Statistics with R case study

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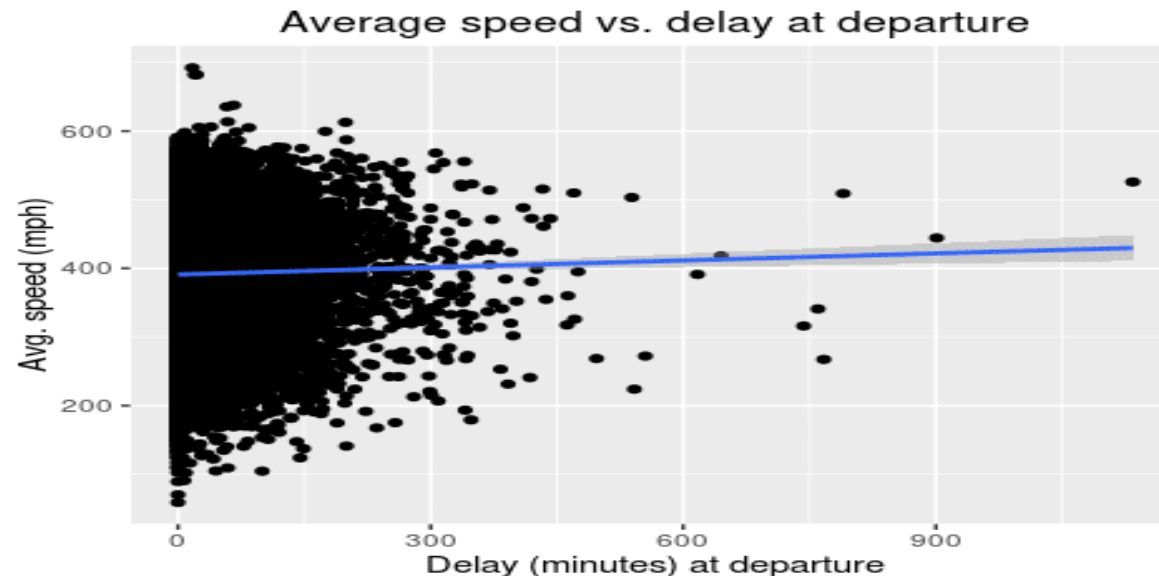**Department of IT**

Problem Statement: Do planes with a delayed departure fly with a faster average speed to make up for the delay?

- 1) we have given the data about fights that fly around USA in the year 2008

- 2) First we have to perform the data cleaning here in the given data Carrier Delay column has nearly 80% of missing values so we don't need to consider that column for analysis

- 3) then we have to find out the average speed of the flights which is not given in the data

- 4) Then we have to plot the graph between Depdelay and the average speed to get the relationship between the Departure delay and the average speed

- 5) Here we will apply the linear model to find out the relationship between the delay time and the average speed

- 6) By that we can Know whether delayed flight fly with a faster average speed to make up for the delay or not

Plotting graph between average speed and delay at depearture

Code : ```ggplot(flights, aes(x=DepDelay, y=speed)) +
geom_point() + geom_smooth(method="lm") +```

```labs(x="Delay (minutes) at departure", y="Avg. speed
(mph)", title="Average speed vs. delay at departure")```

Output :



Average speed vs. delay at departure

# Calculating the Average speed using linear model

Code: mod &amp;lt;- lm(speed ~ DepDelay, data=flights)
summary(mod)

Here the "lm" is the function for linear model

Conclusion: From the above we can conclude that for a delay of 60

The flight should travel at faster average speed of 2.04 miles per hour