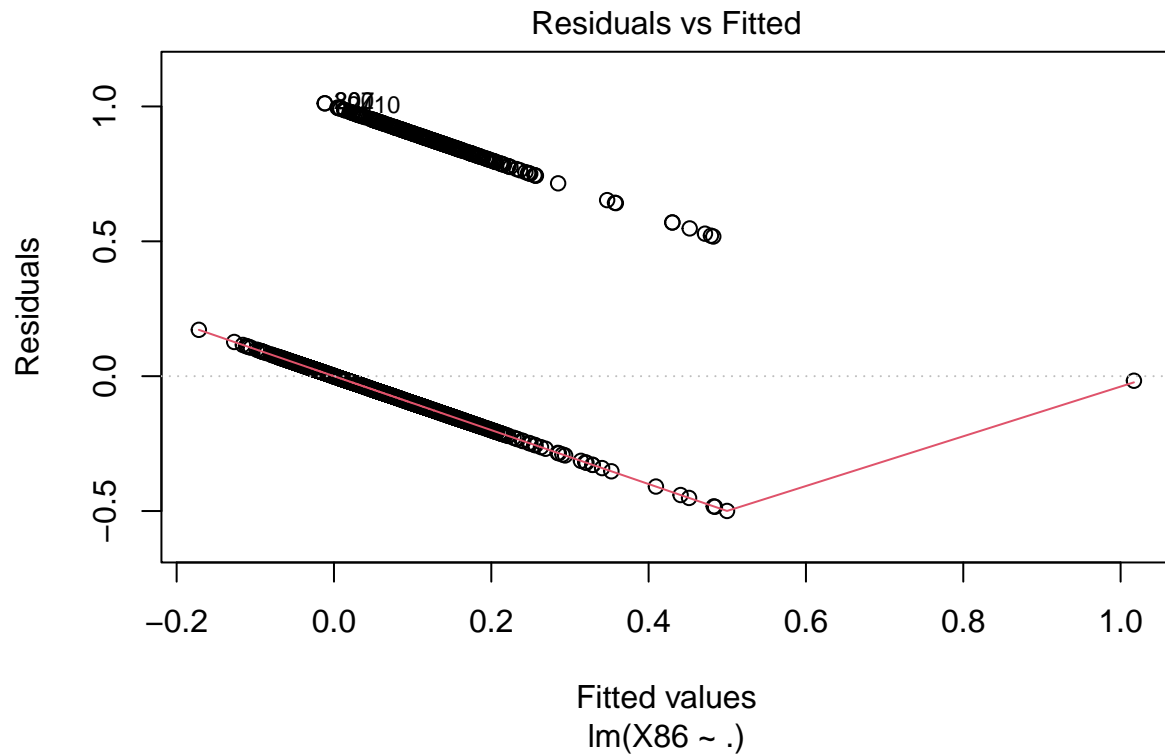# ASRM 432 Final Project

2024-04-29
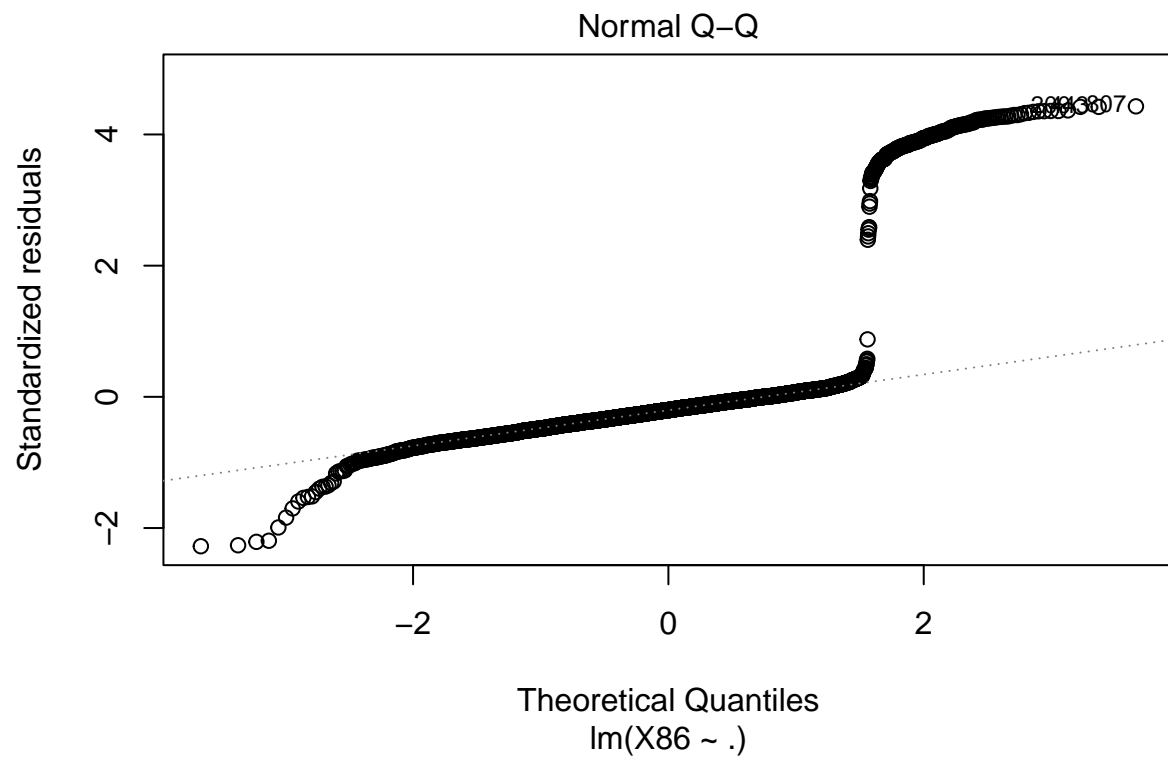
Problem and Literature Review

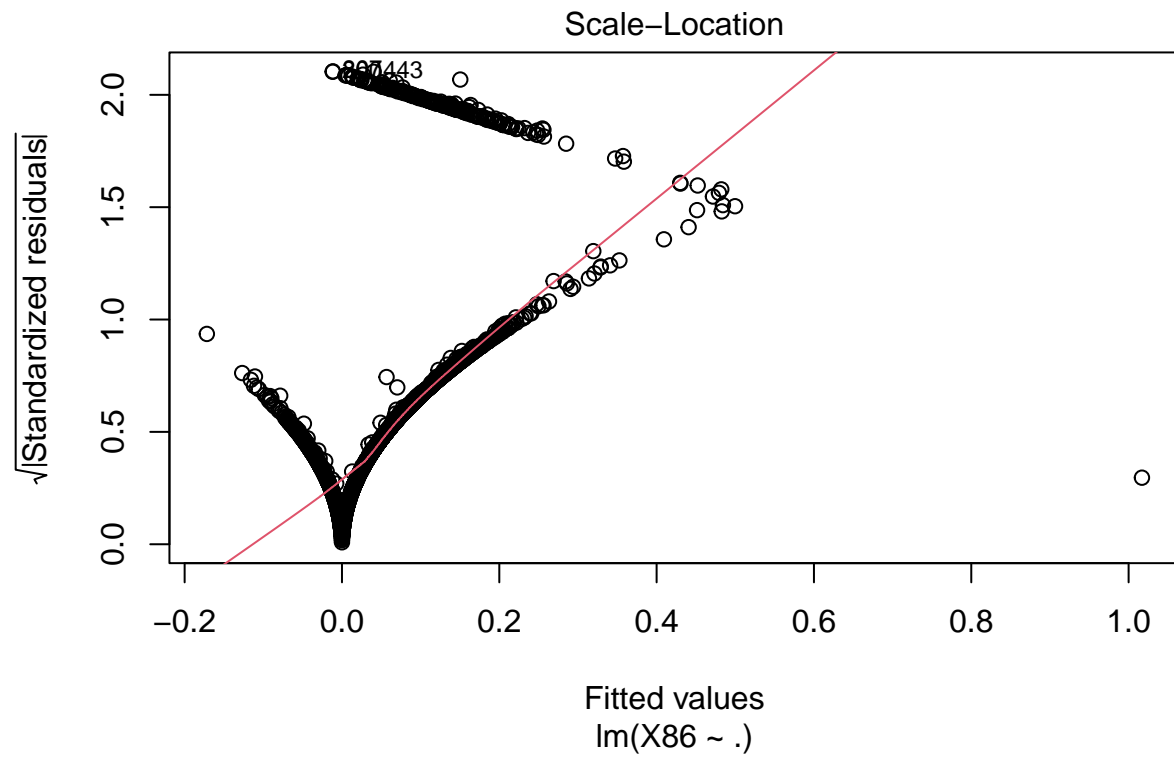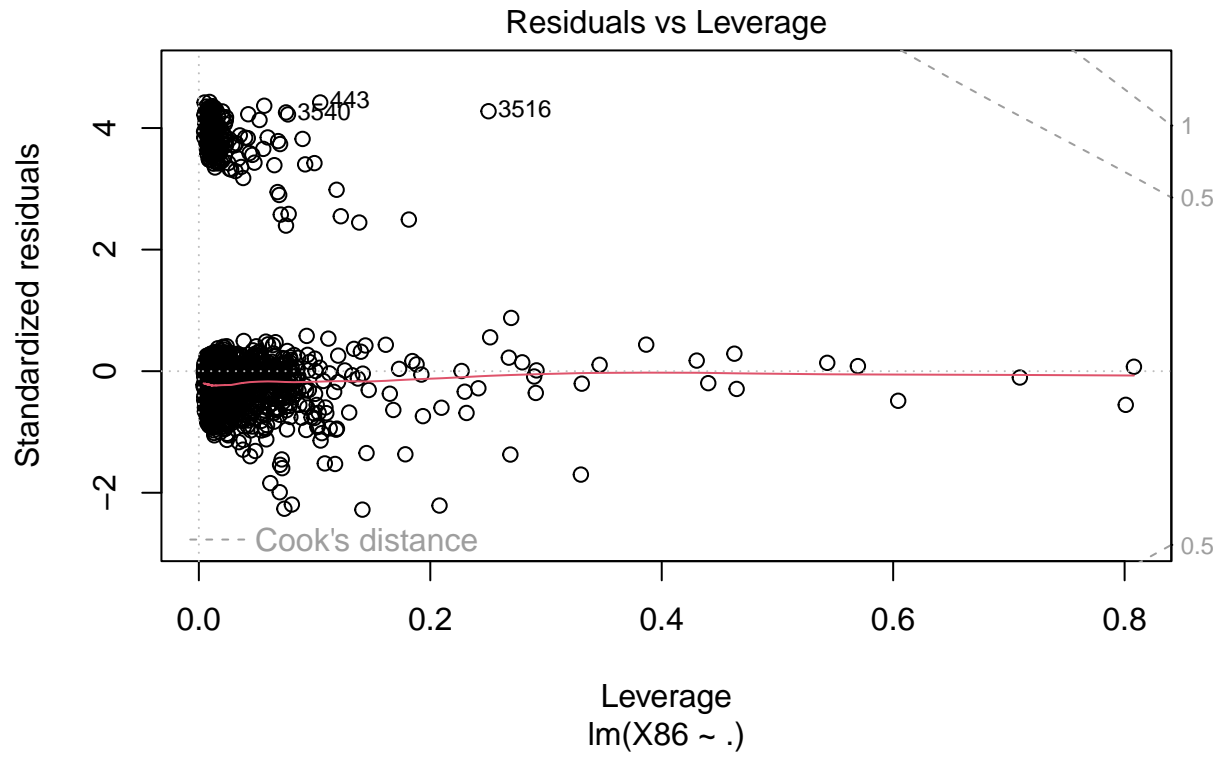Applying linear model on the training split then plotting the results

```
linearmod = lm(X86 ~., data = train)
plot(linearmod)
```

```
## Warning: not plotting observations with leverage one:
##   301, 3812
```

Residuals vs Fitted

Fitted values
lm(X86 ~ .)

Normal Q–Q

Standardized residuals

Theoretical Quantiles
lm(X86 ~ .)

Scale−Location

√|Standardized residuals|

Fitted values
lm(X86 ~ .)

3

Residuals vs Leverage

lm(X86 ~ .)

Classification Methods

Bagging and Random Forest

Bagging

Random Forest

Linear Discriminant Analysis

Comment Here I am running an initial naiveBayes classification model on the full training data set and fitting the model to check the results and accuracy against the data.

```
set.seed(7)
library(e1071)
```

```
## Warning: package 'e1071' was built under R version 4.2.3
```

```
naivebayes_train <- naiveBayes(train$X86 ~ ., data = train, )

naivebayes_train_fitted <- predict(naivebayes_train, newdata = train, type = "class")

table(naivebayes_train_fitted, train$X86)
```

```
##
## naivebayes_train_fitted    0    1
##                        0  433    9
##                        1 3329  229
```

```
insample_accuracy <- (table(naivebayes_train_fitted, train$X86)[1,1] + table(naivebayes_train_fitted, t
print(insample_accuracy)
```

```
## [1] 0.1655
```

Comment The accuracy was very low demonstrating that the model did not explain the data well at all,
below is a new naiveBayes model where it is trained using cross validation. The number of folds was set to
5 because of how large the data is, running more folds took significantly longer.

```
library(caret)
```

```
## Warning: package 'caret' was built under R version 4.2.3
```

```
## Loading required package: lattice
```

```
##
## Attaching package: 'caret'
```

```
## The following object is masked from 'package:purrr':
##
##     lift
```

```
library(e1071)
set.seed(7)
ctrl <- trainControl(method = "cv", number = 5)
nb_model <- train(x = train[, -86], y = as.factor(train$X86), method = "nb", trControl = ctrl)
```

```
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning in FUN(X[[i]], ...): Numerical 0 probability for all classes with
## observation 238
```

```
## Warning in FUN(X[[i]], ...): Numerical 0 probability for all classes with
## observation 704
```

```
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning: model fit failed for Fold1: usekernel=FALSE, fL=0, adjust=1 Error in NaiveBayes.default(x,
##   Zero variances for at least one class in variables: X50, X53, X60, X71, X74, X81
```

```
## Warning: Setting row names on a tibble is deprecated.
```

```
## Warning in FUN(X[[i]], ...): Numerical 0 probability for all classes with
## observation 201
```

```
## Warning in FUN(X[[i]], ...): Numerical 0 probability for all classes with
## observation 363

## Warning in FUN(X[[i]], ...): Numerical 0 probability for all classes with
## observation 619

## Warning in FUN(X[[i]], ...): Numerical 0 probability for all classes with
## observation 797

## Warning: Setting row names on a tibble is deprecated.

## Warning: model fit failed for Fold2: usekernel=FALSE, fL=0, adjust=1 Error in NaiveBayes.default(x, y
##    Zero variances for at least one class in variables: X50, X53, X60, X71, X74, X81

## Warning: Setting row names on a tibble is deprecated.

## Warning in FUN(X[[i]], ...): Numerical 0 probability for all classes with
## observation 40

## Warning: Setting row names on a tibble is deprecated.

## Warning: model fit failed for Fold3: usekernel=FALSE, fL=0, adjust=1 Error in NaiveBayes.default(x, y
##    Zero variances for at least one class in variables: X48, X50, X53, X60, X69, X71, X74, X81

## Warning: Setting row names on a tibble is deprecated.
## Setting row names on a tibble is deprecated.

## Warning: model fit failed for Fold4: usekernel=FALSE, fL=0, adjust=1 Error in NaiveBayes.default(x, y
##    Zero variances for at least one class in variables: X46, X50, X53, X56, X60, X67, X71, X74, X77, X8

## Warning: Setting row names on a tibble is deprecated.
## Setting row names on a tibble is deprecated.

## Warning: model fit failed for Fold5: usekernel=FALSE, fL=0, adjust=1 Error in NaiveBayes.default(x, y
##    Zero variances for at least one class in variables: X50, X51, X53, X60, X71, X72, X74, X81

## Warning in nominalTrainWorkflow(x = x, y = y, wts = weights, info = trainInfo,
## : There were missing values in resampled performance measures.

## Warning in train.default(x = train[, -86], y = as.factor(train$X86), method =
## "nb", : missing values found in aggregated results

## Warning: Setting row names on a tibble is deprecated.
```

```
print(nb_model)
```

```
## Naive Bayes
##
## 4000 samples
##   85 predictor
##    2 classes: '0', '1'
##
## No pre-processing
## Resampling: Cross-Validated (5 fold)
## Summary of sample sizes: 3200, 3200, 3201, 3200, 3199
## Resampling results across tuning parameters:
##
##   usekernel  Accuracy   Kappa
##   FALSE            NaN  NaN
##    TRUE      0.9405003    0
##
## Tuning parameter 'fL' was held constant at a value of 0
## Tuning
##  parameter 'adjust' was held constant at a value of 1
## Accuracy was used to select the optimal model using the largest value.
## The final values used for the model were fL = 0, usekernel = TRUE and adjust
##  = 1.
```

```r
correlation_matrix <- cor(train)

heatmap(correlation_matrix,
        Colv = NA, Rowv = NA,      # Turn off row and column clustering
        col = colorRampPalette(c("blue", "white", "red"))(100),  # Color palette
        scale = "none",           # Don't scale the data
        main = "Heatmap of train Correlation Matrix")
```

Heatmap of train Correlation Matrix
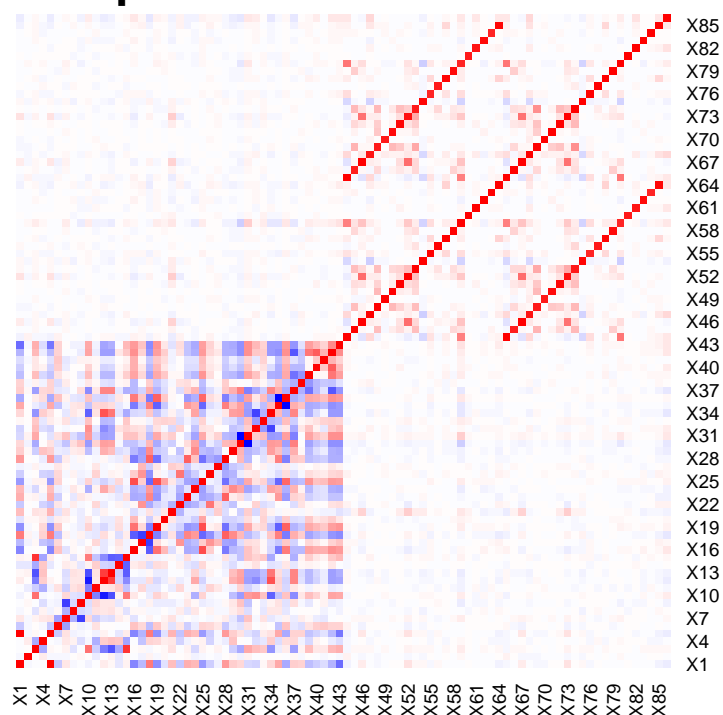
Comment Naive Bayes assumes independence in the input variables of a class, this seems to be an assumption that can not be made about the data we have (heat map provided), so instead I want to see if either other Discriminant Analysis model works better with our data.

```
library(MASS)
```

```
## Warning: package 'MASS' was built under R version 4.2.3
```

```
##
## Attaching package: 'MASS'
```

```
## The following object is masked from 'package:dplyr':
##
##     select
```

```
training_lda <- lda(train$X86 ~ ., data = train)
fitted_lda <- predict(training_lda, data = train)
```

```
conf_matrix <- table(fitted_lda$class, train$X86)
conf_matrix
```

```
##
##        0    1
##   0 3737  220
##   1   25   18
```

```
insample_accuracy <- (table(fitted_lda$class, train$X86)[1,1] + table(fitted_lda$class, train$X86)[2,2])
cat("In-sample Accuracy:", insample_accuracy, "\n")
```

In-sample Accuracy: 0.93875

```
#checking other metrics
TP <- conf_matrix[2,2]
FP <- conf_matrix[1,2]
TN <- conf_matrix[1,1]
FN <- conf_matrix[2,1]
#true negative rate
specificity <- TN / (TN + FP)
#true positive rate
sensitivity <- TP / (TP + FN)
#Positive predictive value
precision <- TP / (TP + FP)

cat("Specificity:", specificity, "\n")
```

Specificity: 0.9444023

```
cat("Sensitivity:", sensitivity, "\n")
```

Sensitivity: 0.4186047

```
cat("Precision:", precision, "\n")
```

Precision: 0.07563025

```
training_lda
```

```
## Call:
## lda(train$X86 ~ ., data = train)
##
## Prior probabilities of groups:
##      0       1
## 0.9405 0.0595
##
## Group means:
##         X1        X2       X3       X4       X5        X6       X7       X8
## 0 24.64381 1.111111 2.671983 2.992026 5.859649 0.6935141 4.594099 1.073365
## 1 21.09244 1.096639 2.802521 2.974790 5.075630 0.6806723 4.840336 1.130252
##         X9       X10       X11      X12      X13      X14      X15      X16
## 0 3.29798 6.147794 0.8971292 2.321637 1.891281 3.234450 4.296119 1.401914
## 1 2.97479 6.735294 0.7689076 1.819328 1.453782 3.247899 4.621849 1.957983
##        X17      X18      X19       X20       X21      X22      X23      X24
## 0 3.320840 4.669325 1.864700 0.3878256 0.5252525 2.871611 2.261031 2.33546
## 1 3.588235 3.836134 2.168067 0.4831933 0.2941176 3.315126 1.936975 2.00000
##        X25      X26      X27      X28       X29      X30      X31      X32
## 0 1.580542 1.603934 2.165603 3.801701 1.1121744 4.336257 4.671983 5.997608
```

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```
## 1 1.886555 1.764706 2.298319 3.478992 0.7605042 3.277311 5.722689 6.483193
##          X33       X34       X35       X36       X37       X38       X39       X40
## 0 1.300372 2.028708 6.340776 2.665072 2.641680 3.513025 2.706273 0.7743222
## 1 1.348739 1.457983 6.054622 2.945378 1.890756 3.605042 3.029412 1.0882353
##          X41       X42       X43       X44       X45       X46       X47
## 0 0.1998937 3.741361 4.186071 0.7652844 0.04279638 0.07017544 2.856725
## 1 0.1848739 4.256303 4.920168 1.1596639 0.02100840 0.01260504 4.802521
##          X48       X49       X50       X51       X52       X53       X54
## 0 0.05103668 0.1695906 0.00877193 0.01807549 0.08771930 0.0148857 0.22567783
## 1 0.02521008 0.2352941 0.00000000 0.01680672 0.04621849 0.0000000 0.07983193
##          X55       X56       X57       X58       X59       X60       X61
## 0 0.1943115 0.015948963 0.01435407 0.02046784 1.790537 0.001063264 0.01143009
## 1 0.2142857 0.008403361 0.04621849 0.05042017 2.512605 0.000000000 0.10084034
##          X62       X63       X64       X65       X66       X67       X68
## 0 0.02259436 0.01594896 0.03907496 0.3995215 0.015417331 0.020202020 0.5419989
## 1 0.02521008 0.01260504 0.17647059 0.5882353 0.008403361 0.004201681 0.9453782
##          X69       X70       X71       X72       X73       X74
## 0 0.011961722 0.04013822 0.002126528 0.010898458 0.03216374 0.007177033
## 1 0.004201681 0.05462185 0.000000000 0.008403361 0.01260504 0.000000000
##          X75       X76       X77       X78       X79       X80
## 0 0.07389686 0.07363105 0.005847953 0.006113769 0.003987241 0.5619351
## 1 0.02521008 0.10924370 0.004201681 0.016806723 0.008403361 0.7058824
##          X81       X82       X83       X84       X85
## 0 0.0005316321 0.003189793 0.02631579 0.007974482 0.01196172
## 1 0.0000000000 0.037815126 0.02941176 0.008403361 0.05462185
##
## Coefficients of linear discriminants:
##              LD1
## X1   0.0541794309
## X2  -0.1389914921
## X3  -0.0239953297
## X4   0.1570462093
## X5  -0.2488711499
## X6  -0.1874593438
## X7  -0.0918597442
## X8  -0.0488919824
## X9  -0.1367895602
## X10  0.0705548394
## X11 -0.0113574505
## X12  0.0369770691
## X13 -0.0378077710
## X14 -0.0679447847
## X15 -0.0058578718
## X16  0.0003295787
## X17 -0.1965301978
## X18 -0.2998943972
## X19 -0.0209535710
## X20  0.0574819871
## X21 -0.0791488624
## X22  0.0444424250
## X23 -0.0445300914
## X24  0.0082235938
## X25 -0.0748316553
## X26 -0.0445355884
```

```
## X27  0.0263158692
## X28  0.0434488553
## X29  0.0078920282
## X30 -0.3646032326
## X31 -0.3213605154
## X32  0.1197448733
## X33  0.1178332482
## X34  0.0219314611
## X35 -0.8930308200
## X36 -0.9827675100
## X37  0.0336280180
## X38  0.0392913184
## X39 -0.0291265968
## X40  0.0568510488
## X41 -0.2267271020
## X42  0.1377280173
## X43  0.0212134106
## X44  0.4155922540
## X45 -0.1541537318
## X46 -0.6455458753
## X47  0.1320504645
## X48  0.0321626448
## X49  0.0262342702
## X50  0.0237100859
## X51  1.0192018727
## X52  0.0879443724
## X53 -0.1085735633
## X54  0.1429853051
## X55 -0.2423479085
## X56  0.1111660061
## X57  2.7899231117
## X58  0.8421662593
## X59  0.2009800222
## X60 -0.6303396519
## X61 -1.0701345921
## X62  0.6887902424
## X63 -0.2593529040
## X64 -0.1760435666
## X65 -0.5480551164
## X66  0.1150985923
## X67  1.3661840273
## X68  0.1922190957
## X69 -0.4110340205
## X70 -0.0604944306
## X71 -0.4679516654
## X72 -1.6672834696
## X73 -0.5153142584
## X74  0.1068721801
## X75 -0.4506629060
## X76  0.4299390302
## X77 -0.5121327028
## X78 -6.1079877347
## X79 -3.1921510452
## X80 -0.3040613454
```

```
## X81  0.0580828909
## X82  8.0515008749
## X83 -0.4768512197
## X84  0.2432887159
## X85  2.0517103659
```

Comment The LDA model fits the training set really well which could mean that the best decision boundary is a linear one and the matrix is best left common and not class specific

Comment QDA does not seem to work with the data due to rank deficiency which would make sense because it also relates to high correlation in the data (similar problem to Naive Bayes), after trying these three, the Linear Discriminant Analysis and its assumptions fit our training data the best and therefore should be used for predictive purposes.

```r
library(ggplot2)

conf_matrix <- table(fitted_lda$class, train$X86)

conf_df <- as.data.frame.matrix(conf_matrix)

conf_df$Predicted_Class <- rownames(conf_df)
rownames(conf_df) <- NULL

conf_df <- reshape2::melt(conf_df, id.vars = "Predicted_Class")

ggplot(data = conf_df, aes(x = Predicted_Class, y = variable, fill = value)) +
  geom_tile(color = "white") +
  scale_fill_gradient(low = "white", high = "blue") +
  geom_text(aes(label = value)) +
  labs(x = "Predicted Class", y = "Actual Class", title = "Confusion Matrix") +
  theme_minimal()
```

Confusion Matrix
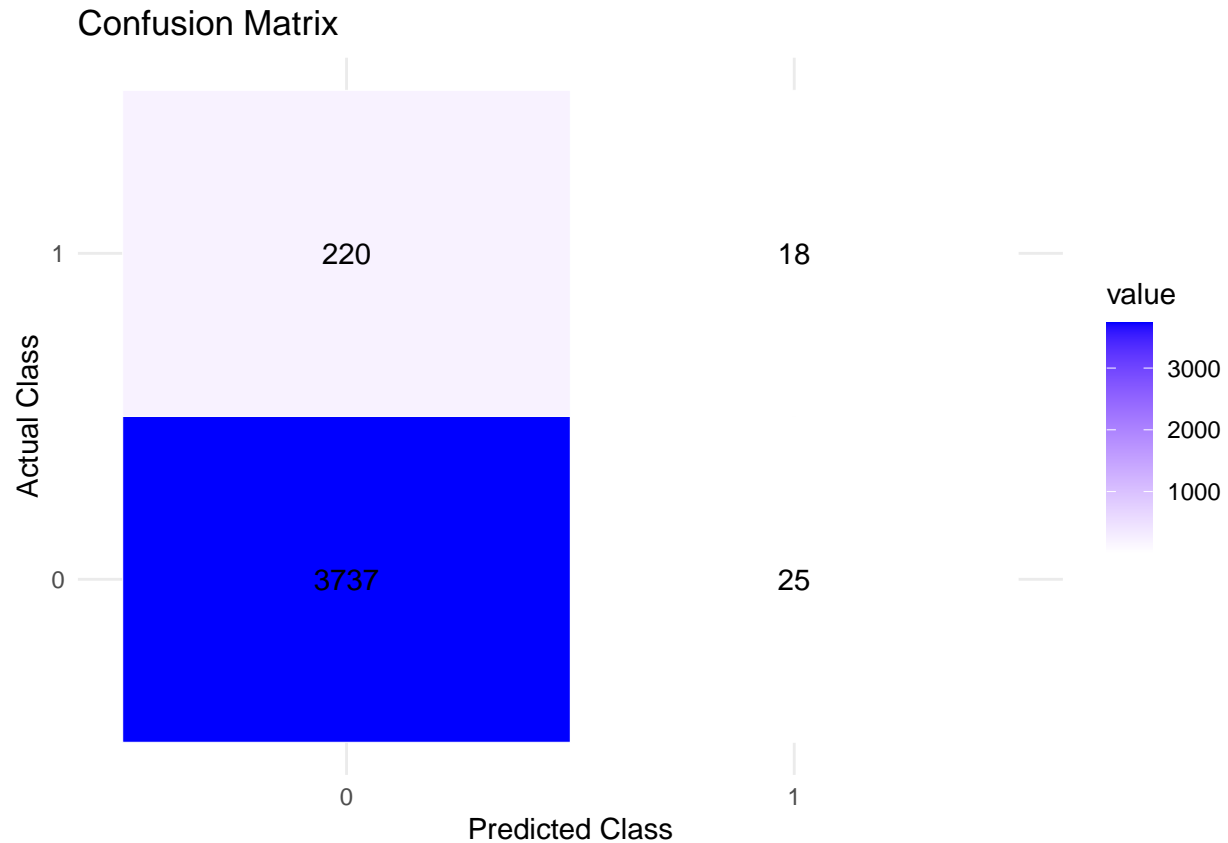
comment running a stepwise regression to find the optimal model size with only the most significant input variables

```
lm_data <- lm(train$X86 ~ ., data = train)
model_opt <- step(lm_data)
```

```
## Start:  AIC=-11691.11
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X11 + X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 +
##     X21 + X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 +
##     X31 + X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 +
##     X41 + X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 +
##     X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X60 +
##     X61 + X62 + X63 + X64 + X65 + X66 + X67 + X68 + X69 + X70 +
##     X71 + X72 + X73 + X74 + X75 + X76 + X77 + X78 + X79 + X80 +
##     X81 + X82 + X83 + X84 + X85
##
##        Df Sum of Sq    RSS    AIC
## - X16   1   0.00000 206.08 -11693
## - X81   1   0.00001 206.08 -11693
## - X50   1   0.00004 206.08 -11693
## - X15   1   0.00010 206.08 -11693
## - X11   1   0.00036 206.08 -11693
## - X74   1   0.00040 206.08 -11693
## - X29   1   0.00041 206.08 -11693
## - X24   1   0.00051 206.08 -11693
```

```
## - X48   1    0.00074 206.08 -11693
## - X70   1    0.00076 206.08 -11693
## - X66   1    0.00088 206.08 -11693
## - X71   1    0.00121 206.08 -11693
## - X34   1    0.00134 206.08 -11693
## - X53   1    0.00146 206.08 -11693
## - X3    1    0.00163 206.08 -11693
## - X56   1    0.00201 206.08 -11693
## - X49   1    0.00202 206.08 -11693
## - X84   1    0.00209 206.08 -11693
## - X19   1    0.00317 206.09 -11693
## - X60   1    0.00318 206.09 -11693
## - X12   1    0.00344 206.09 -11693
## - X52   1    0.00450 206.09 -11693
## - X77   1    0.00480 206.09 -11693
## - X13   1    0.00489 206.09 -11693
## - X39   1    0.00491 206.09 -11693
## - X27   1    0.00508 206.09 -11693
## - X64   1    0.00568 206.09 -11693
## - X37   1    0.00629 206.09 -11693
## - X69   1    0.00705 206.09 -11693
## - X38   1    0.00929 206.09 -11693
## - X31   1    0.00998 206.09 -11693
## - X45   1    0.01028 206.09 -11693
## - X83   1    0.01153 206.09 -11693
## - X26   1    0.01160 206.09 -11693
## - X28   1    0.01172 206.09 -11693
## - X8    1    0.01177 206.09 -11693
## - X67   1    0.01219 206.09 -11693
## - X63   1    0.01275 206.09 -11693
## - X10   1    0.01282 206.09 -11693
## - X30   1    0.01283 206.09 -11693
## - X43   1    0.01283 206.09 -11693
## - X54   1    0.01345 206.09 -11693
## - X75   1    0.01426 206.10 -11693
## - X22   1    0.01474 206.10 -11693
## - X23   1    0.01481 206.10 -11693
## - X14   1    0.01512 206.10 -11693
## - X62   1    0.01602 206.10 -11693
## - X40   1    0.01657 206.10 -11693
## - X20   1    0.01795 206.10 -11693
## - X73   1    0.02377 206.10 -11693
## - X25   1    0.03071 206.11 -11692
## - X7    1    0.03353 206.12 -11692
## - X46   1    0.03361 206.12 -11692
## - X21   1    0.03605 206.12 -11692
## - X32   1    0.03681 206.12 -11692
## - X68   1    0.03760 206.12 -11692
## - X65   1    0.04092 206.12 -11692
## - X33   1    0.04370 206.12 -11692
## - X72   1    0.04484 206.13 -11692
## - X2    1    0.04772 206.13 -11692
## - X51   1    0.04816 206.13 -11692
## - X35   1    0.05613 206.14 -11692
```

```
## - X36    1   0.06822 206.15 -11692
## - X85    1   0.07072 206.15 -11692
## - X79    1   0.07603 206.16 -11692
## - X9     1   0.08136 206.16 -11692
## - X1     1   0.08357 206.16 -11692
## - X5     1   0.08726 206.17 -11691
## - X44    1   0.09002 206.17 -11691
## <none>                206.08 -11691
## - X80    1   0.10540 206.19 -11691
## - X17    1   0.11122 206.19 -11691
## - X76    1   0.11835 206.20 -11691
## - X42    1   0.12780 206.21 -11691
## - X58    1   0.13479 206.22 -11690
## - X4     1   0.14626 206.23 -11690
## - X41    1   0.15774 206.24 -11690
## - X78    1   0.16217 206.24 -11690
## - X6     1   0.16628 206.25 -11690
## - X57    1   0.20440 206.29 -11689
## - X55    1   0.21375 206.29 -11689
## - X61    1   0.22722 206.31 -11689
## - X18    1   0.24757 206.33 -11688
## - X47    1   0.40303 206.48 -11685
## - X59    1   0.47923 206.56 -11684
## - X82    1   1.10350 207.19 -11672
##
## Step:  AIC=-11693.11
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X11 + X12 + X13 + X14 + X15 + X17 + X18 + X19 + X20 + X21 +
##     X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 +
##     X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 +
##     X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 +
##     X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X60 + X61 +
##     X62 + X63 + X64 + X65 + X66 + X67 + X68 + X69 + X70 + X71 +
##     X72 + X73 + X74 + X75 + X76 + X77 + X78 + X79 + X80 + X81 +
##     X82 + X83 + X84 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X81    1   0.00001 206.08 -11695
## - X50    1   0.00004 206.08 -11695
## - X15    1   0.00010 206.08 -11695
## - X11    1   0.00036 206.08 -11695
## - X74    1   0.00040 206.08 -11695
## - X29    1   0.00042 206.08 -11695
## - X24    1   0.00052 206.08 -11695
## - X48    1   0.00074 206.08 -11695
## - X70    1   0.00077 206.08 -11695
## - X66    1   0.00088 206.08 -11695
## - X71    1   0.00121 206.08 -11695
## - X34    1   0.00134 206.08 -11695
## - X53    1   0.00146 206.08 -11695
## - X3     1   0.00163 206.08 -11695
## - X56    1   0.00201 206.08 -11695
## - X49    1   0.00202 206.08 -11695
## - X84    1   0.00209 206.08 -11695
```

```
## - X19   1   0.00318 206.09 -11695
## - X60   1   0.00318 206.09 -11695
## - X12   1   0.00344 206.09 -11695
## - X52   1   0.00449 206.09 -11695
## - X77   1   0.00480 206.09 -11695
## - X13   1   0.00490 206.09 -11695
## - X39   1   0.00500 206.09 -11695
## - X27   1   0.00512 206.09 -11695
## - X64   1   0.00569 206.09 -11695
## - X37   1   0.00639 206.09 -11695
## - X69   1   0.00705 206.09 -11695
## - X38   1   0.00951 206.09 -11695
## - X31   1   0.00998 206.09 -11695
## - X45   1   0.01029 206.09 -11695
## - X83   1   0.01153 206.09 -11695
## - X26   1   0.01168 206.09 -11695
## - X8    1   0.01177 206.09 -11695
## - X28   1   0.01179 206.09 -11695
## - X67   1   0.01219 206.09 -11695
## - X63   1   0.01275 206.09 -11695
## - X43   1   0.01283 206.09 -11695
## - X30   1   0.01283 206.09 -11695
## - X10   1   0.01284 206.09 -11695
## - X54   1   0.01345 206.09 -11695
## - X75   1   0.01426 206.10 -11695
## - X23   1   0.01496 206.10 -11695
## - X22   1   0.01498 206.10 -11695
## - X14   1   0.01512 206.10 -11695
## - X62   1   0.01602 206.10 -11695
## - X40   1   0.01688 206.10 -11695
## - X20   1   0.01806 206.10 -11695
## - X73   1   0.02377 206.10 -11695
## - X25   1   0.03175 206.11 -11694
## - X7    1   0.03353 206.12 -11694
## - X46   1   0.03361 206.12 -11694
## - X21   1   0.03608 206.12 -11694
## - X32   1   0.03682 206.12 -11694
## - X68   1   0.03761 206.12 -11694
## - X65   1   0.04096 206.12 -11694
## - X33   1   0.04371 206.12 -11694
## - X72   1   0.04484 206.13 -11694
## - X2    1   0.04773 206.13 -11694
## - X51   1   0.04816 206.13 -11694
## - X35   1   0.05629 206.14 -11694
## - X36   1   0.06839 206.15 -11694
## - X85   1   0.07076 206.15 -11694
## - X79   1   0.07607 206.16 -11694
## - X9    1   0.08137 206.16 -11694
## - X1    1   0.08359 206.16 -11694
## - X5    1   0.08730 206.17 -11693
## - X44   1   0.09010 206.17 -11693
## <none>          206.08 -11693
## - X80   1   0.10540 206.19 -11693
## - X76   1   0.11838 206.20 -11693
```

```
## - X42    1    0.12788 206.21 -11693
## - X58    1    0.13487 206.22 -11692
## - X4     1    0.14638 206.23 -11692
## - X41    1    0.16126 206.24 -11692
## - X78    1    0.16222 206.24 -11692
## - X6     1    0.16650 206.25 -11692
## - X57    1    0.20444 206.29 -11691
## - X55    1    0.21376 206.29 -11691
## - X61    1    0.22722 206.31 -11691
## - X47    1    0.40303 206.48 -11687
## - X59    1    0.47923 206.56 -11686
## - X17    1    0.49958 206.58 -11685
## - X18    1    0.84902 206.93 -11679
## - X82    1    1.10351 207.19 -11674
##
## Step:  AIC=-11695.11
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X11 + X12 + X13 + X14 + X15 + X17 + X18 + X19 + X20 + X21 +
##     X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 +
##     X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 +
##     X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 +
##     X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X60 + X61 +
##     X62 + X63 + X64 + X65 + X66 + X67 + X68 + X69 + X70 + X71 +
##     X72 + X73 + X74 + X75 + X76 + X77 + X78 + X79 + X80 + X82 +
##     X83 + X84 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X50    1    0.00004 206.08 -11697
## - X15    1    0.00010 206.08 -11697
## - X11    1    0.00036 206.08 -11697
## - X74    1    0.00040 206.08 -11697
## - X29    1    0.00041 206.08 -11697
## - X24    1    0.00052 206.08 -11697
## - X48    1    0.00074 206.08 -11697
## - X70    1    0.00077 206.08 -11697
## - X66    1    0.00088 206.08 -11697
## - X71    1    0.00121 206.08 -11697
## - X34    1    0.00134 206.08 -11697
## - X53    1    0.00146 206.08 -11697
## - X3     1    0.00163 206.08 -11697
## - X56    1    0.00201 206.08 -11697
## - X49    1    0.00202 206.08 -11697
## - X84    1    0.00209 206.08 -11697
## - X19    1    0.00318 206.09 -11697
## - X12    1    0.00345 206.09 -11697
## - X52    1    0.00450 206.09 -11697
## - X77    1    0.00480 206.09 -11697
## - X13    1    0.00490 206.09 -11697
## - X39    1    0.00500 206.09 -11697
## - X27    1    0.00512 206.09 -11697
## - X64    1    0.00569 206.09 -11697
## - X37    1    0.00639 206.09 -11697
## - X69    1    0.00705 206.09 -11697
## - X38    1    0.00951 206.09 -11697
```

```
## - X31  1  0.00999 206.09 -11697
## - X45  1  0.01029 206.09 -11697
## - X83  1  0.01153 206.09 -11697
## - X26  1  0.01171 206.09 -11697
## - X8   1  0.01177 206.09 -11697
## - X28  1  0.01179 206.09 -11697
## - X67  1  0.01220 206.09 -11697
## - X63  1  0.01275 206.09 -11697
## - X43  1  0.01283 206.09 -11697
## - X30  1  0.01284 206.09 -11697
## - X10  1  0.01284 206.09 -11697
## - X54  1  0.01345 206.09 -11697
## - X75  1  0.01426 206.10 -11697
## - X60  1  0.01484 206.10 -11697
## - X23  1  0.01496 206.10 -11697
## - X22  1  0.01498 206.10 -11697
## - X14  1  0.01512 206.10 -11697
## - X62  1  0.01602 206.10 -11697
## - X40  1  0.01688 206.10 -11697
## - X20  1  0.01806 206.10 -11697
## - X73  1  0.02377 206.10 -11697
## - X25  1  0.03175 206.11 -11696
## - X7   1  0.03353 206.12 -11696
## - X46  1  0.03361 206.12 -11696
## - X21  1  0.03611 206.12 -11696
## - X32  1  0.03685 206.12 -11696
## - X68  1  0.03761 206.12 -11696
## - X65  1  0.04096 206.12 -11696
## - X33  1  0.04371 206.12 -11696
## - X72  1  0.04484 206.13 -11696
## - X2   1  0.04774 206.13 -11696
## - X51  1  0.04816 206.13 -11696
## - X35  1  0.05630 206.14 -11696
## - X36  1  0.06840 206.15 -11696
## - X85  1  0.07076 206.15 -11696
## - X79  1  0.07607 206.16 -11696
## - X9   1  0.08136 206.16 -11696
## - X1   1  0.08363 206.16 -11696
## - X5   1  0.08734 206.17 -11695
## - X44  1  0.09009 206.17 -11695
## <none>          206.08 -11695
## - X80  1  0.10542 206.19 -11695
## - X76  1  0.11838 206.20 -11695
## - X42  1  0.12788 206.21 -11695
## - X58  1  0.13487 206.22 -11694
## - X4   1  0.14638 206.23 -11694
## - X41  1  0.16125 206.24 -11694
## - X78  1  0.16222 206.24 -11694
## - X6   1  0.16651 206.25 -11694
## - X57  1  0.20444 206.29 -11693
## - X55  1  0.21377 206.29 -11693
## - X61  1  0.22723 206.31 -11693
## - X47  1  0.40305 206.48 -11689
## - X59  1  0.47923 206.56 -11688
```

```
## - X17   1   0.49958 206.58 -11687
## - X18   1   0.84903 206.93 -11681
## - X82   1   1.10352 207.19 -11676
##
## Step:  AIC=-11697.11
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##      X11 + X12 + X13 + X14 + X15 + X17 + X18 + X19 + X20 + X21 +
##      X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 +
##      X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 +
##      X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X51 + X52 +
##      X53 + X54 + X55 + X56 + X57 + X58 + X59 + X60 + X61 + X62 +
##      X63 + X64 + X65 + X66 + X67 + X68 + X69 + X70 + X71 + X72 +
##      X73 + X74 + X75 + X76 + X77 + X78 + X79 + X80 + X82 + X83 +
##      X84 + X85
##
##         Df Sum of Sq   RSS    AIC
## - X15   1   0.00010 206.08 -11699
## - X74   1   0.00036 206.08 -11699
## - X11   1   0.00037 206.08 -11699
## - X29   1   0.00041 206.08 -11699
## - X24   1   0.00052 206.08 -11699
## - X48   1   0.00072 206.08 -11699
## - X70   1   0.00077 206.08 -11699
## - X66   1   0.00087 206.08 -11699
## - X34   1   0.00133 206.08 -11699
## - X53   1   0.00146 206.08 -11699
## - X3    1   0.00163 206.08 -11699
## - X49   1   0.00202 206.08 -11699
## - X56   1   0.00203 206.08 -11699
## - X84   1   0.00209 206.08 -11699
## - X19   1   0.00319 206.09 -11699
## - X12   1   0.00343 206.09 -11699
## - X52   1   0.00479 206.09 -11699
## - X77   1   0.00482 206.09 -11699
## - X13   1   0.00490 206.09 -11699
## - X39   1   0.00498 206.09 -11699
## - X27   1   0.00511 206.09 -11699
## - X64   1   0.00569 206.09 -11699
## - X37   1   0.00640 206.09 -11699
## - X69   1   0.00710 206.09 -11699
## - X71   1   0.00895 206.09 -11699
## - X38   1   0.00952 206.09 -11699
## - X31   1   0.00998 206.09 -11699
## - X45   1   0.01025 206.09 -11699
## - X83   1   0.01152 206.09 -11699
## - X26   1   0.01172 206.09 -11699
## - X8    1   0.01177 206.09 -11699
## - X28   1   0.01179 206.09 -11699
## - X67   1   0.01216 206.09 -11699
## - X63   1   0.01275 206.09 -11699
## - X10   1   0.01282 206.09 -11699
## - X43   1   0.01282 206.09 -11699
## - X30   1   0.01283 206.09 -11699
## - X54   1   0.01346 206.09 -11699
```

```
## - X75    1   0.01427 206.10 -11699
## - X60    1   0.01485 206.10 -11699
## - X23    1   0.01495 206.10 -11699
## - X22    1   0.01499 206.10 -11699
## - X14    1   0.01513 206.10 -11699
## - X62    1   0.01599 206.10 -11699
## - X40    1   0.01689 206.10 -11699
## - X20    1   0.01806 206.10 -11699
## - X73    1   0.02492 206.11 -11699
## - X25    1   0.03174 206.11 -11698
## - X7     1   0.03350 206.12 -11698
## - X46    1   0.03357 206.12 -11698
## - X21    1   0.03612 206.12 -11698
## - X32    1   0.03681 206.12 -11698
## - X68    1   0.03757 206.12 -11698
## - X65    1   0.04098 206.12 -11698
## - X33    1   0.04367 206.12 -11698
## - X72    1   0.04503 206.13 -11698
## - X2     1   0.04774 206.13 -11698
## - X51    1   0.04849 206.13 -11698
## - X35    1   0.05629 206.14 -11698
## - X36    1   0.06840 206.15 -11698
## - X85    1   0.07076 206.15 -11698
## - X79    1   0.07604 206.16 -11698
## - X9     1   0.08134 206.16 -11698
## - X1     1   0.08360 206.16 -11698
## - X5     1   0.08730 206.17 -11697
## - X44    1   0.09014 206.17 -11697
## <none>              206.08 -11697
## - X80    1   0.10541 206.19 -11697
## - X76    1   0.11839 206.20 -11697
## - X42    1   0.12785 206.21 -11697
## - X58    1   0.13483 206.22 -11696
## - X4     1   0.14644 206.23 -11696
## - X41    1   0.16124 206.24 -11696
## - X78    1   0.16221 206.24 -11696
## - X6     1   0.16648 206.25 -11696
## - X57    1   0.20444 206.29 -11695
## - X55    1   0.21381 206.29 -11695
## - X61    1   0.22725 206.31 -11695
## - X47    1   0.40368 206.49 -11691
## - X59    1   0.47919 206.56 -11690
## - X17    1   0.50015 206.58 -11689
## - X18    1   0.84981 206.93 -11683
## - X82    1   1.10359 207.19 -11678
##
## Step:  AIC=-11699.11
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##      X11 + X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 +
##      X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 + X32 +
##      X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 +
##      X43 + X44 + X45 + X46 + X47 + X48 + X49 + X51 + X52 + X53 +
##      X54 + X55 + X56 + X57 + X58 + X59 + X60 + X61 + X62 + X63 +
##      X64 + X65 + X66 + X67 + X68 + X69 + X70 + X71 + X72 + X73 +
```

```
##       X74 + X75 + X76 + X77 + X78 + X79 + X80 + X82 + X83 + X84 +
##       X85
##
##          Df Sum of Sq    RSS    AIC
## - X74  1    0.00035 206.08 -11701
## - X29  1    0.00039 206.08 -11701
## - X11  1    0.00043 206.08 -11701
## - X24  1    0.00049 206.08 -11701
## - X48  1    0.00070 206.08 -11701
## - X70  1    0.00079 206.08 -11701
## - X66  1    0.00087 206.08 -11701
## - X34  1    0.00135 206.08 -11701
## - X53  1    0.00145 206.08 -11701
## - X3   1    0.00188 206.08 -11701
## - X56  1    0.00202 206.08 -11701
## - X49  1    0.00207 206.08 -11701
## - X84  1    0.00209 206.08 -11701
## - X19  1    0.00328 206.09 -11701
## - X12  1    0.00334 206.09 -11701
## - X52  1    0.00475 206.09 -11701
## - X77  1    0.00480 206.09 -11701
## - X39  1    0.00499 206.09 -11701
## - X27  1    0.00508 206.09 -11701
## - X64  1    0.00566 206.09 -11701
## - X37  1    0.00640 206.09 -11701
## - X69  1    0.00704 206.09 -11701
## - X71  1    0.00891 206.09 -11701
## - X38  1    0.00953 206.09 -11701
## - X31  1    0.00991 206.09 -11701
## - X45  1    0.01023 206.09 -11701
## - X83  1    0.01150 206.09 -11701
## - X28  1    0.01169 206.09 -11701
## - X8   1    0.01175 206.09 -11701
## - X26  1    0.01183 206.09 -11701
## - X67  1    0.01222 206.09 -11701
## - X63  1    0.01274 206.09 -11701
## - X30  1    0.01276 206.09 -11701
## - X10  1    0.01279 206.09 -11701
## - X43  1    0.01281 206.09 -11701
## - X13  1    0.01286 206.09 -11701
## - X54  1    0.01352 206.09 -11701
## - X75  1    0.01434 206.10 -11701
## - X22  1    0.01489 206.10 -11701
## - X60  1    0.01494 206.10 -11701
## - X23  1    0.01534 206.10 -11701
## - X62  1    0.01597 206.10 -11701
## - X40  1    0.01698 206.10 -11701
## - X20  1    0.01803 206.10 -11701
## - X73  1    0.02485 206.11 -11701
## - X25  1    0.03227 206.11 -11700
## - X7   1    0.03340 206.12 -11700
## - X46  1    0.03366 206.12 -11700
## - X21  1    0.03659 206.12 -11700
## - X32  1    0.03688 206.12 -11700
```

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```
## - X68    1   0.03763 206.12 -11700
## - X65    1   0.04117 206.12 -11700
## - X33    1   0.04366 206.12 -11700
## - X72    1   0.04504 206.13 -11700
## - X2     1   0.04794 206.13 -11700
## - X51    1   0.04850 206.13 -11700
## - X35    1   0.05619 206.14 -11700
## - X36    1   0.06830 206.15 -11700
## - X85    1   0.07072 206.15 -11700
## - X79    1   0.07637 206.16 -11700
## - X14    1   0.07799 206.16 -11700
## - X9     1   0.08124 206.16 -11700
## - X1     1   0.08427 206.17 -11700
## - X5     1   0.08786 206.17 -11699
## - X44    1   0.09058 206.17 -11699
## <none>            206.08 -11699
## - X80    1   0.10534 206.19 -11699
## - X76    1   0.11875 206.20 -11699
## - X42    1   0.12776 206.21 -11699
## - X58    1   0.13532 206.22 -11698
## - X4     1   0.14717 206.23 -11698
## - X41    1   0.16114 206.24 -11698
## - X78    1   0.16234 206.24 -11698
## - X6     1   0.16642 206.25 -11698
## - X57    1   0.20460 206.29 -11697
## - X55    1   0.21437 206.30 -11697
## - X61    1   0.22723 206.31 -11697
## - X47    1   0.40358 206.49 -11693
## - X59    1   0.47913 206.56 -11692
## - X17    1   0.50292 206.58 -11691
## - X18    1   0.85194 206.93 -11685
## - X82    1   1.10356 207.19 -11680
##
## Step:  AIC=-11701.1
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X11 + X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 +
##     X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 + X32 +
##     X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 +
##     X43 + X44 + X45 + X46 + X47 + X48 + X49 + X51 + X52 + X53 +
##     X54 + X55 + X56 + X57 + X58 + X59 + X60 + X61 + X62 + X63 +
##     X64 + X65 + X66 + X67 + X68 + X69 + X70 + X71 + X72 + X73 +
##     X75 + X76 + X77 + X78 + X79 + X80 + X82 + X83 + X84 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X29    1   0.00039 206.08 -11703
## - X48    1   0.00043 206.08 -11703
## - X11    1   0.00045 206.08 -11703
## - X24    1   0.00050 206.08 -11703
## - X66    1   0.00079 206.08 -11703
## - X70    1   0.00079 206.08 -11703
## - X34    1   0.00136 206.08 -11703
## - X3     1   0.00185 206.08 -11703
## - X49    1   0.00206 206.08 -11703
## - X84    1   0.00207 206.08 -11703
```

```
## - X53  1   0.00210 206.08 -11703
## - X56  1   0.00243 206.08 -11703
## - X19  1   0.00327 206.09 -11703
## - X12  1   0.00329 206.09 -11703
## - X39  1   0.00495 206.09 -11703
## - X52  1   0.00509 206.09 -11703
## - X27  1   0.00512 206.09 -11703
## - X77  1   0.00524 206.09 -11703
## - X64  1   0.00566 206.09 -11703
## - X37  1   0.00643 206.09 -11703
## - X69  1   0.00725 206.09 -11703
## - X71  1   0.00937 206.09 -11703
## - X38  1   0.00961 206.09 -11703
## - X31  1   0.00991 206.09 -11703
## - X45  1   0.00998 206.09 -11703
## - X83  1   0.01152 206.09 -11703
## - X8   1   0.01169 206.09 -11703
## - X28  1   0.01173 206.09 -11703
## - X26  1   0.01179 206.09 -11703
## - X67  1   0.01190 206.09 -11703
## - X10  1   0.01273 206.09 -11703
## - X63  1   0.01273 206.09 -11703
## - X30  1   0.01275 206.09 -11703
## - X43  1   0.01277 206.09 -11703
## - X13  1   0.01280 206.09 -11703
## - X54  1   0.01355 206.09 -11703
## - X75  1   0.01437 206.10 -11703
## - X60  1   0.01494 206.10 -11703
## - X22  1   0.01498 206.10 -11703
## - X23  1   0.01531 206.10 -11703
## - X62  1   0.01603 206.10 -11703
## - X40  1   0.01708 206.10 -11703
## - X20  1   0.01807 206.10 -11703
## - X73  1   0.02640 206.11 -11703
## - X25  1   0.03226 206.11 -11702
## - X46  1   0.03331 206.12 -11702
## - X7   1   0.03332 206.12 -11702
## - X21  1   0.03654 206.12 -11702
## - X32  1   0.03693 206.12 -11702
## - X68  1   0.03765 206.12 -11702
## - X65  1   0.04116 206.12 -11702
## - X33  1   0.04380 206.13 -11702
## - X72  1   0.04481 206.13 -11702
## - X2   1   0.04793 206.13 -11702
## - X51  1   0.04814 206.13 -11702
## - X35  1   0.05624 206.14 -11702
## - X36  1   0.06835 206.15 -11702
## - X85  1   0.07074 206.15 -11702
## - X79  1   0.07637 206.16 -11702
## - X14  1   0.07779 206.16 -11702
## - X9   1   0.08111 206.16 -11702
## - X1   1   0.08444 206.17 -11702
## - X5   1   0.08809 206.17 -11701
## - X44  1   0.09055 206.17 -11701
```

```
## <none>                206.08 -11701
## - X80   1   0.10521 206.19 -11701
## - X76   1   0.11891 206.20 -11701
## - X42   1   0.12770 206.21 -11701
## - X58   1   0.13517 206.22 -11700
## - X4    1   0.14702 206.23 -11700
## - X41   1   0.16106 206.24 -11700
## - X78   1   0.16248 206.24 -11700
## - X6    1   0.16636 206.25 -11700
## - X57   1   0.20475 206.29 -11699
## - X55   1   0.21446 206.30 -11699
## - X61   1   0.22736 206.31 -11699
## - X47   1   0.40367 206.49 -11695
## - X59   1   0.47900 206.56 -11694
## - X17   1   0.50372 206.59 -11693
## - X18   1   0.85207 206.93 -11687
## - X82   1   1.10385 207.19 -11682
##
## Step:  AIC=-11703.1
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X11 + X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 +
##     X23 + X24 + X25 + X26 + X27 + X28 + X30 + X31 + X32 + X33 +
##     X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 +
##     X44 + X45 + X46 + X47 + X48 + X49 + X51 + X52 + X53 + X54 +
##     X55 + X56 + X57 + X58 + X59 + X60 + X61 + X62 + X63 + X64 +
##     X65 + X66 + X67 + X68 + X69 + X70 + X71 + X72 + X73 + X75 +
##     X76 + X77 + X78 + X79 + X80 + X82 + X83 + X84 + X85
##
##        Df Sum of Sq    RSS    AIC
## - X48   1   0.00043 206.08 -11705
## - X11   1   0.00043 206.08 -11705
## - X66   1   0.00078 206.08 -11705
## - X70   1   0.00080 206.08 -11705
## - X24   1   0.00096 206.08 -11705
## - X34   1   0.00161 206.08 -11705
## - X3    1   0.00190 206.08 -11705
## - X49   1   0.00205 206.08 -11705
## - X84   1   0.00207 206.08 -11705
## - X53   1   0.00215 206.08 -11705
## - X56   1   0.00250 206.09 -11705
## - X19   1   0.00293 206.09 -11705
## - X12   1   0.00329 206.09 -11705
## - X39   1   0.00463 206.09 -11705
## - X52   1   0.00515 206.09 -11705
## - X77   1   0.00532 206.09 -11705
## - X64   1   0.00565 206.09 -11705
## - X27   1   0.00636 206.09 -11705
## - X69   1   0.00722 206.09 -11705
## - X37   1   0.00724 206.09 -11705
## - X71   1   0.00937 206.09 -11705
## - X45   1   0.00997 206.09 -11705
## - X31   1   0.01044 206.09 -11705
## - X38   1   0.01047 206.09 -11705
## - X8    1   0.01149 206.09 -11705
```

```
## - X83   1   0.01156 206.09 -11705
## - X67   1   0.01187 206.09 -11705
## - X43   1   0.01253 206.09 -11705
## - X13   1   0.01262 206.09 -11705
## - X63   1   0.01269 206.09 -11705
## - X10   1   0.01290 206.09 -11705
## - X30   1   0.01336 206.10 -11705
## - X54   1   0.01354 206.10 -11705
## - X75   1   0.01434 206.10 -11705
## - X60   1   0.01489 206.10 -11705
## - X23   1   0.01514 206.10 -11705
## - X62   1   0.01607 206.10 -11705
## - X22   1   0.01770 206.10 -11705
## - X40   1   0.01793 206.10 -11705
## - X20   1   0.01828 206.10 -11705
## - X28   1   0.02058 206.10 -11705
## - X26   1   0.02409 206.11 -11705
## - X73   1   0.02665 206.11 -11705
## - X7    1   0.03298 206.12 -11704
## - X46   1   0.03325 206.12 -11704
## - X21   1   0.03631 206.12 -11704
## - X68   1   0.03774 206.12 -11704
## - X32   1   0.03846 206.12 -11704
## - X65   1   0.04117 206.12 -11704
## - X33   1   0.04477 206.13 -11704
## - X72   1   0.04508 206.13 -11704
## - X25   1   0.04617 206.13 -11704
## - X2    1   0.04820 206.13 -11704
## - X51   1   0.04835 206.13 -11704
## - X35   1   0.05664 206.14 -11704
## - X36   1   0.06882 206.15 -11704
## - X85   1   0.07068 206.15 -11704
## - X79   1   0.07625 206.16 -11704
## - X14   1   0.07837 206.16 -11704
## - X9    1   0.08074 206.16 -11704
## - X1    1   0.08414 206.17 -11704
## - X5    1   0.08778 206.17 -11703
## - X44   1   0.09063 206.17 -11703
## <none>          206.08 -11703
## - X80   1   0.10513 206.19 -11703
## - X76   1   0.11889 206.20 -11703
## - X42   1   0.12790 206.21 -11703
## - X58   1   0.13488 206.22 -11702
## - X4    1   0.14746 206.23 -11702
## - X41   1   0.16190 206.24 -11702
## - X78   1   0.16239 206.25 -11702
## - X6    1   0.16604 206.25 -11702
## - X57   1   0.20467 206.29 -11701
## - X55   1   0.21457 206.30 -11701
## - X61   1   0.22744 206.31 -11701
## - X47   1   0.40330 206.49 -11697
## - X59   1   0.47870 206.56 -11696
## - X17   1   0.50522 206.59 -11695
## - X18   1   0.87991 206.96 -11688
```

```
## - X82    1    1.10531 207.19 -11684
##
## Step:  AIC=-11705.09
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##      X11 + X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 +
##      X23 + X24 + X25 + X26 + X27 + X28 + X30 + X31 + X32 + X33 +
##      X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 +
##      X44 + X45 + X46 + X47 + X49 + X51 + X52 + X53 + X54 + X55 +
##      X56 + X57 + X58 + X59 + X60 + X61 + X62 + X63 + X64 + X65 +
##      X66 + X67 + X68 + X69 + X70 + X71 + X72 + X73 + X75 + X76 +
##      X77 + X78 + X79 + X80 + X82 + X83 + X84 + X85
##
##          Df Sum of Sq    RSS     AIC
## - X11     1   0.00044 206.08 -11707
## - X70     1   0.00080 206.08 -11707
## - X66     1   0.00086 206.08 -11707
## - X24     1   0.00098 206.08 -11707
## - X34     1   0.00157 206.08 -11707
## - X3      1   0.00188 206.09 -11707
## - X84     1   0.00207 206.09 -11707
## - X49     1   0.00208 206.09 -11707
## - X53     1   0.00252 206.09 -11707
## - X56     1   0.00254 206.09 -11707
## - X19     1   0.00291 206.09 -11707
## - X12     1   0.00329 206.09 -11707
## - X39     1   0.00464 206.09 -11707
## - X52     1   0.00489 206.09 -11707
## - X77     1   0.00536 206.09 -11707
## - X64     1   0.00568 206.09 -11707
## - X27     1   0.00635 206.09 -11707
## - X37     1   0.00728 206.09 -11707
## - X71     1   0.00902 206.09 -11707
## - X45     1   0.01023 206.09 -11707
## - X31     1   0.01045 206.09 -11707
## - X38     1   0.01050 206.09 -11707
## - X8      1   0.01140 206.09 -11707
## - X83     1   0.01158 206.09 -11707
## - X67     1   0.01198 206.09 -11707
## - X43     1   0.01247 206.09 -11707
## - X13     1   0.01267 206.09 -11707
## - X63     1   0.01269 206.09 -11707
## - X10     1   0.01285 206.10 -11707
## - X30     1   0.01337 206.10 -11707
## - X54     1   0.01351 206.10 -11707
## - X75     1   0.01433 206.10 -11707
## - X60     1   0.01490 206.10 -11707
## - X23     1   0.01507 206.10 -11707
## - X62     1   0.01609 206.10 -11707
## - X22     1   0.01776 206.10 -11707
## - X40     1   0.01797 206.10 -11707
## - X20     1   0.01840 206.10 -11707
## - X69     1   0.01964 206.10 -11707
## - X28     1   0.02048 206.10 -11707
## - X26     1   0.02403 206.11 -11707
```

```
## - X73   1   0.02622 206.11 -11707
## - X7    1   0.03291 206.12 -11706
## - X46   1   0.03336 206.12 -11706
## - X21   1   0.03635 206.12 -11706
## - X68   1   0.03795 206.12 -11706
## - X32   1   0.03833 206.12 -11706
## - X65   1   0.04114 206.12 -11706
## - X33   1   0.04460 206.13 -11706
## - X72   1   0.04471 206.13 -11706
## - X25   1   0.04612 206.13 -11706
## - X51   1   0.04794 206.13 -11706
## - X2    1   0.04831 206.13 -11706
## - X35   1   0.05661 206.14 -11706
## - X36   1   0.06879 206.15 -11706
## - X85   1   0.07092 206.15 -11706
## - X79   1   0.07646 206.16 -11706
## - X14   1   0.07836 206.16 -11706
## - X9    1   0.08055 206.16 -11706
## - X1    1   0.08380 206.17 -11706
## - X5    1   0.08744 206.17 -11705
## - X44   1   0.09055 206.17 -11705
## <none>             206.08 -11705
## - X80   1   0.10529 206.19 -11705
## - X76   1   0.12017 206.20 -11705
## - X42   1   0.12792 206.21 -11705
## - X58   1   0.13550 206.22 -11704
## - X4    1   0.14743 206.23 -11704
## - X41   1   0.16202 206.25 -11704
## - X78   1   0.16250 206.25 -11704
## - X6    1   0.16587 206.25 -11704
## - X57   1   0.20471 206.29 -11703
## - X55   1   0.21547 206.30 -11703
## - X61   1   0.22734 206.31 -11703
## - X47   1   0.40288 206.49 -11699
## - X59   1   0.47915 206.56 -11698
## - X17   1   0.50548 206.59 -11697
## - X18   1   0.87982 206.96 -11690
## - X82   1   1.10510 207.19 -11686
##
## Step:  AIC=-11707.08
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 +
##     X24 + X25 + X26 + X27 + X28 + X30 + X31 + X32 + X33 + X34 +
##     X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 +
##     X45 + X46 + X47 + X49 + X51 + X52 + X53 + X54 + X55 + X56 +
##     X57 + X58 + X59 + X60 + X61 + X62 + X63 + X64 + X65 + X66 +
##     X67 + X68 + X69 + X70 + X71 + X72 + X73 + X75 + X76 + X77 +
##     X78 + X79 + X80 + X82 + X83 + X84 + X85
##
##         Df Sum of Sq   RSS    AIC
## - X70   1   0.00081 206.08 -11709
## - X66   1   0.00086 206.08 -11709
## - X24   1   0.00095 206.08 -11709
## - X34   1   0.00144 206.09 -11709
```

```
## - X84   1    0.00205 206.09 -11709
## - X3    1    0.00206 206.09 -11709
## - X49   1    0.00207 206.09 -11709
## - X53   1    0.00248 206.09 -11709
## - X56   1    0.00255 206.09 -11709
## - X19   1    0.00299 206.09 -11709
## - X52   1    0.00493 206.09 -11709
## - X39   1    0.00504 206.09 -11709
## - X77   1    0.00533 206.09 -11709
## - X64   1    0.00563 206.09 -11709
## - X27   1    0.00614 206.09 -11709
## - X37   1    0.00698 206.09 -11709
## - X71   1    0.00910 206.09 -11709
## - X38   1    0.01015 206.09 -11709
## - X45   1    0.01022 206.09 -11709
## - X31   1    0.01037 206.09 -11709
## - X83   1    0.01158 206.09 -11709
## - X67   1    0.01195 206.09 -11709
## - X43   1    0.01223 206.09 -11709
## - X12   1    0.01272 206.10 -11709
## - X63   1    0.01273 206.10 -11709
## - X8    1    0.01291 206.10 -11709
## - X13   1    0.01305 206.10 -11709
## - X30   1    0.01329 206.10 -11709
## - X54   1    0.01354 206.10 -11709
## - X75   1    0.01437 206.10 -11709
## - X60   1    0.01480 206.10 -11709
## - X23   1    0.01526 206.10 -11709
## - X62   1    0.01614 206.10 -11709
## - X40   1    0.01755 206.10 -11709
## - X22   1    0.01761 206.10 -11709
## - X20   1    0.01806 206.10 -11709
## - X69   1    0.01977 206.10 -11709
## - X28   1    0.02044 206.10 -11709
## - X26   1    0.02490 206.11 -11709
## - X73   1    0.02641 206.11 -11709
## - X46   1    0.03330 206.12 -11708
## - X7    1    0.03532 206.12 -11708
## - X21   1    0.03652 206.12 -11708
## - X32   1    0.03789 206.12 -11708
## - X68   1    0.03792 206.12 -11708
## - X65   1    0.04119 206.12 -11708
## - X33   1    0.04417 206.13 -11708
## - X72   1    0.04460 206.13 -11708
## - X25   1    0.04630 206.13 -11708
## - X51   1    0.04787 206.13 -11708
## - X2    1    0.04805 206.13 -11708
## - X35   1    0.05665 206.14 -11708
## - X10   1    0.05836 206.14 -11708
## - X36   1    0.06884 206.15 -11708
## - X85   1    0.07082 206.15 -11708
## - X79   1    0.07653 206.16 -11708
## - X14   1    0.08150 206.16 -11708
## - X1    1    0.08338 206.17 -11708
```

```
## - X5    1   0.08703 206.17 -11707
## - X9    1   0.08704 206.17 -11707
## - X44   1   0.09069 206.17 -11707
## <none>              206.08 -11707
## - X80   1   0.10543 206.19 -11707
## - X76   1   0.12015 206.20 -11707
## - X42   1   0.12884 206.21 -11707
## - X58   1   0.13566 206.22 -11706
## - X4    1   0.15282 206.24 -11706
## - X78   1   0.16234 206.25 -11706
## - X41   1   0.16449 206.25 -11706
## - X6    1   0.17548 206.26 -11706
## - X57   1   0.20457 206.29 -11705
## - X55   1   0.21604 206.30 -11705
## - X61   1   0.22713 206.31 -11705
## - X47   1   0.40271 206.49 -11701
## - X59   1   0.47918 206.56 -11700
## - X17   1   0.50874 206.59 -11699
## - X18   1   0.89014 206.97 -11692
## - X82   1   1.10468 207.19 -11688
##
## Step:  AIC=-11709.06
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 +
##     X24 + X25 + X26 + X27 + X28 + X30 + X31 + X32 + X33 + X34 +
##     X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 +
##     X45 + X46 + X47 + X49 + X51 + X52 + X53 + X54 + X55 + X56 +
##     X57 + X58 + X59 + X60 + X61 + X62 + X63 + X64 + X65 + X66 +
##     X67 + X68 + X69 + X71 + X72 + X73 + X75 + X76 + X77 + X78 +
##     X79 + X80 + X82 + X83 + X84 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X66   1   0.00086 206.09 -11711
## - X24   1   0.00092 206.09 -11711
## - X34   1   0.00143 206.09 -11711
## - X49   1   0.00184 206.09 -11711
## - X84   1   0.00205 206.09 -11711
## - X3    1   0.00205 206.09 -11711
## - X53   1   0.00249 206.09 -11711
## - X56   1   0.00253 206.09 -11711
## - X19   1   0.00300 206.09 -11711
## - X52   1   0.00492 206.09 -11711
## - X39   1   0.00503 206.09 -11711
## - X77   1   0.00529 206.09 -11711
## - X64   1   0.00556 206.09 -11711
## - X27   1   0.00617 206.09 -11711
## - X37   1   0.00698 206.09 -11711
## - X71   1   0.00912 206.09 -11711
## - X38   1   0.01018 206.09 -11711
## - X45   1   0.01022 206.09 -11711
## - X31   1   0.01038 206.09 -11711
## - X83   1   0.01159 206.10 -11711
## - X67   1   0.01193 206.10 -11711
## - X43   1   0.01211 206.10 -11711
```

```
## - X63   1   0.01272 206.10 -11711
## - X12   1   0.01273 206.10 -11711
## - X8    1   0.01290 206.10 -11711
## - X13   1   0.01313 206.10 -11711
## - X30   1   0.01329 206.10 -11711
## - X54   1   0.01356 206.10 -11711
## - X75   1   0.01438 206.10 -11711
## - X60   1   0.01480 206.10 -11711
## - X23   1   0.01535 206.10 -11711
## - X62   1   0.01617 206.10 -11711
## - X40   1   0.01752 206.10 -11711
## - X22   1   0.01754 206.10 -11711
## - X20   1   0.01796 206.10 -11711
## - X69   1   0.01974 206.10 -11711
## - X28   1   0.02056 206.10 -11711
## - X26   1   0.02502 206.11 -11711
## - X73   1   0.02641 206.11 -11711
## - X46   1   0.03327 206.12 -11710
## - X7    1   0.03528 206.12 -11710
## - X21   1   0.03659 206.12 -11710
## - X32   1   0.03784 206.12 -11710
## - X68   1   0.03837 206.12 -11710
## - X65   1   0.04115 206.12 -11710
## - X33   1   0.04408 206.13 -11710
## - X72   1   0.04452 206.13 -11710
## - X25   1   0.04655 206.13 -11710
## - X51   1   0.04780 206.13 -11710
## - X2    1   0.04793 206.13 -11710
## - X35   1   0.05672 206.14 -11710
## - X10   1   0.05833 206.14 -11710
## - X36   1   0.06890 206.15 -11710
## - X85   1   0.07058 206.16 -11710
## - X79   1   0.07649 206.16 -11710
## - X14   1   0.08152 206.16 -11710
## - X1    1   0.08356 206.17 -11709
## - X9    1   0.08691 206.17 -11709
## - X5    1   0.08716 206.17 -11709
## - X44   1   0.09064 206.18 -11709
## <none>          206.08 -11709
## - X80   1   0.10533 206.19 -11709
## - X76   1   0.12002 206.20 -11709
## - X42   1   0.12895 206.21 -11709
## - X58   1   0.13563 206.22 -11708
## - X4    1   0.15297 206.24 -11708
## - X78   1   0.16234 206.25 -11708
## - X41   1   0.16425 206.25 -11708
## - X6    1   0.17529 206.26 -11708
## - X57   1   0.20457 206.29 -11707
## - X55   1   0.21623 206.30 -11707
## - X61   1   0.22692 206.31 -11707
## - X47   1   0.40193 206.49 -11703
## - X59   1   0.47903 206.56 -11702
## - X17   1   0.50900 206.59 -11701
## - X18   1   0.89121 206.97 -11694
```

```
## - X82    1   1.10453 207.19 -11690
##
## Step:  AIC=-11711.05
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##      X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 +
##      X24 + X25 + X26 + X27 + X28 + X30 + X31 + X32 + X33 + X34 +
##      X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 +
##      X45 + X46 + X47 + X49 + X51 + X52 + X53 + X54 + X55 + X56 +
##      X57 + X58 + X59 + X60 + X61 + X62 + X63 + X64 + X65 + X67 +
##      X68 + X69 + X71 + X72 + X73 + X75 + X76 + X77 + X78 + X79 +
##      X80 + X82 + X83 + X84 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X24    1   0.00093 206.09 -11713
## - X34    1   0.00152 206.09 -11713
## - X49    1   0.00184 206.09 -11713
## - X3     1   0.00201 206.09 -11713
## - X84    1   0.00206 206.09 -11713
## - X56    1   0.00257 206.09 -11713
## - X53    1   0.00289 206.09 -11713
## - X19    1   0.00312 206.09 -11713
## - X52    1   0.00499 206.09 -11713
## - X39    1   0.00503 206.09 -11713
## - X77    1   0.00533 206.09 -11713
## - X64    1   0.00558 206.09 -11713
## - X27    1   0.00628 206.09 -11713
## - X37    1   0.00696 206.09 -11713
## - X71    1   0.00906 206.09 -11713
## - X38    1   0.01012 206.09 -11713
## - X31    1   0.01037 206.09 -11713
## - X83    1   0.01159 206.10 -11713
## - X67    1   0.01200 206.10 -11713
## - X43    1   0.01218 206.10 -11713
## - X12    1   0.01262 206.10 -11713
## - X63    1   0.01280 206.10 -11713
## - X8     1   0.01291 206.10 -11713
## - X13    1   0.01309 206.10 -11713
## - X30    1   0.01329 206.10 -11713
## - X54    1   0.01351 206.10 -11713
## - X75    1   0.01437 206.10 -11713
## - X60    1   0.01479 206.10 -11713
## - X23    1   0.01532 206.10 -11713
## - X62    1   0.01615 206.10 -11713
## - X40    1   0.01752 206.10 -11713
## - X22    1   0.01754 206.10 -11713
## - X20    1   0.01770 206.10 -11713
## - X28    1   0.02056 206.10 -11713
## - X69    1   0.02219 206.11 -11713
## - X45    1   0.02477 206.11 -11713
## - X26    1   0.02504 206.11 -11713
## - X73    1   0.02624 206.11 -11712
## - X46    1   0.03337 206.12 -11712
## - X7     1   0.03525 206.12 -11712
## - X21    1   0.03674 206.12 -11712
```

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## - X32    1   0.03829 206.12 -11712
## - X68    1   0.03865 206.12 -11712
## - X65    1   0.04110 206.13 -11712
## - X72    1   0.04422 206.13 -11712
## - X33    1   0.04459 206.13 -11712
## - X25    1   0.04611 206.13 -11712
## - X51    1   0.04746 206.13 -11712
## - X2     1   0.04778 206.13 -11712
## - X35    1   0.05670 206.14 -11712
## - X10    1   0.05810 206.14 -11712
## - X36    1   0.06886 206.15 -11712
## - X85    1   0.07067 206.16 -11712
## - X79    1   0.07835 206.16 -11712
## - X14    1   0.08137 206.17 -11712
## - X1     1   0.08356 206.17 -11711
## - X9     1   0.08687 206.17 -11711
## - X5     1   0.08718 206.17 -11711
## - X44    1   0.09055 206.18 -11711
## <none>              206.09 -11711
## - X80    1   0.10454 206.19 -11711
## - X76    1   0.12046 206.21 -11711
## - X42    1   0.12911 206.21 -11710
## - X58    1   0.13918 206.22 -11710
## - X4     1   0.15312 206.24 -11710
## - X78    1   0.16229 206.25 -11710
## - X41    1   0.16432 206.25 -11710
## - X6     1   0.17577 206.26 -11710
## - X57    1   0.20450 206.29 -11709
## - X55    1   0.21703 206.30 -11709
## - X61    1   0.22685 206.31 -11709
## - X47    1   0.40122 206.49 -11705
## - X59    1   0.47881 206.56 -11704
## - X17    1   0.50927 206.59 -11703
## - X18    1   0.89075 206.98 -11696
## - X82    1   1.10438 207.19 -11692
##
## Step:  AIC=-11713.03
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##      X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 +
##      X25 + X26 + X27 + X28 + X30 + X31 + X32 + X33 + X34 + X35 +
##      X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 +
##      X46 + X47 + X49 + X51 + X52 + X53 + X54 + X55 + X56 + X57 +
##      X58 + X59 + X60 + X61 + X62 + X63 + X64 + X65 + X67 + X68 +
##      X69 + X71 + X72 + X73 + X75 + X76 + X77 + X78 + X79 + X80 +
##      X82 + X83 + X84 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X49    1   0.00184 206.09 -11715
## - X34    1   0.00184 206.09 -11715
## - X84    1   0.00207 206.09 -11715
## - X3     1   0.00218 206.09 -11715
## - X56    1   0.00254 206.09 -11715
## - X53    1   0.00289 206.09 -11715
## - X39    1   0.00439 206.09 -11715
```

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## - X52   1   0.00492 206.09 -11715
## - X77   1   0.00530 206.09 -11715
## - X64   1   0.00554 206.09 -11715
## - X27   1   0.00685 206.09 -11715
## - X37   1   0.00774 206.09 -11715
## - X71   1   0.00902 206.09 -11715
## - X19   1   0.01036 206.10 -11715
## - X31   1   0.01046 206.10 -11715
## - X83   1   0.01152 206.10 -11715
## - X38   1   0.01159 206.10 -11715
## - X43   1   0.01174 206.10 -11715
## - X67   1   0.01210 206.10 -11715
## - X8    1   0.01252 206.10 -11715
## - X63   1   0.01287 206.10 -11715
## - X30   1   0.01338 206.10 -11715
## - X54   1   0.01340 206.10 -11715
## - X12   1   0.01359 206.10 -11715
## - X13   1   0.01395 206.10 -11715
## - X75   1   0.01424 206.10 -11715
## - X60   1   0.01484 206.10 -11715
## - X62   1   0.01597 206.10 -11715
## - X20   1   0.01754 206.10 -11715
## - X40   1   0.02013 206.11 -11715
## - X28   1   0.02138 206.11 -11715
## - X69   1   0.02202 206.11 -11715
## - X26   1   0.02437 206.11 -11715
## - X45   1   0.02480 206.11 -11714
## - X73   1   0.02609 206.11 -11714
## - X22   1   0.02977 206.12 -11714
## - X46   1   0.03356 206.12 -11714
## - X7    1   0.03506 206.12 -11714
## - X68   1   0.03839 206.12 -11714
## - X32   1   0.03995 206.13 -11714
## - X65   1   0.04116 206.13 -11714
## - X72   1   0.04445 206.13 -11714
## - X33   1   0.04601 206.13 -11714
## - X25   1   0.04637 206.13 -11714
## - X51   1   0.04778 206.13 -11714
## - X2    1   0.04911 206.13 -11714
## - X35   1   0.05621 206.14 -11714
## - X10   1   0.05847 206.14 -11714
## - X23   1   0.05946 206.15 -11714
## - X21   1   0.06532 206.15 -11714
## - X36   1   0.06834 206.15 -11714
## - X85   1   0.07055 206.16 -11714
## - X79   1   0.07832 206.16 -11714
## - X14   1   0.08278 206.17 -11713
## - X1    1   0.08425 206.17 -11713
## - X9    1   0.08696 206.17 -11713
## - X5    1   0.08785 206.17 -11713
## - X44   1   0.09059 206.18 -11713
## <none>          206.09 -11713
## - X80   1   0.10500 206.19 -11713
## - X76   1   0.12048 206.21 -11713
```

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## - X42    1   0.12819 206.21 -11712
## - X58    1   0.13910 206.22 -11712
## - X4     1   0.15273 206.24 -11712
## - X78    1   0.16266 206.25 -11712
## - X41    1   0.16448 206.25 -11712
## - X6     1   0.17535 206.26 -11712
## - X57    1   0.20484 206.29 -11711
## - X55    1   0.21678 206.30 -11711
## - X61    1   0.22688 206.31 -11711
## - X47    1   0.40193 206.49 -11707
## - X59    1   0.48060 206.57 -11706
## - X17    1   0.50834 206.59 -11705
## - X18    1   0.89428 206.98 -11698
## - X82    1   1.10427 207.19 -11694
##
## Step:  AIC=-11714.99
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 +
##     X25 + X26 + X27 + X28 + X30 + X31 + X32 + X33 + X34 + X35 +
##     X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 +
##     X46 + X47 + X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 +
##     X59 + X60 + X61 + X62 + X63 + X64 + X65 + X67 + X68 + X69 +
##     X71 + X72 + X73 + X75 + X76 + X77 + X78 + X79 + X80 + X82 +
##     X83 + X84 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X34    1   0.00188 206.09 -11717
## - X84    1   0.00213 206.09 -11717
## - X3     1   0.00214 206.09 -11717
## - X56    1   0.00249 206.09 -11717
## - X53    1   0.00295 206.09 -11717
## - X39    1   0.00433 206.09 -11717
## - X52    1   0.00484 206.09 -11717
## - X77    1   0.00521 206.09 -11717
## - X64    1   0.00556 206.09 -11717
## - X27    1   0.00683 206.09 -11717
## - X37    1   0.00798 206.10 -11717
## - X71    1   0.00910 206.10 -11717
## - X19    1   0.01016 206.10 -11717
## - X31    1   0.01047 206.10 -11717
## - X83    1   0.01163 206.10 -11717
## - X38    1   0.01180 206.10 -11717
## - X43    1   0.01181 206.10 -11717
## - X67    1   0.01213 206.10 -11717
## - X8     1   0.01254 206.10 -11717
## - X63    1   0.01293 206.10 -11717
## - X54    1   0.01335 206.10 -11717
## - X30    1   0.01341 206.10 -11717
## - X12    1   0.01353 206.10 -11717
## - X13    1   0.01391 206.10 -11717
## - X75    1   0.01429 206.10 -11717
## - X60    1   0.01490 206.10 -11717
## - X62    1   0.01604 206.10 -11717
## - X20    1   0.01747 206.10 -11717
```

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## - X40   1   0.02035 206.11 -11717
## - X28   1   0.02130 206.11 -11717
## - X69   1   0.02195 206.11 -11717
## - X26   1   0.02430 206.11 -11716
## - X45   1   0.02512 206.11 -11716
## - X73   1   0.02591 206.11 -11716
## - X22   1   0.02995 206.12 -11716
## - X46   1   0.03365 206.12 -11716
## - X7    1   0.03514 206.12 -11716
## - X68   1   0.03950 206.13 -11716
## - X32   1   0.04018 206.13 -11716
## - X65   1   0.04132 206.13 -11716
## - X72   1   0.04400 206.13 -11716
## - X33   1   0.04620 206.13 -11716
## - X25   1   0.04668 206.13 -11716
## - X51   1   0.04737 206.13 -11716
## - X2    1   0.04946 206.14 -11716
## - X35   1   0.05624 206.14 -11716
## - X10   1   0.05850 206.15 -11716
## - X23   1   0.05935 206.15 -11716
## - X21   1   0.06499 206.15 -11716
## - X36   1   0.06839 206.16 -11716
## - X85   1   0.07082 206.16 -11716
## - X79   1   0.07825 206.17 -11716
## - X14   1   0.08258 206.17 -11715
## - X1    1   0.08455 206.17 -11715
## - X9    1   0.08704 206.18 -11715
## - X5    1   0.08820 206.18 -11715
## - X44   1   0.09092 206.18 -11715
## <none>          206.09 -11715
## - X80   1   0.10623 206.19 -11715
## - X76   1   0.11997 206.21 -11715
## - X42   1   0.12856 206.22 -11714
## - X58   1   0.13893 206.23 -11714
## - X4    1   0.15251 206.24 -11714
## - X78   1   0.16240 206.25 -11714
## - X41   1   0.16426 206.25 -11714
## - X6    1   0.17531 206.26 -11714
## - X57   1   0.20442 206.29 -11713
## - X55   1   0.21568 206.30 -11713
## - X61   1   0.22641 206.31 -11713
## - X47   1   0.40052 206.49 -11709
## - X59   1   0.48199 206.57 -11708
## - X17   1   0.50809 206.60 -11707
## - X18   1   0.89348 206.98 -11700
## - X82   1   1.10332 207.19 -11696
##
## Step:  AIC=-11716.96
## train$X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 +
##     X12 + X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 +
##     X25 + X26 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 +
##     X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 + X46 +
##     X47 + X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 +
##     X60 + X61 + X62 + X63 + X64 + X65 + X67 + X68 + X69 + X71 +
```

```
##      X72 + X73 + X75 + X76 + X77 + X78 + X79 + X80 + X82 + X83 +
##      X84 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X3    1   0.00207 206.09 -11719
## - X84   1   0.00217 206.09 -11719
## - X56   1   0.00267 206.09 -11719
## - X53   1   0.00289 206.09 -11719
## - X39   1   0.00366 206.09 -11719
## - X52   1   0.00485 206.09 -11719
## - X77   1   0.00547 206.09 -11719
## - X64   1   0.00551 206.09 -11719
## - X27   1   0.00652 206.10 -11719
## - X37   1   0.00892 206.10 -11719
## - X71   1   0.00913 206.10 -11719
## - X19   1   0.00995 206.10 -11719
## - X31   1   0.01076 206.10 -11719
## - X8    1   0.01143 206.10 -11719
## - X83   1   0.01157 206.10 -11719
## - X43   1   0.01161 206.10 -11719
## - X67   1   0.01218 206.10 -11719
## - X63   1   0.01297 206.10 -11719
## - X38   1   0.01329 206.10 -11719
## - X54   1   0.01355 206.10 -11719
## - X30   1   0.01372 206.10 -11719
## - X13   1   0.01424 206.10 -11719
## - X75   1   0.01443 206.10 -11719
## - X12   1   0.01468 206.10 -11719
## - X60   1   0.01518 206.10 -11719
## - X62   1   0.01599 206.10 -11719
## - X20   1   0.01770 206.11 -11719
## - X28   1   0.02039 206.11 -11719
## - X69   1   0.02173 206.11 -11718
## - X40   1   0.02369 206.11 -11718
## - X26   1   0.02436 206.11 -11718
## - X45   1   0.02507 206.12 -11718
## - X73   1   0.02624 206.12 -11718
## - X22   1   0.03059 206.12 -11718
## - X46   1   0.03374 206.12 -11718
## - X7    1   0.03394 206.12 -11718
## - X68   1   0.03926 206.13 -11718
## - X65   1   0.04157 206.13 -11718
## - X72   1   0.04429 206.13 -11718
## - X25   1   0.04743 206.14 -11718
## - X51   1   0.04770 206.14 -11718
## - X2    1   0.05012 206.14 -11718
## - X35   1   0.05578 206.15 -11718
## - X10   1   0.05820 206.15 -11718
## - X23   1   0.05827 206.15 -11718
## - X21   1   0.06482 206.15 -11718
## - X36   1   0.06796 206.16 -11718
## - X85   1   0.07054 206.16 -11718
## - X79   1   0.07828 206.17 -11717
## - X14   1   0.08206 206.17 -11717
```

```
## - X1     1     0.08461 206.17 -11717
## - X9     1     0.08527 206.18 -11717
## - X5     1     0.08836 206.18 -11717
## - X44    1     0.09111 206.18 -11717
## <none>                   206.09 -11717
## - X80    1     0.10628 206.20 -11717
## - X33    1     0.11063 206.20 -11717
## - X76    1     0.12007 206.21 -11717
## - X42    1     0.12670 206.22 -11716
## - X58    1     0.13913 206.23 -11716
## - X4     1     0.15301 206.24 -11716
## - X78    1     0.16256 206.25 -11716
## - X41    1     0.16351 206.25 -11716
## - X32    1     0.16529 206.25 -11716
## - X6     1     0.17343 206.26 -11716
## - X57    1     0.20462 206.29 -11715
## - X55    1     0.21552 206.31 -11715
## - X61    1     0.22602 206.32 -11715
## - X47    1     0.40141 206.49 -11711
## - X59    1     0.48205 206.57 -11710
## - X17    1     0.51015 206.60 -11709
## - X18    1     0.89263 206.98 -11702
## - X82    1     1.10256 207.19 -11698
##
## Step:  AIC=-11718.92
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##     X26 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 +
##     X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 +
##     X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X60 +
##     X61 + X62 + X63 + X64 + X65 + X67 + X68 + X69 + X71 + X72 +
##     X73 + X75 + X76 + X77 + X78 + X79 + X80 + X82 + X83 + X84 +
##     X85
##
##          Df Sum of Sq    RSS    AIC
## - X84    1     0.00210 206.09 -11721
## - X56    1     0.00269 206.09 -11721
## - X53    1     0.00294 206.09 -11721
## - X39    1     0.00383 206.09 -11721
## - X52    1     0.00471 206.10 -11721
## - X77    1     0.00550 206.10 -11721
## - X64    1     0.00564 206.10 -11721
## - X27    1     0.00635 206.10 -11721
## - X37    1     0.00888 206.10 -11721
## - X71    1     0.00910 206.10 -11721
## - X19    1     0.01030 206.10 -11721
## - X31    1     0.01068 206.10 -11721
## - X43    1     0.01116 206.10 -11721
## - X8     1     0.01132 206.10 -11721
## - X83    1     0.01161 206.10 -11721
## - X67    1     0.01213 206.10 -11721
## - X63    1     0.01292 206.10 -11721
## - X13    1     0.01298 206.10 -11721
## - X38    1     0.01329 206.10 -11721
```

```
## - X54   1   0.01351 206.10 -11721
## - X30   1   0.01362 206.10 -11721
## - X12   1   0.01372 206.10 -11721
## - X75   1   0.01438 206.11 -11721
## - X60   1   0.01515 206.11 -11721
## - X62   1   0.01591 206.11 -11721
## - X20   1   0.01710 206.11 -11721
## - X28   1   0.02108 206.11 -11720
## - X69   1   0.02173 206.11 -11720
## - X40   1   0.02407 206.12 -11720
## - X26   1   0.02530 206.12 -11720
## - X45   1   0.02537 206.12 -11720
## - X73   1   0.02596 206.12 -11720
## - X22   1   0.03029 206.12 -11720
## - X46   1   0.03361 206.12 -11720
## - X7    1   0.03364 206.12 -11720
## - X68   1   0.03942 206.13 -11720
## - X65   1   0.04177 206.13 -11720
## - X72   1   0.04445 206.14 -11720
## - X25   1   0.04752 206.14 -11720
## - X51   1   0.04780 206.14 -11720
## - X2    1   0.05003 206.14 -11720
## - X10   1   0.05628 206.15 -11720
## - X35   1   0.05664 206.15 -11720
## - X23   1   0.05935 206.15 -11720
## - X36   1   0.06880 206.16 -11720
## - X21   1   0.06893 206.16 -11720
## - X85   1   0.07101 206.16 -11720
## - X79   1   0.07802 206.17 -11719
## - X9    1   0.08510 206.18 -11719
## - X1    1   0.08629 206.18 -11719
## - X5    1   0.09007 206.18 -11719
## - X44   1   0.09151 206.18 -11719
## - X14   1   0.09740 206.19 -11719
## <none>         206.09 -11719
## - X80   1   0.10676 206.20 -11719
## - X33   1   0.11028 206.20 -11719
## - X76   1   0.12038 206.21 -11719
## - X42   1   0.12640 206.22 -11718
## - X58   1   0.13864 206.23 -11718
## - X4    1   0.15958 206.25 -11718
## - X78   1   0.16323 206.25 -11718
## - X32   1   0.16383 206.25 -11718
## - X41   1   0.16626 206.26 -11718
## - X6    1   0.17379 206.26 -11718
## - X57   1   0.20547 206.30 -11717
## - X55   1   0.21606 206.31 -11717
## - X61   1   0.22604 206.32 -11716
## - X47   1   0.40125 206.49 -11713
## - X59   1   0.48273 206.57 -11712
## - X17   1   0.51308 206.60 -11711
## - X18   1   0.89918 206.99 -11704
## - X82   1   1.10277 207.19 -11700
##
```

```
## Step:  AIC=-11720.88
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##     X26 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 +
##     X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 +
##     X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X60 +
##     X61 + X62 + X63 + X64 + X65 + X67 + X68 + X69 + X71 + X72 +
##     X73 + X75 + X76 + X77 + X78 + X79 + X80 + X82 + X83 + X85
##
##           Df Sum of Sq    RSS    AIC
## - X56      1   0.00267 206.10 -11723
## - X53      1   0.00297 206.10 -11723
## - X39      1   0.00373 206.10 -11723
## - X52      1   0.00470 206.10 -11723
## - X77      1   0.00548 206.10 -11723
## - X64      1   0.00558 206.10 -11723
## - X27      1   0.00621 206.10 -11723
## - X37      1   0.00899 206.10 -11723
## - X71      1   0.00913 206.10 -11723
## - X19      1   0.01021 206.10 -11723
## - X31      1   0.01063 206.10 -11723
## - X8       1   0.01136 206.10 -11723
## - X43      1   0.01147 206.10 -11723
## - X83      1   0.01174 206.10 -11723
## - X67      1   0.01192 206.11 -11723
## - X13      1   0.01307 206.11 -11723
## - X38      1   0.01343 206.11 -11723
## - X54      1   0.01350 206.11 -11723
## - X30      1   0.01356 206.11 -11723
## - X12      1   0.01380 206.11 -11723
## - X75      1   0.01441 206.11 -11723
## - X60      1   0.01514 206.11 -11723
## - X62      1   0.01611 206.11 -11723
## - X20      1   0.01733 206.11 -11722
## - X63      1   0.01996 206.11 -11722
## - X28      1   0.02104 206.12 -11722
## - X69      1   0.02183 206.12 -11722
## - X40      1   0.02427 206.12 -11722
## - X45      1   0.02540 206.12 -11722
## - X26      1   0.02575 206.12 -11722
## - X73      1   0.02590 206.12 -11722
## - X22      1   0.03053 206.12 -11722
## - X46      1   0.03322 206.13 -11722
## - X7       1   0.03369 206.13 -11722
## - X68      1   0.04040 206.13 -11722
## - X65      1   0.04190 206.14 -11722
## - X72      1   0.04377 206.14 -11722
## - X51      1   0.04717 206.14 -11722
## - X25      1   0.04798 206.14 -11722
## - X2       1   0.04967 206.14 -11722
## - X10      1   0.05621 206.15 -11722
## - X35      1   0.05756 206.15 -11722
## - X23      1   0.05953 206.15 -11722
## - X21      1   0.06868 206.16 -11722
```

```
## - X36    1    0.06986 206.16 -11722
## - X85    1    0.07078 206.16 -11722
## - X79    1    0.07804 206.17 -11721
## - X9     1    0.08518 206.18 -11721
## - X1     1    0.08654 206.18 -11721
## - X5     1    0.09037 206.18 -11721
## - X44    1    0.09182 206.19 -11721
## - X14    1    0.09717 206.19 -11721
## <none>              206.09 -11721
## - X80    1    0.10717 206.20 -11721
## - X33    1    0.11109 206.21 -11721
## - X76    1    0.11978 206.21 -11721
## - X42    1    0.12640 206.22 -11720
## - X58    1    0.13863 206.23 -11720
## - X4     1    0.15942 206.25 -11720
## - X78    1    0.16270 206.26 -11720
## - X32    1    0.16469 206.26 -11720
## - X41    1    0.16533 206.26 -11720
## - X6     1    0.17453 206.27 -11720
## - X57    1    0.20492 206.30 -11719
## - X55    1    0.21532 206.31 -11719
## - X61    1    0.22567 206.32 -11718
## - X47    1    0.39941 206.49 -11715
## - X59    1    0.48320 206.58 -11714
## - X17    1    0.51254 206.61 -11713
## - X18    1    0.89875 206.99 -11706
## - X82    1    1.10250 207.20 -11702
##
## Step:  AIC=-11722.82
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##     X26 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 +
##     X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 +
##     X51 + X52 + X53 + X54 + X55 + X57 + X58 + X59 + X60 + X61 +
##     X62 + X63 + X64 + X65 + X67 + X68 + X69 + X71 + X72 + X73 +
##     X75 + X76 + X77 + X78 + X79 + X80 + X82 + X83 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X53    1    0.00230 206.10 -11725
## - X39    1    0.00379 206.10 -11725
## - X77    1    0.00381 206.10 -11725
## - X52    1    0.00480 206.10 -11725
## - X64    1    0.00557 206.10 -11725
## - X27    1    0.00612 206.10 -11725
## - X37    1    0.00899 206.10 -11725
## - X71    1    0.00921 206.11 -11725
## - X19    1    0.01042 206.11 -11725
## - X31    1    0.01060 206.11 -11725
## - X67    1    0.01134 206.11 -11725
## - X43    1    0.01139 206.11 -11725
## - X8     1    0.01167 206.11 -11725
## - X83    1    0.01174 206.11 -11725
## - X13    1    0.01322 206.11 -11725
## - X38    1    0.01346 206.11 -11725
```

```
## - X54   1   0.01349 206.11 -11725
## - X30   1   0.01352 206.11 -11725
## - X12   1   0.01389 206.11 -11725
## - X75   1   0.01442 206.11 -11724
## - X60   1   0.01518 206.11 -11724
## - X62   1   0.01613 206.11 -11724
## - X20   1   0.01737 206.11 -11724
## - X63   1   0.01993 206.12 -11724
## - X28   1   0.02082 206.12 -11724
## - X69   1   0.02241 206.12 -11724
## - X40   1   0.02436 206.12 -11724
## - X45   1   0.02582 206.12 -11724
## - X26   1   0.02585 206.12 -11724
## - X73   1   0.02616 206.12 -11724
## - X22   1   0.03050 206.13 -11724
## - X46   1   0.03222 206.13 -11724
## - X7    1   0.03421 206.13 -11724
## - X68   1   0.04087 206.14 -11724
## - X65   1   0.04193 206.14 -11724
## - X72   1   0.04387 206.14 -11724
## - X51   1   0.04716 206.14 -11724
## - X25   1   0.04778 206.14 -11724
## - X2    1   0.04962 206.15 -11724
## - X10   1   0.05649 206.15 -11724
## - X35   1   0.05758 206.15 -11724
## - X23   1   0.05954 206.16 -11724
## - X21   1   0.06813 206.16 -11724
## - X36   1   0.06986 206.17 -11724
## - X85   1   0.07080 206.17 -11723
## - X79   1   0.07766 206.17 -11723
## - X9    1   0.08581 206.18 -11723
## - X1    1   0.08674 206.18 -11723
## - X5    1   0.09058 206.19 -11723
## - X44   1   0.09176 206.19 -11723
## - X14   1   0.09771 206.19 -11723
## <none>         206.10 -11723
## - X80   1   0.10737 206.20 -11723
## - X33   1   0.11119 206.21 -11723
## - X76   1   0.11942 206.22 -11722
## - X42   1   0.12638 206.22 -11722
## - X58   1   0.13793 206.23 -11722
## - X4    1   0.15922 206.26 -11722
## - X78   1   0.16282 206.26 -11722
## - X41   1   0.16470 206.26 -11722
## - X32   1   0.16492 206.26 -11722
## - X6    1   0.17531 206.27 -11721
## - X57   1   0.20502 206.30 -11721
## - X55   1   0.21470 206.31 -11721
## - X61   1   0.22438 206.32 -11720
## - X47   1   0.39809 206.49 -11717
## - X59   1   0.48407 206.58 -11715
## - X17   1   0.51133 206.61 -11715
## - X18   1   0.89726 206.99 -11707
## - X82   1   1.10000 207.20 -11704
```

```
##
## Step:  AIC=-11724.78
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##      X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##      X26 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 +
##      X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 +
##      X51 + X52 + X54 + X55 + X57 + X58 + X59 + X60 + X61 + X62 +
##      X63 + X64 + X65 + X67 + X68 + X69 + X71 + X72 + X73 + X75 +
##      X76 + X77 + X78 + X79 + X80 + X82 + X83 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X39     1   0.00366 206.10 -11727
## - X77     1   0.00415 206.10 -11727
## - X64     1   0.00556 206.10 -11727
## - X27     1   0.00613 206.10 -11727
## - X52     1   0.00621 206.10 -11727
## - X37     1   0.00905 206.11 -11727
## - X71     1   0.00967 206.11 -11727
## - X19     1   0.01013 206.11 -11727
## - X31     1   0.01060 206.11 -11727
## - X67     1   0.01121 206.11 -11727
## - X43     1   0.01138 206.11 -11727
## - X83     1   0.01179 206.11 -11727
## - X8      1   0.01180 206.11 -11727
## - X13     1   0.01329 206.11 -11726
## - X30     1   0.01352 206.11 -11726
## - X54     1   0.01365 206.11 -11726
## - X38     1   0.01378 206.11 -11726
## - X12     1   0.01389 206.11 -11726
## - X75     1   0.01459 206.11 -11726
## - X60     1   0.01517 206.11 -11726
## - X62     1   0.01622 206.12 -11726
## - X20     1   0.01787 206.12 -11726
## - X63     1   0.01974 206.12 -11726
## - X28     1   0.02070 206.12 -11726
## - X40     1   0.02464 206.12 -11726
## - X26     1   0.02621 206.12 -11726
## - X69     1   0.02824 206.13 -11726
## - X45     1   0.02878 206.13 -11726
## - X22     1   0.03083 206.13 -11726
## - X46     1   0.03202 206.13 -11726
## - X73     1   0.03300 206.13 -11726
## - X7      1   0.03420 206.13 -11726
## - X68     1   0.04004 206.14 -11726
## - X65     1   0.04215 206.14 -11726
## - X72     1   0.04565 206.14 -11726
## - X25     1   0.04815 206.15 -11726
## - X51     1   0.04837 206.15 -11726
## - X2      1   0.04965 206.15 -11726
## - X10     1   0.05622 206.16 -11726
## - X35     1   0.05770 206.16 -11726
## - X23     1   0.05914 206.16 -11726
## - X21     1   0.06803 206.17 -11726
## - X36     1   0.06998 206.17 -11725
```

```
## - X85    1    0.07088 206.17 -11725
## - X79    1    0.07623 206.18 -11725
## - X9     1    0.08578 206.18 -11725
## - X1     1    0.08709 206.19 -11725
## - X5     1    0.09096 206.19 -11725
## - X44    1    0.09201 206.19 -11725
## - X14    1    0.09799 206.20 -11725
## <none>              206.10 -11725
## - X80    1    0.10708 206.21 -11725
## - X33    1    0.11113 206.21 -11725
## - X76    1    0.12158 206.22 -11724
## - X42    1    0.12628 206.22 -11724
## - X58    1    0.13583 206.23 -11724
## - X4     1    0.15975 206.26 -11724
## - X78    1    0.16267 206.26 -11724
## - X41    1    0.16398 206.26 -11724
## - X32    1    0.16485 206.26 -11724
## - X6     1    0.17567 206.27 -11723
## - X57    1    0.20504 206.30 -11723
## - X55    1    0.21786 206.32 -11723
## - X61    1    0.22426 206.32 -11722
## - X47    1    0.40064 206.50 -11719
## - X59    1    0.48396 206.58 -11717
## - X17    1    0.51075 206.61 -11717
## - X18    1    0.89694 207.00 -11709
## - X82    1    1.10017 207.20 -11706
##
## Step:  AIC=-11726.71
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##     X26 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 +
##     X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 + X51 +
##     X52 + X54 + X55 + X57 + X58 + X59 + X60 + X61 + X62 + X63 +
##     X64 + X65 + X67 + X68 + X69 + X71 + X72 + X73 + X75 + X76 +
##     X77 + X78 + X79 + X80 + X82 + X83 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X77    1    0.00418 206.11 -11729
## - X27    1    0.00492 206.11 -11729
## - X64    1    0.00571 206.11 -11729
## - X52    1    0.00638 206.11 -11729
## - X71    1    0.00980 206.11 -11728
## - X19    1    0.01080 206.11 -11728
## - X43    1    0.01116 206.11 -11728
## - X67    1    0.01127 206.11 -11728
## - X31    1    0.01140 206.11 -11728
## - X83    1    0.01204 206.11 -11728
## - X13    1    0.01338 206.12 -11728
## - X8     1    0.01390 206.12 -11728
## - X54    1    0.01391 206.12 -11728
## - X30    1    0.01447 206.12 -11728
## - X12    1    0.01447 206.12 -11728
## - X75    1    0.01484 206.12 -11728
## - X60    1    0.01487 206.12 -11728
```

```
## - X20    1   0.01643 206.12 -11728
## - X62    1   0.01649 206.12 -11728
## - X28    1   0.01849 206.12 -11728
## - X63    1   0.01977 206.12 -11728
## - X69    1   0.02839 206.13 -11728
## - X45    1   0.02848 206.13 -11728
## - X22    1   0.03043 206.13 -11728
## - X26    1   0.03047 206.13 -11728
## - X46    1   0.03204 206.13 -11728
## - X73    1   0.03337 206.14 -11728
## - X7     1   0.03839 206.14 -11728
## - X68    1   0.04063 206.14 -11728
## - X65    1   0.04271 206.15 -11728
## - X72    1   0.04582 206.15 -11728
## - X51    1   0.04855 206.15 -11728
## - X2     1   0.05093 206.15 -11728
## - X25    1   0.05512 206.16 -11728
## - X10    1   0.05784 206.16 -11728
## - X35    1   0.05798 206.16 -11728
## - X23    1   0.06220 206.16 -11728
## - X37    1   0.06350 206.17 -11728
## - X36    1   0.07032 206.17 -11727
## - X21    1   0.07037 206.17 -11727
## - X85    1   0.07133 206.17 -11727
## - X79    1   0.07636 206.18 -11727
## - X40    1   0.08075 206.18 -11727
## - X1     1   0.08694 206.19 -11727
## - X5     1   0.09071 206.19 -11727
## - X44    1   0.09301 206.19 -11727
## - X9     1   0.09392 206.20 -11727
## - X14    1   0.09803 206.20 -11727
## <none>           206.10 -11727
## - X80    1   0.10692 206.21 -11727
## - X33    1   0.11527 206.22 -11726
## - X38    1   0.11955 206.22 -11726
## - X76    1   0.12199 206.22 -11726
## - X42    1   0.12372 206.23 -11726
## - X58    1   0.13625 206.24 -11726
## - X4     1   0.16063 206.26 -11726
## - X78    1   0.16271 206.26 -11726
## - X32    1   0.16624 206.27 -11726
## - X41    1   0.17354 206.28 -11725
## - X6     1   0.18870 206.29 -11725
## - X57    1   0.20496 206.31 -11725
## - X55    1   0.21861 206.32 -11724
## - X61    1   0.22423 206.33 -11724
## - X47    1   0.39904 206.50 -11721
## - X59    1   0.48322 206.59 -11719
## - X17    1   0.52227 206.62 -11719
## - X18    1   0.91706 207.02 -11711
## - X82    1   1.10029 207.20 -11707
##
## Step:  AIC=-11728.63
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
```

```
##      X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##      X26 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 +
##      X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 + X51 +
##      X52 + X54 + X55 + X57 + X58 + X59 + X60 + X61 + X62 + X63 +
##      X64 + X65 + X67 + X68 + X69 + X71 + X72 + X73 + X75 + X76 +
##      X78 + X79 + X80 + X82 + X83 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X27    1    0.00468 206.11 -11730
## - X64    1    0.00574 206.11 -11730
## - X52    1    0.00630 206.11 -11730
## - X71    1    0.00978 206.12 -11730
## - X19    1    0.01073 206.12 -11730
## - X43    1    0.01099 206.12 -11730
## - X31    1    0.01133 206.12 -11730
## - X67    1    0.01158 206.12 -11730
## - X83    1    0.01204 206.12 -11730
## - X8     1    0.01368 206.12 -11730
## - X13    1    0.01369 206.12 -11730
## - X54    1    0.01394 206.12 -11730
## - X30    1    0.01439 206.12 -11730
## - X12    1    0.01453 206.12 -11730
## - X75    1    0.01477 206.12 -11730
## - X60    1    0.01483 206.12 -11730
## - X62    1    0.01656 206.12 -11730
## - X20    1    0.01661 206.12 -11730
## - X28    1    0.01828 206.12 -11730
## - X63    1    0.01972 206.13 -11730
## - X45    1    0.02827 206.13 -11730
## - X69    1    0.02833 206.13 -11730
## - X22    1    0.03029 206.14 -11730
## - X26    1    0.03110 206.14 -11730
## - X46    1    0.03252 206.14 -11730
## - X73    1    0.03352 206.14 -11730
## - X7     1    0.03751 206.14 -11730
## - X68    1    0.04066 206.15 -11730
## - X65    1    0.04233 206.15 -11730
## - X72    1    0.04584 206.15 -11730
## - X51    1    0.04861 206.16 -11730
## - X2     1    0.05062 206.16 -11730
## - X25    1    0.05605 206.16 -11730
## - X10    1    0.05752 206.16 -11730
## - X35    1    0.05784 206.16 -11730
## - X23    1    0.06272 206.17 -11729
## - X37    1    0.06390 206.17 -11729
## - X21    1    0.06985 206.18 -11729
## - X36    1    0.07021 206.18 -11729
## - X85    1    0.07156 206.18 -11729
## - X79    1    0.07658 206.18 -11729
## - X40    1    0.08078 206.19 -11729
## - X1     1    0.08768 206.19 -11729
## - X5     1    0.09159 206.20 -11729
## - X44    1    0.09256 206.20 -11729
## - X9     1    0.09303 206.20 -11729
```

```
## - X14    1    0.09836 206.21 -11729
## <none>               206.11 -11729
## - X80    1    0.10666 206.21 -11729
## - X33    1    0.11592 206.22 -11728
## - X38    1    0.11918 206.23 -11728
## - X76    1    0.12303 206.23 -11728
## - X42    1    0.12426 206.23 -11728
## - X58    1    0.13667 206.24 -11728
## - X4     1    0.15976 206.27 -11728
## - X78    1    0.16263 206.27 -11728
## - X32    1    0.16752 206.27 -11727
## - X41    1    0.17310 206.28 -11727
## - X6     1    0.18734 206.29 -11727
## - X57    1    0.20494 206.31 -11727
## - X55    1    0.22051 206.33 -11726
## - X61    1    0.22125 206.33 -11726
## - X47    1    0.39958 206.51 -11723
## - X59    1    0.48231 206.59 -11721
## - X17    1    0.52301 206.63 -11720
## - X18    1    0.91954 207.03 -11713
## - X82    1    1.09629 207.20 -11709
##
## Step:  AIC=-11730.54
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##     X26 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 +
##     X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 + X51 + X52 +
##     X54 + X55 + X57 + X58 + X59 + X60 + X61 + X62 + X63 + X64 +
##     X65 + X67 + X68 + X69 + X71 + X72 + X73 + X75 + X76 + X78 +
##     X79 + X80 + X82 + X83 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X64    1    0.00564 206.12 -11732
## - X52    1    0.00647 206.12 -11732
## - X19    1    0.00788 206.12 -11732
## - X71    1    0.00972 206.12 -11732
## - X43    1    0.01063 206.12 -11732
## - X31    1    0.01065 206.12 -11732
## - X67    1    0.01179 206.12 -11732
## - X83    1    0.01208 206.12 -11732
## - X8     1    0.01273 206.12 -11732
## - X13    1    0.01349 206.12 -11732
## - X12    1    0.01355 206.12 -11732
## - X28    1    0.01366 206.12 -11732
## - X30    1    0.01367 206.12 -11732
## - X54    1    0.01393 206.12 -11732
## - X60    1    0.01449 206.13 -11732
## - X75    1    0.01471 206.13 -11732
## - X62    1    0.01647 206.13 -11732
## - X20    1    0.01931 206.13 -11732
## - X63    1    0.01969 206.13 -11732
## - X45    1    0.02829 206.14 -11732
## - X69    1    0.02855 206.14 -11732
## - X46    1    0.03290 206.14 -11732
```

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```
## - X73   1   0.03385 206.15 -11732
## - X7    1   0.03554 206.15 -11732
## - X22   1   0.03874 206.15 -11732
## - X68   1   0.04075 206.15 -11732
## - X65   1   0.04233 206.15 -11732
## - X72   1   0.04543 206.16 -11732
## - X51   1   0.04827 206.16 -11732
## - X2    1   0.05165 206.16 -11732
## - X10   1   0.05565 206.17 -11732
## - X35   1   0.05955 206.17 -11731
## - X23   1   0.05968 206.17 -11731
## - X21   1   0.06520 206.18 -11731
## - X37   1   0.06725 206.18 -11731
## - X85   1   0.07129 206.18 -11731
## - X26   1   0.07212 206.18 -11731
## - X36   1   0.07214 206.18 -11731
## - X79   1   0.07737 206.19 -11731
## - X40   1   0.07951 206.19 -11731
## - X1    1   0.08644 206.20 -11731
## - X5    1   0.09000 206.20 -11731
## - X9    1   0.09081 206.20 -11731
## - X44   1   0.09247 206.20 -11731
## - X14   1   0.09773 206.21 -11731
## <none>           206.11 -11730
## - X80   1   0.10711 206.22 -11730
## - X25   1   0.11529 206.23 -11730
## - X33   1   0.11710 206.23 -11730
## - X38   1   0.12131 206.23 -11730
## - X76   1   0.12378 206.24 -11730
## - X42   1   0.12919 206.24 -11730
## - X58   1   0.13789 206.25 -11730
## - X4    1   0.15644 206.27 -11730
## - X78   1   0.16290 206.27 -11729
## - X41   1   0.17143 206.28 -11729
## - X32   1   0.17209 206.28 -11729
## - X6    1   0.18339 206.29 -11729
## - X57   1   0.20520 206.32 -11729
## - X55   1   0.22145 206.33 -11728
## - X61   1   0.22171 206.33 -11728
## - X47   1   0.39956 206.51 -11725
## - X59   1   0.48205 206.59 -11723
## - X17   1   0.51889 206.63 -11722
## - X18   1   0.97275 207.08 -11714
## - X82   1   1.09724 207.21 -11711
##
## Step:  AIC=-11732.43
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##     X26 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 +
##     X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 + X51 + X52 +
##     X54 + X55 + X57 + X58 + X59 + X60 + X61 + X62 + X63 + X65 +
##     X67 + X68 + X69 + X71 + X72 + X73 + X75 + X76 + X78 + X79 +
##     X80 + X82 + X83 + X85
##
```

```
##           Df Sum of Sq    RSS    AIC
## - X52     1    0.00624 206.12 -11734
## - X19     1    0.00775 206.12 -11734
## - X71     1    0.00979 206.13 -11734
## - X43     1    0.01037 206.13 -11734
## - X31     1    0.01059 206.13 -11734
## - X67     1    0.01159 206.13 -11734
## - X83     1    0.01202 206.13 -11734
## - X8      1    0.01269 206.13 -11734
## - X13     1    0.01331 206.13 -11734
## - X12     1    0.01352 206.13 -11734
## - X30     1    0.01360 206.13 -11734
## - X28     1    0.01400 206.13 -11734
## - X54     1    0.01409 206.13 -11734
## - X60     1    0.01447 206.13 -11734
## - X75     1    0.01496 206.13 -11734
## - X62     1    0.01636 206.13 -11734
## - X20     1    0.01980 206.14 -11734
## - X63     1    0.02007 206.14 -11734
## - X45     1    0.02817 206.15 -11734
## - X69     1    0.02829 206.15 -11734
## - X46     1    0.03251 206.15 -11734
## - X73     1    0.03367 206.15 -11734
## - X7      1    0.03531 206.15 -11734
## - X22     1    0.03887 206.16 -11734
## - X68     1    0.04173 206.16 -11734
## - X65     1    0.04213 206.16 -11734
## - X72     1    0.04536 206.16 -11734
## - X51     1    0.04825 206.16 -11734
## - X2      1    0.05171 206.17 -11733
## - X10     1    0.05548 206.17 -11733
## - X35     1    0.05942 206.18 -11733
## - X23     1    0.05971 206.18 -11733
## - X21     1    0.06479 206.18 -11733
## - X37     1    0.06604 206.18 -11733
## - X26     1    0.07127 206.19 -11733
## - X36     1    0.07199 206.19 -11733
## - X79     1    0.07733 206.19 -11733
## - X40     1    0.07935 206.20 -11733
## - X1      1    0.08574 206.20 -11733
## - X5      1    0.08919 206.21 -11733
## - X9      1    0.08974 206.21 -11733
## - X44     1    0.09244 206.21 -11733
## - X14     1    0.09823 206.22 -11732
## <none>               206.12 -11732
## - X80     1    0.10752 206.22 -11732
## - X25     1    0.11426 206.23 -11732
## - X33     1    0.11596 206.23 -11732
## - X38     1    0.12065 206.24 -11732
## - X76     1    0.12276 206.24 -11732
## - X42     1    0.12872 206.25 -11732
## - X58     1    0.13791 206.25 -11732
## - X4      1    0.15721 206.27 -11731
## - X78     1    0.16313 206.28 -11731
```

```
## - X41    1    0.17155 206.29 -11731
## - X32    1    0.17220 206.29 -11731
## - X6     1    0.18366 206.30 -11731
## - X57    1    0.20362 206.32 -11730
## - X55    1    0.21988 206.34 -11730
## - X61    1    0.22236 206.34 -11730
## - X47    1    0.39775 206.51 -11727
## - X59    1    0.48031 206.60 -11725
## - X85    1    0.51741 206.63 -11724
## - X17    1    0.51903 206.64 -11724
## - X18    1    0.97063 207.09 -11716
## - X82    1    1.09955 207.22 -11713
##
## Step:  AIC=-11734.31
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X25 +
##     X26 + X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 +
##     X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 + X51 + X54 +
##     X55 + X57 + X58 + X59 + X60 + X61 + X62 + X63 + X65 + X67 +
##     X68 + X69 + X71 + X72 + X73 + X75 + X76 + X78 + X79 + X80 +
##     X82 + X83 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X19    1    0.00773 206.13 -11736
## - X71    1    0.00919 206.13 -11736
## - X67    1    0.01014 206.13 -11736
## - X31    1    0.01071 206.13 -11736
## - X43    1    0.01089 206.13 -11736
## - X83    1    0.01212 206.13 -11736
## - X8     1    0.01286 206.14 -11736
## - X13    1    0.01328 206.14 -11736
## - X12    1    0.01330 206.14 -11736
## - X28    1    0.01351 206.14 -11736
## - X54    1    0.01362 206.14 -11736
## - X30    1    0.01374 206.14 -11736
## - X60    1    0.01461 206.14 -11736
## - X75    1    0.01461 206.14 -11736
## - X62    1    0.01648 206.14 -11736
## - X20    1    0.01993 206.14 -11736
## - X63    1    0.02012 206.14 -11736
## - X69    1    0.02731 206.15 -11736
## - X45    1    0.02837 206.15 -11736
## - X46    1    0.02943 206.15 -11736
## - X7     1    0.03533 206.16 -11736
## - X22    1    0.03841 206.16 -11736
## - X65    1    0.04183 206.16 -11736
## - X68    1    0.04295 206.17 -11736
## - X72    1    0.04547 206.17 -11735
## - X51    1    0.04866 206.17 -11735
## - X2     1    0.05237 206.18 -11735
## - X10    1    0.05491 206.18 -11735
## - X35    1    0.05932 206.18 -11735
## - X23    1    0.05960 206.18 -11735
## - X21    1    0.06416 206.19 -11735
```

```
## - X73    1   0.06564 206.19 -11735
## - X37    1   0.06661 206.19 -11735
## - X26    1   0.07109 206.19 -11735
## - X36    1   0.07182 206.19 -11735
## - X79    1   0.07676 206.20 -11735
## - X40    1   0.08064 206.20 -11735
## - X1     1   0.08653 206.21 -11735
## - X9     1   0.08966 206.21 -11735
## - X5     1   0.08995 206.21 -11735
## - X44    1   0.09205 206.22 -11734
## - X14    1   0.09849 206.22 -11734
## <none>             206.12 -11734
## - X80    1   0.11031 206.23 -11734
## - X25    1   0.11541 206.24 -11734
## - X33    1   0.11652 206.24 -11734
## - X38    1   0.12102 206.24 -11734
## - X76    1   0.12204 206.25 -11734
## - X42    1   0.12792 206.25 -11734
## - X58    1   0.13658 206.26 -11734
## - X4     1   0.15773 206.28 -11733
## - X78    1   0.16392 206.29 -11733
## - X32    1   0.17255 206.30 -11733
## - X41    1   0.17284 206.30 -11733
## - X6     1   0.18443 206.31 -11733
## - X57    1   0.20447 206.33 -11732
## - X55    1   0.21916 206.34 -11732
## - X61    1   0.22282 206.35 -11732
## - X47    1   0.39554 206.52 -11729
## - X59    1   0.48639 206.61 -11727
## - X85    1   0.51875 206.64 -11726
## - X17    1   0.51945 206.64 -11726
## - X18    1   0.96833 207.09 -11718
## - X82    1   1.10081 207.22 -11715
##
## Step:  AIC=-11736.16
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 +
##     X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 +
##     X41 + X42 + X43 + X44 + X45 + X46 + X47 + X51 + X54 + X55 +
##     X57 + X58 + X59 + X60 + X61 + X62 + X63 + X65 + X67 + X68 +
##     X69 + X71 + X72 + X73 + X75 + X76 + X78 + X79 + X80 + X82 +
##     X83 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X71    1   0.00947 206.14 -11738
## - X67    1   0.00949 206.14 -11738
## - X43    1   0.01020 206.14 -11738
## - X31    1   0.01203 206.14 -11738
## - X83    1   0.01217 206.14 -11738
## - X12    1   0.01362 206.14 -11738
## - X8     1   0.01366 206.14 -11738
## - X54    1   0.01408 206.15 -11738
## - X60    1   0.01436 206.15 -11738
## - X75    1   0.01491 206.15 -11738
```

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## - X13   1   0.01499 206.15 -11738
## - X30   1   0.01513 206.15 -11738
## - X62   1   0.01657 206.15 -11738
## - X28   1   0.01702 206.15 -11738
## - X63   1   0.02075 206.15 -11738
## - X69   1   0.02726 206.16 -11738
## - X46   1   0.02831 206.16 -11738
## - X45   1   0.02832 206.16 -11738
## - X20   1   0.03274 206.16 -11738
## - X7    1   0.03743 206.17 -11737
## - X65   1   0.04147 206.17 -11737
## - X68   1   0.04343 206.17 -11737
## - X72   1   0.04649 206.18 -11737
## - X51   1   0.04983 206.18 -11737
## - X2    1   0.05162 206.18 -11737
## - X23   1   0.05307 206.18 -11737
## - X10   1   0.05403 206.19 -11737
## - X21   1   0.05646 206.19 -11737
## - X35   1   0.05812 206.19 -11737
## - X22   1   0.06127 206.19 -11737
## - X73   1   0.06620 206.20 -11737
## - X37   1   0.06870 206.20 -11737
## - X36   1   0.07097 206.20 -11737
## - X26   1   0.07591 206.21 -11737
## - X79   1   0.07656 206.21 -11737
## - X40   1   0.07923 206.21 -11737
## - X1    1   0.08535 206.22 -11736
## - X5    1   0.08807 206.22 -11736
## - X44   1   0.09139 206.22 -11736
## - X9    1   0.09305 206.22 -11736
## - X14   1   0.10263 206.23 -11736
## <none>          206.13 -11736
## - X80   1   0.11049 206.24 -11736
## - X33   1   0.11413 206.25 -11736
## - X38   1   0.12193 206.25 -11736
## - X76   1   0.12289 206.25 -11736
## - X42   1   0.12823 206.26 -11736
## - X58   1   0.13600 206.27 -11736
## - X4    1   0.15237 206.28 -11735
## - X78   1   0.16267 206.29 -11735
## - X25   1   0.16477 206.30 -11735
## - X32   1   0.17019 206.30 -11735
## - X41   1   0.17287 206.30 -11735
## - X6    1   0.19116 206.32 -11734
## - X57   1   0.20314 206.33 -11734
## - X55   1   0.21880 206.35 -11734
## - X61   1   0.22319 206.35 -11734
## - X47   1   0.39499 206.53 -11730
## - X59   1   0.48562 206.62 -11729
## - X85   1   0.52104 206.65 -11728
## - X17   1   0.52289 206.65 -11728
## - X18   1   0.97387 207.10 -11719
## - X82   1   1.10210 207.23 -11717
##
```

```
## Step:  AIC=-11737.97
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 +
##     X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 +
##     X41 + X42 + X43 + X44 + X45 + X46 + X47 + X51 + X54 + X55 +
##     X57 + X58 + X59 + X60 + X61 + X62 + X63 + X65 + X67 + X68 +
##     X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 + X82 + X83 +
##     X85
##
##          Df Sum of Sq    RSS    AIC
## - X67     1   0.00960 206.15 -11740
## - X43     1   0.00991 206.15 -11740
## - X83     1   0.01165 206.15 -11740
## - X31     1   0.01204 206.15 -11740
## - X12     1   0.01356 206.15 -11740
## - X8      1   0.01409 206.15 -11740
## - X54     1   0.01412 206.15 -11740
## - X60     1   0.01437 206.16 -11740
## - X75     1   0.01488 206.16 -11740
## - X30     1   0.01515 206.16 -11740
## - X13     1   0.01558 206.16 -11740
## - X62     1   0.01564 206.16 -11740
## - X28     1   0.01683 206.16 -11740
## - X63     1   0.02074 206.16 -11740
## - X45     1   0.02819 206.17 -11739
## - X46     1   0.02841 206.17 -11739
## - X20     1   0.03340 206.17 -11739
## - X69     1   0.03472 206.18 -11739
## - X7      1   0.03844 206.18 -11739
## - X68     1   0.04038 206.18 -11739
## - X65     1   0.04147 206.18 -11739
## - X72     1   0.04511 206.19 -11739
## - X51     1   0.04856 206.19 -11739
## - X2      1   0.05190 206.19 -11739
## - X23     1   0.05294 206.19 -11739
## - X10     1   0.05340 206.19 -11739
## - X21     1   0.05725 206.20 -11739
## - X35     1   0.05782 206.20 -11739
## - X22     1   0.06151 206.20 -11739
## - X73     1   0.06627 206.21 -11739
## - X37     1   0.06918 206.21 -11739
## - X36     1   0.07063 206.21 -11739
## - X26     1   0.07609 206.22 -11738
## - X79     1   0.07679 206.22 -11738
## - X40     1   0.07897 206.22 -11738
## - X1      1   0.08644 206.23 -11738
## - X5      1   0.08940 206.23 -11738
## - X44     1   0.09131 206.23 -11738
## - X9      1   0.09431 206.24 -11738
## <none>                206.14 -11738
## - X14     1   0.10389 206.24 -11738
## - X80     1   0.11029 206.25 -11738
## - X33     1   0.11468 206.25 -11738
## - X38     1   0.12094 206.26 -11738
```

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## - X76   1   0.12415 206.26 -11738
## - X42   1   0.12891 206.27 -11738
## - X58   1   0.13635 206.28 -11737
## - X4    1   0.15375 206.29 -11737
## - X78   1   0.16297 206.30 -11737
## - X25   1   0.16592 206.31 -11737
## - X32   1   0.17039 206.31 -11737
## - X41   1   0.17288 206.31 -11737
## - X6    1   0.19267 206.33 -11736
## - X57   1   0.20343 206.34 -11736
## - X55   1   0.21980 206.36 -11736
## - X61   1   0.22275 206.36 -11736
## - X47   1   0.40575 206.55 -11732
## - X59   1   0.48702 206.63 -11730
## - X17   1   0.52225 206.66 -11730
## - X85   1   0.52316 206.66 -11730
## - X18   1   0.97245 207.11 -11721
## - X82   1   1.10181 207.24 -11719
##
## Step:  AIC=-11739.79
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 +
##     X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 +
##     X41 + X42 + X43 + X44 + X45 + X46 + X47 + X51 + X54 + X55 +
##     X57 + X58 + X59 + X60 + X61 + X62 + X63 + X65 + X68 + X69 +
##     X72 + X73 + X75 + X76 + X78 + X79 + X80 + X82 + X83 + X85
##
##          Df Sum of Sq    RSS     AIC
## - X43   1   0.00984 206.16 -11742
## - X83   1   0.01172 206.16 -11742
## - X31   1   0.01196 206.16 -11742
## - X12   1   0.01326 206.16 -11742
## - X8    1   0.01362 206.16 -11742
## - X54   1   0.01399 206.16 -11742
## - X60   1   0.01440 206.16 -11742
## - X75   1   0.01473 206.16 -11742
## - X30   1   0.01504 206.16 -11742
## - X13   1   0.01545 206.16 -11742
## - X62   1   0.01585 206.17 -11742
## - X28   1   0.01659 206.17 -11742
## - X63   1   0.02094 206.17 -11741
## - X45   1   0.02743 206.18 -11741
## - X20   1   0.03289 206.18 -11741
## - X69   1   0.03527 206.19 -11741
## - X7    1   0.03797 206.19 -11741
## - X68   1   0.04012 206.19 -11741
## - X65   1   0.04137 206.19 -11741
## - X72   1   0.04547 206.19 -11741
## - X51   1   0.05012 206.20 -11741
## - X2    1   0.05159 206.20 -11741
## - X10   1   0.05366 206.20 -11741
## - X23   1   0.05374 206.20 -11741
## - X21   1   0.05446 206.20 -11741
## - X35   1   0.05817 206.21 -11741
```

```
## - X22    1    0.06176 206.21 -11741
## - X73    1    0.06230 206.21 -11741
## - X37    1    0.06785 206.22 -11740
## - X36    1    0.07099 206.22 -11740
## - X26    1    0.07586 206.23 -11740
## - X79    1    0.07606 206.23 -11740
## - X40    1    0.07908 206.23 -11740
## - X1     1    0.08736 206.24 -11740
## - X5     1    0.09043 206.24 -11740
## - X44    1    0.09089 206.24 -11740
## - X9     1    0.09398 206.24 -11740
## <none>                206.15 -11740
## - X14    1    0.10397 206.25 -11740
## - X80    1    0.10673 206.26 -11740
## - X33    1    0.11350 206.26 -11740
## - X38    1    0.11891 206.27 -11740
## - X76    1    0.12436 206.27 -11739
## - X42    1    0.12887 206.28 -11739
## - X58    1    0.13426 206.28 -11739
## - X46    1    0.15283 206.30 -11739
## - X4     1    0.15314 206.30 -11739
## - X78    1    0.16245 206.31 -11739
## - X25    1    0.16634 206.32 -11739
## - X32    1    0.16948 206.32 -11738
## - X41    1    0.17122 206.32 -11738
## - X6     1    0.19241 206.34 -11738
## - X57    1    0.20279 206.35 -11738
## - X55    1    0.22052 206.37 -11738
## - X61    1    0.22322 206.37 -11738
## - X47    1    0.40807 206.56 -11734
## - X59    1    0.48182 206.63 -11732
## - X17    1    0.51788 206.67 -11732
## - X85    1    0.52468 206.68 -11732
## - X18    1    0.96719 207.12 -11723
## - X82    1    1.10229 207.25 -11720
##
## Step:  AIC=-11741.59
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 +
##     X28 + X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 +
##     X41 + X42 + X44 + X45 + X46 + X47 + X51 + X54 + X55 + X57 +
##     X58 + X59 + X60 + X61 + X62 + X63 + X65 + X68 + X69 + X72 +
##     X73 + X75 + X76 + X78 + X79 + X80 + X82 + X83 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X31    1    0.01127 206.17 -11743
## - X83    1    0.01160 206.17 -11743
## - X12    1    0.01310 206.17 -11743
## - X8     1    0.01415 206.17 -11743
## - X54    1    0.01426 206.17 -11743
## - X30    1    0.01441 206.17 -11743
## - X60    1    0.01445 206.17 -11743
## - X75    1    0.01494 206.18 -11743
## - X62    1    0.01588 206.18 -11743
```

```
## - X28   1   0.01686 206.18 -11743
## - X13   1   0.01804 206.18 -11743
## - X63   1   0.02143 206.18 -11743
## - X45   1   0.02721 206.19 -11743
## - X20   1   0.03066 206.19 -11743
## - X69   1   0.03576 206.19 -11743
## - X7    1   0.03898 206.20 -11743
## - X68   1   0.04082 206.20 -11743
## - X65   1   0.04144 206.20 -11743
## - X72   1   0.04615 206.21 -11743
## - X51   1   0.05090 206.21 -11743
## - X10   1   0.05390 206.21 -11742
## - X23   1   0.05393 206.21 -11742
## - X2    1   0.05432 206.21 -11742
## - X21   1   0.05682 206.22 -11742
## - X35   1   0.05891 206.22 -11742
## - X22   1   0.06108 206.22 -11742
## - X73   1   0.06242 206.22 -11742
## - X37   1   0.06626 206.23 -11742
## - X36   1   0.07170 206.23 -11742
## - X26   1   0.07355 206.23 -11742
## - X79   1   0.07602 206.24 -11742
## - X40   1   0.07919 206.24 -11742
## - X1    1   0.07969 206.24 -11742
## - X5    1   0.08480 206.24 -11742
## - X44   1   0.09064 206.25 -11742
## - X9    1   0.09565 206.25 -11742
## <none>              206.16 -11742
## - X80   1   0.11153 206.27 -11741
## - X14   1   0.11390 206.27 -11741
## - X38   1   0.11628 206.28 -11741
## - X33   1   0.12078 206.28 -11741
## - X76   1   0.12529 206.28 -11741
## - X42   1   0.13325 206.29 -11741
## - X58   1   0.13468 206.29 -11741
## - X4    1   0.14998 206.31 -11741
## - X46   1   0.15374 206.31 -11741
## - X78   1   0.16230 206.32 -11740
## - X25   1   0.16568 206.32 -11740
## - X41   1   0.17137 206.33 -11740
## - X32   1   0.17808 206.34 -11740
## - X6    1   0.19399 206.35 -11740
## - X57   1   0.20267 206.36 -11740
## - X55   1   0.22081 206.38 -11739
## - X61   1   0.22199 206.38 -11739
## - X47   1   0.40553 206.56 -11736
## - X59   1   0.49773 206.66 -11734
## - X17   1   0.52389 206.68 -11733
## - X85   1   0.52734 206.69 -11733
## - X18   1   0.98280 207.14 -11725
## - X82   1   1.10109 207.26 -11722
##
## Step:  AIC=-11743.38
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
```

```
##      X13 + X14 + X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 +
##      X28 + X30 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 +
##      X42 + X44 + X45 + X46 + X47 + X51 + X54 + X55 + X57 + X58 +
##      X59 + X60 + X61 + X62 + X63 + X65 + X68 + X69 + X72 + X73 +
##      X75 + X76 + X78 + X79 + X80 + X82 + X83 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X83    1    0.01172 206.18 -11745
## - X12    1    0.01239 206.18 -11745
## - X54    1    0.01410 206.19 -11745
## - X8     1    0.01429 206.19 -11745
## - X60    1    0.01445 206.19 -11745
## - X75    1    0.01472 206.19 -11745
## - X62    1    0.01625 206.19 -11745
## - X13    1    0.01788 206.19 -11745
## - X28    1    0.01831 206.19 -11745
## - X63    1    0.02051 206.19 -11745
## - X45    1    0.02694 206.20 -11745
## - X20    1    0.03205 206.20 -11745
## - X69    1    0.03552 206.21 -11745
## - X7     1    0.04026 206.21 -11745
## - X68    1    0.04075 206.21 -11745
## - X65    1    0.04190 206.21 -11745
## - X72    1    0.04665 206.22 -11744
## - X23    1    0.05109 206.22 -11744
## - X51    1    0.05164 206.22 -11744
## - X10    1    0.05176 206.22 -11744
## - X2     1    0.05374 206.22 -11744
## - X21    1    0.05445 206.22 -11744
## - X22    1    0.06197 206.23 -11744
## - X73    1    0.06263 206.23 -11744
## - X37    1    0.06324 206.23 -11744
## - X26    1    0.06932 206.24 -11744
## - X79    1    0.07629 206.25 -11744
## - X1     1    0.07956 206.25 -11744
## - X40    1    0.07957 206.25 -11744
## - X5     1    0.08410 206.25 -11744
## - X44    1    0.09118 206.26 -11744
## - X35    1    0.09123 206.26 -11744
## - X9     1    0.09642 206.27 -11744
## <none>              206.17 -11743
## - X36    1    0.10813 206.28 -11743
## - X80    1    0.11074 206.28 -11743
## - X38    1    0.11543 206.29 -11743
## - X33    1    0.12150 206.29 -11743
## - X14    1    0.12672 206.30 -11743
## - X76    1    0.12920 206.30 -11743
## - X42    1    0.13186 206.30 -11743
## - X58    1    0.13523 206.31 -11743
## - X46    1    0.15353 206.32 -11742
## - X4     1    0.15414 206.32 -11742
## - X78    1    0.16225 206.33 -11742
## - X30    1    0.16509 206.34 -11742
## - X25    1    0.16683 206.34 -11742
```

```
## - X41    1    0.16947 206.34 -11742
## - X32    1    0.17586 206.35 -11742
## - X6     1    0.19975 206.37 -11742
## - X57    1    0.20274 206.37 -11741
## - X61    1    0.22201 206.39 -11741
## - X55    1    0.22912 206.40 -11741
## - X47    1    0.40700 206.58 -11738
## - X59    1    0.49691 206.67 -11736
## - X85    1    0.52777 206.70 -11735
## - X17    1    0.52835 206.70 -11735
## - X18    1    1.00894 207.18 -11726
## - X82    1    1.10222 207.27 -11724
##
## Step:  AIC=-11745.15
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 +
##     X28 + X30 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 +
##     X42 + X44 + X45 + X46 + X47 + X51 + X54 + X55 + X57 + X58 +
##     X59 + X60 + X61 + X62 + X63 + X65 + X68 + X69 + X72 + X73 +
##     X75 + X76 + X78 + X79 + X80 + X82 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X62    1   0.00632 206.19 -11747
## - X12    1   0.01253 206.19 -11747
## - X54    1   0.01417 206.20 -11747
## - X8     1   0.01443 206.20 -11747
## - X60    1   0.01444 206.20 -11747
## - X75    1   0.01473 206.20 -11747
## - X13    1   0.01757 206.20 -11747
## - X28    1   0.01821 206.20 -11747
## - X63    1   0.02042 206.20 -11747
## - X45    1   0.02695 206.21 -11747
## - X20    1   0.03237 206.22 -11746
## - X69    1   0.03532 206.22 -11746
## - X68    1   0.03988 206.22 -11746
## - X7     1   0.04062 206.22 -11746
## - X65    1   0.04143 206.22 -11746
## - X72    1   0.04665 206.23 -11746
## - X23    1   0.05035 206.23 -11746
## - X51    1   0.05163 206.23 -11746
## - X10    1   0.05164 206.23 -11746
## - X2     1   0.05315 206.24 -11746
## - X21    1   0.05402 206.24 -11746
## - X37    1   0.06145 206.24 -11746
## - X73    1   0.06215 206.25 -11746
## - X22    1   0.06321 206.25 -11746
## - X26    1   0.07008 206.25 -11746
## - X79    1   0.07617 206.26 -11746
## - X1     1   0.07956 206.26 -11746
## - X40    1   0.07973 206.26 -11746
## - X5     1   0.08408 206.27 -11746
## - X35    1   0.08969 206.27 -11745
## - X44    1   0.09029 206.27 -11745
## - X9     1   0.09715 206.28 -11745
```

```
## <none>                    206.18 -11745
## - X36    1   0.10644 206.29 -11745
## - X80    1   0.10977 206.29 -11745
## - X38    1   0.11310 206.30 -11745
## - X33    1   0.12359 206.31 -11745
## - X14    1   0.12686 206.31 -11745
## - X42    1   0.12890 206.31 -11745
## - X76    1   0.12977 206.31 -11745
## - X58    1   0.13512 206.32 -11744
## - X46    1   0.15316 206.34 -11744
## - X4     1   0.15338 206.34 -11744
## - X78    1   0.16231 206.34 -11744
## - X30    1   0.16533 206.35 -11744
## - X25    1   0.16808 206.35 -11744
## - X41    1   0.16902 206.35 -11744
## - X32    1   0.17781 206.36 -11744
## - X6     1   0.19942 206.38 -11743
## - X57    1   0.20276 206.38 -11743
## - X61    1   0.22188 206.41 -11743
## - X55    1   0.22853 206.41 -11743
## - X47    1   0.40951 206.59 -11739
## - X59    1   0.49415 206.68 -11738
## - X17    1   0.52744 206.71 -11737
## - X85    1   0.53017 206.71 -11737
## - X18    1   1.00799 207.19 -11728
## - X82    1   1.10223 207.28 -11726
##
## Step:  AIC=-11747.03
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 +
##     X28 + X30 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 +
##     X42 + X44 + X45 + X46 + X47 + X51 + X54 + X55 + X57 + X58 +
##     X59 + X60 + X61 + X63 + X65 + X68 + X69 + X72 + X73 + X75 +
##     X76 + X78 + X79 + X80 + X82 + X85
##
##         Df Sum of Sq    RSS     AIC
## - X12    1   0.01278 206.20 -11749
## - X8     1   0.01405 206.20 -11749
## - X54    1   0.01422 206.20 -11749
## - X60    1   0.01447 206.20 -11749
## - X75    1   0.01495 206.20 -11749
## - X13    1   0.01786 206.21 -11749
## - X28    1   0.01829 206.21 -11749
## - X63    1   0.02050 206.21 -11749
## - X45    1   0.02725 206.22 -11748
## - X20    1   0.03198 206.22 -11748
## - X69    1   0.03516 206.22 -11748
## - X68    1   0.03985 206.23 -11748
## - X7     1   0.04030 206.23 -11748
## - X65    1   0.04151 206.23 -11748
## - X72    1   0.04663 206.24 -11748
## - X23    1   0.04986 206.24 -11748
## - X51    1   0.05152 206.24 -11748
## - X10    1   0.05210 206.24 -11748
```

```
## - X2    1   0.05371 206.24 -11748
## - X21   1   0.05547 206.24 -11748
## - X73   1   0.06130 206.25 -11748
## - X37   1   0.06191 206.25 -11748
## - X22   1   0.06318 206.25 -11748
## - X26   1   0.06936 206.26 -11748
## - X79   1   0.07590 206.26 -11748
## - X40   1   0.07976 206.27 -11748
## - X1    1   0.08012 206.27 -11748
## - X5    1   0.08455 206.27 -11747
## - X35   1   0.08844 206.28 -11747
## - X44   1   0.09051 206.28 -11747
## - X9    1   0.09697 206.29 -11747
## <none>            206.19 -11747
## - X36   1   0.10510 206.29 -11747
## - X80   1   0.11143 206.30 -11747
## - X38   1   0.11382 206.30 -11747
## - X33   1   0.12461 206.31 -11747
## - X14   1   0.12728 206.32 -11747
## - X42   1   0.12943 206.32 -11746
## - X76   1   0.13020 206.32 -11746
## - X58   1   0.13463 206.32 -11746
## - X46   1   0.15314 206.34 -11746
## - X4    1   0.15438 206.34 -11746
## - X78   1   0.16251 206.35 -11746
## - X30   1   0.16637 206.35 -11746
## - X25   1   0.16784 206.36 -11746
## - X41   1   0.17089 206.36 -11746
## - X32   1   0.17878 206.37 -11746
## - X6    1   0.19912 206.39 -11745
## - X57   1   0.20281 206.39 -11745
## - X61   1   0.22169 206.41 -11745
## - X55   1   0.22846 206.42 -11745
## - X47   1   0.40731 206.60 -11741
## - X59   1   0.49345 206.68 -11740
## - X85   1   0.53185 206.72 -11739
## - X17   1   0.53215 206.72 -11739
## - X18   1   1.01515 207.20 -11729
## - X82   1   1.10117 207.29 -11728
##
## Step:  AIC=-11748.78
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X13 +
##     X14 + X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 + X28 +
##     X30 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 +
##     X44 + X45 + X46 + X47 + X51 + X54 + X55 + X57 + X58 + X59 +
##     X60 + X61 + X63 + X65 + X68 + X69 + X72 + X73 + X75 + X76 +
##     X78 + X79 + X80 + X82 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X8    1   0.01168 206.21 -11751
## - X13   1   0.01181 206.21 -11750
## - X60   1   0.01422 206.22 -11750
## - X54   1   0.01430 206.22 -11750
## - X75   1   0.01510 206.22 -11750
```

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```
## - X28   1   0.01999 206.22 -11750
## - X63   1   0.02066 206.22 -11750
## - X45   1   0.02690 206.23 -11750
## - X20   1   0.03278 206.24 -11750
## - X69   1   0.03462 206.24 -11750
## - X7    1   0.03506 206.24 -11750
## - X68   1   0.04081 206.24 -11750
## - X65   1   0.04181 206.24 -11750
## - X72   1   0.04660 206.25 -11750
## - X10   1   0.04829 206.25 -11750
## - X51   1   0.05151 206.25 -11750
## - X23   1   0.05210 206.25 -11750
## - X21   1   0.05229 206.25 -11750
## - X2    1   0.05482 206.26 -11750
## - X22   1   0.06061 206.26 -11750
## - X73   1   0.06075 206.26 -11750
## - X37   1   0.06224 206.26 -11750
## - X26   1   0.07131 206.27 -11749
## - X79   1   0.07583 206.28 -11749
## - X40   1   0.07758 206.28 -11749
## - X1    1   0.08012 206.28 -11749
## - X5    1   0.08439 206.29 -11749
## - X35   1   0.08665 206.29 -11749
## - X9    1   0.08987 206.29 -11749
## - X44   1   0.09111 206.29 -11749
## - X36   1   0.10284 206.31 -11749
## <none>         206.20 -11749
## - X33   1   0.11245 206.31 -11749
## - X38   1   0.11267 206.31 -11749
## - X80   1   0.11555 206.32 -11748
## - X42   1   0.13036 206.33 -11748
## - X76   1   0.13036 206.33 -11748
## - X58   1   0.13488 206.34 -11748
## - X46   1   0.15493 206.36 -11748
## - X78   1   0.16259 206.36 -11748
## - X30   1   0.16563 206.37 -11748
## - X14   1   0.16675 206.37 -11748
## - X32   1   0.16688 206.37 -11748
## - X25   1   0.16792 206.37 -11748
## - X41   1   0.17263 206.37 -11747
## - X4    1   0.18994 206.39 -11747
## - X6    1   0.19222 206.39 -11747
## - X57   1   0.20282 206.41 -11747
## - X61   1   0.22475 206.43 -11746
## - X55   1   0.22935 206.43 -11746
## - X47   1   0.40444 206.61 -11743
## - X59   1   0.50352 206.71 -11741
## - X85   1   0.52881 206.73 -11740
## - X17   1   0.53204 206.73 -11740
## - X18   1   1.01560 207.22 -11731
## - X82   1   1.10720 207.31 -11729
##
## Step:  AIC=-11750.55
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X9 + X10 + X13 + X14 +
```

```
##      X17 + X18 + X20 + X21 + X22 + X23 + X25 + X26 + X28 + X30 +
##      X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X44 +
##      X45 + X46 + X47 + X51 + X54 + X55 + X57 + X58 + X59 + X60 +
##      X61 + X63 + X65 + X68 + X69 + X72 + X73 + X75 + X76 + X78 +
##      X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X13   1   0.01189 206.22 -11752
## - X60   1   0.01356 206.23 -11752
## - X54   1   0.01427 206.23 -11752
## - X75   1   0.01500 206.23 -11752
## - X28   1   0.01878 206.23 -11752
## - X63   1   0.02057 206.23 -11752
## - X45   1   0.02732 206.24 -11752
## - X7    1   0.02781 206.24 -11752
## - X20   1   0.03118 206.25 -11752
## - X69   1   0.03437 206.25 -11752
## - X65   1   0.04026 206.25 -11752
## - X68   1   0.04070 206.25 -11752
## - X72   1   0.04604 206.26 -11752
## - X23   1   0.04952 206.26 -11752
## - X51   1   0.05084 206.26 -11752
## - X10   1   0.05173 206.26 -11752
## - X21   1   0.05373 206.27 -11752
## - X2    1   0.05442 206.27 -11752
## - X22   1   0.05857 206.27 -11751
## - X73   1   0.06152 206.28 -11751
## - X37   1   0.06467 206.28 -11751
## - X40   1   0.07399 206.29 -11751
## - X26   1   0.07437 206.29 -11751
## - X79   1   0.07713 206.29 -11751
## - X1    1   0.08072 206.29 -11751
## - X5    1   0.08453 206.30 -11751
## - X35   1   0.08623 206.30 -11751
## - X44   1   0.08919 206.30 -11751
## - X36   1   0.10206 206.31 -11751
## <none>              206.21 -11751
## - X33   1   0.10851 206.32 -11750
## - X38   1   0.11190 206.32 -11750
## - X80   1   0.11749 206.33 -11750
## - X9    1   0.11787 206.33 -11750
## - X76   1   0.12775 206.34 -11750
## - X42   1   0.13376 206.35 -11750
## - X58   1   0.13649 206.35 -11750
## - X46   1   0.15224 206.37 -11750
## - X78   1   0.16210 206.38 -11749
## - X32   1   0.16508 206.38 -11749
## - X14   1   0.16517 206.38 -11749
## - X30   1   0.17108 206.38 -11749
## - X25   1   0.17180 206.38 -11749
## - X41   1   0.17430 206.39 -11749
## - X4    1   0.18511 206.40 -11749
## - X57   1   0.20177 206.41 -11749
## - X6    1   0.22033 206.43 -11748
```

```
## - X61    1   0.22487 206.44 -11748
## - X55    1   0.22559 206.44 -11748
## - X47    1   0.40538 206.62 -11745
## - X59    1   0.50364 206.72 -11743
## - X85    1   0.52980 206.74 -11742
## - X17    1   0.53609 206.75 -11742
## - X18    1   1.01769 207.23 -11733
## - X82    1   1.10538 207.32 -11731
##
## Step:  AIC=-11752.32
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X9 + X10 + X14 + X17 +
##     X18 + X20 + X21 + X22 + X23 + X25 + X26 + X28 + X30 + X32 +
##     X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 +
##     X46 + X47 + X51 + X54 + X55 + X57 + X58 + X59 + X60 + X61 +
##     X63 + X65 + X68 + X69 + X72 + X73 + X75 + X76 + X78 + X79 +
##     X80 + X82 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X60    1   0.01366 206.24 -11754
## - X54    1   0.01514 206.24 -11754
## - X75    1   0.01569 206.24 -11754
## - X28    1   0.02048 206.25 -11754
## - X63    1   0.02059 206.25 -11754
## - X7     1   0.02572 206.25 -11754
## - X45    1   0.02721 206.25 -11754
## - X20    1   0.03109 206.26 -11754
## - X69    1   0.03443 206.26 -11754
## - X65    1   0.03974 206.26 -11754
## - X68    1   0.04056 206.27 -11754
## - X72    1   0.04538 206.27 -11753
## - X51    1   0.04975 206.28 -11753
## - X23    1   0.05285 206.28 -11753
## - X21    1   0.05392 206.28 -11753
## - X2     1   0.05550 206.28 -11753
## - X22    1   0.05686 206.28 -11753
## - X37    1   0.05846 206.28 -11753
## - X73    1   0.06110 206.29 -11753
## - X40    1   0.07549 206.30 -11753
## - X79    1   0.07669 206.30 -11753
## - X1     1   0.07696 206.30 -11753
## - X26    1   0.07908 206.30 -11753
## - X5     1   0.08084 206.31 -11753
## - X35    1   0.08452 206.31 -11753
## - X44    1   0.08812 206.31 -11753
## - X36    1   0.10022 206.33 -11752
## <none>             206.22 -11752
## - X38    1   0.11010 206.34 -11752
## - X10    1   0.11412 206.34 -11752
## - X9     1   0.11437 206.34 -11752
## - X33    1   0.11611 206.34 -11752
## - X80    1   0.11738 206.34 -11752
## - X76    1   0.12880 206.35 -11752
## - X58    1   0.13550 206.36 -11752
## - X42    1   0.13687 206.36 -11752
```

```
## - X46    1   0.15179 206.38 -11751
## - X14    1   0.15348 206.38 -11751
## - X78    1   0.16184 206.39 -11751
## - X41    1   0.16989 206.40 -11751
## - X32    1   0.17134 206.40 -11751
## - X30    1   0.17352 206.40 -11751
## - X4     1   0.17402 206.40 -11751
## - X25    1   0.17830 206.40 -11751
## - X57    1   0.20195 206.43 -11750
## - X6     1   0.21576 206.44 -11750
## - X61    1   0.22553 206.45 -11750
## - X55    1   0.22665 206.45 -11750
## - X47    1   0.40810 206.63 -11746
## - X59    1   0.50519 206.73 -11744
## - X85    1   0.52956 206.75 -11744
## - X17    1   0.53281 206.76 -11744
## - X18    1   1.00726 207.23 -11735
## - X82    1   1.10806 207.33 -11733
##
## Step:  AIC=-11754.06
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X9 + X10 + X14 + X17 +
##     X18 + X20 + X21 + X22 + X23 + X25 + X26 + X28 + X30 + X32 +
##     X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 +
##     X46 + X47 + X51 + X54 + X55 + X57 + X58 + X59 + X61 + X63 +
##     X65 + X68 + X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 +
##     X82 + X85
##
##          Df Sum of Sq    RSS     AIC
## - X54    1   0.01514 206.25 -11756
## - X75    1   0.01565 206.25 -11756
## - X63    1   0.02062 206.26 -11756
## - X28    1   0.02079 206.26 -11756
## - X7     1   0.02564 206.26 -11756
## - X45    1   0.02698 206.27 -11756
## - X20    1   0.03017 206.27 -11756
## - X69    1   0.03454 206.27 -11755
## - X65    1   0.03957 206.28 -11755
## - X68    1   0.04100 206.28 -11755
## - X72    1   0.04536 206.28 -11755
## - X51    1   0.04980 206.29 -11755
## - X23    1   0.05347 206.29 -11755
## - X2     1   0.05505 206.29 -11755
## - X21    1   0.05602 206.29 -11755
## - X22    1   0.05654 206.30 -11755
## - X37    1   0.05673 206.30 -11755
## - X73    1   0.06051 206.30 -11755
## - X40    1   0.07370 206.31 -11755
## - X79    1   0.07679 206.32 -11755
## - X1     1   0.07711 206.32 -11755
## - X26    1   0.07998 206.32 -11754
## - X5     1   0.08108 206.32 -11754
## - X35    1   0.08478 206.32 -11754
## - X44    1   0.08770 206.33 -11754
## - X36    1   0.10064 206.34 -11754
```

```
## <none>                 206.24 -11754
## - X38   1   0.10927 206.35 -11754
## - X9    1   0.11394 206.35 -11754
## - X10   1   0.11400 206.35 -11754
## - X33   1   0.11433 206.35 -11754
## - X80   1   0.11713 206.36 -11754
## - X76   1   0.12884 206.37 -11754
## - X58   1   0.13569 206.38 -11753
## - X42   1   0.13639 206.38 -11753
## - X46   1   0.15150 206.39 -11753
## - X14   1   0.15376 206.39 -11753
## - X78   1   0.16185 206.40 -11753
## - X41   1   0.16772 206.41 -11753
## - X32   1   0.17038 206.41 -11753
## - X30   1   0.17281 206.41 -11753
## - X4    1   0.17557 206.41 -11753
## - X25   1   0.17745 206.42 -11753
## - X57   1   0.20202 206.44 -11752
## - X6    1   0.21693 206.46 -11752
## - X61   1   0.22571 206.47 -11752
## - X55   1   0.22631 206.47 -11752
## - X47   1   0.40621 206.65 -11748
## - X59   1   0.50467 206.74 -11746
## - X85   1   0.52946 206.77 -11746
## - X17   1   0.53058 206.77 -11746
## - X18   1   1.00787 207.25 -11737
## - X82   1   1.10845 207.35 -11735
##
## Step:  AIC=-11755.76
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X9 + X10 + X14 + X17 +
##      X18 + X20 + X21 + X22 + X23 + X25 + X26 + X28 + X30 + X32 +
##      X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 +
##      X46 + X47 + X51 + X55 + X57 + X58 + X59 + X61 + X63 + X65 +
##      X68 + X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 + X82 +
##      X85
##
##          Df Sum of Sq    RSS     AIC
## - X75   1   0.00058 206.25 -11758
## - X63   1   0.02069 206.28 -11757
## - X28   1   0.02107 206.28 -11757
## - X7    1   0.02582 206.28 -11757
## - X45   1   0.02711 206.28 -11757
## - X20   1   0.03037 206.28 -11757
## - X69   1   0.03482 206.29 -11757
## - X65   1   0.03996 206.29 -11757
## - X68   1   0.04087 206.29 -11757
## - X72   1   0.04578 206.30 -11757
## - X51   1   0.05056 206.31 -11757
## - X23   1   0.05444 206.31 -11757
## - X21   1   0.05507 206.31 -11757
## - X2    1   0.05517 206.31 -11757
## - X37   1   0.05583 206.31 -11757
## - X22   1   0.05691 206.31 -11757
## - X73   1   0.05909 206.31 -11757
```

```
## - X40    1    0.07332 206.33 -11756
## - X1     1    0.07418 206.33 -11756
## - X79    1    0.07668 206.33 -11756
## - X5     1    0.07835 206.33 -11756
## - X26    1    0.08061 206.34 -11756
## - X35    1    0.08300 206.34 -11756
## - X44    1    0.08812 206.34 -11756
## - X36    1    0.09880 206.35 -11756
## <none>              206.25 -11756
## - X38    1    0.10775 206.36 -11756
## - X10    1    0.11303 206.37 -11756
## - X33    1    0.11335 206.37 -11756
## - X9     1    0.11363 206.37 -11756
## - X80    1    0.11780 206.37 -11756
## - X76    1    0.12910 206.38 -11755
## - X58    1    0.13550 206.39 -11755
## - X42    1    0.13589 206.39 -11755
## - X46    1    0.15308 206.41 -11755
## - X14    1    0.15422 206.41 -11755
## - X78    1    0.16174 206.42 -11755
## - X41    1    0.16823 206.42 -11754
## - X32    1    0.16833 206.42 -11754
## - X4     1    0.17402 206.43 -11754
## - X30    1    0.17597 206.43 -11754
## - X25    1    0.17662 206.43 -11754
## - X57    1    0.20191 206.46 -11754
## - X6     1    0.21549 206.47 -11754
## - X61    1    0.22606 206.48 -11753
## - X55    1    0.22665 206.48 -11753
## - X47    1    0.40456 206.66 -11750
## - X59    1    0.50305 206.76 -11748
## - X85    1    0.52761 206.78 -11748
## - X17    1    0.53225 206.79 -11748
## - X18    1    1.00663 207.26 -11738
## - X82    1    1.10912 207.36 -11736
##
## Step:  AIC=-11757.75
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X9 + X10 + X14 + X17 +
##     X18 + X20 + X21 + X22 + X23 + X25 + X26 + X28 + X30 + X32 +
##     X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 +
##     X46 + X47 + X51 + X55 + X57 + X58 + X59 + X61 + X63 + X65 +
##     X68 + X69 + X72 + X73 + X76 + X78 + X79 + X80 + X82 + X85
##
##         Df Sum of Sq    RSS     AIC
## - X63    1    0.02061 206.28 -11759
## - X28    1    0.02099 206.28 -11759
## - X7     1    0.02612 206.28 -11759
## - X45    1    0.02696 206.28 -11759
## - X20    1    0.03050 206.28 -11759
## - X69    1    0.03470 206.29 -11759
## - X65    1    0.03981 206.29 -11759
## - X68    1    0.04070 206.29 -11759
## - X72    1    0.04588 206.30 -11759
## - X51    1    0.05065 206.31 -11759
```

```
## - X23   1   0.05454 206.31 -11759
## - X2    1   0.05490 206.31 -11759
## - X21   1   0.05540 206.31 -11759
## - X37   1   0.05568 206.31 -11759
## - X22   1   0.05692 206.31 -11759
## - X73   1   0.05945 206.31 -11759
## - X40   1   0.07366 206.33 -11758
## - X1    1   0.07452 206.33 -11758
## - X79   1   0.07686 206.33 -11758
## - X5    1   0.07870 206.33 -11758
## - X26   1   0.08061 206.34 -11758
## - X35   1   0.08277 206.34 -11758
## - X44   1   0.08795 206.34 -11758
## - X36   1   0.09857 206.35 -11758
## <none>              206.25 -11758
## - X38   1   0.10766 206.36 -11758
## - X10   1   0.11300 206.37 -11758
## - X33   1   0.11315 206.37 -11758
## - X9    1   0.11435 206.37 -11758
## - X80   1   0.11722 206.37 -11758
## - X76   1   0.12913 206.38 -11757
## - X42   1   0.13560 206.39 -11757
## - X58   1   0.13586 206.39 -11757
## - X46   1   0.15287 206.41 -11757
## - X14   1   0.15474 206.41 -11757
## - X78   1   0.16165 206.42 -11757
## - X32   1   0.16808 206.42 -11756
## - X41   1   0.16818 206.42 -11756
## - X4    1   0.17376 206.43 -11756
## - X30   1   0.17550 206.43 -11756
## - X25   1   0.17642 206.43 -11756
## - X57   1   0.20183 206.46 -11756
## - X6    1   0.21576 206.47 -11756
## - X61   1   0.22610 206.48 -11755
## - X55   1   0.22657 206.48 -11755
## - X47   1   0.41089 206.67 -11752
## - X59   1   0.50341 206.76 -11750
## - X85   1   0.52734 206.78 -11750
## - X17   1   0.53212 206.79 -11749
## - X18   1   1.00699 207.26 -11740
## - X82   1   1.10944 207.36 -11738
##
## Step:  AIC=-11759.35
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X9 + X10 + X14 + X17 +
##     X18 + X20 + X21 + X22 + X23 + X25 + X26 + X28 + X30 + X32 +
##     X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 +
##     X46 + X47 + X51 + X55 + X57 + X58 + X59 + X61 + X65 + X68 +
##     X69 + X72 + X73 + X76 + X78 + X79 + X80 + X82 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X28   1   0.02023 206.30 -11761
## - X7    1   0.02638 206.30 -11761
## - X45   1   0.02923 206.31 -11761
## - X20   1   0.03100 206.31 -11761
```

```
## - X69   1   0.03326 206.31 -11761
## - X68   1   0.03859 206.31 -11761
## - X65   1   0.03921 206.31 -11761
## - X72   1   0.05006 206.32 -11760
## - X23   1   0.05429 206.33 -11760
## - X21   1   0.05443 206.33 -11760
## - X51   1   0.05457 206.33 -11760
## - X2    1   0.05503 206.33 -11760
## - X37   1   0.05613 206.33 -11760
## - X22   1   0.05741 206.33 -11760
## - X73   1   0.05928 206.34 -11760
## - X1    1   0.07380 206.35 -11760
## - X40   1   0.07469 206.35 -11760
## - X79   1   0.07612 206.35 -11760
## - X5    1   0.07801 206.35 -11760
## - X26   1   0.07880 206.35 -11760
## - X44   1   0.08681 206.36 -11760
## - X35   1   0.08847 206.36 -11760
## <none>          206.28 -11759
## - X36   1   0.10477 206.38 -11759
## - X38   1   0.10936 206.38 -11759
## - X33   1   0.11079 206.39 -11759
## - X9    1   0.11542 206.39 -11759
## - X80   1   0.11627 206.39 -11759
## - X10   1   0.11721 206.39 -11759
## - X76   1   0.13050 206.41 -11759
## - X42   1   0.13511 206.41 -11759
## - X58   1   0.13518 206.41 -11759
## - X14   1   0.15204 206.43 -11758
## - X46   1   0.15278 206.43 -11758
## - X32   1   0.16429 206.44 -11758
## - X78   1   0.16501 206.44 -11758
## - X41   1   0.16877 206.44 -11758
## - X30   1   0.17526 206.45 -11758
## - X4    1   0.17528 206.45 -11758
## - X25   1   0.17822 206.45 -11758
## - X57   1   0.20525 206.48 -11757
## - X6    1   0.21643 206.49 -11757
## - X61   1   0.22827 206.50 -11757
## - X55   1   0.22864 206.50 -11757
## - X47   1   0.41739 206.69 -11753
## - X59   1   0.50028 206.78 -11752
## - X85   1   0.52607 206.80 -11751
## - X17   1   0.53413 206.81 -11751
## - X18   1   1.00541 207.28 -11742
## - X82   1   1.11065 207.39 -11740
##
## Step:  AIC=-11760.96
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X9 + X10 + X14 + X17 +
##     X18 + X20 + X21 + X22 + X23 + X25 + X26 + X30 + X32 + X33 +
##     X35 + X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 + X46 +
##     X47 + X51 + X55 + X57 + X58 + X59 + X61 + X65 + X68 + X69 +
##     X72 + X73 + X76 + X78 + X79 + X80 + X82 + X85
##
```

```
##          Df Sum of Sq    RSS     AIC
## - X7     1   0.02441 206.32 -11762
## - X45    1   0.02953 206.32 -11762
## - X20    1   0.03240 206.33 -11762
## - X69    1   0.03354 206.33 -11762
## - X23    1   0.03716 206.33 -11762
## - X68    1   0.03799 206.33 -11762
## - X65    1   0.03900 206.34 -11762
## - X72    1   0.05047 206.35 -11762
## - X37    1   0.05427 206.35 -11762
## - X51    1   0.05485 206.35 -11762
## - X2     1   0.05613 206.35 -11762
## - X73    1   0.06096 206.36 -11762
## - X22    1   0.06284 206.36 -11762
## - X21    1   0.06989 206.37 -11762
## - X1     1   0.07254 206.37 -11762
## - X79    1   0.07328 206.37 -11762
## - X5     1   0.07606 206.37 -11762
## - X40    1   0.07659 206.37 -11762
## - X44    1   0.08596 206.38 -11761
## - X35    1   0.09090 206.39 -11761
## - X26    1   0.09651 206.39 -11761
## <none>              206.30 -11761
## - X38    1   0.10569 206.40 -11761
## - X36    1   0.10765 206.40 -11761
## - X33    1   0.10781 206.40 -11761
## - X80    1   0.11571 206.41 -11761
## - X9     1   0.11680 206.41 -11761
## - X10    1   0.12160 206.42 -11761
## - X76    1   0.12786 206.42 -11760
## - X58    1   0.13098 206.43 -11760
## - X42    1   0.13254 206.43 -11760
## - X14    1   0.14529 206.44 -11760
## - X46    1   0.15061 206.45 -11760
## - X78    1   0.16236 206.46 -11760
## - X4     1   0.16245 206.46 -11760
## - X30    1   0.16573 206.46 -11760
## - X32    1   0.16625 206.46 -11760
## - X41    1   0.17002 206.47 -11760
## - X25    1   0.19703 206.49 -11759
## - X57    1   0.20263 206.50 -11759
## - X6     1   0.21680 206.51 -11759
## - X55    1   0.22671 206.52 -11759
## - X61    1   0.23137 206.53 -11758
## - X47    1   0.42179 206.72 -11755
## - X59    1   0.50346 206.80 -11753
## - X17    1   0.51804 206.81 -11753
## - X85    1   0.52770 206.82 -11753
## - X18    1   0.99587 207.29 -11744
## - X82    1   1.11722 207.41 -11741
##
## Step:  AIC=-11762.49
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X20 + X21 + X22 + X23 + X25 + X26 + X30 + X32 + X33 + X35 +
```

```
##      X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 +
##      X51 + X55 + X57 + X58 + X59 + X61 + X65 + X68 + X69 + X72 +
##      X73 + X76 + X78 + X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X45     1   0.02996 206.35 -11764
## - X20     1   0.03140 206.35 -11764
## - X69     1   0.03261 206.35 -11764
## - X68     1   0.03732 206.36 -11764
## - X23     1   0.03891 206.36 -11764
## - X65     1   0.03942 206.36 -11764
## - X37     1   0.05102 206.37 -11764
## - X72     1   0.05137 206.37 -11764
## - X2      1   0.05318 206.37 -11764
## - X51     1   0.05561 206.38 -11763
## - X73     1   0.06140 206.38 -11763
## - X22     1   0.06256 206.38 -11763
## - X21     1   0.06950 206.39 -11763
## - X79     1   0.07263 206.39 -11763
## - X1      1   0.07328 206.39 -11763
## - X40     1   0.07641 206.40 -11763
## - X5      1   0.07662 206.40 -11763
## - X44     1   0.08701 206.41 -11763
## - X26     1   0.09621 206.42 -11763
## - X35     1   0.09732 206.42 -11763
## <none>                206.32 -11762
## - X33     1   0.10320 206.42 -11762
## - X38     1   0.10377 206.42 -11762
## - X36     1   0.11525 206.44 -11762
## - X80     1   0.11554 206.44 -11762
## - X10     1   0.11749 206.44 -11762
## - X58     1   0.12976 206.45 -11762
## - X76     1   0.13190 206.45 -11762
## - X42     1   0.13424 206.45 -11762
## - X9      1   0.13548 206.46 -11762
## - X14     1   0.14264 206.46 -11762
## - X46     1   0.14895 206.47 -11762
## - X30     1   0.15184 206.47 -11762
## - X78     1   0.16319 206.48 -11761
## - X4      1   0.16720 206.49 -11761
## - X32     1   0.17100 206.49 -11761
## - X41     1   0.17306 206.49 -11761
## - X25     1   0.19102 206.51 -11761
## - X57     1   0.20308 206.52 -11761
## - X6      1   0.21811 206.54 -11760
## - X55     1   0.23065 206.55 -11760
## - X61     1   0.23095 206.55 -11760
## - X47     1   0.42228 206.74 -11756
## - X59     1   0.50118 206.82 -11755
## - X17     1   0.52064 206.84 -11754
## - X85     1   0.53434 206.85 -11754
## - X18     1   0.99939 207.32 -11745
## - X82     1   1.11639 207.44 -11743
##
```

```
## Step:  AIC=-11763.91
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##      X20 + X21 + X22 + X23 + X25 + X26 + X30 + X32 + X33 + X35 +
##      X36 + X37 + X38 + X40 + X41 + X42 + X44 + X46 + X47 + X51 +
##      X55 + X57 + X58 + X59 + X61 + X65 + X68 + X69 + X72 + X73 +
##      X76 + X78 + X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS     AIC
## - X20     1   0.03176 206.38 -11765
## - X65     1   0.03884 206.39 -11765
## - X68     1   0.03983 206.39 -11765
## - X23     1   0.04074 206.39 -11765
## - X37     1   0.04949 206.40 -11765
## - X72     1   0.05329 206.40 -11765
## - X2      1   0.05392 206.40 -11765
## - X51     1   0.05573 206.41 -11765
## - X69     1   0.05661 206.41 -11765
## - X73     1   0.06050 206.41 -11765
## - X22     1   0.06285 206.41 -11765
## - X21     1   0.07311 206.42 -11764
## - X1      1   0.07433 206.42 -11764
## - X40     1   0.07470 206.43 -11764
## - X5      1   0.07764 206.43 -11764
## - X44     1   0.08783 206.44 -11764
## - X79     1   0.09181 206.44 -11764
## - X35     1   0.09570 206.45 -11764
## - X26     1   0.09577 206.45 -11764
## - X38     1   0.10113 206.45 -11764
## - X33     1   0.10289 206.45 -11764
## <none>              206.35 -11764
## - X80     1   0.11057 206.46 -11764
## - X36     1   0.11357 206.46 -11764
## - X10     1   0.11852 206.47 -11764
## - X42     1   0.13260 206.48 -11763
## - X9      1   0.13489 206.49 -11763
## - X76     1   0.13775 206.49 -11763
## - X14     1   0.14389 206.49 -11763
## - X46     1   0.14509 206.50 -11763
## - X58     1   0.14654 206.50 -11763
## - X30     1   0.15408 206.50 -11763
## - X78     1   0.16246 206.51 -11763
## - X32     1   0.16841 206.52 -11763
## - X4      1   0.16886 206.52 -11763
## - X41     1   0.17103 206.52 -11763
## - X25     1   0.19115 206.54 -11762
## - X57     1   0.20278 206.55 -11762
## - X6      1   0.21780 206.57 -11762
## - X61     1   0.22925 206.58 -11762
## - X55     1   0.24118 206.59 -11761
## - X47     1   0.41671 206.77 -11758
## - X59     1   0.48051 206.83 -11757
## - X17     1   0.52542 206.88 -11756
## - X85     1   0.53859 206.89 -11756
## - X18     1   0.99962 207.35 -11747
```

```
## - X82    1   1.11443 207.46 -11744
##
## Step:  AIC=-11765.29
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X21 + X22 + X23 + X25 + X26 + X30 + X32 + X33 + X35 + X36 +
##     X37 + X38 + X40 + X41 + X42 + X44 + X46 + X47 + X51 + X55 +
##     X57 + X58 + X59 + X61 + X65 + X68 + X69 + X72 + X73 + X76 +
##     X78 + X79 + X80 + X82 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X23    1   0.03806 206.42 -11767
## - X65    1   0.03902 206.42 -11766
## - X68    1   0.04041 206.42 -11766
## - X37    1   0.04888 206.43 -11766
## - X2     1   0.05031 206.43 -11766
## - X72    1   0.05328 206.44 -11766
## - X51    1   0.05496 206.44 -11766
## - X69    1   0.05503 206.44 -11766
## - X22    1   0.05988 206.44 -11766
## - X73    1   0.06321 206.44 -11766
## - X21    1   0.06853 206.45 -11766
## - X40    1   0.07026 206.45 -11766
## - X1     1   0.07764 206.46 -11766
## - X5     1   0.08075 206.46 -11766
## - X44    1   0.08789 206.47 -11766
## - X79    1   0.09133 206.47 -11766
## - X26    1   0.09618 206.48 -11765
## - X38    1   0.10000 206.48 -11765
## - X35    1   0.10167 206.48 -11765
## <none>             206.38 -11765
## - X80    1   0.11143 206.49 -11765
## - X33    1   0.11333 206.50 -11765
## - X10    1   0.11961 206.50 -11765
## - X36    1   0.12023 206.50 -11765
## - X14    1   0.13602 206.52 -11765
## - X76    1   0.13691 206.52 -11765
## - X42    1   0.13989 206.52 -11765
## - X9     1   0.14105 206.52 -11765
## - X46    1   0.14281 206.52 -11764
## - X58    1   0.14734 206.53 -11764
## - X30    1   0.14834 206.53 -11764
## - X78    1   0.16115 206.54 -11764
## - X32    1   0.16671 206.55 -11764
## - X41    1   0.16696 206.55 -11764
## - X25    1   0.17248 206.55 -11764
## - X4     1   0.17458 206.56 -11764
## - X57    1   0.20133 206.58 -11763
## - X6     1   0.21648 206.60 -11763
## - X61    1   0.23072 206.61 -11763
## - X55    1   0.24232 206.62 -11763
## - X47    1   0.41413 206.80 -11759
## - X59    1   0.48673 206.87 -11758
## - X85    1   0.54091 206.92 -11757
## - X17    1   0.54114 206.92 -11757
```

```
## - X18    1   1.02659 207.41 -11747
## - X82    1   1.11874 207.50 -11746
##
## Step:  AIC=-11766.55
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X21 + X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X37 +
##     X38 + X40 + X41 + X42 + X44 + X46 + X47 + X51 + X55 + X57 +
##     X58 + X59 + X61 + X65 + X68 + X69 + X72 + X73 + X76 + X78 +
##     X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS     AIC
## - X65    1   0.03890 206.46 -11768
## - X68    1   0.04188 206.46 -11768
## - X37    1   0.04544 206.47 -11768
## - X21    1   0.05273 206.47 -11768
## - X2     1   0.05294 206.47 -11768
## - X72    1   0.05411 206.47 -11768
## - X69    1   0.05432 206.47 -11768
## - X51    1   0.05611 206.48 -11768
## - X73    1   0.06269 206.48 -11767
## - X40    1   0.06828 206.49 -11767
## - X1     1   0.07647 206.50 -11767
## - X5     1   0.08052 206.50 -11767
## - X44    1   0.08767 206.51 -11767
## - X26    1   0.08935 206.51 -11767
## - X79    1   0.09305 206.51 -11767
## - X38    1   0.09583 206.52 -11767
## - X35    1   0.09970 206.52 -11767
## <none>              206.42 -11767
## - X10    1   0.10688 206.53 -11766
## - X22    1   0.10882 206.53 -11766
## - X80    1   0.11126 206.53 -11766
## - X33    1   0.11324 206.53 -11766
## - X36    1   0.11697 206.54 -11766
## - X76    1   0.13473 206.55 -11766
## - X14    1   0.13810 206.56 -11766
## - X46    1   0.14004 206.56 -11766
## - X30    1   0.14021 206.56 -11766
## - X42    1   0.14077 206.56 -11766
## - X9     1   0.14808 206.57 -11766
## - X58    1   0.15000 206.57 -11766
## - X25    1   0.15283 206.57 -11766
## - X78    1   0.15868 206.58 -11766
## - X32    1   0.15931 206.58 -11766
## - X41    1   0.17259 206.59 -11765
## - X4     1   0.19397 206.61 -11765
## - X57    1   0.19862 206.62 -11765
## - X6     1   0.20775 206.63 -11764
## - X61    1   0.22760 206.65 -11764
## - X55    1   0.24080 206.66 -11764
## - X47    1   0.41077 206.83 -11761
## - X59    1   0.48672 206.91 -11759
## - X17    1   0.54999 206.97 -11758
## - X85    1   0.55163 206.97 -11758
```

```
## - X18    1   1.06002 207.48 -11748
## - X82    1   1.11151 207.53 -11747
##
## Step:  AIC=-11767.8
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##      X21 + X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X37 +
##      X38 + X40 + X41 + X42 + X44 + X46 + X47 + X51 + X55 + X57 +
##      X58 + X59 + X61 + X68 + X69 + X72 + X73 + X76 + X78 + X79 +
##      X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X68    1   0.04284 206.50 -11769
## - X37    1   0.04466 206.50 -11769
## - X21    1   0.05149 206.51 -11769
## - X2     1   0.05287 206.51 -11769
## - X72    1   0.05365 206.51 -11769
## - X69    1   0.05463 206.51 -11769
## - X51    1   0.05603 206.51 -11769
## - X73    1   0.06163 206.52 -11769
## - X40    1   0.06655 206.53 -11768
## - X1     1   0.07878 206.54 -11768
## - X5     1   0.08340 206.54 -11768
## - X26    1   0.08836 206.55 -11768
## - X79    1   0.09455 206.55 -11768
## - X38    1   0.09751 206.56 -11768
## - X35    1   0.09925 206.56 -11768
## <none>               206.46 -11768
## - X10    1   0.10540 206.56 -11768
## - X22    1   0.10786 206.57 -11768
## - X36    1   0.11649 206.57 -11768
## - X33    1   0.11691 206.58 -11768
## - X80    1   0.12202 206.58 -11767
## - X76    1   0.13260 206.59 -11767
## - X14    1   0.13585 206.59 -11767
## - X46    1   0.13759 206.60 -11767
## - X42    1   0.14036 206.60 -11767
## - X30    1   0.14371 206.60 -11767
## - X9     1   0.14870 206.61 -11767
## - X25    1   0.15093 206.61 -11767
## - X58    1   0.15446 206.61 -11767
## - X78    1   0.16141 206.62 -11767
## - X32    1   0.16419 206.62 -11767
## - X41    1   0.17468 206.63 -11766
## - X4     1   0.19299 206.65 -11766
## - X44    1   0.19950 206.66 -11766
## - X57    1   0.20143 206.66 -11766
## - X6     1   0.20212 206.66 -11766
## - X61    1   0.22773 206.69 -11765
## - X55    1   0.23538 206.69 -11765
## - X47    1   0.41199 206.87 -11762
## - X59    1   0.48878 206.95 -11760
## - X17    1   0.54399 207.00 -11759
## - X85    1   0.55288 207.01 -11759
## - X18    1   1.05506 207.51 -11749
```

```
## - X82    1    1.11320 207.57 -11748
##
## Step:  AIC=-11768.97
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X21 + X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X37 +
##     X38 + X40 + X41 + X42 + X44 + X46 + X47 + X51 + X55 + X57 +
##     X58 + X59 + X61 + X69 + X72 + X73 + X76 + X78 + X79 + X80 +
##     X82 + X85
##
##          Df Sum of Sq    RSS     AIC
## - X37     1    0.0471 206.55 -11770
## - X69     1    0.0517 206.55 -11770
## - X21     1    0.0522 206.55 -11770
## - X2      1    0.0545 206.56 -11770
## - X72     1    0.0549 206.56 -11770
## - X51     1    0.0583 206.56 -11770
## - X73     1    0.0593 206.56 -11770
## - X40     1    0.0644 206.57 -11770
## - X1      1    0.0810 206.58 -11769
## - X5      1    0.0855 206.59 -11769
## - X26     1    0.0901 206.59 -11769
## - X79     1    0.0953 206.60 -11769
## - X38     1    0.0997 206.60 -11769
## - X35     1    0.1009 206.60 -11769
## <none>              206.50 -11769
## - X10     1    0.1060 206.61 -11769
## - X22     1    0.1083 206.61 -11769
## - X33     1    0.1167 206.62 -11769
## - X36     1    0.1182 206.62 -11769
## - X80     1    0.1243 206.63 -11769
## - X46     1    0.1318 206.63 -11768
## - X14     1    0.1338 206.63 -11768
## - X42     1    0.1435 206.65 -11768
## - X9      1    0.1481 206.65 -11768
## - X30     1    0.1494 206.65 -11768
## - X25     1    0.1506 206.65 -11768
## - X76     1    0.1523 206.65 -11768
## - X58     1    0.1541 206.66 -11768
## - X32     1    0.1649 206.67 -11768
## - X78     1    0.1661 206.67 -11768
## - X41     1    0.1749 206.68 -11768
## - X4      1    0.1918 206.69 -11767
## - X44     1    0.2006 206.70 -11767
## - X6      1    0.2023 206.70 -11767
## - X57     1    0.2071 206.71 -11767
## - X61     1    0.2195 206.72 -11767
## - X55     1    0.2562 206.76 -11766
## - X59     1    0.4922 206.99 -11761
## - X17     1    0.5486 207.05 -11760
## - X85     1    0.5726 207.07 -11760
## - X18     1    1.0594 207.56 -11750
## - X82     1    1.1096 207.61 -11750
## - X47     1    3.7049 210.21 -11700
##
```

```
## Step:  AIC=-11770.06
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X21 + X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X38 +
##     X40 + X41 + X42 + X44 + X46 + X47 + X51 + X55 + X57 + X58 +
##     X59 + X61 + X69 + X72 + X73 + X76 + X78 + X79 + X80 + X82 +
##     X85
##
##         Df Sum of Sq    RSS    AIC
## - X21    1    0.0477 206.60 -11771
## - X69    1    0.0504 206.60 -11771
## - X38    1    0.0535 206.60 -11771
## - X2     1    0.0546 206.60 -11771
## - X72    1    0.0555 206.60 -11771
## - X51    1    0.0586 206.61 -11771
## - X73    1    0.0592 206.61 -11771
## - X40    1    0.0828 206.63 -11770
## - X1     1    0.0841 206.63 -11770
## - X5     1    0.0888 206.64 -11770
## - X10    1    0.0916 206.64 -11770
## - X79    1    0.0943 206.64 -11770
## - X35    1    0.0946 206.64 -11770
## - X42    1    0.0971 206.65 -11770
## - X26    1    0.0991 206.65 -11770
## <none>              206.55 -11770
## - X22    1    0.1110 206.66 -11770
## - X36    1    0.1116 206.66 -11770
## - X30    1    0.1181 206.67 -11770
## - X33    1    0.1197 206.67 -11770
## - X80    1    0.1272 206.68 -11770
## - X46    1    0.1318 206.68 -11770
## - X14    1    0.1332 206.68 -11770
## - X9     1    0.1403 206.69 -11769
## - X76    1    0.1530 206.70 -11769
## - X58    1    0.1545 206.70 -11769
## - X32    1    0.1572 206.71 -11769
## - X78    1    0.1648 206.71 -11769
## - X41    1    0.1652 206.71 -11769
## - X25    1    0.1689 206.72 -11769
## - X6     1    0.2022 206.75 -11768
## - X57    1    0.2047 206.75 -11768
## - X44    1    0.2050 206.75 -11768
## - X61    1    0.2216 206.77 -11768
## - X4     1    0.2275 206.78 -11768
## - X55    1    0.2544 206.80 -11767
## - X59    1    0.4962 207.04 -11762
## - X17    1    0.5337 207.08 -11762
## - X85    1    0.5665 207.12 -11761
## - X18    1    1.0478 207.60 -11752
## - X82    1    1.1172 207.67 -11750
## - X47    1    3.6924 210.24 -11701
##
## Step:  AIC=-11771.13
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X38 + X40 +
```

```
##      X41 + X42 + X44 + X46 + X47 + X51 + X55 + X57 + X58 + X59 +
##      X61 + X69 + X72 + X73 + X76 + X78 + X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X69    1    0.0481 206.64 -11772
## - X2     1    0.0534 206.65 -11772
## - X72    1    0.0550 206.65 -11772
## - X51    1    0.0568 206.65 -11772
## - X38    1    0.0586 206.66 -11772
## - X73    1    0.0682 206.66 -11772
## - X40    1    0.0848 206.68 -11772
## - X35    1    0.0917 206.69 -11771
## - X30    1    0.0963 206.69 -11771
## - X42    1    0.0997 206.70 -11771
## - X79    1    0.0997 206.70 -11771
## - X10    1    0.1006 206.70 -11771
## <none>          206.60 -11771
## - X1     1    0.1067 206.70 -11771
## - X36    1    0.1086 206.71 -11771
## - X26    1    0.1135 206.71 -11771
## - X5     1    0.1171 206.71 -11771
## - X80    1    0.1192 206.72 -11771
## - X33    1    0.1217 206.72 -11771
## - X14    1    0.1371 206.73 -11770
## - X46    1    0.1379 206.73 -11770
## - X22    1    0.1385 206.74 -11770
## - X9     1    0.1404 206.74 -11770
## - X76    1    0.1522 206.75 -11770
## - X41    1    0.1547 206.75 -11770
## - X58    1    0.1623 206.76 -11770
## - X78    1    0.1639 206.76 -11770
## - X32    1    0.1760 206.77 -11770
## - X6     1    0.1909 206.79 -11769
## - X57    1    0.2030 206.80 -11769
## - X44    1    0.2098 206.81 -11769
## - X25    1    0.2102 206.81 -11769
## - X61    1    0.2193 206.82 -11769
## - X4     1    0.2201 206.82 -11769
## - X55    1    0.2539 206.85 -11768
## - X59    1    0.4801 207.08 -11764
## - X85    1    0.5691 207.16 -11762
## - X17    1    0.6031 207.20 -11762
## - X82    1    1.1158 207.71 -11752
## - X18    1    1.1394 207.74 -11751
## - X47    1    3.7483 210.34 -11701
##
## Step:  AIC=-11772.2
## train$X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##      X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X38 + X40 +
##      X41 + X42 + X44 + X46 + X47 + X51 + X55 + X57 + X58 + X59 +
##      X61 + X72 + X73 + X76 + X78 + X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X2     1    0.0509 206.69 -11773
```

```
## - X51    1     0.0604 206.71 -11773
## - X38    1     0.0613 206.71 -11773
## - X72    1     0.0661 206.71 -11773
## - X73    1     0.0728 206.72 -11773
## - X40    1     0.0867 206.73 -11772
## - X35    1     0.0902 206.74 -11772
## - X30    1     0.0957 206.74 -11772
## - X79    1     0.0977 206.74 -11772
## - X10    1     0.1005 206.75 -11772
## - X42    1     0.1019 206.75 -11772
## - X1     1     0.1022 206.75 -11772
## <none>              206.64 -11772
## - X36    1     0.1069 206.75 -11772
## - X5     1     0.1114 206.76 -11772
## - X80    1     0.1147 206.76 -11772
## - X26    1     0.1152 206.76 -11772
## - X33    1     0.1205 206.76 -11772
## - X46    1     0.1330 206.78 -11772
## - X14    1     0.1372 206.78 -11772
## - X9     1     0.1377 206.78 -11772
## - X22    1     0.1384 206.78 -11772
## - X76    1     0.1457 206.79 -11771
## - X41    1     0.1552 206.80 -11771
## - X58    1     0.1590 206.80 -11771
## - X78    1     0.1624 206.81 -11771
## - X32    1     0.1775 206.82 -11771
## - X6     1     0.1908 206.84 -11770
## - X57    1     0.2020 206.85 -11770
## - X25    1     0.2111 206.85 -11770
## - X61    1     0.2171 206.86 -11770
## - X4     1     0.2178 206.86 -11770
## - X44    1     0.2202 206.87 -11770
## - X55    1     0.2476 206.89 -11769
## - X59    1     0.4662 207.11 -11765
## - X85    1     0.5617 207.21 -11763
## - X17    1     0.6116 207.26 -11762
## - X82    1     1.1145 207.76 -11753
## - X18    1     1.1511 207.79 -11752
## - X47    1     3.7364 210.38 -11702
##
## Step:  AIC=-11773.22
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X38 + X40 +
##     X41 + X42 + X44 + X46 + X47 + X51 + X55 + X57 + X58 + X59 +
##     X61 + X72 + X73 + X76 + X78 + X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS     AIC
## - X51    1     0.0604 206.76 -11774
## - X72    1     0.0658 206.76 -11774
## - X38    1     0.0673 206.76 -11774
## - X73    1     0.0715 206.77 -11774
## - X30    1     0.0848 206.78 -11774
## - X40    1     0.0869 206.78 -11774
## - X35    1     0.0897 206.78 -11774
```

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## - X1     1    0.0903 206.79 -11774
## - X10    1    0.0959 206.79 -11773
## - X79    1    0.0972 206.79 -11773
## - X5     1    0.0982 206.79 -11773
## <none>              206.69 -11773
## - X42    1    0.1051 206.80 -11773
## - X36    1    0.1062 206.80 -11773
## - X80    1    0.1134 206.81 -11773
## - X33    1    0.1165 206.81 -11773
## - X26    1    0.1183 206.81 -11773
## - X14    1    0.1219 206.82 -11773
## - X46    1    0.1319 206.83 -11773
## - X22    1    0.1350 206.83 -11773
## - X76    1    0.1443 206.84 -11772
## - X9     1    0.1448 206.84 -11772
## - X41    1    0.1482 206.84 -11772
## - X78    1    0.1597 206.85 -11772
## - X58    1    0.1597 206.85 -11772
## - X32    1    0.1777 206.87 -11772
## - X6     1    0.1859 206.88 -11772
## - X57    1    0.1985 206.89 -11771
## - X4     1    0.2021 206.90 -11771
## - X25    1    0.2105 206.91 -11771
## - X44    1    0.2117 206.91 -11771
## - X61    1    0.2206 206.92 -11771
## - X55    1    0.2472 206.94 -11770
## - X59    1    0.4647 207.16 -11766
## - X85    1    0.5606 207.26 -11764
## - X17    1    0.6088 207.30 -11764
## - X82    1    1.1241 207.82 -11754
## - X18    1    1.1643 207.86 -11753
## - X47    1    3.7581 210.45 -11703
##
## Step:  AIC=-11774.05
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##      X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X38 + X40 +
##      X41 + X42 + X44 + X46 + X47 + X55 + X57 + X58 + X59 + X61 +
##      X72 + X73 + X76 + X78 + X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X72    1    0.0054 206.76 -11776
## - X73    1    0.0601 206.82 -11775
## - X38    1    0.0670 206.82 -11775
## - X35    1    0.0864 206.84 -11774
## - X30    1    0.0870 206.84 -11774
## - X40    1    0.0900 206.85 -11774
## - X1     1    0.0902 206.85 -11774
## - X10    1    0.0940 206.85 -11774
## - X79    1    0.0965 206.85 -11774
## - X5     1    0.0982 206.85 -11774
## - X36    1    0.1026 206.86 -11774
## <none>              206.76 -11774
## - X42    1    0.1047 206.86 -11774
## - X80    1    0.1126 206.87 -11774
```

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## - X33     1     0.1166 206.87 -11774
## - X26     1     0.1205 206.88 -11774
## - X14     1     0.1210 206.88 -11774
## - X46     1     0.1310 206.89 -11774
## - X22     1     0.1333 206.89 -11774
## - X76     1     0.1433 206.90 -11773
## - X9      1     0.1463 206.90 -11773
## - X41     1     0.1498 206.91 -11773
## - X58     1     0.1581 206.91 -11773
## - X78     1     0.1667 206.92 -11773
## - X32     1     0.1771 206.93 -11773
## - X6      1     0.1909 206.95 -11772
## - X57     1     0.2047 206.96 -11772
## - X4      1     0.2050 206.96 -11772
## - X61     1     0.2103 206.97 -11772
## - X25     1     0.2105 206.97 -11772
## - X44     1     0.2129 206.97 -11772
## - X55     1     0.2485 207.00 -11771
## - X59     1     0.4602 207.22 -11767
## - X85     1     0.5623 207.32 -11765
## - X17     1     0.6009 207.36 -11764
## - X82     1     1.1079 207.86 -11755
## - X18     1     1.1580 207.91 -11754
## - X47     1     3.7542 210.51 -11704
##
## Step:  AIC=-11775.94
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##      X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X38 + X40 +
##      X41 + X42 + X44 + X46 + X47 + X55 + X57 + X58 + X59 + X61 +
##      X73 + X76 + X78 + X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X73     1     0.0621 206.82 -11777
## - X38     1     0.0674 206.83 -11777
## - X30     1     0.0865 206.85 -11776
## - X35     1     0.0877 206.85 -11776
## - X40     1     0.0888 206.85 -11776
## - X1      1     0.0907 206.85 -11776
## - X10     1     0.0940 206.85 -11776
## - X79     1     0.0966 206.86 -11776
## - X5      1     0.0988 206.86 -11776
## <none>                 206.76 -11776
## - X36     1     0.1040 206.87 -11776
## - X42     1     0.1044 206.87 -11776
## - X80     1     0.1115 206.87 -11776
## - X33     1     0.1165 206.88 -11776
## - X26     1     0.1208 206.88 -11776
## - X14     1     0.1217 206.88 -11776
## - X22     1     0.1327 206.89 -11775
## - X46     1     0.1333 206.89 -11775
## - X76     1     0.1427 206.90 -11775
## - X9      1     0.1477 206.91 -11775
## - X41     1     0.1492 206.91 -11775
## - X58     1     0.1586 206.92 -11775
```

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## - X78   1    0.1682 206.93 -11775
## - X32   1    0.1786 206.94 -11774
## - X6    1    0.1916 206.95 -11774
## - X4    1    0.2047 206.97 -11774
## - X57   1    0.2062 206.97 -11774
## - X25   1    0.2099 206.97 -11774
## - X44   1    0.2148 206.98 -11774
## - X61   1    0.2148 206.98 -11774
## - X55   1    0.2473 207.01 -11773
## - X59   1    0.4572 207.22 -11769
## - X85   1    0.5637 207.32 -11767
## - X17   1    0.6029 207.36 -11766
## - X82   1    1.1163 207.88 -11756
## - X18   1    1.1611 207.92 -11756
## - X47   1    3.7492 210.51 -11706
##
## Step:  AIC=-11776.74
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##      X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X38 + X40 +
##      X41 + X42 + X44 + X46 + X47 + X55 + X57 + X58 + X59 + X61 +
##      X76 + X78 + X79 + X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X38   1    0.0729 206.90 -11777
## - X30   1    0.0868 206.91 -11777
## - X35   1    0.0875 206.91 -11777
## - X40   1    0.0895 206.91 -11777
## - X79   1    0.0914 206.91 -11777
## - X10   1    0.0954 206.92 -11777
## - X1    1    0.0987 206.92 -11777
## <none>              206.82 -11777
## - X36   1    0.1040 206.93 -11777
## - X80   1    0.1053 206.93 -11777
## - X42   1    0.1063 206.93 -11777
## - X5    1    0.1086 206.93 -11777
## - X33   1    0.1144 206.94 -11776
## - X14   1    0.1204 206.94 -11776
## - X26   1    0.1268 206.95 -11776
## - X22   1    0.1376 206.96 -11776
## - X41   1    0.1445 206.97 -11776
## - X76   1    0.1467 206.97 -11776
## - X9    1    0.1474 206.97 -11776
## - X58   1    0.1480 206.97 -11776
## - X78   1    0.1623 206.99 -11776
## - X32   1    0.1796 207.00 -11775
## - X6    1    0.1907 207.01 -11775
## - X57   1    0.1987 207.02 -11775
## - X4    1    0.2059 207.03 -11775
## - X25   1    0.2129 207.04 -11775
## - X61   1    0.2134 207.04 -11775
## - X44   1    0.2305 207.05 -11774
## - X55   1    0.2516 207.07 -11774
## - X46   1    0.3065 207.13 -11773
## - X59   1    0.4287 207.25 -11770
```

```
## - X85     1     0.5561 207.38 -11768
## - X17     1     0.6191 207.44 -11767
## - X82     1     1.1116 207.94 -11757
## - X18     1     1.1760 208.00 -11756
## - X47     1     3.7173 210.54 -11708
##
## Step:  AIC=-11777.33
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X40 + X41 +
##     X42 + X44 + X46 + X47 + X55 + X57 + X58 + X59 + X61 + X76 +
##     X78 + X79 + X80 + X82 + X85
##
##         Df Sum of Sq    RSS    AIC
## - X40     1     0.0730 206.97 -11778
## - X35     1     0.0792 206.97 -11778
## - X42     1     0.0907 206.99 -11778
## - X79     1     0.0913 206.99 -11778
## - X1      1     0.0953 206.99 -11778
## - X36     1     0.0956 206.99 -11778
## - X80     1     0.0997 207.00 -11777
## - X30     1     0.1021 207.00 -11777
## <none>                 206.90 -11777
## - X5      1     0.1043 207.00 -11777
## - X10     1     0.1046 207.00 -11777
## - X14     1     0.1107 207.01 -11777
## - X26     1     0.1325 207.03 -11777
## - X33     1     0.1411 207.04 -11777
## - X76     1     0.1458 207.04 -11776
## - X9      1     0.1481 207.04 -11776
## - X58     1     0.1490 207.04 -11776
## - X78     1     0.1579 207.05 -11776
## - X22     1     0.1633 207.06 -11776
## - X41     1     0.1650 207.06 -11776
## - X6      1     0.1907 207.09 -11776
## - X57     1     0.1927 207.09 -11776
## - X4      1     0.2098 207.11 -11775
## - X32     1     0.2099 207.11 -11775
## - X61     1     0.2113 207.11 -11775
## - X25     1     0.2271 207.12 -11775
## - X44     1     0.2342 207.13 -11775
## - X55     1     0.2500 207.15 -11774
## - X46     1     0.3012 207.20 -11774
## - X59     1     0.4149 207.31 -11771
## - X85     1     0.5666 207.46 -11768
## - X17     1     0.5931 207.49 -11768
## - X82     1     1.1067 208.00 -11758
## - X18     1     1.1435 208.04 -11757
## - X47     1     3.7612 210.66 -11707
##
## Step:  AIC=-11777.92
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X22 + X25 + X26 + X30 + X32 + X33 + X35 + X36 + X41 + X42 +
##     X44 + X46 + X47 + X55 + X57 + X58 + X59 + X61 + X76 + X78 +
##     X79 + X80 + X82 + X85
```

```
##
##          Df Sum of Sq    RSS    AIC
## - X35    1     0.0888 207.06 -11778
## - X79    1     0.0903 207.06 -11778
## - X1     1     0.0947 207.06 -11778
## - X80    1     0.0962 207.06 -11778
## - X30    1     0.0987 207.07 -11778
## - X5     1     0.1033 207.07 -11778
## <none>              206.97 -11778
## - X10    1     0.1045 207.07 -11778
## - X36    1     0.1056 207.07 -11778
## - X14    1     0.1160 207.09 -11778
## - X26    1     0.1288 207.10 -11777
## - X33    1     0.1352 207.10 -11777
## - X9     1     0.1363 207.10 -11777
## - X76    1     0.1433 207.11 -11777
## - X22    1     0.1463 207.12 -11777
## - X58    1     0.1472 207.12 -11777
## - X78    1     0.1582 207.13 -11777
## - X41    1     0.1661 207.13 -11777
## - X6     1     0.1737 207.14 -11777
## - X57    1     0.1941 207.16 -11776
## - X32    1     0.1944 207.16 -11776
## - X61    1     0.2156 207.19 -11776
## - X4     1     0.2362 207.21 -11775
## - X44    1     0.2413 207.21 -11775
## - X55    1     0.2502 207.22 -11775
## - X25    1     0.2533 207.22 -11775
## - X42    1     0.2934 207.26 -11774
## - X46    1     0.3010 207.27 -11774
## - X59    1     0.4060 207.38 -11772
## - X85    1     0.5590 207.53 -11769
## - X17    1     0.6115 207.58 -11768
## - X82    1     1.1164 208.09 -11758
## - X18    1     1.1903 208.16 -11757
## - X47    1     3.7441 210.71 -11708
##
## Step:  AIC=-11778.21
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X22 + X25 + X26 + X30 + X32 + X33 + X36 + X41 + X42 + X44 +
##     X46 + X47 + X55 + X57 + X58 + X59 + X61 + X76 + X78 + X79 +
##     X80 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X79    1     0.0896 207.15 -11778
## - X1     1     0.0931 207.15 -11778
## - X80    1     0.0940 207.15 -11778
## - X10    1     0.0969 207.16 -11778
## - X5     1     0.1018 207.16 -11778
## <none>              207.06 -11778
## - X30    1     0.1115 207.17 -11778
## - X9     1     0.1302 207.19 -11778
## - X26    1     0.1314 207.19 -11778
## - X33    1     0.1344 207.19 -11778
```

```
## - X14    1    0.1356 207.19 -11778
## - X22    1    0.1423 207.20 -11778
## - X58    1    0.1467 207.20 -11777
## - X76    1    0.1488 207.21 -11777
## - X78    1    0.1574 207.22 -11777
## - X6     1    0.1594 207.22 -11777
## - X41    1    0.1787 207.24 -11777
## - X32    1    0.1792 207.24 -11777
## - X57    1    0.1933 207.25 -11776
## - X61    1    0.2168 207.27 -11776
## - X4     1    0.2217 207.28 -11776
## - X44    1    0.2416 207.30 -11776
## - X25    1    0.2556 207.31 -11775
## - X55    1    0.2581 207.32 -11775
## - X36    1    0.2814 207.34 -11775
## - X46    1    0.2973 207.35 -11774
## - X42    1    0.2983 207.36 -11774
## - X59    1    0.4029 207.46 -11772
## - X85    1    0.5641 207.62 -11769
## - X17    1    0.6641 207.72 -11767
## - X82    1    1.1203 208.18 -11759
## - X18    1    1.2181 208.28 -11757
## - X47    1    3.7605 210.82 -11708
##
## Step:  AIC=-11778.48
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X22 + X25 + X26 + X30 + X32 + X33 + X36 + X41 + X42 + X44 +
##     X46 + X47 + X55 + X57 + X58 + X59 + X61 + X76 + X78 + X80 +
##     X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## - X80    1    0.0935 207.24 -11779
## - X1     1    0.0937 207.24 -11779
## - X10    1    0.0981 207.25 -11779
## - X5     1    0.1013 207.25 -11778
## - X58    1    0.1031 207.25 -11778
## <none>                207.15 -11778
## - X30    1    0.1145 207.26 -11778
## - X9     1    0.1264 207.27 -11778
## - X14    1    0.1325 207.28 -11778
## - X26    1    0.1340 207.28 -11778
## - X33    1    0.1366 207.28 -11778
## - X22    1    0.1441 207.29 -11778
## - X76    1    0.1501 207.30 -11778
## - X6     1    0.1554 207.30 -11778
## - X78    1    0.1576 207.31 -11777
## - X32    1    0.1768 207.32 -11777
## - X41    1    0.1848 207.33 -11777
## - X57    1    0.1936 207.34 -11777
## - X61    1    0.2164 207.36 -11776
## - X4     1    0.2184 207.37 -11776
## - X44    1    0.2475 207.40 -11776
## - X55    1    0.2584 207.41 -11776
## - X25    1    0.2592 207.41 -11776
```

```
## - X36    1     0.2738 207.42 -11775
## - X46    1     0.2857 207.43 -11775
## - X42    1     0.2976 207.44 -11775
## - X59    1     0.3913 207.54 -11773
## - X85    1     0.5660 207.71 -11770
## - X17    1     0.6744 207.82 -11768
## - X82    1     1.1205 208.27 -11759
## - X18    1     1.2274 208.38 -11757
## - X47    1     3.7469 210.89 -11709
##
## Step:  AIC=-11778.67
## train$X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 +
##     X22 + X25 + X26 + X30 + X32 + X33 + X36 + X41 + X42 + X44 +
##     X46 + X47 + X55 + X57 + X58 + X59 + X61 + X76 + X78 + X82 +
##     X85
##
##          Df Sum of Sq    RSS    AIC
## - X1     1     0.0794 207.32 -11779
## - X5     1     0.0861 207.33 -11779
## - X10    1     0.1000 207.34 -11779
## <none>                 207.24 -11779
## - X58    1     0.1121 207.35 -11778
## - X9     1     0.1249 207.37 -11778
## - X30    1     0.1297 207.37 -11778
## - X26    1     0.1319 207.37 -11778
## - X14    1     0.1347 207.38 -11778
## - X33    1     0.1400 207.38 -11778
## - X22    1     0.1448 207.39 -11778
## - X6     1     0.1529 207.39 -11778
## - X78    1     0.1549 207.40 -11778
## - X76    1     0.1564 207.40 -11778
## - X32    1     0.1828 207.42 -11777
## - X41    1     0.1871 207.43 -11777
## - X57    1     0.1913 207.43 -11777
## - X44    1     0.1973 207.44 -11777
## - X61    1     0.2144 207.46 -11776
## - X4     1     0.2160 207.46 -11776
## - X25    1     0.2542 207.50 -11776
## - X55    1     0.2576 207.50 -11776
## - X46    1     0.2644 207.50 -11776
## - X36    1     0.2719 207.51 -11775
## - X42    1     0.3074 207.55 -11775
## - X59    1     0.4151 207.66 -11773
## - X85    1     0.5615 207.80 -11770
## - X17    1     0.6697 207.91 -11768
## - X82    1     1.1184 208.36 -11759
## - X18    1     1.2193 208.46 -11757
## - X47    1     4.0049 211.25 -11704
##
## Step:  AIC=-11779.14
## train$X86 ~ X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X22 +
##     X25 + X26 + X30 + X32 + X33 + X36 + X41 + X42 + X44 + X46 +
##     X47 + X55 + X57 + X58 + X59 + X61 + X76 + X78 + X82 + X85
##
```

```
##           Df Sum of Sq     RSS    AIC
## - X5    1      0.0113  207.33 -11781
## - X10   1      0.0717  207.39 -11780
## <none>              207.32 -11779
## - X30   1      0.1101  207.43 -11779
## - X14   1      0.1157  207.44 -11779
## - X33   1      0.1177  207.44 -11779
## - X58   1      0.1179  207.44 -11779
## - X9    1      0.1317  207.45 -11779
## - X26   1      0.1358  207.46 -11778
## - X6    1      0.1474  207.47 -11778
## - X78   1      0.1542  207.47 -11778
## - X76   1      0.1567  207.48 -11778
## - X22   1      0.1685  207.49 -11778
## - X32   1      0.1720  207.49 -11778
## - X41   1      0.1827  207.50 -11778
## - X57   1      0.1907  207.51 -11778
## - X4    1      0.2133  207.53 -11777
## - X61   1      0.2141  207.53 -11777
## - X44   1      0.2186  207.54 -11777
## - X25   1      0.2503  207.57 -11776
## - X55   1      0.2615  207.58 -11776
## - X36   1      0.2646  207.59 -11776
## - X46   1      0.2782  207.60 -11776
## - X42   1      0.3021  207.62 -11775
## - X59   1      0.3953  207.72 -11774
## - X85   1      0.5578  207.88 -11770
## - X17   1      0.6699  207.99 -11768
## - X82   1      1.1257  208.45 -11760
## - X18   1      1.2100  208.53 -11758
## - X47   1      3.9882  211.31 -11705
##
## Step:  AIC=-11780.92
## train$X86 ~ X4 + X6 + X9 + X10 + X14 + X17 + X18 + X22 + X25 +
##     X26 + X30 + X32 + X33 + X36 + X41 + X42 + X44 + X46 + X47 +
##     X55 + X57 + X58 + X59 + X61 + X76 + X78 + X82 + X85
##
##           Df Sum of Sq     RSS    AIC
## - X10   1      0.0681  207.40 -11782
## <none>              207.33 -11781
## - X30   1      0.1086  207.44 -11781
## - X33   1      0.1158  207.45 -11781
## - X14   1      0.1160  207.45 -11781
## - X58   1      0.1202  207.45 -11781
## - X9    1      0.1275  207.46 -11780
## - X26   1      0.1402  207.47 -11780
## - X6    1      0.1416  207.47 -11780
## - X78   1      0.1544  207.49 -11780
## - X76   1      0.1571  207.49 -11780
## - X32   1      0.1782  207.51 -11780
## - X22   1      0.1842  207.52 -11779
## - X41   1      0.1867  207.52 -11779
## - X57   1      0.1908  207.52 -11779
## - X61   1      0.2139  207.54 -11779
```

```
## - X44   1    0.2190 207.55 -11779
## - X4    1    0.2242 207.56 -11779
## - X25   1    0.2456 207.58 -11778
## - X55   1    0.2613 207.59 -11778
## - X36   1    0.2613 207.59 -11778
## - X46   1    0.2860 207.62 -11777
## - X42   1    0.3095 207.64 -11777
## - X59   1    0.3954 207.73 -11775
## - X85   1    0.5613 207.89 -11772
## - X17   1    0.7117 208.04 -11769
## - X82   1    1.1262 208.46 -11761
## - X18   1    1.3749 208.71 -11756
## - X47   1    3.9906 211.32 -11707
##
## Step:  AIC=-11781.61
## train$X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X25 + X26 +
##     X30 + X32 + X33 + X36 + X41 + X42 + X44 + X46 + X47 + X55 +
##     X57 + X58 + X59 + X61 + X76 + X78 + X82 + X85
##
##          Df Sum of Sq    RSS    AIC
## <none>               207.40 -11782
## - X14   1    0.1213 207.52 -11781
## - X58   1    0.1229 207.52 -11781
## - X30   1    0.1412 207.54 -11781
## - X9    1    0.1450 207.54 -11781
## - X26   1    0.1469 207.55 -11781
## - X78   1    0.1527 207.55 -11781
## - X6    1    0.1532 207.55 -11781
## - X76   1    0.1549 207.56 -11781
## - X41   1    0.1834 207.58 -11780
## - X22   1    0.1838 207.58 -11780
## - X57   1    0.1887 207.59 -11780
## - X44   1    0.2079 207.61 -11780
## - X33   1    0.2117 207.61 -11780
## - X61   1    0.2183 207.62 -11779
## - X4    1    0.2409 207.64 -11779
## - X25   1    0.2444 207.64 -11779
## - X36   1    0.2536 207.65 -11779
## - X55   1    0.2559 207.66 -11779
## - X46   1    0.2962 207.70 -11778
## - X42   1    0.3672 207.77 -11776
## - X32   1    0.3978 207.80 -11776
## - X59   1    0.3989 207.80 -11776
## - X85   1    0.5697 207.97 -11773
## - X17   1    0.7002 208.10 -11770
## - X82   1    1.1327 208.53 -11762
## - X18   1    1.3371 208.74 -11758
## - X47   1    3.9911 211.39 -11707
```

comment taking the optimal model spit out from step regression and run lda on this one, check accuracy, and other metrics to compare with full model.

```r
#train_optimal <- lm(train$X86 ~ X9 + X10 + X12 + X16 + X17 + X21 + X23 + X24 + X25 +
    #X26 + X28 + X30 + X32 + X33 + X34 + X41 + X42 + X44 + X46 +
    #X47 + X49 + X55 + X57 + X58 + X59 + X60 + X61 + X62 + X70 +
    #X76 + X78 + X79 + X80 + X81 + X82 + X85, data = train)

lda_train_opt <- lda(train$X86 ~ X9 + X10 + X12 + X16 + X17 + X21 + X23 + X24 + X25 +
    X26 + X28 + X30 + X32 + X33 + X34 + X41 + X42 + X44 + X46 +
    X47 + X49 + X55 + X57 + X58 + X59 + X60 + X61 + X62 + X70 +
    X76 + X78 + X79 + X80 + X81 + X82 + X85, data = train)
fitted_opt <- predict(lda_train_opt, data = train)

conf_matrix <- table(fitted_opt$class, train$X86)
conf_matrix
```

```
##
##       0    1
##  0 3739  222
##  1   23   16
```

```r
insample_accuracy <- (table(fitted_opt$class, train$X86)[1,1] + table(fitted_opt$class, train$X86)[2,2]
cat("In-sample Accuracy:", insample_accuracy, "\n")
```

```
## In-sample Accuracy: 0.93875
```

```r
#checking other metrics
TP <- conf_matrix[2,2]
FP <- conf_matrix[1,2]
TN <- conf_matrix[1,1]
FN <- conf_matrix[2,1]
#true negative rate
specificity <- TN / (TN + FP)
#true positive rate
sensitivity <- TP / (TP + FN)
#Positive predictive value
precision <- TP / (TP + FP)

cat("Specificity:", specificity, "\n")
```

```
## Specificity: 0.9439535
```

```r
cat("Sensitivity:", sensitivity, "\n")
```

```
## Sensitivity: 0.4102564
```

```r
cat("Precision:", precision, "\n")
```

```
## Precision: 0.06722689
```

Comment run the LDA function on the testing data and check the results and accuracy

```r
library(MASS)
fitted_lda <- predict(lda_train_opt, newdata = test)

table(fitted_lda$class, test$X86)
```

```
##
##        0    1
##   0 1693  104
##   1   19    6
```

```r
conf_matrix <- table(fitted_lda$class, test$X86)

insample_accuracy <- (table(fitted_lda$class, test$X86)[1,1] + table(fitted_lda$class, test$X86)[2,2])
insample_accuracy
```

```
## [1] 0.9324918
```

```r
#checking other metrics
TP <- conf_matrix[2,2]
FP <- conf_matrix[1,2]
TN <- conf_matrix[1,1]
FN <- conf_matrix[2,1]
#true negative rate
specificity <- TN / (TN + FP)
#true positive rate
sensitivity <- TP / (TP + FN)
#Positive predictive value
precision <- TP / (TP + FP)

cat("Specificity:", specificity, "\n")
```

```
## Specificity: 0.9421258
```

```r
cat("Sensitivity:", sensitivity, "\n")
```

```
## Sensitivity: 0.24
```

```r
cat("Precision:", precision, "\n")
```

```
## Precision: 0.05454545
```

K-Nearest Neighbors

```r
# Normalize the data since KNN uses distance metrics.
library(class)
normalize <- function(x) {
  return ((x - min(x)) / (max(x) - min(x)))
}
```

```r
# Apply normalization to the training and testing datasets
train_normalized <- as.data.frame(lapply(train[, -86], normalize))
test_normalized <- as.data.frame(lapply(test[, -86], normalize))

# Split the data into features and target variable
train_features <- train_normalized
train_target <- as.factor(train[[86]])  # Convert target variable to factor

# Set up cross-validation for k optimization
control <- trainControl(method = "cv", number = 10)

# Define the range of k values to test
grid <- expand.grid(.k = 1:10)  # Testing k from 1 to 10

# Train the model with different values of k and select the best k
knn_train <- train(x = train_features, y = train_target,
                   method = "knn", tuneGrid = grid,
                   trControl = control)

# Print the best k value
best_k <- knn_train$bestTune$k
cat("Best k:", best_k, "\n")
```

```
## Best k: 9
```

```r
# Fit the KNN model with the best k to the training data
knn_model <- knn(train = train_features, test = test_normalized,
                 cl = train_target, k = best_k)

# Evaluate the model by comparing its predictions to actual outcomes from test
test_actual <- as.factor(test[[86]])  # Actual target values for the test set
conf_matrix <- table(predicted = knn_model, actual = test_actual)
print(conf_matrix)
```

```
##          actual
## predicted    0    1
##         0 1711  109
##         1    1    1
```

```r
# Calculate accuracy
accuracy <- sum(diag(conf_matrix)) / sum(conf_matrix)
cat("Accuracy:", accuracy, "\n")
```

```
## Accuracy: 0.9396268
```

```r
# Calculate sensitivity and specificity
sensitivity <- conf_matrix[2, 2] / sum(conf_matrix[2, ])
specificity <- conf_matrix[1, 1] / sum(conf_matrix[1, ])
cat("Sensitivity:", sensitivity, "\n")
```

```
## Sensitivity: 0.5
```

```
cat("Specificity:", specificity, "\n")
```

```
## Specificity: 0.9401099
```

```
# Plot accuracy versus different K values
accuracy_plot <- ggplot(knn_train$results,
                        aes(x = k, y = Accuracy)) +
  geom_line() +
  geom_point(shape = 21, fill = "blue") +
  labs(title = "KNN Model Accuracy for Different K Values",
       x = "Number of Neighbors (K)",
       y = "Cross-Validated Accuracy") +
  theme_minimal()

print(accuracy_plot)
```


KNN Model Accuracy for Different K Values
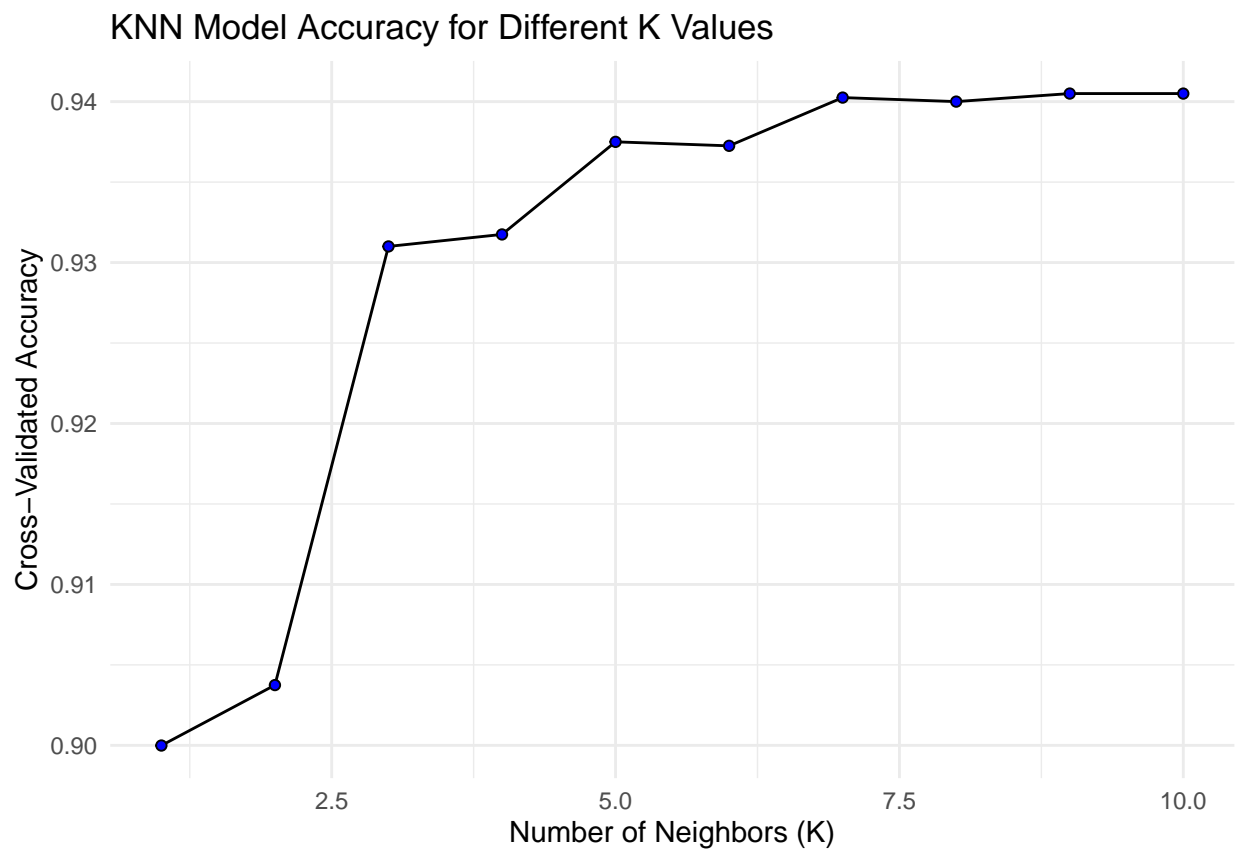
Logistic Regression

```
#Looking through the data, we find that the variables don't have their names assigned to the columns ye
#of the website dictionary and set the column names accordingly.
#colnames(training_data) = c("MOSTYPE", "MAANTHUI", "MGEMOMV", "MGEMLEEF", "MOSHOOFD", "MGODRK", "MGODP
#colnames(training_data)
```

```
#Here we are going to check if our response variables X86 which is the caravan variable is classified a
is.factor(train$X86)
```

[1] FALSE

```
#We have confirmed that every variable is considered a numeric in the data as is and for the sake of co
#
```

```
heatmap_full = heatmap(as.matrix(train))
```
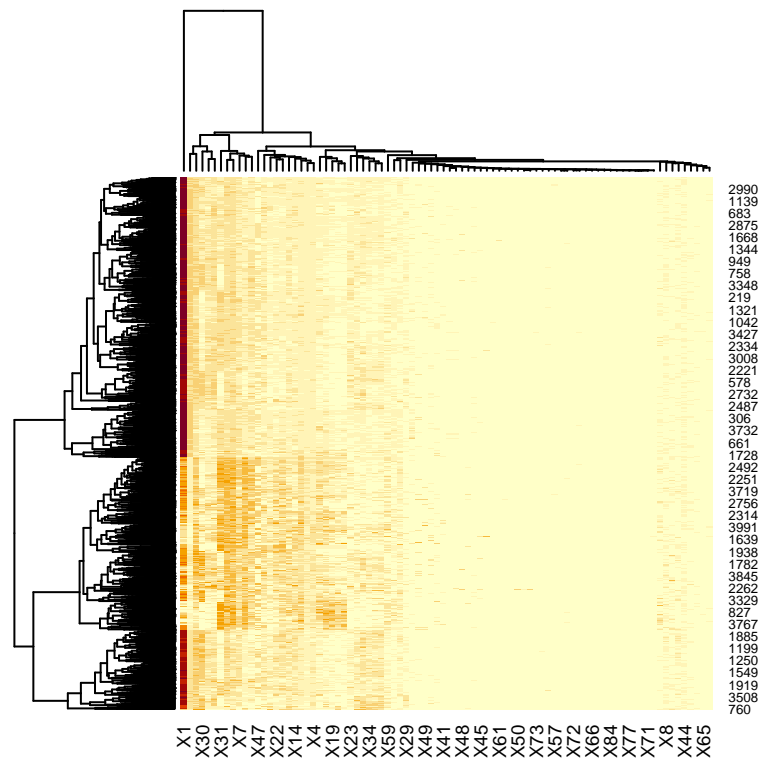


```
summary(heatmap_full)
```

```
##          Length Class  Mode
## rowInd 4000    -none- numeric
## colInd   86    -none- numeric
## Rowv      0    -none- NULL
## Colv      0    -none- NULL
```

```
#Here we try running a glm with all of the variables to see what happens. Storing this model in "logist
logistic_model_full = glm(X86 ~ ., data = train, family = "binomial")
```

Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

```
#Running a summary on "logistic_model".
summary(logistic_model_full)
```

```
##
## Call:
## glm(formula = X86 ~ ., family = "binomial", data = train)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.5396  -0.3705  -0.2390  -0.1505   3.0479
##
## Coefficients:
##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)  2.561e+02  1.440e+04   0.018  0.98581
## X1           7.194e-02  5.624e-02   1.279  0.20079
## X2          -2.450e-01  2.435e-01  -1.006  0.31428
## X3          -2.696e-02  1.735e-01  -0.155  0.87655
## X4           2.173e-01  1.260e-01   1.725  0.08455 .
## X5          -3.280e-01  2.538e-01  -1.293  0.19617
## X6          -2.268e-01  1.303e-01  -1.741  0.08172 .
## X7          -1.170e-01  1.455e-01  -0.804  0.42153
## X8          -7.910e-02  1.308e-01  -0.605  0.54525
## X9          -1.610e-01  1.372e-01  -1.173  0.24067
## X10          1.517e-01  1.929e-01   0.786  0.43172
## X11          3.913e-02  1.820e-01   0.215  0.82971
## X12          1.015e-01  1.929e-01   0.526  0.59871
## X13         -5.436e-02  1.625e-01  -0.335  0.73798
## X14         -8.732e-02  1.670e-01  -0.523  0.60097
## X15         -2.065e-02  1.776e-01  -0.116  0.90741
## X16         -3.686e-02  1.612e-01  -0.229  0.81910
## X17         -2.135e-01  1.683e-01  -1.268  0.20462
## X18         -3.143e-01  1.700e-01  -1.849  0.06445 .
## X19          2.133e-02  1.150e-01   0.186  0.85280
## X20          9.617e-02  1.191e-01   0.808  0.41925
## X21         -9.759e-02  1.342e-01  -0.727  0.46711
## X22          1.059e-01  1.131e-01   0.936  0.34913
## X23          4.157e-03  1.110e-01   0.037  0.97013
## X24          6.777e-02  1.126e-01   0.602  0.54726
## X25         -1.888e-02  1.285e-01  -0.147  0.88318
## X26          3.820e-03  1.257e-01   0.030  0.97576
## X27          5.245e-02  1.135e-01   0.462  0.64400
## X28          8.966e-02  1.220e-01   0.735  0.46250
## X29          3.393e-03  1.188e-01   0.029  0.97722
## X30         -1.440e+01  1.047e+03  -0.014  0.98903
## X31         -1.436e+01  1.047e+03  -0.014  0.98906
## X32          1.959e-01  1.879e-01   1.043  0.29705
## X33          1.896e-01  1.709e-01   1.109  0.26723
## X34          4.530e-02  1.781e-01   0.254  0.79920
## X35         -1.462e+01  1.209e+03  -0.012  0.99035
## X36         -1.471e+01  1.209e+03  -0.012  0.99029
## X37          5.340e-02  1.283e-01   0.416  0.67718
## X38          7.090e-02  1.217e-01   0.583  0.56012
## X39         -1.942e-02  1.202e-01  -0.162  0.87164
```

```
## X40            5.620e-02  1.301e-01   0.432  0.66583
## X41           -2.689e-01  1.865e-01  -1.442  0.14938
## X42            1.639e-01  1.314e-01   1.247  0.21251
## X43            3.784e-02  5.618e-02   0.674  0.50058
## X44            4.516e-01  4.675e-01   0.966  0.33404
## X45           -3.089e-01  7.724e-01  -0.400  0.68919
## X46           -3.024e+00  2.329e+00  -1.298  0.19414
## X47            2.287e-01  5.003e-02   4.572 4.83e-06 ***
## X48            1.251e+01  4.125e+02   0.030  0.97580
## X49            3.471e-02  1.657e-01   0.210  0.83405
## X50           -2.199e+00  1.099e+03  -0.002  0.99840
## X51            1.703e+00  1.351e+00   1.261  0.20743
## X52            1.077e+00  6.409e-01   1.680  0.09288 .
## X53           -4.284e+00  4.133e+03  -0.001  0.99917
## X54            2.759e-01  5.593e-01   0.493  0.62182
## X55           -2.728e-01  1.601e-01  -1.704  0.08839 .
## X56           -7.534e-01  3.258e+00  -0.231  0.81715
## X57            1.588e+00  1.353e+00   1.174  0.24025
## X58            7.476e-01  6.986e-01   1.070  0.28453
## X59            2.455e-01  9.460e-02   2.595  0.00945 **
## X60           -7.268e-01  4.612e+03   0.000  0.99987
## X61           -4.990e-01  4.334e-01  -1.151  0.24962
## X62            1.238e+00  1.484e+00   0.834  0.40426
## X63           -8.462e-01  1.405e+00  -0.602  0.54691
## X64           -1.244e-01  3.744e-01  -0.332  0.73970
## X65           -6.718e-01  9.349e-01  -0.719  0.47238
## X66            7.913e-02  1.995e+00   0.040  0.96836
## X67            8.117e+00  7.056e+00   1.150  0.25000
## X68            5.302e-02  2.019e-01   0.263  0.79287
## X69           -7.494e+01  2.475e+03  -0.030  0.97584
## X70           -7.428e-02  6.457e-01  -0.115  0.90842
## X71           -5.312e-01  4.643e+03   0.000  0.99991
## X72           -2.795e+00  2.640e+00  -1.059  0.28976
## X73           -3.702e+00  2.316e+00  -1.598  0.10998
## X74           -3.714e+00  8.467e+03   0.000  0.99965
## X75           -1.273e+00  1.807e+00  -0.705  0.48108
## X76            4.193e-01  2.973e-01   1.410  0.15841
## X77            1.190e+00  6.626e+00   0.180  0.85749
## X78           -3.679e+00  3.634e+00  -1.012  0.31138
## X79           -2.737e+00  4.044e+00  -0.677  0.49849
## X80           -3.961e-01  3.407e-01  -1.163  0.24499
## X81           -1.408e+01  1.031e+04  -0.001  0.99891
## X82            3.594e+00  1.346e+00   2.671  0.00757 **
## X83           -8.547e-01  1.218e+00  -0.702  0.48283
## X84            9.787e-01  2.155e+00   0.454  0.64979
## X85            1.182e+00  1.216e+00   0.972  0.33101
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1804.7  on 3999  degrees of freedom
## Residual deviance: 1512.7  on 3914  degrees of freedom
## AIC: 1684.7
```

```
##
## Number of Fisher Scoring iterations: 17
```

```
#Get p-values for each coefficient
p_values_full = summary(logistic_model_full)$coefficients[, 4]
```

```
#Filter variables based on significance level of 0.05
significant_variables_full = names(p_values_full)[p_values_full < 0.05]
significant_variables_full
```

```
## [1] "X47" "X59" "X82"
```

```
#Using this "full" model we proceed to see what the model would predict based off the training dataset.
glm_predict_full = predict(logistic_model_full, test, type = 'response')
head(glm_predict_full)
```

```
##          1          2          3          4          5          6
## 0.01566938 0.02217908 0.02559774 0.06608026 0.02206549 0.02116043
```

```
#Classifying values that the predict function got above 0.5 as being TRUE or 1 and anything less to be
predicted_caravan_full = ifelse(glm_predict_full >= 0.5, 1, 0)
head(predicted_caravan_full)
```

```
## 1 2 3 4 5 6
## 0 0 0 0 0 0
```

```
#Determining the accuracy of the full model
accuracy_full = mean(predicted_caravan_full==test$X86)
print(accuracy_full)
```

```
## [1] 0.9363337
```

```
conf_tab_rf_target = table(Predicted = predicted_caravan_full, Actual = test$X86)
sum(diag(conf_tab_rf_target)) / sum(conf_tab_rf_target)
```

```
## [1] 0.9363337
```

```
#Making metrics
TP <- conf_tab_rf_target[2,2]
FP <- conf_tab_rf_target[1,2]
TN <- conf_tab_rf_target[1,1]
FN <- conf_tab_rf_target[2,1]

#true negative rate
specificity <- TN / (TN + FP)

#true positive rate
sensitivity <- TP / (TP + FN)

#Positive predictive value
precision <- TP / (TP + FP)

cat("Specificity:", specificity, "\n")
```

```
## Specificity: 0.9403974
```

```
cat("Sensitivity:", sensitivity, "\n")
```

```
## Sensitivity: 0.2
```

```
cat("Precision:", precision, "\n")
```

```
## Precision: 0.01818182
```

```
#Now we are going to try model selection with the forward stepwise process using BIC as our metric.
train$X86 = factor(train$X86)
forward_model_bic = step(glm(X86 ~ 1, data = train, family = "binomial"),
                         direction = "forward", k = log(nrow(train)), trace = 1)
```

```
## Start:  AIC=1813.01
## X86 ~ 1
```

```
summary(forward_model_bic)
```

```
##
## Call:
## glm(formula = X86 ~ 1, family = "binomial", data = train)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -0.3503  -0.3503  -0.3503  -0.3503   2.3756
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -2.76044    0.06684   -41.3   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1804.7  on 3999  degrees of freedom
## Residual deviance: 1804.7  on 3999  degrees of freedom
## AIC: 1806.7
##
## Number of Fisher Scoring iterations: 5
```

```
#Now we're going to try best selection
best_step_bic = step(glm(X86 ~ ., data = train, family = "binomial"),
                     direction = "both", k = log(nrow(train)), trace = 1)
```

```
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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```
## Start:  AIC=2225.94
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
```

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##       X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 + X21 +
##       X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 +
##       X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 +
##       X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 +
##       X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X60 + X61 +
##       X62 + X63 + X64 + X65 + X66 + X67 + X68 + X69 + X70 + X71 +
##       X72 + X73 + X74 + X75 + X76 + X77 + X78 + X79 + X80 + X81 +
##       X82 + X83 + X84 + X85


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##        Df Deviance    AIC
## - X71   1   1512.7 2217.6
## - X60   1   1512.7 2217.6
## - X81   1   1512.7 2217.6
## - X50   1   1512.7 2217.6
## - X74   1   1512.7 2217.6
## - X53   1   1512.7 2217.6
## - X29   1   1512.7 2217.7
## - X26   1   1512.7 2217.7
## - X23   1   1512.7 2217.7
## - X66   1   1512.7 2217.7
## - X15   1   1512.7 2217.7
## - X70   1   1512.7 2217.7
```

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## - X25    1    1512.7 2217.7
## - X3     1    1512.7 2217.7
## - X39    1    1512.7 2217.7
## - X19    1    1512.7 2217.7
## - X77    1    1512.7 2217.7
## - X11    1    1512.7 2217.7
## - X49    1    1512.7 2217.7
## - X16    1    1512.7 2217.7
## - X34    1    1512.7 2217.7
## - X68    1    1512.7 2217.7
## - X56    1    1512.7 2217.7
## - X64    1    1512.8 2217.8
## - X13    1    1512.8 2217.8
## - X45    1    1512.8 2217.8
## - X37    1    1512.8 2217.8
## - X40    1    1512.8 2217.8
## - X27    1    1512.9 2217.9
## - X84    1    1512.9 2217.9
## - X54    1    1512.9 2217.9
## - X14    1    1512.9 2217.9
## - X12    1    1512.9 2217.9
## - X38    1    1513.0 2218.0
## - X24    1    1513.0 2218.0
## - X8     1    1513.0 2218.0
## - X43    1    1513.1 2218.1
## - X75    1    1513.2 2218.2
## - X63    1    1513.2 2218.2
## - X21    1    1513.2 2218.2
## - X28    1    1513.2 2218.2
## - X83    1    1513.2 2218.2
## - X65    1    1513.2 2218.2
## - X10    1    1513.3 2218.3
## - X7     1    1513.3 2218.3
## - X20    1    1513.3 2218.3
## - X79    1    1513.4 2218.4
## - X62    1    1513.4 2218.4
## - X85    1    1513.5 2218.5
## - X22    1    1513.5 2218.5
## - X48    1    1513.6 2218.6
## - X44    1    1513.7 2218.7
## - X35    1    1513.7 2218.7
## - X69    1    1513.7 2218.7
## - X32    1    1513.7 2218.7
## - X31    1    1513.7 2218.7
## - X2     1    1513.8 2218.8
## - X36    1    1513.8 2218.8
## - X30    1    1513.8 2218.8
## - X78    1    1513.9 2218.8
## - X33    1    1513.9 2218.9
## - X67    1    1513.9 2218.9
## - X61    1    1514.0 2219.0
## - X9     1    1514.0 2219.0
## - X72    1    1514.0 2219.0
## - X80    1    1514.1 2219.1
```

```
## - X57   1   1514.2 2219.2
## - X51   1   1514.2 2219.2
## - X17   1   1514.3 2219.3
## - X1    1   1514.3 2219.3
## - X5    1   1514.3 2219.3
## - X58   1   1514.4 2219.4
## - X42   1   1514.4 2219.4
## - X46   1   1514.6 2219.6
## - X76   1   1514.6 2219.6
## - X41   1   1514.9 2219.9
## - X52   1   1515.4 2220.4
## - X4    1   1515.7 2220.6
## - X6    1   1515.7 2220.7
## - X73   1   1515.9 2220.8
## - X55   1   1516.0 2221.0
## - X18   1   1516.1 2221.1
## - X82   1   1519.4 2224.4
## - X59   1   1519.7 2224.7
## <none>      1512.7 2225.9
## - X47   1   1534.4 2239.4


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2217.64
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
##     X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 + X21 +
##     X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 +
##     X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 +
##     X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 +
##     X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X60 + X61 +
##     X62 + X63 + X64 + X65 + X66 + X67 + X68 + X69 + X70 + X72 +
##     X73 + X74 + X75 + X76 + X77 + X78 + X79 + X80 + X81 + X82 +
##     X83 + X84 + X85


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##          Df Deviance    AIC
## - X60    1    1512.7 2209.3
## - X81    1    1512.7 2209.3
## - X74    1    1512.7 2209.3
## - X53    1    1512.7 2209.3
## - X29    1    1512.7 2209.3
## - X26    1    1512.7 2209.3
## - X23    1    1512.7 2209.3
## - X66    1    1512.7 2209.3
## - X15    1    1512.7 2209.4
## - X70    1    1512.7 2209.4
## - X25    1    1512.7 2209.4
## - X3     1    1512.7 2209.4
## - X39    1    1512.7 2209.4
## - X19    1    1512.7 2209.4
## - X77    1    1512.7 2209.4
## - X11    1    1512.7 2209.4
## - X49    1    1512.7 2209.4
## - X16    1    1512.7 2209.4
## - X34    1    1512.7 2209.4
## - X68    1    1512.7 2209.4
## - X56    1    1512.7 2209.4
## - X64    1    1512.8 2209.5
## - X13    1    1512.8 2209.5
## - X45    1    1512.8 2209.5
## - X37    1    1512.8 2209.5
## - X40    1    1512.8 2209.5
## - X27    1    1512.9 2209.6
## - X84    1    1512.9 2209.6
## - X54    1    1512.9 2209.6
## - X14    1    1512.9 2209.6
## - X12    1    1512.9 2209.6
## - X50    1    1513.0 2209.7
## - X38    1    1513.0 2209.7
## - X24    1    1513.0 2209.7
## - X8     1    1513.0 2209.7
## - X43    1    1513.1 2209.8
## - X75    1    1513.2 2209.9
## - X63    1    1513.2 2209.9
```

```
## - X21   1   1513.2 2209.9
## - X28   1   1513.2 2209.9
## - X83   1   1513.2 2209.9
## - X65   1   1513.2 2209.9
## - X10   1   1513.3 2210.0
## - X7    1   1513.3 2210.0
## - X20   1   1513.3 2210.0
## - X79   1   1513.4 2210.1
## - X62   1   1513.4 2210.1
## - X85   1   1513.5 2210.2
## - X22   1   1513.5 2210.2
## - X48   1   1513.6 2210.3
## - X44   1   1513.7 2210.4
## - X35   1   1513.7 2210.4
## - X69   1   1513.7 2210.4
## - X32   1   1513.7 2210.4
## - X31   1   1513.7 2210.4
## - X2    1   1513.8 2210.4
## - X36   1   1513.8 2210.5
## - X30   1   1513.8 2210.5
## - X78   1   1513.9 2210.6
## - X33   1   1513.9 2210.6
## - X67   1   1513.9 2210.6
## - X61   1   1514.0 2210.7
## - X9    1   1514.0 2210.7
## - X72   1   1514.0 2210.7
## - X80   1   1514.1 2210.8
## - X57   1   1514.2 2210.9
## - X51   1   1514.2 2210.9
## - X17   1   1514.3 2211.0
## - X1    1   1514.3 2211.0
## - X5    1   1514.3 2211.0
## - X58   1   1514.4 2211.1
## - X42   1   1514.4 2211.1
## - X46   1   1514.6 2211.3
## - X76   1   1514.6 2211.3
## - X41   1   1514.9 2211.6
## - X52   1   1515.4 2212.1
## - X4    1   1515.7 2212.3
## - X6    1   1515.7 2212.4
## - X73   1   1515.9 2212.6
## - X55   1   1516.0 2212.7
## - X18   1   1516.1 2212.8
## - X82   1   1519.4 2216.1
## - X59   1   1519.7 2216.4
## <none>      1512.7 2217.6
## + X71   1   1512.7 2225.9
## - X47   1   1534.4 2231.1


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2209.35
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
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```
##      X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 + X21 +
##      X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 +
##      X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 +
##      X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 +
##      X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 +
##      X63 + X64 + X65 + X66 + X67 + X68 + X69 + X70 + X72 + X73 +
##      X74 + X75 + X76 + X77 + X78 + X79 + X80 + X81 + X82 + X83 +
##      X84 + X85


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##         Df Deviance    AIC
## - X74    1   1512.7 2201.1
## - X53    1   1512.7 2201.1
## - X29    1   1512.7 2201.1
## - X26    1   1512.7 2201.1
## - X23    1   1512.7 2201.1
## - X66    1   1512.7 2201.1
## - X15    1   1512.7 2201.1
## - X70    1   1512.7 2201.1
## - X25    1   1512.7 2201.1
## - X3     1   1512.7 2201.1
## - X39    1   1512.7 2201.1
```

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## - X19   1   1512.7 2201.1
## - X77   1   1512.7 2201.1
## - X11   1   1512.7 2201.1
## - X49   1   1512.7 2201.1
## - X16   1   1512.7 2201.1
## - X34   1   1512.7 2201.1
## - X68   1   1512.7 2201.1
## - X56   1   1512.7 2201.1
## - X64   1   1512.8 2201.2
## - X13   1   1512.8 2201.2
## - X45   1   1512.8 2201.2
## - X37   1   1512.8 2201.2
## - X40   1   1512.8 2201.2
## - X27   1   1512.9 2201.3
## - X84   1   1512.9 2201.3
## - X81   1   1512.9 2201.3
## - X54   1   1512.9 2201.3
## - X14   1   1512.9 2201.3
## - X12   1   1512.9 2201.3
## - X50   1   1513.0 2201.4
## - X38   1   1513.0 2201.4
## - X24   1   1513.0 2201.4
## - X8    1   1513.0 2201.4
## - X43   1   1513.1 2201.5
## - X75   1   1513.2 2201.6
## - X63   1   1513.2 2201.6
## - X21   1   1513.2 2201.6
## - X28   1   1513.2 2201.6
## - X83   1   1513.2 2201.6
## - X65   1   1513.2 2201.6
## - X10   1   1513.3 2201.7
## - X7    1   1513.3 2201.7
## - X20   1   1513.3 2201.7
## - X79   1   1513.4 2201.8
## - X62   1   1513.4 2201.8
## - X85   1   1513.5 2201.9
## - X22   1   1513.5 2201.9
## - X48   1   1513.6 2202.0
## - X44   1   1513.7 2202.1
## - X35   1   1513.7 2202.1
## - X69   1   1513.7 2202.1
## - X32   1   1513.7 2202.1
## - X31   1   1513.7 2202.2
## - X2    1   1513.8 2202.2
## - X36   1   1513.8 2202.2
## - X30   1   1513.8 2202.2
## - X78   1   1513.9 2202.3
## - X33   1   1513.9 2202.3
## - X67   1   1513.9 2202.3
## - X61   1   1514.0 2202.4
## - X9    1   1514.0 2202.4
## - X72   1   1514.0 2202.4
## - X80   1   1514.1 2202.5
## - X57   1   1514.2 2202.6
```

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## - X51   1   1514.2 2202.6
## - X17   1   1514.3 2202.7
## - X1    1   1514.3 2202.7
## - X5    1   1514.3 2202.7
## - X58   1   1514.4 2202.8
## - X42   1   1514.4 2202.8
## - X46   1   1514.6 2203.0
## - X76   1   1514.6 2203.0
## - X41   1   1514.9 2203.3
## - X52   1   1515.4 2203.8
## - X4    1   1515.7 2204.1
## - X6    1   1515.7 2204.1
## - X73   1   1515.9 2204.3
## - X55   1   1516.0 2204.4
## - X18   1   1516.1 2204.5
## - X82   1   1519.4 2207.8
## - X59   1   1519.7 2208.1
## <none>      1512.7 2209.3
## + X60   1   1512.7 2217.6
## + X71   1   1512.7 2217.6
## - X47   1   1534.4 2222.8


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2201.06
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
##      X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 + X21 +
##      X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 + X30 + X31 +
##      X32 + X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 +
##      X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 +
##      X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 +
##      X63 + X64 + X65 + X66 + X67 + X68 + X69 + X70 + X72 + X73 +
##      X75 + X76 + X77 + X78 + X79 + X80 + X81 + X82 + X83 + X84 +
##      X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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```

```
##           Df Deviance    AIC
## - X29      1   1512.7 2192.8
## - X26      1   1512.7 2192.8
## - X23      1   1512.7 2192.8
## - X66      1   1512.7 2192.8
## - X15      1   1512.7 2192.8
## - X70      1   1512.7 2192.8
## - X25      1   1512.7 2192.8
## - X3       1   1512.7 2192.8
## - X39      1   1512.7 2192.8
## - X19      1   1512.7 2192.8
## - X77      1   1512.7 2192.8
## - X11      1   1512.7 2192.8
## - X49      1   1512.7 2192.8
## - X16      1   1512.7 2192.8
## - X34      1   1512.7 2192.8
## - X68      1   1512.7 2192.8
## - X56      1   1512.7 2192.8
## - X64      1   1512.8 2192.9
## - X13      1   1512.8 2192.9
## - X45      1   1512.8 2192.9
## - X37      1   1512.8 2192.9
## - X40      1   1512.8 2192.9
## - X27      1   1512.9 2193.0
## - X84      1   1512.9 2193.0
## - X81      1   1512.9 2193.0
## - X54      1   1512.9 2193.0
## - X14      1   1512.9 2193.0
## - X12      1   1512.9 2193.0
## - X50      1   1513.0 2193.1
## - X38      1   1513.0 2193.1
## - X24      1   1513.0 2193.1
## - X8       1   1513.0 2193.1
## - X43      1   1513.1 2193.2
## - X75      1   1513.2 2193.3
## - X63      1   1513.2 2193.3
## - X21      1   1513.2 2193.3
## - X28      1   1513.2 2193.3
```

```
## - X83   1   1513.2 2193.3
## - X65   1   1513.2 2193.3
## - X10   1   1513.3 2193.4
## - X7    1   1513.3 2193.4
## - X20   1   1513.3 2193.4
## - X79   1   1513.4 2193.5
## - X62   1   1513.4 2193.5
## - X85   1   1513.5 2193.6
## - X22   1   1513.5 2193.6
## - X48   1   1513.6 2193.7
## - X53   1   1513.6 2193.7
## - X44   1   1513.7 2193.8
## - X35   1   1513.7 2193.8
## - X69   1   1513.7 2193.8
## - X32   1   1513.7 2193.8
## - X31   1   1513.7 2193.8
## - X2    1   1513.8 2193.9
## - X36   1   1513.8 2193.9
## - X30   1   1513.8 2193.9
## - X78   1   1513.9 2194.0
## - X33   1   1513.9 2194.0
## - X67   1   1513.9 2194.0
## - X61   1   1514.0 2194.1
## - X9    1   1514.0 2194.2
## - X72   1   1514.0 2194.2
## - X80   1   1514.1 2194.2
## - X57   1   1514.2 2194.3
## - X51   1   1514.2 2194.3
## - X17   1   1514.3 2194.4
## - X1    1   1514.3 2194.4
## - X5    1   1514.3 2194.4
## - X58   1   1514.4 2194.5
## - X42   1   1514.4 2194.6
## - X46   1   1514.6 2194.7
## - X76   1   1514.6 2194.7
## - X41   1   1514.9 2195.0
## - X52   1   1515.4 2195.5
## - X4    1   1515.7 2195.8
## - X6    1   1515.7 2195.8
## - X73   1   1515.9 2196.0
## - X55   1   1516.0 2196.1
## - X18   1   1516.1 2196.2
## - X82   1   1519.4 2199.5
## - X59   1   1519.7 2199.8
## <none>      1512.7 2201.1
## + X74   1   1512.7 2209.3
## + X60   1   1512.7 2209.3
## + X71   1   1512.7 2209.3
## - X47   1   1534.4 2214.5


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2192.76
```

```
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
##     X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 + X21 +
##     X22 + X23 + X24 + X25 + X26 + X27 + X28 + X30 + X31 + X32 +
##     X33 + X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 +
##     X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 + X52 +
##     X53 + X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 + X63 +
##     X64 + X65 + X66 + X67 + X68 + X69 + X70 + X72 + X73 + X75 +
##     X76 + X77 + X78 + X79 + X80 + X81 + X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##        Df Deviance    AIC
## - X26   1   1512.7 2184.5
## - X66   1   1512.7 2184.5
## - X23   1   1512.7 2184.5
## - X15   1   1512.7 2184.5
## - X70   1   1512.7 2184.5
## - X3    1   1512.7 2184.5
## - X39   1   1512.7 2184.5
## - X25   1   1512.7 2184.5
## - X19   1   1512.7 2184.5
## - X77   1   1512.7 2184.5
## - X11   1   1512.7 2184.5
```

```
## -  X49  1   1512.7 2184.5
## -  X16  1   1512.7 2184.5
## -  X34  1   1512.7 2184.5
## -  X68  1   1512.7 2184.5
## -  X56  1   1512.7 2184.6
## -  X64  1   1512.8 2184.6
## -  X13  1   1512.8 2184.6
## -  X45  1   1512.8 2184.6
## -  X37  1   1512.8 2184.7
## -  X40  1   1512.8 2184.7
## -  X84  1   1512.9 2184.7
## -  X81  1   1512.9 2184.7
## -  X54  1   1512.9 2184.7
## -  X14  1   1512.9 2184.7
## -  X12  1   1512.9 2184.8
## -  X50  1   1513.0 2184.8
## -  X27  1   1513.0 2184.8
## -  X38  1   1513.0 2184.8
## -  X8   1   1513.0 2184.8
## -  X24  1   1513.1 2184.9
## -  X43  1   1513.1 2184.9
## -  X75  1   1513.2 2185.0
## -  X63  1   1513.2 2185.0
## -  X21  1   1513.2 2185.0
## -  X83  1   1513.2 2185.0
## -  X65  1   1513.2 2185.0
## -  X10  1   1513.3 2185.1
## -  X7   1   1513.3 2185.1
## -  X20  1   1513.3 2185.1
## -  X79  1   1513.4 2185.2
## -  X62  1   1513.4 2185.2
## -  X85  1   1513.5 2185.3
## -  X48  1   1513.6 2185.4
## -  X53  1   1513.6 2185.4
## -  X22  1   1513.6 2185.4
## -  X44  1   1513.7 2185.5
## -  X35  1   1513.7 2185.5
## -  X69  1   1513.7 2185.5
## -  X32  1   1513.7 2185.6
## -  X31  1   1513.8 2185.6
## -  X28  1   1513.8 2185.6
## -  X2   1   1513.8 2185.6
## -  X36  1   1513.8 2185.6
## -  X30  1   1513.8 2185.6
## -  X78  1   1513.9 2185.7
## -  X33  1   1513.9 2185.7
## -  X67  1   1513.9 2185.7
## -  X61  1   1514.0 2185.8
## -  X9   1   1514.0 2185.8
## -  X72  1   1514.0 2185.9
## -  X80  1   1514.1 2185.9
## -  X57  1   1514.2 2186.0
## -  X51  1   1514.2 2186.1
## -  X17  1   1514.3 2186.1
```

```
## - X1     1   1514.3 2186.1
## - X5     1   1514.3 2186.2
## - X58    1   1514.4 2186.2
## - X42    1   1514.4 2186.3
## - X46    1   1514.6 2186.4
## - X76    1   1514.6 2186.4
## - X41    1   1514.9 2186.8
## - X52    1   1515.4 2187.2
## - X4     1   1515.7 2187.5
## - X6     1   1515.7 2187.6
## - X73    1   1515.9 2187.7
## - X55    1   1516.0 2187.8
## - X18    1   1516.1 2188.0
## - X82    1   1519.4 2191.2
## - X59    1   1519.7 2191.5
## <none>       1512.7 2192.8
## + X29    1   1512.7 2201.1
## + X74    1   1512.7 2201.1
## + X60    1   1512.7 2201.1
## + X71    1   1512.7 2201.1
## - X47    1   1534.4 2206.2


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2184.47
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
##      X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 + X21 +
##      X22 + X23 + X24 + X25 + X27 + X28 + X30 + X31 + X32 + X33 +
##      X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 +
##      X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 + X52 + X53 +
##      X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 + X63 + X64 +
##      X65 + X66 + X67 + X68 + X69 + X70 + X72 + X73 + X75 + X76 +
##      X77 + X78 + X79 + X80 + X81 + X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##          Df Deviance    AIC
## - X66     1   1512.7 2176.2
## - X23     1   1512.7 2176.2
## - X15     1   1512.7 2176.2
## - X70     1   1512.7 2176.2
## - X3      1   1512.7 2176.2
## - X39     1   1512.7 2176.2
## - X77     1   1512.7 2176.2
## - X19     1   1512.7 2176.2
## - X11     1   1512.7 2176.2
## - X49     1   1512.7 2176.2
## - X16     1   1512.7 2176.2
## - X25     1   1512.7 2176.2
## - X34     1   1512.7 2176.2
## - X68     1   1512.7 2176.2
## - X56     1   1512.7 2176.3
## - X64     1   1512.8 2176.3
## - X13     1   1512.8 2176.3
## - X45     1   1512.8 2176.3
## - X37     1   1512.8 2176.4
## - X40     1   1512.8 2176.4
## - X84     1   1512.9 2176.4
## - X81     1   1512.9 2176.4
## - X54     1   1512.9 2176.4
## - X14     1   1512.9 2176.4
## - X12     1   1512.9 2176.4
## - X50     1   1513.0 2176.5
## - X38     1   1513.0 2176.5
## - X8      1   1513.0 2176.5
## - X24     1   1513.1 2176.6
## - X43     1   1513.1 2176.6
## - X75     1   1513.2 2176.7
## - X63     1   1513.2 2176.7
## - X83     1   1513.2 2176.7
## - X65     1   1513.2 2176.7
## - X21     1   1513.2 2176.7
## - X10     1   1513.3 2176.8
## - X7      1   1513.3 2176.8
## - X27     1   1513.3 2176.8
```

```
## - X20    1   1513.3 2176.8
## - X79    1   1513.4 2176.9
## - X62    1   1513.4 2176.9
## - X85    1   1513.5 2177.0
## - X48    1   1513.6 2177.1
## - X53    1   1513.6 2177.1
## - X44    1   1513.7 2177.2
## - X35    1   1513.7 2177.2
## - X69    1   1513.7 2177.2
## - X22    1   1513.7 2177.3
## - X32    1   1513.8 2177.3
## - X31    1   1513.8 2177.3
## - X2     1   1513.8 2177.3
## - X36    1   1513.8 2177.3
## - X30    1   1513.8 2177.3
## - X78    1   1513.9 2177.4
## - X33    1   1513.9 2177.4
## - X67    1   1513.9 2177.4
## - X61    1   1514.0 2177.6
## - X9     1   1514.0 2177.6
## - X72    1   1514.0 2177.6
## - X80    1   1514.1 2177.6
## - X28    1   1514.2 2177.7
## - X57    1   1514.2 2177.7
## - X51    1   1514.2 2177.8
## - X17    1   1514.3 2177.8
## - X1     1   1514.3 2177.8
## - X5     1   1514.3 2177.8
## - X58    1   1514.4 2177.9
## - X42    1   1514.5 2178.0
## - X46    1   1514.6 2178.1
## - X76    1   1514.6 2178.1
## - X41    1   1514.9 2178.5
## - X52    1   1515.4 2178.9
## - X4     1   1515.7 2179.2
## - X6     1   1515.8 2179.3
## - X73    1   1515.9 2179.4
## - X55    1   1516.0 2179.6
## - X18    1   1516.2 2179.7
## - X82    1   1519.4 2182.9
## - X59    1   1519.7 2183.2
## <none>       1512.7 2184.5
## + X26    1   1512.7 2192.8
## + X29    1   1512.7 2192.8
## + X74    1   1512.7 2192.8
## + X60    1   1512.7 2192.8
## + X71    1   1512.7 2192.8
## - X47    1   1534.4 2197.9


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2176.18
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
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```
##       X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 + X21 +
##       X22 + X23 + X24 + X25 + X27 + X28 + X30 + X31 + X32 + X33 +
##       X34 + X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 +
##       X44 + X45 + X46 + X47 + X48 + X49 + X50 + X51 + X52 + X53 +
##       X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 + X63 + X64 +
##       X65 + X67 + X68 + X69 + X70 + X72 + X73 + X75 + X76 + X77 +
##       X78 + X79 + X80 + X81 + X82 + X83 + X84 + X85


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##         Df Deviance    AIC
## - X23    1   1512.7 2167.9
## - X15    1   1512.7 2167.9
## - X70    1   1512.7 2167.9
## - X3     1   1512.7 2167.9
## - X39    1   1512.7 2167.9
## - X77    1   1512.7 2167.9
## - X19    1   1512.7 2167.9
## - X11    1   1512.7 2167.9
## - X49    1   1512.7 2167.9
## - X16    1   1512.7 2167.9
## - X25    1   1512.7 2167.9
## - X34    1   1512.7 2167.9
```

```
## - X68    1    1512.7 2167.9
## - X56    1    1512.7 2168.0
## - X64    1    1512.8 2168.0
## - X13    1    1512.8 2168.0
## - X37    1    1512.8 2168.1
## - X40    1    1512.8 2168.1
## - X84    1    1512.9 2168.1
## - X81    1    1512.9 2168.1
## - X54    1    1512.9 2168.1
## - X14    1    1512.9 2168.2
## - X12    1    1512.9 2168.2
## - X50    1    1513.0 2168.2
## - X38    1    1513.0 2168.2
## - X8     1    1513.0 2168.2
## - X24    1    1513.1 2168.3
## - X43    1    1513.1 2168.3
## - X75    1    1513.2 2168.4
## - X63    1    1513.2 2168.4
## - X83    1    1513.2 2168.4
## - X65    1    1513.2 2168.4
## - X21    1    1513.2 2168.4
## - X10    1    1513.3 2168.5
## - X7     1    1513.3 2168.5
## - X27    1    1513.3 2168.5
## - X20    1    1513.3 2168.6
## - X62    1    1513.4 2168.6
## - X79    1    1513.4 2168.7
## - X85    1    1513.5 2168.8
## - X48    1    1513.6 2168.8
## - X53    1    1513.6 2168.8
## - X44    1    1513.7 2168.9
## - X35    1    1513.7 2168.9
## - X45    1    1513.7 2168.9
## - X69    1    1513.7 2168.9
## - X22    1    1513.7 2169.0
## - X31    1    1513.8 2169.0
## - X32    1    1513.8 2169.0
## - X2     1    1513.8 2169.0
## - X36    1    1513.8 2169.0
## - X30    1    1513.8 2169.0
## - X78    1    1513.9 2169.1
## - X33    1    1513.9 2169.1
## - X67    1    1513.9 2169.2
## - X61    1    1514.0 2169.3
## - X9     1    1514.0 2169.3
## - X72    1    1514.0 2169.3
## - X80    1    1514.1 2169.3
## - X28    1    1514.2 2169.4
## - X57    1    1514.2 2169.4
## - X51    1    1514.2 2169.5
## - X17    1    1514.3 2169.5
## - X1     1    1514.3 2169.5
## - X5     1    1514.3 2169.6
## - X42    1    1514.5 2169.7
```

```
## - X46   1   1514.6 2169.8
## - X58   1   1514.6 2169.8
## - X76   1   1514.6 2169.8
## - X41   1   1515.0 2170.2
## - X52   1   1515.4 2170.6
## - X4    1   1515.7 2170.9
## - X6    1   1515.8 2171.0
## - X73   1   1515.9 2171.1
## - X55   1   1516.0 2171.3
## - X18   1   1516.2 2171.4
## - X82   1   1519.4 2174.6
## - X59   1   1519.7 2174.9
## <none>      1512.7 2176.2
## + X66   1   1512.7 2184.5
## + X26   1   1512.7 2184.5
## + X29   1   1512.7 2184.5
## + X74   1   1512.7 2184.5
## + X60   1   1512.7 2184.5
## + X71   1   1512.7 2184.5
## - X47   1   1534.4 2189.6


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2167.89
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
##      X12 + X13 + X14 + X15 + X16 + X17 + X18 + X19 + X20 + X21 +
##      X22 + X24 + X25 + X27 + X28 + X30 + X31 + X32 + X33 + X34 +
##      X35 + X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 +
##      X45 + X46 + X47 + X48 + X49 + X50 + X51 + X52 + X53 + X54 +
##      X55 + X56 + X57 + X58 + X59 + X61 + X62 + X63 + X64 + X65 +
##      X67 + X68 + X69 + X70 + X72 + X73 + X75 + X76 + X77 + X78 +
##      X79 + X80 + X81 + X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X15    1   1512.7 2159.6
## - X70    1   1512.7 2159.6
## - X39    1   1512.7 2159.6
## - X3     1   1512.7 2159.6
## - X77    1   1512.7 2159.6
## - X11    1   1512.7 2159.6
## - X49    1   1512.7 2159.6
## - X16    1   1512.7 2159.6
## - X19    1   1512.7 2159.7
## - X25    1   1512.7 2159.7
## - X68    1   1512.7 2159.7
## - X34    1   1512.7 2159.7
## - X56    1   1512.7 2159.7
## - X64    1   1512.8 2159.7
## - X13    1   1512.8 2159.7
## - X37    1   1512.8 2159.8
## - X40    1   1512.9 2159.8
## - X84    1   1512.9 2159.8
## - X81    1   1512.9 2159.8
## - X54    1   1512.9 2159.8
## - X14    1   1512.9 2159.9
## - X12    1   1512.9 2159.9
## - X50    1   1513.0 2159.9
## - X8     1   1513.0 2160.0
## - X38    1   1513.0 2160.0
## - X43    1   1513.1 2160.0
## - X75    1   1513.2 2160.1
## - X63    1   1513.2 2160.1
## - X65    1   1513.2 2160.2
## - X83    1   1513.2 2160.2
## - X10    1   1513.3 2160.2
## - X7     1   1513.3 2160.2
## - X27    1   1513.3 2160.2
## - X62    1   1513.4 2160.3
## - X79    1   1513.4 2160.4
## - X21    1   1513.5 2160.4
## - X20    1   1513.5 2160.4
## - X85    1   1513.5 2160.5
## - X48    1   1513.6 2160.5
```

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## - X53   1   1513.6 2160.5
## - X44   1   1513.7 2160.6
## - X35   1   1513.7 2160.6
## - X45   1   1513.7 2160.6
## - X69   1   1513.7 2160.6
## - X24   1   1513.7 2160.7
## - X31   1   1513.8 2160.7
## - X36   1   1513.8 2160.7
## - X2    1   1513.8 2160.7
## - X32   1   1513.8 2160.7
## - X30   1   1513.8 2160.7
## - X78   1   1513.9 2160.8
## - X33   1   1513.9 2160.8
## - X67   1   1513.9 2160.9
## - X61   1   1514.0 2161.0
## - X9    1   1514.0 2161.0
## - X72   1   1514.0 2161.0
## - X80   1   1514.1 2161.0
## - X57   1   1514.2 2161.1
## - X51   1   1514.2 2161.2
## - X28   1   1514.3 2161.2
## - X17   1   1514.3 2161.2
## - X1    1   1514.3 2161.2
## - X5    1   1514.3 2161.3
## - X42   1   1514.5 2161.4
## - X46   1   1514.6 2161.5
## - X58   1   1514.6 2161.5
## - X76   1   1514.6 2161.6
## - X41   1   1515.0 2161.9
## - X52   1   1515.4 2162.3
## - X22   1   1515.7 2162.6
## - X4    1   1515.7 2162.6
## - X6    1   1515.8 2162.7
## - X73   1   1515.9 2162.8
## - X55   1   1516.0 2163.0
## - X18   1   1516.2 2163.2
## - X82   1   1519.4 2166.3
## - X59   1   1519.7 2166.7
## <none>      1512.7 2167.9
## + X23   1   1512.7 2176.2
## + X66   1   1512.7 2176.2
## + X26   1   1512.7 2176.2
## + X29   1   1512.7 2176.2
## + X74   1   1512.7 2176.2
## + X60   1   1512.7 2176.2
## + X71   1   1512.7 2176.2
## - X47   1   1534.4 2181.4


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2159.6
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
##     X12 + X13 + X14 + X16 + X17 + X18 + X19 + X20 + X21 + X22 +
```

```
##     X24 + X25 + X27 + X28 + X30 + X31 + X32 + X33 + X34 + X35 +
##     X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 +
##     X46 + X47 + X48 + X49 + X50 + X51 + X52 + X53 + X54 + X55 +
##     X56 + X57 + X58 + X59 + X61 + X62 + X63 + X64 + X65 + X67 +
##     X68 + X69 + X70 + X72 + X73 + X75 + X76 + X77 + X78 + X79 +
##     X80 + X81 + X82 + X83 + X84 + X85
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X70    1   1512.7 2151.3
## - X39    1   1512.7 2151.3
## - X3     1   1512.7 2151.3
## - X77    1   1512.7 2151.3
## - X11    1   1512.7 2151.3
## - X49    1   1512.7 2151.4
## - X16    1   1512.7 2151.4
## - X19    1   1512.7 2151.4
## - X25    1   1512.7 2151.4
## - X68    1   1512.7 2151.4
## - X34    1   1512.7 2151.4
## - X56    1   1512.8 2151.4
## - X64    1   1512.8 2151.4
```

```
## - X37   1   1512.9 2151.5
## - X13   1   1512.9 2151.5
## - X84   1   1512.9 2151.5
## - X40   1   1512.9 2151.5
## - X54   1   1512.9 2151.6
## - X81   1   1512.9 2151.6
## - X12   1   1512.9 2151.6
## - X50   1   1513.0 2151.6
## - X8    1   1513.0 2151.7
## - X38   1   1513.0 2151.7
## - X43   1   1513.1 2151.8
## - X63   1   1513.2 2151.8
## - X75   1   1513.2 2151.8
## - X65   1   1513.2 2151.9
## - X83   1   1513.2 2151.9
## - X10   1   1513.3 2151.9
## - X7    1   1513.3 2151.9
## - X27   1   1513.3 2152.0
## - X62   1   1513.4 2152.0
## - X79   1   1513.5 2152.1
## - X21   1   1513.5 2152.1
## - X20   1   1513.5 2152.1
## - X85   1   1513.5 2152.2
## - X48   1   1513.6 2152.2
## - X53   1   1513.6 2152.2
## - X35   1   1513.7 2152.3
## - X44   1   1513.7 2152.3
## - X45   1   1513.7 2152.4
## - X69   1   1513.7 2152.4
## - X24   1   1513.7 2152.4
## - X31   1   1513.8 2152.4
## - X36   1   1513.8 2152.4
## - X2    1   1513.8 2152.4
## - X30   1   1513.8 2152.4
## - X32   1   1513.8 2152.4
## - X14   1   1513.8 2152.5
## - X78   1   1513.9 2152.5
## - X33   1   1513.9 2152.6
## - X67   1   1513.9 2152.6
## - X61   1   1514.0 2152.7
## - X9    1   1514.0 2152.7
## - X72   1   1514.1 2152.7
## - X80   1   1514.1 2152.7
## - X57   1   1514.2 2152.8
## - X51   1   1514.2 2152.9
## - X28   1   1514.3 2152.9
## - X1    1   1514.3 2153.0
## - X17   1   1514.3 2153.0
## - X5    1   1514.4 2153.0
## - X42   1   1514.5 2153.1
## - X46   1   1514.6 2153.2
## - X58   1   1514.6 2153.3
## - X76   1   1514.7 2153.3
## - X41   1   1515.0 2153.7
```

```
## - X52    1   1515.4 2154.1
## - X22    1   1515.7 2154.3
## - X4     1   1515.7 2154.3
## - X6     1   1515.8 2154.4
## - X73    1   1515.9 2154.5
## - X55    1   1516.1 2154.7
## - X18    1   1516.3 2155.0
## - X82    1   1519.4 2158.0
## - X59    1   1519.7 2158.4
## <none>       1512.7 2159.6
## + X15    1   1512.7 2167.9
## + X66    1   1512.7 2167.9
## + X23    1   1512.7 2167.9
## + X26    1   1512.7 2167.9
## + X29    1   1512.7 2167.9
## + X74    1   1512.7 2167.9
## + X60    1   1512.7 2167.9
## + X71    1   1512.7 2167.9
## - X47    1   1534.4 2173.1


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2151.33
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
##      X12 + X13 + X14 + X16 + X17 + X18 + X19 + X20 + X21 + X22 +
##      X24 + X25 + X27 + X28 + X30 + X31 + X32 + X33 + X34 + X35 +
##      X36 + X37 + X38 + X39 + X40 + X41 + X42 + X43 + X44 + X45 +
##      X46 + X47 + X48 + X49 + X50 + X51 + X52 + X53 + X54 + X55 +
##      X56 + X57 + X58 + X59 + X61 + X62 + X63 + X64 + X65 + X67 +
##      X68 + X69 + X72 + X73 + X75 + X76 + X77 + X78 + X79 + X80 +
##      X81 + X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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```
##         Df Deviance    AIC
## - X39    1   1512.7 2143.1
## - X3     1   1512.7 2143.1
## - X77    1   1512.7 2143.1
## - X11    1   1512.7 2143.1
## - X16    1   1512.7 2143.1
## - X19    1   1512.7 2143.1
## - X49    1   1512.7 2143.1
## - X25    1   1512.8 2143.1
## - X68    1   1512.8 2143.1
## - X34    1   1512.8 2143.1
## - X56    1   1512.8 2143.1
## - X64    1   1512.8 2143.1
## - X37    1   1512.9 2143.2
## - X13    1   1512.9 2143.2
## - X84    1   1512.9 2143.2
## - X40    1   1512.9 2143.2
## - X54    1   1512.9 2143.3
## - X81    1   1512.9 2143.3
## - X12    1   1513.0 2143.3
## - X50    1   1513.0 2143.3
## - X8     1   1513.0 2143.4
## - X38    1   1513.1 2143.4
## - X43    1   1513.1 2143.5
## - X63    1   1513.2 2143.5
## - X75    1   1513.2 2143.6
## - X65    1   1513.2 2143.6
## - X83    1   1513.2 2143.6
## - X10    1   1513.3 2143.7
## - X7     1   1513.3 2143.7
## - X27    1   1513.3 2143.7
## - X62    1   1513.4 2143.8
## - X79    1   1513.5 2143.8
## - X21    1   1513.5 2143.8
## - X20    1   1513.5 2143.8
## - X85    1   1513.5 2143.9
## - X48    1   1513.6 2143.9
## - X53    1   1513.6 2144.0
## - X35    1   1513.7 2144.1
## - X44    1   1513.7 2144.1
## - X45    1   1513.7 2144.1
```

```
## - X69   1   1513.7 2144.1
## - X24   1   1513.8 2144.1
## - X31   1   1513.8 2144.1
## - X2    1   1513.8 2144.2
## - X36   1   1513.8 2144.2
## - X30   1   1513.8 2144.2
## - X32   1   1513.8 2144.2
## - X14   1   1513.8 2144.2
## - X78   1   1513.9 2144.2
## - X33   1   1513.9 2144.3
## - X67   1   1514.0 2144.3
## - X61   1   1514.0 2144.4
## - X9    1   1514.1 2144.4
## - X72   1   1514.1 2144.4
## - X80   1   1514.1 2144.5
## - X57   1   1514.2 2144.6
## - X51   1   1514.3 2144.6
## - X28   1   1514.3 2144.6
## - X17   1   1514.3 2144.7
## - X1    1   1514.3 2144.7
## - X5    1   1514.4 2144.7
## - X42   1   1514.5 2144.8
## - X46   1   1514.6 2145.0
## - X58   1   1514.7 2145.0
## - X76   1   1514.7 2145.0
## - X41   1   1515.0 2145.4
## - X52   1   1515.4 2145.8
## - X22   1   1515.7 2146.1
## - X4    1   1515.7 2146.1
## - X6    1   1515.8 2146.1
## - X73   1   1515.9 2146.2
## - X55   1   1516.1 2146.5
## - X18   1   1516.3 2146.7
## - X82   1   1519.4 2149.8
## - X59   1   1519.8 2150.1
## <none>      1512.7 2151.3
## + X70   1   1512.7 2159.6
## + X15   1   1512.7 2159.6
## + X66   1   1512.7 2159.6
## + X23   1   1512.7 2159.6
## + X26   1   1512.7 2159.6
## + X29   1   1512.7 2159.6
## + X74   1   1512.7 2159.6
## + X60   1   1512.7 2159.6
## + X71   1   1512.7 2159.6
## - X47   1   1534.4 2164.8


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2143.06
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 +
##     X12 + X13 + X14 + X16 + X17 + X18 + X19 + X20 + X21 + X22 +
##     X24 + X25 + X27 + X28 + X30 + X31 + X32 + X33 + X34 + X35 +
```

```
##      X36 + X37 + X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 +
##      X47 + X48 + X49 + X50 + X51 + X52 + X53 + X54 + X55 + X56 +
##      X57 + X58 + X59 + X61 + X62 + X63 + X64 + X65 + X67 + X68 +
##      X69 + X72 + X73 + X75 + X76 + X77 + X78 + X79 + X80 + X81 +
##      X82 + X83 + X84 + X85
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##         Df Deviance    AIC
## - X11    1   1512.7 2134.8
## - X3     1   1512.7 2134.8
## - X77    1   1512.8 2134.8
## - X19    1   1512.8 2134.8
## - X49    1   1512.8 2134.8
## - X34    1   1512.8 2134.8
## - X16    1   1512.8 2134.8
## - X68    1   1512.8 2134.8
## - X25    1   1512.8 2134.8
## - X56    1   1512.8 2134.8
## - X64    1   1512.8 2134.9
## - X84    1   1512.9 2135.0
## - X13    1   1512.9 2135.0
## - X81    1   1512.9 2135.0
```

```
## - X54   1   1513.0 2135.0
## - X12   1   1513.0 2135.0
## - X50   1   1513.0 2135.1
## - X8    1   1513.1 2135.1
## - X43   1   1513.2 2135.2
## - X63   1   1513.2 2135.3
## - X75   1   1513.2 2135.3
## - X83   1   1513.3 2135.3
## - X65   1   1513.3 2135.3
## - X10   1   1513.3 2135.4
## - X27   1   1513.4 2135.4
## - X7    1   1513.4 2135.4
## - X40   1   1513.4 2135.4
## - X62   1   1513.4 2135.5
## - X79   1   1513.5 2135.6
## - X20   1   1513.5 2135.6
## - X21   1   1513.5 2135.6
## - X85   1   1513.6 2135.6
## - X37   1   1513.6 2135.6
## - X48   1   1513.6 2135.7
## - X53   1   1513.6 2135.7
## - X35   1   1513.7 2135.8
## - X44   1   1513.7 2135.8
## - X45   1   1513.8 2135.8
## - X24   1   1513.8 2135.8
## - X69   1   1513.8 2135.8
## - X31   1   1513.8 2135.9
## - X36   1   1513.8 2135.9
## - X32   1   1513.8 2135.9
## - X2    1   1513.8 2135.9
## - X30   1   1513.8 2135.9
## - X14   1   1513.9 2135.9
## - X78   1   1513.9 2136.0
## - X33   1   1513.9 2136.0
## - X67   1   1514.0 2136.0
## - X61   1   1514.1 2136.1
## - X72   1   1514.1 2136.2
## - X9    1   1514.1 2136.2
## - X80   1   1514.1 2136.2
## - X57   1   1514.2 2136.3
## - X28   1   1514.3 2136.3
## - X51   1   1514.3 2136.3
## - X1    1   1514.4 2136.4
## - X5    1   1514.4 2136.4
## - X42   1   1514.5 2136.5
## - X17   1   1514.5 2136.6
## - X46   1   1514.6 2136.7
## - X58   1   1514.7 2136.7
## - X76   1   1514.7 2136.8
## - X41   1   1515.2 2137.2
## - X38   1   1515.2 2137.2
## - X52   1   1515.5 2137.5
## - X22   1   1515.7 2137.8
## - X4    1   1515.7 2137.8
```

```
## - X6    1   1515.8 2137.9
## - X73   1   1515.9 2138.0
## - X55   1   1516.2 2138.2
## - X18   1   1516.5 2138.6
## - X82   1   1519.4 2141.5
## - X59   1   1519.8 2141.8
## <none>       1512.7 2143.1
## + X39   1   1512.7 2151.3
## + X70   1   1512.7 2151.3
## + X15   1   1512.7 2151.3
## + X66   1   1512.7 2151.3
## + X26   1   1512.7 2151.3
## + X23   1   1512.7 2151.3
## + X29   1   1512.7 2151.3
## + X74   1   1512.7 2151.3
## + X60   1   1512.7 2151.3
## + X71   1   1512.7 2151.3
## - X47   1   1534.4 2156.5


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2134.8
## X86 ~ X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 +
##     X13 + X14 + X16 + X17 + X18 + X19 + X20 + X21 + X22 + X24 +
##     X25 + X27 + X28 + X30 + X31 + X32 + X33 + X34 + X35 + X36 +
##     X37 + X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 +
##     X48 + X49 + X50 + X51 + X52 + X53 + X54 + X55 + X56 + X57 +
##     X58 + X59 + X61 + X62 + X63 + X64 + X65 + X67 + X68 + X69 +
##     X72 + X73 + X75 + X76 + X77 + X78 + X79 + X80 + X81 + X82 +
##     X83 + X84 + X85


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##          Df Deviance    AIC
## - X3    1   1512.8 2126.5
## - X77   1   1512.8 2126.5
## - X19   1   1512.8 2126.6
## - X49   1   1512.8 2126.6
## - X16   1   1512.8 2126.6
## - X68   1   1512.8 2126.6
## - X34   1   1512.8 2126.6
## - X25   1   1512.8 2126.6
## - X56   1   1512.8 2126.6
## - X64   1   1512.9 2126.6
## - X13   1   1513.0 2126.7
## - X84   1   1513.0 2126.7
## - X54   1   1513.0 2126.7
## - X81   1   1513.0 2126.7
## - X50   1   1513.0 2126.8
## - X12   1   1513.0 2126.8
## - X8    1   1513.1 2126.8
## - X43   1   1513.2 2127.0
## - X63   1   1513.2 2127.0
## - X75   1   1513.3 2127.0
## - X83   1   1513.3 2127.1
## - X65   1   1513.3 2127.1
## - X7    1   1513.4 2127.1
## - X27   1   1513.4 2127.2
## - X40   1   1513.5 2127.2
## - X62   1   1513.5 2127.2
## - X79   1   1513.5 2127.3
## - X21   1   1513.6 2127.3
## - X20   1   1513.6 2127.3
## - X37   1   1513.6 2127.4
## - X85   1   1513.6 2127.4
## - X48   1   1513.7 2127.4
## - X53   1   1513.7 2127.4
## - X35   1   1513.8 2127.5
## - X24   1   1513.8 2127.5
## - X44   1   1513.8 2127.5
## - X45   1   1513.8 2127.5
## - X69   1   1513.8 2127.6
## - X31   1   1513.8 2127.6
## - X36   1   1513.9 2127.6
## - X30   1   1513.9 2127.6
```

```
## - X14   1   1513.9 2127.7
## - X2    1   1513.9 2127.7
## - X32   1   1513.9 2127.7
## - X78   1   1514.0 2127.7
## - X67   1   1514.0 2127.8
## - X33   1   1514.0 2127.8
## - X10   1   1514.0 2127.8
## - X61   1   1514.1 2127.9
## - X9    1   1514.1 2127.9
## - X72   1   1514.1 2127.9
## - X80   1   1514.2 2127.9
## - X57   1   1514.3 2128.1
## - X28   1   1514.3 2128.1
## - X51   1   1514.3 2128.1
## - X1    1   1514.4 2128.2
## - X5    1   1514.5 2128.2
## - X42   1   1514.5 2128.2
## - X17   1   1514.5 2128.3
## - X46   1   1514.7 2128.4
## - X58   1   1514.7 2128.5
## - X76   1   1514.7 2128.5
## - X41   1   1515.2 2128.9
## - X38   1   1515.2 2129.0
## - X52   1   1515.5 2129.2
## - X4    1   1515.7 2129.5
## - X22   1   1515.8 2129.5
## - X6    1   1515.9 2129.7
## - X73   1   1516.0 2129.7
## - X55   1   1516.2 2129.9
## - X18   1   1516.5 2130.3
## - X82   1   1519.5 2133.3
## - X59   1   1519.8 2133.6
## <none>      1512.7 2134.8
## + X11   1   1512.7 2143.1
## + X39   1   1512.7 2143.1
## + X70   1   1512.7 2143.1
## + X15   1   1512.7 2143.1
## + X66   1   1512.7 2143.1
## + X26   1   1512.7 2143.1
## + X23   1   1512.7 2143.1
## + X29   1   1512.7 2143.1
## + X74   1   1512.7 2143.1
## + X60   1   1512.7 2143.1
## + X71   1   1512.7 2143.1
## - X47   1   1534.5 2148.3


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2126.53
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##     X14 + X16 + X17 + X18 + X19 + X20 + X21 + X22 + X24 + X25 +
##     X27 + X28 + X30 + X31 + X32 + X33 + X34 + X35 + X36 + X37 +
##     X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 + X48 +
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```
##       X49 + X50 + X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 +
##       X59 + X61 + X62 + X63 + X64 + X65 + X67 + X68 + X69 + X72 +
##       X73 + X75 + X76 + X77 + X78 + X79 + X80 + X81 + X82 + X83 +
##       X84 + X85


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##          Df Deviance    AIC
## - X77    1    1512.8 2118.3
## - X19    1    1512.8 2118.3
## - X49    1    1512.8 2118.3
## - X16    1    1512.8 2118.3
## - X34    1    1512.8 2118.3
## - X68    1    1512.8 2118.3
## - X25    1    1512.8 2118.3
## - X56    1    1512.9 2118.3
## - X64    1    1512.9 2118.4
## - X13    1    1513.0 2118.4
## - X84    1    1513.0 2118.4
## - X54    1    1513.0 2118.5
## - X81    1    1513.0 2118.5
## - X12    1    1513.1 2118.5
## - X50    1    1513.1 2118.5
```

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## - X8   1   1513.1 2118.6
## - X43  1   1513.2 2118.7
## - X63  1   1513.3 2118.8
## - X75  1   1513.3 2118.8
## - X83  1   1513.3 2118.8
## - X65  1   1513.3 2118.8
## - X7   1   1513.4 2118.9
## - X27  1   1513.4 2118.9
## - X62  1   1513.5 2119.0
## - X40  1   1513.5 2119.0
## - X79  1   1513.6 2119.1
## - X20  1   1513.6 2119.1
## - X21  1   1513.6 2119.1
## - X37  1   1513.7 2119.1
## - X85  1   1513.7 2119.1
## - X48  1   1513.7 2119.1
## - X53  1   1513.7 2119.2
## - X35  1   1513.8 2119.3
## - X69  1   1513.8 2119.3
## - X45  1   1513.8 2119.3
## - X44  1   1513.8 2119.3
## - X24  1   1513.8 2119.3
## - X31  1   1513.9 2119.3
## - X36  1   1513.9 2119.4
## - X30  1   1513.9 2119.4
## - X32  1   1513.9 2119.4
## - X2   1   1514.0 2119.4
## - X78  1   1514.0 2119.5
## - X10  1   1514.0 2119.5
## - X33  1   1514.0 2119.5
## - X67  1   1514.0 2119.5
## - X14  1   1514.1 2119.6
## - X61  1   1514.2 2119.6
## - X72  1   1514.2 2119.6
## - X9   1   1514.2 2119.6
## - X80  1   1514.2 2119.7
## - X57  1   1514.3 2119.8
## - X51  1   1514.3 2119.8
## - X28  1   1514.4 2119.9
## - X1   1   1514.5 2120.0
## - X5   1   1514.5 2120.0
## - X42  1   1514.5 2120.0
## - X17  1   1514.6 2120.0
## - X46  1   1514.7 2120.2
## - X58  1   1514.8 2120.2
## - X76  1   1514.8 2120.2
## - X41  1   1515.3 2120.8
## - X38  1   1515.3 2120.8
## - X52  1   1515.5 2121.0
## - X22  1   1515.8 2121.3
## - X4   1   1515.9 2121.4
## - X6   1   1515.9 2121.4
## - X73  1   1516.0 2121.4
## - X55  1   1516.2 2121.7
```

```
## - X18    1   1516.6 2122.1
## - X82    1   1519.5 2125.0
## - X59    1   1519.8 2125.3
## <none>       1512.8 2126.5
## + X3     1   1512.7 2134.8
## + X11    1   1512.7 2134.8
## + X39    1   1512.8 2134.8
## + X15    1   1512.8 2134.8
## + X70    1   1512.8 2134.8
## + X66    1   1512.8 2134.8
## + X29    1   1512.8 2134.8
## + X23    1   1512.8 2134.8
## + X74    1   1512.8 2134.8
## + X26    1   1512.8 2134.8
## + X60    1   1512.8 2134.8
## + X71    1   1512.8 2134.8
## - X47    1   1534.5 2140.0


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2118.28
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##      X14 + X16 + X17 + X18 + X19 + X20 + X21 + X22 + X24 + X25 +
##      X27 + X28 + X30 + X31 + X32 + X33 + X34 + X35 + X36 + X37 +
##      X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 + X48 +
##      X49 + X50 + X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 +
##      X59 + X61 + X62 + X63 + X64 + X65 + X67 + X68 + X69 + X72 +
##      X73 + X75 + X76 + X78 + X79 + X80 + X81 + X82 + X83 + X84 +
##      X85


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##         Df Deviance    AIC
## - X19    1   1512.9 2110.0
## - X49    1   1512.9 2110.1
## - X34    1   1512.9 2110.1
## - X16    1   1512.9 2110.1
## - X68    1   1512.9 2110.1
## - X25    1   1512.9 2110.1
## - X64    1   1512.9 2110.1
## - X56    1   1513.0 2110.2
## - X13    1   1513.0 2110.2
## - X84    1   1513.0 2110.2
## - X54    1   1513.0 2110.2
## - X81    1   1513.0 2110.2
## - X12    1   1513.1 2110.3
## - X50    1   1513.1 2110.3
## - X8     1   1513.2 2110.3
## - X43    1   1513.3 2110.4
## - X63    1   1513.3 2110.5
## - X75    1   1513.3 2110.5
## - X83    1   1513.4 2110.6
## - X65    1   1513.4 2110.6
## - X7     1   1513.4 2110.6
## - X27    1   1513.5 2110.7
## - X62    1   1513.5 2110.7
## - X40    1   1513.6 2110.7
## - X79    1   1513.6 2110.8
## - X20    1   1513.7 2110.8
## - X21    1   1513.7 2110.8
## - X37    1   1513.7 2110.9
## - X85    1   1513.7 2110.9
## - X48    1   1513.7 2110.9
## - X53    1   1513.7 2110.9
## - X35    1   1513.8 2111.0
## - X69    1   1513.8 2111.0
## - X45    1   1513.8 2111.0
## - X44    1   1513.9 2111.0
## - X24    1   1513.9 2111.1
## - X31    1   1513.9 2111.1
## - X36    1   1513.9 2111.1
## - X30    1   1514.0 2111.1
## - X32    1   1514.0 2111.1
## - X2     1   1514.0 2111.2
## - X78    1   1514.0 2111.2
```

```
## - X33    1   1514.1 2111.2
## - X10    1   1514.1 2111.2
## - X67    1   1514.1 2111.2
## - X14    1   1514.2 2111.3
## - X9     1   1514.2 2111.4
## - X72    1   1514.2 2111.4
## - X80    1   1514.2 2111.4
## - X61    1   1514.2 2111.4
## - X57    1   1514.4 2111.6
## - X51    1   1514.4 2111.6
## - X28    1   1514.5 2111.6
## - X1     1   1514.5 2111.7
## - X5     1   1514.6 2111.7
## - X42    1   1514.6 2111.7
## - X17    1   1514.6 2111.8
## - X46    1   1514.7 2111.9
## - X58    1   1514.8 2112.0
## - X76    1   1514.8 2112.0
## - X38    1   1515.3 2112.5
## - X41    1   1515.3 2112.5
## - X52    1   1515.5 2112.7
## - X22    1   1515.8 2113.0
## - X4     1   1516.0 2113.1
## - X6     1   1516.0 2113.1
## - X73    1   1516.0 2113.2
## - X55    1   1516.3 2113.4
## - X18    1   1516.6 2113.8
## - X82    1   1519.7 2116.8
## - X59    1   1519.9 2117.0
## <none>       1512.8 2118.3
## + X77    1   1512.8 2126.5
## + X3     1   1512.8 2126.5
## + X11    1   1512.8 2126.5
## + X39    1   1512.8 2126.6
## + X70    1   1512.8 2126.6
## + X15    1   1512.8 2126.6
## + X66    1   1512.8 2126.6
## + X23    1   1512.8 2126.6
## + X29    1   1512.8 2126.6
## + X26    1   1512.8 2126.6
## + X74    1   1512.8 2126.6
## + X60    1   1512.8 2126.6
## + X71    1   1512.8 2126.6
## - X47    1   1534.6 2131.8


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2110.04
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##     X14 + X16 + X17 + X18 + X20 + X21 + X22 + X24 + X25 + X27 +
##     X28 + X30 + X31 + X32 + X33 + X34 + X35 + X36 + X37 + X38 +
##     X40 + X41 + X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 +
##     X50 + X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 +
```

```
##       X61 + X62 + X63 + X64 + X65 + X67 + X68 + X69 + X72 + X73 +
##       X75 + X76 + X78 + X79 + X80 + X81 + X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X25    1   1512.9 2101.8
## - X49    1   1512.9 2101.8
## - X16    1   1512.9 2101.8
## - X34    1   1512.9 2101.8
## - X68    1   1512.9 2101.8
## - X64    1   1513.0 2101.9
## - X56    1   1513.0 2101.9
## - X13    1   1513.0 2101.9
## - X84    1   1513.1 2101.9
## - X54    1   1513.1 2102.0
## - X81    1   1513.1 2102.0
## - X50    1   1513.2 2102.0
## - X12    1   1513.2 2102.0
## - X8     1   1513.2 2102.1
## - X43    1   1513.3 2102.2
## - X63    1   1513.4 2102.2
## - X75    1   1513.4 2102.2
```

```
## - X83    1    1513.4 2102.3
## - X65    1    1513.4 2102.3
## - X7     1    1513.5 2102.4
## - X27    1    1513.6 2102.4
## - X62    1    1513.6 2102.5
## - X40    1    1513.7 2102.6
## - X79    1    1513.7 2102.6
## - X20    1    1513.7 2102.6
## - X37    1    1513.7 2102.6
## - X85    1    1513.8 2102.6
## - X48    1    1513.8 2102.6
## - X53    1    1513.8 2102.7
## - X24    1    1513.9 2102.8
## - X35    1    1513.9 2102.8
## - X69    1    1513.9 2102.8
## - X44    1    1513.9 2102.8
## - X45    1    1513.9 2102.8
## - X31    1    1513.9 2102.8
## - X21    1    1514.0 2102.8
## - X30    1    1514.0 2102.9
## - X36    1    1514.0 2102.9
## - X32    1    1514.0 2102.9
## - X2     1    1514.1 2102.9
## - X78    1    1514.1 2103.0
## - X10    1    1514.1 2103.0
## - X33    1    1514.1 2103.0
## - X67    1    1514.2 2103.0
## - X14    1    1514.2 2103.1
## - X9     1    1514.2 2103.1
## - X72    1    1514.2 2103.1
## - X61    1    1514.3 2103.2
## - X80    1    1514.3 2103.2
## - X51    1    1514.4 2103.3
## - X57    1    1514.5 2103.3
## - X28    1    1514.5 2103.3
## - X42    1    1514.6 2103.5
## - X1     1    1514.6 2103.5
## - X17    1    1514.7 2103.5
## - X5     1    1514.7 2103.5
## - X46    1    1514.8 2103.7
## - X76    1    1514.8 2103.7
## - X58    1    1514.9 2103.7
## - X38    1    1515.3 2104.2
## - X41    1    1515.4 2104.3
## - X52    1    1515.6 2104.5
## - X6     1    1516.0 2104.8
## - X73    1    1516.1 2105.0
## - X4     1    1516.1 2105.0
## - X22    1    1516.2 2105.1
## - X55    1    1516.3 2105.2
## - X18    1    1516.7 2105.5
## - X82    1    1519.7 2108.6
## - X59    1    1520.0 2108.8
## <none>        1512.9 2110.0
```

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## + X19   1   1512.8 2118.3
## + X77   1   1512.8 2118.3
## + X11   1   1512.8 2118.3
## + X3    1   1512.8 2118.3
## + X23   1   1512.8 2118.3
## + X70   1   1512.8 2118.3
## + X15   1   1512.8 2118.3
## + X39   1   1512.8 2118.3
## + X26   1   1512.9 2118.3
## + X66   1   1512.9 2118.3
## + X29   1   1512.9 2118.3
## + X74   1   1512.9 2118.3
## + X60   1   1512.9 2118.3
## + X71   1   1512.9 2118.3
## - X47   1   1534.7 2123.6


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2101.79
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##     X14 + X16 + X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 +
##     X30 + X31 + X32 + X33 + X34 + X35 + X36 + X37 + X38 + X40 +
##     X41 + X42 + X43 + X44 + X45 + X46 + X47 + X48 + X49 + X50 +
##     X51 + X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X61 +
##     X62 + X63 + X64 + X65 + X67 + X68 + X69 + X72 + X73 + X75 +
##     X76 + X78 + X79 + X80 + X81 + X82 + X83 + X84 + X85


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##         Df Deviance    AIC
## - X49    1   1513.0 2093.6
## - X34    1   1513.0 2093.6
## - X68    1   1513.0 2093.6
## - X16    1   1513.0 2093.6
## - X64    1   1513.0 2093.6
## - X56    1   1513.1 2093.7
## - X13    1   1513.1 2093.7
## - X84    1   1513.1 2093.7
## - X54    1   1513.1 2093.7
## - X81    1   1513.2 2093.7
## - X12    1   1513.2 2093.8
## - X50    1   1513.2 2093.8
## - X8     1   1513.2 2093.8
## - X43    1   1513.4 2094.0
## - X63    1   1513.4 2094.0
## - X75    1   1513.4 2094.0
## - X83    1   1513.5 2094.1
## - X65    1   1513.5 2094.1
## - X7     1   1513.5 2094.1
## - X62    1   1513.6 2094.2
## - X20    1   1513.7 2094.3
## - X79    1   1513.7 2094.3
## - X37    1   1513.8 2094.3
## - X40    1   1513.8 2094.4
## - X85    1   1513.8 2094.4
## - X48    1   1513.8 2094.4
## - X53    1   1513.8 2094.4
## - X27    1   1513.8 2094.4
## - X35    1   1513.9 2094.5
## - X69    1   1513.9 2094.5
## - X44    1   1514.0 2094.5
## - X45    1   1514.0 2094.6
## - X31    1   1514.0 2094.6
## - X36    1   1514.0 2094.6
## - X30    1   1514.0 2094.6
## - X21    1   1514.0 2094.6
## - X32    1   1514.1 2094.7
## - X2     1   1514.1 2094.7
## - X24    1   1514.1 2094.7
## - X10    1   1514.1 2094.7
## - X33    1   1514.2 2094.8
## - X78    1   1514.2 2094.8
## - X67    1   1514.2 2094.8
## - X9     1   1514.3 2094.8
## - X72    1   1514.3 2094.9
```

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## - X61    1   1514.3 2094.9
## - X80    1   1514.3 2094.9
## - X14    1   1514.3 2094.9
## - X51    1   1514.5 2095.1
## - X57    1   1514.5 2095.1
## - X42    1   1514.6 2095.2
## - X1     1   1514.7 2095.2
## - X5     1   1514.7 2095.3
## - X17    1   1514.8 2095.3
## - X46    1   1514.8 2095.4
## - X76    1   1514.9 2095.5
## - X58    1   1514.9 2095.5
## - X28    1   1515.0 2095.5
## - X38    1   1515.4 2096.0
## - X41    1   1515.4 2096.0
## - X52    1   1515.7 2096.3
## - X6     1   1516.0 2096.6
## - X73    1   1516.1 2096.7
## - X4     1   1516.2 2096.8
## - X55    1   1516.4 2096.9
## - X18    1   1516.8 2097.3
## - X22    1   1517.3 2097.9
## - X82    1   1519.8 2100.3
## - X59    1   1520.0 2100.6
## <none>       1512.9 2101.8
## + X25    1   1512.9 2110.0
## + X77    1   1512.9 2110.0
## + X11    1   1512.9 2110.0
## + X3     1   1512.9 2110.1
## + X26    1   1512.9 2110.1
## + X39    1   1512.9 2110.1
## + X70    1   1512.9 2110.1
## + X15    1   1512.9 2110.1
## + X19    1   1512.9 2110.1
## + X23    1   1512.9 2110.1
## + X29    1   1512.9 2110.1
## + X66    1   1512.9 2110.1
## + X74    1   1512.9 2110.1
## + X60    1   1512.9 2110.1
## + X71    1   1512.9 2110.1
## - X47    1   1534.7 2115.3


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2093.56
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##      X14 + X16 + X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 +
##      X30 + X31 + X32 + X33 + X34 + X35 + X36 + X37 + X38 + X40 +
##      X41 + X42 + X43 + X44 + X45 + X46 + X47 + X48 + X50 + X51 +
##      X52 + X53 + X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 +
##      X63 + X64 + X65 + X67 + X68 + X69 + X72 + X73 + X75 + X76 +
##      X78 + X79 + X80 + X81 + X82 + X83 + X84 + X85
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##        Df Deviance    AIC
## - X34   1   1513.0 2085.3
## - X68   1   1513.1 2085.3
## - X16   1   1513.1 2085.4
## - X64   1   1513.1 2085.4
## - X56   1   1513.1 2085.4
## - X13   1   1513.1 2085.4
## - X84   1   1513.2 2085.5
## - X54   1   1513.2 2085.5
## - X81   1   1513.2 2085.5
## - X12   1   1513.2 2085.5
## - X50   1   1513.3 2085.6
## - X8    1   1513.3 2085.6
## - X43   1   1513.5 2085.7
## - X63   1   1513.5 2085.8
## - X75   1   1513.5 2085.8
## - X83   1   1513.5 2085.8
## - X65   1   1513.5 2085.8
## - X7    1   1513.6 2085.9
## - X62   1   1513.7 2086.0
## - X20   1   1513.8 2086.0
```

```
## - X79    1    1513.8 2086.1
## - X37    1    1513.8 2086.1
## - X40    1    1513.8 2086.1
## - X85    1    1513.9 2086.2
## - X48    1    1513.9 2086.2
## - X53    1    1513.9 2086.2
## - X27    1    1513.9 2086.2
## - X35    1    1514.0 2086.3
## - X69    1    1514.0 2086.3
## - X44    1    1514.0 2086.3
## - X45    1    1514.0 2086.3
## - X31    1    1514.0 2086.3
## - X21    1    1514.1 2086.4
## - X36    1    1514.1 2086.4
## - X30    1    1514.1 2086.4
## - X32    1    1514.1 2086.4
## - X2     1    1514.2 2086.5
## - X24    1    1514.2 2086.5
## - X10    1    1514.2 2086.5
## - X33    1    1514.2 2086.5
## - X78    1    1514.2 2086.5
## - X67    1    1514.2 2086.5
## - X72    1    1514.3 2086.6
## - X9     1    1514.3 2086.6
## - X61    1    1514.4 2086.7
## - X14    1    1514.4 2086.7
## - X80    1    1514.4 2086.7
## - X51    1    1514.5 2086.8
## - X57    1    1514.6 2086.9
## - X42    1    1514.7 2087.0
## - X1     1    1514.7 2087.0
## - X5     1    1514.8 2087.0
## - X17    1    1514.8 2087.1
## - X46    1    1514.9 2087.2
## - X76    1    1514.9 2087.2
## - X58    1    1515.0 2087.2
## - X28    1    1515.0 2087.3
## - X41    1    1515.5 2087.8
## - X38    1    1515.5 2087.8
## - X52    1    1515.7 2088.0
## - X6     1    1516.1 2088.3
## - X73    1    1516.2 2088.5
## - X4     1    1516.2 2088.5
## - X55    1    1516.4 2088.7
## - X18    1    1516.8 2089.1
## - X22    1    1517.4 2089.7
## - X82    1    1519.8 2092.1
## - X59    1    1520.1 2092.4
## <none>        1513.0 2093.6
## + X49    1    1512.9 2101.8
## + X25    1    1512.9 2101.8
## + X11    1    1512.9 2101.8
## + X77    1    1512.9 2101.8
## + X3     1    1513.0 2101.8
```

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```
## + X26   1   1513.0 2101.8
## + X70   1   1513.0 2101.8
## + X39   1   1513.0 2101.8
## + X19   1   1513.0 2101.8
## + X15   1   1513.0 2101.8
## + X23   1   1513.0 2101.8
## + X29   1   1513.0 2101.8
## + X66   1   1513.0 2101.8
## + X74   1   1513.0 2101.8
## + X60   1   1513.0 2101.8
## + X71   1   1513.0 2101.8
## - X47   1   1534.7 2107.0


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2085.34
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##     X14 + X16 + X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 +
##     X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 +
##     X42 + X43 + X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 +
##     X53 + X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 + X63 +
##     X64 + X65 + X67 + X68 + X69 + X72 + X73 + X75 + X76 + X78 +
##     X79 + X80 + X81 + X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X68    1   1513.1 2077.1
## - X16    1   1513.1 2077.1
## - X64    1   1513.2 2077.2
## - X56    1   1513.2 2077.2
## - X13    1   1513.2 2077.2
## - X84    1   1513.3 2077.3
## - X54    1   1513.3 2077.3
## - X81    1   1513.3 2077.3
## - X8     1   1513.3 2077.3
## - X50    1   1513.3 2077.3
## - X12    1   1513.3 2077.3
## - X43    1   1513.5 2077.5
## - X63    1   1513.5 2077.5
## - X75    1   1513.6 2077.6
## - X83    1   1513.6 2077.6
## - X65    1   1513.6 2077.6
## - X7     1   1513.6 2077.6
## - X62    1   1513.8 2077.8
## - X20    1   1513.8 2077.8
## - X79    1   1513.9 2077.8
## - X37    1   1513.9 2077.9
## - X85    1   1513.9 2077.9
## - X48    1   1513.9 2077.9
## - X27    1   1514.0 2078.0
## - X53    1   1514.0 2078.0
## - X40    1   1514.0 2078.0
## - X35    1   1514.1 2078.1
## - X69    1   1514.1 2078.1
## - X45    1   1514.1 2078.1
## - X44    1   1514.1 2078.1
## - X21    1   1514.1 2078.1
## - X31    1   1514.2 2078.1
## - X36    1   1514.2 2078.1
## - X30    1   1514.2 2078.2
## - X2     1   1514.2 2078.2
## - X10    1   1514.3 2078.3
## - X24    1   1514.3 2078.3
## - X67    1   1514.3 2078.3
## - X78    1   1514.3 2078.3
## - X9     1   1514.4 2078.4
## - X72    1   1514.4 2078.4
## - X61    1   1514.5 2078.4
## - X14    1   1514.5 2078.5
## - X80    1   1514.5 2078.5
## - X51    1   1514.6 2078.6
## - X57    1   1514.7 2078.7
## - X42    1   1514.7 2078.7
## - X1     1   1514.8 2078.8
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## - X5    1    1514.8 2078.8
## - X17   1    1514.9 2078.9
## - X46   1    1515.0 2079.0
## - X76   1    1515.0 2079.0
## - X58   1    1515.0 2079.0
## - X28   1    1515.0 2079.0
## - X41   1    1515.6 2079.6
## - X38   1    1515.6 2079.6
## - X52   1    1515.8 2079.8
## - X33   1    1516.0 2080.0
## - X6    1    1516.1 2080.1
## - X73   1    1516.3 2080.3
## - X4    1    1516.3 2080.3
## - X55   1    1516.5 2080.5
## - X18   1    1516.8 2080.8
## - X32   1    1517.1 2081.1
## - X22   1    1517.4 2081.4
## - X82   1    1519.9 2083.9
## - X59   1    1520.2 2084.2
## <none>       1513.0 2085.3
## + X34   1    1513.0 2093.6
## + X49   1    1513.0 2093.6
## + X11   1    1513.0 2093.6
## + X25   1    1513.0 2093.6
## + X77   1    1513.0 2093.6
## + X26   1    1513.0 2093.6
## + X70   1    1513.0 2093.6
## + X3    1    1513.0 2093.6
## + X19   1    1513.0 2093.6
## + X15   1    1513.0 2093.6
## + X39   1    1513.0 2093.6
## + X29   1    1513.0 2093.6
## + X66   1    1513.0 2093.6
## + X23   1    1513.0 2093.6
## + X74   1    1513.0 2093.6
## + X60   1    1513.0 2093.6
## + X71   1    1513.0 2093.6
## - X47   1    1534.9 2098.9


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2077.13
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##     X14 + X16 + X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 +
##     X30 + X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 +
##     X42 + X43 + X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 +
##     X53 + X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 + X63 +
##     X64 + X65 + X67 + X69 + X72 + X73 + X75 + X76 + X78 + X79 +
##     X80 + X81 + X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##        Df Deviance    AIC
## - X16   1   1513.2 2068.9
## - X64   1   1513.3 2069.0
## - X56   1   1513.3 2069.0
## - X13   1   1513.3 2069.0
## - X84   1   1513.3 2069.1
## - X54   1   1513.4 2069.1
## - X81   1   1513.4 2069.1
## - X50   1   1513.4 2069.1
## - X8    1   1513.4 2069.1
## - X12   1   1513.5 2069.2
## - X43   1   1513.6 2069.3
## - X63   1   1513.6 2069.3
## - X75   1   1513.6 2069.3
## - X83   1   1513.7 2069.4
## - X65   1   1513.7 2069.4
## - X7    1   1513.7 2069.4
## - X62   1   1513.9 2069.6
## - X79   1   1513.9 2069.6
## - X20   1   1513.9 2069.6
## - X37   1   1514.0 2069.7
## - X53   1   1514.0 2069.8
## - X85   1   1514.1 2069.8
```

```
## - X27   1   1514.1 2069.8
## - X40   1   1514.1 2069.8
## - X48   1   1514.1 2069.8
## - X35   1   1514.2 2069.8
## - X44   1   1514.2 2069.9
## - X45   1   1514.2 2069.9
## - X69   1   1514.2 2069.9
## - X31   1   1514.2 2069.9
## - X21   1   1514.2 2069.9
## - X36   1   1514.2 2069.9
## - X30   1   1514.3 2070.0
## - X2    1   1514.3 2070.1
## - X24   1   1514.4 2070.1
## - X10   1   1514.4 2070.1
## - X67   1   1514.4 2070.1
## - X9    1   1514.5 2070.2
## - X78   1   1514.5 2070.2
## - X61   1   1514.5 2070.2
## - X14   1   1514.5 2070.2
## - X72   1   1514.5 2070.2
## - X80   1   1514.6 2070.3
## - X51   1   1514.7 2070.4
## - X57   1   1514.8 2070.5
## - X42   1   1514.8 2070.5
## - X1    1   1514.9 2070.6
## - X5    1   1515.0 2070.7
## - X17   1   1515.0 2070.7
## - X46   1   1515.1 2070.8
## - X28   1   1515.1 2070.8
## - X58   1   1515.1 2070.8
## - X76   1   1515.3 2071.0
## - X41   1   1515.7 2071.4
## - X38   1   1515.7 2071.4
## - X52   1   1515.9 2071.6
## - X33   1   1516.1 2071.8
## - X6    1   1516.2 2071.9
## - X73   1   1516.4 2072.1
## - X4    1   1516.4 2072.1
## - X55   1   1516.7 2072.4
## - X18   1   1517.0 2072.7
## - X32   1   1517.2 2072.9
## - X22   1   1517.5 2073.2
## - X82   1   1519.9 2075.6
## - X59   1   1520.3 2076.0
## <none>      1513.1 2077.1
## + X68   1   1513.0 2085.3
## + X49   1   1513.0 2085.3
## + X34   1   1513.1 2085.3
## + X11   1   1513.1 2085.4
## + X25   1   1513.1 2085.4
## + X77   1   1513.1 2085.4
## + X70   1   1513.1 2085.4
## + X26   1   1513.1 2085.4
## + X3    1   1513.1 2085.4
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## + X19   1   1513.1 2085.4
## + X15   1   1513.1 2085.4
## + X39   1   1513.1 2085.4
## + X29   1   1513.1 2085.4
## + X23   1   1513.1 2085.4
## + X66   1   1513.1 2085.4
## + X74   1   1513.1 2085.4
## + X60   1   1513.1 2085.4
## + X71   1   1513.1 2085.4
## - X47   1   1584.7 2140.4


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2068.93
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##      X14 + X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 + X30 +
##      X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 +
##      X43 + X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 + X53 +
##      X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 + X63 + X64 +
##      X65 + X67 + X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 +
##      X81 + X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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```
##           Df Deviance    AIC
## - X64    1    1513.3 2060.8
## - X56    1    1513.4 2060.8
## - X84    1    1513.4 2060.8
## - X13    1    1513.4 2060.8
## - X54    1    1513.5 2060.9
## - X81    1    1513.5 2060.9
## - X50    1    1513.5 2060.9
## - X8     1    1513.5 2060.9
## - X12    1    1513.6 2061.0
## - X63    1    1513.7 2061.1
## - X43    1    1513.7 2061.1
## - X75    1    1513.7 2061.1
## - X65    1    1513.8 2061.2
## - X83    1    1513.8 2061.2
## - X7     1    1513.8 2061.2
## - X62    1    1514.0 2061.4
## - X20    1    1514.0 2061.4
## - X79    1    1514.0 2061.4
## - X85    1    1514.1 2061.5
## - X53    1    1514.1 2061.5
## - X40    1    1514.1 2061.6
## - X37    1    1514.2 2061.6
## - X27    1    1514.2 2061.6
## - X48    1    1514.2 2061.6
## - X35    1    1514.2 2061.6
## - X44    1    1514.3 2061.7
## - X36    1    1514.3 2061.7
## - X31    1    1514.3 2061.7
## - X21    1    1514.3 2061.8
## - X45    1    1514.3 2061.8
## - X69    1    1514.4 2061.8
## - X30    1    1514.4 2061.8
## - X24    1    1514.4 2061.8
## - X2     1    1514.5 2061.9
## - X10    1    1514.5 2061.9
## - X67    1    1514.5 2061.9
## - X78    1    1514.5 2061.9
## - X61    1    1514.6 2062.0
## - X9     1    1514.6 2062.0
## - X14    1    1514.6 2062.0
## - X72    1    1514.6 2062.0
## - X80    1    1514.7 2062.1
## - X51    1    1514.8 2062.2
## - X57    1    1514.9 2062.3
## - X42    1    1514.9 2062.3
## - X1     1    1515.0 2062.4
## - X5     1    1515.0 2062.4
## - X46    1    1515.2 2062.6
## - X28    1    1515.2 2062.6
## - X58    1    1515.2 2062.6
```

```
## - X76   1   1515.4 2062.8
## - X38   1   1515.8 2063.2
## - X52   1   1515.9 2063.3
## - X41   1   1516.0 2063.3
## - X33   1   1516.3 2063.7
## - X6    1   1516.4 2063.8
## - X73   1   1516.4 2063.8
## - X4    1   1516.6 2064.0
## - X55   1   1516.8 2064.2
## - X32   1   1517.3 2064.7
## - X22   1   1517.6 2065.0
## - X17   1   1519.6 2067.0
## - X82   1   1520.0 2067.4
## - X59   1   1520.4 2067.8
## <none>      1513.2 2068.9
## - X18   1   1526.7 2074.1
## + X16   1   1513.1 2077.1
## + X68   1   1513.1 2077.1
## + X25   1   1513.1 2077.1
## + X49   1   1513.2 2077.1
## + X34   1   1513.2 2077.2
## + X11   1   1513.2 2077.2
## + X77   1   1513.2 2077.2
## + X70   1   1513.2 2077.2
## + X26   1   1513.2 2077.2
## + X3    1   1513.2 2077.2
## + X15   1   1513.2 2077.2
## + X39   1   1513.2 2077.2
## + X19   1   1513.2 2077.2
## + X29   1   1513.2 2077.2
## + X23   1   1513.2 2077.2
## + X66   1   1513.2 2077.2
## + X74   1   1513.2 2077.2
## + X60   1   1513.2 2077.2
## + X71   1   1513.2 2077.2
## - X47   1   1584.7 2132.1


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2060.75
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##     X14 + X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 + X30 +
##     X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 +
##     X43 + X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 + X53 +
##     X54 + X55 + X56 + X57 + X58 + X59 + X61 + X62 + X63 + X65 +
##     X67 + X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 + X81 +
##     X82 + X83 + X84 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##          Df Deviance    AIC
## - X56    1    1513.5 2052.6
## - X84    1    1513.5 2052.7
## - X13    1    1513.5 2052.7
## - X54    1    1513.6 2052.7
## - X81    1    1513.6 2052.7
## - X50    1    1513.6 2052.8
## - X8     1    1513.7 2052.8
## - X12    1    1513.7 2052.8
## - X43    1    1513.8 2052.9
## - X63    1    1513.8 2052.9
## - X75    1    1513.8 2053.0
## - X65    1    1513.9 2053.0
## - X83    1    1513.9 2053.0
## - X7     1    1513.9 2053.1
## - X62    1    1514.1 2053.2
## - X79    1    1514.2 2053.3
## - X20    1    1514.2 2053.3
## - X37    1    1514.2 2053.3
## - X53    1    1514.2 2053.4
## - X40    1    1514.3 2053.4
## - X27    1    1514.3 2053.4
## - X35    1    1514.3 2053.5
## - X48    1    1514.3 2053.5
## - X44    1    1514.4 2053.5
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## - X36    1    1514.4 2053.6
## - X31    1    1514.4 2053.6
## - X21    1    1514.5 2053.6
## - X45    1    1514.5 2053.6
## - X30    1    1514.5 2053.6
## - X69    1    1514.5 2053.6
## - X24    1    1514.5 2053.6
## - X2     1    1514.6 2053.7
## - X10    1    1514.6 2053.7
## - X67    1    1514.6 2053.7
## - X9     1    1514.7 2053.8
## - X61    1    1514.7 2053.8
## - X78    1    1514.7 2053.8
## - X14    1    1514.7 2053.8
## - X72    1    1514.8 2053.9
## - X80    1    1514.8 2053.9
## - X51    1    1514.9 2054.0
## - X42    1    1515.0 2054.1
## - X57    1    1515.0 2054.1
## - X1     1    1515.1 2054.2
## - X5     1    1515.1 2054.2
## - X46    1    1515.3 2054.4
## - X28    1    1515.3 2054.4
## - X58    1    1515.3 2054.5
## - X76    1    1515.5 2054.6
## - X38    1    1515.9 2055.0
## - X41    1    1516.0 2055.2
## - X52    1    1516.1 2055.2
## - X33    1    1516.4 2055.5
## - X6     1    1516.5 2055.6
## - X73    1    1516.6 2055.7
## - X4     1    1516.7 2055.8
## - X55    1    1516.9 2056.0
## - X32    1    1517.4 2056.6
## - X85    1    1517.5 2056.7
## - X22    1    1517.7 2056.8
## - X17    1    1519.7 2058.8
## - X82    1    1520.1 2059.2
## - X59    1    1520.4 2059.6
## <none>        1513.3 2060.8
## - X18    1    1526.7 2065.8
## + X64    1    1513.2 2068.9
## + X68    1    1513.2 2068.9
## + X16    1    1513.3 2069.0
## + X49    1    1513.3 2069.0
## + X25    1    1513.3 2069.0
## + X11    1    1513.3 2069.0
## + X34    1    1513.3 2069.0
## + X77    1    1513.3 2069.0
## + X70    1    1513.3 2069.0
## + X26    1    1513.3 2069.0
## + X3     1    1513.3 2069.0
## + X39    1    1513.3 2069.0
## + X15    1    1513.3 2069.0
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## + X19    1   1513.3 2069.0
## + X23    1   1513.3 2069.0
## + X29    1   1513.3 2069.0
## + X66    1   1513.3 2069.1
## + X74    1   1513.3 2069.1
## + X60    1   1513.3 2069.1
## + X71    1   1513.3 2069.1
## - X47    1   1585.0 2124.1


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2052.62
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X13 +
##      X14 + X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 + X30 +
##      X31 + X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 +
##      X43 + X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 + X53 +
##      X54 + X55 + X57 + X58 + X59 + X61 + X62 + X63 + X65 + X67 +
##      X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 + X81 + X82 +
##      X83 + X84 + X85


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##          Df Deviance    AIC
## - X13     1   1513.7 2044.5
## - X84     1   1513.7 2044.5
## - X54     1   1513.7 2044.6
## - X81     1   1513.8 2044.6
## - X50     1   1513.8 2044.6
## - X8      1   1513.8 2044.7
## - X12     1   1513.8 2044.7
## - X63     1   1514.0 2044.8
## - X43     1   1514.0 2044.8
## - X75     1   1514.0 2044.8
## - X65     1   1514.1 2044.9
## - X83     1   1514.1 2044.9
## - X7      1   1514.1 2044.9
## - X62     1   1514.2 2045.1
## - X79     1   1514.3 2045.2
## - X20     1   1514.3 2045.2
## - X37     1   1514.4 2045.2
## - X53     1   1514.4 2045.2
## - X40     1   1514.4 2045.2
## - X27     1   1514.4 2045.2
## - X35     1   1514.5 2045.3
## - X48     1   1514.5 2045.3
## - X44     1   1514.6 2045.4
## - X36     1   1514.6 2045.4
## - X21     1   1514.6 2045.4
## - X31     1   1514.6 2045.4
## - X45     1   1514.6 2045.4
## - X30     1   1514.7 2045.5
## - X69     1   1514.7 2045.5
## - X24     1   1514.7 2045.5
## - X61     1   1514.7 2045.5
## - X2      1   1514.7 2045.6
## - X10     1   1514.8 2045.6
## - X67     1   1514.8 2045.6
## - X9      1   1514.8 2045.7
## - X78     1   1514.9 2045.7
## - X14     1   1514.9 2045.7
## - X72     1   1514.9 2045.7
## - X80     1   1515.0 2045.8
## - X51     1   1515.1 2045.9
## - X42     1   1515.2 2046.0
## - X57     1   1515.2 2046.0
## - X1      1   1515.2 2046.1
## - X5      1   1515.3 2046.1
## - X46     1   1515.4 2046.2
## - X28     1   1515.5 2046.3
## - X58     1   1515.5 2046.3
## - X76     1   1515.7 2046.5
## - X38     1   1516.0 2046.9
## - X41     1   1516.2 2047.0
## - X52     1   1516.2 2047.1
## - X33     1   1516.6 2047.4
## - X6      1   1516.7 2047.5
```

```
## - X73    1   1516.7 2047.6
## - X4     1   1516.8 2047.7
## - X55    1   1517.1 2048.0
## - X32    1   1517.6 2048.4
## - X85    1   1517.7 2048.5
## - X22    1   1517.9 2048.7
## - X17    1   1519.9 2050.7
## - X82    1   1520.1 2051.0
## - X59    1   1520.6 2051.4
## <none>       1513.5 2052.6
## - X18    1   1526.9 2057.7
## + X56    1   1513.3 2060.8
## + X77    1   1513.4 2060.8
## + X64    1   1513.4 2060.8
## + X68    1   1513.4 2060.8
## + X49    1   1513.4 2060.8
## + X25    1   1513.4 2060.8
## + X16    1   1513.4 2060.8
## + X34    1   1513.4 2060.8
## + X11    1   1513.4 2060.8
## + X70    1   1513.5 2060.9
## + X26    1   1513.5 2060.9
## + X3     1   1513.5 2060.9
## + X39    1   1513.5 2060.9
## + X15    1   1513.5 2060.9
## + X19    1   1513.5 2060.9
## + X23    1   1513.5 2060.9
## + X29    1   1513.5 2060.9
## + X66    1   1513.5 2060.9
## + X74    1   1513.5 2060.9
## + X60    1   1513.5 2060.9
## + X71    1   1513.5 2060.9
## - X47    1   1585.2 2116.0


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2044.53
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X14 +
##      X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 + X30 + X31 +
##      X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X43 +
##      X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 + X53 + X54 +
##      X55 + X57 + X58 + X59 + X61 + X62 + X63 + X65 + X67 + X69 +
##      X72 + X73 + X75 + X76 + X78 + X79 + X80 + X81 + X82 + X83 +
##      X84 + X85


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##          Df Deviance    AIC
## - X84     1   1513.9 2036.4
## - X54     1   1513.9 2036.5
## - X12     1   1513.9 2036.5
## - X81     1   1514.0 2036.5
## - X8      1   1514.0 2036.5
## - X50     1   1514.0 2036.5
## - X63     1   1514.2 2036.7
## - X75     1   1514.2 2036.7
## - X43     1   1514.2 2036.8
## - X7      1   1514.2 2036.8
## - X65     1   1514.3 2036.8
## - X83     1   1514.3 2036.8
## - X62     1   1514.4 2037.0
## - X37     1   1514.5 2037.0
## - X79     1   1514.5 2037.1
## - X20     1   1514.6 2037.1
## - X53     1   1514.6 2037.1
## - X40     1   1514.6 2037.2
## - X27     1   1514.6 2037.2
## - X35     1   1514.7 2037.2
## - X48     1   1514.7 2037.2
## - X44     1   1514.8 2037.3
## - X21     1   1514.8 2037.3
## - X36     1   1514.8 2037.3
## - X31     1   1514.8 2037.3
## - X45     1   1514.8 2037.3
## - X30     1   1514.8 2037.3
```

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## - X69   1   1514.8 2037.4
## - X2    1   1514.9 2037.4
## - X61   1   1514.9 2037.5
## - X14   1   1515.0 2037.5
## - X9    1   1515.0 2037.5
## - X67   1   1515.0 2037.5
## - X24   1   1515.0 2037.5
## - X10   1   1515.1 2037.6
## - X78   1   1515.1 2037.6
## - X72   1   1515.1 2037.6
## - X80   1   1515.2 2037.7
## - X51   1   1515.2 2037.8
## - X42   1   1515.4 2037.9
## - X1    1   1515.4 2037.9
## - X57   1   1515.4 2037.9
## - X5    1   1515.4 2038.0
## - X46   1   1515.6 2038.2
## - X58   1   1515.7 2038.2
## - X28   1   1515.8 2038.4
## - X76   1   1515.9 2038.4
## - X38   1   1516.2 2038.7
## - X41   1   1516.3 2038.8
## - X52   1   1516.5 2039.0
## - X6    1   1516.8 2039.3
## - X33   1   1516.8 2039.3
## - X4    1   1516.9 2039.4
## - X73   1   1517.0 2039.5
## - X55   1   1517.4 2039.9
## - X32   1   1517.8 2040.4
## - X85   1   1517.9 2040.4
## - X22   1   1518.1 2040.7
## - X17   1   1520.0 2042.6
## - X82   1   1520.4 2042.9
## - X59   1   1520.8 2043.3
## <none>      1513.7 2044.5
## - X18   1   1527.0 2049.6
## + X13   1   1513.5 2052.6
## + X56   1   1513.5 2052.7
## + X77   1   1513.6 2052.7
## + X15   1   1513.6 2052.7
## + X64   1   1513.6 2052.7
## + X68   1   1513.6 2052.7
## + X16   1   1513.6 2052.7
## + X49   1   1513.6 2052.7
## + X34   1   1513.6 2052.8
## + X25   1   1513.6 2052.8
## + X11   1   1513.6 2052.8
## + X70   1   1513.7 2052.8
## + X39   1   1513.7 2052.8
## + X3    1   1513.7 2052.8
## + X26   1   1513.7 2052.8
## + X19   1   1513.7 2052.8
## + X23   1   1513.7 2052.8
## + X29   1   1513.7 2052.8
```

```
## + X66   1   1513.7 2052.8
## + X74   1   1513.7 2052.8
## + X60   1   1513.7 2052.8
## + X71   1   1513.7 2052.8
## - X47   1   1585.5 2108.0


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2036.43
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X14 +
##      X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 + X30 + X31 +
##      X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X43 +
##      X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 + X53 + X54 +
##      X55 + X57 + X58 + X59 + X61 + X62 + X63 + X65 + X67 + X69 +
##      X72 + X73 + X75 + X76 + X78 + X79 + X80 + X81 + X82 + X83 +
##      X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
##        Df Deviance    AIC
## - X54   1   1514.1 2028.4
```

```
## - X12   1   1514.2 2028.4
## - X81   1   1514.2 2028.4
## - X8    1   1514.2 2028.5
## - X50   1   1514.2 2028.5
## - X63   1   1514.3 2028.5
## - X75   1   1514.4 2028.7
## - X43   1   1514.5 2028.7
## - X65   1   1514.5 2028.7
## - X7    1   1514.5 2028.7
## - X83   1   1514.5 2028.7
## - X62   1   1514.6 2028.9
## - X37   1   1514.7 2028.9
## - X79   1   1514.7 2029.0
## - X20   1   1514.8 2029.0
## - X53   1   1514.8 2029.0
## - X40   1   1514.8 2029.1
## - X27   1   1514.9 2029.1
## - X48   1   1514.9 2029.2
## - X35   1   1514.9 2029.2
## - X44   1   1515.0 2029.2
## - X21   1   1515.0 2029.2
## - X31   1   1515.0 2029.2
## - X36   1   1515.0 2029.2
## - X30   1   1515.0 2029.3
## - X45   1   1515.0 2029.3
## - X69   1   1515.0 2029.3
## - X2    1   1515.1 2029.3
## - X14   1   1515.1 2029.3
## - X61   1   1515.2 2029.4
## - X67   1   1515.2 2029.4
## - X9    1   1515.2 2029.4
## - X24   1   1515.2 2029.5
## - X72   1   1515.3 2029.5
## - X10   1   1515.3 2029.5
## - X78   1   1515.3 2029.5
## - X80   1   1515.4 2029.6
## - X51   1   1515.5 2029.7
## - X42   1   1515.5 2029.8
## - X1    1   1515.6 2029.8
## - X5    1   1515.6 2029.8
## - X57   1   1515.6 2029.9
## - X46   1   1515.8 2030.0
## - X58   1   1515.9 2030.2
## - X76   1   1516.0 2030.3
## - X28   1   1516.1 2030.3
## - X38   1   1516.4 2030.6
## - X41   1   1516.5 2030.7
## - X52   1   1516.7 2030.9
## - X6    1   1517.0 2031.2
## - X33   1   1517.0 2031.2
## - X4    1   1517.0 2031.3
## - X73   1   1517.1 2031.4
## - X55   1   1517.5 2031.8
## - X85   1   1518.1 2032.3
```

```
## - X32     1    1518.1 2032.3
## - X22     1    1518.4 2032.6
## - X17     1    1520.2 2034.5
## - X82     1    1520.6 2034.8
## - X59     1    1521.0 2035.2
## <none>         1513.9 2036.4
## - X18     1    1527.2 2041.4
## + X84     1    1513.7 2044.5
## + X13     1    1513.7 2044.5
## + X56     1    1513.7 2044.6
## + X15     1    1513.8 2044.6
## + X77     1    1513.8 2044.6
## + X64     1    1513.8 2044.6
## + X68     1    1513.8 2044.6
## + X16     1    1513.8 2044.6
## + X49     1    1513.8 2044.6
## + X34     1    1513.8 2044.7
## + X25     1    1513.8 2044.7
## + X11     1    1513.8 2044.7
## + X70     1    1513.9 2044.7
## + X39     1    1513.9 2044.7
## + X3      1    1513.9 2044.7
## + X26     1    1513.9 2044.7
## + X19     1    1513.9 2044.7
## + X29     1    1513.9 2044.7
## + X23     1    1513.9 2044.7
## + X66     1    1513.9 2044.7
## + X74     1    1513.9 2044.7
## + X60     1    1513.9 2044.7
## + X71     1    1513.9 2044.7
## - X47     1    1585.7 2099.9


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2028.37
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X14 +
##      X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 + X30 + X31 +
##      X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X43 +
##      X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 + X53 + X55 +
##      X57 + X58 + X59 + X61 + X62 + X63 + X65 + X67 + X69 + X72 +
##      X73 + X75 + X76 + X78 + X79 + X80 + X81 + X82 + X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##          Df Deviance    AIC
## - X81    1    1514.4 2020.3
## - X12    1    1514.4 2020.3
## - X8     1    1514.5 2020.4
## - X50    1    1514.5 2020.4
## - X63    1    1514.5 2020.5
## - X43    1    1514.7 2020.6
## - X65    1    1514.7 2020.6
## - X7     1    1514.7 2020.6
## - X83    1    1514.7 2020.6
## - X62    1    1514.9 2020.8
## - X37    1    1514.9 2020.8
## - X79    1    1515.0 2020.9
## - X20    1    1515.0 2021.0
## - X53    1    1515.0 2021.0
## - X40    1    1515.0 2021.0
## - X27    1    1515.1 2021.0
## - X48    1    1515.2 2021.1
## - X35    1    1515.2 2021.1
## - X21    1    1515.2 2021.1
## - X44    1    1515.2 2021.1
## - X31    1    1515.2 2021.2
## - X75    1    1515.2 2021.2
## - X36    1    1515.2 2021.2
## - X30    1    1515.3 2021.2
## - X45    1    1515.3 2021.2
## - X69    1    1515.3 2021.2
## - X2     1    1515.3 2021.3
## - X14    1    1515.3 2021.3
## - X61    1    1515.4 2021.3
## - X67    1    1515.4 2021.3
```

```
## - X9    1    1515.4 2021.3
## - X24   1    1515.5 2021.4
## - X72   1    1515.5 2021.5
## - X78   1    1515.5 2021.5
## - X10   1    1515.5 2021.5
## - X80   1    1515.6 2021.6
## - X51   1    1515.7 2021.6
## - X42   1    1515.8 2021.7
## - X1    1    1515.8 2021.7
## - X5    1    1515.8 2021.8
## - X57   1    1515.9 2021.8
## - X46   1    1516.0 2022.0
## - X58   1    1516.2 2022.1
## - X76   1    1516.3 2022.2
## - X28   1    1516.3 2022.2
## - X38   1    1516.6 2022.5
## - X41   1    1516.7 2022.7
## - X52   1    1516.9 2022.8
## - X33   1    1517.2 2023.2
## - X6    1    1517.2 2023.2
## - X4    1    1517.2 2023.2
## - X73   1    1517.4 2023.3
## - X55   1    1517.8 2023.7
## - X32   1    1518.2 2024.2
## - X85   1    1518.3 2024.2
## - X22   1    1518.7 2024.6
## - X17   1    1520.5 2026.4
## - X82   1    1520.8 2026.7
## - X59   1    1521.2 2027.2
## <none>       1514.1 2028.4
## - X18   1    1527.4 2033.4
## + X54   1    1513.9 2036.4
## + X13   1    1513.9 2036.5
## + X84   1    1513.9 2036.5
## + X56   1    1514.0 2036.5
## + X15   1    1514.0 2036.5
## + X77   1    1514.0 2036.5
## + X64   1    1514.0 2036.5
## + X68   1    1514.0 2036.6
## + X16   1    1514.0 2036.6
## + X49   1    1514.0 2036.6
## + X34   1    1514.1 2036.6
## + X25   1    1514.1 2036.6
## + X11   1    1514.1 2036.6
## + X70   1    1514.1 2036.6
## + X39   1    1514.1 2036.6
## + X3    1    1514.1 2036.7
## + X26   1    1514.1 2036.7
## + X19   1    1514.1 2036.7
## + X29   1    1514.1 2036.7
## + X23   1    1514.1 2036.7
## + X66   1    1514.1 2036.7
## + X74   1    1514.1 2036.7
## + X60   1    1514.1 2036.7
```

```
## + X71   1   1514.1 2036.7
## - X47   1   1585.8 2091.8


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2020.33
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X12 + X14 +
##     X17 + X18 + X20 + X21 + X22 + X24 + X27 + X28 + X30 + X31 +
##     X32 + X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X43 +
##     X44 + X45 + X46 + X47 + X48 + X50 + X51 + X52 + X53 + X55 +
##     X57 + X58 + X59 + X61 + X62 + X63 + X65 + X67 + X69 + X72 +
##     X73 + X75 + X76 + X78 + X79 + X80 + X82 + X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X12    1   1514.6 2012.3
## - X8     1   1514.7 2012.3
## - X50    1   1514.7 2012.3
## - X63    1   1514.8 2012.4
## - X43    1   1514.9 2012.6
```

```
## - X7    1    1514.9 2012.6
## - X65   1    1514.9 2012.6
## - X83   1    1515.0 2012.6
## - X37   1    1515.1 2012.8
## - X62   1    1515.1 2012.8
## - X79   1    1515.2 2012.9
## - X20   1    1515.3 2012.9
## - X40   1    1515.3 2012.9
## - X53   1    1515.3 2012.9
## - X27   1    1515.3 2013.0
## - X48   1    1515.4 2013.0
## - X35   1    1515.4 2013.0
## - X44   1    1515.4 2013.1
## - X31   1    1515.5 2013.1
## - X21   1    1515.5 2013.1
## - X75   1    1515.5 2013.1
## - X36   1    1515.5 2013.2
## - X30   1    1515.5 2013.2
## - X45   1    1515.5 2013.2
## - X69   1    1515.5 2013.2
## - X2    1    1515.6 2013.2
## - X14   1    1515.6 2013.2
## - X9    1    1515.6 2013.3
## - X61   1    1515.6 2013.3
## - X67   1    1515.7 2013.3
## - X24   1    1515.8 2013.4
## - X72   1    1515.8 2013.4
## - X78   1    1515.8 2013.4
## - X10   1    1515.8 2013.4
## - X80   1    1515.9 2013.5
## - X51   1    1516.0 2013.6
## - X42   1    1516.0 2013.7
## - X1    1    1516.0 2013.7
## - X5    1    1516.1 2013.7
## - X57   1    1516.1 2013.8
## - X46   1    1516.3 2013.9
## - X58   1    1516.4 2014.0
## - X76   1    1516.5 2014.2
## - X28   1    1516.5 2014.2
## - X38   1    1516.8 2014.5
## - X41   1    1516.9 2014.6
## - X52   1    1517.1 2014.8
## - X33   1    1517.4 2015.1
## - X6    1    1517.5 2015.1
## - X4    1    1517.5 2015.2
## - X73   1    1517.6 2015.2
## - X55   1    1518.0 2015.7
## - X32   1    1518.5 2016.1
## - X85   1    1518.5 2016.2
## - X22   1    1518.9 2016.5
## - X17   1    1520.7 2018.4
## - X82   1    1521.1 2018.7
## - X59   1    1521.5 2019.1
## <none>       1514.4 2020.3
```

```
## - X18   1   1527.7 2025.3
## + X81   1   1514.1 2028.4
## + X60   1   1514.1 2028.4
## + X54   1   1514.2 2028.4
## + X84   1   1514.2 2028.4
## + X13   1   1514.2 2028.4
## + X56   1   1514.2 2028.5
## + X77   1   1514.3 2028.5
## + X15   1   1514.3 2028.5
## + X64   1   1514.3 2028.5
## + X68   1   1514.3 2028.5
## + X16   1   1514.3 2028.5
## + X34   1   1514.3 2028.5
## + X49   1   1514.3 2028.5
## + X25   1   1514.3 2028.5
## + X11   1   1514.3 2028.6
## + X70   1   1514.3 2028.6
## + X39   1   1514.4 2028.6
## + X3    1   1514.4 2028.6
## + X19   1   1514.4 2028.6
## + X26   1   1514.4 2028.6
## + X23   1   1514.4 2028.6
## + X29   1   1514.4 2028.6
## + X66   1   1514.4 2028.6
## + X74   1   1514.4 2028.6
## + X71   1   1514.4 2028.6
## - X47   1   1586.1 2083.7


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=2012.29
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X14 + X17 +
##     X18 + X20 + X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 +
##     X33 + X35 + X36 + X37 + X38 + X40 + X41 + X42 + X43 + X44 +
##     X45 + X46 + X47 + X48 + X50 + X51 + X52 + X53 + X55 + X57 +
##     X58 + X59 + X61 + X62 + X63 + X65 + X67 + X69 + X72 + X73 +
##     X75 + X76 + X78 + X79 + X80 + X82 + X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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```
##          Df Deviance    AIC
## - X8      1   1514.9 2004.2
## - X50     1   1514.9 2004.3
## - X63     1   1515.0 2004.4
## - X7      1   1515.1 2004.5
## - X43     1   1515.1 2004.5
## - X65     1   1515.2 2004.6
## - X83     1   1515.2 2004.6
## - X62     1   1515.4 2004.7
## - X37     1   1515.4 2004.8
## - X79     1   1515.5 2004.8
## - X20     1   1515.5 2004.9
## - X40     1   1515.5 2004.9
## - X53     1   1515.5 2004.9
## - X27     1   1515.5 2004.9
## - X48     1   1515.7 2005.0
## - X21     1   1515.7 2005.0
## - X35     1   1515.7 2005.0
## - X31     1   1515.7 2005.0
## - X44     1   1515.7 2005.1
## - X30     1   1515.7 2005.1
## - X36     1   1515.8 2005.1
## - X75     1   1515.8 2005.1
## - X45     1   1515.8 2005.1
## - X9      1   1515.8 2005.1
## - X69     1   1515.8 2005.1
## - X2      1   1515.9 2005.2
## - X67     1   1515.9 2005.3
## - X61     1   1515.9 2005.3
## - X78     1   1516.0 2005.4
## - X72     1   1516.0 2005.4
## - X24     1   1516.0 2005.4
## - X80     1   1516.2 2005.6
## - X51     1   1516.2 2005.6
## - X42     1   1516.3 2005.7
```

```
## - X1    1   1516.3 2005.7
## - X57   1   1516.4 2005.7
## - X5    1   1516.4 2005.7
## - X14   1   1516.5 2005.9
## - X46   1   1516.6 2005.9
## - X10   1   1516.6 2006.0
## - X58   1   1516.7 2006.0
## - X76   1   1516.8 2006.1
## - X28   1   1516.8 2006.2
## - X38   1   1517.0 2006.4
## - X41   1   1517.2 2006.5
## - X52   1   1517.4 2006.7
## - X33   1   1517.5 2006.8
## - X6    1   1517.6 2007.0
## - X73   1   1517.9 2007.2
## - X55   1   1518.3 2007.6
## - X32   1   1518.5 2007.9
## - X85   1   1518.7 2008.1
## - X4    1   1519.1 2008.4
## - X22   1   1519.1 2008.4
## - X17   1   1520.9 2010.2
## - X82   1   1521.4 2010.8
## - X59   1   1521.9 2011.2
## <none>      1514.6 2012.3
## - X18   1   1528.0 2017.3
## + X12   1   1514.4 2020.3
## + X81   1   1514.4 2020.3
## + X60   1   1514.4 2020.3
## + X54   1   1514.4 2020.3
## + X84   1   1514.4 2020.4
## + X56   1   1514.5 2020.4
## + X77   1   1514.5 2020.5
## + X34   1   1514.5 2020.5
## + X64   1   1514.5 2020.5
## + X68   1   1514.5 2020.5
## + X16   1   1514.5 2020.5
## + X13   1   1514.5 2020.5
## + X49   1   1514.6 2020.5
## + X15   1   1514.6 2020.5
## + X11   1   1514.6 2020.5
## + X25   1   1514.6 2020.5
## + X70   1   1514.6 2020.5
## + X39   1   1514.6 2020.5
## + X19   1   1514.6 2020.6
## + X3    1   1514.6 2020.6
## + X23   1   1514.6 2020.6
## + X29   1   1514.6 2020.6
## + X26   1   1514.6 2020.6
## + X66   1   1514.6 2020.6
## + X74   1   1514.6 2020.6
## + X71   1   1514.6 2020.6
## - X47   1   1586.3 2075.7

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
##
## Step:  AIC=2004.24
## X86 ~ X1 + X2 + X4 + X5 + X6 + X7 + X9 + X10 + X14 + X17 + X18 +
##     X20 + X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 +
##     X35 + X36 + X37 + X38 + X40 + X41 + X42 + X43 + X44 + X45 +
##     X46 + X47 + X48 + X50 + X51 + X52 + X53 + X55 + X57 + X58 +
##     X59 + X61 + X62 + X63 + X65 + X67 + X69 + X72 + X73 + X75 +
##     X76 + X78 + X79 + X80 + X82 + X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X7     1   1515.1 1996.2
## - X50    1   1515.2 1996.2
## - X63    1   1515.3 1996.3
## - X43    1   1515.4 1996.4
## - X65    1   1515.4 1996.5
## - X83    1   1515.5 1996.5
## - X62    1   1515.7 1996.7
## - X40    1   1515.7 1996.7
## - X37    1   1515.7 1996.8
## - X20    1   1515.8 1996.8
## - X79    1   1515.8 1996.8
```

```
## - X27   1   1515.8 1996.8
## - X53   1   1515.8 1996.8
## - X48   1   1515.9 1996.9
## - X35   1   1515.9 1997.0
## - X44   1   1515.9 1997.0
## - X21   1   1515.9 1997.0
## - X31   1   1516.0 1997.0
## - X30   1   1516.0 1997.0
## - X69   1   1516.0 1997.1
## - X36   1   1516.0 1997.1
## - X75   1   1516.0 1997.1
## - X45   1   1516.1 1997.1
## - X2    1   1516.1 1997.1
## - X9    1   1516.1 1997.2
## - X67   1   1516.2 1997.2
## - X61   1   1516.2 1997.2
## - X24   1   1516.2 1997.3
## - X72   1   1516.3 1997.3
## - X78   1   1516.3 1997.3
## - X51   1   1516.5 1997.5
## - X80   1   1516.5 1997.6
## - X1    1   1516.6 1997.6
## - X57   1   1516.6 1997.7
## - X5    1   1516.6 1997.7
## - X42   1   1516.6 1997.7
## - X14   1   1516.7 1997.8
## - X46   1   1516.8 1997.8
## - X58   1   1517.0 1998.0
## - X76   1   1517.0 1998.0
## - X10   1   1517.0 1998.0
## - X28   1   1517.0 1998.1
## - X38   1   1517.3 1998.4
## - X41   1   1517.4 1998.5
## - X33   1   1517.6 1998.7
## - X52   1   1517.7 1998.7
## - X6    1   1518.1 1999.1
## - X73   1   1518.2 1999.2
## - X55   1   1518.5 1999.5
## - X32   1   1518.8 1999.9
## - X85   1   1519.0 2000.1
## - X4    1   1519.2 2000.2
## - X22   1   1519.2 2000.2
## - X17   1   1521.1 2002.1
## - X82   1   1521.7 2002.7
## - X59   1   1522.2 2003.2
## <none>      1514.9 2004.2
## - X18   1   1528.0 2009.1
## + X8    1   1514.6 2012.3
## + X81   1   1514.7 2012.3
## + X60   1   1514.7 2012.3
## + X54   1   1514.7 2012.3
## + X84   1   1514.7 2012.3
## + X12   1   1514.7 2012.3
## + X56   1   1514.7 2012.3
```

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## + X77  1   1514.8 2012.4
## + X68  1   1514.8 2012.4
## + X16  1   1514.8 2012.4
## + X64  1   1514.8 2012.4
## + X13  1   1514.8 2012.4
## + X49  1   1514.8 2012.5
## + X34  1   1514.8 2012.5
## + X11  1   1514.8 2012.5
## + X39  1   1514.8 2012.5
## + X15  1   1514.8 2012.5
## + X25  1   1514.8 2012.5
## + X70  1   1514.8 2012.5
## + X23  1   1514.9 2012.5
## + X19  1   1514.9 2012.5
## + X3   1   1514.9 2012.5
## + X29  1   1514.9 2012.5
## + X66  1   1514.9 2012.5
## + X26  1   1514.9 2012.5
## + X74  1   1514.9 2012.5
## + X71  1   1514.9 2012.5
## - X47  1   1586.5 2067.6


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1996.17
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X20 +
##     X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 +
##     X36 + X37 + X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 +
##     X47 + X48 + X50 + X51 + X52 + X53 + X55 + X57 + X58 + X59 +
##     X61 + X62 + X63 + X65 + X67 + X69 + X72 + X73 + X75 + X76 +
##     X78 + X79 + X80 + X82 + X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X50     1   1515.4 1988.2
## - X63     1   1515.5 1988.2
## - X43     1   1515.6 1988.4
## - X65     1   1515.7 1988.4
## - X83     1   1515.7 1988.5
## - X37     1   1515.9 1988.7
## - X62     1   1515.9 1988.7
## - X40     1   1515.9 1988.7
## - X20     1   1516.0 1988.7
## - X27     1   1516.0 1988.7
## - X79     1   1516.0 1988.8
## - X53     1   1516.0 1988.8
## - X48     1   1516.1 1988.8
## - X44     1   1516.2 1988.9
## - X31     1   1516.2 1988.9
## - X21     1   1516.2 1988.9
## - X35     1   1516.2 1988.9
## - X30     1   1516.2 1989.0
## - X69     1   1516.2 1989.0
## - X2      1   1516.2 1989.0
## - X45     1   1516.3 1989.0
## - X36     1   1516.3 1989.0
## - X75     1   1516.3 1989.0
## - X67     1   1516.4 1989.1
## - X61     1   1516.4 1989.2
## - X24     1   1516.5 1989.2
## - X72     1   1516.5 1989.3
## - X78     1   1516.5 1989.3
## - X9      1   1516.5 1989.3
## - X51     1   1516.7 1989.5
## - X80     1   1516.8 1989.5
## - X1      1   1516.8 1989.6
## - X5      1   1516.8 1989.6
## - X42     1   1516.8 1989.6
## - X57     1   1516.8 1989.6
## - X14     1   1516.9 1989.7
## - X46     1   1517.0 1989.8
## - X28     1   1517.1 1989.9
## - X10     1   1517.2 1989.9
## - X58     1   1517.2 1990.0
```

```
## - X76    1   1517.3 1990.0
## - X38    1   1517.5 1990.2
## - X41    1   1517.6 1990.4
## - X33    1   1517.8 1990.6
## - X52    1   1517.9 1990.7
## - X73    1   1518.4 1991.2
## - X6     1   1518.6 1991.4
## - X55    1   1518.7 1991.5
## - X32    1   1519.2 1992.0
## - X85    1   1519.4 1992.1
## - X22    1   1519.4 1992.2
## - X4     1   1519.5 1992.2
## - X17    1   1521.4 1994.1
## - X82    1   1521.9 1994.7
## - X59    1   1522.4 1995.1
## <none>       1515.1 1996.2
## - X18    1   1528.3 2001.1
## + X54    1   1514.9 2004.2
## + X81    1   1514.9 2004.2
## + X60    1   1514.9 2004.2
## + X7     1   1514.9 2004.2
## + X84    1   1514.9 2004.2
## + X12    1   1514.9 2004.3
## + X56    1   1515.0 2004.3
## + X77    1   1515.0 2004.3
## + X68    1   1515.0 2004.3
## + X16    1   1515.0 2004.3
## + X64    1   1515.0 2004.4
## + X49    1   1515.0 2004.4
## + X34    1   1515.0 2004.4
## + X13    1   1515.0 2004.4
## + X39    1   1515.0 2004.4
## + X11    1   1515.1 2004.4
## + X15    1   1515.1 2004.4
## + X25    1   1515.1 2004.4
## + X70    1   1515.1 2004.4
## + X19    1   1515.1 2004.5
## + X23    1   1515.1 2004.5
## + X8     1   1515.1 2004.5
## + X3     1   1515.1 2004.5
## + X29    1   1515.1 2004.5
## + X66    1   1515.1 2004.5
## + X26    1   1515.1 2004.5
## + X74    1   1515.1 2004.5
## + X71    1   1515.1 2004.5
## - X47    1   1586.6 2059.3


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1988.19
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X20 +
##     X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 +
##     X36 + X37 + X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 +
```

```
##       X47 + X48 + X51 + X52 + X53 + X55 + X57 + X58 + X59 + X61 +
##       X62 + X63 + X65 + X67 + X69 + X72 + X73 + X75 + X76 + X78 +
##       X79 + X80 + X82 + X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X63   1   1515.8 1980.3
## - X43   1   1515.9 1980.4
## - X65   1   1516.0 1980.4
## - X83   1   1516.0 1980.5
## - X62   1   1516.2 1980.7
## - X37   1   1516.2 1980.7
## - X40   1   1516.2 1980.7
## - X27   1   1516.3 1980.8
## - X20   1   1516.3 1980.8
## - X79   1   1516.3 1980.8
## - X53   1   1516.3 1980.8
## - X48   1   1516.4 1980.9
## - X44   1   1516.5 1980.9
## - X31   1   1516.5 1980.9
## - X35   1   1516.5 1981.0
## - X30   1   1516.5 1981.0
```

```
## - X21     1    1516.5 1981.0
## - X45     1    1516.6 1981.0
## - X2      1    1516.6 1981.0
## - X36     1    1516.6 1981.1
## - X75     1    1516.6 1981.1
## - X67     1    1516.7 1981.2
## - X69     1    1516.7 1981.2
## - X61     1    1516.8 1981.2
## - X72     1    1516.8 1981.2
## - X24     1    1516.8 1981.2
## - X78     1    1516.8 1981.3
## - X9      1    1516.8 1981.3
## - X51     1    1517.0 1981.5
## - X80     1    1517.0 1981.5
## - X1      1    1517.1 1981.6
## - X42     1    1517.1 1981.6
## - X5      1    1517.1 1981.6
## - X57     1    1517.2 1981.6
## - X14     1    1517.3 1981.7
## - X46     1    1517.3 1981.8
## - X28     1    1517.4 1981.9
## - X10     1    1517.5 1981.9
## - X58     1    1517.5 1982.0
## - X76     1    1517.7 1982.1
## - X38     1    1517.8 1982.2
## - X41     1    1518.0 1982.4
## - X33     1    1518.1 1982.6
## - X52     1    1518.2 1982.7
## - X73     1    1518.7 1983.2
## - X6      1    1518.9 1983.4
## - X55     1    1519.1 1983.6
## - X32     1    1519.5 1984.0
## - X22     1    1519.7 1984.2
## - X85     1    1519.7 1984.2
## - X4      1    1519.8 1984.3
## - X17     1    1521.7 1986.1
## - X82     1    1522.2 1986.7
## - X59     1    1522.7 1987.1
## <none>         1515.4 1988.2
## - X18     1    1528.6 1993.1
## + X50     1    1515.1 1996.2
## + X71     1    1515.1 1996.2
## + X54     1    1515.2 1996.2
## + X81     1    1515.2 1996.2
## + X60     1    1515.2 1996.2
## + X7      1    1515.2 1996.2
## + X84     1    1515.2 1996.3
## + X12     1    1515.3 1996.3
## + X56     1    1515.3 1996.3
## + X77     1    1515.3 1996.4
## + X16     1    1515.3 1996.4
## + X68     1    1515.3 1996.4
## + X64     1    1515.3 1996.4
## + X49     1    1515.3 1996.4
```

```
## + X13   1   1515.3 1996.4
## + X39   1   1515.3 1996.4
## + X34   1   1515.3 1996.4
## + X11   1   1515.4 1996.4
## + X15   1   1515.4 1996.4
## + X70   1   1515.4 1996.4
## + X25   1   1515.4 1996.4
## + X23   1   1515.4 1996.5
## + X19   1   1515.4 1996.5
## + X3    1   1515.4 1996.5
## + X8    1   1515.4 1996.5
## + X29   1   1515.4 1996.5
## + X66   1   1515.4 1996.5
## + X26   1   1515.4 1996.5
## + X74   1   1515.4 1996.5
## - X47   1   1587.0 2051.5


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1980.26
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X20 +
##     X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 +
##     X36 + X37 + X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 +
##     X47 + X48 + X51 + X52 + X53 + X55 + X57 + X58 + X59 + X61 +
##     X62 + X65 + X67 + X69 + X72 + X73 + X75 + X76 + X78 + X79 +
##     X80 + X82 + X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X65   1    1516.3 1972.5
## - X43   1    1516.3 1972.5
## - X83   1    1516.4 1972.6
## - X62   1    1516.5 1972.7
## - X37   1    1516.6 1972.8
## - X40   1    1516.6 1972.8
## - X27   1    1516.6 1972.8
## - X20   1    1516.7 1972.8
## - X79   1    1516.7 1972.8
## - X53   1    1516.7 1972.9
## - X48   1    1516.8 1972.9
## - X44   1    1516.8 1973.0
## - X31   1    1516.8 1973.0
## - X21   1    1516.9 1973.0
## - X30   1    1516.9 1973.0
## - X2    1    1516.9 1973.1
## - X75   1    1516.9 1973.1
## - X35   1    1517.0 1973.1
## - X45   1    1517.0 1973.2
## - X36   1    1517.1 1973.2
## - X67   1    1517.1 1973.2
## - X69   1    1517.1 1973.3
## - X24   1    1517.2 1973.4
## - X72   1    1517.2 1973.4
## - X61   1    1517.2 1973.4
## - X9    1    1517.2 1973.4
## - X80   1    1517.4 1973.6
## - X78   1    1517.4 1973.6
## - X51   1    1517.4 1973.6
## - X1    1    1517.5 1973.6
## - X5    1    1517.5 1973.6
## - X42   1    1517.5 1973.7
## - X14   1    1517.6 1973.8
## - X46   1    1517.7 1973.9
## - X57   1    1517.7 1973.9
## - X28   1    1517.8 1974.0
## - X10   1    1517.8 1974.0
## - X58   1    1517.9 1974.1
## - X76   1    1518.1 1974.2
## - X38   1    1518.2 1974.3
## - X41   1    1518.3 1974.5
## - X33   1    1518.4 1974.6
## - X52   1    1518.6 1974.8
## - X73   1    1519.1 1975.3
## - X6    1    1519.3 1975.4
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## - X55   1   1519.5 1975.7
## - X32   1   1519.8 1976.0
## - X85   1   1520.0 1976.2
## - X22   1   1520.2 1976.3
## - X4    1   1520.2 1976.4
## - X17   1   1522.1 1978.3
## - X82   1   1522.7 1978.9
## - X59   1   1522.9 1979.1
## <none>      1515.8 1980.3
## - X18   1   1529.0 1985.2
## + X63   1   1515.4 1988.2
## + X50   1   1515.5 1988.2
## + X71   1   1515.5 1988.2
## + X54   1   1515.5 1988.3
## + X81   1   1515.6 1988.3
## + X60   1   1515.6 1988.3
## + X7    1   1515.6 1988.3
## + X56   1   1515.6 1988.4
## + X12   1   1515.6 1988.4
## + X77   1   1515.7 1988.4
## + X84   1   1515.7 1988.4
## + X64   1   1515.7 1988.4
## + X16   1   1515.7 1988.5
## + X13   1   1515.7 1988.5
## + X39   1   1515.7 1988.5
## + X49   1   1515.7 1988.5
## + X34   1   1515.7 1988.5
## + X11   1   1515.7 1988.5
## + X15   1   1515.7 1988.5
## + X68   1   1515.7 1988.5
## + X25   1   1515.8 1988.5
## + X70   1   1515.8 1988.5
## + X8    1   1515.8 1988.5
## + X19   1   1515.8 1988.5
## + X3    1   1515.8 1988.5
## + X23   1   1515.8 1988.5
## + X29   1   1515.8 1988.5
## + X66   1   1515.8 1988.5
## + X26   1   1515.8 1988.5
## + X74   1   1515.8 1988.5
## - X47   1   1587.3 2043.5


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1972.49
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X20 +
##      X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 +
##      X36 + X37 + X38 + X40 + X41 + X42 + X43 + X44 + X45 + X46 +
##      X47 + X48 + X51 + X52 + X53 + X55 + X57 + X58 + X59 + X61 +
##      X62 + X67 + X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 +
##      X82 + X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X43    1   1516.9 1964.7
## - X83    1   1516.9 1964.8
## - X62    1   1517.1 1965.0
## - X37    1   1517.1 1965.0
## - X40    1   1517.1 1965.0
## - X27    1   1517.2 1965.0
## - X79    1   1517.2 1965.1
## - X53    1   1517.2 1965.1
## - X20    1   1517.2 1965.1
## - X48    1   1517.3 1965.2
## - X21    1   1517.4 1965.2
## - X31    1   1517.4 1965.3
## - X30    1   1517.4 1965.3
## - X2     1   1517.4 1965.3
## - X35    1   1517.5 1965.3
## - X75    1   1517.5 1965.3
## - X45    1   1517.5 1965.4
## - X67    1   1517.6 1965.5
## - X36    1   1517.6 1965.5
## - X69    1   1517.6 1965.5
## - X24    1   1517.7 1965.6
```

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## - X72    1    1517.8 1965.6
## - X61    1    1517.8 1965.6
## - X9     1    1517.8 1965.6
## - X51    1    1518.0 1965.8
## - X78    1    1518.0 1965.8
## - X42    1    1518.0 1965.9
## - X1     1    1518.0 1965.9
## - X5     1    1518.1 1965.9
## - X80    1    1518.1 1966.0
## - X14    1    1518.1 1966.0
## - X46    1    1518.2 1966.1
## - X57    1    1518.3 1966.1
## - X44    1    1518.3 1966.2
## - X28    1    1518.3 1966.2
## - X10    1    1518.4 1966.3
## - X58    1    1518.5 1966.4
## - X76    1    1518.6 1966.5
## - X38    1    1518.8 1966.6
## - X41    1    1518.9 1966.8
## - X33    1    1519.0 1966.9
## - X52    1    1519.1 1967.0
## - X73    1    1519.6 1967.4
## - X6     1    1519.7 1967.6
## - X55    1    1520.0 1967.9
## - X32    1    1520.4 1968.3
## - X85    1    1520.6 1968.5
## - X22    1    1520.6 1968.5
## - X4     1    1520.8 1968.7
## - X17    1    1522.6 1970.5
## - X82    1    1523.2 1971.1
## - X59    1    1523.4 1971.3
## <none>        1516.3 1972.5
## - X18    1    1529.5 1977.4
## + X65    1    1515.8 1980.3
## + X63    1    1516.0 1980.4
## + X50    1    1516.0 1980.5
## + X71    1    1516.0 1980.5
## + X54    1    1516.1 1980.5
## + X81    1    1516.1 1980.5
## + X60    1    1516.1 1980.5
## + X7     1    1516.1 1980.6
## + X12    1    1516.2 1980.6
## + X56    1    1516.2 1980.6
## + X77    1    1516.2 1980.7
## + X84    1    1516.2 1980.7
## + X64    1    1516.2 1980.7
## + X16    1    1516.2 1980.7
## + X39    1    1516.2 1980.7
## + X49    1    1516.2 1980.7
## + X13    1    1516.2 1980.7
## + X34    1    1516.2 1980.7
## + X11    1    1516.3 1980.7
## + X68    1    1516.3 1980.7
## + X25    1    1516.3 1980.7
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```
## + X15   1   1516.3 1980.8
## + X70   1   1516.3 1980.8
## + X8    1   1516.3 1980.8
## + X19   1   1516.3 1980.8
## + X23   1   1516.3 1980.8
## + X3    1   1516.3 1980.8
## + X29   1   1516.3 1980.8
## + X66   1   1516.3 1980.8
## + X26   1   1516.3 1980.8
## + X74   1   1516.3 1980.8
## - X47   1   1588.3 2036.2


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1964.74
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X20 +
##     X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 +
##     X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 +
##     X48 + X51 + X52 + X53 + X55 + X57 + X58 + X59 + X61 + X62 +
##     X67 + X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 + X82 +
##     X83 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X83   1   1517.4 1957.0
## - X37   1   1517.5 1957.1
## - X62   1   1517.6 1957.2
## - X20   1   1517.6 1957.2
## - X27   1   1517.7 1957.2
## - X40   1   1517.7 1957.3
## - X79   1   1517.8 1957.3
## - X53   1   1517.8 1957.4
## - X48   1   1517.8 1957.4
## - X31   1   1517.9 1957.5
## - X30   1   1518.0 1957.5
## - X21   1   1518.0 1957.6
## - X2    1   1518.0 1957.6
## - X75   1   1518.0 1957.6
## - X45   1   1518.0 1957.6
## - X35   1   1518.0 1957.6
## - X67   1   1518.1 1957.7
## - X24   1   1518.1 1957.7
## - X36   1   1518.2 1957.7
## - X69   1   1518.2 1957.7
## - X61   1   1518.3 1957.8
## - X72   1   1518.3 1957.9
## - X9    1   1518.3 1957.9
## - X1    1   1518.3 1957.9
## - X5    1   1518.5 1958.0
## - X51   1   1518.5 1958.1
## - X78   1   1518.5 1958.1
## - X42   1   1518.6 1958.2
## - X80   1   1518.7 1958.3
## - X46   1   1518.8 1958.3
## - X44   1   1518.8 1958.4
## - X57   1   1518.8 1958.4
## - X28   1   1518.9 1958.5
## - X14   1   1518.9 1958.5
## - X10   1   1519.0 1958.6
## - X58   1   1519.0 1958.6
## - X38   1   1519.2 1958.8
## - X76   1   1519.2 1958.8
## - X41   1   1519.3 1958.9
## - X52   1   1519.7 1959.3
## - X33   1   1519.9 1959.4
## - X73   1   1520.2 1959.8
## - X6    1   1520.2 1959.8
## - X55   1   1520.6 1960.2
## - X4    1   1521.1 1960.7
## - X22   1   1521.1 1960.7
## - X85   1   1521.2 1960.8
## - X32   1   1521.3 1960.9
## - X17   1   1523.1 1962.7
## - X82   1   1523.8 1963.3
```

```
## - X59    1    1524.4 1964.0
## <none>        1516.9 1964.7
## - X18    1    1530.3 1969.9
## + X43    1    1516.3 1972.5
## + X65    1    1516.3 1972.5
## + X63    1    1516.5 1972.6
## + X50    1    1516.6 1972.7
## + X71    1    1516.6 1972.7
## + X54    1    1516.6 1972.8
## + X81    1    1516.6 1972.8
## + X60    1    1516.6 1972.8
## + X7     1    1516.6 1972.8
## + X56    1    1516.7 1972.9
## + X84    1    1516.7 1972.9
## + X12    1    1516.7 1972.9
## + X77    1    1516.7 1972.9
## + X13    1    1516.7 1972.9
## + X16    1    1516.8 1972.9
## + X64    1    1516.8 1972.9
## + X15    1    1516.8 1973.0
## + X49    1    1516.8 1973.0
## + X39    1    1516.8 1973.0
## + X25    1    1516.8 1973.0
## + X34    1    1516.8 1973.0
## + X68    1    1516.8 1973.0
## + X70    1    1516.8 1973.0
## + X11    1    1516.8 1973.0
## + X3     1    1516.8 1973.0
## + X8     1    1516.8 1973.0
## + X23    1    1516.8 1973.0
## + X19    1    1516.8 1973.0
## + X26    1    1516.9 1973.0
## + X66    1    1516.9 1973.0
## + X29    1    1516.9 1973.0
## + X74    1    1516.9 1973.0
## - X47    1    1588.5 2028.1


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1957.03
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X20 +
##     X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 +
##     X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 +
##     X48 + X51 + X52 + X53 + X55 + X57 + X58 + X59 + X61 + X62 +
##     X67 + X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 + X82 +
##     X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X62   1   1517.6 1948.9
## - X37   1   1518.1 1949.3
## - X20   1   1518.2 1949.5
## - X40   1   1518.3 1949.5
## - X27   1   1518.3 1949.6
## - X79   1   1518.3 1949.6
## - X53   1   1518.3 1949.6
## - X48   1   1518.4 1949.7
## - X31   1   1518.5 1949.8
## - X30   1   1518.5 1949.8
## - X2    1   1518.6 1949.8
## - X45   1   1518.6 1949.9
## - X75   1   1518.6 1949.9
## - X21   1   1518.6 1949.9
## - X35   1   1518.6 1949.9
## - X67   1   1518.7 1950.0
## - X36   1   1518.7 1950.0
## - X24   1   1518.7 1950.0
## - X69   1   1518.7 1950.0
## - X61   1   1518.8 1950.1
## - X1    1   1518.9 1950.2
## - X72   1   1518.9 1950.2
## - X9    1   1518.9 1950.2
## - X5    1   1519.0 1950.3
## - X42   1   1519.1 1950.4
```

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## - X51     1    1519.1 1950.4
## - X78     1    1519.1 1950.4
## - X80     1    1519.3 1950.6
## - X46     1    1519.3 1950.6
## - X44     1    1519.4 1950.7
## - X57     1    1519.4 1950.7
## - X28     1    1519.5 1950.8
## - X14     1    1519.5 1950.8
## - X10     1    1519.5 1950.8
## - X38     1    1519.6 1950.9
## - X58     1    1519.6 1950.9
## - X76     1    1519.8 1951.1
## - X41     1    1519.8 1951.1
## - X52     1    1520.3 1951.6
## - X33     1    1520.5 1951.8
## - X73     1    1520.8 1952.0
## - X6      1    1520.8 1952.1
## - X55     1    1521.1 1952.4
## - X22     1    1521.6 1952.9
## - X4      1    1521.7 1953.0
## - X85     1    1521.9 1953.2
## - X32     1    1522.0 1953.2
## - X17     1    1523.7 1955.0
## - X82     1    1524.3 1955.6
## - X59     1    1524.8 1956.0
## <none>         1517.4 1957.0
## - X18     1    1530.9 1962.2
## + X83     1    1516.9 1964.7
## + X43     1    1516.9 1964.8
## + X65     1    1516.9 1964.8
## + X63     1    1517.0 1964.9
## + X50     1    1517.2 1965.0
## + X71     1    1517.2 1965.0
## + X7      1    1517.2 1965.1
## + X54     1    1517.2 1965.1
## + X81     1    1517.2 1965.1
## + X60     1    1517.2 1965.1
## + X56     1    1517.3 1965.2
## + X84     1    1517.3 1965.2
## + X12     1    1517.3 1965.2
## + X77     1    1517.3 1965.2
## + X16     1    1517.3 1965.2
## + X13     1    1517.3 1965.2
## + X64     1    1517.3 1965.2
## + X49     1    1517.4 1965.2
## + X34     1    1517.4 1965.3
## + X15     1    1517.4 1965.3
## + X25     1    1517.4 1965.3
## + X39     1    1517.4 1965.3
## + X70     1    1517.4 1965.3
## + X68     1    1517.4 1965.3
## + X11     1    1517.4 1965.3
## + X3      1    1517.4 1965.3
## + X8      1    1517.4 1965.3
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## + X19   1   1517.4 1965.3
## + X23   1   1517.4 1965.3
## + X26   1   1517.4 1965.3
## + X66   1   1517.4 1965.3
## + X29   1   1517.4 1965.3
## + X74   1   1517.4 1965.3
## - X47   1   1588.8 2020.0


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1948.93
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X20 +
##     X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 +
##     X36 + X37 + X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 +
##     X48 + X51 + X52 + X53 + X55 + X57 + X58 + X59 + X61 + X67 +
##     X69 + X72 + X73 + X75 + X76 + X78 + X79 + X80 + X82 + X85


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##        Df Deviance    AIC
## - X37   1   1518.3 1941.3
```

```
## - X20   1   1518.4 1941.4
## - X40   1   1518.5 1941.5
## - X27   1   1518.5 1941.5
## - X79   1   1518.5 1941.5
## - X53   1   1518.5 1941.5
## - X48   1   1518.6 1941.6
## - X31   1   1518.7 1941.7
## - X30   1   1518.7 1941.7
## - X45   1   1518.8 1941.8
## - X2    1   1518.8 1941.8
## - X35   1   1518.8 1941.8
## - X75   1   1518.8 1941.8
## - X21   1   1518.8 1941.8
## - X24   1   1518.9 1941.9
## - X36   1   1518.9 1941.9
## - X67   1   1518.9 1941.9
## - X69   1   1518.9 1941.9
## - X61   1   1519.0 1942.0
## - X72   1   1519.1 1942.1
## - X1    1   1519.1 1942.1
## - X9    1   1519.1 1942.1
## - X5    1   1519.2 1942.2
## - X51   1   1519.3 1942.3
## - X42   1   1519.3 1942.3
## - X78   1   1519.3 1942.3
## - X80   1   1519.5 1942.5
## - X46   1   1519.5 1942.5
## - X44   1   1519.6 1942.6
## - X57   1   1519.6 1942.6
## - X10   1   1519.7 1942.7
## - X14   1   1519.7 1942.7
## - X28   1   1519.7 1942.7
## - X58   1   1519.8 1942.8
## - X38   1   1519.8 1942.8
## - X76   1   1520.0 1943.0
## - X41   1   1520.1 1943.1
## - X52   1   1520.5 1943.5
## - X33   1   1520.8 1943.8
## - X73   1   1520.9 1943.9
## - X6    1   1520.9 1943.9
## - X55   1   1521.3 1944.3
## - X22   1   1521.8 1944.8
## - X4    1   1521.9 1944.9
## - X85   1   1522.1 1945.1
## - X32   1   1522.2 1945.2
## - X17   1   1523.9 1946.9
## - X82   1   1524.5 1947.5
## - X59   1   1524.9 1947.9
## <none>       1517.6 1948.9
## - X18   1   1531.3 1954.3
## + X43   1   1517.1 1956.7
## + X65   1   1517.1 1956.7
## + X63   1   1517.2 1956.8
## + X50   1   1517.4 1957.0
```

```
## + X71  1   1517.4 1957.0
## + X7   1   1517.4 1957.0
## + X54  1   1517.4 1957.0
## + X81  1   1517.4 1957.0
## + X60  1   1517.4 1957.0
## + X62  1   1517.4 1957.0
## + X56  1   1517.5 1957.1
## + X12  1   1517.5 1957.1
## + X84  1   1517.5 1957.1
## + X77  1   1517.5 1957.1
## + X13  1   1517.5 1957.1
## + X16  1   1517.5 1957.1
## + X64  1   1517.5 1957.1
## + X15  1   1517.6 1957.2
## + X34  1   1517.6 1957.2
## + X49  1   1517.6 1957.2
## + X25  1   1517.6 1957.2
## + X39  1   1517.6 1957.2
## + X68  1   1517.6 1957.2
## + X70  1   1517.6 1957.2
## + X11  1   1517.6 1957.2
## + X83  1   1517.6 1957.2
## + X3   1   1517.6 1957.2
## + X8   1   1517.6 1957.2
## + X23  1   1517.6 1957.2
## + X19  1   1517.6 1957.2
## + X26  1   1517.6 1957.2
## + X66  1   1517.6 1957.2
## + X29  1   1517.6 1957.2
## + X74  1   1517.6 1957.2
## - X47  1   1588.8 2011.8


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1941.27
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X20 +
##      X21 + X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 +
##      X36 + X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 + X48 +
##      X51 + X52 + X53 + X55 + X57 + X58 + X59 + X61 + X67 + X69 +
##      X72 + X73 + X75 + X76 + X78 + X79 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##          Df Deviance    AIC
## - X20     1   1519.0 1933.7
## - X79     1   1519.1 1933.8
## - X53     1   1519.1 1933.8
## - X27     1   1519.3 1934.0
## - X48     1   1519.3 1934.0
## - X31     1   1519.3 1934.0
## - X45     1   1519.3 1934.0
## - X30     1   1519.3 1934.0
## - X42     1   1519.3 1934.0
## - X75     1   1519.4 1934.1
## - X35     1   1519.4 1934.1
## - X2      1   1519.4 1934.1
## - X67     1   1519.5 1934.2
## - X21     1   1519.5 1934.2
## - X24     1   1519.5 1934.2
## - X36     1   1519.5 1934.2
## - X40     1   1519.6 1934.3
## - X69     1   1519.6 1934.3
## - X61     1   1519.7 1934.4
## - X72     1   1519.7 1934.4
## - X9      1   1519.7 1934.4
## - X1      1   1519.8 1934.5
## - X38     1   1519.8 1934.5
## - X5      1   1519.9 1934.6
## - X51     1   1520.0 1934.7
## - X78     1   1520.0 1934.7
## - X46     1   1520.1 1934.8
## - X80     1   1520.1 1934.8
## - X10     1   1520.2 1934.9
## - X57     1   1520.2 1934.9
## - X44     1   1520.3 1935.0
```

```
## - X58     1    1520.4 1935.1
## - X14     1    1520.4 1935.1
## - X41     1    1520.4 1935.1
## - X28     1    1520.4 1935.2
## - X76     1    1520.7 1935.4
## - X52     1    1521.0 1935.7
## - X33     1    1521.3 1936.0
## - X73     1    1521.5 1936.2
## - X6      1    1521.5 1936.2
## - X55     1    1522.0 1936.7
## - X22     1    1522.5 1937.2
## - X85     1    1522.7 1937.4
## - X32     1    1522.7 1937.4
## - X4      1    1523.1 1937.8
## - X17     1    1524.3 1939.0
## - X82     1    1525.2 1939.9
## - X59     1    1525.6 1940.3
## <none>         1518.3 1941.3
## - X18     1    1531.5 1946.2
## + X37     1    1517.6 1948.9
## + X39     1    1517.7 1949.0
## + X65     1    1517.8 1949.0
## + X43     1    1517.8 1949.1
## + X63     1    1517.9 1949.2
## + X50     1    1518.0 1949.3
## + X71     1    1518.0 1949.3
## + X54     1    1518.0 1949.3
## + X62     1    1518.1 1949.3
## + X81     1    1518.1 1949.4
## + X60     1    1518.1 1949.4
## + X7      1    1518.1 1949.4
## + X56     1    1518.1 1949.4
## + X12     1    1518.1 1949.4
## + X84     1    1518.1 1949.4
## + X77     1    1518.2 1949.4
## + X16     1    1518.2 1949.5
## + X49     1    1518.2 1949.5
## + X25     1    1518.2 1949.5
## + X34     1    1518.2 1949.5
## + X68     1    1518.2 1949.5
## + X11     1    1518.2 1949.5
## + X70     1    1518.2 1949.5
## + X64     1    1518.2 1949.5
## + X13     1    1518.2 1949.5
## + X83     1    1518.2 1949.5
## + X15     1    1518.3 1949.5
## + X23     1    1518.3 1949.6
## + X8      1    1518.3 1949.6
## + X3      1    1518.3 1949.6
## + X26     1    1518.3 1949.6
## + X66     1    1518.3 1949.6
## + X29     1    1518.3 1949.6
## + X19     1    1518.3 1949.6
## + X74     1    1518.3 1949.6
```

```
## - X47   1   1589.5 2004.2


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1933.7
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X21 +
##      X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 +
##      X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 + X48 + X51 +
##      X52 + X53 + X55 + X57 + X58 + X59 + X61 + X67 + X69 + X72 +
##      X73 + X75 + X76 + X78 + X79 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##        Df Deviance    AIC
## - X79   1   1519.8 1926.2
## - X53   1   1519.9 1926.3
## - X27   1   1520.0 1926.4
## - X2    1   1520.0 1926.4
## - X31   1   1520.1 1926.5
## - X48   1   1520.1 1926.5
## - X30   1   1520.1 1926.5
```

```
## - X75    1    1520.1 1926.5
## - X45    1    1520.1 1926.5
## - X21    1    1520.1 1926.5
## - X24    1    1520.1 1926.5
## - X42    1    1520.1 1926.5
## - X67    1    1520.2 1926.6
## - X35    1    1520.2 1926.6
## - X40    1    1520.2 1926.6
## - X36    1    1520.3 1926.7
## - X61    1    1520.4 1926.8
## - X69    1    1520.4 1926.8
## - X72    1    1520.5 1926.9
## - X9     1    1520.6 1927.0
## - X38    1    1520.6 1927.0
## - X1     1    1520.6 1927.0
## - X78    1    1520.7 1927.1
## - X5     1    1520.7 1927.1
## - X51    1    1520.7 1927.1
## - X46    1    1520.8 1927.2
## - X80    1    1520.8 1927.2
## - X14    1    1520.9 1927.3
## - X10    1    1520.9 1927.3
## - X57    1    1520.9 1927.3
## - X44    1    1521.0 1927.4
## - X41    1    1521.1 1927.5
## - X58    1    1521.1 1927.5
## - X28    1    1521.2 1927.6
## - X76    1    1521.4 1927.8
## - X52    1    1521.8 1928.2
## - X33    1    1522.0 1928.4
## - X73    1    1522.3 1928.7
## - X6     1    1522.4 1928.8
## - X55    1    1522.8 1929.2
## - X22    1    1522.8 1929.2
## - X32    1    1523.5 1929.9
## - X85    1    1523.5 1929.9
## - X4     1    1524.0 1930.4
## - X17    1    1525.6 1932.0
## - X82    1    1525.9 1932.3
## - X59    1    1526.3 1932.7
## <none>        1519.0 1933.7
## - X18    1    1533.5 1939.9
## + X20    1    1518.3 1941.3
## + X37    1    1518.4 1941.4
## + X65    1    1518.4 1941.4
## + X39    1    1518.5 1941.5
## + X63    1    1518.6 1941.6
## + X43    1    1518.7 1941.7
## + X50    1    1518.7 1941.7
## + X71    1    1518.7 1941.7
## + X54    1    1518.8 1941.8
## + X7     1    1518.8 1941.8
## + X81    1    1518.8 1941.8
## + X60    1    1518.8 1941.8
```

```
## + X62   1   1518.8 1941.8
## + X56   1   1518.8 1941.8
## + X12   1   1518.8 1941.8
## + X77   1   1518.9 1941.9
## + X84   1   1518.9 1941.9
## + X16   1   1518.9 1941.9
## + X19   1   1518.9 1941.9
## + X34   1   1518.9 1941.9
## + X49   1   1518.9 1941.9
## + X68   1   1518.9 1941.9
## + X64   1   1518.9 1941.9
## + X13   1   1518.9 1941.9
## + X70   1   1519.0 1942.0
## + X11   1   1519.0 1942.0
## + X83   1   1519.0 1942.0
## + X23   1   1519.0 1942.0
## + X15   1   1519.0 1942.0
## + X25   1   1519.0 1942.0
## + X8    1   1519.0 1942.0
## + X29   1   1519.0 1942.0
## + X26   1   1519.0 1942.0
## + X3    1   1519.0 1942.0
## + X66   1   1519.0 1942.0
## + X74   1   1519.0 1942.0
## - X47   1   1590.3 1996.7


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1926.22
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X21 +
##      X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 +
##      X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 + X48 + X51 +
##      X52 + X53 + X55 + X57 + X58 + X59 + X61 + X67 + X69 + X72 +
##      X73 + X75 + X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X53    1   1520.7 1918.8
## - X2     1   1520.8 1918.9
## - X27    1   1520.8 1919.0
## - X31    1   1520.9 1919.0
## - X48    1   1520.9 1919.0
## - X30    1   1520.9 1919.0
## - X75    1   1520.9 1919.0
## - X24    1   1521.0 1919.1
## - X40    1   1521.0 1919.1
## - X42    1   1521.0 1919.1
## - X67    1   1521.0 1919.1
## - X35    1   1521.0 1919.1
## - X21    1   1521.1 1919.2
## - X36    1   1521.1 1919.2
## - X69    1   1521.2 1919.3
## - X9     1   1521.2 1919.3
## - X61    1   1521.2 1919.3
## - X38    1   1521.3 1919.4
## - X72    1   1521.3 1919.4
## - X1     1   1521.4 1919.5
## - X78    1   1521.5 1919.6
## - X5     1   1521.5 1919.6
## - X51    1   1521.5 1919.6
## - X46    1   1521.6 1919.7
## - X14    1   1521.6 1919.8
## - X80    1   1521.7 1919.8
## - X44    1   1521.7 1919.8
## - X57    1   1521.8 1919.9
## - X10    1   1521.8 1919.9
## - X45    1   1521.8 1919.9
## - X28    1   1522.0 1920.1
## - X41    1   1522.1 1920.2
## - X76    1   1522.2 1920.3
## - X58    1   1522.6 1920.8
## - X52    1   1522.7 1920.8
## - X33    1   1522.9 1921.0
## - X73    1   1523.1 1921.2
```

```
## - X6    1   1523.2 1921.3
## - X55   1   1523.5 1921.6
## - X22   1   1523.6 1921.7
## - X32   1   1524.2 1922.3
## - X85   1   1524.3 1922.4
## - X4    1   1524.8 1922.9
## - X17   1   1526.4 1924.5
## - X82   1   1526.7 1924.8
## - X59   1   1527.2 1925.3
## <none>      1519.8 1926.2
## - X18   1   1534.2 1932.3
## + X79   1   1519.0 1933.7
## + X20   1   1519.1 1933.8
## + X37   1   1519.2 1933.9
## + X65   1   1519.2 1933.9
## + X39   1   1519.3 1934.0
## + X63   1   1519.4 1934.1
## + X43   1   1519.5 1934.2
## + X50   1   1519.5 1934.2
## + X71   1   1519.5 1934.2
## + X54   1   1519.6 1934.3
## + X7    1   1519.6 1934.3
## + X81   1   1519.6 1934.3
## + X60   1   1519.6 1934.3
## + X62   1   1519.6 1934.3
## + X56   1   1519.6 1934.3
## + X12   1   1519.7 1934.3
## + X77   1   1519.7 1934.4
## + X84   1   1519.7 1934.4
## + X16   1   1519.7 1934.4
## + X34   1   1519.7 1934.4
## + X19   1   1519.7 1934.4
## + X49   1   1519.7 1934.4
## + X68   1   1519.7 1934.4
## + X64   1   1519.7 1934.4
## + X13   1   1519.8 1934.5
## + X66   1   1519.8 1934.5
## + X70   1   1519.8 1934.5
## + X11   1   1519.8 1934.5
## + X23   1   1519.8 1934.5
## + X83   1   1519.8 1934.5
## + X15   1   1519.8 1934.5
## + X25   1   1519.8 1934.5
## + X26   1   1519.8 1934.5
## + X8    1   1519.8 1934.5
## + X29   1   1519.8 1934.5
## + X3    1   1519.8 1934.5
## + X74   1   1519.8 1934.5
## - X47   1   1590.9 1989.0


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1918.78
```

```
## X86 ~ X1 + X2 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X21 +
##     X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 +
##     X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 + X48 + X51 +
##     X52 + X55 + X57 + X58 + X59 + X61 + X67 + X69 + X72 + X73 +
##     X75 + X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##         Df Deviance    AIC
## - X2     1   1521.7 1911.5
## - X27    1   1521.7 1911.5
## - X31    1   1521.7 1911.5
## - X30    1   1521.8 1911.6
## - X67    1   1521.8 1911.6
## - X48    1   1521.8 1911.6
## - X40    1   1521.8 1911.7
## - X42    1   1521.9 1911.7
## - X24    1   1521.9 1911.7
## - X35    1   1521.9 1911.7
## - X21    1   1521.9 1911.8
## - X75    1   1522.0 1911.8
## - X36    1   1522.0 1911.8
## - X9     1   1522.1 1911.9
## - X61    1   1522.1 1911.9
## - X69    1   1522.1 1912.0
```

```
## - X38      1   1522.2 1912.0
## - X72      1   1522.3 1912.1
## - X1       1   1522.3 1912.1
## - X78      1   1522.3 1912.2
## - X5       1   1522.4 1912.2
## - X46      1   1522.4 1912.2
## - X51      1   1522.4 1912.2
## - X80      1   1522.5 1912.3
## - X14      1   1522.5 1912.3
## - X44      1   1522.6 1912.4
## - X57      1   1522.6 1912.4
## - X10      1   1522.6 1912.4
## - X45      1   1522.8 1912.6
## - X28      1   1522.8 1912.6
## - X41      1   1523.0 1912.8
## - X76      1   1523.1 1912.9
## - X58      1   1523.5 1913.3
## - X52      1   1523.6 1913.4
## - X33      1   1523.7 1913.6
## - X6       1   1524.1 1914.0
## - X73      1   1524.2 1914.0
## - X55      1   1524.4 1914.2
## - X22      1   1524.5 1914.3
## - X32      1   1525.0 1914.8
## - X85      1   1525.2 1915.0
## - X4       1   1525.6 1915.4
## - X17      1   1527.2 1917.0
## - X82      1   1527.6 1917.4
## - X59      1   1527.9 1917.7
## <none>         1520.7 1918.8
## - X18      1   1535.0 1924.8
## + X53      1   1519.8 1926.2
## + X74      1   1519.8 1926.2
## + X79      1   1519.9 1926.3
## + X20      1   1520.0 1926.4
## + X65      1   1520.1 1926.5
## + X37      1   1520.1 1926.5
## + X39      1   1520.2 1926.6
## + X63      1   1520.3 1926.7
## + X50      1   1520.3 1926.8
## + X71      1   1520.3 1926.8
## + X43      1   1520.4 1926.8
## + X54      1   1520.4 1926.8
## + X81      1   1520.5 1926.9
## + X60      1   1520.5 1926.9
## + X7       1   1520.5 1926.9
## + X62      1   1520.5 1926.9
## + X56      1   1520.5 1926.9
## + X12      1   1520.5 1926.9
## + X77      1   1520.5 1927.0
## + X84      1   1520.5 1927.0
## + X16      1   1520.6 1927.0
## + X34      1   1520.6 1927.0
## + X49      1   1520.6 1927.0
```

```
## + X13    1   1520.6 1927.0
## + X19    1   1520.6 1927.0
## + X64    1   1520.6 1927.0
## + X66    1   1520.6 1927.0
## + X68    1   1520.6 1927.0
## + X70    1   1520.6 1927.0
## + X23    1   1520.6 1927.0
## + X11    1   1520.6 1927.0
## + X83    1   1520.6 1927.0
## + X15    1   1520.7 1927.1
## + X25    1   1520.7 1927.1
## + X26    1   1520.7 1927.1
## + X3     1   1520.7 1927.1
## + X8     1   1520.7 1927.1
## + X29    1   1520.7 1927.1
## - X47    1   1591.5 1981.4


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1911.5
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X21 +
##      X22 + X24 + X27 + X28 + X30 + X31 + X32 + X33 + X35 + X36 +
##      X38 + X40 + X41 + X42 + X44 + X45 + X46 + X47 + X48 + X51 +
##      X52 + X55 + X57 + X58 + X59 + X61 + X67 + X69 + X72 + X73 +
##      X75 + X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##          Df Deviance    AIC
## - X31    1   1522.7 1904.3
## - X30    1   1522.8 1904.3
## - X67    1   1522.8 1904.3
## - X48    1   1522.8 1904.3
## - X40    1   1522.9 1904.4
## - X24    1   1522.9 1904.4
## - X35    1   1522.9 1904.4
## - X42    1   1522.9 1904.4
## - X27    1   1522.9 1904.4
## - X75    1   1522.9 1904.4
## - X21    1   1523.0 1904.5
## - X36    1   1523.0 1904.5
## - X1     1   1523.1 1904.6
## - X61    1   1523.1 1904.6
## - X69    1   1523.2 1904.7
## - X5     1   1523.2 1904.7
## - X9     1   1523.2 1904.7
## - X14    1   1523.2 1904.7
## - X78    1   1523.2 1904.8
## - X72    1   1523.3 1904.8
## - X38    1   1523.3 1904.9
## - X46    1   1523.4 1904.9
## - X10    1   1523.5 1905.0
## - X51    1   1523.5 1905.0
## - X80    1   1523.5 1905.0
## - X57    1   1523.5 1905.0
## - X44    1   1523.5 1905.0
## - X45    1   1523.7 1905.3
## - X41    1   1523.9 1905.5
## - X28    1   1524.0 1905.5
## - X76    1   1524.1 1905.6
## - X58    1   1524.6 1906.2
## - X52    1   1524.7 1906.2
## - X33    1   1524.7 1906.2
## - X6     1   1525.1 1906.6
## - X22    1   1525.2 1906.8
## - X73    1   1525.3 1906.8
## - X55    1   1525.4 1907.0
## - X32    1   1526.0 1907.5
## - X85    1   1526.1 1907.6
## - X4     1   1526.4 1907.9
## - X17    1   1528.6 1910.1
## - X82    1   1528.7 1910.2
## - X59    1   1528.9 1910.4
## <none>       1521.7 1911.5
## - X18    1   1537.2 1918.8
## + X2     1   1520.7 1918.8
## + X53    1   1520.8 1918.9
```

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## + X74    1    1520.8 1918.9
## + X79    1    1520.9 1919.0
## + X20    1    1521.1 1919.2
## + X37    1    1521.1 1919.2
## + X65    1    1521.1 1919.2
## + X39    1    1521.2 1919.3
## + X63    1    1521.3 1919.4
## + X43    1    1521.3 1919.5
## + X50    1    1521.3 1919.5
## + X71    1    1521.3 1919.5
## + X54    1    1521.4 1919.5
## + X62    1    1521.5 1919.6
## + X81    1    1521.5 1919.6
## + X60    1    1521.5 1919.6
## + X12    1    1521.5 1919.6
## + X56    1    1521.5 1919.6
## + X7     1    1521.5 1919.6
## + X16    1    1521.5 1919.7
## + X77    1    1521.5 1919.7
## + X84    1    1521.5 1919.7
## + X49    1    1521.6 1919.7
## + X34    1    1521.6 1919.7
## + X68    1    1521.6 1919.7
## + X64    1    1521.6 1919.7
## + X70    1    1521.6 1919.7
## + X13    1    1521.6 1919.7
## + X66    1    1521.6 1919.7
## + X83    1    1521.6 1919.8
## + X19    1    1521.6 1919.8
## + X11    1    1521.7 1919.8
## + X23    1    1521.7 1919.8
## + X15    1    1521.7 1919.8
## + X25    1    1521.7 1919.8
## + X26    1    1521.7 1919.8
## + X29    1    1521.7 1919.8
## + X3     1    1521.7 1919.8
## + X8     1    1521.7 1919.8
## - X47    1    1592.8 1974.3


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##
## Step:  AIC=1904.26
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X21 +
##      X22 + X24 + X27 + X28 + X30 + X32 + X33 + X35 + X36 + X38 +
##      X40 + X41 + X42 + X44 + X45 + X46 + X47 + X48 + X51 + X52 +
##      X55 + X57 + X58 + X59 + X61 + X67 + X69 + X72 + X73 + X75 +
##      X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
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##        Df Deviance    AIC
## - X48   1   1523.8 1897.1
## - X67   1   1523.8 1897.1
## - X27   1   1523.9 1897.1
## - X40   1   1523.9 1897.1
## - X30   1   1523.9 1897.1
## - X21   1   1523.9 1897.2
## - X75   1   1524.0 1897.2
## - X24   1   1524.0 1897.2
## - X42   1   1524.0 1897.2
## - X1    1   1524.1 1897.4
## - X61   1   1524.2 1897.4
## - X5    1   1524.2 1897.4
## - X69   1   1524.2 1897.4
## - X9    1   1524.3 1897.5
## - X78   1   1524.3 1897.5
## - X72   1   1524.4 1897.6
## - X38   1   1524.4 1897.6
## - X46   1   1524.5 1897.7
## - X10   1   1524.5 1897.7
## - X51   1   1524.5 1897.7
## - X80   1   1524.5 1897.7
## - X14   1   1524.5 1897.8
## - X44   1   1524.5 1897.8
## - X57   1   1524.6 1897.8
## - X45   1   1524.8 1898.0
## - X41   1   1525.0 1898.2
```

```
## - X28    1    1525.0 1898.3
## - X76    1    1525.1 1898.4
## - X58    1    1525.7 1898.9
## - X52    1    1525.7 1899.0
## - X33    1    1525.7 1899.0
## - X35    1    1526.0 1899.2
## - X36    1    1526.3 1899.5
## - X6     1    1526.3 1899.5
## - X73    1    1526.3 1899.6
## - X22    1    1526.4 1899.7
## - X55    1    1526.5 1899.7
## - X32    1    1527.1 1900.3
## - X85    1    1527.1 1900.4
## - X4     1    1527.5 1900.8
## - X17    1    1529.6 1902.8
## - X82    1    1529.8 1903.0
## - X59    1    1530.0 1903.2
## <none>        1522.7 1904.3
## + X31    1    1521.7 1911.5
## + X2     1    1521.7 1911.5
## + X53    1    1521.9 1911.7
## + X74    1    1521.9 1911.7
## + X79    1    1522.0 1911.8
## + X20    1    1522.1 1911.9
## + X65    1    1522.2 1912.0
## + X37    1    1522.2 1912.0
## - X18    1    1538.8 1912.0
## + X39    1    1522.3 1912.1
## + X63    1    1522.3 1912.2
## + X43    1    1522.4 1912.2
## + X50    1    1522.4 1912.2
## + X71    1    1522.4 1912.2
## + X54    1    1522.5 1912.3
## + X62    1    1522.5 1912.3
## + X81    1    1522.5 1912.4
## + X60    1    1522.5 1912.4
## + X56    1    1522.6 1912.4
## + X12    1    1522.6 1912.4
## + X7     1    1522.6 1912.4
## + X16    1    1522.6 1912.4
## + X84    1    1522.6 1912.4
## + X77    1    1522.6 1912.4
## + X34    1    1522.6 1912.5
## + X49    1    1522.6 1912.5
## + X68    1    1522.7 1912.5
## + X70    1    1522.7 1912.5
## + X64    1    1522.7 1912.5
## + X13    1    1522.7 1912.5
## + X66    1    1522.7 1912.5
## + X19    1    1522.7 1912.5
## + X83    1    1522.7 1912.5
## + X15    1    1522.7 1912.5
## + X11    1    1522.7 1912.5
## + X23    1    1522.7 1912.5
```

```
## + X29   1   1522.7 1912.5
## + X25   1   1522.7 1912.5
## + X26   1   1522.7 1912.5
## + X3    1   1522.7 1912.5
## + X8    1   1522.7 1912.5
## - X47   1   1594.2 1967.4
##
## Step:  AIC=1897.07
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X21 +
##      X22 + X24 + X27 + X28 + X30 + X32 + X33 + X35 + X36 + X38 +
##      X40 + X41 + X42 + X44 + X45 + X46 + X47 + X51 + X52 + X55 +
##      X57 + X58 + X59 + X61 + X67 + X69 + X72 + X73 + X75 + X76 +
##      X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X69   1   1524.6 1889.5
## - X30   1   1525.0 1889.9
## - X27   1   1525.0 1889.9
## - X67   1   1525.0 1889.9
## - X40   1   1525.0 1890.0
## - X75   1   1525.1 1890.0
## - X21   1   1525.1 1890.0
## - X42   1   1525.1 1890.0
## - X24   1   1525.1 1890.0
## - X72   1   1525.2 1890.2
## - X1    1   1525.3 1890.2
## - X61   1   1525.3 1890.2
## - X5    1   1525.3 1890.3
## - X9    1   1525.3 1890.3
## - X51   1   1525.4 1890.4
## - X38   1   1525.5 1890.4
## - X78   1   1525.5 1890.4
## - X44   1   1525.5 1890.5
## - X10   1   1525.6 1890.5
## - X46   1   1525.6 1890.5
## - X14   1   1525.7 1890.6
## - X57   1   1525.7 1890.6
## - X80   1   1525.8 1890.7
## - X45   1   1525.8 1890.8
## - X41   1   1526.1 1891.0
## - X28   1   1526.2 1891.1
## - X52   1   1526.8 1891.7
## - X58   1   1526.8 1891.7
## - X76   1   1526.8 1891.8
## - X33   1   1526.8 1891.8
## - X35   1   1527.1 1892.0
## - X6    1   1527.3 1892.3
## - X73   1   1527.4 1892.3
```

```
## - X36       1    1527.4 1892.3
## - X22       1    1527.5 1892.4
## - X55       1    1528.0 1893.0
## - X32       1    1528.2 1893.1
## - X85       1    1528.5 1893.4
## - X4        1    1528.6 1893.5
## - X17       1    1530.7 1895.6
## - X82       1    1530.9 1895.9
## - X59       1    1531.5 1896.4
## <none>           1523.8 1897.1
## + X48       1    1522.7 1904.3
## + X31       1    1522.8 1904.3
## + X2        1    1522.8 1904.3
## + X74       1    1523.0 1904.5
## + X53       1    1523.0 1904.5
## + X79       1    1523.0 1904.6
## + X20       1    1523.2 1904.7
## + X65       1    1523.3 1904.8
## + X37       1    1523.3 1904.8
## + X39       1    1523.3 1904.9
## - X18       1    1540.0 1904.9
## + X63       1    1523.5 1905.0
## + X50       1    1523.5 1905.0
## + X71       1    1523.5 1905.0
## + X43       1    1523.5 1905.1
## + X54       1    1523.6 1905.1
## + X62       1    1523.6 1905.1
## + X81       1    1523.7 1905.2
## + X60       1    1523.7 1905.2
## + X12       1    1523.7 1905.2
## + X56       1    1523.7 1905.2
## + X16       1    1523.7 1905.2
## + X7        1    1523.7 1905.2
## + X68       1    1523.7 1905.2
## + X84       1    1523.7 1905.2
## + X77       1    1523.7 1905.2
## + X49       1    1523.7 1905.3
## + X34       1    1523.8 1905.3
## + X64       1    1523.8 1905.3
## + X70       1    1523.8 1905.3
## + X13       1    1523.8 1905.3
## + X19       1    1523.8 1905.3
## + X83       1    1523.8 1905.3
## + X66       1    1523.8 1905.3
## + X23       1    1523.8 1905.3
## + X15       1    1523.8 1905.3
## + X11       1    1523.8 1905.3
## + X25       1    1523.8 1905.4
## + X29       1    1523.8 1905.4
## + X26       1    1523.8 1905.4
## + X3        1    1523.8 1905.4
## + X8        1    1523.8 1905.4
## - X47       1    1595.0 1960.0
##
```

```
## Step:  AIC=1889.5
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X21 +
##     X22 + X24 + X27 + X28 + X30 + X32 + X33 + X35 + X36 + X38 +
##     X40 + X41 + X42 + X44 + X45 + X46 + X47 + X51 + X52 + X55 +
##     X57 + X58 + X59 + X61 + X67 + X72 + X73 + X75 + X76 + X78 +
##     X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X67    1   1525.7 1882.3
## - X30    1   1525.7 1882.3
## - X27    1   1525.7 1882.4
## - X40    1   1525.7 1882.4
## - X21    1   1525.7 1882.4
## - X75    1   1525.8 1882.4
## - X24    1   1525.8 1882.4
## - X42    1   1525.9 1882.5
## - X1     1   1526.0 1882.6
## - X61    1   1526.0 1882.6
## - X9     1   1526.0 1882.7
## - X5     1   1526.0 1882.7
## - X72    1   1526.1 1882.7
## - X78    1   1526.1 1882.8
## - X51    1   1526.2 1882.8
## - X46    1   1526.2 1882.9
## - X38    1   1526.3 1882.9
## - X10    1   1526.3 1882.9
## - X14    1   1526.4 1883.0
## - X44    1   1526.4 1883.0
## - X57    1   1526.4 1883.0
## - X80    1   1526.5 1883.2
## - X41    1   1526.8 1883.5
## - X28    1   1526.9 1883.5
## - X45    1   1527.0 1883.7
## - X52    1   1527.2 1883.8
## - X76    1   1527.2 1883.9
## - X33    1   1527.6 1884.2
## - X58    1   1527.6 1884.2
## - X73    1   1527.8 1884.5
## - X35    1   1527.8 1884.5
## - X6     1   1528.0 1884.7
## - X36    1   1528.1 1884.7
## - X22    1   1528.2 1884.9
## - X55    1   1528.5 1885.2
## - X32    1   1529.0 1885.6
## - X85    1   1529.0 1885.7
## - X4     1   1529.2 1885.9
## - X17    1   1531.4 1888.0
## - X82    1   1531.6 1888.2
## - X59    1   1532.3 1888.9
```

```
## <none>        1524.6 1889.5
## + X31    1    1523.5 1896.7
## + X2     1    1523.6 1896.8
## + X74    1    1523.6 1896.8
## + X53    1    1523.6 1896.8
## + X79    1    1523.8 1897.0
## + X50    1    1523.8 1897.0
## + X71    1    1523.8 1897.0
## + X69    1    1523.8 1897.1
## + X20    1    1523.9 1897.1
## + X65    1    1524.0 1897.2
## - X18    1    1540.6 1897.2
## + X37    1    1524.0 1897.3
## + X39    1    1524.1 1897.3
## + X63    1    1524.2 1897.4
## + X48    1    1524.2 1897.4
## + X43    1    1524.2 1897.5
## + X54    1    1524.3 1897.5
## + X62    1    1524.3 1897.6
## + X81    1    1524.4 1897.6
## + X60    1    1524.4 1897.6
## + X12    1    1524.4 1897.6
## + X56    1    1524.4 1897.6
## + X16    1    1524.4 1897.6
## + X7     1    1524.4 1897.7
## + X84    1    1524.4 1897.7
## + X77    1    1524.4 1897.7
## + X49    1    1524.5 1897.7
## + X34    1    1524.5 1897.7
## + X70    1    1524.5 1897.7
## + X66    1    1524.5 1897.7
## + X64    1    1524.5 1897.7
## + X68    1    1524.5 1897.7
## + X13    1    1524.5 1897.7
## + X83    1    1524.5 1897.7
## + X19    1    1524.5 1897.8
## + X23    1    1524.5 1897.8
## + X11    1    1524.5 1897.8
## + X15    1    1524.5 1897.8
## + X25    1    1524.5 1897.8
## + X29    1    1524.5 1897.8
## + X26    1    1524.5 1897.8
## + X3     1    1524.6 1897.8
## + X8     1    1524.6 1897.8
## - X47    1    1595.6 1952.2
##
## Step:  AIC=1882.29
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X21 +
##       X22 + X24 + X27 + X28 + X30 + X32 + X33 + X35 + X36 + X38 +
##       X40 + X41 + X42 + X44 + X45 + X46 + X47 + X51 + X52 + X55 +
##       X57 + X58 + X59 + X61 + X72 + X73 + X75 + X76 + X78 + X80 +
##       X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X21    1   1526.7 1875.1
## - X30    1   1526.8 1875.1
## - X40    1   1526.8 1875.1
## - X27    1   1526.8 1875.2
## - X75    1   1526.9 1875.2
## - X24    1   1526.9 1875.2
## - X42    1   1527.0 1875.4
## - X1     1   1527.0 1875.4
## - X61    1   1527.1 1875.4
## - X5     1   1527.1 1875.5
## - X9     1   1527.2 1875.5
## - X78    1   1527.2 1875.5
## - X72    1   1527.2 1875.6
## - X38    1   1527.3 1875.6
## - X51    1   1527.3 1875.6
## - X10    1   1527.4 1875.8
## - X57    1   1527.4 1875.8
## - X44    1   1527.4 1875.8
## - X14    1   1527.5 1875.8
## - X80    1   1527.6 1875.9
## - X52    1   1527.9 1876.2
## - X41    1   1527.9 1876.2
## - X28    1   1528.0 1876.3
## - X45    1   1528.1 1876.4
## - X76    1   1528.3 1876.7
## - X73    1   1528.5 1876.8
## - X33    1   1528.6 1876.9
## - X58    1   1528.6 1877.0
## - X35    1   1528.9 1877.2
## - X6     1   1529.1 1877.5
## - X36    1   1529.2 1877.5
## - X22    1   1529.3 1877.7
## - X46    1   1529.4 1877.8
## - X55    1   1529.6 1877.9
## - X32    1   1530.0 1878.3
## - X85    1   1530.2 1878.5
## - X4     1   1530.3 1878.6
## - X17    1   1532.4 1880.7
## - X82    1   1532.7 1881.0
## - X59    1   1533.3 1881.6
## <none>       1525.7 1882.3
## + X67    1   1524.6 1889.5
## + X31    1   1524.6 1889.5
## + X2     1   1524.7 1889.6
## + X74    1   1524.8 1889.7
## + X53    1   1524.8 1889.7
## - X18    1   1541.5 1889.8
## + X79    1   1524.9 1889.8
## + X50    1   1525.0 1889.9
```

```
## + X71   1   1525.0 1889.9
## + X69   1   1525.0 1889.9
## + X20   1   1525.0 1890.0
## + X65   1   1525.1 1890.0
## + X37   1   1525.2 1890.1
## + X39   1   1525.2 1890.2
## + X63   1   1525.3 1890.2
## + X43   1   1525.3 1890.2
## + X48   1   1525.3 1890.3
## + X54   1   1525.4 1890.3
## + X62   1   1525.4 1890.4
## + X81   1   1525.5 1890.4
## + X60   1   1525.5 1890.4
## + X12   1   1525.5 1890.4
## + X16   1   1525.5 1890.4
## + X56   1   1525.5 1890.4
## + X7    1   1525.5 1890.5
## + X84   1   1525.5 1890.5
## + X77   1   1525.5 1890.5
## + X49   1   1525.5 1890.5
## + X34   1   1525.6 1890.5
## + X66   1   1525.6 1890.5
## + X70   1   1525.6 1890.5
## + X68   1   1525.6 1890.5
## + X64   1   1525.6 1890.5
## + X13   1   1525.6 1890.5
## + X83   1   1525.6 1890.5
## + X23   1   1525.6 1890.5
## + X19   1   1525.6 1890.6
## + X11   1   1525.6 1890.6
## + X15   1   1525.6 1890.6
## + X25   1   1525.6 1890.6
## + X29   1   1525.6 1890.6
## + X26   1   1525.7 1890.6
## + X3    1   1525.7 1890.6
## + X8    1   1525.7 1890.6
## - X47   1   1596.6 1945.0
##
## Step:  AIC=1875.09
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X22 +
##      X24 + X27 + X28 + X30 + X32 + X33 + X35 + X36 + X38 + X40 +
##      X41 + X42 + X44 + X45 + X46 + X47 + X51 + X52 + X55 + X57 +
##      X58 + X59 + X61 + X72 + X73 + X75 + X76 + X78 + X80 + X82 +
##      X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X30   1   1527.7 1867.8
## - X27   1   1527.8 1867.8
## - X40   1   1527.9 1867.9
```

```
## - X75       1    1528.0 1868.0
## - X61       1    1528.1 1868.2
## - X42       1    1528.2 1868.3
## - X72       1    1528.2 1868.3
## - X78       1    1528.2 1868.3
## - X9        1    1528.3 1868.3
## - X51       1    1528.3 1868.3
## - X24       1    1528.4 1868.4
## - X1        1    1528.5 1868.5
## - X57       1    1528.5 1868.5
## - X80       1    1528.5 1868.6
## - X44       1    1528.6 1868.6
## - X38       1    1528.6 1868.7
## - X14       1    1528.6 1868.7
## - X5        1    1528.6 1868.7
## - X10       1    1528.6 1868.7
## - X41       1    1528.9 1869.0
## - X52       1    1529.0 1869.1
## - X76       1    1529.3 1869.4
## - X45       1    1529.4 1869.5
## - X73       1    1529.7 1869.8
## - X33       1    1529.8 1869.8
## - X58       1    1529.8 1869.9
## - X28       1    1529.9 1869.9
## - X6        1    1529.9 1870.0
## - X35       1    1530.0 1870.0
## - X36       1    1530.2 1870.3
## - X55       1    1530.6 1870.6
## - X46       1    1530.7 1870.7
## - X4        1    1531.3 1871.3
## - X85       1    1531.4 1871.4
## - X32       1    1531.5 1871.6
## - X22       1    1531.5 1871.6
## - X82       1    1533.7 1873.8
## - X59       1    1534.1 1874.1
## - X17       1    1534.3 1874.4
## <none>           1526.7 1875.1
## + X21       1    1525.7 1882.3
## + X67       1    1525.7 1882.4
## + X2        1    1525.8 1882.4
## + X31       1    1525.8 1882.4
## + X74       1    1525.9 1882.5
## + X53       1    1525.9 1882.5
## + X79       1    1525.9 1882.5
## + X50       1    1526.0 1882.7
## + X71       1    1526.0 1882.7
## + X69       1    1526.1 1882.8
## + X20       1    1526.2 1882.8
## + X39       1    1526.2 1882.8
## + X37       1    1526.2 1882.8
## + X65       1    1526.2 1882.9
## + X43       1    1526.3 1883.0
## + X63       1    1526.4 1883.0
## + X62       1    1526.5 1883.1
```

```
## + X48    1    1526.5 1883.1
## + X81    1    1526.5 1883.2
## + X60    1    1526.5 1883.2
## + X54    1    1526.5 1883.2
## + X16    1    1526.6 1883.2
## + X7     1    1526.6 1883.2
## + X56    1    1526.6 1883.2
## + X84    1    1526.6 1883.3
## + X12    1    1526.6 1883.3
## + X77    1    1526.6 1883.3
## + X49    1    1526.7 1883.3
## + X66    1    1526.7 1883.3
## + X68    1    1526.7 1883.3
## + X34    1    1526.7 1883.3
## + X83    1    1526.7 1883.3
## + X70    1    1526.7 1883.3
## + X64    1    1526.7 1883.3
## + X13    1    1526.7 1883.3
## + X25    1    1526.7 1883.3
## + X29    1    1526.7 1883.4
## + X11    1    1526.7 1883.4
## + X26    1    1526.7 1883.4
## + X15    1    1526.7 1883.4
## + X19    1    1526.7 1883.4
## + X3     1    1526.7 1883.4
## + X23    1    1526.7 1883.4
## + X8     1    1526.7 1883.4
## - X18    1    1544.7 1884.8
## - X47    1    1598.4 1938.5
##
## Step:  AIC=1867.77
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X22 +
##      X24 + X27 + X28 + X32 + X33 + X35 + X36 + X38 + X40 + X41 +
##      X42 + X44 + X45 + X46 + X47 + X51 + X52 + X55 + X57 + X58 +
##      X59 + X61 + X72 + X73 + X75 + X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X40    1    1528.8 1860.6
## - X27    1    1528.8 1860.6
## - X24    1    1528.9 1860.7
## - X75    1    1529.0 1860.7
## - X61    1    1529.1 1860.9
## - X78    1    1529.2 1860.9
## - X1     1    1529.2 1861.0
## - X72    1    1529.3 1861.1
## - X51    1    1529.3 1861.1
## - X5     1    1529.4 1861.1
## - X57    1    1529.4 1861.1
## - X44    1    1529.5 1861.2
```

```
## - X42    1    1529.6 1861.4
## - X14    1    1529.7 1861.5
## - X41    1    1529.7 1861.5
## - X80    1    1529.8 1861.6
## - X38    1    1529.9 1861.6
## - X10    1    1529.9 1861.7
## - X9     1    1529.9 1861.7
## - X52    1    1530.0 1861.8
## - X76    1    1530.2 1862.0
## - X28    1    1530.5 1862.3
## - X45    1    1530.6 1862.3
## - X73    1    1530.7 1862.5
## - X6     1    1530.8 1862.6
## - X58    1    1530.9 1862.6
## - X33    1    1531.0 1862.8
## - X35    1    1531.1 1862.9
## - X36    1    1531.4 1863.1
## - X55    1    1531.5 1863.3
## - X46    1    1531.8 1863.5
## - X4     1    1532.1 1863.9
## - X22    1    1532.2 1864.0
## - X85    1    1532.4 1864.2
## - X32    1    1532.8 1864.6
## - X82    1    1534.8 1866.6
## - X17    1    1535.3 1867.1
## <none>        1527.7 1867.8
## - X59    1    1536.5 1868.3
## + X67    1    1526.7 1875.0
## + X30    1    1526.7 1875.1
## + X21    1    1526.8 1875.1
## + X31    1    1526.8 1875.1
## + X79    1    1526.8 1875.2
## + X74    1    1526.8 1875.2
## + X53    1    1526.8 1875.2
## + X2     1    1527.0 1875.3
## + X50    1    1527.1 1875.4
## + X71    1    1527.1 1875.4
## + X43    1    1527.1 1875.5
## + X20    1    1527.2 1875.5
## + X69    1    1527.2 1875.5
## + X65    1    1527.2 1875.5
## + X63    1    1527.4 1875.7
## + X62    1    1527.4 1875.8
## + X39    1    1527.4 1875.8
## + X48    1    1527.5 1875.8
## + X54    1    1527.5 1875.8
## + X81    1    1527.5 1875.8
## + X60    1    1527.5 1875.8
## + X16    1    1527.5 1875.8
## + X37    1    1527.5 1875.9
## + X56    1    1527.5 1875.9
## + X13    1    1527.6 1875.9
## + X49    1    1527.6 1875.9
## + X77    1    1527.6 1876.0
```

```
## + X84   1   1527.6 1876.0
## + X66   1   1527.6 1876.0
## + X68   1   1527.6 1876.0
## + X12   1   1527.6 1876.0
## + X70   1   1527.6 1876.0
## + X7    1   1527.6 1876.0
## + X83   1   1527.6 1876.0
## + X15   1   1527.7 1876.0
## + X64   1   1527.7 1876.0
## + X25   1   1527.7 1876.0
## + X34   1   1527.7 1876.0
## + X11   1   1527.7 1876.0
## + X3    1   1527.7 1876.0
## + X8    1   1527.7 1876.0
## + X19   1   1527.7 1876.0
## + X26   1   1527.7 1876.0
## + X29   1   1527.7 1876.1
## + X23   1   1527.7 1876.1
## - X18   1   1545.5 1877.2
## - X47   1   1599.5 1931.2
##
## Step:  AIC=1860.56
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X22 +
##     X24 + X27 + X28 + X32 + X33 + X35 + X36 + X38 + X41 + X42 +
##     X44 + X45 + X46 + X47 + X51 + X52 + X55 + X57 + X58 + X59 +
##     X61 + X72 + X73 + X75 + X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X27   1   1530.0 1853.5
## - X75   1   1530.1 1853.6
## - X24   1   1530.2 1853.7
## - X1    1   1530.2 1853.7
## - X78   1   1530.2 1853.7
## - X5    1   1530.3 1853.8
## - X72   1   1530.3 1853.8
## - X61   1   1530.4 1853.8
## - X51   1   1530.4 1853.9
## - X57   1   1530.5 1853.9
## - X38   1   1530.6 1854.1
## - X44   1   1530.7 1854.2
## - X80   1   1530.8 1854.3
## - X10   1   1530.8 1854.3
## - X9    1   1530.9 1854.4
## - X52   1   1531.0 1854.4
## - X14   1   1531.1 1854.6
## - X76   1   1531.3 1854.7
## - X41   1   1531.3 1854.8
## - X45   1   1531.6 1855.1
## - X6    1   1531.6 1855.1
```

```
## - X73       1    1531.7 1855.1
## - X58       1    1531.8 1855.3
## - X28       1    1531.9 1855.4
## - X33       1    1532.0 1855.5
## - X35       1    1532.3 1855.8
## - X55       1    1532.6 1856.0
## - X36       1    1532.6 1856.0
## - X46       1    1532.8 1856.2
## - X22       1    1533.2 1856.7
## - X85       1    1533.5 1856.9
## - X32       1    1533.5 1857.0
## - X4        1    1533.8 1857.3
## - X42       1    1535.5 1859.0
## - X82       1    1536.1 1859.6
## - X17       1    1536.3 1859.7
## <none>           1528.8 1860.6
## - X59       1    1537.2 1860.6
## + X39       1    1527.7 1867.7
## + X40       1    1527.7 1867.8
## + X67       1    1527.8 1867.9
## + X21       1    1527.9 1867.9
## + X30       1    1527.9 1867.9
## + X31       1    1527.9 1868.0
## + X74       1    1527.9 1868.0
## + X53       1    1527.9 1868.0
## + X79       1    1528.0 1868.0
## + X2        1    1528.0 1868.1
## + X50       1    1528.2 1868.2
## + X71       1    1528.2 1868.2
## + X43       1    1528.2 1868.2
## + X69       1    1528.2 1868.3
## + X65       1    1528.3 1868.3
## + X20       1    1528.3 1868.4
## + X37       1    1528.3 1868.4
## + X63       1    1528.4 1868.5
## + X62       1    1528.5 1868.6
## + X48       1    1528.5 1868.6
## + X54       1    1528.6 1868.6
## + X81       1    1528.6 1868.6
## + X60       1    1528.6 1868.6
## + X16       1    1528.6 1868.7
## + X56       1    1528.6 1868.7
## + X49       1    1528.7 1868.7
## + X84       1    1528.7 1868.7
## + X34       1    1528.7 1868.7
## + X13       1    1528.7 1868.7
## + X77       1    1528.7 1868.7
## + X25       1    1528.7 1868.8
## + X66       1    1528.7 1868.8
## + X68       1    1528.7 1868.8
## + X70       1    1528.7 1868.8
## + X83       1    1528.7 1868.8
## + X12       1    1528.7 1868.8
## + X7        1    1528.7 1868.8
```

```
## + X64   1   1528.8 1868.8
## + X15   1   1528.8 1868.8
## + X19   1   1528.8 1868.8
## + X29   1   1528.8 1868.8
## + X8    1   1528.8 1868.8
## + X23   1   1528.8 1868.8
## + X3    1   1528.8 1868.8
## + X11   1   1528.8 1868.8
## + X26   1   1528.8 1868.8
## - X18   1   1546.7 1870.1
## - X47   1   1600.1 1923.6
##
## Step:  AIC=1853.51
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X22 +
##     X24 + X28 + X32 + X33 + X35 + X36 + X38 + X41 + X42 + X44 +
##     X45 + X46 + X47 + X51 + X52 + X55 + X57 + X58 + X59 + X61 +
##     X72 + X73 + X75 + X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X75   1   1531.4 1846.5
## - X1    1   1531.4 1846.5
## - X24   1   1531.5 1846.6
## - X5    1   1531.5 1846.6
## - X78   1   1531.5 1846.7
## - X72   1   1531.5 1846.7
## - X61   1   1531.6 1846.8
## - X51   1   1531.7 1846.8
## - X57   1   1531.8 1847.0
## - X38   1   1531.9 1847.1
## - X44   1   1532.0 1847.1
## - X28   1   1532.0 1847.2
## - X10   1   1532.0 1847.2
## - X80   1   1532.1 1847.2
## - X14   1   1532.2 1847.4
## - X52   1   1532.3 1847.4
## - X41   1   1532.4 1847.5
## - X9    1   1532.4 1847.6
## - X76   1   1532.7 1847.8
## - X6    1   1532.8 1848.0
## - X73   1   1533.0 1848.2
## - X58   1   1533.0 1848.2
## - X45   1   1533.0 1848.2
## - X33   1   1533.3 1848.5
## - X35   1   1533.7 1848.8
## - X36   1   1534.0 1849.2
## - X55   1   1534.0 1849.2
## - X46   1   1534.1 1849.3
## - X22   1   1534.8 1850.0
## - X85   1   1534.8 1850.0
```

```
## - X4       1    1535.0 1850.2
## - X32      1    1535.2 1850.4
## - X17      1    1536.4 1851.6
## - X42      1    1537.1 1852.3
## - X82      1    1537.4 1852.6
## <none>          1530.0 1853.5
## - X59      1    1538.5 1853.7
## + X39      1    1528.7 1860.4
## + X27      1    1528.8 1860.6
## + X40      1    1528.8 1860.6
## + X67      1    1529.0 1860.8
## + X30      1    1529.0 1860.8
## + X31      1    1529.1 1860.8
## + X2       1    1529.1 1860.9
## + X74      1    1529.1 1860.9
## + X53      1    1529.1 1860.9
## + X79      1    1529.2 1860.9
## + X21      1    1529.2 1861.0
## + X50      1    1529.3 1861.1
## + X71      1    1529.3 1861.1
## + X37      1    1529.4 1861.2
## + X43      1    1529.5 1861.2
## + X69      1    1529.5 1861.2
## + X65      1    1529.5 1861.3
## + X20      1    1529.6 1861.3
## + X25      1    1529.6 1861.3
## + X63      1    1529.7 1861.4
## + X62      1    1529.7 1861.5
## + X26      1    1529.8 1861.5
## + X48      1    1529.8 1861.5
## + X54      1    1529.8 1861.6
## + X81      1    1529.8 1861.6
## + X60      1    1529.8 1861.6
## + X16      1    1529.9 1861.6
## + X56      1    1529.9 1861.6
## + X49      1    1529.9 1861.6
## + X13      1    1529.9 1861.7
## + X77      1    1529.9 1861.7
## + X84      1    1529.9 1861.7
## + X70      1    1529.9 1861.7
## + X34      1    1529.9 1861.7
## + X68      1    1529.9 1861.7
## + X66      1    1529.9 1861.7
## + X83      1    1530.0 1861.7
## + X12      1    1530.0 1861.7
## + X7       1    1530.0 1861.8
## + X29      1    1530.0 1861.8
## + X15      1    1530.0 1861.8
## + X23      1    1530.0 1861.8
## + X64      1    1530.0 1861.8
## + X19      1    1530.0 1861.8
## + X8       1    1530.0 1861.8
## + X3       1    1530.0 1861.8
## + X11      1    1530.0 1861.8
```

```
## - X18   1   1546.7 1861.8
## - X47   1   1601.4 1916.6
##
## Step:  AIC=1846.53
## X86 ~ X1 + X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X22 +
##     X24 + X28 + X32 + X33 + X35 + X36 + X38 + X41 + X42 + X44 +
##     X45 + X46 + X47 + X51 + X52 + X55 + X57 + X58 + X59 + X61 +
##     X72 + X73 + X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X1    1    1532.7 1839.5
## - X5    1    1532.8 1839.6
## - X24   1    1532.8 1839.7
## - X78   1    1532.8 1839.7
## - X72   1    1532.9 1839.8
## - X61   1    1533.0 1839.8
## - X51   1    1533.0 1839.8
## - X57   1    1533.1 1840.0
## - X38   1    1533.2 1840.1
## - X80   1    1533.2 1840.1
## - X44   1    1533.3 1840.2
## - X28   1    1533.3 1840.2
## - X10   1    1533.3 1840.2
## - X14   1    1533.5 1840.4
## - X52   1    1533.6 1840.5
## - X41   1    1533.7 1840.6
## - X9    1    1533.8 1840.7
## - X76   1    1534.0 1840.9
## - X6    1    1534.1 1841.0
## - X45   1    1534.3 1841.2
## - X73   1    1534.4 1841.2
## - X58   1    1534.4 1841.3
## - X33   1    1534.6 1841.5
## - X35   1    1535.0 1841.8
## - X36   1    1535.2 1842.1
## - X55   1    1535.3 1842.2
## - X46   1    1535.3 1842.2
## - X85   1    1536.1 1842.9
## - X22   1    1536.1 1843.0
## - X4    1    1536.3 1843.1
## - X32   1    1536.4 1843.3
## - X17   1    1537.5 1844.4
## - X42   1    1538.4 1845.3
## - X82   1    1538.8 1845.7
## - X59   1    1539.6 1846.5
## <none>       1531.4 1846.5
## + X39   1    1530.0 1853.5
## + X75   1    1530.0 1853.5
## + X40   1    1530.0 1853.5
```

```
## + X27    1    1530.1 1853.6
## + X74    1    1530.3 1853.8
## + X53    1    1530.3 1853.8
## + X54    1    1530.3 1853.8
## + X67    1    1530.3 1853.8
## + X30    1    1530.3 1853.8
## + X31    1    1530.4 1853.8
## + X79    1    1530.5 1853.9
## + X2     1    1530.5 1854.0
## + X21    1    1530.5 1854.0
## + X50    1    1530.7 1854.1
## + X71    1    1530.7 1854.1
## + X43    1    1530.8 1854.2
## + X37    1    1530.8 1854.2
## + X69    1    1530.8 1854.3
## + X65    1    1530.9 1854.3
## + X20    1    1530.9 1854.4
## + X25    1    1530.9 1854.4
## + X63    1    1531.0 1854.5
## + X62    1    1531.0 1854.5
## + X26    1    1531.0 1854.5
## + X48    1    1531.1 1854.6
## + X81    1    1531.2 1854.6
## + X60    1    1531.2 1854.6
## + X16    1    1531.2 1854.6
## + X49    1    1531.2 1854.7
## + X56    1    1531.2 1854.7
## - X18    1    1547.8 1854.7
## + X77    1    1531.2 1854.7
## + X70    1    1531.2 1854.7
## + X84    1    1531.2 1854.7
## + X13    1    1531.3 1854.7
## + X66    1    1531.3 1854.7
## + X83    1    1531.3 1854.7
## + X34    1    1531.3 1854.7
## + X68    1    1531.3 1854.7
## + X12    1    1531.3 1854.8
## + X7     1    1531.3 1854.8
## + X29    1    1531.3 1854.8
## + X64    1    1531.3 1854.8
## + X19    1    1531.3 1854.8
## + X15    1    1531.3 1854.8
## + X23    1    1531.3 1854.8
## + X8     1    1531.3 1854.8
## + X3     1    1531.3 1854.8
## + X11    1    1531.4 1854.8
## - X47    1    1606.0 1912.9
##
## Step:  AIC=1839.53
## X86 ~ X4 + X5 + X6 + X9 + X10 + X14 + X17 + X18 + X22 + X24 +
##      X28 + X32 + X33 + X35 + X36 + X38 + X41 + X42 + X44 + X45 +
##      X46 + X47 + X51 + X52 + X55 + X57 + X58 + X59 + X61 + X72 +
##      X73 + X76 + X78 + X80 + X82 + X85
```

```
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X5      1   1532.8 1831.4
## - X24     1   1534.0 1832.6
## - X78     1   1534.1 1832.7
## - X10     1   1534.1 1832.7
## - X72     1   1534.1 1832.7
## - X51     1   1534.2 1832.8
## - X80     1   1534.3 1832.8
## - X61     1   1534.3 1832.9
## - X57     1   1534.3 1832.9
## - X38     1   1534.3 1832.9
## - X14     1   1534.6 1833.2
## - X44     1   1534.7 1833.3
## - X28     1   1534.8 1833.3
## - X52     1   1534.9 1833.5
## - X41     1   1535.1 1833.7
## - X6      1   1535.3 1833.8
## - X9      1   1535.3 1833.9
## - X76     1   1535.4 1834.0
## - X33     1   1535.6 1834.2
## - X45     1   1535.6 1834.2
## - X73     1   1535.8 1834.3
## - X58     1   1535.9 1834.5
## - X35     1   1536.1 1834.7
## - X36     1   1536.4 1835.0
## - X46     1   1536.6 1835.2
## - X55     1   1536.7 1835.3
## - X85     1   1537.3 1835.9
## - X32     1   1537.6 1836.2
## - X4      1   1537.7 1836.3
## - X22     1   1538.2 1836.8
## - X17     1   1539.0 1837.5
## - X42     1   1539.5 1838.1
## - X82     1   1540.3 1838.9
## - X59     1   1540.3 1838.9
## <none>        1532.7 1839.5
## + X39     1   1531.3 1846.5
## + X1      1   1531.4 1846.5
## + X75     1   1531.4 1846.5
## + X40     1   1531.4 1846.6
## + X27     1   1531.5 1846.7
## + X21     1   1531.6 1846.7
## + X74     1   1531.6 1846.8
## + X53     1   1531.6 1846.8
## + X54     1   1531.7 1846.8
## + X67     1   1531.7 1846.8
## + X79     1   1531.7 1846.9
## + X30     1   1531.8 1847.0
## + X31     1   1531.9 1847.0
```

```
## + X2     1    1531.9 1847.1
## + X50    1    1532.0 1847.1
## + X71    1    1532.0 1847.1
## + X37    1    1532.0 1847.2
## + X65    1    1532.1 1847.3
## + X69    1    1532.1 1847.3
## + X20    1    1532.1 1847.3
## + X25    1    1532.3 1847.5
## + X62    1    1532.3 1847.5
## + X26    1    1532.3 1847.5
## + X63    1    1532.3 1847.5
## + X43    1    1532.3 1847.5
## + X48    1    1532.4 1847.6
## + X81    1    1532.4 1847.6
## + X60    1    1532.4 1847.6
## + X49    1    1532.5 1847.7
## + X16    1    1532.5 1847.7
## + X56    1    1532.5 1847.7
## + X68    1    1532.5 1847.7
## + X34    1    1532.5 1847.7
## + X83    1    1532.5 1847.7
## + X77    1    1532.5 1847.7
## + X70    1    1532.5 1847.7
## + X66    1    1532.6 1847.7
## + X12    1    1532.6 1847.7
## + X84    1    1532.6 1847.7
## - X18    1    1549.2 1847.8
## + X7     1    1532.6 1847.8
## + X13    1    1532.6 1847.8
## + X19    1    1532.6 1847.8
## + X29    1    1532.6 1847.8
## + X64    1    1532.6 1847.8
## + X23    1    1532.6 1847.8
## + X3     1    1532.6 1847.8
## + X8     1    1532.6 1847.8
## + X15    1    1532.7 1847.8
## + X11    1    1532.7 1847.8
## - X47    1    1607.5 1906.1
##
## Step:  AIC=1831.41
## X86 ~ X4 + X6 + X9 + X10 + X14 + X17 + X18 + X22 + X24 + X28 +
##     X32 + X33 + X35 + X36 + X38 + X41 + X42 + X44 + X45 + X46 +
##     X47 + X51 + X52 + X55 + X57 + X58 + X59 + X61 + X72 + X73 +
##     X76 + X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X24    1    1534.1 1824.4
## - X10    1    1534.2 1824.5
## - X78    1    1534.3 1824.5
```

```
## - X72     1     1534.4 1824.7
## - X80     1     1534.4 1824.7
## - X51     1     1534.5 1824.8
## - X38     1     1534.5 1824.8
## - X57     1     1534.5 1824.8
## - X61     1     1534.5 1824.8
## - X44     1     1534.8 1825.1
## - X14     1     1534.9 1825.2
## - X28     1     1534.9 1825.2
## - X52     1     1535.2 1825.5
## - X41     1     1535.3 1825.6
## - X6      1     1535.4 1825.7
## - X9      1     1535.4 1825.7
## - X76     1     1535.5 1825.8
## - X45     1     1535.8 1826.0
## - X33     1     1535.8 1826.1
## - X73     1     1536.0 1826.3
## - X58     1     1536.1 1826.4
## - X35     1     1536.3 1826.6
## - X36     1     1536.6 1826.9
## - X46     1     1536.8 1827.1
## - X55     1     1536.8 1827.1
## - X85     1     1537.6 1827.9
## - X32     1     1538.0 1828.2
## - X4      1     1538.2 1828.4
## - X22     1     1538.8 1829.1
## - X17     1     1539.4 1829.7
## - X42     1     1539.8 1830.1
## - X82     1     1540.5 1830.8
## - X59     1     1540.6 1830.8
## <none>          1532.8 1831.4
## + X75     1     1531.5 1838.4
## + X39     1     1531.5 1838.4
## + X21     1     1531.6 1838.5
## + X40     1     1531.7 1838.5
## + X27     1     1531.8 1838.6
## + X74     1     1531.8 1838.7
## + X53     1     1531.8 1838.7
## + X54     1     1531.8 1838.7
## + X67     1     1531.8 1838.7
## + X79     1     1531.9 1838.8
## + X30     1     1532.0 1838.9
## + X31     1     1532.0 1838.9
## + X50     1     1532.1 1839.0
## + X71     1     1532.1 1839.0
## + X2      1     1532.2 1839.1
## + X37     1     1532.2 1839.1
## + X65     1     1532.3 1839.2
## + X69     1     1532.3 1839.2
## + X43     1     1532.3 1839.2
## + X20     1     1532.3 1839.2
## + X26     1     1532.5 1839.3
## + X62     1     1532.5 1839.4
## + X63     1     1532.5 1839.4
```

```
## + X25   1   1532.5 1839.4
## + X81   1   1532.6 1839.5
## + X60   1   1532.6 1839.5
## + X48   1   1532.6 1839.5
## + X5    1   1532.7 1839.5
## + X49   1   1532.7 1839.5
## + X56   1   1532.7 1839.6
## + X16   1   1532.7 1839.6
## + X34   1   1532.7 1839.6
## + X68   1   1532.7 1839.6
## + X83   1   1532.7 1839.6
## + X70   1   1532.7 1839.6
## + X77   1   1532.7 1839.6
## + X66   1   1532.7 1839.6
## + X19   1   1532.7 1839.6
## + X84   1   1532.8 1839.6
## + X1    1   1532.8 1839.6
## + X12   1   1532.8 1839.6
## + X7    1   1532.8 1839.7
## + X13   1   1532.8 1839.7
## + X29   1   1532.8 1839.7
## + X64   1   1532.8 1839.7
## + X23   1   1532.8 1839.7
## + X3    1   1532.8 1839.7
## + X8    1   1532.8 1839.7
## + X15   1   1532.8 1839.7
## + X11   1   1532.8 1839.7
## - X18   1   1552.1 1842.4
## - X47   1   1607.7 1898.0
##
## Step:  AIC=1824.42
## X86 ~ X4 + X6 + X9 + X10 + X14 + X17 + X18 + X22 + X28 + X32 +
##      X33 + X35 + X36 + X38 + X41 + X42 + X44 + X45 + X46 + X47 +
##      X51 + X52 + X55 + X57 + X58 + X59 + X61 + X72 + X73 + X76 +
##      X78 + X80 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X10   1   1535.2 1817.2
## - X78   1   1535.5 1817.5
## - X80   1   1535.7 1817.7
## - X57   1   1535.7 1817.7
## - X72   1   1535.7 1817.7
## - X61   1   1535.8 1817.8
## - X51   1   1535.9 1817.9
## - X38   1   1536.0 1818.0
## - X44   1   1536.1 1818.1
## - X28   1   1536.2 1818.1
## - X14   1   1536.4 1818.4
## - X52   1   1536.5 1818.5
```

```
## - X41   1   1536.5 1818.5
## - X6    1   1536.5 1818.5
## - X33   1   1536.7 1818.7
## - X9    1   1536.8 1818.8
## - X76   1   1536.8 1818.8
## - X45   1   1537.1 1819.1
## - X58   1   1537.3 1819.3
## - X73   1   1537.3 1819.3
## - X35   1   1537.4 1819.4
## - X36   1   1537.7 1819.7
## - X46   1   1538.1 1820.1
## - X55   1   1538.2 1820.2
## - X32   1   1538.8 1820.8
## - X22   1   1539.0 1821.0
## - X85   1   1539.0 1821.0
## - X4    1   1539.5 1821.5
## - X17   1   1540.3 1822.3
## - X42   1   1541.0 1823.0
## - X59   1   1541.7 1823.7
## - X82   1   1541.7 1823.7
## <none>      1534.1 1824.4
## + X21   1   1532.5 1831.1
## + X39   1   1532.7 1831.3
## + X40   1   1532.8 1831.3
## + X24   1   1532.8 1831.4
## + X75   1   1532.8 1831.4
## + X27   1   1533.0 1831.6
## + X74   1   1533.0 1831.6
## + X53   1   1533.0 1831.6
## + X54   1   1533.1 1831.7
## + X67   1   1533.1 1831.7
## + X79   1   1533.2 1831.8
## + X37   1   1533.4 1832.0
## + X25   1   1533.4 1832.0
## + X2    1   1533.4 1832.0
## + X50   1   1533.4 1832.0
## + X71   1   1533.4 1832.0
## + X69   1   1533.6 1832.2
## + X65   1   1533.7 1832.2
## + X30   1   1533.7 1832.3
## + X31   1   1533.7 1832.3
## + X63   1   1533.7 1832.3
## + X20   1   1533.7 1832.3
## + X43   1   1533.8 1832.4
## + X62   1   1533.8 1832.4
## + X26   1   1533.9 1832.5
## + X23   1   1533.9 1832.5
## + X81   1   1533.9 1832.5
## + X60   1   1533.9 1832.5
## + X48   1   1533.9 1832.5
## + X34   1   1534.0 1832.5
## + X56   1   1534.0 1832.6
## + X49   1   1534.0 1832.6
## + X16   1   1534.0 1832.6
```

```
## + X84    1    1534.0 1832.6
## + X77    1    1534.0 1832.6
## + X68    1    1534.0 1832.6
## + X7     1    1534.0 1832.6
## + X5     1    1534.0 1832.6
## + X12    1    1534.0 1832.6
## + X66    1    1534.0 1832.6
## + X83    1    1534.0 1832.6
## + X70    1    1534.0 1832.6
## + X13    1    1534.0 1832.6
## + X1     1    1534.1 1832.7
## + X3     1    1534.1 1832.7
## + X29    1    1534.1 1832.7
## + X64    1    1534.1 1832.7
## + X15    1    1534.1 1832.7
## + X19    1    1534.1 1832.7
## + X11    1    1534.1 1832.7
## + X8     1    1534.1 1832.7
## - X18    1    1552.3 1834.3
## - X47    1    1609.3 1891.3
##
## Step:  AIC=1817.18
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##      X35 + X36 + X38 + X41 + X42 + X44 + X45 + X46 + X47 + X51 +
##      X52 + X55 + X57 + X58 + X59 + X61 + X72 + X73 + X76 + X78 +
##      X80 + X82 + X85

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##          Df Deviance    AIC
## - X78    1    1536.5 1810.2
## - X72    1    1536.7 1810.4
## - X57    1    1536.7 1810.4
## - X80    1    1536.8 1810.5
## - X51    1    1536.8 1810.5
## - X61    1    1537.0 1810.7
## - X44    1    1537.1 1810.8
## - X38    1    1537.3 1811.0
## - X52    1    1537.4 1811.1
## - X6     1    1537.6 1811.3
## - X28    1    1537.6 1811.3
## - X41    1    1537.6 1811.3
## - X14    1    1537.7 1811.3
## - X76    1    1537.8 1811.5
## - X45    1    1538.1 1811.8
## - X73    1    1538.3 1812.0
## - X35    1    1538.3 1812.1
## - X9     1    1538.4 1812.1
## - X58    1    1538.5 1812.2
## - X36    1    1538.6 1812.3
## - X55    1    1539.1 1812.8
```

```
## - X46    1    1539.2 1812.9
## - X33    1    1539.5 1813.2
## - X22    1    1540.0 1813.7
## - X85    1    1540.2 1813.9
## - X4     1    1540.8 1814.5
## - X17    1    1541.4 1815.1
## - X59    1    1542.9 1816.6
## - X82    1    1543.0 1816.7
## - X32    1    1543.5 1817.2
## <none>        1535.2 1817.2
## - X42    1    1543.8 1817.5
## + X21    1    1533.7 1824.0
## + X75    1    1533.9 1824.2
## + X40    1    1533.9 1824.2
## + X39    1    1534.0 1824.3
## + X27    1    1534.1 1824.3
## + X74    1    1534.1 1824.4
## + X53    1    1534.1 1824.4
## + X10    1    1534.1 1824.4
## + X67    1    1534.2 1824.5
## + X24    1    1534.2 1824.5
## + X54    1    1534.2 1824.5
## + X79    1    1534.2 1824.5
## + X30    1    1534.5 1824.8
## + X25    1    1534.5 1824.8
## + X50    1    1534.5 1824.8
## + X71    1    1534.5 1824.8
## + X31    1    1534.5 1824.8
## + X13    1    1534.5 1824.8
## + X2     1    1534.6 1824.9
## + X12    1    1534.7 1825.0
## + X37    1    1534.7 1825.0
## + X65    1    1534.7 1825.0
## + X69    1    1534.7 1825.0
## + X20    1    1534.8 1825.0
## + X11    1    1534.8 1825.1
## + X63    1    1534.8 1825.1
## + X43    1    1534.8 1825.1
## + X15    1    1534.8 1825.1
## + X26    1    1534.9 1825.2
## + X62    1    1534.9 1825.2
## + X81    1    1535.0 1825.2
## + X60    1    1535.0 1825.2
## + X23    1    1535.0 1825.3
## + X48    1    1535.0 1825.3
## + X16    1    1535.0 1825.3
## + X56    1    1535.0 1825.3
## + X49    1    1535.0 1825.3
## + X84    1    1535.1 1825.3
## + X66    1    1535.1 1825.4
## + X77    1    1535.1 1825.4
## + X68    1    1535.1 1825.4
## + X70    1    1535.1 1825.4
## + X3     1    1535.1 1825.4
```

```
## + X83    1   1535.1 1825.4
## + X7     1   1535.1 1825.4
## + X5     1   1535.1 1825.4
## + X34    1   1535.2 1825.4
## + X19    1   1535.2 1825.5
## + X1     1   1535.2 1825.5
## + X64    1   1535.2 1825.5
## + X29    1   1535.2 1825.5
## + X8     1   1535.2 1825.5
## - X18    1   1553.2 1826.9
## - X47    1   1610.1 1883.8
##
## Step:  AIC=1810.2
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##      X35 + X36 + X38 + X41 + X42 + X44 + X45 + X46 + X47 + X51 +
##      X52 + X55 + X57 + X58 + X59 + X61 + X72 + X73 + X76 + X80 +
##      X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##        Df Deviance    AIC
## - X57   1   1536.9 1802.3
## - X80   1   1538.1 1803.5
## - X72   1   1538.2 1803.6
## - X51   1   1538.3 1803.7
## - X61   1   1538.3 1803.7
## - X44   1   1538.4 1803.8
## - X38   1   1538.5 1803.9
## - X52   1   1538.7 1804.1
## - X14   1   1538.8 1804.2
## - X6    1   1538.9 1804.3
## - X28   1   1538.9 1804.3
## - X41   1   1539.0 1804.4
## - X76   1   1539.0 1804.4
## - X45   1   1539.4 1804.8
## - X73   1   1539.4 1804.8
## - X9    1   1539.6 1805.0
## - X35   1   1539.7 1805.1
## - X58   1   1539.8 1805.2
## - X36   1   1539.9 1805.3
## - X55   1   1540.4 1805.8
## - X33   1   1540.7 1806.1
## - X46   1   1540.7 1806.2
## - X85   1   1541.2 1806.7
## - X22   1   1541.5 1806.9
## - X4    1   1542.0 1807.4
## - X17   1   1542.8 1808.2
## - X59   1   1544.2 1809.6
## - X82   1   1544.3 1809.7
## - X32   1   1544.6 1810.0
## <none>      1536.5 1810.2
```

```
## - X42   1    1545.2 1810.6
## + X21   1    1535.1 1817.1
## + X78   1    1535.2 1817.2
## + X75   1    1535.2 1817.2
## + X40   1    1535.3 1817.3
## + X39   1    1535.3 1817.3
## + X27   1    1535.3 1817.3
## + X74   1    1535.4 1817.4
## + X53   1    1535.4 1817.4
## + X10   1    1535.5 1817.5
## + X54   1    1535.5 1817.5
## + X67   1    1535.5 1817.5
## + X79   1    1535.5 1817.5
## + X24   1    1535.6 1817.6
## + X25   1    1535.8 1817.8
## + X50   1    1535.8 1817.8
## + X71   1    1535.8 1817.8
## + X30   1    1535.8 1817.8
## + X13   1    1535.9 1817.9
## + X31   1    1535.9 1817.9
## + X63   1    1535.9 1817.9
## + X2    1    1535.9 1817.9
## + X65   1    1536.0 1818.0
## + X37   1    1536.0 1818.0
## + X12   1    1536.0 1818.0
## + X69   1    1536.0 1818.0
## + X43   1    1536.1 1818.1
## + X20   1    1536.1 1818.1
## + X11   1    1536.1 1818.1
## + X15   1    1536.1 1818.1
## + X26   1    1536.2 1818.2
## + X62   1    1536.2 1818.2
## + X84   1    1536.2 1818.2
## + X81   1    1536.3 1818.3
## + X60   1    1536.3 1818.3
## + X48   1    1536.3 1818.3
## + X23   1    1536.3 1818.3
## + X56   1    1536.3 1818.3
## + X49   1    1536.4 1818.4
## + X16   1    1536.4 1818.4
## + X68   1    1536.4 1818.4
## + X77   1    1536.4 1818.4
## + X66   1    1536.4 1818.4
## + X70   1    1536.4 1818.4
## + X83   1    1536.4 1818.4
## + X7    1    1536.4 1818.4
## + X3    1    1536.4 1818.4
## + X5    1    1536.4 1818.4
## + X34   1    1536.5 1818.5
## + X64   1    1536.5 1818.5
## + X29   1    1536.5 1818.5
## + X19   1    1536.5 1818.5
## + X1    1    1536.5 1818.5
## + X8    1    1536.5 1818.5
```

```
## - X18    1    1554.8 1820.2
## - X47    1    1611.9 1877.3
##
## Step:  AIC=1802.28
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##       X35 + X36 + X38 + X41 + X42 + X44 + X45 + X46 + X47 + X51 +
##       X52 + X55 + X58 + X59 + X61 + X72 + X73 + X76 + X80 + X82 +
##       X85

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##            Df Deviance    AIC
## - X80     1    1538.5 1795.6
## - X72     1    1538.5 1795.6
## - X51     1    1538.6 1795.7
## - X61     1    1538.7 1795.8
## - X38     1    1538.8 1795.9
## - X44     1    1538.8 1796.0
## - X52     1    1539.0 1796.1
## - X14     1    1539.2 1796.3
## - X6      1    1539.2 1796.3
## - X28     1    1539.3 1796.4
## - X76     1    1539.4 1796.5
## - X41     1    1539.5 1796.6
## - X73     1    1539.7 1796.8
## - X45     1    1539.8 1797.0
## - X9      1    1539.9 1797.0
## - X35     1    1540.0 1797.2
## - X58     1    1540.2 1797.3
## - X36     1    1540.3 1797.4
## - X55     1    1540.6 1797.7
## - X46     1    1541.1 1798.2
## - X33     1    1541.1 1798.2
## - X22     1    1541.9 1799.1
## - X85     1    1542.2 1799.3
## - X4      1    1542.4 1799.5
## - X17     1    1543.3 1800.4
## - X82     1    1544.7 1801.8
## - X59     1    1544.7 1801.8
## - X32     1    1545.1 1802.2
## <none>         1536.9 1802.3
## - X42     1    1545.6 1802.8
## + X21     1    1535.5 1809.2
## + X75     1    1535.6 1809.3
## + X40     1    1535.6 1809.3
## + X27     1    1535.7 1809.4
## + X39     1    1535.7 1809.4
## + X74     1    1535.8 1809.5
## + X53     1    1535.8 1809.5
## + X10     1    1535.8 1809.6
## + X54     1    1535.9 1809.6
```

```
## + X67    1    1535.9 1809.6
## + X24    1    1535.9 1809.6
## + X79    1    1535.9 1809.6
## + X25    1    1536.1 1809.8
## + X13    1    1536.2 1809.9
## + X30    1    1536.2 1809.9
## + X50    1    1536.2 1809.9
## + X71    1    1536.2 1809.9
## + X31    1    1536.2 1809.9
## + X63    1    1536.3 1810.0
## + X2     1    1536.3 1810.0
## + X65    1    1536.4 1810.1
## + X12    1    1536.4 1810.1
## + X69    1    1536.4 1810.1
## + X37    1    1536.4 1810.1
## + X43    1    1536.5 1810.2
## + X15    1    1536.5 1810.2
## + X20    1    1536.5 1810.2
## + X57    1    1536.5 1810.2
## + X11    1    1536.5 1810.2
## + X62    1    1536.6 1810.3
## + X26    1    1536.6 1810.3
## + X81    1    1536.7 1810.3
## + X60    1    1536.7 1810.3
## + X84    1    1536.7 1810.4
## + X48    1    1536.7 1810.4
## + X23    1    1536.7 1810.4
## + X56    1    1536.7 1810.4
## + X68    1    1536.7 1810.4
## + X16    1    1536.7 1810.4
## + X78    1    1536.7 1810.4
## + X49    1    1536.8 1810.5
## + X77    1    1536.8 1810.5
## + X66    1    1536.8 1810.5
## + X70    1    1536.8 1810.5
## + X3     1    1536.8 1810.5
## + X83    1    1536.8 1810.5
## + X7     1    1536.8 1810.5
## + X5     1    1536.8 1810.5
## + X34    1    1536.8 1810.5
## + X19    1    1536.9 1810.6
## + X29    1    1536.9 1810.6
## + X1     1    1536.9 1810.6
## + X64    1    1536.9 1810.6
## + X8     1    1536.9 1810.6
## - X18    1    1555.2 1812.4
## - X47    1    1612.6 1869.7
##
## Step:  AIC=1795.59
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##      X35 + X36 + X38 + X41 + X42 + X44 + X45 + X46 + X47 + X51 +
##      X52 + X55 + X58 + X59 + X61 + X72 + X73 + X76 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X44     1   1539.8 1788.6
## - X72     1   1540.1 1788.9
## - X51     1   1540.2 1789.0
## - X61     1   1540.3 1789.1
## - X38     1   1540.4 1789.2
## - X6      1   1540.8 1789.6
## - X28     1   1540.8 1789.6
## - X52     1   1540.8 1789.6
## - X14     1   1540.8 1789.7
## - X41     1   1541.0 1789.8
## - X45     1   1541.0 1789.8
## - X76     1   1541.2 1790.0
## - X9      1   1541.5 1790.3
## - X73     1   1541.5 1790.3
## - X35     1   1541.7 1790.5
## - X58     1   1541.9 1790.7
## - X36     1   1541.9 1790.8
## - X55     1   1542.3 1791.1
## - X46     1   1542.5 1791.3
## - X33     1   1543.0 1791.8
## - X22     1   1543.3 1792.1
## - X85     1   1543.7 1792.5
## - X4      1   1543.9 1792.7
## - X17     1   1544.7 1793.5
## - X82     1   1546.2 1795.1
## <none>        1538.5 1795.6
## - X32     1   1547.3 1796.2
## - X59     1   1547.8 1796.6
## - X42     1   1547.9 1796.7
## + X80     1   1536.9 1802.3
## + X27     1   1537.2 1802.6
## + X21     1   1537.3 1802.7
## + X40     1   1537.3 1802.7
## + X75     1   1537.4 1802.8
## + X10     1   1537.4 1802.8
## + X39     1   1537.4 1802.8
## + X74     1   1537.5 1802.9
## + X53     1   1537.5 1802.9
## + X67     1   1537.5 1802.9
## + X30     1   1537.5 1802.9
## + X31     1   1537.5 1803.0
## + X79     1   1537.5 1803.0
## + X24     1   1537.6 1803.0
## + X54     1   1537.6 1803.0
## + X25     1   1537.7 1803.1
## + X13     1   1537.7 1803.1
## + X65     1   1537.8 1803.2
## + X50     1   1537.8 1803.2
## + X71     1   1537.8 1803.2
```

```
## + X43   1   1537.9 1803.3
## + X63   1   1538.0 1803.4
## + X2    1   1538.0 1803.4
## + X12   1   1538.0 1803.4
## + X69   1   1538.0 1803.4
## + X15   1   1538.0 1803.4
## + X11   1   1538.0 1803.4
## + X37   1   1538.0 1803.5
## + X57   1   1538.1 1803.5
## + X20   1   1538.1 1803.5
## + X62   1   1538.2 1803.6
## + X26   1   1538.2 1803.6
## + X81   1   1538.2 1803.7
## + X60   1   1538.2 1803.7
## + X84   1   1538.3 1803.7
## + X48   1   1538.3 1803.7
## + X56   1   1538.3 1803.7
## + X68   1   1538.3 1803.7
## + X23   1   1538.3 1803.7
## + X49   1   1538.3 1803.7
## + X16   1   1538.3 1803.7
## + X78   1   1538.3 1803.7
## + X77   1   1538.3 1803.8
## + X70   1   1538.4 1803.8
## + X3    1   1538.4 1803.8
## + X83   1   1538.4 1803.8
## + X66   1   1538.4 1803.8
## + X7    1   1538.4 1803.8
## + X5    1   1538.4 1803.8
## + X34   1   1538.4 1803.8
## + X19   1   1538.5 1803.9
## + X1    1   1538.5 1803.9
## + X8    1   1538.5 1803.9
## + X64   1   1538.5 1803.9
## + X29   1   1538.5 1803.9
## - X18   1   1556.4 1805.2
## - X47   1   1619.0 1867.8
##
## Step:  AIC=1788.6
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##     X35 + X36 + X38 + X41 + X42 + X45 + X46 + X47 + X51 + X52 +
##     X55 + X58 + X59 + X61 + X72 + X73 + X76 + X82 + X85

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##         Df Deviance    AIC
## - X72   1   1541.5 1782.0
## - X51   1   1541.6 1782.1
## - X61   1   1541.7 1782.2
## - X38   1   1541.7 1782.2
## - X6    1   1541.9 1782.5
```

```
## - X52     1    1542.0 1782.6
## - X28     1    1542.2 1782.7
## - X41     1    1542.2 1782.8
## - X14     1    1542.2 1782.8
## - X76     1    1542.4 1783.0
## - X9      1    1542.7 1783.3
## - X45     1    1542.8 1783.4
## - X73     1    1542.9 1783.4
## - X35     1    1543.0 1783.6
## - X58     1    1543.2 1783.8
## - X36     1    1543.3 1783.8
## - X55     1    1543.4 1784.0
## - X33     1    1544.1 1784.7
## - X22     1    1544.7 1785.2
## - X46     1    1544.9 1785.4
## - X85     1    1545.0 1785.5
## - X4      1    1545.2 1785.7
## - X17     1    1546.0 1786.5
## - X82     1    1547.6 1788.1
## <none>        1539.8 1788.6
## - X32     1    1548.5 1789.1
## - X42     1    1549.2 1789.7
## + X44     1    1538.5 1795.6
## + X40     1    1538.5 1795.6
## + X27     1    1538.5 1795.6
## + X21     1    1538.5 1795.6
## + X39     1    1538.6 1795.7
## + X75     1    1538.6 1795.8
## + X74     1    1538.7 1795.8
## + X53     1    1538.7 1795.8
## + X10     1    1538.7 1795.9
## + X67     1    1538.8 1796.0
## + X80     1    1538.8 1796.0
## + X24     1    1538.9 1796.0
## + X65     1    1538.9 1796.0
## + X54     1    1538.9 1796.0
## + X25     1    1538.9 1796.0
## + X79     1    1539.0 1796.1
## + X30     1    1539.0 1796.1
## + X31     1    1539.0 1796.1
## + X50     1    1539.1 1796.2
## + X71     1    1539.1 1796.2
## + X13     1    1539.1 1796.2
## + X69     1    1539.2 1796.3
## + X63     1    1539.2 1796.3
## + X43     1    1539.3 1796.4
## + X37     1    1539.3 1796.4
## + X11     1    1539.3 1796.4
## + X2      1    1539.3 1796.4
## + X57     1    1539.3 1796.4
## + X12     1    1539.3 1796.5
## + X15     1    1539.4 1796.5
## + X20     1    1539.4 1796.5
## + X62     1    1539.5 1796.6
```

```
## + X48   1   1539.5 1796.6
## + X26   1   1539.5 1796.7
## + X81   1   1539.6 1796.7
## + X60   1   1539.6 1796.7
## + X16   1   1539.6 1796.7
## + X56   1   1539.6 1796.7
## + X84   1   1539.6 1796.7
## + X78   1   1539.6 1796.7
## + X49   1   1539.6 1796.7
## + X23   1   1539.6 1796.7
## + X77   1   1539.6 1796.7
## + X68   1   1539.6 1796.8
## + X70   1   1539.7 1796.8
## + X83   1   1539.7 1796.8
## + X3    1   1539.7 1796.8
## + X7    1   1539.7 1796.8
## + X66   1   1539.7 1796.8
## + X34   1   1539.7 1796.9
## + X5    1   1539.8 1796.9
## + X29   1   1539.8 1796.9
## + X19   1   1539.8 1796.9
## + X8    1   1539.8 1796.9
## + X64   1   1539.8 1796.9
## + X1    1   1539.8 1796.9
## - X18   1   1557.8 1798.4
## - X59   1   1561.6 1802.2
## - X47   1   1627.6 1868.1
##
## Step:  AIC=1781.98
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##     X35 + X36 + X38 + X41 + X42 + X45 + X46 + X47 + X51 + X52 +
##     X55 + X58 + X59 + X61 + X73 + X76 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X51   1   1541.6 1773.8
## - X61   1   1543.3 1775.5
## - X38   1   1543.4 1775.6
## - X52   1   1543.6 1775.8
## - X6    1   1543.7 1776.0
## - X28   1   1543.8 1776.0
## - X14   1   1544.0 1776.2
## - X41   1   1544.0 1776.2
## - X76   1   1544.0 1776.3
## - X73   1   1544.4 1776.6
## - X9    1   1544.5 1776.7
## - X35   1   1544.7 1776.9
## - X45   1   1544.9 1777.2
## - X36   1   1545.0 1777.2
## - X58   1   1545.0 1777.2
```

```
## - X55    1    1545.1 1777.3
## - X33    1    1545.9 1778.1
## - X22    1    1546.2 1778.5
## - X46    1    1546.5 1778.8
## - X85    1    1546.7 1779.0
## - X4     1    1546.9 1779.2
## - X17    1    1547.5 1779.8
## - X82    1    1549.1 1781.3
## <none>        1541.5 1782.0
## - X32    1    1550.3 1782.5
## - X42    1    1550.9 1783.2
## + X72    1    1539.8 1788.6
## + X44    1    1540.1 1788.9
## + X40    1    1540.2 1789.0
## + X27    1    1540.2 1789.0
## + X39    1    1540.3 1789.1
## + X21    1    1540.3 1789.1
## + X74    1    1540.3 1789.1
## + X53    1    1540.3 1789.1
## + X75    1    1540.3 1789.1
## + X24    1    1540.5 1789.3
## + X67    1    1540.5 1789.3
## + X65    1    1540.5 1789.3
## + X10    1    1540.5 1789.3
## + X80    1    1540.6 1789.4
## + X54    1    1540.6 1789.4
## + X25    1    1540.6 1789.4
## + X30    1    1540.6 1789.5
## + X31    1    1540.7 1789.5
## + X79    1    1540.7 1789.5
## + X69    1    1540.8 1789.6
## + X63    1    1540.8 1789.6
## + X13    1    1540.9 1789.7
## + X50    1    1540.9 1789.7
## + X71    1    1540.9 1789.7
## + X43    1    1540.9 1789.7
## + X2     1    1541.0 1789.8
## + X11    1    1541.0 1789.8
## + X37    1    1541.0 1789.8
## + X57    1    1541.0 1789.9
## + X48    1    1541.1 1789.9
## + X12    1    1541.1 1789.9
## + X20    1    1541.1 1789.9
## + X15    1    1541.1 1789.9
## + X62    1    1541.2 1790.0
## + X84    1    1541.2 1790.0
## + X26    1    1541.2 1790.0
## + X81    1    1541.2 1790.1
## + X60    1    1541.2 1790.1
## + X56    1    1541.3 1790.1
## + X23    1    1541.3 1790.1
## + X16    1    1541.3 1790.1
## + X78    1    1541.3 1790.1
## + X68    1    1541.3 1790.1
```

```
## + X77   1   1541.3 1790.1
## + X49   1   1541.3 1790.1
## + X70   1   1541.4 1790.2
## + X83   1   1541.4 1790.2
## + X7    1   1541.4 1790.2
## + X3    1   1541.4 1790.2
## + X66   1   1541.4 1790.2
## + X5    1   1541.4 1790.2
## + X34   1   1541.4 1790.2
## + X19   1   1541.4 1790.3
## + X29   1   1541.4 1790.3
## + X1    1   1541.4 1790.3
## + X64   1   1541.5 1790.3
## + X8    1   1541.5 1790.3
## - X18   1   1559.4 1791.6
## - X59   1   1563.2 1795.4
## - X47   1   1628.6 1860.9
##
## Step:  AIC=1773.82
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##     X35 + X36 + X38 + X41 + X42 + X45 + X46 + X47 + X52 + X55 +
##     X58 + X59 + X61 + X73 + X76 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X61    1   1543.3 1767.3
## - X38    1   1543.5 1767.4
## - X52    1   1543.8 1767.7
## - X6     1   1543.8 1767.8
## - X28    1   1543.9 1767.9
## - X14    1   1544.1 1768.0
## - X41    1   1544.1 1768.1
## - X76    1   1544.2 1768.1
## - X73    1   1544.5 1768.5
## - X9     1   1544.6 1768.5
## - X35    1   1544.8 1768.8
## - X45    1   1544.9 1768.9
## - X58    1   1545.1 1769.0
## - X36    1   1545.1 1769.0
## - X55    1   1545.2 1769.2
## - X33    1   1546.0 1769.9
## - X22    1   1546.4 1770.3
## - X46    1   1546.7 1770.6
## - X85    1   1546.8 1770.8
## - X4     1   1547.1 1771.0
## - X17    1   1547.6 1771.6
## - X82    1   1549.1 1773.0
## <none>       1541.6 1773.8
## - X32    1   1550.3 1774.2
## - X42    1   1551.1 1775.0
```

```
## + X44   1    1540.2 1780.7
## + X40   1    1540.3 1780.8
## + X27   1    1540.3 1780.9
## + X39   1    1540.4 1780.9
## + X21   1    1540.4 1780.9
## + X75   1    1540.5 1781.0
## + X74   1    1540.5 1781.0
## + X53   1    1540.5 1781.0
## + X24   1    1540.6 1781.1
## + X67   1    1540.6 1781.1
## + X10   1    1540.6 1781.2
## + X65   1    1540.6 1781.2
## + X80   1    1540.7 1781.2
## + X54   1    1540.7 1781.3
## + X30   1    1540.8 1781.3
## + X25   1    1540.8 1781.3
## + X31   1    1540.8 1781.3
## + X79   1    1540.8 1781.3
## + X63   1    1540.9 1781.5
## + X13   1    1541.0 1781.5
## + X43   1    1541.0 1781.6
## + X69   1    1541.1 1781.6
## + X50   1    1541.1 1781.6
## + X71   1    1541.1 1781.6
## + X11   1    1541.1 1781.6
## + X2    1    1541.1 1781.6
## + X37   1    1541.1 1781.6
## + X57   1    1541.2 1781.7
## + X12   1    1541.2 1781.7
## + X20   1    1541.2 1781.8
## + X15   1    1541.2 1781.8
## + X62   1    1541.3 1781.8
## + X48   1    1541.3 1781.8
## + X84   1    1541.3 1781.8
## + X26   1    1541.3 1781.9
## + X81   1    1541.4 1781.9
## + X60   1    1541.4 1781.9
## + X56   1    1541.4 1781.9
## + X23   1    1541.4 1781.9
## + X16   1    1541.4 1781.9
## + X78   1    1541.4 1782.0
## + X49   1    1541.4 1782.0
## + X68   1    1541.4 1782.0
## + X77   1    1541.4 1782.0
## + X51   1    1541.5 1782.0
## + X70   1    1541.5 1782.0
## + X83   1    1541.5 1782.0
## + X7    1    1541.5 1782.0
## + X3    1    1541.5 1782.1
## + X34   1    1541.5 1782.1
## + X66   1    1541.5 1782.1
## + X5    1    1541.5 1782.1
## + X19   1    1541.6 1782.1
## + X29   1    1541.6 1782.1
```

```
## + X1     1   1541.6 1782.1
## + X64    1   1541.6 1782.1
## + X8     1   1541.6 1782.1
## + X72    1   1541.6 1782.1
## - X18    1   1559.4 1783.3
## - X59    1   1563.2 1787.2
## - X47    1   1628.9 1852.8
##
## Step:  AIC=1767.29
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##      X35 + X36 + X38 + X41 + X42 + X45 + X46 + X47 + X52 + X55 +
##      X58 + X59 + X73 + X76 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X38    1   1545.3 1760.9
## - X6     1   1545.5 1761.2
## - X52    1   1545.5 1761.2
## - X14    1   1545.7 1761.4
## - X41    1   1545.8 1761.5
## - X28    1   1545.9 1761.5
## - X76    1   1546.0 1761.7
## - X9     1   1546.3 1761.9
## - X73    1   1546.3 1761.9
## - X35    1   1546.6 1762.2
## - X45    1   1546.7 1762.3
## - X36    1   1546.9 1762.5
## - X58    1   1546.9 1762.5
## - X55    1   1547.1 1762.7
## - X33    1   1547.6 1763.3
## - X46    1   1548.4 1764.0
## - X22    1   1548.5 1764.1
## - X85    1   1548.7 1764.3
## - X4     1   1548.8 1764.5
## - X17    1   1549.5 1765.1
## <none>       1543.3 1767.3
## - X32    1   1552.1 1767.7
## - X42    1   1552.7 1768.3
## - X82    1   1558.1 1773.8
## + X61    1   1541.6 1773.8
## + X44    1   1541.9 1774.1
## + X40    1   1541.9 1774.1
## + X39    1   1542.1 1774.3
## + X27    1   1542.1 1774.3
## + X75    1   1542.2 1774.4
## + X21    1   1542.2 1774.5
## + X74    1   1542.3 1774.5
## + X53    1   1542.3 1774.5
## + X10    1   1542.3 1774.5
## + X65    1   1542.3 1774.6
```

```
## + X67   1   1542.4 1774.6
## + X24   1   1542.4 1774.6
## + X30   1   1542.5 1774.7
## + X80   1   1542.5 1774.7
## + X54   1   1542.5 1774.7
## + X31   1   1542.5 1774.7
## + X25   1   1542.5 1774.7
## + X63   1   1542.5 1774.7
## + X79   1   1542.5 1774.8
## + X13   1   1542.7 1775.0
## + X43   1   1542.8 1775.0
## + X11   1   1542.8 1775.0
## + X69   1   1542.8 1775.0
## + X50   1   1542.8 1775.1
## + X71   1   1542.8 1775.1
## + X37   1   1542.9 1775.1
## + X2    1   1542.9 1775.1
## + X12   1   1542.9 1775.2
## + X57   1   1542.9 1775.2
## + X15   1   1542.9 1775.2
## + X84   1   1543.0 1775.2
## + X20   1   1543.0 1775.2
## + X62   1   1543.1 1775.3
## + X48   1   1543.1 1775.3
## + X26   1   1543.1 1775.3
## + X81   1   1543.1 1775.4
## + X60   1   1543.1 1775.4
## + X16   1   1543.2 1775.4
## + X78   1   1543.2 1775.4
## + X23   1   1543.2 1775.4
## + X49   1   1543.2 1775.5
## + X83   1   1543.3 1775.5
## + X70   1   1543.3 1775.5
## + X7    1   1543.3 1775.5
## + X51   1   1543.3 1775.5
## + X5    1   1543.3 1775.5
## + X3    1   1543.3 1775.5
## + X68   1   1543.3 1775.5
## + X34   1   1543.3 1775.5
## + X66   1   1543.3 1775.5
## + X56   1   1543.3 1775.5
## + X19   1   1543.3 1775.6
## + X1    1   1543.3 1775.6
## + X77   1   1543.3 1775.6
## + X29   1   1543.3 1775.6
## + X72   1   1543.3 1775.6
## + X64   1   1543.3 1775.6
## + X8    1   1543.3 1775.6
## - X18   1   1561.0 1776.7
## - X59   1   1564.4 1780.0
## - X47   1   1630.4 1846.1
##
## Step:  AIC=1760.92
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
```

```
##       X35 + X36 + X41 + X42 + X45 + X46 + X47 + X52 + X55 + X58 +
##       X59 + X73 + X76 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X52    1   1547.4 1754.7
## - X14    1   1547.4 1754.7
## - X76    1   1547.7 1755.1
## - X6     1   1547.8 1755.1
## - X28    1   1547.8 1755.2
## - X41    1   1547.9 1755.2
## - X73    1   1548.2 1755.5
## - X35    1   1548.4 1755.8
## - X9     1   1548.6 1755.9
## - X36    1   1548.7 1756.0
## - X45    1   1548.7 1756.1
## - X55    1   1548.8 1756.2
## - X58    1   1548.8 1756.2
## - X46    1   1550.2 1757.5
## - X4     1   1550.5 1757.9
## - X17    1   1550.7 1758.0
## - X85    1   1550.8 1758.2
## - X33    1   1550.9 1758.2
## - X22    1   1551.1 1758.5
## - X42    1   1553.0 1760.4
## <none>       1545.3 1760.9
## - X32    1   1555.7 1763.0
## + X39    1   1542.6 1766.6
## - X82    1   1559.8 1767.2
## + X38    1   1543.3 1767.3
## + X61    1   1543.5 1767.4
## + X44    1   1543.8 1767.7
## + X27    1   1544.0 1767.9
## + X10    1   1544.0 1767.9
## + X21    1   1544.0 1767.9
## + X30    1   1544.1 1768.0
## + X31    1   1544.1 1768.1
## + X24    1   1544.2 1768.1
## + X74    1   1544.2 1768.1
## + X53    1   1544.2 1768.1
## + X75    1   1544.2 1768.1
## + X40    1   1544.2 1768.1
## + X65    1   1544.2 1768.2
## + X67    1   1544.3 1768.3
## + X25    1   1544.4 1768.3
## + X13    1   1544.4 1768.3
## + X63    1   1544.4 1768.3
## + X80    1   1544.4 1768.4
## + X54    1   1544.4 1768.4
## + X79    1   1544.5 1768.5
```

```
## + X2    1   1544.7 1768.6
## + X69   1   1544.7 1768.6
## + X12   1   1544.7 1768.6
## + X11   1   1544.7 1768.6
## + X15   1   1544.7 1768.7
## + X43   1   1544.8 1768.7
## + X50   1   1544.8 1768.7
## + X71   1   1544.8 1768.7
## + X84   1   1544.9 1768.8
## + X26   1   1544.9 1768.9
## + X48   1   1545.0 1768.9
## + X20   1   1545.0 1768.9
## + X57   1   1545.0 1768.9
## + X62   1   1545.0 1768.9
## + X81   1   1545.0 1769.0
## + X60   1   1545.0 1769.0
## + X23   1   1545.1 1769.1
## + X16   1   1545.2 1769.1
## + X49   1   1545.2 1769.1
## + X83   1   1545.2 1769.1
## + X78   1   1545.2 1769.1
## + X70   1   1545.2 1769.1
## + X37   1   1545.2 1769.1
## + X3    1   1545.2 1769.1
## + X7    1   1545.2 1769.2
## + X68   1   1545.2 1769.2
## + X51   1   1545.2 1769.2
## + X34   1   1545.2 1769.2
## + X56   1   1545.2 1769.2
## + X66   1   1545.2 1769.2
## + X5    1   1545.2 1769.2
## + X19   1   1545.2 1769.2
## + X72   1   1545.3 1769.2
## + X77   1   1545.3 1769.2
## + X64   1   1545.3 1769.2
## + X1    1   1545.3 1769.2
## + X8    1   1545.3 1769.2
## + X29   1   1545.3 1769.2
## - X18   1   1561.9 1769.3
## - X59   1   1566.8 1774.1
## - X47   1   1634.0 1841.4
##
## Step:  AIC=1754.74
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##      X35 + X36 + X41 + X42 + X45 + X46 + X47 + X55 + X58 + X59 +
##      X73 + X76 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X73   1   1548.6 1747.7
```

```
## - X14    1    1549.6 1748.6
## - X28    1    1549.8 1748.8
## - X76    1    1549.8 1748.9
## - X6     1    1549.9 1749.0
## - X41    1    1550.1 1749.2
## - X35    1    1550.5 1749.6
## - X9     1    1550.5 1749.6
## - X58    1    1550.8 1749.8
## - X45    1    1550.8 1749.8
## - X36    1    1550.8 1749.8
## - X55    1    1551.0 1750.0
## - X46    1    1551.5 1750.6
## - X4     1    1552.6 1751.6
## - X17    1    1552.7 1751.8
## - X85    1    1552.8 1751.9
## - X33    1    1552.9 1751.9
## - X22    1    1553.3 1752.3
## - X42    1    1555.2 1754.3
## <none>        1547.4 1754.7
## - X32    1    1557.6 1756.6
## + X39    1    1544.9 1760.6
## + X52    1    1545.3 1760.9
## - X82    1    1561.9 1761.0
## + X38    1    1545.5 1761.2
## + X61    1    1545.6 1761.2
## + X44    1    1545.9 1761.6
## + X27    1    1546.0 1761.7
## + X21    1    1546.0 1761.7
## + X10    1    1546.2 1761.8
## + X74    1    1546.2 1761.8
## + X53    1    1546.2 1761.8
## + X30    1    1546.2 1761.9
## + X75    1    1546.2 1761.9
## + X31    1    1546.2 1761.9
## + X24    1    1546.3 1761.9
## + X80    1    1546.3 1762.0
## + X40    1    1546.4 1762.0
## + X65    1    1546.4 1762.0
## + X13    1    1546.5 1762.1
## + X25    1    1546.5 1762.1
## + X63    1    1546.5 1762.2
## + X54    1    1546.5 1762.2
## + X79    1    1546.7 1762.3
## + X67    1    1546.7 1762.4
## + X2     1    1546.8 1762.4
## + X43    1    1546.8 1762.4
## + X15    1    1546.8 1762.5
## + X12    1    1546.8 1762.5
## + X11    1    1546.8 1762.5
## + X69    1    1546.9 1762.6
## + X84    1    1547.0 1762.6
## + X20    1    1547.0 1762.7
## + X26    1    1547.0 1762.7
## + X50    1    1547.1 1762.7
```

```
## + X71   1   1547.1 1762.7
## + X62   1   1547.1 1762.7
## + X48   1   1547.1 1762.8
## - X18   1   1563.7 1762.8
## + X57   1   1547.2 1762.8
## + X81   1   1547.2 1762.8
## + X60   1   1547.2 1762.8
## + X23   1   1547.2 1762.8
## + X49   1   1547.3 1762.9
## + X83   1   1547.3 1762.9
## + X16   1   1547.3 1762.9
## + X37   1   1547.3 1762.9
## + X3    1   1547.3 1763.0
## + X70   1   1547.3 1763.0
## + X7    1   1547.3 1763.0
## + X78   1   1547.3 1763.0
## + X51   1   1547.3 1763.0
## + X68   1   1547.3 1763.0
## + X5    1   1547.3 1763.0
## + X56   1   1547.3 1763.0
## + X34   1   1547.3 1763.0
## + X66   1   1547.3 1763.0
## + X19   1   1547.4 1763.0
## + X1    1   1547.4 1763.0
## + X64   1   1547.4 1763.0
## + X77   1   1547.4 1763.0
## + X72   1   1547.4 1763.0
## + X8    1   1547.4 1763.0
## + X29   1   1547.4 1763.0
## - X59   1   1569.1 1768.2
## - X47   1   1636.3 1835.4
##
## Step:  AIC=1747.65
## X86 ~ X4 + X6 + X9 + X14 + X17 + X18 + X22 + X28 + X32 + X33 +
##       X35 + X36 + X41 + X42 + X45 + X46 + X47 + X55 + X58 + X59 +
##       X76 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X14   1   1550.8 1741.5
## - X6    1   1551.1 1741.8
## - X76   1   1551.1 1741.8
## - X28   1   1551.1 1741.9
## - X41   1   1551.2 1742.0
## - X35   1   1551.7 1742.5
## - X9    1   1551.8 1742.5
## - X58   1   1551.8 1742.5
## - X45   1   1551.9 1742.7
## - X36   1   1552.0 1742.7
## - X55   1   1552.1 1742.9
```

```
## - X85     1    1553.8 1744.5
## - X4      1    1553.9 1744.7
## - X33     1    1554.0 1744.8
## - X17     1    1554.2 1745.0
## - X22     1    1554.9 1745.7
## - X42     1    1556.3 1747.1
## <none>        1548.6 1747.7
## - X46     1    1558.4 1749.2
## - X32     1    1558.8 1749.6
## + X39     1    1546.0 1753.3
## - X82     1    1562.8 1753.6
## + X38     1    1546.5 1753.9
## + X61     1    1546.8 1754.2
## + X44     1    1546.9 1754.2
## + X21     1    1546.9 1754.2
## + X74     1    1547.0 1754.3
## + X53     1    1547.0 1754.3
## + X27     1    1547.2 1754.6
## + X10     1    1547.3 1754.7
## + X75     1    1547.3 1754.7
## + X65     1    1547.4 1754.7
## + X73     1    1547.4 1754.7
## + X30     1    1547.4 1754.8
## + X31     1    1547.4 1754.8
## + X24     1    1547.5 1754.8
## + X40     1    1547.6 1754.9
## + X54     1    1547.6 1755.0
## + X80     1    1547.6 1755.0
## + X13     1    1547.7 1755.1
## + X63     1    1547.8 1755.1
## + X25     1    1547.8 1755.1
## + X67     1    1547.9 1755.3
## + X79     1    1548.0 1755.3
## + X43     1    1548.0 1755.3
## + X11     1    1548.0 1755.3
## + X12     1    1548.0 1755.3
## + X2      1    1548.0 1755.4
## + X15     1    1548.0 1755.4
## + X69     1    1548.1 1755.4
## + X26     1    1548.2 1755.5
## + X52     1    1548.2 1755.5
## + X84     1    1548.2 1755.6
## + X20     1    1548.2 1755.6
## + X50     1    1548.3 1755.6
## + X71     1    1548.3 1755.6
## + X48     1    1548.3 1755.6
## + X62     1    1548.3 1755.7
## + X81     1    1548.4 1755.7
## + X60     1    1548.4 1755.7
## + X23     1    1548.4 1755.8
## + X57     1    1548.5 1755.8
## + X49     1    1548.5 1755.8
## + X37     1    1548.5 1755.8
## + X83     1    1548.5 1755.8
```

```
## + X70    1    1548.5 1755.8
## + X7     1    1548.5 1755.8
## + X5     1    1548.5 1755.9
## + X16    1    1548.5 1755.9
## + X3     1    1548.5 1755.9
## + X34    1    1548.5 1755.9
## + X68    1    1548.5 1755.9
## + X56    1    1548.5 1755.9
## + X64    1    1548.5 1755.9
## + X1     1    1548.5 1755.9
## + X51    1    1548.6 1755.9
## + X78    1    1548.6 1755.9
## + X72    1    1548.6 1755.9
## + X29    1    1548.6 1755.9
## + X77    1    1548.6 1755.9
## + X66    1    1548.6 1755.9
## + X19    1    1548.6 1755.9
## + X8     1    1548.6 1755.9
## - X18    1    1565.7 1756.5
## - X59    1    1569.5 1760.3
## - X47    1    1637.2 1827.9
##
## Step:  AIC=1741.54
## X86 ~ X4 + X6 + X9 + X17 + X18 + X22 + X28 + X32 + X33 + X35 +
##      X36 + X41 + X42 + X45 + X46 + X47 + X55 + X58 + X59 + X76 +
##      X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##           Df Deviance    AIC
## - X6     1    1552.9 1735.4
## - X28    1    1553.3 1735.8
## - X76    1    1553.3 1735.8
## - X41    1    1553.4 1735.8
## - X9     1    1553.5 1735.9
## - X58    1    1554.0 1736.5
## - X45    1    1554.1 1736.6
## - X55    1    1554.3 1736.7
## - X35    1    1554.3 1736.8
## - X36    1    1554.6 1737.0
## - X4     1    1554.6 1737.1
## - X33    1    1555.8 1738.3
## - X85    1    1555.9 1738.4
## - X17    1    1556.8 1739.2
## - X22    1    1557.3 1739.8
## - X42    1    1558.7 1741.2
## <none>        1550.8 1741.5
## - X32    1    1560.3 1742.8
## - X46    1    1561.0 1743.4
## + X39    1    1548.0 1747.1
## - X82    1    1564.7 1747.2
```

```
## + X15   1   1548.3 1747.3
## + X14   1   1548.6 1747.7
## + X44   1   1549.0 1748.0
## + X21   1   1549.0 1748.1
## + X38   1   1549.0 1748.1
## + X74   1   1549.1 1748.2
## + X53   1   1549.1 1748.2
## + X61   1   1549.1 1748.2
## + X10   1   1549.4 1748.4
## + X11   1   1549.4 1748.4
## + X30   1   1549.4 1748.5
## + X31   1   1549.5 1748.5
## + X65   1   1549.5 1748.5
## + X24   1   1549.5 1748.5
## + X40   1   1549.5 1748.5
## + X75   1   1549.5 1748.6
## + X27   1   1549.5 1748.6
## + X73   1   1549.6 1748.6
## + X25   1   1549.7 1748.7
## + X80   1   1549.8 1748.8
## + X54   1   1549.8 1748.8
## + X43   1   1549.8 1748.8
## + X63   1   1550.0 1749.1
## + X3    1   1550.0 1749.1
## + X67   1   1550.1 1749.2
## - X18   1   1566.8 1749.2
## + X79   1   1550.2 1749.3
## + X69   1   1550.3 1749.3
## + X52   1   1550.4 1749.5
## + X13   1   1550.4 1749.5
## + X84   1   1550.4 1749.5
## + X26   1   1550.4 1749.5
## + X50   1   1550.5 1749.5
## + X71   1   1550.5 1749.5
## + X62   1   1550.5 1749.5
## + X2    1   1550.5 1749.5
## + X48   1   1550.5 1749.5
## + X12   1   1550.5 1749.6
## + X81   1   1550.5 1749.6
## + X60   1   1550.5 1749.6
## + X20   1   1550.6 1749.7
## + X23   1   1550.6 1749.7
## + X49   1   1550.6 1749.7
## + X5    1   1550.6 1749.7
## + X57   1   1550.7 1749.7
## + X83   1   1550.7 1749.7
## + X70   1   1550.7 1749.7
## + X29   1   1550.7 1749.7
## + X34   1   1550.7 1749.8
## + X1    1   1550.7 1749.8
## + X37   1   1550.7 1749.8
## + X7    1   1550.7 1749.8
## + X56   1   1550.7 1749.8
## + X16   1   1550.7 1749.8
```

```
## + X64   1   1550.7 1749.8
## + X68   1   1550.7 1749.8
## + X72   1   1550.8 1749.8
## + X78   1   1550.8 1749.8
## + X51   1   1550.8 1749.8
## + X77   1   1550.8 1749.8
## + X19   1   1550.8 1749.8
## + X66   1   1550.8 1749.8
## + X8    1   1550.8 1749.8
## - X59   1   1571.9 1754.4
## - X47   1   1639.3 1821.8
##
## Step:  AIC=1735.4
## X86 ~ X4 + X9 + X17 + X18 + X22 + X28 + X32 + X33 + X35 + X36 +
##     X41 + X42 + X45 + X46 + X47 + X55 + X58 + X59 + X76 + X82 +
##     X85

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X9     1   1555.4 1729.5
## - X76    1   1555.5 1729.6
## - X28    1   1555.7 1729.9
## - X35    1   1556.2 1730.3
## - X41    1   1556.2 1730.4
## - X45    1   1556.3 1730.4
## - X58    1   1556.3 1730.5
## - X55    1   1556.4 1730.6
## - X36    1   1556.4 1730.6
## - X4     1   1557.1 1731.3
## - X85    1   1558.1 1732.3
## - X33    1   1558.5 1732.7
## - X17    1   1558.9 1733.1
## - X22    1   1559.0 1733.2
## - X42    1   1560.4 1734.5
## <none>       1552.9 1735.4
## - X46    1   1562.7 1736.9
## - X32    1   1563.2 1737.4
## + X39    1   1550.3 1741.0
## - X82    1   1567.0 1741.2
## + X15    1   1550.7 1741.5
## + X6     1   1550.8 1741.5
## + X38    1   1550.9 1741.7
## + X14    1   1551.1 1741.8
## + X53    1   1551.2 1742.0
## + X74    1   1551.2 1742.0
## + X44    1   1551.3 1742.0
## + X11    1   1551.3 1742.1
## + X61    1   1551.3 1742.1
## + X21    1   1551.5 1742.2
## + X10    1   1551.5 1742.2
```

```
## + X30   1   1551.5 1742.3
## + X31   1   1551.6 1742.3
## + X75   1   1551.7 1742.5
## + X27   1   1551.7 1742.5
## + X65   1   1551.8 1742.5
## + X73   1   1551.8 1742.5
## + X24   1   1551.8 1742.5
## + X80   1   1551.9 1742.7
## + X25   1   1552.0 1742.7
## + X54   1   1552.0 1742.7
## + X40   1   1552.0 1742.8
## + X43   1   1552.1 1742.9
## - X18   1   1568.7 1742.9
## + X63   1   1552.2 1743.0
## + X67   1   1552.2 1743.0
## + X3    1   1552.3 1743.0
## + X79   1   1552.3 1743.1
## + X26   1   1552.4 1743.2
## + X69   1   1552.5 1743.2
## + X7    1   1552.5 1743.3
## + X13   1   1552.5 1743.3
## + X52   1   1552.6 1743.3
## + X50   1   1552.6 1743.4
## + X71   1   1552.6 1743.4
## + X84   1   1552.6 1743.4
## + X2    1   1552.6 1743.4
## + X48   1   1552.7 1743.4
## + X12   1   1552.7 1743.4
## + X20   1   1552.7 1743.4
## + X81   1   1552.7 1743.4
## + X60   1   1552.7 1743.4
## + X62   1   1552.7 1743.5
## + X16   1   1552.8 1743.5
## + X37   1   1552.8 1743.5
## + X23   1   1552.8 1743.6
## + X57   1   1552.8 1743.6
## + X49   1   1552.8 1743.6
## + X83   1   1552.8 1743.6
## + X29   1   1552.8 1743.6
## + X70   1   1552.8 1743.6
## + X5    1   1552.8 1743.6
## + X19   1   1552.9 1743.6
## + X64   1   1552.9 1743.6
## + X56   1   1552.9 1743.6
## + X1    1   1552.9 1743.7
## + X72   1   1552.9 1743.7
## + X68   1   1552.9 1743.7
## + X77   1   1552.9 1743.7
## + X78   1   1552.9 1743.7
## + X51   1   1552.9 1743.7
## + X34   1   1552.9 1743.7
## + X66   1   1552.9 1743.7
## + X8    1   1552.9 1743.7
## - X59   1   1574.4 1748.6
```

```
## - X47   1   1640.8 1814.9
##
## Step:  AIC=1729.55
## X86 ~ X4 + X17 + X18 + X22 + X28 + X32 + X33 + X35 + X36 + X41 +
##      X42 + X45 + X46 + X47 + X55 + X58 + X59 + X76 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X76   1   1558.0 1723.8
## - X28   1   1558.0 1723.9
## - X35   1   1558.5 1724.4
## - X58   1   1558.6 1724.5
## - X45   1   1558.7 1724.6
## - X36   1   1558.8 1724.7
## - X55   1   1559.0 1724.9
## - X41   1   1559.5 1725.4
## - X4    1   1560.1 1726.0
## - X85   1   1560.7 1726.6
## - X33   1   1561.3 1727.2
## - X17   1   1561.4 1727.2
## - X22   1   1562.0 1727.9
## - X42   1   1563.2 1729.1
## <none>      1555.4 1729.5
## - X46   1   1565.2 1731.1
## - X32   1   1565.7 1731.5
## + X39   1   1552.7 1735.2
## + X7    1   1552.8 1735.3
## + X9    1   1552.9 1735.4
## + X38   1   1553.0 1735.4
## + X30   1   1553.1 1735.5
## + X31   1   1553.1 1735.6
## + X11   1   1553.2 1735.7
## + X15   1   1553.3 1735.8
## + X10   1   1553.4 1735.8
## + X6    1   1553.5 1735.9
## - X82   1   1570.2 1736.1
## + X44   1   1553.8 1736.2
## + X53   1   1553.8 1736.3
## + X74   1   1553.8 1736.3
## + X61   1   1553.8 1736.3
## + X27   1   1553.9 1736.3
## + X14   1   1553.9 1736.4
## + X21   1   1554.0 1736.4
## + X75   1   1554.1 1736.5
## + X73   1   1554.2 1736.6
## + X24   1   1554.2 1736.7
## + X65   1   1554.2 1736.7
## + X25   1   1554.2 1736.7
## + X54   1   1554.4 1736.8
## + X80   1   1554.4 1736.8
```

```
## + X40   1   1554.5 1737.0
## + X43   1   1554.6 1737.0
## + X63   1   1554.6 1737.1
## + X67   1   1554.7 1737.1
## + X3    1   1554.7 1737.2
## + X13   1   1554.8 1737.2
## - X18   1   1571.4 1737.3
## + X12   1   1554.8 1737.3
## + X26   1   1554.9 1737.3
## + X69   1   1554.9 1737.3
## + X79   1   1554.9 1737.4
## + X52   1   1555.0 1737.4
## + X2    1   1555.0 1737.5
## + X84   1   1555.0 1737.5
## + X20   1   1555.0 1737.5
## + X37   1   1555.0 1737.5
## + X50   1   1555.1 1737.5
## + X71   1   1555.1 1737.5
## + X48   1   1555.1 1737.5
## + X62   1   1555.1 1737.6
## + X81   1   1555.1 1737.6
## + X60   1   1555.1 1737.6
## + X16   1   1555.2 1737.6
## + X19   1   1555.3 1737.7
## + X49   1   1555.3 1737.8
## + X23   1   1555.3 1737.8
## + X56   1   1555.3 1737.8
## + X83   1   1555.3 1737.8
## + X57   1   1555.3 1737.8
## + X70   1   1555.3 1737.8
## + X8    1   1555.3 1737.8
## + X77   1   1555.3 1737.8
## + X72   1   1555.3 1737.8
## + X29   1   1555.3 1737.8
## + X68   1   1555.3 1737.8
## + X64   1   1555.3 1737.8
## + X5    1   1555.4 1737.8
## + X51   1   1555.4 1737.8
## + X78   1   1555.4 1737.8
## + X66   1   1555.4 1737.8
## + X1    1   1555.4 1737.8
## + X34   1   1555.4 1737.8
## - X59   1   1577.7 1743.6
## - X47   1   1643.5 1809.4
##
## Step:  AIC=1723.84
## X86 ~ X4 + X17 + X18 + X22 + X28 + X32 + X33 + X35 + X36 + X41 +
##      X42 + X45 + X46 + X47 + X55 + X58 + X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
##           Df Deviance    AIC
## - X55     1    1559.0 1716.6
## - X28     1    1560.5 1718.0
## - X58     1    1561.2 1718.8
## - X35     1    1561.2 1718.8
## - X45     1    1561.5 1719.1
## - X36     1    1561.5 1719.1
## - X41     1    1562.0 1719.6
## - X4      1    1562.6 1720.2
## - X85     1    1563.0 1720.5
## - X17     1    1563.6 1721.2
## - X33     1    1563.7 1721.3
## - X22     1    1564.4 1722.0
## - X42     1    1565.8 1723.4
## <none>         1558.0 1723.8
## - X32     1    1568.2 1725.8
## - X46     1    1568.2 1725.8
## + X39     1    1555.3 1729.5
## + X76     1    1555.4 1729.5
## + X9      1    1555.5 1729.6
## + X7      1    1555.5 1729.6
## + X30     1    1555.7 1729.9
## + X31     1    1555.8 1729.9
## + X11     1    1555.8 1729.9
## + X38     1    1555.8 1729.9
## + X15     1    1556.0 1730.1
## + X10     1    1556.0 1730.2
## - X82     1    1572.6 1730.2
## + X6      1    1556.1 1730.3
## + X27     1    1556.3 1730.4
## + X61     1    1556.4 1730.5
## + X74     1    1556.4 1730.6
## + X53     1    1556.4 1730.6
## + X44     1    1556.4 1730.6
## + X14     1    1556.4 1730.6
## + X21     1    1556.6 1730.8
## + X75     1    1556.7 1730.8
## + X73     1    1556.7 1730.9
## + X24     1    1556.8 1730.9
## + X80     1    1556.8 1731.0
## + X25     1    1556.8 1731.0
## - X18     1    1573.4 1731.0
## + X65     1    1556.9 1731.0
## + X54     1    1556.9 1731.1
## + X63     1    1557.1 1731.3
## + X40     1    1557.2 1731.3
## + X43     1    1557.2 1731.3
## + X67     1    1557.2 1731.4
## + X3      1    1557.3 1731.5
## + X13     1    1557.4 1731.5
## + X26     1    1557.4 1731.6
## + X12     1    1557.4 1731.6
## + X79     1    1557.5 1731.7
## + X52     1    1557.5 1731.7
```

```
## + X84    1    1557.5 1731.7
## + X2     1    1557.6 1731.7
## + X20    1    1557.6 1731.7
## + X50    1    1557.7 1731.8
## + X71    1    1557.7 1731.8
## + X62    1    1557.7 1731.8
## + X37    1    1557.7 1731.9
## + X81    1    1557.7 1731.9
## + X60    1    1557.7 1731.9
## + X69    1    1557.7 1731.9
## + X16    1    1557.7 1731.9
## + X68    1    1557.8 1731.9
## + X19    1    1557.8 1732.0
## + X56    1    1557.8 1732.0
## + X8     1    1557.9 1732.0
## + X83    1    1557.9 1732.0
## + X23    1    1557.9 1732.1
## + X57    1    1557.9 1732.1
## + X48    1    1557.9 1732.1
## + X49    1    1557.9 1732.1
## + X77    1    1557.9 1732.1
## + X29    1    1557.9 1732.1
## + X70    1    1557.9 1732.1
## + X72    1    1557.9 1732.1
## + X51    1    1557.9 1732.1
## + X64    1    1557.9 1732.1
## + X5     1    1557.9 1732.1
## + X78    1    1558.0 1732.1
## + X66    1    1558.0 1732.1
## + X1     1    1558.0 1732.1
## + X34    1    1558.0 1732.1
## - X59    1    1581.5 1739.0
## - X47    1    1646.9 1804.5
##
## Step:  AIC=1716.63
## X86 ~ X4 + X17 + X18 + X22 + X28 + X32 + X33 + X35 + X36 + X41 +
##     X42 + X45 + X46 + X47 + X58 + X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X28    1    1561.6 1710.9
## - X35    1    1562.4 1711.7
## - X58    1    1562.4 1711.7
## - X45    1    1562.6 1711.9
## - X36    1    1562.7 1712.0
## - X41    1    1563.3 1712.6
## - X85    1    1563.8 1713.1
## - X4     1    1564.0 1713.3
## - X17    1    1564.8 1714.1
## - X33    1    1565.0 1714.3
```

```
## - X22       1    1565.6 1714.9
## - X42       1    1567.1 1716.4
## <none>           1559.0 1716.6
## - X46       1    1569.1 1718.4
## - X32       1    1569.2 1718.5
## + X9        1    1556.4 1722.3
## + X39       1    1556.4 1722.3
## + X7        1    1556.4 1722.3
## + X30       1    1556.8 1722.7
## + X38       1    1556.8 1722.7
## + X11       1    1556.8 1722.7
## + X31       1    1556.8 1722.7
## + X6        1    1557.2 1723.0
## + X15       1    1557.2 1723.0
## + X10       1    1557.2 1723.1
## + X27       1    1557.3 1723.2
## - X82       1    1573.9 1723.2
## + X61       1    1557.4 1723.3
## + X74       1    1557.5 1723.4
## + X53       1    1557.5 1723.4
## + X14       1    1557.6 1723.5
## + X44       1    1557.7 1723.5
## + X21       1    1557.8 1723.7
## + X75       1    1557.8 1723.7
## + X24       1    1557.8 1723.7
## + X25       1    1557.8 1723.7
## + X73       1    1557.9 1723.7
## + X80       1    1557.9 1723.8
## + X55       1    1558.0 1723.8
## - X18       1    1574.6 1723.9
## + X54       1    1558.1 1723.9
## + X65       1    1558.1 1724.0
## + X63       1    1558.2 1724.1
## + X40       1    1558.2 1724.1
## + X67       1    1558.3 1724.2
## + X43       1    1558.3 1724.2
## + X3        1    1558.4 1724.3
## + X13       1    1558.5 1724.3
## + X26       1    1558.5 1724.3
## + X12       1    1558.6 1724.5
## + X79       1    1558.6 1724.5
## + X2        1    1558.6 1724.5
## + X20       1    1558.6 1724.5
## + X84       1    1558.6 1724.5
## + X52       1    1558.7 1724.5
## + X50       1    1558.8 1724.6
## + X71       1    1558.8 1724.6
## + X37       1    1558.8 1724.7
## + X62       1    1558.8 1724.7
## + X69       1    1558.8 1724.7
## + X81       1    1558.8 1724.7
## + X60       1    1558.8 1724.7
## + X16       1    1558.8 1724.7
## + X68       1    1558.9 1724.8
```

```
## + X19   1   1558.9 1724.8
## + X56   1   1558.9 1724.8
## + X8    1   1558.9 1724.8
## + X23   1   1559.0 1724.8
## + X83   1   1559.0 1724.8
## + X48   1   1559.0 1724.8
## + X77   1   1559.0 1724.9
## + X49   1   1559.0 1724.9
## + X29   1   1559.0 1724.9
## + X72   1   1559.0 1724.9
## + X70   1   1559.0 1724.9
## + X51   1   1559.0 1724.9
## + X64   1   1559.0 1724.9
## + X57   1   1559.0 1724.9
## + X5    1   1559.0 1724.9
## + X78   1   1559.0 1724.9
## + X66   1   1559.0 1724.9
## + X76   1   1559.0 1724.9
## + X1    1   1559.0 1724.9
## + X34   1   1559.0 1724.9
## - X59   1   1581.6 1730.9
## - X47   1   1647.1 1796.4
##
## Step:  AIC=1710.9
## X86 ~ X4 + X17 + X18 + X22 + X32 + X33 + X35 + X36 + X41 + X42 +
##      X45 + X46 + X47 + X58 + X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X58   1   1564.9 1705.9
## - X35   1   1565.0 1706.0
## - X45   1   1565.1 1706.1
## - X36   1   1565.4 1706.4
## - X4    1   1565.9 1706.9
## - X41   1   1565.9 1706.9
## - X17   1   1566.1 1707.1
## - X85   1   1566.3 1707.3
## - X33   1   1567.2 1708.2
## - X22   1   1567.5 1708.5
## - X42   1   1569.4 1710.4
## <none>      1561.6 1710.9
## - X46   1   1572.0 1713.0
## - X32   1   1572.5 1713.5
## - X18   1   1574.8 1715.8
## + X39   1   1558.8 1716.4
## + X7    1   1558.8 1716.4
## + X11   1   1559.0 1716.6
## + X28   1   1559.0 1716.6
## + X9    1   1559.2 1716.7
## + X10   1   1559.2 1716.8
```

```
## + X15    1   1559.3 1716.9
## + X21    1   1559.3 1716.9
## + X38    1   1559.4 1717.0
## + X6     1   1559.5 1717.0
## + X25    1   1559.6 1717.2
## + X61    1   1559.8 1717.3
## + X30    1   1559.9 1717.5
## - X82    1   1576.5 1717.5
## + X31    1   1560.0 1717.6
## + X44    1   1560.1 1717.7
## + X53    1   1560.2 1717.7
## + X74    1   1560.2 1717.7
## + X14    1   1560.2 1717.8
## + X73    1   1560.3 1717.9
## + X75    1   1560.4 1718.0
## + X55    1   1560.5 1718.0
## + X24    1   1560.5 1718.1
## + X65    1   1560.5 1718.1
## + X40    1   1560.6 1718.2
## + X54    1   1560.6 1718.2
## + X80    1   1560.6 1718.2
## + X13    1   1560.7 1718.3
## + X26    1   1560.7 1718.3
## + X63    1   1560.8 1718.3
## + X67    1   1560.9 1718.5
## + X12    1   1560.9 1718.5
## + X43    1   1561.0 1718.5
## + X19    1   1561.0 1718.6
## + X3     1   1561.1 1718.7
## + X2     1   1561.1 1718.7
## + X52    1   1561.1 1718.7
## + X84    1   1561.2 1718.8
## + X79    1   1561.2 1718.8
## + X20    1   1561.2 1718.8
## + X62    1   1561.3 1718.9
## + X69    1   1561.3 1718.9
## + X50    1   1561.3 1718.9
## + X71    1   1561.3 1718.9
## + X81    1   1561.3 1718.9
## + X60    1   1561.3 1718.9
## + X16    1   1561.4 1719.0
## + X37    1   1561.4 1719.0
## + X27    1   1561.4 1719.0
## + X23    1   1561.4 1719.0
## + X29    1   1561.5 1719.0
## + X68    1   1561.5 1719.1
## + X48    1   1561.5 1719.1
## + X83    1   1561.5 1719.1
## + X56    1   1561.5 1719.1
## + X72    1   1561.5 1719.1
## + X77    1   1561.5 1719.1
## + X8     1   1561.6 1719.1
## + X64    1   1561.6 1719.2
## + X57    1   1561.6 1719.2
```

```
## + X49   1   1561.6 1719.2
## + X34   1   1561.6 1719.2
## + X1    1   1561.6 1719.2
## + X76   1   1561.6 1719.2
## + X51   1   1561.6 1719.2
## + X66   1   1561.6 1719.2
## + X70   1   1561.6 1719.2
## + X78   1   1561.6 1719.2
## + X5    1   1561.6 1719.2
## - X59   1   1584.0 1725.0
## - X47   1   1650.6 1791.6
##
## Step:  AIC=1705.89
## X86 ~ X4 + X17 + X18 + X22 + X32 + X33 + X35 + X36 + X41 + X42 +
##      X45 + X46 + X47 + X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X45   1   1566.7 1699.4
## - X35   1   1568.3 1701.0
## - X36   1   1568.7 1701.4
## - X4    1   1569.1 1701.8
## - X17   1   1569.2 1702.0
## - X41   1   1569.3 1702.0
## - X85   1   1569.6 1702.3
## - X33   1   1570.5 1703.2
## - X22   1   1570.7 1703.4
## - X42   1   1572.8 1705.5
## <none>      1564.9 1705.9
## - X46   1   1574.7 1707.4
## - X32   1   1575.6 1708.3
## - X18   1   1577.9 1710.6
## + X58   1   1561.6 1710.9
## + X7    1   1562.1 1711.4
## + X11   1   1562.1 1711.4
## + X39   1   1562.2 1711.5
## + X10   1   1562.4 1711.7
## + X28   1   1562.4 1711.7
## + X21   1   1562.5 1711.8
## + X9    1   1562.5 1711.8
## + X6    1   1562.6 1711.9
## + X38   1   1562.6 1711.9
## + X15   1   1562.6 1711.9
## + X79   1   1562.9 1712.2
## + X25   1   1563.0 1712.2
## + X61   1   1563.0 1712.3
## + X30   1   1563.1 1712.4
## + X31   1   1563.1 1712.4
## - X82   1   1579.8 1712.5
## + X44   1   1563.5 1712.7
```

```
## + X14    1    1563.5 1712.8
## + X53    1    1563.5 1712.8
## + X74    1    1563.5 1712.8
## + X75    1    1563.6 1712.9
## + X55    1    1563.6 1712.9
## + X73    1    1563.7 1713.0
## + X80    1    1563.8 1713.1
## + X24    1    1563.9 1713.2
## + X54    1    1563.9 1713.2
## + X65    1    1563.9 1713.2
## + X63    1    1564.0 1713.3
## + X13    1    1564.0 1713.3
## + X26    1    1564.0 1713.3
## + X40    1    1564.0 1713.3
## + X12    1    1564.2 1713.5
## + X43    1    1564.2 1713.5
## + X67    1    1564.3 1713.6
## + X3     1    1564.3 1713.6
## + X19    1    1564.4 1713.7
## + X2     1    1564.4 1713.7
## + X84    1    1564.4 1713.7
## + X69    1    1564.4 1713.7
## + X20    1    1564.5 1713.7
## + X52    1    1564.5 1713.8
## + X50    1    1564.5 1713.8
## + X71    1    1564.5 1713.8
## + X62    1    1564.6 1713.9
## + X81    1    1564.6 1713.9
## + X60    1    1564.6 1713.9
## + X37    1    1564.6 1713.9
## + X16    1    1564.7 1714.0
## + X48    1    1564.7 1714.0
## + X29    1    1564.7 1714.0
## + X66    1    1564.7 1714.0
## + X27    1    1564.7 1714.0
## + X23    1    1564.8 1714.0
## + X68    1    1564.8 1714.1
## + X83    1    1564.8 1714.1
## + X56    1    1564.8 1714.1
## + X72    1    1564.8 1714.1
## + X77    1    1564.8 1714.1
## + X8     1    1564.9 1714.2
## + X64    1    1564.9 1714.2
## + X34    1    1564.9 1714.2
## + X57    1    1564.9 1714.2
## + X49    1    1564.9 1714.2
## + X76    1    1564.9 1714.2
## + X1     1    1564.9 1714.2
## + X70    1    1564.9 1714.2
## + X5     1    1564.9 1714.2
## + X78    1    1564.9 1714.2
## + X51    1    1564.9 1714.2
## - X59    1    1587.7 1720.4
## - X47    1    1653.0 1785.7
```

```
##
## Step:  AIC=1699.37
## X86 ~ X4 + X17 + X18 + X22 + X32 + X33 + X35 + X36 + X41 + X42 +
##      X46 + X47 + X59 + X82 + X85

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##           Df Deviance    AIC
## - X35   1   1570.0 1694.5
## - X36   1   1570.4 1694.8
## - X4    1   1570.9 1695.3
## - X41   1   1571.0 1695.5
## - X17   1   1571.3 1695.7
## - X85   1   1571.5 1695.9
## - X33   1   1572.3 1696.7
## - X22   1   1572.6 1697.0
## - X42   1   1574.7 1699.1
## <none>      1566.7 1699.4
## - X46   1   1576.5 1700.9
## - X32   1   1577.4 1701.8
## - X18   1   1579.9 1704.3
## + X7    1   1563.8 1704.8
## + X11   1   1563.9 1704.9
## + X39   1   1564.0 1705.0
## + X21   1   1564.1 1705.1
## + X10   1   1564.2 1705.1
## + X28   1   1564.2 1705.2
## + X9    1   1564.3 1705.3
## + X38   1   1564.3 1705.3
## + X15   1   1564.4 1705.4
## + X6    1   1564.4 1705.4
## + X25   1   1564.6 1705.6
## + X53   1   1564.7 1705.7
## + X74   1   1564.7 1705.7
## + X30   1   1564.8 1705.8
## + X44   1   1564.8 1705.8
## + X31   1   1564.8 1705.8
## + X61   1   1564.8 1705.8
## + X45   1   1564.9 1705.9
## + X58   1   1565.1 1706.1
## - X82   1   1581.7 1706.1
## + X14   1   1565.2 1706.2
## + X55   1   1565.3 1706.3
## + X65   1   1565.3 1706.3
## + X75   1   1565.4 1706.4
## + X69   1   1565.5 1706.5
## + X73   1   1565.5 1706.5
## + X66   1   1565.5 1706.5
## + X63   1   1565.6 1706.6
## + X24   1   1565.6 1706.6
## + X54   1   1565.7 1706.7
```

```
## + X13    1    1565.8 1706.8
## + X26    1    1565.8 1706.8
## + X40    1    1565.8 1706.8
## + X12    1    1565.9 1706.9
## + X48    1    1565.9 1706.9
## + X43    1    1566.0 1707.0
## + X80    1    1566.0 1707.0
## + X84    1    1566.1 1707.1
## + X79    1    1566.1 1707.1
## + X67    1    1566.1 1707.1
## + X19    1    1566.1 1707.1
## + X3     1    1566.2 1707.2
## + X50    1    1566.2 1707.2
## + X71    1    1566.2 1707.2
## + X2     1    1566.2 1707.2
## + X20    1    1566.2 1707.2
## + X52    1    1566.3 1707.3
## + X62    1    1566.3 1707.3
## + X37    1    1566.3 1707.3
## + X16    1    1566.3 1707.3
## + X72    1    1566.4 1707.4
## + X81    1    1566.4 1707.4
## + X60    1    1566.4 1707.4
## + X27    1    1566.4 1707.4
## + X29    1    1566.5 1707.5
## + X68    1    1566.5 1707.5
## + X23    1    1566.5 1707.5
## + X83    1    1566.5 1707.5
## + X56    1    1566.5 1707.5
## + X77    1    1566.6 1707.6
## + X51    1    1566.6 1707.6
## + X34    1    1566.6 1707.6
## + X8     1    1566.6 1707.6
## + X57    1    1566.6 1707.6
## + X49    1    1566.6 1707.6
## + X64    1    1566.6 1707.6
## + X76    1    1566.7 1707.7
## + X1     1    1566.7 1707.7
## + X70    1    1566.7 1707.7
## + X78    1    1566.7 1707.7
## + X5     1    1566.7 1707.7
## - X59    1    1588.2 1712.6
## - X47    1    1655.0 1779.4
##
## Step:  AIC=1694.45
## X86 ~ X4 + X17 + X18 + X22 + X32 + X33 + X36 + X41 + X42 + X46 +
##      X47 + X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##         Df Deviance    AIC
## - X4     1    1573.8 1689.9
```

```
## - X41      1   1574.6 1690.7
## - X85      1   1575.0 1691.1
## - X17      1   1575.6 1691.7
## - X36      1   1575.7 1691.8
## - X33      1   1575.7 1691.8
## - X22      1   1575.8 1691.9
## <none>         1570.0 1694.5
## - X42      1   1578.3 1694.5
## - X46      1   1579.8 1695.9
## - X32      1   1579.9 1696.0
## + X35      1   1566.7 1699.4
## + X11      1   1567.4 1700.1
## - X18      1   1584.0 1700.1
## + X39      1   1567.4 1700.1
## + X28      1   1567.5 1700.2
## + X15      1   1567.5 1700.2
## + X21      1   1567.6 1700.3
## + X7       1   1567.7 1700.4
## + X10      1   1567.8 1700.5
## + X9       1   1567.8 1700.5
## + X30      1   1567.9 1700.6
## + X38      1   1567.9 1700.6
## + X25      1   1568.0 1700.7
## + X31      1   1568.0 1700.7
## + X6       1   1568.1 1700.8
## + X53      1   1568.1 1700.8
## + X74      1   1568.1 1700.8
## + X44      1   1568.2 1700.9
## + X61      1   1568.2 1700.9
## + X14      1   1568.3 1701.0
## + X45      1   1568.3 1701.0
## + X58      1   1568.5 1701.2
## - X82      1   1585.2 1701.3
## + X55      1   1568.7 1701.4
## + X65      1   1568.7 1701.4
## + X63      1   1568.8 1701.5
## + X75      1   1568.8 1701.5
## + X69      1   1568.9 1701.6
## + X73      1   1568.9 1701.6
## + X66      1   1568.9 1701.6
## + X40      1   1569.0 1701.8
## + X54      1   1569.1 1701.8
## + X26      1   1569.1 1701.8
## + X24      1   1569.1 1701.8
## + X43      1   1569.2 1702.0
## + X13      1   1569.3 1702.0
## + X48      1   1569.3 1702.0
## + X80      1   1569.3 1702.0
## + X84      1   1569.3 1702.1
## + X12      1   1569.4 1702.1
## + X79      1   1569.4 1702.2
## + X67      1   1569.5 1702.2
## + X19      1   1569.5 1702.2
## + X71      1   1569.5 1702.2
```

```
## + X50    1    1569.5 1702.2
## + X3     1    1569.5 1702.2
## + X20    1    1569.6 1702.3
## + X2     1    1569.6 1702.3
## + X52    1    1569.6 1702.3
## + X62    1    1569.7 1702.4
## + X72    1    1569.7 1702.5
## + X37    1    1569.7 1702.5
## + X27    1    1569.8 1702.5
## + X81    1    1569.8 1702.5
## + X60    1    1569.8 1702.5
## + X16    1    1569.8 1702.5
## + X68    1    1569.8 1702.6
## + X23    1    1569.9 1702.6
## + X29    1    1569.9 1702.6
## + X83    1    1569.9 1702.6
## + X56    1    1569.9 1702.6
## + X8     1    1570.0 1702.7
## + X77    1    1570.0 1702.7
## + X51    1    1570.0 1702.7
## + X34    1    1570.0 1702.7
## + X57    1    1570.0 1702.7
## + X49    1    1570.0 1702.7
## + X64    1    1570.0 1702.7
## + X76    1    1570.0 1702.7
## + X5     1    1570.0 1702.7
## + X70    1    1570.0 1702.7
## + X1     1    1570.0 1702.8
## + X78    1    1570.0 1702.8
## - X59    1    1591.7 1707.8
## - X47    1    1658.6 1774.7
##
## Step:  AIC=1689.89
## X86 ~ X17 + X18 + X22 + X32 + X33 + X36 + X41 + X42 + X46 + X47 +
##     X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##        Df Deviance    AIC
## - X36   1   1577.6 1685.4
## - X33   1   1577.9 1685.7
## - X41   1   1578.1 1685.9
## - X85   1   1578.3 1686.2
## - X22   1   1578.8 1686.6
## - X17   1   1579.9 1687.8
## - X42   1   1581.8 1689.6
## - X32   1   1581.8 1689.6
## <none>      1573.8 1689.9
## - X46   1   1583.5 1691.3
## + X11   1   1569.4 1693.8
## + X4    1   1570.0 1694.5
## - X18   1   1586.9 1694.7
```

```
## + X39   1   1570.3 1694.8
## + X7    1   1570.9 1695.3
## + X35   1   1570.9 1695.3
## + X9    1   1570.9 1695.3
## + X10   1   1571.1 1695.5
## + X21   1   1571.3 1695.7
## + X6    1   1571.5 1695.9
## + X38   1   1571.5 1696.0
## + X30   1   1571.7 1696.1
## + X31   1   1571.8 1696.2
## + X28   1   1571.9 1696.3
## + X53   1   1571.9 1696.3
## + X74   1   1571.9 1696.3
## + X61   1   1571.9 1696.3
## + X44   1   1572.0 1696.5
## + X45   1   1572.0 1696.5
## + X25   1   1572.0 1696.5
## + X55   1   1572.2 1696.6
## + X58   1   1572.2 1696.6
## + X63   1   1572.3 1696.7
## + X40   1   1572.5 1696.9
## + X73   1   1572.5 1696.9
## + X65   1   1572.5 1697.0
## - X82   1   1589.2 1697.0
## + X26   1   1572.6 1697.0
## + X69   1   1572.6 1697.0
## + X66   1   1572.6 1697.0
## + X75   1   1572.7 1697.1
## + X54   1   1572.9 1697.3
## + X84   1   1573.0 1697.4
## + X24   1   1573.0 1697.4
## + X48   1   1573.1 1697.5
## + X80   1   1573.1 1697.5
## + X79   1   1573.2 1697.6
## + X67   1   1573.2 1697.6
## + X20   1   1573.2 1697.6
## + X15   1   1573.2 1697.6
## + X71   1   1573.2 1697.7
## + X50   1   1573.2 1697.7
## + X43   1   1573.2 1697.7
## + X52   1   1573.3 1697.7
## + X14   1   1573.3 1697.7
## + X2    1   1573.4 1697.8
## + X16   1   1573.4 1697.8
## + X27   1   1573.4 1697.8
## + X12   1   1573.4 1697.8
## + X72   1   1573.5 1697.9
## + X62   1   1573.5 1697.9
## + X13   1   1573.5 1697.9
## + X81   1   1573.5 1697.9
## + X60   1   1573.5 1697.9
## + X68   1   1573.6 1698.0
## + X19   1   1573.6 1698.0
## + X8    1   1573.6 1698.0
```

```
## + X83   1   1573.6 1698.0
## + X37   1   1573.7 1698.1
## + X56   1   1573.7 1698.1
## + X51   1   1573.7 1698.1
## + X76   1   1573.7 1698.1
## + X29   1   1573.7 1698.1
## + X5    1   1573.7 1698.1
## + X23   1   1573.8 1698.2
## + X64   1   1573.8 1698.2
## + X77   1   1573.8 1698.2
## + X49   1   1573.8 1698.2
## + X57   1   1573.8 1698.2
## + X1    1   1573.8 1698.2
## + X34   1   1573.8 1698.2
## + X70   1   1573.8 1698.2
## + X78   1   1573.8 1698.2
## + X3    1   1573.8 1698.2
## - X59   1   1595.5 1703.3
## - X47   1   1661.6 1769.4
##
## Step:  AIC=1685.38
## X86 ~ X17 + X18 + X22 + X32 + X33 + X41 + X42 + X46 + X47 + X59 +
##      X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##           Df Deviance    AIC
## - X33    1   1580.2 1679.8
## - X17    1   1582.1 1681.6
## - X85    1   1582.2 1681.7
## - X41    1   1582.5 1682.0
## - X42    1   1584.2 1683.7
## - X32    1   1584.6 1684.2
## - X22    1   1584.7 1684.2
## <none>       1577.6 1685.4
## - X18    1   1587.0 1686.6
## - X46    1   1587.7 1687.2
## + X36    1   1573.8 1689.9
## + X39    1   1573.8 1689.9
## + X35    1   1574.0 1690.1
## + X25    1   1574.2 1690.3
## + X11    1   1574.4 1690.5
## + X6     1   1574.5 1690.7
## + X28    1   1574.7 1690.8
## + X21    1   1574.8 1690.9
## + X7     1   1574.9 1691.0
## + X38    1   1574.9 1691.1
## + X9     1   1575.0 1691.1
## + X10    1   1575.2 1691.3
## + X53    1   1575.6 1691.8
## + X74    1   1575.6 1691.8
## + X4     1   1575.7 1691.8
```

```
## + X55    1    1575.7 1691.8
## + X45    1    1575.7 1691.8
## + X44    1    1575.8 1691.9
## + X61    1    1575.9 1692.0
## + X63    1    1576.0 1692.1
## + X58    1    1576.1 1692.2
## + X30    1    1576.2 1692.3
## + X73    1    1576.2 1692.3
## + X31    1    1576.3 1692.4
## + X24    1    1576.3 1692.4
## + X66    1    1576.3 1692.4
## + X65    1    1576.3 1692.5
## + X19    1    1576.4 1692.5
## + X69    1    1576.4 1692.5
## + X75    1    1576.4 1692.6
## + X40    1    1576.4 1692.6
## + X26    1    1576.5 1692.6
## - X82    1    1593.2 1692.8
## + X54    1    1576.7 1692.8
## + X84    1    1576.7 1692.8
## + X16    1    1576.8 1692.9
## + X48    1    1576.8 1693.0
## + X15    1    1576.9 1693.0
## + X80    1    1576.9 1693.0
## + X79    1    1577.0 1693.1
## + X67    1    1577.0 1693.1
## + X71    1    1577.0 1693.1
## + X50    1    1577.0 1693.1
## + X52    1    1577.0 1693.1
## + X14    1    1577.0 1693.1
## + X12    1    1577.1 1693.2
## + X27    1    1577.1 1693.2
## + X20    1    1577.1 1693.2
## + X23    1    1577.1 1693.2
## + X8     1    1577.2 1693.3
## + X13    1    1577.2 1693.3
## + X81    1    1577.2 1693.3
## + X60    1    1577.2 1693.3
## + X62    1    1577.2 1693.3
## + X2     1    1577.2 1693.3
## + X72    1    1577.2 1693.3
## + X43    1    1577.2 1693.4
## + X68    1    1577.4 1693.5
## + X83    1    1577.4 1693.5
## + X37    1    1577.4 1693.5
## + X76    1    1577.5 1693.6
## + X56    1    1577.5 1693.6
## + X51    1    1577.5 1693.6
## + X29    1    1577.5 1693.6
## + X3     1    1577.5 1693.6
## + X77    1    1577.5 1693.6
## + X57    1    1577.5 1693.6
## + X49    1    1577.5 1693.7
## + X64    1    1577.5 1693.7
```

```
## + X34    1    1577.5 1693.7
## + X70    1    1577.5 1693.7
## + X1     1    1577.5 1693.7
## + X5     1    1577.6 1693.7
## + X78    1    1577.6 1693.7
## - X59    1    1598.7 1698.2
## - X47    1    1666.0 1765.5
##
## Step:  AIC=1679.75
## X86 ~ X17 + X18 + X22 + X32 + X41 + X42 + X46 + X47 + X59 + X82 +
##     X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X17    1    1584.4 1675.6
## - X32    1    1584.7 1675.9
## - X85    1    1584.7 1676.0
## - X41    1    1584.9 1676.1
## - X22    1    1586.8 1678.0
## <none>        1580.2 1679.8
## - X42    1    1589.7 1680.9
## - X18    1    1589.8 1681.0
## - X46    1    1590.5 1681.8
## + X10    1    1576.1 1683.9
## + X39    1    1576.5 1684.3
## + X38    1    1576.5 1684.3
## + X7     1    1576.8 1684.6
## + X11    1    1577.0 1684.8
## + X6     1    1577.0 1684.8
## + X9     1    1577.3 1685.2
## + X33    1    1577.6 1685.4
## + X28    1    1577.7 1685.5
## + X21    1    1577.7 1685.5
## + X36    1    1577.9 1685.7
## + X30    1    1577.9 1685.7
## + X25    1    1577.9 1685.7
## + X31    1    1578.0 1685.8
## + X35    1    1578.0 1685.9
## + X55    1    1578.2 1686.1
## + X34    1    1578.2 1686.1
## + X53    1    1578.3 1686.2
## + X74    1    1578.3 1686.2
## + X12    1    1578.3 1686.2
## + X45    1    1578.4 1686.2
## + X61    1    1578.6 1686.4
## + X44    1    1578.7 1686.5
## + X58    1    1578.8 1686.6
## + X63    1    1578.8 1686.6
## - X82    1    1595.4 1686.6
## + X15    1    1578.9 1686.7
## + X26    1    1578.9 1686.7
```

```
## + X69   1   1578.9 1686.8
## + X4    1   1578.9 1686.8
## + X73   1   1578.9 1686.8
## + X13   1   1579.0 1686.8
## + X66   1   1579.0 1686.8
## + X75   1   1579.2 1687.0
## + X65   1   1579.2 1687.0
## + X16   1   1579.3 1687.2
## + X40   1   1579.3 1687.2
## + X54   1   1579.4 1687.2
## + X48   1   1579.4 1687.2
## + X80   1   1579.4 1687.2
## + X19   1   1579.5 1687.3
## + X43   1   1579.5 1687.3
## + X84   1   1579.5 1687.3
## + X37   1   1579.7 1687.5
## + X24   1   1579.7 1687.5
## + X67   1   1579.7 1687.5
## + X71   1   1579.7 1687.5
## + X50   1   1579.7 1687.5
## + X79   1   1579.7 1687.5
## + X27   1   1579.7 1687.5
## + X52   1   1579.7 1687.5
## + X14   1   1579.7 1687.5
## + X20   1   1579.7 1687.6
## + X62   1   1579.8 1687.6
## + X23   1   1579.8 1687.7
## + X3    1   1579.9 1687.7
## + X72   1   1579.9 1687.7
## + X29   1   1579.9 1687.7
## + X2    1   1579.9 1687.7
## + X81   1   1579.9 1687.8
## + X60   1   1579.9 1687.8
## + X8    1   1580.0 1687.8
## + X68   1   1580.0 1687.8
## + X83   1   1580.0 1687.9
## + X56   1   1580.1 1687.9
## + X76   1   1580.1 1687.9
## + X51   1   1580.1 1688.0
## + X77   1   1580.2 1688.0
## + X57   1   1580.2 1688.0
## + X49   1   1580.2 1688.0
## + X64   1   1580.2 1688.0
## + X70   1   1580.2 1688.0
## + X1    1   1580.2 1688.0
## + X5    1   1580.2 1688.0
## + X78   1   1580.2 1688.0
## - X59   1   1603.1 1694.3
## - X47   1   1668.7 1760.0
##
## Step:  AIC=1675.64
## X86 ~ X18 + X22 + X32 + X41 + X42 + X46 + X47 + X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X22   1   1588.4 1671.3
## - X41   1   1588.5 1671.5
## - X85   1   1588.9 1671.8
## - X32   1   1589.4 1672.4
## - X18   1   1589.8 1672.7
## <none>      1584.4 1675.6
## - X46   1   1595.4 1678.3
## + X17   1   1580.2 1679.8
## + X10   1   1580.5 1680.0
## + X11   1   1580.7 1680.2
## + X21   1   1581.1 1680.7
## - X42   1   1597.8 1680.7
## + X7    1   1581.3 1680.8
## + X9    1   1581.5 1681.0
## + X6    1   1581.6 1681.1
## + X39   1   1581.6 1681.2
## + X38   1   1581.8 1681.4
## + X30   1   1581.9 1681.4
## + X31   1   1582.0 1681.5
## + X33   1   1582.1 1681.6
## + X16   1   1582.1 1681.7
## + X55   1   1582.3 1681.9
## + X45   1   1582.4 1681.9
## + X53   1   1582.5 1682.0
## + X74   1   1582.5 1682.0
## + X4    1   1582.5 1682.1
## + X61   1   1582.8 1682.3
## + X12   1   1582.8 1682.3
## - X82   1   1599.4 1682.3
## + X34   1   1582.8 1682.3
## + X44   1   1582.8 1682.3
## + X63   1   1582.9 1682.4
## + X73   1   1582.9 1682.4
## + X66   1   1583.0 1682.5
## + X69   1   1583.1 1682.6
## + X26   1   1583.1 1682.7
## + X58   1   1583.1 1682.7
## + X36   1   1583.1 1682.7
## + X28   1   1583.2 1682.8
## + X15   1   1583.3 1682.8
## + X35   1   1583.3 1682.8
## + X65   1   1583.3 1682.8
## + X43   1   1583.4 1682.9
## + X20   1   1583.4 1682.9
## + X75   1   1583.5 1683.0
## + X48   1   1583.5 1683.1
## + X13   1   1583.5 1683.1
## + X40   1   1583.6 1683.1
## + X84   1   1583.6 1683.1
## + X54   1   1583.6 1683.2
```

```
## + X52   1   1583.8 1683.3
## + X80   1   1583.8 1683.3
## + X14   1   1583.8 1683.3
## + X37   1   1583.9 1683.4
## + X71   1   1583.9 1683.4
## + X50   1   1583.9 1683.4
## + X67   1   1583.9 1683.4
## + X62   1   1584.0 1683.5
## + X79   1   1584.0 1683.5
## + X72   1   1584.0 1683.6
## + X2    1   1584.1 1683.6
## + X24   1   1584.1 1683.6
## + X25   1   1584.1 1683.7
## + X81   1   1584.1 1683.7
## + X60   1   1584.1 1683.7
## + X8    1   1584.1 1683.7
## + X83   1   1584.2 1683.7
## + X29   1   1584.2 1683.7
## + X68   1   1584.2 1683.7
## + X76   1   1584.2 1683.7
## + X3    1   1584.2 1683.8
## + X19   1   1584.2 1683.8
## + X56   1   1584.3 1683.8
## + X5    1   1584.3 1683.8
## + X51   1   1584.3 1683.8
## + X27   1   1584.3 1683.8
## + X77   1   1584.3 1683.9
## + X23   1   1584.3 1683.9
## + X1    1   1584.3 1683.9
## + X64   1   1584.4 1683.9
## + X57   1   1584.4 1683.9
## + X49   1   1584.4 1683.9
## + X70   1   1584.4 1683.9
## + X78   1   1584.4 1683.9
## - X59   1   1607.4 1690.4
## - X47   1   1673.2 1756.1
##
## Step:  AIC=1671.3
## X86 ~ X18 + X32 + X41 + X42 + X46 + X47 + X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X41   1   1592.4 1667.0
## - X85   1   1593.3 1668.0
## - X32   1   1594.8 1669.4
## - X18   1   1596.6 1671.2
## <none>      1588.4 1671.3
## - X46   1   1599.6 1674.3
## + X21   1   1583.5 1674.7
## - X42   1   1600.3 1675.0
## + X22   1   1584.4 1675.6
```

```
## + X10   1   1584.5 1675.8
## + X38   1   1584.6 1675.8
## + X39   1   1584.6 1675.9
## + X9    1   1585.1 1676.4
## + X7    1   1585.1 1676.4
## + X11   1   1585.6 1676.9
## + X36   1   1585.7 1677.0
## + X6    1   1585.8 1677.0
## + X35   1   1586.0 1677.2
## + X55   1   1586.1 1677.4
## + X30   1   1586.2 1677.4
## + X25   1   1586.2 1677.5
## + X45   1   1586.2 1677.5
## + X31   1   1586.3 1677.5
## + X33   1   1586.3 1677.6
## + X12   1   1586.4 1677.7
## + X61   1   1586.5 1677.7
## + X53   1   1586.5 1677.8
## + X74   1   1586.5 1677.8
## + X73   1   1586.5 1677.8
## + X44   1   1586.6 1677.8
## - X82   1   1603.2 1677.8
## + X17   1   1586.8 1678.0
## + X63   1   1586.8 1678.0
## + X19   1   1586.9 1678.1
## + X66   1   1586.9 1678.1
## + X34   1   1586.9 1678.2
## + X15   1   1587.0 1678.3
## + X28   1   1587.1 1678.3
## + X65   1   1587.1 1678.3
## + X58   1   1587.1 1678.4
## + X69   1   1587.1 1678.4
## + X43   1   1587.2 1678.4
## + X75   1   1587.3 1678.5
## + X4    1   1587.3 1678.6
## + X13   1   1587.4 1678.6
## + X52   1   1587.5 1678.7
## + X54   1   1587.5 1678.7
## + X84   1   1587.5 1678.8
## + X48   1   1587.6 1678.8
## + X14   1   1587.6 1678.8
## + X16   1   1587.6 1678.8
## + X37   1   1587.6 1678.9
## + X40   1   1587.6 1678.9
## + X71   1   1587.8 1679.0
## + X50   1   1587.8 1679.0
## + X80   1   1587.8 1679.0
## + X67   1   1587.8 1679.1
## + X62   1   1587.9 1679.1
## + X79   1   1587.9 1679.2
## + X29   1   1588.0 1679.2
## + X8    1   1588.0 1679.2
## + X27   1   1588.0 1679.3
## + X72   1   1588.1 1679.3
```

```
## + X81   1   1588.1 1679.3
## + X60   1   1588.1 1679.3
## + X3    1   1588.1 1679.3
## + X76   1   1588.1 1679.3
## + X83   1   1588.1 1679.4
## + X20   1   1588.2 1679.4
## + X5    1   1588.2 1679.4
## + X68   1   1588.2 1679.4
## + X2    1   1588.2 1679.4
## + X56   1   1588.2 1679.5
## + X1    1   1588.2 1679.5
## + X23   1   1588.3 1679.5
## + X51   1   1588.3 1679.5
## + X77   1   1588.3 1679.5
## + X57   1   1588.3 1679.6
## + X49   1   1588.3 1679.6
## + X64   1   1588.3 1679.6
## + X24   1   1588.3 1679.6
## + X70   1   1588.3 1679.6
## + X26   1   1588.3 1679.6
## + X78   1   1588.4 1679.6
## - X59   1   1611.0 1685.7
## - X47   1   1676.7 1751.4
##
## Step:  AIC=1667
## X86 ~ X18 + X32 + X42 + X46 + X47 + X59 + X82 + X85


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## - X85   1   1597.4 1663.8
## - X18   1   1600.0 1666.3
## <none>      1592.4 1667.0
## - X42   1   1601.3 1667.7
## - X32   1   1602.0 1668.4
## - X46   1   1603.2 1669.6
## + X21   1   1588.1 1671.0
## + X7    1   1588.2 1671.2
## + X9    1   1588.2 1671.2
## + X38   1   1588.3 1671.2
## + X41   1   1588.4 1671.3
## + X10   1   1588.4 1671.3
## + X22   1   1588.5 1671.5
## + X6    1   1588.8 1671.8
## + X11   1   1589.2 1672.1
## + X36   1   1589.2 1672.1
## + X35   1   1589.4 1672.4
## + X39   1   1589.7 1672.7
## + X55   1   1589.9 1672.9
## + X25   1   1590.0 1672.9
## + X45   1   1590.3 1673.3
```

```
## + X12   1   1590.4 1673.3
## + X30   1   1590.4 1673.3
## - X82   1   1607.1 1673.4
## + X31   1   1590.5 1673.4
## + X33   1   1590.5 1673.5
## + X61   1   1590.6 1673.5
## + X19   1   1590.6 1673.5
## + X53   1   1590.6 1673.6
## + X74   1   1590.6 1673.6
## + X44   1   1590.7 1673.7
## + X63   1   1590.8 1673.7
## + X73   1   1590.8 1673.8
## + X28   1   1590.9 1673.8
## + X66   1   1591.0 1673.9
## + X34   1   1591.0 1674.0
## + X17   1   1591.1 1674.0
## + X58   1   1591.1 1674.0
## + X37   1   1591.1 1674.0
## + X15   1   1591.1 1674.0
## + X69   1   1591.2 1674.1
## + X65   1   1591.2 1674.2
## + X75   1   1591.3 1674.2
## + X40   1   1591.3 1674.3
## + X43   1   1591.4 1674.3
## + X13   1   1591.4 1674.3
## + X54   1   1591.5 1674.4
## + X4    1   1591.5 1674.4
## + X84   1   1591.5 1674.5
## + X48   1   1591.6 1674.5
## + X14   1   1591.6 1674.6
## + X52   1   1591.7 1674.6
## + X29   1   1591.8 1674.7
## + X62   1   1591.8 1674.8
## + X71   1   1591.8 1674.8
## + X50   1   1591.8 1674.8
## + X8    1   1591.8 1674.8
## + X67   1   1591.8 1674.8
## + X80   1   1591.9 1674.8
## + X79   1   1592.0 1674.9
## + X16   1   1592.0 1674.9
## + X76   1   1592.0 1675.0
## + X83   1   1592.1 1675.0
## + X81   1   1592.1 1675.0
## + X60   1   1592.1 1675.0
## + X72   1   1592.1 1675.0
## + X27   1   1592.1 1675.1
## + X20   1   1592.2 1675.1
## + X5    1   1592.2 1675.1
## + X3    1   1592.2 1675.1
## + X68   1   1592.2 1675.1
## + X2    1   1592.2 1675.2
## + X56   1   1592.2 1675.2
## + X1    1   1592.3 1675.2
## + X23   1   1592.3 1675.2
```

```
## + X77   1   1592.3 1675.2
## + X57   1   1592.3 1675.3
## + X51   1   1592.3 1675.3
## + X64   1   1592.3 1675.3
## + X24   1   1592.3 1675.3
## + X49   1   1592.3 1675.3
## + X70   1   1592.4 1675.3
## + X78   1   1592.4 1675.3
## + X26   1   1592.4 1675.3
## - X59   1   1614.5 1680.8
## - X47   1   1681.7 1748.1
##
## Step:  AIC=1663.77
## X86 ~ X18 + X32 + X42 + X46 + X47 + X59 + X82


## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred


##          Df Deviance    AIC
## <none>      1597.4 1663.8
## - X18   1   1605.8 1663.8
## - X42   1   1606.5 1664.5
## - X32   1   1607.6 1665.6
## - X46   1   1608.4 1666.5
## + X85   1   1592.4 1667.0
## + X21   1   1592.9 1667.6
## + X64   1   1593.0 1667.6
## + X22   1   1593.0 1667.7
## + X38   1   1593.1 1667.7
## + X9    1   1593.2 1667.9
## + X10   1   1593.3 1668.0
## + X41   1   1593.3 1668.0
## + X7    1   1593.4 1668.1
## + X6    1   1594.0 1668.6
## + X36   1   1594.1 1668.8
## + X11   1   1594.3 1668.9
## + X35   1   1594.4 1669.0
## + X25   1   1594.6 1669.2
## + X39   1   1594.7 1669.4
## + X45   1   1595.2 1669.9
## + X55   1   1595.2 1669.9
## + X12   1   1595.2 1669.9
## + X30   1   1595.4 1670.0
## + X19   1   1595.4 1670.1
## + X31   1   1595.5 1670.1
## + X61   1   1595.5 1670.2
## + X53   1   1595.6 1670.3
## + X74   1   1595.6 1670.3
## + X33   1   1595.7 1670.3
## + X44   1   1595.7 1670.3
## + X63   1   1595.9 1670.5
## + X66   1   1595.9 1670.5
```

```
## + X28  1   1596.0 1670.6
## + X37  1   1596.0 1670.6
## + X34  1   1596.1 1670.8
## + X15  1   1596.1 1670.8
## + X73  1   1596.2 1670.8
## + X65  1   1596.2 1670.9
## + X58  1   1596.2 1670.9
## + X69  1   1596.2 1670.9
## + X17  1   1596.3 1670.9
## + X43  1   1596.3 1671.0
## - X82  1   1612.9 1671.0
## + X13  1   1596.4 1671.0
## + X75  1   1596.4 1671.0
## + X40  1   1596.4 1671.0
## + X54  1   1596.6 1671.2
## + X84  1   1596.6 1671.3
## + X48  1   1596.7 1671.3
## + X14  1   1596.7 1671.3
## + X4   1   1596.8 1671.4
## + X29  1   1596.8 1671.4
## + X8   1   1596.8 1671.4
## + X62  1   1596.8 1671.5
## + X71  1   1596.9 1671.5
## + X50  1   1596.9 1671.5
## + X67  1   1596.9 1671.5
## + X52  1   1596.9 1671.6
## + X57  1   1597.0 1671.6
## + X80  1   1597.0 1671.7
## + X79  1   1597.1 1671.7
## + X16  1   1597.1 1671.7
## + X27  1   1597.1 1671.8
## + X83  1   1597.1 1671.8
## + X72  1   1597.1 1671.8
## + X76  1   1597.2 1671.8
## + X81  1   1597.2 1671.8
## + X60  1   1597.2 1671.8
## + X78  1   1597.2 1671.8
## + X68  1   1597.2 1671.8
## + X20  1   1597.2 1671.9
## + X5   1   1597.2 1671.9
## + X3   1   1597.2 1671.9
## + X56  1   1597.3 1671.9
## + X23  1   1597.3 1671.9
## + X2   1   1597.3 1672.0
## + X1   1   1597.3 1672.0
## + X77  1   1597.3 1672.0
## + X51  1   1597.4 1672.0
## + X24  1   1597.4 1672.0
## + X70  1   1597.4 1672.0
## + X49  1   1597.4 1672.0
## + X26  1   1597.4 1672.1
## - X59  1   1620.7 1678.7
## - X47  1   1691.4 1749.5
```

```
summary(best_step_bic)
```

```
##
## Call:
## glm(formula = X86 ~ X18 + X32 + X42 + X46 + X47 + X59 + X82,
##     family = "binomial", data = train)
##
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -1.5701  -0.3847  -0.2583  -0.1749   3.1019
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -5.31161    0.46185 -11.501  < 2e-16 ***
## X18         -0.09783    0.03399  -2.878  0.00400 **
## X32          0.15062    0.04752   3.169  0.00153 **
## X42          0.16447    0.05408   3.041  0.00236 **
## X46         -0.69349    0.31930  -2.172  0.02986 *
## X47          0.25363    0.02915   8.701  < 2e-16 ***
## X59          0.17696    0.03693   4.792 1.65e-06 ***
## X82          2.03022    0.49878   4.070 4.69e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1804.7  on 3999  degrees of freedom
## Residual deviance: 1597.4  on 3992  degrees of freedom
## AIC: 1613.4
##
## Number of Fisher Scoring iterations: 7
```

```
#Holy cow that took a long time, but we got the Model and it included the variables X12, X18, X47, X59,

#Using the "best" model we proceed to see what the model would predict based off the training dataset.
glm_predict_best = predict(best_step_bic, test, type = 'response')
head(glm_predict_best)
```

```
##          1          2          3          4          5          6
## 0.03011022 0.08632553 0.02311198 0.09624859 0.02547082 0.04255163
```

```
predicted_caravan_best = ifelse(glm_predict_best >= 0.5, 1, 0)
head(predicted_caravan_full)
```

```
## 1 2 3 4 5 6
## 0 0 0 0 0 0
```

```
#Determining the accuracy of the full model
accuracy_best = mean(predicted_caravan_best==test$X86)
print(accuracy_best)
```

```
## [1] 0.9385291
```

```
conf_tab_rf_target_best = table(Predicted = predicted_caravan_best, Actual = test$X86)
sum(diag(conf_tab_rf_target_best)) / sum(conf_tab_rf_target_best)
```

[1] 0.9385291

```
#Making metrics
TP_best <- conf_tab_rf_target_best[2,2]
FP_best <- conf_tab_rf_target_best[1,2]
TN_best <- conf_tab_rf_target_best[1,1]
FN_best <- conf_tab_rf_target_best[2,1]

#true negative rate
specificity_best <- TN_best / (TN_best + FP_best)

#true positive rate
sensitivity_best <- TP_best / (TP_best + FN_best)

#Positive predictive value
precision_best <- TP_best / (TP_best + FP_best)

cat("Specificity:", specificity_best, "\n")
```

Specificity: 0.9395604

```
cat("Sensitivity:", sensitivity_best, "\n")
```

Sensitivity: 0

```
cat("Precision:", precision_best, "\n")
```

Precision: 0