CountryHaiti                                                           1.187e+04
## CountryHonduras                                                        1.107e+02
## CountryHungary                                                        -1.779e+02
## CountryIceland                                                         2.914e+03
## CountryIndia                                                          -2.934e+02
## CountryIndonesia                                                       3.797e+02
## CountryIran (Islamic Republic of)                                     -2.342e+02
## CountryIraq                                                           -3.474e+03
## CountryIreland                                                         1.984e+03
## CountryIsrael                                                         -5.106e+02
## CountryItaly                                                           1.185e+03
## CountryJamaica                                                         1.384e+02
## CountryJapan                                                           3.836e+02
## CountryJordan                                                          2.335e+02
```

```
## CountryKazakhstan                              -7.781e+02
## CountryKenya                                    1.804e+03
## CountryKiribati                                 2.415e+02
## CountryKuwait                                   4.199e+02
## CountryKyrgyzstan                              -2.814e+03
## CountryLao People's Democratic Republic         5.295e+03
## CountryLatvia                                   6.041e+03
## CountryLebanon                                  2.302e+02
## CountryLesotho                                  7.252e+02
## CountryLiberia                                  3.526e+03
## CountryLibya                                    2.281e+03
## CountryLithuania                               -1.700e+03
## CountryLuxembourg                               3.339e+02
## CountryMadagascar                               9.558e+03
## CountryMalawi                                   2.095e+03
## CountryMalaysia                                 3.272e+02
## CountryMaldives                                -2.431e+03
## CountryMali                                    -9.500e+02
## CountryMalta                                   -1.493e+02
## CountryMarshall Islands                         1.491e+01
## CountryMauritania                               2.072e+03
## CountryMauritius                               -3.502e+02
## CountryMexico                                   6.223e+02
## CountryMicronesia (Federated States of)         3.252e+02
## CountryMonaco                                   1.346e+01
## CountryMongolia                                -4.872e+01
## CountryMontenegro                               2.530e+02
## CountryMorocco                                  2.166e+03
## CountryMozambique                              -4.940e+03
## CountryMyanmar                                 -4.103e+02
## CountryNamibia                                  1.205e+03
## CountryNauru                                    1.394e+01
## CountryNepal                                   -2.991e+03
## CountryNetherlands                             -6.744e+01
## CountryNew Zealand                              3.685e+02
## CountryNicaragua                                6.023e+02
## CountryNiger                                    4.804e+03
## CountryNigeria                                  2.004e+03
## CountryNiue                                     1.334e+01
## CountryNorway                                   7.422e+02
## CountryOman                                     6.647e+01
## CountryPakistan                                 2.223e+02
## CountryPalau                                    4.063e+01
## CountryPanama                                   4.319e+02
## CountryPapua New Guinea                         4.321e+02
## CountryParaguay                                -2.019e+03
## CountryPeru                                    -3.313e+02
## CountryPhilippines                              3.873e+02
## CountryPoland                                   2.479e+02
## CountryPortugal                                -7.811e+02
## CountryQatar                                    4.043e+02
## CountryRepublic of Korea                       -1.611e+02
## CountryRepublic of Moldova                      4.425e+03
## CountryRomania                                  2.744e+03
```

```
## CountryRussian Federation                                          8.153e+01
## CountryRwanda                                                      -1.016e+04
## CountrySaint Kitts and Nevis                                        7.499e+01
## CountrySaint Lucia                                                 -6.920e+01
## CountrySaint Vincent and the Grenadines                            1.443e+03
## CountrySamoa                                                       -8.985e+02
## CountrySan Marino                                                   1.275e+01
## CountrySao Tome and Principe                                        1.494e+03
## CountrySaudi Arabia                                                 3.810e+02
## CountrySenegal                                                     -2.830e+03
## CountrySerbia                                                       5.827e+02
## CountrySeychelles                                                   2.235e+02
## CountrySierra Leone                                                 5.118e+03
## CountrySingapore                                                    1.697e+03
## CountrySlovakia                                                    -1.034e+01
## CountrySlovenia                                                    -1.431e+03
## CountrySolomon Islands                                              2.413e+02
## CountrySomalia                                                     -8.350e+02
## CountrySouth Africa                                                 3.722e+03
## CountrySouth Sudan                                                 -3.167e+02
## CountrySpain                                                       -1.557e+03
## CountrySri Lanka                                                    1.627e+03
## CountrySudan                                                        2.330e+03
## CountrySuriname                                                     3.728e+03
## CountrySwaziland                                                   -1.096e+04
## CountrySweden                                                      -6.882e+02
## CountrySwitzerland                                                 -1.478e+03
## CountrySyrian Arab Republic                                         2.916e+03
## CountryTajikistan                                                   1.768e+01
## CountryThailand                                                    -1.242e+03
## CountryThe former Yugoslav republic of Macedonia                    1.104e+02
## CountryTimor-Leste                                                 -2.286e+03
## CountryTogo                                                         1.555e+03
## CountryTonga                                                        3.430e+02
## CountryTrinidad and Tobago                                          2.434e+03
## CountryTunisia                                                      4.424e+02
## CountryTurkey                                                      -1.488e+03
## CountryTurkmenistan                                                -2.757e+02
## CountryTuvalu                                                       1.337e+01
## CountryUganda                                                       1.068e+04
## CountryUkraine                                                      2.697e+02
## CountryUnited Arab Emirates                                         4.239e+02
## CountryUnited Kingdom of Great Britain and Northern Ireland         7.463e+02
## CountryUnited Republic of Tanzania                                  4.488e+03
## CountryUnited States of America                                     2.906e+02
## CountryUruguay                                                      3.824e+02
## CountryUzbekistan                                                   3.265e+02
## CountryVanuatu                                                     -2.177e+03
## CountryVenezuela (Bolivarian Republic of)                           4.711e+02
## CountryViet Nam                                                     1.034e+02
## CountryYemen                                                       -2.302e+03
## CountryZambia                                                       4.186e+03
## CountryZimbabwe                                                    -7.117e+03
## Year                                                                2.819e-01
```

```
## HIV.AIDS                                          8.038e-01
## Schooling                                         1.150e-01
## Diphtheria                                         7.817e-02
## Adult.Mortality                                   -3.851e-03
## Measles                                            1.021e-04
## Alcohol                                           -7.258e+00
## Polio                                             -8.233e-02
## thinness.5.9.years                                7.382e-02
## Total.expenditure                                 1.212e-01
## percentage.expenditure                           -1.670e-03
## CountryAlbania:Year                               1.051e+00
## CountryAlgeria:Year                               1.400e-02
## CountryAngola:Year                                2.555e+00
## CountryAntigua and Barbuda:Year                  -1.158e-01
## CountryArgentina:Year                            -3.526e-02
## CountryArmenia:Year                              -8.031e-02
## CountryAustralia:Year                            -2.296e-01
## CountryAustria:Year                               2.655e-02
## CountryAzerbaijan:Year                            1.329e+00
## CountryBahamas:Year                              -2.596e-01
## CountryBahrain:Year                              -1.097e-01
## CountryBangladesh:Year                           -7.891e-01
## CountryBarbados:Year                             -1.121e-01
## CountryBelarus:Year                              -4.593e-01
## CountryBelgium:Year                               3.017e-01
## CountryBelize:Year                               -1.310e-01
## CountryBenin:Year                                -1.301e-01
## CountryBhutan:Year                                2.364e-01
## CountryBolivia (Plurinational State of):Year      2.315e+00
## CountryBosnia and Herzegovina:Year               -4.963e-01
## CountryBotswana:Year                              4.422e-01
## CountryBrazil:Year                               -1.118e+00
## CountryBrunei Darussalam:Year                     7.424e-01
## CountryBulgaria:Year                             -5.706e-02
## CountryBurkina Faso:Year                          2.310e-01
## CountryBurundi:Year                               2.105e-01
## CountryCÃ´te d'Ivoire:Year                        2.160e+00
## CountryCabo Verde:Year                            5.810e-01
## CountryCambodia:Year                             -2.041e-02
## CountryCameroon:Year                             -3.255e-01
## CountryCanada:Year                               -5.763e-01
## CountryCentral African Republic:Year              2.128e-01
## CountryChad:Year                                  1.149e+00
## CountryChile:Year                                -1.490e-01
## CountryChina:Year                                 5.195e-01
## CountryColombia:Year                              1.050e-01
## CountryComoros:Year                               5.039e+01
## CountryCongo:Year                                 1.824e+00
## CountryCook Islands:Year                                 NA
## CountryCosta Rica:Year                           -2.271e-01
## CountryCroatia:Year                               1.935e-01
## CountryCuba:Year                                 -1.614e-01
## CountryCyprus:Year                               -3.499e-03
## CountryCzechia:Year                               2.683e-02
```

```
## CountryDemocratic People's Republic of Korea:Year                           5.787e-01
## CountryDemocratic Republic of the Congo:Year                                2.800e-01
## CountryDenmark:Year                                                        -2.902e-01
## CountryDjibouti:Year                                                       -3.790e+00
## CountryDominica:Year                                                               NA
## CountryDominican Republic:Year                                              3.398e+00
## CountryEcuador:Year                                                        -4.272e-03
## CountryEgypt:Year                                                          -9.505e-01
## CountryEl Salvador:Year                                                     2.188e-02
## CountryEquatorial Guinea:Year                                               7.922e-02
## CountryEritrea:Year                                                         2.845e+00
## CountryEstonia:Year                                                         1.407e+00
## CountryEthiopia:Year                                                       -3.005e-01
## CountryFiji:Year                                                           -1.541e-01
## CountryFinland:Year                                                         4.375e-01
## CountryFrance:Year                                                         -3.123e-01
## CountryGabon:Year                                                           3.504e+00
## CountryGambia:Year                                                         -1.308e-02
## CountryGeorgia:Year                                                        -1.820e-01
## CountryGermany:Year                                                         3.946e-01
## CountryGhana:Year                                                           1.042e-01
## CountryGreece:Year                                                          7.279e-01
## CountryGrenada:Year                                                         7.273e-01
## CountryGuatemala:Year                                                      -1.044e+00
## CountryGuinea:Year                                                          4.090e-01
## CountryGuinea-Bissau:Year                                                   6.436e-01
## CountryGuyana:Year                                                         -1.451e-01
## CountryHaiti:Year                                                          -5.836e+00
## CountryHonduras:Year                                                       -4.742e-02
## CountryHungary:Year                                                         1.013e-01
## CountryIceland:Year                                                        -1.503e+00
## CountryIndia:Year                                                           1.482e-01
## CountryIndonesia:Year                                                      -1.867e-01
## CountryIran (Islamic Republic of):Year                                      1.209e-01
## CountryIraq:Year                                                            1.253e+00
## CountryIreland:Year                                                        -1.073e+00
## CountryIsrael:Year                                                          3.112e-01
## CountryItaly:Year                                                          -6.388e-01
## CountryJamaica:Year                                                        -6.208e-02
## CountryJapan:Year                                                          -1.901e-01
## CountryJordan:Year                                                         -1.081e-01
## CountryKazakhstan:Year                                                      3.994e-01
## CountryKenya:Year                                                          -8.469e-01
## CountryKiribati:Year                                                       -1.161e-01
## CountryKuwait:Year                                                         -1.998e-01
## CountryKyrgyzstan:Year                                                      1.364e+00
## CountryLao People's Democratic Republic:Year                               -2.694e+00
## CountryLatvia:Year                                                         -2.926e+00
## CountryLebanon:Year                                                        -9.823e-02
## CountryLesotho:Year                                                        -3.509e-01
## CountryLiberia:Year                                                        -1.687e+00
## CountryLibya:Year                                                          -1.050e+00
## CountryLithuania:Year                                                       8.345e-01
## CountryLuxembourg:Year                                                     -1.800e-01
```

```
## CountryMadagascar:Year                                           -4.510e+00
## CountryMalawi:Year                                                -1.017e+00
## CountryMalaysia:Year                                              -1.547e-01
## CountryMaldives:Year                                               1.208e+00
## CountryMali:Year                                                   4.756e-01
## CountryMalta:Year                                                  8.759e-02
## CountryMarshall Islands:Year                                               NA
## CountryMauritania:Year                                            -1.049e+00
## CountryMauritius:Year                                              1.946e-01
## CountryMexico:Year                                                -3.119e-01
## CountryMicronesia (Federated States of):Year                      -1.634e-01
## CountryMonaco:Year                                                         NA
## CountryMongolia:Year                                               3.603e-02
## CountryMontenegro:Year                                            -1.161e-01
## CountryMorocco:Year                                               -1.084e+00
## CountryMozambique:Year                                             2.460e+00
## CountryMyanmar:Year                                                7.920e-02
## CountryNamibia:Year                                               -5.829e-01
## CountryNauru:Year                                                          NA
## CountryNepal:Year                                                  1.439e+00
## CountryNetherlands:Year                                            5.426e-02
## CountryNew Zealand:Year                                           -2.132e-01
## CountryNicaragua:Year                                             -3.167e-01
## CountryNiger:Year                                                 -2.443e+00
## CountryNigeria:Year                                               -1.023e+00
## CountryNiue:Year                                                           NA
## CountryNorway:Year                                                -4.134e-01
## CountryOman:Year                                                  -1.583e-02
## CountryPakistan:Year                                              -1.068e-01
## CountryPalau:Year                                                          NA
## CountryPanama:Year                                                -1.955e-01
## CountryPapua New Guinea:Year                                      -2.919e-01
## CountryParaguay:Year                                               1.018e+00
## CountryPeru:Year                                                   1.674e-01
## CountryPhilippines:Year                                           -1.852e-01
## CountryPoland:Year                                                -1.189e-01
## CountryPortugal:Year                                               3.276e-01
## CountryQatar:Year                                                 -1.955e-01
## CountryRepublic of Korea:Year                                      1.131e-01
## CountryRepublic of Moldova:Year                                   -2.143e+00
## CountryRomania:Year                                               -1.318e+00
## CountryRussian Federation:Year                                     4.240e-03
## CountryRwanda:Year                                                 4.894e+00
## CountrySaint Kitts and Nevis:Year                                          NA
## CountrySaint Lucia:Year                                            3.544e-02
## CountrySaint Vincent and the Grenadines:Year                      -5.359e-01
## CountrySamoa:Year                                                  4.307e-01
## CountrySan Marino:Year                                                     NA
## CountrySao Tome and Principe:Year                                 -7.230e-01
## CountrySaudi Arabia:Year                                          -1.862e-01
## CountrySenegal:Year                                                1.436e+00
## CountrySerbia:Year                                                -2.822e-01
## CountrySeychelles:Year                                            -1.011e-01
## CountrySierra Leone:Year                                          -2.611e+00
```

```
## CountrySingapore:Year                                                      -8.056e-01
## CountrySlovakia:Year                                                        1.708e-02
## CountrySlovenia:Year                                                        7.808e-01
## CountrySolomon Islands:Year                                                -1.138e-01
## CountrySomalia:Year                                                         3.931e-01
## CountrySouth Africa:Year                                                   -1.702e+00
## CountrySouth Sudan:Year                                                     1.706e-01
## CountrySpain:Year                                                           8.294e-01
## CountrySri Lanka:Year                                                      -1.006e+00
## CountrySudan:Year                                                          -1.217e+00
## CountrySuriname:Year                                                       -1.915e+00
## CountrySwaziland:Year                                                       5.407e+00
## CountrySweden:Year                                                          6.386e-01
## CountrySwitzerland:Year                                                     6.060e-01
## CountrySyrian Arab Republic:Year                                           -1.468e+00
## CountryTajikistan:Year                                                      1.142e-02
## CountryThailand:Year                                                        6.231e-01
## CountryThe former Yugoslav republic of Macedonia:Year                      -4.634e-02
## CountryTimor-Leste:Year                                                     1.091e+00
## CountryTogo:Year                                                           -7.581e-01
## CountryTonga:Year                                                          -1.621e-01
## CountryTrinidad and Tobago:Year                                            -1.066e+00
## CountryTunisia:Year                                                        -2.160e-01
## CountryTurkey:Year                                                          7.658e-01
## CountryTurkmenistan:Year                                                    1.506e-01
## CountryTuvalu:Year                                                                  NA
## CountryUganda:Year                                                         -5.155e+00
## CountryUkraine:Year                                                        -1.203e-01
## CountryUnited Arab Emirates:Year                                           -2.105e-01
## CountryUnited Kingdom of Great Britain and Northern Ireland:Year           -4.387e-01
## CountryUnited Republic of Tanzania:Year                                    -2.183e+00
## CountryUnited States of America:Year                                       -1.356e-01
## CountryUruguay:Year                                                        -1.796e-01
## CountryUzbekistan:Year                                                     -1.460e-01
## CountryVanuatu:Year                                                         1.012e+00
## CountryVenezuela (Bolivarian Republic of):Year                            -2.227e-01
## CountryViet Nam:Year                                                       -4.537e-02
## CountryYemen:Year                                                           9.310e-01
## CountryZambia:Year                                                         -1.543e+00
## CountryZimbabwe:Year                                                        3.510e+00
## CountryAlbania:HIV.AIDS                                                             NA
## CountryAlgeria:HIV.AIDS                                                             NA
## CountryAngola:HIV.AIDS                                                       1.704e+01
## CountryAntigua and Barbuda:HIV.AIDS                                        -6.751e-01
## CountryArgentina:HIV.AIDS                                                           NA
## CountryArmenia:HIV.AIDS                                                             NA
## CountryAustralia:HIV.AIDS                                                           NA
## CountryAustria:HIV.AIDS                                                             NA
## CountryAzerbaijan:HIV.AIDS                                                          NA
## CountryBahamas:HIV.AIDS                                                     -6.350e-01
## CountryBahrain:HIV.AIDS                                                             NA
## CountryBangladesh:HIV.AIDS                                                          NA
## CountryBarbados:HIV.AIDS                                                    -7.035e-01
## CountryBelarus:HIV.AIDS                                                             NA
```

```
## CountryBelgium:HIV.AIDS                                                      NA
## CountryBelize:HIV.AIDS                                                 -8.621e-01
## CountryBenin:HIV.AIDS                                                  -1.966e-01
## CountryBhutan:HIV.AIDS                                                  2.275e+00
## CountryBolivia (Plurinational State of):HIV.AIDS                        4.001e+01
## CountryBosnia and Herzegovina:HIV.AIDS                                         NA
## CountryBotswana:HIV.AIDS                                               -1.132e+00
## CountryBrazil:HIV.AIDS                                                         NA
## CountryBrunei Darussalam:HIV.AIDS                                              NA
## CountryBulgaria:HIV.AIDS                                                       NA
## CountryBurkina Faso:HIV.AIDS                                            6.907e-01
## CountryBurundi:HIV.AIDS                                                -1.307e+00
## CountryCôte d'Ivoire:HIV.AIDS                                          -2.678e+00
## CountryCabo Verde:HIV.AIDS                                             -1.498e+01
## CountryCambodia:HIV.AIDS                                               -9.017e-01
## CountryCameroon:HIV.AIDS                                               -1.435e+00
## CountryCanada:HIV.AIDS                                                         NA
## CountryCentral African Republic:HIV.AIDS                               -7.825e+00
## CountryChad:HIV.AIDS                                                   -3.003e-01
## CountryChile:HIV.AIDS                                                          NA
## CountryChina:HIV.AIDS                                                          NA
## CountryColombia:HIV.AIDS                                                       NA
## CountryComoros:HIV.AIDS                                                -4.230e+00
## CountryCongo:HIV.AIDS                                                  -5.413e+00
## CountryCook Islands:HIV.AIDS                                                   NA
## CountryCosta Rica:HIV.AIDS                                                     NA
## CountryCroatia:HIV.AIDS                                                        NA
## CountryCuba:HIV.AIDS                                                           NA
## CountryCyprus:HIV.AIDS                                                         NA
## CountryCzechia:HIV.AIDS                                                        NA
## CountryDemocratic People's Republic of Korea:HIV.AIDS                         NA
## CountryDemocratic Republic of the Congo:HIV.AIDS                       -7.008e-01
## CountryDenmark:HIV.AIDS                                                        NA
## CountryDjibouti:HIV.AIDS                                                6.513e-01
## CountryDominica:HIV.AIDS                                                       NA
## CountryDominican Republic:HIV.AIDS                                      7.917e+00
## CountryEcuador:HIV.AIDS                                                -3.742e+00
## CountryEgypt:HIV.AIDS                                                          NA
## CountryEl Salvador:HIV.AIDS                                            -1.068e+01
## CountryEquatorial Guinea:HIV.AIDS                                      -8.856e-01
## CountryEritrea:HIV.AIDS                                                 2.090e+01
## CountryEstonia:HIV.AIDS                                                        NA
## CountryEthiopia:HIV.AIDS                                               -3.939e+00
## CountryFiji:HIV.AIDS                                                           NA
## CountryFinland:HIV.AIDS                                                        NA
## CountryFrance:HIV.AIDS                                                         NA
## CountryGabon:HIV.AIDS                                                  -7.373e-01
## CountryGambia:HIV.AIDS                                                  1.965e-01
## CountryGeorgia:HIV.AIDS                                                        NA
## CountryGermany:HIV.AIDS                                                        NA
## CountryGhana:HIV.AIDS                                                   1.283e+01
## CountryGreece:HIV.AIDS                                                         NA
## CountryGrenada:HIV.AIDS                                                        NA
## CountryGuatemala:HIV.AIDS                                              -2.608e+01
```

```
## CountryGuinea:HIV.AIDS                                        1.711e-01
## CountryGuinea-Bissau:HIV.AIDS                                 -2.672e-01
## CountryGuyana:HIV.AIDS                                        -1.003e+00
## CountryHaiti:HIV.AIDS                                         -1.911e+01
## CountryHonduras:HIV.AIDS                                      -1.711e+00
## CountryHungary:HIV.AIDS                                               NA
## CountryIceland:HIV.AIDS                                               NA
## CountryIndia:HIV.AIDS                                         -2.287e+00
## CountryIndonesia:HIV.AIDS                                      1.748e+00
## CountryIran (Islamic Republic of):HIV.AIDS                            NA
## CountryIraq:HIV.AIDS                                                  NA
## CountryIreland:HIV.AIDS                                               NA
## CountryIsrael:HIV.AIDS                                                NA
## CountryItaly:HIV.AIDS                                                 NA
## CountryJamaica:HIV.AIDS                                       -1.019e+00
## CountryJapan:HIV.AIDS                                                 NA
## CountryJordan:HIV.AIDS                                                NA
## CountryKazakhstan:HIV.AIDS                                            NA
## CountryKenya:HIV.AIDS                                         -4.637e-01
## CountryKiribati:HIV.AIDS                                              NA
## CountryKuwait:HIV.AIDS                                                NA
## CountryKyrgyzstan:HIV.AIDS                                    -2.762e+01
## CountryLao People's Democratic Republic:HIV.AIDS              4.511e+01
## CountryLatvia:HIV.AIDS                                                NA
## CountryLebanon:HIV.AIDS                                               NA
## CountryLesotho:HIV.AIDS                                       -1.136e+00
## CountryLiberia:HIV.AIDS                                       -4.109e+00
## CountryLibya:HIV.AIDS                                                 NA
## CountryLithuania:HIV.AIDS                                             NA
## CountryLuxembourg:HIV.AIDS                                            NA
## CountryMadagascar:HIV.AIDS                                    -6.011e+00
## CountryMalawi:HIV.AIDS                                        -1.438e+00
## CountryMalaysia:HIV.AIDS                                              NA
## CountryMaldives:HIV.AIDS                                              NA
## CountryMali:HIV.AIDS                                          -1.219e+00
## CountryMalta:HIV.AIDS                                                 NA
## CountryMarshall Islands:HIV.AIDS                                      NA
## CountryMauritania:HIV.AIDS                                    -3.795e+00
## CountryMauritius:HIV.AIDS                                     -9.078e-01
## CountryMexico:HIV.AIDS                                                NA
## CountryMicronesia (Federated States of):HIV.AIDS                      NA
## CountryMonaco:HIV.AIDS                                                NA
## CountryMongolia:HIV.AIDS                                              NA
## CountryMontenegro:HIV.AIDS                                            NA
## CountryMorocco:HIV.AIDS                                               NA
## CountryMozambique:HIV.AIDS                                     2.723e-01
## CountryMyanmar:HIV.AIDS                                       -7.895e+00
## CountryNamibia:HIV.AIDS                                       -1.423e+00
## CountryNauru:HIV.AIDS                                                 NA
## CountryNepal:HIV.AIDS                                          5.153e+00
## CountryNetherlands:HIV.AIDS                                           NA
## CountryNew Zealand:HIV.AIDS                                           NA
## CountryNicaragua:HIV.AIDS                                     -1.388e+01
## CountryNiger:HIV.AIDS                                          5.611e+00
```

```
## CountryNigeria:HIV.AIDS                                           -1.901e+00
## CountryNiue:HIV.AIDS                                                        NA
## CountryNorway:HIV.AIDS                                                      NA
## CountryOman:HIV.AIDS                                                        NA
## CountryPakistan:HIV.AIDS                                                    NA
## CountryPalau:HIV.AIDS                                                       NA
## CountryPanama:HIV.AIDS                                               -2.399e-01
## CountryPapua New Guinea:HIV.AIDS                                      8.329e+00
## CountryParaguay:HIV.AIDS                                              2.591e+01
## CountryPeru:HIV.AIDS                                                 -8.161e-01
## CountryPhilippines:HIV.AIDS                                                  NA
## CountryPoland:HIV.AIDS                                                       NA
## CountryPortugal:HIV.AIDS                                                     NA
## CountryQatar:HIV.AIDS                                                        NA
## CountryRepublic of Korea:HIV.AIDS                                            NA
## CountryRepublic of Moldova:HIV.AIDS                                          NA
## CountryRomania:HIV.AIDS                                                      NA
## CountryRussian Federation:HIV.AIDS                                   -8.379e+00
## CountryRwanda:HIV.AIDS                                               -7.503e-01
## CountrySaint Kitts and Nevis:HIV.AIDS                                        NA
## CountrySaint Lucia:HIV.AIDS                                          -9.942e-01
## CountrySaint Vincent and the Grenadines:HIV.AIDS                      2.383e+00
## CountrySamoa:HIV.AIDS                                                        NA
## CountrySan Marino:HIV.AIDS                                                   NA
## CountrySao Tome and Principe:HIV.AIDS                                -5.357e-01
## CountrySaudi Arabia:HIV.AIDS                                                 NA
## CountrySenegal:HIV.AIDS                                               1.494e+00
## CountrySerbia:HIV.AIDS                                                       NA
## CountrySeychelles:HIV.AIDS                                                   NA
## CountrySierra Leone:HIV.AIDS                                         -2.046e+00
## CountrySingapore:HIV.AIDS                                                    NA
## CountrySlovakia:HIV.AIDS                                                     NA
## CountrySlovenia:HIV.AIDS                                                     NA
## CountrySolomon Islands:HIV.AIDS                                              NA
## CountrySomalia:HIV.AIDS                                              -2.779e+01
## CountrySouth Africa:HIV.AIDS                                         -1.856e+00
## CountrySouth Sudan:HIV.AIDS                                          -1.960e+00
## CountrySpain:HIV.AIDS                                                        NA
## CountrySri Lanka:HIV.AIDS                                                    NA
## CountrySudan:HIV.AIDS                                                -8.125e+00
## CountrySuriname:HIV.AIDS                                             -4.299e+00
## CountrySwaziland:HIV.AIDS                                            -8.692e-01
## CountrySweden:HIV.AIDS                                                       NA
## CountrySwitzerland:HIV.AIDS                                                  NA
## CountrySyrian Arab Republic:HIV.AIDS                                         NA
## CountryTajikistan:HIV.AIDS                                            2.770e+00
## CountryThailand:HIV.AIDS                                              4.990e+00
## CountryThe former Yugoslav republic of Macedonia:HIV.AIDS                    NA
## CountryTimor-Leste:HIV.AIDS                                                  NA
## CountryTogo:HIV.AIDS                                                 -1.359e+00
## CountryTonga:HIV.AIDS                                                        NA
## CountryTrinidad and Tobago:HIV.AIDS                                   1.105e-01
## CountryTunisia:HIV.AIDS                                                      NA
## CountryTurkey:HIV.AIDS                                                       NA
```

```
## CountryTurkmenistan:HIV.AIDS                                                          NA
## CountryTuvalu:HIV.AIDS                                                                 NA
## CountryUganda:HIV.AIDS                                                          -5.764e+00
## CountryUkraine:HIV.AIDS                                                         -1.114e+00
## CountryUnited Arab Emirates:HIV.AIDS                                                    NA
## CountryUnited Kingdom of Great Britain and Northern Ireland:HIV.AIDS                    NA
## CountryUnited Republic of Tanzania:HIV.AIDS                                      -1.872e+00
## CountryUnited States of America:HIV.AIDS                                                NA
## CountryUruguay:HIV.AIDS                                                                 NA
## CountryUzbekistan:HIV.AIDS                                                       -2.822e+00
## CountryVanuatu:HIV.AIDS                                                                 NA
## CountryVenezuela (Bolivarian Republic of):HIV.AIDS                                      NA
## CountryViet Nam:HIV.AIDS                                                         -2.070e-01
## CountryYemen:HIV.AIDS                                                                   NA
## CountryZambia:HIV.AIDS                                                           -1.764e-01
## CountryZimbabwe:HIV.AIDS                                                                NA
## CountryAlbania:Schooling                                                         -2.267e-02
## CountryAlgeria:Schooling                                                         -5.791e-02
## CountryAngola:Schooling                                                          -3.396e+00
## CountryAntigua and Barbuda:Schooling                                             -1.095e-01
## CountryArgentina:Schooling                                                       -8.271e-01
## CountryArmenia:Schooling                                                          8.061e-02
## CountryAustralia:Schooling                                                        1.095e+00
## CountryAustria:Schooling                                                         -5.919e-01
## CountryAzerbaijan:Schooling                                                      -1.523e+00
## CountryBahamas:Schooling                                                          2.228e+00
## CountryBahrain:Schooling                                                         -2.800e-01
## CountryBangladesh:Schooling                                                       3.707e+00
## CountryBarbados:Schooling                                                        -1.540e-01
## CountryBelarus:Schooling                                                          1.298e+00
## CountryBelgium:Schooling                                                          9.544e-01
## CountryBelize:Schooling                                                           1.887e-01
## CountryBenin:Schooling                                                           -2.279e-01
## CountryBhutan:Schooling                                                           3.084e-01
## CountryBolivia (Plurinational State of):Schooling                                -7.627e+00
## CountryBosnia and Herzegovina:Schooling                                          -5.775e-02
## CountryBotswana:Schooling                                                         6.366e-01
## CountryBrazil:Schooling                                                          -1.203e+00
## CountryBrunei Darussalam:Schooling                                               -1.073e+00
## CountryBulgaria:Schooling                                                        -7.215e-01
## CountryBurkina Faso:Schooling                                                     1.138e+00
## CountryBurundi:Schooling                                                         -1.004e-01
## CountryCÃ´te d'Ivoire:Schooling                                                         NA
## CountryCabo Verde:Schooling                                                       9.491e-01
## CountryCambodia:Schooling                                                         1.649e+00
## CountryCameroon:Schooling                                                         7.451e-02
## CountryCanada:Schooling                                                           2.938e+01
## CountryCentral African Republic:Schooling                                        -3.282e+01
## CountryChad:Schooling                                                            -4.276e+00
## CountryChile:Schooling                                                            2.377e+00
## CountryChina:Schooling                                                           -2.998e-01
## CountryColombia:Schooling                                                        -6.428e-01
## CountryComoros:Schooling                                                          2.294e+00
## CountryCongo:Schooling                                                            2.943e+00
```

```
## CountryCook Islands:Schooling                                    NA
## CountryCosta Rica:Schooling                                -1.736e-01
## CountryCroatia:Schooling                                   -9.782e-01
## CountryCuba:Schooling                                      -2.653e-01
## CountryCyprus:Schooling                                     3.637e-01
## CountryCzechia:Schooling                                           NA
## CountryDemocratic People's Republic of Korea:Schooling             NA
## CountryDemocratic Republic of the Congo:Schooling                  NA
## CountryDenmark:Schooling                                     1.177e+00
## CountryDjibouti:Schooling                                    1.314e+01
## CountryDominica:Schooling                                           NA
## CountryDominican Republic:Schooling                         -1.721e+01
## CountryEcuador:Schooling                                    -1.020e+00
## CountryEgypt:Schooling                                       4.955e+00
## CountryEl Salvador:Schooling                                 2.410e+00
## CountryEquatorial Guinea:Schooling                          -9.000e-02
## CountryEritrea:Schooling                                     1.178e+01
## CountryEstonia:Schooling                                    -6.998e+00
## CountryEthiopia:Schooling                                   -5.441e-01
## CountryFiji:Schooling                                        2.197e-01
## CountryFinland:Schooling                                     1.112e-01
## CountryFrance:Schooling                                      1.197e+01
## CountryGabon:Schooling                                      -2.249e+00
## CountryGambia:Schooling                                     -2.893e+00
## CountryGeorgia:Schooling                                     4.335e-01
## CountryGermany:Schooling                                     2.018e+00
## CountryGhana:Schooling                                       4.811e+00
## CountryGreece:Schooling                                      3.278e+00
## CountryGrenada:Schooling                                    -1.115e+01
## CountryGuatemala:Schooling                                   1.238e+01
## CountryGuinea:Schooling                                     -4.782e-02
## CountryGuinea-Bissau:Schooling                              -8.558e-01
## CountryGuyana:Schooling                                     -5.240e-02
## CountryHaiti:Schooling                                      -5.197e+00
## CountryHonduras:Schooling                                   -4.245e-01
## CountryHungary:Schooling                                    -1.662e-02
## CountryIceland:Schooling                                     7.630e+00
## CountryIndia:Schooling                                      -1.713e-01
## CountryIndonesia:Schooling                                   5.150e-02
## CountryIran (Islamic Republic of):Schooling                 -1.589e+00
## CountryIraq:Schooling                                        8.705e+00
## CountryIreland:Schooling                                     1.020e+01
## CountryIsrael:Schooling                                     -2.106e+00
## CountryItaly:Schooling                                       1.998e+00
## CountryJamaica:Schooling                                    -4.376e-02
## CountryJapan:Schooling                                       1.163e+00
## CountryJordan:Schooling                                     -2.136e-01
## CountryKazakhstan:Schooling                                 -1.196e+00
## CountryKenya:Schooling                                      -1.108e+00
## CountryKiribati:Schooling                                   -8.046e-02
## CountryKuwait:Schooling                                     -1.969e-01
## CountryKyrgyzstan:Schooling                                  1.073e+00
## CountryLao People's Democratic Republic:Schooling            9.897e+00
## CountryLatvia:Schooling                                      7.380e-02
```

```
## CountryLebanon:Schooling                                      5.917e-03
## CountryLesotho:Schooling                                      -2.046e+00
## CountryLiberia:Schooling                                      -7.632e+00
## CountryLibya:Schooling                                        -4.076e+00
## CountryLithuania:Schooling                                     1.924e+00
## CountryLuxembourg:Schooling                                    1.231e+01
## CountryMadagascar:Schooling                                   -7.379e+00
## CountryMalawi:Schooling                                        1.757e-01
## CountryMalaysia:Schooling                                      1.738e-02
## CountryMaldives:Schooling                                      1.955e+00
## CountryMali:Schooling                                         -1.140e+00
## CountryMalta:Schooling                                         7.633e-01
## CountryMarshall Islands:Schooling                                     NA
## CountryMauritania:Schooling                                    4.213e+00
## CountryMauritius:Schooling                                    -1.425e+00
## CountryMexico:Schooling                                        1.714e+00
## CountryMicronesia (Federated States of):Schooling             3.032e-01
## CountryMonaco:Schooling                                               NA
## CountryMongolia:Schooling                                      1.114e-01
## CountryMontenegro:Schooling                                   -1.360e-01
## CountryMorocco:Schooling                                       2.426e+00
## CountryMozambique:Schooling                                   -4.058e+00
## CountryMyanmar:Schooling                                       6.216e+00
## CountryNamibia:Schooling                                      -1.333e+00
## CountryNauru:Schooling                                                NA
## CountryNepal:Schooling                                         2.602e-01
## CountryNetherlands:Schooling                                  -7.241e-01
## CountryNew Zealand:Schooling                                   4.179e+00
## CountryNicaragua:Schooling                                     2.716e+00
## CountryNiger:Schooling                                         2.055e+01
## CountryNigeria:Schooling                                       4.112e+00
## CountryNiue:Schooling                                                 NA
## CountryNorway:Schooling                                        2.431e+00
## CountryOman:Schooling                                         -1.029e-01
## CountryPakistan:Schooling                                      2.304e-01
## CountryPalau:Schooling                                                NA
## CountryPanama:Schooling                                       -1.083e+00
## CountryPapua New Guinea:Schooling                              4.198e+00
## CountryParaguay:Schooling                                     -5.266e+00
## CountryPeru:Schooling                                          1.991e+00
## CountryPhilippines:Schooling                                   9.724e-01
## CountryPoland:Schooling                                        1.269e-01
## CountryPortugal:Schooling                                      2.792e+00
## CountryQatar:Schooling                                        -1.039e-01
## CountryRepublic of Korea:Schooling                                    NA
## CountryRepublic of Moldova:Schooling                                  NA
## CountryRomania:Schooling                                       6.776e-02
## CountryRussian Federation:Schooling                            5.021e-01
## CountryRwanda:Schooling                                        6.306e+00
## CountrySaint Kitts and Nevis:Schooling                                NA
## CountrySaint Lucia:Schooling                                  -2.374e-01
## CountrySaint Vincent and the Grenadines:Schooling             -2.137e+01
## CountrySamoa:Schooling                                         2.467e+00
## CountrySan Marino:Schooling                                           NA
```

```
## CountrySao Tome and Principe:Schooling                                       2.456e-01
## CountrySaudi Arabia:Schooling                                                2.087e-02
## CountrySenegal:Schooling                                                    -4.176e+00
## CountrySerbia:Schooling                                                      7.701e-01
## CountrySeychelles:Schooling                                                 -4.777e-01
## CountrySierra Leone:Schooling                                                1.251e+01
## CountrySingapore:Schooling                                                   3.278e+00
## CountrySlovakia:Schooling                                                   -4.435e-01
## CountrySlovenia:Schooling                                                   -9.804e-01
## CountrySolomon Islands:Schooling                                            1.518e-02
## CountrySomalia:Schooling                                                            NA
## CountrySouth Africa:Schooling                                               -2.112e+01
## CountrySouth Sudan:Schooling                                                -1.571e-01
## CountrySpain:Schooling                                                      -4.875e+00
## CountrySri Lanka:Schooling                                                   9.635e+00
## CountrySudan:Schooling                                                       1.924e+01
## CountrySuriname:Schooling                                                    1.167e+01
## CountrySwaziland:Schooling                                                   1.714e+00
## CountrySweden:Schooling                                                      5.171e+00
## CountrySwitzerland:Schooling                                                -7.939e+00
## CountrySyrian Arab Republic:Schooling                                        6.571e+00
## CountryTajikistan:Schooling                                                 -1.721e+00
## CountryThailand:Schooling                                                   -1.071e-02
## CountryThe former Yugoslav republic of Macedonia:Schooling                   1.032e-01
## CountryTimor-Leste:Schooling                                                -1.244e-01
## CountryTogo:Schooling                                                       -2.376e-01
## CountryTonga:Schooling                                                      -1.877e-01
## CountryTrinidad and Tobago:Schooling                                        -1.275e+01
## CountryTunisia:Schooling                                                     4.492e-01
## CountryTurkey:Schooling                                                     -2.502e+00
## CountryTurkmenistan:Schooling                                               -2.446e-01
## CountryTuvalu:Schooling                                                             NA
## CountryUganda:Schooling                                                     -1.304e+00
## CountryUkraine:Schooling                                                    -4.605e-01
## CountryUnited Arab Emirates:Schooling                                        6.380e-01
## CountryUnited Kingdom of Great Britain and Northern Ireland:Schooling               NA
## CountryUnited Republic of Tanzania:Schooling                                        NA
## CountryUnited States of America:Schooling                                           NA
## CountryUruguay:Schooling                                                     7.974e-02
## CountryUzbekistan:Schooling                                                 -4.830e-01
## CountryVanuatu:Schooling                                                     5.121e+00
## CountryVenezuela (Bolivarian Republic of):Schooling                         -7.015e-02
## CountryViet Nam:Schooling                                                   -1.478e-01
## CountryYemen:Schooling                                                       4.990e-01
## CountryZambia:Schooling                                                     -3.294e+01
## CountryZimbabwe:Schooling                                                    4.058e+00
## CountryAlbania:Diphtheria                                                   -3.665e-01
## CountryAlgeria:Diphtheria                                                    1.247e-01
## CountryAngola:Diphtheria                                                    -6.315e-02
## CountryAntigua and Barbuda:Diphtheria                                       -7.515e-02
## CountryArgentina:Diphtheria                                                 -5.596e-02
## CountryArmenia:Diphtheria                                                   -7.766e-02
## CountryAustralia:Diphtheria                                                  1.593e+00
## CountryAustria:Diphtheria                                                   -1.416e+00
```

```
## CountryAzerbaijan:Diphtheria                                 -6.464e-01
## CountryBahamas:Diphtheria                                      3.932e-03
## CountryBahrain:Diphtheria                                     -8.423e-02
## CountryBangladesh:Diphtheria                                   4.726e-03
## CountryBarbados:Diphtheria                                    -7.457e-02
## CountryBelarus:Diphtheria                                     -7.352e-02
## CountryBelgium:Diphtheria                                      7.118e-01
## CountryBelize:Diphtheria                                      -8.133e-02
## CountryBenin:Diphtheria                                       -8.015e-02
## CountryBhutan:Diphtheria                                       2.621e-02
## CountryBolivia (Plurinational State of):Diphtheria            -6.410e-01
## CountryBosnia and Herzegovina:Diphtheria                      -8.295e-02
##                                                               Std. Error
## (Intercept)                                                    1.957e+03
## CountryAlbania                                                 3.338e+03
## CountryAlgeria                                                 4.625e+03
## CountryAngola                                                  3.844e+03
## CountryAntigua and Barbuda                                     2.389e+03
## CountryArgentina                                               2.111e+03
## CountryArmenia                                                 2.012e+03
## CountryAustralia                                               2.146e+03
## CountryAustria                                                 2.020e+03
## CountryAzerbaijan                                              2.446e+03
## CountryBahamas                                                 2.074e+03
## CountryBahrain                                                 2.176e+03
## CountryBangladesh                                              2.235e+03
## CountryBarbados                                                2.586e+03
## CountryBelarus                                                 2.785e+03
## CountryBelgium                                                 2.178e+03
## CountryBelize                                                  2.034e+03
## CountryBenin                                                   8.539e+03
## CountryBhutan                                                  9.851e+03
## CountryBolivia (Plurinational State of)                        2.679e+03
## CountryBosnia and Herzegovina                                  3.081e+03
## CountryBotswana                                                2.422e+03
## CountryBrazil                                                  2.706e+03
## CountryBrunei Darussalam                                       3.318e+03
## CountryBulgaria                                                2.593e+03
## CountryBurkina Faso                                            3.929e+03
## CountryBurundi                                                 7.991e+03
## CountryCÃ´te d'Ivoire                                          4.956e+03
## CountryCabo Verde                                              6.653e+03
## CountryCambodia                                                3.011e+03
## CountryCameroon                                                5.101e+03
## CountryCanada                                                  1.974e+03
## CountryCentral African Republic                                3.304e+03
## CountryChad                                                    2.297e+03
## CountryChile                                                   2.498e+03
## CountryChina                                                   4.714e+03
## CountryColombia                                                2.561e+03
## CountryComoros                                                 8.132e+04
## CountryCongo                                                   5.165e+03
## CountryCook Islands                                            8.905e+00
## CountryCosta Rica                                              5.726e+03
```

```
## CountryCroatia                                          2.460e+03
## CountryCuba                                             1.984e+03
## CountryCyprus                                           2.031e+03
## CountryCzechia                                          2.249e+03
## CountryDemocratic People's Republic of Korea            3.466e+03
## CountryDemocratic Republic of the Congo                 2.451e+03
## CountryDenmark                                          2.078e+03
## CountryDjibouti                                         3.451e+03
## CountryDominica                                         9.615e+00
## CountryDominican Republic                               4.586e+03
## CountryEcuador                                          2.346e+03
## CountryEgypt                                            3.232e+03
## CountryEl Salvador                                      2.149e+03
## CountryEquatorial Guinea                                2.069e+03
## CountryEritrea                                          3.549e+03
## CountryEstonia                                          2.542e+03
## CountryEthiopia                                         3.348e+03
## CountryFiji                                             2.472e+03
## CountryFinland                                          2.034e+03
## CountryFrance                                           2.007e+03
## CountryGabon                                            7.292e+03
## CountryGambia                                           2.369e+03
## CountryGeorgia                                          2.269e+03
## CountryGermany                                          4.033e+03
## CountryGhana                                            5.641e+03
## CountryGreece                                           2.140e+03
## CountryGrenada                                          2.131e+03
## CountryGuatemala                                        2.318e+03
## CountryGuinea                                           2.396e+03
## CountryGuinea-Bissau                                    5.613e+03
## CountryGuyana                                           2.225e+03
## CountryHaiti                                            2.951e+03
## CountryHonduras                                         2.339e+03
## CountryHungary                                          2.372e+03
## CountryIceland                                          2.017e+03
## CountryIndia                                            5.275e+03
## CountryIndonesia                                        3.984e+03
## CountryIran (Islamic Republic of)                       2.212e+03
## CountryIraq                                             2.032e+03
## CountryIreland                                          2.645e+03
## CountryIsrael                                           1.999e+03
## CountryItaly                                            2.260e+03
## CountryJamaica                                          2.010e+03
## CountryJapan                                            2.275e+03
## CountryJordan                                           2.028e+03
## CountryKazakhstan                                       2.217e+03
## CountryKenya                                            5.022e+03
## CountryKiribati                                         2.090e+03
## CountryKuwait                                           2.240e+03
## CountryKyrgyzstan                                       2.110e+03
## CountryLao People's Democratic Republic                 3.690e+03
## CountryLatvia                                           2.476e+03
## CountryLebanon                                          2.012e+03
## CountryLesotho                                          2.068e+03
```

```
## CountryLiberia                                       4.177e+03
## CountryLibya                                         2.084e+03
## CountryLithuania                                     2.509e+03
## CountryLuxembourg                                    2.009e+03
## CountryMadagascar                                    3.865e+03
## CountryMalawi                                        1.158e+04
## CountryMalaysia                                      4.681e+03
## CountryMaldives                                      2.365e+03
## CountryMali                                          2.237e+03
## CountryMalta                                         1.992e+03
## CountryMarshall Islands                              3.426e+01
## CountryMauritania                                    2.069e+03
## CountryMauritius                                     4.732e+03
## CountryMexico                                        2.427e+03
## CountryMicronesia (Federated States of)             2.224e+03
## CountryMonaco                                        8.369e+00
## CountryMongolia                                      2.264e+03
## CountryMontenegro                                    2.488e+03
## CountryMorocco                                       2.681e+03
## CountryMozambique                                    4.711e+03
## CountryMyanmar                                       2.646e+03
## CountryNamibia                                       2.564e+03
## CountryNauru                                         3.666e+00
## CountryNepal                                         9.838e+03
## CountryNetherlands                                   2.062e+03
## CountryNew Zealand                                   2.063e+03
## CountryNicaragua                                     2.139e+03
## CountryNiger                                         2.298e+03
## CountryNigeria                                       2.559e+03
## CountryNiue                                          8.854e+00
## CountryNorway                                        1.972e+03
## CountryOman                                          2.141e+03
## CountryPakistan                                      2.679e+03
## CountryPalau                                         3.022e+02
## CountryPanama                                        2.294e+03
## CountryPapua New Guinea                              3.111e+03
## CountryParaguay                                      2.218e+03
## CountryPeru                                          2.338e+03
## CountryPhilippines                                   2.092e+03
## CountryPoland                                        2.696e+03
## CountryPortugal                                      2.176e+03
## CountryQatar                                         2.191e+03
## CountryRepublic of Korea                             2.036e+03
## CountryRepublic of Moldova                           4.296e+03
## CountryRomania                                       4.337e+03
## CountryRussian Federation                            3.211e+03
## CountryRwanda                                        6.990e+03
## CountrySaint Kitts and Nevis                         6.996e+02
## CountrySaint Lucia                                   2.176e+03
## CountrySaint Vincent and the Grenadines              2.283e+03
## CountrySamoa                                         2.203e+03
## CountrySan Marino                                    1.783e+01
## CountrySao Tome and Principe                         5.325e+03
## CountrySaudi Arabia                                  2.206e+03
```

```
## CountrySenegal                                                     4.114e+03
## CountrySerbia                                                      2.842e+03
## CountrySeychelles                                                  2.495e+03
## CountrySierra Leone                                                6.339e+03
## CountrySingapore                                                   2.266e+03
## CountrySlovakia                                                    2.320e+03
## CountrySlovenia                                                    3.348e+03
## CountrySolomon Islands                                             2.009e+03
## CountrySomalia                                                     2.745e+03
## CountrySouth Africa                                                2.145e+03
## CountrySouth Sudan                                                 1.863e+03
## CountrySpain                                                       2.012e+03
## CountrySri Lanka                                                   4.451e+03
## CountrySudan                                                       2.230e+03
## CountrySuriname                                                    2.491e+03
## CountrySwaziland                                                   1.131e+04
## CountrySweden                                                      2.388e+03
## CountrySwitzerland                                                 2.085e+03
## CountrySyrian Arab Republic                                        2.174e+03
## CountryTajikistan                                                  2.282e+03
## CountryThailand                                                    6.755e+03
## CountryThe former Yugoslav republic of Macedonia                   2.320e+03
## CountryTimor-Leste                                                 5.134e+03
## CountryTogo                                                        1.131e+04
## CountryTonga                                                       1.968e+03
## CountryTrinidad and Tobago                                         3.486e+03
## CountryTunisia                                                     2.712e+03
## CountryTurkey                                                      2.393e+03
## CountryTurkmenistan                                                2.037e+03
## CountryTuvalu                                                      3.026e+01
## CountryUganda                                                      1.167e+04
## CountryUkraine                                                     2.994e+03
## CountryUnited Arab Emirates                                        4.511e+03
## CountryUnited Kingdom of Great Britain and Northern Ireland        2.106e+03
## CountryUnited Republic of Tanzania                                 5.361e+03
## CountryUnited States of America                                    2.052e+03
## CountryUruguay                                                     2.130e+03
## CountryUzbekistan                                                  2.309e+03
## CountryVanuatu                                                     2.210e+03
## CountryVenezuela (Bolivarian Republic of)                          2.160e+03
## CountryViet Nam                                                    6.238e+03
## CountryYemen                                                       2.384e+03
## CountryZambia                                                      6.303e+03
## CountryZimbabwe                                                    2.785e+03
## Year                                                               9.855e-01
## HIV.AIDS                                                           4.064e-01
## Schooling                                                          3.201e+00
## Diphtheria                                                         4.854e-02
## Adult.Mortality                                                    9.239e-03
## Measles                                                            4.678e-04
## Alcohol                                                            8.281e+01
## Polio                                                              3.614e-02
## thinness.5.9.years                                                 2.176e-01
## Total.expenditure                                                  7.617e-01
```

```
## percentage.expenditure                                          2.488e-02
## CountryAlbania:Year                                              1.668e+00
## CountryAlgeria:Year                                              2.296e+00
## CountryAngola:Year                                               1.927e+00
## CountryAntigua and Barbuda:Year                                  1.192e+00
## CountryArgentina:Year                                            1.064e+00
## CountryArmenia:Year                                              1.013e+00
## CountryAustralia:Year                                            1.074e+00
## CountryAustria:Year                                              1.019e+00
## CountryAzerbaijan:Year                                           1.236e+00
## CountryBahamas:Year                                              1.048e+00
## CountryBahrain:Year                                              1.134e+00
## CountryBangladesh:Year                                           1.129e+00
## CountryBarbados:Year                                             1.285e+00
## CountryBelarus:Year                                              1.390e+00
## CountryBelgium:Year                                              1.123e+00
## CountryBelize:Year                                               1.020e+00
## CountryBenin:Year                                                4.225e+00
## CountryBhutan:Year                                               4.780e+00
## CountryBolivia (Plurinational State of):Year                     1.385e+00
## CountryBosnia and Herzegovina:Year                              1.523e+00
## CountryBotswana:Year                                             1.221e+00
## CountryBrazil:Year                                               1.338e+00
## CountryBrunei Darussalam:Year                                    1.617e+00
## CountryBulgaria:Year                                             1.295e+00
## CountryBurkina Faso:Year                                         1.968e+00
## CountryBurundi:Year                                              3.855e+00
## CountryCÃ´te d'Ivoire:Year                                       2.429e+00
## CountryCabo Verde:Year                                           3.263e+00
## CountryCambodia:Year                                             1.500e+00
## CountryCameroon:Year                                             2.501e+00
## CountryCanada:Year                                               1.009e+00
## CountryCentral African Republic:Year                             1.633e+00
## CountryChad:Year                                                 1.157e+00
## CountryChile:Year                                                1.271e+00
## CountryChina:Year                                                2.332e+00
## CountryColombia:Year                                             1.272e+00
## CountryComoros:Year                                              3.910e+01
## CountryCongo:Year                                                2.526e+00
## CountryCook Islands:Year                                                 NA
## CountryCosta Rica:Year                                           2.921e+00
## CountryCroatia:Year                                              1.223e+00
## CountryCuba:Year                                                 9.982e-01
## CountryCyprus:Year                                               1.025e+00
## CountryCzechia:Year                                              1.112e+00
## CountryDemocratic People's Republic of Korea:Year                1.674e+00
## CountryDemocratic Republic of the Congo:Year                     1.210e+00
## CountryDenmark:Year                                              1.046e+00
## CountryDjibouti:Year                                             1.713e+00
## CountryDominica:Year                                                     NA
## CountryDominican Republic:Year                                   2.329e+00
## CountryEcuador:Year                                              1.182e+00
## CountryEgypt:Year                                                1.613e+00
## CountryEl Salvador:Year                                          1.085e+00
```

```
## CountryEquatorial Guinea:Year                                  1.042e+00
## CountryEritrea:Year                                            1.760e+00
## CountryEstonia:Year                                            1.252e+00
## CountryEthiopia:Year                                           1.673e+00
## CountryFiji:Year                                               1.268e+00
## CountryFinland:Year                                            1.024e+00
## CountryFrance:Year                                             1.013e+00
## CountryGabon:Year                                              3.651e+00
## CountryGambia:Year                                             1.187e+00
## CountryGeorgia:Year                                            1.143e+00
## CountryGermany:Year                                            1.810e+00
## CountryGhana:Year                                              2.761e+00
## CountryGreece:Year                                             1.082e+00
## CountryGrenada:Year                                            1.081e+00
## CountryGuatemala:Year                                          1.162e+00
## CountryGuinea:Year                                             1.204e+00
## CountryGuinea-Bissau:Year                                      2.837e+00
## CountryGuyana:Year                                             1.100e+00
## CountryHaiti:Year                                              1.493e+00
## CountryHonduras:Year                                           1.162e+00
## CountryHungary:Year                                            1.183e+00
## CountryIceland:Year                                            1.018e+00
## CountryIndia:Year                                              2.416e+00
## CountryIndonesia:Year                                          2.023e+00
## CountryIran (Islamic Republic of):Year                         1.129e+00
## CountryIraq:Year                                               1.018e+00
## CountryIreland:Year                                            1.355e+00
## CountryIsrael:Year                                             1.012e+00
## CountryItaly:Year                                              1.135e+00
## CountryJamaica:Year                                            1.013e+00
## CountryJapan:Year                                              1.174e+00
## CountryJordan:Year                                             1.022e+00
## CountryKazakhstan:Year                                         1.118e+00
## CountryKenya:Year                                              2.408e+00
## CountryKiribati:Year                                           1.050e+00
## CountryKuwait:Year                                             1.124e+00
## CountryKyrgyzstan:Year                                         1.054e+00
## CountryLao People's Democratic Republic:Year                   1.871e+00
## CountryLatvia:Year                                             1.227e+00
## CountryLebanon:Year                                            1.015e+00
## CountryLesotho:Year                                            1.044e+00
## CountryLiberia:Year                                            2.056e+00
## CountryLibya:Year                                              1.040e+00
## CountryLithuania:Year                                          1.243e+00
## CountryLuxembourg:Year                                         1.022e+00
## CountryMadagascar:Year                                         1.887e+00
## CountryMalawi:Year                                             5.628e+00
## CountryMalaysia:Year                                           2.290e+00
## CountryMaldives:Year                                           1.161e+00
## CountryMali:Year                                               1.125e+00
## CountryMalta:Year                                              1.005e+00
## CountryMarshall Islands:Year                                         NA
## CountryMauritania:Year                                         1.042e+00
## CountryMauritius:Year                                          2.326e+00
```

```
## CountryMexico:Year                                      1.226e+00
## CountryMicronesia (Federated States of):Year            1.151e+00
## CountryMonaco:Year                                              NA
## CountryMongolia:Year                                     1.135e+00
## CountryMontenegro:Year                                   1.240e+00
## CountryMorocco:Year                                      1.340e+00
## CountryMozambique:Year                                   2.330e+00
## CountryMyanmar:Year                                      1.325e+00
## CountryNamibia:Year                                      1.296e+00
## CountryNauru:Year                                               NA
## CountryNepal:Year                                        4.699e+00
## CountryNetherlands:Year                                  1.033e+00
## CountryNew Zealand:Year                                  1.039e+00
## CountryNicaragua:Year                                    1.073e+00
## CountryNiger:Year                                        1.159e+00
## CountryNigeria:Year                                      1.287e+00
## CountryNiue:Year                                                NA
## CountryNorway:Year                                       9.974e-01
## CountryOman:Year                                         1.088e+00
## CountryPakistan:Year                                     1.352e+00
## CountryPalau:Year                                               NA
## CountryPanama:Year                                       1.139e+00
## CountryPapua New Guinea:Year                             1.571e+00
## CountryParaguay:Year                                     1.107e+00
## CountryPeru:Year                                         1.167e+00
## CountryPhilippines:Year                                  1.096e+00
## CountryPoland:Year                                       1.304e+00
## CountryPortugal:Year                                     1.082e+00
## CountryQatar:Year                                        1.112e+00
## CountryRepublic of Korea:Year                            1.006e+00
## CountryRepublic of Moldova:Year                          2.093e+00
## CountryRomania:Year                                      2.141e+00
## CountryRussian Federation:Year                           1.560e+00
## CountryRwanda:Year                                       3.408e+00
## CountrySaint Kitts and Nevis:Year                               NA
## CountrySaint Lucia:Year                                  1.090e+00
## CountrySaint Vincent and the Grenadines:Year             1.125e+00
## CountrySamoa:Year                                        1.114e+00
## CountrySan Marino:Year                                          NA
## CountrySao Tome and Principe:Year                        2.609e+00
## CountrySaudi Arabia:Year                                 1.102e+00
## CountrySenegal:Year                                      2.076e+00
## CountrySerbia:Year                                       1.400e+00
## CountrySeychelles:Year                                   1.237e+00
## CountrySierra Leone:Year                                 3.219e+00
## CountrySingapore:Year                                    1.142e+00
## CountrySlovakia:Year                                     1.156e+00
## CountrySlovenia:Year                                     1.645e+00
## CountrySolomon Islands:Year                              1.014e+00
## CountrySomalia:Year                                      1.338e+00
## CountrySouth Africa:Year                                 1.065e+00
## CountrySouth Sudan:Year                                  1.031e+00
## CountrySpain:Year                                        1.016e+00
## CountrySri Lanka:Year                                    2.253e+00
```

```
## CountrySudan:Year                                                      1.129e+00
## CountrySuriname:Year                                                   1.274e+00
## CountrySwaziland:Year                                                  5.601e+00
## CountrySweden:Year                                                     1.159e+00
## CountrySwitzerland:Year                                                1.052e+00
## CountrySyrian Arab Republic:Year                                       1.076e+00
## CountryTajikistan:Year                                                 1.130e+00
## CountryThailand:Year                                                   3.215e+00
## CountryThe former Yugoslav republic of Macedonia:Year                  1.159e+00
## CountryTimor-Leste:Year                                                2.435e+00
## CountryTogo:Year                                                       5.551e+00
## CountryTonga:Year                                                      9.911e-01
## CountryTrinidad and Tobago:Year                                        1.674e+00
## CountryTunisia:Year                                                    1.417e+00
## CountryTurkey:Year                                                     1.203e+00
## CountryTurkmenistan:Year                                               1.022e+00
## CountryTuvalu:Year                                                           NA
## CountryUganda:Year                                                     5.647e+00
## CountryUkraine:Year                                                    1.494e+00
## CountryUnited Arab Emirates:Year                                       2.396e+00
## CountryUnited Kingdom of Great Britain and Northern Ireland:Year       1.055e+00
## CountryUnited Republic of Tanzania:Year                                2.610e+00
## CountryUnited States of America:Year                                   1.012e+00
## CountryUruguay:Year                                                    1.069e+00
## CountryUzbekistan:Year                                                 1.145e+00
## CountryVanuatu:Year                                                    1.110e+00
## CountryVenezuela (Bolivarian Republic of):Year                         1.085e+00
## CountryViet Nam:Year                                                   3.109e+00
## CountryYemen:Year                                                      1.153e+00
## CountryZambia:Year                                                     2.900e+00
## CountryZimbabwe:Year                                                   1.389e+00
## CountryAlbania:HIV.AIDS                                                      NA
## CountryAlgeria:HIV.AIDS                                                      NA
## CountryAngola:HIV.AIDS                                                 7.637e+00
## CountryAntigua and Barbuda:HIV.AIDS                                    2.276e+01
## CountryArgentina:HIV.AIDS                                                    NA
## CountryArmenia:HIV.AIDS                                                      NA
## CountryAustralia:HIV.AIDS                                                    NA
## CountryAustria:HIV.AIDS                                                      NA
## CountryAzerbaijan:HIV.AIDS                                                   NA
## CountryBahamas:HIV.AIDS                                                1.491e+01
## CountryBahrain:HIV.AIDS                                                      NA
## CountryBangladesh:HIV.AIDS                                                   NA
## CountryBarbados:HIV.AIDS                                               3.058e+00
## CountryBelarus:HIV.AIDS                                                      NA
## CountryBelgium:HIV.AIDS                                                      NA
## CountryBelize:HIV.AIDS                                                 1.608e+00
## CountryBenin:HIV.AIDS                                                  8.739e+00
## CountryBhutan:HIV.AIDS                                                 1.570e+01
## CountryBolivia (Plurinational State of):HIV.AIDS                       2.714e+01
## CountryBosnia and Herzegovina:HIV.AIDS                                       NA
## CountryBotswana:HIV.AIDS                                               4.774e-01
## CountryBrazil:HIV.AIDS                                                       NA
## CountryBrunei Darussalam:HIV.AIDS                                            NA
```

```
## CountryBulgaria:HIV.AIDS                                        NA
## CountryBurkina Faso:HIV.AIDS                               3.530e+00
## CountryBurundi:HIV.AIDS                                    8.954e+00
## CountryCÃ´te d'Ivoire:HIV.AIDS                             1.593e+00
## CountryCabo Verde:HIV.AIDS                                 8.514e+00
## CountryCambodia:HIV.AIDS                                   7.107e+00
## CountryCameroon:HIV.AIDS                                   1.903e+00
## CountryCanada:HIV.AIDS                                            NA
## CountryCentral African Republic:HIV.AIDS                   3.594e+00
## CountryChad:HIV.AIDS                                       1.508e+00
## CountryChile:HIV.AIDS                                             NA
## CountryChina:HIV.AIDS                                             NA
## CountryColombia:HIV.AIDS                                          NA
## CountryComoros:HIV.AIDS                                     3.037e+00
## CountryCongo:HIV.AIDS                                       2.897e+00
## CountryCook Islands:HIV.AIDS                                      NA
## CountryCosta Rica:HIV.AIDS                                        NA
## CountryCroatia:HIV.AIDS                                           NA
## CountryCuba:HIV.AIDS                                              NA
## CountryCyprus:HIV.AIDS                                            NA
## CountryCzechia:HIV.AIDS                                           NA
## CountryDemocratic People's Republic of Korea:HIV.AIDS            NA
## CountryDemocratic Republic of the Congo:HIV.AIDS           7.533e+00
## CountryDenmark:HIV.AIDS                                           NA
## CountryDjibouti:HIV.AIDS                                    3.214e+00
## CountryDominica:HIV.AIDS                                          NA
## CountryDominican Republic:HIV.AIDS                          5.637e+00
## CountryEcuador:HIV.AIDS                                     2.003e+01
## CountryEgypt:HIV.AIDS                                             NA
## CountryEl Salvador:HIV.AIDS                                 1.087e+01
## CountryEquatorial Guinea:HIV.AIDS                           8.566e-01
## CountryEritrea:HIV.AIDS                                     1.073e+01
## CountryEstonia:HIV.AIDS                                           NA
## CountryEthiopia:HIV.AIDS                                    4.698e+00
## CountryFiji:HIV.AIDS                                              NA
## CountryFinland:HIV.AIDS                                           NA
## CountryFrance:HIV.AIDS                                            NA
## CountryGabon:HIV.AIDS                                       7.845e-01
## CountryGambia:HIV.AIDS                                      1.501e+00
## CountryGeorgia:HIV.AIDS                                           NA
## CountryGermany:HIV.AIDS                                           NA
## CountryGhana:HIV.AIDS                                       3.529e+00
## CountryGreece:HIV.AIDS                                            NA
## CountryGrenada:HIV.AIDS                                           NA
## CountryGuatemala:HIV.AIDS                                   2.233e+01
## CountryGuinea:HIV.AIDS                                      1.610e+00
## CountryGuinea-Bissau:HIV.AIDS                               3.219e+00
## CountryGuyana:HIV.AIDS                                      1.320e+00
## CountryHaiti:HIV.AIDS                                       3.167e+00
## CountryHonduras:HIV.AIDS                                    5.875e+00
## CountryHungary:HIV.AIDS                                           NA
## CountryIceland:HIV.AIDS                                           NA
## CountryIndia:HIV.AIDS                                       4.850e+01
## CountryIndonesia:HIV.AIDS                                   1.620e+01
```

```
## CountryIran (Islamic Republic of):HIV.AIDS                        NA
## CountryIraq:HIV.AIDS                                              NA
## CountryIreland:HIV.AIDS                                           NA
## CountryIsrael:HIV.AIDS                                            NA
## CountryItaly:HIV.AIDS                                             NA
## CountryJamaica:HIV.AIDS                                       2.450e+00
## CountryJapan:HIV.AIDS                                             NA
## CountryJordan:HIV.AIDS                                            NA
## CountryKazakhstan:HIV.AIDS                                        NA
## CountryKenya:HIV.AIDS                                         1.289e+00
## CountryKiribati:HIV.AIDS                                          NA
## CountryKuwait:HIV.AIDS                                            NA
## CountryKyrgyzstan:HIV.AIDS                                    1.415e+01
## CountryLao People's Democratic Republic:HIV.AIDS             2.219e+01
## CountryLatvia:HIV.AIDS                                            NA
## CountryLebanon:HIV.AIDS                                           NA
## CountryLesotho:HIV.AIDS                                       4.287e-01
## CountryLiberia:HIV.AIDS                                       2.932e+00
## CountryLibya:HIV.AIDS                                             NA
## CountryLithuania:HIV.AIDS                                         NA
## CountryLuxembourg:HIV.AIDS                                        NA
## CountryMadagascar:HIV.AIDS                                    8.353e+00
## CountryMalawi:HIV.AIDS                                        8.579e-01
## CountryMalaysia:HIV.AIDS                                          NA
## CountryMaldives:HIV.AIDS                                          NA
## CountryMali:HIV.AIDS                                          5.868e+00
## CountryMalta:HIV.AIDS                                             NA
## CountryMarshall Islands:HIV.AIDS                                  NA
## CountryMauritania:HIV.AIDS                                    8.944e+00
## CountryMauritius:HIV.AIDS                                     2.110e+01
## CountryMexico:HIV.AIDS                                            NA
## CountryMicronesia (Federated States of):HIV.AIDS                 NA
## CountryMonaco:HIV.AIDS                                            NA
## CountryMongolia:HIV.AIDS                                          NA
## CountryMontenegro:HIV.AIDS                                        NA
## CountryMorocco:HIV.AIDS                                           NA
## CountryMozambique:HIV.AIDS                                    9.315e-01
## CountryMyanmar:HIV.AIDS                                       6.777e+00
## CountryNamibia:HIV.AIDS                                       5.098e-01
## CountryNauru:HIV.AIDS                                             NA
## CountryNepal:HIV.AIDS                                         1.995e+01
## CountryNetherlands:HIV.AIDS                                       NA
## CountryNew Zealand:HIV.AIDS                                       NA
## CountryNicaragua:HIV.AIDS                                     1.432e+01
## CountryNiger:HIV.AIDS                                         7.180e+00
## CountryNigeria:HIV.AIDS                                       2.644e+00
## CountryNiue:HIV.AIDS                                              NA
## CountryNorway:HIV.AIDS                                            NA
## CountryOman:HIV.AIDS                                              NA
## CountryPakistan:HIV.AIDS                                          NA
## CountryPalau:HIV.AIDS                                             NA
## CountryPanama:HIV.AIDS                                        1.431e+01
## CountryPapua New Guinea:HIV.AIDS                              5.331e+00
## CountryParaguay:HIV.AIDS                                      1.194e+01
```

```
## CountryPeru:HIV.AIDS                                                          2.070e+01
## CountryPhilippines:HIV.AIDS                                                          NA
## CountryPoland:HIV.AIDS                                                                NA
## CountryPortugal:HIV.AIDS                                                              NA
## CountryQatar:HIV.AIDS                                                                 NA
## CountryRepublic of Korea:HIV.AIDS                                                     NA
## CountryRepublic of Moldova:HIV.AIDS                                                   NA
## CountryRomania:HIV.AIDS                                                               NA
## CountryRussian Federation:HIV.AIDS                                               1.245e+01
## CountryRwanda:HIV.AIDS                                                           1.459e+00
## CountrySaint Kitts and Nevis:HIV.AIDS                                                 NA
## CountrySaint Lucia:HIV.AIDS                                                      9.381e+00
## CountrySaint Vincent and the Grenadines:HIV.AIDS                                 5.792e+00
## CountrySamoa:HIV.AIDS                                                                 NA
## CountrySan Marino:HIV.AIDS                                                            NA
## CountrySao Tome and Principe:HIV.AIDS                                            4.155e+00
## CountrySaudi Arabia:HIV.AIDS                                                          NA
## CountrySenegal:HIV.AIDS                                                          9.657e+00
## CountrySerbia:HIV.AIDS                                                                NA
## CountrySeychelles:HIV.AIDS                                                            NA
## CountrySierra Leone:HIV.AIDS                                                     3.507e+00
## CountrySingapore:HIV.AIDS                                                             NA
## CountrySlovakia:HIV.AIDS                                                              NA
## CountrySlovenia:HIV.AIDS                                                              NA
## CountrySolomon Islands:HIV.AIDS                                                       NA
## CountrySomalia:HIV.AIDS                                                          1.498e+01
## CountrySouth Africa:HIV.AIDS                                                     4.469e-01
## CountrySouth Sudan:HIV.AIDS                                                      2.219e+00
## CountrySpain:HIV.AIDS                                                                 NA
## CountrySri Lanka:HIV.AIDS                                                             NA
## CountrySudan:HIV.AIDS                                                            1.250e+01
## CountrySuriname:HIV.AIDS                                                         1.636e+00
## CountrySwaziland:HIV.AIDS                                                        4.480e-01
## CountrySweden:HIV.AIDS                                                                NA
## CountrySwitzerland:HIV.AIDS                                                           NA
## CountrySyrian Arab Republic:HIV.AIDS                                                  NA
## CountryTajikistan:HIV.AIDS                                                       5.511e+01
## CountryThailand:HIV.AIDS                                                         2.367e+01
## CountryThe former Yugoslav republic of Macedonia:HIV.AIDS                             NA
## CountryTimor-Leste:HIV.AIDS                                                           NA
## CountryTogo:HIV.AIDS                                                             1.674e+00
## CountryTonga:HIV.AIDS                                                                 NA
## CountryTrinidad and Tobago:HIV.AIDS                                              1.251e+00
## CountryTunisia:HIV.AIDS                                                               NA
## CountryTurkey:HIV.AIDS                                                                NA
## CountryTurkmenistan:HIV.AIDS                                                          NA
## CountryTuvalu:HIV.AIDS                                                                NA
## CountryUganda:HIV.AIDS                                                           2.904e+00
## CountryUkraine:HIV.AIDS                                                          5.041e+00
## CountryUnited Arab Emirates:HIV.AIDS                                                  NA
## CountryUnited Kingdom of Great Britain and Northern Ireland:HIV.AIDS                  NA
## CountryUnited Republic of Tanzania:HIV.AIDS                                      8.487e-01
## CountryUnited States of America:HIV.AIDS                                              NA
## CountryUruguay:HIV.AIDS                                                               NA
```

```
## CountryUzbekistan:HIV.AIDS                                    1.659e+01
## CountryVanuatu:HIV.AIDS                                              NA
## CountryVenezuela (Bolivarian Republic of):HIV.AIDS                   NA
## CountryViet Nam:HIV.AIDS                                       1.303e+01
## CountryYemen:HIV.AIDS                                                NA
## CountryZambia:HIV.AIDS                                          6.690e-01
## CountryZimbabwe:HIV.AIDS                                             NA
## CountryAlbania:Schooling                                        3.660e+00
## CountryAlgeria:Schooling                                        4.840e+00
## CountryAngola:Schooling                                         4.421e+00
## CountryAntigua and Barbuda:Schooling                            3.205e+00
## CountryArgentina:Schooling                                      4.030e+00
## CountryArmenia:Schooling                                        3.563e+00
## CountryAustralia:Schooling                                      3.337e+00
## CountryAustria:Schooling                                        3.446e+00
## CountryAzerbaijan:Schooling                                     4.301e+00
## CountryBahamas:Schooling                                        9.351e+00
## CountryBahrain:Schooling                                        5.754e+00
## CountryBangladesh:Schooling                                     3.862e+00
## CountryBarbados:Schooling                                       4.047e+00
## CountryBelarus:Schooling                                        4.751e+00
## CountryBelgium:Schooling                                        3.303e+00
## CountryBelize:Schooling                                         3.895e+00
## CountryBenin:Schooling                                          8.822e+00
## CountryBhutan:Schooling                                         5.775e+00
## CountryBolivia (Plurinational State of):Schooling               6.380e+00
## CountryBosnia and Herzegovina:Schooling                         3.206e+00
## CountryBotswana:Schooling                                       1.025e+01
## CountryBrazil:Schooling                                         3.590e+00
## CountryBrunei Darussalam:Schooling                              4.205e+00
## CountryBulgaria:Schooling                                       5.666e+00
## CountryBurkina Faso:Schooling                                   4.722e+00
## CountryBurundi:Schooling                                        5.214e+00
## CountryCÃ´te d'Ivoire:Schooling                                      NA
## CountryCabo Verde:Schooling                                     4.156e+00
## CountryCambodia:Schooling                                       3.642e+00
## CountryCameroon:Schooling                                       4.239e+00
## CountryCanada:Schooling                                         1.477e+01
## CountryCentral African Republic:Schooling                       1.264e+01
## CountryChad:Schooling                                           4.297e+00
## CountryChile:Schooling                                          5.397e+00
## CountryChina:Schooling                                          3.986e+00
## CountryColombia:Schooling                                       3.733e+00
## CountryComoros:Schooling                                        4.757e+00
## CountryCongo:Schooling                                          3.467e+00
## CountryCook Islands:Schooling                                        NA
## CountryCosta Rica:Schooling                                     1.381e+01
## CountryCroatia:Schooling                                        5.746e+00
## CountryCuba:Schooling                                           3.242e+00
## CountryCyprus:Schooling                                         3.636e+00
## CountryCzechia:Schooling                                             NA
## CountryDemocratic People's Republic of Korea:Schooling               NA
## CountryDemocratic Republic of the Congo:Schooling                    NA
## CountryDenmark:Schooling                                        3.346e+00
```

```
## CountryDjibouti:Schooling                                    5.665e+00
## CountryDominica:Schooling                                           NA
## CountryDominican Republic:Schooling                           1.922e+01
## CountryEcuador:Schooling                                      4.695e+00
## CountryEgypt:Schooling                                        5.301e+00
## CountryEl Salvador:Schooling                                  4.798e+00
## CountryEquatorial Guinea:Schooling                            3.217e+00
## CountryEritrea:Schooling                                      6.645e+00
## CountryEstonia:Schooling                                      4.318e+00
## CountryEthiopia:Schooling                                     3.978e+00
## CountryFiji:Schooling                                         5.704e+00
## CountryFinland:Schooling                                      3.514e+00
## CountryFrance:Schooling                                       3.985e+00
## CountryGabon:Schooling                                        2.121e+01
## CountryGambia:Schooling                                       4.623e+00
## CountryGeorgia:Schooling                                      4.574e+00
## CountryGermany:Schooling                                      1.995e+01
## CountryGhana:Schooling                                        3.617e+00
## CountryGreece:Schooling                                       3.741e+00
## CountryGrenada:Schooling                                      6.104e+00
## CountryGuatemala:Schooling                                    4.227e+00
## CountryGuinea:Schooling                                       3.509e+00
## CountryGuinea-Bissau:Schooling                                5.574e+00
## CountryGuyana:Schooling                                       3.957e+00
## CountryHaiti:Schooling                                        1.117e+01
## CountryHonduras:Schooling                                     5.728e+00
## CountryHungary:Schooling                                      3.746e+00
## CountryIceland:Schooling                                      3.601e+00
## CountryIndia:Schooling                                        4.398e+00
## CountryIndonesia:Schooling                                    6.138e+00
## CountryIran (Islamic Republic of):Schooling                   3.417e+00
## CountryIraq:Schooling                                         4.861e+00
## CountryIreland:Schooling                                      6.071e+00
## CountryIsrael:Schooling                                       4.025e+00
## CountryItaly:Schooling                                        5.134e+00
## CountryJamaica:Schooling                                      3.656e+00
## CountryJapan:Schooling                                        1.217e+01
## CountryJordan:Schooling                                       4.532e+00
## CountryKazakhstan:Schooling                                   4.021e+00
## CountryKenya:Schooling                                        4.322e+00
## CountryKiribati:Schooling                                     3.308e+00
## CountryKuwait:Schooling                                       4.852e+00
## CountryKyrgyzstan:Schooling                                   3.746e+00
## CountryLao People's Democratic Republic:Schooling             6.775e+00
## CountryLatvia:Schooling                                       3.857e+00
## CountryLebanon:Schooling                                      3.546e+00
## CountryLesotho:Schooling                                      4.282e+00
## CountryLiberia:Schooling                                      3.858e+00
## CountryLibya:Schooling                                        3.579e+00
## CountryLithuania:Schooling                                    3.345e+00
## CountryLuxembourg:Schooling                                   5.484e+00
## CountryMadagascar:Schooling                                   5.995e+00
## CountryMalawi:Schooling                                       5.163e+00
## CountryMalaysia:Schooling                                     4.161e+00
```

```
## CountryMaldives:Schooling                                      3.921e+00
## CountryMali:Schooling                                          3.571e+00
## CountryMalta:Schooling                                         3.568e+00
## CountryMarshall Islands:Schooling                                    NA
## CountryMauritania:Schooling                                    3.999e+00
## CountryMauritius:Schooling                                     5.631e+00
## CountryMexico:Schooling                                        6.169e+00
## CountryMicronesia (Federated States of):Schooling             5.647e+00
## CountryMonaco:Schooling                                              NA
## CountryMongolia:Schooling                                      3.863e+00
## CountryMontenegro:Schooling                                    3.204e+00
## CountryMorocco:Schooling                                       4.329e+00
## CountryMozambique:Schooling                                    4.560e+00
## CountryMyanmar:Schooling                                       9.510e+00
## CountryNamibia:Schooling                                       5.013e+00
## CountryNauru:Schooling                                               NA
## CountryNepal:Schooling                                         3.629e+00
## CountryNetherlands:Schooling                                   4.000e+00
## CountryNew Zealand:Schooling                                   3.586e+00
## CountryNicaragua:Schooling                                     4.139e+00
## CountryNiger:Schooling                                         5.787e+00
## CountryNigeria:Schooling                                       4.355e+00
## CountryNiue:Schooling                                                NA
## CountryNorway:Schooling                                        4.417e+00
## CountryOman:Schooling                                          3.665e+00
## CountryPakistan:Schooling                                      5.338e+00
## CountryPalau:Schooling                                               NA
## CountryPanama:Schooling                                        4.154e+00
## CountryPapua New Guinea:Schooling                              4.955e+00
## CountryParaguay:Schooling                                      3.543e+00
## CountryPeru:Schooling                                          4.101e+00
## CountryPhilippines:Schooling                                   6.061e+00
## CountryPoland:Schooling                                        3.681e+00
## CountryPortugal:Schooling                                      5.029e+00
## CountryQatar:Schooling                                         3.256e+00
## CountryRepublic of Korea:Schooling                                   NA
## CountryRepublic of Moldova:Schooling                                 NA
## CountryRomania:Schooling                                       3.395e+00
## CountryRussian Federation:Schooling                            4.573e+00
## CountryRwanda:Schooling                                        3.587e+00
## CountrySaint Kitts and Nevis:Schooling                               NA
## CountrySaint Lucia:Schooling                                   4.678e+00
## CountrySaint Vincent and the Grenadines:Schooling              5.982e+00
## CountrySamoa:Schooling                                         5.439e+00
## CountrySan Marino:Schooling                                          NA
## CountrySao Tome and Principe:Schooling                         4.913e+00
## CountrySaudi Arabia:Schooling                                  3.663e+00
## CountrySenegal:Schooling                                       7.591e+00
## CountrySerbia:Schooling                                        5.148e+00
## CountrySeychelles:Schooling                                    3.680e+00
## CountrySierra Leone:Schooling                                  1.537e+01
## CountrySingapore:Schooling                                     3.585e+00
## CountrySlovakia:Schooling                                      4.998e+00
## CountrySlovenia:Schooling                                      3.652e+00
```

```
## CountrySolomon Islands:Schooling                                                      4.207e+00
## CountrySomalia:Schooling                                                                    NA
## CountrySouth Africa:Schooling                                                          7.861e+00
## CountrySouth Sudan:Schooling                                                           3.383e+00
## CountrySpain:Schooling                                                                 3.646e+00
## CountrySri Lanka:Schooling                                                             1.502e+01
## CountrySudan:Schooling                                                                 7.222e+00
## CountrySuriname:Schooling                                                              5.599e+00
## CountrySwaziland:Schooling                                                             6.684e+00
## CountrySweden:Schooling                                                                7.920e+00
## CountrySwitzerland:Schooling                                                           6.261e+00
## CountrySyrian Arab Republic:Schooling                                                  4.069e+00
## CountryTajikistan:Schooling                                                            4.902e+00
## CountryThailand:Schooling                                                              5.830e+00
## CountryThe former Yugoslav republic of Macedonia:Schooling                             3.727e+00
## CountryTimor-Leste:Schooling                                                           3.229e+00
## CountryTogo:Schooling                                                                  4.472e+00
## CountryTonga:Schooling                                                                 3.488e+00
## CountryTrinidad and Tobago:Schooling                                                   9.651e+00
## CountryTunisia:Schooling                                                               6.796e+00
## CountryTurkey:Schooling                                                                3.834e+00
## CountryTurkmenistan:Schooling                                                          3.275e+00
## CountryTuvalu:Schooling                                                                      NA
## CountryUganda:Schooling                                                                3.523e+00
## CountryUkraine:Schooling                                                               4.691e+00
## CountryUnited Arab Emirates:Schooling                                                  1.525e+01
## CountryUnited Kingdom of Great Britain and Northern Ireland:Schooling                        NA
## CountryUnited Republic of Tanzania:Schooling                                                 NA
## CountryUnited States of America:Schooling                                                    NA
## CountryUruguay:Schooling                                                               3.635e+00
## CountryUzbekistan:Schooling                                                            5.678e+00
## CountryVanuatu:Schooling                                                               9.464e+00
## CountryVenezuela (Bolivarian Republic of):Schooling                                    3.610e+00
## CountryViet Nam:Schooling                                                              1.404e+01
## CountryYemen:Schooling                                                                 4.677e+00
## CountryZambia:Schooling                                                                1.854e+01
## CountryZimbabwe:Schooling                                                              3.929e+00
## CountryAlbania:Diphtheria                                                              9.570e-01
## CountryAlgeria:Diphtheria                                                              1.168e+00
## CountryAngola:Diphtheria                                                               5.619e-02
## CountryAntigua and Barbuda:Diphtheria                                                  4.461e-01
## CountryArgentina:Diphtheria                                                            1.445e-01
## CountryArmenia:Diphtheria                                                              5.541e-02
## CountryAustralia:Diphtheria                                                            1.988e+00
## CountryAustria:Diphtheria                                                              3.441e-01
## CountryAzerbaijan:Diphtheria                                                           1.966e-01
## CountryBahamas:Diphtheria                                                              3.818e-01
## CountryBahrain:Diphtheria                                                              1.649e+00
## CountryBangladesh:Diphtheria                                                           1.677e-01
## CountryBarbados:Diphtheria                                                             1.652e-01
## CountryBelarus:Diphtheria                                                              5.128e-02
## CountryBelgium:Diphtheria                                                              1.922e+00
## CountryBelize:Diphtheria                                                               3.968e-01
## CountryBenin:Diphtheria                                                                5.629e-02
```

```
## CountryBhutan:Diphtheria                                    2.136e-01
## CountryBolivia (Plurinational State of):Diphtheria          4.500e-01
## CountryBosnia and Herzegovina:Diphtheria                    5.094e-02
##                                                             t value
## (Intercept)                                                 -0.261
## CountryAlbania                                              -0.633
## CountryAlgeria                                              -0.002
## CountryAngola                                               -1.336
## CountryAntigua and Barbuda                                   0.106
## CountryArgentina                                             0.046
## CountryArmenia                                               0.092
## CountryAustralia                                             0.219
## CountryAustria                                              -0.075
## CountryAzerbaijan                                           -1.042
## CountryBahamas                                               0.252
## CountryBahrain                                               0.116
## CountryBangladesh                                            0.692
## CountryBarbados                                              0.094
## CountryBelarus                                               0.335
## CountryBelgium                                              -0.347
## CountryBelize                                                0.133
## CountryBenin                                                 0.033
## CountryBhutan                                               -0.050
## CountryBolivia (Plurinational State of)                     -1.637
## CountryBosnia and Herzegovina                                0.336
## CountryBotswana                                             -0.508
## CountryBrazil                                                0.876
## CountryBrunei Darussalam                                    -0.453
## CountryBulgaria                                              0.056
## CountryBurkina Faso                                         -0.121
## CountryBurundi                                              -0.054
## CountryCÃ´te d'Ivoire                                       -0.896
## CountryCabo Verde                                           -0.186
## CountryCambodia                                              0.013
## CountryCameroon                                              0.130
## CountryCanada                                                0.342
## CountryCentral African Republic                             -0.052
## CountryChad                                                 -0.995
## CountryChile                                                 0.113
## CountryChina                                                -0.221
## CountryColombia                                             -0.075
## CountryComoros                                              -1.289
## CountryCongo                                                -0.743
## CountryCook Islands                                          1.547
## CountryCosta Rica                                            0.084
## CountryCroatia                                              -0.148
## CountryCuba                                                  0.188
## CountryCyprus                                               -0.002
## CountryCzechia                                              -0.021
## CountryDemocratic People's Republic of Korea               -0.319
## CountryDemocratic Republic of the Congo                    -0.230
## CountryDenmark                                               0.283
## CountryDjibouti                                              2.195
## CountryDominica                                              1.385
```

```
## CountryDominican Republic                          -1.445
## CountryEcuador                                       0.020
## CountryEgypt                                         0.579
## CountryEl Salvador                                  -0.036
## CountryEquatorial Guinea                            -0.077
## CountryEritrea                                      -1.637
## CountryEstonia                                      -1.144
## CountryEthiopia                                      0.186
## CountryFiji                                          0.128
## CountryFinland                                      -0.332
## CountryFrance                                        0.260
## CountryGabon                                        -0.980
## CountryGambia                                        0.032
## CountryGeorgia                                       0.160
## CountryGermany                                      -0.132
## CountryGhana                                        -0.040
## CountryGreece                                       -0.644
## CountryGrenada                                      -0.573
## CountryGuatemala                                     0.825
## CountryGuinea                                       -0.343
## CountryGuinea-Bissau                                -0.228
## CountryGuyana                                        0.128
## CountryHaiti                                         4.021
## CountryHonduras                                      0.047
## CountryHungary                                      -0.075
## CountryIceland                                       1.445
## CountryIndia                                        -0.056
## CountryIndonesia                                     0.095
## CountryIran (Islamic Republic of)                   -0.106
## CountryIraq                                         -1.710
## CountryIreland                                       0.750
## CountryIsrael                                       -0.255
## CountryItaly                                         0.524
## CountryJamaica                                       0.069
## CountryJapan                                         0.169
## CountryJordan                                        0.115
## CountryKazakhstan                                   -0.351
## CountryKenya                                         0.359
## CountryKiribati                                      0.116
## CountryKuwait                                        0.187
## CountryKyrgyzstan                                   -1.334
## CountryLao People's Democratic Republic             1.435
## CountryLatvia                                        2.439
## CountryLebanon                                       0.114
## CountryLesotho                                       0.351
## CountryLiberia                                       0.844
## CountryLibya                                         1.095
## CountryLithuania                                    -0.678
## CountryLuxembourg                                    0.166
## CountryMadagascar                                    2.473
## CountryMalawi                                        0.181
## CountryMalaysia                                      0.070
## CountryMaldives                                     -1.028
## CountryMali                                         -0.425
```

```
## CountryMalta                                          -0.075
## CountryMarshall Islands                                 0.435
## CountryMauritania                                       1.002
## CountryMauritius                                       -0.074
## CountryMexico                                           0.256
## CountryMicronesia (Federated States of)                0.146
## CountryMonaco                                           1.608
## CountryMongolia                                        -0.022
## CountryMontenegro                                       0.102
## CountryMorocco                                          0.808
## CountryMozambique                                      -1.049
## CountryMyanmar                                         -0.155
## CountryNamibia                                          0.470
## CountryNauru                                            3.802
## CountryNepal                                           -0.304
## CountryNetherlands                                     -0.033
## CountryNew Zealand                                      0.179
## CountryNicaragua                                        0.282
## CountryNiger                                            2.090
## CountryNigeria                                          0.783
## CountryNiue                                             1.507
## CountryNorway                                           0.376
## CountryOman                                             0.031
## CountryPakistan                                         0.083
## CountryPalau                                            0.134
## CountryPanama                                           0.188
## CountryPapua New Guinea                                 0.139
## CountryParaguay                                        -0.910
## CountryPeru                                            -0.142
## CountryPhilippines                                      0.185
## CountryPoland                                           0.092
## CountryPortugal                                        -0.359
## CountryQatar                                            0.185
## CountryRepublic of Korea                               -0.079
## CountryRepublic of Moldova                              1.030
## CountryRomania                                          0.633
## CountryRussian Federation                               0.025
## CountryRwanda                                          -1.454
## CountrySaint Kitts and Nevis                            0.107
## CountrySaint Lucia                                     -0.032
## CountrySaint Vincent and the Grenadines                 0.632
## CountrySamoa                                           -0.408
## CountrySan Marino                                       0.715
## CountrySao Tome and Principe                            0.281
## CountrySaudi Arabia                                     0.173
## CountrySenegal                                         -0.688
## CountrySerbia                                           0.205
## CountrySeychelles                                       0.090
## CountrySierra Leone                                     0.807
## CountrySingapore                                        0.749
## CountrySlovakia                                        -0.004
## CountrySlovenia                                        -0.427
## CountrySolomon Islands                                  0.120
## CountrySomalia                                         -0.304
```

```
## CountrySouth Africa                                               1.735
## CountrySouth Sudan                                               -0.170
## CountrySpain                                                     -0.774
## CountrySri Lanka                                                  0.366
## CountrySudan                                                      1.045
## CountrySuriname                                                   1.497
## CountrySwaziland                                                 -0.970
## CountrySweden                                                    -0.288
## CountrySwitzerland                                               -0.709
## CountrySyrian Arab Republic                                       1.342
## CountryTajikistan                                                 0.008
## CountryThailand                                                  -0.184
## CountryThe former Yugoslav republic of Macedonia                 0.048
## CountryTimor-Leste                                               -0.445
## CountryTogo                                                       0.137
## CountryTonga                                                      0.174
## CountryTrinidad and Tobago                                        0.698
## CountryTunisia                                                    0.163
## CountryTurkey                                                    -0.622
## CountryTurkmenistan                                              -0.135
## CountryTuvalu                                                     0.442
## CountryUganda                                                     0.915
## CountryUkraine                                                    0.090
## CountryUnited Arab Emirates                                       0.094
## CountryUnited Kingdom of Great Britain and Northern Ireland       0.354
## CountryUnited Republic of Tanzania                                0.837
## CountryUnited States of America                                   0.142
## CountryUruguay                                                    0.180
## CountryUzbekistan                                                 0.141
## CountryVanuatu                                                   -0.985
## CountryVenezuela (Bolivarian Republic of)                         0.218
## CountryViet Nam                                                   0.017
## CountryYemen                                                     -0.966
## CountryZambia                                                     0.664
## CountryZimbabwe                                                  -2.556
## Year                                                              0.286
## HIV.AIDS                                                          1.978
## Schooling                                                         0.036
## Diphtheria                                                        1.610
## Adult.Mortality                                                  -0.417
## Measles                                                           0.218
## Alcohol                                                          -0.088
## Polio                                                            -2.278
## thinness.5.9.years                                                0.339
## Total.expenditure                                                 0.159
## percentage.expenditure                                           -0.067
## CountryAlbania:Year                                               0.630
## CountryAlgeria:Year                                               0.006
## CountryAngola:Year                                                1.326
## CountryAntigua and Barbuda:Year                                  -0.097
## CountryArgentina:Year                                            -0.033
## CountryArmenia:Year                                              -0.079
## CountryAustralia:Year                                            -0.214
## CountryAustria:Year                                               0.026
```

```
## CountryAzerbaijan:Year                                              1.075
## CountryBahamas:Year                                                -0.248
## CountryBahrain:Year                                                -0.097
## CountryBangladesh:Year                                             -0.699
## CountryBarbados:Year                                               -0.087
## CountryBelarus:Year                                                -0.330
## CountryBelgium:Year                                                 0.269
## CountryBelize:Year                                                 -0.129
## CountryBenin:Year                                                  -0.031
## CountryBhutan:Year                                                  0.049
## CountryBolivia (Plurinational State of):Year                        1.672
## CountryBosnia and Herzegovina:Year                                 -0.326
## CountryBotswana:Year                                                0.362
## CountryBrazil:Year                                                 -0.836
## CountryBrunei Darussalam:Year                                       0.459
## CountryBulgaria:Year                                               -0.044
## CountryBurkina Faso:Year                                            0.117
## CountryBurundi:Year                                                 0.055
## CountryCÃ´te d'Ivoire:Year                                          0.889
## CountryCabo Verde:Year                                              0.178
## CountryCambodia:Year                                               -0.014
## CountryCameroon:Year                                               -0.130
## CountryCanada:Year                                                 -0.571
## CountryCentral African Republic:Year                                0.130
## CountryChad:Year                                                    0.993
## CountryChile:Year                                                  -0.117
## CountryChina:Year                                                   0.223
## CountryColombia:Year                                                0.083
## CountryComoros:Year                                                 1.289
## CountryCongo:Year                                                   0.722
## CountryCook Islands:Year                                               NA
## CountryCosta Rica:Year                                             -0.078
## CountryCroatia:Year                                                 0.158
## CountryCuba:Year                                                   -0.162
## CountryCyprus:Year                                                 -0.003
## CountryCzechia:Year                                                 0.024
## CountryDemocratic People's Republic of Korea:Year                   0.346
## CountryDemocratic Republic of the Congo:Year                        0.231
## CountryDenmark:Year                                                -0.278
## CountryDjibouti:Year                                               -2.212
## CountryDominica:Year                                                   NA
## CountryDominican Republic:Year                                      1.459
## CountryEcuador:Year                                                -0.004
## CountryEgypt:Year                                                  -0.589
## CountryEl Salvador:Year                                             0.020
## CountryEquatorial Guinea:Year                                       0.076
## CountryEritrea:Year                                                 1.617
## CountryEstonia:Year                                                 1.124
## CountryEthiopia:Year                                               -0.180
## CountryFiji:Year                                                   -0.122
## CountryFinland:Year                                                 0.427
## CountryFrance:Year                                                 -0.308
## CountryGabon:Year                                                   0.960
## CountryGambia:Year                                                 -0.011
```

```
## CountryGeorgia:Year                                      -0.159
## CountryGermany:Year                                       0.218
## CountryGhana:Year                                         0.038
## CountryGreece:Year                                        0.673
## CountryGrenada:Year                                       0.673
## CountryGuatemala:Year                                    -0.898
## CountryGuinea:Year                                        0.340
## CountryGuinea-Bissau:Year                                 0.227
## CountryGuyana:Year                                       -0.132
## CountryHaiti:Year                                        -3.908
## CountryHonduras:Year                                     -0.041
## CountryHungary:Year                                       0.086
## CountryIceland:Year                                      -1.476
## CountryIndia:Year                                         0.061
## CountryIndonesia:Year                                    -0.092
## CountryIran (Islamic Republic of):Year                    0.107
## CountryIraq:Year                                          1.232
## CountryIreland:Year                                      -0.792
## CountryIsrael:Year                                        0.308
## CountryItaly:Year                                        -0.563
## CountryJamaica:Year                                      -0.061
## CountryJapan:Year                                        -0.162
## CountryJordan:Year                                       -0.106
## CountryKazakhstan:Year                                    0.357
## CountryKenya:Year                                        -0.352
## CountryKiribati:Year                                     -0.111
## CountryKuwait:Year                                       -0.178
## CountryKyrgyzstan:Year                                    1.293
## CountryLao People's Democratic Republic:Year             -1.440
## CountryLatvia:Year                                       -2.384
## CountryLebanon:Year                                      -0.097
## CountryLesotho:Year                                      -0.336
## CountryLiberia:Year                                      -0.820
## CountryLibya:Year                                        -1.009
## CountryLithuania:Year                                     0.672
## CountryLuxembourg:Year                                   -0.176
## CountryMadagascar:Year                                   -2.390
## CountryMalawi:Year                                       -0.181
## CountryMalaysia:Year                                     -0.068
## CountryMaldives:Year                                      1.041
## CountryMali:Year                                          0.423
## CountryMalta:Year                                         0.087
## CountryMarshall Islands:Year                                 NA
## CountryMauritania:Year                                   -1.007
## CountryMauritius:Year                                     0.084
## CountryMexico:Year                                       -0.254
## CountryMicronesia (Federated States of):Year             -0.142
## CountryMonaco:Year                                           NA
## CountryMongolia:Year                                      0.032
## CountryMontenegro:Year                                   -0.094
## CountryMorocco:Year                                      -0.809
## CountryMozambique:Year                                    1.056
## CountryMyanmar:Year                                       0.060
## CountryNamibia:Year                                      -0.450
```

```
## CountryNauru:Year                                                       NA
## CountryNepal:Year                                                     0.306
## CountryNetherlands:Year                                               0.053
## CountryNew Zealand:Year                                              -0.205
## CountryNicaragua:Year                                                -0.295
## CountryNiger:Year                                                    -2.108
## CountryNigeria:Year                                                  -0.795
## CountryNiue:Year                                                        NA
## CountryNorway:Year                                                   -0.415
## CountryOman:Year                                                     -0.015
## CountryPakistan:Year                                                 -0.079
## CountryPalau:Year                                                       NA
## CountryPanama:Year                                                   -0.172
## CountryPapua New Guinea:Year                                         -0.186
## CountryParaguay:Year                                                  0.919
## CountryPeru:Year                                                      0.143
## CountryPhilippines:Year                                              -0.169
## CountryPoland:Year                                                   -0.091
## CountryPortugal:Year                                                  0.303
## CountryQatar:Year                                                    -0.176
## CountryRepublic of Korea:Year                                         0.112
## CountryRepublic of Moldova:Year                                      -1.024
## CountryRomania:Year                                                  -0.616
## CountryRussian Federation:Year                                        0.003
## CountryRwanda:Year                                                    1.436
## CountrySaint Kitts and Nevis:Year                                       NA
## CountrySaint Lucia:Year                                               0.033
## CountrySaint Vincent and the Grenadines:Year                         -0.476
## CountrySamoa:Year                                                     0.387
## CountrySan Marino:Year                                                  NA
## CountrySao Tome and Principe:Year                                    -0.277
## CountrySaudi Arabia:Year                                             -0.169
## CountrySenegal:Year                                                   0.692
## CountrySerbia:Year                                                   -0.202
## CountrySeychelles:Year                                               -0.082
## CountrySierra Leone:Year                                             -0.811
## CountrySingapore:Year                                                -0.706
## CountrySlovakia:Year                                                  0.015
## CountrySlovenia:Year                                                  0.475
## CountrySolomon Islands:Year                                          -0.112
## CountrySomalia:Year                                                   0.294
## CountrySouth Africa:Year                                             -1.598
## CountrySouth Sudan:Year                                               0.166
## CountrySpain:Year                                                     0.816
## CountrySri Lanka:Year                                                -0.447
## CountrySudan:Year                                                    -1.077
## CountrySuriname:Year                                                 -1.504
## CountrySwaziland:Year                                                 0.965
## CountrySweden:Year                                                    0.551
## CountrySwitzerland:Year                                               0.576
## CountrySyrian Arab Republic:Year                                     -1.364
## CountryTajikistan:Year                                                0.010
## CountryThailand:Year                                                  0.194
## CountryThe former Yugoslav republic of Macedonia:Year                -0.040
```

```
## CountryTimor-Leste:Year                                                     0.448
## CountryTogo:Year                                                           -0.137
## CountryTonga:Year                                                          -0.164
## CountryTrinidad and Tobago:Year                                            -0.637
## CountryTunisia:Year                                                        -0.152
## CountryTurkey:Year                                                          0.637
## CountryTurkmenistan:Year                                                    0.147
## CountryTuvalu:Year                                                             NA
## CountryUganda:Year                                                         -0.913
## CountryUkraine:Year                                                        -0.081
## CountryUnited Arab Emirates:Year                                           -0.088
## CountryUnited Kingdom of Great Britain and Northern Ireland:Year           -0.416
## CountryUnited Republic of Tanzania:Year                                    -0.837
## CountryUnited States of America:Year                                       -0.134
## CountryUruguay:Year                                                        -0.168
## CountryUzbekistan:Year                                                     -0.128
## CountryVanuatu:Year                                                         0.912
## CountryVenezuela (Bolivarian Republic of):Year                             -0.205
## CountryViet Nam:Year                                                       -0.015
## CountryYemen:Year                                                           0.808
## CountryZambia:Year                                                         -0.532
## CountryZimbabwe:Year                                                        2.527
## CountryAlbania:HIV.AIDS                                                        NA
## CountryAlgeria:HIV.AIDS                                                        NA
## CountryAngola:HIV.AIDS                                                       2.231
## CountryAntigua and Barbuda:HIV.AIDS                                        -0.030
## CountryArgentina:HIV.AIDS                                                      NA
## CountryArmenia:HIV.AIDS                                                        NA
## CountryAustralia:HIV.AIDS                                                      NA
## CountryAustria:HIV.AIDS                                                        NA
## CountryAzerbaijan:HIV.AIDS                                                     NA
## CountryBahamas:HIV.AIDS                                                     -0.043
## CountryBahrain:HIV.AIDS                                                        NA
## CountryBangladesh:HIV.AIDS                                                     NA
## CountryBarbados:HIV.AIDS                                                    -0.230
## CountryBelarus:HIV.AIDS                                                        NA
## CountryBelgium:HIV.AIDS                                                        NA
## CountryBelize:HIV.AIDS                                                      -0.536
## CountryBenin:HIV.AIDS                                                       -0.022
## CountryBhutan:HIV.AIDS                                                       0.145
## CountryBolivia (Plurinational State of):HIV.AIDS                             1.474
## CountryBosnia and Herzegovina:HIV.AIDS                                         NA
## CountryBotswana:HIV.AIDS                                                    -2.371
## CountryBrazil:HIV.AIDS                                                         NA
## CountryBrunei Darussalam:HIV.AIDS                                              NA
## CountryBulgaria:HIV.AIDS                                                       NA
## CountryBurkina Faso:HIV.AIDS                                                 0.196
## CountryBurundi:HIV.AIDS                                                     -0.146
## CountryCÃ´te d'Ivoire:HIV.AIDS                                             -1.682
## CountryCabo Verde:HIV.AIDS                                                  -1.759
## CountryCambodia:HIV.AIDS                                                    -0.127
## CountryCameroon:HIV.AIDS                                                    -0.754
## CountryCanada:HIV.AIDS                                                         NA
## CountryCentral African Republic:HIV.AIDS                                    -2.177
```

```
## CountryChad:HIV.AIDS                                              -0.199
## CountryChile:HIV.AIDS                                                 NA
## CountryChina:HIV.AIDS                                                 NA
## CountryColombia:HIV.AIDS                                              NA
## CountryComoros:HIV.AIDS                                           -1.393
## CountryCongo:HIV.AIDS                                             -1.869
## CountryCook Islands:HIV.AIDS                                          NA
## CountryCosta Rica:HIV.AIDS                                            NA
## CountryCroatia:HIV.AIDS                                               NA
## CountryCuba:HIV.AIDS                                                  NA
## CountryCyprus:HIV.AIDS                                                NA
## CountryCzechia:HIV.AIDS                                               NA
## CountryDemocratic People's Republic of Korea:HIV.AIDS                 NA
## CountryDemocratic Republic of the Congo:HIV.AIDS                  -0.093
## CountryDenmark:HIV.AIDS                                               NA
## CountryDjibouti:HIV.AIDS                                           0.203
## CountryDominica:HIV.AIDS                                              NA
## CountryDominican Republic:HIV.AIDS                                 1.405
## CountryEcuador:HIV.AIDS                                           -0.187
## CountryEgypt:HIV.AIDS                                                 NA
## CountryEl Salvador:HIV.AIDS                                       -0.983
## CountryEquatorial Guinea:HIV.AIDS                                 -1.034
## CountryEritrea:HIV.AIDS                                            1.948
## CountryEstonia:HIV.AIDS                                               NA
## CountryEthiopia:HIV.AIDS                                          -0.838
## CountryFiji:HIV.AIDS                                                  NA
## CountryFinland:HIV.AIDS                                               NA
## CountryFrance:HIV.AIDS                                                NA
## CountryGabon:HIV.AIDS                                             -0.940
## CountryGambia:HIV.AIDS                                             0.131
## CountryGeorgia:HIV.AIDS                                               NA
## CountryGermany:HIV.AIDS                                               NA
## CountryGhana:HIV.AIDS                                              3.636
## CountryGreece:HIV.AIDS                                                NA
## CountryGrenada:HIV.AIDS                                               NA
## CountryGuatemala:HIV.AIDS                                         -1.168
## CountryGuinea:HIV.AIDS                                             0.106
## CountryGuinea-Bissau:HIV.AIDS                                     -0.083
## CountryGuyana:HIV.AIDS                                            -0.760
## CountryHaiti:HIV.AIDS                                             -6.032
## CountryHonduras:HIV.AIDS                                          -0.291
## CountryHungary:HIV.AIDS                                               NA
## CountryIceland:HIV.AIDS                                               NA
## CountryIndia:HIV.AIDS                                             -0.047
## CountryIndonesia:HIV.AIDS                                          0.108
## CountryIran (Islamic Republic of):HIV.AIDS                            NA
## CountryIraq:HIV.AIDS                                                  NA
## CountryIreland:HIV.AIDS                                               NA
## CountryIsrael:HIV.AIDS                                                NA
## CountryItaly:HIV.AIDS                                                 NA
## CountryJamaica:HIV.AIDS                                           -0.416
## CountryJapan:HIV.AIDS                                                 NA
## CountryJordan:HIV.AIDS                                                NA
## CountryKazakhstan:HIV.AIDS                                            NA
```

```
## CountryKenya:HIV.AIDS                                   -0.360
## CountryKiribati:HIV.AIDS                                      NA
## CountryKuwait:HIV.AIDS                                        NA
## CountryKyrgyzstan:HIV.AIDS                                -1.952
## CountryLao People's Democratic Republic:HIV.AIDS          2.033
## CountryLatvia:HIV.AIDS                                        NA
## CountryLebanon:HIV.AIDS                                       NA
## CountryLesotho:HIV.AIDS                                   -2.651
## CountryLiberia:HIV.AIDS                                   -1.401
## CountryLibya:HIV.AIDS                                         NA
## CountryLithuania:HIV.AIDS                                     NA
## CountryLuxembourg:HIV.AIDS                                    NA
## CountryMadagascar:HIV.AIDS                                -0.720
## CountryMalawi:HIV.AIDS                                    -1.677
## CountryMalaysia:HIV.AIDS                                      NA
## CountryMaldives:HIV.AIDS                                      NA
## CountryMali:HIV.AIDS                                      -0.208
## CountryMalta:HIV.AIDS                                         NA
## CountryMarshall Islands:HIV.AIDS                              NA
## CountryMauritania:HIV.AIDS                                -0.424
## CountryMauritius:HIV.AIDS                                 -0.043
## CountryMexico:HIV.AIDS                                        NA
## CountryMicronesia (Federated States of):HIV.AIDS             NA
## CountryMonaco:HIV.AIDS                                        NA
## CountryMongolia:HIV.AIDS                                      NA
## CountryMontenegro:HIV.AIDS                                    NA
## CountryMorocco:HIV.AIDS                                       NA
## CountryMozambique:HIV.AIDS                                 0.292
## CountryMyanmar:HIV.AIDS                                   -1.165
## CountryNamibia:HIV.AIDS                                   -2.791
## CountryNauru:HIV.AIDS                                         NA
## CountryNepal:HIV.AIDS                                      0.258
## CountryNetherlands:HIV.AIDS                                   NA
## CountryNew Zealand:HIV.AIDS                                   NA
## CountryNicaragua:HIV.AIDS                                 -0.969
## CountryNiger:HIV.AIDS                                      0.781
## CountryNigeria:HIV.AIDS                                   -0.719
## CountryNiue:HIV.AIDS                                          NA
## CountryNorway:HIV.AIDS                                        NA
## CountryOman:HIV.AIDS                                          NA
## CountryPakistan:HIV.AIDS                                      NA
## CountryPalau:HIV.AIDS                                         NA
## CountryPanama:HIV.AIDS                                    -0.017
## CountryPapua New Guinea:HIV.AIDS                           1.562
## CountryParaguay:HIV.AIDS                                   2.170
## CountryPeru:HIV.AIDS                                      -0.039
## CountryPhilippines:HIV.AIDS                                   NA
## CountryPoland:HIV.AIDS                                        NA
## CountryPortugal:HIV.AIDS                                      NA
## CountryQatar:HIV.AIDS                                         NA
## CountryRepublic of Korea:HIV.AIDS                             NA
## CountryRepublic of Moldova:HIV.AIDS                           NA
## CountryRomania:HIV.AIDS                                       NA
## CountryRussian Federation:HIV.AIDS                        -0.673
```

```
## CountryRwanda:HIV.AIDS                                                          -0.514
## CountrySaint Kitts and Nevis:HIV.AIDS                                                NA
## CountrySaint Lucia:HIV.AIDS                                                      -0.106
## CountrySaint Vincent and the Grenadines:HIV.AIDS                                  0.411
## CountrySamoa:HIV.AIDS                                                                NA
## CountrySan Marino:HIV.AIDS                                                            NA
## CountrySao Tome and Principe:HIV.AIDS                                            -0.129
## CountrySaudi Arabia:HIV.AIDS                                                         NA
## CountrySenegal:HIV.AIDS                                                           0.155
## CountrySerbia:HIV.AIDS                                                                NA
## CountrySeychelles:HIV.AIDS                                                            NA
## CountrySierra Leone:HIV.AIDS                                                     -0.583
## CountrySingapore:HIV.AIDS                                                             NA
## CountrySlovakia:HIV.AIDS                                                              NA
## CountrySlovenia:HIV.AIDS                                                              NA
## CountrySolomon Islands:HIV.AIDS                                                       NA
## CountrySomalia:HIV.AIDS                                                          -1.856
## CountrySouth Africa:HIV.AIDS                                                     -4.152
## CountrySouth Sudan:HIV.AIDS                                                      -0.884
## CountrySpain:HIV.AIDS                                                                 NA
## CountrySri Lanka:HIV.AIDS                                                             NA
## CountrySudan:HIV.AIDS                                                            -0.650
## CountrySuriname:HIV.AIDS                                                         -2.627
## CountrySwaziland:HIV.AIDS                                                        -1.940
## CountrySweden:HIV.AIDS                                                                NA
## CountrySwitzerland:HIV.AIDS                                                           NA
## CountrySyrian Arab Republic:HIV.AIDS                                                  NA
## CountryTajikistan:HIV.AIDS                                                        0.050
## CountryThailand:HIV.AIDS                                                          0.211
## CountryThe former Yugoslav republic of Macedonia:HIV.AIDS                             NA
## CountryTimor-Leste:HIV.AIDS                                                           NA
## CountryTogo:HIV.AIDS                                                             -0.812
## CountryTonga:HIV.AIDS                                                                 NA
## CountryTrinidad and Tobago:HIV.AIDS                                               0.088
## CountryTunisia:HIV.AIDS                                                               NA
## CountryTurkey:HIV.AIDS                                                                NA
## CountryTurkmenistan:HIV.AIDS                                                          NA
## CountryTuvalu:HIV.AIDS                                                                NA
## CountryUganda:HIV.AIDS                                                           -1.985
## CountryUkraine:HIV.AIDS                                                          -0.221
## CountryUnited Arab Emirates:HIV.AIDS                                                  NA
## CountryUnited Kingdom of Great Britain and Northern Ireland:HIV.AIDS                  NA
## CountryUnited Republic of Tanzania:HIV.AIDS                                      -2.206
## CountryUnited States of America:HIV.AIDS                                              NA
## CountryUruguay:HIV.AIDS                                                               NA
## CountryUzbekistan:HIV.AIDS                                                       -0.170
## CountryVanuatu:HIV.AIDS                                                               NA
## CountryVenezuela (Bolivarian Republic of):HIV.AIDS                                   NA
## CountryViet Nam:HIV.AIDS                                                         -0.016
## CountryYemen:HIV.AIDS                                                                 NA
## CountryZambia:HIV.AIDS                                                           -0.264
## CountryZimbabwe:HIV.AIDS                                                              NA
## CountryAlbania:Schooling                                                         -0.006
## CountryAlgeria:Schooling                                                         -0.012
```

```
## CountryAngola:Schooling                                        -0.768
## CountryAntigua and Barbuda:Schooling                           -0.034
## CountryArgentina:Schooling                                     -0.205
## CountryArmenia:Schooling                                        0.023
## CountryAustralia:Schooling                                      0.328
## CountryAustria:Schooling                                       -0.172
## CountryAzerbaijan:Schooling                                    -0.354
## CountryBahamas:Schooling                                        0.238
## CountryBahrain:Schooling                                       -0.049
## CountryBangladesh:Schooling                                     0.960
## CountryBarbados:Schooling                                      -0.038
## CountryBelarus:Schooling                                        0.273
## CountryBelgium:Schooling                                        0.289
## CountryBelize:Schooling                                         0.048
## CountryBenin:Schooling                                         -0.026
## CountryBhutan:Schooling                                         0.053
## CountryBolivia (Plurinational State of):Schooling             -1.195
## CountryBosnia and Herzegovina:Schooling                       -0.018
## CountryBotswana:Schooling                                       0.062
## CountryBrazil:Schooling                                        -0.335
## CountryBrunei Darussalam:Schooling                             -0.255
## CountryBulgaria:Schooling                                      -0.127
## CountryBurkina Faso:Schooling                                   0.241
## CountryBurundi:Schooling                                       -0.019
## CountryCÃ´te d'Ivoire:Schooling                                    NA
## CountryCabo Verde:Schooling                                     0.228
## CountryCambodia:Schooling                                       0.453
## CountryCameroon:Schooling                                       0.018
## CountryCanada:Schooling                                         1.989
## CountryCentral African Republic:Schooling                     -2.596
## CountryChad:Schooling                                          -0.995
## CountryChile:Schooling                                          0.440
## CountryChina:Schooling                                         -0.075
## CountryColombia:Schooling                                      -0.172
## CountryComoros:Schooling                                        0.482
## CountryCongo:Schooling                                          0.849
## CountryCook Islands:Schooling                                      NA
## CountryCosta Rica:Schooling                                    -0.013
## CountryCroatia:Schooling                                       -0.170
## CountryCuba:Schooling                                          -0.082
## CountryCyprus:Schooling                                         0.100
## CountryCzechia:Schooling                                           NA
## CountryDemocratic People's Republic of Korea:Schooling            NA
## CountryDemocratic Republic of the Congo:Schooling                 NA
## CountryDenmark:Schooling                                        0.352
## CountryDjibouti:Schooling                                       2.319
## CountryDominica:Schooling                                          NA
## CountryDominican Republic:Schooling                            -0.895
## CountryEcuador:Schooling                                       -0.217
## CountryEgypt:Schooling                                          0.935
## CountryEl Salvador:Schooling                                    0.502
## CountryEquatorial Guinea:Schooling                             -0.028
## CountryEritrea:Schooling                                        1.772
## CountryEstonia:Schooling                                       -1.621
```

```
## CountryEthiopia:Schooling                                    -0.137
## CountryFiji:Schooling                                         0.039
## CountryFinland:Schooling                                      0.032
## CountryFrance:Schooling                                       3.003
## CountryGabon:Schooling                                       -0.106
## CountryGambia:Schooling                                      -0.626
## CountryGeorgia:Schooling                                      0.095
## CountryGermany:Schooling                                      0.101
## CountryGhana:Schooling                                        1.330
## CountryGreece:Schooling                                       0.876
## CountryGrenada:Schooling                                     -1.826
## CountryGuatemala:Schooling                                    2.929
## CountryGuinea:Schooling                                      -0.014
## CountryGuinea-Bissau:Schooling                               -0.154
## CountryGuyana:Schooling                                      -0.013
## CountryHaiti:Schooling                                       -0.465
## CountryHonduras:Schooling                                    -0.074
## CountryHungary:Schooling                                     -0.004
## CountryIceland:Schooling                                      2.119
## CountryIndia:Schooling                                       -0.039
## CountryIndonesia:Schooling                                    0.008
## CountryIran (Islamic Republic of):Schooling                 -0.465
## CountryIraq:Schooling                                         1.791
## CountryIreland:Schooling                                      1.680
## CountryIsrael:Schooling                                      -0.523
## CountryItaly:Schooling                                        0.389
## CountryJamaica:Schooling                                     -0.012
## CountryJapan:Schooling                                        0.096
## CountryJordan:Schooling                                      -0.047
## CountryKazakhstan:Schooling                                  -0.297
## CountryKenya:Schooling                                       -0.256
## CountryKiribati:Schooling                                    -0.024
## CountryKuwait:Schooling                                      -0.041
## CountryKyrgyzstan:Schooling                                   0.286
## CountryLao People's Democratic Republic:Schooling            1.461
## CountryLatvia:Schooling                                       0.019
## CountryLebanon:Schooling                                      0.002
## CountryLesotho:Schooling                                     -0.478
## CountryLiberia:Schooling                                     -1.978
## CountryLibya:Schooling                                       -1.139
## CountryLithuania:Schooling                                    0.575
## CountryLuxembourg:Schooling                                   2.245
## CountryMadagascar:Schooling                                  -1.231
## CountryMalawi:Schooling                                       0.034
## CountryMalaysia:Schooling                                     0.004
## CountryMaldives:Schooling                                     0.498
## CountryMali:Schooling                                        -0.319
## CountryMalta:Schooling                                        0.214
## CountryMarshall Islands:Schooling                                NA
## CountryMauritania:Schooling                                   1.053
## CountryMauritius:Schooling                                   -0.253
## CountryMexico:Schooling                                       0.278
## CountryMicronesia (Federated States of):Schooling            0.054
## CountryMonaco:Schooling                                          NA
```

```
## CountryMongolia:Schooling                                        0.029
## CountryMontenegro:Schooling                                      -0.042
## CountryMorocco:Schooling                                          0.560
## CountryMozambique:Schooling                                      -0.890
## CountryMyanmar:Schooling                                          0.654
## CountryNamibia:Schooling                                         -0.266
## CountryNauru:Schooling                                              NA
## CountryNepal:Schooling                                            0.072
## CountryNetherlands:Schooling                                     -0.181
## CountryNew Zealand:Schooling                                      1.165
## CountryNicaragua:Schooling                                        0.656
## CountryNiger:Schooling                                            3.552
## CountryNigeria:Schooling                                          0.944
## CountryNiue:Schooling                                               NA
## CountryNorway:Schooling                                           0.550
## CountryOman:Schooling                                            -0.028
## CountryPakistan:Schooling                                         0.043
## CountryPalau:Schooling                                              NA
## CountryPanama:Schooling                                          -0.261
## CountryPapua New Guinea:Schooling                                 0.847
## CountryParaguay:Schooling                                        -1.487
## CountryPeru:Schooling                                             0.485
## CountryPhilippines:Schooling                                      0.160
## CountryPoland:Schooling                                           0.034
## CountryPortugal:Schooling                                         0.555
## CountryQatar:Schooling                                           -0.032
## CountryRepublic of Korea:Schooling                                 NA
## CountryRepublic of Moldova:Schooling                               NA
## CountryRomania:Schooling                                          0.020
## CountryRussian Federation:Schooling                               0.110
## CountryRwanda:Schooling                                           1.758
## CountrySaint Kitts and Nevis:Schooling                             NA
## CountrySaint Lucia:Schooling                                     -0.051
## CountrySaint Vincent and the Grenadines:Schooling               -3.573
## CountrySamoa:Schooling                                            0.454
## CountrySan Marino:Schooling                                        NA
## CountrySao Tome and Principe:Schooling                            0.050
## CountrySaudi Arabia:Schooling                                     0.006
## CountrySenegal:Schooling                                         -0.550
## CountrySerbia:Schooling                                           0.150
## CountrySeychelles:Schooling                                      -0.130
## CountrySierra Leone:Schooling                                     0.814
## CountrySingapore:Schooling                                        0.914
## CountrySlovakia:Schooling                                        -0.089
## CountrySlovenia:Schooling                                        -0.268
## CountrySolomon Islands:Schooling                                  0.004
## CountrySomalia:Schooling                                           NA
## CountrySouth Africa:Schooling                                    -2.687
## CountrySouth Sudan:Schooling                                     -0.046
## CountrySpain:Schooling                                           -1.337
## CountrySri Lanka:Schooling                                        0.641
## CountrySudan:Schooling                                            2.665
## CountrySuriname:Schooling                                         2.084
## CountrySwaziland:Schooling                                        0.256
```

```
## CountrySweden:Schooling                                                      0.653
## CountrySwitzerland:Schooling                                                 -1.268
## CountrySyrian Arab Republic:Schooling                                         1.615
## CountryTajikistan:Schooling                                                  -0.351
## CountryThailand:Schooling                                                    -0.002
## CountryThe former Yugoslav republic of Macedonia:Schooling                    0.028
## CountryTimor-Leste:Schooling                                                 -0.039
## CountryTogo:Schooling                                                        -0.053
## CountryTonga:Schooling                                                       -0.054
## CountryTrinidad and Tobago:Schooling                                         -1.321
## CountryTunisia:Schooling                                                      0.066
## CountryTurkey:Schooling                                                      -0.653
## CountryTurkmenistan:Schooling                                                -0.075
## CountryTuvalu:Schooling                                                          NA
## CountryUganda:Schooling                                                      -0.370
## CountryUkraine:Schooling                                                     -0.098
## CountryUnited Arab Emirates:Schooling                                         0.042
## CountryUnited Kingdom of Great Britain and Northern Ireland:Schooling            NA
## CountryUnited Republic of Tanzania:Schooling                                     NA
## CountryUnited States of America:Schooling                                        NA
## CountryUruguay:Schooling                                                      0.022
## CountryUzbekistan:Schooling                                                  -0.085
## CountryVanuatu:Schooling                                                      0.541
## CountryVenezuela (Bolivarian Republic of):Schooling                          -0.019
## CountryViet Nam:Schooling                                                    -0.011
## CountryYemen:Schooling                                                        0.107
## CountryZambia:Schooling                                                      -1.777
## CountryZimbabwe:Schooling                                                     1.033
## CountryAlbania:Diphtheria                                                    -0.383
## CountryAlgeria:Diphtheria                                                     0.107
## CountryAngola:Diphtheria                                                     -1.124
## CountryAntigua and Barbuda:Diphtheria                                        -0.168
## CountryArgentina:Diphtheria                                                  -0.387
## CountryArmenia:Diphtheria                                                    -1.401
## CountryAustralia:Diphtheria                                                   0.801
## CountryAustria:Diphtheria                                                    -4.115
## CountryAzerbaijan:Diphtheria                                                 -3.288
## CountryBahamas:Diphtheria                                                     0.010
## CountryBahrain:Diphtheria                                                    -0.051
## CountryBangladesh:Diphtheria                                                  0.028
## CountryBarbados:Diphtheria                                                   -0.451
## CountryBelarus:Diphtheria                                                    -1.434
## CountryBelgium:Diphtheria                                                     0.370
## CountryBelize:Diphtheria                                                     -0.205
## CountryBenin:Diphtheria                                                      -1.424
## CountryBhutan:Diphtheria                                                      0.123
## CountryBolivia (Plurinational State of):Diphtheria                           -1.424
## CountryBosnia and Herzegovina:Diphtheria                                     -1.628
##                                                                              Pr(>|t|)
## (Intercept)                                                                  0.794503
## CountryAlbania                                                               0.526866
## CountryAlgeria                                                               0.998535
## CountryAngola                                                                0.181875
## CountryAntigua and Barbuda                                                   0.915490
```

```
## CountryArgentina                                        0.962947
## CountryArmenia                                          0.926856
## CountryAustralia                                        0.826514
## CountryAustria                                          0.940429
## CountryAzerbaijan                                       0.297570
## CountryBahamas                                          0.800852
## CountryBahrain                                          0.907909
## CountryBangladesh                                       0.488935
## CountryBarbados                                         0.925327
## CountryBelarus                                          0.737598
## CountryBelgium                                          0.728889
## CountryBelize                                           0.894301
## CountryBenin                                            0.973752
## CountryBhutan                                           0.959802
## CountryBolivia (Plurinational State of)                 0.101941
## CountryBosnia and Herzegovina                           0.737261
## CountryBotswana                                         0.611714
## CountryBrazil                                           0.381101
## CountryBrunei Darussalam                                0.650500
## CountryBulgaria                                         0.954973
## CountryBurkina Faso                                     0.904028
## CountryBurundi                                          0.957240
## CountryCÃ´te d'Ivoire                                   0.370604
## CountryCabo Verde                                       0.852407
## CountryCambodia                                         0.989983
## CountryCameroon                                         0.896311
## CountryCanada                                           0.732143
## CountryCentral African Republic                         0.958585
## CountryChad                                             0.319955
## CountryChile                                            0.910148
## CountryChina                                            0.825201
## CountryColombia                                         0.939893
## CountryComoros                                          0.197681
## CountryCongo                                            0.457701
## CountryCook Islands                                     0.122146
## CountryCosta Rica                                       0.933015
## CountryCroatia                                          0.882481
## CountryCuba                                             0.850634
## CountryCyprus                                           0.998801
## CountryCzechia                                          0.983369
## CountryDemocratic People's Republic of Korea            0.750021
## CountryDemocratic Republic of the Congo                 0.818136
## CountryDenmark                                          0.777333
## CountryDjibouti                                         0.028410
## CountryDominica                                         0.166384
## CountryDominican Republic                               0.148727
## CountryEcuador                                          0.984290
## CountryEgypt                                            0.562451
## CountryEl Salvador                                      0.971192
## CountryEquatorial Guinea                                0.938598
## CountryEritrea                                          0.102017
## CountryEstonia                                          0.252774
## CountryEthiopia                                         0.852675
## CountryFiji                                             0.897905
```

```
## CountryFinland                                     0.739594
## CountryFrance                                      0.794672
## CountryGabon                                       0.327168
## CountryGambia                                      0.974147
## CountryGeorgia                                     0.872733
## CountryGermany                                     0.895121
## CountryGhana                                       0.968185
## CountryGreece                                      0.519650
## CountryGrenada                                     0.567097
## CountryGuatemala                                   0.409655
## CountryGuinea                                      0.731670
## CountryGuinea-Bissau                               0.819896
## CountryGuyana                                      0.898199
## CountryHaiti                                       6.26e-05
## CountryHonduras                                    0.962257
## CountryHungary                                     0.940227
## CountryIceland                                     0.148923
## CountryIndia                                       0.955649
## CountryIndonesia                                   0.924084
## CountryIran (Islamic Republic of)                  0.915713
## CountryIraq                                        0.087686
## CountryIreland                                     0.453420
## CountryIsrael                                      0.798466
## CountryItaly                                       0.600322
## CountryJamaica                                     0.945095
## CountryJapan                                       0.866132
## CountryJordan                                      0.908365
## CountryKazakhstan                                  0.725660
## CountryKenya                                       0.719480
## CountryKiribati                                    0.908019
## CountryKuwait                                      0.851361
## CountryKyrgyzstan                                  0.182564
## CountryLao People's Democratic Republic            0.151578
## CountryLatvia                                      0.014900
## CountryLebanon                                     0.908950
## CountryLesotho                                     0.725920
## CountryLiberia                                     0.398824
## CountryLibya                                       0.274009
## CountryLithuania                                   0.498180
## CountryLuxembourg                                  0.868014
## CountryMadagascar                                  0.013577
## CountryMalawi                                      0.856486
## CountryMalaysia                                    0.944284
## CountryMaldives                                    0.304273
## CountryMali                                        0.671138
## CountryMalta                                       0.940264
## CountryMarshall Islands                            0.663401
## CountryMauritania                                  0.316850
## CountryMauritius                                   0.941019
## CountryMexico                                      0.797729
## CountryMicronesia (Federated States of)            0.883753
## CountryMonaco                                      0.108125
## CountryMongolia                                    0.982838
## CountryMontenegro                                  0.919038
```

```
## CountryMorocco                                      0.419293
## CountryMozambique                                   0.294615
## CountryMyanmar                                      0.876810
## CountryNamibia                                      0.638620
## CountryNauru                                        0.000153
## CountryNepal                                        0.761205
## CountryNetherlands                                  0.973920
## CountryNew Zealand                                  0.858248
## CountryNicaragua                                    0.778362
## CountryNiger                                        0.036876
## CountryNigeria                                      0.433692
## CountryNiue                                         0.132130
## CountryNorway                                       0.706724
## CountryOman                                         0.975244
## CountryPakistan                                     0.933881
## CountryPalau                                        0.893058
## CountryPanama                                       0.850699
## CountryPapua New Guinea                             0.889548
## CountryParaguay                                     0.362955
## CountryPeru                                         0.887354
## CountryPhilippines                                  0.853121
## CountryPoland                                       0.926763
## CountryPortugal                                     0.719668
## CountryQatar                                        0.853627
## CountryRepublic of Korea                            0.936942
## CountryRepublic of Moldova                          0.303365
## CountryRomania                                      0.527076
## CountryRussian Federation                           0.979751
## CountryRwanda                                       0.146408
## CountrySaint Kitts and Nevis                        0.914661
## CountrySaint Lucia                                  0.974641
## CountrySaint Vincent and the Grenadines             0.527633
## CountrySamoa                                        0.683511
## CountrySan Marino                                   0.474992
## CountrySao Tome and Principe                        0.779116
## CountrySaudi Arabia                                 0.862944
## CountrySenegal                                      0.491674
## CountrySerbia                                       0.837569
## CountrySeychelles                                   0.928638
## CountrySierra Leone                                 0.419659
## CountrySingapore                                    0.454088
## CountrySlovakia                                     0.996446
## CountrySlovenia                                     0.669170
## CountrySolomon Islands                              0.904451
## CountrySomalia                                      0.761010
## CountrySouth Africa                                 0.083024
## CountrySouth Sudan                                  0.865093
## CountrySpain                                        0.439278
## CountrySri Lanka                                    0.714812
## CountrySudan                                        0.296482
## CountrySuriname                                     0.134853
## CountrySwaziland                                    0.332545
## CountrySweden                                       0.773253
## CountrySwitzerland                                  0.478481
```

```
## CountrySyrian Arab Republic                                    0.180064
## CountryTajikistan                                              0.993822
## CountryThailand                                                0.854141
## CountryThe former Yugoslav republic of Macedonia               0.962072
## CountryTimor-Leste                                             0.656174
## CountryTogo                                                    0.890737
## CountryTonga                                                   0.861679
## CountryTrinidad and Tobago                                     0.485192
## CountryTunisia                                                 0.870451
## CountryTurkey                                                  0.534125
## CountryTurkmenistan                                            0.892394
## CountryTuvalu                                                  0.658641
## CountryUganda                                                  0.360510
## CountryUkraine                                                 0.928255
## CountryUnited Arab Emirates                                    0.925144
## CountryUnited Kingdom of Great Britain and Northern Ireland    0.723109
## CountryUnited Republic of Tanzania                             0.402682
## CountryUnited States of America                                0.887383
## CountryUruguay                                                 0.857513
## CountryUzbekistan                                              0.887573
## CountryVanuatu                                                 0.324967
## CountryVenezuela (Bolivarian Republic of)                      0.827441
## CountryViet Nam                                                0.986773
## CountryYemen                                                   0.334449
## CountryZambia                                                  0.506792
## CountryZimbabwe                                                0.010762
## Year                                                           0.774936
## HIV.AIDS                                                       0.048263
## Schooling                                                      0.971352
## Diphtheria                                                     0.107683
## Adult.Mortality                                                0.676923
## Measles                                                        0.827220
## Alcohol                                                        0.930173
## Polio                                                          0.022944
## thinness.5.9.years                                             0.734498
## Total.expenditure                                              0.873624
## percentage.expenditure                                         0.946497
## CountryAlbania:Year                                            0.528861
## CountryAlgeria:Year                                            0.995137
## CountryAngola:Year                                             0.185118
## CountryAntigua and Barbuda:Year                                0.922624
## CountryArgentina:Year                                          0.973581
## CountryArmenia:Year                                            0.936834
## CountryAustralia:Year                                          0.830789
## CountryAustria:Year                                            0.979211
## CountryAzerbaijan:Year                                         0.282720
## CountryBahamas:Year                                            0.804432
## CountryBahrain:Year                                            0.922991
## CountryBangladesh:Year                                         0.484875
## CountryBarbados:Year                                           0.930543
## CountryBelarus:Year                                            0.741230
## CountryBelgium:Year                                            0.788195
## CountryBelize:Year                                             0.897769
## CountryBenin:Year                                              0.975435
```

```
## CountryBhutan:Year                                              0.960559
## CountryBolivia (Plurinational State of):Year                     0.094922
## CountryBosnia and Herzegovina:Year                               0.744617
## CountryBotswana:Year                                             0.717358
## CountryBrazil:Year                                               0.403373
## CountryBrunei Darussalam:Year                                    0.646241
## CountryBulgaria:Year                                             0.964851
## CountryBurkina Faso:Year                                         0.906570
## CountryBurundi:Year                                              0.956460
## CountryCÃ´te d'Ivoire:Year                                       0.374233
## CountryCabo Verde:Year                                           0.858745
## CountryCambodia:Year                                             0.989143
## CountryCameroon:Year                                             0.896497
## CountryCanada:Year                                               0.568165
## CountryCentral African Republic:Year                             0.896309
## CountryChad:Year                                                 0.320807
## CountryChile:Year                                                0.906723
## CountryChina:Year                                                0.823776
## CountryColombia:Year                                             0.934237
## CountryComoros:Year                                              0.197838
## CountryCongo:Year                                                0.470562
## CountryCook Islands:Year                                               NA
## CountryCosta Rica:Year                                           0.938037
## CountryCroatia:Year                                              0.874333
## CountryCuba:Year                                                 0.871605
## CountryCyprus:Year                                               0.997275
## CountryCzechia:Year                                              0.980753
## CountryDemocratic People's Republic of Korea:Year                0.729636
## CountryDemocratic Republic of the Congo:Year                     0.817031
## CountryDenmark:Year                                              0.781447
## CountryDjibouti:Year                                             0.027205
## CountryDominica:Year                                                   NA
## CountryDominican Republic:Year                                   0.144884
## CountryEcuador:Year                                              0.997117
## CountryEgypt:Year                                                0.555882
## CountryEl Salvador:Year                                          0.983915
## CountryEquatorial Guinea:Year                                    0.939386
## CountryEritrea:Year                                              0.106287
## CountryEstonia:Year                                              0.261418
## CountryEthiopia:Year                                             0.857511
## CountryFiji:Year                                                 0.903306
## CountryFinland:Year                                              0.669202
## CountryFrance:Year                                               0.758063
## CountryGabon:Year                                                0.337482
## CountryGambia:Year                                               0.991214
## CountryGeorgia:Year                                              0.873540
## CountryGermany:Year                                              0.827501
## CountryGhana:Year                                                0.969919
## CountryGreece:Year                                               0.501077
## CountryGrenada:Year                                              0.501135
## CountryGuatemala:Year                                            0.369159
## CountryGuinea:Year                                               0.734172
## CountryGuinea-Bissau:Year                                        0.820595
## CountryGuyana:Year                                               0.895063
```

```
## CountryHaiti:Year                                          9.98e-05
## CountryHonduras:Year                                       0.967445
## CountryHungary:Year                                        0.931754
## CountryIceland:Year                                        0.140226
## CountryIndia:Year                                          0.951096
## CountryIndonesia:Year                                      0.926487
## CountryIran (Islamic Republic of):Year                     0.914762
## CountryIraq:Year                                           0.218405
## CountryIreland:Year                                        0.428755
## CountryIsrael:Year                                         0.758496
## CountryItaly:Year                                          0.573623
## CountryJamaica:Year                                        0.951140
## CountryJapan:Year                                          0.871399
## CountryJordan:Year                                         0.915748
## CountryKazakhstan:Year                                     0.720986
## CountryKenya:Year                                          0.725121
## CountryKiribati:Year                                       0.911982
## CountryKuwait:Year                                         0.858954
## CountryKyrgyzstan:Year                                     0.196285
## CountryLao People's Democratic Republic:Year               0.150260
## CountryLatvia:Year                                         0.017320
## CountryLebanon:Year                                        0.922916
## CountryLesotho:Year                                        0.736823
## CountryLiberia:Year                                        0.412199
## CountryLibya:Year                                          0.313163
## CountryLithuania:Year                                      0.501993
## CountryLuxembourg:Year                                     0.860209
## CountryMadagascar:Year                                     0.017056
## CountryMalawi:Year                                         0.856675
## CountryMalaysia:Year                                       0.946171
## CountryMaldives:Year                                       0.298292
## CountryMali:Year                                           0.672617
## CountryMalta:Year                                          0.930539
## CountryMarshall Islands:Year                                     NA
## CountryMauritania:Year                                     0.314266
## CountryMauritius:Year                                      0.933353
## CountryMexico:Year                                         0.799259
## CountryMicronesia (Federated States of):Year               0.887160
## CountryMonaco:Year                                               NA
## CountryMongolia:Year                                       0.974692
## CountryMontenegro:Year                                     0.925393
## CountryMorocco:Year                                        0.418794
## CountryMozambique:Year                                     0.291446
## CountryMyanmar:Year                                        0.952346
## CountryNamibia:Year                                        0.653052
## CountryNauru:Year                                                NA
## CountryNepal:Year                                          0.759471
## CountryNetherlands:Year                                    0.958125
## CountryNew Zealand:Year                                    0.837461
## CountryNicaragua:Year                                      0.768056
## CountryNiger:Year                                          0.035264
## CountryNigeria:Year                                        0.426996
## CountryNiue:Year                                                 NA
## CountryNorway:Year                                         0.678586
```

```
## CountryOman:Year                                                  0.988392
## CountryPakistan:Year                                              0.937038
## CountryPalau:Year                                                        NA
## CountryPanama:Year                                                 0.863814
## CountryPapua New Guinea:Year                                       0.852669
## CountryParaguay:Year                                               0.358214
## CountryPeru:Year                                                   0.885980
## CountryPhilippines:Year                                            0.865816
## CountryPoland:Year                                                 0.927334
## CountryPortugal:Year                                               0.762143
## CountryQatar:Year                                                  0.860440
## CountryRepublic of Korea:Year                                      0.910541
## CountryRepublic of Moldova:Year                                    0.306121
## CountryRomania:Year                                                0.538227
## CountryRussian Federation:Year                                     0.997832
## CountryRwanda:Year                                                 0.151351
## CountrySaint Kitts and Nevis:Year                                        NA
## CountrySaint Lucia:Year                                            0.974063
## CountrySaint Vincent and the Grenadines:Year                       0.633875
## CountrySamoa:Year                                                  0.699068
## CountrySan Marino:Year                                                   NA
## CountrySao Tome and Principe:Year                                  0.781739
## CountrySaudi Arabia:Year                                           0.865853
## CountrySenegal:Year                                                0.489289
## CountrySerbia:Year                                                 0.840303
## CountrySeychelles:Year                                             0.934859
## CountrySierra Leone:Year                                           0.417562
## CountrySingapore:Year                                              0.480594
## CountrySlovakia:Year                                               0.988209
## CountrySlovenia:Year                                               0.635141
## CountrySolomon Islands:Year                                        0.910635
## CountrySomalia:Year                                                0.769014
## CountrySouth Africa:Year                                           0.110401
## CountrySouth Sudan:Year                                            0.868584
## CountrySpain:Year                                                  0.414737
## CountrySri Lanka:Year                                              0.655248
## CountrySudan:Year                                                  0.281542
## CountrySuriname:Year                                               0.133040
## CountrySwaziland:Year                                              0.334610
## CountrySweden:Year                                                 0.581835
## CountrySwitzerland:Year                                            0.564719
## CountrySyrian Arab Republic:Year                                   0.172865
## CountryTajikistan:Year                                             0.991940
## CountryThailand:Year                                               0.846385
## CountryThe former Yugoslav republic of Macedonia:Year              0.968115
## CountryTimor-Leste:Year                                            0.654173
## CountryTogo:Year                                                   0.891403
## CountryTonga:Year                                                  0.870156
## CountryTrinidad and Tobago:Year                                    0.524317
## CountryTunisia:Year                                                0.878858
## CountryTurkey:Year                                                 0.524514
## CountryTurkmenistan:Year                                           0.882953
## CountryTuvalu:Year                                                       NA
## CountryUganda:Year                                                 0.361494
```

```
## CountryUkraine:Year                                                    0.935811
## CountryUnited Arab Emirates:Year                                        0.930018
## CountryUnited Kingdom of Great Britain and Northern Ireland:Year        0.677593
## CountryUnited Republic of Tanzania:Year                                 0.403071
## CountryUnited States of America:Year                                    0.893429
## CountryUruguay:Year                                                     0.866650
## CountryUzbekistan:Year                                                  0.898562
## CountryVanuatu:Year                                                     0.361924
## CountryVenezuela (Bolivarian Republic of):Year                          0.837462
## CountryViet Nam:Year                                                    0.988360
## CountryYemen:Year                                                       0.419423
## CountryZambia:Year                                                      0.594776
## CountryZimbabwe:Year                                                    0.011671
## CountryAlbania:HIV.AIDS                                                       NA
## CountryAlgeria:HIV.AIDS                                                       NA
## CountryAngola:HIV.AIDS                                                   0.025890
## CountryAntigua and Barbuda:HIV.AIDS                                      0.976342
## CountryArgentina:HIV.AIDS                                                     NA
## CountryArmenia:HIV.AIDS                                                       NA
## CountryAustralia:HIV.AIDS                                                     NA
## CountryAustria:HIV.AIDS                                                       NA
## CountryAzerbaijan:HIV.AIDS                                                    NA
## CountryBahamas:HIV.AIDS                                                  0.966030
## CountryBahrain:HIV.AIDS                                                       NA
## CountryBangladesh:HIV.AIDS                                                    NA
## CountryBarbados:HIV.AIDS                                                 0.818073
## CountryBelarus:HIV.AIDS                                                       NA
## CountryBelgium:HIV.AIDS                                                       NA
## CountryBelize:HIV.AIDS                                                   0.592035
## CountryBenin:HIV.AIDS                                                    0.982061
## CountryBhutan:HIV.AIDS                                                   0.884807
## CountryBolivia (Plurinational State of):HIV.AIDS                         0.140747
## CountryBosnia and Herzegovina:HIV.AIDS                                        NA
## CountryBotswana:HIV.AIDS                                                 0.017948
## CountryBrazil:HIV.AIDS                                                        NA
## CountryBrunei Darussalam:HIV.AIDS                                             NA
## CountryBulgaria:HIV.AIDS                                                      NA
## CountryBurkina Faso:HIV.AIDS                                             0.844933
## CountryBurundi:HIV.AIDS                                                  0.883932
## CountryCÃ´te d'Ivoire:HIV.AIDS                                           0.092985
## CountryCabo Verde:HIV.AIDS                                               0.078875
## CountryCambodia:HIV.AIDS                                                 0.899071
## CountryCameroon:HIV.AIDS                                                 0.450883
## CountryCanada:HIV.AIDS                                                        NA
## CountryCentral African Republic:HIV.AIDS                                 0.029733
## CountryChad:HIV.AIDS                                                     0.842228
## CountryChile:HIV.AIDS                                                         NA
## CountryChina:HIV.AIDS                                                         NA
## CountryColombia:HIV.AIDS                                                      NA
## CountryComoros:HIV.AIDS                                                  0.164054
## CountryCongo:HIV.AIDS                                                    0.062003
## CountryCook Islands:HIV.AIDS                                                  NA
## CountryCosta Rica:HIV.AIDS                                                    NA
## CountryCroatia:HIV.AIDS                                                       NA
```

```
## CountryCuba:HIV.AIDS                                              NA
## CountryCyprus:HIV.AIDS                                            NA
## CountryCzechia:HIV.AIDS                                           NA
## CountryDemocratic People's Republic of Korea:HIV.AIDS            NA
## CountryDemocratic Republic of the Congo:HIV.AIDS            0.925902
## CountryDenmark:HIV.AIDS                                           NA
## CountryDjibouti:HIV.AIDS                                    0.839462
## CountryDominica:HIV.AIDS                                          NA
## CountryDominican Republic:HIV.AIDS                          0.160483
## CountryEcuador:HIV.AIDS                                     0.851858
## CountryEgypt:HIV.AIDS                                             NA
## CountryEl Salvador:HIV.AIDS                                 0.326026
## CountryEquatorial Guinea:HIV.AIDS                           0.301438
## CountryEritrea:HIV.AIDS                                     0.051677
## CountryEstonia:HIV.AIDS                                           NA
## CountryEthiopia:HIV.AIDS                                    0.402078
## CountryFiji:HIV.AIDS                                              NA
## CountryFinland:HIV.AIDS                                           NA
## CountryFrance:HIV.AIDS                                            NA
## CountryGabon:HIV.AIDS                                       0.347565
## CountryGambia:HIV.AIDS                                      0.895840
## CountryGeorgia:HIV.AIDS                                           NA
## CountryGermany:HIV.AIDS                                           NA
## CountryGhana:HIV.AIDS                                       0.000293
## CountryGreece:HIV.AIDS                                            NA
## CountryGrenada:HIV.AIDS                                           NA
## CountryGuatemala:HIV.AIDS                                   0.242981
## CountryGuinea:HIV.AIDS                                      0.915424
## CountryGuinea-Bissau:HIV.AIDS                               0.933853
## CountryGuyana:HIV.AIDS                                      0.447434
## CountryHaiti:HIV.AIDS                                        2.35e-09
## CountryHonduras:HIV.AIDS                                    0.770883
## CountryHungary:HIV.AIDS                                           NA
## CountryIceland:HIV.AIDS                                           NA
## CountryIndia:HIV.AIDS                                       0.962403
## CountryIndonesia:HIV.AIDS                                   0.914119
## CountryIran (Islamic Republic of):HIV.AIDS                       NA
## CountryIraq:HIV.AIDS                                              NA
## CountryIreland:HIV.AIDS                                           NA
## CountryIsrael:HIV.AIDS                                            NA
## CountryItaly:HIV.AIDS                                             NA
## CountryJamaica:HIV.AIDS                                     0.677670
## CountryJapan:HIV.AIDS                                             NA
## CountryJordan:HIV.AIDS                                            NA
## CountryKazakhstan:HIV.AIDS                                        NA
## CountryKenya:HIV.AIDS                                       0.719117
## CountryKiribati:HIV.AIDS                                          NA
## CountryKuwait:HIV.AIDS                                            NA
## CountryKyrgyzstan:HIV.AIDS                                  0.051231
## CountryLao People's Democratic Republic:HIV.AIDS           0.042344
## CountryLatvia:HIV.AIDS                                            NA
## CountryLebanon:HIV.AIDS                                           NA
## CountryLesotho:HIV.AIDS                                     0.008162
## CountryLiberia:HIV.AIDS                                     0.161412
```

```
## CountryLibya:HIV.AIDS                                                      NA
## CountryLithuania:HIV.AIDS                                                   NA
## CountryLuxembourg:HIV.AIDS                                                  NA
## CountryMadagascar:HIV.AIDS                                            0.471973
## CountryMalawi:HIV.AIDS                                                0.093946
## CountryMalaysia:HIV.AIDS                                                    NA
## CountryMaldives:HIV.AIDS                                                    NA
## CountryMali:HIV.AIDS                                                   0.835450
## CountryMalta:HIV.AIDS                                                       NA
## CountryMarshall Islands:HIV.AIDS                                            NA
## CountryMauritania:HIV.AIDS                                             0.671402
## CountryMauritius:HIV.AIDS                                              0.965688
## CountryMexico:HIV.AIDS                                                      NA
## CountryMicronesia (Federated States of):HIV.AIDS                            NA
## CountryMonaco:HIV.AIDS                                                      NA
## CountryMongolia:HIV.AIDS                                                    NA
## CountryMontenegro:HIV.AIDS                                                  NA
## CountryMorocco:HIV.AIDS                                                     NA
## CountryMozambique:HIV.AIDS                                             0.770092
## CountryMyanmar:HIV.AIDS                                                0.244339
## CountryNamibia:HIV.AIDS                                                0.005361
## CountryNauru:HIV.AIDS                                                       NA
## CountryNepal:HIV.AIDS                                                  0.796225
## CountryNetherlands:HIV.AIDS                                                 NA
## CountryNew Zealand:HIV.AIDS                                                 NA
## CountryNicaragua:HIV.AIDS                                              0.332836
## CountryNiger:HIV.AIDS                                                  0.434729
## CountryNigeria:HIV.AIDS                                                0.472435
## CountryNiue:HIV.AIDS                                                        NA
## CountryNorway:HIV.AIDS                                                      NA
## CountryOman:HIV.AIDS                                                        NA
## CountryPakistan:HIV.AIDS                                                    NA
## CountryPalau:HIV.AIDS                                                       NA
## CountryPanama:HIV.AIDS                                                 0.986626
## CountryPapua New Guinea:HIV.AIDS                                       0.118551
## CountryParaguay:HIV.AIDS                                               0.030292
## CountryPeru:HIV.AIDS                                                   0.968561
## CountryPhilippines:HIV.AIDS                                                 NA
## CountryPoland:HIV.AIDS                                                      NA
## CountryPortugal:HIV.AIDS                                                    NA
## CountryQatar:HIV.AIDS                                                       NA
## CountryRepublic of Korea:HIV.AIDS                                           NA
## CountryRepublic of Moldova:HIV.AIDS                                         NA
## CountryRomania:HIV.AIDS                                                     NA
## CountryRussian Federation:HIV.AIDS                                     0.500992
## CountryRwanda:HIV.AIDS                                                 0.607072
## CountrySaint Kitts and Nevis:HIV.AIDS                                       NA
## CountrySaint Lucia:HIV.AIDS                                            0.915622
## CountrySaint Vincent and the Grenadines:HIV.AIDS                       0.680930
## CountrySamoa:HIV.AIDS                                                       NA
## CountrySan Marino:HIV.AIDS                                                  NA
## CountrySao Tome and Principe:HIV.AIDS                                  0.897437
## CountrySaudi Arabia:HIV.AIDS                                                NA
## CountrySenegal:HIV.AIDS                                                0.877075
```

```
## CountrySerbia:HIV.AIDS                                                    NA
## CountrySeychelles:HIV.AIDS                                                 NA
## CountrySierra Leone:HIV.AIDS                                         0.559859
## CountrySingapore:HIV.AIDS                                                  NA
## CountrySlovakia:HIV.AIDS                                                   NA
## CountrySlovenia:HIV.AIDS                                                   NA
## CountrySolomon Islands:HIV.AIDS                                            NA
## CountrySomalia:HIV.AIDS                                                0.063810
## CountrySouth Africa:HIV.AIDS                                           3.60e-05
## CountrySouth Sudan:HIV.AIDS                                            0.377190
## CountrySpain:HIV.AIDS                                                      NA
## CountrySri Lanka:HIV.AIDS                                                  NA
## CountrySudan:HIV.AIDS                                                  0.516001
## CountrySuriname:HIV.AIDS                                               0.008759
## CountrySwaziland:HIV.AIDS                                              0.052690
## CountrySweden:HIV.AIDS                                                     NA
## CountrySwitzerland:HIV.AIDS                                                NA
## CountrySyrian Arab Republic:HIV.AIDS                                       NA
## CountryTajikistan:HIV.AIDS                                             0.959918
## CountryThailand:HIV.AIDS                                               0.833068
## CountryThe former Yugoslav republic of Macedonia:HIV.AIDS                  NA
## CountryTimor-Leste:HIV.AIDS                                                NA
## CountryTogo:HIV.AIDS                                                   0.417153
## CountryTonga:HIV.AIDS                                                      NA
## CountryTrinidad and Tobago:HIV.AIDS                                    0.929684
## CountryTunisia:HIV.AIDS                                                    NA
## CountryTurkey:HIV.AIDS                                                     NA
## CountryTurkmenistan:HIV.AIDS                                               NA
## CountryTuvalu:HIV.AIDS                                                     NA
## CountryUganda:HIV.AIDS                                                 0.047423
## CountryUkraine:HIV.AIDS                                                0.825114
## CountryUnited Arab Emirates:HIV.AIDS                                       NA
## CountryUnited Kingdom of Great Britain and Northern Ireland:HIV.AIDS       NA
## CountryUnited Republic of Tanzania:HIV.AIDS                            0.027617
## CountryUnited States of America:HIV.AIDS                                   NA
## CountryUruguay:HIV.AIDS                                                    NA
## CountryUzbekistan:HIV.AIDS                                             0.864972
## CountryVanuatu:HIV.AIDS                                                    NA
## CountryVenezuela (Bolivarian Republic of):HIV.AIDS                        NA
## CountryViet Nam:HIV.AIDS                                               0.987327
## CountryYemen:HIV.AIDS                                                      NA
## CountryZambia:HIV.AIDS                                                 0.792066
## CountryZimbabwe:HIV.AIDS                                                   NA
## CountryAlbania:Schooling                                               0.995059
## CountryAlgeria:Schooling                                               0.990456
## CountryAngola:Schooling                                                0.442564
## CountryAntigua and Barbuda:Schooling                                   0.972761
## CountryArgentina:Schooling                                             0.837409
## CountryArmenia:Schooling                                               0.981955
## CountryAustralia:Schooling                                             0.742772
## CountryAustria:Schooling                                               0.863657
## CountryAzerbaijan:Schooling                                            0.723261
## CountryBahamas:Schooling                                               0.811736
## CountryBahrain:Schooling                                               0.961205
```

```
## CountryBangladesh:Schooling                             0.337374
## CountryBarbados:Schooling                               0.969646
## CountryBelarus:Schooling                                0.784707
## CountryBelgium:Schooling                                0.772674
## CountryBelize:Schooling                                 0.961362
## CountryBenin:Schooling                                  0.979393
## CountryBhutan:Schooling                                 0.957420
## CountryBolivia (Plurinational State of):Schooling       0.232211
## CountryBosnia and Herzegovina:Schooling                 0.985632
## CountryBotswana:Schooling                               0.950476
## CountryBrazil:Schooling                                 0.737635
## CountryBrunei Darussalam:Schooling                      0.798584
## CountryBulgaria:Schooling                               0.898702
## CountryBurkina Faso:Schooling                           0.809652
## CountryBurundi:Schooling                                0.984641
## CountryCÃ´te d'Ivoire:Schooling                               NA
## CountryCabo Verde:Schooling                             0.819391
## CountryCambodia:Schooling                               0.650761
## CountryCameroon:Schooling                               0.985982
## CountryCanada:Schooling                                 0.046950
## CountryCentral African Republic:Schooling               0.009572
## CountryChad:Schooling                                   0.319938
## CountryChile:Schooling                                  0.659753
## CountryChina:Schooling                                  0.940068
## CountryColombia:Schooling                               0.863326
## CountryComoros:Schooling                                0.629845
## CountryCongo:Schooling                                  0.396296
## CountryCook Islands:Schooling                                 NA
## CountryCosta Rica:Schooling                             0.989974
## CountryCroatia:Schooling                                0.864861
## CountryCuba:Schooling                                   0.934800
## CountryCyprus:Schooling                                 0.920355
## CountryCzechia:Schooling                                      NA
## CountryDemocratic People's Republic of Korea:Schooling        NA
## CountryDemocratic Republic of the Congo:Schooling             NA
## CountryDenmark:Schooling                                0.725157
## CountryDjibouti:Schooling                               0.020590
## CountryDominica:Schooling                                     NA
## CountryDominican Republic:Schooling                     0.370804
## CountryEcuador:Schooling                                0.828077
## CountryEgypt:Schooling                                  0.350157
## CountryEl Salvador:Schooling                            0.615565
## CountryEquatorial Guinea:Schooling                      0.977686
## CountryEritrea:Schooling                                0.076684
## CountryEstonia:Schooling                                0.105448
## CountryEthiopia:Schooling                               0.891230
## CountryFiji:Schooling                                   0.969288
## CountryFinland:Schooling                                0.974755
## CountryFrance:Schooling                                 0.002747
## CountryGabon:Schooling                                  0.915600
## CountryGambia:Schooling                                 0.531635
## CountryGeorgia:Schooling                                0.924515
## CountryGermany:Schooling                                0.919459
## CountryGhana:Schooling                                  0.183836
```

```
## CountryGreece:Schooling                                          0.381062
## CountryGrenada:Schooling                                         0.068152
## CountryGuatemala:Schooling                                       0.003481
## CountryGuinea:Schooling                                          0.989130
## CountryGuinea-Bissau:Schooling                                   0.878000
## CountryGuyana:Schooling                                          0.989438
## CountryHaiti:Schooling                                           0.641833
## CountryHonduras:Schooling                                        0.940939
## CountryHungary:Schooling                                         0.996461
## CountryIceland:Schooling                                         0.034364
## CountryIndia:Schooling                                           0.968943
## CountryIndonesia:Schooling                                       0.993308
## CountryIran (Islamic Republic of):Schooling                      0.641965
## CountryIraq:Schooling                                            0.073671
## CountryIreland:Schooling                                         0.093396
## CountryIsrael:Schooling                                          0.600934
## CountryItaly:Schooling                                           0.697248
## CountryJamaica:Schooling                                         0.990453
## CountryJapan:Schooling                                           0.923892
## CountryJordan:Schooling                                          0.962429
## CountryKazakhstan:Schooling                                      0.766221
## CountryKenya:Schooling                                           0.797697
## CountryKiribati:Schooling                                        0.980602
## CountryKuwait:Schooling                                          0.967634
## CountryKyrgyzstan:Schooling                                      0.774582
## CountryLao People's Democratic Republic:Schooling                0.144417
## CountryLatvia:Schooling                                          0.984739
## CountryLebanon:Schooling                                         0.998669
## CountryLesotho:Schooling                                         0.632874
## CountryLiberia:Schooling                                         0.048229
## CountryLibya:Schooling                                           0.255090
## CountryLithuania:Schooling                                       0.565427
## CountryLuxembourg:Schooling                                      0.025024
## CountryMadagascar:Schooling                                      0.218734
## CountryMalawi:Schooling                                          0.972869
## CountryMalaysia:Schooling                                        0.996668
## CountryMaldives:Schooling                                        0.618282
## CountryMali:Schooling                                            0.749526
## CountryMalta:Schooling                                           0.830625
## CountryMarshall Islands:Schooling                                      NA
## CountryMauritania:Schooling                                      0.292461
## CountryMauritius:Schooling                                       0.800215
## CountryMexico:Schooling                                          0.781231
## CountryMicronesia (Federated States of):Schooling                0.957192
## CountryMonaco:Schooling                                                NA
## CountryMongolia:Schooling                                        0.977008
## CountryMontenegro:Schooling                                      0.966149
## CountryMorocco:Schooling                                         0.575385
## CountryMozambique:Schooling                                      0.373765
## CountryMyanmar:Schooling                                         0.513546
## CountryNamibia:Schooling                                         0.790428
## CountryNauru:Schooling                                                 NA
## CountryNepal:Schooling                                           0.942854
## CountryNetherlands:Schooling                                     0.856387
```

```
## CountryNew Zealand:Schooling                                          0.244240
## CountryNicaragua:Schooling                                            0.511927
## CountryNiger:Schooling                                                0.000402
## CountryNigeria:Schooling                                              0.345246
## CountryNiue:Schooling                                                       NA
## CountryNorway:Schooling                                               0.582263
## CountryOman:Schooling                                                 0.977600
## CountryPakistan:Schooling                                             0.965590
## CountryPalau:Schooling                                                      NA
## CountryPanama:Schooling                                               0.794467
## CountryPapua New Guinea:Schooling                                     0.397104
## CountryParaguay:Schooling                                             0.137490
## CountryPeru:Schooling                                                 0.627479
## CountryPhilippines:Schooling                                          0.872567
## CountryPoland:Schooling                                               0.972513
## CountryPortugal:Schooling                                             0.578955
## CountryQatar:Schooling                                                0.974559
## CountryRepublic of Korea:Schooling                                          NA
## CountryRepublic of Moldova:Schooling                                        NA
## CountryRomania:Schooling                                              0.984082
## CountryRussian Federation:Schooling                                   0.912588
## CountryRwanda:Schooling                                               0.079072
## CountrySaint Kitts and Nevis:Schooling                                      NA
## CountrySaint Lucia:Schooling                                          0.959544
## CountrySaint Vincent and the Grenadines:Schooling                     0.000372
## CountrySamoa:Schooling                                                0.650279
## CountrySan Marino:Schooling                                                 NA
## CountrySao Tome and Principe:Schooling                                0.960137
## CountrySaudi Arabia:Schooling                                         0.995455
## CountrySenegal:Schooling                                              0.582397
## CountrySerbia:Schooling                                               0.881121
## CountrySeychelles:Schooling                                           0.896744
## CountrySierra Leone:Schooling                                         0.415788
## CountrySingapore:Schooling                                            0.360743
## CountrySlovakia:Schooling                                             0.929311
## CountrySlovenia:Schooling                                             0.788410
## CountrySolomon Islands:Schooling                                      0.997123
## CountrySomalia:Schooling                                                    NA
## CountrySouth Africa:Schooling                                         0.007349
## CountrySouth Sudan:Schooling                                          0.962966
## CountrySpain:Schooling                                                0.181566
## CountrySri Lanka:Schooling                                            0.521491
## CountrySudan:Schooling                                                0.007845
## CountrySuriname:Schooling                                             0.037456
## CountrySwaziland:Schooling                                            0.797662
## CountrySweden:Schooling                                               0.513994
## CountrySwitzerland:Schooling                                          0.205143
## CountrySyrian Arab Republic:Schooling                                 0.106629
## CountryTajikistan:Schooling                                           0.725655
## CountryThailand:Schooling                                             0.998534
## CountryThe former Yugoslav republic of Macedonia:Schooling            0.977910
## CountryTimor-Leste:Schooling                                          0.969273
## CountryTogo:Schooling                                                 0.957642
## CountryTonga:Schooling                                                0.957091
```

```
## CountryTrinidad and Tobago:Schooling                                          0.186928
## CountryTunisia:Schooling                                                      0.947319
## CountryTurkey:Schooling                                                       0.514136
## CountryTurkmenistan:Schooling                                                 0.940475
## CountryTuvalu:Schooling                                                             NA
## CountryUganda:Schooling                                                       0.711433
## CountryUkraine:Schooling                                                      0.921829
## CountryUnited Arab Emirates:Schooling                                         0.966633
## CountryUnited Kingdom of Great Britain and Northern Ireland:Schooling               NA
## CountryUnited Republic of Tanzania:Schooling                                        NA
## CountryUnited States of America:Schooling                                           NA
## CountryUruguay:Schooling                                                       0.982501
## CountryUzbekistan:Schooling                                                    0.932227
## CountryVanuatu:Schooling                                                       0.588531
## CountryVenezuela (Bolivarian Republic of):Schooling                            0.984499
## CountryViet Nam:Schooling                                                      0.991602
## CountryYemen:Schooling                                                         0.915057
## CountryZambia:Schooling                                                        0.075956
## CountryZimbabwe:Schooling                                                      0.301949
## CountryAlbania:Diphtheria                                                      0.701874
## CountryAlgeria:Diphtheria                                                      0.914940
## CountryAngola:Diphtheria                                                       0.261319
## CountryAntigua and Barbuda:Diphtheria                                          0.866272
## CountryArgentina:Diphtheria                                                    0.698588
## CountryArmenia:Diphtheria                                                      0.161420
## CountryAustralia:Diphtheria                                                    0.423242
## CountryAustria:Diphtheria                                                      4.21e-05
## CountryAzerbaijan:Diphtheria                                                   0.001046
## CountryBahamas:Diphtheria                                                      0.991785
## CountryBahrain:Diphtheria                                                      0.959269
## CountryBangladesh:Diphtheria                                                   0.977524
## CountryBarbados:Diphtheria                                                     0.651789
## CountryBelarus:Diphtheria                                                      0.151975
## CountryBelgium:Diphtheria                                                      0.711148
## CountryBelize:Diphtheria                                                       0.837654
## CountryBenin:Diphtheria                                                        0.154795
## CountryBhutan:Diphtheria                                                       0.902386
## CountryBolivia (Plurinational State of):Diphtheria                             0.154692
## CountryBosnia and Herzegovina:Diphtheria                                       0.103780
##
## (Intercept)
## CountryAlbania
## CountryAlgeria
## CountryAngola
## CountryAntigua and Barbuda
## CountryArgentina
## CountryArmenia
## CountryAustralia
## CountryAustria
## CountryAzerbaijan
## CountryBahamas
## CountryBahrain
## CountryBangladesh
## CountryBarbados
```

```
## CountryBelarus
## CountryBelgium
## CountryBelize
## CountryBenin
## CountryBhutan
## CountryBolivia (Plurinational State of)
## CountryBosnia and Herzegovina
## CountryBotswana
## CountryBrazil
## CountryBrunei Darussalam
## CountryBulgaria
## CountryBurkina Faso
## CountryBurundi
## CountryCÃ´te d'Ivoire
## CountryCabo Verde
## CountryCambodia
## CountryCameroon
## CountryCanada
## CountryCentral African Republic
## CountryChad
## CountryChile
## CountryChina
## CountryColombia
## CountryComoros
## CountryCongo
## CountryCook Islands
## CountryCosta Rica
## CountryCroatia
## CountryCuba
## CountryCyprus
## CountryCzechia
## CountryDemocratic People's Republic of Korea
## CountryDemocratic Republic of the Congo
## CountryDenmark
## CountryDjibouti                                                    *
## CountryDominica
## CountryDominican Republic
## CountryEcuador
## CountryEgypt
## CountryEl Salvador
## CountryEquatorial Guinea
## CountryEritrea
## CountryEstonia
## CountryEthiopia
## CountryFiji
## CountryFinland
## CountryFrance
## CountryGabon
## CountryGambia
## CountryGeorgia
## CountryGermany
## CountryGhana
## CountryGreece
## CountryGrenada
```

```
## CountryGuatemala
## CountryGuinea
## CountryGuinea-Bissau
## CountryGuyana
## CountryHaiti                                                          ***
## CountryHonduras
## CountryHungary
## CountryIceland
## CountryIndia
## CountryIndonesia
## CountryIran (Islamic Republic of)
## CountryIraq                                                           .
## CountryIreland
## CountryIsrael
## CountryItaly
## CountryJamaica
## CountryJapan
## CountryJordan
## CountryKazakhstan
## CountryKenya
## CountryKiribati
## CountryKuwait
## CountryKyrgyzstan
## CountryLao People's Democratic Republic
## CountryLatvia                                                         *
## CountryLebanon
## CountryLesotho
## CountryLiberia
## CountryLibya
## CountryLithuania
## CountryLuxembourg
## CountryMadagascar                                                     *
## CountryMalawi
## CountryMalaysia
## CountryMaldives
## CountryMali
## CountryMalta
## CountryMarshall Islands
## CountryMauritania
## CountryMauritius
## CountryMexico
## CountryMicronesia (Federated States of)
## CountryMonaco
## CountryMongolia
## CountryMontenegro
## CountryMorocco
## CountryMozambique
## CountryMyanmar
## CountryNamibia
## CountryNauru                                                          ***
## CountryNepal
## CountryNetherlands
## CountryNew Zealand
## CountryNicaragua
```

```
## CountryNiger                                                        *
## CountryNigeria
## CountryNiue
## CountryNorway
## CountryOman
## CountryPakistan
## CountryPalau
## CountryPanama
## CountryPapua New Guinea
## CountryParaguay
## CountryPeru
## CountryPhilippines
## CountryPoland
## CountryPortugal
## CountryQatar
## CountryRepublic of Korea
## CountryRepublic of Moldova
## CountryRomania
## CountryRussian Federation
## CountryRwanda
## CountrySaint Kitts and Nevis
## CountrySaint Lucia
## CountrySaint Vincent and the Grenadines
## CountrySamoa
## CountrySan Marino
## CountrySao Tome and Principe
## CountrySaudi Arabia
## CountrySenegal
## CountrySerbia
## CountrySeychelles
## CountrySierra Leone
## CountrySingapore
## CountrySlovakia
## CountrySlovenia
## CountrySolomon Islands
## CountrySomalia
## CountrySouth Africa                                                  .
## CountrySouth Sudan
## CountrySpain
## CountrySri Lanka
## CountrySudan
## CountrySuriname
## CountrySwaziland
## CountrySweden
## CountrySwitzerland
## CountrySyrian Arab Republic
## CountryTajikistan
## CountryThailand
## CountryThe former Yugoslav republic of Macedonia
## CountryTimor-Leste
## CountryTogo
## CountryTonga
## CountryTrinidad and Tobago
## CountryTunisia
```

```
## CountryTurkey
## CountryTurkmenistan
## CountryTuvalu
## CountryUganda
## CountryUkraine
## CountryUnited Arab Emirates
## CountryUnited Kingdom of Great Britain and Northern Ireland
## CountryUnited Republic of Tanzania
## CountryUnited States of America
## CountryUruguay
## CountryUzbekistan
## CountryVanuatu
## CountryVenezuela (Bolivarian Republic of)
## CountryViet Nam
## CountryYemen
## CountryZambia
## CountryZimbabwe                                                           *
## Year
## HIV.AIDS                                                                  *
## Schooling
## Diphtheria
## Adult.Mortality
## Measles
## Alcohol
## Polio                                                                     *
## thinness.5.9.years
## Total.expenditure
## percentage.expenditure
## CountryAlbania:Year
## CountryAlgeria:Year
## CountryAngola:Year
## CountryAntigua and Barbuda:Year
## CountryArgentina:Year
## CountryArmenia:Year
## CountryAustralia:Year
## CountryAustria:Year
## CountryAzerbaijan:Year
## CountryBahamas:Year
## CountryBahrain:Year
## CountryBangladesh:Year
## CountryBarbados:Year
## CountryBelarus:Year
## CountryBelgium:Year
## CountryBelize:Year
## CountryBenin:Year
## CountryBhutan:Year
## CountryBolivia (Plurinational State of):Year                              .
## CountryBosnia and Herzegovina:Year
## CountryBotswana:Year
## CountryBrazil:Year
## CountryBrunei Darussalam:Year
## CountryBulgaria:Year
## CountryBurkina Faso:Year
## CountryBurundi:Year
```

130

```
## CountryCÃ´te d'Ivoire:Year
## CountryCabo Verde:Year
## CountryCambodia:Year
## CountryCameroon:Year
## CountryCanada:Year
## CountryCentral African Republic:Year
## CountryChad:Year
## CountryChile:Year
## CountryChina:Year
## CountryColombia:Year
## CountryComoros:Year
## CountryCongo:Year
## CountryCook Islands:Year
## CountryCosta Rica:Year
## CountryCroatia:Year
## CountryCuba:Year
## CountryCyprus:Year
## CountryCzechia:Year
## CountryDemocratic People's Republic of Korea:Year
## CountryDemocratic Republic of the Congo:Year
## CountryDenmark:Year
## CountryDjibouti:Year                                                      *
## CountryDominica:Year
## CountryDominican Republic:Year
## CountryEcuador:Year
## CountryEgypt:Year
## CountryEl Salvador:Year
## CountryEquatorial Guinea:Year
## CountryEritrea:Year
## CountryEstonia:Year
## CountryEthiopia:Year
## CountryFiji:Year
## CountryFinland:Year
## CountryFrance:Year
## CountryGabon:Year
## CountryGambia:Year
## CountryGeorgia:Year
## CountryGermany:Year
## CountryGhana:Year
## CountryGreece:Year
## CountryGrenada:Year
## CountryGuatemala:Year
## CountryGuinea:Year
## CountryGuinea-Bissau:Year
## CountryGuyana:Year
## CountryHaiti:Year                                                       ***
## CountryHonduras:Year
## CountryHungary:Year
## CountryIceland:Year
## CountryIndia:Year
## CountryIndonesia:Year
## CountryIran (Islamic Republic of):Year
## CountryIraq:Year
## CountryIreland:Year
```

```
## CountryIsrael:Year
## CountryItaly:Year
## CountryJamaica:Year
## CountryJapan:Year
## CountryJordan:Year
## CountryKazakhstan:Year
## CountryKenya:Year
## CountryKiribati:Year
## CountryKuwait:Year
## CountryKyrgyzstan:Year
## CountryLao People's Democratic Republic:Year
## CountryLatvia:Year                                                    *
## CountryLebanon:Year
## CountryLesotho:Year
## CountryLiberia:Year
## CountryLibya:Year
## CountryLithuania:Year
## CountryLuxembourg:Year
## CountryMadagascar:Year                                                *
## CountryMalawi:Year
## CountryMalaysia:Year
## CountryMaldives:Year
## CountryMali:Year
## CountryMalta:Year
## CountryMarshall Islands:Year
## CountryMauritania:Year
## CountryMauritius:Year
## CountryMexico:Year
## CountryMicronesia (Federated States of):Year
## CountryMonaco:Year
## CountryMongolia:Year
## CountryMontenegro:Year
## CountryMorocco:Year
## CountryMozambique:Year
## CountryMyanmar:Year
## CountryNamibia:Year
## CountryNauru:Year
## CountryNepal:Year
## CountryNetherlands:Year
## CountryNew Zealand:Year
## CountryNicaragua:Year
## CountryNiger:Year                                                     *
## CountryNigeria:Year
## CountryNiue:Year
## CountryNorway:Year
## CountryOman:Year
## CountryPakistan:Year
## CountryPalau:Year
## CountryPanama:Year
## CountryPapua New Guinea:Year
## CountryParaguay:Year
## CountryPeru:Year
## CountryPhilippines:Year
## CountryPoland:Year
```

```
## CountryPortugal:Year
## CountryQatar:Year
## CountryRepublic of Korea:Year
## CountryRepublic of Moldova:Year
## CountryRomania:Year
## CountryRussian Federation:Year
## CountryRwanda:Year
## CountrySaint Kitts and Nevis:Year
## CountrySaint Lucia:Year
## CountrySaint Vincent and the Grenadines:Year
## CountrySamoa:Year
## CountrySan Marino:Year
## CountrySao Tome and Principe:Year
## CountrySaudi Arabia:Year
## CountrySenegal:Year
## CountrySerbia:Year
## CountrySeychelles:Year
## CountrySierra Leone:Year
## CountrySingapore:Year
## CountrySlovakia:Year
## CountrySlovenia:Year
## CountrySolomon Islands:Year
## CountrySomalia:Year
## CountrySouth Africa:Year
## CountrySouth Sudan:Year
## CountrySpain:Year
## CountrySri Lanka:Year
## CountrySudan:Year
## CountrySuriname:Year
## CountrySwaziland:Year
## CountrySweden:Year
## CountrySwitzerland:Year
## CountrySyrian Arab Republic:Year
## CountryTajikistan:Year
## CountryThailand:Year
## CountryThe former Yugoslav republic of Macedonia:Year
## CountryTimor-Leste:Year
## CountryTogo:Year
## CountryTonga:Year
## CountryTrinidad and Tobago:Year
## CountryTunisia:Year
## CountryTurkey:Year
## CountryTurkmenistan:Year
## CountryTuvalu:Year
## CountryUganda:Year
## CountryUkraine:Year
## CountryUnited Arab Emirates:Year
## CountryUnited Kingdom of Great Britain and Northern Ireland:Year
## CountryUnited Republic of Tanzania:Year
## CountryUnited States of America:Year
## CountryUruguay:Year
## CountryUzbekistan:Year
## CountryVanuatu:Year
## CountryVenezuela (Bolivarian Republic of):Year
```

```
## CountryViet Nam:Year
## CountryYemen:Year
## CountryZambia:Year
## CountryZimbabwe:Year                                                      *
## CountryAlbania:HIV.AIDS
## CountryAlgeria:HIV.AIDS
## CountryAngola:HIV.AIDS                                                     *
## CountryAntigua and Barbuda:HIV.AIDS
## CountryArgentina:HIV.AIDS
## CountryArmenia:HIV.AIDS
## CountryAustralia:HIV.AIDS
## CountryAustria:HIV.AIDS
## CountryAzerbaijan:HIV.AIDS
## CountryBahamas:HIV.AIDS
## CountryBahrain:HIV.AIDS
## CountryBangladesh:HIV.AIDS
## CountryBarbados:HIV.AIDS
## CountryBelarus:HIV.AIDS
## CountryBelgium:HIV.AIDS
## CountryBelize:HIV.AIDS
## CountryBenin:HIV.AIDS
## CountryBhutan:HIV.AIDS
## CountryBolivia (Plurinational State of):HIV.AIDS
## CountryBosnia and Herzegovina:HIV.AIDS
## CountryBotswana:HIV.AIDS                                                   *
## CountryBrazil:HIV.AIDS
## CountryBrunei Darussalam:HIV.AIDS
## CountryBulgaria:HIV.AIDS
## CountryBurkina Faso:HIV.AIDS
## CountryBurundi:HIV.AIDS
## CountryCÃ´te d'Ivoire:HIV.AIDS                                             .
## CountryCabo Verde:HIV.AIDS                                                 .
## CountryCambodia:HIV.AIDS
## CountryCameroon:HIV.AIDS
## CountryCanada:HIV.AIDS
## CountryCentral African Republic:HIV.AIDS                                   *
## CountryChad:HIV.AIDS
## CountryChile:HIV.AIDS
## CountryChina:HIV.AIDS
## CountryColombia:HIV.AIDS
## CountryComoros:HIV.AIDS
## CountryCongo:HIV.AIDS                                                      .
## CountryCook Islands:HIV.AIDS
## CountryCosta Rica:HIV.AIDS
## CountryCroatia:HIV.AIDS
## CountryCuba:HIV.AIDS
## CountryCyprus:HIV.AIDS
## CountryCzechia:HIV.AIDS
## CountryDemocratic People's Republic of Korea:HIV.AIDS
## CountryDemocratic Republic of the Congo:HIV.AIDS
## CountryDenmark:HIV.AIDS
## CountryDjibouti:HIV.AIDS
## CountryDominica:HIV.AIDS
## CountryDominican Republic:HIV.AIDS
```

```
## CountryEcuador:HIV.AIDS
## CountryEgypt:HIV.AIDS
## CountryEl Salvador:HIV.AIDS
## CountryEquatorial Guinea:HIV.AIDS
## CountryEritrea:HIV.AIDS                                              .
## CountryEstonia:HIV.AIDS
## CountryEthiopia:HIV.AIDS
## CountryFiji:HIV.AIDS
## CountryFinland:HIV.AIDS
## CountryFrance:HIV.AIDS
## CountryGabon:HIV.AIDS
## CountryGambia:HIV.AIDS
## CountryGeorgia:HIV.AIDS
## CountryGermany:HIV.AIDS
## CountryGhana:HIV.AIDS                                             ***
## CountryGreece:HIV.AIDS
## CountryGrenada:HIV.AIDS
## CountryGuatemala:HIV.AIDS
## CountryGuinea:HIV.AIDS
## CountryGuinea-Bissau:HIV.AIDS
## CountryGuyana:HIV.AIDS
## CountryHaiti:HIV.AIDS                                             ***
## CountryHonduras:HIV.AIDS
## CountryHungary:HIV.AIDS
## CountryIceland:HIV.AIDS
## CountryIndia:HIV.AIDS
## CountryIndonesia:HIV.AIDS
## CountryIran (Islamic Republic of):HIV.AIDS
## CountryIraq:HIV.AIDS
## CountryIreland:HIV.AIDS
## CountryIsrael:HIV.AIDS
## CountryItaly:HIV.AIDS
## CountryJamaica:HIV.AIDS
## CountryJapan:HIV.AIDS
## CountryJordan:HIV.AIDS
## CountryKazakhstan:HIV.AIDS
## CountryKenya:HIV.AIDS
## CountryKiribati:HIV.AIDS
## CountryKuwait:HIV.AIDS
## CountryKyrgyzstan:HIV.AIDS                                          .
## CountryLao People's Democratic Republic:HIV.AIDS                    *
## CountryLatvia:HIV.AIDS
## CountryLebanon:HIV.AIDS
## CountryLesotho:HIV.AIDS                                            **
## CountryLiberia:HIV.AIDS
## CountryLibya:HIV.AIDS
## CountryLithuania:HIV.AIDS
## CountryLuxembourg:HIV.AIDS
## CountryMadagascar:HIV.AIDS
## CountryMalawi:HIV.AIDS                                             .
## CountryMalaysia:HIV.AIDS
## CountryMaldives:HIV.AIDS
## CountryMali:HIV.AIDS
## CountryMalta:HIV.AIDS
```

```
## CountryMarshall Islands:HIV.AIDS
## CountryMauritania:HIV.AIDS
## CountryMauritius:HIV.AIDS
## CountryMexico:HIV.AIDS
## CountryMicronesia (Federated States of):HIV.AIDS
## CountryMonaco:HIV.AIDS
## CountryMongolia:HIV.AIDS
## CountryMontenegro:HIV.AIDS
## CountryMorocco:HIV.AIDS
## CountryMozambique:HIV.AIDS
## CountryMyanmar:HIV.AIDS
## CountryNamibia:HIV.AIDS                                                        **
## CountryNauru:HIV.AIDS
## CountryNepal:HIV.AIDS
## CountryNetherlands:HIV.AIDS
## CountryNew Zealand:HIV.AIDS
## CountryNicaragua:HIV.AIDS
## CountryNiger:HIV.AIDS
## CountryNigeria:HIV.AIDS
## CountryNiue:HIV.AIDS
## CountryNorway:HIV.AIDS
## CountryOman:HIV.AIDS
## CountryPakistan:HIV.AIDS
## CountryPalau:HIV.AIDS
## CountryPanama:HIV.AIDS
## CountryPapua New Guinea:HIV.AIDS
## CountryParaguay:HIV.AIDS                                                       *
## CountryPeru:HIV.AIDS
## CountryPhilippines:HIV.AIDS
## CountryPoland:HIV.AIDS
## CountryPortugal:HIV.AIDS
## CountryQatar:HIV.AIDS
## CountryRepublic of Korea:HIV.AIDS
## CountryRepublic of Moldova:HIV.AIDS
## CountryRomania:HIV.AIDS
## CountryRussian Federation:HIV.AIDS
## CountryRwanda:HIV.AIDS
## CountrySaint Kitts and Nevis:HIV.AIDS
## CountrySaint Lucia:HIV.AIDS
## CountrySaint Vincent and the Grenadines:HIV.AIDS
## CountrySamoa:HIV.AIDS
## CountrySan Marino:HIV.AIDS
## CountrySao Tome and Principe:HIV.AIDS
## CountrySaudi Arabia:HIV.AIDS
## CountrySenegal:HIV.AIDS
## CountrySerbia:HIV.AIDS
## CountrySeychelles:HIV.AIDS
## CountrySierra Leone:HIV.AIDS
## CountrySingapore:HIV.AIDS
## CountrySlovakia:HIV.AIDS
## CountrySlovenia:HIV.AIDS
## CountrySolomon Islands:HIV.AIDS
## CountrySomalia:HIV.AIDS                                                        .
## CountrySouth Africa:HIV.AIDS                                                   ***
```

```
## CountrySouth Sudan:HIV.AIDS
## CountrySpain:HIV.AIDS
## CountrySri Lanka:HIV.AIDS
## CountrySudan:HIV.AIDS
## CountrySuriname:HIV.AIDS                                                      **
## CountrySwaziland:HIV.AIDS                                                     .
## CountrySweden:HIV.AIDS
## CountrySwitzerland:HIV.AIDS
## CountrySyrian Arab Republic:HIV.AIDS
## CountryTajikistan:HIV.AIDS
## CountryThailand:HIV.AIDS
## CountryThe former Yugoslav republic of Macedonia:HIV.AIDS
## CountryTimor-Leste:HIV.AIDS
## CountryTogo:HIV.AIDS
## CountryTonga:HIV.AIDS
## CountryTrinidad and Tobago:HIV.AIDS
## CountryTunisia:HIV.AIDS
## CountryTurkey:HIV.AIDS
## CountryTurkmenistan:HIV.AIDS
## CountryTuvalu:HIV.AIDS
## CountryUganda:HIV.AIDS                                                        *
## CountryUkraine:HIV.AIDS
## CountryUnited Arab Emirates:HIV.AIDS
## CountryUnited Kingdom of Great Britain and Northern Ireland:HIV.AIDS
## CountryUnited Republic of Tanzania:HIV.AIDS                                   *
## CountryUnited States of America:HIV.AIDS
## CountryUruguay:HIV.AIDS
## CountryUzbekistan:HIV.AIDS
## CountryVanuatu:HIV.AIDS
## CountryVenezuela (Bolivarian Republic of):HIV.AIDS
## CountryViet Nam:HIV.AIDS
## CountryYemen:HIV.AIDS
## CountryZambia:HIV.AIDS
## CountryZimbabwe:HIV.AIDS
## CountryAlbania:Schooling
## CountryAlgeria:Schooling
## CountryAngola:Schooling
## CountryAntigua and Barbuda:Schooling
## CountryArgentina:Schooling
## CountryArmenia:Schooling
## CountryAustralia:Schooling
## CountryAustria:Schooling
## CountryAzerbaijan:Schooling
## CountryBahamas:Schooling
## CountryBahrain:Schooling
## CountryBangladesh:Schooling
## CountryBarbados:Schooling
## CountryBelarus:Schooling
## CountryBelgium:Schooling
## CountryBelize:Schooling
## CountryBenin:Schooling
## CountryBhutan:Schooling
## CountryBolivia (Plurinational State of):Schooling
## CountryBosnia and Herzegovina:Schooling
```

```
## CountryBotswana:Schooling
## CountryBrazil:Schooling
## CountryBrunei Darussalam:Schooling
## CountryBulgaria:Schooling
## CountryBurkina Faso:Schooling
## CountryBurundi:Schooling
## CountryCÃ´te d'Ivoire:Schooling
## CountryCabo Verde:Schooling
## CountryCambodia:Schooling
## CountryCameroon:Schooling
## CountryCanada:Schooling                                              *
## CountryCentral African Republic:Schooling                           **
## CountryChad:Schooling
## CountryChile:Schooling
## CountryChina:Schooling
## CountryColombia:Schooling
## CountryComoros:Schooling
## CountryCongo:Schooling
## CountryCook Islands:Schooling
## CountryCosta Rica:Schooling
## CountryCroatia:Schooling
## CountryCuba:Schooling
## CountryCyprus:Schooling
## CountryCzechia:Schooling
## CountryDemocratic People's Republic of Korea:Schooling
## CountryDemocratic Republic of the Congo:Schooling
## CountryDenmark:Schooling
## CountryDjibouti:Schooling                                            *
## CountryDominica:Schooling
## CountryDominican Republic:Schooling
## CountryEcuador:Schooling
## CountryEgypt:Schooling
## CountryEl Salvador:Schooling
## CountryEquatorial Guinea:Schooling
## CountryEritrea:Schooling                                             .
## CountryEstonia:Schooling
## CountryEthiopia:Schooling
## CountryFiji:Schooling
## CountryFinland:Schooling
## CountryFrance:Schooling                                             **
## CountryGabon:Schooling
## CountryGambia:Schooling
## CountryGeorgia:Schooling
## CountryGermany:Schooling
## CountryGhana:Schooling
## CountryGreece:Schooling
## CountryGrenada:Schooling                                             .
## CountryGuatemala:Schooling                                          **
## CountryGuinea:Schooling
## CountryGuinea-Bissau:Schooling
## CountryGuyana:Schooling
## CountryHaiti:Schooling
## CountryHonduras:Schooling
## CountryHungary:Schooling
```

```
## CountryIceland:Schooling                                                      *
## CountryIndia:Schooling
## CountryIndonesia:Schooling
## CountryIran (Islamic Republic of):Schooling
## CountryIraq:Schooling                                                         .
## CountryIreland:Schooling                                                       .
## CountryIsrael:Schooling
## CountryItaly:Schooling
## CountryJamaica:Schooling
## CountryJapan:Schooling
## CountryJordan:Schooling
## CountryKazakhstan:Schooling
## CountryKenya:Schooling
## CountryKiribati:Schooling
## CountryKuwait:Schooling
## CountryKyrgyzstan:Schooling
## CountryLao People's Democratic Republic:Schooling
## CountryLatvia:Schooling
## CountryLebanon:Schooling
## CountryLesotho:Schooling
## CountryLiberia:Schooling                                                      *
## CountryLibya:Schooling
## CountryLithuania:Schooling
## CountryLuxembourg:Schooling                                                    *
## CountryMadagascar:Schooling
## CountryMalawi:Schooling
## CountryMalaysia:Schooling
## CountryMaldives:Schooling
## CountryMali:Schooling
## CountryMalta:Schooling
## CountryMarshall Islands:Schooling
## CountryMauritania:Schooling
## CountryMauritius:Schooling
## CountryMexico:Schooling
## CountryMicronesia (Federated States of):Schooling
## CountryMonaco:Schooling
## CountryMongolia:Schooling
## CountryMontenegro:Schooling
## CountryMorocco:Schooling
## CountryMozambique:Schooling
## CountryMyanmar:Schooling
## CountryNamibia:Schooling
## CountryNauru:Schooling
## CountryNepal:Schooling
## CountryNetherlands:Schooling
## CountryNew Zealand:Schooling
## CountryNicaragua:Schooling
## CountryNiger:Schooling                                                       ***
## CountryNigeria:Schooling
## CountryNiue:Schooling
## CountryNorway:Schooling
## CountryOman:Schooling
## CountryPakistan:Schooling
## CountryPalau:Schooling
```

```
## CountryPanama:Schooling
## CountryPapua New Guinea:Schooling
## CountryParaguay:Schooling
## CountryPeru:Schooling
## CountryPhilippines:Schooling
## CountryPoland:Schooling
## CountryPortugal:Schooling
## CountryQatar:Schooling
## CountryRepublic of Korea:Schooling
## CountryRepublic of Moldova:Schooling
## CountryRomania:Schooling
## CountryRussian Federation:Schooling
## CountryRwanda:Schooling                                          .
## CountrySaint Kitts and Nevis:Schooling
## CountrySaint Lucia:Schooling
## CountrySaint Vincent and the Grenadines:Schooling                ***
## CountrySamoa:Schooling
## CountrySan Marino:Schooling
## CountrySao Tome and Principe:Schooling
## CountrySaudi Arabia:Schooling
## CountrySenegal:Schooling
## CountrySerbia:Schooling
## CountrySeychelles:Schooling
## CountrySierra Leone:Schooling
## CountrySingapore:Schooling
## CountrySlovakia:Schooling
## CountrySlovenia:Schooling
## CountrySolomon Islands:Schooling
## CountrySomalia:Schooling
## CountrySouth Africa:Schooling                                    **
## CountrySouth Sudan:Schooling
## CountrySpain:Schooling
## CountrySri Lanka:Schooling
## CountrySudan:Schooling                                           **
## CountrySuriname:Schooling                                        *
## CountrySwaziland:Schooling
## CountrySweden:Schooling
## CountrySwitzerland:Schooling
## CountrySyrian Arab Republic:Schooling
## CountryTajikistan:Schooling
## CountryThailand:Schooling
## CountryThe former Yugoslav republic of Macedonia:Schooling
## CountryTimor-Leste:Schooling
## CountryTogo:Schooling
## CountryTonga:Schooling
## CountryTrinidad and Tobago:Schooling
## CountryTunisia:Schooling
## CountryTurkey:Schooling
## CountryTurkmenistan:Schooling
## CountryTuvalu:Schooling
## CountryUganda:Schooling
## CountryUkraine:Schooling
## CountryUnited Arab Emirates:Schooling
## CountryUnited Kingdom of Great Britain and Northern Ireland:Schooling
```

```
## CountryUnited Republic of Tanzania:Schooling
## CountryUnited States of America:Schooling
## CountryUruguay:Schooling
## CountryUzbekistan:Schooling
## CountryVanuatu:Schooling
## CountryVenezuela (Bolivarian Republic of):Schooling
## CountryViet Nam:Schooling
## CountryYemen:Schooling
## CountryZambia:Schooling                                                      .
## CountryZimbabwe:Schooling
## CountryAlbania:Diphtheria
## CountryAlgeria:Diphtheria
## CountryAngola:Diphtheria
## CountryAntigua and Barbuda:Diphtheria
## CountryArgentina:Diphtheria
## CountryArmenia:Diphtheria
## CountryAustralia:Diphtheria
## CountryAustria:Diphtheria                                                    ***
## CountryAzerbaijan:Diphtheria                                                 **
## CountryBahamas:Diphtheria
## CountryBahrain:Diphtheria
## CountryBangladesh:Diphtheria
## CountryBarbados:Diphtheria
## CountryBelarus:Diphtheria
## CountryBelgium:Diphtheria
## CountryBelize:Diphtheria
## CountryBenin:Diphtheria
## CountryBhutan:Diphtheria
## CountryBolivia (Plurinational State of):Diphtheria
## CountryBosnia and Herzegovina:Diphtheria
##   [ reached getOption("max.print") -- omitted 1516 rows ]
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.263 on 913 degrees of freedom
## Multiple R-squared:  0.9945, Adjusted R-squared:  0.9824
## F-statistic: 81.84 on 2024 and 913 DF,  p-value: < 2.2e-16
```

```r
# F test
anova(final_fit, my_fit_interaction)
```

```
## Analysis of Variance Table
##
## Model 1: Life.expectancy ~ Country + Year + HIV.AIDS + Schooling + Diphtheria +
##     Adult.Mortality + Measles + Alcohol + Polio + Total.expenditure +
##     percentage.expenditure
## Model 2: Life.expectancy ~ Country * Year + HIV.AIDS * Country + Schooling *
##     Country + Diphtheria * Country + Adult.Mortality * Country +
##     Measles * Country + Alcohol * Country + Polio * Country +
##     thinness.5.9.years * Country + Total.expenditure * Country +
##     percentage.expenditure * Country
##   Res.Df    RSS   Df Sum of Sq      F    Pr(>F)
## 1   2735 9853.1
## 2    913 1455.8 1822    8397.3 2.8904 < 2.2e-16 ***
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
# assess performance
set.seed(251203021)
n = nrow(dataLife)
idx_tr = sample(n,round(0.70*n),replace=FALSE)

dataLife_tr = dataLife[idx_tr,]
dataLife_ts = dataLife[-idx_tr,]

dataLife_tr = rbind(dataLife_tr, dataLife_ts[which(dataLife_ts$Country=='Cook Islands' | dataLife_ts$Cou

my_fit_train = lm(Life.expectancy ~ Country*Year + HIV.AIDS*Country + Schooling*Country + Diphtheria*Cou

ypr = predict(my_fit_train,newdata=dataLife_ts)

## Warning in predict.lm(my_fit_train, newdata = dataLife_ts): prediction from a
## rank-deficient fit may be misleading
mse = mean((ypr- dataLife_ts[,4])^2)
mse

## [1] 1.213945e+20
```