IBM HR Attrition

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# Logistic Regression - Predicting IBM Employees Attrition.

ibm <- read.csv(file="C:\\Users\\rafae\\Desktop\\AllvarIBM.csv", header=TRUE)  
attach(ibm)

# Introduction

The issue of keeping one's employees happy and satisfied is an age-old challenge. If an employee you have invested so much time and money leaves, then this would mean that you would have to spend even more time and money to hire somebody else. This report attempts to analyze the correctness of if an employee left/will leave or stayed/will stay at IBM based on a multitude of other variables.

# Data Characteristics.

Below is a demonstration of the dataset variables, which variables we are keeping for our model and which ones we are deleting. No cleaning was done on the dataset. All of the variables are numeric and straightforward to understand.

The dataset variables are: Age, Attrition, DailyRate, DistanceFromHome, Education, EmployeeCount, EmployeeNumber, EnvironmentSatisfaction, Gender, HourlyRate, JobInvolvement, JobLevel, JobSatisfaction, MaritalStatus, MonthlyIncome, MonthlyRate, OverTime, PerformanceRating, RelationshipSatisfaction, StockOptionLevel, TotalWorkingYears, TrainingTimesLastYear, WorkLifeBalance, YearsAtCompany, YearsInCurrentRole, YearsSinceLastPromotion, YearsWithCurrManager.

Response variable: Attrition

Used predictor variables: Gender, Education, JobSatisfaction, JobInvolvement, RelationshipSatisfaction, StockOptionLevel, MonthlyIncome, OverTime, PerformanceRating, WorkLifeBalance, DistanceFromHome, Age, TotalWorkingYears, TrainingTimesLastYear, YearsAtCompany, YearsInCurrentRole, YearsSinceLastPromotion, YearsWithCurrManager, EnvironmentSatisfaction, MaritalStatus.

Deleted variables: DailyRate, EmployeeCount, EmployeeNumber, HourlyRate, JobLevel, MonthlyRate.

# Conclusion.

The analysis of the IBM Attrition is of great value for any HR department in the world. It can certainly be replicated if given the time to collect the numerous data points as shown in the dataset. The ROC plots suggest a very good AUC score along with the roc tables that show specificity, sensitivity, true positive rate, false positive rate and optimal cutoff point. All of that was done in the steps above. Questions worth posing for future work are: how much does IBM's reputation influence on attrition, how does our AUC score compares to Watson's score if he were to do the same analysis? To go into further detail, one could perform similar testing on a larger sample size. With the data set we used, we found what we believe to be the most descriptive model with the least amount of predictor variables of employees Attrition.

# APPENDIX

# Exploratory Analysis.

##### Checking Attrition collinearity with possible significant predictors.

ftable(Attrition, Gender)

## Gender 0 1  
## Attrition   
## 0 501 732  
## 1 87 150

ftable(Attrition, Education)

## Education 1 2 3 4 5  
## Attrition   
## 0 139 238 473 340 43  
## 1 31 44 99 58 5

ftable(Attrition, EnvironmentSatisfaction)

## EnvironmentSatisfaction 1 2 3 4  
## Attrition   
## 0 212 244 391 386  
## 1 72 43 62 60

ftable(Attrition, JobInvolvement)

## JobInvolvement 1 2 3 4  
## Attrition   
## 0 55 304 743 131  
## 1 28 71 125 13

ftable(Attrition, JobSatisfaction)

## JobSatisfaction 1 2 3 4  
## Attrition   
## 0 223 234 369 407  
## 1 66 46 73 52

ftable(Attrition, RelationshipSatisfaction)

## RelationshipSatisfaction 1 2 3 4  
## Attrition   
## 0 219 258 388 368  
## 1 57 45 71 64

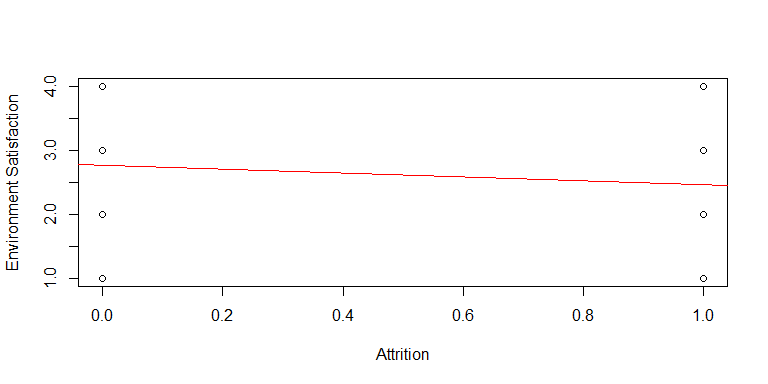
ftable(Attrition, WorkLifeBalance)

## WorkLifeBalance 1 2 3 4  
## Attrition   
## 0 55 286 766 126  
## 1 25 58 127 27

All the variables except EnvironmentSatisfaction, tested with the ftable function, show collinearity with Attrition.

##### Checking EnvironmentSatisfaction for collinearity with attrition

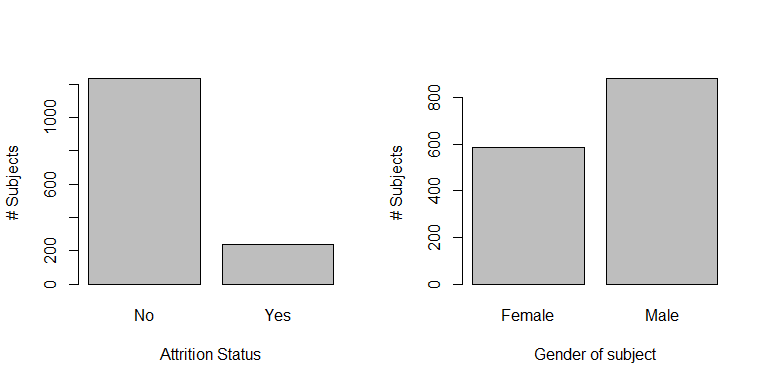
plot(Attrition, EnvironmentSatisfaction, xlab="Attrition", ylab="Environment Satisfaction")  
abline(lm(EnvironmentSatisfaction~Attrition), col="red")



The EnvironmentSatisfaction variable does not seem to be collinear with Attrition, leading us to consider it as a categorical variable.

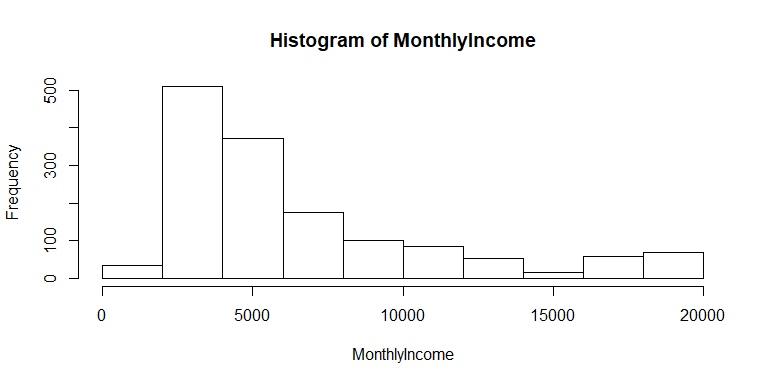
##### Looking at the overall shape of the data in both Attrition and Gender means.

par (mfrow = c(1, 2))  
  
barplot (table (ifelse (Attrition==1, "Yes", "No")), xlab="Attrition Status", ylab="# Subjects")  
# 0 for females - 1 for males  
barplot (table (ifelse (Gender==1, "Male", "Female")), xlab="Gender of subject", ylab="# Subjects")



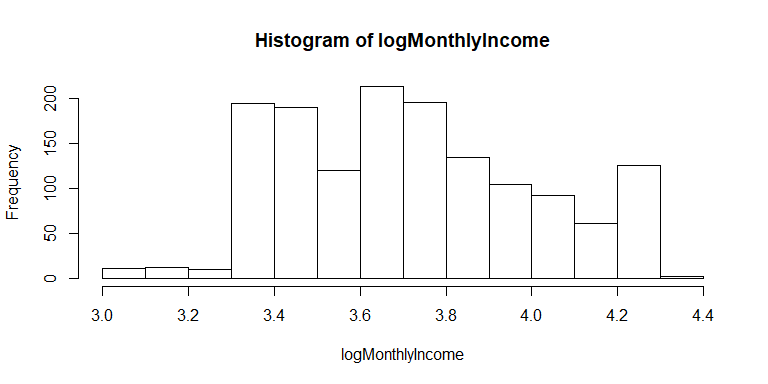
The plots above show that there is a greater amount of "No's" than "Yes" in the dataset. Also, roughly more than fifty percent of the subjects are males.

hist(MonthlyIncome)



The Histogram of MonthlyIncome shows right skewness. We will perform log transformation on MonthlyIncome.

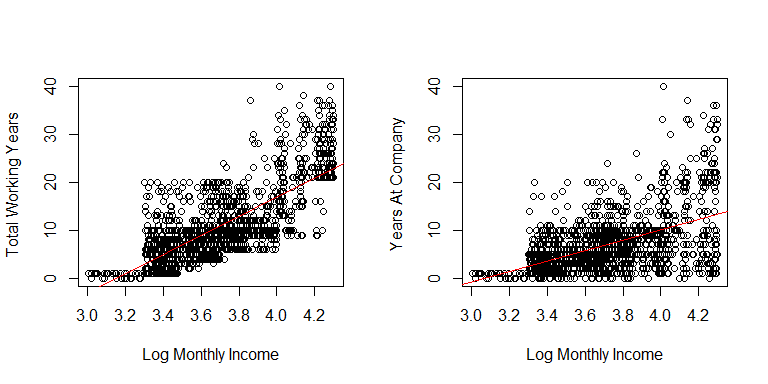
logMonthlyIncome = log10(MonthlyIncome)  
hist(logMonthlyIncome)



The distribution of logMonthlyIncome seems a lot more normal.

##### Relationship between TotalWorkingYears and YearsAtCompany with the Log of MonthlyIncome.

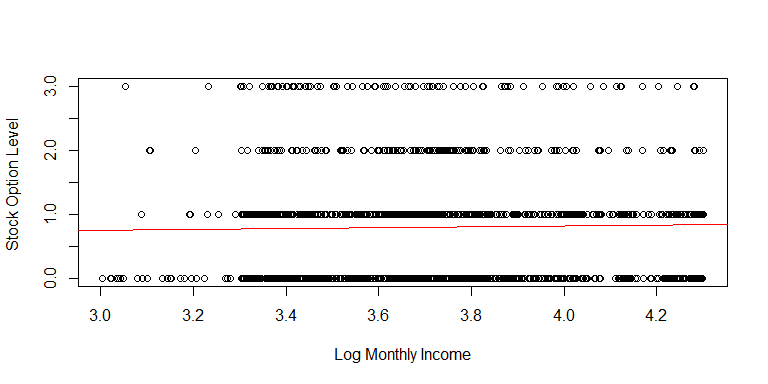
par (mfrow = c(1, 2))  
plot(logMonthlyIncome, TotalWorkingYears, xlab="Log Monthly Income", ylab="Total Working Years ")  
abline(lm(TotalWorkingYears~logMonthlyIncome), col="red")  
plot(logMonthlyIncome, YearsAtCompany, xlab="Log Monthly Income", ylab="Years At Company ")  
abline(lm(YearsAtCompany~logMonthlyIncome), col="red")



There seems to be positive collinearity between working time and logMonthlyIncome.

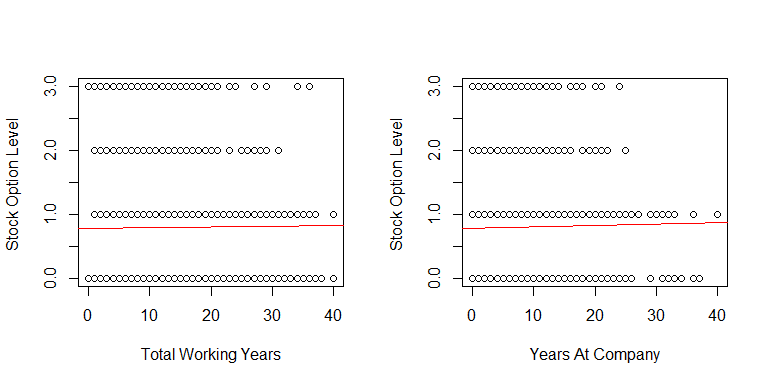
##### Looking at the relationship between income and working years with the StockOptionLevel variable.

par (mfrow = c(1, 1))  
plot(logMonthlyIncome, StockOptionLevel, xlab="Log Monthly Income", ylab="Stock Option Level ")  
abline(lm(StockOptionLevel~logMonthlyIncome), col="red")



There does not seem to be a colinear relationship between StockOptionLevel and logMonthlyIncome.

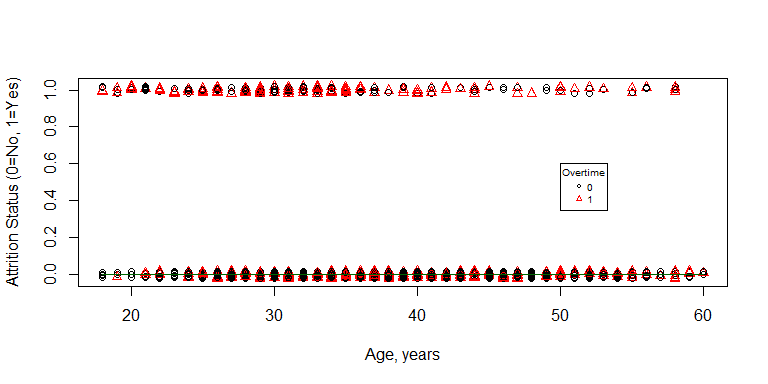
par (mfrow = c(1, 2))  
plot(TotalWorkingYears, StockOptionLevel, xlab="Total Working Years", ylab="Stock Option Level ")  
abline(lm(StockOptionLevel~TotalWorkingYears), col="red")  
plot(YearsAtCompany, StockOptionLevel, xlab="Years At Company", ylab="Stock Option Level ")  
abline(lm(StockOptionLevel~YearsAtCompany), col="red")



There does not seem be a relationship between MonthlyIncome, TotalWorkingYears, and YearsAtCompany with the StockOptionLevel.

##### Exploring Age, Attrition, and Overtime

par (mfrow = c(1, 1))  
plot (jitter (Attrition, 0.1) ~ Age, col=ifelse (OverTime==0, 1, 2), pch=ifelse  
(OverTime==0, 1, 2), xlab="Age, years", ylab="Attrition Status (0=No, 1=Yes)")  
lines (lowess (Age, Attrition), col='darkgreen')  
legend(50, 0.6, c("0", "1"), col=c(1, 2), cex=0.6, pch=c(1,2), title="Overtime")



The plot shows that there is a relationship between Overtime and Attrition.

##### Fitting first-order logistic regression model

ibm.logit <- glm(Attrition ~ Gender + Education + JobSatisfaction + JobInvolvement + RelationshipSatisfaction + StockOptionLevel + logMonthlyIncome + OverTime + PerformanceRating + WorkLifeBalance + DistanceFromHome + Age + TotalWorkingYears + TrainingTimesLastYear + YearsAtCompany + YearsInCurrentRole + YearsSinceLastPromotion + YearsWithCurrManager + as.factor(EnvironmentSatisfaction) + as.factor(MaritalStatus) ,family = binomial)  
summary(ibm.logit)

##   
## Call:  
## glm(formula = Attrition ~ Gender + Education + JobSatisfaction +   
## JobInvolvement + RelationshipSatisfaction + StockOptionLevel +   
## logMonthlyIncome + OverTime + PerformanceRating + WorkLifeBalance +   
## DistanceFromHome + Age + TotalWorkingYears + TrainingTimesLastYear +   
## YearsAtCompany + YearsInCurrentRole + YearsSinceLastPromotion +   
## YearsWithCurrManager + as.factor(EnvironmentSatisfaction) +   
## as.factor(MaritalStatus), family = binomial)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -1.8287 -0.5469 -0.3097 -0.1483 3.2732   
##   
## Coefficients:  
## Estimate Std. Error z value Pr(>|z|)  
## (Intercept) 9.620334 1.925636 4.996 5.86e-07  
## Gender 0.309348 0.173038 1.788 0.073817  
## Education 0.029256 0.082411 0.355 0.722590  
## JobSatisfaction -0.380891 0.076103 -5.005 5.59e-07  
## JobInvolvement -0.518105 0.114340 -4.531 5.86e-06  
## RelationshipSatisfaction -0.234930 0.077578 -3.028 0.002459  
## StockOptionLevel -0.158709 0.143137 -1.109 0.267521  
## logMonthlyIncome -1.743213 0.457739 -3.808 0.000140  
## OverTime 1.781675 0.178338 9.990 < 2e-16  
## PerformanceRating -0.152776 0.238052 -0.642 0.521018  
## WorkLifeBalance -0.250618 0.115045 -2.178 0.029374  
## DistanceFromHome 0.035937 0.009926 3.620 0.000294  
## Age -0.019808 0.012552 -1.578 0.114550  
## TotalWorkingYears -0.022149 0.023664 -0.936 0.349301  
## TrainingTimesLastYear -0.154850 0.067832 -2.283 0.022440  
## YearsAtCompany 0.033883 0.033430 1.014 0.310798  
## YearsInCurrentRole -0.105824 0.043128 -2.454 0.014138  
## YearsSinceLastPromotion 0.171226 0.039393 4.347 1.38e-05  
## YearsWithCurrManager -0.126824 0.043557 -2.912 0.003595  
## as.factor(EnvironmentSatisfaction)2 -1.057934 0.255082 -4.147 3.36e-05  
## as.factor(EnvironmentSatisfaction)3 -1.109284 0.231306 -4.796 1.62e-06  
## as.factor(EnvironmentSatisfaction)4 -1.300562 0.237388 -5.479 4.29e-08  
## as.factor(MaritalStatus)1 1.120113 0.321690 3.482 0.000498  
## as.factor(MaritalStatus)2 0.317681 0.255048 1.246 0.212920  
##   
## (Intercept) \*\*\*  
## Gender .   
## Education   
## JobSatisfaction \*\*\*  
## JobInvolvement \*\*\*  
## RelationshipSatisfaction \*\*   
## StockOptionLevel   
## logMonthlyIncome \*\*\*  
## OverTime \*\*\*  
## PerformanceRating   
## WorkLifeBalance \*   
## DistanceFromHome \*\*\*  
## Age   
## TotalWorkingYears   
## TrainingTimesLastYear \*   
## YearsAtCompany   
## YearsInCurrentRole \*   
## YearsSinceLastPromotion \*\*\*  
## YearsWithCurrManager \*\*   
## as.factor(EnvironmentSatisfaction)2 \*\*\*  
## as.factor(EnvironmentSatisfaction)3 \*\*\*  
## as.factor(EnvironmentSatisfaction)4 \*\*\*  
## as.factor(MaritalStatus)1 \*\*\*  
## as.factor(MaritalStatus)2   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for binomial family taken to be 1)  
##   
## Null deviance: 1298.58 on 1469 degrees of freedom  
## Residual deviance: 954.38 on 1446 degrees of freedom  
## AIC: 1002.4  
##   
## Number of Fisher Scoring iterations: 6

anova(ibm.logit)

## Analysis of Deviance Table  
##   
## Model: binomial, link: logit  
##   
## Response: Attrition  
##   
## Terms added sequentially (first to last)  
##   
##   
## Df Deviance Resid. Df Resid. Dev  
## NULL 1469 1298.58  
## Gender 1 1.286 1468 1297.30  
## Education 1 1.395 1467 1295.90  
## JobSatisfaction 1 15.959 1466 1279.94  
## JobInvolvement 1 25.102 1465 1254.84  
## RelationshipSatisfaction 1 2.649 1464 1252.19  
## StockOptionLevel 1 30.326 1463 1221.87  
## logMonthlyIncome 1 60.071 1462 1161.79  
## OverTime 1 96.527 1461 1065.27  
## PerformanceRating 1 0.465 1460 1064.80  
## WorkLifeBalance 1 5.112 1459 1059.69  
## DistanceFromHome 1 12.844 1458 1046.85  
## Age 1 6.666 1457 1040.18  
## TotalWorkingYears 1 1.531 1456 1038.65  
## TrainingTimesLastYear 1 3.733 1455 1034.92  
## YearsAtCompany 1 1.054 1454 1033.86  
## YearsInCurrentRole 1 10.493 1453 1023.37  
## YearsSinceLastPromotion 1 13.395 1452 1009.97  
## YearsWithCurrManager 1 5.702 1451 1004.27  
## as.factor(EnvironmentSatisfaction) 3 34.420 1448 969.85  
## as.factor(MaritalStatus) 2 15.473 1446 954.38

We have fit our first model above with all the variables excepted the deleted ones, mentioned in Data Characteristics. This model suggested an AIC of 1002.4. The summary of the model suggests that there are several coefficients that are significant and several coefficients that are not significant. We will do a stepwise backward elimination on this model.

# Model Selection.

##### Stepwise on the first model with backward elimination using both direcitons.

ibm.logit.step = step (ibm.logit, directon='both', k=log(nrow(ibm)))

## Start: AIC=1129.41  
## Attrition ~ Gender + Education + JobSatisfaction + JobInvolvement +   
## RelationshipSatisfaction + StockOptionLevel + logMonthlyIncome +   
## OverTime + PerformanceRating + WorkLifeBalance + DistanceFromHome +   
## Age + TotalWorkingYears + TrainingTimesLastYear + YearsAtCompany +   
## YearsInCurrentRole + YearsSinceLastPromotion + YearsWithCurrManager +   
## as.factor(EnvironmentSatisfaction) + as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - Education 1 954.51 1122.2  
## - PerformanceRating 1 954.80 1122.5  
## - TotalWorkingYears 1 955.27 1123.0  
## - YearsAtCompany 1 955.39 1123.1  
## - StockOptionLevel 1 955.63 1123.4  
## - Age 1 956.94 1124.7  
## - Gender 1 957.62 1125.4  
## - WorkLifeBalance 1 959.09 1126.8  
## - TrainingTimesLastYear 1 959.71 1127.5  
## - YearsInCurrentRole 1 960.41 1128.1  
## <none> 954.38 1129.4  
## - as.factor(MaritalStatus) 2 969.85 1130.3  
## - YearsWithCurrManager 1 962.74 1130.5  
## - RelationshipSatisfaction 1 963.60 1131.3  
## - DistanceFromHome 1 967.28 1135.0  
## - logMonthlyIncome 1 969.11 1136.8  
## - YearsSinceLastPromotion 1 973.74 1141.5  
## - JobInvolvement 1 975.06 1142.8  
## - as.factor(EnvironmentSatisfaction) 3 989.67 1142.8  
## - JobSatisfaction 1 980.00 1147.7  
## - OverTime 1 1061.55 1229.3  
##   
## Step: AIC=1122.25  
## Attrition ~ Gender + JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## StockOptionLevel + logMonthlyIncome + OverTime + PerformanceRating +   
## WorkLifeBalance + DistanceFromHome + Age + TotalWorkingYears +   
## TrainingTimesLastYear + YearsAtCompany + YearsInCurrentRole +   
## YearsSinceLastPromotion + YearsWithCurrManager + as.factor(EnvironmentSatisfaction) +   
## as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - PerformanceRating 1 954.93 1115.4  
## - TotalWorkingYears 1 955.40 1115.8  
## - YearsAtCompany 1 955.48 1115.9  
## - StockOptionLevel 1 955.73 1116.2  
## - Age 1 956.95 1117.4  
## - Gender 1 957.73 1118.2  
## - WorkLifeBalance 1 959.24 1119.7  
## - TrainingTimesLastYear 1 959.84 1120.3  
## - YearsInCurrentRole 1 960.48 1120.9  
## <none> 954.51 1122.2  
## - as.factor(MaritalStatus) 2 970.11 1123.3  
## - YearsWithCurrManager 1 962.82 1123.3  
## - RelationshipSatisfaction 1 963.76 1124.2  
## - DistanceFromHome 1 967.48 1127.9  
## - logMonthlyIncome 1 969.16 1129.6  
## - YearsSinceLastPromotion 1 974.01 1134.5  
## - JobInvolvement 1 975.10 1135.5  
## - as.factor(EnvironmentSatisfaction) 3 990.01 1135.9  
## - JobSatisfaction 1 980.10 1140.5  
## - OverTime 1 1061.75 1222.2  
##   
## Step: AIC=1115.38  
## Attrition ~ Gender + JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## StockOptionLevel + logMonthlyIncome + OverTime + WorkLifeBalance +   
## DistanceFromHome + Age + TotalWorkingYears + TrainingTimesLastYear +   
## YearsAtCompany + YearsInCurrentRole + YearsSinceLastPromotion +   
## YearsWithCurrManager + as.factor(EnvironmentSatisfaction) +   
## as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - TotalWorkingYears 1 955.86 1109.0  
## - YearsAtCompany 1 955.96 1109.1  
## - StockOptionLevel 1 956.13 1109.3  
## - Age 1 957.41 1110.6  
## - Gender 1 958.20 1111.3  
## - WorkLifeBalance 1 959.62 1112.8  
## - TrainingTimesLastYear 1 960.30 1113.5  
## - YearsInCurrentRole 1 961.09 1114.2  
## <none> 954.93 1115.4  
## - YearsWithCurrManager 1 963.32 1116.5  
## - as.factor(MaritalStatus) 2 970.64 1116.5  
## - RelationshipSatisfaction 1 964.09 1117.2  
## - DistanceFromHome 1 967.94 1121.1  
## - logMonthlyIncome 1 969.31 1122.5  
## - YearsSinceLastPromotion 1 974.40 1127.5  
## - JobInvolvement 1 975.50 1128.7  
## - as.factor(EnvironmentSatisfaction) 3 990.18 1128.8  
## - JobSatisfaction 1 980.55 1133.7  
## - OverTime 1 1061.89 1215.0  
##   
## Step: AIC=1109.01  
## Attrition ~ Gender + JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## StockOptionLevel + logMonthlyIncome + OverTime + WorkLifeBalance +   
## DistanceFromHome + Age + TrainingTimesLastYear + YearsAtCompany +   
## YearsInCurrentRole + YearsSinceLastPromotion + YearsWithCurrManager +   
## as.factor(EnvironmentSatisfaction) + as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - YearsAtCompany 1 956.42 1102.3  
## - StockOptionLevel 1 956.99 1102.8  
## - Gender 1 959.12 1105.0  
## - WorkLifeBalance 1 960.43 1106.3  
## - TrainingTimesLastYear 1 961.12 1107.0  
## - Age 1 961.75 1107.6  
## - YearsInCurrentRole 1 961.91 1107.8  
## <none> 955.86 1109.0  
## - YearsWithCurrManager 1 964.19 1110.0  
## - as.factor(MaritalStatus) 2 971.65 1110.2  
## - RelationshipSatisfaction 1 964.76 1110.6  
## - DistanceFromHome 1 968.82 1114.7  
## - YearsSinceLastPromotion 1 975.18 1121.0  
## - as.factor(EnvironmentSatisfaction) 3 990.82 1122.1  
## - JobInvolvement 1 976.34 1122.2  
## - logMonthlyIncome 1 980.24 1126.1  
## - JobSatisfaction 1 981.02 1126.9  
## - OverTime 1 1062.38 1208.2  
##   
## Step: AIC=1102.28  
## Attrition ~ Gender + JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## StockOptionLevel + logMonthlyIncome + OverTime + WorkLifeBalance +   
## DistanceFromHome + Age + TrainingTimesLastYear + YearsInCurrentRole +   
## YearsSinceLastPromotion + YearsWithCurrManager + as.factor(EnvironmentSatisfaction) +   
## as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - StockOptionLevel 1 957.58 1096.2  
## - Gender 1 959.78 1098.3  
## - WorkLifeBalance 1 961.01 1099.6  
## - TrainingTimesLastYear 1 961.61 1100.2  
## - YearsInCurrentRole 1 961.97 1100.5  
## - Age 1 962.05 1100.6  
## <none> 956.42 1102.3  
## - YearsWithCurrManager 1 964.59 1103.2  
## - as.factor(MaritalStatus) 2 972.21 1103.5  
## - RelationshipSatisfaction 1 965.21 1103.8  
## - DistanceFromHome 1 969.35 1107.9  
## - as.factor(EnvironmentSatisfaction) 3 991.47 1115.5  
## - JobInvolvement 1 977.33 1115.9  
## - logMonthlyIncome 1 980.28 1118.8  
## - YearsSinceLastPromotion 1 981.25 1119.8  
## - JobSatisfaction 1 981.38 1120.0  
## - OverTime 1 1063.07 1201.6  
##   
## Step: AIC=1096.15  
## Attrition ~ Gender + JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## logMonthlyIncome + OverTime + WorkLifeBalance + DistanceFromHome +   
## Age + TrainingTimesLastYear + YearsInCurrentRole + YearsSinceLastPromotion +   
## YearsWithCurrManager + as.factor(EnvironmentSatisfaction) +   
## as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - Gender 1 960.85 1092.1  
## - WorkLifeBalance 1 962.38 1093.7  
## - TrainingTimesLastYear 1 962.90 1094.2  
## - YearsInCurrentRole 1 963.19 1094.5  
## - Age 1 963.27 1094.5  
## <none> 957.58 1096.2  
## - YearsWithCurrManager 1 965.80 1097.1  
## - RelationshipSatisfaction 1 965.98 1097.3  
## - DistanceFromHome 1 970.24 1101.5  
## - as.factor(EnvironmentSatisfaction) 3 992.91 1109.6  
## - JobInvolvement 1 978.52 1109.8  
## - logMonthlyIncome 1 981.23 1112.5  
## - YearsSinceLastPromotion 1 982.78 1114.1  
## - JobSatisfaction 1 983.54 1114.8  
## - as.factor(MaritalStatus) 2 1000.25 1124.2  
## - OverTime 1 1064.44 1195.7  
##   
## Step: AIC=1092.13  
## Attrition ~ JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## logMonthlyIncome + OverTime + WorkLifeBalance + DistanceFromHome +   
## Age + TrainingTimesLastYear + YearsInCurrentRole + YearsSinceLastPromotion +   
## YearsWithCurrManager + as.factor(EnvironmentSatisfaction) +   
## as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - WorkLifeBalance 1 965.66 1089.6  
## - YearsInCurrentRole 1 966.54 1090.5  
## - Age 1 966.56 1090.5  
## - TrainingTimesLastYear 1 966.74 1090.7  
## <none> 960.85 1092.1  
## - RelationshipSatisfaction 1 968.67 1092.7  
## - YearsWithCurrManager 1 969.09 1093.1  
## - DistanceFromHome 1 973.44 1097.4  
## - as.factor(EnvironmentSatisfaction) 3 996.29 1105.7  
## - JobInvolvement 1 981.72 1105.7  
## - logMonthlyIncome 1 984.93 1108.9  
## - YearsSinceLastPromotion 1 985.97 1110.0  
## - JobSatisfaction 1 986.48 1110.5  
## - as.factor(MaritalStatus) 2 1002.49 1119.2  
## - OverTime 1 1065.33 1189.3  
##   
## Step: AIC=1089.64  
## Attrition ~ JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## logMonthlyIncome + OverTime + DistanceFromHome + Age + TrainingTimesLastYear +   
## YearsInCurrentRole + YearsSinceLastPromotion + YearsWithCurrManager +   
## as.factor(EnvironmentSatisfaction) + as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - Age 1 970.91 1087.6  
## - YearsInCurrentRole 1 971.42 1088.1  
## - TrainingTimesLastYear 1 972.10 1088.8  
## <none> 965.66 1089.6  
## - YearsWithCurrManager 1 973.75 1090.4  
## - RelationshipSatisfaction 1 973.77 1090.5  
## - DistanceFromHome 1 978.52 1095.2  
## - JobInvolvement 1 986.48 1103.2  
## - as.factor(EnvironmentSatisfaction) 3 1001.67 1103.8  
## - JobSatisfaction 1 990.36 1107.0  
## - YearsSinceLastPromotion 1 990.51 1107.2  
## - logMonthlyIncome 1 991.07 1107.8  
## - as.factor(MaritalStatus) 2 1006.39 1115.8  
## - OverTime 1 1070.78 1187.5  
##   
## Step: AIC=1087.6  
## Attrition ~ JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## logMonthlyIncome + OverTime + DistanceFromHome + TrainingTimesLastYear +   
## YearsInCurrentRole + YearsSinceLastPromotion + YearsWithCurrManager +   
## as.factor(EnvironmentSatisfaction) + as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - YearsInCurrentRole 1 976.72 1086.1  
## - TrainingTimesLastYear 1 977.36 1086.8  
## <none> 970.91 1087.6  
## - YearsWithCurrManager 1 979.18 1088.6  
## - RelationshipSatisfaction 1 979.93 1089.3  
## - DistanceFromHome 1 983.61 1093.0  
## - as.factor(EnvironmentSatisfaction) 3 1006.65 1101.5  
## - JobInvolvement 1 992.68 1102.1  
## - YearsSinceLastPromotion 1 994.38 1103.8  
## - JobSatisfaction 1 995.20 1104.6  
## - as.factor(MaritalStatus) 2 1014.86 1117.0  
## - logMonthlyIncome 1 1016.19 1125.6  
## - OverTime 1 1075.25 1184.6  
##   
## Step: AIC=1086.11  
## Attrition ~ JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## logMonthlyIncome + OverTime + DistanceFromHome + TrainingTimesLastYear +   
## YearsSinceLastPromotion + YearsWithCurrManager + as.factor(EnvironmentSatisfaction) +   
## as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## - TrainingTimesLastYear 1 982.98 1085.1  
## <none> 976.72 1086.1  
## - RelationshipSatisfaction 1 985.09 1087.2  
## - DistanceFromHome 1 989.30 1091.4  
## - YearsSinceLastPromotion 1 995.57 1097.7  
## - JobInvolvement 1 998.36 1100.5  
## - as.factor(EnvironmentSatisfaction) 3 1013.78 1101.3  
## - JobSatisfaction 1 1001.31 1103.4  
## - YearsWithCurrManager 1 1001.78 1103.9  
## - as.factor(MaritalStatus) 2 1022.02 1116.8  
## - logMonthlyIncome 1 1028.05 1130.2  
## - OverTime 1 1081.66 1183.8  
##   
## Step: AIC=1085.08  
## Attrition ~ JobSatisfaction + JobInvolvement + RelationshipSatisfaction +   
## logMonthlyIncome + OverTime + DistanceFromHome + YearsSinceLastPromotion +   
## YearsWithCurrManager + as.factor(EnvironmentSatisfaction) +   
## as.factor(MaritalStatus)  
##   
## Df Deviance AIC  
## <none> 982.98 1085.1  
## - RelationshipSatisfaction 1 991.24 1086.0  
## - DistanceFromHome 1 995.69 1090.5  
## - YearsSinceLastPromotion 1 1001.34 1096.2  
## - JobInvolvement 1 1003.93 1098.7  
## - as.factor(EnvironmentSatisfaction) 3 1020.08 1100.3  
## - JobSatisfaction 1 1006.97 1101.8  
## - YearsWithCurrManager 1 1007.25 1102.1  
## - as.factor(MaritalStatus) 2 1026.86 1114.4  
## - logMonthlyIncome 1 1032.84 1127.7  
## - OverTime 1 1090.89 1185.7

This model suggests an AIC=1085.08 and took out several variables. We will now fit the resulting model with some variables as factors in a logistic regression.

##### Fitting the model after the stepwise backward elimination

m2 = glm (Attrition ~ RelationshipSatisfaction + DistanceFromHome + YearsSinceLastPromotion + JobInvolvement + as.factor(EnvironmentSatisfaction) + JobSatisfaction + YearsWithCurrManager + as.factor(MaritalStatus) + logMonthlyIncome + OverTime, family = binomial)  
summary(m2)

##   
## Call:  
## glm(formula = Attrition ~ RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + as.factor(EnvironmentSatisfaction) +   
## JobSatisfaction + YearsWithCurrManager + as.factor(MaritalStatus) +   
## logMonthlyIncome + OverTime, family = binomial)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -1.6458 -0.5583 -0.3278 -0.1666 3.1507   
##   
## Coefficients:  
## Estimate Std. Error z value Pr(>|z|)  
## (Intercept) 9.227176 1.357589 6.797 1.07e-11  
## RelationshipSatisfaction -0.216362 0.075349 -2.871 0.004086  
## DistanceFromHome 0.034769 0.009668 3.596 0.000323  
## YearsSinceLastPromotion 0.146042 0.033337 4.381 1.18e-05  
## JobInvolvement -0.513713 0.112628 -4.561 5.09e-06  
## as.factor(EnvironmentSatisfaction)2 -1.085503 0.251663 -4.313 1.61e-05  
## as.factor(EnvironmentSatisfaction)3 -1.123337 0.226698 -4.955 7.23e-07  
## as.factor(EnvironmentSatisfaction)4 -1.299137 0.232342 -5.591 2.25e-08  
## JobSatisfaction -0.360210 0.074198 -4.855 1.21e-06  
## YearsWithCurrManager -0.157473 0.033461 -4.706 2.52e-06  
## as.factor(MaritalStatus)1 1.340583 0.240212 5.581 2.39e-08  
## as.factor(MaritalStatus)2 0.388230 0.240351 1.615 0.106253  
## logMonthlyIncome -2.332240 0.351242 -6.640 3.14e-11  
## OverTime 1.751062 0.173972 10.065 < 2e-16  
##   
## (Intercept) \*\*\*  
## RelationshipSatisfaction \*\*   
## DistanceFromHome \*\*\*  
## YearsSinceLastPromotion \*\*\*  
## JobInvolvement \*\*\*  
## as.factor(EnvironmentSatisfaction)2 \*\*\*  
## as.factor(EnvironmentSatisfaction)3 \*\*\*  
## as.factor(EnvironmentSatisfaction)4 \*\*\*  
## JobSatisfaction \*\*\*  
## YearsWithCurrManager \*\*\*  
## as.factor(MaritalStatus)1 \*\*\*  
## as.factor(MaritalStatus)2   
## logMonthlyIncome \*\*\*  
## OverTime \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for binomial family taken to be 1)  
##   
## Null deviance: 1298.58 on 1469 degrees of freedom  
## Residual deviance: 982.98 on 1456 degrees of freedom  
## AIC: 1011  
##   
## Number of Fisher Scoring iterations: 6

This model has a better AIC than model ibm.logit. All the variables are significant in our second model here except MaritalStatus2. This model is the result of the first model with stepwise backward elimination. We refit this new model, now with interactions.

##### Model 2 with interactions

m2.int = glm(Attrition ~ factor(EnvironmentSatisfaction) \* factor(MaritalStatus) + factor(EnvironmentSatisfaction) \* logMonthlyIncome + factor(EnvironmentSatisfaction) \* RelationshipSatisfaction + factor(EnvironmentSatisfaction) \* DistanceFromHome + factor(EnvironmentSatisfaction) \* YearsSinceLastPromotion + factor(EnvironmentSatisfaction) \* JobInvolvement + factor(EnvironmentSatisfaction) \* JobSatisfaction + factor(EnvironmentSatisfaction) \* YearsWithCurrManager + factor(EnvironmentSatisfaction) \* OverTime + factor(MaritalStatus) \* logMonthlyIncome + factor(MaritalStatus) \* RelationshipSatisfaction + factor(MaritalStatus) \* DistanceFromHome + factor(MaritalStatus) \* YearsSinceLastPromotion + factor(MaritalStatus) \* JobInvolvement + factor(MaritalStatus) \* JobSatisfaction + factor(MaritalStatus) \* YearsWithCurrManager + factor(MaritalStatus) \* OverTime + logMonthlyIncome \* RelationshipSatisfaction + logMonthlyIncome \* DistanceFromHome + logMonthlyIncome \* YearsSinceLastPromotion + logMonthlyIncome \* JobInvolvement + logMonthlyIncome \* JobSatisfaction + logMonthlyIncome \* YearsWithCurrManager + logMonthlyIncome \* OverTime + RelationshipSatisfaction \* DistanceFromHome + RelationshipSatisfaction \* YearsSinceLastPromotion + RelationshipSatisfaction \* JobInvolvement + RelationshipSatisfaction \* JobSatisfaction + RelationshipSatisfaction \* YearsWithCurrManager + RelationshipSatisfaction \* OverTime + DistanceFromHome \* YearsSinceLastPromotion + DistanceFromHome \* JobInvolvement + DistanceFromHome \* JobSatisfaction + DistanceFromHome \* YearsWithCurrManager + DistanceFromHome \* OverTime + YearsSinceLastPromotion \* JobInvolvement + YearsSinceLastPromotion \* JobSatisfaction + YearsSinceLastPromotion \* YearsWithCurrManager + YearsSinceLastPromotion \* OverTime + JobInvolvement \* JobSatisfaction + JobInvolvement \* YearsWithCurrManager + JobInvolvement \* OverTime + JobSatisfaction \* YearsWithCurrManager + JobSatisfaction \* OverTime + YearsWithCurrManager \* OverTime, family = binomial)  
summary(m2.int)

##   
## Call:  
## glm(formula = Attrition ~ factor(EnvironmentSatisfaction) \* factor(MaritalStatus) +   
## factor(EnvironmentSatisfaction) \* logMonthlyIncome + factor(EnvironmentSatisfaction) \*   
## RelationshipSatisfaction + factor(EnvironmentSatisfaction) \*   
## DistanceFromHome + factor(EnvironmentSatisfaction) \* YearsSinceLastPromotion +   
## factor(EnvironmentSatisfaction) \* JobInvolvement + factor(EnvironmentSatisfaction) \*   
## JobSatisfaction + factor(EnvironmentSatisfaction) \* YearsWithCurrManager +   
## factor(EnvironmentSatisfaction) \* OverTime + factor(MaritalStatus) \*   
## logMonthlyIncome + factor(MaritalStatus) \* RelationshipSatisfaction +   
## factor(MaritalStatus) \* DistanceFromHome + factor(MaritalStatus) \*   
## YearsSinceLastPromotion + factor(MaritalStatus) \* JobInvolvement +   
## factor(MaritalStatus) \* JobSatisfaction + factor(MaritalStatus) \*   
## YearsWithCurrManager + factor(MaritalStatus) \* OverTime +   
## logMonthlyIncome \* RelationshipSatisfaction + logMonthlyIncome \*   
## DistanceFromHome + logMonthlyIncome \* YearsSinceLastPromotion +   
## logMonthlyIncome \* JobInvolvement + logMonthlyIncome \* JobSatisfaction +   
## logMonthlyIncome \* YearsWithCurrManager + logMonthlyIncome \*   
## OverTime + RelationshipSatisfaction \* DistanceFromHome +   
## RelationshipSatisfaction \* YearsSinceLastPromotion + RelationshipSatisfaction \*   
## JobInvolvement + RelationshipSatisfaction \* JobSatisfaction +   
## RelationshipSatisfaction \* YearsWithCurrManager + RelationshipSatisfaction \*   
## OverTime + DistanceFromHome \* YearsSinceLastPromotion + DistanceFromHome \*   
## JobInvolvement + DistanceFromHome \* JobSatisfaction + DistanceFromHome \*   
## YearsWithCurrManager + DistanceFromHome \* OverTime + YearsSinceLastPromotion \*   
## JobInvolvement + YearsSinceLastPromotion \* JobSatisfaction +   
## YearsSinceLastPromotion \* YearsWithCurrManager + YearsSinceLastPromotion \*   
## OverTime + JobInvolvement \* JobSatisfaction + JobInvolvement \*   
## YearsWithCurrManager + JobInvolvement \* OverTime + JobSatisfaction \*   
## YearsWithCurrManager + JobSatisfaction \* OverTime + YearsWithCurrManager \*   
## OverTime, family = binomial)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -2.1606 -0.4996 -0.2955 -0.1213 3.3468   
##   
## Coefficients:  
## Estimate  
## (Intercept) 13.014778  
## factor(EnvironmentSatisfaction)2 -3.636950  
## factor(EnvironmentSatisfaction)3 4.607552  
## factor(EnvironmentSatisfaction)4 -3.791677  
## factor(MaritalStatus)1 3.057163  
## factor(MaritalStatus)2 -2.282662  
## logMonthlyIncome -3.234953  
## RelationshipSatisfaction -1.395841  
## DistanceFromHome 0.082219  
## YearsSinceLastPromotion -0.060530  
## JobInvolvement -0.020566  
## JobSatisfaction -0.676797  
## YearsWithCurrManager -1.288247  
## OverTime 11.226494  
## factor(EnvironmentSatisfaction)2:factor(MaritalStatus)1 -0.117419  
## factor(EnvironmentSatisfaction)3:factor(MaritalStatus)1 0.397016  
## factor(EnvironmentSatisfaction)4:factor(MaritalStatus)1 1.246373  
## factor(EnvironmentSatisfaction)2:factor(MaritalStatus)2 -0.564523  
## factor(EnvironmentSatisfaction)3:factor(MaritalStatus)2 0.198320  
## factor(EnvironmentSatisfaction)4:factor(MaritalStatus)2 1.946506  
## factor(EnvironmentSatisfaction)2:logMonthlyIncome 0.646753  
## factor(EnvironmentSatisfaction)3:logMonthlyIncome -2.204213  
## factor(EnvironmentSatisfaction)4:logMonthlyIncome -0.276630  
## factor(EnvironmentSatisfaction)2:RelationshipSatisfaction 0.434862  
## factor(EnvironmentSatisfaction)3:RelationshipSatisfaction 0.192277  
## factor(EnvironmentSatisfaction)4:RelationshipSatisfaction 0.259491  
## factor(EnvironmentSatisfaction)2:DistanceFromHome -0.034696  
## factor(EnvironmentSatisfaction)3:DistanceFromHome -0.008523  
## factor(EnvironmentSatisfaction)4:DistanceFromHome 0.008282  
## factor(EnvironmentSatisfaction)2:YearsSinceLastPromotion 0.008774  
## factor(EnvironmentSatisfaction)3:YearsSinceLastPromotion -0.005923  
## factor(EnvironmentSatisfaction)4:YearsSinceLastPromotion 0.141225  
## factor(EnvironmentSatisfaction)2:JobInvolvement 0.044343  
## factor(EnvironmentSatisfaction)3:JobInvolvement 0.190877  
## factor(EnvironmentSatisfaction)4:JobInvolvement 0.474751  
## factor(EnvironmentSatisfaction)2:JobSatisfaction -0.341816  
## factor(EnvironmentSatisfaction)3:JobSatisfaction 0.218589  
## factor(EnvironmentSatisfaction)4:JobSatisfaction -0.089840  
## factor(EnvironmentSatisfaction)2:YearsWithCurrManager 0.097583  
## factor(EnvironmentSatisfaction)3:YearsWithCurrManager 0.237755  
## factor(EnvironmentSatisfaction)4:YearsWithCurrManager -0.015604  
## factor(EnvironmentSatisfaction)2:OverTime 0.048655  
## factor(EnvironmentSatisfaction)3:OverTime -0.994774  
## factor(EnvironmentSatisfaction)4:OverTime -0.509120  
## factor(MaritalStatus)1:logMonthlyIncome -0.132242  
## factor(MaritalStatus)2:logMonthlyIncome 0.843211  
## factor(MaritalStatus)1:RelationshipSatisfaction -0.361358  
## factor(MaritalStatus)2:RelationshipSatisfaction -0.090305  
## factor(MaritalStatus)1:DistanceFromHome 0.018863  
## factor(MaritalStatus)2:DistanceFromHome 0.002298  
## factor(MaritalStatus)1:YearsSinceLastPromotion 0.012071  
## factor(MaritalStatus)2:YearsSinceLastPromotion -0.079599  
## factor(MaritalStatus)1:JobInvolvement 0.045001  
## factor(MaritalStatus)2:JobInvolvement -0.126237  
## factor(MaritalStatus)1:JobSatisfaction -0.455106  
## factor(MaritalStatus)2:JobSatisfaction -0.189651  
## factor(MaritalStatus)1:YearsWithCurrManager 0.148012  
## factor(MaritalStatus)2:YearsWithCurrManager 0.271574  
## factor(MaritalStatus)1:OverTime 0.269593  
## factor(MaritalStatus)2:OverTime -0.665708  
## logMonthlyIncome:RelationshipSatisfaction 0.307094  
## logMonthlyIncome:DistanceFromHome -0.009203  
## logMonthlyIncome:YearsSinceLastPromotion -0.040211  
## logMonthlyIncome:JobInvolvement -0.122839  
## logMonthlyIncome:JobSatisfaction 0.145373  
## logMonthlyIncome:YearsWithCurrManager 0.261803  
## logMonthlyIncome:OverTime -2.376994  
## RelationshipSatisfaction:DistanceFromHome -0.005159  
## RelationshipSatisfaction:YearsSinceLastPromotion 0.003768  
## RelationshipSatisfaction:JobInvolvement -0.053300  
## RelationshipSatisfaction:JobSatisfaction 0.098067  
## RelationshipSatisfaction:YearsWithCurrManager 0.011100  
## RelationshipSatisfaction:OverTime -0.274131  
## DistanceFromHome:YearsSinceLastPromotion -0.003492  
## DistanceFromHome:JobInvolvement 0.011257  
## DistanceFromHome:JobSatisfaction -0.012278  
## DistanceFromHome:YearsWithCurrManager -0.002304  
## DistanceFromHome:OverTime 0.064727  
## YearsSinceLastPromotion:JobInvolvement 0.060990  
## YearsSinceLastPromotion:JobSatisfaction 0.074603  
## YearsSinceLastPromotion:YearsWithCurrManager 0.004949  
## YearsSinceLastPromotion:OverTime 0.035128  
## JobInvolvement:JobSatisfaction -0.071406  
## JobInvolvement:YearsWithCurrManager -0.025574  
## JobInvolvement:OverTime -0.035905  
## JobSatisfaction:YearsWithCurrManager -0.035289  
## JobSatisfaction:OverTime 0.095896  
## YearsWithCurrManager:OverTime -0.008526  
## Std. Error  
## (Intercept) 8.588979  
## factor(EnvironmentSatisfaction)2 4.292260  
## factor(EnvironmentSatisfaction)3 4.354721  
## factor(EnvironmentSatisfaction)4 4.046175  
## factor(MaritalStatus)1 4.677370  
## factor(MaritalStatus)2 4.647646  
## logMonthlyIncome 2.365963  
## RelationshipSatisfaction 1.457503  
## DistanceFromHome 0.177541  
## YearsSinceLastPromotion 0.612211  
## JobInvolvement 2.014894  
## JobSatisfaction 1.397274  
## YearsWithCurrManager 0.569767  
## OverTime 3.361329  
## factor(EnvironmentSatisfaction)2:factor(MaritalStatus)1 0.847120  
## factor(EnvironmentSatisfaction)3:factor(MaritalStatus)1 0.744164  
## factor(EnvironmentSatisfaction)4:factor(MaritalStatus)1 0.935521  
## factor(EnvironmentSatisfaction)2:factor(MaritalStatus)2 0.833197  
## factor(EnvironmentSatisfaction)3:factor(MaritalStatus)2 0.749641  
## factor(EnvironmentSatisfaction)4:factor(MaritalStatus)2 0.921780  
## factor(EnvironmentSatisfaction)2:logMonthlyIncome 1.132313  
## factor(EnvironmentSatisfaction)3:logMonthlyIncome 1.156773  
## factor(EnvironmentSatisfaction)4:logMonthlyIncome 1.070305  
## factor(EnvironmentSatisfaction)2:RelationshipSatisfaction 0.266804  
## factor(EnvironmentSatisfaction)3:RelationshipSatisfaction 0.237959  
## factor(EnvironmentSatisfaction)4:RelationshipSatisfaction 0.249866  
## factor(EnvironmentSatisfaction)2:DistanceFromHome 0.033765  
## factor(EnvironmentSatisfaction)3:DistanceFromHome 0.029926  
## factor(EnvironmentSatisfaction)4:DistanceFromHome 0.031439  
## factor(EnvironmentSatisfaction)2:YearsSinceLastPromotion 0.115526  
## factor(EnvironmentSatisfaction)3:YearsSinceLastPromotion 0.105949  
## factor(EnvironmentSatisfaction)4:YearsSinceLastPromotion 0.109807  
## factor(EnvironmentSatisfaction)2:JobInvolvement 0.362934  
## factor(EnvironmentSatisfaction)3:JobInvolvement 0.359219  
## factor(EnvironmentSatisfaction)4:JobInvolvement 0.371058  
## factor(EnvironmentSatisfaction)2:JobSatisfaction 0.269396  
## factor(EnvironmentSatisfaction)3:JobSatisfaction 0.225746  
## factor(EnvironmentSatisfaction)4:JobSatisfaction 0.245322  
## factor(EnvironmentSatisfaction)2:YearsWithCurrManager 0.114502  
## factor(EnvironmentSatisfaction)3:YearsWithCurrManager 0.103346  
## factor(EnvironmentSatisfaction)4:YearsWithCurrManager 0.114169  
## factor(EnvironmentSatisfaction)2:OverTime 0.633489  
## factor(EnvironmentSatisfaction)3:OverTime 0.570288  
## factor(EnvironmentSatisfaction)4:OverTime 0.593232  
## factor(MaritalStatus)1:logMonthlyIncome 1.247579  
## factor(MaritalStatus)2:logMonthlyIncome 1.234829  
## factor(MaritalStatus)1:RelationshipSatisfaction 0.271375  
## factor(MaritalStatus)2:RelationshipSatisfaction 0.263569  
## factor(MaritalStatus)1:DistanceFromHome 0.033926  
## factor(MaritalStatus)2:DistanceFromHome 0.033580  
## factor(MaritalStatus)1:YearsSinceLastPromotion 0.123992  
## factor(MaritalStatus)2:YearsSinceLastPromotion 0.113693  
## factor(MaritalStatus)1:JobInvolvement 0.385896  
## factor(MaritalStatus)2:JobInvolvement 0.379883  
## factor(MaritalStatus)1:JobSatisfaction 0.257868  
## factor(MaritalStatus)2:JobSatisfaction 0.252127  
## factor(MaritalStatus)1:YearsWithCurrManager 0.132333  
## factor(MaritalStatus)2:YearsWithCurrManager 0.125652  
## factor(MaritalStatus)1:OverTime 0.633758  
## factor(MaritalStatus)2:OverTime 0.616731  
## logMonthlyIncome:RelationshipSatisfaction 0.390716  
## logMonthlyIncome:DistanceFromHome 0.046329  
## logMonthlyIncome:YearsSinceLastPromotion 0.139791  
## logMonthlyIncome:JobInvolvement 0.544843  
## logMonthlyIncome:JobSatisfaction 0.368904  
## logMonthlyIncome:YearsWithCurrManager 0.132901  
## logMonthlyIncome:OverTime 0.846248  
## RelationshipSatisfaction:DistanceFromHome 0.010528  
## RelationshipSatisfaction:YearsSinceLastPromotion 0.033652  
## RelationshipSatisfaction:JobInvolvement 0.116096  
## RelationshipSatisfaction:JobSatisfaction 0.079927  
## RelationshipSatisfaction:YearsWithCurrManager 0.034783  
## RelationshipSatisfaction:OverTime 0.182891  
## DistanceFromHome:YearsSinceLastPromotion 0.004397  
## DistanceFromHome:JobInvolvement 0.014998  
## DistanceFromHome:JobSatisfaction 0.010212  
## DistanceFromHome:YearsWithCurrManager 0.004431  
## DistanceFromHome:OverTime 0.025311  
## YearsSinceLastPromotion:JobInvolvement 0.053352  
## YearsSinceLastPromotion:JobSatisfaction 0.033780  
## YearsSinceLastPromotion:YearsWithCurrManager 0.009137  
## YearsSinceLastPromotion:OverTime 0.077811  
## JobInvolvement:JobSatisfaction 0.118693  
## JobInvolvement:YearsWithCurrManager 0.055098  
## JobInvolvement:OverTime 0.273711  
## JobSatisfaction:YearsWithCurrManager 0.033700  
## JobSatisfaction:OverTime 0.178557  
## YearsWithCurrManager:OverTime 0.081013  
## z value Pr(>|z|)  
## (Intercept) 1.515 0.129699  
## factor(EnvironmentSatisfaction)2 -0.847 0.396813  
## factor(EnvironmentSatisfaction)3 1.058 0.290029  
## factor(EnvironmentSatisfaction)4 -0.937 0.348706  
## factor(MaritalStatus)1 0.654 0.513365  
## factor(MaritalStatus)2 -0.491 0.623325  
## logMonthlyIncome -1.367 0.171535  
## RelationshipSatisfaction -0.958 0.338217  
## DistanceFromHome 0.463 0.643292  
## YearsSinceLastPromotion -0.099 0.921240  
## JobInvolvement -0.010 0.991856  
## JobSatisfaction -0.484 0.628124  
## YearsWithCurrManager -2.261 0.023759  
## OverTime 3.340 0.000838  
## factor(EnvironmentSatisfaction)2:factor(MaritalStatus)1 -0.139 0.889758  
## factor(EnvironmentSatisfaction)3:factor(MaritalStatus)1 0.534 0.593683  
## factor(EnvironmentSatisfaction)4:factor(MaritalStatus)1 1.332 0.182769  
## factor(EnvironmentSatisfaction)2:factor(MaritalStatus)2 -0.678 0.498064  
## factor(EnvironmentSatisfaction)3:factor(MaritalStatus)2 0.265 0.791354  
## factor(EnvironmentSatisfaction)4:factor(MaritalStatus)2 2.112 0.034714  
## factor(EnvironmentSatisfaction)2:logMonthlyIncome 0.571 0.567878  
## factor(EnvironmentSatisfaction)3:logMonthlyIncome -1.905 0.056717  
## factor(EnvironmentSatisfaction)4:logMonthlyIncome -0.258 0.796052  
## factor(EnvironmentSatisfaction)2:RelationshipSatisfaction 1.630 0.103124  
## factor(EnvironmentSatisfaction)3:RelationshipSatisfaction 0.808 0.419075  
## factor(EnvironmentSatisfaction)4:RelationshipSatisfaction 1.039 0.299028  
## factor(EnvironmentSatisfaction)2:DistanceFromHome -1.028 0.304146  
## factor(EnvironmentSatisfaction)3:DistanceFromHome -0.285 0.775801  
## factor(EnvironmentSatisfaction)4:DistanceFromHome 0.263 0.792227  
## factor(EnvironmentSatisfaction)2:YearsSinceLastPromotion 0.076 0.939462  
## factor(EnvironmentSatisfaction)3:YearsSinceLastPromotion -0.056 0.955416  
## factor(EnvironmentSatisfaction)4:YearsSinceLastPromotion 1.286 0.198402  
## factor(EnvironmentSatisfaction)2:JobInvolvement 0.122 0.902756  
## factor(EnvironmentSatisfaction)3:JobInvolvement 0.531 0.595164  
## factor(EnvironmentSatisfaction)4:JobInvolvement 1.279 0.200739  
## factor(EnvironmentSatisfaction)2:JobSatisfaction -1.269 0.204503  
## factor(EnvironmentSatisfaction)3:JobSatisfaction 0.968 0.332896  
## factor(EnvironmentSatisfaction)4:JobSatisfaction -0.366 0.714207  
## factor(EnvironmentSatisfaction)2:YearsWithCurrManager 0.852 0.394080  
## factor(EnvironmentSatisfaction)3:YearsWithCurrManager 2.301 0.021416  
## factor(EnvironmentSatisfaction)4:YearsWithCurrManager -0.137 0.891287  
## factor(EnvironmentSatisfaction)2:OverTime 0.077 0.938779  
## factor(EnvironmentSatisfaction)3:OverTime -1.744 0.081101  
## factor(EnvironmentSatisfaction)4:OverTime -0.858 0.390774  
## factor(MaritalStatus)1:logMonthlyIncome -0.106 0.915583  
## factor(MaritalStatus)2:logMonthlyIncome 0.683 0.494697  
## factor(MaritalStatus)1:RelationshipSatisfaction -1.332 0.182998  
## factor(MaritalStatus)2:RelationshipSatisfaction -0.343 0.731882  
## factor(MaritalStatus)1:DistanceFromHome 0.556 0.578201  
## factor(MaritalStatus)2:DistanceFromHome 0.068 0.945438  
## factor(MaritalStatus)1:YearsSinceLastPromotion 0.097 0.922445  
## factor(MaritalStatus)2:YearsSinceLastPromotion -0.700 0.483851  
## factor(MaritalStatus)1:JobInvolvement 0.117 0.907165  
## factor(MaritalStatus)2:JobInvolvement -0.332 0.739659  
## factor(MaritalStatus)1:JobSatisfaction -1.765 0.077585  
## factor(MaritalStatus)2:JobSatisfaction -0.752 0.451928  
## factor(MaritalStatus)1:YearsWithCurrManager 1.118 0.263361  
## factor(MaritalStatus)2:YearsWithCurrManager 2.161 0.030671  
## factor(MaritalStatus)1:OverTime 0.425 0.670553  
## factor(MaritalStatus)2:OverTime -1.079 0.280403  
## logMonthlyIncome:RelationshipSatisfaction 0.786 0.431880  
## logMonthlyIncome:DistanceFromHome -0.199 0.842545  
## logMonthlyIncome:YearsSinceLastPromotion -0.288 0.773614  
## logMonthlyIncome:JobInvolvement -0.225 0.821624  
## logMonthlyIncome:JobSatisfaction 0.394 0.693530  
## logMonthlyIncome:YearsWithCurrManager 1.970 0.048849  
## logMonthlyIncome:OverTime -2.809 0.004972  
## RelationshipSatisfaction:DistanceFromHome -0.490 0.624076  
## RelationshipSatisfaction:YearsSinceLastPromotion 0.112 0.910846  
## RelationshipSatisfaction:JobInvolvement -0.459 0.646161  
## RelationshipSatisfaction:JobSatisfaction 1.227 0.219838  
## RelationshipSatisfaction:YearsWithCurrManager 0.319 0.749630  
## RelationshipSatisfaction:OverTime -1.499 0.133906  
## DistanceFromHome:YearsSinceLastPromotion -0.794 0.427015  
## DistanceFromHome:JobInvolvement 0.751 0.452898  
## DistanceFromHome:JobSatisfaction -1.202 0.229239  
## DistanceFromHome:YearsWithCurrManager -0.520 0.603030  
## DistanceFromHome:OverTime 2.557 0.010550  
## YearsSinceLastPromotion:JobInvolvement 1.143 0.252976  
## YearsSinceLastPromotion:JobSatisfaction 2.208 0.027210  
## YearsSinceLastPromotion:YearsWithCurrManager 0.542 0.588050  
## YearsSinceLastPromotion:OverTime 0.451 0.651664  
## JobInvolvement:JobSatisfaction -0.602 0.547439  
## JobInvolvement:YearsWithCurrManager -0.464 0.642530  
## JobInvolvement:OverTime -0.131 0.895633  
## JobSatisfaction:YearsWithCurrManager -1.047 0.295031  
## JobSatisfaction:OverTime 0.537 0.591223  
## YearsWithCurrManager:OverTime -0.105 0.916183  
##   
## (Intercept)   
## factor(EnvironmentSatisfaction)2   
## factor(EnvironmentSatisfaction)3   
## factor(EnvironmentSatisfaction)4   
## factor(MaritalStatus)1   
## factor(MaritalStatus)2   
## logMonthlyIncome   
## RelationshipSatisfaction   
## DistanceFromHome   
## YearsSinceLastPromotion   
## JobInvolvement   
## JobSatisfaction   
## YearsWithCurrManager \*   
## OverTime \*\*\*  
## factor(EnvironmentSatisfaction)2:factor(MaritalStatus)1   
## factor(EnvironmentSatisfaction)3:factor(MaritalStatus)1   
## factor(EnvironmentSatisfaction)4:factor(MaritalStatus)1   
## factor(EnvironmentSatisfaction)2:factor(MaritalStatus)2   
## factor(EnvironmentSatisfaction)3:factor(MaritalStatus)2   
## factor(EnvironmentSatisfaction)4:factor(MaritalStatus)2 \*   
## factor(EnvironmentSatisfaction)2:logMonthlyIncome   
## factor(EnvironmentSatisfaction)3:logMonthlyIncome .   
## factor(EnvironmentSatisfaction)4:logMonthlyIncome   
## factor(EnvironmentSatisfaction)2:RelationshipSatisfaction   
## factor(EnvironmentSatisfaction)3:RelationshipSatisfaction   
## factor(EnvironmentSatisfaction)4:RelationshipSatisfaction   
## factor(EnvironmentSatisfaction)2:DistanceFromHome   
## factor(EnvironmentSatisfaction)3:DistanceFromHome   
## factor(EnvironmentSatisfaction)4:DistanceFromHome   
## factor(EnvironmentSatisfaction)2:YearsSinceLastPromotion   
## factor(EnvironmentSatisfaction)3:YearsSinceLastPromotion   
## factor(EnvironmentSatisfaction)4:YearsSinceLastPromotion   
## factor(EnvironmentSatisfaction)2:JobInvolvement   
## factor(EnvironmentSatisfaction)3:JobInvolvement   
## factor(EnvironmentSatisfaction)4:JobInvolvement   
## factor(EnvironmentSatisfaction)2:JobSatisfaction   
## factor(EnvironmentSatisfaction)3:JobSatisfaction   
## factor(EnvironmentSatisfaction)4:JobSatisfaction   
## factor(EnvironmentSatisfaction)2:YearsWithCurrManager   
## factor(EnvironmentSatisfaction)3:YearsWithCurrManager \*   
## factor(EnvironmentSatisfaction)4:YearsWithCurrManager   
## factor(EnvironmentSatisfaction)2:OverTime   
## factor(EnvironmentSatisfaction)3:OverTime .   
## factor(EnvironmentSatisfaction)4:OverTime   
## factor(MaritalStatus)1:logMonthlyIncome   
## factor(MaritalStatus)2:logMonthlyIncome   
## factor(MaritalStatus)1:RelationshipSatisfaction   
## factor(MaritalStatus)2:RelationshipSatisfaction   
## factor(MaritalStatus)1:DistanceFromHome   
## factor(MaritalStatus)2:DistanceFromHome   
## factor(MaritalStatus)1:YearsSinceLastPromotion   
## factor(MaritalStatus)2:YearsSinceLastPromotion   
## factor(MaritalStatus)1:JobInvolvement   
## factor(MaritalStatus)2:JobInvolvement   
## factor(MaritalStatus)1:JobSatisfaction .   
## factor(MaritalStatus)2:JobSatisfaction   
## factor(MaritalStatus)1:YearsWithCurrManager   
## factor(MaritalStatus)2:YearsWithCurrManager \*   
## factor(MaritalStatus)1:OverTime   
## factor(MaritalStatus)2:OverTime   
## logMonthlyIncome:RelationshipSatisfaction   
## logMonthlyIncome:DistanceFromHome   
## logMonthlyIncome:YearsSinceLastPromotion   
## logMonthlyIncome:JobInvolvement   
## logMonthlyIncome:JobSatisfaction   
## logMonthlyIncome:YearsWithCurrManager \*   
## logMonthlyIncome:OverTime \*\*   
## RelationshipSatisfaction:DistanceFromHome   
## RelationshipSatisfaction:YearsSinceLastPromotion   
## RelationshipSatisfaction:JobInvolvement   
## RelationshipSatisfaction:JobSatisfaction   
## RelationshipSatisfaction:YearsWithCurrManager   
## RelationshipSatisfaction:OverTime   
## DistanceFromHome:YearsSinceLastPromotion   
## DistanceFromHome:JobInvolvement   
## DistanceFromHome:JobSatisfaction   
## DistanceFromHome:YearsWithCurrManager   
## DistanceFromHome:OverTime \*   
## YearsSinceLastPromotion:JobInvolvement   
## YearsSinceLastPromotion:JobSatisfaction \*   
## YearsSinceLastPromotion:YearsWithCurrManager   
## YearsSinceLastPromotion:OverTime   
## JobInvolvement:JobSatisfaction   
## JobInvolvement:YearsWithCurrManager   
## JobInvolvement:OverTime   
## JobSatisfaction:YearsWithCurrManager   
## JobSatisfaction:OverTime   
## YearsWithCurrManager:OverTime   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for binomial family taken to be 1)  
##   
## Null deviance: 1298.6 on 1469 degrees of freedom  
## Residual deviance: 882.0 on 1382 degrees of freedom  
## AIC: 1058  
##   
## Number of Fisher Scoring iterations: 7

The summary of m2 is very large and suggests a lot of not significant variables. Now we will do stepwise backward elimination on the second model with interactions. Worse AIC than m2.int.

##### Stepwise backward elimination on model 2 with interactions

m2.int.step = step (m2.int, directon='both', k=log(nrow(ibm)))

## Start: AIC=1523.79  
## Attrition ~ factor(EnvironmentSatisfaction) \* factor(MaritalStatus) +   
## factor(EnvironmentSatisfaction) \* logMonthlyIncome + factor(EnvironmentSatisfaction) \*   
## RelationshipSatisfaction + factor(EnvironmentSatisfaction) \*   
## DistanceFromHome + factor(EnvironmentSatisfaction) \* YearsSinceLastPromotion +   
## factor(EnvironmentSatisfaction) \* JobInvolvement + factor(EnvironmentSatisfaction) \*   
## JobSatisfaction + factor(EnvironmentSatisfaction) \* YearsWithCurrManager +   
## factor(EnvironmentSatisfaction) \* OverTime + factor(MaritalStatus) \*   
## logMonthlyIncome + factor(MaritalStatus) \* RelationshipSatisfaction +   
## factor(MaritalStatus) \* DistanceFromHome + factor(MaritalStatus) \*   
## YearsSinceLastPromotion + factor(MaritalStatus) \* JobInvolvement +   
## factor(MaritalStatus) \* JobSatisfaction + factor(MaritalStatus) \*   
## YearsWithCurrManager + factor(MaritalStatus) \* OverTime +   
## logMonthlyIncome \* RelationshipSatisfaction + logMonthlyIncome \*   
## DistanceFromHome + logMonthlyIncome \* YearsSinceLastPromotion +   
## logMonthlyIncome \* JobInvolvement + logMonthlyIncome \* JobSatisfaction +   
## logMonthlyIncome \* YearsWithCurrManager + logMonthlyIncome \*   
## OverTime + RelationshipSatisfaction \* DistanceFromHome +   
## RelationshipSatisfaction \* YearsSinceLastPromotion + RelationshipSatisfaction \*   
## JobInvolvement + RelationshipSatisfaction \* JobSatisfaction +   
## RelationshipSatisfaction \* YearsWithCurrManager + RelationshipSatisfaction \*   
## OverTime + DistanceFromHome \* YearsSinceLastPromotion + DistanceFromHome \*   
## JobInvolvement + DistanceFromHome \* JobSatisfaction + DistanceFromHome \*   
## YearsWithCurrManager + DistanceFromHome \* OverTime + YearsSinceLastPromotion \*   
## JobInvolvement + YearsSinceLastPromotion \* JobSatisfaction +   
## YearsSinceLastPromotion \* YearsWithCurrManager + YearsSinceLastPromotion \*   
## OverTime + JobInvolvement \* JobSatisfaction + JobInvolvement \*   
## YearsWithCurrManager + JobInvolvement \* OverTime + JobSatisfaction \*   
## YearsWithCurrManager + JobSatisfaction \* OverTime + YearsWithCurrManager \*   
## OverTime  
##   
## Df Deviance  
## - factor(EnvironmentSatisfaction):factor(MaritalStatus) 6 892.80  
## - factor(EnvironmentSatisfaction):DistanceFromHome 3 883.86  
## - factor(EnvironmentSatisfaction):JobInvolvement 3 884.00  
## - factor(EnvironmentSatisfaction):RelationshipSatisfaction 3 884.75  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 3 884.82  
## - factor(EnvironmentSatisfaction):OverTime 3 886.60  
## - factor(EnvironmentSatisfaction):JobSatisfaction 3 887.26  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 888.17  
## - factor(MaritalStatus):JobInvolvement 2 882.41  
## - factor(MaritalStatus):DistanceFromHome 2 882.56  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 889.94  
## - factor(MaritalStatus):logMonthlyIncome 2 883.39  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 883.41  
## - factor(MaritalStatus):RelationshipSatisfaction 2 884.89  
## - factor(MaritalStatus):JobSatisfaction 2 885.81  
## - factor(MaritalStatus):OverTime 2 886.82  
## - factor(MaritalStatus):YearsWithCurrManager 2 887.90  
## - YearsWithCurrManager:OverTime 1 882.01  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 882.02  
## - JobInvolvement:OverTime 1 882.02  
## - logMonthlyIncome:DistanceFromHome 1 882.04  
## - logMonthlyIncome:JobInvolvement 1 882.05  
## - logMonthlyIncome:YearsSinceLastPromotion 1 882.09  
## - RelationshipSatisfaction:YearsWithCurrManager 1 882.10  
## - logMonthlyIncome:JobSatisfaction 1 882.16  
## - YearsSinceLastPromotion:OverTime 1 882.21  
## - RelationshipSatisfaction:JobInvolvement 1 882.21  
## - JobInvolvement:YearsWithCurrManager 1 882.22  
## - RelationshipSatisfaction:DistanceFromHome 1 882.24  
## - DistanceFromHome:YearsWithCurrManager 1 882.28  
## - JobSatisfaction:OverTime 1 882.29  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 882.29  
## - JobInvolvement:JobSatisfaction 1 882.36  
## - DistanceFromHome:JobInvolvement 1 882.57  
## - logMonthlyIncome:RelationshipSatisfaction 1 882.62  
## - DistanceFromHome:YearsSinceLastPromotion 1 882.63  
## - JobSatisfaction:YearsWithCurrManager 1 883.11  
## - YearsSinceLastPromotion:JobInvolvement 1 883.32  
## - DistanceFromHome:JobSatisfaction 1 883.47  
## - RelationshipSatisfaction:JobSatisfaction 1 883.52  
## - RelationshipSatisfaction:OverTime 1 884.27  
## - logMonthlyIncome:YearsWithCurrManager 1 885.74  
## - YearsSinceLastPromotion:JobSatisfaction 1 886.95  
## - DistanceFromHome:OverTime 1 888.85  
## <none> 882.00  
## - logMonthlyIncome:OverTime 1 890.11  
## AIC  
## - factor(EnvironmentSatisfaction):factor(MaritalStatus) 1490.8  
## - factor(EnvironmentSatisfaction):DistanceFromHome 1503.8  
## - factor(EnvironmentSatisfaction):JobInvolvement 1503.9  
## - factor(EnvironmentSatisfaction):RelationshipSatisfaction 1504.7  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 1504.7  
## - factor(EnvironmentSatisfaction):OverTime 1506.5  
## - factor(EnvironmentSatisfaction):JobSatisfaction 1507.2  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 1508.1  
## - factor(MaritalStatus):JobInvolvement 1509.6  
## - factor(MaritalStatus):DistanceFromHome 1509.8  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 1509.8  
## - factor(MaritalStatus):logMonthlyIncome 1510.6  
## - factor(MaritalStatus):YearsSinceLastPromotion 1510.6  
## - factor(MaritalStatus):RelationshipSatisfaction 1512.1  
## - factor(MaritalStatus):JobSatisfaction 1513.0  
## - factor(MaritalStatus):OverTime 1514.0  
## - factor(MaritalStatus):YearsWithCurrManager 1515.1  
## - YearsWithCurrManager:OverTime 1516.5  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1516.5  
## - JobInvolvement:OverTime 1516.5  
## - logMonthlyIncome:DistanceFromHome 1516.5  
## - logMonthlyIncome:JobInvolvement 1516.5  
## - logMonthlyIncome:YearsSinceLastPromotion 1516.6  
## - RelationshipSatisfaction:YearsWithCurrManager 1516.6  
## - logMonthlyIncome:JobSatisfaction 1516.7  
## - YearsSinceLastPromotion:OverTime 1516.7  
## - RelationshipSatisfaction:JobInvolvement 1516.7  
## - JobInvolvement:YearsWithCurrManager 1516.7  
## - RelationshipSatisfaction:DistanceFromHome 1516.7  
## - DistanceFromHome:YearsWithCurrManager 1516.8  
## - JobSatisfaction:OverTime 1516.8  
## - YearsSinceLastPromotion:YearsWithCurrManager 1516.8  
## - JobInvolvement:JobSatisfaction 1516.9  
## - DistanceFromHome:JobInvolvement 1517.1  
## - logMonthlyIncome:RelationshipSatisfaction 1517.1  
## - DistanceFromHome:YearsSinceLastPromotion 1517.1  
## - JobSatisfaction:YearsWithCurrManager 1517.6  
## - YearsSinceLastPromotion:JobInvolvement 1517.8  
## - DistanceFromHome:JobSatisfaction 1518.0  
## - RelationshipSatisfaction:JobSatisfaction 1518.0  
## - RelationshipSatisfaction:OverTime 1518.8  
## - logMonthlyIncome:YearsWithCurrManager 1520.2  
## - YearsSinceLastPromotion:JobSatisfaction 1521.4  
## - DistanceFromHome:OverTime 1523.3  
## <none> 1523.8  
## - logMonthlyIncome:OverTime 1524.6  
##   
## Step: AIC=1490.82  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):RelationshipSatisfaction +   
## factor(EnvironmentSatisfaction):DistanceFromHome + factor(EnvironmentSatisfaction):YearsSinceLastPromotion +   
## factor(EnvironmentSatisfaction):JobInvolvement + factor(EnvironmentSatisfaction):JobSatisfaction +   
## factor(EnvironmentSatisfaction):YearsWithCurrManager + factor(EnvironmentSatisfaction):OverTime +   
## factor(MaritalStatus):logMonthlyIncome + factor(MaritalStatus):RelationshipSatisfaction +   
## factor(MaritalStatus):DistanceFromHome + factor(MaritalStatus):YearsSinceLastPromotion +   
## factor(MaritalStatus):JobInvolvement + factor(MaritalStatus):JobSatisfaction +   
## factor(MaritalStatus):YearsWithCurrManager + factor(MaritalStatus):OverTime +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:DistanceFromHome +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:YearsWithCurrManager +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + YearsSinceLastPromotion:OverTime +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime + YearsWithCurrManager:OverTime  
##   
## Df Deviance  
## - factor(EnvironmentSatisfaction):JobInvolvement 3 894.76  
## - factor(EnvironmentSatisfaction):DistanceFromHome 3 894.92  
## - factor(EnvironmentSatisfaction):RelationshipSatisfaction 3 895.35  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 3 895.64  
## - factor(EnvironmentSatisfaction):OverTime 3 897.08  
## - factor(EnvironmentSatisfaction):JobSatisfaction 3 898.02  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 899.92  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 900.08  
## - factor(MaritalStatus):JobInvolvement 2 893.10  
## - factor(MaritalStatus):DistanceFromHome 2 893.50  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 893.60  
## - factor(MaritalStatus):logMonthlyIncome 2 894.06  
## - factor(MaritalStatus):RelationshipSatisfaction 2 895.45  
## - factor(MaritalStatus):JobSatisfaction 2 897.06  
## - factor(MaritalStatus):OverTime 2 897.24  
## - factor(MaritalStatus):YearsWithCurrManager 2 897.39  
## - YearsWithCurrManager:OverTime 1 892.80  
## - JobInvolvement:OverTime 1 892.80  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 892.82  
## - logMonthlyIncome:DistanceFromHome 1 892.85  
## - logMonthlyIncome:YearsSinceLastPromotion 1 892.85  
## - logMonthlyIncome:JobInvolvement 1 892.90  
## - logMonthlyIncome:JobSatisfaction 1 892.91  
## - YearsSinceLastPromotion:OverTime 1 892.92  
## - RelationshipSatisfaction:DistanceFromHome 1 892.94  
## - RelationshipSatisfaction:YearsWithCurrManager 1 892.94  
## - RelationshipSatisfaction:JobInvolvement 1 892.97  
## - JobInvolvement:JobSatisfaction 1 893.02  
## - JobInvolvement:YearsWithCurrManager 1 893.06  
## - DistanceFromHome:YearsWithCurrManager 1 893.08  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 893.14  
## - JobSatisfaction:OverTime 1 893.15  
## - logMonthlyIncome:RelationshipSatisfaction 1 893.26  
## - DistanceFromHome:YearsSinceLastPromotion 1 893.43  
## - DistanceFromHome:JobInvolvement 1 893.45  
## - JobSatisfaction:YearsWithCurrManager 1 894.00  
## - YearsSinceLastPromotion:JobInvolvement 1 894.27  
## - RelationshipSatisfaction:OverTime 1 894.29  
## - RelationshipSatisfaction:JobSatisfaction 1 894.36  
## - DistanceFromHome:JobSatisfaction 1 894.51  
## - logMonthlyIncome:YearsWithCurrManager 1 896.89  
## - YearsSinceLastPromotion:JobSatisfaction 1 897.96  
## - DistanceFromHome:OverTime 1 898.54  
## - logMonthlyIncome:OverTime 1 899.92  
## <none> 892.80  
## AIC  
## - factor(EnvironmentSatisfaction):JobInvolvement 1470.9  
## - factor(EnvironmentSatisfaction):DistanceFromHome 1471.1  
## - factor(EnvironmentSatisfaction):RelationshipSatisfaction 1471.5  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 1471.8  
## - factor(EnvironmentSatisfaction):OverTime 1473.2  
## - factor(EnvironmentSatisfaction):JobSatisfaction 1474.2  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 1476.1  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 1476.2  
## - factor(MaritalStatus):JobInvolvement 1476.5  
## - factor(MaritalStatus):DistanceFromHome 1476.9  
## - factor(MaritalStatus):YearsSinceLastPromotion 1477.0  
## - factor(MaritalStatus):logMonthlyIncome 1477.5  
## - factor(MaritalStatus):RelationshipSatisfaction 1478.9  
## - factor(MaritalStatus):JobSatisfaction 1480.5  
## - factor(MaritalStatus):OverTime 1480.7  
## - factor(MaritalStatus):YearsWithCurrManager 1480.8  
## - YearsWithCurrManager:OverTime 1483.5  
## - JobInvolvement:OverTime 1483.5  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1483.5  
## - logMonthlyIncome:DistanceFromHome 1483.6  
## - logMonthlyIncome:YearsSinceLastPromotion 1483.6  
## - logMonthlyIncome:JobInvolvement 1483.6  
## - logMonthlyIncome:JobSatisfaction 1483.6  
## - YearsSinceLastPromotion:OverTime 1483.7  
## - RelationshipSatisfaction:DistanceFromHome 1483.7  
## - RelationshipSatisfaction:YearsWithCurrManager 1483.7  
## - RelationshipSatisfaction:JobInvolvement 1483.7  
## - JobInvolvement:JobSatisfaction 1483.8  
## - JobInvolvement:YearsWithCurrManager 1483.8  
## - DistanceFromHome:YearsWithCurrManager 1483.8  
## - YearsSinceLastPromotion:YearsWithCurrManager 1483.9  
## - JobSatisfaction:OverTime 1483.9  
## - logMonthlyIncome:RelationshipSatisfaction 1484.0  
## - DistanceFromHome:YearsSinceLastPromotion 1484.2  
## - DistanceFromHome:JobInvolvement 1484.2  
## - JobSatisfaction:YearsWithCurrManager 1484.7  
## - YearsSinceLastPromotion:JobInvolvement 1485.0  
## - RelationshipSatisfaction:OverTime 1485.0  
## - RelationshipSatisfaction:JobSatisfaction 1485.1  
## - DistanceFromHome:JobSatisfaction 1485.2  
## - logMonthlyIncome:YearsWithCurrManager 1487.6  
## - YearsSinceLastPromotion:JobSatisfaction 1488.7  
## - DistanceFromHome:OverTime 1489.3  
## - logMonthlyIncome:OverTime 1490.7  
## <none> 1490.8  
##   
## Step: AIC=1470.91  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):RelationshipSatisfaction +   
## factor(EnvironmentSatisfaction):DistanceFromHome + factor(EnvironmentSatisfaction):YearsSinceLastPromotion +   
## factor(EnvironmentSatisfaction):JobSatisfaction + factor(EnvironmentSatisfaction):YearsWithCurrManager +   
## factor(EnvironmentSatisfaction):OverTime + factor(MaritalStatus):logMonthlyIncome +   
## factor(MaritalStatus):RelationshipSatisfaction + factor(MaritalStatus):DistanceFromHome +   
## factor(MaritalStatus):YearsSinceLastPromotion + factor(MaritalStatus):JobInvolvement +   
## factor(MaritalStatus):JobSatisfaction + factor(MaritalStatus):YearsWithCurrManager +   
## factor(MaritalStatus):OverTime + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance  
## - factor(EnvironmentSatisfaction):RelationshipSatisfaction 3 897.11  
## - factor(EnvironmentSatisfaction):DistanceFromHome 3 897.17  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 3 897.77  
## - factor(EnvironmentSatisfaction):OverTime 3 898.74  
## - factor(EnvironmentSatisfaction):JobSatisfaction 3 900.08  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 901.96  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 902.19  
## - factor(MaritalStatus):JobInvolvement 2 895.10  
## - factor(MaritalStatus):DistanceFromHome 2 895.39  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 895.53  
## - factor(MaritalStatus):logMonthlyIncome 2 896.01  
## - factor(MaritalStatus):RelationshipSatisfaction 2 897.17  
## - factor(MaritalStatus):OverTime 2 899.01  
## - factor(MaritalStatus):JobSatisfaction 2 899.14  
## - factor(MaritalStatus):YearsWithCurrManager 2 899.32  
## - JobInvolvement:OverTime 1 894.76  
## - YearsWithCurrManager:OverTime 1 894.77  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 894.78  
## - logMonthlyIncome:YearsSinceLastPromotion 1 894.80  
## - logMonthlyIncome:DistanceFromHome 1 894.81  
## - YearsSinceLastPromotion:OverTime 1 894.86  
## - RelationshipSatisfaction:DistanceFromHome 1 894.86  
## - logMonthlyIncome:JobSatisfaction 1 894.89  
## - RelationshipSatisfaction:JobInvolvement 1 894.90  
## - RelationshipSatisfaction:YearsWithCurrManager 1 894.94  
## - logMonthlyIncome:JobInvolvement 1 894.99  
## - DistanceFromHome:YearsWithCurrManager 1 895.00  
## - JobInvolvement:JobSatisfaction 1 895.04  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 895.09  
## - JobSatisfaction:OverTime 1 895.17  
## - JobInvolvement:YearsWithCurrManager 1 895.20  
## - logMonthlyIncome:RelationshipSatisfaction 1 895.23  
## - DistanceFromHome:JobInvolvement 1 895.42  
## - DistanceFromHome:YearsSinceLastPromotion 1 895.47  
## - JobSatisfaction:YearsWithCurrManager 1 895.90  
## - RelationshipSatisfaction:OverTime 1 896.06  
## - DistanceFromHome:JobSatisfaction 1 896.31  
## - RelationshipSatisfaction:JobSatisfaction 1 896.37  
## - YearsSinceLastPromotion:JobInvolvement 1 897.19  
## - logMonthlyIncome:YearsWithCurrManager 1 898.75  
## - YearsSinceLastPromotion:JobSatisfaction 1 900.04  
## - DistanceFromHome:OverTime 1 900.44  
## - logMonthlyIncome:OverTime 1 901.60  
## <none> 894.76  
## AIC  
## - factor(EnvironmentSatisfaction):RelationshipSatisfaction 1451.4  
## - factor(EnvironmentSatisfaction):DistanceFromHome 1451.4  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 1452.0  
## - factor(EnvironmentSatisfaction):OverTime 1453.0  
## - factor(EnvironmentSatisfaction):JobSatisfaction 1454.3  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 1456.2  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 1456.5  
## - factor(MaritalStatus):JobInvolvement 1456.7  
## - factor(MaritalStatus):DistanceFromHome 1457.0  
## - factor(MaritalStatus):YearsSinceLastPromotion 1457.1  
## - factor(MaritalStatus):logMonthlyIncome 1457.6  
## - factor(MaritalStatus):RelationshipSatisfaction 1458.7  
## - factor(MaritalStatus):OverTime 1460.6  
## - factor(MaritalStatus):JobSatisfaction 1460.7  
## - factor(MaritalStatus):YearsWithCurrManager 1460.9  
## - JobInvolvement:OverTime 1463.6  
## - YearsWithCurrManager:OverTime 1463.6  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1463.6  
## - logMonthlyIncome:YearsSinceLastPromotion 1463.7  
## - logMonthlyIncome:DistanceFromHome 1463.7  
## - YearsSinceLastPromotion:OverTime 1463.7  
## - RelationshipSatisfaction:DistanceFromHome 1463.7  
## - logMonthlyIncome:JobSatisfaction 1463.7  
## - RelationshipSatisfaction:JobInvolvement 1463.8  
## - RelationshipSatisfaction:YearsWithCurrManager 1463.8  
## - logMonthlyIncome:JobInvolvement 1463.8  
## - DistanceFromHome:YearsWithCurrManager 1463.8  
## - JobInvolvement:JobSatisfaction 1463.9  
## - YearsSinceLastPromotion:YearsWithCurrManager 1463.9  
## - JobSatisfaction:OverTime 1464.0  
## - JobInvolvement:YearsWithCurrManager 1464.1  
## - logMonthlyIncome:RelationshipSatisfaction 1464.1  
## - DistanceFromHome:JobInvolvement 1464.3  
## - DistanceFromHome:YearsSinceLastPromotion 1464.3  
## - JobSatisfaction:YearsWithCurrManager 1464.8  
## - RelationshipSatisfaction:OverTime 1464.9  
## - DistanceFromHome:JobSatisfaction 1465.2  
## - RelationshipSatisfaction:JobSatisfaction 1465.2  
## - YearsSinceLastPromotion:JobInvolvement 1466.0  
## - logMonthlyIncome:YearsWithCurrManager 1467.6  
## - YearsSinceLastPromotion:JobSatisfaction 1468.9  
## - DistanceFromHome:OverTime 1469.3  
## - logMonthlyIncome:OverTime 1470.5  
## <none> 1470.9  
##   
## Step: AIC=1451.38  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):DistanceFromHome + factor(EnvironmentSatisfaction):YearsSinceLastPromotion +   
## factor(EnvironmentSatisfaction):JobSatisfaction + factor(EnvironmentSatisfaction):YearsWithCurrManager +   
## factor(EnvironmentSatisfaction):OverTime + factor(MaritalStatus):logMonthlyIncome +   
## factor(MaritalStatus):RelationshipSatisfaction + factor(MaritalStatus):DistanceFromHome +   
## factor(MaritalStatus):YearsSinceLastPromotion + factor(MaritalStatus):JobInvolvement +   
## factor(MaritalStatus):JobSatisfaction + factor(MaritalStatus):YearsWithCurrManager +   
## factor(MaritalStatus):OverTime + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance  
## - factor(EnvironmentSatisfaction):DistanceFromHome 3 899.88  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 3 900.63  
## - factor(EnvironmentSatisfaction):OverTime 3 901.03  
## - factor(EnvironmentSatisfaction):JobSatisfaction 3 902.78  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 904.07  
## - factor(MaritalStatus):JobInvolvement 2 897.50  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 904.81  
## - factor(MaritalStatus):DistanceFromHome 2 897.93  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 897.98  
## - factor(MaritalStatus):logMonthlyIncome 2 898.43  
## - factor(MaritalStatus):RelationshipSatisfaction 2 899.49  
## - factor(MaritalStatus):JobSatisfaction 2 901.75  
## - factor(MaritalStatus):OverTime 2 901.84  
## - factor(MaritalStatus):YearsWithCurrManager 2 901.91  
## - JobInvolvement:OverTime 1 897.11  
## - YearsWithCurrManager:OverTime 1 897.14  
## - logMonthlyIncome:YearsSinceLastPromotion 1 897.14  
## - logMonthlyIncome:DistanceFromHome 1 897.14  
## - YearsSinceLastPromotion:OverTime 1 897.18  
## - RelationshipSatisfaction:DistanceFromHome 1 897.20  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 897.21  
## - RelationshipSatisfaction:JobInvolvement 1 897.22  
## - logMonthlyIncome:JobSatisfaction 1 897.24  
## - RelationshipSatisfaction:YearsWithCurrManager 1 897.25  
## - JobInvolvement:JobSatisfaction 1 897.27  
## - logMonthlyIncome:JobInvolvement 1 897.29  
## - logMonthlyIncome:RelationshipSatisfaction 1 897.44  
## - DistanceFromHome:YearsWithCurrManager 1 897.46  
## - JobSatisfaction:OverTime 1 897.51  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 897.55  
## - JobInvolvement:YearsWithCurrManager 1 897.56  
## - DistanceFromHome:YearsSinceLastPromotion 1 897.73  
## - DistanceFromHome:JobInvolvement 1 897.82  
## - RelationshipSatisfaction:OverTime 1 897.84  
## - JobSatisfaction:YearsWithCurrManager 1 898.18  
## - RelationshipSatisfaction:JobSatisfaction 1 898.48  
## - DistanceFromHome:JobSatisfaction 1 898.60  
## - YearsSinceLastPromotion:JobInvolvement 1 899.44  
## - logMonthlyIncome:YearsWithCurrManager 1 900.95  
## - YearsSinceLastPromotion:JobSatisfaction 1 902.43  
## - DistanceFromHome:OverTime 1 902.70  
## - logMonthlyIncome:OverTime 1 903.93  
## <none> 897.11  
## AIC  
## - factor(EnvironmentSatisfaction):DistanceFromHome 1432.3  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 1433.0  
## - factor(EnvironmentSatisfaction):OverTime 1433.4  
## - factor(EnvironmentSatisfaction):JobSatisfaction 1435.2  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 1436.5  
## - factor(MaritalStatus):JobInvolvement 1437.2  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 1437.2  
## - factor(MaritalStatus):DistanceFromHome 1437.6  
## - factor(MaritalStatus):YearsSinceLastPromotion 1437.7  
## - factor(MaritalStatus):logMonthlyIncome 1438.1  
## - factor(MaritalStatus):RelationshipSatisfaction 1439.2  
## - factor(MaritalStatus):JobSatisfaction 1441.4  
## - factor(MaritalStatus):OverTime 1441.5  
## - factor(MaritalStatus):YearsWithCurrManager 1441.6  
## - JobInvolvement:OverTime 1444.1  
## - YearsWithCurrManager:OverTime 1444.1  
## - logMonthlyIncome:YearsSinceLastPromotion 1444.1  
## - logMonthlyIncome:DistanceFromHome 1444.1  
## - YearsSinceLastPromotion:OverTime 1444.2  
## - RelationshipSatisfaction:DistanceFromHome 1444.2  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1444.2  
## - RelationshipSatisfaction:JobInvolvement 1444.2  
## - logMonthlyIncome:JobSatisfaction 1444.2  
## - RelationshipSatisfaction:YearsWithCurrManager 1444.2  
## - JobInvolvement:JobSatisfaction 1444.2  
## - logMonthlyIncome:JobInvolvement 1444.3  
## - logMonthlyIncome:RelationshipSatisfaction 1444.4  
## - DistanceFromHome:YearsWithCurrManager 1444.4  
## - JobSatisfaction:OverTime 1444.5  
## - YearsSinceLastPromotion:YearsWithCurrManager 1444.5  
## - JobInvolvement:YearsWithCurrManager 1444.5  
## - DistanceFromHome:YearsSinceLastPromotion 1444.7  
## - DistanceFromHome:JobInvolvement 1444.8  
## - RelationshipSatisfaction:OverTime 1444.8  
## - JobSatisfaction:YearsWithCurrManager 1445.2  
## - RelationshipSatisfaction:JobSatisfaction 1445.5  
## - DistanceFromHome:JobSatisfaction 1445.6  
## - YearsSinceLastPromotion:JobInvolvement 1446.4  
## - logMonthlyIncome:YearsWithCurrManager 1447.9  
## - YearsSinceLastPromotion:JobSatisfaction 1449.4  
## - DistanceFromHome:OverTime 1449.7  
## - logMonthlyIncome:OverTime 1450.9  
## <none> 1451.4  
##   
## Step: AIC=1432.27  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):YearsSinceLastPromotion +   
## factor(EnvironmentSatisfaction):JobSatisfaction + factor(EnvironmentSatisfaction):YearsWithCurrManager +   
## factor(EnvironmentSatisfaction):OverTime + factor(MaritalStatus):logMonthlyIncome +   
## factor(MaritalStatus):RelationshipSatisfaction + factor(MaritalStatus):DistanceFromHome +   
## factor(MaritalStatus):YearsSinceLastPromotion + factor(MaritalStatus):JobInvolvement +   
## factor(MaritalStatus):JobSatisfaction + factor(MaritalStatus):YearsWithCurrManager +   
## factor(MaritalStatus):OverTime + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 3 903.20  
## - factor(EnvironmentSatisfaction):OverTime 3 903.58  
## - factor(EnvironmentSatisfaction):JobSatisfaction 3 905.06  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 906.87  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 907.16  
## - factor(MaritalStatus):JobInvolvement 2 900.25  
## - factor(MaritalStatus):DistanceFromHome 2 900.61  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 900.77  
## - factor(MaritalStatus):logMonthlyIncome 2 901.29  
## - factor(MaritalStatus):RelationshipSatisfaction 2 902.36  
## - factor(MaritalStatus):OverTime 2 904.46  
## - factor(MaritalStatus):JobSatisfaction 2 904.52  
## - factor(MaritalStatus):YearsWithCurrManager 2 904.58  
## - JobInvolvement:OverTime 1 899.88  
## - logMonthlyIncome:YearsSinceLastPromotion 1 899.90  
## - RelationshipSatisfaction:DistanceFromHome 1 899.91  
## - YearsWithCurrManager:OverTime 1 899.92  
## - logMonthlyIncome:DistanceFromHome 1 899.93  
## - YearsSinceLastPromotion:OverTime 1 899.93  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 899.96  
## - logMonthlyIncome:JobSatisfaction 1 899.98  
## - logMonthlyIncome:JobInvolvement 1 900.00  
## - RelationshipSatisfaction:JobInvolvement 1 900.01  
## - JobInvolvement:JobSatisfaction 1 900.05  
## - RelationshipSatisfaction:YearsWithCurrManager 1 900.06  
## - logMonthlyIncome:RelationshipSatisfaction 1 900.12  
## - DistanceFromHome:YearsWithCurrManager 1 900.14  
## - JobSatisfaction:OverTime 1 900.15  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 900.29  
## - JobInvolvement:YearsWithCurrManager 1 900.33  
## - DistanceFromHome:YearsSinceLastPromotion 1 900.38  
## - RelationshipSatisfaction:OverTime 1 900.61  
## - DistanceFromHome:JobInvolvement 1 900.69  
## - JobSatisfaction:YearsWithCurrManager 1 900.80  
## - RelationshipSatisfaction:JobSatisfaction 1 901.19  
## - DistanceFromHome:JobSatisfaction 1 901.32  
## - YearsSinceLastPromotion:JobInvolvement 1 902.31  
## - logMonthlyIncome:YearsWithCurrManager 1 903.69  
## - YearsSinceLastPromotion:JobSatisfaction 1 905.03  
## - DistanceFromHome:OverTime 1 905.23  
## - logMonthlyIncome:OverTime 1 906.46  
## <none> 899.88  
## AIC  
## - factor(EnvironmentSatisfaction):YearsSinceLastPromotion 1413.7  
## - factor(EnvironmentSatisfaction):OverTime 1414.1  
## - factor(EnvironmentSatisfaction):JobSatisfaction 1415.6  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 1417.4  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 1417.7  
## - factor(MaritalStatus):JobInvolvement 1418.0  
## - factor(MaritalStatus):DistanceFromHome 1418.4  
## - factor(MaritalStatus):YearsSinceLastPromotion 1418.6  
## - factor(MaritalStatus):logMonthlyIncome 1419.1  
## - factor(MaritalStatus):RelationshipSatisfaction 1420.2  
## - factor(MaritalStatus):OverTime 1422.3  
## - factor(MaritalStatus):JobSatisfaction 1422.3  
## - factor(MaritalStatus):YearsWithCurrManager 1422.4  
## - JobInvolvement:OverTime 1425.0  
## - logMonthlyIncome:YearsSinceLastPromotion 1425.0  
## - RelationshipSatisfaction:DistanceFromHome 1425.0  
## - YearsWithCurrManager:OverTime 1425.0  
## - logMonthlyIncome:DistanceFromHome 1425.0  
## - YearsSinceLastPromotion:OverTime 1425.0  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1425.1  
## - logMonthlyIncome:JobSatisfaction 1425.1  
## - logMonthlyIncome:JobInvolvement 1425.1  
## - RelationshipSatisfaction:JobInvolvement 1425.1  
## - JobInvolvement:JobSatisfaction 1425.2  
## - RelationshipSatisfaction:YearsWithCurrManager 1425.2  
## - logMonthlyIncome:RelationshipSatisfaction 1425.2  
## - DistanceFromHome:YearsWithCurrManager 1425.2  
## - JobSatisfaction:OverTime 1425.2  
## - YearsSinceLastPromotion:YearsWithCurrManager 1425.4  
## - JobInvolvement:YearsWithCurrManager 1425.4  
## - DistanceFromHome:YearsSinceLastPromotion 1425.5  
## - RelationshipSatisfaction:OverTime 1425.7  
## - DistanceFromHome:JobInvolvement 1425.8  
## - JobSatisfaction:YearsWithCurrManager 1425.9  
## - RelationshipSatisfaction:JobSatisfaction 1426.3  
## - DistanceFromHome:JobSatisfaction 1426.4  
## - YearsSinceLastPromotion:JobInvolvement 1427.4  
## - logMonthlyIncome:YearsWithCurrManager 1428.8  
## - YearsSinceLastPromotion:JobSatisfaction 1430.1  
## - DistanceFromHome:OverTime 1430.3  
## - logMonthlyIncome:OverTime 1431.6  
## <none> 1432.3  
##   
## Step: AIC=1413.72  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):JobSatisfaction + factor(EnvironmentSatisfaction):YearsWithCurrManager +   
## factor(EnvironmentSatisfaction):OverTime + factor(MaritalStatus):logMonthlyIncome +   
## factor(MaritalStatus):RelationshipSatisfaction + factor(MaritalStatus):DistanceFromHome +   
## factor(MaritalStatus):YearsSinceLastPromotion + factor(MaritalStatus):JobInvolvement +   
## factor(MaritalStatus):JobSatisfaction + factor(MaritalStatus):YearsWithCurrManager +   
## factor(MaritalStatus):OverTime + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(EnvironmentSatisfaction):OverTime 3 907.22 1395.8  
## - factor(EnvironmentSatisfaction):JobSatisfaction 3 908.32 1397.0  
## - factor(MaritalStatus):JobInvolvement 2 903.58 1399.5  
## - factor(MaritalStatus):DistanceFromHome 2 903.79 1399.7  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 904.09 1400.0  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 911.75 1400.4  
## - factor(MaritalStatus):logMonthlyIncome 2 904.58 1400.5  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 911.88 1400.5  
## - factor(MaritalStatus):RelationshipSatisfaction 2 905.61 1401.5  
## - factor(MaritalStatus):JobSatisfaction 2 907.50 1403.4  
## - factor(MaritalStatus):OverTime 2 907.75 1403.7  
## - factor(MaritalStatus):YearsWithCurrManager 2 908.23 1404.2  
## - YearsWithCurrManager:OverTime 1 903.21 1406.4  
## - JobInvolvement:OverTime 1 903.21 1406.4  
## - logMonthlyIncome:YearsSinceLastPromotion 1 903.21 1406.4  
## - logMonthlyIncome:DistanceFromHome 1 903.23 1406.5  
## - RelationshipSatisfaction:DistanceFromHome 1 903.24 1406.5  
## - logMonthlyIncome:JobSatisfaction 1 903.29 1406.5  
## - RelationshipSatisfaction:YearsWithCurrManager 1 903.30 1406.5  
## - RelationshipSatisfaction:JobInvolvement 1 903.32 1406.5  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 903.33 1406.5  
## - logMonthlyIncome:JobInvolvement 1 903.35 1406.6  
## - JobInvolvement:JobSatisfaction 1 903.37 1406.6  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 903.37 1406.6  
## - DistanceFromHome:YearsWithCurrManager 1 903.46 1406.7  
## - YearsSinceLastPromotion:OverTime 1 903.47 1406.7  
## - JobSatisfaction:OverTime 1 903.48 1406.7  
## - logMonthlyIncome:RelationshipSatisfaction 1 903.49 1406.7  
## - JobInvolvement:YearsWithCurrManager 1 903.60 1406.8  
## - DistanceFromHome:YearsSinceLastPromotion 1 903.71 1406.9  
## - JobSatisfaction:YearsWithCurrManager 1 903.73 1407.0  
## - RelationshipSatisfaction:OverTime 1 903.97 1407.2  
## - DistanceFromHome:JobInvolvement 1 904.10 1407.3  
## - DistanceFromHome:JobSatisfaction 1 904.53 1407.8  
## - RelationshipSatisfaction:JobSatisfaction 1 904.66 1407.9  
## - YearsSinceLastPromotion:JobInvolvement 1 905.85 1409.1  
## - logMonthlyIncome:YearsWithCurrManager 1 907.22 1410.4  
## - YearsSinceLastPromotion:JobSatisfaction 1 907.89 1411.1  
## - DistanceFromHome:OverTime 1 908.18 1411.4  
## - logMonthlyIncome:OverTime 1 909.51 1412.7  
## <none> 903.20 1413.7  
##   
## Step: AIC=1395.85  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):JobSatisfaction + factor(EnvironmentSatisfaction):YearsWithCurrManager +   
## factor(MaritalStatus):logMonthlyIncome + factor(MaritalStatus):RelationshipSatisfaction +   
## factor(MaritalStatus):DistanceFromHome + factor(MaritalStatus):YearsSinceLastPromotion +   
## factor(MaritalStatus):JobInvolvement + factor(MaritalStatus):JobSatisfaction +   
## factor(MaritalStatus):YearsWithCurrManager + factor(MaritalStatus):OverTime +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:DistanceFromHome +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:YearsWithCurrManager +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + YearsSinceLastPromotion:OverTime +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime + YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(EnvironmentSatisfaction):JobSatisfaction 3 911.14 1377.9  
## - factor(MaritalStatus):JobInvolvement 2 907.76 1381.8  
## - factor(MaritalStatus):DistanceFromHome 2 907.77 1381.8  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 907.96 1382.0  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 915.71 1382.5  
## - factor(MaritalStatus):logMonthlyIncome 2 908.63 1382.7  
## - factor(MaritalStatus):RelationshipSatisfaction 2 909.29 1383.3  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 916.61 1383.4  
## - factor(MaritalStatus):JobSatisfaction 2 911.28 1385.3  
## - factor(MaritalStatus):OverTime 2 911.39 1385.4  
## - factor(MaritalStatus):YearsWithCurrManager 2 912.30 1386.3  
## - YearsWithCurrManager:OverTime 1 907.23 1388.6  
## - JobInvolvement:OverTime 1 907.24 1388.6  
## - logMonthlyIncome:YearsSinceLastPromotion 1 907.24 1388.6  
## - logMonthlyIncome:DistanceFromHome 1 907.24 1388.6  
## - RelationshipSatisfaction:DistanceFromHome 1 907.27 1388.6  
## - RelationshipSatisfaction:YearsWithCurrManager 1 907.29 1388.6  
## - JobInvolvement:JobSatisfaction 1 907.30 1388.6  
## - logMonthlyIncome:JobSatisfaction 1 907.32 1388.7  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 907.34 1388.7  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 907.37 1388.7  
## - logMonthlyIncome:JobInvolvement 1 907.38 1388.7  
## - JobSatisfaction:OverTime 1 907.39 1388.7  
## - YearsSinceLastPromotion:OverTime 1 907.42 1388.8  
## - RelationshipSatisfaction:JobInvolvement 1 907.43 1388.8  
## - DistanceFromHome:YearsWithCurrManager 1 907.44 1388.8  
## - logMonthlyIncome:RelationshipSatisfaction 1 907.55 1388.9  
## - JobInvolvement:YearsWithCurrManager 1 907.64 1389.0  
## - JobSatisfaction:YearsWithCurrManager 1 907.77 1389.1  
## - DistanceFromHome:YearsSinceLastPromotion 1 907.78 1389.1  
## - RelationshipSatisfaction:OverTime 1 908.03 1389.4  
## - DistanceFromHome:JobInvolvement 1 908.43 1389.8  
## - RelationshipSatisfaction:JobSatisfaction 1 908.60 1389.9  
## - DistanceFromHome:JobSatisfaction 1 908.82 1390.2  
## - YearsSinceLastPromotion:JobInvolvement 1 909.87 1391.2  
## - logMonthlyIncome:YearsWithCurrManager 1 911.16 1392.5  
## - YearsSinceLastPromotion:JobSatisfaction 1 911.94 1393.3  
## - DistanceFromHome:OverTime 1 912.24 1393.6  
## - logMonthlyIncome:OverTime 1 912.35 1393.7  
## <none> 907.22 1395.8  
##   
## Step: AIC=1377.9  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):YearsWithCurrManager + factor(MaritalStatus):logMonthlyIncome +   
## factor(MaritalStatus):RelationshipSatisfaction + factor(MaritalStatus):DistanceFromHome +   
## factor(MaritalStatus):YearsSinceLastPromotion + factor(MaritalStatus):JobInvolvement +   
## factor(MaritalStatus):JobSatisfaction + factor(MaritalStatus):YearsWithCurrManager +   
## factor(MaritalStatus):OverTime + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(MaritalStatus):JobInvolvement 2 911.74 1363.9  
## - factor(MaritalStatus):DistanceFromHome 2 911.74 1363.9  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 911.90 1364.1  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 919.49 1364.4  
## - factor(MaritalStatus):logMonthlyIncome 2 912.28 1364.5  
## - factor(MaritalStatus):RelationshipSatisfaction 2 913.41 1365.6  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 920.89 1365.8  
## - factor(MaritalStatus):JobSatisfaction 2 915.00 1367.2  
## - factor(MaritalStatus):OverTime 2 915.40 1367.6  
## - factor(MaritalStatus):YearsWithCurrManager 2 916.40 1368.6  
## - YearsWithCurrManager:OverTime 1 911.15 1370.6  
## - logMonthlyIncome:DistanceFromHome 1 911.16 1370.6  
## - JobInvolvement:JobSatisfaction 1 911.16 1370.6  
## - logMonthlyIncome:YearsSinceLastPromotion 1 911.16 1370.6  
## - RelationshipSatisfaction:YearsWithCurrManager 1 911.17 1370.6  
## - logMonthlyIncome:JobSatisfaction 1 911.17 1370.6  
## - JobInvolvement:OverTime 1 911.19 1370.7  
## - RelationshipSatisfaction:DistanceFromHome 1 911.21 1370.7  
## - JobSatisfaction:OverTime 1 911.24 1370.7  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 911.24 1370.7  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 911.27 1370.7  
## - logMonthlyIncome:JobInvolvement 1 911.27 1370.7  
## - DistanceFromHome:YearsWithCurrManager 1 911.29 1370.8  
## - YearsSinceLastPromotion:OverTime 1 911.31 1370.8  
## - JobSatisfaction:YearsWithCurrManager 1 911.47 1370.9  
## - JobInvolvement:YearsWithCurrManager 1 911.51 1371.0  
## - logMonthlyIncome:RelationshipSatisfaction 1 911.52 1371.0  
## - RelationshipSatisfaction:JobInvolvement 1 911.58 1371.0  
## - RelationshipSatisfaction:OverTime 1 911.88 1371.3  
## - DistanceFromHome:YearsSinceLastPromotion 1 911.90 1371.4  
## - DistanceFromHome:JobInvolvement 1 912.19 1371.7  
## - RelationshipSatisfaction:JobSatisfaction 1 912.55 1372.0  
## - DistanceFromHome:JobSatisfaction 1 912.87 1372.3  
## - YearsSinceLastPromotion:JobInvolvement 1 913.66 1373.1  
## - logMonthlyIncome:YearsWithCurrManager 1 915.27 1374.7  
## - YearsSinceLastPromotion:JobSatisfaction 1 915.92 1375.4  
## - logMonthlyIncome:OverTime 1 916.30 1375.8  
## - DistanceFromHome:OverTime 1 916.87 1376.3  
## <none> 911.14 1377.9  
##   
## Step: AIC=1363.91  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):YearsWithCurrManager + factor(MaritalStatus):logMonthlyIncome +   
## factor(MaritalStatus):RelationshipSatisfaction + factor(MaritalStatus):DistanceFromHome +   
## factor(MaritalStatus):YearsSinceLastPromotion + factor(MaritalStatus):JobSatisfaction +   
## factor(MaritalStatus):YearsWithCurrManager + factor(MaritalStatus):OverTime +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:DistanceFromHome +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:YearsWithCurrManager +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + YearsSinceLastPromotion:OverTime +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime + YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(MaritalStatus):DistanceFromHome 2 912.42 1350.0  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 912.52 1350.1  
## - factor(MaritalStatus):logMonthlyIncome 2 912.99 1350.6  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 920.38 1350.7  
## - factor(MaritalStatus):RelationshipSatisfaction 2 913.96 1351.5  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 921.66 1352.0  
## - factor(MaritalStatus):JobSatisfaction 2 915.66 1353.2  
## - factor(MaritalStatus):OverTime 2 916.46 1354.0  
## - factor(MaritalStatus):YearsWithCurrManager 2 917.02 1354.6  
## - YearsWithCurrManager:OverTime 1 911.75 1356.6  
## - logMonthlyIncome:DistanceFromHome 1 911.75 1356.6  
## - JobInvolvement:JobSatisfaction 1 911.76 1356.6  
## - logMonthlyIncome:YearsSinceLastPromotion 1 911.76 1356.6  
## - RelationshipSatisfaction:YearsWithCurrManager 1 911.77 1356.6  
## - logMonthlyIncome:JobSatisfaction 1 911.78 1356.7  
## - RelationshipSatisfaction:DistanceFromHome 1 911.83 1356.7  
## - JobInvolvement:OverTime 1 911.84 1356.7  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 911.85 1356.7  
## - JobSatisfaction:OverTime 1 911.85 1356.7  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 911.85 1356.7  
## - logMonthlyIncome:JobInvolvement 1 911.87 1356.8  
## - DistanceFromHome:YearsWithCurrManager 1 911.89 1356.8  
## - YearsSinceLastPromotion:OverTime 1 911.89 1356.8  
## - JobSatisfaction:YearsWithCurrManager 1 912.06 1356.9  
## - JobInvolvement:YearsWithCurrManager 1 912.11 1357.0  
## - RelationshipSatisfaction:JobInvolvement 1 912.13 1357.0  
## - logMonthlyIncome:RelationshipSatisfaction 1 912.15 1357.0  
## - RelationshipSatisfaction:OverTime 1 912.46 1357.3  
## - DistanceFromHome:YearsSinceLastPromotion 1 912.55 1357.4  
## - DistanceFromHome:JobInvolvement 1 912.83 1357.7  
## - RelationshipSatisfaction:JobSatisfaction 1 913.17 1358.0  
## - DistanceFromHome:JobSatisfaction 1 913.46 1358.3  
## - YearsSinceLastPromotion:JobInvolvement 1 914.26 1359.1  
## - logMonthlyIncome:YearsWithCurrManager 1 915.88 1360.8  
## - YearsSinceLastPromotion:JobSatisfaction 1 916.33 1361.2  
## - logMonthlyIncome:OverTime 1 916.84 1361.7  
## - DistanceFromHome:OverTime 1 917.66 1362.5  
## <none> 911.74 1363.9  
##   
## Step: AIC=1350  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):YearsWithCurrManager + factor(MaritalStatus):logMonthlyIncome +   
## factor(MaritalStatus):RelationshipSatisfaction + factor(MaritalStatus):YearsSinceLastPromotion +   
## factor(MaritalStatus):JobSatisfaction + factor(MaritalStatus):YearsWithCurrManager +   
## factor(MaritalStatus):OverTime + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(MaritalStatus):YearsSinceLastPromotion 2 913.10 1336.1  
## - factor(MaritalStatus):logMonthlyIncome 2 913.53 1336.5  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 921.15 1336.8  
## - factor(MaritalStatus):RelationshipSatisfaction 2 914.46 1337.5  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 922.54 1338.2  
## - factor(MaritalStatus):JobSatisfaction 2 916.57 1339.6  
## - factor(MaritalStatus):OverTime 2 917.09 1340.1  
## - factor(MaritalStatus):YearsWithCurrManager 2 917.46 1340.5  
## - RelationshipSatisfaction:YearsWithCurrManager 1 912.43 1342.7  
## - YearsWithCurrManager:OverTime 1 912.43 1342.7  
## - JobInvolvement:JobSatisfaction 1 912.44 1342.7  
## - RelationshipSatisfaction:DistanceFromHome 1 912.44 1342.7  
## - logMonthlyIncome:YearsSinceLastPromotion 1 912.45 1342.7  
## - logMonthlyIncome:DistanceFromHome 1 912.45 1342.7  
## - logMonthlyIncome:JobSatisfaction 1 912.46 1342.8  
## - JobInvolvement:OverTime 1 912.49 1342.8  
## - DistanceFromHome:YearsWithCurrManager 1 912.50 1342.8  
## - logMonthlyIncome:JobInvolvement 1 912.52 1342.8  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 912.53 1342.8  
## - JobSatisfaction:OverTime 1 912.54 1342.8  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 912.55 1342.8  
## - YearsSinceLastPromotion:OverTime 1 912.57 1342.9  
## - JobSatisfaction:YearsWithCurrManager 1 912.73 1343.0  
## - JobInvolvement:YearsWithCurrManager 1 912.79 1343.1  
## - RelationshipSatisfaction:JobInvolvement 1 912.85 1343.1  
## - logMonthlyIncome:RelationshipSatisfaction 1 912.85 1343.1  
## - RelationshipSatisfaction:OverTime 1 913.08 1343.4  
## - DistanceFromHome:YearsSinceLastPromotion 1 913.32 1343.6  
## - DistanceFromHome:JobInvolvement 1 913.42 1343.7  
## - RelationshipSatisfaction:JobSatisfaction 1 913.87 1344.2  
## - DistanceFromHome:JobSatisfaction 1 914.20 1344.5  
## - YearsSinceLastPromotion:JobInvolvement 1 914.82 1345.1  
## - logMonthlyIncome:YearsWithCurrManager 1 916.62 1346.9  
## - YearsSinceLastPromotion:JobSatisfaction 1 917.05 1347.3  
## - logMonthlyIncome:OverTime 1 917.52 1347.8  
## - DistanceFromHome:OverTime 1 918.07 1348.4  
## <none> 912.42 1350.0  
##   
## Step: AIC=1336.1  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):YearsWithCurrManager + factor(MaritalStatus):logMonthlyIncome +   
## factor(MaritalStatus):RelationshipSatisfaction + factor(MaritalStatus):JobSatisfaction +   
## factor(MaritalStatus):YearsWithCurrManager + factor(MaritalStatus):OverTime +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:DistanceFromHome +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:YearsWithCurrManager +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + YearsSinceLastPromotion:OverTime +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime + YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(MaritalStatus):logMonthlyIncome 2 913.95 1322.4  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 922.10 1323.2  
## - factor(MaritalStatus):RelationshipSatisfaction 2 914.89 1323.3  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 923.26 1324.4  
## - factor(MaritalStatus):JobSatisfaction 2 916.97 1325.4  
## - factor(MaritalStatus):OverTime 2 917.52 1325.9  
## - factor(MaritalStatus):YearsWithCurrManager 2 918.33 1326.7  
## - RelationshipSatisfaction:YearsWithCurrManager 1 913.11 1328.8  
## - RelationshipSatisfaction:DistanceFromHome 1 913.11 1328.8  
## - YearsWithCurrManager:OverTime 1 913.12 1328.8  
## - logMonthlyIncome:DistanceFromHome 1 913.13 1328.8  
## - JobInvolvement:JobSatisfaction 1 913.14 1328.8  
## - logMonthlyIncome:JobSatisfaction 1 913.15 1328.9  
## - DistanceFromHome:YearsWithCurrManager 1 913.16 1328.9  
## - logMonthlyIncome:YearsSinceLastPromotion 1 913.18 1328.9  
## - logMonthlyIncome:JobInvolvement 1 913.20 1328.9  
## - JobInvolvement:OverTime 1 913.21 1328.9  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 913.24 1328.9  
## - JobSatisfaction:OverTime 1 913.25 1329.0  
## - YearsSinceLastPromotion:OverTime 1 913.28 1329.0  
## - JobSatisfaction:YearsWithCurrManager 1 913.38 1329.1  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 913.38 1329.1  
## - JobInvolvement:YearsWithCurrManager 1 913.46 1329.2  
## - RelationshipSatisfaction:JobInvolvement 1 913.55 1329.2  
## - logMonthlyIncome:RelationshipSatisfaction 1 913.55 1329.2  
## - RelationshipSatisfaction:OverTime 1 913.74 1329.4  
## - DistanceFromHome:JobInvolvement 1 914.04 1329.7  
## - DistanceFromHome:YearsSinceLastPromotion 1 914.22 1329.9  
## - RelationshipSatisfaction:JobSatisfaction 1 914.62 1330.3  
## - DistanceFromHome:JobSatisfaction 1 914.83 1330.5  
## - YearsSinceLastPromotion:JobInvolvement 1 915.36 1331.1  
## - YearsSinceLastPromotion:JobSatisfaction 1 917.50 1333.2  
## - logMonthlyIncome:YearsWithCurrManager 1 917.54 1333.2  
## - logMonthlyIncome:OverTime 1 918.21 1333.9  
## - DistanceFromHome:OverTime 1 918.90 1334.6  
## <none> 913.10 1336.1  
##   
## Step: AIC=1322.36  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):YearsWithCurrManager + factor(MaritalStatus):RelationshipSatisfaction +   
## factor(MaritalStatus):JobSatisfaction + factor(MaritalStatus):YearsWithCurrManager +   
## factor(MaritalStatus):OverTime + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(MaritalStatus):RelationshipSatisfaction 2 915.80 1309.6  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 923.36 1309.9  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 924.10 1310.6  
## - factor(MaritalStatus):JobSatisfaction 2 917.80 1311.6  
## - factor(MaritalStatus):OverTime 2 918.23 1312.0  
## - logMonthlyIncome:DistanceFromHome 1 913.96 1315.1  
## - RelationshipSatisfaction:YearsWithCurrManager 1 913.97 1315.1  
## - RelationshipSatisfaction:DistanceFromHome 1 913.98 1315.1  
## - logMonthlyIncome:JobSatisfaction 1 913.99 1315.1  
## - YearsWithCurrManager:OverTime 1 913.99 1315.1  
## - JobInvolvement:JobSatisfaction 1 913.99 1315.1  
## - logMonthlyIncome:YearsSinceLastPromotion 1 914.02 1315.1  
## - DistanceFromHome:YearsWithCurrManager 1 914.05 1315.2  
## - factor(MaritalStatus):YearsWithCurrManager 2 921.34 1315.2  
## - JobInvolvement:OverTime 1 914.07 1315.2  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 914.09 1315.2  
## - logMonthlyIncome:JobInvolvement 1 914.09 1315.2  
## - YearsSinceLastPromotion:OverTime 1 914.10 1315.2  
## - JobSatisfaction:OverTime 1 914.13 1315.2  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 914.17 1315.3  
## - JobSatisfaction:YearsWithCurrManager 1 914.22 1315.3  
## - JobInvolvement:YearsWithCurrManager 1 914.28 1315.4  
## - logMonthlyIncome:RelationshipSatisfaction 1 914.35 1315.5  
## - RelationshipSatisfaction:JobInvolvement 1 914.42 1315.5  
## - RelationshipSatisfaction:OverTime 1 914.62 1315.7  
## - DistanceFromHome:JobInvolvement 1 914.94 1316.0  
## - DistanceFromHome:YearsSinceLastPromotion 1 915.00 1316.1  
## - RelationshipSatisfaction:JobSatisfaction 1 915.56 1316.7  
## - DistanceFromHome:JobSatisfaction 1 915.63 1316.8  
## - YearsSinceLastPromotion:JobInvolvement 1 916.25 1317.4  
## - YearsSinceLastPromotion:JobSatisfaction 1 918.33 1319.4  
## - logMonthlyIncome:YearsWithCurrManager 1 918.67 1319.8  
## - logMonthlyIncome:OverTime 1 918.88 1320.0  
## - DistanceFromHome:OverTime 1 919.75 1320.9  
## <none> 913.95 1322.4  
##   
## Step: AIC=1309.62  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(EnvironmentSatisfaction):YearsWithCurrManager + factor(MaritalStatus):JobSatisfaction +   
## factor(MaritalStatus):YearsWithCurrManager + factor(MaritalStatus):OverTime +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:DistanceFromHome +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:YearsWithCurrManager +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + YearsSinceLastPromotion:OverTime +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime + YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(EnvironmentSatisfaction):YearsWithCurrManager 3 925.04 1297.0  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 925.95 1297.9  
## - factor(MaritalStatus):OverTime 2 919.64 1298.9  
## - factor(MaritalStatus):JobSatisfaction 2 919.69 1298.9  
## - RelationshipSatisfaction:DistanceFromHome 1 915.80 1302.3  
## - RelationshipSatisfaction:YearsWithCurrManager 1 915.81 1302.3  
## - logMonthlyIncome:DistanceFromHome 1 915.81 1302.3  
## - JobInvolvement:JobSatisfaction 1 915.83 1302.4  
## - DistanceFromHome:YearsWithCurrManager 1 915.84 1302.4  
## - YearsWithCurrManager:OverTime 1 915.84 1302.4  
## - logMonthlyIncome:YearsSinceLastPromotion 1 915.85 1302.4  
## - logMonthlyIncome:JobSatisfaction 1 915.86 1302.4  
## - YearsSinceLastPromotion:OverTime 1 915.92 1302.5  
## - logMonthlyIncome:JobInvolvement 1 915.94 1302.5  
## - JobInvolvement:OverTime 1 915.95 1302.5  
## - JobSatisfaction:OverTime 1 915.96 1302.5  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 915.97 1302.5  
## - JobSatisfaction:YearsWithCurrManager 1 916.06 1302.6  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 916.07 1302.6  
## - JobInvolvement:YearsWithCurrManager 1 916.11 1302.6  
## - factor(MaritalStatus):YearsWithCurrManager 2 923.42 1302.7  
## - logMonthlyIncome:RelationshipSatisfaction 1 916.16 1302.7  
## - RelationshipSatisfaction:JobInvolvement 1 916.26 1302.8  
## - RelationshipSatisfaction:OverTime 1 916.35 1302.9  
## - DistanceFromHome:JobInvolvement 1 916.86 1303.4  
## - DistanceFromHome:YearsSinceLastPromotion 1 916.97 1303.5  
## - RelationshipSatisfaction:JobSatisfaction 1 917.31 1303.8  
## - DistanceFromHome:JobSatisfaction 1 917.56 1304.1  
## - YearsSinceLastPromotion:JobInvolvement 1 918.12 1304.7  
## - YearsSinceLastPromotion:JobSatisfaction 1 919.95 1306.5  
## - logMonthlyIncome:YearsWithCurrManager 1 920.66 1307.2  
## - logMonthlyIncome:OverTime 1 920.75 1307.3  
## - DistanceFromHome:OverTime 1 921.48 1308.0  
## <none> 915.80 1309.6  
##   
## Step: AIC=1296.99  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(EnvironmentSatisfaction):logMonthlyIncome +   
## factor(MaritalStatus):JobSatisfaction + factor(MaritalStatus):YearsWithCurrManager +   
## factor(MaritalStatus):OverTime + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(EnvironmentSatisfaction):logMonthlyIncome 3 930.33 1280.4  
## - factor(MaritalStatus):OverTime 2 928.70 1286.1  
## - factor(MaritalStatus):JobSatisfaction 2 929.04 1286.4  
## - logMonthlyIncome:DistanceFromHome 1 925.04 1289.7  
## - YearsWithCurrManager:OverTime 1 925.04 1289.7  
## - RelationshipSatisfaction:DistanceFromHome 1 925.05 1289.7  
## - RelationshipSatisfaction:YearsWithCurrManager 1 925.07 1289.7  
## - logMonthlyIncome:JobSatisfaction 1 925.07 1289.7  
## - JobInvolvement:JobSatisfaction 1 925.10 1289.8  
## - DistanceFromHome:YearsWithCurrManager 1 925.13 1289.8  
## - YearsSinceLastPromotion:OverTime 1 925.15 1289.8  
## - logMonthlyIncome:JobInvolvement 1 925.18 1289.8  
## - JobSatisfaction:OverTime 1 925.21 1289.9  
## - JobInvolvement:OverTime 1 925.22 1289.9  
## - JobInvolvement:YearsWithCurrManager 1 925.29 1289.9  
## - logMonthlyIncome:YearsSinceLastPromotion 1 925.29 1289.9  
## - JobSatisfaction:YearsWithCurrManager 1 925.41 1290.1  
## - RelationshipSatisfaction:JobInvolvement 1 925.42 1290.1  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 925.44 1290.1  
## - logMonthlyIncome:RelationshipSatisfaction 1 925.45 1290.1  
## - RelationshipSatisfaction:OverTime 1 925.51 1290.2  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 925.83 1290.5  
## - DistanceFromHome:YearsSinceLastPromotion 1 926.20 1290.8  
## - DistanceFromHome:JobInvolvement 1 926.21 1290.9  
## - RelationshipSatisfaction:JobSatisfaction 1 926.29 1291.0  
## - factor(MaritalStatus):YearsWithCurrManager 2 933.77 1291.1  
## - DistanceFromHome:JobSatisfaction 1 926.66 1291.3  
## - YearsSinceLastPromotion:JobInvolvement 1 927.22 1291.9  
## - logMonthlyIncome:YearsWithCurrManager 1 928.80 1293.5  
## - YearsSinceLastPromotion:JobSatisfaction 1 929.00 1293.7  
## - logMonthlyIncome:OverTime 1 930.42 1295.1  
## - DistanceFromHome:OverTime 1 930.54 1295.2  
## <none> 925.04 1297.0  
##   
## Step: AIC=1280.39  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):JobSatisfaction +   
## factor(MaritalStatus):YearsWithCurrManager + factor(MaritalStatus):OverTime +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:DistanceFromHome +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:YearsWithCurrManager +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + YearsSinceLastPromotion:OverTime +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime + YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(MaritalStatus):OverTime 2 933.64 1269.1  
## - factor(MaritalStatus):JobSatisfaction 2 934.66 1270.1  
## - logMonthlyIncome:DistanceFromHome 1 930.33 1273.1  
## - RelationshipSatisfaction:DistanceFromHome 1 930.33 1273.1  
## - YearsWithCurrManager:OverTime 1 930.33 1273.1  
## - logMonthlyIncome:JobSatisfaction 1 930.35 1273.1  
## - RelationshipSatisfaction:YearsWithCurrManager 1 930.36 1273.1  
## - YearsSinceLastPromotion:OverTime 1 930.38 1273.2  
## - DistanceFromHome:YearsWithCurrManager 1 930.42 1273.2  
## - JobInvolvement:JobSatisfaction 1 930.44 1273.2  
## - logMonthlyIncome:YearsSinceLastPromotion 1 930.44 1273.2  
## - logMonthlyIncome:JobInvolvement 1 930.45 1273.2  
## - JobSatisfaction:OverTime 1 930.45 1273.2  
## - JobInvolvement:OverTime 1 930.51 1273.3  
## - RelationshipSatisfaction:JobInvolvement 1 930.57 1273.3  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 930.67 1273.4  
## - JobSatisfaction:YearsWithCurrManager 1 930.69 1273.5  
## - JobInvolvement:YearsWithCurrManager 1 930.71 1273.5  
## - logMonthlyIncome:RelationshipSatisfaction 1 930.73 1273.5  
## - RelationshipSatisfaction:OverTime 1 930.82 1273.6  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 931.36 1274.1  
## - DistanceFromHome:YearsSinceLastPromotion 1 931.39 1274.2  
## - DistanceFromHome:JobInvolvement 1 931.40 1274.2  
## - factor(MaritalStatus):YearsWithCurrManager 2 938.88 1274.4  
## - RelationshipSatisfaction:JobSatisfaction 1 931.66 1274.4  
## - DistanceFromHome:JobSatisfaction 1 932.17 1275.0  
## - YearsSinceLastPromotion:JobInvolvement 1 933.00 1275.8  
## - logMonthlyIncome:YearsWithCurrManager 1 933.54 1276.3  
## - YearsSinceLastPromotion:JobSatisfaction 1 934.49 1277.3  
## - logMonthlyIncome:OverTime 1 935.73 1278.5  
## - DistanceFromHome:OverTime 1 935.97 1278.7  
## <none> 930.33 1280.4  
## - factor(EnvironmentSatisfaction) 3 966.14 1294.3  
##   
## Step: AIC=1269.12  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):JobSatisfaction +   
## factor(MaritalStatus):YearsWithCurrManager + logMonthlyIncome:RelationshipSatisfaction +   
## logMonthlyIncome:DistanceFromHome + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:DistanceFromHome + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - factor(MaritalStatus):JobSatisfaction 2 937.21 1258.1  
## - RelationshipSatisfaction:DistanceFromHome 1 933.64 1261.8  
## - logMonthlyIncome:DistanceFromHome 1 933.64 1261.8  
## - YearsWithCurrManager:OverTime 1 933.65 1261.8  
## - YearsSinceLastPromotion:OverTime 1 933.65 1261.8  
## - logMonthlyIncome:JobSatisfaction 1 933.65 1261.8  
## - RelationshipSatisfaction:YearsWithCurrManager 1 933.68 1261.9  
## - JobInvolvement:JobSatisfaction 1 933.71 1261.9  
## - logMonthlyIncome:JobInvolvement 1 933.75 1261.9  
## - logMonthlyIncome:YearsSinceLastPromotion 1 933.77 1262.0  
## - RelationshipSatisfaction:JobInvolvement 1 933.82 1262.0  
## - DistanceFromHome:YearsWithCurrManager 1 933.83 1262.0  
## - JobInvolvement:OverTime 1 933.83 1262.0  
## - JobSatisfaction:OverTime 1 933.84 1262.0  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 933.96 1262.2  
## - RelationshipSatisfaction:OverTime 1 933.97 1262.2  
## - JobInvolvement:YearsWithCurrManager 1 934.00 1262.2  
## - JobSatisfaction:YearsWithCurrManager 1 934.04 1262.2  
## - logMonthlyIncome:RelationshipSatisfaction 1 934.18 1262.4  
## - DistanceFromHome:YearsSinceLastPromotion 1 934.48 1262.7  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 934.55 1262.7  
## - DistanceFromHome:JobInvolvement 1 934.80 1263.0  
## - factor(MaritalStatus):YearsWithCurrManager 2 942.11 1263.0  
## - RelationshipSatisfaction:JobSatisfaction 1 935.06 1263.2  
## - DistanceFromHome:JobSatisfaction 1 935.39 1263.6  
## - YearsSinceLastPromotion:JobInvolvement 1 935.94 1264.1  
## - logMonthlyIncome:YearsWithCurrManager 1 937.04 1265.2  
## - YearsSinceLastPromotion:JobSatisfaction 1 938.06 1266.2  
## - DistanceFromHome:OverTime 1 938.44 1266.6  
## - logMonthlyIncome:OverTime 1 938.94 1267.1  
## <none> 933.64 1269.1  
## - factor(EnvironmentSatisfaction) 3 970.52 1284.1  
##   
## Step: AIC=1258.1  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:DistanceFromHome +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:YearsWithCurrManager +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + YearsSinceLastPromotion:OverTime +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime + YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - RelationshipSatisfaction:DistanceFromHome 1 937.21 1250.8  
## - YearsWithCurrManager:OverTime 1 937.21 1250.8  
## - YearsSinceLastPromotion:OverTime 1 937.21 1250.8  
## - logMonthlyIncome:DistanceFromHome 1 937.21 1250.8  
## - logMonthlyIncome:JobSatisfaction 1 937.24 1250.8  
## - RelationshipSatisfaction:YearsWithCurrManager 1 937.25 1250.8  
## - logMonthlyIncome:JobInvolvement 1 937.28 1250.9  
## - JobInvolvement:JobSatisfaction 1 937.29 1250.9  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.33 1250.9  
## - DistanceFromHome:YearsWithCurrManager 1 937.35 1251.0  
## - JobInvolvement:OverTime 1 937.42 1251.0  
## - RelationshipSatisfaction:JobInvolvement 1 937.44 1251.0  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.46 1251.1  
## - RelationshipSatisfaction:OverTime 1 937.54 1251.1  
## - JobInvolvement:YearsWithCurrManager 1 937.65 1251.2  
## - JobSatisfaction:OverTime 1 937.68 1251.3  
## - logMonthlyIncome:RelationshipSatisfaction 1 937.87 1251.5  
## - JobSatisfaction:YearsWithCurrManager 1 938.03 1251.6  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.06 1251.7  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.16 1251.8  
## - RelationshipSatisfaction:JobSatisfaction 1 938.19 1251.8  
## - DistanceFromHome:JobSatisfaction 1 938.63 1252.2  
## - DistanceFromHome:JobInvolvement 1 938.67 1252.3  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.34 1252.6  
## - YearsSinceLastPromotion:JobInvolvement 1 939.69 1253.3  
## - logMonthlyIncome:YearsWithCurrManager 1 940.59 1254.2  
## - DistanceFromHome:OverTime 1 941.74 1255.3  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.21 1255.8  
## - logMonthlyIncome:OverTime 1 942.24 1255.8  
## <none> 937.21 1258.1  
## - factor(EnvironmentSatisfaction) 3 975.19 1274.2  
##   
## Step: AIC=1250.81  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime +   
## YearsWithCurrManager:OverTime  
##   
## Df Deviance AIC  
## - YearsWithCurrManager:OverTime 1 937.21 1243.5  
## - YearsSinceLastPromotion:OverTime 1 937.21 1243.5  
## - logMonthlyIncome:DistanceFromHome 1 937.21 1243.5  
## - logMonthlyIncome:JobSatisfaction 1 937.24 1243.5  
## - RelationshipSatisfaction:YearsWithCurrManager 1 937.25 1243.5  
## - logMonthlyIncome:JobInvolvement 1 937.28 1243.6  
## - JobInvolvement:JobSatisfaction 1 937.29 1243.6  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.33 1243.6  
## - DistanceFromHome:YearsWithCurrManager 1 937.36 1243.7  
## - JobInvolvement:OverTime 1 937.42 1243.7  
## - RelationshipSatisfaction:JobInvolvement 1 937.44 1243.8  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.46 1243.8  
## - RelationshipSatisfaction:OverTime 1 937.54 1243.8  
## - JobInvolvement:YearsWithCurrManager 1 937.65 1244.0  
## - JobSatisfaction:OverTime 1 937.68 1244.0  
## - logMonthlyIncome:RelationshipSatisfaction 1 937.87 1244.2  
## - JobSatisfaction:YearsWithCurrManager 1 938.03 1244.3  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.06 1244.4  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.17 1244.5  
## - RelationshipSatisfaction:JobSatisfaction 1 938.19 1244.5  
## - DistanceFromHome:JobSatisfaction 1 938.63 1244.9  
## - DistanceFromHome:JobInvolvement 1 938.67 1245.0  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.34 1245.4  
## - YearsSinceLastPromotion:JobInvolvement 1 939.69 1246.0  
## - logMonthlyIncome:YearsWithCurrManager 1 940.60 1246.9  
## - DistanceFromHome:OverTime 1 941.75 1248.1  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.21 1248.5  
## - logMonthlyIncome:OverTime 1 942.24 1248.5  
## <none> 937.21 1250.8  
## - factor(EnvironmentSatisfaction) 3 975.21 1266.9  
##   
## Step: AIC=1243.51  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## YearsSinceLastPromotion:OverTime + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - YearsSinceLastPromotion:OverTime 1 937.21 1236.2  
## - logMonthlyIncome:DistanceFromHome 1 937.21 1236.2  
## - logMonthlyIncome:JobSatisfaction 1 937.24 1236.3  
## - RelationshipSatisfaction:YearsWithCurrManager 1 937.25 1236.3  
## - logMonthlyIncome:JobInvolvement 1 937.28 1236.3  
## - JobInvolvement:JobSatisfaction 1 937.29 1236.3  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.33 1236.3  
## - DistanceFromHome:YearsWithCurrManager 1 937.36 1236.4  
## - JobInvolvement:OverTime 1 937.42 1236.4  
## - RelationshipSatisfaction:JobInvolvement 1 937.44 1236.5  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.46 1236.5  
## - RelationshipSatisfaction:OverTime 1 937.54 1236.5  
## - JobInvolvement:YearsWithCurrManager 1 937.65 1236.7  
## - JobSatisfaction:OverTime 1 937.69 1236.7  
## - logMonthlyIncome:RelationshipSatisfaction 1 937.88 1236.9  
## - JobSatisfaction:YearsWithCurrManager 1 938.04 1237.0  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.06 1237.1  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.17 1237.2  
## - RelationshipSatisfaction:JobSatisfaction 1 938.20 1237.2  
## - DistanceFromHome:JobSatisfaction 1 938.63 1237.6  
## - DistanceFromHome:JobInvolvement 1 938.67 1237.7  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.35 1238.1  
## - YearsSinceLastPromotion:JobInvolvement 1 939.69 1238.7  
## - logMonthlyIncome:YearsWithCurrManager 1 940.60 1239.6  
## - DistanceFromHome:OverTime 1 941.75 1240.8  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.21 1241.2  
## - logMonthlyIncome:OverTime 1 942.63 1241.6  
## <none> 937.21 1243.5  
## - factor(EnvironmentSatisfaction) 3 975.49 1259.9  
##   
## Step: AIC=1236.22  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:DistanceFromHome +   
## logMonthlyIncome:YearsSinceLastPromotion + logMonthlyIncome:JobInvolvement +   
## logMonthlyIncome:JobSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - logMonthlyIncome:DistanceFromHome 1 937.21 1228.9  
## - logMonthlyIncome:JobSatisfaction 1 937.24 1229.0  
## - RelationshipSatisfaction:YearsWithCurrManager 1 937.25 1229.0  
## - logMonthlyIncome:JobInvolvement 1 937.29 1229.0  
## - JobInvolvement:JobSatisfaction 1 937.29 1229.0  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.33 1229.0  
## - DistanceFromHome:YearsWithCurrManager 1 937.36 1229.1  
## - JobInvolvement:OverTime 1 937.42 1229.2  
## - RelationshipSatisfaction:JobInvolvement 1 937.45 1229.2  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.46 1229.2  
## - RelationshipSatisfaction:OverTime 1 937.54 1229.3  
## - JobInvolvement:YearsWithCurrManager 1 937.65 1229.4  
## - JobSatisfaction:OverTime 1 937.69 1229.4  
## - logMonthlyIncome:RelationshipSatisfaction 1 937.88 1229.6  
## - JobSatisfaction:YearsWithCurrManager 1 938.04 1229.8  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.06 1229.8  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.17 1229.9  
## - RelationshipSatisfaction:JobSatisfaction 1 938.20 1229.9  
## - DistanceFromHome:JobSatisfaction 1 938.63 1230.3  
## - DistanceFromHome:JobInvolvement 1 938.67 1230.4  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.36 1230.8  
## - YearsSinceLastPromotion:JobInvolvement 1 939.70 1231.4  
## - logMonthlyIncome:YearsWithCurrManager 1 940.60 1232.3  
## - DistanceFromHome:OverTime 1 941.76 1233.5  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.22 1233.9  
## - logMonthlyIncome:OverTime 1 943.76 1235.5  
## <none> 937.21 1236.2  
## - factor(EnvironmentSatisfaction) 3 975.53 1252.7  
##   
## Step: AIC=1228.93  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:JobSatisfaction +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:YearsWithCurrManager +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - logMonthlyIncome:JobSatisfaction 1 937.24 1221.7  
## - RelationshipSatisfaction:YearsWithCurrManager 1 937.25 1221.7  
## - logMonthlyIncome:JobInvolvement 1 937.29 1221.7  
## - JobInvolvement:JobSatisfaction 1 937.30 1221.7  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.33 1221.8  
## - DistanceFromHome:YearsWithCurrManager 1 937.36 1221.8  
## - JobInvolvement:OverTime 1 937.42 1221.8  
## - RelationshipSatisfaction:JobInvolvement 1 937.45 1221.9  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.46 1221.9  
## - RelationshipSatisfaction:OverTime 1 937.54 1222.0  
## - JobInvolvement:YearsWithCurrManager 1 937.65 1222.1  
## - JobSatisfaction:OverTime 1 937.69 1222.1  
## - logMonthlyIncome:RelationshipSatisfaction 1 937.88 1222.3  
## - JobSatisfaction:YearsWithCurrManager 1 938.04 1222.5  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.07 1222.5  
## - RelationshipSatisfaction:JobSatisfaction 1 938.20 1222.6  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.21 1222.6  
## - DistanceFromHome:JobSatisfaction 1 938.65 1223.1  
## - DistanceFromHome:JobInvolvement 1 938.67 1223.1  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.38 1223.5  
## - YearsSinceLastPromotion:JobInvolvement 1 939.70 1224.1  
## - logMonthlyIncome:YearsWithCurrManager 1 940.60 1225.0  
## - DistanceFromHome:OverTime 1 941.82 1226.2  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.25 1226.7  
## - logMonthlyIncome:OverTime 1 943.78 1228.2  
## <none> 937.21 1228.9  
## - factor(EnvironmentSatisfaction) 3 975.53 1245.4  
##   
## Step: AIC=1221.67  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:YearsWithCurrManager + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - RelationshipSatisfaction:YearsWithCurrManager 1 937.28 1214.4  
## - logMonthlyIncome:JobInvolvement 1 937.33 1214.5  
## - JobInvolvement:JobSatisfaction 1 937.34 1214.5  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.36 1214.5  
## - DistanceFromHome:YearsWithCurrManager 1 937.40 1214.5  
## - JobInvolvement:OverTime 1 937.46 1214.6  
## - RelationshipSatisfaction:JobInvolvement 1 937.49 1214.6  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.49 1214.6  
## - RelationshipSatisfaction:OverTime 1 937.57 1214.7  
## - JobInvolvement:YearsWithCurrManager 1 937.69 1214.8  
## - JobSatisfaction:OverTime 1 937.75 1214.9  
## - logMonthlyIncome:RelationshipSatisfaction 1 937.92 1215.1  
## - JobSatisfaction:YearsWithCurrManager 1 938.04 1215.2  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.09 1215.2  
## - RelationshipSatisfaction:JobSatisfaction 1 938.23 1215.4  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.23 1215.4  
## - DistanceFromHome:JobSatisfaction 1 938.65 1215.8  
## - DistanceFromHome:JobInvolvement 1 938.74 1215.9  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.39 1216.2  
## - YearsSinceLastPromotion:JobInvolvement 1 939.78 1216.9  
## - logMonthlyIncome:YearsWithCurrManager 1 940.61 1217.8  
## - DistanceFromHome:OverTime 1 941.83 1219.0  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.70 1219.8  
## - logMonthlyIncome:OverTime 1 943.82 1221.0  
## <none> 937.24 1221.7  
## - factor(EnvironmentSatisfaction) 3 975.65 1238.2  
##   
## Step: AIC=1214.41  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:JobInvolvement + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + JobInvolvement:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - logMonthlyIncome:JobInvolvement 1 937.37 1207.2  
## - JobInvolvement:JobSatisfaction 1 937.38 1207.2  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.39 1207.2  
## - DistanceFromHome:YearsWithCurrManager 1 937.44 1207.3  
## - JobInvolvement:OverTime 1 937.49 1207.3  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.50 1207.3  
## - RelationshipSatisfaction:JobInvolvement 1 937.52 1207.4  
## - RelationshipSatisfaction:OverTime 1 937.61 1207.5  
## - JobInvolvement:YearsWithCurrManager 1 937.76 1207.6  
## - JobSatisfaction:OverTime 1 937.80 1207.6  
## - logMonthlyIncome:RelationshipSatisfaction 1 937.93 1207.8  
## - JobSatisfaction:YearsWithCurrManager 1 938.08 1207.9  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.09 1207.9  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.26 1208.1  
## - RelationshipSatisfaction:JobSatisfaction 1 938.33 1208.2  
## - DistanceFromHome:JobSatisfaction 1 938.67 1208.5  
## - DistanceFromHome:JobInvolvement 1 938.77 1208.6  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.40 1208.9  
## - YearsSinceLastPromotion:JobInvolvement 1 939.86 1209.7  
## - logMonthlyIncome:YearsWithCurrManager 1 940.64 1210.5  
## - DistanceFromHome:OverTime 1 941.83 1211.7  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.73 1212.6  
## - logMonthlyIncome:OverTime 1 943.84 1213.7  
## <none> 937.28 1214.4  
## - factor(EnvironmentSatisfaction) 3 975.68 1230.9  
##   
## Step: AIC=1207.21  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## JobInvolvement:JobSatisfaction + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - JobInvolvement:JobSatisfaction 1 937.49 1200.0  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.50 1200.0  
## - DistanceFromHome:YearsWithCurrManager 1 937.52 1200.1  
## - JobInvolvement:OverTime 1 937.59 1200.1  
## - RelationshipSatisfaction:JobInvolvement 1 937.59 1200.1  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.60 1200.2  
## - RelationshipSatisfaction:OverTime 1 937.72 1200.3  
## - JobSatisfaction:OverTime 1 937.89 1200.4  
## - logMonthlyIncome:RelationshipSatisfaction 1 938.00 1200.5  
## - JobInvolvement:YearsWithCurrManager 1 938.04 1200.6  
## - JobSatisfaction:YearsWithCurrManager 1 938.16 1200.7  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.19 1200.7  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.35 1200.9  
## - RelationshipSatisfaction:JobSatisfaction 1 938.45 1201.0  
## - DistanceFromHome:JobSatisfaction 1 938.79 1201.3  
## - DistanceFromHome:JobInvolvement 1 938.82 1201.4  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.51 1201.8  
## - YearsSinceLastPromotion:JobInvolvement 1 939.86 1202.4  
## - logMonthlyIncome:YearsWithCurrManager 1 940.78 1203.3  
## - DistanceFromHome:OverTime 1 941.87 1204.4  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.78 1205.3  
## - logMonthlyIncome:OverTime 1 944.04 1206.6  
## <none> 937.37 1207.2  
## - factor(EnvironmentSatisfaction) 3 975.72 1223.7  
##   
## Step: AIC=1200.03  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsSinceLastPromotion +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:YearsSinceLastPromotion + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:YearsWithCurrManager +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - logMonthlyIncome:YearsSinceLastPromotion 1 937.62 1192.9  
## - DistanceFromHome:YearsWithCurrManager 1 937.64 1192.9  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.71 1193.0  
## - RelationshipSatisfaction:JobInvolvement 1 937.73 1193.0  
## - JobInvolvement:OverTime 1 937.76 1193.0  
## - RelationshipSatisfaction:OverTime 1 937.85 1193.1  
## - JobSatisfaction:OverTime 1 937.96 1193.2  
## - JobInvolvement:YearsWithCurrManager 1 938.08 1193.3  
## - logMonthlyIncome:RelationshipSatisfaction 1 938.14 1193.4  
## - JobSatisfaction:YearsWithCurrManager 1 938.28 1193.5  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.35 1193.6  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.45 1193.7  
## - RelationshipSatisfaction:JobSatisfaction 1 938.54 1193.8  
## - DistanceFromHome:JobSatisfaction 1 938.94 1194.2  
## - DistanceFromHome:JobInvolvement 1 938.97 1194.2  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.60 1194.6  
## - YearsSinceLastPromotion:JobInvolvement 1 939.86 1195.1  
## - logMonthlyIncome:YearsWithCurrManager 1 940.93 1196.2  
## - DistanceFromHome:OverTime 1 942.02 1197.3  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.89 1198.1  
## - logMonthlyIncome:OverTime 1 944.22 1199.5  
## <none> 937.49 1200.0  
## - factor(EnvironmentSatisfaction) 3 976.00 1216.7  
##   
## Step: AIC=1192.88  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:YearsWithCurrManager + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - DistanceFromHome:YearsWithCurrManager 1 937.77 1185.7  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.82 1185.8  
## - RelationshipSatisfaction:JobInvolvement 1 937.85 1185.8  
## - JobInvolvement:OverTime 1 937.88 1185.8  
## - RelationshipSatisfaction:OverTime 1 937.99 1186.0  
## - JobSatisfaction:OverTime 1 938.08 1186.0  
## - logMonthlyIncome:RelationshipSatisfaction 1 938.22 1186.2  
## - JobInvolvement:YearsWithCurrManager 1 938.27 1186.2  
## - JobSatisfaction:YearsWithCurrManager 1 938.38 1186.3  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.41 1186.4  
## - DistanceFromHome:YearsSinceLastPromotion 1 938.59 1186.6  
## - RelationshipSatisfaction:JobSatisfaction 1 938.67 1186.6  
## - DistanceFromHome:JobInvolvement 1 939.09 1187.0  
## - DistanceFromHome:JobSatisfaction 1 939.14 1187.1  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.82 1187.5  
## - YearsSinceLastPromotion:JobInvolvement 1 940.17 1188.1  
## - logMonthlyIncome:YearsWithCurrManager 1 941.76 1189.7  
## - DistanceFromHome:OverTime 1 942.15 1190.1  
## - YearsSinceLastPromotion:JobSatisfaction 1 942.97 1190.9  
## - logMonthlyIncome:OverTime 1 944.28 1192.2  
## <none> 937.62 1192.9  
## - factor(EnvironmentSatisfaction) 3 976.05 1209.4  
##   
## Step: AIC=1185.73  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:YearsSinceLastPromotion +   
## RelationshipSatisfaction:JobInvolvement + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - RelationshipSatisfaction:YearsSinceLastPromotion 1 937.96 1178.6  
## - RelationshipSatisfaction:JobInvolvement 1 937.99 1178.7  
## - JobInvolvement:OverTime 1 938.05 1178.7  
## - RelationshipSatisfaction:OverTime 1 938.18 1178.8  
## - JobSatisfaction:OverTime 1 938.21 1178.9  
## - logMonthlyIncome:RelationshipSatisfaction 1 938.35 1179.0  
## - JobInvolvement:YearsWithCurrManager 1 938.51 1179.2  
## - JobSatisfaction:YearsWithCurrManager 1 938.52 1179.2  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.58 1179.2  
## - RelationshipSatisfaction:JobSatisfaction 1 938.83 1179.5  
## - DistanceFromHome:JobInvolvement 1 939.20 1179.9  
## - DistanceFromHome:JobSatisfaction 1 939.21 1179.9  
## - factor(MaritalStatus):YearsWithCurrManager 2 946.93 1180.3  
## - YearsSinceLastPromotion:JobInvolvement 1 940.43 1181.1  
## - DistanceFromHome:YearsSinceLastPromotion 1 940.49 1181.2  
## - logMonthlyIncome:YearsWithCurrManager 1 941.84 1182.5  
## - DistanceFromHome:OverTime 1 942.28 1183.0  
## - YearsSinceLastPromotion:JobSatisfaction 1 943.18 1183.8  
## - logMonthlyIncome:OverTime 1 944.33 1185.0  
## <none> 937.77 1185.7  
## - factor(EnvironmentSatisfaction) 3 976.37 1202.5  
##   
## Step: AIC=1178.63  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobInvolvement +   
## RelationshipSatisfaction:JobSatisfaction + RelationshipSatisfaction:OverTime +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + JobInvolvement:YearsWithCurrManager +   
## JobInvolvement:OverTime + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - RelationshipSatisfaction:JobInvolvement 1 938.16 1171.5  
## - JobInvolvement:OverTime 1 938.28 1171.7  
## - RelationshipSatisfaction:OverTime 1 938.38 1171.8  
## - JobSatisfaction:OverTime 1 938.40 1171.8  
## - JobInvolvement:YearsWithCurrManager 1 938.72 1172.1  
## - JobSatisfaction:YearsWithCurrManager 1 938.74 1172.1  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 938.76 1172.1  
## - logMonthlyIncome:RelationshipSatisfaction 1 939.12 1172.5  
## - RelationshipSatisfaction:JobSatisfaction 1 939.13 1172.5  
## - DistanceFromHome:JobInvolvement 1 939.38 1172.8  
## - DistanceFromHome:JobSatisfaction 1 939.40 1172.8  
## - factor(MaritalStatus):YearsWithCurrManager 2 947.22 1173.3  
## - YearsSinceLastPromotion:JobInvolvement 1 940.58 1174.0  
## - DistanceFromHome:YearsSinceLastPromotion 1 940.73 1174.1  
## - logMonthlyIncome:YearsWithCurrManager 1 942.19 1175.6  
## - DistanceFromHome:OverTime 1 942.42 1175.8  
## - YearsSinceLastPromotion:JobSatisfaction 1 943.53 1176.9  
## - logMonthlyIncome:OverTime 1 944.58 1178.0  
## <none> 937.96 1178.6  
## - factor(EnvironmentSatisfaction) 3 977.11 1195.9  
##   
## Step: AIC=1171.54  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## JobInvolvement:YearsWithCurrManager + JobInvolvement:OverTime +   
## JobSatisfaction:YearsWithCurrManager + JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - JobInvolvement:OverTime 1 938.51 1164.6  
## - JobSatisfaction:OverTime 1 938.58 1164.7  
## - RelationshipSatisfaction:OverTime 1 938.63 1164.7  
## - JobInvolvement:YearsWithCurrManager 1 938.90 1165.0  
## - JobSatisfaction:YearsWithCurrManager 1 938.94 1165.0  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 939.01 1165.1  
## - logMonthlyIncome:RelationshipSatisfaction 1 939.41 1165.5  
## - RelationshipSatisfaction:JobSatisfaction 1 939.42 1165.5  
## - DistanceFromHome:JobInvolvement 1 939.48 1165.6  
## - DistanceFromHome:JobSatisfaction 1 939.60 1165.7  
## - factor(MaritalStatus):YearsWithCurrManager 2 947.48 1166.3  
## - YearsSinceLastPromotion:JobInvolvement 1 940.71 1166.8  
## - DistanceFromHome:YearsSinceLastPromotion 1 940.87 1167.0  
## - logMonthlyIncome:YearsWithCurrManager 1 942.33 1168.4  
## - DistanceFromHome:OverTime 1 942.56 1168.6  
## - YearsSinceLastPromotion:JobSatisfaction 1 943.69 1169.8  
## - logMonthlyIncome:OverTime 1 944.84 1170.9  
## <none> 938.16 1171.5  
## - factor(EnvironmentSatisfaction) 3 977.37 1188.9  
##   
## Step: AIC=1164.59  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## JobInvolvement:YearsWithCurrManager + JobSatisfaction:YearsWithCurrManager +   
## JobSatisfaction:OverTime  
##   
## Df Deviance AIC  
## - JobSatisfaction:OverTime 1 938.98 1157.8  
## - RelationshipSatisfaction:OverTime 1 938.98 1157.8  
## - JobSatisfaction:YearsWithCurrManager 1 939.32 1158.1  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 939.36 1158.2  
## - JobInvolvement:YearsWithCurrManager 1 939.40 1158.2  
## - logMonthlyIncome:RelationshipSatisfaction 1 939.72 1158.5  
## - RelationshipSatisfaction:JobSatisfaction 1 939.76 1158.5  
## - DistanceFromHome:JobInvolvement 1 939.80 1158.6  
## - DistanceFromHome:JobSatisfaction 1 939.92 1158.7  
## - factor(MaritalStatus):YearsWithCurrManager 2 947.65 1159.2  
## - DistanceFromHome:YearsSinceLastPromotion 1 941.17 1160.0  
## - YearsSinceLastPromotion:JobInvolvement 1 941.22 1160.0  
## - logMonthlyIncome:YearsWithCurrManager 1 942.65 1161.4  
## - DistanceFromHome:OverTime 1 942.75 1161.5  
## - YearsSinceLastPromotion:JobSatisfaction 1 943.99 1162.8  
## - logMonthlyIncome:OverTime 1 944.97 1163.8  
## <none> 938.51 1164.6  
## - factor(EnvironmentSatisfaction) 3 977.80 1182.0  
##   
## Step: AIC=1157.77  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobSatisfaction +   
## RelationshipSatisfaction:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction + YearsSinceLastPromotion:YearsWithCurrManager +   
## JobInvolvement:YearsWithCurrManager + JobSatisfaction:YearsWithCurrManager  
##   
## Df Deviance AIC  
## - RelationshipSatisfaction:OverTime 1 939.46 1151.0  
## - JobSatisfaction:YearsWithCurrManager 1 939.75 1151.2  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 939.80 1151.3  
## - JobInvolvement:YearsWithCurrManager 1 939.83 1151.3  
## - DistanceFromHome:JobInvolvement 1 940.24 1151.7  
## - logMonthlyIncome:RelationshipSatisfaction 1 940.25 1151.8  
## - DistanceFromHome:JobSatisfaction 1 940.32 1151.8  
## - RelationshipSatisfaction:JobSatisfaction 1 940.39 1151.9  
## - factor(MaritalStatus):YearsWithCurrManager 2 948.35 1152.6  
## - DistanceFromHome:YearsSinceLastPromotion 1 941.58 1153.1  
## - YearsSinceLastPromotion:JobInvolvement 1 941.73 1153.2  
## - DistanceFromHome:OverTime 1 943.04 1154.5  
## - logMonthlyIncome:YearsWithCurrManager 1 943.15 1154.6  
## - YearsSinceLastPromotion:JobSatisfaction 1 944.31 1155.8  
## - logMonthlyIncome:OverTime 1 945.59 1157.1  
## <none> 938.98 1157.8  
## - factor(EnvironmentSatisfaction) 3 977.84 1174.8  
##   
## Step: AIC=1150.96  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobSatisfaction +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + JobInvolvement:YearsWithCurrManager +   
## JobSatisfaction:YearsWithCurrManager  
##   
## Df Deviance AIC  
## - JobSatisfaction:YearsWithCurrManager 1 940.18 1144.4  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 940.26 1144.5  
## - JobInvolvement:YearsWithCurrManager 1 940.39 1144.6  
## - logMonthlyIncome:RelationshipSatisfaction 1 940.64 1144.8  
## - DistanceFromHome:JobInvolvement 1 940.66 1144.9  
## - RelationshipSatisfaction:JobSatisfaction 1 940.78 1145.0  
## - DistanceFromHome:JobSatisfaction 1 940.92 1145.1  
## - factor(MaritalStatus):YearsWithCurrManager 2 948.64 1145.6  
## - DistanceFromHome:YearsSinceLastPromotion 1 942.03 1146.2  
## - YearsSinceLastPromotion:JobInvolvement 1 942.43 1146.6  
## - DistanceFromHome:OverTime 1 943.47 1147.7  
## - logMonthlyIncome:YearsWithCurrManager 1 943.69 1147.9  
## - YearsSinceLastPromotion:JobSatisfaction 1 944.76 1149.0  
## - logMonthlyIncome:OverTime 1 946.03 1150.2  
## <none> 939.46 1151.0  
## - factor(EnvironmentSatisfaction) 3 978.21 1167.8  
##   
## Step: AIC=1144.39  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobSatisfaction +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## YearsSinceLastPromotion:YearsWithCurrManager + JobInvolvement:YearsWithCurrManager  
##   
## Df Deviance AIC  
## - YearsSinceLastPromotion:YearsWithCurrManager 1 940.81 1137.7  
## - JobInvolvement:YearsWithCurrManager 1 941.16 1138.1  
## - logMonthlyIncome:RelationshipSatisfaction 1 941.26 1138.2  
## - DistanceFromHome:JobInvolvement 1 941.43 1138.3  
## - RelationshipSatisfaction:JobSatisfaction 1 941.59 1138.5  
## - factor(MaritalStatus):YearsWithCurrManager 2 949.03 1138.7  
## - DistanceFromHome:JobSatisfaction 1 941.77 1138.7  
## - DistanceFromHome:YearsSinceLastPromotion 1 942.57 1139.5  
## - YearsSinceLastPromotion:JobInvolvement 1 943.28 1140.2  
## - DistanceFromHome:OverTime 1 944.16 1141.1  
## - logMonthlyIncome:YearsWithCurrManager 1 944.60 1141.5  
## - YearsSinceLastPromotion:JobSatisfaction 1 945.36 1142.3  
## - logMonthlyIncome:OverTime 1 946.95 1143.9  
## <none> 940.18 1144.4  
## - factor(EnvironmentSatisfaction) 3 978.41 1160.7  
##   
## Step: AIC=1137.72  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobSatisfaction +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction +   
## JobInvolvement:YearsWithCurrManager  
##   
## Df Deviance AIC  
## - JobInvolvement:YearsWithCurrManager 1 941.65 1131.3  
## - logMonthlyIncome:RelationshipSatisfaction 1 941.98 1131.6  
## - DistanceFromHome:JobInvolvement 1 942.07 1131.7  
## - factor(MaritalStatus):YearsWithCurrManager 2 949.47 1131.8  
## - RelationshipSatisfaction:JobSatisfaction 1 942.25 1131.9  
## - DistanceFromHome:JobSatisfaction 1 942.48 1132.1  
## - DistanceFromHome:YearsSinceLastPromotion 1 943.03 1132.6  
## - YearsSinceLastPromotion:JobInvolvement 1 943.74 1133.3  
## - DistanceFromHome:OverTime 1 944.86 1134.5  
## - YearsSinceLastPromotion:JobSatisfaction 1 945.89 1135.5  
## - logMonthlyIncome:OverTime 1 947.80 1137.4  
## <none> 940.81 1137.7  
## - logMonthlyIncome:YearsWithCurrManager 1 948.32 1137.9  
## - factor(EnvironmentSatisfaction) 3 979.59 1154.6  
##   
## Step: AIC=1131.26  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:RelationshipSatisfaction + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobSatisfaction +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - logMonthlyIncome:RelationshipSatisfaction 1 942.65 1125.0  
## - factor(MaritalStatus):YearsWithCurrManager 2 950.00 1125.0  
## - DistanceFromHome:JobInvolvement 1 942.94 1125.3  
## - RelationshipSatisfaction:JobSatisfaction 1 943.12 1125.5  
## - DistanceFromHome:JobSatisfaction 1 943.25 1125.6  
## - YearsSinceLastPromotion:JobInvolvement 1 943.77 1126.1  
## - DistanceFromHome:YearsSinceLastPromotion 1 943.86 1126.2  
## - DistanceFromHome:OverTime 1 945.45 1127.8  
## - YearsSinceLastPromotion:JobSatisfaction 1 947.08 1129.4  
## - logMonthlyIncome:OverTime 1 948.78 1131.1  
## <none> 941.65 1131.3  
## - logMonthlyIncome:YearsWithCurrManager 1 949.79 1132.1  
## - factor(EnvironmentSatisfaction) 3 980.38 1148.1  
##   
## Step: AIC=1124.98  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + factor(MaritalStatus):YearsWithCurrManager +   
## logMonthlyIncome:YearsWithCurrManager + logMonthlyIncome:OverTime +   
## RelationshipSatisfaction:JobSatisfaction + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - factor(MaritalStatus):YearsWithCurrManager 2 951.09 1118.8  
## - DistanceFromHome:JobInvolvement 1 943.84 1118.9  
## - DistanceFromHome:JobSatisfaction 1 944.20 1119.2  
## - RelationshipSatisfaction:JobSatisfaction 1 944.21 1119.2  
## - YearsSinceLastPromotion:JobInvolvement 1 944.63 1119.7  
## - DistanceFromHome:YearsSinceLastPromotion 1 944.94 1120.0  
## - DistanceFromHome:OverTime 1 946.49 1121.5  
## - YearsSinceLastPromotion:JobSatisfaction 1 948.35 1123.4  
## - logMonthlyIncome:OverTime 1 949.42 1124.5  
## <none> 942.65 1125.0  
## - logMonthlyIncome:YearsWithCurrManager 1 950.73 1125.8  
## - factor(EnvironmentSatisfaction) 3 981.68 1142.1  
##   
## Step: AIC=1118.83  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + RelationshipSatisfaction:JobSatisfaction +   
## DistanceFromHome:YearsSinceLastPromotion + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - RelationshipSatisfaction:JobSatisfaction 1 952.36 1112.8  
## - DistanceFromHome:YearsSinceLastPromotion 1 952.61 1113.0  
## - YearsSinceLastPromotion:JobInvolvement 1 952.75 1113.2  
## - DistanceFromHome:JobInvolvement 1 952.81 1113.2  
## - DistanceFromHome:JobSatisfaction 1 953.00 1113.5  
## - DistanceFromHome:OverTime 1 955.19 1115.6  
## - YearsSinceLastPromotion:JobSatisfaction 1 957.67 1118.1  
## - logMonthlyIncome:OverTime 1 958.21 1118.7  
## <none> 951.09 1118.8  
## - logMonthlyIncome:YearsWithCurrManager 1 961.14 1121.6  
## - factor(EnvironmentSatisfaction) 3 990.23 1136.1  
## - factor(MaritalStatus) 2 994.73 1147.9  
##   
## Step: AIC=1112.81  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + DistanceFromHome:YearsSinceLastPromotion +   
## DistanceFromHome:JobInvolvement + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobInvolvement +   
## YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - DistanceFromHome:YearsSinceLastPromotion 1 953.90 1107.1  
## - YearsSinceLastPromotion:JobInvolvement 1 954.09 1107.2  
## - DistanceFromHome:JobInvolvement 1 954.09 1107.2  
## - DistanceFromHome:JobSatisfaction 1 954.24 1107.4  
## - DistanceFromHome:OverTime 1 956.80 1110.0  
## - YearsSinceLastPromotion:JobSatisfaction 1 959.23 1112.4  
## - logMonthlyIncome:OverTime 1 959.39 1112.5  
## <none> 952.36 1112.8  
## - RelationshipSatisfaction 1 961.29 1114.5  
## - logMonthlyIncome:YearsWithCurrManager 1 963.11 1116.3  
## - factor(EnvironmentSatisfaction) 3 992.03 1130.6  
## - factor(MaritalStatus) 2 996.50 1142.4  
##   
## Step: AIC=1107.06  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobInvolvement + YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - YearsSinceLastPromotion:JobInvolvement 1 955.27 1101.1  
## - DistanceFromHome:JobInvolvement 1 955.42 1101.3  
## - DistanceFromHome:JobSatisfaction 1 956.17 1102.0  
## - DistanceFromHome:OverTime 1 958.23 1104.1  
## - YearsSinceLastPromotion:JobSatisfaction 1 960.64 1106.5  
## - logMonthlyIncome:OverTime 1 961.19 1107.0  
## <none> 953.90 1107.1  
## - RelationshipSatisfaction 1 962.65 1108.5  
## - logMonthlyIncome:YearsWithCurrManager 1 964.74 1110.6  
## - factor(EnvironmentSatisfaction) 3 993.52 1124.8  
## - factor(MaritalStatus) 2 997.43 1136.0  
##   
## Step: AIC=1101.13  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + DistanceFromHome:JobInvolvement +   
## DistanceFromHome:JobSatisfaction + DistanceFromHome:OverTime +   
## YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - DistanceFromHome:JobInvolvement 1 956.76 1095.3  
## - DistanceFromHome:JobSatisfaction 1 957.53 1096.1  
## - DistanceFromHome:OverTime 1 959.62 1098.2  
## - YearsSinceLastPromotion:JobSatisfaction 1 961.24 1099.8  
## - logMonthlyIncome:OverTime 1 962.47 1101.0  
## <none> 955.27 1101.1  
## - RelationshipSatisfaction 1 964.12 1102.7  
## - logMonthlyIncome:YearsWithCurrManager 1 965.89 1104.5  
## - factor(EnvironmentSatisfaction) 3 995.08 1119.1  
## - factor(MaritalStatus) 2 998.24 1129.5  
##   
## Step: AIC=1095.33  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + DistanceFromHome:JobSatisfaction +   
## DistanceFromHome:OverTime + YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - DistanceFromHome:JobSatisfaction 1 958.99 1090.3  
## - DistanceFromHome:OverTime 1 962.30 1093.6  
## - YearsSinceLastPromotion:JobSatisfaction 1 962.60 1093.9  
## - logMonthlyIncome:OverTime 1 963.63 1094.9  
## <none> 956.76 1095.3  
## - RelationshipSatisfaction 1 965.43 1096.7  
## - logMonthlyIncome:YearsWithCurrManager 1 967.30 1098.6  
## - JobInvolvement 1 976.39 1107.7  
## - factor(EnvironmentSatisfaction) 3 996.70 1113.4  
## - factor(MaritalStatus) 2 999.66 1123.6  
##   
## Step: AIC=1090.26  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + DistanceFromHome:OverTime + YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - DistanceFromHome:OverTime 1 963.76 1087.7  
## - YearsSinceLastPromotion:JobSatisfaction 1 964.71 1088.7  
## - logMonthlyIncome:OverTime 1 965.75 1089.7  
## <none> 958.99 1090.3  
## - RelationshipSatisfaction 1 967.67 1091.7  
## - logMonthlyIncome:YearsWithCurrManager 1 969.52 1093.5  
## - JobInvolvement 1 979.42 1103.4  
## - factor(EnvironmentSatisfaction) 3 998.38 1107.8  
## - factor(MaritalStatus) 2 1001.95 1118.6  
##   
## Step: AIC=1087.74  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager +   
## logMonthlyIncome:OverTime + YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - logMonthlyIncome:OverTime 1 969.17 1085.9  
## - YearsSinceLastPromotion:JobSatisfaction 1 969.65 1086.3  
## <none> 963.76 1087.7  
## - RelationshipSatisfaction 1 972.11 1088.8  
## - logMonthlyIncome:YearsWithCurrManager 1 973.94 1090.6  
## - DistanceFromHome 1 978.02 1094.7  
## - JobInvolvement 1 982.91 1099.6  
## - factor(EnvironmentSatisfaction) 3 1002.15 1104.3  
## - factor(MaritalStatus) 2 1005.85 1115.2  
##   
## Step: AIC=1085.86  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager +   
## YearsSinceLastPromotion:JobSatisfaction  
##   
## Df Deviance AIC  
## - YearsSinceLastPromotion:JobSatisfaction 1 974.73 1084.1  
## <none> 969.17 1085.9  
## - RelationshipSatisfaction 1 977.57 1087.0  
## - logMonthlyIncome:YearsWithCurrManager 1 977.87 1087.3  
## - DistanceFromHome 1 982.85 1092.2  
## - JobInvolvement 1 988.82 1098.2  
## - factor(EnvironmentSatisfaction) 3 1007.80 1102.6  
## - factor(MaritalStatus) 2 1010.39 1112.5  
## - OverTime 1 1079.85 1189.2  
##   
## Step: AIC=1084.13  
## Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager  
##   
## Df Deviance AIC  
## <none> 974.73 1084.1  
## - logMonthlyIncome:YearsWithCurrManager 1 982.98 1085.1  
## - RelationshipSatisfaction 1 983.56 1085.7  
## - DistanceFromHome 1 988.71 1090.8  
## - YearsSinceLastPromotion 1 989.73 1091.8  
## - JobInvolvement 1 994.57 1096.7  
## - factor(EnvironmentSatisfaction) 3 1012.25 1099.8  
## - JobSatisfaction 1 998.27 1100.4  
## - factor(MaritalStatus) 2 1016.32 1111.1  
## - OverTime 1 1083.60 1185.7

summary(m2.int.step)

##   
## Call:  
## glm(formula = Attrition ~ factor(EnvironmentSatisfaction) + factor(MaritalStatus) +   
## logMonthlyIncome + RelationshipSatisfaction + DistanceFromHome +   
## YearsSinceLastPromotion + JobInvolvement + JobSatisfaction +   
## YearsWithCurrManager + OverTime + logMonthlyIncome:YearsWithCurrManager,   
## family = binomial)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -1.6508 -0.5464 -0.3271 -0.1718 3.0478   
##   
## Coefficients:  
## Estimate Std. Error z value  
## (Intercept) 12.034337 1.703692 7.064  
## factor(EnvironmentSatisfaction)2 -1.096091 0.252809 -4.336  
## factor(EnvironmentSatisfaction)3 -1.144800 0.227853 -5.024  
## factor(EnvironmentSatisfaction)4 -1.300197 0.232821 -5.585  
## factor(MaritalStatus)1 1.316420 0.240905 5.464  
## factor(MaritalStatus)2 0.385806 0.240730 1.603  
## logMonthlyIncome -3.105153 0.451285 -6.881  
## RelationshipSatisfaction -0.224652 0.075719 -2.967  
## DistanceFromHome 0.036785 0.009757 3.770  
## YearsSinceLastPromotion 0.132242 0.033526 3.944  
## JobInvolvement -0.502683 0.113282 -4.437  
## JobSatisfaction -0.359112 0.074685 -4.808  
## YearsWithCurrManager -1.105624 0.327526 -3.376  
## OverTime 1.768216 0.175230 10.091  
## logMonthlyIncome:YearsWithCurrManager 0.254230 0.086718 2.932  
## Pr(>|z|)   
## (Intercept) 1.62e-12 \*\*\*  
## factor(EnvironmentSatisfaction)2 1.45e-05 \*\*\*  
## factor(EnvironmentSatisfaction)3 5.05e-07 \*\*\*  
## factor(EnvironmentSatisfaction)4 2.34e-08 \*\*\*  
## factor(MaritalStatus)1 4.64e-08 \*\*\*  
## factor(MaritalStatus)2 0.109012   
## logMonthlyIncome 5.96e-12 \*\*\*  
## RelationshipSatisfaction 0.003008 \*\*   
## DistanceFromHome 0.000163 \*\*\*  
## YearsSinceLastPromotion 8.00e-05 \*\*\*  
## JobInvolvement 9.10e-06 \*\*\*  
## JobSatisfaction 1.52e-06 \*\*\*  
## YearsWithCurrManager 0.000736 \*\*\*  
## OverTime < 2e-16 \*\*\*  
## logMonthlyIncome:YearsWithCurrManager 0.003371 \*\*   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for binomial family taken to be 1)  
##   
## Null deviance: 1298.58 on 1469 degrees of freedom  
## Residual deviance: 974.73 on 1455 degrees of freedom  
## AIC: 1004.7  
##   
## Number of Fisher Scoring iterations: 6

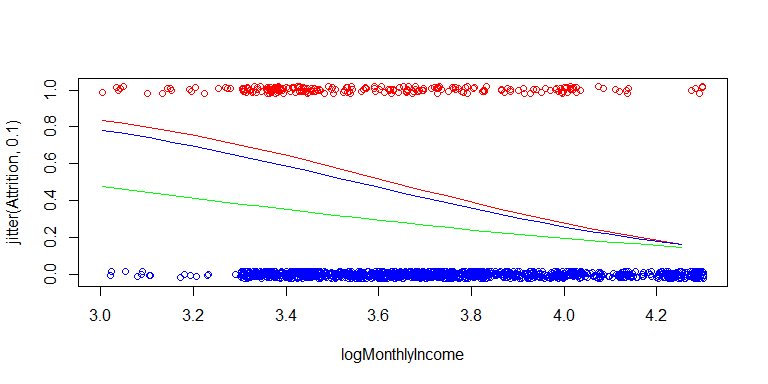
This seems to be our best and final model, the stepwise backward elimination seems added one interaction only to our model, which is "logMonthlyIncome:YearsWithCurrManager" and nothing was found removed. The significant levels of all the variables is the same except for "RelationshipSatisfaction" and "logMonthlyIncome:YearsWithCurrManager", showing that the predictors are not highly collinear.

The EnvironmentSatisfaction, logMonthlyIncome and OverTime predictors appear to have the highest magnitude in their Z-values. We will consider those three predictors our most important.

This is the model with the second-best AIC score so far. AIC=1004.7. Although all of its variables are significant.

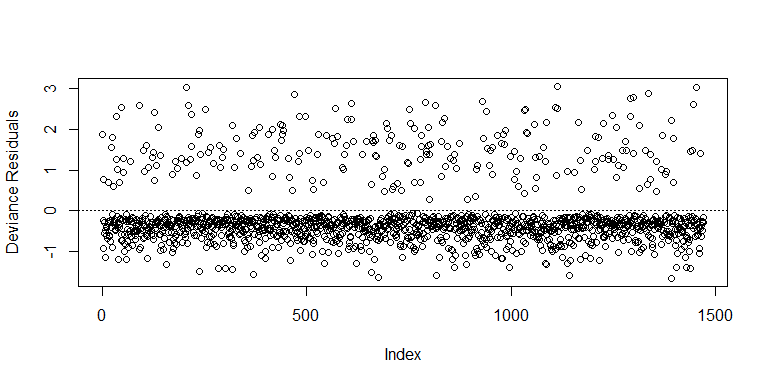
# Model Diagnostics

salseq = seq (min(logMonthlyIncome), max(logMonthlyIncome), by=.05)  
fitprob0 = predict (m2.int.step, data.frame (logMonthlyIncome=salseq, EnvironmentSatisfaction = 3, MaritalStatus= 1, RelationshipSatisfaction = mean(RelationshipSatisfaction), DistanceFromHome = mean(DistanceFromHome), YearsSinceLastPromotion = mean(YearsSinceLastPromotion), JobInvolvement = mean(JobInvolvement), JobSatisfaction = mean(JobSatisfaction), YearsWithCurrManager = 2, OverTime = 1), type='response')  
  
fitprob1 = predict (m2.int.step, data.frame (logMonthlyIncome=salseq, EnvironmentSatisfaction = 3, MaritalStatus= 1, RelationshipSatisfaction = mean(RelationshipSatisfaction), DistanceFromHome = mean(DistanceFromHome), YearsSinceLastPromotion = mean(YearsSinceLastPromotion), JobInvolvement = mean(JobInvolvement), JobSatisfaction = mean(JobSatisfaction), YearsWithCurrManager = 3, OverTime = 1), type='response')  
  
fitprob2 = predict (m2.int.step, data.frame (logMonthlyIncome=salseq, EnvironmentSatisfaction = 3, MaritalStatus= 1, RelationshipSatisfaction = mean(RelationshipSatisfaction), DistanceFromHome = mean(DistanceFromHome), YearsSinceLastPromotion = mean(YearsSinceLastPromotion), JobInvolvement = mean(JobInvolvement), JobSatisfaction = mean(JobSatisfaction), YearsWithCurrManager = 7, OverTime = 1), type='response')  
  
plot(logMonthlyIncome, jitter(Attrition, .1), col=ifelse  
(Attrition==0, "blue", "red"))  
lines (salseq, fitprob0, col='red')  
lines (salseq, fitprob1, col='blue')  
lines (salseq, fitprob2, col='green')

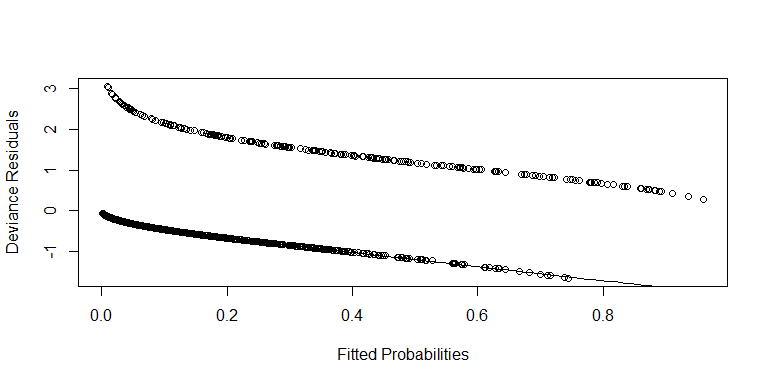


The plot above suggests that as logMonthlyIncome gets larger and YearsWithCurrManager gets larger, the likelihood of staying at IBM increases.

plot(residuals(m2.int.step), ylab = 'Deviance Residuals')  
abline(h=0, lty=3)



plot(m2.int.step$fitted.values, residuals(m2.int.step), ylab= 'Deviance Residuals', xlab= 'Fitted Probabilities')  
lines(lowess(m2.int.step$fitted.values, residuals(m2.int.step)))



The plot of residuals vs. index (data order) shows that there are a lot more observations below 0. The plot of deviance residuals vs. fitted probabilities suggests that we have a good model but maybe not the best, since the Lowess fit is close to a horizontal line at Y=0 but goes down to -1.

pchisq(deviance(ibm.logit), df.residual(ibm.logit), lower=F)

## [1] 1

pchisq(deviance(m2.int.step), df.residual(m2.int.step), lower=F)

## [1] 1

No significant lack of fit in either the first model or the final model (p > 0.05).

pchisq(ibm.logit$null.deviance - ibm.logit$deviance,  
 ibm.logit$df.null - ibm.logit$df.residual, lower=F)

## [1] 4.83768e-59

pchisq(m2.int.step$null.deviance - m2.int.step$deviance,  
 m2.int.step$df.null - m2.int.step$df.residual, lower=F)

## [1] 1.234753e-60

Both the first model and best model have significant effects on Attrition status (p< 0.05).

##### ROC Curve on model 2 without interactions.

library(ROCR)

## Loading required package: gplots

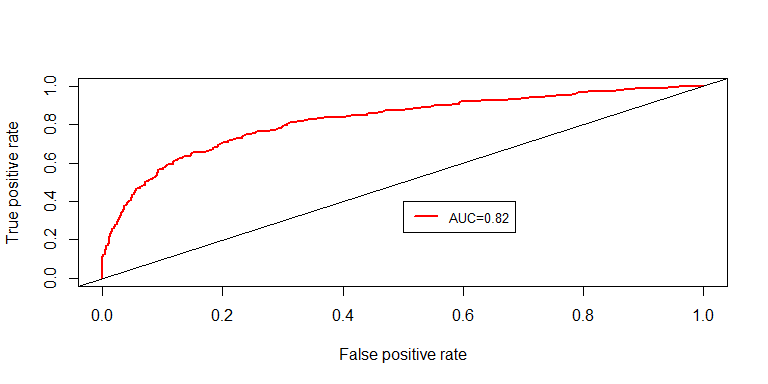
##   
## Attaching package: 'gplots'

## The following object is masked from 'package:stats':  
##   
## lowess

pred1 <- prediction(m2$fitted.values, m2$y)  
perf1 <- performance(pred1, "tpr", "fpr")  
auc1 <- performance(pred1,"auc")@y.values[[1]]  
auc1

## [1] 0.8214673

plot(perf1,lwd=2,col=2)  
abline(0,1)  
legend(0.5,0.4, c(paste("AUC=", round(auc1,2),sep = "")), cex=0.8,lwd=2, col=2)



roc.table = cbind.data.frame(pred1@tn, pred1@fn, pred1@fp, pred1@tp,  
 pred1@cutoffs)  
names (roc.table) = c("TrueNeg", "FalseNeg", "FalsePos", "TruePos", "Cutoff")  
attach (roc.table)  
roc.table$sensitivity = TruePos / (TruePos + FalseNeg) # True positive rate  
roc.table$specificity = TrueNeg / (TrueNeg + FalsePos) # 1 - False pos rate  
roc.table$FalsePosRate = 1 - roc.table$specificity  
roc.table$PctCorrect = (TruePos + TrueNeg) /  
 (TruePos + TrueNeg + FalsePos + FalseNeg)

roc.table[max(roc.table$PctCorrect) == roc.table$PctCorrect,]

## TrueNeg FalseNeg FalsePos TruePos Cutoff sensitivity specificity  
## 379 1188 147 45 90 0.4340045 0.3797468 0.9635036  
## FalsePosRate PctCorrect  
## 379 0.03649635 0.8693878

roc.table$distance = sqrt((roc.table$sensitivity-1)^2 + (roc.table$specificity -1)^2)  
  
roc.table[which.min(roc.table$distance),]

## TrueNeg FalseNeg FalsePos TruePos Cutoff sensitivity specificity  
## 406 941 59 292 178 0.1744586 0.7510549 0.7631792  
## FalsePosRate PctCorrect distance  
## 406 0.2368208 0.7612245 0.3435953

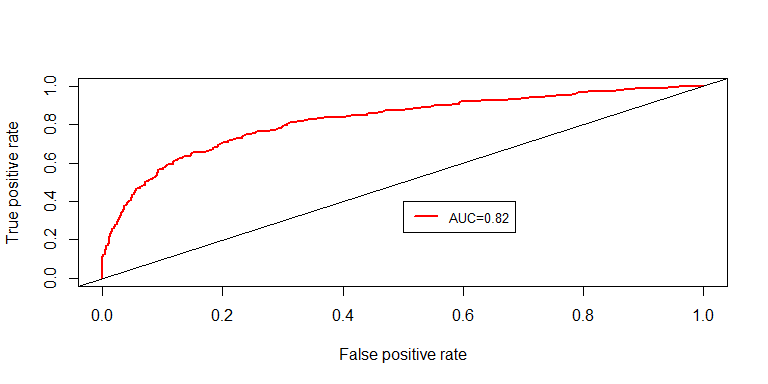
The ROC curve suggests the predictive ability of this model is better than random guessing, since the AUC is larger than 0.5. By examining the x, y, and alpha.value vectors in the object, perf1, the optimal cutoff for classification is a fitted probability of 0.17, having a false positive rate of 0.75, and a true positive rate of 0.76.

##### ROC Curve on best model.

pred2 <- prediction(m2.int.step$fitted.values, m2.int.step$y)  
perf2 <- performance(pred2, "tpr", "fpr")  
auc2 <- performance(pred2,"auc")@y.values[[1]]  
auc2

## [1] 0.8233358

plot(perf1,lwd=2,col=2)  
abline(0,1)  
legend(0.5,0.4, c(paste("AUC=", round(auc2,2),sep = "")), cex=0.8,lwd=2, col=2)



roc.table = cbind.data.frame(pred2@tn, pred2@fn, pred2@fp, pred2@tp,  
 pred2@cutoffs)  
names (roc.table) = c("TrueNeg", "FalseNeg", "FalsePos", "TruePos", "Cutoff")  
attach (roc.table)

## The following objects are masked from roc.table (pos = 3):  
##   
## Cutoff, FalseNeg, FalsePos, TrueNeg, TruePos

roc.table$sensitivity = TruePos / (TruePos + FalseNeg) # True positive rate  
roc.table$specificity = TrueNeg / (TrueNeg + FalsePos) # 1 - False pos rate  
roc.table$FalsePosRate = 1 - roc.table$specificity  
roc.table$PctCorrect = (TruePos + TrueNeg) /  
 (TruePos + TrueNeg + FalsePos + FalseNeg)

Sensitivity is the probability of the model correctly predicting someone is leaving. Specificity is the probability of correctly predicting someone is not leaving.

roc.table[max(roc.table$PctCorrect) == roc.table$PctCorrect,]

## TrueNeg FalseNeg FalsePos TruePos Cutoff sensitivity specificity  
## 123 1185 141 48 96 0.4283182 0.4050633 0.9610706  
## 1058 1184 140 49 97 0.4256009 0.4092827 0.9602595  
## FalsePosRate PctCorrect  
## 123 0.03892944 0.8714286  
## 1058 0.03974047 0.8714286

roc.table$distance = sqrt((roc.table$sensitivity-1)^2 + (roc.table$specificity -1)^2)  
  
roc.table[which.min(roc.table$distance),]

## TrueNeg FalseNeg FalsePos TruePos Cutoff sensitivity specificity  
## 529 940 58 293 179 0.1700843 0.7552743 0.7623682  
## FalsePosRate PctCorrect distance  
## 529 0.2376318 0.7612245 0.3411152

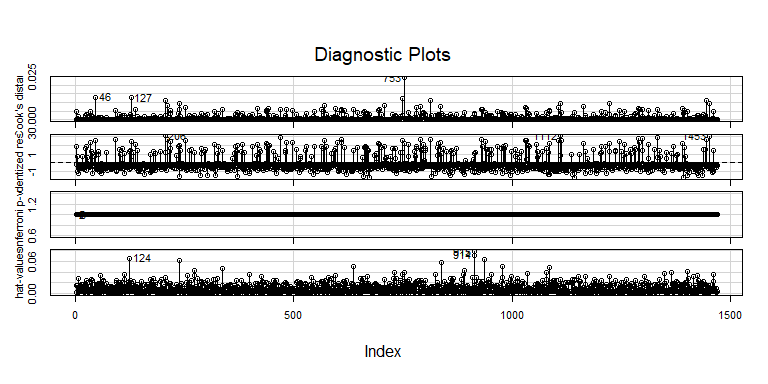
The ROC curve of our best model is very similar to our best model without interactions. The ROC curve suggests the predictive ability of this model is better than random guessing, since the AUC is larger than 0.5. By examining the x, y, and alpha.value vectors in the object, perf2, the optimal cutoff for classification is a fitted probability of 0.17, having a false positive rate of 0.75, and a true positive rate of 0.72.

# 

# Comment about high cooks distance row 753.  
library(car)

## Warning: package 'car' was built under R version 3.4.3

influenceIndexPlot(m2.int.step, id.n=3)



The diagnostics plot show that one point (number 753) is high in cooks distance which means that if it is above the cutoff leverage value we should take it out of the model and refit our model to see any improvements.

# Make a comment about each exp.  
exp(m2.int.step$coefficients)

## (Intercept)   
## 1.684403e+05   
## factor(EnvironmentSatisfaction)2   
## 3.341748e-01   
## factor(EnvironmentSatisfaction)3   
## 3.182875e-01   
## factor(EnvironmentSatisfaction)4   
## 2.724780e-01   
## factor(MaritalStatus)1   
## 3.730045e+00   
## factor(MaritalStatus)2   
## 1.470799e+00   
## logMonthlyIncome   
## 4.481766e-02   
## RelationshipSatisfaction   
## 7.987943e-01   
## DistanceFromHome   
## 1.037470e+00   
## YearsSinceLastPromotion   
## 1.141385e+00   
## JobInvolvement   
## 6.049057e-01   
## JobSatisfaction   
## 6.982964e-01   
## YearsWithCurrManager   
## 3.310044e-01   
## OverTime   
## 5.860392e+00   
## logMonthlyIncome:YearsWithCurrManager   
## 1.289468e+00

The OddsRatios table above suggests that:

The odds of someone leaving IBM who has more logMonthly Income is 4% lower than the the odds of someone with less logMonthlyIncome.The odds of someone leaving IBM who has more YearsSinceLastPromotion is 40% higher than the odds of someone with less YearsSinceLastPromotion.The other variables are interpreted the same way. For categorical variables, they are being compared to the reference group. The odds of someone leavin IBM who is Married is 47% higher than someone that is divorced.