CaseStudy2

Alexy Morris

12/4/2021

```
## 
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
## 
##     filter, lag
```

```
## The following objects are masked from 'package:base':
## 
##     intersect, setdiff, setequal, union
```

```
## Rows: 870 Columns: 36
```

```
## -- Column specification -----------------------------------------------------
## Delimiter: ","
## chr  (9): Attrition, BusinessTravel, Department, EducationField, Gender, Job...
## dbl (27): ID, Age, DailyRate, DistanceFromHome, Education, EmployeeCount, Em...
```

```
## 
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
## # A tibble: 6 x 22
##   Attrition BusinessTravel DailyRate DistanceFromHome EnvironmentSatisfaction
##       <dbl>          <dbl>     <dbl>            <dbl>                   <dbl>
## 1         1              1       117               13                       2
## 2         1              1      1308               14                       3
## 3         1              2       200               18                       3
## 4         1              1       801                1                       3
## 5         1              2       567                2                       1
## 6         1              2       294               10                       4
## # ... with 17 more variables: HourlyRate <dbl>, JobInvolvement <dbl>,
## #   JobSatisfaction <dbl>, MonthlyIncome <dbl>, MonthlyRate <dbl>,
## #   NumCompaniesWorked <dbl>, PercentSalaryHike <dbl>, PerformanceRating <dbl>,
## #   RelationshipSatisfaction <dbl>, StockOptionLevel <dbl>,
## #   TotalWorkingYears <dbl>, TrainingTimesLastYear <dbl>,
## #   WorkLifeBalance <dbl>, YearsAtCompany <dbl>, YearsInCurrentRole <dbl>,
## #   YearsSinceLastPromotion <dbl>, YearsWithCurrManager <dbl>
```

```
## Warning: package 'olsrr' was built under R version 4.1.2
```

```
##
## Attaching package: 'olsrr'
```

```
## The following object is masked from 'package:datasets':
##
##      rivers
```

```
## Backward Elimination Method
## -------------------------
##
## Candidate Terms:
##
## 1 . BusinessTravel
## 2 . DailyRate
## 3 . DistanceFromHome
## 4 . EnvironmentSatisfaction
## 5 . HourlyRate
## 6 . JobInvolvement
## 7 . JobSatisfaction
## 8 . MonthlyIncome
## 9 . MonthlyRate
## 10 . NumCompaniesWorked
## 11 . PercentSalaryHike
## 12 . PerformanceRating
## 13 . RelationshipSatisfaction
## 14 . StockOptionLevel
## 15 . TotalWorkingYears
## 16 . TrainingTimesLastYear
## 17 . WorkLifeBalance
## 18 . YearsAtCompany
## 19 . YearsInCurrentRole
## 20 . YearsSinceLastPromotion
## 21 . YearsWithCurrManager
##
## We are eliminating variables based on p value...
##
## - PerformanceRating
##
## Backward Elimination: Step 1
##
##   Variable PerformanceRating Removed
##
##                       Model Summary
## -----------------------------------------------------------------
## R                    0.415       RMSE              0.338
## R-Squared            0.172       Coef. Var         40.337
## Adj. R-Squared       0.153       MSE               0.115
## Pred R-Squared       0.129       MAE               0.247
## -----------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                           ANOVA
## ---------------------------------------------------------------------
##              Sum of
##              Squares       DF    Mean Square     F       Sig.
## ---------------------------------------------------------------------
## Regression    20.213       20         1.011    8.822    0.0000
```

```
## Residual       97.259      849        0.115
## Total         117.471      869
## -----------------------------------------------------------------
##
##                            Parameter Estimates
## ------------------------------------------------------------------------------------
## --------
##                   model      Beta    Std. Error    Std. Beta      t       Sig      lower
## upper
## ------------------------------------------------------------------------------------
## --------
##            (Intercept)      0.192      0.114                    1.686    0.092    -0.032
## 0.416
##           BusinessTravel   -0.072      0.022       -0.104      -3.295    0.001    -0.114
## -0.029
##              DailyRate      0.000      0.000        0.022       0.690    0.491     0.000
## 0.000
##          DistanceFromHome  -0.004      0.001       -0.096      -3.045    0.002    -0.007
## -0.002
## EnvironmentSatisfaction    0.024      0.011        0.072       2.280    0.023     0.003
## 0.045
##             HourlyRate     -0.001      0.001       -0.038      -1.190    0.234    -0.002
## 0.000
##          JobInvolvement     0.095      0.017        0.182       5.751    0.000     0.063
## 0.128
##          JobSatisfaction    0.043      0.010        0.129       4.062    0.000     0.022
## 0.063
##          MonthlyIncome      0.000      0.000        0.037       0.727    0.468     0.000
## 0.000
##            MonthlyRate      0.000      0.000        0.028       0.877    0.381     0.000
## 0.000
##       NumCompaniesWorked   -0.019      0.005       -0.131      -3.642    0.000    -0.029
## -0.009
##          PercentSalaryHike -0.001      0.003       -0.012      -0.376    0.707    -0.007
## 0.005
## RelationshipSatisfaction   0.022      0.011        0.067       2.122    0.034     0.002
## 0.043
##          StockOptionLevel   0.055      0.014        0.127       4.013    0.000     0.028
## 0.081
##          TotalWorkingYears  0.011      0.003        0.224       3.627    0.000     0.005
## 0.017
##     TrainingTimesLastYear   0.020      0.009        0.068       2.163    0.031     0.002
## 0.038
##          WorkLifeBalance    0.037      0.016        0.072       2.284    0.023     0.005
## 0.069
##          YearsAtCompany    -0.007      0.004       -0.109      -1.556    0.120    -0.015
## 0.002
##        YearsInCurrentRole   0.010      0.005        0.097       1.835    0.067    -0.001
## 0.020
##   YearsSinceLastPromotion  -0.016      0.005       -0.142      -3.413    0.001    -0.026
## -0.007
##     YearsWithCurrManager    0.010      0.005        0.097       1.897    0.058     0.000
```

```
0.020
## ------------------------------------------------------------------------------------
--------
##
##
## - PercentSalaryHike
##
## Backward Elimination: Step 2
##
##   Variable PercentSalaryHike Removed
##
##                     Model Summary
## ----------------------------------------------------------------
## R                     0.415     RMSE              0.338
## R-Squared             0.172     Coef. Var        40.317
## Adj. R-Squared        0.153     MSE               0.114
## Pred R-Squared        0.131     MAE               0.247
## ----------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                         ANOVA
## ----------------------------------------------------------------------
##             Sum of
##             Squares      DF    Mean Square     F        Sig.
## ----------------------------------------------------------------------
## Regression   20.196      19        1.063     9.288     0.0000
## Residual     97.275     850        0.114
## Total       117.471     869
## ----------------------------------------------------------------------
##
##                             Parameter Estimates
## ------------------------------------------------------------------------------------
--------
##               model     Beta    Std. Error    Std. Beta      t       Sig      lower
upper
## ------------------------------------------------------------------------------------
--------
##         (Intercept)    0.174       0.103                   1.689    0.092    -0.028
0.376
##        BusinessTravel  -0.072      0.022       -0.104     -3.291    0.001    -0.114
-0.029
##           DailyRate     0.000      0.000        0.021      0.682    0.496     0.000
0.000
##       DistanceFromHome -0.004      0.001       -0.097     -3.072    0.002    -0.007
-0.002
## EnvironmentSatisfaction 0.024      0.011        0.072      2.281    0.023     0.003
0.045
##           HourlyRate   -0.001      0.001       -0.037     -1.182    0.237    -0.002
0.000
##        JobInvolvement   0.095      0.017        0.182      5.749    0.000     0.063
```

```
0.128
##         JobSatisfaction    0.043        0.010        0.129      4.061      0.000       0.022
0.063
##           MonthlyIncome    0.000        0.000        0.037      0.731      0.465       0.000
0.000
##             MonthlyRate    0.000        0.000        0.028      0.877      0.381       0.000
0.000
##      NumCompaniesWorked   -0.019        0.005       -0.131     -3.640      0.000      -0.029
-0.009
## RelationshipSatisfaction    0.023        0.011        0.067      2.142      0.032       0.002
0.043
##         StockOptionLevel    0.055        0.014        0.128      4.020      0.000       0.028
0.081
##        TotalWorkingYears    0.011        0.003        0.224      3.633      0.000       0.005
0.017
##     TrainingTimesLastYear    0.020        0.009        0.068      2.163      0.031       0.002
0.038
##          WorkLifeBalance    0.037        0.016        0.072      2.282      0.023       0.005
0.069
##           YearsAtCompany   -0.007        0.004       -0.109     -1.553      0.121      -0.015
0.002
##        YearsInCurrentRole    0.010        0.005        0.096      1.823      0.069      -0.001
0.020
##   YearsSinceLastPromotion   -0.016        0.005       -0.141     -3.401      0.001      -0.026
-0.007
##       YearsWithCurrManager    0.010        0.005        0.097      1.905      0.057       0.000
0.020
## -----------------------------------------------------------------------------------------
--------
##
##
## - DailyRate
##
## Backward Elimination: Step 3
##
##   Variable DailyRate Removed
##
##                     Model Summary
## -----------------------------------------------------------------
## R                       0.414        RMSE                0.338
## R-Squared               0.171        Coef. Var          40.304
## Adj. R-Squared          0.154        MSE                 0.114
## Pred R-Squared          0.132        MAE                 0.247
## -----------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                              ANOVA
## ----------------------------------------------------------------------
##               Sum of
##              Squares         DF    Mean Square      F         Sig.
```

```
## -----------------------------------------------------------------
## Regression     20.143        18          1.119   9.785    0.0000
## Residual       97.328        851         0.114
## Total          117.471       869
## -----------------------------------------------------------------
##
##                              Parameter Estimates
## ---------------------------------------------------------------------------------
--------
##                     model    Beta    Std. Error   Std. Beta     t      Sig     lower
upper
## ---------------------------------------------------------------------------------
--------
##             (Intercept)     0.189       0.101                  1.872   0.062   -0.009
0.386
##            BusinessTravel  -0.072       0.022      -0.105     -3.323   0.001   -0.115
-0.030
##           DistanceFromHome -0.004       0.001      -0.097     -3.066   0.002   -0.007
-0.002
##  EnvironmentSatisfaction    0.024       0.011       0.072      2.275   0.023    0.003
0.045
##              HourlyRate    -0.001       0.001      -0.036     -1.154   0.249   -0.002
0.000
##           JobInvolvement    0.096       0.017       0.183      5.795   0.000    0.063
0.128
##           JobSatisfaction   0.043       0.010       0.129      4.070   0.000    0.022
0.063
##            MonthlyIncome    0.000       0.000       0.037      0.739   0.460    0.000
0.000
##              MonthlyRate    0.000       0.000       0.027      0.857   0.391    0.000
0.000
##        NumCompaniesWorked  -0.019       0.005      -0.130     -3.616   0.000   -0.029
-0.009
## RelationshipSatisfaction    0.023       0.010       0.068      2.153   0.032    0.002
0.043
##           StockOptionLevel  0.055       0.014       0.128      4.028   0.000    0.028
0.081
##          TotalWorkingYears  0.011       0.003       0.224      3.631   0.000    0.005
0.017
##       TrainingTimesLastYear 0.020       0.009       0.068      2.161   0.031    0.002
0.038
##           WorkLifeBalance   0.037       0.016       0.071      2.262   0.024    0.005
0.069
##            YearsAtCompany  -0.007       0.004      -0.110     -1.568   0.117   -0.015
0.002
##          YearsInCurrentRole 0.010       0.005       0.098      1.861   0.063   -0.001
0.020
##  YearsSinceLastPromotion   -0.016       0.005      -0.142     -3.439   0.001   -0.026
-0.007
##      YearsWithCurrManager   0.010       0.005       0.097      1.899   0.058    0.000
0.020
## ---------------------------------------------------------------------------------
```

```
## --------
## 
## 
## - MonthlyIncome
## 
## Backward Elimination: Step 4
## 
##   Variable MonthlyIncome Removed
## 
##                        Model Summary
## -----------------------------------------------------------------
## R                      0.413       RMSE                0.338
## R-Squared              0.171       Coef. Var           40.293
## Adj. R-Squared         0.154       MSE                 0.114
## Pred R-Squared         0.134       MAE                 0.247
## -----------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
## 
##                              ANOVA
## --------------------------------------------------------------------
##              Sum of
##              Squares      DF    Mean Square      F        Sig.
## --------------------------------------------------------------------
## Regression    20.081      17       1.181      10.334    0.0000
## Residual      97.390      852      0.114
## Total        117.471      869
## --------------------------------------------------------------------
## 
##                           Parameter Estimates
## ----------------------------------------------------------------------------------------
## --------
##                  model      Beta    Std. Error    Std. Beta     t      Sig      lower
## upper
## ----------------------------------------------------------------------------------------
## --------
##             (Intercept)    0.194       0.100                   1.927   0.054    -0.004
## 0.391
##           BusinessTravel  -0.073       0.022      -0.106      -3.351   0.001    -0.115
## -0.030
##          DistanceFromHome -0.004       0.001      -0.097      -3.084   0.002    -0.007
## -0.002
##   EnvironmentSatisfaction  0.024       0.011       0.072       2.272   0.023     0.003
## 0.045
##               HourlyRate  -0.001       0.001      -0.037      -1.180   0.238    -0.002
## 0.000
##           JobInvolvement   0.096       0.017       0.184       5.815   0.000     0.064
## 0.128
##           JobSatisfaction  0.042       0.010       0.128       4.050   0.000     0.022
## 0.063
##               MonthlyRate   0.000       0.000       0.028       0.880   0.379     0.000
```

```
0.000
##       NumCompaniesWorked    -0.019        0.005        -0.132    -3.698    0.000    -0.030
-0.009
## RelationshipSatisfaction     0.023        0.010         0.068     2.172    0.030     0.002
0.043
##          StockOptionLevel     0.055        0.014         0.128     4.024    0.000     0.028
0.081
##          TotalWorkingYears     0.012        0.002         0.255     5.520    0.000     0.008
0.017
##     TrainingTimesLastYear     0.020        0.009         0.068     2.147    0.032     0.002
0.037
##          WorkLifeBalance      0.037        0.016         0.072     2.273    0.023     0.005
0.069
##          YearsAtCompany      -0.007        0.004        -0.107    -1.540    0.124    -0.015
0.002
##       YearsInCurrentRole     0.010        0.005         0.098     1.851    0.064    -0.001
0.020
##  YearsSinceLastPromotion    -0.017        0.005        -0.144    -3.490    0.001    -0.026
-0.007
##     YearsWithCurrManager     0.010        0.005         0.094     1.858    0.064    -0.001
0.020
## ----------------------------------------------------------------------------------------
--------
##
##
## - MonthlyRate
##
## Backward Elimination: Step 5
##
##   Variable MonthlyRate Removed
##
##
##                      Model Summary
## ---------------------------------------------------------------
## R                       0.413       RMSE                 0.338
## R-Squared               0.170       Coef. Var           40.288
## Adj. R-Squared          0.155       MSE                  0.114
## Pred R-Squared          0.135       MAE                  0.247
## ---------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##
##                          ANOVA
## ----------------------------------------------------------------------
##            Sum of
##            Squares       DF    Mean Square      F         Sig.
## ----------------------------------------------------------------------
## Regression   19.992       16        1.250    10.934     0.0000
## Residual     97.479      853        0.114
## Total       117.471      869
## ----------------------------------------------------------------------
##
```

```
##                          Parameter Estimates
## -----------------------------------------------------------------------------
--------
##                 model      Beta    Std. Error   Std. Beta      t       Sig      lower
upper
## -----------------------------------------------------------------------------
--------
##              (Intercept)   0.214      0.098                  2.185    0.029    0.022
0.406
##            BusinessTravel  -0.073     0.022      -0.106     -3.381    0.001   -0.116
-0.031
##           DistanceFromHome -0.004     0.001      -0.097     -3.090    0.002   -0.007
-0.002
##  EnvironmentSatisfaction   0.024      0.011       0.073      2.328    0.020    0.004
0.045
##               HourlyRate   -0.001     0.001      -0.038     -1.188    0.235   -0.002
0.000
##            JobInvolvement   0.096      0.016       0.183      5.802    0.000    0.063
0.128
##            JobSatisfaction  0.043      0.010       0.129      4.085    0.000    0.022
0.063
##         NumCompaniesWorked  -0.019     0.005      -0.133     -3.727    0.000   -0.030
-0.009
## RelationshipSatisfaction   0.023      0.010       0.068      2.157    0.031    0.002
0.043
##           StockOptionLevel  0.054      0.014       0.126      3.990    0.000    0.028
0.081
##           TotalWorkingYears 0.013      0.002       0.259      5.634    0.000    0.008
0.017
##       TrainingTimesLastYear 0.020      0.009       0.068      2.148    0.032    0.002
0.037
##            WorkLifeBalance  0.037      0.016       0.072      2.272    0.023    0.005
0.069
##             YearsAtCompany  -0.007     0.004      -0.113     -1.619    0.106   -0.015
0.001
##          YearsInCurrentRole  0.010     0.005       0.101      1.917    0.056    0.000
0.021
##   YearsSinceLastPromotion   -0.017     0.005      -0.144     -3.479    0.001   -0.026
-0.007
##       YearsWithCurrManager  0.010      0.005       0.093      1.837    0.067   -0.001
0.020
## -----------------------------------------------------------------------------
--------
##
##
## - HourlyRate
##
## Backward Elimination: Step 6
##
##   Variable HourlyRate Removed
##
##                     Model Summary
```

```
## -----------------------------------------------------------
## R                        0.411       RMSE               0.338
## R-Squared                0.169       Coef. Var         40.298
## Adj. R-Squared           0.154       MSE                0.114
## Pred R-Squared           0.135       MAE                0.247
## -----------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                            ANOVA
## ----------------------------------------------------------------------
##              Sum of
##              Squares       DF    Mean Square      F        Sig.
## ----------------------------------------------------------------------
## Regression    19.831       15        1.322     11.563    0.0000
## Residual      97.640      854        0.114
## Total        117.471      869
## ----------------------------------------------------------------------
##
##
##                        Parameter Estimates
## ------------------------------------------------------------------------------------
## --------
##                  model     Beta    Std. Error    Std. Beta      t       Sig      lower
## upper
## ------------------------------------------------------------------------------------
## --------
##             (Intercept)    0.170      0.091                    1.877    0.061    -0.008
## 0.348
##           BusinessTravel  -0.074      0.022       -0.108      -3.428    0.001    -0.117
## -0.032
##          DistanceFromHome -0.005      0.001       -0.100      -3.166    0.002    -0.007
## -0.002
##   EnvironmentSatisfaction  0.025      0.011        0.074       2.368    0.018     0.004
## 0.046
##           JobInvolvement   0.095      0.016        0.181       5.738    0.000     0.062
## 0.127
##           JobSatisfaction  0.044      0.010        0.133       4.200    0.000     0.023
## 0.064
##        NumCompaniesWorked -0.019      0.005       -0.133      -3.726    0.000    -0.030
## -0.009
## RelationshipSatisfaction   0.022      0.010        0.067       2.143    0.032     0.002
## 0.043
##          StockOptionLevel  0.053      0.014        0.124       3.925    0.000     0.027
## 0.080
##          TotalWorkingYears  0.013     0.002        0.257       5.606    0.000     0.008
## 0.017
##      TrainingTimesLastYear  0.020     0.009        0.068       2.141    0.033     0.002
## 0.037
##           WorkLifeBalance   0.038     0.016        0.073       2.306    0.021     0.006
## 0.070
##           YearsAtCompany   -0.007     0.004       -0.112      -1.615    0.107    -0.015
```

```
0.001
##       YearsInCurrentRole      0.010         0.005         0.101     1.925     0.055     0.000
0.021
##   YearsSinceLastPromotion    -0.017         0.005        -0.144    -3.487     0.001    -0.026
-0.007
##       YearsWithCurrManager    0.010         0.005         0.094     1.846     0.065    -0.001
0.020
## --------------------------------------------------------------------------------------------
--------
##
##
## - YearsAtCompany
##
## Backward Elimination: Step 7
##
##   Variable YearsAtCompany Removed
##
##                      Model Summary
## -----------------------------------------------------------------
## R                        0.408      RMSE                0.338
## R-Squared                0.166      Coef. Var          40.336
## Adj. R-Squared           0.153      MSE                 0.115
## Pred R-Squared           0.135      MAE                 0.247
## -----------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                              ANOVA
## ----------------------------------------------------------------------
##              Sum of
##              Squares       DF    Mean Square     F         Sig.
## ----------------------------------------------------------------------
## Regression    19.533       14        1.395     12.18     0.0000
## Residual      97.938      855        0.115
## Total        117.471      869
## ----------------------------------------------------------------------
##
##                          Parameter Estimates
## --------------------------------------------------------------------------------------------
--------
##                    model     Beta    Std. Error    Std. Beta      t       Sig      lower
upper
## --------------------------------------------------------------------------------------------
--------
##              (Intercept)    0.168       0.091                    1.850     0.065    -0.010
0.346
##             BusinessTravel  -0.074       0.022        -0.107    -3.404     0.001    -0.116
-0.031
##           DistanceFromHome  -0.004       0.001        -0.098    -3.106     0.002    -0.007
-0.002
##   EnvironmentSatisfaction   0.025       0.011         0.075     2.390     0.017     0.004
```

```
0.046
##            JobInvolvement      0.097          0.016          0.185      5.882      0.000      0.064
0.129
##            JobSatisfaction     0.042          0.010          0.129      4.083      0.000      0.022
0.063
##         NumCompaniesWorked    -0.017          0.005         -0.118     -3.415      0.001     -0.027
-0.007
## RelationshipSatisfaction      0.022          0.010          0.065      2.068      0.039      0.001
0.042
##            StockOptionLevel    0.054          0.014          0.125      3.963      0.000      0.027
0.080
##            TotalWorkingYears   0.011          0.002          0.222      5.487      0.000      0.007
0.015
##       TrainingTimesLastYear    0.018          0.009          0.064      2.022      0.044      0.001
0.036
##            WorkLifeBalance     0.038          0.016          0.074      2.342      0.019      0.006
0.070
##            YearsInCurrentRole  0.007          0.005          0.067      1.393      0.164     -0.003
0.016
##  YearsSinceLastPromotion     -0.019          0.005         -0.164     -4.147      0.000     -0.028
-0.010
##       YearsWithCurrManager     0.006          0.005          0.060      1.293      0.196     -0.003
0.016
## ------------------------------------------------------------------------------------------------
--------
##
##
## - YearsWithCurrManager
##
## Backward Elimination: Step 8
##
##   Variable YearsWithCurrManager Removed
##
##                        Model Summary
## -----------------------------------------------------------------
## R                       0.406       RMSE                0.339
## R-Squared               0.165       Coef. Var          40.352
## Adj. R-Squared          0.152       MSE                 0.115
## Pred R-Squared          0.135       MAE                 0.247
## -----------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                            ANOVA
## ----------------------------------------------------------------------
##            Sum of
##            Squares      DF    Mean Square      F        Sig.
## ----------------------------------------------------------------------
## Regression    19.341        13           1.488      12.978     0.0000
## Residual      98.130        856          0.115
## Total        117.471        869
```

```
## ----------------------------------------------------------------------
##
##                                   Parameter Estimates
## -------------------------------------------------------------------------------------
--------
##                   model      Beta    Std. Error    Std. Beta      t       Sig      lower
upper
## -------------------------------------------------------------------------------------
--------
##             (Intercept)     0.177       0.090                    1.961    0.050     0.000
0.355
##            BusinessTravel  -0.074       0.022       -0.108      -3.413    0.001    -0.117
-0.031
##          DistanceFromHome  -0.004       0.001       -0.099      -3.135    0.002    -0.007
-0.002
##   EnvironmentSatisfaction   0.025       0.011        0.073       2.335    0.020     0.004
0.045
##            JobInvolvement   0.097       0.016        0.186       5.903    0.000     0.065
0.129
##            JobSatisfaction  0.043       0.010        0.129       4.105    0.000     0.022
0.063
##         NumCompaniesWorked -0.018       0.005       -0.123      -3.607    0.000    -0.028
-0.008
## RelationshipSatisfaction   0.021       0.010        0.064       2.046    0.041     0.001
0.042
##           StockOptionLevel  0.053       0.014        0.125       3.941    0.000     0.027
0.080
##           TotalWorkingYears  0.011      0.002        0.232       5.823    0.000     0.008
0.015
##      TrainingTimesLastYear  0.019       0.009        0.065       2.059    0.040     0.001
0.037
##            WorkLifeBalance   0.037       0.016        0.072       2.285    0.023     0.005
0.069
##         YearsInCurrentRole   0.010       0.004        0.100       2.462    0.014     0.002
0.018
##   YearsSinceLastPromotion  -0.018       0.005       -0.156      -3.998    0.000    -0.027
-0.009
## -------------------------------------------------------------------------------------
--------
##
##
##
## No more variables satisfy the condition of p value = 0.05
##
##
## Variables Removed:
##
## - PerformanceRating
## - PercentSalaryHike
## - DailyRate
## - MonthlyIncome
## - MonthlyRate
```

```
## - HourlyRate
## - YearsAtCompany
## - YearsWithCurrManager
##
##
## Final Model Output
## ------------------
##
##                       Model Summary
## -----------------------------------------------------------------
## R                      0.406       RMSE              0.339
## R-Squared              0.165       Coef. Var        40.352
## Adj. R-Squared         0.152       MSE               0.115
## Pred R-Squared         0.135       MAE               0.247
## -----------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                             ANOVA
## ----------------------------------------------------------------------
##              Sum of
##              Squares       DF    Mean Square      F         Sig.
## ----------------------------------------------------------------------
## Regression    19.341       13        1.488      12.978    0.0000
## Residual      98.130      856        0.115
## Total        117.471      869
## ----------------------------------------------------------------------
##
##                              Parameter Estimates
## --------------------------------------------------------------------------------------
## --------
##                   model     Beta    Std. Error    Std. Beta     t       Sig      lower
## upper
## --------------------------------------------------------------------------------------
## --------
##           (Intercept)      0.177       0.090                   1.961    0.050     0.000
## 0.355
##          BusinessTravel   -0.074       0.022      -0.108      -3.413    0.001    -0.117
## -0.031
##         DistanceFromHome  -0.004       0.001      -0.099      -3.135    0.002    -0.007
## -0.002
##   EnvironmentSatisfaction  0.025       0.011       0.073       2.335    0.020     0.004
## 0.045
##          JobInvolvement    0.097       0.016       0.186       5.903    0.000     0.065
## 0.129
##          JobSatisfaction   0.043       0.010       0.129       4.105    0.000     0.022
## 0.063
##       NumCompaniesWorked  -0.018       0.005      -0.123      -3.607    0.000    -0.028
## -0.008
## RelationshipSatisfaction   0.021       0.010       0.064       2.046    0.041     0.001
## 0.042
```

```
##       StockOptionLevel     0.053        0.014       0.125      3.941     0.000      0.027
0.080
##       TotalWorkingYears    0.011        0.002       0.232      5.823     0.000      0.008
0.015
##    TrainingTimesLastYear   0.019        0.009       0.065      2.059     0.040      0.001
0.037
##         WorkLifeBalance    0.037        0.016       0.072      2.285     0.023      0.005
0.069
##       YearsInCurrentRole   0.010        0.004       0.100      2.462     0.014      0.002
0.018
##  YearsSinceLastPromotion  -0.018        0.005      -0.156     -3.998     0.000     -0.027
-0.009
## --------------------------------------------------------------------------------------
--------
```

```
##
##
##                              Elimination Summary
## ----------------------------------------------------------------------------
##         Variable                        Adj.
## Step     Removed       R-Square     R-Square     C(p)        AIC        RMSE
## ----------------------------------------------------------------------------
##   1    PerformanceRating    0.1721     0.1526    20.0008    606.6790    0.3385
##   2    PercentSalaryHike    0.1719     0.1534    18.1418    604.8237    0.3383
##   3    DailyRate            0.1715     0.1539    16.6052    603.2989    0.3382
##   4    MonthlyIncome        0.1709     0.1544    15.1498    601.8570    0.3381
##   5    MonthlyRate          0.1702     0.1546    13.9214    600.6472    0.3380
##   6    HourlyRate           0.1688     0.1542    13.3272    600.0850    0.3381
##   7    YearsAtCompany       0.1663     0.1526    13.9284    600.7392    0.3384
##   8    YearsWithCurrManager 0.1646      0.152    13.5993    600.4399    0.3386
## ----------------------------------------------------------------------------
```

```
## Warning: package 'coefplot' was built under R version 4.1.2
```
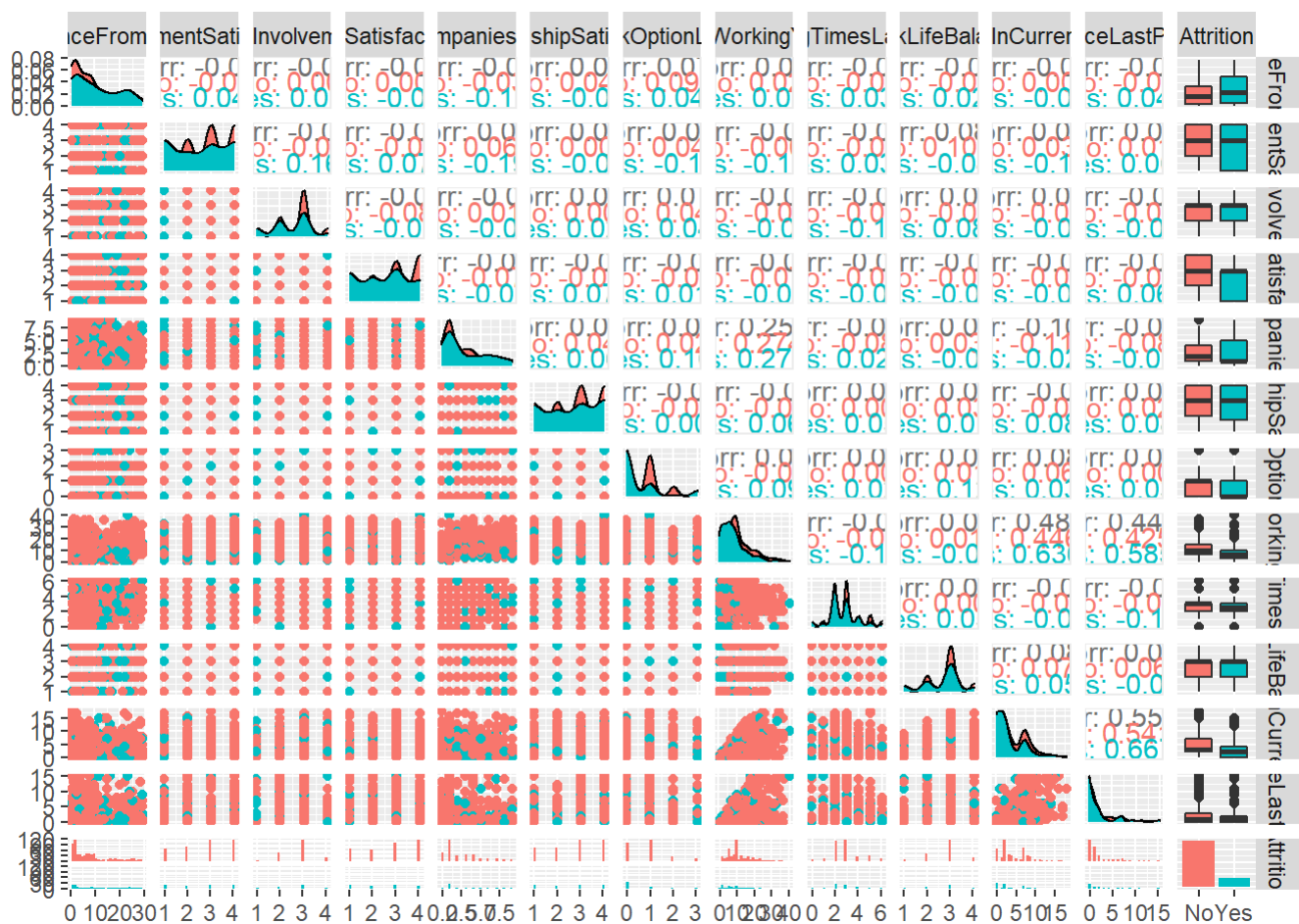
```
## Warning: It is deprecated to specify `guide = FALSE` to remove a guide. Please
## use `guide = "none"` instead.

## Warning: It is deprecated to specify `guide = FALSE` to remove a guide. Please
## use `guide = "none"` instead.

## Warning: It is deprecated to specify `guide = FALSE` to remove a guide. Please
## use `guide = "none"` instead.
```

Coefficient Plot


```
## Registered S3 method overwritten by 'GGally':
##   method from
##   +.gg   ggplot2
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

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

```
##
## Attaching package: 'e1071'
```

```
## The following object is masked from 'package:coefplot':
##
##     extractPath
```

```
## Rows: 300 Columns: 35
```

```
## -- Column specification ----------------------------------------------
## Delimiter: ","
## chr  (8): BusinessTravel, Department, EducationField, Gender, JobRole, Marit...
## dbl (27): ID, Age, DailyRate, DistanceFromHome, Education, EmployeeCount, Em...
```

```
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
## # A tibble: 6 x 2
##       ID AttritionPrediction
##    <dbl> <fct>
## 1  1171 No
## 2  1172 No
## 3  1173 Yes
## 4  1174 No
## 5  1175 No
## 6  1176 No
```

```
## Backward Elimination Method
## --------------------------
##
## Candidate Terms:
##
## 1 . Attrition
## 2 . BusinessTravel
## 3 . DailyRate
## 4 . DistanceFromHome
## 5 . EnvironmentSatisfaction
## 6 . HourlyRate
## 7 . JobInvolvement
## 8 . JobSatisfaction
## 9 . MonthlyRate
## 10 . NumCompaniesWorked
## 11 . PercentSalaryHike
## 12 . PerformanceRating
## 13 . RelationshipSatisfaction
## 14 . StockOptionLevel
## 15 . TotalWorkingYears
## 16 . TrainingTimesLastYear
## 17 . WorkLifeBalance
## 18 . YearsAtCompany
## 19 . YearsInCurrentRole
## 20 . YearsSinceLastPromotion
## 21 . YearsWithCurrManager
##
## We are eliminating variables based on p value...
##
## - PercentSalaryHike
##
## Backward Elimination: Step 1
##
##   Variable PercentSalaryHike Removed
##
##                        Model Summary
## ----------------------------------------------------------------------
## R                    0.784       RMSE                   2886.092
## R-Squared            0.615       Coef. Var                45.164
## Adj. R-Squared       0.606       MSE                 8329529.054
## Pred R-Squared       0.592       MAE                    2127.073
## ----------------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                                 ANOVA
## ---------------------------------------------------------------------------------
##                   Sum of
##                   Squares        DF      Mean Square       F         Sig.
## ---------------------------------------------------------------------------------
## Regression    11297854220.544         20    564892711.027    67.818    0.0000
```

```
## Residual        7071770166.652        849      8329529.054
## Total         18369624387.195        869
## ----------------------------------------------------------------------------
##
##                                    Parameter Estimates
## ----------------------------------------------------------------------------
--------------
##                       model      Beta    Std. Error    Std. Beta      t        Sig        lowe
r       upper
## ----------------------------------------------------------------------------
--------------
##            (Intercept)    2030.138    1237.134                      1.641    0.101    -398.06
2    4458.338
##              Attrition     212.282     292.546        0.017        0.726    0.468    -361.91
7     786.481
##           BusinessTravel   -160.750     186.707       -0.019       -0.861    0.389    -527.21
0     205.711
##              DailyRate       0.075       0.246        0.007        0.303    0.762      -0.40
9       0.558
##           DistanceFromHome   -6.730      12.239       -0.012       -0.550    0.583     -30.75
2      17.293
## EnvironmentSatisfaction   -17.268      90.172       -0.004       -0.192    0.848    -194.25
4     159.718
##              HourlyRate     -4.752       4.933       -0.021       -0.963    0.336     -14.43
4       4.931
##           JobInvolvement    72.329     143.818        0.011        0.503    0.615    -209.95
2     354.609
##           JobSatisfaction   -93.287      90.194       -0.023       -1.034    0.301    -270.31
6      83.741
##             MonthlyRate      0.012       0.014        0.018        0.851    0.395      -0.01
6       0.039
##         NumCompaniesWorked  -113.398     44.902       -0.062       -2.525    0.012    -201.53
0     -25.266
##           PerformanceRating -136.159    274.042       -0.011       -0.497    0.619    -674.03
9     401.720
## RelationshipSatisfaction    53.309      89.878        0.013        0.593    0.553    -123.10
0     229.717
##           StockOptionLevel  -37.884     117.138       -0.007       -0.323    0.746    -267.79
7     192.030
##           TotalWorkingYears  496.874     19.609        0.812       25.339    0.000     458.38
6     535.361
##         TrainingTimesLastYear -48.526     78.036       -0.013       -0.622    0.534    -201.69
2     104.640
##           WorkLifeBalance    49.566     139.614        0.008        0.355    0.723    -224.46
3     323.594
##            YearsAtCompany    43.564      36.453        0.057        1.195    0.232     -27.98
4     115.112
##           YearsInCurrentRole -19.784     45.633       -0.016       -0.434    0.665    -109.35
2      69.783
## YearsSinceLastPromotion    -67.420      41.068       -0.047       -1.642    0.101    -148.02
6      13.187
##         YearsWithCurrManager  -82.511     44.684       -0.064       -1.847    0.065    -170.21
```

```
5        5.193
## ---------------------------------------------------------------------------------------
--------------
##
##
## - EnvironmentSatisfaction
##
## Backward Elimination: Step 2
##
##   Variable EnvironmentSatisfaction Removed
##
##                            Model Summary
## -----------------------------------------------------------------------
## R                     0.784    RMSE                  2884.456
## R-Squared             0.615    Coef. Var               45.138
## Adj. R-Squared        0.606    MSE              8320088.977
## Pred R-Squared        0.594    MAE                   2126.075
## -----------------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                               ANOVA
## -----------------------------------------------------------------------------
##                    Sum of
##                    Squares        DF      Mean Square      F         Sig.
## -----------------------------------------------------------------------------
## Regression    11297548756.525     19     594607829.291    71.467    0.0000
## Residual       7072075630.670    850       8320088.977
## Total         18369624387.195    869
## -----------------------------------------------------------------------------
##
##                             Parameter Estimates
## ---------------------------------------------------------------------------------------
--------------
##                    model      Beta    Std. Error    Std. Beta      t        Sig       lowe
r        upper
## ---------------------------------------------------------------------------------------
--------------
##          (Intercept)    1987.135     1215.894                   1.634      0.103     -399.37
1    4373.642
##             Attrition     207.923      291.494        0.017     0.713      0.476     -364.21
0     780.056
##        BusinessTravel    -161.678      186.538       -0.019    -0.867      0.386     -527.80
6     204.451
##             DailyRate       0.075        0.246        0.007     0.306      0.760        -0.40
8       0.559
##      DistanceFromHome      -6.662       12.227       -0.012    -0.545      0.586       -30.66
0      17.337
##            HourlyRate      -4.725        4.928       -0.021    -0.959      0.338       -14.39
8       4.948
##        JobInvolvement      72.814      143.714        0.011     0.507      0.613      -209.26
```

```
2      354.890
##         JobSatisfaction    -92.731       90.096    -0.022   -1.029    0.304    -269.56
7      84.105
##             MonthlyRate      0.012        0.014     0.018    0.842    0.400      -0.01
6       0.039
##       NumCompaniesWorked   -113.596       44.865    -0.062   -2.532    0.012    -201.65
4     -25.537
##         PerformanceRating  -135.863      273.883    -0.011   -0.496    0.620    -673.42
8     401.703
## RelationshipSatisfaction    53.370       89.826     0.013    0.594    0.553    -122.93
7     229.677
##           StockOptionLevel  -38.345      117.047    -0.007   -0.328    0.743    -268.08
0     191.389
##            TotalWorkingYears 497.023      19.582     0.812   25.381    0.000     458.58
8     535.459
##       TrainingTimesLastYear  -48.192      77.972    -0.013   -0.618    0.537    -201.23
3     104.849
##             WorkLifeBalance   47.733     139.206     0.007    0.343    0.732    -225.49
6     320.961
##              YearsAtCompany   43.609      36.431     0.057    1.197    0.232     -27.89
7     115.115
##           YearsInCurrentRole  -20.133     45.571    -0.016   -0.442    0.659    -109.57
8      69.312
##     YearsSinceLastPromotion   -67.608     41.033    -0.047   -1.648    0.100    -148.14
6      12.929
##        YearsWithCurrManager   -82.194     44.628    -0.064   -1.842    0.066    -169.78
8       5.400
## -------------------------------------------------------------------------------------
--------------
##
##
## - DailyRate
##
## Backward Elimination: Step 3
##
##   Variable DailyRate Removed
##
##                     Model Summary
## -----------------------------------------------------------------
## R                    0.784       RMSE                2882.920
## R-Squared            0.615       Coef. Var             45.114
## Adj. R-Squared       0.607       MSE              8311225.534
## Pred R-Squared       0.595       MAE                2124.974
## -----------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                            ANOVA
## -------------------------------------------------------------------------------
##                  Sum of
##                  Squares         DF     Mean Square     F         Sig.
```

```
## -----------------------------------------------------------------------
## Regression    11296771457.913      18    627598414.328    75.512    0.0000
## Residual       7072852929.282     851      8311225.534
## Total         18369624387.195     869
## -----------------------------------------------------------------------
##
##
##                                  Parameter Estimates
## ------------------------------------------------------------------------------------
## --------------
##                      model        Beta     Std. Error    Std. Beta       t        Sig        lowe
## r       upper
## ------------------------------------------------------------------------------------
## --------------
##              (Intercept)     2048.827      1198.386                    1.710      0.088      -303.31
## 2    4400.966
##                Attrition      209.933       291.265       0.017       0.721      0.471      -361.74
## 8     781.615
##           BusinessTravel     -163.868       186.301      -0.019      -0.880      0.379      -529.53
## 1     201.795
##          DistanceFromHome      -6.610        12.219      -0.012      -0.541      0.589       -30.59
## 4      17.373
##               HourlyRate      -4.657         4.921      -0.020      -0.946      0.344       -14.31
## 5       5.001
##            JobInvolvement     74.928       143.471       0.011       0.522      0.602      -206.67
## 0     356.527
##           JobSatisfaction    -92.515        90.045      -0.022      -1.027      0.305      -269.25
## 1      84.221
##               MonthlyRate      0.012         0.014       0.018       0.833      0.405        -0.01
## 6       0.039
##         NumCompaniesWorked   -113.014        44.800      -0.062      -2.523      0.012      -200.94
## 6     -25.082
##         PerformanceRating   -138.044       273.644      -0.011      -0.504      0.614      -675.14
## 0     399.051
## RelationshipSatisfaction     53.727        89.771       0.013       0.598      0.550      -122.47
## 1     229.925
##           StockOptionLevel    -38.129       116.982      -0.007      -0.326      0.745      -267.73
## 7     191.478
##          TotalWorkingYears    497.022        19.572       0.812      25.395      0.000       458.60
## 7     535.437
##        TrainingTimesLastYear   -48.325        77.930      -0.013      -0.620      0.535      -201.28
## 2     104.631
##           WorkLifeBalance     46.279       139.051       0.007       0.333      0.739      -226.64
## 4     319.203
##            YearsAtCompany     43.399        36.406       0.057       1.192      0.234       -28.05
## 6     114.854
##          YearsInCurrentRole    -19.442        45.491      -0.015      -0.427      0.669      -108.72
## 9      69.845
##      YearsSinceLastPromotion    -68.201        40.965      -0.047      -1.665      0.096      -148.60
## 6      12.203
##         YearsWithCurrManager    -82.333        44.602      -0.064      -1.846      0.065      -169.87
## 6       5.209
## ------------------------------------------------------------------------------------
```

```
## --------------
##
##
## - StockOptionLevel
##
## Backward Elimination: Step 4
##
##   Variable StockOptionLevel Removed
##
##                         Model Summary
## -----------------------------------------------------------------
## R                   0.784      RMSE                  2881.407
## R-Squared           0.615      Coef. Var               45.091
## Adj. R-Squared      0.607      MSE               8302506.929
## Pred R-Squared      0.595      MAE                   2125.523
## -----------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                                    ANOVA
## ------------------------------------------------------------------------
##                   Sum of
##                   Squares        DF      Mean Square      F       Sig.
## ------------------------------------------------------------------------
## Regression   11295888483.779      17    664464028.458   80.032   0.0000
## Residual      7073735903.416     852      8302506.929
## Total        18369624387.195     869
## ------------------------------------------------------------------------
##
##                                Parameter Estimates
## ----------------------------------------------------------------------------------
## --------------
##                 model      Beta    Std. Error   Std. Beta     t      Sig      lowe
## r      upper
## ----------------------------------------------------------------------------------
## --------------
##            (Intercept)   2037.612    1197.264                1.702   0.089   -312.32
## 0    4387.544
##              Attrition    196.800     288.313      0.016    0.683   0.495   -369.08
## 7     762.687
##          BusinessTravel  -162.546     186.159     -0.019   -0.873   0.383   -527.93
## 1     202.838
##         DistanceFromHome    -6.956      12.167     -0.012   -0.572   0.568    -30.83
## 6      16.924
##              HourlyRate     -4.758       4.908     -0.021   -0.969   0.333    -14.39
## 2       4.876
##          JobInvolvement     73.157     143.293      0.011    0.511   0.610   -208.09
## 1     354.406
##         JobSatisfaction    -92.299      89.995     -0.022   -1.026   0.305   -268.93
## 7      84.340
##             MonthlyRate      0.012       0.014      0.018    0.850   0.396     -0.01
```

```
5         0.039
##       NumCompaniesWorked       -113.769          44.717          -0.062    -2.544     0.011     -201.53
8     -26.001
##         PerformanceRating       -136.101         273.435          -0.011    -0.498     0.619     -672.78
7     400.584
## RelationshipSatisfaction         55.171          89.614           0.013     0.616     0.538     -120.72
0     231.061
##         TotalWorkingYears        497.139          19.558           0.812    25.418     0.000      458.75
1     535.527
##       TrainingTimesLastYear      -48.799          77.875          -0.014    -0.627     0.531     -201.64
9     104.051
##            WorkLifeBalance        44.958         138.919           0.007     0.324     0.746     -227.70
5     317.622
##             YearsAtCompany        43.652          36.378           0.057     1.200     0.230      -27.74
9     115.054
##          YearsInCurrentRole      -20.587          45.331          -0.016    -0.454     0.650     -109.56
1      68.386
##  YearsSinceLastPromotion        -68.231          40.943          -0.047    -1.666     0.096     -148.59
3      12.131
##       YearsWithCurrManager       -82.128          44.574          -0.064    -1.843     0.066     -169.61
6       5.359
## ----------------------------------------------------------------------------------------------
--------------
##
##
## - WorkLifeBalance
##
## Backward Elimination: Step 5
##
##   Variable WorkLifeBalance Removed
##
##                       Model Summary
## -----------------------------------------------------------------
## R                        0.784      RMSE                  2879.895
## R-Squared                0.615      Coef. Var               45.067
## Adj. R-Squared           0.608      MSE              8293793.053
## Pred R-Squared           0.596      MAE                   2125.812
## -----------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                              ANOVA
## --------------------------------------------------------------------------
##                 Sum of
##                 Squares        DF     Mean Square      F        Sig.
## --------------------------------------------------------------------------
## Regression    11295018913.034      16    705938682.065   85.117    0.0000
## Residual       7074605474.161     853      8293793.053
## Total         18369624387.195     869
## --------------------------------------------------------------------------
##
```

```
##                                 Parameter Estimates
## -----------------------------------------------------------------------------
--------------
##                   model        Beta    Std. Error   Std. Beta      t       Sig        lowe
r       upper
## -----------------------------------------------------------------------------
--------------
##             (Intercept)     2151.299     1143.968                  1.881     0.060      -94.02
3     4396.620
##               Attrition      205.060      287.030       0.016      0.714     0.475     -358.30
9      768.428
##            BusinessTravel   -161.514      186.034      -0.019     -0.868     0.386     -526.65
2      203.624
##          DistanceFromHome     -6.969       12.160      -0.012     -0.573     0.567      -30.83
7       16.898
##               HourlyRate     -4.798        4.904      -0.021     -0.978     0.328      -14.42
4       4.828
##            JobInvolvement     72.552      143.205       0.011      0.507     0.613     -208.52
5      353.628
##           JobSatisfaction    -93.303       89.894      -0.023     -1.038     0.300     -269.74
4       83.137
##               MonthlyRate      0.012        0.014       0.018      0.850     0.395       -0.01
5        0.039
##         NumCompaniesWorked  -113.261       44.666      -0.062     -2.536     0.011     -200.92
9      -25.593
##          PerformanceRating  -134.522      273.248      -0.011     -0.492     0.623     -670.83
9      401.796
## RelationshipSatisfaction     55.987       89.532       0.013      0.625     0.532     -119.74
2      231.715
##           TotalWorkingYears   496.972       19.541       0.812     25.432     0.000      458.61
7      535.326
##        TrainingTimesLastYear   -48.305       77.819      -0.013     -0.621     0.535     -201.04
5      104.435
##             YearsAtCompany     43.420       36.352       0.057      1.194     0.233      -27.92
9      114.770
##           YearsInCurrentRole   -19.290       45.130      -0.015     -0.427     0.669     -107.86
8       69.289
##     YearsSinceLastPromotion   -67.839       40.904      -0.047     -1.658     0.098     -148.12
3       12.445
##        YearsWithCurrManager   -82.695       44.516      -0.064     -1.858     0.064     -170.06
9        4.679
## -----------------------------------------------------------------------------
--------------
##
##
## - YearsInCurrentRole
##
## Backward Elimination: Step 6
##
##   Variable YearsInCurrentRole Removed
##
##                               Model Summary
```

```
## --------------------------------------------------------------------
## R                         0.784      RMSE                2878.516
## R-Squared                 0.615      Coef. Var             45.045
## Adj. R-Squared            0.608      MSE             8285855.619
## Pred R-Squared            0.598      MAE                2125.564
## --------------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                               ANOVA
## -------------------------------------------------------------------------------
##                  Sum of
##                  Squares         DF      Mean Square      F        Sig.
## -------------------------------------------------------------------------------
## Regression    11293503688.337      15     752900245.889    90.866    0.0000
## Residual       7076120698.858     854       8285855.619
## Total         18369624387.195     869
## -------------------------------------------------------------------------------
##
##                              Parameter Estimates
## --------------------------------------------------------------------------------
## --------------
##                   model       Beta    Std. Error    Std. Beta     t       Sig       lowe
## r      upper
## --------------------------------------------------------------------------------
## --------------
##           (Intercept)    2166.464     1142.870                  1.896    0.058    -76.70
## 0    4409.628
##             Attrition     194.363      285.800       0.016     0.680    0.497   -366.59
## 1     755.317
##         BusinessTravel    -162.365      185.934      -0.019    -0.873    0.383   -527.30
## 6     202.577
##        DistanceFromHome     -7.086       12.151      -0.013    -0.583    0.560    -30.93
## 6      16.764
##             HourlyRate     -4.794        4.902       -0.021    -0.978    0.328    -14.41
## 5       4.827
##         JobInvolvement     70.248      143.035       0.011     0.491    0.623   -210.49
## 4     350.990
##         JobSatisfaction    -91.668       89.770      -0.022    -1.021    0.307   -267.86
## 4      84.528
##            MonthlyRate      0.011        0.014       0.018     0.824    0.410     -0.01
## 6       0.039
##       NumCompaniesWorked  -113.884       44.621      -0.062    -2.552    0.011   -201.46
## 3     -26.304
##         PerformanceRating  -139.698      272.849      -0.011    -0.512    0.609   -675.23
## 1     395.835
## RelationshipSatisfaction    56.494       89.481       0.014     0.631    0.528   -119.13
## 5     232.123
##        TotalWorkingYears    497.323       19.515       0.813    25.485    0.000    459.02
## 0     535.625
##     TrainingTimesLastYear    -46.799       77.702      -0.013    -0.602    0.547   -199.30
```

```
9     105.711
## YearsAtCompany          37.111          33.204          0.049          1.118          0.264          -28.06
0     102.281
## YearsSinceLastPromotion  -69.810         40.624          -0.048         -1.718         0.086          -149.54
4       9.925
## YearsWithCurrManager     -87.854         42.828          -0.068         -2.051         0.041          -171.91
5       -3.793
## ----------------------------------------------------------------------------------------
--------------
##
##
## - JobInvolvement
##
## Backward Elimination: Step 7
##
##   Variable JobInvolvement Removed
##
##                          Model Summary
## -----------------------------------------------------------------------
## R                        0.784          RMSE                   2877.239
## R-Squared                0.615          Coef. Var                45.025
## Adj. R-Squared           0.608          MSE              8278502.071
## Pred R-Squared           0.598          MAE                    2126.848
## -----------------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                                ANOVA
## --------------------------------------------------------------------------------
##                  Sum of
##                  Squares        DF        Mean Square     F          Sig.
## --------------------------------------------------------------------------------
## Regression    11291505116.402    14       806536079.743   97.425     0.0000
## Residual       7078119270.793   855        8278502.071
## Total         18369624387.195   869
## --------------------------------------------------------------------------------
##
##                          Parameter Estimates
## ----------------------------------------------------------------------------------------
--------------
##                  model        Beta     Std. Error    Std. Beta      t          Sig        lowe
r       upper
## ----------------------------------------------------------------------------------------
--------------
##          (Intercept)    2330.325       1092.599                      2.133      0.033      185.83
4     4474.816
##             Attrition     223.258        279.555         0.018      0.799      0.425      -325.43
7       771.952
##        BusinessTravel    -156.602        185.481         -0.018     -0.844     0.399      -520.65
5     207.450
##       DistanceFromHome      -7.050         12.146         -0.012     -0.580     0.562       -30.88
```

```
9      16.789
##          HourlyRate       -4.622        4.887       -0.020    -0.946     0.345      -14.21
5      4.970
##       JobSatisfaction     -94.866       89.494      -0.023    -1.060     0.289     -270.51
9     80.788
##          MonthlyRate       0.011        0.014        0.017     0.813     0.416       -0.01
6      0.038
##     NumCompaniesWorked   -113.908       44.601      -0.062    -2.554     0.011     -201.44
8    -26.367
##       PerformanceRating  -138.395      272.715      -0.011    -0.507     0.612     -673.66
4    396.875
## RelationshipSatisfaction   56.645       89.441       0.014     0.633     0.527     -118.90
4    232.194
##       TotalWorkingYears   497.191       19.504       0.813    25.492     0.000      458.91
0    535.473
##     TrainingTimesLastYear  -48.356       77.603      -0.013    -0.623     0.533     -200.67
1    103.959
##          YearsAtCompany    36.135       33.129       0.047     1.091     0.276      -28.89
0    101.159
##   YearsSinceLastPromotion  -69.643       40.605      -0.048    -1.715     0.087     -149.34
0     10.053
##       YearsWithCurrManager  -86.844      42.760      -0.068    -2.031     0.043     -170.77
1     -2.918
## --------------------------------------------------------------------------------------------
--------------
##
##
## - PerformanceRating
##
## Backward Elimination: Step 8
##
##   Variable PerformanceRating Removed
##
##                         Model Summary
## -----------------------------------------------------------------------
## R                       0.784       RMSE                  2875.991
## R-Squared               0.615       Coef. Var               45.006
## Adj. R-Squared          0.609       MSE                8271321.489
## Pred R-Squared          0.599       MAE                   2127.338
## -----------------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                              ANOVA
## --------------------------------------------------------------------------------
##                  Sum of
##                 Squares       DF      Mean Square      F        Sig.
## --------------------------------------------------------------------------------
## Regression    11289373192.722      13     868413322.517    104.991    0.0000
## Residual       7080251194.473     856       8271321.489
## Total         18369624387.195     869
```

```
## ------------------------------------------------------------------------------
##
##                              Parameter Estimates
## ------------------------------------------------------------------------------
--------------
##                 model       Beta    Std. Error   Std. Beta      t       Sig        lowe
r      upper
## ------------------------------------------------------------------------------
--------------
##           (Intercept)    1888.577     660.031                  2.861    0.004     593.10
8    3184.047
##              Attrition     224.227     279.427       0.018     0.802    0.423    -324.21
6     772.670
##          BusinessTravel   -158.815     185.350      -0.018    -0.857    0.392    -522.60
8     204.979
##         DistanceFromHome    -7.246      12.134      -0.013    -0.597    0.551     -31.06
3      16.570
##             HourlyRate      -4.625       4.885      -0.020    -0.947    0.344     -14.21
3       4.963
##         JobSatisfaction    -94.444      89.451      -0.023    -1.056    0.291    -270.01
3      81.126
##             MonthlyRate      0.011       0.014       0.017     0.813    0.416      -0.01
6       0.038
##       NumCompaniesWorked  -113.507      44.575      -0.062    -2.546    0.011    -200.99
5     -26.018
## RelationshipSatisfaction    58.002      89.362       0.014     0.649    0.516    -117.39
2     233.397
##         TotalWorkingYears   497.384      19.492       0.813    25.517    0.000     459.12
7     535.642
##       TrainingTimesLastYear  -47.948      77.565      -0.013    -0.618    0.537    -200.18
9     104.292
##           YearsAtCompany     36.255      33.114       0.047     1.095    0.274     -28.74
0     101.249
##    YearsSinceLastPromotion   -69.120      40.574      -0.048    -1.704    0.089    -148.75
6      10.516
##        YearsWithCurrManager   -87.330      42.731      -0.068    -2.044    0.041    -171.19
9      -3.460
## ------------------------------------------------------------------------------
--------------
##
##
## - DistanceFromHome
##
## Backward Elimination: Step 9
##
##   Variable DistanceFromHome Removed
##
##                         Model Summary
## --------------------------------------------------------------------
## R                      0.784       RMSE                 2874.911
## R-Squared              0.614       Coef. Var              44.989
## Adj. R-Squared         0.609       MSE              8265111.890
```

```
## Pred R-Squared         0.600        MAE                2127.687
## -------------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                               ANOVA
## ------------------------------------------------------------------------------
##                  Sum of
##                  Squares        DF      Mean Square        F        Sig.
## ------------------------------------------------------------------------------
## Regression    11286423497.063      12    940535291.422    113.796    0.0000
## Residual       7083200890.133     857      8265111.890
## Total         18369624387.195     869
## ------------------------------------------------------------------------------
##
##                             Parameter Estimates
## ----------------------------------------------------------------------------------------
## --------------
##                  model        Beta    Std. Error    Std. Beta      t        Sig        lowe
## r      upper
## ----------------------------------------------------------------------------------------
## --------------
##            (Intercept)    1814.099     647.898                   2.800    0.005      542.44
## 7    3085.751
##              Attrition     240.375     278.011      0.019      0.865    0.387     -305.28
## 8     786.038
##          BusinessTravel   -155.852     185.214     -0.018     -0.841    0.400     -519.37
## 8     207.673
##              HourlyRate     -4.807       4.874     -0.021     -0.986    0.324      -14.37
## 3       4.759
##          JobSatisfaction   -94.262      89.417     -0.023     -1.054    0.292     -269.76
## 4      81.240
##             MonthlyRate      0.011       0.014      0.017      0.818    0.414       -0.01
## 6       0.038
##        NumCompaniesWorked  -111.206      44.391     -0.061     -2.505    0.012     -198.33
## 4     -24.078
## RelationshipSatisfaction    55.409      89.223      0.013      0.621    0.535     -119.71
## 2     230.530
##         TotalWorkingYears   496.600      19.440      0.812     25.545    0.000      458.44
## 3     534.756
##       TrainingTimesLastYear  -46.327      77.489     -0.013     -0.598    0.550     -198.41
## 7     105.763
##            YearsAtCompany    37.003      33.078      0.048      1.119    0.264      -27.92
## 0     101.927
##   YearsSinceLastPromotion   -68.613      40.550     -0.048     -1.692    0.091     -148.20
## 2      10.975
##       YearsWithCurrManager   -87.542      42.713     -0.068     -2.050    0.041     -171.37
## 6      -3.707
## ----------------------------------------------------------------------------------------
## --------------
##
```

```
##
## - TrainingTimesLastYear
##
## Backward Elimination: Step 10
##
##   Variable TrainingTimesLastYear Removed
##
##                             Model Summary
## -----------------------------------------------------------------
## R                      0.784      RMSE                   2873.834
## R-Squared              0.614      Coef. Var                44.972
## Adj. R-Squared         0.609      MSE                8258922.070
## Pred R-Squared         0.600      MAE                   2128.879
## -----------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                                 ANOVA
## -------------------------------------------------------------------------------
##                     Sum of
##                     Squares        DF     Mean Square      F        Sig.
## -------------------------------------------------------------------------------
## Regression    11283469250.951      11    1025769931.905   124.201   0.0000
## Residual       7086155136.244     858       8258922.070
## Total         18369624387.195     869
## -------------------------------------------------------------------------------
##
##                             Parameter Estimates
## --------------------------------------------------------------------------------------------
## --------------
##                     model       Beta    Std. Error    Std. Beta     t       Sig       lowe
## r      upper
## --------------------------------------------------------------------------------------------
## --------------
##             (Intercept)    1688.002      612.377                  2.756    0.006     486.07
## 0    2889.934
##                Attrition    228.661      277.216       0.018      0.825    0.410     -315.44
## 0     772.762
##           BusinessTravel   -162.691      184.791      -0.019     -0.880    0.379     -525.38
## 6     200.004
##               HourlyRate     -4.822        4.872      -0.021     -0.990    0.323      -14.38
## 4       4.741
##          JobSatisfaction    -91.459       89.261      -0.022     -1.025    0.306     -266.65
## 4      83.736
##              MonthlyRate      0.011        0.014       0.018      0.822    0.411       -0.01
## 6       0.038
##        NumCompaniesWorked  -110.315       44.349      -0.060     -2.487    0.013     -197.36
## 2     -23.269
## RelationshipSatisfaction    54.942       89.186       0.013      0.616    0.538     -120.10
## 6     229.991
##         TotalWorkingYears   497.251       19.402       0.813     25.628    0.000     459.17
```

```
0      535.333
##          YearsAtCompany       35.611        32.984        0.047     1.080     0.281      -29.12
7      100.349
## YearsSinceLastPromotion      -67.067        40.452       -0.046    -1.658     0.098     -146.46
3       12.330
##      YearsWithCurrManager     -86.873        42.683       -0.068    -2.035     0.042     -170.64
8       -3.099
## ----------------------------------------------------------------------------------------
--------------
##
##
## - RelationshipSatisfaction
##
## Backward Elimination: Step 11
##
##   Variable RelationshipSatisfaction Removed
##
##                              Model Summary
## ----------------------------------------------------------------------
## R                        0.784      RMSE                  2872.796
## R-Squared                0.614      Coef. Var               44.956
## Adj. R-Squared           0.610      MSE                8252956.311
## Pred R-Squared           0.601      MAE                   2127.508
## ----------------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                                 ANOVA
## ---------------------------------------------------------------------------------
##                   Sum of
##                   Squares          DF      Mean Square      F        Sig.
## ---------------------------------------------------------------------------------
## Regression    11280334916.448      10    1128033491.645   136.682    0.0000
## Residual       7089289470.747      859      8252956.311
## Total         18369624387.195      869
## ---------------------------------------------------------------------------------
##
##                              Parameter Estimates
## ----------------------------------------------------------------------------------------
--------------
##              model       Beta    Std. Error    Std. Beta      t       Sig      lower
upper
## ----------------------------------------------------------------------------------------
--------------
##          (Intercept)   1825.996     569.732                  3.205    0.001     707.766
2944.225
##            Attrition    240.368     276.464       0.019      0.869    0.385     -302.256
782.993
##       BusinessTravel   -155.944     184.400      -0.018     -0.846    0.398     -517.871
205.982
##            HourlyRate     -4.782       4.870      -0.021     -0.982    0.326      -14.340
```

```
4.776
##          JobSatisfaction    -93.831        89.145       -0.023     -1.053     0.293     -268.799
81.137
##             MonthlyRate      0.011         0.014        0.017      0.810     0.418       -0.016
0.038
##       NumCompaniesWorked   -108.360        44.220       -0.059     -2.450     0.014     -195.152
-21.569
##         TotalWorkingYears   496.390        19.345        0.811     25.660     0.000      458.421
534.359
##           YearsAtCompany     36.566        32.935        0.048      1.110     0.267      -28.076
101.209
## YearsSinceLastPromotion    -65.999        40.400       -0.046     -1.634     0.103     -145.294
13.296
##     YearsWithCurrManager    -88.059        42.624       -0.068     -2.066     0.039     -171.718
-4.400
## ------------------------------------------------------------------------------------------
-------------
##
##
## - MonthlyRate
##
## Backward Elimination: Step 12
##
##   Variable MonthlyRate Removed
##
##                         Model Summary
## -----------------------------------------------------------------------
## R                      0.783      RMSE                    2872.222
## R-Squared              0.614      Coef. Var                 44.947
## Adj. R-Squared         0.610      MSE                  8249657.959
## Pred R-Squared         0.602      MAE                     2129.471
## -----------------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                                  ANOVA
## --------------------------------------------------------------------------------
##                   Sum of
##                   Squares         DF      Mean Square       F        Sig.
## --------------------------------------------------------------------------------
## Regression    11274918542.615       9   1252768726.957   151.857    0.0000
## Residual       7094705844.580     860      8249657.959
## Total         18369624387.195     869
## --------------------------------------------------------------------------------
##
##
##                              Parameter Estimates
## ------------------------------------------------------------------------------------------
-------------
##               model     Beta    Std. Error    Std. Beta      t       Sig        lower
upper
## ------------------------------------------------------------------------------------------
```

```
## -------------
##          (Intercept)    1980.856      536.599                  3.692   0.000     927.660
## 3034.052
##             Attrition     247.013      276.287     0.020    0.894   0.372    -295.263
## 789.290
##        BusinessTravel    -160.177      184.289    -0.019   -0.869   0.385    -521.885
## 201.532
##            HourlyRate      -4.841        4.868    -0.021   -0.994   0.320     -14.396
## 4.714
##       JobSatisfaction     -91.639       89.086    -0.022   -1.029   0.304    -266.492
## 83.213
##     NumCompaniesWorked    -109.310       44.195    -0.060   -2.473   0.014    -196.054
## -22.567
##       TotalWorkingYears     497.783       19.265     0.813   25.839   0.000     459.972
## 535.594
##         YearsAtCompany      34.984       32.871     0.046    1.064   0.287     -29.532
## 99.500
## YearsSinceLastPromotion     -65.164       40.379    -0.045   -1.614   0.107    -144.417
## 14.089
##     YearsWithCurrManager     -88.397       42.613    -0.069   -2.074   0.038    -172.035
## -4.759
## -----------------------------------------------------------------------------------------
## -------------
##
##
## - BusinessTravel
##
## Backward Elimination: Step 13
##
##   Variable BusinessTravel Removed
##
##                        Model Summary
## -----------------------------------------------------------------------
## R                      0.783     RMSE                    2871.814
## R-Squared              0.613     Coef. Var                 44.940
## Adj. R-Squared         0.610     MSE                  8247314.732
## Pred R-Squared         0.602     MAE                     2129.561
## -----------------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                             ANOVA
## --------------------------------------------------------------------------
##                   Sum of
##                   Squares         DF      Mean Square       F        Sig.
## --------------------------------------------------------------------------
## Regression    11268686402.899        8    1408585800.362   170.793   0.0000
## Residual       7100937984.296      861       8247314.732
## Total         18369624387.195      869
## --------------------------------------------------------------------------
##
```

```
##                              Parameter Estimates
## -----------------------------------------------------------------------------
-------------
##                 model       Beta    Std. Error    Std. Beta      t      Sig        lower
upper
## -----------------------------------------------------------------------------
-------------
##           (Intercept)    1819.120      503.229                 3.615    0.000      831.421
2806.819
##             Attrition     269.977      274.982       0.022     0.982    0.326     -269.737
809.691
##             HourlyRate     -4.990        4.865      -0.022    -1.026    0.305      -14.537
4.558
##        JobSatisfaction    -97.601       88.809      -0.024    -1.099    0.272     -271.909
76.708
##     NumCompaniesWorked   -107.779       44.154      -0.059    -2.441    0.015     -194.441
-21.117
##       TotalWorkingYears    497.075       19.245       0.812    25.829    0.000      459.303
534.846
##          YearsAtCompany     35.350       32.863       0.046     1.076    0.282      -29.152
99.851
## YearsSinceLastPromotion    -65.885       40.365      -0.046    -1.632    0.103     -145.110
13.340
##     YearsWithCurrManager    -88.620       42.606      -0.069    -2.080    0.038     -172.244
-4.995
## -----------------------------------------------------------------------------
-------------
##
##
## - Attrition
##
## Backward Elimination: Step 14
##
##   Variable Attrition Removed
##
##                      Model Summary
## -----------------------------------------------------------------------
## R                      0.783       RMSE                   2871.754
## R-Squared              0.613       Coef. Var                44.940
## Adj. R-Squared         0.610       MSE              8246969.605
## Pred R-Squared         0.603       MAE                    2125.199
## -----------------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                              ANOVA
## -----------------------------------------------------------------------------
##                  Sum of
##                 Squares        DF      Mean Square       F        Sig.
## -----------------------------------------------------------------------------
## Regression   11260736588.040          7    1608676655.434    195.063    0.0000
```

```
## Residual        7108887799.155        862        8246969.605
## Total          18369624387.195        869
## -----------------------------------------------------------------------------
##
##                              Parameter Estimates
## ---------------------------------------------------------------------------------------
## -------------
##              model      Beta    Std. Error    Std. Beta      t       Sig       lower
## upper
## ---------------------------------------------------------------------------------------
## -------------
##        (Intercept)    2008.158     464.928                  4.319    0.000    1095.635
## 2920.681
##         HourlyRate      -5.143       4.862      -0.023     -1.058    0.290     -14.686
## 4.399
##      JobSatisfaction    -88.224      88.293      -0.021     -0.999    0.318    -261.518
## 85.069
##     NumCompaniesWorked  -112.324      43.910      -0.062     -2.558    0.011    -198.506
## -26.141
##     TotalWorkingYears   500.226      18.975       0.817     26.363    0.000     462.985
## 537.468
##       YearsAtCompany     34.430      32.849       0.045      1.048    0.295     -30.043
## 98.904
## YearsSinceLastPromotion  -70.270      40.116      -0.049     -1.752    0.080    -149.007
## 8.467
##    YearsWithCurrManager  -84.845      42.432      -0.066     -2.000    0.046    -168.126
## -1.564
## ---------------------------------------------------------------------------------------
## -------------
##
##
## - JobSatisfaction
##
## Backward Elimination: Step 15
##
##   Variable JobSatisfaction Removed
##
##                      Model Summary
## ----------------------------------------------------------------------
## R                     0.783     RMSE               2871.751
## R-Squared             0.613     Coef. Var            44.939
## Adj. R-Squared        0.610     MSE             8246954.784
## Pred R-Squared        0.603     MAE                2127.280
## ----------------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                              ANOVA
## -----------------------------------------------------------------------------
##                   Sum of
##                   Squares        DF      Mean Square      F        Sig.
```

```
## -----------------------------------------------------------------------------
## Regression   11252502408.190         6   1875417068.032   227.407   0.0000
## Residual      7117121979.005       863      8246954.784
## Total        18369624387.195       869
## -----------------------------------------------------------------------------
##
##                                  Parameter Estimates
## -----------------------------------------------------------------------------------
-------------
##                     model      Beta    Std. Error    Std. Beta      t      Sig       lower
upper
## -----------------------------------------------------------------------------------
-------------
##           (Intercept)   1733.129     374.698                    4.625   0.000    997.702
2468.555
##            HourlyRate     -4.725       4.844       -0.021   -0.975   0.330    -14.232
4.782
##     NumCompaniesWorked  -110.683      43.879       -0.061   -2.522   0.012   -196.805
-24.561
##      TotalWorkingYears   501.303      18.944        0.819   26.462   0.000    464.122
538.485
##         YearsAtCompany    32.092      32.766        0.042    0.979   0.328    -32.218
96.402
## YearsSinceLastPromotion  -68.429      40.074       -0.047   -1.708   0.088   -147.082
10.225
##     YearsWithCurrManager  -83.764     42.418       -0.065   -1.975   0.049   -167.019
-0.510
## -----------------------------------------------------------------------------------
-------------
##
##
## - HourlyRate
##
## Backward Elimination: Step 16
##
##   Variable HourlyRate Removed
##
##                        Model Summary
## -----------------------------------------------------------------------
## R                    0.782      RMSE                  2871.670
## R-Squared            0.612      Coef. Var               44.938
## Adj. R-Squared       0.610      MSE               8246491.127
## Pred R-Squared       0.604      MAE                   2126.280
## -----------------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                              ANOVA
## -----------------------------------------------------------------------
##                 Sum of
##                 Squares        DF      Mean Square      F       Sig.
```

```
## --------------------------------------------------------------------------------
## Regression    11244656053.133          5    2248931210.627    272.714    0.0000
## Residual       7124968334.062        864       8246491.127
## Total         18369624387.195        869
## --------------------------------------------------------------------------------
##
##                                    Parameter Estimates
## -----------------------------------------------------------------------------------------
## -------------
##                    model      Beta    Std. Error    Std. Beta      t       Sig      lower
## upper
## -----------------------------------------------------------------------------------------
## -------------
##            (Intercept)    1426.063      203.206                  7.018    0.000    1027.227
## 1824.898
##      NumCompaniesWorked   -110.533       43.877      -0.061     -2.519    0.012    -196.652
## -24.414
##       TotalWorkingYears    500.658       18.932       0.818     26.445    0.000     463.500
## 537.816
##          YearsAtCompany     32.679       32.759       0.043      0.998    0.319     -31.618
## 96.976
## YearsSinceLastPromotion    -68.751       40.071      -0.048     -1.716    0.087    -147.399
## 9.898
##      YearsWithCurrManager   -83.670       42.416      -0.065     -1.973    0.049    -166.921
## -0.418
## -----------------------------------------------------------------------------------------
## -------------
##
##
## - YearsAtCompany
##
## Backward Elimination: Step 17
##
##   Variable YearsAtCompany Removed
##
##                         Model Summary
## ----------------------------------------------------------------------
## R                        0.782    RMSE                      2871.662
## R-Squared                0.612    Coef. Var                   44.938
## Adj. R-Squared           0.610    MSE                    8246444.345
## Pred R-Squared           0.605    MAE                       2130.712
## ----------------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                                    ANOVA
## --------------------------------------------------------------------------------
##                    Sum of
##                    Squares        DF      Mean Square       F        Sig.
## --------------------------------------------------------------------------------
## Regression    11236450028.815          4    2809112507.204    340.645    0.0000
```

```
## Residual          7133174358.380         865        8246444.345
## Total             18369624387.195        869
## -------------------------------------------------------------------------------
##
##                                 Parameter Estimates
## ------------------------------------------------------------------------------------
-------------
##                  model        Beta      Std. Error    Std. Beta      t        Sig         lower
upper
## ------------------------------------------------------------------------------------
-------------
##             (Intercept)    1447.486      202.068                   7.163      0.000    1050.885
1844.086
##      NumCompaniesWorked    -123.154       42.014       -0.068      -2.931     0.003    -205.615
-40.693
##       TotalWorkingYears     510.087       16.403        0.834      31.097     0.000     477.892
542.282
## YearsSinceLastPromotion     -53.980       37.235       -0.037      -1.450     0.148    -127.061
19.102
##     YearsWithCurrManager     -58.488       34.087       -0.045      -1.716     0.087    -125.391
8.415
## ------------------------------------------------------------------------------------
-------------
##
##
## - YearsSinceLastPromotion
##
## Backward Elimination: Step 18
##
##   Variable YearsSinceLastPromotion Removed
##
##                      Model Summary
## -----------------------------------------------------------------
## R                      0.782      RMSE                 2873.488
## R-Squared              0.611      Coef. Var              44.967
## Adj. R-Squared         0.609      MSE              8256934.849
## Pred R-Squared         0.606      MAE                  2129.423
## -----------------------------------------------------------------
##   RMSE: Root Mean Square Error
##   MSE: Mean Square Error
##   MAE: Mean Absolute Error
##
##                              ANOVA
## ----------------------------------------------------------------------
##                  Sum of
##                  Squares       DF      Mean Square       F        Sig.
## ----------------------------------------------------------------------
## Regression   11219118808.190     3    3739706269.397   452.917   0.0000
## Residual      7150505579.005    866      8256934.849
## Total        18369624387.195    869
## ----------------------------------------------------------------------
##
```

```
##                            Parameter Estimates
## --------------------------------------------------------------------------------
----------
##              model        Beta      Std. Error    Std. Beta      t         Sig        lower
upper
## --------------------------------------------------------------------------------
----------
##        (Intercept)     1459.122      202.037                   7.222      0.000      1062.583
1855.661
##    NumCompaniesWorked   -115.764      41.730       -0.063     -2.774      0.006      -197.667
-33.860
##     TotalWorkingYears    502.960      15.659        0.822     32.119      0.000       472.226
533.694
## YearsWithCurrManager     -75.420      32.044       -0.059     -2.354      0.019      -138.313
-12.526
## --------------------------------------------------------------------------------
----------
##
##
##
## No more variables satisfy the condition of p value = 0.05
##
##
## Variables Removed:
##
## - PercentSalaryHike
## - EnvironmentSatisfaction
## - DailyRate
## - StockOptionLevel
## - WorkLifeBalance
## - YearsInCurrentRole
## - JobInvolvement
## - PerformanceRating
## - DistanceFromHome
## - TrainingTimesLastYear
## - RelationshipSatisfaction
## - MonthlyRate
## - BusinessTravel
## - Attrition
## - JobSatisfaction
## - HourlyRate
## - YearsAtCompany
## - YearsSinceLastPromotion
##
##
## Final Model Output
## ------------------
##
##                          Model Summary
## ----------------------------------------------------------------
## R                   0.782       RMSE                2873.488
## R-Squared           0.611       Coef. Var             44.967
```

```
## Adj. R-Squared          0.609     MSE                    8256934.849
## Pred R-Squared          0.606     MAE                    2129.423
## ----------------------------------------------------------------
##  RMSE: Root Mean Square Error
##  MSE: Mean Square Error
##  MAE: Mean Absolute Error
##
##                              ANOVA
## --------------------------------------------------------------------------------
##                   Sum of
##                   Squares        DF      Mean Square       F         Sig.
## --------------------------------------------------------------------------------
## Regression    11219118808.190     3    3739706269.397    452.917    0.0000
## Residual       7150505579.005    866      8256934.849
## Total         18369624387.195    869
## --------------------------------------------------------------------------------
##
##                                  Parameter Estimates
## -------------------------------------------------------------------------------------------
## ----------
##                   model      Beta     Std. Error    Std. Beta     t        Sig        lower
## upper
## -------------------------------------------------------------------------------------------
## ----------
##        (Intercept)    1459.122      202.037                     7.222     0.000     1062.583
## 1855.661
##   NumCompaniesWorked   -115.764      41.730        -0.063     -2.774     0.006     -197.667
## -33.860
##     TotalWorkingYears    502.960      15.659         0.822     32.119     0.000      472.226
## 533.694
## YearsWithCurrManager     -75.420      32.044        -0.059     -2.354     0.019     -138.313
## -12.526
## -------------------------------------------------------------------------------------------
## ----------
```
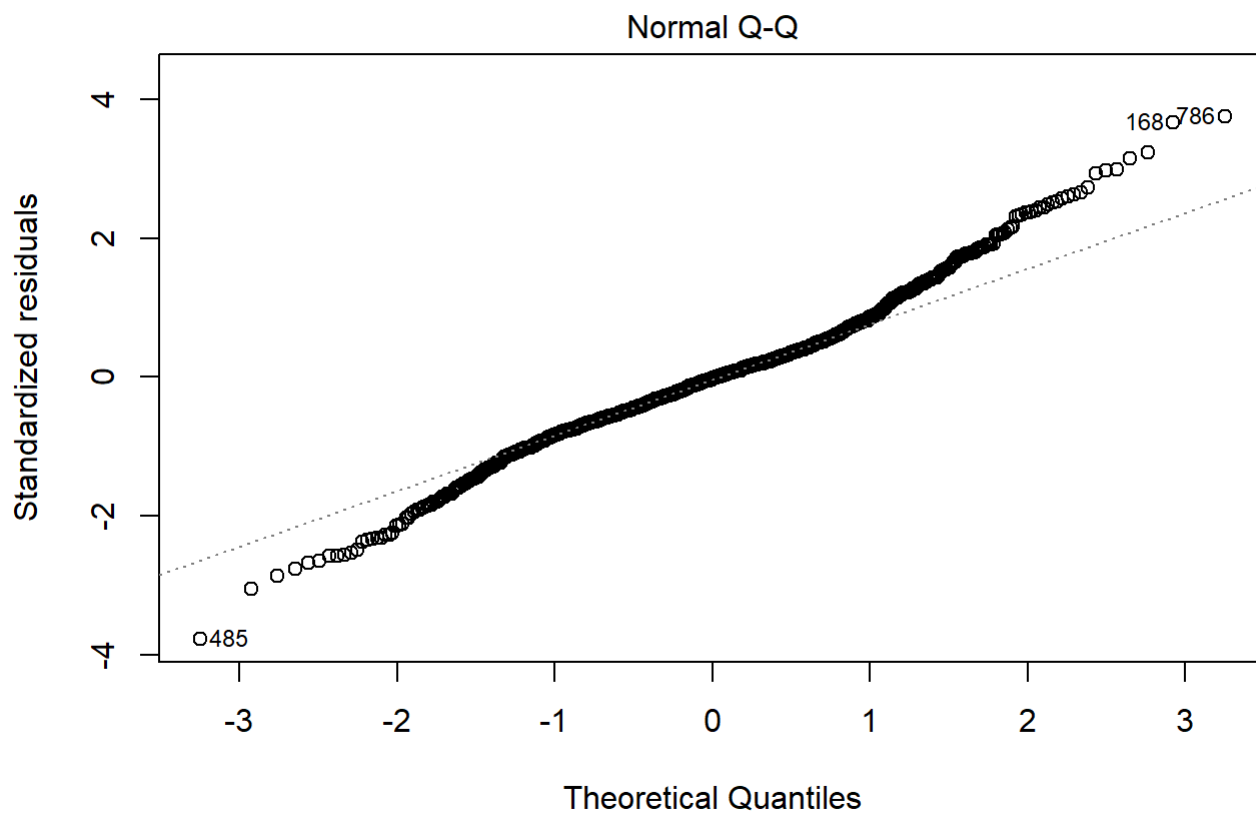
```
##
##
##                          Elimination Summary
## -----------------------------------------------------------------------------
-
##          Variable                        Adj.
## Step      Removed         R-Square     R-Square     C(p)        AIC        RMSE
## -----------------------------------------------------------------------------
-
##   1    PercentSalaryHike       0.615       0.606     20.0271    16355.4217   2886.092
4
##   2    EnvironmentSatisfaction 0.615       0.6064    18.0637    16353.4592   2884.456
4
##   3    DailyRate               0.615       0.6068    16.1569    16351.5548   2882.919
6
##   4    StockOptionLevel        0.6149      0.6072    14.2628    16349.6635   2881.407
1
##   5    WorkLifeBalance         0.6149      0.6077    12.3671    16347.7704   2879.894
6
##   6    YearsInCurrentRole      0.6148      0.608     10.5488    16345.9567   2878.516
2
##   7    JobInvolvement          0.6147      0.6084     8.7884    16344.2024   2877.238
6
##   8    PerformanceRating       0.6146      0.6087     7.0441    16342.4644   2875.990
5
##   9    DistanceFromHome        0.6144      0.609      5.3978    16340.8268   2874.910
8
##  10    TrainingTimesLastYear   0.6142      0.6093     3.7521    16339.1896   2873.834
0
##  11    RelationshipSatisfaction 0.6141     0.6096     2.1279    16337.5743   2872.795
9
##  12    MonthlyRate             0.6138      0.6097     0.7775    16336.2387   2872.221
8
##  13    BusinessTravel          0.6134      0.6098    -0.4752    16335.0026   2871.813
8
##  14    Attrition               0.613       0.6099    -1.5219    16333.9761   2871.753
8
##  15    JobSatisfaction         0.6126      0.6099    -2.5345    16332.9832   2871.751
2
##  16    HourlyRate              0.6121      0.6099    -3.5936    16331.9418   2871.670
4
##  17    YearsAtCompany          0.6117      0.6099    -4.6095    16330.9433   2871.662
3
##  18    YearsSinceLastPromotion 0.6107      0.6094    -4.5312    16331.0545   2873.488
3
## -----------------------------------------------------------------------------
-
```
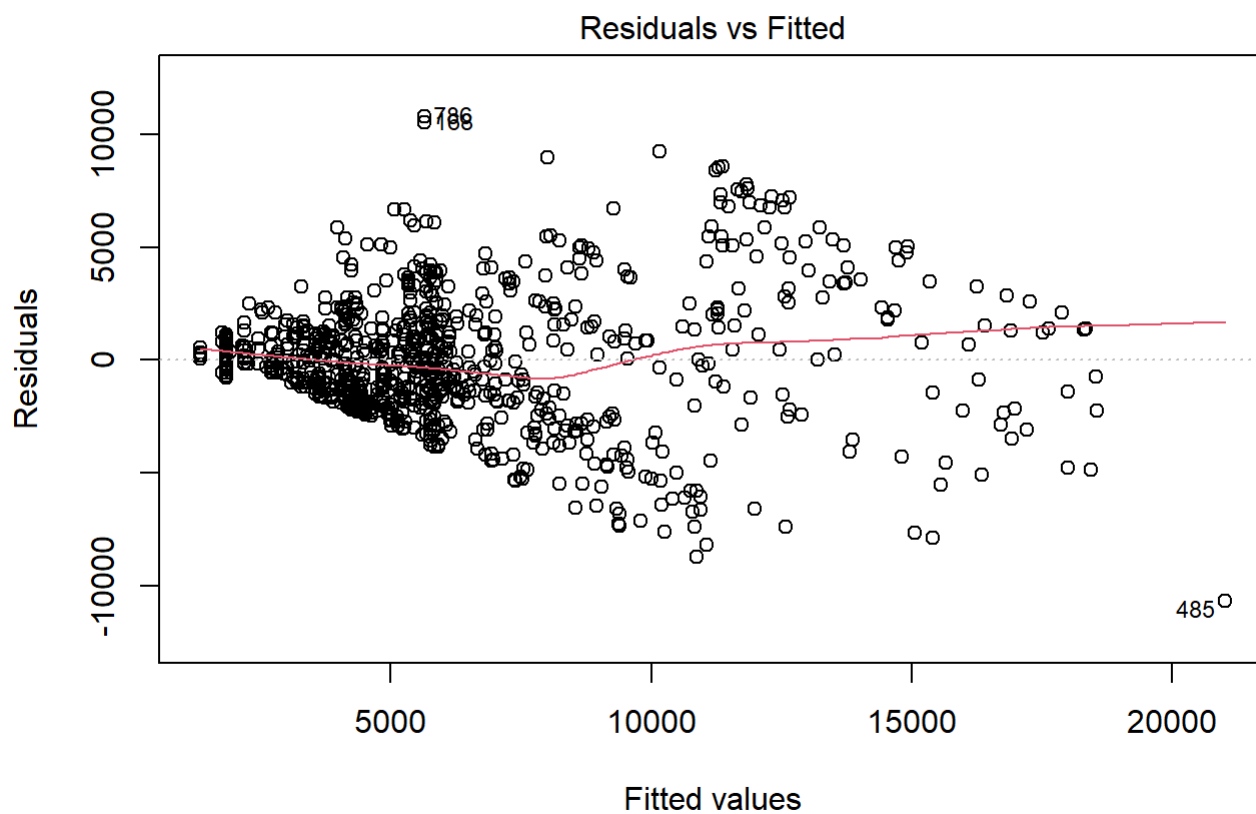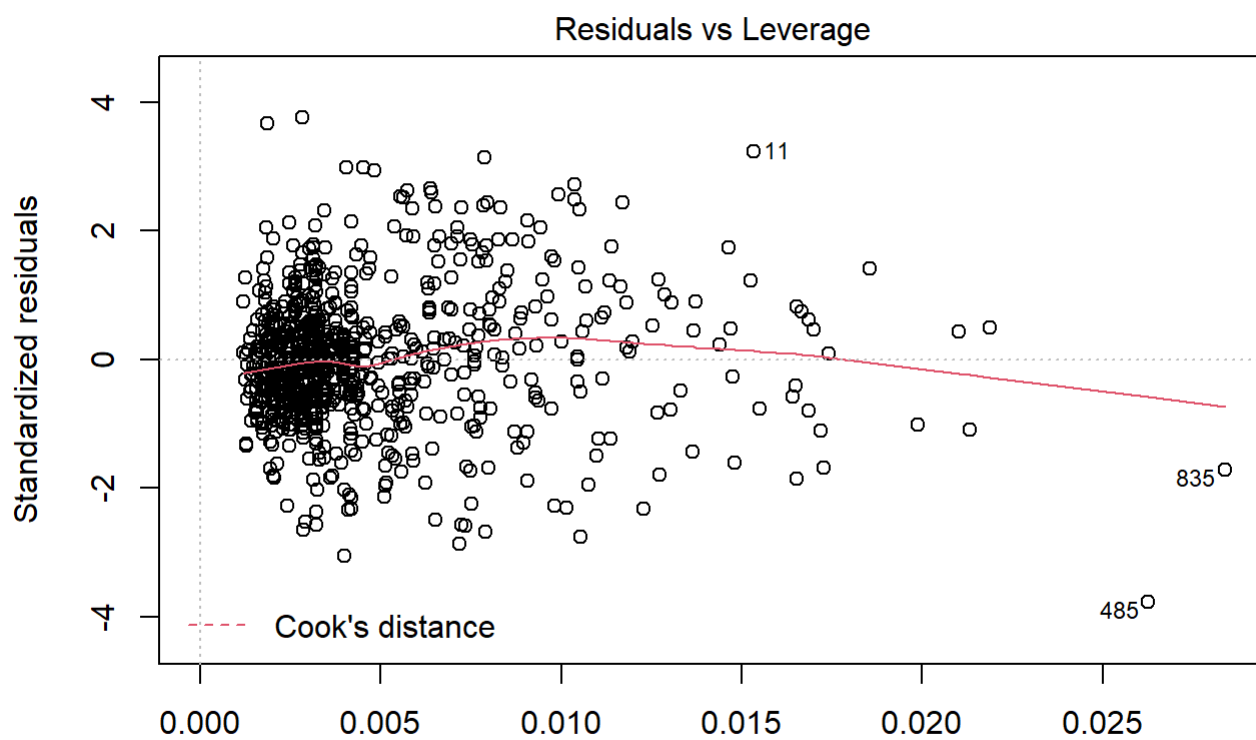
Residuals vs Fitted

786
168
485

Fitted values
lm(MonthlyIncome ~ NumCompaniesWorked + TotalWorkingYears + YearsWithCurrMa ...

Normal Q-Q

168 786
485

Theoretical Quantiles
lm(MonthlyIncome ~ NumCompaniesWorked + TotalWorkingYears + YearsWithCurrMa ...

Scale-Location

√|Standardized residuals|

786
485

Fitted values
lm(MonthlyIncome ~ NumCompaniesWorked + TotalWorkingYears + YearsWithCurrMa ...

Residuals vs Leverage

Standardized residuals

11

835

485

Cook's distance
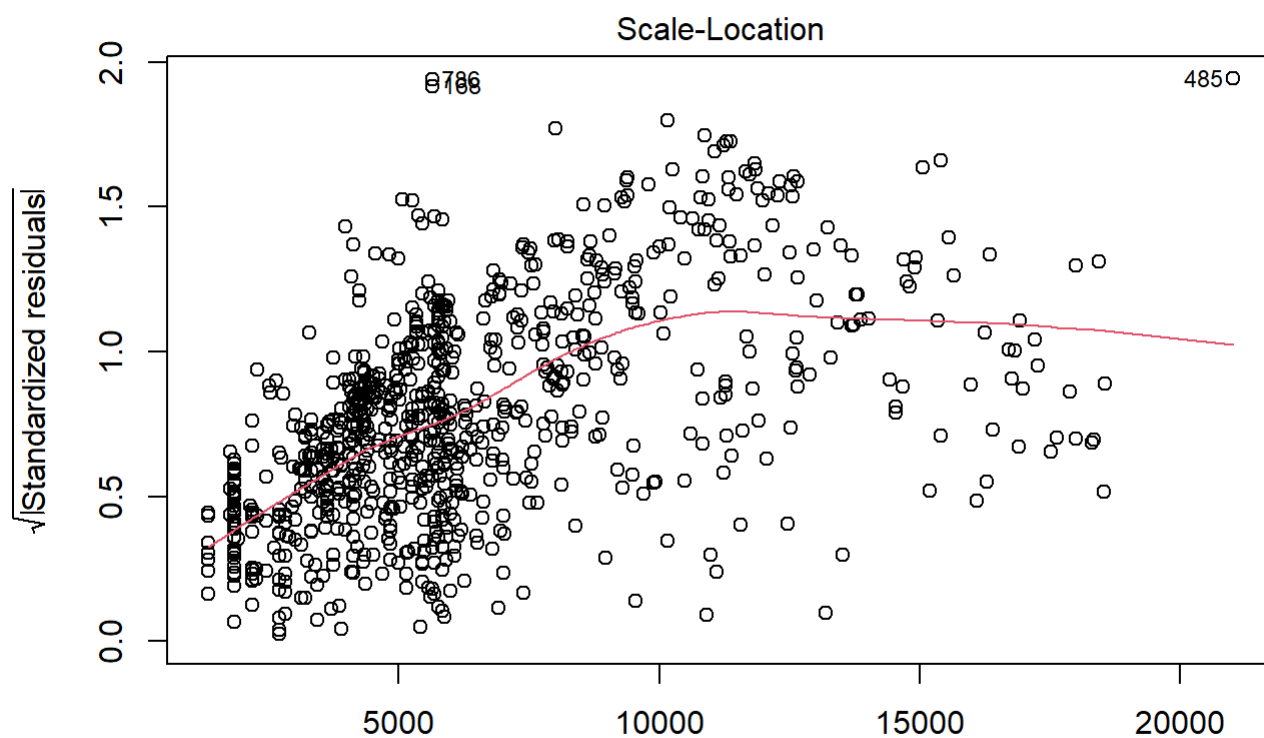
Leverage
lm(MonthlyIncome ~ NumCompaniesWorked + TotalWorkingYears + YearsWithCurrMa ...

```
## # A tibble: 6 x 2
##       ID ModeledSalary
##    <dbl>        <dbl>
## 1   871        4336.
## 2   872        3476.
## 3   873       12232.
## 4   874        3707.
## 5   875        4336.
## 6   876       10668.
```

```
## # A tibble: 3 x 2
##   Department                   n
##   <chr>                    <int>
## 1 Human Resources             35
## 2 Research & Development     562
## 3 Sales                      273
```

```
## Warning: package 'hrbrthemes' was built under R version 4.1.2
```

```
## NOTE: Either Arial Narrow or Roboto Condensed fonts are required to use these themes.
```

```
##       Please use hrbrthemes::import_roboto_condensed() to install Roboto Condensed and
```

```
##       if Arial Narrow is not on your system, please see https://bit.ly/arialnarrow
```

```
## Warning in grid.Call(C_stringMetric, as.graphicsAnnot(x$label)): font family not
## found in Windows font database
```

```
## Warning in grid.Call(C_stringMetric, as.graphicsAnnot(x$label)): font family not
## found in Windows font database
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database
```

```
## Warning in grid.Call(C_stringMetric, as.graphicsAnnot(x$label)): font family not
## found in Windows font database
```
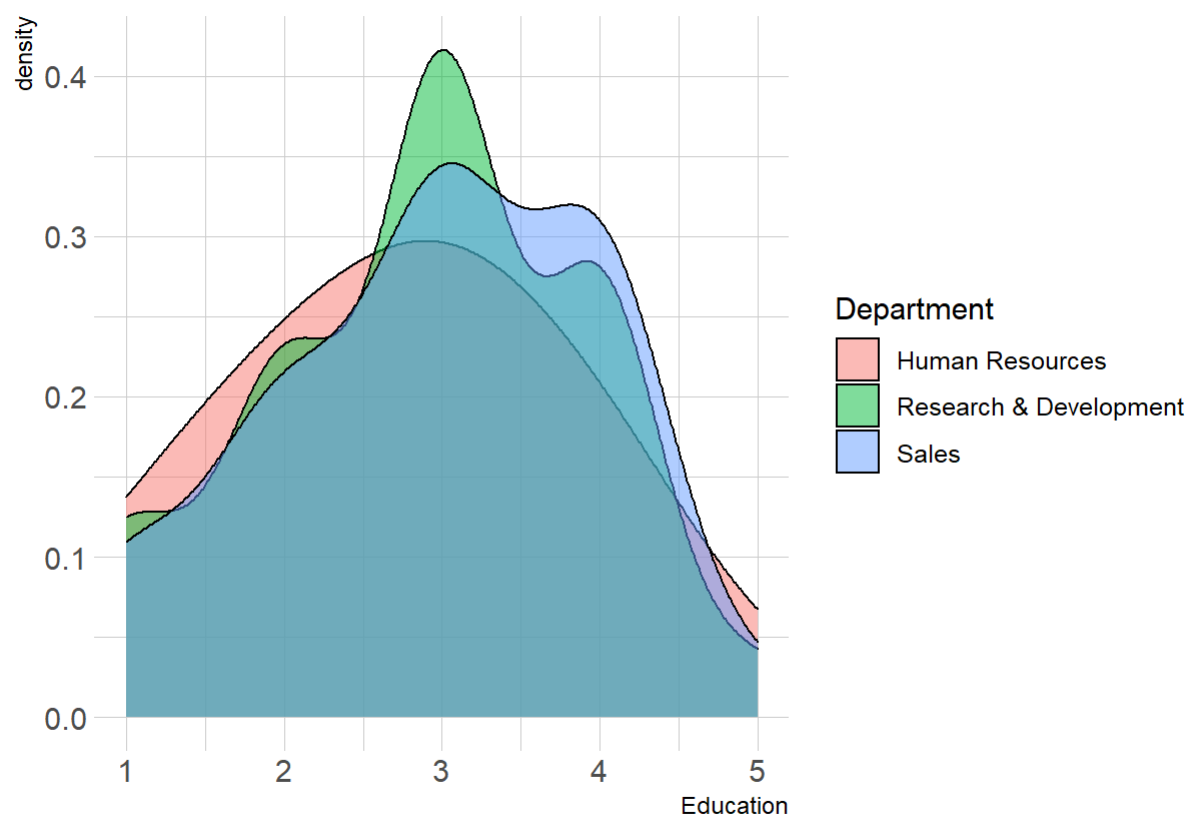
```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font family not found in Windows font database
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database
```

```
## # A tibble: 9 x 2
##   JobRole                       n
##   <chr>                     <int>
## 1 Healthcare Representative    76
## 2 Human Resources              27
## 3 Laboratory Technician       153
## 4 Manager                      51
## 5 Manufacturing Director       87
## 6 Research Director            51
## 7 Research Scientist          172
## 8 Sales Executive             200
## 9 Sales Representative         53
```

```
## Warning: package 'ggridges' was built under R version 4.1.2
```

```
## Warning: package 'viridis' was built under R version 4.1.2
```

```
## Loading required package: viridisLite
```

```
## Picking joint bandwidth of 671
```

```
## Warning in grid.Call(C_stringMetric, as.graphicsAnnot(x$label)): font family not
## found in Windows font database
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database
```
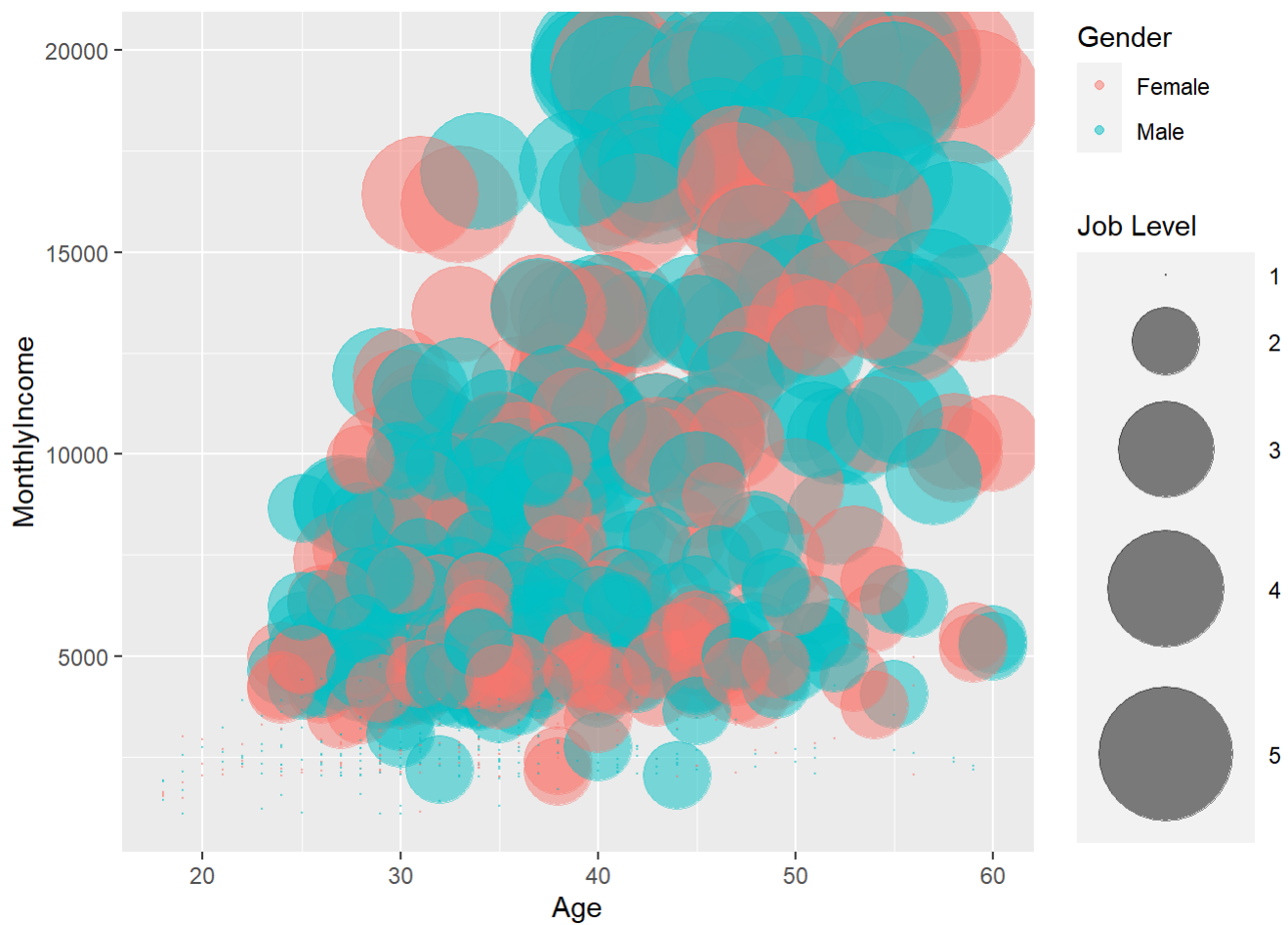
```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font family not found in Windows font database
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## family not found in Windows font database
```

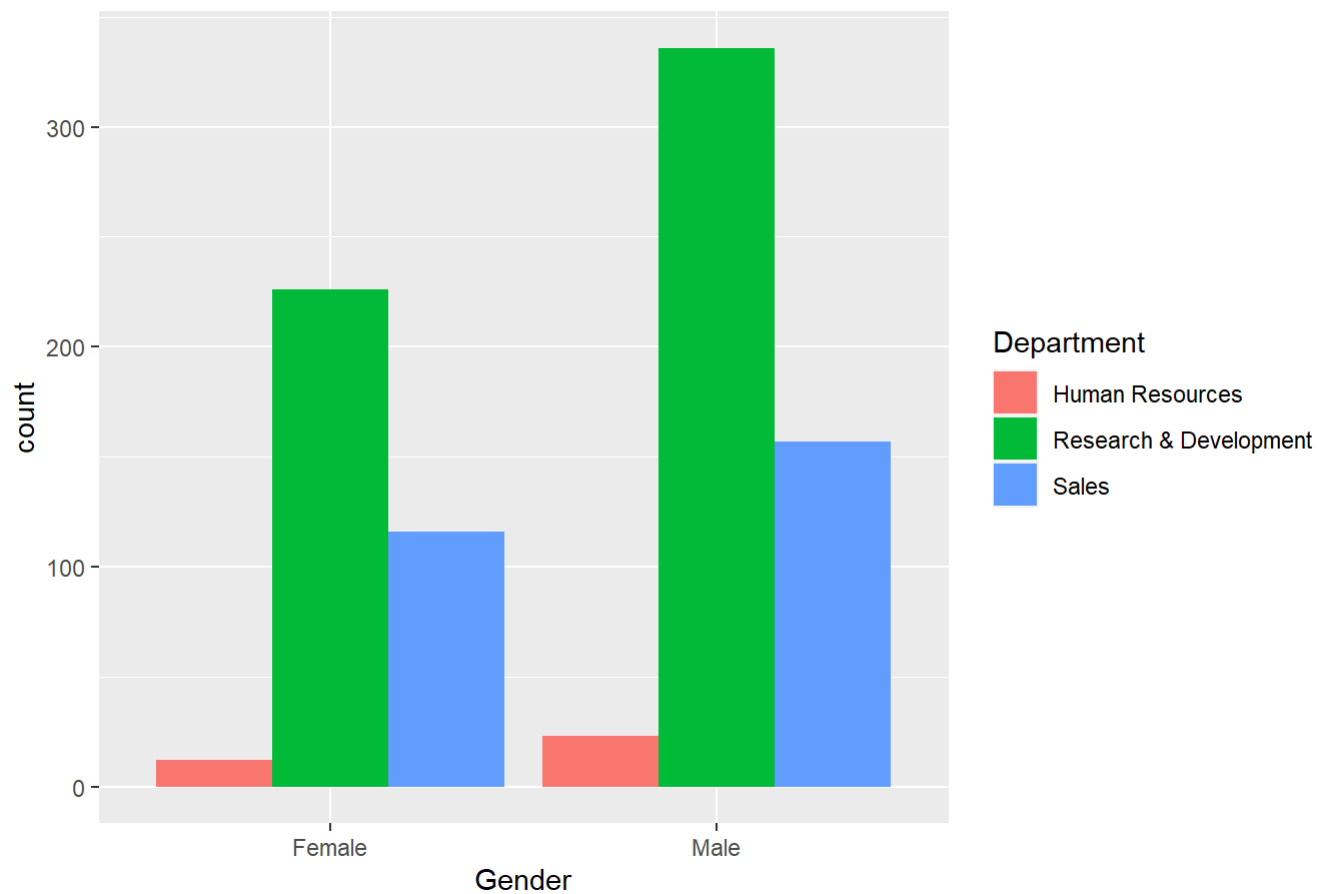# The Salary Distribution Of each repres
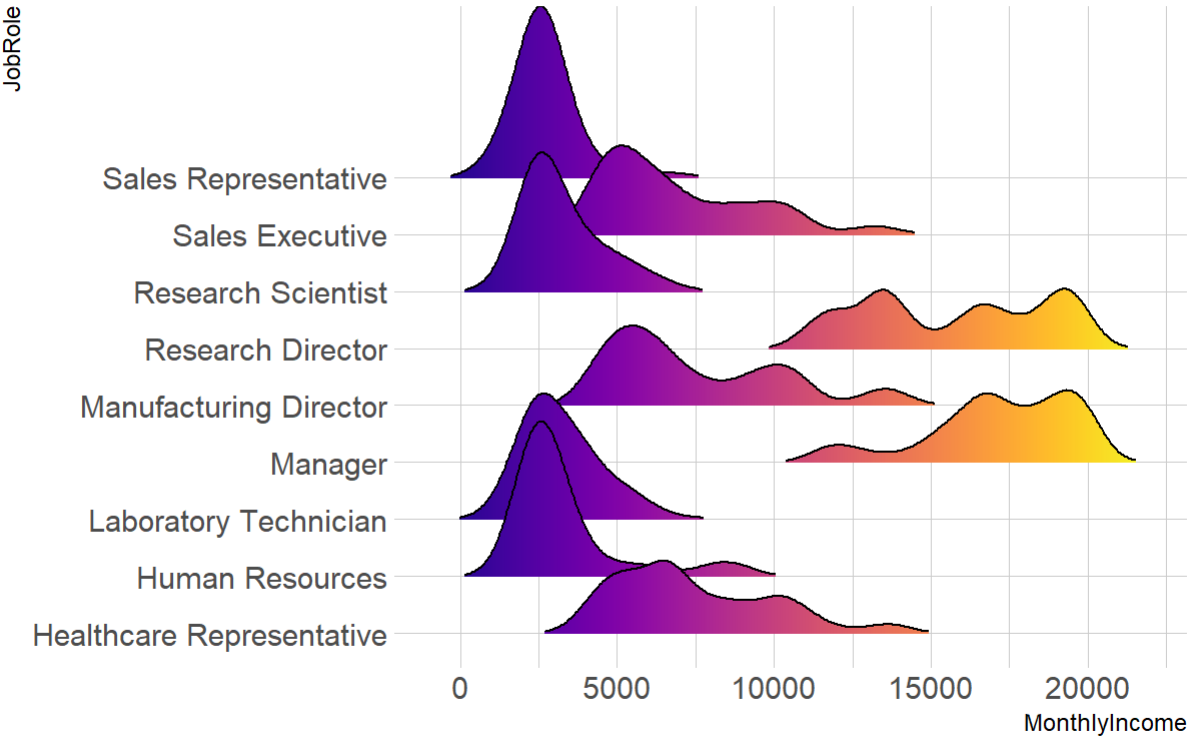

```
## # A tibble: 5 x 2
##   JobLevel     n
##      <dbl> <int>
## 1        1   329
## 2        2   312
## 3        3   132
## 4        4    60
## 5        5    37
```

Department Population by Gender

Correlation Between Gender and Job Level As Applies To Job Involvement