IT2120

Probability and Statistics

Year 2 – Semester 1

Lab Report - 05

Submitted to

Sri Lanka Institute of Information Technology

In partial fulfillment of the requirements for the

Bachelor of Science Special Honors Degree in Information Technology

RStudio

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PS lab 3.R | PS lab 3.R | Untitled1* | Exercise...Lab.05 | `Delivery Times`

Source on Save | Run | Source

```r
setwd("C:\\Users\\Piyumi Samaraweera\\Downloads\\IT24103858")
data <- read.table("Exercise - Lab 05.txt", header = TRUE)
names(data) <- c("Delivery_Time")
attach(data)

histogram <- hist(Delivery_Time, main = "Histogram for Delivery Times", breaks = seq(20, 70, length = 10), right = FALSE, xlab = "Delivery Time (minutes)")

breaks <- round(histogram$breaks)
freq <- histogram$counts
mids <- histogram$mids

classes <- c()
for (i in 1:(length(breaks)-1)) {
  classes[i] <- paste0("[", breaks[i], ",", breaks[i+1], ")")
}
freq_dist <- cbind(Classes = classes, Frequency = freq)
print(freq_dist)

plot(mids, freq, type = 'l', main = "Frequency Polygon for Delivery Times", xlab = "Delivery Time (minutes)", ylab = "Frequency", ylim = c(0, max(freq)))

cum_freq <- cumsum(freq)
new <- c()
for (i in 1:length(breaks)) {
  if (i == 1) {
    new[i] = 0
  } else {
    new[i] = cum_freq[i-1]
  }
}
plot(breaks, new, type = 'l', main = "Cumulative Frequency Polygon (Ogive)", xlab = "Delivery Time (minutes)", ylab = "Cumulative Frequency", ylim = c(0, max(cum_freq)))
cbind(Upper = breaks, CumFreq = new)
```

Filter

	Delivery_Time_.minutes.
1	34
2	54
3	47
4	29
5	39
6	61
7	20
8	40
9	57
10	36
11	38
12	44
13	59
14	38
15	40
16	40
17	67
18	66
19	55
20	48
21	52
22	59
23	35
24	56
25	32
26	38
27	54
28	30
29	43
30	36

Showing 1 to 30 of 40 entries, 1 total columns

Console

Source

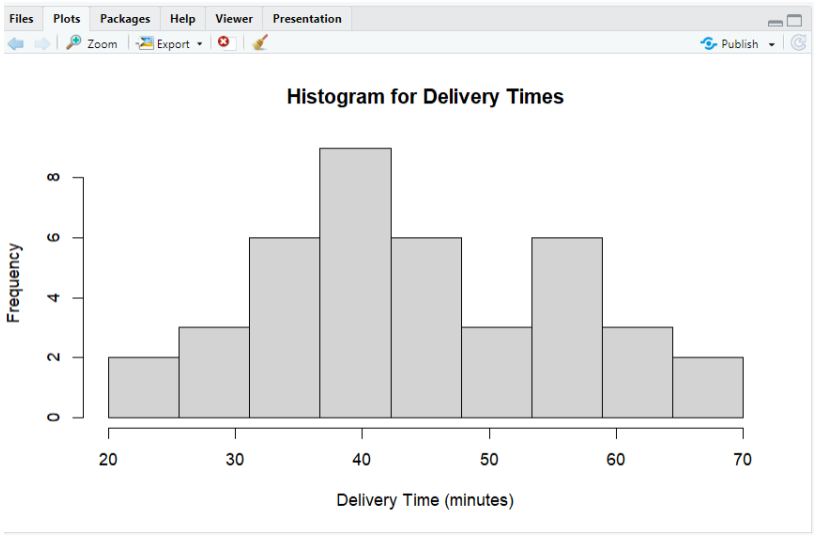
Console | Background Jobs

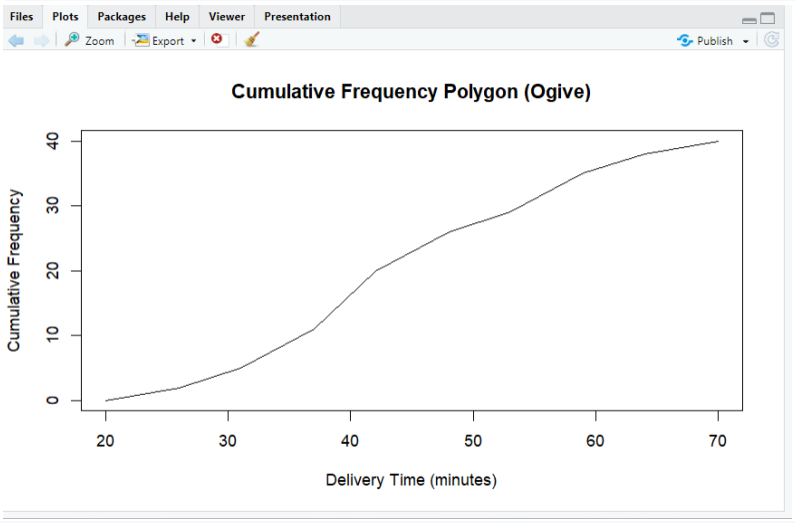
R 4.5.0 · C:/Users/Piyumi Samaraweera/Downloads/IT24103858/

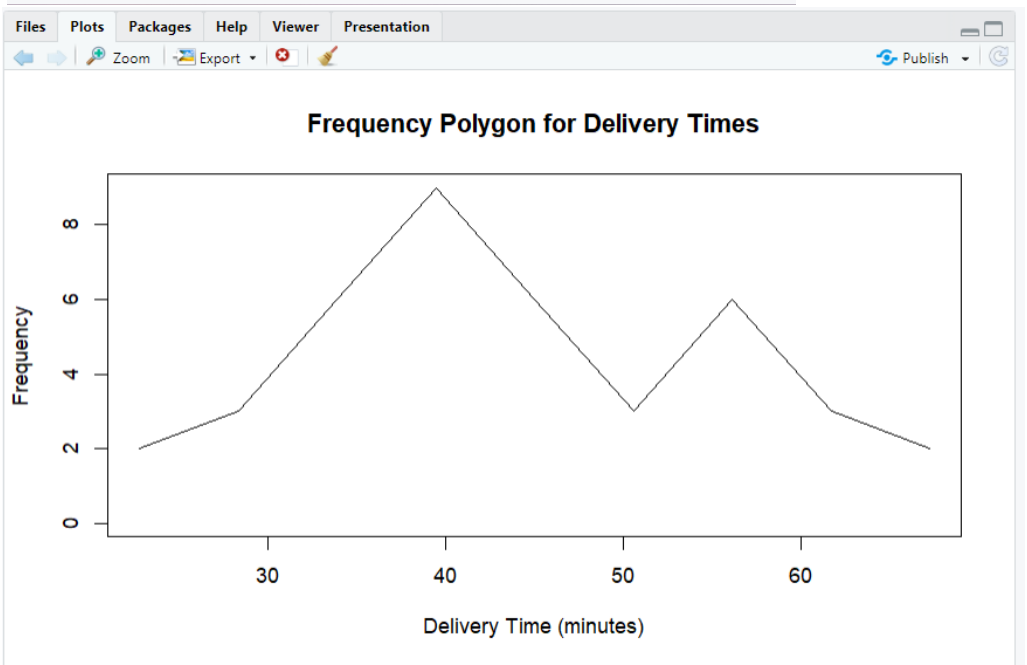
```
> setwd("C:\\Users\\Piyumi Samaraweera\\Downloads\\IT24103858")
> data <- read.table("Exercise - Lab 05.txt", header = TRUE)
> names(data) <- c("Delivery_Time")
> attach(data)
The following object is masked from data (pos = 3):

    Delivery_Time

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

    Delivery_Time

> histogram <- hist(Delivery_Time, main = "Histogram for Delivery Times", breaks = seq(20, 70, length = 10), right = FALSE, xlab = "Delivery Time (minutes)")
> breaks <- round(histogram$breaks)
> freq <- histogram$counts
> mids <- histogram$mids
> classes <- c()
> for (i in 1:(length(breaks)-1)) {
+   classes[i] <- paste0("[", breaks[i], ",", breaks[i+1], ")")
+ }
> freq_dist <- cbind(Classes = classes, Frequency = freq)
> print(freq_dist)
      Classes   Frequency
 [1,] "[20,26)" "2"
 [2,] "[26,31)" "3"
 [3,] "[31,37)" "6"
 [4,] "[37,42)" "9"
 [5,] "[42,48)" "6"
 [6,] "[48,53)" "3"
 [7,] "[53,59)" "6"
 [8,] "[59,64)" "3"
 [9,] "[64,70)" "2"


> plot(mids, freq, type = 'l', main = "Frequency Polygon for Delivery Times", xlab = "Delivery Time (minutes)", ylab = "Frequency", ylim = c(0, max(freq)))
> cum_freq <- cumsum(freq)
> new <- c()
> for (i in 1:length(breaks)) {
+   if (i == 1) {
+     new[i] = 0
+   } else {
+     new[i] = cum_freq[i-1]
+   }
+ }
> plot(breaks, new, type = 'l', main = "Cumulative Frequency Polygon (Ogive)", xlab = "Delivery Time (minutes)", ylab = "Cumulative Frequency", ylim = c(0, max(cum_freq)))
> plot(mids, freq, type = 'l', main = "Frequency Polygon for Delivery Times", xlab = "Delivery Time (minutes)", ylab = "Frequency", ylim = c(0, max(freq)))
> plot(breaks, new, type = 'l', main = "Cumulative Frequency Polygon (Ogive)", xlab = "Delivery Time (minutes)", ylab = "Cumulative Frequency", ylim = c(0, max(cum_freq)))
> cbind(Upper = breaks, CumFreq = new)
      Upper CumFreq
 [1,]    20       0
 [2,]    26       2
 [3,]    31       5
 [4,]    37      11
 [5,]    42      20
 [6,]    48      26
 [7,]    53      29
 [8,]    59      35
 [9,]    64      38
[10,]    70      40
>
```

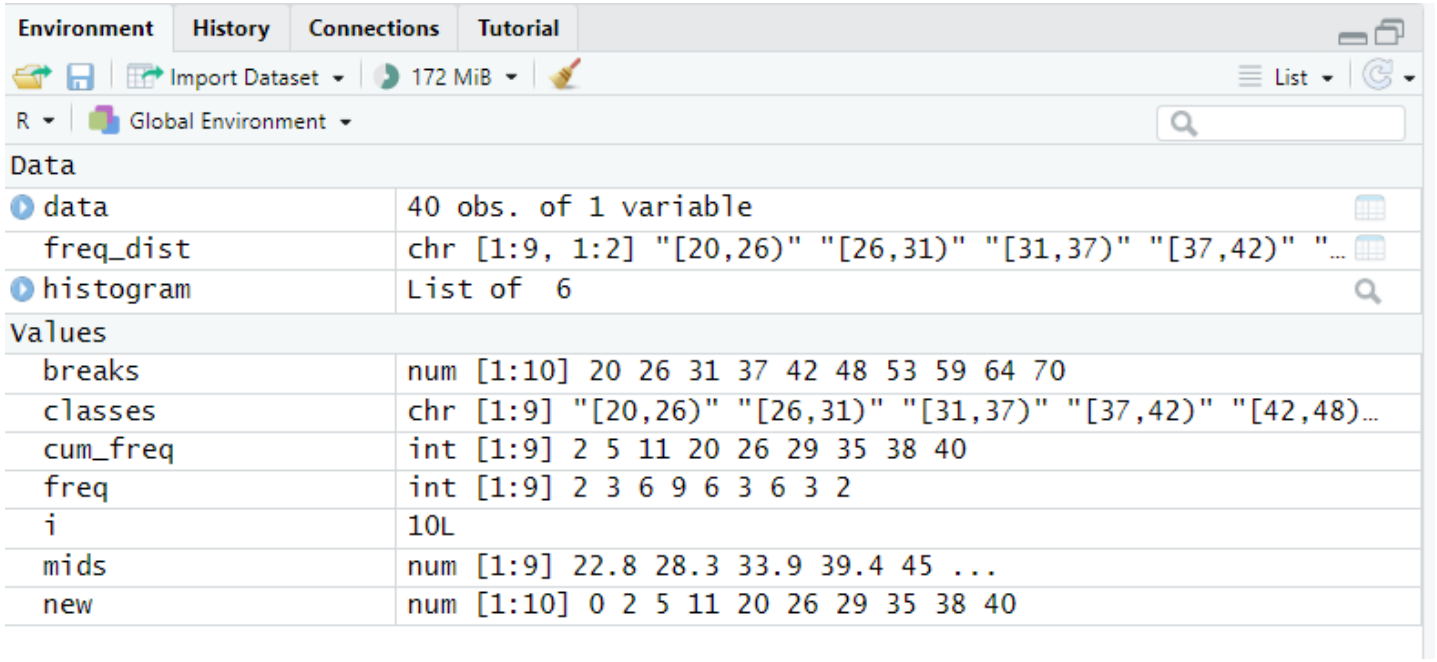
3) Comment on the shape of the distribution

The distribution has 8 classes and the class with the highest frequency is the 4th one.








Environment
History
Connections
Tutorial
Import Dataset
172 MiB
List
R
Global Environment
Data
data
40 obs. of 1 variable
freq_dist
chr [1:9, 1:2] "[20,26)" "[26,31)" "[31,37)" "[37,42)" "...
histogram
List of 6
Values
breaks
num [1:10] 20 26 31 37 42 48 53 59 64 70
classes
chr [1:9] "[20,26)" "[26,31)" "[31,37)" "[37,42)" "[42,48)...
cum_freq
int [1:9] 2 5 11 20 26 29 35 38 40
freq
int [1:9] 2 3 6 9 6 3 6 3 2
i
10L
mids
num [1:9] 22.8 28.3 33.9 39.4 45 ...
new
num [1:10] 0 2 5 11 20 26 29 35 38 40