**Akhil\_Menon\_Airline\_Code.R**

menon

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*# Analysis of Airline Code*  
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*# Setting Work directory to the folder containing the Dataset*  
**setwd**("C:/Users/menon/Desktop/New Stuff")  
  
*# Reading the dataset and storing onto a data frame*  
AirLine <- **read.csv**("SixAirlines.csv"  
 )  
*# Basic view of the Data Frame*  
**View**(AirLine)  
  
*# Data Frame Summary*  
**summary**(AirLine)

## AIRLINE AIRCRAFT FLIGHT\_DURATION MONTH   
## AirFrance: 74 Min. :0.0000 Min. : 1.250 Min. :0.000   
## British :175 1st Qu.:0.0000 1st Qu.: 4.250 1st Qu.:1.000   
## Delta : 46 Median :0.0000 Median : 7.750 Median :2.000   
## Jet : 65 Mean :0.3268 Mean : 7.549 Mean :1.671   
## Singapore: 40 3rd Qu.:1.0000 3rd Qu.:10.500 3rd Qu.:3.000   
## Virgin : 62 Max. :1.0000 Max. :14.660 Max. :3.000   
## INTERNATIONAL SEATS\_ECONOMY SEATS\_PREMIUM PITCH\_ECONOMY   
## Min. :0.0000 Min. : 17.0 Min. : 8.00 Min. :30.00   
## 1st Qu.:1.0000 1st Qu.:127.0 1st Qu.:21.00 1st Qu.:31.00   
## Median :1.0000 Median :185.0 Median :36.00 Median :31.00   
## Mean :0.9134 Mean :200.7 Mean :33.54 Mean :31.21   
## 3rd Qu.:1.0000 3rd Qu.:243.0 3rd Qu.:40.00 3rd Qu.:32.00   
## Max. :1.0000 Max. :389.0 Max. :66.00 Max. :33.00   
## PITCH\_PREMIUM WIDTH\_ECONOMY WIDTH\_PREMIUM PRICE\_ECONOMY   
## Min. :34.00 Min. :17.00 Min. :17.00 Min. : 65.0   
## 1st Qu.:38.00 1st Qu.:17.00 1st Qu.:19.00 1st Qu.: 404.8   
## Median :38.00 Median :18.00 Median :19.00 Median :1224.0   
## Mean :37.92 Mean :17.83 Mean :19.48 Mean :1317.1   
## 3rd Qu.:38.00 3rd Qu.:18.00 3rd Qu.:21.00 3rd Qu.:1903.0   
## Max. :40.00 Max. :19.00 Max. :21.00 Max. :3593.0   
## PRICE\_PREMIUM PRICE\_RELATIVE N LAMBDA   
## Min. : 86 Min. :0.0200 Min. : 38.0 Min. :0.0500   
## 1st Qu.: 524 1st Qu.:0.1000 1st Qu.:162.0 1st Qu.:0.1200   
## Median :1710 Median :0.3800 Median :227.0 Median :0.1300   
## Mean :1832 Mean :0.4926 Mean :234.2 Mean :0.1503   
## 3rd Qu.:2989 3rd Qu.:0.7475 3rd Qu.:279.0 3rd Qu.:0.1500   
## Max. :7414 Max. :1.8900 Max. :441.0 Max. :0.5500   
## QUALITY   
## Min. : 2.000   
## 1st Qu.: 6.000   
## Median : 7.000   
## Mean : 6.716   
## 3rd Qu.: 7.000   
## Max. :10.000

*# Visualization Using BoxPlots*  
*# Using PRICE\_PREMIUM and PRICE\_ECONOMY as Y*   
**boxplot**(AirLine$PRICE\_PREMIUM~AirLine$AIRLINE)



**boxplot**(AirLine$PRICE\_ECONOMY~AirLine$AIRLINE)



**boxplot**(AirLine$PRICE\_PREMIUM~AirLine$MONTH)



**boxplot**(AirLine$PRICE\_ECONOMY~AirLine$MONTH)



*# Using PRICE\_RELATIVE as Y*   
**boxplot**(AirLine$PRICE\_RELATIVE~AirLine$MONTH)



**boxplot**(AirLine$PRICE\_RELATIVE~AirLine$INTERNATIONAL)



**boxplot**(AirLine$PRICE\_RELATIVE~AirLine$AIRCRAFT)



**boxplot**(AirLine$PRICE\_RELATIVE~AirLine$QUALITY)   
  
*# From the above visualization the increase in quality leads to the increase in relative price*  
  
*#Scatterplot for non-categorical variables*  
**library**(car)



**scatterplot**(AirLine$PRICE\_RELATIVE,AirLine$FLIGHT\_DURATION)



**scatterplot**(AirLine$PRICE\_RELATIVE,AirLine$SEATS\_ECONOMY)



*#CORRGRAM VISUALIZATION*  
**library**(corrgram)  
**corrgram**(AirLine, order=TRUE, lower.panel=panel.shade,upper.panel=panel.pie, text.panel=panel.txt)



**corrgram**(AirLine, order=NULL, lower.panel=panel.shade,upper.panel=NULL, text.panel=panel.txt)



*# Variance-Covariance Matrix*  
**cor**(AirLine[,-**c**(1)])

## AIRCRAFT FLIGHT\_DURATION MONTH INTERNATIONAL  
## AIRCRAFT 1.000000000 -0.022265599 0.007377185 0.11607192  
## FLIGHT\_DURATION -0.022265599 1.000000000 0.042726734 0.37027250  
## MONTH 0.007377185 0.042726734 1.000000000 0.04278124  
## INTERNATIONAL 0.116071917 0.370272495 0.042781237 1.00000000  
## SEATS\_ECONOMY 0.401466912 0.209301905 0.013665959 0.30780599  
## SEATS\_PREMIUM 0.295390514 0.167707636 0.054286479 0.30898003  
## PITCH\_ECONOMY 0.241596266 0.303239275 0.020511825 -0.28733904  
## PITCH\_PREMIUM -0.040380485 0.082007777 -0.008600321 0.86207721  
## WIDTH\_ECONOMY 0.292529863 0.462436824 0.034357832 0.29207630  
## WIDTH\_PREMIUM 0.036853395 0.090968063 -0.066095472 0.61130395  
## PRICE\_ECONOMY 0.037272760 0.570604184 0.002979302 0.29906411  
## PRICE\_PREMIUM 0.020092754 0.651891797 0.018930560 0.34559444  
## PRICE\_RELATIVE -0.119890981 0.108224710 0.019989106 0.27746729  
## N 0.405295313 0.213389202 0.020544571 0.32332858  
## LAMBDA -0.128565543 0.003494719 0.038527062 0.01812136  
## QUALITY -0.119809583 -0.051829983 -0.014013167 0.74708385  
## SEATS\_ECONOMY SEATS\_PREMIUM PITCH\_ECONOMY PITCH\_PREMIUM  
## AIRCRAFT 0.401466912 0.2953905141 0.24159627 -0.040380485  
## FLIGHT\_DURATION 0.209301905 0.1677076365 0.30323927 0.082007777  
## MONTH 0.013665959 0.0542864791 0.02051183 -0.008600321  
## INTERNATIONAL 0.307805993 0.3089800311 -0.28733904 0.862077210  
## SEATS\_ECONOMY 1.000000000 0.6267956084 0.17614558 0.082656260  
## SEATS\_PREMIUM 0.626795608 1.0000000000 -0.01847429 -0.008183207  
## PITCH\_ECONOMY 0.176145581 -0.0184742879 1.00000000 -0.561708319  
## PITCH\_PREMIUM 0.082656260 -0.0081832073 -0.56170832 1.000000000  
## WIDTH\_ECONOMY 0.391536716 0.4618817295 0.31103746 -0.043627342  
## WIDTH\_PREMIUM 0.070712269 -0.0140721606 -0.54892493 0.754851871  
## PRICE\_ECONOMY 0.148163761 0.1221179841 0.37960497 0.033635434  
## PRICE\_PREMIUM 0.195287760 0.2249974040 0.23983878 0.071331248  
## PRICE\_RELATIVE -0.024509143 -0.1072356234 -0.43465185 0.427823608  
## N 0.992908806 0.7149790849 0.15523329 0.072917300  
## LAMBDA -0.399068794 0.3163713970 -0.17266314 -0.053841073  
## QUALITY -0.004098189 0.0007906561 -0.78895106 0.951521570  
## WIDTH\_ECONOMY WIDTH\_PREMIUM PRICE\_ECONOMY PRICE\_PREMIUM  
## AIRCRAFT 0.29252986 0.03685339 0.037272760 0.02009275  
## FLIGHT\_DURATION 0.46243682 0.09096806 0.570604184 0.65189180  
## MONTH 0.03435783 -0.06609547 0.002979302 0.01893056  
## INTERNATIONAL 0.29207630 0.61130395 0.299064115 0.34559444  
## SEATS\_ECONOMY 0.39153672 0.07071227 0.148163761 0.19528776  
## SEATS\_PREMIUM 0.46188173 -0.01407216 0.122117984 0.22499740  
## PITCH\_ECONOMY 0.31103746 -0.54892493 0.379604972 0.23983878  
## PITCH\_PREMIUM -0.04362734 0.75485187 0.033635434 0.07133125  
## WIDTH\_ECONOMY 1.00000000 0.06259988 0.081967901 0.16310757  
## WIDTH\_PREMIUM 0.06259988 1.00000000 -0.070180135 0.04932498  
## PRICE\_ECONOMY 0.08196790 -0.07018013 1.000000000 0.90253105  
## PRICE\_PREMIUM 0.16310757 0.04932498 0.902531053 1.00000000  
## PRICE\_RELATIVE -0.06093642 0.51167702 -0.298104314 0.01757342  
## N 0.42178638 0.06130173 0.151575655 0.20955518  
## LAMBDA 0.09724877 -0.07203714 -0.005672849 0.03550282  
## QUALITY -0.14803745 0.76469927 -0.116146580 -0.03618869  
## PRICE\_RELATIVE N LAMBDA QUALITY  
## AIRCRAFT -0.11989098 0.405295313 -0.128565543 -0.1198095828  
## FLIGHT\_DURATION 0.10822471 0.213389202 0.003494719 -0.0518299826  
## MONTH 0.01998911 0.020544571 0.038527062 -0.0140131666  
## INTERNATIONAL 0.27746729 0.323328584 0.018121358 0.7470838510  
## SEATS\_ECONOMY -0.02450914 0.992908806 -0.399068794 -0.0040981889  
## SEATS\_PREMIUM -0.10723562 0.714979085 0.316371397 0.0007906561  
## PITCH\_ECONOMY -0.43465185 0.155233293 -0.172663141 -0.7889510603  
## PITCH\_PREMIUM 0.42782361 0.072917300 -0.053841073 0.9515215700  
## WIDTH\_ECONOMY -0.06093642 0.421786384 0.097248771 -0.1480374529  
## WIDTH\_PREMIUM 0.51167702 0.061301732 -0.072037142 0.7646992712  
## PRICE\_ECONOMY -0.29810431 0.151575655 -0.005672849 -0.1161465802  
## PRICE\_PREMIUM 0.01757342 0.209555179 0.035502822 -0.0361886891  
## PRICE\_RELATIVE 1.00000000 -0.038352287 -0.050057215 0.4793339231  
## N -0.03835229 1.000000000 -0.309808226 -0.0035565934  
## LAMBDA -0.05005721 -0.309808226 1.000000000 0.0242043400  
## QUALITY 0.47933392 -0.003556593 0.024204340 1.0000000000

*#PRICE\_RELATIVE SHOULD BE TAKEN AS Y*  
A1 <-**lm**(PRICE\_RELATIVE~.,data=AirLine)  
**summary**(A1)

##   
## Call:  
## lm(formula = PRICE\_RELATIVE ~ ., data = AirLine)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.75748 -0.08813 0.00198 0.08247 0.84554   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -3.874e-01 2.949e+00 -0.131 0.895542   
## AIRLINEBritish -4.021e-01 1.108e-01 -3.629 0.000318 \*\*\*  
## AIRLINEDelta -4.281e-01 2.193e-01 -1.952 0.051576 .   
## AIRLINEJet -2.664e-01 9.581e-02 -2.780 0.005664 \*\*   
## AIRLINESingapore -3.797e-01 1.280e-01 -2.965 0.003186 \*\*   
## AIRLINEVirgin -3.980e-01 2.015e-01 -1.975 0.048891 \*   
## AIRCRAFT -4.535e-02 2.919e-02 -1.554 0.120964   
## FLIGHT\_DURATION 2.624e-02 4.734e-03 5.544 5.08e-08 \*\*\*  
## MONTH 5.656e-03 9.583e-03 0.590 0.555343   
## INTERNATIONAL -6.942e-03 2.501e-01 -0.028 0.977869   
## SEATS\_ECONOMY 3.996e-04 3.172e-04 1.260 0.208502   
## SEATS\_PREMIUM -4.691e-03 2.289e-03 -2.050 0.040995 \*   
## PITCH\_ECONOMY -1.482e-02 8.008e-02 -0.185 0.853227   
## PITCH\_PREMIUM 4.836e-02 9.162e-02 0.528 0.597866   
## WIDTH\_ECONOMY -8.241e-02 5.126e-02 -1.608 0.108623   
## WIDTH\_PREMIUM 6.594e-02 1.366e-01 0.483 0.629564   
## PRICE\_ECONOMY -9.313e-04 3.319e-05 -28.059 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.780e-04 2.299e-05 25.141 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.664e-01 3.029e-01 1.540 0.124381   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.2128 on 443 degrees of freedom  
## Multiple R-squared: 0.7881, Adjusted R-squared: 0.7795   
## F-statistic: 91.54 on 18 and 443 DF, p-value: < 2.2e-16

*#HYPOTHESIS - 1*  
*# Mean of the RELATIVE\_PRICE should not be equal to zero.*  
  
  
*#USING THE GLM COMMAND AND CHECKING AIC VALUE FOR EACH EXCLUSION OF VARIABLE*  
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75632 -0.08765 0.00253 0.08316 0.84464   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 1.919e-01 2.691e+00 0.071 0.943175   
## AIRLINEBritish -4.442e-01 6.847e-02 -6.487 2.34e-10 \*\*\*  
## AIRLINEDelta -3.351e-01 1.047e-01 -3.200 0.001471 \*\*   
## AIRLINEJet -2.722e-01 9.497e-02 -2.866 0.004357 \*\*   
## AIRLINESingapore -3.335e-01 8.504e-02 -3.922 0.000102 \*\*\*  
## AIRLINEVirgin -3.071e-01 7.186e-02 -4.274 2.35e-05 \*\*\*  
## AIRCRAFT -4.851e-02 2.842e-02 -1.707 0.088602 .   
## FLIGHT\_DURATION 2.603e-02 4.709e-03 5.528 5.53e-08 \*\*\*  
## MONTH 5.372e-03 9.556e-03 0.562 0.574292   
## INTERNATIONAL 5.930e-02 2.089e-01 0.284 0.776659   
## SEATS\_ECONOMY 3.885e-04 3.162e-04 1.229 0.219720   
## SEATS\_PREMIUM -4.581e-03 2.276e-03 -2.013 0.044689 \*   
## PITCH\_ECONOMY -4.836e-02 3.976e-02 -1.216 0.224501   
## PITCH\_PREMIUM 8.639e-02 4.672e-02 1.849 0.065104 .   
## WIDTH\_ECONOMY -6.878e-02 4.275e-02 -1.609 0.108337   
## PRICE\_ECONOMY -9.317e-04 3.315e-05 -28.104 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.784e-04 2.296e-05 25.192 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.622e-01 3.026e-01 1.528 0.127296   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04518787)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.063 on 444 degrees of freedom  
## AIC: -100.04  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE DECREASES SO IT CAN BE REMOVED*   
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-PITCH\_ECONOMY,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - PITCH\_ECONOMY,   
## data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75632 -0.08765 0.00253 0.08316 0.84464   
##   
## Coefficients: (1 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 1.919e-01 2.691e+00 0.071 0.943175   
## AIRLINEBritish -4.442e-01 6.847e-02 -6.487 2.34e-10 \*\*\*  
## AIRLINEDelta -3.351e-01 1.047e-01 -3.200 0.001471 \*\*   
## AIRLINEJet -2.722e-01 9.497e-02 -2.866 0.004357 \*\*   
## AIRLINESingapore -3.335e-01 8.504e-02 -3.922 0.000102 \*\*\*  
## AIRLINEVirgin -3.071e-01 7.186e-02 -4.274 2.35e-05 \*\*\*  
## AIRCRAFT -4.851e-02 2.842e-02 -1.707 0.088602 .   
## FLIGHT\_DURATION 2.603e-02 4.709e-03 5.528 5.53e-08 \*\*\*  
## MONTH 5.372e-03 9.556e-03 0.562 0.574292   
## INTERNATIONAL 5.930e-02 2.089e-01 0.284 0.776659   
## SEATS\_ECONOMY 3.885e-04 3.162e-04 1.229 0.219720   
## SEATS\_PREMIUM -4.581e-03 2.276e-03 -2.013 0.044689 \*   
## PITCH\_PREMIUM 3.802e-02 7.324e-02 0.519 0.603908   
## WIDTH\_ECONOMY -6.878e-02 4.275e-02 -1.609 0.108337   
## PRICE\_ECONOMY -9.317e-04 3.315e-05 -28.104 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.784e-04 2.296e-05 25.192 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.622e-01 3.026e-01 1.528 0.127296   
## QUALITY 4.836e-02 3.976e-02 1.216 0.224501   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04518787)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.063 on 444 degrees of freedom  
## AIC: -100.04  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE REMAINS THE SAME SO IT CANNOT BE REMOVED*  
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-PITCH\_PREMIUM,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - PITCH\_PREMIUM,   
## data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75632 -0.08765 0.00253 0.08316 0.84464   
##   
## Coefficients: (1 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 1.919e-01 2.691e+00 0.071 0.943175   
## AIRLINEBritish -4.442e-01 6.847e-02 -6.487 2.34e-10 \*\*\*  
## AIRLINEDelta -3.351e-01 1.047e-01 -3.200 0.001471 \*\*   
## AIRLINEJet -2.722e-01 9.497e-02 -2.866 0.004357 \*\*   
## AIRLINESingapore -3.335e-01 8.504e-02 -3.922 0.000102 \*\*\*  
## AIRLINEVirgin -3.071e-01 7.186e-02 -4.274 2.35e-05 \*\*\*  
## AIRCRAFT -4.851e-02 2.842e-02 -1.707 0.088602 .   
## FLIGHT\_DURATION 2.603e-02 4.709e-03 5.528 5.53e-08 \*\*\*  
## MONTH 5.372e-03 9.556e-03 0.562 0.574292   
## INTERNATIONAL 5.930e-02 2.089e-01 0.284 0.776659   
## SEATS\_ECONOMY 3.885e-04 3.162e-04 1.229 0.219720   
## SEATS\_PREMIUM -4.581e-03 2.276e-03 -2.013 0.044689 \*   
## PITCH\_ECONOMY 3.802e-02 7.324e-02 0.519 0.603908   
## WIDTH\_ECONOMY -6.878e-02 4.275e-02 -1.609 0.108337   
## PRICE\_ECONOMY -9.317e-04 3.315e-05 -28.104 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.784e-04 2.296e-05 25.192 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.622e-01 3.026e-01 1.528 0.127296   
## QUALITY 8.639e-02 4.672e-02 1.849 0.065104 .   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04518787)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.063 on 444 degrees of freedom  
## AIC: -100.04  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE REMAINS THE SAME SO IT CANNOT BE REMOVED*  
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-WIDTH\_ECONOMY,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - WIDTH\_ECONOMY,   
## data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75632 -0.09346 0.00612 0.08528 0.84527   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -1.699e+00 2.425e+00 -0.700 0.484067   
## AIRLINEBritish -4.763e-01 6.560e-02 -7.260 1.74e-12 \*\*\*  
## AIRLINEDelta -3.552e-01 1.041e-01 -3.410 0.000708 \*\*\*  
## AIRLINEJet -2.757e-01 9.511e-02 -2.899 0.003929 \*\*   
## AIRLINESingapore -4.318e-01 5.929e-02 -7.283 1.50e-12 \*\*\*  
## AIRLINEVirgin -3.346e-01 6.993e-02 -4.785 2.33e-06 \*\*\*  
## AIRCRAFT -6.410e-02 2.677e-02 -2.395 0.017050 \*   
## FLIGHT\_DURATION 2.509e-02 4.681e-03 5.360 1.34e-07 \*\*\*  
## MONTH 5.815e-03 9.569e-03 0.608 0.543696   
## INTERNATIONAL -3.868e-02 2.002e-01 -0.193 0.846892   
## SEATS\_ECONOMY 3.424e-04 3.154e-04 1.085 0.278298   
## SEATS\_PREMIUM -4.227e-03 2.269e-03 -1.863 0.063133 .   
## PITCH\_ECONOMY -4.487e-02 3.977e-02 -1.128 0.259926   
## PITCH\_PREMIUM 1.046e-01 4.541e-02 2.303 0.021737 \*   
## PRICE\_ECONOMY -9.320e-04 3.321e-05 -28.065 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.789e-04 2.300e-05 25.174 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 3.925e-01 3.000e-01 1.308 0.191411   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.0453492)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.180 on 445 degrees of freedom  
## AIC: -99.355  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE INCREASES SO IT CANnOT BE REMOVED*  
  
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-MONTH,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - MONTH, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75060 -0.08270 0.00304 0.08164 0.83682   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 2.371e-01 2.688e+00 0.088 0.92976   
## AIRLINEBritish -4.437e-01 6.841e-02 -6.486 2.35e-10 \*\*\*  
## AIRLINEDelta -3.333e-01 1.046e-01 -3.187 0.00154 \*\*   
## AIRLINEJet -2.730e-01 9.488e-02 -2.877 0.00421 \*\*   
## AIRLINESingapore -3.348e-01 8.495e-02 -3.941 9.43e-05 \*\*\*  
## AIRLINEVirgin -3.081e-01 7.179e-02 -4.292 2.17e-05 \*\*\*  
## AIRCRAFT -4.858e-02 2.840e-02 -1.710 0.08788 .   
## FLIGHT\_DURATION 2.608e-02 4.705e-03 5.543 5.09e-08 \*\*\*  
## INTERNATIONAL 6.856e-02 2.081e-01 0.329 0.74199   
## SEATS\_ECONOMY 3.883e-04 3.159e-04 1.229 0.21964   
## SEATS\_PREMIUM -4.610e-03 2.273e-03 -2.028 0.04314 \*   
## PITCH\_ECONOMY -4.794e-02 3.972e-02 -1.207 0.22817   
## PITCH\_PREMIUM 8.522e-02 4.664e-02 1.827 0.06831 .   
## WIDTH\_ECONOMY -6.948e-02 4.270e-02 -1.627 0.10443   
## PRICE\_ECONOMY -9.330e-04 3.304e-05 -28.236 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.788e-04 2.293e-05 25.242 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.641e-01 3.023e-01 1.535 0.12547   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04511842)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.078 on 445 degrees of freedom  
## AIC: -101.71  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE DECREASES SO IT CAN BE REMOVED*   
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-INTERNATIONAL,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - INTERNATIONAL,   
## data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75734 -0.08745 0.00355 0.08374 0.84362   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -2.999e-01 2.057e+00 -0.146 0.884161   
## AIRLINEBritish -4.436e-01 6.837e-02 -6.488 2.32e-10 \*\*\*  
## AIRLINEDelta -3.462e-01 9.711e-02 -3.564 0.000404 \*\*\*  
## AIRLINEJet -2.831e-01 8.669e-02 -3.266 0.001176 \*\*   
## AIRLINESingapore -3.380e-01 8.344e-02 -4.051 6.01e-05 \*\*\*  
## AIRLINEVirgin -3.074e-01 7.178e-02 -4.283 2.26e-05 \*\*\*  
## AIRCRAFT -4.699e-02 2.789e-02 -1.685 0.092697 .   
## FLIGHT\_DURATION 2.634e-02 4.581e-03 5.749 1.67e-08 \*\*\*  
## MONTH 5.586e-03 9.517e-03 0.587 0.557530   
## SEATS\_ECONOMY 3.779e-04 3.136e-04 1.205 0.228827   
## SEATS\_PREMIUM -4.471e-03 2.240e-03 -1.996 0.046531 \*   
## PITCH\_ECONOMY -4.643e-02 3.913e-02 -1.186 0.236071   
## PITCH\_PREMIUM 9.750e-02 2.549e-02 3.825 0.000149 \*\*\*  
## WIDTH\_ECONOMY -6.525e-02 4.085e-02 -1.597 0.110942   
## PRICE\_ECONOMY -9.311e-04 3.305e-05 -28.169 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.783e-04 2.293e-05 25.217 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.540e-01 3.009e-01 1.509 0.131998   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04509451)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.067 on 445 degrees of freedom  
## AIC: -101.96  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE DECREASES SO IT CAN BE REMOVED*  
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-INTERNATIONAL-MONTH-AIRCRAFT,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - INTERNATIONAL -   
## MONTH - AIRCRAFT, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.76212 -0.09167 -0.00109 0.08241 0.83725   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 7.619e-01 1.953e+00 0.390 0.696586   
## AIRLINEBritish -4.196e-01 6.701e-02 -6.262 8.93e-10 \*\*\*  
## AIRLINEDelta -3.502e-01 9.721e-02 -3.602 0.000351 \*\*\*  
## AIRLINEJet -2.897e-01 8.665e-02 -3.344 0.000896 \*\*\*  
## AIRLINESingapore -2.855e-01 7.688e-02 -3.714 0.000230 \*\*\*  
## AIRLINEVirgin -2.997e-01 7.166e-02 -4.183 3.47e-05 \*\*\*  
## FLIGHT\_DURATION 2.769e-02 4.522e-03 6.123 2.02e-09 \*\*\*  
## SEATS\_ECONOMY 3.449e-04 3.134e-04 1.100 0.271729   
## SEATS\_PREMIUM -5.016e-03 2.220e-03 -2.259 0.024368 \*   
## PITCH\_ECONOMY -5.932e-02 3.831e-02 -1.548 0.122231   
## PITCH\_PREMIUM 9.340e-02 2.535e-02 3.685 0.000257 \*\*\*  
## WIDTH\_ECONOMY -9.429e-02 3.710e-02 -2.542 0.011371 \*   
## PRICE\_ECONOMY -9.283e-04 3.294e-05 -28.185 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.787e-04 2.295e-05 25.213 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.853e-01 3.007e-01 1.614 0.107283   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04521185)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.210 on 447 degrees of freedom  
## AIC: -102.68  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE REMAINS THE SAME AND IT CANNOT BE REMOVED*   
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-INTERNATIONAL-MONTH-SEATS\_ECONOMY,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - INTERNATIONAL -   
## MONTH - SEATS\_ECONOMY, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75153 -0.08167 0.00275 0.08230 0.83527   
##   
## Coefficients: (1 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -3.329e-01 2.055e+00 -0.162 0.871348   
## AIRLINEBritish -4.430e-01 6.831e-02 -6.486 2.35e-10 \*\*\*  
## AIRLINEDelta -3.460e-01 9.704e-02 -3.566 0.000402 \*\*\*  
## AIRLINEJet -2.858e-01 8.651e-02 -3.303 0.001032 \*\*   
## AIRLINESingapore -3.401e-01 8.331e-02 -4.082 5.29e-05 \*\*\*  
## AIRLINEVirgin -3.085e-01 7.170e-02 -4.302 2.08e-05 \*\*\*  
## AIRCRAFT -4.682e-02 2.786e-02 -1.680 0.093634 .   
## FLIGHT\_DURATION 2.644e-02 4.574e-03 5.779 1.41e-08 \*\*\*  
## SEATS\_PREMIUM -4.860e-03 2.493e-03 -1.950 0.051852 .   
## PITCH\_ECONOMY -4.567e-02 3.908e-02 -1.168 0.243234   
## PITCH\_PREMIUM 9.809e-02 2.545e-02 3.854 0.000133 \*\*\*  
## WIDTH\_ECONOMY -6.539e-02 4.082e-02 -1.602 0.109872   
## PRICE\_ECONOMY -9.324e-04 3.296e-05 -28.290 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.787e-04 2.291e-05 25.266 < 2e-16 \*\*\*  
## N 3.759e-04 3.133e-04 1.200 0.230909   
## LAMBDA 4.546e-01 3.006e-01 1.512 0.131211   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04502823)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.083 on 446 degrees of freedom  
## AIC: -103.6  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE REMAINS THE SAME AND IT CANNOT BE REMOVED*   
  
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-INTERNATIONAL-MONTH-SEATS\_PREMIUM,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - INTERNATIONAL -   
## MONTH - SEATS\_PREMIUM, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75153 -0.08167 0.00275 0.08230 0.83527   
##   
## Coefficients: (1 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -3.329e-01 2.055e+00 -0.162 0.871348   
## AIRLINEBritish -4.430e-01 6.831e-02 -6.486 2.35e-10 \*\*\*  
## AIRLINEDelta -3.460e-01 9.704e-02 -3.566 0.000402 \*\*\*  
## AIRLINEJet -2.858e-01 8.651e-02 -3.303 0.001032 \*\*   
## AIRLINESingapore -3.401e-01 8.331e-02 -4.082 5.29e-05 \*\*\*  
## AIRLINEVirgin -3.085e-01 7.170e-02 -4.302 2.08e-05 \*\*\*  
## AIRCRAFT -4.682e-02 2.786e-02 -1.680 0.093634 .   
## FLIGHT\_DURATION 2.644e-02 4.574e-03 5.779 1.41e-08 \*\*\*  
## SEATS\_ECONOMY 4.860e-03 2.493e-03 1.950 0.051852 .   
## PITCH\_ECONOMY -4.567e-02 3.908e-02 -1.168 0.243234   
## PITCH\_PREMIUM 9.809e-02 2.545e-02 3.854 0.000133 \*\*\*  
## WIDTH\_ECONOMY -6.539e-02 4.082e-02 -1.602 0.109872   
## PRICE\_ECONOMY -9.324e-04 3.296e-05 -28.290 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.787e-04 2.291e-05 25.266 < 2e-16 \*\*\*  
## N -4.484e-03 2.238e-03 -2.003 0.045750 \*   
## LAMBDA 4.546e-01 3.006e-01 1.512 0.131211   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04502823)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.083 on 446 degrees of freedom  
## AIC: -103.6  
##   
## Number of Fisher Scoring iterations: 2

*# AIC VALUE REMAINS THE SAME AND IT CANNOT BE REMOVED*   
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-INTERNATIONAL-MONTH-LAMBDA,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - INTERNATIONAL -   
## MONTH - LAMBDA, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.74819 -0.08612 -0.00058 0.08817 0.82342   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -1.830e-01 2.055e+00 -0.089 0.929099   
## AIRLINEBritish -4.627e-01 6.716e-02 -6.889 1.91e-11 \*\*\*  
## AIRLINEDelta -3.577e-01 9.687e-02 -3.692 0.000250 \*\*\*  
## AIRLINEJet -2.898e-01 8.659e-02 -3.347 0.000886 \*\*\*  
## AIRLINESingapore -3.534e-01 8.296e-02 -4.260 2.49e-05 \*\*\*  
## AIRLINEVirgin -3.307e-01 7.028e-02 -4.706 3.38e-06 \*\*\*  
## AIRCRAFT -4.937e-02 2.785e-02 -1.773 0.076976 .   
## FLIGHT\_DURATION 2.701e-02 4.565e-03 5.918 6.49e-09 \*\*\*  
## SEATS\_ECONOMY 6.814e-07 1.916e-04 0.004 0.997164   
## SEATS\_PREMIUM -2.170e-03 1.636e-03 -1.327 0.185340   
## PITCH\_ECONOMY -5.044e-02 3.901e-02 -1.293 0.196687   
## PITCH\_PREMIUM 9.658e-02 2.547e-02 3.793 0.000170 \*\*\*  
## WIDTH\_ECONOMY -5.791e-02 4.058e-02 -1.427 0.154215   
## PRICE\_ECONOMY -9.345e-04 3.298e-05 -28.339 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.796e-04 2.293e-05 25.275 < 2e-16 \*\*\*  
## N NA NA NA NA   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04515783)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.186 on 447 degrees of freedom  
## AIC: -103.24  
##   
## Number of Fisher Scoring iterations: 2

*#AIC VALUE INCREASES AND SO CANNOT BE REMOVED*  
  
A1<-**lm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-INTERNATIONAL-MONTH-AIRLINE,data=AirLine)  
**summary**(A1)

##   
## Call:  
## lm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - INTERNATIONAL -   
## MONTH - AIRLINE, data = AirLine)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.88804 -0.09304 -0.00548 0.08441 0.86162   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -4.236e+00 1.150e+00 -3.683 0.000259 \*\*\*  
## AIRCRAFT 9.780e-03 2.577e-02 0.379 0.704501   
## FLIGHT\_DURATION 2.231e-02 4.693e-03 4.754 2.69e-06 \*\*\*  
## SEATS\_ECONOMY 8.944e-04 3.090e-04 2.895 0.003979 \*\*   
## SEATS\_PREMIUM -1.034e-02 1.785e-03 -5.792 1.30e-08 \*\*\*  
## PITCH\_ECONOMY 7.400e-02 2.812e-02 2.632 0.008784 \*\*   
## PITCH\_PREMIUM 1.387e-01 1.132e-02 12.259 < 2e-16 \*\*\*  
## WIDTH\_ECONOMY -1.605e-01 2.710e-02 -5.923 6.26e-09 \*\*\*  
## PRICE\_ECONOMY -8.531e-04 2.911e-05 -29.304 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.612e-04 2.247e-05 24.977 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 7.426e-01 3.073e-01 2.416 0.016083 \*   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.2229 on 451 degrees of freedom  
## Multiple R-squared: 0.7633, Adjusted R-squared: 0.758   
## F-statistic: 145.4 on 10 and 451 DF, p-value: < 2.2e-16

*#AIC VALUE INCREASES AND SO IT CANNOT BE REMOVED*  
  
A1<-**glm**(PRICE\_RELATIVE~.-WIDTH\_PREMIUM-INTERNATIONAL-MONTH-QUALITY,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - WIDTH\_PREMIUM - INTERNATIONAL -   
## MONTH - QUALITY, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75153 -0.08167 0.00275 0.08230 0.83527   
##   
## Coefficients: (1 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -3.329e-01 2.055e+00 -0.162 0.871348   
## AIRLINEBritish -4.430e-01 6.831e-02 -6.486 2.35e-10 \*\*\*  
## AIRLINEDelta -3.460e-01 9.704e-02 -3.566 0.000402 \*\*\*  
## AIRLINEJet -2.858e-01 8.651e-02 -3.303 0.001032 \*\*   
## AIRLINESingapore -3.401e-01 8.331e-02 -4.082 5.29e-05 \*\*\*  
## AIRLINEVirgin -3.085e-01 7.170e-02 -4.302 2.08e-05 \*\*\*  
## AIRCRAFT -4.682e-02 2.786e-02 -1.680 0.093634 .   
## FLIGHT\_DURATION 2.644e-02 4.574e-03 5.779 1.41e-08 \*\*\*  
## SEATS\_ECONOMY 3.759e-04 3.133e-04 1.200 0.230909   
## SEATS\_PREMIUM -4.484e-03 2.238e-03 -2.003 0.045750 \*   
## PITCH\_ECONOMY -4.567e-02 3.908e-02 -1.168 0.243234   
## PITCH\_PREMIUM 9.809e-02 2.545e-02 3.854 0.000133 \*\*\*  
## WIDTH\_ECONOMY -6.539e-02 4.082e-02 -1.602 0.109872   
## PRICE\_ECONOMY -9.324e-04 3.296e-05 -28.290 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.787e-04 2.291e-05 25.266 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.546e-01 3.006e-01 1.512 0.131211   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04502823)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.083 on 446 degrees of freedom  
## AIC: -103.6  
##   
## Number of Fisher Scoring iterations: 2

*#AIC VALUE REMAINS THE SAME AND SO CANOT BE REMOVED*  
  
  
*#AIC VALUE OBTAINED IS MINIMUM FOR THIS MODEL TILL NOW*  
A1<-**lm**(PRICE\_RELATIVE~.-INTERNATIONAL-MONTH-WIDTH\_PREMIUM,data=AirLine)  
**summary**(A1)

##   
## Call:  
## lm(formula = PRICE\_RELATIVE ~ . - INTERNATIONAL - MONTH - WIDTH\_PREMIUM,   
## data = AirLine)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -0.75153 -0.08167 0.00275 0.08230 0.83527   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -3.329e-01 2.055e+00 -0.162 0.871348   
## AIRLINEBritish -4.430e-01 6.831e-02 -6.486 2.35e-10 \*\*\*  
## AIRLINEDelta -3.460e-01 9.704e-02 -3.566 0.000402 \*\*\*  
## AIRLINEJet -2.858e-01 8.651e-02 -3.303 0.001032 \*\*   
## AIRLINESingapore -3.401e-01 8.331e-02 -4.082 5.29e-05 \*\*\*  
## AIRLINEVirgin -3.085e-01 7.170e-02 -4.302 2.08e-05 \*\*\*  
## AIRCRAFT -4.682e-02 2.786e-02 -1.680 0.093634 .   
## FLIGHT\_DURATION 2.644e-02 4.574e-03 5.779 1.41e-08 \*\*\*  
## SEATS\_ECONOMY 3.759e-04 3.133e-04 1.200 0.230909   
## SEATS\_PREMIUM -4.484e-03 2.238e-03 -2.003 0.045750 \*   
## PITCH\_ECONOMY -4.567e-02 3.908e-02 -1.168 0.243234   
## PITCH\_PREMIUM 9.809e-02 2.545e-02 3.854 0.000133 \*\*\*  
## WIDTH\_ECONOMY -6.539e-02 4.082e-02 -1.602 0.109872   
## PRICE\_ECONOMY -9.324e-04 3.296e-05 -28.290 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.787e-04 2.291e-05 25.266 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.546e-01 3.006e-01 1.512 0.131211   
## QUALITY NA NA NA NA   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.2122 on 446 degrees of freedom  
## Multiple R-squared: 0.7878, Adjusted R-squared: 0.7807   
## F-statistic: 110.4 on 15 and 446 DF, p-value: < 2.2e-16

*#ADDING INTERACTION TERMS*  
  
A1<-**glm**(PRICE\_RELATIVE~.-INTERNATIONAL-MONTH-WIDTH\_PREMIUM+WIDTH\_PREMIUM\*WIDTH\_ECONOMY,data=AirLine)  
**summary**(A1) *# AIC INCREASES SO IT SHOULD NOT BE ADDED*

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - INTERNATIONAL - MONTH - WIDTH\_PREMIUM +   
## WIDTH\_PREMIUM \* WIDTH\_ECONOMY, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.75107 -0.08414 0.00272 0.08448 0.83740   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 1.694e+00 2.108e+01 0.080 0.93597   
## AIRLINEBritish -4.059e-01 1.026e-01 -3.956 8.85e-05 \*\*\*  
## AIRLINEDelta -4.337e-01 1.999e-01 -2.170 0.03051 \*   
## AIRLINEJet -2.667e-01 9.380e-02 -2.844 0.00466 \*\*   
## AIRLINESingapore -3.931e-01 1.763e-01 -2.229 0.02628 \*   
## AIRLINEVirgin -4.090e-01 2.210e-01 -1.850 0.06492 .   
## AIRCRAFT -4.634e-02 2.956e-02 -1.567 0.11775   
## FLIGHT\_DURATION 2.622e-02 4.698e-03 5.580 4.19e-08 \*\*\*  
## SEATS\_ECONOMY 3.989e-04 3.166e-04 1.260 0.20835   
## SEATS\_PREMIUM -4.714e-03 2.279e-03 -2.068 0.03922 \*   
## PITCH\_ECONOMY -1.711e-02 6.888e-02 -0.248 0.80389   
## PITCH\_PREMIUM 4.701e-02 9.490e-02 0.495 0.62062   
## WIDTH\_ECONOMY -1.940e-01 1.141e+00 -0.170 0.86505   
## PRICE\_ECONOMY -9.328e-04 3.308e-05 -28.202 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 5.785e-04 2.296e-05 25.197 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.685e-01 3.023e-01 1.550 0.12191   
## QUALITY NA NA NA NA   
## WIDTH\_PREMIUM -3.794e-02 1.039e+00 -0.037 0.97090   
## WIDTH\_ECONOMY:WIDTH\_PREMIUM 5.941e-03 6.061e-02 0.098 0.92196   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.04519876)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 20.068 on 444 degrees of freedom  
## AIC: -99.93  
##   
## Number of Fisher Scoring iterations: 2

A1<-**glm**(PRICE\_RELATIVE~.-INTERNATIONAL-MONTH-WIDTH\_PREMIUM+PRICE\_PREMIUM\*PRICE\_ECONOMY,data=AirLine)  
**summary**(A1)*# AIC DECREASES SO IT SHOULD BE ADDED*

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - INTERNATIONAL - MONTH - WIDTH\_PREMIUM +   
## PRICE\_PREMIUM \* PRICE\_ECONOMY, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.71503 -0.07994 0.00007 0.06878 0.84699   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 1.598e+00 2.048e+00 0.780 0.435607   
## AIRLINEBritish -4.644e-01 6.687e-02 -6.944 1.36e-11 \*\*\*  
## AIRLINEDelta -4.058e-01 9.562e-02 -4.244 2.67e-05 \*\*\*  
## AIRLINEJet -2.555e-01 8.474e-02 -3.016 0.002712 \*\*   
## AIRLINESingapore -3.150e-01 8.154e-02 -3.863 0.000129 \*\*\*  
## AIRLINEVirgin -3.712e-01 7.127e-02 -5.209 2.91e-07 \*\*\*  
## AIRCRAFT -3.513e-02 2.733e-02 -1.285 0.199339   
## FLIGHT\_DURATION 2.200e-02 4.565e-03 4.819 1.98e-06 \*\*\*  
## SEATS\_ECONOMY 5.932e-04 3.095e-04 1.917 0.055887 .   
## SEATS\_PREMIUM -4.948e-03 2.188e-03 -2.261 0.024244 \*   
## PITCH\_ECONOMY -6.167e-02 3.832e-02 -1.609 0.108266   
## PITCH\_PREMIUM 7.636e-02 2.528e-02 3.021 0.002663 \*\*   
## WIDTH\_ECONOMY -1.054e-01 4.075e-02 -2.587 0.010011 \*   
## PRICE\_ECONOMY -8.351e-04 3.818e-05 -21.874 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 6.748e-04 3.018e-05 22.359 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.802e-01 2.937e-01 1.635 0.102775   
## QUALITY NA NA NA NA   
## PRICE\_ECONOMY:PRICE\_PREMIUM -5.168e-08 1.090e-08 -4.743 2.85e-06 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.0429582)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 19.116 on 445 degrees of freedom  
## AIC: -124.38  
##   
## Number of Fisher Scoring iterations: 2

*#INTUITIVELY,WIDTH\_PREMIUM SHOULD NOT BE REMOVED, ALSO BECAUSE CORRELATION IS HIGH*  
A1<-**glm**(PRICE\_RELATIVE~.-INTERNATIONAL-MONTH+PRICE\_PREMIUM\*PRICE\_ECONOMY,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = PRICE\_RELATIVE ~ . - INTERNATIONAL - MONTH + PRICE\_PREMIUM \*   
## PRICE\_ECONOMY, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.71531 -0.07483 -0.00131 0.06408 0.84992   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 1.575e+00 2.049e+00 0.769 0.442530   
## AIRLINEBritish -4.057e-01 9.666e-02 -4.197 3.27e-05 \*\*\*  
## AIRLINEDelta -5.211e-01 1.672e-01 -3.117 0.001943 \*\*   
## AIRLINEJet -2.296e-01 9.019e-02 -2.546 0.011237 \*   
## AIRLINESingapore -3.732e-01 1.070e-01 -3.489 0.000534 \*\*\*  
## AIRLINEVirgin -5.006e-01 1.695e-01 -2.953 0.003318 \*\*   
## AIRCRAFT -3.293e-02 2.746e-02 -1.199 0.231079   
## FLIGHT\_DURATION 2.178e-02 4.574e-03 4.761 2.62e-06 \*\*\*  
## SEATS\_ECONOMY 6.280e-04 3.123e-04 2.011 0.044946 \*   
## SEATS\_PREMIUM -5.284e-03 2.225e-03 -2.374 0.018003 \*   
## PITCH\_ECONOMY -1.722e-02 6.531e-02 -0.264 0.792194   
## PITCH\_PREMIUM 4.448e-03 8.918e-02 0.050 0.960239   
## WIDTH\_ECONOMY -1.308e-01 5.073e-02 -2.578 0.010250 \*   
## WIDTH\_PREMIUM 9.373e-02 1.115e-01 0.841 0.400867   
## PRICE\_ECONOMY -8.344e-04 3.820e-05 -21.846 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 6.753e-04 3.020e-05 22.365 < 2e-16 \*\*\*  
## N NA NA NA NA   
## LAMBDA 4.994e-01 2.947e-01 1.695 0.090827 .   
## QUALITY NA NA NA NA   
## PRICE\_ECONOMY:PRICE\_PREMIUM -5.220e-08 1.092e-08 -4.781 2.37e-06 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.0429865)  
##   
## Null deviance: 94.635 on 461 degrees of freedom  
## Residual deviance: 19.086 on 444 degrees of freedom  
## AIC: -123.11  
##   
## Number of Fisher Scoring iterations: 2

*#To check the prediction values from this model*  
**predict**(A1)

## 1 2 3 4 5   
## 1.515491295 1.515491295 1.348674188 1.467459198 1.244880709   
## 6 7 8 9 10   
## 1.647662760 1.647662760 1.018004696 1.103523698 0.611516759   
## 11 12 13 14 15   
## 0.611516759 0.611516759 0.129115521 0.129115521 0.129115521   
## 16 17 18 19 20   
## 0.129115521 0.129115521 0.129115521 0.129115521 0.129115521   
## 21 22 23 24 25   
## 0.130449376 0.130449376 0.130449376 0.187784820 0.187784820   
## 26 27 28 29 30   
## 0.300644745 0.006048983 0.006048983 0.161093654 0.122179773   
## 31 32 33 34 35   
## 0.122179773 0.122179773 0.098359953 0.098359953 0.098359953   
## 36 37 38 39 40   
## 0.152109753 0.152109753 0.152109753 0.036926270 0.018852547   
## 41 42 43 44 45   
## 0.018852547 -0.022688996 -0.020729194 -0.020729194 0.012203316   
## 46 47 48 49 50   
## 0.005482076 -0.102440226 -0.102440226 -0.102440226 -0.102440226   
## 51 52 53 54 55   
## -0.034080265 -0.034080265 -0.034080265 -0.032338219 -0.137898190   
## 56 57 58 59 60   
## -0.137898190 -0.136373900 -0.136373900 -0.138333701 -0.138333701   
## 61 62 63 64 65   
## -0.136373900 -0.136373900 -0.139523623 -0.139523623 -0.139523623   
## 66 67 68 69 70   
## -0.144103776 -0.144103776 -0.234280643 -0.234280643 0.066291854   
## 71 72 73 74 75   
## 0.066291854 0.066291854 0.066291854 -0.060725398 1.805535429   
## 76 77 78 79 80   
## 1.805535429 1.805535429 0.218038548 0.218038548 0.218038548   
## 81 82 83 84 85   
## 0.218038548 0.388929545 0.388929545 0.388929545 0.388929545   
## 86 87 88 89 90   
## 0.905873395 0.905873395 0.905873395 0.905873395 1.174401460   
## 91 92 93 94 95   
## 1.174401460 0.030616961 0.440436697 0.440436697 0.440436697   
## 96 97 98 99 100   
## 0.275424483 0.275424483 0.275424483 0.275424483 0.981657118   
## 101 102 103 104 105   
## 0.981657118 0.981657118 0.285849760 0.285849760 0.285849760   
## 106 107 108 109 110   
## 0.285849760 0.647019139 0.647019139 0.647019139 0.923815723   
## 111 112 113 114 115   
## 0.923815723 0.922251056 0.801092332 0.801092332 0.597058006   
## 116 117 118 119 120   
## 0.134514169 0.915199344 0.915199344 0.915199344 0.915199344   
## 121 122 123 124 125   
## 0.312168500 0.312168500 0.312168500 0.563793363 0.563793363   
## 126 127 128 129 130   
## 0.563793363 0.502868102 0.502868102 0.502868102 0.304098532   
## 131 132 133 134 135   
## 0.304098532 0.304098532 0.304485838 0.361525331 0.361525331   
## 136 137 138 139 140   
## 0.361525331 0.383839568 0.383839568 0.383839568 0.158005421   
## 141 142 143 144 145   
## 0.158005421 0.158005421 0.992933468 0.459353948 0.459353948   
## 146 147 148 149 150   
## 0.459353948 0.398444512 0.398444512 0.398444512 0.283326553   
## 151 152 153 154 155   
## 0.283326553 0.283326553 0.299480852 0.299480852 0.299480852   
## 156 157 158 159 160   
## 0.279031209 0.279031209 0.279031209 0.364312355 0.341675148   
## 161 162 163 164 165   
## 0.341675148 0.762610358 0.054687795 0.054687795 0.054687795   
## 166 167 168 169 170   
## 0.296528148 0.296528148 0.296528148 0.926554173 0.926554173   
## 171 172 173 174 175   
## 0.842146490 0.333845277 0.344777537 0.344777537 0.344777537   
## 176 177 178 179 180   
## 0.344777537 0.857587961 0.857587961 0.417038744 0.716556054   
## 181 182 183 184 185   
## 0.335052969 0.699878343 0.699878343 0.699878343 0.207368766   
## 186 187 188 189 190   
## 0.207368766 0.207368766 0.207368766 0.210149370 0.210149370   
## 191 192 193 194 195   
## 0.210149370 0.407329106 0.397530099 0.211465350 0.211465350   
## 196 197 198 199 200   
## 0.211465350 0.391353071 0.391353071 0.677729820 0.360374963   
## 201 202 203 204 205   
## 0.550974029 0.550974029 0.596489699 0.353323778 0.597399574   
## 206 207 208 209 210   
## 0.574102988 0.523292923 0.575213242 0.575213242 0.575213242   
## 211 212 213 214 215   
## 0.196475150 0.204084570 0.204084570 0.164261303 0.206132795   
## 216 217 218 219 220   
## 0.206132795 0.210782486 0.195567864 0.182378100 0.182378100   
## 221 222 223 224 225   
## 0.196765176 0.224108307 0.197888948 0.234670353 0.254567506   
## 226 227 228 229 230   
## 0.195899491 0.259152813 0.202040900 0.209589909 0.233073707   
## 231 232 233 234 235   
## 0.249813239 0.225229497 0.262129746 0.199647789 0.255367682   
## 236 237 238 239 240   
## 0.233106420 0.219913169 0.211380970 0.211380970 0.203030092   
## 241 242 243 244 245   
## 0.203030092 0.235962602 0.251276969 0.236812494 0.236446325   
## 246 247 248 249 250   
## 0.236446325 0.240077593 0.233859472 0.237786148 0.490633138   
## 251 252 253 254 255   
## 0.490633138 0.402911919 0.402911919 0.402911919 0.289941315   
## 256 257 258 259 260   
## 0.141347138 0.140693871 0.088024377 0.137617689 0.138053200   
## 261 262 263 264 265   
## 0.138270956 0.138577382 0.138577382 0.138577382 0.121643731   
## 266 267 268 269 270   
## 0.119248418 0.134530440 0.136527151 0.070365417 0.129889385   
## 271 272 273 274 275   
## 0.132937965 0.053925190 0.083383042 0.079232333 0.060457340   
## 276 277 278 279 280   
## 0.075357446 0.043518897 0.048932898 0.081865408 0.075719362   
## 281 282 283 284 285   
## 0.081596146 0.070672273 0.062756095 0.062767477 0.070832062   
## 286 287 288 289 290   
## 0.006367330 0.034062363 0.034497874 0.065536874 0.003044028   
## 291 292 293 294 295   
## 0.009628381 0.024680020 0.054707455 0.044993503 -0.003359025   
## 296 297 298 299 300   
## 1.052801195 1.052801195 1.052801195 1.020083657 1.153441495   
## 301 302 303 304 305   
## 1.045927583 1.045927583 1.011531578 1.071434904 1.068673470   
## 306 307 308 309 310   
## 0.882595218 1.088979702 1.088979702 1.088979702 1.088979702   
## 311 312 313 314 315   
## 0.984710233 1.124090711 1.124090711 1.124090711 0.934048038   
## 316 317 318 319 320   
## 0.934048038 0.934048038 1.115474721 0.919897232 0.919897232   
## 321 322 323 324 325   
## 0.919897232 1.051261456 1.029413408 0.995204992 0.970242692   
## 326 327 328 329 330   
## 0.971984737 0.800910304 1.027857958 0.771925335 0.909445318   
## 331 332 333 334 335   
## 0.903816889 0.950801910 0.950801910 0.950801910 0.943356024   
## 336 337 338 339 340   
## 0.943356024 0.943356024 0.943356024 0.978694363 1.073768960   
## 341 342 343 344 345   
## 0.955238608 0.951806266 0.919556247 0.890632105 0.890632105   
## 346 347 348 349 350   
## 0.890632105 0.890632105 0.935194545 0.935194545 0.642030142   
## 351 352 353 354 355   
## 0.642030142 0.652890350 0.628719830 0.936643086 0.855739193   
## 356 357 358 359 360   
## 0.855739193 0.855739193 0.834074507 0.822976925 0.835311796   
## 361 362 363 364 365   
## 0.941030303 0.765279418 0.765279418 0.765279418 0.765279418   
## 366 367 368 369 370   
## 0.609148580 0.609148580 0.609148580 0.609148580 0.802206559   
## 371 372 373 374 375   
## 0.802206559 0.774315031 0.654392881 0.654392881 0.654392881   
## 376 377 378 379 380   
## 0.654392881 0.520255369 0.520255369 0.520255369 0.520255369   
## 381 382 383 384 385   
## 0.689239302 0.689239302 0.689239302 0.600055898 0.548287159   
## 386 387 388 389 390   
## 0.548287159 0.340937237 0.340937237 0.340937237 0.269866416   
## 391 392 393 394 395   
## 0.269866416 0.269866416 0.254889335 0.254889335 0.254889335   
## 396 397 398 399 400   
## 0.254889335 0.264405033 0.264405033 0.264405033 0.264405033   
## 401 402 403 404 405   
## 1.148454777 1.148454777 1.148454777 1.148454777 1.528121495   
## 406 407 408 409 410   
## 1.528121495 1.528121495 1.368867878 1.050328931 1.050328931   
## 411 412 413 414 415   
## 1.050328931 1.050328931 1.010533579 1.010533579 1.010533579   
## 416 417 418 419 420   
## 1.010533579 1.058173082 1.058173082 1.058173082 1.058173082   
## 421 422 423 424 425   
## 1.044868308 1.044868308 1.044868308 1.044868308 0.965746596   
## 426 427 428 429 430   
## 0.965746596 0.965746596 0.997543081 0.735581052 0.735581052   
## 431 432 433 434 435   
## 0.735581052 0.735581052 0.753977728 0.502104430 0.502104430   
## 436 437 438 439 440   
## 0.502104430 0.502104430 0.712754426 0.528679838 0.528679838   
## 441 442 443 444 445   
## 0.560476323 0.449874836 0.449874836 0.449874836 0.449874836   
## 446 447 448 449 450   
## 0.463246450 0.463246450 0.463246450 0.463246450 0.360642415   
## 451 452 453 454 455   
## 0.360642415 0.360642415 0.360642415 0.244261541 0.196240178   
## 456 457 458 459 460   
## 0.196240178 0.196240178 0.513817245 0.408351803 0.360330439   
## 461 462   
## 0.408351803 0.408351803

*#Alternate Hypothesis*  
  
*#The mean of the PRICE\_PREMIUM is higher than the mean of the PRICE\_ECONOMY.*  
  
**t.test**(AirLine$PRICE\_ECONOMY,AirLine$PRICE\_PREMIUM,alternative = "greater")

##   
## Welch Two Sample t-test  
##   
## data: AirLine$PRICE\_ECONOMY and AirLine$PRICE\_PREMIUM  
## t = -6.8117, df = 864.11, p-value = 1  
## alternative hypothesis: true difference in means is greater than 0  
## 95 percent confidence interval:  
## -639.8422 Inf  
## sample estimates:  
## mean of x mean of y   
## 1317.065 1832.346

*# The p-value comes out -> 1 ( i.e >0.05)*   
*# Hence - Hypothesis is Incorrect and Alternate Hypothesis is correct*  
  
  
*#Linear regression for Differnce of the prices as Y*  
B1<-AirLine$PRICE\_PREMIUM- AirLine$PRICE\_ECONOMY  
  
*#R-Sqaured value equals to 1 and residual error term reduced to ~Zero*  
A1<-**lm**(B1~.-INTERNATIONAL-MONTH+PRICE\_PREMIUM\*PRICE\_ECONOMY,data=AirLine)  
**summary**(A1)

##   
## Call:  
## lm(formula = B1 ~ . - INTERNATIONAL - MONTH + PRICE\_PREMIUM \*   
## PRICE\_ECONOMY, data = AirLine)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -2.512e-11 -4.230e-13 -8.200e-14 2.680e-13 6.575e-11   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -6.012e-12 3.654e-11 -1.650e-01 0.869387   
## AIRLINEBritish -2.689e-12 1.757e-12 -1.531e+00 0.126567   
## AIRLINEDelta -7.937e-12 3.012e-12 -2.635e+00 0.008702 \*\*   
## AIRLINEJet -2.727e-12 1.619e-12 -1.684e+00 0.092817 .   
## AIRLINESingapore -6.886e-12 1.933e-12 -3.563e+00 0.000406 \*\*\*  
## AIRLINEVirgin -7.936e-12 3.051e-12 -2.601e+00 0.009614 \*\*   
## AIRCRAFT -8.766e-14 4.902e-13 -1.790e-01 0.858172   
## FLIGHT\_DURATION 1.939e-13 8.358e-14 2.320e+00 0.020808 \*   
## SEATS\_ECONOMY -6.711e-15 5.592e-15 -1.200e+00 0.230699   
## SEATS\_PREMIUM 3.662e-14 3.991e-14 9.170e-01 0.359418   
## PITCH\_ECONOMY 8.235e-13 1.164e-12 7.070e-01 0.479651   
## PITCH\_PREMIUM -7.772e-13 1.589e-12 -4.890e-01 0.625103   
## WIDTH\_ECONOMY -8.443e-13 9.110e-13 -9.270e-01 0.354520   
## WIDTH\_PREMIUM 1.640e-12 1.988e-12 8.250e-01 0.410011   
## PRICE\_ECONOMY -1.000e+00 9.806e-16 -1.020e+15 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 1.000e+00 7.849e-16 1.274e+15 < 2e-16 \*\*\*  
## PRICE\_RELATIVE 3.513e-13 8.459e-13 4.150e-01 0.678094   
## N NA NA NA NA   
## LAMBDA -1.608e-12 5.269e-12 -3.050e-01 0.760312   
## QUALITY NA NA NA NA   
## PRICE\_ECONOMY:PRICE\_PREMIUM -1.920e-19 1.995e-19 -9.620e-01 0.336344   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 3.695e-12 on 443 degrees of freedom  
## Multiple R-squared: 1, Adjusted R-squared: 1   
## F-statistic: 6.358e+29 on 18 and 443 DF, p-value: < 2.2e-16

*#AIC Value is reduced to -2260*  
A1<-**glm**(B1~.-INTERNATIONAL-MONTH+PRICE\_PREMIUM\*PRICE\_ECONOMY,data=AirLine)  
**summary**(A1)

##   
## Call:  
## glm(formula = B1 ~ . - INTERNATIONAL - MONTH + PRICE\_PREMIUM \*   
## PRICE\_ECONOMY, data = AirLine)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -1.023e-11 -5.002e-12 -3.464e-12 -2.501e-12 1.172e-12   
##   
## Coefficients: (2 not defined because of singularities)  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -6.012e-12 4.122e-11 -1.460e-01 0.88410   
## AIRLINEBritish -2.689e-12 1.982e-12 -1.357e+00 0.17551   
## AIRLINEDelta -7.937e-12 3.397e-12 -2.336e+00 0.01993 \*   
## AIRLINEJet -2.727e-12 1.827e-12 -1.493e+00 0.13612   
## AIRLINESingapore -6.886e-12 2.180e-12 -3.159e+00 0.00169 \*\*   
## AIRLINEVirgin -7.936e-12 3.442e-12 -2.305e+00 0.02160 \*   
## AIRCRAFT -8.766e-14 5.530e-13 -1.590e-01 0.87413   
## FLIGHT\_DURATION 1.939e-13 9.428e-14 2.056e+00 0.04033 \*   
## SEATS\_ECONOMY -6.711e-15 6.308e-15 -1.064e+00 0.28794   
## SEATS\_PREMIUM 3.662e-14 4.502e-14 8.130e-01 0.41650   
## PITCH\_ECONOMY 8.235e-13 1.313e-12 6.270e-01 0.53089   
## PITCH\_PREMIUM -7.772e-13 1.793e-12 -4.330e-01 0.66489   
## WIDTH\_ECONOMY -8.443e-13 1.028e-12 -8.220e-01 0.41175   
## WIDTH\_PREMIUM 1.640e-12 2.243e-12 7.310e-01 0.46515   
## PRICE\_ECONOMY -1.000e+00 1.106e-15 -9.040e+14 < 2e-16 \*\*\*  
## PRICE\_PREMIUM 1.000e+00 8.854e-16 1.129e+15 < 2e-16 \*\*\*  
## PRICE\_RELATIVE 3.513e-13 9.542e-13 3.680e-01 0.71291   
## N NA NA NA NA   
## LAMBDA -1.608e-12 5.944e-12 -2.710e-01 0.78682   
## QUALITY NA NA NA NA   
## PRICE\_ECONOMY:PRICE\_PREMIUM -1.920e-19 2.251e-19 -8.530e-01 0.39402   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 1.737741e-23)  
##   
## Null deviance: 1.5628e+08 on 461 degrees of freedom  
## Residual deviance: 7.6982e-21 on 443 degrees of freedom  
## AIC: -22880  
##   
## Number of Fisher Scoring iterations: 1

*#PREDICTION OF VALUES*   
**predict**(A1)

## 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15   
## 1062 1062 981 1010 868 1767 1767 621 616 1054 1054 1054 200 200 200   
## 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30   
## 200 200 200 200 200 200 200 200 200 200 200 203 203 203 200   
## 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45   
## 200 200 200 200 200 178 178 178 110 110 110 109 109 109 109   
## 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60   
## 109 110 110 110 110 110 110 110 110 110 110 110 110 110 110   
## 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75   
## 110 110 109 109 109 109 109 109 109 84 84 84 84 69 4312   
## 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90   
## 4312 4312 1018 1018 1018 1018 1179 1179 1179 1179 1688 1688 1688 1688 1858   
## 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105   
## 1858 734 997 997 997 844 844 844 844 1537 1537 1537 744 744 744   
## 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120   
## 744 1206 1206 1206 1521 1521 1521 1284 1284 1078 611 1538 1538 1538 1538   
## 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135   
## 777 777 777 906 906 906 834 834 834 725 725 725 725 691 691   
## 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150   
## 691 659 659 659 304 304 304 1283 683 683 683 646 646 646 561   
## 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165   
## 561 561 561 561 561 540 540 540 542 518 518 909 130 130 130   
## 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180   
## 464 464 464 938 938 847 299 522 522 522 522 915 915 436 712   
## 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195   
## 227 608 608 608 288 288 288 288 190 190 190 221 221 90 90   
## 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210   
## 90 176 176 503 155 278 278 304 29 309 273 215 264 264 264   
## 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225   
## 29 40 40 15 40 40 26 26 16 16 30 36 40 38 35   
## 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240   
## 16 35 36 30 27 29 30 30 35 28 35 27 30 30 32   
## 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255   
## 32 32 27 28 22 22 28 23 21 810 810 766 766 766 603   
## 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270   
## 39 39 39 44 44 44 44 44 44 44 44 39 44 44 34   
## 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285   
## 34 44 39 15 15 15 25 19 19 15 44 24 15 15 15   
## 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300   
## 44 15 15 15 24 15 15 15 15 15 316 316 316 259 344   
## 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315   
## 249 249 249 323 323 505 243 243 243 243 179 198 198 198 149   
## 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330   
## 149 149 300 120 120 120 323 249 249 162 162 412 296 379 120   
## 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345   
## 101 132 132 132 113 113 113 113 190 139 170 169 161 170 170   
## 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360   
## 170 170 170 170 232 232 267 255 191 152 152 152 127 102 59   
## 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375   
## 877 499 499 499 499 499 499 499 499 658 658 614 420 420 420   
## 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390   
## 420 420 420 420 420 732 732 732 480 291 291 178 178 178 160   
## 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405   
## 160 160 56 56 56 56 133 133 133 133 1045 1045 1045 1045 1878   
## 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420   
## 1878 1878 1717 1548 1548 1548 1548 1521 1521 1521 1521 1728 1728 1728 1728   
## 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435   
## 1439 1439 1439 1439 1606 1606 1606 1606 1315 1315 1315 1315 614 1249 1249   
## 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450   
## 1249 1249 490 1171 1171 1171 732 732 732 732 720 720 720 720 804   
## 451 452 453 454 455 456 457 458 459 460 461 462   
## 804 804 804 490 490 490 490 354 54 54 54 54

*#According to summary report it is of ~ a-b=a-b type*  
*# Therefore Model not cosidered*