ProjectCheckpoint3MLR.R

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```
project_data <- read.csv("/Users/brandonvidro/Downloads/project-iste-780-bad-
project1/LassoRegression/LassoForwardSelectionDataSetForModelling.csv")
head(project_data)
```

```
##   Adolescent.fertility.rate..births.per.1.000.women.ages.15.19.
## 1                                                     145.3210
## 2                                                      46.6478
## 3                                                      56.3066
## 4                                                      88.5072
## 5                                                     100.5586
## 6                                                      88.4568
##   Cereal.yield..kg.per.hectare. Urban.population....of.total.
## 1                      1082.838                        9.426
## 2                      1323.715                       83.110
## 3                      2621.710                       64.962
## 4                       529.302                       11.801
## 5                       795.060                       37.957
## 6                      1256.435                       50.059
##   GDP.per.capita..current.US..
## 1                     82.23139
## 2                   2127.16574
## 3                   1269.41258
## 4                    104.32376
## 5                    203.60125
## 6                    259.46697
##
Merchandise.exports.by.the.reporting.economy..residual....of.total.merchandis
e.exports.
## 1
44.252874
## 2
9.663118
## 3
11.543540
## 4
1.526718
## 5
2.370500
## 6
8.379342
##   Permanent.cropland....of.land.area.
## 1                          0.11181570
```

```
## 2                                0.02199862
## 3                                0.81133446
## 4                                0.70947144
## 5                                0.12646543
## 6                                0.74669723
##
Merchandise.imports.by.the.reporting.economy..residual....of.total.merchandis
e.imports.
## 1
57.122507
## 2
2.713909
## 3
8.977475
## 4
9.385113
## 5
3.692906
## 6
7.820431
##   Population.density..people.per.sq..km.of.land.area.
## 1                                         14.901579
## 2                                          1.453601
## 3                                         87.476399
## 4                                         22.936875
## 5                                          3.683980
## 6                                          9.781100
##   Agricultural.land....of.land.area. Arable.land..hectares.per.person.
## 1                           58.01091                         0.8017561
## 2                           61.05060                         3.1682636
## 3                           48.24413                         0.2293806
## 4                           13.32033                         0.3789106
## 5                           27.58054                         0.3360182
## 6                           19.86578                         0.3302679
##   Arable.land....of.land.area.
CO2.emissions.from.solid.fuel.consumption..kt.
## 1                 11.947431
300.694
## 2                  4.605392
67190.441
## 3                 20.065391
18951.056
## 4                  8.691025
0.000
## 5                  1.237884
3.667
## 6                  3.230384
6175.228
##   Merchandise.trade....of.GDP.       LE Year CountryName
## 1                     23.50000 34.09288 1964 Afghanistan
```

```
## 2                     26.82261 70.88098 1964    Australia
## 3                     36.08512 69.92195 1964     Austria
## 4                     16.41000 39.13685 1964       Benin
## 5                     24.45286 43.43022 1964     Bolivia
## 6                     12.69571 56.26295 1964      Brazil
##   MeanLifeExpetancyOverall MeanLifeExpetancyForYear
## 1                 64.19356                 55.93722
## 2                 64.19356                 55.93722
## 3                 64.19356                 55.93722
## 4                 64.19356                 55.93722
## 5                 64.19356                 55.93722
## 6                 64.19356                 55.93722
##   AboveAverageLifeExpectancyOverall AboveAverageLifeExpectancyByYear
## 1                             FALSE                            FALSE
## 2                              TRUE                             TRUE
## 3                              TRUE                             TRUE
## 4                             FALSE                            FALSE
## 5                             FALSE                            FALSE
## 6                             FALSE                             TRUE
```

```r
mlrmodel = lm(LE ~. -Year -CountryName -MeanLifeExpetancyOverall -
MeanLifeExpetancyForYear - AboveAverageLifeExpectancyOverall -
AboveAverageLifeExpectancyByYear, data = project_data)
summary(mlrmodel)
```

```
##
## Call:
## lm(formula = LE ~ . - Year - CountryName - MeanLifeExpetancyOverall -
##     MeanLifeExpetancyForYear - AboveAverageLifeExpectancyOverall -
##     AboveAverageLifeExpectancyByYear, data = project_data)
##
## Residuals:
##     Min      1Q   Median      3Q     Max
## -29.9016  -2.4874   0.3633   2.5113  16.9172
##
## Coefficients:
##
Estimate
## (Intercept)
6.277e+01
## Adolescent.fertility.rate..births.per.1.000.women.ages.15.19.
-9.906e-02
## Cereal.yield..kg.per.hectare.
2.616e-04
## Urban.population....of.total.
1.793e-01
## GDP.per.capita..current.US..
5.349e-05
##
Merchandise.exports.by.the.reporting.economy..residual....of.total.merchandis
```

```
e.exports.  -4.926e-02
## Permanent.cropland....of.land.area.
1.479e-01
##
Merchandise.imports.by.the.reporting.economy..residual....of.total.merchandis
e.imports.  -2.923e-02
## Population.density..people.per.sq..km.of.land.area.
4.451e-03
## Agricultural.land....of.land.area.
-1.530e-02
## Arable.land..hectares.per.person.
-7.115e-01
## Arable.land....of.land.area.
-2.567e-02
## CO2.emissions.from.solid.fuel.consumption..kt.
3.595e-07
## Merchandise.trade....of.GDP.
7.744e-03
##
Std. Error
## (Intercept)
3.500e-01
## Adolescent.fertility.rate..births.per.1.000.women.ages.15.19.
1.587e-03
## Cereal.yield..kg.per.hectare.
2.984e-05
## Urban.population....of.total.
3.860e-03
## GDP.per.capita..current.US..
7.750e-06
##
Merchandise.exports.by.the.reporting.economy..residual....of.total.merchandis
e.exports.   5.791e-03
## Permanent.cropland....of.land.area.
1.524e-02
##
Merchandise.imports.by.the.reporting.economy..residual....of.total.merchandis
e.imports.   7.498e-03
## Population.density..people.per.sq..km.of.land.area.
5.070e-04
## Agricultural.land....of.land.area.
3.923e-03
## Arable.land..hectares.per.person.
1.931e-01
## Arable.land....of.land.area.
6.689e-03
## CO2.emissions.from.solid.fuel.consumption..kt.
7.613e-08
## Merchandise.trade....of.GDP.
1.536e-03
```

```
##
t value
## (Intercept)
179.353
## Adolescent.fertility.rate..births.per.1.000.women.ages.15.19.
-62.427
## Cereal.yield..kg.per.hectare.
8.768
## Urban.population....of.total.
46.444
## GDP.per.capita..current.US..
6.902
##
Merchandise.exports.by.the.reporting.economy..residual....of.total.merchandis
e.exports.   -8.507
## Permanent.cropland....of.land.area.
9.708
##
Merchandise.imports.by.the.reporting.economy..residual....of.total.merchandis
e.imports.   -3.899
## Population.density..people.per.sq..km.of.land.area.
8.779
## Agricultural.land....of.land.area.
-3.900
## Arable.land..hectares.per.person.
-3.685
## Arable.land....of.land.area.
-3.838
## CO2.emissions.from.solid.fuel.consumption..kt.
4.722
## Merchandise.trade....of.GDP.
5.041
##
Pr(>|t|)
## (Intercept)
< 2e-16
## Adolescent.fertility.rate..births.per.1.000.women.ages.15.19.
< 2e-16
## Cereal.yield..kg.per.hectare.
< 2e-16
## Urban.population....of.total.
< 2e-16
## GDP.per.capita..current.US..
5.63e-12
##
Merchandise.exports.by.the.reporting.economy..residual....of.total.merchandis
e.exports.   < 2e-16
## Permanent.cropland....of.land.area.
< 2e-16
##
```

```
Merchandise.imports.by.the.reporting.economy..residual....of.total.merchandis
e.imports. 9.77e-05
## Population.density..people.per.sq..km.of.land.area.
< 2e-16
## Agricultural.land....of.land.area.
9.70e-05
## Arable.land..hectares.per.person.
0.000230
## Arable.land....of.land.area.
0.000125
## CO2.emissions.from.solid.fuel.consumption..kt.
2.39e-06
## Merchandise.trade....of.GDP.
4.75e-07
##
## (Intercept)
***
## Adolescent.fertility.rate..births.per.1.000.women.ages.15.19.
***
## Cereal.yield..kg.per.hectare.
***
## Urban.population....of.total.
***
## GDP.per.capita..current.US..
***
##
Merchandise.exports.by.the.reporting.economy..residual....of.total.merchandis
e.exports. ***
## Permanent.cropland....of.land.area.
***
##
Merchandise.imports.by.the.reporting.economy..residual....of.total.merchandis
e.imports. ***
## Population.density..people.per.sq..km.of.land.area.
***
## Agricultural.land....of.land.area.
***
## Arable.land..hectares.per.person.
***
## Arable.land....of.land.area.
***
## CO2.emissions.from.solid.fuel.consumption..kt.
***
## Merchandise.trade....of.GDP.
***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 4.929 on 6245 degrees of freedom
```

```
## Multiple R-squared:  0.791,  Adjusted R-squared:  0.7906
## F-statistic:  1818 on 13 and 6245 DF,  p-value: < 2.2e-16
```