# IT24103506 – Siriwardana S.A.D.V.I.

## IT2120 - Probability and Statistics Lab Sheet 05

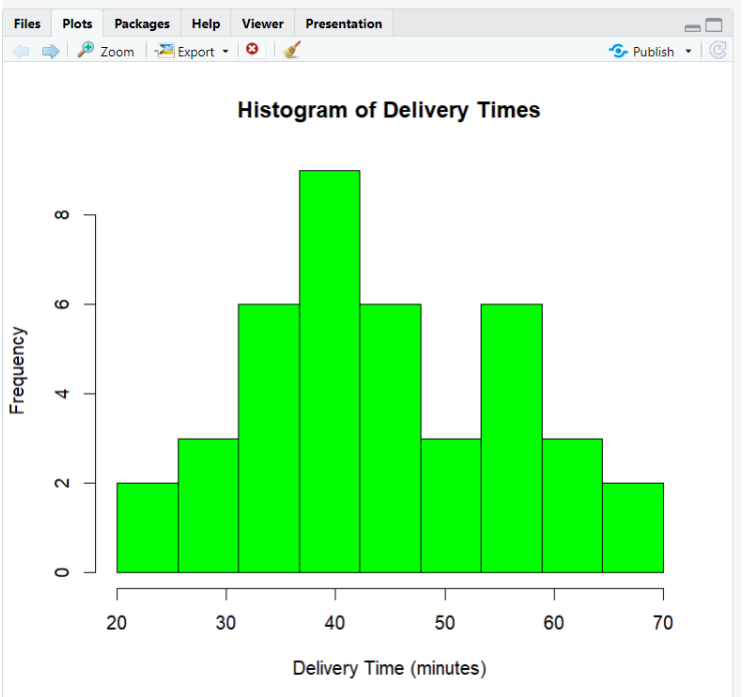
01)

```
#Question 01
setwd("C:\\Users\\vimuk\\OneDrive\\Desktop\\IT24103506")
getwd()

Delivery_Times <- read.table("Exercise - Lab 05.txt", header = TRUE)
head(Dilivery_Times)
```

```
Console   Terminal ×   Background Jobs ×
R 4.5.1 · C:/Users/vimuk/OneDrive/Desktop/IT24103506/
> setwd("C:\\Users\\vimuk\\OneDrive\\Desktop\\IT24103506")
> getwd()
[1] "C:/Users/vimuk/OneDrive/Desktop/IT24103506"
> Dilivery_Times <- read.table("Exercise - Lab 05.txt", header = TRUE)
```

02)

```
#Question 02
breaks <- seq(20, 70, length.out = 10)
hist(Delivery_Times$Delivery_Time,
     breaks = breaks,
     right = FALSE,
     main = "Histogram of Delivery Times",
     xlab = "Delivery Time (minutes)",
     col = "green",
     border = "black")
```

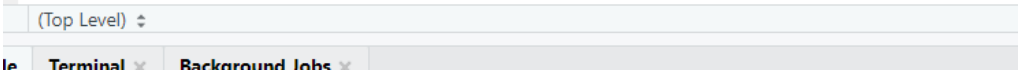


03.

```
#Question 03
# The distribution of delivery time is unimodal and slightly right-skewd.
# Most deliveries occur around 40 minutes, while a few deliveries take much longer,
# creating a tail on the right side of the histogram.
```

04.

```
#Question 04
histogram <- hist(Delivery_Times$Delivery_Time,
                  breaks = seq(20, 70, length.out = 10),
                  right = FALSE,
                  plot = FALSE)

breaks <- histogram$breaks
freq <- histogram$counts

classes <- c()
for(i in 1:(length(breaks) - 1)) {
  classes[i] <- paste0("[", breaks[i], ", ", breaks[i+1], ")")
}

freq_table <- cbind(Class_Interval = classes, Frequency = freq)
print(freq_table)

cum_freq <- cumsum(freq)

cum_freq_with0 <- c(0, cum_freq)

plot(breaks, cum_freq_with0, type = "o",
     main = "Cumulative Frequency Polygon (Ogive)",
     xlab = "Delivery Time (minutes)",
     ylab = "Cumulative Frequency",
     col = "red", pch = 16)

cum_table <- cbind(Upper_Class = breaks, Cum_Freq = cum_freq_with0)
print(cum_table)
```



Console | Terminal | Background Jobs

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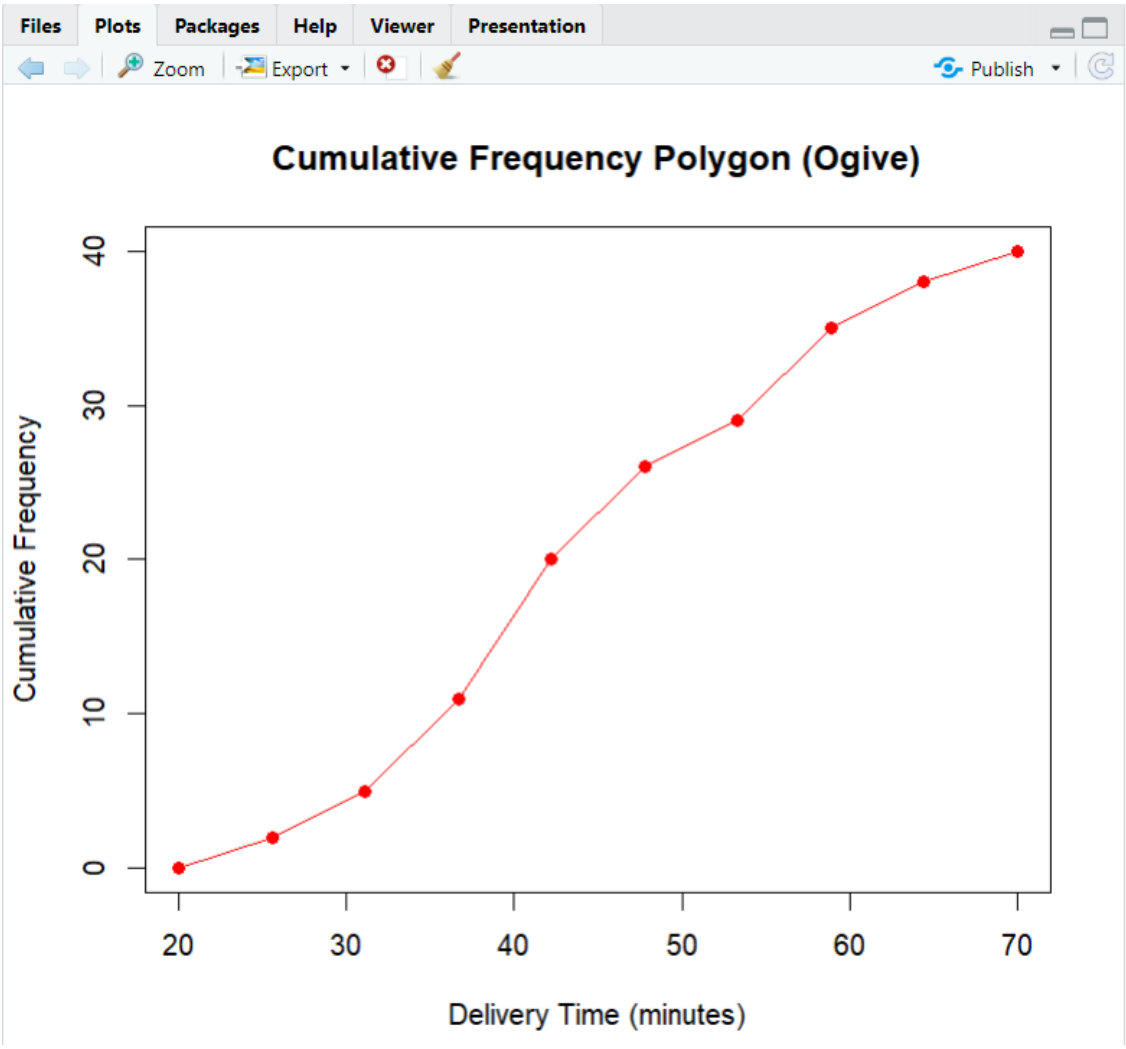
```
> #Question 04
> histogram <- hist(Delivery_Times$Delivery_Time,
+                   breaks = seq(20, 70, length.out = 10),
+                   right = FALSE,
+                   plot = FALSE)
> breaks <- histogram$breaks
> freq <- histogram$counts
> classes <- c()
> for(i in 1:(length(breaks) - 1)) {
+   classes[i] <- paste0("[", breaks[i], ", ", breaks[i+1], ")")
+ }
> freq_table <- cbind(Class_Interval = classes, Frequency = freq)
> print(freq_table)
      Class_Interval                          Frequency
 [1,] "[20, 25.5555555555556)"                "2"
 [2,] "[25.5555555555556, 31.1111111111111)" "3"
 [3,] "[31.1111111111111, 36.6666666666667)" "6"
 [4,] "[36.6666666666667, 42.2222222222222)" "9"
 [5,] "[42.2222222222222, 47.7777777777778)" "6"
 [6,] "[47.7777777777778, 53.3333333333333)" "3"
 [7,] "[53.3333333333333, 58.8888888888889)" "6"
 [8,] "[58.8888888888889, 64.4444444444444)" "3"
 [9,] "[64.4444444444444, 70)"               "2"
> cum_freq <- cumsum(freq)
> cum_freq_with0 <- c(0, cum_freq)
> plot(breaks, cum_freq_with0, type = "o",
+      main = "Cumulative Frequency Polygon (Ogive)",
+      xlab = "Delivery Time (minutes)",
+      ylab = "Cumulative Frequency",
+      col = "red", pch = 16)
> cum_table <- cbind(Upper_Class = breaks, Cum_Freq = cum_freq_with0)
> print(cum_table)
      Upper_Class Cum_Freq
 [1,]    20.00000        0
 [2,]    25.55556        2
 [3,]    31.11111        5
 [4,]    36.66667       11
 [5,]    42.22222       20
 [6,]    47.77778       26
 [7,]    53.33333       29
 [8,]    58.88889       35
 [9,]    64.44444       38
[10,]    70.00000       40
>
```


Files
Plots
Packages
Help
Viewer
Presentation
Zoom
Export
Publish
Cumulative Frequency Polygon (Ogive)
Cumulative Frequency
0
10
20
30
40
20
30
40
50
60
70
Delivery Time (minutes)