Probability and Statistics - IT2120

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Lab Sheet 05 – Exercise

1. Import the dataset ('Exercise – Lab 05.txt') into R and store it in a data frame called" Delivery Times".

```
setwd("C:\\Users\\User\\Desktop\\lab5")
Delivery_time <- read.table("Exercise - Lab 05.txt",header = TRUE,sep = ",")
fix(Delivery_time)

attach(Delivery_time)
```

```
> setwd("C:\\Users\\User\\Desktop\\lab5")
> Delivery_time <- read.table("Exercise - Lab 05.txt",header = TRUE,sep = ",")
> fix(Delivery_time)
```

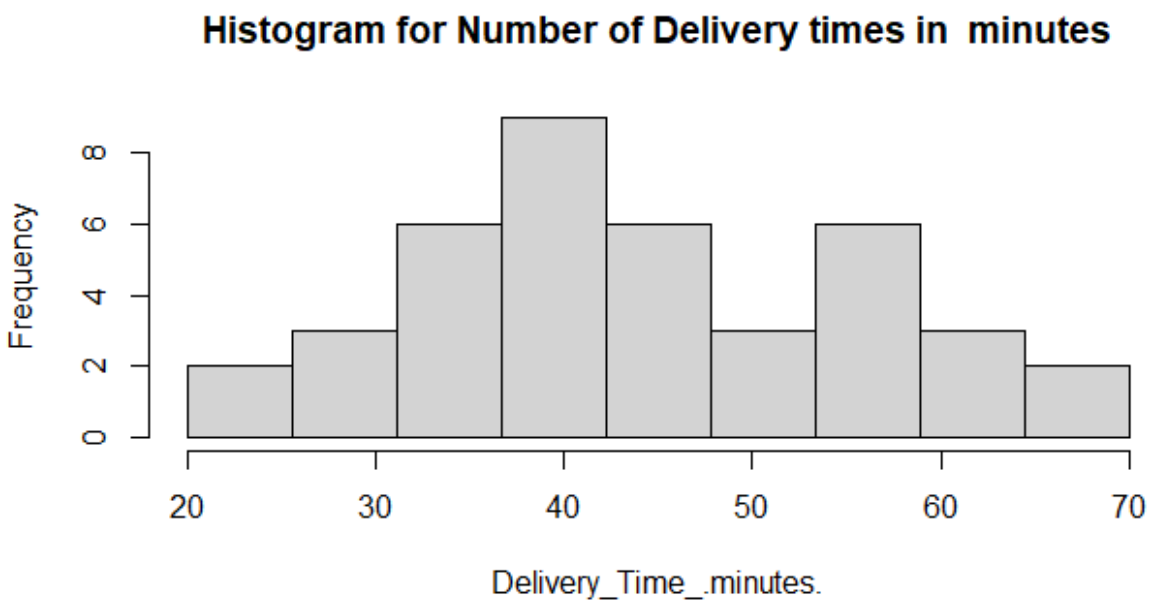
```
> attach(Delivery_time)
The following object is masked from Delivery_time (pos = 3):

    Delivery_Time_.minutes.

The following object is masked from Delivery_time (pos = 4):

    Delivery_Time_.minutes.

The following object is masked from Delivery_time (pos = 5):
```

2. Draw a histogram for deliver times using nine class intervals where the lower limit is 20 and upper limit is 70. Use right open intervals.

```
histogram <- hist(Delivery_Time_.minutes.,
                  main= "Histogram for Number of Delivery times in  minutes",
                  breaks = seq(20,70,length = 10), right = TRUE)
```

```
> histogram <- hist(Delivery_Time_.minutes.,
+                   main= "Histogram for Number of Delivery times in  minutes",
+                   breaks = seq(20,70,length = 10), right = TRUE)
```

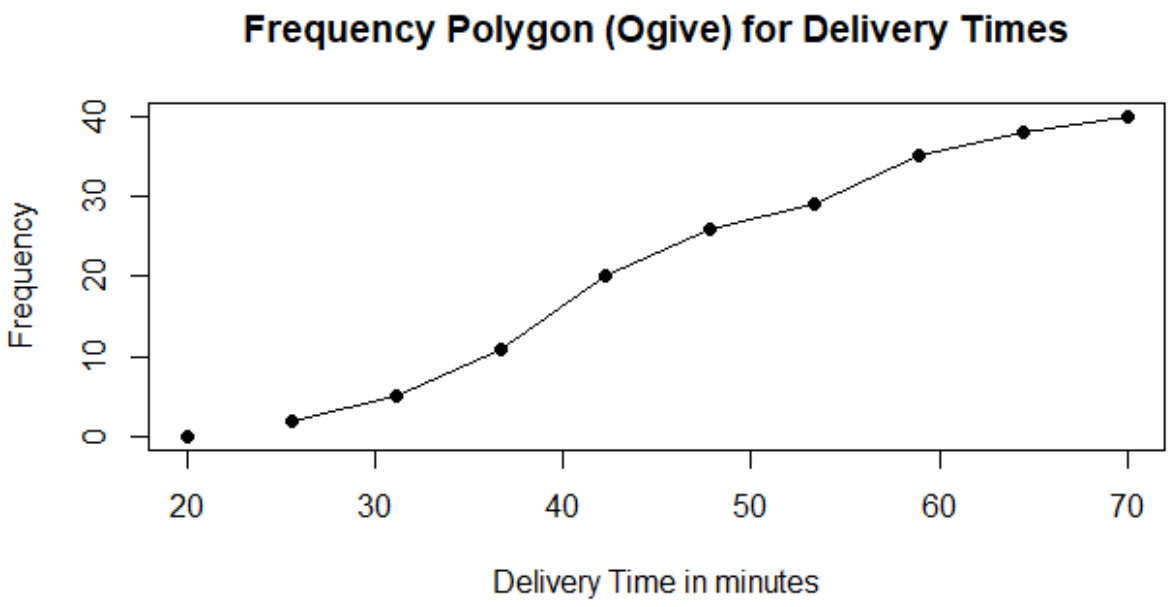
#The distribution of delivery times appears to be roughly bell-shaped, suggesting a normal or approximately symmetric distribution. The peak frequency occurs around 40 minutes, with the frequency decreasing fairly evenly on both sides, indicating that most delivery times cluster around the mean with fewer occurrences at the extremes (20 and 70 minutes).



4. Draw a cumulative frequency polygon (ogive) for the data in a separate plot.

```
#Draw a cumulative frequency polygon (ogive) for the data in a separate plot.
cum_freq <- cumsum(histogram$counts)

plot(histogram$breaks[-1], cum_freq, type = "l",
     main = "Frequency Polygon (Ogive) for Delivery Times",
     xlab = "Delivery Time in minutes", ylab = "Frequency",
     xlim = c(20, 70), ylim = c(0, max(cum_freq)))


points(histogram$breaks[-1], cum_freq, pch = 16)

#Adding starting point(0,0)
points(20, 0, pch = 16)
lines(c(20, histogram$breaks[1]), c(0, 0), type = "l")
```

```
> #Draw a cumulative frequency polygon (ogive) for the data in a separate plot.
> cum_freq <- cumsum(histogram$counts)
>
> plot(histogram$breaks[-1], cum_freq, type = "l",
+      main = "Frequency Polygon (Ogive) for Delivery Times",
+      xlab = "Delivery Time in minutes", ylab = "Frequency",
+      xlim = c(20, 70), ylim = c(0, max(cum_freq)))
>
>
> points(histogram$breaks[-1], cum_freq, pch = 16)
>
> #Adding starting point(0,0)
> points(20, 0, pch = 16)
> lines(c(20, histogram$breaks[1]), c(0, 0), type = "l")
```


Frequency Polygon (Ogive) for Delivery Times
Frequency
0
10
20
30
40
20
30
40
50
60
70
Delivery Time in minutes