



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
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
PS lab 3.R x PS lab 3.R x PS lab 3.R x Exercise...Lab.05 x Delivery Times x
Source on Save
Run
1 setwd("C:\\Users\\Piyumi Samaraweera\\Downloads\\IT24103858")
2 data <- read.table("Exercise - Lab 05.txt", header = TRUE)
3 names(data) <- c("Delivery_Time")
4 attach(data)
5
6 histogram <- hist(Delivery_Time, main = "Histogram for Delivery Times", breaks = seq(20, 70, length = 10), right = FALSE, xlab = "Delivery Time (minutes)")
7
8 breaks <- round(histogram$breaks)
9 freq <- histogram$counts
10 mids <- histogram$mids
11
12 classes <- c()
13 for (i in 1:(length(breaks)-1)) {
14   classes[i] <- paste0("[", breaks[i], ",", breaks[i+1], ")")
15 }
16 freq_dist <- cbind(classes = classes, Frequency = freq)
17 print(freq_dist)
18
19 plot(mids, freq, type = 'l', main = "Frequency Polygon for Delivery Times", xlab = "Delivery Time (minutes)", ylab = "Frequency", ylim = c(0, max(freq)))
20
21 cum_freq <- cumsum(freq)
22 new <- c()
23 for (i in 1:length(breaks)) {
24   if (i == 1) {
25     new[i] = 0
26   } else {
27     new[i] = cum_freq[i-1]
28   }
29 }
30 plot(breaks, new, type = 'l', main = "Cumulative Frequency Polygon (Ogive)", xlab = "Delivery Time (minutes)", ylab = "Cumulative Frequency", ylim = c(0, max(cum_freq)))
31 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		26
Showing 1 to 30 of 40 entries, 1 total columns		
Console		

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

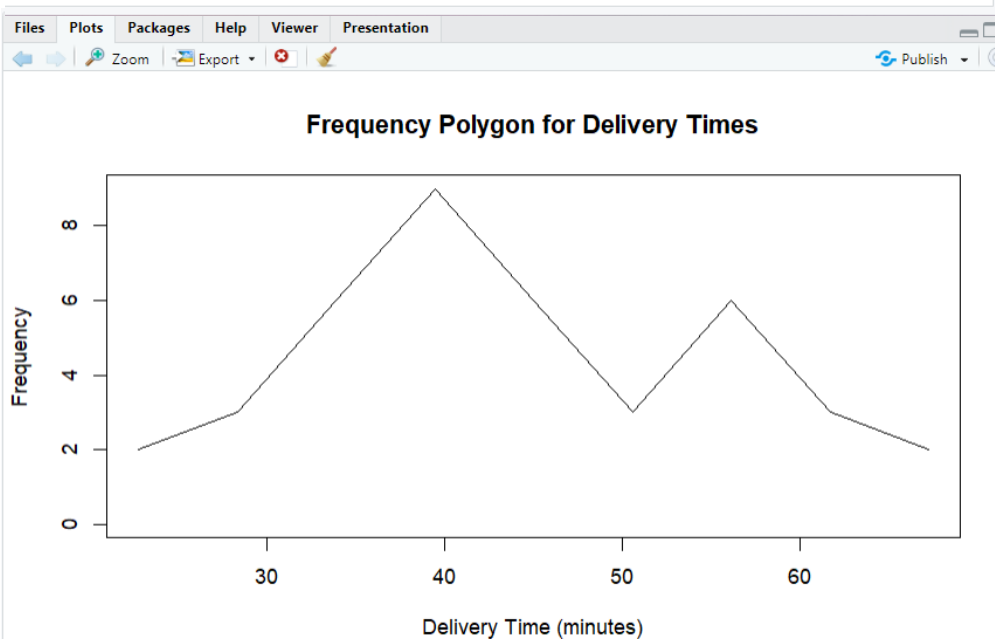
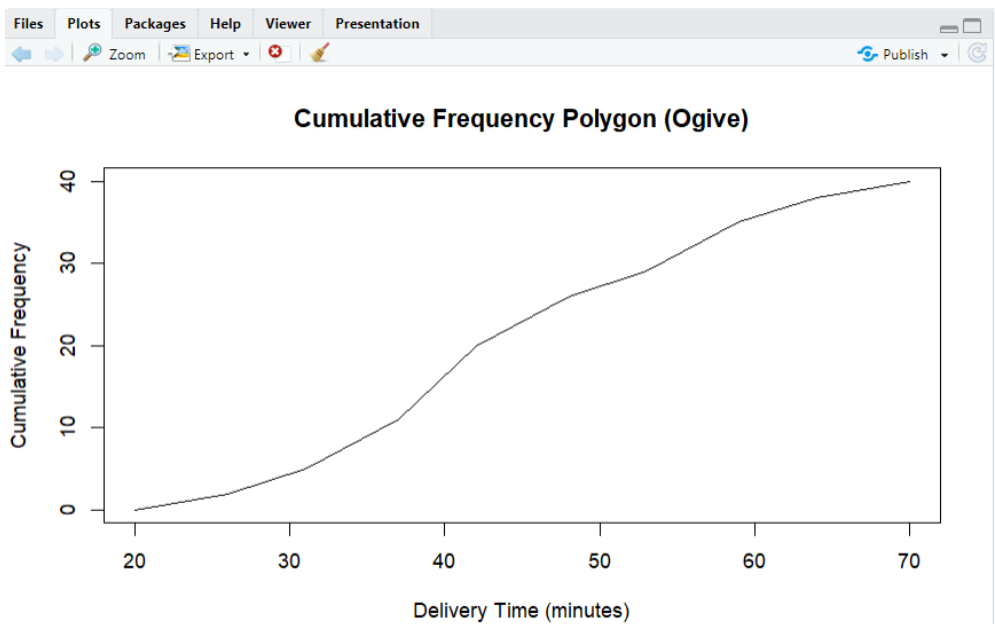
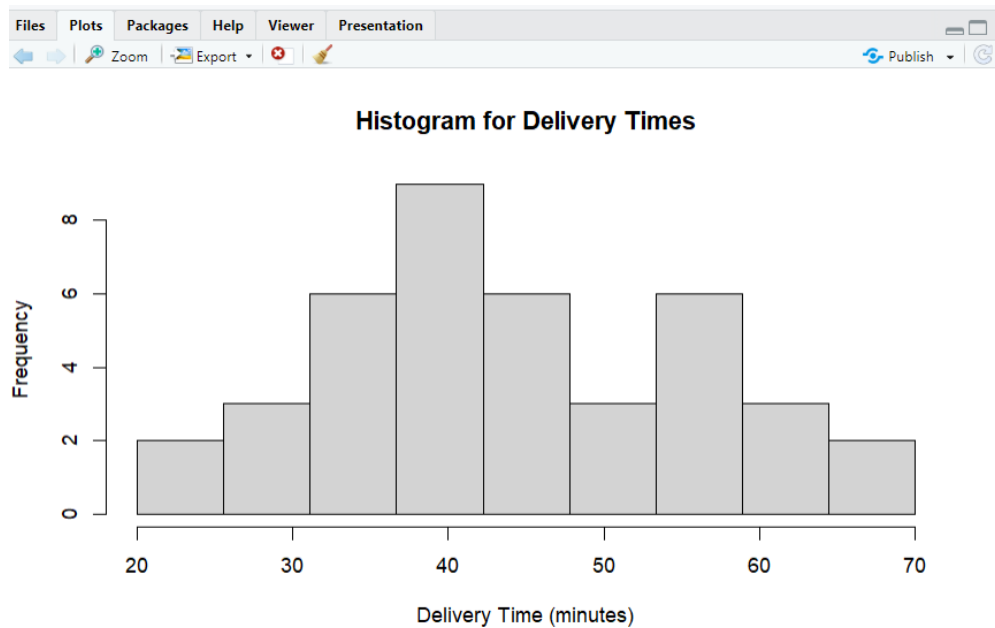
```
> histogram <- hist(Delivery_Time, main = "Histogram for Delivery Times", breaks = seq(20, 70, length = 10), right = FALSE, xlab = "Delivery Time (minutes)")
> breaks <- round(histogram$breaks)
> freq <- histogram$counts
> mids <- histogram$mids
> classes <- c()
> for (i in 1:(length(breaks)-1)) {
+   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

```
> |
```



Environment

History

Connections

Tutorial

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