154_project

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```
library(stringr)
library(e1071)
library(tree)
library(splines)
library(corrplot)
## corrplot 0.84 loaded
library(randomForest)
## randomForest 4.6-14
## Type rfNews() to see new features/changes/bug fixes.
library(caret)
## Loading required package: lattice
## Loading required package: ggplot2
##
## Attaching package: 'ggplot2'
## The following object is masked from 'package:randomForest':
##
##
       margin
epl=data.frame(read.csv("epldata_final.csv"))
#print(epl)
#barplot(table(epl$position))
#dim(model.matrix( ~ club + position +nationality- 1, data=epl ))
```

Data wrangling

We combine columns of one-hot encoding of club, position, and nationality into epl data frame.

```
epl$fpl_sel <- as.double(str_remove(epl$fpl_sel, "%$"))
epl <- cbind(epl, model.matrix( ~ club + position +nationality- 1, data=epl))
#epl</pre>
```

We remove columns we don't use and we clean up the NAs. Lastly, we split the data into training and test set.

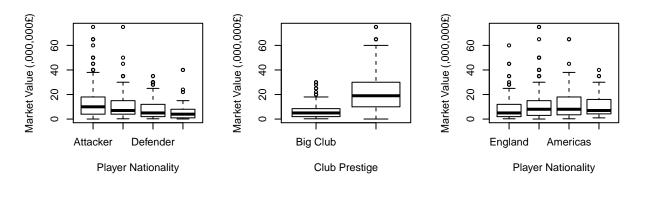
```
#deleting unwanted columns
epl$name=NULL
epl$club=NULL
epl$position=NULL
#epl$page_views=NULL
#epl$fpl_value=NULL
epl$fpl_sel=NULL
```

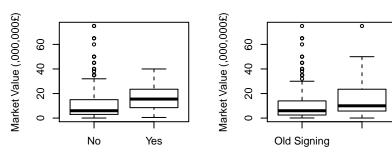
```
#epl$fpl_points=NULL
epl$nationality=NULL
epl$age_cat=NULL
\#epl$club_id=NULL
#head(epl)
epl=na.omit(epl)
factors=c('position_cat','region','big_club','new_signing','new_foreign')
#head(epl)
#epl[factors] <- lapply(epl[factors] , factor)</pre>
names(epl)
     [1] "age"
##
                                           "position_cat"
##
     [3] "market_value"
                                           "page_views"
##
                                           "fpl_points"
     [5] "fpl_value"
     [7] "region"
##
                                           "new_foreign"
##
     [9] "club_id"
                                           "big_club"
##
    [11] "new_signing"
                                           "clubArsenal"
##
   [13] "clubBournemouth"
                                           "clubBrighton+and+Hove"
##
   [15] "clubBurnley"
                                           "clubChelsea"
##
    [17] "clubCrystal+Palace"
                                           "clubEverton"
##
   [19] "clubHuddersfield"
                                           "clubLeicester+City"
##
  [21] "clubLiverpool"
                                           "clubManchester+City"
  [23] "clubManchester+United"
                                           "clubNewcastle+United"
##
  [25] "clubSouthampton"
                                           "clubStoke+City"
##
  [27] "clubSwansea"
                                           "clubTottenham"
## [29] "clubWatford"
                                           "clubWest+Brom"
## [31] "clubWest+Ham"
                                           "positionCB"
## [33] "positionCF"
                                           "positionCM"
## [35] "positionDM"
                                           "positionGK"
  [37] "positionLB"
                                           "positionLM"
  [39] "positionLW"
##
                                           "positionRB"
##
  [41] "positionRM"
                                           "positionRW"
  [43] "positionSS"
##
                                           "nationalityArgentina"
  [45] "nationalityArmenia"
                                           "nationalityAustralia"
##
  [47] "nationalityAustria"
                                           "nationalityBelgium"
##
  [49] "nationalityBenin"
                                           "nationalityBermuda"
##
  [51] "nationalityBosnia"
                                           "nationalityBrazil"
  [53] "nationalityCameroon"
                                           "nationalityCanada"
##
  [55] "nationalityChile"
                                           "nationalityColombia"
##
  [57] "nationalityCongo DR"
                                           "nationalityCote d'Ivoire"
##
  [59] "nationalityCroatia"
                                           "nationalityCuracao"
## [61] "nationalityCzech Republic"
                                           "nationalityDenmark"
##
    [63] "nationalityEcuador"
                                           "nationalityEgypt"
##
  [65] "nationalityEngland"
                                           "nationalityEstonia"
  [67] "nationalityFinland"
                                           "nationalityFrance"
  [69] "nationalityGermany"
                                           "nationalityGhana"
##
  [71] "nationalityGreece"
                                           "nationalityIceland"
##
  [73] "nationalityIreland"
                                           "nationalityIsrael"
  [75] "nationalityItaly"
                                           "nationalityJamaica"
  [77] "nationalityJapan"
##
                                           "nationalityKenya"
   [79] "nationalityMali"
##
                                           "nationalityMorocco"
##
   [81] "nationalityNetherlands"
                                           "nationalityNew Zealand"
   [83] "nationalityNigeria"
                                           "nationalityNorthern Ireland"
```

```
## [85] "nationalityNorway"
                                          "nationalityPoland"
## [87] "nationalityPortugal"
                                          "nationalityRomania"
## [89] "nationalityScotland"
                                          "nationalitySenegal"
## [91] "nationalitySerbia"
                                          "nationalitySlovenia"
## [93] "nationalitySouth Korea"
                                          "nationalitySpain"
## [95] "nationalitySweden"
                                          "nationalitySwitzerland"
## [97] "nationalityThe Gambia"
                                          "nationalityTrinidad and Tobago"
## [99] "nationalityTunisia"
                                          "nationalityUnited States"
## [101] "nationalityUruguay"
                                          "nationalityVenezuela"
## [103] "nationalityWales"
train.index=sample(nrow(epl),nrow(epl)*0.75)
train=epl[train.index,]
test=epl[-train.index,]
```

Plots of some basic statistics.

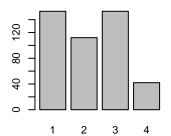
```
#boxplots for all the categorical variables
par(mfrow=c(2,3))
#attacker=1,midfielders=2,defenders=3,goalkeepers=4
boxplot(epl$market_value~epl$position_cat,xlab='Player Nationality',ylab='Market Value (,000,000$)',nam
#Plays for top 6 clubs. (Arsenal,Chelsea,Liverpool,Manchester City,Manchester United,Tottenham)
boxplot(epl$market_value~epl$big_club,xlab='Club Prestige',ylab='Market Value (,000,000$)',names=c('Big
#what region in the world the player is from 1=England, 2=Rest of EU, 3=Americas, 4= Rest of World
boxplot(epl$market_value~epl$region,xlab='Player Nationality',ylab='Market Value (,000,000$)',names=c('Bugue')
#Used to play in a different (foreign) league
boxplot(epl$market_value~epl$new_foreign,xlab='New Player from Foreign League',ylab='Market Value (,000,000$)'
#Whether or not the player is a new signing (12 month playing or less)
boxplot(epl$market_value~epl$new_signing,ylab='Market Value (,000,000$)',names=c('Old Signing','New Signar')
```

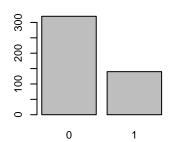


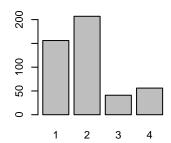


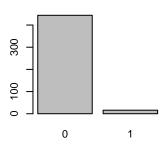
New Player from Foreign League

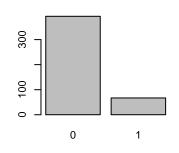
```
barplot(table(epl$position_cat))
barplot(table(epl$big_club))
barplot(table(epl$region))
barplot(table(epl$new_foreign))
barplot(table(epl$new_signing))
barplot(table(epl$age), xlab="Age", ylab="Market Value (,000,000£)")
```

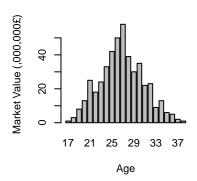






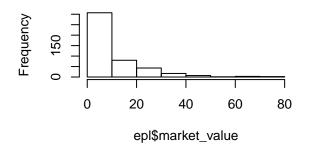




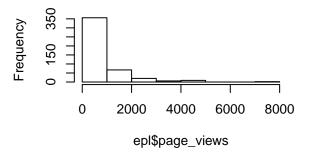


```
par(mfrow=c(2,2))
hist(epl$market_value)
hist(epl$page_views)
hist(epl$fpl_value)
hist(epl$fpl_points)
```

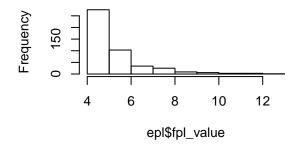
Histogram of epl\$market_value



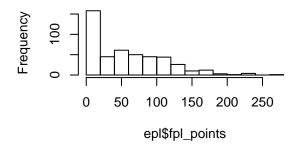
Histogram of epl\$page_views



Histogram of epl\$fpl_value



Histogram of epl\$fpl_points

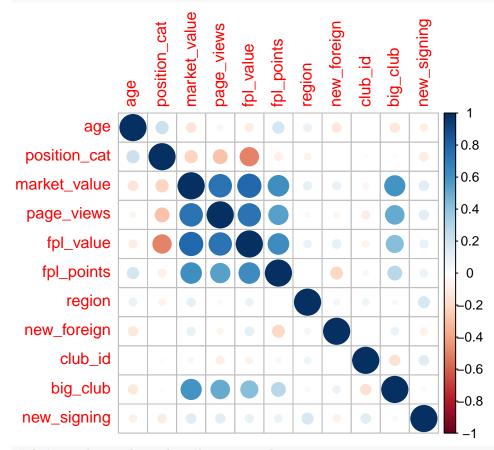


```
summary(epl$big_club)
      Min. 1st Qu.
                    Median
                              Mean 3rd Qu.
                                               Max.
    0.0000 0.0000
                    0.0000
##
                            0.3043 1.0000
                                            1.0000
summary(epl$region)
##
      Min. 1st Qu.
                    Median
                              Mean 3rd Qu.
                                               Max.
##
     1.000
             1.000
                     2.000
                              1.993
                                      2.000
                                              4.000
summary(epl$new_foreign)
##
      Min. 1st Qu. Median
                              Mean 3rd Qu.
                                               Max.
## 0.00000 0.00000 0.00000 0.03478 0.00000 1.00000
summary(epl$new_signing)
```

Min. 1st Qu. Median Mean 3rd Qu. Max. ## 0.0000 0.0000 0.0000 0.1457 0.0000 1.0000

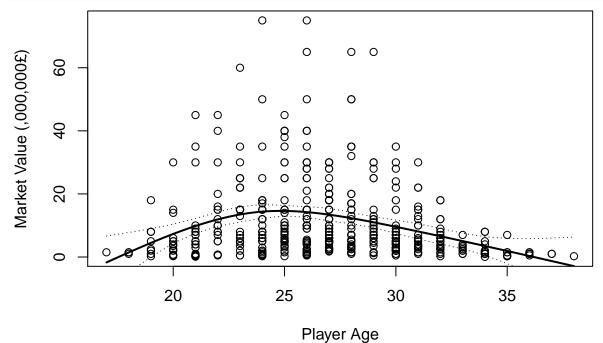
Corrlation plot shows which predictors are closely related to other variables. Note page_views, fpl_values, fpl_points, and big_club has large corrleations with market_value.

corrplot(cor(epl[c("age", "position_cat", "market_value", "page_views", "fpl_value", "fpl_points", "reg



#plot + cubic spline for the ages column
age.spline=lm(market_value~ns(age,4),epl)
x=seq(min(epl\$age),max(epl\$age),length=100)
y=predict(age.spline,newdata=data.frame(age=x),se=T)

```
plot(epl$age,epl$market_value,xlab='Player Age',ylab='Market Value (,000,000£)')
lines(x,y$fit,lwd=2)
lines(x,y$fit+2*y$se.fit,lty='dotted')
lines(x,y$fit-2*y$se.fit,lty='dotted')
```

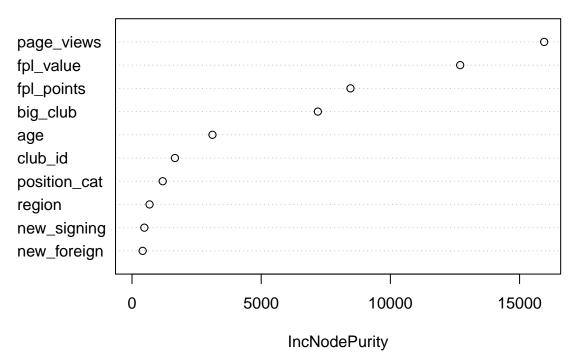


Variable importance plots shows that page_views and fpl_value is the best predictor for market_value.

rf_fit=randomForest(market_value~., data=train[c("age", "position_cat", "market_value", "page_views", ".
(VI_F=importance(rf_fit))

```
##
                 IncNodePurity
                     3113.9196
## age
## position_cat
                     1188.9477
## page_views
                    15953.0689
                    12701.2064
## fpl_value
## fpl_points
                     8454.9724
## region
                      679.5710
## new_foreign
                      412.2832
## club_id
                     1661.5936
## big_club
                     7192.9767
## new_signing
                      477.7448
\#varImp(rf\_fit)
varImpPlot(rf_fit,type=2)
```

rf fit



Our linear model with the following predictors (age, position_cat, region, big_club, new_signing, new_foreign) gives us 102 test mean square error.

```
#linear model with forward/backward selection with age as linear term
epl.lmfit1=lm(market_value~age+position_cat+region+big_club+new_signing+new_foreign,train)
summary(epl.lmfit1)
```

```
##
## Call:
  lm(formula = market_value ~ age + position_cat + region + big_club +
##
       new_signing + new_foreign, data = train)
##
## Residuals:
       Min
                1Q Median
                                3Q
##
                                       Max
  -26.942 -4.512 -0.885
                             3.321
                                    49.954
##
##
## Coefficients:
##
                Estimate Std. Error t value Pr(>|t|)
                                      3.145 0.00181 **
## (Intercept)
                12.06884
                            3.83735
                -0.05253
                            0.13835
                                     -0.380 0.70443
                                     -4.704 3.72e-06 ***
## position_cat -2.47154
                            0.52540
## region
                 0.24769
                            0.54525
                                      0.454 0.64993
## big_club
                16.43036
                            1.14939
                                     14.295
                                             < 2e-16 ***
                                             0.13731
## new_signing
                 2.25496
                            1.51397
                                      1.489
## new_foreign
                 4.35135
                            2.77775
                                      1.567 0.11817
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## Residual standard error: 9.592 on 338 degrees of freedom
## Multiple R-squared: 0.4275, Adjusted R-squared: 0.4173
```

```
## F-statistic: 42.06 on 6 and 338 DF, p-value: < 2.2e-16
epl.lmfit1.y = predict(epl.lmfit1, newdata=test)
mean((test$market_value-epl.lmfit1.y)^2)
## [1] 81.58968
We use backward and forward stepwise function to find best the best performing predictors.
start.model1=lm(market_value~1,data=epl)
end.model1 =lm(market_value~age+position_cat+region+big_club+new_signing+new_foreign,data=epl)
step(start.model1, scope=list(lower=start.model1,upper=end.model1),direction="forward")
## Start: AIC=2307.44
## market value ~ 1
##
##
                  Df Sum of Sq
                                 RSS
                                        AIC
## + big_club
                       24312.9 44769 2109.9
                   1
## + position_cat 1
                        3318.5 65763 2286.8
## + age
                        1237.3 67845 2301.1
                   1
## + new_signing
                   1
                        1185.0 67897 2301.5
## + region
                   1
                        713.9 68368 2304.7
                         662.1 68420 2305.0
## + new_foreign 1
                               69082 2307.4
## <none>
##
## Step: AIC=2109.9
## market_value ~ big_club
##
##
                  Df Sum of Sq
                                 RSS
                                        AIC
## + position cat 1
                        3617.8 41151 2073.1
## + new_signing
                         840.6 43928 2103.2
                   1
## + region
                   1
                         426.1 44343 2107.5
## + age
                  1
                         247.1 44522 2109.3
## <none>
                               44769 2109.9
                         173.9 44595 2110.1
## + new_foreign 1
## Step: AIC=2073.14
## market_value ~ big_club + position_cat
##
##
                 Df Sum of Sq
                                RSS
                                       AIC
## + new_signing 1
                       514.69 40636 2069.3
## + region
                  1
                       284.80 40866 2071.9
                              41151 2073.1
## <none>
## + new_foreign 1
                       173.30 40978 2073.2
## + age
                  1
                        5.87 41145 2075.1
##
## Step: AIC=2069.35
## market_value ~ big_club + position_cat + new_signing
##
##
                 Df Sum of Sq
                                RSS
                                       AIC
## + new_foreign 1
                      227.287 40409 2068.8
                              40636 2069.3
## <none>
## + region
                  1
                      174.446 40462 2069.4
## + age
                  1
                       1.407 40635 2071.3
```

##

```
## Step: AIC=2068.77
## market_value ~ big_club + position_cat + new_signing + new_foreign
##
##
           Df Sum of Sq RSS
                                  AIC
## <none>
                         40409 2068.8
## + region 1
                 150.821 40258 2069.1
## + age
                  0.501 40409 2070.8
             1
##
## Call:
## lm(formula = market_value ~ big_club + position_cat + new_signing +
       new_foreign, data = epl)
##
## Coefficients:
## (Intercept)
                     big_club position_cat
                                             new_signing
                                                           new_foreign
##
         11.520
                                     -2.688
                                                    3.183
                       15.685
                                                                  3.862
step(end.model1, scope=list(lower=start.model1,upper=end.model1),direction="backward")
## Start: AIC=2071.04
## market_value ~ age + position_cat + region + big_club + new_signing +
##
      new_foreign
##
                 Df Sum of Sq
##
                                 RSS
                                        AIC
## - age
                  1
                           0.8 40258 2069.1
                        151.1 40409 2070.8
## - region
                   1
## <none>
                               40257 2071.0
                        196.6 40454 2071.3
## - new foreign
                 1
                        448.3 40706 2074.1
## - new signing
                  1
## - position_cat 1
                       3024.8 43282 2102.4
                      23219.2 63477 2278.5
## - big_club
##
## Step: AIC=2069.05
## market_value ~ position_cat + region + big_club + new_signing +
##
      new_foreign
##
##
                  Df Sum of Sq
                                RSS
## - region
                  1
                     150.8 40409 2068.8
                               40258 2069.1
## <none>
                        203.7 40462 2069.4
## - new foreign
                  1
## - new_signing
                        455.0 40713 2072.2
                   1
## - position_cat 1
                       3206.5 43465 2102.3
## - big_club
                   1
                       23624.3 63883 2279.4
##
## Step: AIC=2068.77
## market_value ~ position_cat + big_club + new_signing + new_foreign
##
##
                  Df Sum of Sq
                               RSS
                                        AIC
## <none>
                               40409 2068.8
                        227.3 40636 2069.3
## - new_foreign
                   1
## - new_signing
                        568.7 40978 2073.2
                   1
## - position_cat 1
                       3275.7 43685 2102.6
## - big_club
                  1
                       23754.1 64163 2279.5
##
## Call:
```

```
## lm(formula = market_value ~ position_cat + big_club + new_signing +
##
       new_foreign, data = epl)
##
## Coefficients:
##
    (Intercept)
                 position_cat
                                    big_club
                                               new_signing
                                                              new foreign
         11.520
                       -2.688
                                      15.685
                                                     3.183
                                                                    3.862
##
Our stepwise function found the best performing model (market_value~big_club+position_cat+new_signing+new_foreign)
in this small scale search. The test MSE for this model is 102.
#both forward and backward model selection give the same outbut
epl.forwardfit1=lm(market_value~big_club+position_cat+new_signing+new_foreign,data=train)
summary(epl.forwardfit1)
##
## Call:
## lm(formula = market_value ~ big_club + position_cat + new_signing +
       new_foreign, data = train)
##
## Residuals:
##
       Min
                                 3Q
                1Q Median
                                        Max
## -27.548 -4.666 -0.880
                             3.352 49.920
##
## Coefficients:
##
                Estimate Std. Error t value Pr(>|t|)
## (Intercept)
                 11.2020
                             1.3142
                                     8.524 5.11e-16 ***
                              1.1327 14.568 < 2e-16 ***
## big_club
                 16.5001
## position_cat
                -2.5181
                             0.5119
                                     -4.919 1.36e-06 ***
                                      1.628
                                               0.1046
## new_signing
                  2.4137
                              1.4830
## new_foreign
                  4.5662
                              2.7320
                                       1.671
                                               0.0956 .
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.568 on 340 degrees of freedom
## Multiple R-squared: 0.4269, Adjusted R-squared: 0.4202
## F-statistic: 63.32 on 4 and 340 DF, p-value: < 2.2e-16
epl.forwardfit1.y = predict(epl.forwardfit1, newdata=test)
mean((test$market_value-epl.forwardfit1.y)^2)
## [1] 82.03573
We try a linear model with natural spline on predictor age and degree 3. Which gives us a test MSE of 83
#linear model with forward/backward selection with splines for age term
epl.lmfit2=lm(market_value~ns(age,3)+position_cat+region+big_club+new_signing+new_foreign,train)
summary(epl.lmfit2)
##
## Call:
## lm(formula = market_value ~ ns(age, 3) + position_cat + region +
       big_club + new_signing + new_foreign, data = train)
##
##
## Residuals:
##
       Min
                1Q Median
                                 3Q
                                        Max
## -23.249 -4.870 -1.192
                             3.630 47.640
##
```

```
## Coefficients:
##
                Estimate Std. Error t value Pr(>|t|)
## (Intercept)
                 -5.2216
                              3.3795 -1.545 0.12327
## ns(age, 3)1
                  6.6222
                              2.3191
                                       2.856 0.00456 **
## ns(age, 3)2
                 32.1471
                              7.5035
                                       4.284 2.40e-05 ***
## ns(age, 3)3
                              3.6586 -0.750 0.45393
                 -2.7430
## position cat
                 -2.3963
                                      -4.804 2.35e-06 ***
                              0.4988
## region
                 -0.2304
                              0.5214
                                      -0.442 0.65884
## big_club
                 16.6248
                              1.0883
                                      15.276
                                              < 2e-16 ***
## new_signing
                  2.2380
                              1.4389
                                       1.555 0.12080
## new_foreign
                  3.8186
                              2.6470
                                       1.443 0.15006
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.078 on 336 degrees of freedom
## Multiple R-squared: 0.4902, Adjusted R-squared: 0.4781
## F-statistic: 40.38 on 8 and 336 DF, p-value: < 2.2e-16
epl.lmfit2.y = predict(epl.lmfit2, newdata=test)
mean((test$market_value-epl.lmfit2.y)^2)
## [1] 71.16503
We do a stepwise search with natural spline included in our model. The search found us this model
(\text{market\_value} \sim \text{big\_club} + \text{ns}(\text{age}, 3) + \text{position\_cat} + \text{new\_signing}). It has a test MSE of 81.
start.model2=lm(market_value~1,data=epl)
end.model2 =lm(market_value~ns(age,3)+position_cat+region+big_club+new_signing+new_foreign,data=epl)
step(start.model2, scope=list(lower=start.model2,upper=end.model2),direction="forward")
## Start: AIC=2307.44
## market value ~ 1
##
##
                  Df Sum of Sq
                                  RSS
                        24312.9 44769 2109.9
## + big_club
                    1
## + ns(age, 3)
                    3
                         6293.9 62788 2269.5
## + position_cat
                   1
                         3318.5 65763 2286.8
## + new_signing
                    1
                         1185.0 67897 2301.5
## + region
                          713.9 68368 2304.7
                    1
## + new_foreign
                    1
                          662.1 68420 2305.0
## <none>
                                69082 2307.4
##
## Step: AIC=2109.9
## market_value ~ big_club
##
                  Df Sum of Sq
##
                                  RSS
                                         ATC
## + ns(age, 3)
                    3
                         5672.8 39096 2053.6
## + position_cat 1
                         3617.8 41151 2073.1
## + new_signing
                    1
                          840.6 43928 2103.2
## + region
                          426.1 44343 2107.5
                    1
## <none>
                                44769 2109.9
## + new_foreign
                          173.9 44595 2110.1
                    1
##
## Step: AIC=2053.57
## market_value ~ big_club + ns(age, 3)
```

```
##
##
                 Df Sum of Sq
                                RSS
                                        ATC
## + position_cat 1
                      2899.15 36197 2020.1
## + new_signing
                 1
                       637.36 38459 2048.0
## <none>
                               39096 2053.6
                       134.52 38962 2054.0
## + region
                   1
## + new foreign
                        61.90 39034 2054.8
                  1
##
## Step: AIC=2020.13
## market_value ~ big_club + ns(age, 3) + position_cat
                Df Sum of Sq RSS
##
## + new_signing 1
                      411.77 35785 2016.9
## <none>
                              36197 2020.1
## + new_foreign 1
                        83.76 36113 2021.1
## + region
                  1
                        55.32 36142 2021.4
##
## Step: AIC=2016.87
## market_value ~ big_club + ns(age, 3) + position_cat + new_signing
##
                Df Sum of Sq
                               RSS
                                       AIC
                              35785 2016.9
                     124.548 35661 2017.3
## + new_foreign 1
## + region
                 1
                      15.495 35770 2018.7
##
## Call:
## lm(formula = market_value ~ big_club + ns(age, 3) + position_cat +
##
      new_signing, data = epl)
##
## Coefficients:
## (Intercept)
                     big_club
                                ns(age, 3)1
                                              ns(age, 3)2
                                                            ns(age, 3)3
                                     7.587
        -4.657
                      15.904
                                                   29.399
                                                                 -4.010
##
## position_cat
                 new_signing
##
        -2.497
                        2.708
step(end.model2, scope=list(lower=start.model2,upper=end.model2),direction="backward")
## Start: AIC=2019.14
## market_value ~ ns(age, 3) + position_cat + region + big_club +
##
      new_signing + new_foreign
##
##
                 Df Sum of Sq
                                RSS
                                        AIC
                  1
                           9.7 35661 2017.3
## - region
## - new_foreign
                 1
                         118.7 35770 2018.7
## <none>
                               35651 2019.1
## - new_signing
                   1
                        414.2 36065 2022.5
## - position_cat 1
                       2658.9 38310 2050.2
## - ns(age, 3)
                        4607.3 40258 2069.1
                  3
## - big_club
                       23718.9 59370 2251.8
                   1
##
## Step: AIC=2017.26
## market_value ~ ns(age, 3) + position_cat + big_club + new_signing +
##
      new_foreign
##
```

```
##
                 Df Sum of Sq
                                RSS
                        124.5 35785 2016.9
## - new_foreign
                 1
## <none>
                               35661 2017.3
                        452.6 36113 2021.1
## - new_signing
                  1
## - position_cat 1
                       2690.0 38351 2048.7
## - ns(age, 3)
                  3
                       4748.4 40409 2068.8
## - big club
                      23818.5 59479 2250.6
##
## Step: AIC=2016.87
## market_value ~ ns(age, 3) + position_cat + big_club + new_signing
##
                 Df Sum of Sq
                               RSS
                                       AIC
## <none>
                               35785 2016.9
## - new_signing
                        411.8 36197 2020.1
## - position_cat 1
                       2673.6 38459 2048.0
## - ns(age, 3)
                  3
                       4851.2 40636 2069.3
## - big_club
                      24168.2 59953 2252.2
                   1
##
## Call:
## lm(formula = market_value ~ ns(age, 3) + position_cat + big_club +
      new_signing, data = epl)
##
## Coefficients:
                                             ns(age, 3)3 position_cat
##
   (Intercept)
                 ns(age, 3)1
                               ns(age, 3)2
##
        -4.657
                       7.587
                                     29.399
                                                   -4.010
##
       big_club
                 new_signing
##
         15.904
                        2.708
#both forward and backward model selection give the same outbut
epl.forwardfit2=lm(market_value~big_club+ns(age,3)+position_cat+new_signing,data=train)
summary(epl.forwardfit2)
##
## Call:
## lm(formula = market_value ~ big_club + ns(age, 3) + position_cat +
##
      new_signing, data = train)
##
## Residuals:
               10 Median
                               30
## -23.026 -4.917 -1.116
                            3.692 47.527
##
## Coefficients:
               Estimate Std. Error t value Pr(>|t|)
                            3.3393 -1.604 0.1096
                -5.3566
## (Intercept)
## big_club
                16.7423
                            1.0843 15.441 < 2e-16 ***
## ns(age, 3)1
                 5.9764
                            2.2646
                                    2.639 0.0087 **
## ns(age, 3)2
                31.9832
                            7.4267
                                    4.307 2.18e-05 ***
## ns(age, 3)3
                -2.9050
                            3.6536 -0.795
                                             0.4271
## position_cat -2.3944
                            0.4986 -4.803 2.36e-06 ***
## new_signing
                 1.9004
                            1.4104
                                    1.347
                                             0.1788
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.05 '.' 0.1 ' ' 1
##
```

```
## Residual standard error: 9.08 on 338 degrees of freedom
## Multiple R-squared: 0.4868, Adjusted R-squared: 0.4777
## F-statistic: 53.44 on 6 and 338 DF, p-value: < 2.2e-16
epl.forwardfit2.y = predict(epl.forwardfit2, newdata=test)
mean((test$market_value-epl.forwardfit2.y)^2)
```

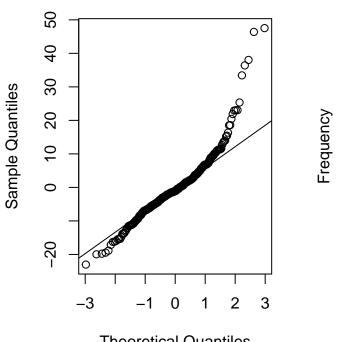
[1] 70.26386

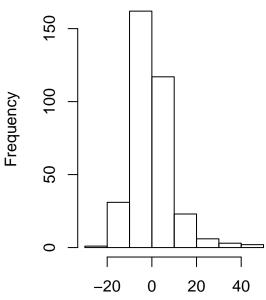
The Normal QQ plot of the model residule is sorta linear. The error is almost gausian.

```
#checking normality of the residuals
par(mfrow=c(1,2))
qqnorm(epl.forwardfit2$resid)
qqline(epl.forwardfit2$resid)
hist(resid(epl.forwardfit2))
```

Normal Q-Q Plot

Histogram of resid(epl.forwardfit





Theoretical Quantiles

resid(epl.forwardfit2)

We try one last linear model with natural spline and all the one-hot predictors. We use the forward/backword stepwise search for predictors. The best performing AIC model is (market_value ~ fpl_value + page_views + ns(age, 3) + big club + fpl points + nationalityBelgium + positionDM + nationalityNorway + clubManchester+City + nationalityFrance + positionCF + clubChelsea + positionSS + clubSouthampton + clubBurnley + nationalityCzech Republic + clubLiverpool + nationalityEcuador + new foreign + positionRW + positionLW)

It gives us the best test MSE with 30.

```
start.model3=lm(market_value~1,data=epl)
end.model3 =lm(market_value~ns(age,3) + .,data=epl)
#step(start.model3, scope=list(lower=start.model3,upper=end.model3),direction="forward")
#step(end.model3, scope=list(lower=start.model3,upper=end.model3),direction="backward")
all_pred_step <- step(start.model3, scope=list(lower=start.model3,upper=end.model3), direction="both")
```

```
## Start: AIC=2307.44
## market_value ~ 1
##
##
                                      Df Sum of Sq RSS
                                                            AIC
## + fpl_value
                                             43046 26036 1860.6
## + page views
                                             37782 31300 1945.3
## + fpl_points
                                             26130 42952 2090.8
                                             24313 44769 2109.9
## + big_club
                                      1
## + `clubManchester+City`
                                       1
                                              6168 62913 2266.4
## + clubChelsea
                                              5799 63283 2269.1
                                      1
## + ns(age, 3)
                                              6294 62788 2269.5
                                              4093 64989 2281.3
## + nationalityBelgium
                                       1
## + position_cat
                                       1
                                              3318 65763 2286.8
                                              2999 66083 2289.0
## + clubTottenham
                                      1
## + clubHuddersfield
                                              2519 66563 2292.3
                                      1
## + `clubManchester+United`
                                      1
                                              2406 66676 2293.1
## + clubArsenal
                                              2215 66867 2294.4
                                       1
## + nationalityEngland
                                              1715 67367 2297.9
## + `clubBrighton+and+Hove`
                                              1670 67412 2298.2
                                      1
## + nationalityBrazil
                                       1
                                              1418 67664 2299.9
## + nationalityChile
                                       1
                                              1304 67778 2300.7
## + nationalityFrance
                                              1279 67803 2300.8
                                             1237 67845 2301.1
## + age
                                      1
## + new signing
                                      1
                                              1185 67897 2301.5
                                              996 68086 2302.8
## + nationalitySpain
                                      1
## + clubBournemouth
                                      1
                                               951 68131 2303.1
## + clubBurnley
                                      1
                                               935 68147 2303.2
                                               869 68213 2303.6
## + clubWatford
                                      1
                                              803 68279 2304.1
## + clubLiverpool
                                      1
## + clubSwansea
                                      1
                                              789 68292 2304.2
## + `clubNewcastle+United`
                                      1
                                               746 68336 2304.4
## + region
                                       1
                                               714 68368 2304.7
## + nationalityScotland
                                       1
                                               673 68409 2304.9
## + positionGK
                                               664 68418 2305.0
                                       1
## + new foreign
                                       1
                                              662 68420 2305.0
## + nationalityIreland
                                             659 68422 2305.0
                                      1
## + `clubWest+Brom`
                                     1
                                             643 68439 2305.1
## + positionCF
                                      1
                                              596 68486 2305.4
## + nationalityArmenia
                                       1
                                               576 68506 2305.6
## + positionCB
                                               439 68643 2306.5
                                       1
## + `clubStoke+City`
                                               409 68673 2306.7
## + positionLM
                                       1
                                               402 68680 2306.8
                                               395 68686 2306.8
## + positionRB
## <none>
                                                   69082 2307.4
                                               293 68789 2307.5
## + `nationalityNorthern Ireland`
                                               281 68801 2307.6
## + positionLB
                                       1
## + nationalityAustralia
                                       1
                                               268 68814 2307.7
## + `clubCrystal+Palace`
                                               239 68842 2307.8
                                       1
## + positionLW
                                       1
                                               201 68881 2308.1
## + nationalityKenya
                                       1
                                               196 68886 2308.1
## + nationalityPoland
                                               171 68911 2308.3
                                      1
                                              168 68914 2308.3
## + nationalityIsrael
                                     1
## + nationalityJamaica
                                      1
                                              164 68918 2308.3
                                               159 68923 2308.4
## + nationalityAustria
                                       1
```

##	_	aluh id	1	1/0	60020	2308.4
		<pre>club_id `clubLeicester+City`</pre>	1			2308.5
		·	1			2308.5
		nationalityWales	1			2308.6
		nationalityGermany	1			2308.7
		nationalityFinland				
		`clubWest+Ham`	1			2308.7
		nationalitySlovenia	1			2308.7
		`nationalityTrinidad and Tobago`	1			2308.7
		nationalityMali	1			2308.7
		nationalityTunisia	1			2308.8
		`nationalityUnited States`	1			2308.8
		`nationalityCzech Republic`	1			2308.8
		`nationalityCote d'Ivoire`	1			2308.8
		nationalityCuracao	1			2308.9
		nationalityGreece	1			2308.9
		nationalitySenegal	1			2309.0
		positionDM	1			2309.0
		nationalityCanada	1			2309.0
		nationalityRomania	1			2309.0
		`nationalityThe Gambia`	1	65	69017	2309.0
##	+	nationalityEstonia	1	57	69025	2309.1
		nationalityUruguay	1	57	69025	2309.1
##	+	nationalityArgentina	1	54	69027	2309.1
##	+	nationalityJapan	1	51	69031	2309.1
##	+	positionRW	1	47	69035	2309.1
##	+	nationalitySwitzerland	1	45	69036	2309.1
##	+	nationalitySerbia	1	45	69037	2309.1
##	+	nationalityNetherlands	1	44	69038	2309.1
##	+	nationalityBermuda	1	36	69045	2309.2
##	+	nationalityCroatia	1	36	69046	2309.2
##	+	nationalityEcuador	1	29	69053	2309.2
##	+	nationalityPortugal	1	29	69053	2309.2
##	+	nationalityGhana	1	27	69054	2309.3
		clubEverton	1	26	69056	2309.3
##	+	clubSouthampton	1	25	69056	2309.3
		nationalityNigeria	1	24	69058	2309.3
		nationalityColombia	1	16	69066	2309.3
		nationalityVenezuela	1	16	69066	2309.3
		nationalityIceland	1	15	69067	2309.3
		nationalityEgypt	1			2309.4
		`nationalitySouth Korea`	1	10	69072	2309.4
		nationalityNorway	1			2309.4
		nationalitySweden	1			2309.4
		`nationalityCongo DR`	1			2309.4
		nationalityMorocco	1			2309.4
		nationalityDenmark	1			2309.4
		nationalityCameroon	1			2309.4
		nationalityItaly	1			2309.4
		`nationalityNew Zealand`	1			2309.4
		positionRM	1			2309.4
		-	1			2309.4
		positionSS nationalityBosnia	1			2309.4
		nationalityBosnia	1			
	+	positionCM	1	U	09081	2309.4
##						

```
## Step: AIC=1860.57
## market_value ~ fpl_value
##
##
                                      Df Sum of Sq RSS
                                                             AIC
## + big_club
                                               5618 20418 1750.8
## + page_views
                                               3895 22142 1788.0
## + positionCF
                                               2918 23118 1807.9
                                               2598 23438 1814.2
## + position_cat
                                       1
## + fpl_points
                                       1
                                               1757 24279 1830.4
## + clubChelsea
                                       1
                                               1709 24328 1831.3
## + positionDM
                                       1
                                               1499 24537 1835.3
                                       3
                                               1550 24486 1838.3
## + ns(age, 3)
## + `clubManchester+City`
                                              1107 24929 1842.6
                                       1
## + `clubManchester+United`
                                               913 25123 1846.2
                                       1
## + nationalityFrance
                                               820 25216 1847.8
                                       1
## + nationalityEngland
                                       1
                                               577 25459 1852.2
                                               535 25501 1853.0
## + positionCB
                                       1
## + clubHuddersfield
                                               507 25529 1853.5
## + nationalityBelgium
                                               492 25544 1853.8
                                       1
## + clubTottenham
                                       1
                                               488 25549 1853.9
                                               430 25606 1854.9
## + clubBournemouth
                                       1
## + positionSS
                                               324 25712 1856.8
## + nationalityNorway
                                               318 25718 1856.9
                                       1
## + nationalityBrazil
                                               305 25731 1857.1
                                       1
                                               296 25740 1857.3
## + nationalityKenya
                                       1
## + positionRW
                                       1
                                               274 25762 1857.7
## + clubBurnley
                                               252 25784 1858.1
                                       1
## + `clubBrighton+and+Hove`
                                               236 25801 1858.4
                                       1
## + age
                                               230 25806 1858.5
                                       1
## + nationalityScotland
                                               217 25819 1858.7
                                       1
                                               209 25827 1858.9
## + `clubWest+Brom`
                                       1
## + new_signing
                                       1
                                               196 25840 1859.1
## + nationalitySerbia
                                       1
                                               194 25843 1859.1
                                               193 25843 1859.1
## + positionLW
                                       1
## + clubArsenal
                                       1
                                               186 25850 1859.3
                                               173 25863 1859.5
## + positionGK
                                       1
## + positionCM
                                      1
                                               151 25885 1859.9
## + positionLM
                                      1
                                               148 25888 1859.9
## + nationalitySpain
                                       1
                                               144 25892 1860.0
## + clubSwansea
                                               135 25901 1860.2
                                       1
## + nationalityGermany
                                               132 25904 1860.2
## + nationalitySwitzerland
                                               129 25907 1860.3
                                       1
                                               123 25913 1860.4
## + clubWatford
                                       1
## <none>
                                                    26036 1860.6
                                                93 25943 1860.9
## + region
                                                89 25947 1861.0
## + nationalityIceland
                                       1
## + `clubLeicester+City`
                                       1
                                                74 25962 1861.2
## + nationalityEcuador
                                                71 25965 1861.3
                                       1
## + clubLiverpool
                                       1
                                                61 25975 1861.5
## + nationalityIreland
                                       1
                                                 61 25976 1861.5
## + `nationalityNorthern Ireland`
                                                60 25976 1861.5
                                       1
## + `nationalityCzech Republic`
                                       1
                                                58 25978 1861.5
## + `nationalityTrinidad and Tobago`
                                       1
                                                51 25985 1861.7
## + `clubStoke+City`
                                                 51 25985 1861.7
```

##		clubEverton	1	40	OFOOE	1861.8
			1			1861.9
		`nationalityCongo DR` nationalityIsrael	1			1862.0
		•	1			1862.0
		nationalityGreece nationalityArmenia	1			1862.0
		•				
		nationalityCroatia	1			1862.0
		nationalityJapan	1			1862.1
		nationalityChile	1			1862.1
		nationalitySweden	1			1862.1
		nationalityNigeria	1			1862.1
		nationalityArgentina	1			1862.2
		nationalityCanada	1			1862.2
		`nationalityThe Gambia`	1			1862.2
		`clubCrystal+Palace`	1			1862.2
		nationalityCameroon	1			1862.2
		`clubNewcastle+United`	1			1862.2
		`clubWest+Ham`	1			1862.3
		nationalityItaly	1			1862.3
		nationalityVenezuela	1			1862.3
##	+	${\tt nationalityNetherlands}$	1			1862.4
		positionRM	1	12	26024	1862.4
##	+	nationalityTunisia	1	10	26026	1862.4
##	+	nationalityMali	1	10	26026	1862.4
##	+	nationalitySenegal	1	10	26026	1862.4
##	+	new_foreign	1	10	26026	1862.4
##	+	positionLB	1	9	26027	1862.4
##	+	nationalityPortugal	1	9	26028	1862.4
##	+	nationalityGhana	1	8	26028	1862.4
##	+	nationalityBermuda	1	8	26028	1862.4
##	+	nationalityAustralia	1	7	26029	1862.4
##	+	nationalityBosnia	1	7	26029	1862.4
##	+	nationalityWales	1	6	26030	1862.5
##	+	nationalityMorocco	1	6	26031	1862.5
		clubSouthampton	1	5	26031	1862.5
##	+	nationalityCuracao	1	5	26031	1862.5
		`nationalityNew Zealand`	1	5	26031	1862.5
		positionRB	1	5	26032	1862.5
		`nationalitySouth Korea`	1	3	26033	1862.5
		nationalityPoland	1	2	26035	1862.5
		nationalityRomania	1	1	26035	1862.5
		nationalityDenmark	1			1862.5
		nationalityEgypt	1			1862.5
		nationalityColombia	1			1862.6
		nationalityAustria	1			1862.6
		nationalityEstonia	1			1862.6
		nationalityUruguay	1			1862.6
		nationalityJamaica	1			1862.6
		nationalityFinland	1			1862.6
		club_id	1			1862.6
		`nationalityUnited States`	1			1862.6
		`nationalityCote d'Ivoire`	1			1862.6
		nationalitySlovenia	1			1862.6
		fpl_value	1			2307.4
##	_	ThT_narme	T	43040	03002	2001.4
##						

```
## Step: AIC=1750.75
## market_value ~ fpl_value + big_club
##
##
                                       Df Sum of Sq RSS
                                                             AIC
## + ns(age, 3)
                                             1980.8 18437 1709.8
                                             1692.8 18725 1712.9
## + page views
## + positionCF
                                             1666.4 18752 1713.6
                                             1623.0 18795 1714.7
## + fpl_points
                                        1
## + position_cat
                                        1
                                              953.1 19465 1730.8
## + positionDM
                                        1
                                              860.6 19557 1732.9
## + clubLiverpool
                                       1
                                              469.3 19949 1742.1
## + clubChelsea
                                              449.0 19969 1742.5
                                        1
## + nationalityFrance
                                       1
                                              427.1 19991 1743.0
                                              307.9 20110 1745.8
## + nationalityEngland
                                        1
## + nationalityBelgium
                                              259.7 20158 1746.9
                                        1
## + positionCB
                                        1
                                              241.2 20177 1747.3
                                              212.9 20205 1747.9
## + new_signing
                                        1
## + `clubManchester+City`
                                              207.4 20211 1748.1
## + clubSouthampton
                                              190.1 20228 1748.5
                                        1
                                              190.0 20228 1748.5
## + clubArsenal
                                        1
## + clubHuddersfield
                                        1
                                              184.3 20234 1748.6
## + nationalityNorway
                                              163.8 20254 1749.0
## + nationalitySwitzerland
                                              132.4 20286 1749.8
                                       1
## + positionCM
                                        1
                                              131.2 20287 1749.8
                                              127.6 20290 1749.9
## + club id
                                        1
## + positionSS
                                              125.8 20292 1749.9
## + nationalityKenya
                                              117.9 20300 1750.1
                                        1
                                              113.9 20304 1750.2
## + positionLW
                                        1
## + `nationalityCzech Republic`
                                              105.5 20313 1750.4
                                        1
## + nationalityEcuador
                                              104.9 20313 1750.4
                                        1
## + clubBournemouth
                                        1
                                               94.1 20324 1750.6
## <none>
                                                    20418 1750.8
                                               86.7 20331 1750.8
## + region
                                               85.0 20333 1750.8
## + positionLM
                                        1
## + age
                                        1
                                               66.9 20351 1751.2
## + clubEverton
                                               62.0 20356 1751.4
                                        1
## + nationalityEstonia
                                               60.2 20358 1751.4
## + nationalitySenegal
                                               59.1 20359 1751.4
                                        1
## + `clubBrighton+and+Hove`
                                        1
                                               54.8 20363 1751.5
## + `clubWest+Ham`
                                               54.7 20363 1751.5
                                        1
## + clubBurnley
                                               53.9 20364 1751.5
## + nationalityNigeria
                                               53.7 20364 1751.5
                                        1
## + nationalityColombia
                                               52.2 20366 1751.6
                                       1
## + nationalitySerbia
                                               51.0 20367 1751.6
                                        1
                                               48.6 20369 1751.7
## + nationalityScotland
                                       1
                                               46.9 20371 1751.7
## + positionRW
                                        1
## + nationalitySpain
                                        1
                                               40.5 20378 1751.8
## + `clubCrystal+Palace`
                                               32.9 20385 1752.0
## + `nationalityTrinidad and Tobago`
                                               26.7 20391 1752.2
                                        1
## + `clubWest+Brom`
                                        1
                                               24.6 20393 1752.2
## + positionGK
                                               23.3 20395 1752.2
                                        1
## + positionRM
                                               23.2 20395 1752.2
## + nationalityGermany
                                        1
                                               22.9 20395 1752.2
## + `nationalityNew Zealand`
                                               17.7 20400 1752.4
```

##		`alubNarrang+la.Uni+ad`	1	1 = 1	20402	1750 /
		`clubNewcastle+United`	1 1			1752.4
		nationalityGreece	_			1752.4
		`clubLeicester+City`	1			1752.4
		nationalityIceland	1			1752.5
		`clubManchester+United`	1			1752.5
		nationalityEgypt	1			1752.5
		nationalityIsrael	1			1752.5
		nationalitySweden	1			1752.5
		`nationalityNorthern Ireland`	1			1752.5
		nationalityCameroon	1			1752.5
		`clubStoke+City`	1			1752.6
		nationalityArmenia	1			1752.6
		nationalityBrazil	1			1752.6
		nationalityCanada	1			1752.6
		`nationalityThe Gambia`	1			1752.6
##	+	nationalityGhana	1	6.2	20412	1752.6
##	+	nationalityWales	1	5.9	20412	1752.6
##	+	nationalityItaly	1	5.2	20413	1752.6
##	+	nationalityChile	1	4.1	20414	1752.7
##	+	`nationalityCote d'Ivoire`	1	3.8	20414	1752.7
##	+	${\tt nationalityNetherlands}$	1	3.6	20414	1752.7
##	+	nationalityJapan	1	3.4	20415	1752.7
##	+	nationalityAustria	1	3.4	20415	1752.7
##	+	nationalityTunisia	1	3.3	20415	1752.7
##	+	nationalityDenmark	1	3.2	20415	1752.7
##	+	`nationalityUnited States`	1	2.8	20415	1752.7
##	+	nationalityArgentina	1	2.3	20416	1752.7
		nationalityMorocco	1	1.9	20416	1752.7
		clubWatford	1	1.8	20416	1752.7
##	+	`nationalitySouth Korea`	1	1.7	20416	1752.7
		clubSwansea	1	1.6	20416	1752.7
##	+	nationalityPoland	1	1.4	20417	1752.7
		nationalityJamaica	1	0.9	20417	1752.7
		positionLB	1			1752.7
		nationalityCuracao	1			1752.7
		nationalityBermuda	1			1752.7
		nationalityMali	1			1752.7
		clubTottenham	1			1752.7
		nationalityPortugal	1			1752.7
		nationalityUruguay	1			1752.7
		nationalitySlovenia	1			1752.7
		positionRB	1			1752.8
		nationalityFinland	1			1752.8
		`nationalityCongo DR`	1			1752.8
		new_foreign	1			1752.8
		nationalityVenezuela	1			1752.8
		nationalityRomania	1			1752.8
		nationalityCroatia	1			1752.8
		· ·	1			1752.8
		nationalityIreland	1			1752.8
		nationalityIreland				
		nationalityBosnia	1			1752.8
		big_club	1			1860.6
	_	fpl_value	1	24350.9	44/69	∠109.9
##						

```
## Step: AIC=1709.81
## market_value ~ fpl_value + big_club + ns(age, 3)
##
                                      Df Sum of Sq
                                                      RSS
                                                             AIC
## + page_views
                                             2341.4 16096 1649.3
## + fpl_points
                                             1953.2 16484 1660.3
## + positionCF
                                            1345.2 17092 1677.0
                                             961.1 17476 1687.2
## + position_cat
                                       1
## + positionDM
                                       1
                                             713.0 17724 1693.7
## + clubLiverpool
                                       1
                                             429.3 18008 1701.0
## + clubChelsea
                                       1
                                              421.7 18016 1701.2
                                              362.4 18075 1702.7
## + `clubManchester+City`
                                       1
## + clubHuddersfield
                                              313.1 18124 1703.9
                                       1
                                              301.1 18136 1704.2
## + nationalityFrance
                                       1
## + clubArsenal
                                              289.2 18148 1704.5
                                       1
## + nationalityBelgium
                                       1
                                              201.1 18236 1706.8
                                              198.4 18239 1706.8
## + nationalityNorway
                                       1
## + club id
                                              185.0 18252 1707.2
                                              171.0 18266 1707.5
## + new_signing
                                       1
## + clubSouthampton
                                       1
                                              169.9 18267 1707.6
                                              161.2 18276 1707.8
## + clubEverton
                                       1
## + positionCB
                                              158.8 18278 1707.8
                                              135.8 18301 1708.4
## + nationalityEngland
                                       1
## + positionCM
                                              128.1 18309 1708.6
                                       1
## + nationalitySwitzerland
                                             126.4 18311 1708.7
                                       1
## + positionSS
                                       1
                                              117.9 18319 1708.9
## + positionRW
                                              110.8 18326 1709.0
                                       1
                                              108.3 18329 1709.1
## + nationalityEcuador
                                       1
## + clubBurnley
                                             106.3 18331 1709.2
                                       1
## + positionGK
                                              100.0 18337 1709.3
                                       1
## + `nationalityCzech Republic`
                                       1
                                              82.1 18355 1709.8
## <none>
                                                    18437 1709.8
                                               78.3 18359 1709.9
## + `clubBrighton+and+Hove`
## + clubBournemouth
                                               76.7 18361 1709.9
                                        1
                                               73.0 18364 1710.0
## + nationalityColombia
                                       1
                                              71.4 18366 1710.0
## + nationalityKenya
                                       1
## + positionLW
                                               60.7 18377 1710.3
## + nationalityScotland
                                               59.8 18377 1710.3
                                       1
## + positionRM
                                               58.0 18379 1710.4
## + positionLM
                                               57.7 18380 1710.4
## + `nationalityTrinidad and Tobago`
                                               51.6 18386 1710.5
## + nationalityEstonia
                                               50.9 18386 1710.5
                                        1
## + `clubWest+Ham`
                                               46.6 18391 1710.7
                                       1
                                               44.5 18393 1710.7
## + nationalitySerbia
                                               43.6 18394 1710.7
## + `clubStoke+City`
                                               40.1 18397 1710.8
## + nationalityPoland
                                       1
## + `clubCrystal+Palace`
                                       1
                                               27.4 18410 1711.1
## + nationalityIceland
                                               27.2 18410 1711.1
                                       1
## + `clubLeicester+City`
                                       1
                                               26.9 18410 1711.1
## + nationalitySenegal
                                       1
                                               26.7 18410 1711.2
## + nationalityBrazil
                                               26.3 18411 1711.2
                                      1
## + nationalityChile
                                      1
                                               25.6 18412 1711.2
                                      1
## + nationalityEgypt
                                               23.0 18414 1711.2
                                               22.7 18414 1711.2
## + nationalityItaly
```

```
22.2 18415 1711.3
## + `clubManchester+United`
## + nationalitySpain
                                              21.7 18416 1711.3
## + nationalityNetherlands
                                              21.5 18416 1711.3
## + `nationalityThe Gambia`
                                              21.3 18416 1711.3
                                       1
## + region
                                       1
                                              19.5 18418 1711.3
## + nationalityNigeria
                                              19.4 18418 1711.3
                                      1
## + `nationalityNew Zealand`
                                             16.0 18421 1711.4
## + nationalityCanada
                                            13.7 18423 1711.5
                                      1
## + nationalityIsrael
                                      1
                                             11.5 18426 1711.5
## + nationalityArgentina
                                      1
                                             11.1 18426 1711.5
## + `nationalitySouth Korea`
                                      1
                                              8.3 18429 1711.6
## + nationalityJamaica
                                              8.0 18429 1711.6
                                       1
## + `nationalityCongo DR`
                                      1
                                              7.4 18430 1711.6
                                              7.4 18430 1711.6
## + positionLB
                                      1
## + nationalityArmenia
                                              7.2 18430 1711.6
                                      1
## + nationalityCuracao
                                      1
                                              6.5 18431 1711.7
                                               6.2 18431 1711.7
## + nationalityMali
                                      1
## + new foreign
                                      1
                                               6.0 18431 1711.7
## + nationalityUruguay
                                               6.0 18431 1711.7
                                      1
## + nationalityBermuda
                                      1
                                              5.5 18432 1711.7
                                              4.4 18433 1711.7
## + nationalityAustria
                                      1
## + nationalityFinland
                                              4.0 18433 1711.7
                                     1
## + nationalitySlovenia
                                              3.9 18433 1711.7
## + clubTottenham
                                      1
                                              3.8 18433 1711.7
## + nationalityAustralia
                                      1
                                               3.5 18434 1711.7
## + nationalitySweden
                                      1
                                               3.1 18434 1711.7
## + nationalityDenmark
                                               2.8 18434 1711.7
                                       1
                                               2.6 18435 1711.8
## + clubSwansea
                                       1
## + `nationalityUnited States`
                                              2.3 18435 1711.8
                                       1
## + nationalityTunisia
                                              2.3 18435 1711.8
                                       1
## + nationalityJapan
                                       1
                                              2.2 18435 1711.8
## + `nationalityCote d'Ivoire`
                                       1
                                              1.8 18435 1711.8
## + nationalityCameroon
                                       1
                                              1.7 18435 1711.8
                                              1.7 18435 1711.8
## + nationalityPortugal
                                       1
## + nationalityCroatia
                                       1
                                              1.7 18436 1711.8
## + `clubWest+Brom`
                                              1.6 18436 1711.8
                                      1
## + nationalityMorocco
                                      1
                                             1.6 18436 1711.8
## + nationalityGermany
                                     1
                                              1.6 18436 1711.8
## + clubWatford
                                      1
                                               1.4 18436 1711.8
## + nationalityGreece
                                              1.3 18436 1711.8
                                      1
## + nationalityBosnia
                                              1.1 18436 1711.8
## + nationalityIreland
                                              1.0 18436 1711.8
                                      1
## + nationalityVenezuela
                                              0.6 18437 1711.8
                                      1
## + nationalityGhana
                                      1
                                              0.4 18437 1711.8
                                              0.3 18437 1711.8
## + nationalityWales
                                      1
                                              0.3 18437 1711.8
## + nationalityRomania
                                       1
## + `nationalityNorthern Ireland`
                                       1
                                               0.2 18437 1711.8
## + `clubNewcastle+United`
                                       1
                                               0.2 18437 1711.8
## + positionRB
                                       1
                                               0.0 18437 1711.8
## - ns(age, 3)
                                       3
                                            1980.8 20418 1750.8
                                            6049.0 24486 1838.3
## - big_club
                                       1
                                           20658.9 39096 2053.6
## - fpl_value
##
## Step: AIC=1649.34
```

```
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views
##
                                       Df Sum of Sq
##
                                                      RSS
## + fpl_points
                                             1355.3 14740 1610.9
## + positionCF
                                             1220.1 14876 1615.1
## + position cat
                                              845.0 15251 1626.5
## + `clubManchester+City`
                                              591.3 15504 1634.1
                                              435.6 15660 1638.7
## + positionDM
                                        1
## + positionSS
                                        1
                                              367.5 15728 1640.7
## + nationalityBelgium
                                        1
                                              341.5 15754 1641.5
## + clubLiverpool
                                        1
                                              320.7 15775 1642.1
## + clubChelsea
                                              282.3 15814 1643.2
                                        1
## + clubArsenal
                                        1
                                              251.9 15844 1644.1
                                              229.9 15866 1644.7
## + club_id
                                              225.4 15870 1644.8
## + clubHuddersfield
                                        1
## + nationalityEngland
                                        1
                                              208.2 15888 1645.3
                                              189.7 15906 1645.9
## + clubSouthampton
                                        1
## + nationalityFrance
                                              177.7 15918 1646.2
                                              164.1 15932 1646.6
## + positionCB
                                        1
## + nationalityNorway
                                        1
                                              150.1 15946 1647.0
## + nationalityEcuador
                                        1
                                               96.4 15999 1648.6
## + nationalitySwitzerland
                                               88.9 16007 1648.8
## + positionRM
                                               80.1 16016 1649.0
                                        1
## + positionGK
                                               80.0 16016 1649.0
                                        1
## + `nationalityCzech Republic`
                                               76.7 16019 1649.1
                                        1
## + clubBournemouth
                                        1
                                               76.0 16020 1649.2
## + clubBurnley
                                               74.8 16021 1649.2
                                        1
                                               73.2 16023 1649.2
## + new_signing
## <none>
                                                    16096 1649.3
## + new_foreign
                                               62.4 16033 1649.5
                                        1
## + nationalityItaly
                                        1
                                               60.4 16035 1649.6
## + nationalityEstonia
                                        1
                                               60.3 16035 1649.6
## + nationalityKenya
                                               59.2 16037 1649.6
                                               58.5 16037 1649.7
## + clubEverton
                                        1
## + nationalityColombia
                                        1
                                               55.5 16040 1649.8
## + positionCM
                                               53.3 16042 1649.8
                                       1
## + `clubWest+Ham`
                                               52.6 16043 1649.8
## + nationalityPoland
                                               52.4 16043 1649.8
                                        1
## + nationalityScotland
                                               51.5 16044 1649.9
## + `clubBrighton+and+Hove`
                                               49.8 16046 1649.9
                                        1
## + nationalitySerbia
                                               47.5 16048 1650.0
## + nationalityArgentina
                                               42.3 16054 1650.1
                                        1
                                               41.2 16054 1650.2
## + nationalityNigeria
                                        1
## + positionLM
                                               38.7 16057 1650.2
                                        1
                                               37.0 16059 1650.3
## + region
## + nationalityChile
                                               35.7 16060 1650.3
                                        1
## + `nationalityTrinidad and Tobago`
                                               34.8 16061 1650.3
## + positionRW
                                               34.4 16061 1650.4
## + `clubManchester+United`
                                        1
                                               33.1 16063 1650.4
## + `clubCrystal+Palace`
                                        1
                                               32.8 16063 1650.4
                                               32.8 16063 1650.4
## + positionLW
                                        1
## + nationalityBrazil
                                       1
                                               28.9 16067 1650.5
## + `clubStoke+City`
                                       1
                                               27.7 16068 1650.5
## + nationalitySenegal
                                               27.5 16068 1650.5
```

```
## + `nationalityThe Gambia`
                                              24.1 16072 1650.7
## + nationalityPortugal
                                              22.1 16074 1650.7
## + `nationalityNew Zealand`
                                              17.9 16078 1650.8
## + nationalitySpain
                                              13.8 16082 1650.9
                                       1
## + clubTottenham
                                              12.8 16083 1651.0
## + `nationalityCote d'Ivoire`
                                              12.6 16083 1651.0
                                       1
## + `nationalitySouth Korea`
                                            12.3 16083 1651.0
                                             12.0 16084 1651.0
## + nationalityCanada
                                       1
## + nationalityAustralia
                                       1
                                              9.8 16086 1651.1
## + nationalityUruguay
                                       1
                                              9.5 16086 1651.1
## + nationalityCuracao
                                       1
                                              8.7 16087 1651.1
                                              8.4 16087 1651.1
## + nationalityIsrael
                                       1
## + `clubNewcastle+United`
                                      1
                                              7.4 16088 1651.1
## + `clubLeicester+City`
                                              7.2 16088 1651.1
                                      1
                                              7.0 16089 1651.1
## + nationalityDenmark
                                      1
## + nationalityNetherlands
                                       1
                                               6.6 16089 1651.2
                                               5.3 16090 1651.2
## + nationalityMorocco
                                       1
## + nationalityMali
                                               4.8 16091 1651.2
## + nationalityEgypt
                                               3.8 16092 1651.2
                                      1
## + nationalityBermuda
                                       1
                                               3.8 16092 1651.2
## + nationalityTunisia
                                      1
                                               3.5 16092 1651.2
## + nationalityFinland
                                              3.5 16092 1651.2
## + nationalityIceland
                                              3.5 16092 1651.2
                                      1
## + nationalitySlovenia
                                               3.0 16093 1651.2
                                      1
                                               2.6 16093 1651.3
## + nationalityArmenia
                                     1
## + nationalitySweden
                                     1
                                               2.3 16093 1651.3
## + `clubWest+Brom`
                                               2.2 16094 1651.3
                                       1
                                              2.0 16094 1651.3
## + nationalityJamaica
                                       1
## + nationalityGhana
                                              1.7 16094 1651.3
                                       1
## + `nationalityNorthern Ireland`
                                             1.6 16094 1651.3
                                       1
## + nationalityVenezuela
                                       1
                                              1.5 16094 1651.3
## + nationalityCameroon
                                       1
                                              1.5 16094 1651.3
## + positionRB
                                       1
                                              1.4 16094 1651.3
                                               1.3 16094 1651.3
## + nationalityIreland
                                       1
## + nationalityAustria
                                       1
                                               1.2 16094 1651.3
## + nationalityJapan
                                              1.2 16095 1651.3
                                      1
## + clubSwansea
                                     1
                                              1.1 16095 1651.3
## + nationalityGermany
                                     1
                                              0.8 16095 1651.3
## + nationalityWales
                                      1
                                              0.8 16095 1651.3
## + `nationalityCongo DR`
                                              0.8 16095 1651.3
                                      1
## + nationalityBosnia
                                              0.4 16095 1651.3
## + clubWatford
                                       1
                                              0.3 16096 1651.3
                                              0.1 16096 1651.3
## + nationalityRomania
                                       1
## + nationalityGreece
                                              0.1 16096 1651.3
                                       1
                                               0.0 16096 1651.3
## + `nationalityUnited States`
                                       1
## + nationalityCroatia
                                               0.0 16096 1651.3
                                       1
## + positionLB
                                       1
                                               0.0 16096 1651.3
## - page_views
                                       1
                                            2341.4 18437 1709.8
## - ns(age, 3)
                                       3
                                            2629.5 18725 1712.9
## - big_club
                                       1
                                            3526.7 19622 1738.5
                                            5446.6 21542 1781.4
## - fpl_value
                                       1
## Step: AIC=1610.88
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
```

```
##
       fpl_points
##
##
                                      Df Sum of Sq RSS
                                                             AIC
## + `clubManchester+City`
                                             716.0 14024 1590.0
## + positionCF
                                             708.1 14032 1590.2
## + new foreign
                                             410.0 14330 1599.9
## + position_cat
                                              389.5 14351 1600.6
                                             361.6 14379 1601.5
## + positionDM
                                       1
## + clubLiverpool
                                       1
                                             355.9 14384 1601.6
## + nationalityEngland
                                       1
                                             319.6 14421 1602.8
## + positionSS
                                       1
                                             300.7 14440 1603.4
## + nationalityFrance
                                             274.0 14466 1604.2
                                       1
## + nationalityNorway
                                       1
                                             259.7 14481 1604.7
                                             245.8 14495 1605.1
## + nationalityBelgium
                                       1
## + clubChelsea
                                             207.4 14533 1606.4
                                       1
## + clubBournemouth
                                       1
                                             180.0 14560 1607.2
## + clubArsenal
                                             161.1 14579 1607.8
                                       1
## + clubBurnley
                                             143.4 14597 1608.4
                                             116.5 14624 1609.2
## + club id
                                       1
                                              106.7 14634 1609.5
## + region
                                       1
## + clubSouthampton
                                       1
                                             104.7 14636 1609.6
## + positionCB
                                              99.7 14641 1609.8
                                             90.1 14650 1610.1
## + nationalityEcuador
                                       1
## + `nationalityCzech Republic`
                                              85.6 14655 1610.2
                                       1
                                              76.0 14664 1610.5
## + nationalityArgentina
                                       1
## + nationalityScotland
                                       1
                                              75.2 14665 1610.5
## + positionCM
                                              70.9 14670 1610.7
                                       1
                                                    14740 1610.9
## <none>
## + nationalitySwitzerland
                                              63.3 14677 1610.9
## + nationalityEstonia
                                              51.6 14689 1611.3
                                       1
## + nationalityNigeria
                                       1
                                              49.1 14691 1611.3
## + positionRM
                                       1
                                              48.4 14692 1611.4
## + clubHuddersfield
                                              47.7 14693 1611.4
                                              47.6 14693 1611.4
## + new_signing
                                       1
## + nationalitySenegal
                                       1
                                              44.7 14696 1611.5
## + nationalitySerbia
                                              40.7 14700 1611.6
                                       1
## + clubEverton
                                      1
                                              38.5 14702 1611.7
## + nationalityItaly
                                      1
                                              37.1 14703 1611.7
## + positionGK
                                       1
                                              34.7 14706 1611.8
## + `clubNewcastle+United`
                                              31.9 14708 1611.9
                                      1
## + positionLW
                                              30.4 14710 1611.9
## + nationalityBrazil
                                              29.9 14710 1611.9
                                       1
## + positionLM
                                              28.7 14712 1612.0
                                       1
                                              28.6 14712 1612.0
## + nationalityKenya
                                       1
                                              27.9 14713 1612.0
## + nationalityPortugal
                                              26.2 14714 1612.1
## + nationalityColombia
                                       1
## + `nationalityThe Gambia`
                                       1
                                              24.1 14716 1612.1
## + `clubManchester+United`
                                              22.0 14718 1612.2
## + nationalityChile
                                       1
                                              21.4 14719 1612.2
## + `nationalityCote d'Ivoire`
                                       1
                                              18.3 14722 1612.3
## + nationalityCanada
                                              18.0 14722 1612.3
                                       1
## + `nationalityTrinidad and Tobago`
                                              17.5 14723 1612.3
## + `nationalitySouth Korea`
                                       1
                                              17.0 14723 1612.3
## + `clubWest+Ham`
                                              16.9 14724 1612.3
```

```
## + nationalityIceland
                                             15.8 14725 1612.4
## + nationalityPoland
                                             15.5 14725 1612.4
                                             14.0 14726 1612.4
## + positionRW
## + nationalityFinland
                                             12.9 14728 1612.5
                                     1
## + nationalitySpain
                                             12.6 14728 1612.5
## + `clubStoke+City`
                                             12.3 14728 1612.5
                                    1
## + nationalitySweden
                                            12.3 14728 1612.5
                                     1
                                             9.8 14731 1612.6
## + `clubCrystal+Palace`
## + positionLB
                                     1
                                             8.5 14732 1612.6
## + nationalityBosnia
                                     1
                                             7.4 14733 1612.7
## + nationalityCuracao
                                     1
                                             7.4 14733 1612.7
                                              7.1 14733 1612.7
## + `clubWest+Brom`
                                      1
## + nationalityGermany
                                      1
                                             6.9 14734 1612.7
                                             6.6 14734 1612.7
## + positionRB
                                     1
## + nationalityMorocco
                                             5.8 14735 1612.7
                                     1
## + nationalityRomania
                                     1
                                             5.2 14735 1612.7
                                             4.7 14736 1612.7
## + clubSwansea
                                      1
## + `nationalityNew Zealand`
                                              4.7 14736 1612.7
## + `clubLeicester+City`
                                             4.5 14736 1612.7
                                      1
                                             4.3 14736 1612.7
## + nationalityUruguay
                                      1
## + `clubBrighton+and+Hove`
                                      1
                                            3.8 14737 1612.8
## + nationalityJamaica
                                             3.4 14737 1612.8
                                             3.3 14737 1612.8
## + nationalityNetherlands
                                     1
## + nationalityCroatia
                                             3.1 14737 1612.8
                                      1
                                             2.9 14738 1612.8
## + nationalitySlovenia
                                     1
## + nationalityJapan
                                     1
                                             2.7 14738 1612.8
## + nationalityArmenia
                                              2.4 14738 1612.8
                                      1
                                             2.2 14738 1612.8
## + nationalityDenmark
                                      1
## + nationalityGhana
                                             2.0 14738 1612.8
                                     1
## + nationalityGreece
                                     1
                                             2.0 14738 1612.8
                                     1
## + nationalityWales
                                             1.7 14739 1612.8
## + nationalityEgypt
                                     1
                                             1.6 14739 1612.8
## + nationalityAustria
                                             1.1 14739 1612.8
## + nationalityTunisia
                                             0.9 14740 1612.8
                                    1
## + nationalityCameroon
                                      1
                                             0.6 14740 1612.9
                                           0.3 14740 1612.9
## + `nationalityNorthern Ireland`
                                      1
## + `nationalityUnited States`
                                     1
                                            0.3 14740 1612.9
## + nationalityVenezuela
                                      1
                                            0.3 14740 1612.9
## + nationalityAustralia
                                      1
                                             0.2 14740 1612.9
## + clubWatford
                                             0.2 14740 1612.9
## + nationalityIreland
                                             0.1 14740 1612.9
## + nationalityIsrael
                                             0.1 14740 1612.9
                                      1
## + nationalityMali
                                             0.1 14740 1612.9
                                      1
## + `nationalityCongo DR`
                                             0.0 14740 1612.9
                                     1
                                              0.0 14740 1612.9
## + clubTottenham
                                     1
                                              0.0 14740 1612.9
## + nationalityBermuda
                                     1
## - fpl_points
                                     1
                                           1355.3 16096 1649.3
                                           1743.6 16484 1660.3
## - page_views
                                     1
## - ns(age, 3)
                                           2831.3 17572 1685.7
                                           2754.3 17495 1687.7
## - fpl_value
                                      1
                                           3497.7 18238 1706.8
## - big_club
## Step: AIC=1589.97
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
```

```
##
       fpl_points + `clubManchester+City`
##
##
                                      Df Sum of Sq RSS
## + positionCF
                                            630.12 13394 1570.8
## + new_foreign
                                             392.45 13632 1578.9
## + clubChelsea
                                            362.17 13662 1579.9
## + nationalityFrance
                                            353.41 13671 1580.2
                                            348.91 13676 1580.4
## + position_cat
                                       1
## + positionDM
                                       1
                                            320.52 13704 1581.3
## + nationalityEngland
                                       1
                                            301.61 13723 1582.0
## + positionSS
                                       1
                                            290.92 13734 1582.3
## + nationalityNorway
                                            257.05 13767 1583.5
                                       1
## + nationalityBelgium
                                       1
                                            246.25 13778 1583.8
                                            189.22 13835 1585.7
## + clubLiverpool
                                       1
## + clubBournemouth
                                            183.61 13841 1585.9
                                       1
## + clubBurnley
                                       1
                                            148.70 13876 1587.1
                                            100.00 13924 1588.7
## + clubSouthampton
                                       1
## + positionCB
                                             93.10 13931 1588.9
## + nationalityScotland
                                             76.97 13947 1589.4
                                       1
## + nationalityEcuador
                                       1
                                             76.13 13948 1589.5
## + region
                                       1
                                             75.61 13949 1589.5
## + nationalityNigeria
                                             74.70 13950 1589.5
## + club_id
                                             74.34 13950 1589.5
                                       1
## + `nationalityCzech Republic`
                                             72.78 13952 1589.6
                                       1
## + nationalitySwitzerland
                                       1
                                              66.21 13958 1589.8
## <none>
                                                    14024 1590.0
## + positionCM
                                       1
                                              58.80 13966 1590.0
                                              57.56 13967 1590.1
## + nationalityArgentina
                                       1
                                             51.31 13973 1590.3
## + clubArsenal
                                       1
## + nationalitySenegal
                                             50.86 13974 1590.3
                                       1
## + clubHuddersfield
                                       1
                                             47.14 13977 1590.4
## + `nationalityCote d'Ivoire`
                                       1
                                             44.79 13980 1590.5
## + nationalityEstonia
                                       1
                                             40.04 13984 1590.7
## + positionRM
                                              39.51 13985 1590.7
                                       1
## + clubEverton
                                       1
                                             39.47 13985 1590.7
## + nationalityKenya
                                             34.34 13990 1590.8
                                       1
## + nationalityItaly
                                             33.59 13991 1590.9
## + positionGK
                                             31.24 13993 1590.9
                                       1
## + `clubNewcastle+United`
                                       1
                                              29.61 13995 1591.0
## + positionLW
                                             27.79 13997 1591.1
                                       1
## + new signing
                                              26.26 13998 1591.1
## + `nationalityThe Gambia`
                                              25.85 13999 1591.1
                                       1
                                              24.36 14000 1591.2
## + nationalitySpain
                                       1
## + positionLM
                                              22.84 14002 1591.2
                                       1
                                              20.99 14003 1591.3
## + clubTottenham
## + nationalitySerbia
                                             19.64 14005 1591.3
                                       1
## + nationalityCanada
                                       1
                                              18.53 14006 1591.4
## + nationalityColombia
                                              17.46 14007 1591.4
## + `nationalityTrinidad and Tobago`
                                              17.33 14007 1591.4
                                       1
## + nationalityPoland
                                       1
                                              16.59 14008 1591.4
                                              16.56 14008 1591.4
## + `clubWest+Ham`
                                       1
## + nationalityPortugal
                                       1
                                             16.45 14008 1591.4
## + nationalitySweden
                                      1
                                              15.37 14009 1591.5
## + nationalityIceland
                                              13.85 14011 1591.5
```

```
## + nationalityFinland
                                            13.81 14011 1591.5
                                            13.36 14011 1591.5
## + `nationalitySouth Korea`
## + `clubStoke+City`
                                            13.02 14011 1591.5
## + nationalityBosnia
                                     1
                                            11.95 14012 1591.6
## + positionRW
                                      1
                                            11.72 14013 1591.6
## + `clubCrystal+Palace`
                                             9.54 14015 1591.7
                                     1
## + nationalityCuracao
                                             8.33 14016 1591.7
                                     1
                                     1
                                             7.14 14017 1591.7
## + positionLB
## + positionRB
                                      1
                                             6.72 14018 1591.8
## + nationalityArmenia
                                     1
                                             6.68 14018 1591.8
## + nationalityMorocco
                                     1
                                             6.37 14018 1591.8
## + nationalityEgypt
                                             5.84 14019 1591.8
                                      1
## + `clubWest+Brom`
                                      1
                                             5.68 14019 1591.8
## + nationalityRomania
                                             5.61 14019 1591.8
## + `clubBrighton+and+Hove`
                                             5.23 14019 1591.8
                                     1
## + clubSwansea
                                      1
                                             5.03 14019 1591.8
## + `clubLeicester+City`
                                             4.84 14020 1591.8
                                      1
## + nationalityUruguay
                                             4.76 14020 1591.8
## + `nationalityNew Zealand`
                                             4.35 14020 1591.8
                                     1
## + nationalityDenmark
                                      1
                                             3.48 14021 1591.9
## + nationalityJamaica
                                     1
                                             3.46 14021 1591.9
## + nationalityChile
                                             3.35 14021 1591.9
                                     1
## + nationalityGhana
                                            2.81 14022 1591.9
                                     1
## + nationalitySlovenia
                                             2.45 14022 1591.9
                                             2.37 14022 1591.9
## + nationalityJapan
                                     1
## + nationalityGreece
                                     1
                                             1.43 14023 1591.9
## + nationalityCameroon
                                             1.36 14023 1591.9
                                     1
## + nationalityTunisia
                                     1
                                             0.88 14024 1591.9
## + nationalityCroatia
                                           0.86 14024 1591.9
                                     1
## + nationalityBrazil
                                     1
                                           0.80 14024 1591.9
                                     1 0.78 14024 1592.0
1 0.61 14024 1592.0
## + nationalityGermany
## + nationalityNetherlands
## + nationalityAustralia
                                           0.50 14024 1592.0
## + nationalityAustria
                                             0.41 14024 1592.0
                                     1
## + nationalityIsrael
                                      1
                                             0.22 14024 1592.0
                                     1 0.21 14024 1592.0
1 0.16 14024 1592.0
## + nationalityWales
## + `nationalityUnited States`
## + nationalityVenezuela
                                      1
                                           0.15 14024 1592.0
                                           0.14 14024 1592.0
## + nationalityIreland
                                      1
## + clubWatford
                                           0.14 14024 1592.0
## + `nationalityNorthern Ireland`
                                           0.12 14024 1592.0
## + `nationalityCongo DR`
                                      1
                                           0.09 14024 1592.0
                                           0.07 14024 1592.0
## + nationalityMali
                                      1
## + nationalityBermuda
                                      1
                                           0.02 14024 1592.0
                                           0.01 14024 1592.0
## + `clubManchester+United`
## - `clubManchester+City`
                                          716.03 14740 1610.9
                                     1
## - fpl_points
                                      1
                                          1480.05 15504 1634.1
                                          1944.98 15969 1647.7
## - page_views
                                      1
## - fpl_value
                                      1
                                          2221.30 16246 1655.6
## - big_club
                                      1
                                          2452.71 16477 1662.1
                                          3161.00 17185 1677.5
## - ns(age, 3)
## Step: AIC=1570.82
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
```

```
##
       fpl_points + `clubManchester+City` + positionCF
##
                                      Df Sum of Sq
##
                                                     RSS
                                                            AIC
## + positionSS
                                            412.12 12982 1558.5
## + nationalityFrance
                                            366.92 13027 1560.0
## + clubChelsea
                                            340.18 13054 1561.0
## + positionDM
                                            304.80 13090 1562.2
                                            295.40 13099 1562.6
## + nationalityBelgium
                                      1
## + nationalityNorway
                                       1
                                            287.84 13106 1562.8
## + new_foreign
                                       1
                                            274.05 13120 1563.3
## + nationalityEngland
                                       1
                                            255.04 13139 1564.0
                                            166.15 13228 1567.1
## + clubLiverpool
                                       1
## + position_cat
                                       1
                                            163.57 13231 1567.2
## + clubBournemouth
                                      1
                                            151.94 13242 1567.6
                                            120.11 13274 1568.7
## + positionLW
                                       1
## + clubBurnley
                                       1
                                            112.20 13282 1569.0
                                            101.24 13293 1569.3
## + clubSouthampton
                                       1
## + nationalityEcuador
                                           90.90 13303 1569.7
                                            80.93 13313 1570.0
## + positionRW
                                       1
## + club id
                                       1
                                             80.13 13314 1570.1
                                          79.34 13315 1570.1
## + `nationalityCzech Republic`
                                       1
## + nationalityScotland
                                         68.40 13326 1570.5
## + nationalitySenegal
                                             66.23 13328 1570.5
                                       1
## + clubHuddersfield
                                             61.77 13332 1570.7
                                       1
                                             60.99 13333 1570.7
## + `nationalityCote d'Ivoire`
                                       1
## + positionCB
                                       1
                                             59.82 13334 1570.8
## + positionRM
                                             59.80 13334 1570.8
                                       1
## <none>
                                                   13394 1570.8
## + nationalitySwitzerland
                                             57.36 13337 1570.8
                                       1
## + region
                                             57.18 13337 1570.9
                                       1
## + clubArsenal
                                       1
                                             55.04 13339 1570.9
## + nationalityArgentina
                                       1
                                             52.23 13342 1571.0
## + nationalityNigeria
                                      1
                                             51.68 13343 1571.0
                                             42.04 13352 1571.4
## + nationalityKenya
                                       1
## + positionLM
                                       1
                                             39.24 13355 1571.5
## + nationalityEstonia
                                             37.59 13357 1571.5
                                       1
## + nationalitySerbia
                                      1
                                             36.61 13358 1571.6
## + `nationalityThe Gambia`
                                     1
                                             30.24 13364 1571.8
## + new_signing
                                       1
                                             26.87 13367 1571.9
## + positionGK
                                             26.71 13368 1571.9
## + nationalityIceland
                                             26.40 13368 1571.9
## + `clubNewcastle+United`
                                             26.25 13368 1571.9
                                       1
## + `nationalityTrinidad and Tobago`
                                       1
                                             23.76 13370 1572.0
## + nationalitySpain
                                             23.12 13371 1572.0
                                       1
## + `clubStoke+City`
                                       1
                                             22.80 13372 1572.0
## + `nationalitySouth Korea`
                                             21.23 13373 1572.1
                                       1
## + nationalityCanada
                                       1
                                             21.09 13373 1572.1
## + nationalityColombia
                                       1
                                             20.12 13374 1572.1
## + `clubWest+Ham`
                                       1
                                             19.21 13375 1572.2
## + positionLB
                                       1
                                             17.39 13377 1572.2
                                             17.34 13377 1572.2
## + clubTottenham
                                     1
## + nationalityPoland
                                     1
                                             15.59 13379 1572.3
## + positionCM
                                     1
                                             14.99 13379 1572.3
## + positionRB
                                       1
                                             14.27 13380 1572.3
```

```
## + nationalityBermuda
                                             11.24 13383 1572.4
                                             11.24 13383 1572.4
## + nationalityFinland
## + nationalitySweden
                                             10.49 13384 1572.5
## + `clubLeicester+City`
                                             10.05 13384 1572.5
                                       1
## + nationalityItaly
                                       1
                                             10.04 13384 1572.5
## + clubEverton
                                      1
                                              9.56 13385 1572.5
## + nationalityCuracao
                                              9.48 13385 1572.5
                                              8.37 13386 1572.5
## + `clubCrystal+Palace`
                                      1
## + nationalityVenezuela
                                      1
                                              7.74 13386 1572.6
## + nationalityPortugal
                                      1
                                              7.32 13387 1572.6
## + nationalityBosnia
                                              5.98 13388 1572.6
## + `clubWest+Brom`
                                              5.84 13388 1572.6
                                       1
## + nationalityNetherlands
                                      1
                                              5.20 13389 1572.7
## + nationalityIsrael
                                              4.96 13389 1572.7
## + nationalityUruguay
                                              4.21 13390 1572.7
                                      1
## + `nationalityNew Zealand`
                                       1
                                              4.00 13390 1572.7
                                              3.14 13391 1572.7
## + nationalityRomania
                                       1
## + `clubBrighton+and+Hove`
                                              3.05 13391 1572.7
## + nationalityJamaica
                                              2.51 13392 1572.7
                                       1
## + nationalityAustralia
                                       1
                                              2.48 13392 1572.7
## + nationalityGreece
                                      1
                                              2.43 13392 1572.7
## + nationalityMorocco
                                              2.14 13392 1572.8
## + nationalityTunisia
                                             1.79 13392 1572.8
                                      1
## + nationalitySlovenia
                                              1.70 13393 1572.8
## + clubSwansea
                                              1.70 13393 1572.8
## + `nationalityNorthern Ireland`
                                             1.38 13393 1572.8
## + nationalityGhana
                                              1.31 13393 1572.8
                                       1
## + clubWatford
                                       1
                                              1.02 13393 1572.8
                                              0.98 13393 1572.8
## + nationalityAustria
                                       1
## + nationalityArmenia
                                              0.73 13394 1572.8
                                      1
## + nationalityCameroon
                                       1
                                              0.68 13394 1572.8
## + nationalityCroatia
                                       1
                                              0.54 13394 1572.8
## + nationalityEgypt
                                              0.38 13394 1572.8
                                              0.36 13394 1572.8
## + nationalityMali
                                      1
## + nationalityJapan
                                      1
                                              0.29 13394 1572.8
## + nationalityDenmark
                                              0.26 13394 1572.8
                                      1
## + `nationalityCongo DR`
                                     1
                                              0.26 13394 1572.8
## + nationalityWales
                                      1
                                              0.19 13394 1572.8
## + nationalityBrazil
                                       1
                                              0.12 13394 1572.8
## + `clubManchester+United`
                                             0.04 13394 1572.8
                                      1
## + nationalityIreland
                                             0.02 13394 1572.8
## + nationalityChile
                                             0.00 13394 1572.8
                                       1
## + nationalityGermany
                                            0.00 13394 1572.8
                                       1
## + `nationalityUnited States`
                                            0.00 13394 1572.8
                                       1
                                         630.12 14024 1590.0
## - positionCF
                                       1
## - `clubManchester+City`
                                          638.02 14032 1590.2
                                       1
## - fpl_points
                                       1
                                           955.08 14349 1600.5
## - page_views
                                       1
                                           1942.67 15337 1631.1
## - big_club
                                       1
                                           2006.61 15401 1633.0
## - ns(age, 3)
                                       3
                                           2799.69 16194 1652.1
                                           2837.34 16232 1657.2
## - fpl_value
## Step: AIC=1558.45
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
```

```
##
       fpl_points + `clubManchester+City` + positionCF + positionSS
##
##
                                      Df Sum of Sq RSS
## + nationalityFrance
                                            335.02 12647 1548.4
## + clubChelsea
                                            317.39 12665 1549.1
## + nationalityBelgium
                                            288.79 12693 1550.1
                                       1
## + positionDM
                                            282.62 12700 1550.3
                                            270.16 12712 1550.8
## + nationalityEngland
                                      1
## + new_foreign
                                      1
                                            252.05 12730 1551.4
## + positionLW
                                      1
                                            160.24 12822 1554.7
## + clubBournemouth
                                      1
                                            125.97 12856 1556.0
## + clubLiverpool
                                            123.42 12859 1556.0
                                      1
## + clubBurnley
                                      1
                                            116.17 12866 1556.3
## + positionRW
                                      1
                                           111.97 12870 1556.5
                                           106.91 12875 1556.6
## + position_cat
                                      1
                                          97.99 12884 1557.0
## + nationalityNorway
                                       1
                                           94.09 12888 1557.1
## + nationalityEcuador
                                      1
## + clubSouthampton
                                           86.36 12896 1557.4
                                           81.66 12900 1557.5
## + club_id
                                      1
## + nationalityArgentina
                                       1
                                             81.49 12901 1557.5
                                       1 80.84 12901 1557.6
## + `nationalityCzech Republic`
## + clubHuddersfield
                                       1 75.69 12906 1557.8
                                      1 75.67 12906 1557.8
1 69.49 12913 1558.0
1 69.10 12913 1558.0
## + nationalityScotland
## + `nationalityCote d'Ivoire`
## + positionRM
## + clubArsenal
                                      1
                                             60.77 12921 1558.3
## + nationalitySenegal
                                             60.19 12922 1558.3
                                       1
                                             58.17 12924 1558.4
## + nationalityNigeria
                                       1
## <none>
                                                   12982 1558.5
                                             55.47 12927 1558.5
## + region
                                       1
## + nationalitySpain
                                       1
                                             53.33 12929 1558.5
## + nationalitySwitzerland
                                     1
                                             51.67 12930 1558.6
## + positionCB
                                     1
                                             49.01 12933 1558.7
## + positionLM
                                             44.33 12938 1558.9
                                     1
## + nationalityKenya
                                      1
                                             44.04 12938 1558.9
## + nationalitySerbia
                                     1
                                             38.56 12944 1559.1
## + nationalityEstonia
                                     1
                                             36.13 12946 1559.2
## + `clubNewcastle+United`
                                     1
                                             35.47 12947 1559.2
## + `clubStoke+City`
                                       1
                                             34.99 12947 1559.2
## + `nationalityThe Gambia`
                                             32.86 12949 1559.3
## + nationalityIceland
                                             29.41 12953 1559.4
## + `nationalityTrinidad and Tobago`
                                             25.45 12957 1559.5
                                       1
## + positionGK
                                       1
                                             24.79 12957 1559.6
## + `nationalitySouth Korea`
                                             24.71 12958 1559.6
                                       1
## + nationalityCanada
                                             22.09 12960 1559.7
## + new_signing
                                             21.53 12961 1559.7
                                       1
## + positionLB
                                       1
                                             20.55 12962 1559.7
## + clubEverton
                                             20.52 12962 1559.7
## + nationalityColombia
                                      1
                                             19.40 12963 1559.8
## + clubTottenham
                                      1
                                             17.90 12964 1559.8
                                     1
                                             17.14 12965 1559.8
## + positionRB
## + nationalityPoland
                                     1
                                             15.25 12967 1559.9
## + `clubWest+Ham`
                                     1
                                             14.04 12968 1560.0
## + nationalityBermuda
                                      1
                                             12.37 12970 1560.0
```

```
## + nationalityItaly
                                           11.87 12970 1560.0
## + nationalityFinland
                                           10.55 12972 1560.1
                                          10.32 12972 1560.1
## + nationalityCuracao
## + nationalityVenezuela
                                            9.09 12973 1560.1
                                    1
## + nationalitySweden
                                     1
                                            9.08 12973 1560.1
## + nationalityNetherlands
                                   1
                                           8.36 12974 1560.2
## + `clubWest+Brom`
                                           7.71 12974 1560.2
                                    1
                                          6.59 12976 1560.2
## + nationalityBrazil
## + nationalityPortugal
                                     1
                                            6.56 12976 1560.2
## + `clubCrystal+Palace`
                                    1
                                            5.21 12977 1560.3
## + positionCM
                                    1
                                            5.08 12977 1560.3
## + nationalityIsrael
                                            4.97 12977 1560.3
                                     1
## + `clubLeicester+City`
                                     1
                                            4.91 12977 1560.3
## + nationalityBosnia
                                     1
                                            4.86 12977 1560.3
## + nationalityUruguay
                                            4.21 12978 1560.3
                                    1
## + nationalityAustralia
                                     1
                                            4.11 12978 1560.3
## + `nationalityNew Zealand`
                                    1
                                            3.82 12978 1560.3
## + clubSwansea
                                            3.56 12979 1560.3
## + nationalityGreece
                                            2.60 12980 1560.4
                                    1
## + nationalityRomania
                                     1
                                            2.49 12980 1560.4
## + nationalityGhana
                                    1
                                           2.47 12980 1560.4
## + nationalityTunisia
                                           2.21 12980 1560.4
## + nationalityJamaica
                                           1.94 12980 1560.4
                                     1
                                        1.86 12980 1560.4
## + `nationalityNorthern Ireland`
## + nationalityMorocco
                                           1.32 12981 1560.4
                                      1
## + nationalitySlovenia
                                      1
                                            1.31 12981 1560.4
## + `clubBrighton+and+Hove`
                                            1.08 12981 1560.4
                                      1
                                            1.04 12981 1560.4
## + nationalityAustria
                                      1
## + nationalityMali
                                            0.77 12981 1560.4
                                     1
## + `clubManchester+United`
                                          0.61 12982 1560.4
                                    1
## + nationalityCameroon
                                     1
                                            0.49 12982 1560.4
## + nationalityGermany
                                     1
                                            0.44 12982 1560.4
## + nationalityIreland
                                    1
                                            0.38 12982 1560.4
## + nationalityWales
                                            0.36 12982 1560.4
                                    1
## + nationalityJapan
                                     1
                                            0.36 12982 1560.4
## + nationalityCroatia
                                            0.27 12982 1560.4
                                     1
## + nationalityChile
                                          0.12 12982 1560.4
## + `nationalityUnited States`
                                    1
                                          0.10 12982 1560.5
                                          0.07 12982 1560.5
## + nationalityEgypt
                                     1
## + `nationalityCongo DR`
                                    1
                                          0.02 12982 1560.5
## + nationalityArmenia
                                           0.01 12982 1560.5
## + nationalityDenmark
                                           0.01 12982 1560.5
                                     1
                                            0.00 12982 1560.5
## + clubWatford
                                     1
## - positionSS
                                     1
                                        412.12 13394 1570.8
                                        619.56 13602 1577.9
## - `clubManchester+City`
                                    1
                                     1
                                         751.32 13734 1582.3
## - positionCF
                                          850.71 13833 1585.7
## - fpl_points
                                     1
                                         1695.22 14677 1612.9
## - big_club
                                     1
## - page_views
                                     1
                                          2200.06 15182 1628.5
## - ns(age, 3)
                                      3
                                          2813.66 15796 1642.7
                                         2942.57 15925 1650.4
## - fpl_value
## Step: AIC=1548.42
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
```

```
##
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
       nationalityFrance
##
##
                                      Df Sum of Sq
                                                     RSS
                                                            AIC
## + nationalityBelgium
                                            326.07 12321 1538.4
## + clubChelsea
                                            289.52 12358 1539.8
## + new foreign
                                            228.69 12418 1542.0
                                            192.35 12455 1543.4
## + positionDM
                                      1
## + nationalityEngland
                                       1
                                            185.11 12462 1543.6
## + positionLW
                                      1
                                            145.91 12501 1545.1
## + clubBournemouth
                                      1
                                            133.77 12513 1545.5
                                            114.16 12533 1546.2
## + position_cat
                                       1
## + nationalityNorway
                                       1
                                            105.81 12541 1546.6
                                            105.28 12542 1546.6
## + clubBurnley
                                      1
## + positionRW
                                            102.31 12545 1546.7
                                      1
                                           95.67 12552 1546.9
## + nationalityArgentina
                                       1
                                             94.36 12553 1547.0
## + clubLiverpool
                                       1
## + nationalityEcuador
                                             87.10 12560 1547.2
                                             85.93 12561 1547.3
## + positionRM
                                       1
## + clubSouthampton
                                       1
                                             82.76 12564 1547.4
## + club_id
                                       1
                                             78.43 12569 1547.6
## + nationalitySpain
                                             76.13 12571 1547.6
## + `nationalityCzech Republic`
                                             75.14 12572 1547.7
                                       1
## + clubArsenal
                                       1
                                             71.44 12576 1547.8
## + nationalitySenegal
                                       1
                                             70.35 12577 1547.9
## + nationalityScotland
                                       1
                                             67.07 12580 1548.0
## + `nationalityCote d'Ivoire`
                                             63.13 12584 1548.1
                                       1
## + nationalitySwitzerland
                                       1
                                             58.36 12589 1548.3
## + region
                                             57.87 12589 1548.3
                                       1
## + clubHuddersfield
                                             55.02 12592 1548.4
## <none>
                                                   12647 1548.4
## + nationalityNigeria
                                       1
                                             49.68 12598 1548.6
## + nationalityKenya
                                             49.56 12598 1548.6
                                             46.62 12600 1548.7
## + positionCB
                                       1
## + nationalitySerbia
                                       1
                                             45.49 12602 1548.8
## + positionLM
                                             38.67 12608 1549.0
                                       1
## + nationalityEstonia
                                             31.30 12616 1549.3
## + positionGK
                                             31.14 12616 1549.3
                                      1
## + `clubStoke+City`
                                       1
                                             31.05 12616 1549.3
## + `nationalityThe Gambia`
                                             30.30 12617 1549.3
                                       1
## + `clubNewcastle+United`
                                             29.56 12618 1549.3
## + nationalityIceland
                                             28.92 12618 1549.4
                                       1
## + `nationalityTrinidad and Tobago`
                                             23.02 12624 1549.6
                                       1
## + nationalityCanada
                                       1
                                             21.01 12626 1549.7
## + `nationalitySouth Korea`
                                             20.65 12626 1549.7
                                             19.83 12627 1549.7
## + clubEverton
                                       1
## + `clubWest+Ham`
                                       1
                                             18.68 12628 1549.7
## + positionLB
                                             16.03 12631 1549.8
## + nationalityColombia
                                       1
                                             15.20 12632 1549.9
## + nationalityPoland
                                       1
                                             14.79 12632 1549.9
## + nationalityBermuda
                                     1
                                             14.54 12633 1549.9
## + nationalitySweden
                                     1
                                             12.70 12634 1550.0
## + nationalityFinland
                                     1
                                             11.65 12636 1550.0
## + nationalityBrazil
                                      1
                                             11.37 12636 1550.0
```

```
9.92 12637 1550.1
## + clubTottenham
                                            9.61 12638 1550.1
## + positionRB
## + nationalityVenezuela
                                            9.38 12638 1550.1
## + nationalityCuracao
                                    1
                                            8.98 12638 1550.1
## + nationalityPortugal
                                     1
                                            8.80 12638 1550.1
## + nationalityBosnia
                                            7.66 12640 1550.1
                                    1
## + nationalityItaly
                                            7.61 12640 1550.1
## + nationalityIsrael
                                    1
                                            6.53 12641 1550.2
## + new_signing
                                    1
                                            6.45 12641 1550.2
## + `clubWest+Brom`
                                    1
                                            6.29 12641 1550.2
## + `clubLeicester+City`
                                            4.68 12642 1550.2
## + positionCM
                                            4.39 12643 1550.3
                                     1
## + nationalityUruguay
                                    1
                                            4.25 12643 1550.3
## + `nationalityNew Zealand`
                                    1
                                            3.95 12643 1550.3
## + `clubCrystal+Palace`
                                            3.93 12643 1550.3
                                     1
## + nationalityNetherlands
                                     1
                                            3.43 12644 1550.3
## + clubWatford
                                            3.24 12644 1550.3
                                     1
## + nationalityRomania
                                            3.23 12644 1550.3
## + nationalityGreece
                                            2.71 12644 1550.3
                                    1
## + nationalityJamaica
                                    1
                                            2.52 12645 1550.3
                                          2.25 12645 1550.3
## + nationalityAustralia
                                   1
## + nationalityMorocco
                                           1.78 12645 1550.4
## + nationalityTunisia
                                    1
                                           1.73 12645 1550.4
## + nationalitySlovenia
                                     1
                                           1.70 12646 1550.4
## + `clubBrighton+and+Hove`
                                           1.69 12646 1550.4
                                    1
## + `nationalityNorthern Ireland`
                                    1
                                           1.55 12646 1550.4
## + clubSwansea
                                            1.34 12646 1550.4
                                     1
## + nationalityCameroon
                                     1
                                            1.27 12646 1550.4
## + nationalityGhana
                                           1.19 12646 1550.4
                                     1
## + nationalityEgypt
                                    1
                                          0.92 12646 1550.4
## + nationalityArmenia
                                     1
                                            0.58 12647 1550.4
## + nationalityJapan
                                     1
                                            0.56 12647 1550.4
## + nationalityGermany
                                            0.41 12647 1550.4
                                            0.40 12647 1550.4
## + nationalityAustria
                                    1
## + `nationalityCongo DR`
                                     1
                                            0.30 12647 1550.4
## + nationalityMali
                                    1
                                            0.28 12647 1550.4
## + nationalityDenmark
                                    1
                                          0.23 12647 1550.4
## + nationalityChile
                                    1
                                          0.06 12647 1550.4
## + nationalityCroatia
                                    1
                                           0.05 12647 1550.4
## + `clubManchester+United`
                                          0.04 12647 1550.4
                                   1
## + nationalityWales
                                          0.00 12647 1550.4
## + nationalityIreland
                                          0.00 12647 1550.4
                                     1
                                           0.00 12647 1550.4
## + `nationalityUnited States`
                                     1
## - nationalityFrance
                                     1 335.02 12982 1558.5
                                     1 380.21 13027 1560.0
## - positionSS
                                     1 691.68 13339 1570.9
## - `clubManchester+City`
## - positionCF
                                     1
                                        760.06 13407 1573.3
## - fpl_points
                                         940.28 13587 1579.4
                                     1
## - big_club
                                     1
                                         1542.39 14190 1599.4
## - page_views
                                     1
                                         2020.08 14667 1614.6
                                     3
                                         2656.60 15304 1630.1
## - ns(age, 3)
                                         2989.51 15637 1644.0
## - fpl_value
##
## Step: AIC=1538.41
```

```
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
##
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium
##
##
                                      Df Sum of Sq
                                                      RSS
                                             256.35 12065 1530.7
## + new foreign
## + clubChelsea
                                             246.55 12074 1531.1
## + positionDM
                                             206.01 12115 1532.7
                                       1
## + positionLW
                                       1
                                             152.09 12169 1534.7
## + nationalityEngland
                                       1
                                             129.34 12192 1535.5
## + clubBournemouth
                                       1
                                             120.42 12201 1535.9
## + nationalityArgentina
                                             114.84 12206 1536.1
                                       1
## + clubBurnley
                                            113.12 12208 1536.2
                                       1
## + nationalitySpain
                                            108.89 12212 1536.3
                                             104.11 12217 1536.5
## + position_cat
                                       1
## + nationalityNorway
                                       1
                                             97.24 12224 1536.8
                                             95.78 12225 1536.8
## + positionRW
                                       1
## + clubSouthampton
                                             93.31 12228 1536.9
                                             88.93 12232 1537.1
## + clubLiverpool
                                       1
## + nationalitySenegal
                                       1
                                             81.66 12239 1537.3
## + positionRM
                                             81.33 12240 1537.4
## + nationalityEcuador
                                             79.27 12242 1537.4
## + `nationalityCzech Republic`
                                             71.45 12250 1537.7
                                       1
## + club id
                                             69.60 12252 1537.8
## + clubHuddersfield
                                             69.54 12252 1537.8
                                       1
## + region
                                       1
                                              64.06 12257 1538.0
## + nationalitySwitzerland
                                             61.41 12260 1538.1
                                       1
                                              59.52 12262 1538.2
## + nationalityScotland
                                       1
## + `nationalityCote d'Ivoire`
                                              56.08 12265 1538.3
                                       1
## + nationalityKenya
                                              55.41 12266 1538.3
## <none>
                                                    12321 1538.4
## + nationalitySerbia
                                              52.95 12268 1538.4
                                       1
## + nationalityNigeria
                                              42.86 12278 1538.8
                                              38.28 12283 1539.0
## + clubArsenal
                                       1
## + `clubStoke+City`
                                       1
                                              36.16 12285 1539.0
                                              35.11 12286 1539.1
## + positionLM
                                       1
## + positionCB
                                             34.55 12286 1539.1
## + `nationalityThe Gambia`
                                              30.14 12291 1539.3
                                       1
## + nationalityEstonia
                                              28.35 12293 1539.3
## + `clubNewcastle+United`
                                              27.52 12294 1539.4
                                       1
## + `clubWest+Ham`
                                              26.17 12295 1539.4
## + nationalityIceland
                                              23.31 12298 1539.5
                                        1
## + positionGK
                                              23.29 12298 1539.5
                                        1
## + `nationalityTrinidad and Tobago`
                                              22.46 12299 1539.6
## + nationalityBrazil
                                              22.17 12299 1539.6
                                              19.30 12302 1539.7
## + nationalityCanada
                                        1
## + `nationalitySouth Korea`
                                       1
                                              16.62 12304 1539.8
## + nationalityBermuda
                                              16.25 12305 1539.8
## + nationalityPoland
                                       1
                                              14.75 12306 1539.9
## + clubEverton
                                       1
                                              14.52 12307 1539.9
## + nationalitySweden
                                              14.08 12307 1539.9
                                       1
## + nationalityVenezuela
                                      1
                                             13.10 12308 1539.9
## + nationalityColombia
                                      1
                                             12.86 12308 1539.9
## + nationalityPortugal
                                              12.25 12309 1540.0
```

```
11.20 12310 1540.0
## + nationalityFinland
                                              8.88 12312 1540.1
## + positionLB
                                              8.70 12312 1540.1
## + nationalityBosnia
## + nationalityCuracao
                                              8.60 12312 1540.1
                                      1
## + `clubWest+Brom`
                                      1
                                              8.38 12313 1540.1
## + `clubLeicester+City`
                                             7.96 12313 1540.1
                                      1
## + nationalityIsrael
                                             7.52 12314 1540.1
                                     1
## + clubWatford
                                              5.92 12315 1540.2
## + nationalityItaly
                                      1
                                              5.28 12316 1540.2
## + `nationalityNew Zealand`
                                     1
                                              5.02 12316 1540.2
## + nationalityUruguay
                                      1
                                              4.73 12316 1540.2
                                              4.40 12317 1540.2
## + positionRB
                                      1
## + clubTottenham
                                      1
                                              4.08 12317 1540.2
                                              3.28 12318 1540.3
## + nationalityRomania
                                     1
## + nationalityAustralia
                                              2.61 12318 1540.3
                                     1
## + nationalityJamaica
                                     1
                                              2.49 12319 1540.3
## + nationalityGreece
                                     1
                                              2.31 12319 1540.3
## + nationalityMorocco
                                              2.30 12319 1540.3
## + `clubCrystal+Palace`
                                              2.26 12319 1540.3
                                     1
## + nationalityCameroon
                                      1
                                              2.21 12319 1540.3
## + nationalityGermany
                                      1
                                             1.91 12319 1540.3
## + nationalityEgypt
                                             1.74 12319 1540.3
                                     1
                                             1.66 12319 1540.3
## + `clubBrighton+and+Hove`
## + nationalityTunisia
                                      1
                                             1.59 12320 1540.3
## + positionCM
                                     1
                                             1.52 12320 1540.3
## + new_signing
                                     1
                                             1.38 12320 1540.4
## + nationalitySlovenia
                                              1.32 12320 1540.4
                                      1
                                             1.28 12320 1540.4
## + nationalityArmenia
                                      1
## + nationalityJapan
                                     1
                                             1.28 12320 1540.4
## + nationalityNetherlands
                                      1
                                           1.18 12320 1540.4
## + `nationalityNorthern Ireland`
                                      1
                                             0.94 12320 1540.4
## + nationalityDenmark
                                      1
                                             0.78 12320 1540.4
## + nationalityGhana
                                              0.76 12320 1540.4
## + `nationalityCongo DR`
                                              0.76 12320 1540.4
                                      1
                                              0.47 12321 1540.4
## + nationalityChile
                                      1
## + nationalityWales
                                             0.36 12321 1540.4
                                      1
## + clubSwansea
                                     1
                                             0.36 12321 1540.4
## + nationalityMali
                                     1
                                             0.23 12321 1540.4
## + nationalityIreland
                                     1
                                             0.17 12321 1540.4
                                             0.11 12321 1540.4
## + nationalityAustria
                                     1
## + nationalityCroatia
                                             0.10 12321 1540.4
                                             0.05 12321 1540.4
## + `clubManchester+United`
                                      1
                                             0.01 12321 1540.4
## + `nationalityUnited States`
                                      1
                                           326.07 12647 1548.4
## - nationalityBelgium
                                      1
                                           371.77 12693 1550.1
## - positionSS
                                      1
                                           372.29 12693 1550.1
## - nationalityFrance
                                      1
## - `clubManchester+City`
                                      1
                                           693.55 13015 1561.6
## - positionCF
                                           815.64 13137 1565.9
                                      1
## - fpl_points
                                      1
                                           844.16 13165 1566.9
                                           1355.71 13677 1584.4
## - big_club
                                      1
                                      1
                                          2151.80 14473 1610.5
## - page_views
                                      3
                                          2593.07 14914 1620.3
## - ns(age, 3)
## - fpl_value
                                           2810.69 15132 1630.9
##
```

```
## Step: AIC=1530.73
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium + new_foreign
##
##
##
                                                             AIC
                                      Df Sum of Sq
                                                      RSS
## + clubChelsea
                                             200.10 11865 1525.0
                                             172.82 11892 1526.1
## + positionDM
                                       1
## + nationalityArgentina
                                       1
                                            140.95 11924 1527.3
## + clubBournemouth
                                       1
                                            121.54 11943 1528.1
## + clubBurnley
                                       1
                                            115.16 11950 1528.3
## + positionLW
                                            107.94 11957 1528.6
                                       1
                                          102.48 11962 1528.8
## + nationalityEngland
                                       1
## + nationalityNorway
                                       1
                                          99.89 11965 1528.9
## + nationalitySenegal
                                            90.74 11974 1529.3
                                       1
## + clubSouthampton
                                       1
                                             83.91 11981 1529.5
                                             82.26 11982 1529.6
## + clubLiverpool
                                       1
## + positionRW
                                             80.62 11984 1529.7
                                             74.24 11990 1529.9
## + nationalityEcuador
                                       1
## + `nationalityCzech Republic`
                                       1
                                             67.41 11997 1530.2
## + positionRM
                                       1
                                             66.09 11999 1530.2
## + region
                                             63.48 12001 1530.3
## + nationalitySwitzerland
                                             63.08 12002 1530.3
                                       1
## + position cat
                                             60.11 12005 1530.4
                                             59.67 12005 1530.5
## + nationalitySpain
                                       1
## + club id
                                       1
                                             56.43 12008 1530.6
## + nationalityScotland
                                             56.28 12008 1530.6
                                       1
                                             56.00 12009 1530.6
## + nationalitySerbia
## <none>
                                                    12065 1530.7
## + nationalityKenya
                                             52.34 12012 1530.7
                                       1
## + `nationalityCote d'Ivoire`
                                       1
                                             51.36 12013 1530.8
## + `clubNewcastle+United`
                                       1
                                             49.52 12015 1530.8
## + nationalityNigeria
                                       1
                                             37.64 12027 1531.3
                                             37.56 12027 1531.3
## + clubHuddersfield
                                       1
## + `clubStoke+City`
                                       1
                                             35.20 12030 1531.4
## + clubArsenal
                                             34.88 12030 1531.4
                                       1
## + nationalityEstonia
                                             28.62 12036 1531.6
## + positionLM
                                             28.62 12036 1531.6
                                       1
## + `clubWest+Ham`
                                       1
                                             26.93 12038 1531.7
## + `nationalityThe Gambia`
                                             26.91 12038 1531.7
                                       1
## + positionCB
                                             22.59 12042 1531.9
## + nationalityCanada
                                             19.54 12045 1532.0
                                       1
## + nationalityIceland
                                             19.27 12046 1532.0
                                       1
## + nationalityBrazil
                                             18.00 12047 1532.0
## + nationalityBermuda
                                             17.45 12047 1532.1
## + `nationalityTrinidad and Tobago`
                                             17.23 12048 1532.1
                                       1
## + `clubWest+Brom`
                                       1
                                             16.91 12048 1532.1
## + positionGK
                                             16.03 12049 1532.1
## + clubWatford
                                             15.00 12050 1532.2
## + `nationalitySouth Korea`
                                       1
                                             14.90 12050 1532.2
## + nationalityFinland
                                             12.25 12052 1532.3
                                       1
## + nationalityVenezuela
                                       1
                                             11.83 12053 1532.3
## + clubTottenham
                                       1
                                             11.53 12053 1532.3
## + `clubBrighton+and+Hove`
                                       1
                                             10.61 12054 1532.3
```

```
## + nationalityColombia
                                              9.41 12055 1532.4
                                              9.04 12056 1532.4
## + nationalityIsrael
## + positionLB
                                              8.74 12056 1532.4
## + nationalityCuracao
                                              8.00 12057 1532.4
                                       1
## + positionRB
                                              6.67 12058 1532.5
## + nationalityPortugal
                                     1
                                              6.62 12058 1532.5
## + new signing
                                              6.25 12058 1532.5
                                     1
                                              5.97 12059 1532.5
## + clubEverton
## + nationalityItaly
                                      1
                                              4.84 12060 1532.5
## + nationalityRomania
                                      1
                                              4.22 12060 1532.6
## + `clubLeicester+City`
                                      1
                                              4.11 12061 1532.6
                                              4.05 12061 1532.6
## + nationalityUruguay
                                      1
## + `nationalityNew Zealand`
                                      1
                                              3.84 12061 1532.6
## + nationalityMorocco
                                              3.69 12061 1532.6
                                              3.64 12061 1532.6
## + nationalityEgypt
                                      1
## + `clubCrystal+Palace`
                                      1
                                              2.95 12062 1532.6
                                              2.80 12062 1532.6
## + `nationalityCongo DR`
                                      1
## + nationalitySweden
                                              2.73 12062 1532.6
                                     1
                                              2.72 12062 1532.6
## + nationalityArmenia
## + nationalityGreece
                                      1
                                              2.62 12062 1532.6
## + nationalityCameroon
                                     1
                                              2.59 12062 1532.6
## + nationalityGermany
                                              2.19 12062 1532.7
                                     1
## + nationalityJamaica
                                              2.07 12063 1532.7
## + positionCM
                                              2.00 12063 1532.7
                                      1
                                              1.78 12063 1532.7
## + nationalityDenmark
                                     1
## + nationalitySlovenia
                                     1
                                             1.77 12063 1532.7
## + nationalityTunisia
                                              1.43 12063 1532.7
                                     1
                                             1.33 12063 1532.7
## + clubSwansea
                                      1
                                             1.33 12063 1532.7
## + nationalityChile
                                     1
## + nationalityAustralia
                                            0.95 12064 1532.7
                                     1
## + nationalityPoland
                                       1
                                             0.88 12064 1532.7
                                         0.88 12064 1532.7
## + `nationalityNorthern Ireland`
                                       1
## + nationalityNetherlands
                                              0.82 12064 1532.7
                                              0.82 12064 1532.7
## + nationalityJapan
                                       1
## + nationalityIreland
                                       1
                                              0.68 12064 1532.7
                                             0.50 12064 1532.7
## + nationalityWales
                                      1
## + `clubManchester+United`
                                             0.42 12064 1532.7
## + nationalityBosnia
                                     1
                                             0.30 12064 1532.7
## + nationalityGhana
                                      1
                                              0.17 12065 1532.7
## + nationalityCroatia
                                             0.07 12065 1532.7
                                      1
## + nationalityAustria
                                              0.03 12065 1532.7
## + nationalityMali
                                              0.01 12065 1532.7
                                       1
                                              0.00 12065 1532.7
## + `nationalityUnited States`
                                       1
## - new_foreign
                                       1
                                            256.35 12321 1538.4
                                            347.94 12413 1541.8
## - nationalityFrance
                                       1
                                            351.48 12416 1541.9
## - positionSS
                                       1
## - nationalityBelgium
                                       1
                                            353.73 12418 1542.0
## - positionCF
                                            681.39 12746 1554.0
## - `clubManchester+City`
                                       1
                                            683.93 12749 1554.1
## - fpl_points
                                       1
                                           1067.46 13132 1567.7
                                           1274.05 13339 1574.9
## - big_club
                                      1
## - fpl_value
                                     1
                                           1995.42 14060 1599.1
## - page_views
                                     1
                                           2343.23 14408 1610.4
## - ns(age, 3)
                                           2573.38 14638 1613.7
```

```
##
## Step: AIC=1525.04
  market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
##
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea
##
                                       Df Sum of Sq
                                                      RSS
##
                                             162.16 11702 1520.7
## + positionDM
## + nationalityArgentina
                                             133.20 11731 1521.8
## + clubBournemouth
                                        1
                                             120.53 11744 1522.3
## + positionLW
                                        1
                                             115.49 11749 1522.5
                                             113.58 11751 1522.6
## + clubBurnley
                                        1
## + nationalityNorway
                                            100.83 11764 1523.1
                                        1
## + club_id
                                        1
                                             98.80 11766 1523.2
## + positionRW
                                              97.61 11767 1523.2
                                        1
## + nationalitySenegal
                                        1
                                              93.43 11771 1523.4
## + positionRM
                                              86.46 11778 1523.7
                                        1
## + clubSouthampton
                                              83.91 11781 1523.8
## + nationalityEngland
                                              81.35 11783 1523.9
                                        1
## + nationalitySwitzerland
                                        1
                                              67.94 11797 1524.4
## + nationalityEcuador
                                        1
                                              67.78 11797 1524.4
## + position_cat
                                              64.54 11800 1524.5
## + nationalityKenya
                                              61.40 11803 1524.7
                                        1
## + `nationalityCzech Republic`
                                              60.48 11804 1524.7
## + nationalityScotland
                                        1
                                              57.20 11807 1524.8
## + nationalityNigeria
                                        1
                                              53.54 11811 1525.0
## <none>
                                                    11865 1525.0
                                              51.06 11814 1525.1
## + region
                                        1
## + `nationalityCote d'Ivoire`
                                              46.21 11818 1525.2
                                        1
## + `clubNewcastle+United`
                                              44.69 11820 1525.3
                                        1
## + clubHuddersfield
                                        1
                                              44.21 11820 1525.3
## + clubTottenham
                                        1
                                              41.78 11823 1525.4
## + nationalitySerbia
                                              39.26 11825 1525.5
                                              36.60 11828 1525.6
## + clubLiverpool
                                        1
## + `clubStoke+City`
                                        1
                                              35.84 11829 1525.7
## + nationalitySpain
                                              35.24 11829 1525.7
                                        1
## + `nationalityThe Gambia`
                                              27.38 11837 1526.0
## + `clubWest+Ham`
                                              27.27 11837 1526.0
                                        1
## + positionLM
                                        1
                                              26.93 11838 1526.0
## + nationalityEstonia
                                              23.10 11842 1526.1
                                        1
## + positionCB
                                              22.93 11842 1526.2
## + nationalityCanada
                                              19.46 11845 1526.3
                                        1
## + nationalityIceland
                                        1
                                              19.18 11845 1526.3
## + `nationalityTrinidad and Tobago`
                                              18.24 11846 1526.3
                                        1
## + positionGK
                                              18.04 11847 1526.3
## + nationalityBermuda
                                              16.32 11848 1526.4
                                        1
## + `clubWest+Brom`
                                              15.21 11849 1526.5
## + clubWatford
                                              13.29 11851 1526.5
## + `nationalitySouth Korea`
                                        1
                                              12.29 11852 1526.6
## + nationalityFinland
                                        1
                                              12.04 11853 1526.6
                                              11.71 11853 1526.6
## + nationalityVenezuela
                                        1
## + positionLB
                                        1
                                              11.19 11853 1526.6
## + `clubManchester+United`
                                        1
                                              8.67 11856 1526.7
## + `clubBrighton+and+Hove`
                                              8.32 11856 1526.7
```

```
8.23 11856 1526.7
## + nationalityIsrael
## + nationalityCuracao
                                             8.18 11856 1526.7
## + clubEverton
                                             7.55 11857 1526.8
                                             7.03 11858 1526.8
## + nationalityColombia
                                     1
## + clubArsenal
                                     1
                                             6.38 11858 1526.8
                                             5.67 11859 1526.8
## + positionRB
                                    1
## + nationalityArmenia
                                             5.22 11859 1526.8
                                     1
                                             5.10 11860 1526.8
## + positionCM
## + nationalityBrazil
                                      1
                                             4.92 11860 1526.8
## + new_signing
                                     1
                                             4.87 11860 1526.8
## + `clubLeicester+City`
                                             4.68 11860 1526.9
## + nationalitySweden
                                             4.39 11860 1526.9
                                      1
## + nationalityUruguay
                                      1
                                             4.26 11860 1526.9
## + `nationalityNew Zealand`
                                             4.09 11860 1526.9
## + nationalityRomania
                                             4.00 11861 1526.9
                                     1
## + nationalityItaly
                                      1
                                             3.80 11861 1526.9
                                             3.65 11861 1526.9
## + nationalityCameroon
                                      1
## + nationalityMorocco
                                             3.52 11861 1526.9
## + `clubCrystal+Palace`
                                             3.51 11861 1526.9
                                     1
                                             2.94 11862 1526.9
## + nationalityChile
                                      1
## + nationalityPortugal
                                     1
                                             2.55 11862 1526.9
## + nationalityGreece
                                             2.37 11862 1527.0
                                    1
                                            2.33 11862 1527.0
## + `nationalityCongo DR`
## + nationalityJamaica
                                     1
                                             2.23 11862 1527.0
                                     1
                                             2.23 11862 1527.0
## + nationalityDenmark
## + nationalityGermany
                                     1
                                             1.81 11863 1527.0
## + nationalityPoland
                                             1.69 11863 1527.0
                                     1
                                             1.48 11863 1527.0
## + nationalitySlovenia
                                     1
## + nationalityTunisia
                                     1
                                             1.47 11863 1527.0
## + nationalityEgypt
                                     1
                                             1.43 11863 1527.0
                                     1
## + clubSwansea
                                             1.37 11863 1527.0
## + nationalityWales
                                     1
                                             1.36 11863 1527.0
## + nationalityAustralia
                                             1.20 11863 1527.0
                                             1.18 11863 1527.0
## + nationalityBosnia
                                     1
## + nationalityJapan
                                      1
                                             0.83 11864 1527.0
                                      1 0.71 11864 1527.0
1 0.67 11864 1527.0
## + `nationalityNorthern Ireland`
## + nationalityCroatia
                                      1
## + nationalityIreland
                                      1
                                           0.63 11864 1527.0
                                           0.25 11864 1527.0
## + nationalityGhana
                                      1
## + nationalityNetherlands
                                           0.13 11864 1527.0
                                      1
## + `nationalityUnited States`
                                             0.00 11865 1527.0
## + nationalityAustria
                                      1
                                             0.00 11865 1527.0
## + nationalityMali
                                             0.00 11865 1527.0
                                      1
## - clubChelsea
                                           200.10 12065 1530.7
                                      1
                                           209.90 12074 1531.1
## - new_foreign
                                           310.10 12175 1534.9
## - nationalityBelgium
                                     1
                                           323.82 12188 1535.4
## - nationalityFrance
                                      1
## - positionSS
                                     1
                                           337.88 12202 1536.0
## - positionCF
                                           667.99 12533 1548.2
                                           790.34 12655 1552.7
## - `clubManchester+City`
                                      1
                                     1
                                           957.12 12822 1558.7
## - big_club
                                     1
                                           994.38 12859 1560.1
## - fpl_points
## - fpl_value
                                     1
                                          2050.82 13915 1596.4
                                          2228.85 14094 1602.2
## - page_views
```

```
2594.76 14459 1610.0
## - ns(age, 3)
##
## Step: AIC=1520.71
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
       nationalityFrance + nationalityBelgium + new foreign + clubChelsea +
##
       positionDM
##
##
                                      Df Sum of Sq
                                                     RSS
                                                             AIC
                                             141.52 11561 1517.1
## + position_cat
## + nationalityArgentina
                                             132.40 11570 1517.5
                                             122.68 11580 1517.9
## + clubBurnley
                                        1
## + positionLW
                                        1
                                             103.79 11599 1518.6
## + nationalityNorway
                                        1
                                            103.55 11599 1518.6
## + clubBournemouth
                                             102.40 11600 1518.7
                                        1
## + club_id
                                        1
                                             90.15 11612 1519.2
                                              87.67 11615 1519.2
## + positionRW
                                        1
## + nationalitySenegal
                                              81.22 11621 1519.5
## + clubSouthampton
                                              80.98 11622 1519.5
                                        1
                                              75.94 11626 1519.7
## + positionRM
                                        1
## + nationalityEngland
                                        1
                                             70.70 11632 1519.9
## + nationalityEcuador
                                              65.09 11637 1520.2
                                              62.32 11640 1520.2
## + nationalityNigeria
                                        1
## + positionCB
                                              59.86 11643 1520.3
## + `nationalityCzech Republic`
                                              56.09 11646 1520.5
## <none>
                                                    11702 1520.7
## + `clubNewcastle+United`
                                              49.65 11653 1520.8
                                        1
## + nationalityScotland
                                              48.93 11654 1520.8
                                        1
## + nationalitySwitzerland
                                             41.28 11661 1521.1
                                        1
## + `nationalityCote d'Ivoire`
                                        1
                                              40.78 11662 1521.1
## + positionGK
                                        1
                                              39.15 11663 1521.2
## + clubTottenham
                                        1
                                              38.35 11664 1521.2
## + region
                                        1
                                              36.88 11666 1521.3
                                              36.85 11666 1521.3
## + clubLiverpool
                                        1
## + nationalitySpain
                                        1
                                              36.41 11666 1521.3
## + clubHuddersfield
                                              35.94 11666 1521.3
                                       1
## + nationalityKenya
                                       1
                                              35.62 11667 1521.3
## + `clubStoke+City`
                                        1
                                              33.23 11669 1521.4
## + `clubWest+Ham`
                                        1
                                              29.01 11674 1521.6
## + `nationalityThe Gambia`
                                              25.42 11677 1521.7
                                       1
## + positionLM
                                              23.23 11679 1521.8
## + nationalitySerbia
                                              23.09 11679 1521.8
                                        1
## + `nationalitySouth Korea`
                                              21.38 11681 1521.9
                                        1
## + nationalityEstonia
                                              20.18 11682 1521.9
                                        1
## + nationalityIceland
                                              19.66 11683 1521.9
## + `clubWest+Brom`
                                              19.14 11683 1522.0
                                        1
## + nationalityCanada
                                        1
                                              18.00 11684 1522.0
## + positionCM
                                              17.65 11685 1522.0
## + `nationalityTrinidad and Tobago`
                                        1
                                              17.57 11685 1522.0
## + nationalityBermuda
                                        1
                                              16.87 11686 1522.0
## + clubWatford
                                              16.15 11686 1522.1
                                        1
## + nationalityFinland
                                        1
                                              13.32 11689 1522.2
## + `clubBrighton+and+Hove`
                                        1
                                              12.73 11690 1522.2
## + `clubManchester+United`
                                        1
                                              11.96 11690 1522.2
```

```
## + nationalityVenezuela
                                            11.57 11691 1522.3
## + nationalityIsrael
                                            8.81 11694 1522.4
## + clubArsenal
                                            7.56 11695 1522.4
                                             6.95 11696 1522.4
## + nationalityCuracao
                                    1
                                    1
## + nationalitySweden
                                             6.63 11696 1522.5
                                    1
                                             6.30 11696 1522.5
## + new signing
## + nationalityColombia
                                             6.15 11696 1522.5
                                    1
                                            5.39 11697 1522.5
## + nationalityArmenia
## + nationalityCameroon
                                     1
                                             5.18 11697 1522.5
## + nationalityUruguay
                                     1
                                             5.07 11697 1522.5
## + `nationalityNew Zealand`
                                    1
                                             4.95 11698 1522.5
## + clubEverton
                                             4.85 11698 1522.5
                                      1
## + `clubCrystal+Palace`
                                     1
                                             4.72 11698 1522.5
                                             4.54 11698 1522.5
## + nationalityRomania
## + nationalityPortugal
                                             4.23 11698 1522.5
                                    1
## + nationalityEgypt
                                     1
                                             4.14 11698 1522.5
                                    1
                                             3.95 11698 1522.6
## + positionLB
## + nationalityMorocco
                                             3.92 11698 1522.6
## + nationalityPoland
                                             3.46 11699 1522.6
                                    1
## + nationalityJamaica
                                    1
                                             3.33 11699 1522.6
                                    1
## + nationalityDenmark
                                             3.25 11699 1522.6
## + nationalityWales
                                             3.06 11699 1522.6
                                    1
                                             3.05 11699 1522.6
## + nationalityChile
## + nationalityItaly
                                     1
                                             2.70 11700 1522.6
## + `nationalityCongo DR`
                                             2.60 11700 1522.6
                                    1
## + nationalityBosnia
                                    1
                                             2.09 11700 1522.6
## + nationalitySlovenia
                                             2.07 11700 1522.6
                                     1
                                            1.97 11700 1522.6
## + nationalityGreece
                                     1
## + nationalityGhana
                                            1.48 11701 1522.7
                                    1
## + nationalityJapan
                                     1
                                            1.13 11701 1522.7
                                     1
## + nationalityCroatia
                                             1.13 11701 1522.7
## + positionRB
                                     1
                                             1.10 11701 1522.7
## + nationalityGermany
                                             1.10 11701 1522.7
                                             1.09 11701 1522.7
## + nationalityTunisia
                                      1
## + `clubLeicester+City`
                                      1
                                             0.92 11702 1522.7
## + nationalityBrazil
                                            0.83 11702 1522.7
                                     1
## + nationalityIreland
                                     1
                                           0.83 11702 1522.7
## + clubSwansea
                                     1
                                           0.68 11702 1522.7
                                         0.58 11702 1522.7
## + nationalityNetherlands
                                     1
## + nationalityAustralia
                                           0.49 11702 1522.7
## + `nationalityNorthern Ireland`
                                            0.21 11702 1522.7
## + nationalityAustria
                                           0.20 11702 1522.7
                                      1
                                            0.15 11702 1522.7
## + `nationalityUnited States`
                                      1
                                             0.02 11702 1522.7
## + nationalityMali
                                      1
                                           162.16 11865 1525.0
## - positionDM
                                      1
                                           182.21 11885 1525.8
## - new_foreign
                                      1
## - clubChelsea
                                      1
                                           189.45 11892 1526.1
## - nationalityFrance
                                           244.11 11947 1528.2
                                      1
## - nationalityBelgium
                                      1
                                           321.27 12024 1531.2
## - positionSS
                                      1
                                           327.31 12030 1531.4
                                     1
                                           660.93 12363 1544.0
## - positionCF
                                 1
## - `clubManchester+City`
                                           746.35 12449 1547.2
## - fpl_points
                                    1
                                           923.01 12626 1553.6
## - big club
                                           925.65 12628 1553.7
```

```
2067.60 13770 1593.5
## - page_views
## - fpl_value
                                           2204.50 13907 1598.1
## - ns(age, 3)
                                           2491.27 14194 1603.5
##
## Step: AIC=1517.11
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
##
       positionDM + position_cat
##
##
                                      Df Sum of Sq
                                                     RSS
                                           121.46 11440 1514.3
## + nationalityArgentina
                                            114.13 11447 1514.5
## + clubBurnley
## + nationalityNorway
                                          106.06 11455 1514.9
## + club_id
                                           99.71 11461 1515.1
                                      1
## + clubBournemouth
                                       1
                                            94.15 11467 1515.3
## + nationalitySenegal
                                             83.15 11478 1515.8
                                       1
## + clubSouthampton
                                             78.48 11482 1516.0
## + positionRM
                                             71.02 11490 1516.3
                                       1
                                             65.32 11496 1516.5
## + nationalityEngland
                                       1
## + nationalityEcuador
                                       1
                                             59.37 11502 1516.8
## + positionCM
                                             52.99 11508 1517.0
                                             52.84 11508 1517.0
## + nationalityNigeria
                                       1
## + `nationalityCzech Republic`
                                             52.30 11509 1517.0
## <none>
                                                   11561 1517.1
## + nationalitySwitzerland
                                       1
                                             48.89 11512 1517.2
## + region
                                             40.26 11521 1517.5
                                       1
## + nationalityKenya
                                             40.01 11521 1517.5
                                       1
## + `clubNewcastle+United`
                                       1
                                             39.96 11521 1517.5
## + clubHuddersfield
                                      1
                                             37.28 11524 1517.6
## + clubTottenham
                                       1
                                             36.94 11524 1517.6
## + `clubStoke+City`
                                       1
                                             34.74 11526 1517.7
## + nationalitySpain
                                       1
                                             33.96 11527 1517.8
## + positionLW
                                             32.68 11528 1517.8
                                       1
## + nationalityScotland
                                       1
                                             31.87 11529 1517.8
## + `nationalityCote d'Ivoire`
                                             30.33 11531 1517.9
                                       1
## + `clubWest+Ham`
                                       1
                                             29.22 11532 1518.0
## + clubLiverpool
                                       1
                                             27.42 11534 1518.0
## + positionRW
                                             27.20 11534 1518.0
## + nationalitySerbia
                                             26.42 11534 1518.1
## + `nationalityTrinidad and Tobago`
                                             24.65 11536 1518.1
## + positionCB
                                             23.90 11537 1518.2
                                       1
## + nationalityBermuda
                                             19.57 11541 1518.3
                                       1
## + positionLB
                                             19.50 11541 1518.3
## + nationalityEstonia
                                             18.80 11542 1518.4
## + `nationalityThe Gambia`
                                             16.58 11544 1518.5
                                       1
## + positionLM
                                       1
                                             15.39 11546 1518.5
## + nationalityCanada
                                             15.17 11546 1518.5
                                       1
## + clubWatford
                                       1
                                             15.11 11546 1518.5
## + `nationalitySouth Korea`
                                       1
                                             13.95 11547 1518.6
## + nationalityIceland
                                             13.47 11548 1518.6
                                      1
## + `clubWest+Brom`
                                     1
                                            13.35 11548 1518.6
## + nationalityColombia
                                      1 13.20 11548 1518.6
## + `clubBrighton+and+Hove`
                                             12.73 11548 1518.6
                                      1
```

```
## + nationalityVenezuela
                                             12.68 11548 1518.6
                                             12.27 11549 1518.6
## + new_signing
## + nationalityIsrael
                                             11.52 11549 1518.7
                                             11.44 11550 1518.7
## + clubArsenal
                                       1
## + `clubManchester+United`
                                             11.17 11550 1518.7
## + nationalityMorocco
                                             10.00 11551 1518.7
                                       1
## + nationalityCuracao
                                              9.06 11552 1518.8
                                              7.29 11554 1518.8
## + nationalityArmenia
                                      1
## + nationalityFinland
                                       1
                                              7.06 11554 1518.8
## + positionRB
                                      1
                                              6.96 11554 1518.8
## + nationalityPortugal
                                              6.64 11554 1518.8
## + `clubCrystal+Palace`
                                              5.99 11555 1518.9
                                       1
## + nationalityUruguay
                                       1
                                              4.52 11556 1518.9
                                              4.35 11557 1518.9
## + nationalityAustralia
## + `nationalityNew Zealand`
                                              3.77 11557 1519.0
                                       1
## + `nationalityCongo DR`
                                       1
                                              3.59 11557 1519.0
                                              3.56 11557 1519.0
## + nationalityItaly
                                       1
## + nationalityWales
                                              3.34 11558 1519.0
                                              2.86 11558 1519.0
## + nationalityCameroon
                                       1
                                              2.85 11558 1519.0
## + nationalitySweden
                                       1
## + nationalityGreece
                                       1
                                              2.67 11558 1519.0
## + nationalityJamaica
                                              2.67 11558 1519.0
                                      1
                                              2.11 11559 1519.0
## + nationalityEgypt
## + nationalityTunisia
                                      1
                                              2.00 11559 1519.0
## + clubEverton
                                      1
                                              1.69 11559 1519.0
## + nationalityPoland
                                     1
                                              1.37 11560 1519.1
## + nationalityJapan
                                              1.18 11560 1519.1
                                       1
                                              0.96 11560 1519.1
## + nationalitySlovenia
                                       1
## + nationalityNetherlands
                                              0.95 11560 1519.1
                                      1
## + nationalityCroatia
                                              0.94 11560 1519.1
                                      1
## + nationalityChile
                                       1
                                              0.89 11560 1519.1
## + nationalityDenmark
                                       1
                                              0.78 11560 1519.1
## + nationalityRomania
                                              0.74 11560 1519.1
## + nationalityIreland
                                              0.70 11560 1519.1
                                       1
## + nationalityGhana
                                       1
                                              0.58 11560 1519.1
## + nationalityBrazil
                                              0.27 11561 1519.1
                                       1
## + nationalityGermany
                                              0.20 11561 1519.1
## + nationalityBosnia
                                              0.18 11561 1519.1
                                       1
## + nationalityMali
                                              0.14 11561 1519.1
## + `nationalityNorthern Ireland`
                                              0.07 11561 1519.1
## + positionGK
                                              0.07 11561 1519.1
## + nationalityAustria
                                              0.01 11561 1519.1
                                       1
                                              0.01 11561 1519.1
## + `nationalityUnited States`
                                       1
                                              0.00 11561 1519.1
## + `clubLeicester+City`
                                       1
                                              0.00 11561 1519.1
## + clubSwansea
                                       1
                                            122.19 11683 1520.0
## - new_foreign
                                       1
## - position_cat
                                       1
                                            141.52 11702 1520.7
## - clubChelsea
                                       1
                                            193.45 11754 1522.8
## - nationalityFrance
                                       1
                                            235.47 11796 1524.4
## - positionDM
                                       1
                                            239.14 11800 1524.5
                                            267.48 11828 1525.6
## - positionSS
                                      1
## - nationalityBelgium
                                     1
                                            307.98 11869 1527.2
## - positionCF
                                      1
                                            473.35 12034 1533.6
                                            675.32 12236 1541.2
## - fpl_points
```

```
## - big_club
                                            719.03 12280 1542.9
## - `clubManchester+City`
                                            723.10 12284 1543.0
                                       1
## - page_views
                                          1961.59 13522 1587.2
## - fpl_value
                                       1
                                           2182.94 13744 1594.7
## - ns(age, 3)
                                           2527.37 14088 1602.1
##
## Step: AIC=1514.26
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
##
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
       positionDM + position_cat + nationalityArgentina
##
##
                                      Df Sum of Sq
                                                     RSS
                                                            AIC
## + clubBurnley
                                            106.78 11333 1511.9
                                             97.18 11342 1512.3
## + nationalityNorway
                                       1
## + nationalitySenegal
                                       1
                                             88.24 11351 1512.7
## + clubBournemouth
                                       1
                                             86.23 11353 1512.8
## + clubSouthampton
                                             81.39 11358 1513.0
                                             81.22 11358 1513.0
## + club id
                                       1
                                             67.37 11372 1513.5
## + positionRM
                                       1
## + positionCM
                                       1
                                             63.00 11376 1513.7
## + nationalityEcuador
                                             56.31 11383 1514.0
## + nationalityNigeria
                                      1
                                             51.13 11388 1514.2
## + nationalitySwitzerland
                                             50.48 11389 1514.2
## <none>
                                                   11440 1514.3
## + `clubNewcastle+United`
                                      1
                                             48.82 11391 1514.3
## + `nationalityCzech Republic`
                                             47.86 11392 1514.3
                                       1
## + nationalityEngland
                                       1
                                             44.51 11395 1514.5
## + nationalitySpain
                                             43.98 11396 1514.5
                                       1
## + `clubStoke+City`
                                       1
                                             40.98 11398 1514.6
## + nationalityKenya
                                       1
                                             40.91 11399 1514.6
## + clubTottenham
                                       1
                                             35.48 11404 1514.8
## + nationalitySerbia
                                             29.68 11410 1515.1
                                             29.27 11410 1515.1
## + nationalityScotland
                                       1
## + clubHuddersfield
                                       1
                                             29.14 11410 1515.1
## + positionRW
                                             28.72 11411 1515.1
                                       1
## + positionLW
                                             27.96 11412 1515.1
## + `nationalityCote d'Ivoire`
                                             27.36 11412 1515.2
                                       1
## + `nationalityTrinidad and Tobago`
                                             22.87 11417 1515.3
## + clubWatford
                                             21.88 11418 1515.4
                                       1
## + positionCB
                                             21.02 11418 1515.4
## + clubLiverpool
                                             20.92 11419 1515.4
                                       1
## + `clubWest+Ham`
                                             20.55 11419 1515.4
                                       1
## + nationalityBermuda
                                             20.53 11419 1515.4
                                       1
## + region
                                             19.59 11420 1515.5
## + nationalityEstonia
                                             17.19 11422 1515.6
                                       1
## + `nationalityThe Gambia`
                                       1
                                             16.29 11423 1515.6
## + `clubWest+Brom`
                                      1
                                             16.12 11423 1515.6
## + nationalityCanada
                                       1
                                             14.81 11425 1515.7
## + new_signing
                                       1
                                             14.73 11425 1515.7
## + `clubBrighton+and+Hove`
                                             14.16 11425 1515.7
                                      1
## + positionLB
                                      1
                                             13.95 11426 1515.7
## + nationalityVenezuela
                                      1
                                            13.11 11426 1515.7
## + `nationalitySouth Korea`
                                      1
                                             13.04 11426 1515.7
```

```
## + nationalityIsrael
                                             12.84 11427 1515.7
## + nationalityIceland
                                             12.65 11427 1515.8
## + positionLM
                                             12.32 11427 1515.8
                                             11.33 11428 1515.8
## + nationalityColombia
                                       1
## + nationalityMorocco
                                       1
                                             10.63 11429 1515.8
## + clubArsenal
                                              9.39 11430 1515.9
                                       1
## + nationalityPortugal
                                              8.97 11430 1515.9
                                              8.64 11431 1515.9
## + positionRB
                                       1
## + nationalityCuracao
                                       1
                                              8.55 11431 1515.9
                                              8.40 11431 1515.9
## + nationalityFinland
                                       1
## + nationalityArmenia
                                              7.93 11432 1515.9
## + `clubManchester+United`
                                              5.91 11434 1516.0
                                       1
## + nationalityUruguay
                                       1
                                              5.21 11434 1516.0
                                              5.01 11434 1516.0
## + `clubCrystal+Palace`
## + nationalityWales
                                              4.77 11435 1516.1
                                       1
## + `nationalityCongo DR`
                                       1
                                              4.41 11435 1516.1
## + `nationalityNew Zealand`
                                              3.96 11436 1516.1
                                       1
## + nationalityCameroon
                                              3.56 11436 1516.1
## + nationalityJamaica
                                              3.37 11436 1516.1
                                       1
                                              3.24 11436 1516.1
## + nationalitySweden
                                       1
## + nationalityAustralia
                                       1
                                              3.22 11436 1516.1
## + nationalityItaly
                                              2.95 11436 1516.1
                                      1
                                              2.08 11437 1516.2
## + nationalityBrazil
## + nationalityGreece
                                      1
                                              2.03 11438 1516.2
                                              1.96 11438 1516.2
## + nationalityChile
                                     1
## + nationalityEgypt
                                      1
                                              1.89 11438 1516.2
## + nationalityIreland
                                              1.88 11438 1516.2
                                       1
                                              1.83 11438 1516.2
## + nationalityPoland
                                       1
## + nationalityTunisia
                                              1.66 11438 1516.2
                                      1
## + nationalityJapan
                                      1
                                              1.48 11438 1516.2
## + nationalityCroatia
                                      1
                                              1.21 11438 1516.2
## + clubEverton
                                       1
                                              1.20 11438 1516.2
## + nationalityDenmark
                                              1.18 11438 1516.2
## + nationalityRomania
                                              1.11 11438 1516.2
                                       1
## + nationalityGermany
                                       1
                                              1.08 11438 1516.2
## + nationalitySlovenia
                                              0.99 11438 1516.2
                                       1
## + positionGK
                                              0.97 11438 1516.2
## + nationalityGhana
                                      1
                                              0.40 11439 1516.2
                                              0.33 11439 1516.2
## + nationalityBosnia
                                              0.30 11439 1516.2
## + nationalityMali
## + nationalityNetherlands
                                              0.23 11439 1516.2
## + `clubLeicester+City`
                                       1
                                              0.07 11439 1516.2
## + clubSwansea
                                              0.05 11439 1516.2
                                       1
                                              0.04 11439 1516.2
## + nationalityAustria
                                       1
                                              0.02 11440 1516.3
## + `nationalityNorthern Ireland`
## + `nationalityUnited States`
                                              0.01 11440 1516.3
                                       1
                                            121.46 11561 1517.1
## - nationalityArgentina
                                       1
## - position_cat
                                            130.58 11570 1517.5
                                       1
## - new_foreign
                                       1
                                            141.34 11581 1517.9
## - clubChelsea
                                       1
                                            186.03 11626 1519.7
                                            234.41 11674 1521.6
## - positionDM
                                       1
                                            249.73 11689 1522.2
## - nationalityFrance
                                      1
## - positionSS
                                      1
                                            297.97 11738 1524.1
                                            329.54 11769 1525.3
## - nationalityBelgium
```

```
## - positionCF
                                           474.13 11914 1530.9
                                           680.77 12120 1538.8
## - big_club
## - `clubManchester+City`
                                           696.85 12136 1539.5
## - fpl_points
                                           717.94 12157 1540.3
                                      1
## - page_views
                                      1
                                          2028.32 13468 1587.3
                                      1
                                          2075.79 13515 1589.0
## - fpl value
                                          2605.74 14045 1602.7
## - ns(age, 3)
## Step: AIC=1511.94
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
       positionDM + position_cat + nationalityArgentina + clubBurnley
##
##
##
                                     Df Sum of Sq
                                                    RSS
## + clubBournemouth
                                           103.17 11230 1509.7
                                            101.17 11232 1509.8
## + nationalityNorway
## + nationalitySenegal
                                           80.87 11252 1510.7
                                           68.96 11264 1511.1
## + positionRM
                                      1
## + clubSouthampton
                                      1
                                            68.70 11264 1511.1
## + positionCM
                                     1 67.18 11266 1511.2
## + nationalityEcuador
                                            58.15 11274 1511.6
                                      1 52.87 11280 1511.8
## + nationalityNigeria
## + `nationalityCzech Republic`
                                            49.47 11283 1511.9
                                                   11333 1511.9
## <none>
## + nationalitySwitzerland
                                      1
                                            46.53 11286 1512.0
## + `clubNewcastle+United`
                                            42.23 11290 1512.2
                                      1
                                            41.39 11291 1512.3
## + club_id
                                      1
## + nationalityKenya
                                            38.56 11294 1512.4
                                      1
## + nationalitySpain
                                     1
                                            37.85 11295 1512.4
## + nationalityScotland
                                      1
                                            36.96 11296 1512.4
## + clubHuddersfield
                                      1
                                            36.86 11296 1512.4
## + positionLW
                                            34.32 11298 1512.5
## + clubTottenham
                                            33.83 11299 1512.6
                                      1
## + nationalityEngland
                                      1
                                            33.17 11300 1512.6
## + `clubStoke+City`
                                            32.19 11300 1512.6
                                      1
## + positionRW
                                            30.63 11302 1512.7
## + clubWatford
                                            29.42 11303 1512.8
                                      1
## + `nationalityCote d'Ivoire`
                                            28.85 11304 1512.8
## + nationalitySerbia
                                            26.95 11306 1512.8
## + `nationalityTrinidad and Tobago`
                                            23.84 11309 1513.0
## + `clubWest+Brom`
                                            23.24 11310 1513.0
                                       1
                                            21.55 11311 1513.1
## + clubLiverpool
## + positionCB
                                            20.26 11312 1513.1
## + nationalityBermuda
                                            18.57 11314 1513.2
## + `nationalityThe Gambia`
                                            17.63 11315 1513.2
                                      1
## + nationalityEstonia
                                      1
                                            17.44 11315 1513.2
## + new_signing
                                      1
                                            16.28 11316 1513.3
## + positionLB
                                      1
                                            15.19 11318 1513.3
## + `nationalitySouth Korea`
                                      1
                                            14.94 11318 1513.3
## + `clubWest+Ham`
                                     1
                                            14.10 11319 1513.4
## + region
                                     1
                                            11.26 11321 1513.5
## + nationalityIsrael
                                     1
                                            11.26 11321 1513.5
## + nationalityColombia
                                            11.08 11322 1513.5
```

```
## + nationalityVenezuela
                                             11.02 11322 1513.5
## + nationalityIreland
                                             10.88 11322 1513.5
## + `clubBrighton+and+Hove`
                                             10.37 11322 1513.5
                                             10.17 11322 1513.5
## + positionRB
                                       1
## + nationalityCuracao
                                              9.48 11323 1513.6
## + nationalityMorocco
                                              9.32 11323 1513.6
                                       1
## + clubArsenal
                                              9.09 11324 1513.6
                                      1
                                              8.64 11324 1513.6
## + nationalityArmenia
## + nationalityPortugal
                                       1
                                              8.15 11324 1513.6
## + nationalityFinland
                                       1
                                              7.95 11325 1513.6
## + `clubManchester+United`
                                       1
                                              6.65 11326 1513.7
## + nationalityWales
                                              6.22 11326 1513.7
                                       1
## + nationalityUruguay
                                       1
                                              4.45 11328 1513.8
                                              4.12 11329 1513.8
## + nationalityIceland
## + nationalityItaly
                                              3.96 11329 1513.8
                                       1
## + nationalityAustralia
                                       1
                                              3.93 11329 1513.8
                                              3.27 11329 1513.8
## + `nationalityCongo DR`
                                       1
## + `nationalityNew Zealand`
                                              3.17 11330 1513.8
## + nationalityCameroon
                                              2.84 11330 1513.8
                                       1
## + nationalitySweden
                                       1
                                              2.83 11330 1513.8
## + nationalityJamaica
                                       1
                                              2.70 11330 1513.8
## + nationalityGreece
                                              2.50 11330 1513.8
                                              2.35 11330 1513.8
## + nationalityCanada
                                      1
## + `clubCrystal+Palace`
                                              2.16 11330 1513.8
                                      1
## + nationalityEgypt
                                              2.12 11331 1513.9
                                      1
## + nationalityChile
                                      1
                                              2.08 11331 1513.9
## + nationalityTunisia
                                              1.99 11331 1513.9
                                       1
                                              1.91 11331 1513.9
## + nationalityBrazil
                                       1
## + positionGK
                                              1.34 11331 1513.9
                                      1
## + positionLM
                                      1
                                              1.30 11331 1513.9
## + nationalityPoland
                                      1
                                              1.21 11332 1513.9
## + clubSwansea
                                       1
                                              1.11 11332 1513.9
## + nationalityGhana
                                              1.03 11332 1513.9
                                              1.01 11332 1513.9
## + `clubLeicester+City`
                                       1
## + nationalityCroatia
                                       1
                                              1.01 11332 1513.9
## + nationalityNetherlands
                                              0.98 11332 1513.9
                                       1
## + nationalityRomania
                                              0.96 11332 1513.9
## + nationalitySlovenia
                                              0.87 11332 1513.9
                                      1
## + nationalityJapan
                                              0.84 11332 1513.9
## + nationalityDenmark
                                              0.71 11332 1513.9
                                       1
## + nationalityGermany
                                              0.61 11332 1513.9
## + nationalityBosnia
                                              0.32 11332 1513.9
                                       1
                                              0.27 11332 1513.9
## + clubEverton
                                       1
                                              0.14 11333 1513.9
## + nationalityMali
                                       1
                                              0.07 11333 1513.9
## + `nationalityNorthern Ireland`
## + `nationalityUnited States`
                                              0.01 11333 1513.9
                                       1
## + nationalityAustria
                                       1
                                              0.00 11333 1513.9
## - clubBurnley
                                       1
                                            106.78 11440 1514.3
## - nationalityArgentina
                                       1
                                            114.11 11447 1514.5
## - position_cat
                                       1
                                            122.97 11456 1514.9
                                            143.21 11476 1515.7
## - new_foreign
                                       1
## - clubChelsea
                                      1
                                            184.39 11517 1517.4
## - nationalityFrance
                                      1
                                            238.84 11572 1519.5
                                            241.52 11574 1519.6
## - positionDM
```

```
## - positionSS
                                           301.80 11634 1522.0
                                           337.41 11670 1523.4
## - nationalityBelgium
                                      1
                                           449.79 11782 1527.8
## - positionCF
## - big_club
                                           645.73 11978 1535.4
                                      1
## - `clubManchester+City`
                                      1
                                           701.77 12034 1537.6
## - fpl points
                                      1 764.22 12097 1540.0
                                     1 1986.57 13319 1584.2
## - page views
## - fpl_value
                                      1
                                          2014.56 13347 1585.2
## - ns(age, 3)
                                          2653.18 13986 1602.7
##
## Step: AIC=1509.73
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
##
      positionDM + position_cat + nationalityArgentina + clubBurnley +
##
       clubBournemouth
##
##
                                     Df Sum of Sq
                                                    RSS
                                                           AIC
## + nationalitySenegal
                                            75.38 11154 1508.6
                                            71.95 11158 1508.8
## + positionRM
## + positionCM
                                      1
                                            70.78 11159 1508.8
## + nationalityNorway
                                            70.33 11159 1508.8
                                     1 59.61 11170 1509.3
1 57.61 11172 1509.4
## + nationalityEcuador
## + nationalityNigeria
                                     1
                                            53.01 11176 1509.6
## + clubSouthampton
## + `nationalityCzech Republic`
                                     1 52.54 11177 1509.6
## <none>
                                                  11230 1509.7
## + clubHuddersfield
                                            45.79 11184 1509.9
                                      1
## + nationalitySwitzerland
                                     1
                                            43.31 11186 1510.0
## + clubWatford
                                     1
                                            39.74 11190 1510.1
                                     1
1
1
                                            39.47 11190 1510.1
## + nationalityScotland
## + nationalityKenya
                                            38.50 11191 1510.2
## + positionRW
                                            35.46 11194 1510.3
## + `clubNewcastle+United`
                                            35.04 11194 1510.3
                                     1
## + `clubWest+Brom`
                                     1
                                            33.24 11196 1510.4
## + clubTottenham
                                     1
                                            32.42 11197 1510.4
## + nationalitySpain
                                     1
                                            31.02 11198 1510.5
## + nationalityEngland
                                            25.81 11204 1510.7
                                      1
## + nationalitySerbia
                                      1
                                            25.41 11204 1510.7
## + positionLW
                                            24.96 11205 1510.7
## + `nationalityTrinidad and Tobago`
                                            24.58 11205 1510.7
## + clubLiverpool
                                            22.76 11207 1510.8
                                      1
## + `clubStoke+City`
                                            21.92 11208 1510.8
                                      1
## + `nationalityCote d'Ivoire`
                                            20.57 11209 1510.9
                                      1
## + `nationalityThe Gambia`
                                            19.59 11210 1510.9
                                            17.22 11212 1511.0
## + nationalityEstonia
                                      1
## + nationalityBermuda
                                      1
                                            17.05 11212 1511.0
## + positionCB
                                     1
                                            16.47 11213 1511.1
## + `nationalitySouth Korea`
                                     1
                                            16.14 11213 1511.1
## + positionLB
                                      1
                                            15.14 11214 1511.1
                                     1
                                            11.10 11218 1511.3
## + nationalityIreland
## + positionRB
                                     1
                                            10.47 11219 1511.3
## + nationalityCuracao
                                     1
                                            10.37 11219 1511.3
                                            10.27 11219 1511.3
## + nationalityIsrael
                                      1
```

```
10.09 11219 1511.3
## + nationalityColombia
                                              9.82 11220 1511.3
## + region
## + nationalityArmenia
                                              9.72 11220 1511.3
## + nationalityVenezuela
                                              8.91 11221 1511.4
                                       1
## + new signing
                                       1
                                              8.56 11221 1511.4
## + clubArsenal
                                              8.34 11221 1511.4
                                      1
## + `clubWest+Ham`
                                              8.02 11222 1511.4
                                      1
                                              7.76 11222 1511.4
## + nationalityMorocco
## + nationalityFinland
                                       1
                                              7.57 11222 1511.4
## + `clubManchester+United`
                                      1
                                              7.26 11222 1511.4
## + `clubBrighton+and+Hove`
                                      1
                                              7.15 11222 1511.4
                                              6.73 11223 1511.5
## + nationalityPortugal
                                       1
## + `nationalityCongo DR`
                                       1
                                              6.58 11223 1511.5
                                              5.01 11224 1511.5
## + nationalityItaly
                                      1
                                              5.01 11224 1511.5
## + nationalityBosnia
                                      1
## + nationalityIceland
                                      1
                                              4.96 11225 1511.5
                                              4.49 11225 1511.5
## + club_id
                                      1
## + clubSwansea
                                              4.29 11225 1511.6
                                              3.93 11226 1511.6
## + nationalityWales
                                      1
                                              3.61 11226 1511.6
## + nationalityUruguay
                                       1
## + nationalityPoland
                                       1
                                              3.60 11226 1511.6
## + `clubLeicester+City`
                                              3.31 11226 1511.6
                                              3.28 11226 1511.6
## + nationalityGreece
                                      1
## + nationalitySweden
                                              2.56 11227 1511.6
                                       1
## + `nationalityNew Zealand`
                                              2.42 11227 1511.6
                                      1
## + nationalityCanada
                                      1
                                              2.32 11227 1511.6
## + nationalityTunisia
                                              2.27 11227 1511.6
                                       1
                                              2.26 11227 1511.6
## + nationalityCameroon
                                       1
                                              2.17 11227 1511.7
## + nationalityEgypt
                                     1
## + nationalityGhana
                                     1
                                              2.06 11228 1511.7
                                      1
## + nationalityJamaica
                                              2.04 11228 1511.7
## + nationalityChile
                                      1
                                              1.95 11228 1511.7
## + positionLM
                                              1.86 11228 1511.7
                                              1.66 11228 1511.7
## + nationalityBrazil
                                       1
## + nationalityNetherlands
                                       1
                                              1.02 11228 1511.7
## + nationalityRomania
                                              0.93 11229 1511.7
                                       1
## + nationalityCroatia
                                              0.89 11229 1511.7
## + `nationalityNorthern Ireland`
                                             0.67 11229 1511.7
                                       1
                                              0.57 11229 1511.7
## + nationalitySlovenia
                                       1
                                              0.50 11229 1511.7
## + positionGK
                                       1
## + nationalityJapan
                                              0.37 11229 1511.7
## + nationalityGermany
                                              0.36 11229 1511.7
                                       1
## + `clubCrystal+Palace`
                                              0.28 11229 1511.7
                                       1
## + clubEverton
                                              0.26 11229 1511.7
                                       1
                                              0.23 11229 1511.7
## + nationalityDenmark
                                       1
                                              0.08 11229 1511.7
## + `nationalityUnited States`
                                       1
                                              0.08 11230 1511.7
## + nationalityAustria
                                       1
                                              0.06 11230 1511.7
## + nationalityMali
                                       1
## + nationalityAustralia
                                       1
                                              0.00 11230 1511.7
                                            103.17 11333 1511.9
## - clubBournemouth
                                       1
                                            105.16 11335 1512.0
## - nationalityArgentina
                                     1
## - position_cat
                                     1
                                            114.70 11344 1512.4
## - clubBurnley
                                      1
                                            123.72 11353 1512.8
                                            146.29 11376 1513.7
## - new foreign
                                       1
```

```
184.06 11414 1515.2
## - clubChelsea
## - positionDM
                                            217.36 11447 1516.5
                                       1
## - nationalityFrance
                                            246.49 11476 1517.7
## - positionSS
                                            283.13 11513 1519.2
                                      1
## - nationalityBelgium
                                       1
                                            324.52 11554 1520.8
## - positionCF
                                            427.37 11657 1524.9
                                      1
## - big club
                                      1 586.10 11816 1531.1
## - `clubManchester+City`
                                      1 710.90 11940 1536.0
## - fpl_points
                                       1
                                           831.85 12061 1540.6
                                       1 1937.82 13167 1581.0
## - fpl_value
## - page_views
                                       1 1959.32 13189 1581.7
                                           2662.79 13892 1601.6
## - ns(age, 3)
## Step: AIC=1508.64
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
##
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
       positionDM + position_cat + nationalityArgentina + clubBurnley +
##
##
       clubBournemouth + nationalitySenegal
##
##
                                      Df Sum of Sq RSS
                                                             AIC
## + nationalityNorway
                                            71.14 11083 1507.7
                                             69.90 11084 1507.7
## + positionRM
                                       1
## + positionCM
                                             61.22 11093 1508.1
## + clubSouthampton
                                             58.14 11096 1508.2
                                      1
## + nationalityEcuador
                                      1
                                             57.78 11096 1508.2
                                    1
## + nationalityNigeria
                                             55.99 11098 1508.3
## + `nationalityCzech Republic`
                                             52.25 11102 1508.5
## <none>
                                                   11154 1508.6
                                    1 45.49 11109 1508.8
1 39.89 11114 1509.0
## + nationalitySwitzerland
## + nationalityKenya
## + clubHuddersfield
                                      1
                                             39.60 11114 1509.0
## + clubWatford
                                      1
                                             35.93 11118 1509.2
## + nationalityScotland
                                             35.86 11118 1509.2
                                      1
                                             35.19 11119 1509.2
## + nationalitySpain
                                      1
                                      1
## + clubTottenham
                                             34.07 11120 1509.2
## + `clubNewcastle+United`
                                     1
                                             30.81 11123 1509.4
## + positionRW
                                      1
                                             30.14 11124 1509.4
                                             29.98 11124 1509.4
## + `clubWest+Brom`
                                      1
                                             28.58 11126 1509.5
## + clubLiverpool
                                       1
## + positionLW
                                             28.07 11126 1509.5
## + nationalitySerbia
                                             27.07 11127 1509.5
                                       1
                                          23.59 11131 1509.7
75.38 11230 1509.7
## + `nationalityTrinidad and Tobago`
                                       1
## - nationalitySenegal
                                       1
                                       1 20.16 11134 1509.8
1 19.01 11135 1509.8
1 18.95 11135 1509.8
## + `nationalityCote d'Ivoire`
## + `nationalityThe Gambia`
## + positionCB
## + nationalityBermuda
                                             18.56 11136 1509.9
                                      1
## + `clubStoke+City`
                                      1
                                             18.31 11136 1509.9
                                             18.29 11136 1509.9
## + nationalityEngland
                                      1
                                     1 18.21 11136 1509.9
1 16.88 11137 1509.9
## + positionLB
## + nationalityEstonia
                                     1 14.55 11140 1510.0
## + `nationalitySouth Korea`
## + nationalityIreland
                                             12.93 11141 1510.1
                                       1
```

```
11.68 11142 1510.2
## + nationalityIsrael
## + nationalityArmenia
                                            10.50 11144 1510.2
## + nationalityVenezuela
                                           9.92 11144 1510.2
                                             9.80 11144 1510.2
## + nationalityCuracao
                                     1
## + `clubBrighton+and+Hove`
                                      1
                                             9.72 11144 1510.2
## + nationalityColombia
                                             9.58 11145 1510.2
                                     1
## + positionRB
                                            8.99 11145 1510.3
                                     1
                                             8.46 11146 1510.3
## + nationalityMorocco
## + `clubManchester+United`
                                     1
                                             7.92 11146 1510.3
## + nationalityFinland
                                      1
                                             7.91 11146 1510.3
## + `nationalityCongo DR`
                                     1
                                             7.53 11147 1510.3
                                             6.96 11147 1510.3
## + nationalityPortugal
                                      1
## + clubArsenal
                                      1
                                             6.62 11148 1510.4
                                             5.99 11148 1510.4
## + new_signing
                                     1
                                             5.05 11149 1510.4
## + nationalityBosnia
                                     1
## + nationalityWales
                                     1
                                             4.68 11150 1510.4
                                     1
                                             4.54 11150 1510.5
## + nationalityIceland
## + nationalityItaly
                                             3.98 11150 1510.5
## + nationalityUruguay
                                             3.80 11150 1510.5
                                     1
                                             3.16 11151 1510.5
## + nationalityGreece
                                     1
                                    1
## + nationalityPoland
                                             3.14 11151 1510.5
## + club id
                                             3.08 11151 1510.5
                                     1
                                             3.01 11151 1510.5
## + `clubWest+Ham`
## + nationalitySweden
                                             2.82 11151 1510.5
## + clubSwansea
                                             2.82 11151 1510.5
## + `nationalityNew Zealand`
                                     1
                                             2.68 11152 1510.5
## + nationalityCameroon
                                             2.67 11152 1510.5
                                      1
                                             2.29 11152 1510.5
## + nationalityCanada
                                      1
## + nationalityJamaica
                                             2.29 11152 1510.5
                                     1
## + nationalityChile
                                     1
                                           2.08 11152 1510.5
## + nationalityTunisia
                                     1
                                             2.00 11152 1510.5
## + nationalityBrazil
                                     1
                                             1.95 11152 1510.6
## + nationalityEgypt
                                             1.89 11152 1510.6
## + `clubLeicester+City`
                                             1.82 11152 1510.6
                                      1
## + positionLM
                                      1
                                             1.61 11152 1510.6
## + nationalityGhana
                                     1
                                             1.47 11153 1510.6
## + nationalityRomania
                                     1
                                             1.13 11153 1510.6
## + nationalityCroatia
                                     1
                                             1.00 11153 1510.6
## + clubEverton
                                     1
                                             0.88 11153 1510.6
                                             0.85 11153 1510.6
## + region
                                      1
## + nationalityGermany
                                             0.77 11153 1510.6
## + nationalityJapan
                                      1
                                             0.61 11154 1510.6
## + nationalitySlovenia
                                             0.58 11154 1510.6
                                      1
## + `nationalityNorthern Ireland`
                                             0.47 11154 1510.6
                                      1
                                             0.46 11154 1510.6
## + nationalityNetherlands
                                             0.45 11154 1510.6
## + positionGK
                                      1
## + nationalityDenmark
                                      1
                                             0.40 11154 1510.6
## + nationalityMali
                                             0.17 11154 1510.6
## + `nationalityUnited States`
                                      1
                                             0.04 11154 1510.6
## + nationalityAustria
                                      1
                                             0.02 11154 1510.6
                                     1 0.02 11154 1510.6
## + nationalityAustralia
                                           0.01 11154 1510.6
## + `clubCrystal+Palace`
                                    1
                                     1 97.68 11252 1510.7
## - clubBournemouth
                                           109.99 11264 1511.2
## - nationalityArgentina
```

```
115.56 11270 1511.4
## - clubBurnley
                                            116.60 11271 1511.4
## - position_cat
                                       1
## - new foreign
                                            152.93 11307 1512.9
## - clubChelsea
                                            186.69 11341 1514.3
                                       1
## - positionDM
                                       1
                                            205.07 11359 1515.0
## - nationalityFrance
                                            258.16 11412 1517.2
                                       1
## - positionSS
                                            277.70 11432 1518.0
## - nationalityBelgium
                                            335.51 11490 1520.3
                                      1
## - positionCF
                                       1
                                            439.70 11594 1524.4
## - big_club
                                            596.95 11751 1530.6
                                       1
## - `clubManchester+City`
                                            719.59 11874 1535.4
                                            846.52 12001 1540.3
## - fpl_points
                                       1
                                           1912.43 13067 1579.4
## - fpl_value
                                       1
                                       1
                                           1965.04 13119 1581.3
## - page_views
## - ns(age, 3)
                                           2622.00 13776 1599.8
##
## Step: AIC=1507.69
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
##
       positionDM + position_cat + nationalityArgentina + clubBurnley +
##
       clubBournemouth + nationalitySenegal + nationalityNorway
##
                                      Df Sum of Sq RSS
## + positionRM
                                             68.43 11015 1506.8
## + positionCM
                                             64.15 11019 1507.0
## + clubSouthampton
                                             57.52 11026 1507.3
                                       1
## + nationalityEcuador
                                             57.32 11026 1507.3
                                       1
                                             55.03 11028 1507.4
## + nationalityNigeria
                                       1
## + `nationalityCzech Republic`
                                             52.26 11031 1507.5
                                      1
## <none>
                                                    11083 1507.7
## + nationalitySwitzerland
                                       1
                                             45.61 11037 1507.8
                                             39.09 11044 1508.1
## + nationalityKenya
## + clubWatford
                                             38.11 11045 1508.1
                                       1
                                             36.29 11047 1508.2
## + nationalityScotland
                                       1
## + clubHuddersfield
                                             36.02 11047 1508.2
                                       1
## + clubTottenham
                                      1
                                             31.83 11051 1508.4
## + clubLiverpool
                                      1
                                             31.66 11051 1508.4
## + `clubNewcastle+United`
                                      1
                                             30.85 11052 1508.4
                                             30.26 11053 1508.4
## + positionRW
                                       1
## + `clubWest+Brom`
                                             30.18 11053 1508.4
                                             29.42 11054 1508.5
## + positionLW
                                       1
## + nationalitySpain
                                             29.27 11054 1508.5
                                       1
## - clubBournemouth
                                             67.66 11151 1508.5
                                       1
## + nationalitySerbia
                                             27.22 11056 1508.6
                                             71.14 11154 1508.6
## - nationalityNorway
                                       1
## + `nationalityTrinidad and Tobago`
                                             23.45 11060 1508.7
## + nationalityEngland
                                             22.16 11061 1508.8
## + `nationalityCote d'Ivoire`
                                       1
                                             21.28 11062 1508.8
                                             76.19 11159 1508.8
## - nationalitySenegal
                                       1
## + positionCB
                                             19.67 11063 1508.9
                                       1
                                             19.34 11064 1508.9
## + positionLB
                                       1
## + nationalityBermuda
                                       1
                                             19.09 11064 1508.9
## + `nationalityThe Gambia`
                                             18.83 11064 1508.9
```

```
## + `clubStoke+City`
                                             16.46 11066 1509.0
## + nationalityEstonia
                                             16.19 11067 1509.0
## + `nationalitySouth Korea`
                                             14.49 11068 1509.1
## + nationalityIreland
                                             13.17 11070 1509.2
                                       1
## + nationalityIsrael
                                       1
                                             12.60 11070 1509.2
## + `clubBrighton+and+Hove`
                                      1 11.93 11071 1509.2
## + nationalityArmenia
                                      1 11.63 11071 1509.2
                                     1
## + `clubManchester+United`
                                             10.41 11073 1509.3
## + nationalityCuracao
                                       1
                                             9.58 11073 1509.3
                                              9.48 11074 1509.3
## + positionRB
                                      1
## + nationalityVenezuela
                                              9.31 11074 1509.3
                                              9.22 11074 1509.3
## + nationalityColombia
                                      1
                                     1
## + nationalityMorocco
                                              8.56 11074 1509.3
                                              8.42 11075 1509.3
## + nationalityFinland
## + nationalityPortugal
                                              6.91 11076 1509.4
                                     1
## + `nationalityCongo DR`
                                      1
                                              6.56 11076 1509.4
                                              6.30 11077 1509.4
## + clubArsenal
                                      1
## + new signing
                                              5.80 11077 1509.5
## + nationalityIceland
                                              5.12 11078 1509.5
                                      1
                                              4.79 11078 1509.5
## + nationalityWales
                                      1
## + nationalityBosnia
                                     1
                                              4.39 11079 1509.5
## + nationalityUruguay
                                              3.82 11079 1509.5
                                     1
                                              3.51 11080 1509.5
## + nationalityItaly
## + nationalityGreece
                                     1
                                              3.22 11080 1509.6
                                     1
                                              3.14 11080 1509.6
## + nationalitySweden
## + `clubWest+Ham`
                                              3.10 11080 1509.6
## + nationalityCameroon
                                     1
                                              2.77 11080 1509.6
                                              2.62 11080 1509.6
## + nationalityJamaica
                                      1
                                              2.59 11080 1509.6
## + `nationalityNew Zealand`
                                     1
## + clubSwansea
                                      1
                                              2.50 11080 1509.6
## + club_id
                                      1
                                              2.38 11081 1509.6
## + nationalityPoland
                                       1
                                              2.28 11081 1509.6
## + nationalityCanada
                                              2.24 11081 1509.6
                                              1.82 11081 1509.6
## + nationalityEgypt
                                       1
## + nationalityChile
                                       1
                                              1.82 11081 1509.6
## + clubEverton
                                              1.81 11081 1509.6
                                      1
## + nationalityTunisia
                                              1.80 11081 1509.6
## + `clubLeicester+City`
                                     1
                                              1.51 11082 1509.6
## + nationalityGhana
                                      1
                                              1.45 11082 1509.6
                                              1.39 11082 1509.6
## + positionLM
                                     1
## + nationalityRomania
                                              1.32 11082 1509.6
## + nationalityGermany
                                       1
                                              1.08 11082 1509.7
                                              1.07 11082 1509.7
## + region
                                       1
## + nationalityCroatia
                                              0.90 11082 1509.7
                                       1
## + nationalityBrazil
                                              0.90 11082 1509.7
                                              0.66 11082 1509.7
## + nationalitySlovenia
                                       1
## + nationalityJapan
                                       1
                                              0.63 11082 1509.7
## + nationalityNetherlands
                                              0.54 11082 1509.7
## + `nationalityNorthern Ireland`
                                       1
                                              0.50 11082 1509.7
                                              0.48 11082 1509.7
## + positionGK
                                       1
## + nationalityDenmark
                                              0.39 11083 1509.7
                                       1
                                              0.25 11083 1509.7
## + nationalityMali
                                       1
## + `nationalityUnited States`
                                      1
                                              0.02 11083 1509.7
                                              0.01 11083 1509.7
## + nationalityAustria
```

```
0.01 11083 1509.7
## + `clubCrystal+Palace`
## + nationalityAustralia
                                               0.01 11083 1509.7
                                       1
## - nationalityArgentina
                                       1
                                             103.86 11187 1510.0
                                             116.39 11199 1510.5
## - clubBurnley
                                       1
## - position_cat
                                       1
                                             119.90 11203 1510.6
## - positionSS
                                       1
                                             147.64 11231 1511.8
## - new foreign
                                             152.91 11236 1512.0
                                             187.69 11271 1513.4
## - clubChelsea
                                       1
## - positionDM
                                       1
                                             211.54 11295 1514.4
## - nationalityFrance
                                       1
                                             261.00 11344 1516.4
## - nationalityBelgium
                                       1
                                             329.38 11412 1519.2
                                             436.65 11520 1523.5
## - positionCF
                                       1
## - big_club
                                       1
                                             605.11 11688 1530.2
## - `clubManchester+City`
                                            720.43 11803 1534.7
                                       1
                                            884.74 11968 1541.0
## - fpl_points
                                       1
                                            1836.47 12920 1576.2
## - page_views
                                       1
                                            1944.92 13028 1580.1
## - fpl_value
                                       1
## - ns(age, 3)
                                            2643.16 13726 1600.1
##
## Step: AIC=1506.84
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
       positionDM + position cat + nationalityArgentina + clubBurnley +
##
       clubBournemouth + nationalitySenegal + nationalityNorway +
##
##
       positionRM
##
                                      Df Sum of Sq
                                                      RSS
## + clubSouthampton
                                              68.17 10946 1506.0
                                              58.51 10956 1506.4
## + nationalityEcuador
## + positionCM
                                        1
                                              55.64 10959 1506.5
## + `nationalityCzech Republic`
                                              53.16 10961 1506.6
                                                    11015 1506.8
## + nationalitySwitzerland
                                              45.00 10970 1507.0
                                       1
## + clubHuddersfield
                                        1
                                              42.50 10972 1507.1
## + clubWatford
                                       1
                                              39.98 10975 1507.2
## + nationalityKenya
                                       1
                                              39.65 10975 1507.2
## + positionRW
                                              38.07 10976 1507.2
                                       1
                                              36.67 10978 1507.3
## + nationalityNigeria
                                       1
                                              36.43 10978 1507.3
## + positionLW
                                       1
## + `clubNewcastle+United`
                                              36.13 10978 1507.3
## + clubLiverpool
                                       1
                                              33.37 10981 1507.5
## + `clubWest+Brom`
                                              30.23 10984 1507.6
                                       1
## + clubTottenham
                                              29.64 10985 1507.6
                                       1
                                              68.43 11083 1507.7
## - positionRM
                                              26.83 10988 1507.7
## + nationalityScotland
                                       1
                                              26.69 10988 1507.7
## + nationalitySpain
                                       1
## + nationalitySerbia
                                              26.34 10988 1507.7
                                       1
## - nationalityNorway
                                       1
                                              69.67 11084 1507.7
                                              70.30 11085 1507.8
## - clubBournemouth
                                        1
## + `nationalityTrinidad and Tobago`
                                              24.49 10990 1507.8
                                       1
## + `nationalityCote d'Ivoire`
                                       1
                                              22.26 10992 1507.9
## + positionLB
                                       1
                                              22.03 10993 1507.9
                                              74.15 11089 1507.9
## - nationalitySenegal
```

```
19.86 10995 1508.0
## + `nationalityThe Gambia`
## + nationalityEngland
                                             19.71 10995 1508.0
## + nationalityBermuda
                                             18.81 10996 1508.1
## + nationalityEstonia
                                             16.36 10998 1508.2
                                       1
## + `clubStoke+City`
                                       1
                                             15.72 10999 1508.2
## + positionCB
                                       1
                                             15.53 10999 1508.2
                                       1
1
1
## + `clubBrighton+and+Hove`
                                             15.27 10999 1508.2
## + `nationalitySouth Korea`
                                             15.09 11000 1508.2
## + nationalityIsrael
                                             12.16 11002 1508.3
                                             12.03 11003 1508.3
## + nationalityIreland
                                       1
## + nationalityArmenia
                                             10.71 11004 1508.4
                                             10.67 11004 1508.4
## + positionRB
                                       1
                                             10.00 11005 1508.4
## + nationalityCuracao
                                       1
                                     1 9.63 11005 1508.4
1 9.55 11005 1508.5
1 9.08 11006 1508.5
## + nationalityColombia
## + nationalityVenezuela
## + `clubManchester+United`
                                      1
                                              8.24 11006 1508.5
## + nationalityFinland
## + nationalityMorocco
                                              7.89 11007 1508.5
## + nationalityPortugal
                                              6.15 11008 1508.6
                                      1
                                              5.83 11009 1508.6
## + `nationalityCongo DR`
                                       1
## + new_signing
                                       1
                                              5.63 11009 1508.6
## + nationalityIceland
                                              5.50 11009 1508.6
                                      1
                                              4.42 11010 1508.7
## + nationalityWales
## + nationalityBosnia
                                              4.37 11010 1508.7
## + clubArsenal
                                      1
                                              3.95 11011 1508.7
## + nationalityItaly
                                      1
                                              3.86 11011 1508.7
## + nationalityUruguay
                                              3.84 11011 1508.7
                                      1
                                              3.18 11011 1508.7
## + nationalityGreece
                                       1
                                              3.11 11012 1508.7
## + clubSwansea
                                      1
## + nationalitySweden
                                      1
                                              3.00 11012 1508.7
                                      1
## + nationalityPoland
                                              2.72 11012 1508.7
                                      1
## + `clubWest+Ham`
                                              2.69 11012 1508.7
## + `nationalityNew Zealand`
                                              2.60 11012 1508.7
## + nationalityCameroon
                                              2.51 11012 1508.7
                                      1
                                              2.51 11012 1508.7
## + nationalityJamaica
                                       1
## + nationalityCanada
                                       1
                                              2.31 11012 1508.8
## + clubEverton
                                      1
                                              2.20 11012 1508.8
## + nationalityEgypt
                                      1
                                              1.95 11013 1508.8
## + nationalityTunisia
                                       1
                                              1.91 11013 1508.8
                                              1.81 11013 1508.8
## + nationalityGhana
                                       1
## + nationalityChile
                                              1.79 11013 1508.8
## + positionLM
                                       1
                                              1.75 11013 1508.8
## + `clubLeicester+City`
                                              1.75 11013 1508.8
                                       1
                                              1.50 11013 1508.8
## + club_id
                                       1
## + nationalityRomania
                                              1.21 11013 1508.8
                                              0.96 11014 1508.8
## + region
                                       1
## + nationalityNetherlands
                                              0.93 11014 1508.8
                                       1
## + nationalityCroatia
                                              0.89 11014 1508.8
                                       1
## + nationalityJapan
                                       1
                                              0.65 11014 1508.8
## + nationalityBrazil
                                       1
                                              0.64 11014 1508.8
                                              0.60 11014 1508.8
## + positionGK
                                       1
## + `nationalityNorthern Ireland`
                                              0.59 11014 1508.8
                                       1
## + nationalityGermany
                                       1
                                              0.58 11014 1508.8
## + nationalitySlovenia
                                              0.57 11014 1508.8
```

```
0.25 11014 1508.8
## + nationalityDenmark
## + nationalityMali
                                              0.13 11014 1508.8
## + nationalityAustralia
                                              0.05 11014 1508.8
## + `nationalityUnited States`
                                              0.05 11014 1508.8
                                       1
## + nationalityAustria
                                       1
                                              0.03 11015 1508.8
## + `clubCrystal+Palace`
                                              0.01 11015 1508.8
                                       1
## - nationalityArgentina
                                       1
                                          100.30 11115 1509.0
                                            115.38 11130 1509.6
## - position cat
                                       1
## - clubBurnley
                                       1
                                            118.38 11133 1509.8
                                            141.03 11156 1510.7
## - new_foreign
                                       1
## - positionSS
                                            153.55 11168 1511.2
                                            198.75 11213 1513.1
## - positionDM
                                       1
## - clubChelsea
                                       1
                                            205.38 11220 1513.3
                                            275.23 11290 1516.2
## - nationalityFrance
                                       1
                                            321.58 11336 1518.1
## - nationalityBelgium
                                       1
## - positionCF
                                       1
                                            458.53 11473 1523.6
                                            600.96 11616 1529.3
## - big_club
                                       1
## - `clubManchester+City`
                                            717.70 11732 1533.9
                                            846.58 11861 1538.9
## - fpl_points
                                       1
## - page views
                                       1
                                           1850.76 12865 1576.3
## - fpl_value
                                       1
                                           1960.42 12975 1580.2
## - ns(age, 3)
                                           2680.70 13695 1601.0
##
## Step: AIC=1505.99
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
       positionDM + position_cat + nationalityArgentina + clubBurnley +
##
       clubBournemouth + nationalitySenegal + nationalityNorway +
##
       positionRM + clubSouthampton
##
##
                                      Df Sum of Sq
                                                      RSS
                                                             AIC
## + nationalityEcuador
                                             57.74 10889 1505.6
## + positionCM
                                              54.06 10892 1505.7
                                       1
## + `nationalityCzech Republic`
                                       1
                                             52.20 10894 1505.8
## + nationalitySwitzerland
                                             49.53 10897 1505.9
## <none>
                                                    10946 1506.0
## + `clubNewcastle+United`
                                             43.45 10903 1506.2
                                       1
## + nationalityKenya
                                       1
                                             40.63 10906 1506.3
                                             56.43 11003 1506.3
## - clubBournemouth
                                       1
## + positionRW
                                             37.50 10909 1506.4
## + clubHuddersfield
                                       1
                                             34.44 10912 1506.5
                                             33.12 10913 1506.6
## + positionLW
                                       1
                                             32.89 10914 1506.6
## + clubLiverpool
                                       1
                                             31.49 10915 1506.7
## + clubWatford
                                             30.88 10916 1506.7
## + nationalityNigeria
                                       1
                                             30.76 10916 1506.7
## + clubTottenham
                                       1
                                             28.33 10918 1506.8
## + nationalitySerbia
## - clubSouthampton
                                       1
                                              68.17 11015 1506.8
                                             27.05 10919 1506.8
## + nationalitySpain
                                       1
                                             68.88 11015 1506.9
## - nationalityNorway
                                       1
                                             23.33 10923 1507.0
## + `nationalityTrinidad and Tobago`
## + `clubWest+Brom`
                                       1
                                             22.34 10924 1507.0
## + `clubStoke+City`
                                             22.33 10924 1507.0
```

```
22.02 10924 1507.1
## + positionLB
## + `nationalityCote d'Ivoire`
                                             21.59 10925 1507.1
## + nationalityScotland
                                             20.30 10926 1507.1
                                             20.22 10926 1507.1
## + nationalityEngland
                                       1
## + nationalityBermuda
                                       1
                                             19.84 10927 1507.2
                                         19.36 10927 1507.2
## + `clubBrighton+and+Hove`
                                       1
## + `nationalityThe Gambia`
                                      1 18.23 10928 1507.2
                                             17.21 10929 1507.3
## + nationalityEstonia
                                       1
## - positionRM
                                       1
                                             79.08 11026 1507.3
                                             79.53 11026 1507.3
## - nationalitySenegal
                                       1
## + positionCB
                                             14.11 10932 1507.4
## + `nationalitySouth Korea`
                                             13.65 10933 1507.4
                                       1
## + nationalityIsrael
                                             12.77 10934 1507.5
                                       1
                                         11.23 10935 1507.5
## + nationalityIreland
                                       1
                                      1 11.20 10935 1507.5
1 10.33 10936 1507.5
## + nationalityVenezuela
## + nationalityColombia
                                           9.89 10936 1507.6
## + nationalityArmenia
                                      1
## + nationalityCuracao
                                              9.13 10937 1507.6
                                              8.79 10938 1507.6
## + positionRB
                                      1
## + `clubManchester+United`
                                      1
                                              8.59 10938 1507.6
## + nationalityFinland
                                      1
                                              8.45 10938 1507.6
## + nationalityItaly
                                              7.36 10939 1507.7
                                      1
## + `nationalityCongo DR`
                                              7.19 10939 1507.7
## + nationalityWales
                                              6.21 10940 1507.7
## + `clubWest+Ham`
                                     1
                                              6.02 10940 1507.7
## + new_signing
                                     1
                                              5.47 10941 1507.8
## + nationalityIceland
                                              4.60 10942 1507.8
                                       1
## + nationalityUruguay
                                              4.34 10942 1507.8
                                       1
## + clubArsenal
                                              4.16 10942 1507.8
                                      1
## + nationalityBosnia
                                              4.03 10942 1507.8
                                      1
## + positionLM
                                      1
                                              3.64 10943 1507.8
## + nationalitySweden
                                       1
                                              3.55 10943 1507.8
## + `nationalityNew Zealand`
                                              3.26 10943 1507.8
## + nationalityCameroon
                                              3.05 10943 1507.9
                                       1
## + nationalityMorocco
                                       1
                                              3.02 10943 1507.9
## + nationalityJamaica
                                              2.90 10944 1507.9
                                       1
## + nationalityGreece
                                              2.75 10944 1507.9
## + nationalityCanada
                                      1
                                              2.34 10944 1507.9
## + nationalityChile
                                       1
                                              1.79 10945 1507.9
                                              1.69 10945 1507.9
## + nationalityTunisia
## + nationalityNetherlands
                                              1.68 10945 1507.9
## + region
                                              1.68 10945 1507.9
                                       1
                                              1.43 10945 1507.9
## + `nationalityNorthern Ireland`
                                       1
## + nationalityEgypt
                                              1.41 10945 1507.9
                                              1.33 10945 1507.9
## + nationalityRomania
                                              1.32 10945 1507.9
## + nationalityPortugal
                                       1
## + nationalityGermany
                                       1
                                              1.00 10945 1508.0
                                              0.95 10946 1508.0
## + nationalitySlovenia
## + nationalityCroatia
                                       1
                                              0.93 10946 1508.0
## + nationalityGhana
                                      1
                                              0.81 10946 1508.0
## + clubSwansea
                                     1
                                              0.79 10946 1508.0
## + nationalityBrazil
                                     1
                                              0.67 10946 1508.0
                                      1
## + nationalityPoland
                                              0.66 10946 1508.0
                                              0.45 10946 1508.0
## + club id
```

```
0.43 10946 1508.0
## + positionGK
## + `clubCrystal+Palace`
                                              0.43 10946 1508.0
                                              0.26 10946 1508.0
## + clubEverton
                                              0.24 10946 1508.0
## + nationalityMali
                                      1
## + `clubLeicester+City`
                                      1
                                              0.21 10946 1508.0
## + nationalityJapan
                                             0.09 10946 1508.0
                                      1
## + nationalityAustralia
                                            0.03 10946 1508.0
## + nationalityDenmark
                                            0.02 10946 1508.0
                                      1
                                            0.00 10946 1508.0
## + `nationalityUnited States`
                                      1
                                      1
                                            0.00 10946 1508.0
## + nationalityAustria
## - clubBurnley
                                      1
                                         103.25 11050 1508.3
                                           103.77 11050 1508.3
## - nationalityArgentina
                                       1
## - position_cat
                                       1
                                           113.96 11060 1508.8
                                           134.75 11081 1509.6
## - new_foreign
                                      1
## - positionSS
                                      1
                                           148.70 11095 1510.2
## - positionDM
                                      1
                                           195.06 11142 1512.1
## - clubChelsea
                                           207.10 11154 1512.6
                                      1
## - nationalityFrance
                                           275.58 11222 1515.4
## - nationalityBelgium
                                           330.74 11277 1517.7
                                      1
## - positionCF
                                       1
                                           466.34 11413 1523.2
## - big_club
                                       1
                                           650.65 11597 1530.5
## - `clubManchester+City`
                                          713.07 11660 1533.0
                                          781.19 11728 1535.7
## - fpl_points
                                      1
                                      1
                                           1872.24 12819 1576.6
## - page_views
                                           1973.12 12920 1580.2
## - fpl_value
                                      1
## - ns(age, 3)
                                           2606.28 13553 1598.2
##
## Step: AIC=1505.56
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
##
       positionDM + position_cat + nationalityArgentina + clubBurnley +
       clubBournemouth + nationalitySenegal + nationalityNorway +
##
##
       positionRM + clubSouthampton + nationalityEcuador
##
                                      Df Sum of Sq
##
                                                    RSS
                                                            AIC
## + `nationalityCzech Republic`
                                             53.10 10836 1505.3
## + positionCM
                                             49.37 10839 1505.5
                                       1
## + nationalitySwitzerland
                                             48.96 10840 1505.5
## <none>
                                                   10889 1505.6
## + `clubNewcastle+United`
                                             42.46 10846 1505.8
## + positionRW
                                             41.53 10847 1505.8
                                       1
## + nationalityKenya
                                             40.11 10849 1505.9
                                      1
## - clubBournemouth
                                            57.69 10946 1506.0
                                      1
                                             37.07 10852 1506.0
## + clubLiverpool
                                      1
                                            57.74 10946 1506.0
## - nationalityEcuador
                                      1
                                             36.23 10852 1506.0
## + clubHuddersfield
                                      1
## + clubWatford
                                     1
                                             32.67 10856 1506.2
## + nationalityNigeria
                                      1
                                             30.69 10858 1506.3
                                             28.02 10861 1506.4
## + nationalitySerbia
                                      1
                                     1
## + clubTottenham
                                             27.94 10861 1506.4
                                     1
                                            67.40 10956 1506.4
## - clubSouthampton
## - nationalityNorway
                                     1
                                            68.42 10957 1506.4
                                             25.37 10863 1506.5
## + positionLW
```

```
## + nationalitySpain
                                             24.96 10864 1506.5
                                              23.78 10865 1506.5
## + nationalityEngland
                                             23.56 10865 1506.6
## + `nationalityTrinidad and Tobago`
## + `clubWest+Brom`
                                             23.55 10865 1506.6
## + positionLB
                                             23.47 10865 1506.6
## + `nationalityCote d'Ivoire`
                                             22.28 10866 1506.6
## + `clubStoke+City`
                                             21.40 10867 1506.7
                                             21.39 10867 1506.7
## + nationalityScotland
                                       1
## + nationalityBermuda
                                       1
                                             19.69 10869 1506.7
## + `nationalityThe Gambia`
                                       1
                                             18.46 10870 1506.8
## + nationalityEstonia
                                             18.02 10871 1506.8
                                             17.96 10871 1506.8
## + `clubBrighton+and+Hove`
                                       1
## - nationalitySenegal
                                       1
                                             77.60 10966 1506.8
## + `clubManchester+United`
                                             15.81 10873 1506.9
                                             80.28 10969 1506.9
## - positionRM
                                       1
## + `nationalitySouth Korea`
                                       1
                                             14.46 10874 1506.9
                                             12.46 10876 1507.0
## + positionCB
                                       1
## + nationalityIsrael
                                             12.23 10876 1507.0
## + nationalityVenezuela
                                             11.12 10878 1507.1
                                       1
## + nationalityColombia
                                       1
                                             10.85 10878 1507.1
## + nationalityIreland
                                       1
                                             10.56 10878 1507.1
## + nationalityCuracao
                                              9.30 10879 1507.2
## + nationalityArmenia
                                              9.14 10880 1507.2
                                      1
## + nationalityFinland
                                       1
                                              8.26 10880 1507.2
                                              7.66 10881 1507.2
## + nationalityItaly
                                      1
## + `nationalityCongo DR`
                                      1
                                              6.99 10882 1507.3
## + clubArsenal
                                              5.88 10883 1507.3
                                       1
                                              5.53 10883 1507.3
## + nationalityWales
                                       1
## + `clubWest+Ham`
                                              5.48 10883 1507.3
                                      1
## + nationalityIceland
                                              4.89 10884 1507.3
                                      1
## + new_signing
                                       1
                                              4.72 10884 1507.4
## + positionRB
                                       1
                                              4.64 10884 1507.4
## + nationalityUruguay
                                              4.16 10884 1507.4
                                              4.11 10885 1507.4
## + positionLM
                                       1
## + nationalityBosnia
                                       1
                                              3.88 10885 1507.4
                                              3.47 10885 1507.4
## + region
                                       1
## + nationalitySweden
                                              3.35 10885 1507.4
## + `nationalityNew Zealand`
                                              3.11 10886 1507.4
                                       1
## + nationalityGreece
                                              2.88 10886 1507.4
## + nationalityMorocco
                                              2.78 10886 1507.4
                                       1
## + nationalityCameroon
                                              2.77 10886 1507.4
## + nationalityJamaica
                                              2.69 10886 1507.4
                                       1
## + nationalityCanada
                                       1
                                              2.43 10886 1507.5
## + nationalityNetherlands
                                              2.11 10887 1507.5
                                       1
## + nationalityTunisia
                                              1.83 10887 1507.5
                                              1.66 10887 1507.5
## + `nationalityNorthern Ireland`
                                       1
## + nationalityEgypt
                                       1
                                              1.58 10887 1507.5
## + nationalityChile
                                              1.57 10887 1507.5
## + nationalityRomania
                                       1
                                              1.24 10887 1507.5
## + nationalityPortugal
                                       1
                                              1.17 10888 1507.5
                                              1.10 10888 1507.5
## + club_id
                                       1
## + nationalitySlovenia
                                       1
                                              0.99 10888 1507.5
## + nationalityGhana
                                      1
                                              0.85 10888 1507.5
## + nationalityCroatia
                                              0.77 10888 1507.5
```

```
0.76 10888 1507.5
## + nationalityGermany
## + nationalityPoland
                                              0.73 10888 1507.5
## + positionGK
                                              0.56 10888 1507.5
## + nationalityBrazil
                                              0.54 10888 1507.5
                                      1
## + clubEverton
                                      1
                                              0.32 10888 1507.5
## + `clubLeicester+City`
                                              0.31 10888 1507.5
                                      1
## + `clubCrystal+Palace`
                                              0.30 10888 1507.5
## + nationalityMali
                                              0.17 10888 1507.5
                                      1
## + nationalityJapan
                                      1
                                              0.11 10889 1507.5
                                              0.03 10889 1507.5
## + nationalityAustralia
                                      1
## + clubSwansea
                                      1
                                              0.02 10889 1507.6
                                              0.01 10889 1507.6
## + nationalityAustria
                                       1
## + nationalityDenmark
                                       1
                                             0.01 10889 1507.6
## + `nationalityUnited States`
                                            0.00 10889 1507.6
                                       1
## - nationalityArgentina
                                       1 100.72 10989 1507.8
## - clubBurnley
                                       1
                                           105.34 10994 1508.0
                                            108.86 10998 1508.1
## - position_cat
                                       1
## - new foreign
                                            132.95 11022 1509.1
## - positionSS
                                            151.26 11040 1509.9
                                       1
## - positionDM
                                       1
                                            190.60 11079 1511.5
## - clubChelsea
                                       1
                                            201.24 11090 1512.0
## - nationalityFrance
                                            271.12 11160 1514.9
                                            324.03 11213 1517.0
## - nationalityBelgium
                                      1
## - positionCF
                                      1
                                            478.67 11367 1523.3
                                            667.21 11556 1530.9
## - big club
                                       1
## - `clubManchester+City`
                                            698.74 11587 1532.2
## - fpl_points
                                            776.68 11665 1535.2
                                       1
                                          1865.39 12754 1576.3
## - page_views
                                          1980.38 12869 1580.4
                                      1
## - fpl_value
                                           2592.27 13481 1597.8
## - ns(age, 3)
##
## Step: AIC=1505.31
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
       positionDM + position_cat + nationalityArgentina + clubBurnley +
##
##
       clubBournemouth + nationalitySenegal + nationalityNorway +
##
       positionRM + clubSouthampton + nationalityEcuador + `nationalityCzech Republic`
##
##
                                      Df Sum of Sq
                                                    RSS
                                                            AIC
## + nationalitySwitzerland
                                             47.95 10788 1505.3
## <none>
                                                   10836 1505.3
                                             45.67 10790 1505.4
## + positionCM
                                             43.83 10792 1505.4
## + positionRW
## + `clubNewcastle+United`
                                             41.31 10794 1505.5
## - `nationalityCzech Republic`
                                             53.10 10889 1505.6
                                       1
## + clubLiverpool
                                       1
                                             40.96 10795 1505.6
## + nationalityKenya
                                             39.52 10796 1505.6
                                       1
## + clubHuddersfield
                                       1
                                             38.09 10798 1505.7
                                             58.63 10894 1505.8
## - nationalityEcuador
                                       1
## - clubBournemouth
                                     1
                                             60.08 10896 1505.8
## + clubWatford
                                     1
                                             33.48 10802 1505.9
## + nationalityNigeria
                                      1
                                             30.80 10805 1506.0
## + `clubBrighton+and+Hove`
                                             28.55 10807 1506.1
```

```
## + nationalityEngland
                                              28.23 10807 1506.1
## - clubSouthampton
                                              66.43 10902 1506.1
## + nationalitySerbia
                                              27.80 10808 1506.1
## - nationalityNorway
                                              68.42 10904 1506.2
                                       1
## + clubTottenham
                                              24.89 10811 1506.2
## + positionLB
                                             24.84 10811 1506.2
## + `clubWest+Brom`
                                              24.65 10811 1506.3
## + `nationalityTrinidad and Tobago`
                                              23.72 10812 1506.3
                                       1
## + nationalitySpain
                                        1
                                              23.57 10812 1506.3
## + `nationalityCote d'Ivoire`
                                              23.33 10812 1506.3
## + nationalityScotland
                                              22.18 10813 1506.4
## + `clubStoke+City`
                                              20.14 10815 1506.5
                                        1
## + nationalityBermuda
                                       1
                                              19.74 10816 1506.5
                                             18.97 10817 1506.5
## + `nationalityThe Gambia`
## + nationalityEstonia
                                             18.60 10817 1506.5
                                       1
## + positionLW
                                       1
                                              17.48 10818 1506.6
                                             77.24 10913 1506.6
## - nationalitySenegal
                                       1
## + `nationalitySouth Korea`
                                             14.76 10821 1506.7
## + `clubManchester+United`
                                             13.74 10822 1506.7
                                       1
                                             81.17 10917 1506.7
## - positionRM
                                       1
## + nationalityIsrael
                                       1
                                             12.30 10823 1506.8
## + nationalityVenezuela
                                             11.13 10824 1506.8
## + nationalityColombia
                                             11.02 10825 1506.8
                                       1
## + positionCB
                                             10.30 10825 1506.9
                                       1
## + nationalityIreland
                                             9.80 10826 1506.9
                                       1
## + nationalityCuracao
                                       1
                                               9.33 10826 1506.9
## + nationalityArmenia
                                               8.93 10827 1506.9
                                       1
## + nationalityFinland
                                       1
                                               8.07 10828 1507.0
## + nationalityItaly
                                               7.74 10828 1507.0
                                       1
## + `nationalityCongo DR`
                                               6.78 10829 1507.0
                                       1
## + positionRB
                                       1
                                               5.44 10830 1507.1
## + `clubWest+Ham`
                                       1
                                               5.17 10830 1507.1
## + nationalityIceland
                                               5.01 10831 1507.1
                                               4.98 10831 1507.1
## + nationalityWales
                                       1
## + positionLM
                                       1
                                               4.66 10831 1507.1
## + nationalityUruguay
                                               3.96 10832 1507.1
                                       1
## + nationalityBosnia
                                       1
                                               3.87 10832 1507.1
## + new_signing
                                               3.86 10832 1507.1
                                       1
## + region
                                       1
                                               3.75 10832 1507.2
                                               3.29 10832 1507.2
## + nationalitySweden
                                       1
## + nationalityGreece
                                               3.16 10832 1507.2
## + `nationalityNew Zealand`
                                               3.12 10832 1507.2
                                       1
## + nationalityCameroon
                                       1
                                               2.64 10833 1507.2
## + nationalityMorocco
                                               2.64 10833 1507.2
                                       1
                                               2.59 10833 1507.2
## + clubArsenal
                                       1
## + nationalityNetherlands
                                               2.55 10833 1507.2
                                       1
## + nationalityJamaica
                                       1
                                               2.51 10833 1507.2
## + nationalityCanada
                                               2.37 10833 1507.2
## + `nationalityNorthern Ireland`
                                       1
                                               2.10 10834 1507.2
## + nationalityTunisia
                                        1
                                               1.83 10834 1507.2
                                               1.73 10834 1507.2
## + nationalityEgypt
                                       1
## + nationalityChile
                                       1
                                               1.33 10834 1507.2
## + nationalityRomania
                                       1
                                               1.28 10834 1507.2
## + nationalitySlovenia
                                               0.97 10835 1507.3
```

```
0.97 10835 1507.3
## + nationalityGhana
## + nationalityPortugal
                                              0.93 10835 1507.3
## + nationalityCroatia
                                              0.70 10835 1507.3
## + nationalityGermany
                                              0.56 10835 1507.3
                                      1
## + nationalityPoland
                                      1
                                              0.50 10835 1507.3
## + clubEverton
                                     1
                                              0.43 10835 1507.3
## + nationalityBrazil
                                              0.38 10835 1507.3
## + `clubLeicester+City`
                                     1
                                             0.32 10835 1507.3
## + nationalityMali
                                      1
                                              0.15 10835 1507.3
## + `clubCrystal+Palace`
                                              0.15 10835 1507.3
                                     1
## + nationalityJapan
                                              0.11 10836 1507.3
                                              0.04 10836 1507.3
## + nationalityAustralia
                                       1
                                             0.04 10836 1507.3
## + club_id
                                       1
## + nationalityAustria
                                             0.02 10836 1507.3
## + `nationalityUnited States`
                                           0.02 10836 1507.3
                                       1
                                           0.00 10836 1507.3
## + positionGK
                                       1
## + nationalityDenmark
                                           0.00 10836 1507.3
                                       1
## + clubSwansea
                                            0.00 10836 1507.3
## - nationalityArgentina
                                           96.22 10932 1507.4
                                       1
                                           105.49 10941 1507.8
## - position cat
                                       1
## - clubBurnley
                                       1
                                           107.37 10943 1507.8
## - new foreign
                                          131.56 10967 1508.9
                                         152.36 10988 1509.7
## - positionSS
                                      1
## - positionDM
                                      1
                                           184.69 11020 1511.1
## - clubChelsea
                                           195.02 11031 1511.5
                                      1
## - nationalityFrance
                                      1
                                           268.04 11104 1514.5
## - nationalityBelgium
                                           320.61 11156 1516.7
                                       1
                                           485.19 11321 1523.5
## - positionCF
## - big_club
                                       1
                                           684.44 11520 1531.5
                                         686.51 11522 1531.6
## - `clubManchester+City`
                                      1
                                          781.81 11617 1535.3
## - fpl_points
                                       1
## - page_views
                                       1
                                           1859.91 12696 1576.2
                                           1973.68 12809 1580.3
## - fpl_value
                                           2553.27 13389 1596.6
## - ns(age, 3)
## Step: AIC=1505.27
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
##
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
       positionDM + position_cat + nationalityArgentina + clubBurnley +
##
##
       clubBournemouth + nationalitySenegal + nationalityNorway +
       positionRM + clubSouthampton + nationalityEcuador + `nationalityCzech Republic` +
##
       nationalitySwitzerland
##
##
                                      Df Sum of Sq
                                                     RSS
                                             49.70 10738 1505.1
## + positionRW
## <none>
                                                   10788 1505.3
## - nationalitySwitzerland
                                             47.95 10836 1505.3
                                       1
## + `clubNewcastle+United`
                                       1
                                             42.90 10745 1505.4
## + nationalityKenya
                                       1
                                             42.71 10745 1505.4
                                            42.18 10746 1505.5
## + positionCM
                                       1
## - `nationalityCzech Republic`
                                      1 52.09 10840 1505.5
## + clubWatford
                                      1
                                           40.55 10747 1505.5
## + clubLiverpool
                                            37.99 10750 1505.6
```

```
57.02 10845 1505.7
## - clubBournemouth
## + clubHuddersfield
                                              35.93 10752 1505.7
                                              58.05 10846 1505.7
## - nationalityEcuador
## + nationalitySerbia
                                              30.11 10758 1506.0
                                        1
## + `clubBrighton+and+Hove`
                                        1
                                              29.46 10758 1506.0
## + nationalityNigeria
                                              28.66 10759 1506.0
                                        1
## + clubTottenham
                                              27.03 10761 1506.1
## - nationalityNorway
                                              68.53 10856 1506.2
                                        1
## + nationalitySpain
                                              24.93 10763 1506.2
## + positionLB
                                        1
                                              24.22 10763 1506.2
## + `nationalityTrinidad and Tobago`
                                              23.61 10764 1506.3
                                              70.84 10858 1506.3
## - clubSouthampton
                                        1
## + `nationalityCote d'Ivoire`
                                        1
                                              22.53 10765 1506.3
                                              22.11 10766 1506.3
## + `clubWest+Brom`
                                              22.06 10766 1506.3
## + nationalityEngland
                                        1
## + nationalityScotland
                                        1
                                              20.59 10767 1506.4
                                              19.83 10768 1506.4
## + nationalityBermuda
                                        1
## + nationalityEstonia
                                              18.62 10769 1506.5
## + `nationalityThe Gambia`
                                              18.18 10769 1506.5
                                        1
## + `clubStoke+City`
                                        1
                                              15.46 10772 1506.6
## + `clubManchester+United`
                                        1
                                              15.44 10772 1506.6
## + positionLW
                                              14.65 10773 1506.6
## - nationalitySenegal
                                              79.70 10867 1506.7
                                        1
## + `nationalitySouth Korea`
                                              13.28 10774 1506.7
                                              80.86 10868 1506.7
## - positionRM
                                        1
## + nationalityIsrael
                                        1
                                              12.32 10775 1506.7
## + nationalityVenezuela
                                              11.35 10776 1506.8
                                        1
                                              11.31 10776 1506.8
## + nationalityColombia
                                        1
                                              10.96 10777 1506.8
## + positionCB
                                        1
## + nationalityIreland
                                       1
                                              10.43 10777 1506.8
## + nationalityCuracao
                                        1
                                               9.21 10778 1506.9
## + nationalityArmenia
                                        1
                                               9.13 10778 1506.9
## + nationalityFinland
                                        1
                                               7.94 10780 1506.9
                                               7.68 10780 1506.9
## + nationalityItaly
                                        1
## + `nationalityCongo DR`
                                        1
                                               7.21 10780 1507.0
## + nationalityWales
                                               5.43 10782 1507.0
                                        1
## + clubArsenal
                                               5.08 10783 1507.0
## + positionRB
                                               4.99 10783 1507.0
                                        1
## + nationalityIceland
                                        1
                                               4.75 10783 1507.1
## + positionLM
                                               4.52 10783 1507.1
                                        1
## + nationalityUruguay
                                               4.03 10784 1507.1
## + region
                                        1
                                               3.72 10784 1507.1
## + nationalityBosnia
                                               3.64 10784 1507.1
                                        1
## + nationalitySweden
                                               3.28 10784 1507.1
                                        1
                                               3.25 10784 1507.1
## + new_signing
                                        1
                                               3.19 10784 1507.1
## + `nationalityNew Zealand`
                                        1
## + nationalityGreece
                                        1
                                               3.07 10785 1507.1
## + nationalityMorocco
                                        1
                                               2.81 10785 1507.2
## + `clubWest+Ham`
                                        1
                                               2.80 10785 1507.2
## + nationalityCameroon
                                        1
                                               2.73 10785 1507.2
## + nationalityJamaica
                                               2.57 10785 1507.2
                                        1
## + nationalityCanada
                                       1
                                               2.43 10785 1507.2
## + nationalityNetherlands
                                        1
                                               1.91 10786 1507.2
## + `nationalityNorthern Ireland`
                                               1.91 10786 1507.2
```

```
1.83 10786 1507.2
## + nationalityTunisia
                                              1.35 10786 1507.2
## + nationalityChile
                                              1.33 10786 1507.2
## + nationalityEgypt
## + nationalityRomania
                                              1.20 10786 1507.2
                                      1
## + nationalitySlovenia
                                       1
                                              1.06 10787 1507.2
## + nationalityPortugal
                                              0.94 10787 1507.2
                                      1
## + nationalityGermany
                                              0.86 10787 1507.2
                                      1
                                              0.72 10787 1507.2
## + nationalityCroatia
## + nationalityBrazil
                                      1
                                              0.61 10787 1507.2
## + nationalityGhana
                                      1
                                              0.58 10787 1507.2
## + nationalityPoland
                                      1
                                              0.50 10787 1507.2
                                              0.36 10787 1507.2
## + `clubCrystal+Palace`
                                      1
## + nationalityMali
                                       1
                                              0.19 10787 1507.3
## + nationalityJapan
                                              0.13 10788 1507.3
## + clubEverton
                                              0.11 10788 1507.3
                                      1
## + `clubLeicester+City`
                                       1
                                              0.07 10788 1507.3
                                              0.07 10788 1507.3
## + clubSwansea
                                       1
## + nationalityAustralia
                                              0.04 10788 1507.3
                                              0.02 10788 1507.3
## + positionGK
                                      1
## + nationalityAustria
                                       1
                                              0.02 10788 1507.3
## + nationalityDenmark
                                       1
                                              0.01 10788 1507.3
## + `nationalityUnited States`
                                              0.01 10788 1507.3
## + club_id
                                              0.00 10788 1507.3
                                       1
## - nationalityArgentina
                                       1
                                             98.10 10886 1507.4
                                            102.46 10890 1507.6
## - clubBurnley
                                       1
## - position_cat
                                       1
                                            112.27 10900 1508.0
## - new_foreign
                                            132.62 10920 1508.9
                                       1
                                            148.50 10936 1509.6
## - positionSS
                                       1
                                            158.13 10946 1510.0
## - positionDM
                                      1
## - clubChelsea
                                      1
                                            200.08 10988 1511.7
## - nationalityFrance
                                      1
                                            278.62 11066 1515.0
## - nationalityBelgium
                                       1
                                            322.44 11110 1516.8
## - positionCF
                                            475.19 11263 1523.1
                                            689.57 11477 1531.8
## - big_club
                                       1
## - `clubManchester+City`
                                       1
                                            693.62 11481 1531.9
                                            767.13 11555 1534.9
## - fpl_points
                                       1
## - page views
                                       1
                                          1849.43 12637 1576.0
## - fpl_value
                                       1
                                           1988.34 12776 1581.1
## - ns(age, 3)
                                           2541.17 13329 1596.6
##
## Step: AIC=1505.14
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
       positionDM + position_cat + nationalityArgentina + clubBurnley +
##
       clubBournemouth + nationalitySenegal + nationalityNorway +
##
       positionRM + clubSouthampton + nationalityEcuador + `nationalityCzech Republic` +
##
##
       nationalitySwitzerland + positionRW
##
##
                                      Df Sum of Sq
                                                     RSS
                                                            AIC
                                             55.94 10682 1504.7
## + positionLW
## <none>
                                                   10738 1505.1
## + clubWatford
                                       1
                                             44.90 10693 1505.2
## - position_cat
                                             49.70 10788 1505.3
```

```
49.70 10788 1505.3
## - positionRW
## + nationalityKenya
                                              43.27 10695 1505.3
## + `clubNewcastle+United`
                                              40.68 10697 1505.4
## - nationalitySwitzerland
                                              53.83 10792 1505.4
                                       1
## - `nationalityCzech Republic`
                                       1
                                              54.46 10792 1505.5
## + clubLiverpool
                                              38.66 10699 1505.5
                                       1
## + clubHuddersfield
                                              33.85 10704 1505.7
                                              32.12 10706 1505.8
## + nationalityNigeria
                                       1
## - clubBournemouth
                                       1
                                              61.60 10800 1505.8
## - nationalityEcuador
                                       1
                                              62.48 10800 1505.8
## + nationalitySerbia
                                       1
                                              28.85 10709 1505.9
                                              26.71 10711 1506.0
## + clubTottenham
                                       1
## + positionLB
                                       1
                                              25.95 10712 1506.0
                                              68.57 10806 1506.1
## - nationalityNorway
## + `clubBrighton+and+Hove`
                                              24.94 10713 1506.1
                                        1
## + `nationalityTrinidad and Tobago`
                                              24.58 10713 1506.1
                                              70.41 10808 1506.2
## - clubSouthampton
                                        1
## + nationalitySpain
                                              22.85 10715 1506.2
                                              22.39 10716 1506.2
## + positionCM
                                        1
                                              21.66 10716 1506.2
## + nationalityEngland
                                        1
## + `clubWest+Brom`
                                              21.56 10716 1506.2
## - nationalitySenegal
                                              72.64 10811 1506.2
                                              20.24 10718 1506.3
## + nationalityScotland
                                       1
## + `nationalityCote d'Ivoire`
                                              19.88 10718 1506.3
                                       1
                                              19.33 10719 1506.3
## + nationalityBermuda
                                       1
## + nationalityEstonia
                                       1
                                              18.20 10720 1506.4
## + `clubManchester+United`
                                              15.57 10722 1506.5
                                       1
## + `clubStoke+City`
                                              14.54 10723 1506.5
                                       1
                                       1
                                              11.01 10727 1506.7
## + nationalityVenezuela
## + nationalityIsrael
                                       1
                                              11.00 10727 1506.7
## + `nationalityThe Gambia`
                                       1
                                              10.67 10727 1506.7
## + `nationalitySouth Korea`
                                       1
                                              10.63 10727 1506.7
## + nationalityColombia
                                              10.03 10728 1506.7
                                               9.99 10728 1506.7
## + nationalityIreland
                                       1
## + nationalityCuracao
                                       1
                                               9.59 10728 1506.7
## + nationalityFinland
                                               8.92 10729 1506.8
                                       1
## + positionCB
                                      1
                                               8.89 10729 1506.8
## + `nationalityCongo DR`
                                       1
                                               8.56 10729 1506.8
## + nationalityItaly
                                       1
                                               7.94 10730 1506.8
## + positionLM
                                               7.80 10730 1506.8
## + nationalityArmenia
                                               7.15 10731 1506.8
## + positionRB
                                       1
                                               5.97 10732 1506.9
                                               5.19 10733 1506.9
## + region
                                       1
## + clubArsenal
                                       1
                                               4.78 10733 1506.9
                                               4.11 10734 1507.0
## + nationalityBosnia
## + `clubWest+Ham`
                                               4.07 10734 1507.0
                                       1
## + nationalityWales
                                       1
                                               3.95 10734 1507.0
## + nationalityUruguay
                                       1
                                               3.94 10734 1507.0
## + nationalitySweden
                                       1
                                               3.41 10734 1507.0
## - positionRM
                                       1
                                              90.59 10828 1507.0
## + nationalityGreece
                                               3.15 10735 1507.0
                                       1
## + nationalityCanada
                                       1
                                               3.13 10735 1507.0
## + `nationalityNew Zealand`
                                       1
                                               3.09 10735 1507.0
                                               3.07 10735 1507.0
## + nationalityIceland
```

```
3.00 10735 1507.0
## + `nationalityNorthern Ireland`
## + nationalityCameroon
                                             2.57 10735 1507.0
## + nationalityJamaica
                                             2.49 10735 1507.0
## + positionGK
                                             2.33 10736 1507.0
                                      1
## + new signing
                                      1
                                             2.25 10736 1507.0
## + nationalityTunisia
                                             1.91 10736 1507.1
                                      1
## + nationalityNetherlands
                                            1.87 10736 1507.1
                                     1
## + nationalityRomania
                                            1.58 10736 1507.1
## + nationalityBrazil
                                     1
                                             1.28 10737 1507.1
                                             1.17 10737 1507.1
## + nationalityChile
                                     1
## + nationalityPortugal
                                     1
                                             1.16 10737 1507.1
                                             1.08 10737 1507.1
## + nationalityMorocco
                                     1
                                     1
## + nationalitySlovenia
                                             1.01 10737 1507.1
## + `clubCrystal+Palace`
                                             0.91 10737 1507.1
                                    1
## + nationalityPoland
                                             0.86 10737 1507.1
                                     1
                                             0.80 10737 1507.1
## + nationalityEgypt
                                     1
## + nationalityCroatia
                                             0.75 10737 1507.1
                                     1
## + nationalityGhana
                                             0.33 10738 1507.1
## + nationalityGermany
                                             0.30 10738 1507.1
                                    1
                                             0.16 10738 1507.1
## + clubSwansea
                                     1
## + nationalityJapan
                                     1
                                             0.15 10738 1507.1
## + clubEverton
                                             0.10 10738 1507.1
                                     1
                                             0.09 10738 1507.1
## + `clubLeicester+City`
## + nationalityAustria
                                            0.04 10738 1507.1
## + nationalityAustralia
                                            0.03 10738 1507.1
                                     1
## + nationalityDenmark
                                      1
                                            0.02 10738 1507.1
## + `nationalityUnited States`
                                      1
                                            0.02 10738 1507.1
## + nationalityMali
                                           0.00 10738 1507.1
                                      1
## + club_id
                                      1
                                           0.00 10738 1507.1
                                          99.04 10837 1507.4
## - nationalityArgentina
                                     1
                                         105.67 10844 1507.7
## - clubBurnley
                                     1
## - positionDM
                                     1
                                           126.45 10864 1508.5
## - new_foreign
                                     1
                                           134.95 10873 1508.9
                                           168.96 10907 1510.3
## - positionSS
                                      1
## - clubChelsea
                                      1
                                           213.11 10951 1512.2
## - nationalityFrance
                                     1
                                           276.84 11015 1514.8
## - nationalityBelgium
                                     1
                                         316.84 11055 1516.5
## - positionCF
                                     1
                                         524.61 11262 1525.1
## - big club
                                     1
                                           667.86 11406 1530.9
## - `clubManchester+City`
                                     1 692.13 11430 1531.9
## - fpl points
                                     1 758.03 11496 1534.5
## - page_views
                                      1
                                          1811.81 12550 1574.9
                                          2006.98 12745 1582.0
## - fpl value
                                          2574.78 13313 1598.0
## - ns(age, 3)
## Step: AIC=1504.74
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
##
      fpl_points + `clubManchester+City` + positionCF + positionSS +
##
      nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
      positionDM + position_cat + nationalityArgentina + clubBurnley +
##
      clubBournemouth + nationalitySenegal + nationalityNorway +
##
      positionRM + clubSouthampton + nationalityEcuador + `nationalityCzech Republic` +
##
      nationalitySwitzerland + positionRW + positionLW
##
```

```
##
                                       Df Sum of Sq
                                                      RSS
                                               3.29 10685 1502.9
## - position_cat
## - `nationalityCzech Republic`
                                              40.99 10723 1504.5
                                                    10682 1504.7
## <none>
## + nationalityKenya
                                              43.49 10638 1504.9
## + clubWatford
                                              42.82 10639 1504.9
                                        1
## - nationalitySwitzerland
                                              50.63 10733 1504.9
                                              51.81 10734 1505.0
## - nationalityEcuador
                                        1
## - clubBournemouth
                                        1
                                              52.62 10735 1505.0
## + `clubNewcastle+United`
                                        1
                                              40.05 10642 1505.0
## + clubLiverpool
                                        1
                                              38.37 10644 1505.1
                                              55.94 10738 1505.1
## - positionLW
                                        1
## + clubHuddersfield
                                        1
                                              35.70 10646 1505.2
## + positionLB
                                              29.14 10653 1505.5
## - clubSouthampton
                                              65.30 10747 1505.5
                                        1
## + clubTottenham
                                        1
                                              27.58 10654 1505.5
                                              26.90 10655 1505.6
## + nationalityEngland
                                        1
## + nationalitySerbia
                                              25.86 10656 1505.6
## + nationalityNigeria
                                              25.02 10657 1505.7
                                        1
## + `nationalityTrinidad and Tobago`
                                              24.91 10657 1505.7
## + `clubBrighton+and+Hove`
                                              22.84 10659 1505.8
## - nationalityNorway
                                              70.62 10753 1505.8
## + positionGK
                                              21.10 10661 1505.8
                                        1
## + nationalityScotland
                                              20.05 10662 1505.9
                                              19.42 10663 1505.9
## + nationalityBermuda
                                        1
## - nationalitySenegal
                                        1
                                              74.04 10756 1505.9
## + nationalityEstonia
                                              18.33 10664 1506.0
                                        1
## + nationalitySpain
                                        1
                                              18.10 10664 1506.0
## + `nationalityCote d'Ivoire`
                                              17.74 10664 1506.0
                                        1
## + `clubWest+Brom`
                                              17.15 10665 1506.0
                                        1
## + `clubStoke+City`
                                        1
                                              16.44 10666 1506.0
## + positionLM
                                        1
                                              14.66 10667 1506.1
## + `clubManchester+United`
                                              13.02 10669 1506.2
## + `nationalityCongo DR`
                                              11.15 10671 1506.3
                                        1
## + nationalityVenezuela
                                        1
                                              11.07 10671 1506.3
## + nationalityFinland
                                              10.91 10671 1506.3
                                        1
## + `nationalityThe Gambia`
                                              10.67 10671 1506.3
## + nationalityIreland
                                              10.56 10671 1506.3
                                        1
## + region
                                        1
                                              10.18 10672 1506.3
## - positionDM
                                              83.22 10765 1506.3
                                        1
## + nationalityCuracao
                                               9.75 10672 1506.3
## + nationalityIsrael
                                               9.23 10673 1506.3
                                        1
## + positionRB
                                        1
                                               8.29 10674 1506.4
## + nationalityColombia
                                               8.03 10674 1506.4
                                        1
                                               7.68 10674 1506.4
## + nationalityItaly
                                        1
## + `nationalitySouth Korea`
                                               7.21 10675 1506.4
                                        1
## + positionCB
                                        1
                                               7.09 10675 1506.4
## + nationalityWales
                                               5.65 10676 1506.5
## + nationalityBosnia
                                        1
                                               4.99 10677 1506.5
## + `nationalityNorthern Ireland`
                                        1
                                               4.99 10677 1506.5
                                               4.87 10677 1506.5
## + nationalityIceland
                                        1
## + nationalityChile
                                        1
                                               4.34 10678 1506.5
## + nationalitySweden
                                        1
                                               4.27 10678 1506.6
## + new_signing
                                               4.18 10678 1506.6
```

```
4.18 10678 1506.6
## + nationalityPortugal
## + nationalityCanada
                                            4.17 10678 1506.6
## + nationalityArmenia
                                            3.92 10678 1506.6
## + clubArsenal
                                    1
                                            3.84 10678 1506.6
## + nationalityUruguay
                                    1
                                            3.79 10678 1506.6
## + `clubWest+Ham`
                                    1
                                            3.64 10678 1506.6
## + nationalityGreece
                                          3.29 10679 1506.6
                                    1
## + `nationalityNew Zealand`
                                          2.98 10679 1506.6
                                    1 2.71 10679 1506.6
## + nationalityNetherlands
## + nationalityRomania
                                          2.48 10680 1506.6
                                    1
## + nationalityCameroon
                                           2.44 10680 1506.6
                                    1
                                           2.35 10680 1506.6
## + nationalityJamaica
                                    1
                                        91.00 10773 1506.6
## - positionRW
                                          2.02 10680 1506.7
## + nationalityTunisia
                                    1
                                         1.55 10680 1506.7
1.44 10000
## + nationalityPoland
                                    1
                                           1.68 10680 1506.7
                                    1
## + nationalityMorocco
                                    1
## + positionCM
## + nationalityBrazil
                                            0.96 10681 1506.7
## + nationalitySlovenia
                                   1
                                            0.81 10681 1506.7
## + nationalityCroatia
                                            0.72 10681 1506.7
                                    1
## + `clubCrystal+Palace`
                                    1
                                          0.70 10681 1506.7
## + nationalityMali
                                           0.54 10681 1506.7
                                          0.30 10682 1506.7
## + nationalityDenmark
                                    1
## + nationalityGermany
                                    1
                                           0.21 10682 1506.7
                                    1
                                            0.15 10682 1506.7
## + clubEverton
## + nationalityJapan
                                            0.13 10682 1506.7
## + nationalityEgypt
                                    1
                                            0.11 10682 1506.7
## + `clubLeicester+City`
                                            0.07 10682 1506.7
                                     1
                                          0.07 10682 1506.7
## + nationalityAustria
                                    1
                                          0.05 10682 1506.7
## + club_id
                                    1
                                    1 0.05 10682 1506.7
1 0.04 10682 1506.7
## + clubSwansea
## + nationalityAustralia
                                    1
                                          0.04 10682 1506.7
## + `nationalityUnited States`
## + nationalityGhana
                                          0.02 10682 1506.7
                                     1
                                         93.70 10776 1506.8
## - nationalityArgentina
                                     1
## - positionRM
                                     1
                                        105.89 10788 1507.3
## - clubBurnley
                                    1
                                        115.35 10797 1507.7
## - new_foreign
                                    1
                                        125.31 10807 1508.1
## - positionSS
                                    1
                                          204.42 10886 1511.5
## - clubChelsea
                                          227.77 10910 1512.5
                                    1
## - nationalityFrance
                                          273.05 10955 1514.3
## - nationalityBelgium
                                    1
                                          320.94 11003 1516.4
## - positionCF
                                          558.66 11241 1526.2
                                     1
                                    1 663.72 11346 1530.5
## - big_club
## - `clubManchester+City`
                                        692.87 11375 1531.7
                                    1
                                         755.37 11437 1534.2
## - fpl_points
                                         1788.71 12471 1574.0
## - page_views
                                     1
## - fpl_value
                                         2017.19 12699 1582.3
## - ns(age, 3)
                                         2541.06 13223 1596.9
## Step: AIC=1502.88
## market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
      fpl_points + `clubManchester+City` + positionCF + positionSS +
##
      nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
```

```
##
       positionDM + nationalityArgentina + clubBurnley + clubBournemouth +
       nationalitySenegal + nationalityNorway + positionRM + clubSouthampton +
##
       nationalityEcuador + `nationalityCzech Republic` + nationalitySwitzerland +
##
##
       positionRW + positionLW
##
##
                                      Df Sum of Sq
                                                      RSS
                                                             AIC
## - `nationalityCzech Republic`
                                              40.08 10725 1502.6
                                                    10685 1502.9
## <none>
## + clubWatford
                                       1
                                              43.18 10642 1503.0
## - nationalitySwitzerland
                                             49.82 10735 1503.0
                                       1
## + nationalityKenya
                                             42.96 10642 1503.0
## - nationalityEcuador
                                             51.51 10737 1503.1
                                       1
## + `clubNewcastle+United`
                                       1
                                             40.84 10644 1503.1
## - clubBournemouth
                                             52.72 10738 1503.2
                                       1
## + clubLiverpool
                                             39.53 10646 1503.2
                                       1
## + clubHuddersfield
                                       1
                                             35.71 10650 1503.3
## - clubSouthampton
                                             64.76 10750 1503.7
                                       1
## + nationalityEngland
                                             27.86 10657 1503.7
## + clubTottenham
                                             27.74 10658 1503.7
                                       1
                                             26.31 10659 1503.8
## + positionLB
                                       1
## + nationalityNigeria
                                             25.10 10660 1503.8
## + nationalitySerbia
                                             24.89 10660 1503.8
## + `nationalityTrinidad and Tobago`
                                             24.11 10661 1503.8
                                       1
## - nationalityNorway
                                             70.46 10756 1503.9
## + `clubBrighton+and+Hove`
                                             22.18 10663 1503.9
                                       1
## + positionGK
                                             21.81 10664 1503.9
## + nationalityScotland
                                       1
                                             21.35 10664 1504.0
## - nationalitySenegal
                                             73.41 10759 1504.0
                                       1
## + nationalityBermuda
                                             19.04 10666 1504.1
                                       1
## + nationalityEstonia
                                       1
                                          18.47 10667 1504.1
                                             18.11 10667 1504.1
## + `nationalityCote d'Ivoire`
                                       1
## + nationalitySpain
                                       1
                                             17.50 10668 1504.1
## + `clubWest+Brom`
                                       1
                                             17.37 10668 1504.1
## + positionLM
                                             16.55 10669 1504.2
                                       1
## + `clubStoke+City`
                                             16.50 10669 1504.2
                                       1
## + `clubManchester+United`
                                       1
                                             12.77 10672 1504.3
## + nationalityFinland
                                       1 11.98 10673 1504.4
## + `nationalityCongo DR`
                                       1
                                             11.43 10674 1504.4
## + nationalityVenezuela
                                             10.91 10674 1504.4
                                       1
## + `nationalityThe Gambia`
                                             10.88 10674 1504.4
                                       1
## + region
                                             10.82 10674 1504.4
## + nationalityIreland
                                       1
                                             10.70 10675 1504.4
## - positionDM
                                             83.01 10768 1504.4
                                       1
## + nationalityCuracao
                                              9.54 10676 1504.5
                                       1
## + nationalityIsrael
                                              8.57 10677 1504.5
                                       1
                                              8.48 10677 1504.5
## + positionCB
                                       1
## + positionRB
                                       1
                                              7.63 10678 1504.5
## + nationalityItaly
                                              7.53 10678 1504.6
## + `nationalitySouth Korea`
                                       1
                                              7.21 10678 1504.6
## + nationalityColombia
                                       1
                                              6.87 10678 1504.6
## + nationalityBosnia
                                              5.73 10680 1504.6
                                       1
## + nationalityWales
                                              5.70 10680 1504.6
                                       1
## + `nationalityNorthern Ireland`
                                       1
                                              5.54 10680 1504.6
## + nationalityIceland
                                              5.35 10680 1504.7
                                       1
```

```
5.23 10680 1504.7
## + nationalityChile
## + nationalitySweden
                                             4.82 10680 1504.7
## + nationalityCanada
                                             4.51 10681 1504.7
## + nationalityPortugal
                                             4.47 10681 1504.7
                                     1
## + new_signing
                                     1
                                             3.88 10681 1504.7
## + nationalityUruguay
                                    1
                                             3.81 10682 1504.7
## + `clubWest+Ham`
                                             3.66 10682 1504.7
                                     1
## + clubArsenal
                                             3.36 10682 1504.7
## + position_cat
                                     1
                                             3.29 10682 1504.7
                                             3.25 10682 1504.7
## + nationalityArmenia
                                    1
## + nationalityGreece
                                    1
                                             3.22 10682 1504.7
                                             3.13 10682 1504.8
## + nationalityRomania
                                     1
## + `nationalityNew Zealand`
                                     1
                                             3.06 10682 1504.8
## + nationalityNetherlands
                                             2.77 10682 1504.8
                                     1
## + nationalityCameroon
                                             2.62 10683 1504.8
                                     1
## + nationalityJamaica
                                     1
                                             2.39 10683 1504.8
                                             2.09 10683 1504.8
## + nationalityPoland
                                     1
## + nationalityTunisia
                                             1.92 10683 1504.8
## + nationalityMorocco
                                    1
                                             1.14 10684 1504.8
                                    1
                                             1.07 10684 1504.8
## + nationalityBrazil
                                           0.88 10684 1504.8
## + nationalitySlovenia
                                    1
## + nationalityCroatia
                                           0.74 10684 1504.8
                                    1
                                           0.65 10685 1504.8
## + `clubCrystal+Palace`
## + nationalityMali
                                     1
                                            0.58 10685 1504.9
                                    1
                                             0.26 10685 1504.9
## + nationalityDenmark
## + nationalityGermany
                                    1
                                             0.23 10685 1504.9
## + nationalityJapan
                                     1
                                             0.13 10685 1504.9
                                             0.09 10685 1504.9
## + clubEverton
                                     1
## + nationalityEgypt
                                    1
                                             0.09 10685 1504.9
## + nationalityAustria
                                             0.04 10685 1504.9
                                     1
## + `clubLeicester+City`
                                     1
                                            0.03 10685 1504.9
## + club_id
                                      1
                                            0.02 10685 1504.9
## + `nationalityUnited States`
                                            0.02 10685 1504.9
                                            0.02 10685 1504.9
## + nationalityGhana
                                      1
                                            0.01 10685 1504.9
## + clubSwansea
                                      1
                                           0.00 10685 1504.9
## + positionCM
                                      1
## + nationalityAustralia
                                           0.00 10685 1504.9
## - nationalityArgentina
                                     1
                                          94.11 10779 1504.9
## - positionLW
                                     1
                                           102.36 10788 1505.3
                                           111.12 10796 1505.6
## - positionRM
                                     1
                                           118.74 10804 1506.0
## - clubBurnley
## - new foreign
                                           131.96 10817 1506.5
                                      1
                                           151.44 10837 1507.4
## - positionRW
                                      1
                                           231.10 10916 1510.7
## - clubChelsea
                                     1
                                           233.37 10919 1510.8
## - positionSS
                                     1
                                           273.44 10959 1512.5
## - nationalityFrance
                                     1
## - nationalityBelgium
                                      1
                                           322.78 11008 1514.6
## - big_club
                                           692.41 11378 1529.8
                                      1
## - `clubManchester+City`
                                      1
                                           695.47 11381 1529.9
                                           807.11 11492 1534.4
## - fpl_points
                                      1
                                           833.16 11518 1535.4
## - positionCF
                                      1
## - page_views
                                     1
                                          1795.58 12481 1572.3
## - fpl_value
                                     1
                                          2253.94 12939 1588.9
                                          2538.27 13224 1594.9
## - ns(age, 3)
```

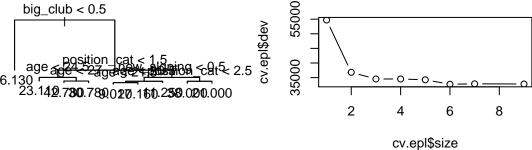
```
##
## Step: AIC=1502.6
  market_value ~ fpl_value + big_club + ns(age, 3) + page_views +
       fpl_points + `clubManchester+City` + positionCF + positionSS +
##
##
       nationalityFrance + nationalityBelgium + new_foreign + clubChelsea +
##
       positionDM + nationalityArgentina + clubBurnley + clubBournemouth +
##
       nationalitySenegal + nationalityNorway + positionRM + clubSouthampton +
       nationalityEcuador + nationalitySwitzerland + positionRW +
##
##
       positionLW
##
##
                                       Df Sum of Sq
                                                      RSS
                                                              AIC
                                                    10725 1502.6
## <none>
                                              43.60 10682 1502.7
## + nationalityKenya
                                              49.77 10775 1502.7
## - nationalityEcuador
## - clubBournemouth
                                              49.85 10775 1502.7
                                        1
## - nationalitySwitzerland
                                        1
                                              50.39 10776 1502.8
                                              42.08 10683 1502.8
## + clubWatford
                                        1
## + `clubNewcastle+United`
                                              41.69 10684 1502.8
## + `nationalityCzech Republic`
                                              40.08 10685 1502.9
                                        1
## + clubLiverpool
                                        1
                                              35.96 10689 1503.1
## + clubHuddersfield
                                        1
                                              34.37 10691 1503.1
## + clubTottenham
                                              30.59 10695 1503.3
                                              65.20 10791 1503.4
## - clubSouthampton
                                        1
## + positionLB
                                              25.72 10700 1503.5
## + nationalitySerbia
                                              24.94 10700 1503.5
                                        1
## + nationalityEngland
                                              24.35 10701 1503.6
## + nationalityNigeria
                                              24.20 10701 1503.6
                                        1
## + `nationalityTrinidad and Tobago`
                                              24.11 10701 1503.6
                                        1
## - nationalityNorway
                                              70.70 10796 1503.6
                                              20.44 10705 1503.7
## + nationalityScotland
                                        1
## - nationalitySenegal
                                        1
                                              74.13 10800 1503.8
## + nationalityBermuda
                                        1
                                              19.06 10706 1503.8
## + nationalitySpain
                                              18.19 10707 1503.8
                                              17.97 10707 1503.8
## + nationalityEstonia
                                        1
## + `clubStoke+City`
                                        1
                                              17.66 10708 1503.8
## + positionGK
                                              17.42 10708 1503.9
                                        1
## + `nationalityCote d'Ivoire`
                                              17.07 10708 1503.9
## + `clubWest+Brom`
                                              16.10 10709 1503.9
                                        1
## + positionLM
                                        1
                                              16.01 10709 1503.9
## + `clubManchester+United`
                                              14.27 10711 1504.0
                                        1
## + `clubBrighton+and+Hove`
                                              14.06 10711 1504.0
## + nationalityFinland
                                              12.20 10713 1504.1
                                        1
## + `nationalityCongo DR`
                                              11.89 10714 1504.1
                                        1
## + nationalityIreland
                                              11.43 10714 1504.1
                                        1
                                              10.94 10714 1504.1
## + nationalityVenezuela
                                              10.85 10714 1504.1
## + region
                                        1
## + `nationalityThe Gambia`
                                        1
                                              10.65 10715 1504.2
                                               9.73 10716 1504.2
## + positionCB
## + nationalityCuracao
                                        1
                                               9.55 10716 1504.2
## - positionDM
                                        1
                                              85.06 10810 1504.2
                                               8.46 10717 1504.2
## + nationalityIsrael
                                        1
## + nationalityItaly
                                       1
                                               7.45 10718 1504.3
## + positionRB
                                       1
                                               7.10 10718 1504.3
## + nationalityColombia
                                               6.75 10719 1504.3
```

```
6.74 10719 1504.3
## + `nationalitySouth Korea`
## + clubArsenal
                                             6.45 10719 1504.3
## + nationalityWales
                                             6.44 10719 1504.3
                                             5.96 10719 1504.3
## + nationalityChile
                                     1
## + nationalityBosnia
                                      1
                                             5.72 10720 1504.4
## + nationalityIceland
                                             5.42 10720 1504.4
                                      1
## + nationalityPortugal
                                             5.29 10720 1504.4
## + `nationalityNorthern Ireland`
                                           5.02 10720 1504.4
                                      1
## + new_signing
                                      1
                                             4.94 10720 1504.4
## + nationalitySweden
                                      1
                                             4.89 10720 1504.4
## + nationalityCanada
                                             4.64 10721 1504.4
                                             3.96 10721 1504.4
## + nationalityUruguay
                                      1
## + `clubWest+Ham`
                                      1
                                             3.79 10722 1504.4
                                             3.21 10722 1504.5
## + nationalityArmenia
## + nationalityRomania
                                             3.08 10722 1504.5
                                      1
## + `nationalityNew Zealand`
                                     1
                                             3.03 10722 1504.5
## + nationalityGreece
                                             3.00 10722 1504.5
                                      1
## + nationalityCameroon
                                             2.69 10723 1504.5
## + nationalityJamaica
                                             2.53 10723 1504.5
                                     1
## + nationalityPoland
                                     1
                                             2.50 10723 1504.5
                                    1
## + nationalityNetherlands
                                             2.44 10723 1504.5
## + position_cat
                                             2.38 10723 1504.5
                                     1
                                            1.94 10723 1504.5
## + nationalityTunisia
## + nationalityMorocco
                                     1
                                             1.36 10724 1504.5
                                             1.23 10724 1504.5
## + nationalityBrazil
                                     1
## + `clubCrystal+Palace`
                                     1
                                             0.87 10724 1504.6
## + nationalitySlovenia
                                             0.86 10724 1504.6
                                      1
                                             0.85 10724 1504.6
## + club_id
                                      1
## + nationalityCroatia
                                     1
                                             0.80 10724 1504.6
## + nationalityMali
                                     1
                                             0.72 10725 1504.6
                                     1
## + nationalityGermany
                                             0.34 10725 1504.6
## + nationalityDenmark
                                     1
                                             0.27 10725 1504.6
## + nationalityJapan
                                     1
                                             0.13 10725 1504.6
## + clubEverton
                                             0.06 10725 1504.6
                                     1
                                             0.04 10725 1504.6
## + clubSwansea
                                     1
## + nationalityEgypt
                                     1
                                             0.04 10725 1504.6
## + nationalityAustria
                                             0.03 10725 1504.6
## + `clubLeicester+City`
                                             0.03 10725 1504.6
                                      1
## + `nationalityUnited States`
                                      1
                                             0.01 10725 1504.6
                                             0.01 10725 1504.6
## + positionCM
                                      1
## + nationalityGhana
                                             0.00 10725 1504.6
## + nationalityAustralia
                                             0.00 10725 1504.6
                                      1
## - nationalityArgentina
                                            97.30 10823 1504.8
                                      1
                                           111.19 10836 1505.3
## - positionRM
                                      1
## - clubBurnley
                                           117.44 10843 1505.6
                                      1
                                           119.92 10845 1505.7
## - positionLW
                                      1
                                           131.41 10857 1506.2
## - new_foreign
                                      1
## - positionRW
                                     1
                                           153.01 10878 1507.1
## - positionSS
                                     1
                                           234.65 10960 1510.6
                                           238.06 10963 1510.7
## - clubChelsea
                                      1
                                    1
## - nationalityFrance
                                           275.81 11001 1512.3
                                     1
                                           326.09 11051 1514.4
## - nationalityBelgium
## - big_club
                                     1
                                           675.93 11401 1528.7
## - `clubManchester+City`
                                           705.99 11431 1529.9
```

```
## - fpl points
                                             799.49 11525 1533.7
## - positionCF
                                        1
                                             839.33 11565 1535.3
## - page views
                                        1
                                            1797.76 12523 1571.9
## - fpl_value
                                            2273.18 12998 1589.0
## - ns(age, 3)
                                            2568.49 13294 1595.4
print(all_pred_step$call)
## lm(formula = market_value ~ fpl_value + big_club + ns(age, 3) +
       page views + fpl points + `clubManchester+City` + positionCF +
##
       positionSS + nationalityFrance + nationalityBelgium + new foreign +
##
##
       clubChelsea + positionDM + nationalityArgentina + clubBurnley +
##
       clubBournemouth + nationalitySenegal + nationalityNorway +
##
       positionRM + clubSouthampton + nationalityEcuador + nationalitySwitzerland +
       positionRW + positionLW, data = epl)
##
market value ~ fpl value + big club + page views + positionCF + positionDM + nationalityBelgium + age
+ fpl points + nationalityEngland + clubManchester+City + positionSS + nationalityFrance + clubChelsea
+ nationalityNigeria + nationalityNorway + new foreign + clubNewcastle+United + nationalityScotland
+ nationalityArgentina + nationalitySenegal + clubBrighton+and+Hove + nationalityCzech Republic +
clubLiverpool + positionLW + positionRW + clubSouthampton + nationalityEcuador
market_value ~ fpl_value + big_club + ns(age, 3) +
page_views + fpl_points + `clubManchester+City` + clubChelsea +
nationalityFrance + positionCF + nationalityBelgium + positionSS +
positionDM + clubBurnley + new_foreign + nationalityArgentina +
nationalityNorway + positionRM + clubBournemouth + nationalitySenegal +
clubSouthampton + nationalityEcuador + positionRW + positionLW +
nationalitySwitzerland
market value ~ fpl value + page views + ns(age,
3) + big_club + fpl_points + nationalityBelgium + positionDM +
nationalityNorway + `clubManchester+City` + nationalityFrance +
positionCF + clubChelsea + positionSS + clubSouthampton +
clubBurnley + `nationalityCzech Republic` + clubLiverpool +
nationalityEcuador + new_foreign + positionRW + positionLW
epl.back.forward.fit=lm(market_value ~ fpl_value + page_views + ns(age,
    3) + big_club + fpl_points + nationalityBelgium + positionDM +
    nationalityNorway + `clubManchester+City` + nationalityFrance +
    positionCF + clubChelsea + positionSS + clubSouthampton +
    clubBurnley + `nationalityCzech Republic` + clubLiverpool +
    nationalityEcuador + new_foreign + positionRW + positionLW ,data=train)
summary(epl.back.forward.fit)
##
## Call:
## lm(formula = market_value ~ fpl_value + page_views + ns(age,
       3) + big_club + fpl_points + nationalityBelgium + positionDM +
##
       nationalityNorway + `clubManchester+City` + nationalityFrance +
##
       positionCF + clubChelsea + positionSS + clubSouthampton +
##
##
       clubBurnley + `nationalityCzech Republic` + clubLiverpool +
##
       nationalityEcuador + new_foreign + positionRW + positionLW,
       data = train)
##
##
```

```
## Residuals:
##
                     Median
       Min
                 10
                                   30
                                           Max
## -18.8239 -2.8647 -0.3697
                               2.4747 18.7229
##
## Coefficients:
##
                                Estimate Std. Error t value Pr(>|t|)
## (Intercept)
                              -21.471150 2.458041 -8.735 < 2e-16 ***
                                                    7.418 1.07e-12 ***
## fpl value
                                3.245375
                                          0.437505
## page views
                                0.003811
                                         0.000474
                                                      8.039 1.75e-14 ***
## ns(age, 3)1
                               0.273699
                                         1.358871
                                                     0.201 0.840500
## ns(age, 3)2
                              14.566849
                                         4.366980
                                                     3.336 0.000951 ***
## ns(age, 3)3
                               -7.346724
                                           2.122681 -3.461 0.000611 ***
## big_club
                               4.771124
                                         0.912273
                                                     5.230 3.06e-07 ***
                                         0.008209
                                                    5.170 4.13e-07 ***
## fpl_points
                                0.042441
## nationalityBelgium
                                5.096351
                                           1.537397
                                                     3.315 0.001022 **
## positionDM
                                1.820300
                                           1.118203
                                                      1.628 0.104532
## nationalityNorway
                              -10.112225
                                           5.921294 -1.708 0.088645 .
## `clubManchester+City`
                               5.980692
                                           1.468252
                                                     4.073 5.84e-05 ***
                                                     2.277 0.023469 *
## nationalityFrance
                                2.951804
                                           1.296593
## positionCF
                               -4.544064
                                          1.024613 -4.435 1.27e-05 ***
## clubChelsea
                                3.898089
                                         1.642981
                                                    2.373 0.018254 *
## positionSS
                               -7.095838 2.757830 -2.573 0.010532 *
## clubSouthampton
                                                    1.719 0.086587 .
                               2.215921
                                          1.289112
## clubBurnlev
                                          1.348801 -1.941 0.053124 .
                               -2.618130
## `nationalityCzech Republic` -5.143148 3.717187 -1.384 0.167438
## clubLiverpool
                               -1.341750
                                          1.386229 -0.968 0.333816
## nationalityEcuador
                                0.623651
                                                    0.119 0.905441
                                           5.245868
## new_foreign
                                4.541034
                                         1.680478
                                                     2.702 0.007254 **
## positionRW
                                         1.165679 -2.126 0.034231 *
                               -2.478716
## positionLW
                               -2.162880
                                           1.128419 -1.917 0.056159 .
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.05 '.' 0.1 ' ' 1
## Residual standard error: 5.126 on 321 degrees of freedom
## Multiple R-squared: 0.8447, Adjusted R-squared: 0.8336
## F-statistic: 75.9 on 23 and 321 DF, p-value: < 2.2e-16
epl.back.forward.y = predict(epl.back.forward.fit, newdata=test)
mean((test$market_value-epl.back.forward.y)^2)
## [1] 24.24639
par(mfrow=c(2,2))
epl.tree =tree(market_value~age+position_cat+region+big_club+new_signing+new_foreign,train)
summary(epl.tree)
##
## Regression tree:
## tree(formula = market_value ~ age + position_cat + region + big_club +
      new_signing + new_foreign, data = train)
## Variables actually used in tree construction:
## [1] "big_club"
                     "position_cat" "age"
                                                   "new_signing"
## Number of terminal nodes: 9
## Residual mean deviance: 75.69 = 25430 / 336
## Distribution of residuals:
```

```
##
      Min. 1st Qu. Median
                               Mean 3rd Qu.
##
    -30.73
             -4.63
                      -1.13
                               0.00
                                       2.87
                                               37.00
plot(epl.tree)
text(epl.tree,pretty=0)
cv.epl=cv.tree(epl.tree)
plot(cv.epl$size,cv.epl$dev,type='b')
prune.epl=prune.tree(epl.tree,best=8)
plot(prune.epl)
text(prune.epl,pretty=0)
    big_club < 0.5
```



```
big_club < 0.5

age age 2gg age 155 2.5

6.130
23.142.730.780.020.160.250.020.000

#initial tree test MSE

mean((test$market_value-predict(epl.tree,newdata=test))^2)

## [1] 71.67043

#pruned tree test MSE

mean((test$market_value-predict(prune.epl,newdata=test))^2)

## [1] 71.67043

#no learning benchmark ybar= mean of y in training data

mean((test$market_value-mean(train$market_value))^2)
```

[1] 128.5292

We try the SVM model. First we standarize the data and resplit the train and test set. Next we fit market_value to all predictors and we have test MSE of 204

```
# subset test dropping columns that don't fit the criteria
#smaller_test <- test[, dropVars]</pre>
epl_ddf <- as.data.frame(sapply(epl, function(i) if(is.numeric(i)) scale(i) else i))
dropVars <- sapply(epl_ddf, function(i) { if((is.numeric(i) & !any(is.nan(i)) & sd(i) > 0) | is.factor(
epl_ddf <- epl_ddf[, dropVars]</pre>
train.index=sample(nrow(epl_ddf),nrow(epl_ddf)*0.75)
train=epl[train.index,]
test=epl[-train.index,]
#smaller train
\#test\_ddf \leftarrow as.data.frame(sapply(test, function(i) if(is.numeric(i)) scale(i) else i))
\#dropVars \leftarrow sapply(test\_ddf, function(i) \{ if((is.numeric(i) & !any(is.nan(i)) & sd(i) > 0) \mid is.facto
#smaller_test <- test_ddf[, dropVars]</pre>
#train
\#test\_ddf[is.na(test\_ddf)]
#test_ddf %>% lapply(function(x){any(is.na(x))})
#summary(train_ddf)
svm.fit <- svm(market_value~., data=train)</pre>
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
\hbox{\tt \#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and }
## 'nationalityUruguay' constant. Cannot scale data.
svm.fit.y <- predict(svm.fit, newdata=test)</pre>
#summary(svm.fit)
mean((test$market_value-svm.fit.y)^2)
## [1] 169.5077
#svm.fit.y
We use the tune function to do SVM predictors search. The best model from this search gives a test MSE of .
tuneResult <- tune(svm, market_value ~ ., data = train,</pre>
              ranges = list(epsilon = seq(0,1,0.1), cost = 2^{(2:9)}
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
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## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
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## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
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## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
\verb|## 'X.nationalityUnited.States.'| and 'nationalityUruguay' constant. Cannot \\
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
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## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
\#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
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## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
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## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
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## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
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## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
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## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
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## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
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## and 'nationalityUruguay' constant. Cannot scale data.
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## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## and 'nationalityUruguay' constant. Cannot scale data.
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## 'nationalityUruguay' constant. Cannot scale data.
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## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## Warning in svm.default(x, y, scale = scale, ..., na.action =
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
\#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
```

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## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
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## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
\#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
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## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
\verb|## 'X.nationalityUnited.States.'| and 'nationalityUruguay' constant. Cannot \\
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
\#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
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## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
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## 'nationalityVenezuela' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
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## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
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## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
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## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
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## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
\hbox{\tt \#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and }
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
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## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
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## 'nationalityVenezuela' constant. Cannot scale data.
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## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
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## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
\verb|## 'X.nationalityUnited.States.'| and 'nationalityUruguay' constant. Cannot \\
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
\#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
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## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
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## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
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## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
\hbox{\tt \#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and }
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
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## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
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## and 'nationalityTunisia' and 'nationalityUruguay' and
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## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
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## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
\hbox{\tt \#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and }
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityVenezuela' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
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## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
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## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## and 'nationalityUruguay' constant. Cannot scale data.
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## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
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## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
\verb|## 'X.nationalityUnited.States.'| and 'nationalityUruguay' constant. Cannot \\
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
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## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
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## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
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## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
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## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
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## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
\hbox{\tt \#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and }
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
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## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
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## 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
\#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
\hbox{\tt \#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and }
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
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## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
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## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
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## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## Warning in svm.default(x, y, scale = scale, ..., na.action =
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
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## and 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
\#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
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## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
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## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
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## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
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## and 'nationalityUruguay' constant. Cannot scale data.
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## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
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## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## and 'nationalityUruguay' constant. Cannot scale data.
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
```

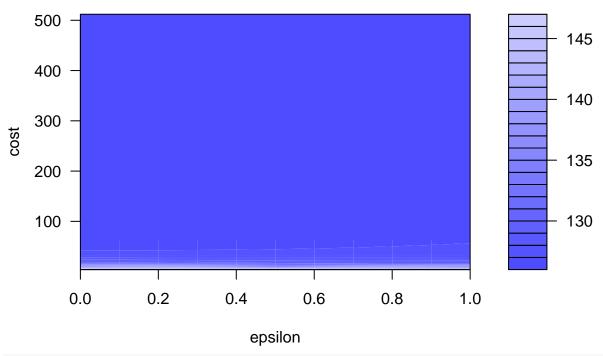
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
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## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
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## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
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## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
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## 'X.nationalityUnited.States.' and 'nationalityUruguay' constant. Cannot
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
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## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
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## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
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## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
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## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityMali' and 'nationalityPoland' and 'X.nationalityThe.Gambia.'
## and 'X.nationalityTrinidad.and.Tobago.' and 'nationalityTunisia' and
\verb|## 'X.nationalityUnited.States.'| and 'nationalityUruguay' constant. Cannot \\
## scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
```

```
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityIceland' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityGreece' and
## 'nationalityKenya' and 'nationalityRomania' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' constant. Cannot scale
## data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCroatia'
## and 'nationalityKenya' and 'X.nationalityNew.Zealand.' and
## 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya' and
## 'nationalityNorway' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityArmenia' and 'nationalityBenin' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia'
## and 'nationalityIsrael' and 'nationalityKenya' and 'nationalitySlovenia'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityCuracao'
## and 'nationalityFinland' and 'nationalityJapan' and 'nationalityKenya'
\#\# and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityBermuda' and
## 'nationalityCameroon' and 'nationalityCanada' and 'nationalityColombia' and
## 'nationalityKenya' and 'X.nationalityThe.Gambia.' and 'nationalityTunisia'
## and 'nationalityUruguay' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon' and
## 'nationalityCanada' and 'nationalityColombia' and 'nationalityEstonia' and
## 'nationalityKenya' and 'nationalityMorocco' and 'X.nationalityThe.Gambia.'
## and 'nationalityTunisia' and 'nationalityUruguay' and
## 'nationalityVenezuela' constant. Cannot scale data.
## Warning in svm.default(x, y, scale = scale, ..., na.action =
```

```
## na.action): Variable(s) 'nationalityBenin' and 'nationalityCameroon'
## and 'nationalityCanada' and 'nationalityColombia' and 'nationalityKenya'
## and 'X.nationalityThe.Gambia.' and 'nationalityTunisia' and
## 'nationalityUruguay' constant. Cannot scale data.
print(tuneResult)
##
## Parameter tuning of 'svm':
## - sampling method: 10-fold cross validation
##
  - best parameters:
   epsilon cost
             64
##
##
## - best performance: 126.484
# Draw the tuning graph
plot(tuneResult)
```

Performance of 'svm'



```
tunedModel <- tuneResult$best.model
tunedModelY <- predict(tunedModel, test)

error <- test$model_value - tunedModelY

# this value can be different on your computer
# because the tune method randomly shuffles the data
#tunedModelRMSE <- rmse(error) # 2.219642
#print(tunedModelRMSE)</pre>
```

mean((test\$market_value-tunedModelY)^2)

[1] 143.06