**FLIGHT LANDING**

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**CHAPTER - 1**

**Introduction:**

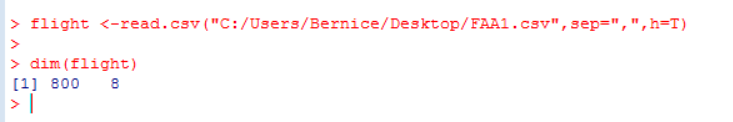
In this chapter, we will focus on cleaning the data and removing the extreme values. Finally we’ll conclude by summarizing them and analyzing their distribution.

**R-Code**

1. **Import the FAA1 file.**

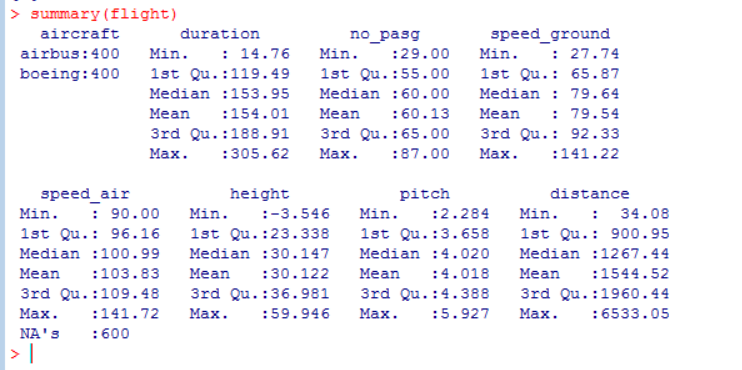
flight <-read.csv("C:/Users/Bernice/Desktop/FAA1.csv",sep=",",h=T)

dim(flight)



1. **Summarize the data**

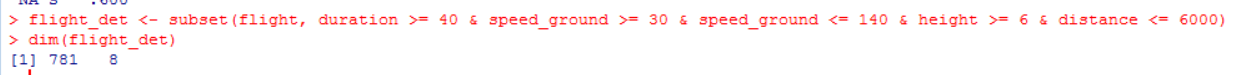
summary(flight)



1. **Remove the outliers**

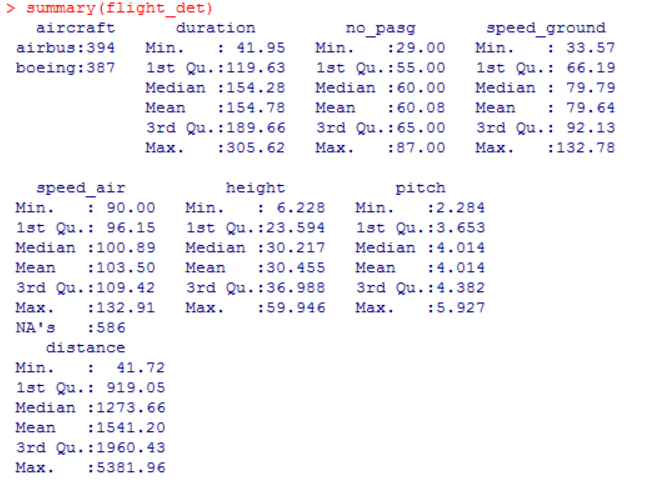
flight\_det <- subset(flight, duration >= 40 & speed\_ground >= 30 & speed\_ground <= 140 & height >= 6 & distance <= 6000)

dim(flight\_det)



1. **Summarize the final data for analysis**

summary(flight\_det)



**CHAPTER - 2**

**Introduction:**

In this chapter, we will focus on analyzing and exploring the cleaned data.

**R-Code:**

1. **Plot distance against all the columns**

par(mfrow=c(1,1))

plot(flight\_det$distance~flight\_det$duration)

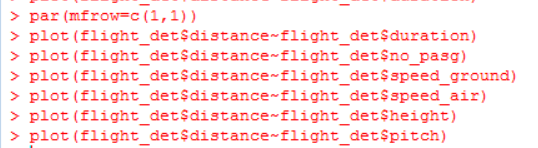
plot(flight\_det$distance~flight\_det$no\_pasg)

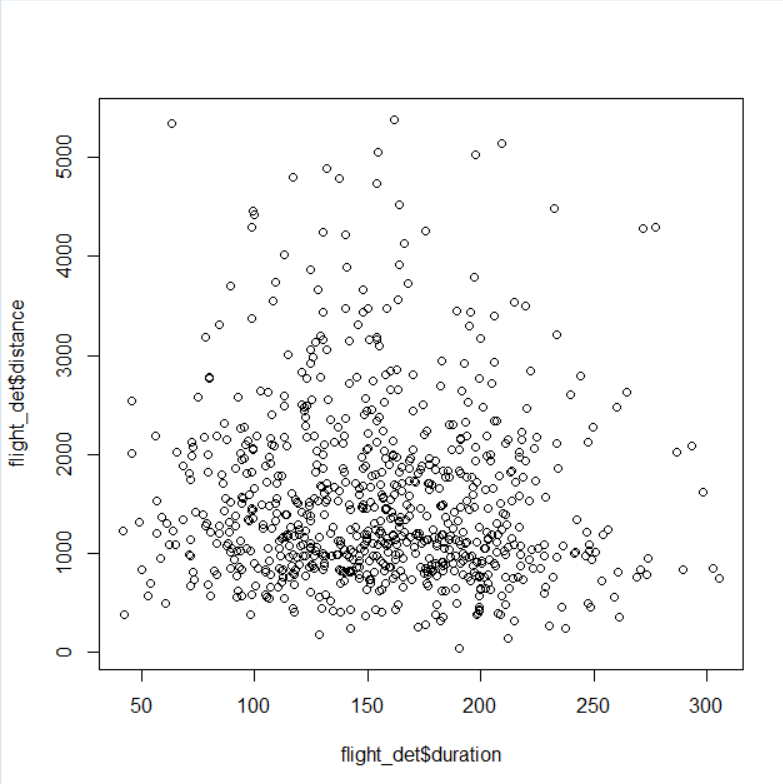
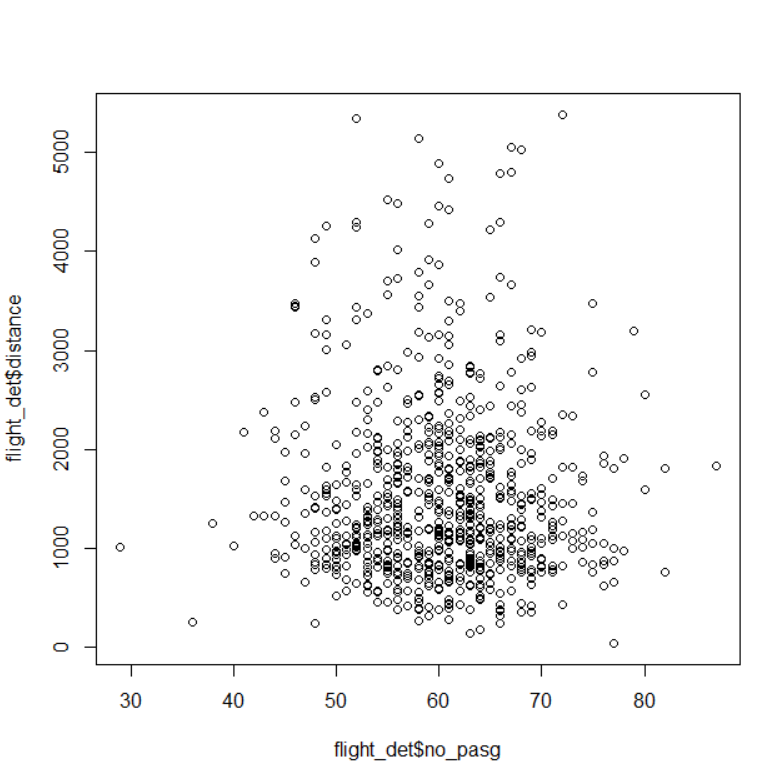
plot(flight\_det$distance~flight\_det$speed\_ground)

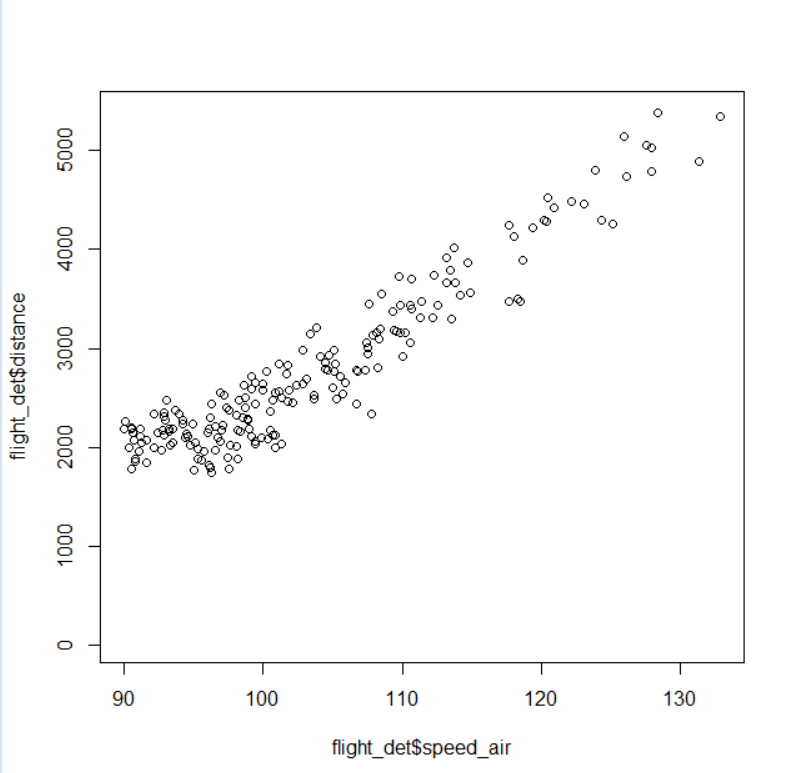
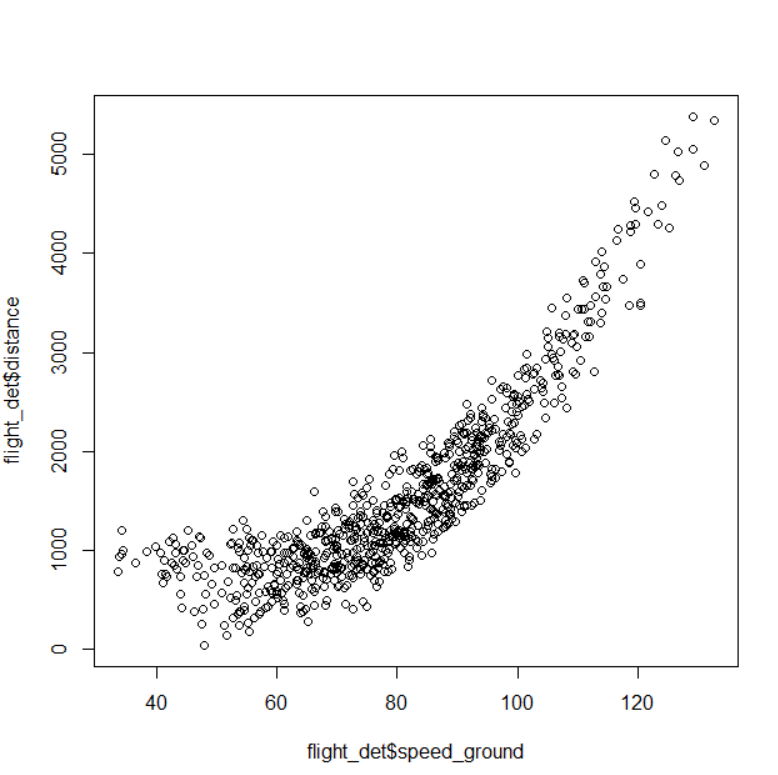
plot(flight\_det$distance~flight\_det$speed\_air)

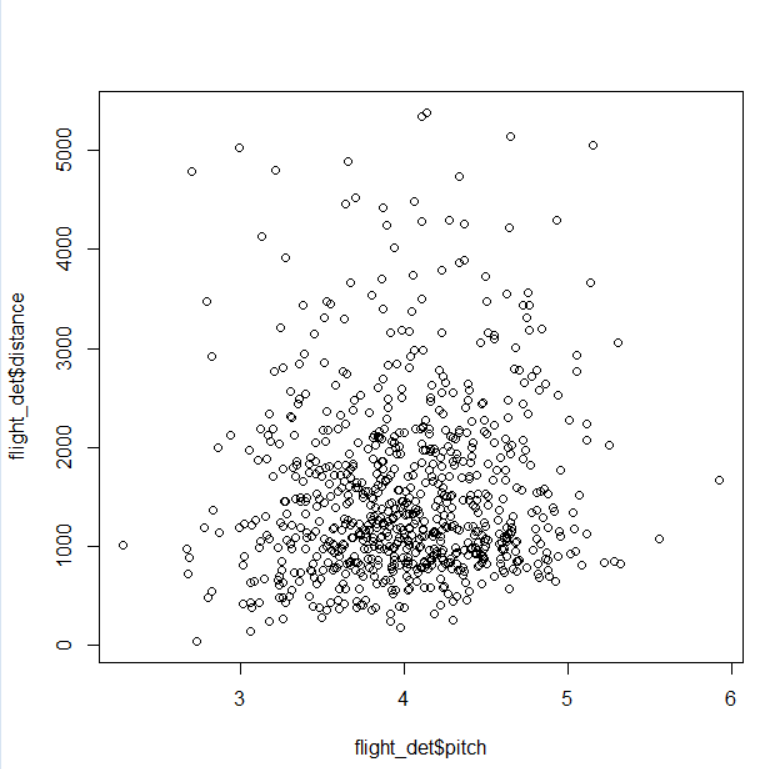
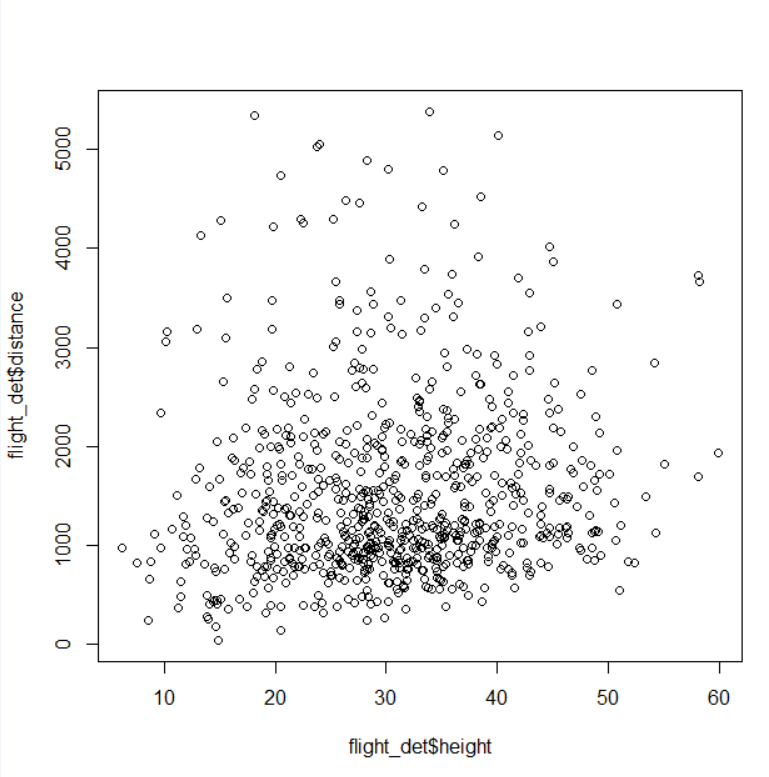
plot(flight\_det$distance~flight\_det$height)

plot(flight\_det$distance~flight\_det$pitch)







1. **Generate boxplots for visualization**

par(mfrow=c(1,1))

boxplot(duration~aircraft, data=flight\_det)

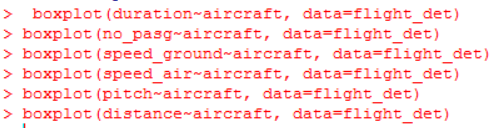
boxplot(no\_pasg~aircraft, data=flight\_det)

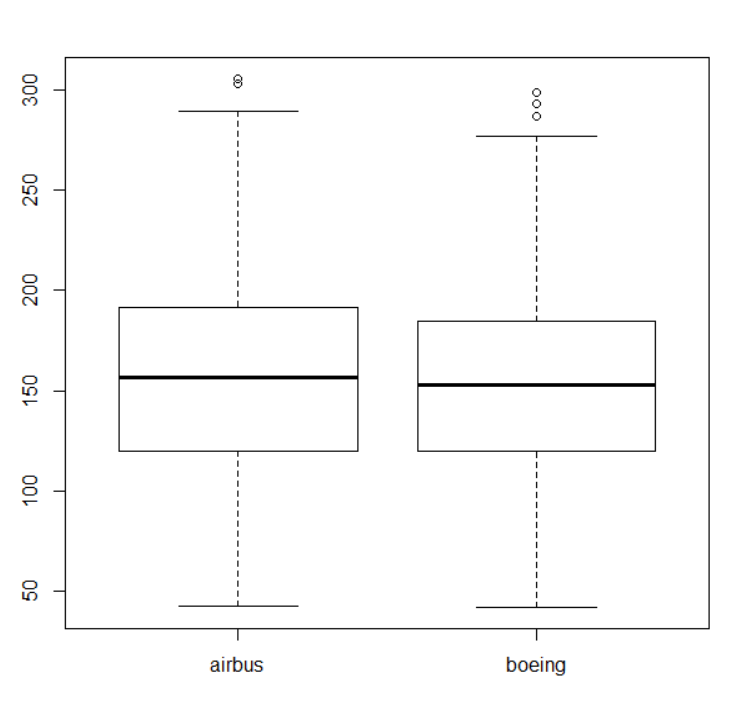
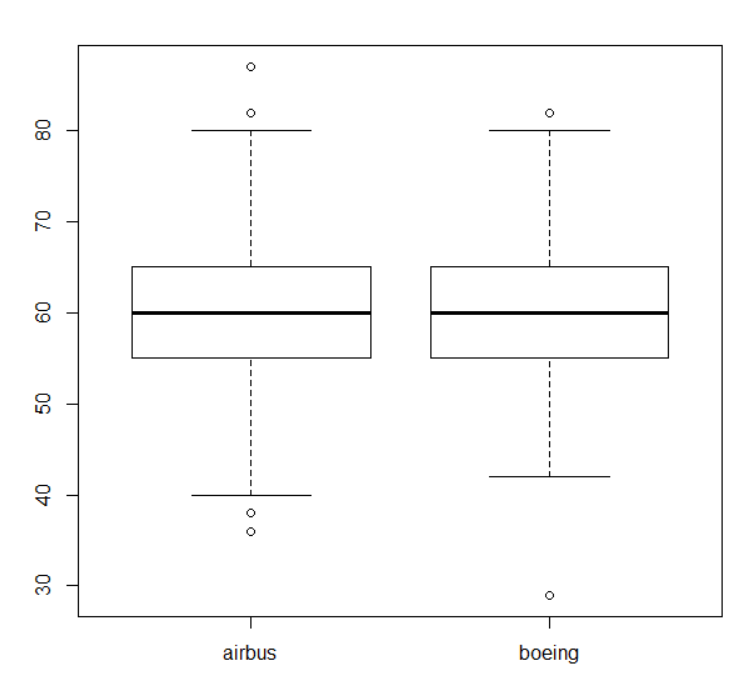
boxplot(speed\_ground~aircraft, data=flight\_det)

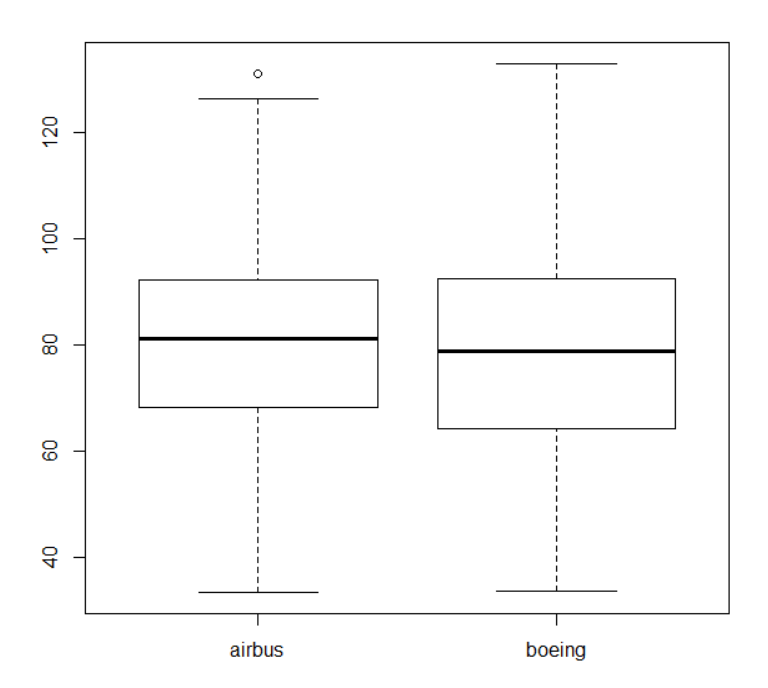
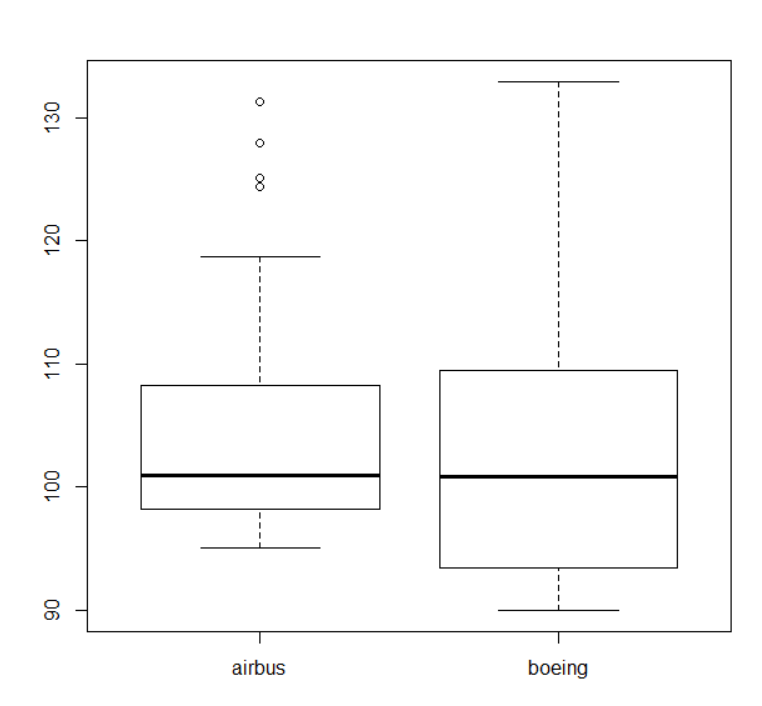
boxplot(speed\_air~aircraft, data=flight\_det)

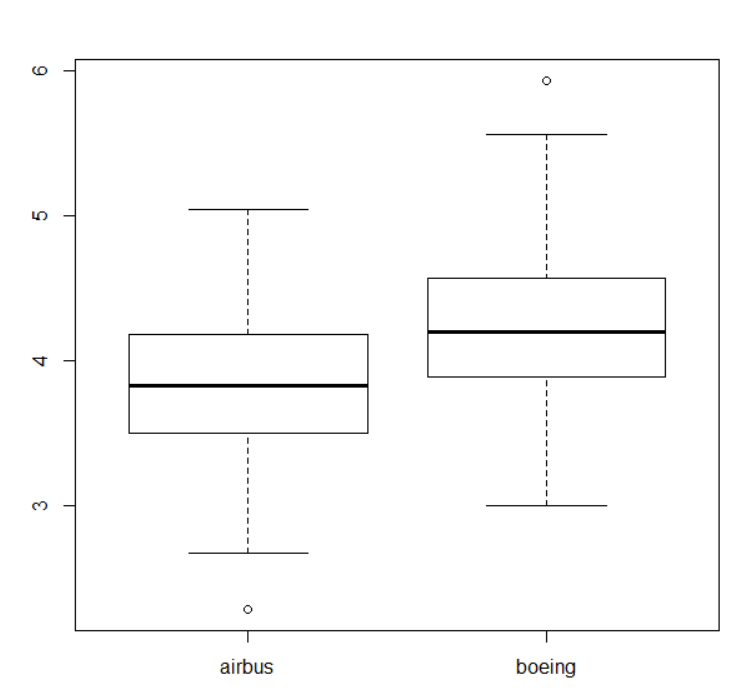
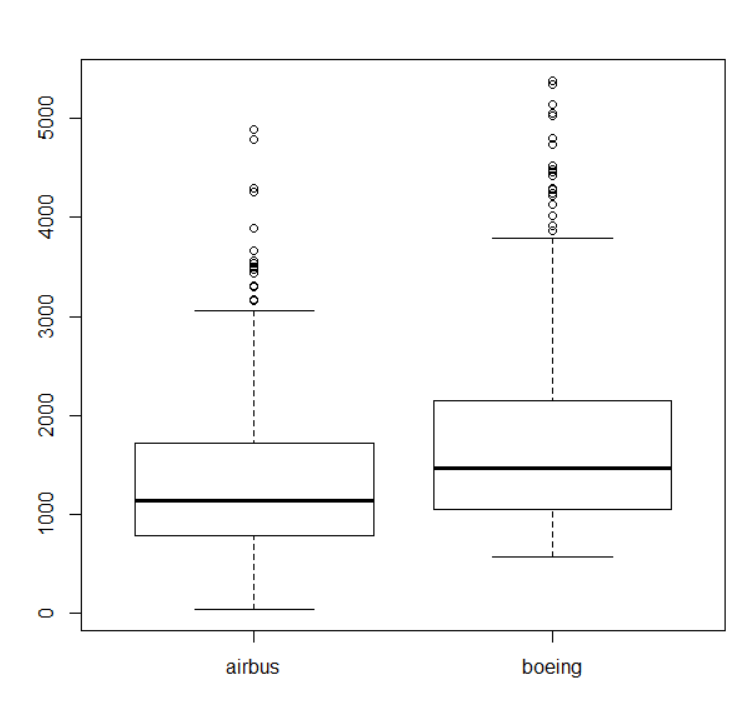
boxplot(pitch~aircraft, data=flight\_det)

boxplot(distance~aircraft, data=flight\_det)



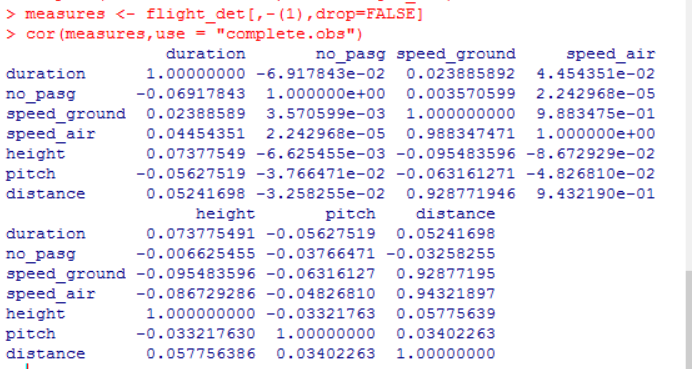
 

1. **Find correlation between the different measures**

measures <- flight\_det[,-(1),drop=FALSE]

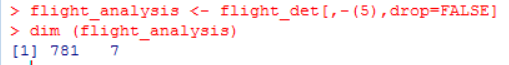
cor(measures,use = "complete.obs")



1. **Drop the speed\_air column due to high correlation coefficient**

flight\_analysis <- flight\_det[,-(5),drop=FALSE]

dim (flight\_analysis)



**CHAPTER - 3**

**Introduction:**

In this chapter we aim to model the data and arrive at the final equation supporting the models.

**R-Code:**

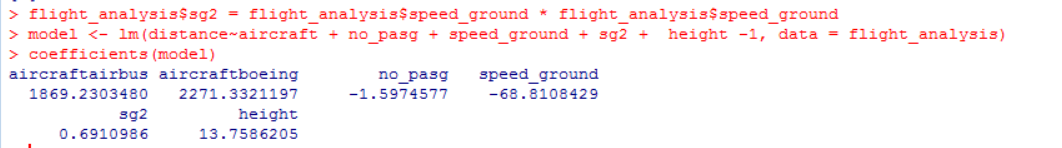
1. **Include speed\_ground^2**

flight\_analysis$sg2 = flight\_analysis$speed\_ground \* flight\_analysis$speed\_ground

1. **Model**

model <- lm(distance~aircraft + no\_pasg + speed\_ground + sg2 + height -1, data = flight\_analysis)

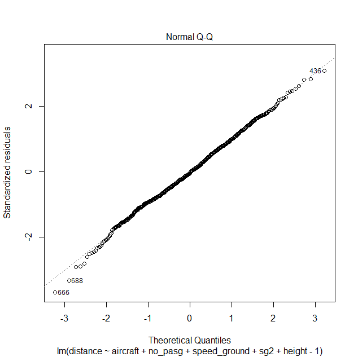
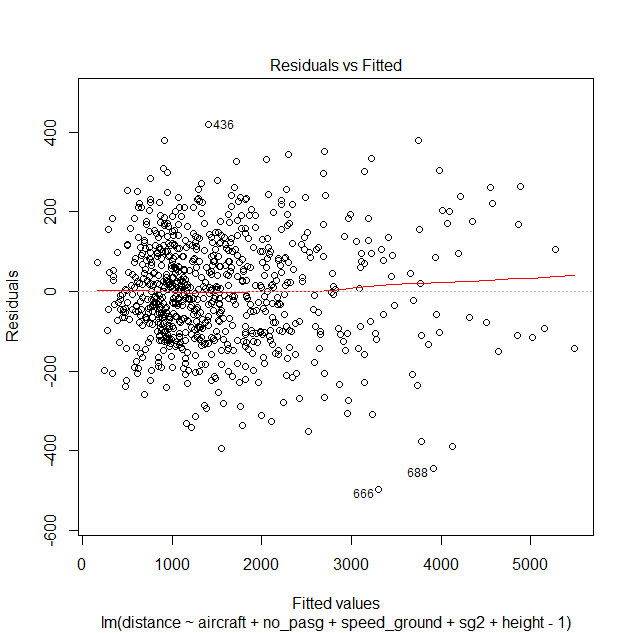
coefficients(model)

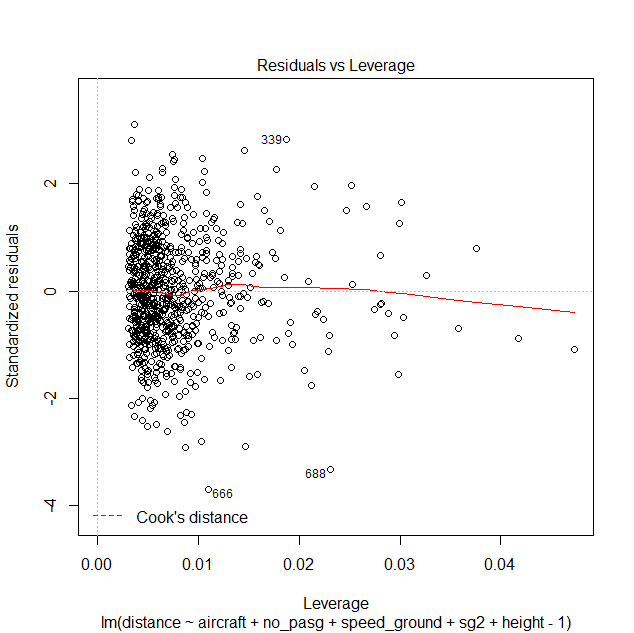
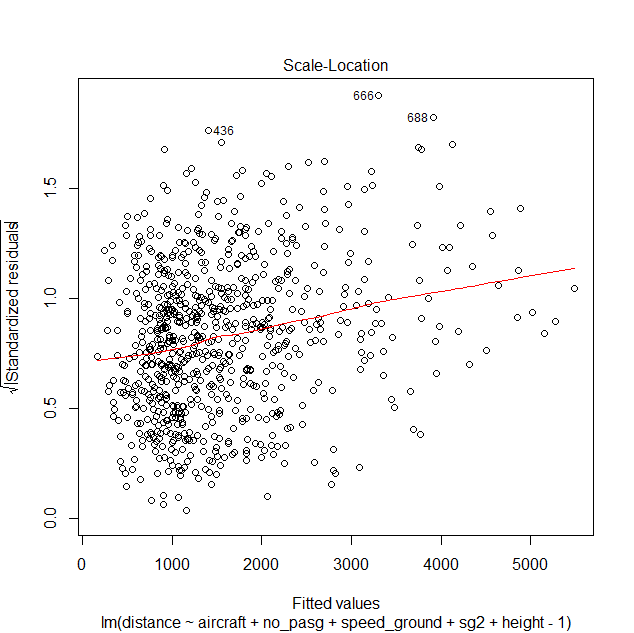


resid <-residuals(model)

1. **Plot the models**

plot(model)





**Final Equations:**

Distance(Boeing) = 2271.3321 + 0.6911\*speed\_ground2 - 1.5975\*no\_pasg - 68.8108\*speed\_ground+ 13.7586\*height

Distance(Airbus) = 1869.2304 + 0.6911\*speed\_ground2 - 1.5975\*no\_pasg - 68.8108\*speed\_ground+ 13.7586\*height