

PRACTICAL 1-6 (M2)

AIM : Practical 1 to 6 Generating descriptive statistics using `summary()` or `describe()` (R). Generating frequency tables using `table()` or `count()` (R). Creating cross-tabulations and two-way tables using `table()` (R). Performing one-sample t-tests using `t.test()` (R). Performing independent two-sample t-tests using `t.test()` with grouping (R). Performing paired t-tests using `t.test(paired=TRUE)` (R). **NOTE:** Use different Dataset

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

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R = R4.2.2 -

> **install.packages("dplyr")**

WARNING: tools is required to build R packages but is not currently installed. Please download and install the appropriate version of tools before proceeding:

https://cran.rstudio.com/bin/windows/tools/

Installing package into 'C:/users/DHEERAJ/AppData/Local/R/win-library/4.5'

(as 'lib' is unspecified)

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.5/dplyr_1.1.4.zip'

Content type 'application/zip' length 1593482 bytes (1.5 MB)

downloaded 1.5 MB

package 'dplyr' successfully unpacked and MD5 sums checked

The downloaded binary packages are in

C:/users/DHEERAJ/AppData/Local/Temp/RtmpsfkeCS/downloaded_packages

warning message:

In file.copy(saveto, lib, recursive = TRUE) :
 problem copying C:/users/DHEERAJ/AppData/Local/R/win-library/4.5/00LOCK/dplyr/l1bs\x64/dplyr.dll to C:/users/DHEERAJ/AppData/Local/R/win-library/4.5/dplyr/l1bs\x64/dplyr.dll: Permission denied

> **install.packages("psych")**

WARNING: tools is required to build R packages but is not currently installed. Please download and install the appropriate version of tools before proceeding:

https://cran.rstudio.com/bin/windows/tools/

Installing package into 'C:/users/DHEERAJ/AppData/Local/R/win-library/4.5'

(as 'lib' is unspecified)

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.5/psych_2.5.6.zip'

Content type 'application/zip' length 3594552 bytes (3.4 MB)

downloaded 3.4 MB

package 'psych' successfully unpacked and MD5 sums checked

The downloaded binary packages are in

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> **library(dplyr)**

Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

filter, lag

The following objects are masked from 'package:base':

intersect, setdiff, setequal, union

Environment History Connections Tutorial

Import Dataset 208 MB

Data

iris, df, diabetes, t_test_one, t_test_paired, t_test_two, mtcars, cross_tab

Values

mtcars 248 obs. of 2 variables
df 768 obs. of 11 variables
diabetes 768 obs. of 9 variables
t_test_one List of 10
t_test_paired List of 10
t_test_two List of 10

cross_tab 'table' int [1:248(1d)] 11 3 1 1 1 1 2 3 1 1 ...
cross_tab 'table' int [1:52, 1:7] 21 17 8 9 13 9 5 2 3 1 ...

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23°C Clear

ENG IN 23:01

15-12-2025

RStudio

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Go to function Addins

Source

Console Terminal Background Jobs

R - 8.4.2 / library(psych)

```
> df <- read.csv("C:/Users/Projects/diabetes.csv")  
>  
> df$Glucose_level <- ifelse(df$Glucose >100,"High","Low")  
> print(df$Glucose_level)  
>  
print("1. Descriptive statistics")  
[1] "Descriptive statistics"  
print("Summary of blood Pressure : ")  
[1] "Summary of blood Pressure : "  
> summary(df$BloodPressure)  
Min. 1st Qu. Median Mean 3rd Qu. Max.  
0.00 62.00 72.00 69.11 80.00 122.00  
>  
print("Detailed description of Age : ")  
[1] "Detailed description of Age : "  
> describe(df$Age)  
 vars n mean sd median trimmed min max range skew kurtosis se  
x1 1 768 31.32 11.76 29.31 34.10 18.21 81.60 61.13 0.62 0.42  
>  
>  
>  
#2nd Practical Generating frequency tables using table() or count()  
print("2. Frequency tables (BM1 distribution)")  
[1] "Frequency tables (BM1 Distribution)"  
bmi_counts <- table(df$BM1)  
print(bmi_counts)
```

BM1	Count
Underweight	10
Normal	226
Overweight	22
Obese	27
Very obese	27
Total	270

Files Plots Packages Help Viewer Presentation

Home

- AKData
- Akhstory
- administrator.hive
- administrator.lock
- Custom Office Templates
- CVTE
- darkhive
- darklock
- desktop.ini
- Downloads - Shortcut.lnk
- downloads.hive
- downloads.lock
- dumps
- T123 DHEERAJ SINGH 9th PRACTICAL.pdf
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ENG ENG 29/02 16-12-2023

The screenshot shows the RStudio interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help, and a Project dropdown. The left sidebar has sections for Source, Console, Terminal, and Background Jobs, with the Terminal tab active. The console output shows a large dataset with columns bmi, age, gender, and others. The right sidebar features a Data browser with various datasets like bmt, df, diabetes, t_test_one, t_test_paired, t_test_two, and their respective values. Below this is a file browser showing a directory structure with files like RData, history, administrator.hive, administrator.lock, Custom Office Templates, CVTE, darkhive, desktop.ini, Downloads - Shortcut.lnk, downloads.hive, downloads.lock, dumps, F123 DHEERAJ SINGH 9th PRACTICAL.pdf, F123 DHEERAJ SINGH 10th PRACTICAL.pdf, F123 Dheeraj Singh PowerPoint.pptm, favourite.hive, favourite.lock, first.py, HTML, kmpca.zip, and My Music. The bottom status bar shows the date as 15-12-2023.

The screenshot shows the RStudio interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help, and a Help icon. The left sidebar has sections for Source, Console, Terminal, and Background Jobs. The main area displays an R script with code for cross-tabulations and two-way tables using the table() function. The right sidebar shows the Environment, History, Connections, and Tutorial tabs, with the Environment tab active. It lists variables like bmi_df, df, diabetes, t_test_one, t_test_paired, t_test_two, bml_counts, and cross_tab. Below the environment is a file browser with a tree view of files and folders, including RData, history, administrator.hive, administrator.lock, CVTE, darkhive, desktop.ini, Downloads, Shortcut.link, downloads.hive, downloads.lock, dumps, F123 DHEERAJ SINGH 9th PRACTICAL.pdf, F123 DHEERAJ SINGH 10th PRACTICAL.pdf, F123 Dherry Singh PowerPoint.pptm, favourite.hive, favourite.lock, first.py, HTML, kmpcica.zip, and My Music. A status bar at the bottom indicates '23PC Clear' and '33 IN 15-12-2023'.

```
R #rd practical (1) creating cross-tabulations and two-way tables using table()
# print("3. cross Tabulation ")
## [1] "3. Cross Tabulation "
## 
## > cross.tab <- table(df$age,df$pregnancies)
## > print(cross.tab)
## > 
##      0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 17
## 21  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 22  17 22 18 10 3 3 1 0 0 0 0 0 0 0 0 0 0 0 0
## 23  8 13 10 3 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0
## 24  9 14 9 7 4 1 0 1 0 0 0 0 0 0 0 0 0 0 0
## 25  2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
## 26  9 7 5 5 4 1 2 0 0 0 0 0 0 0 0 0 0 0 0
## 27  5 4 8 6 3 4 2 0 0 0 0 0 0 0 0 0 0 0 0
## 28  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
## 29  3 6 5 2 5 2 3 0 0 0 1 0 0 0 0 0 0 0 0
## 30  1 3 2 4 4 1 0 0 0 1 0 0 0 0 0 0 0 0 0
## 31  2 2 2 2 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 32  2 2 2 2 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 33  2 4 1 0 3 2 1 0 1 3 0 0 0 0 0 0 0 0 0
## 34  0 0 1 1 2 3 1 1 2 1 1 2 0 0 0 0 0 0 0
## 35  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
## 36  1 2 0 2 2 2 1 1 3 2 1 1 0 0 0 0 0 0 0
## 37  0 1 0 1 1 6 4 1 4 1 0 1 0 0 0 0 0 0 0
## 38  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 39  0 0 0 0 2 0 0 1 2 5 0 1 0 0 0 1 0 0 0
## 40  0 1 0 2 2 1 2 2 0 2 1 1 0 0 0 0 0 0 0
## 41  1 2 2 1 0 0 2 3 7 1 1 2 0 0 0 0 0 0 0
## 42  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 43  0 1 0 0 0 0 1 1 4 3 1 0 0 0 0 1 0 1 0
## 44  2 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 2 2 0 0 0
## 45  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 46  2 1 0 1 1 3 0 2 0 2 1 0 0 0 2 0 1 0 0 0
## 47  0 1 0 0 0 0 1 0 1 0 0 0 2 0 0 0 0 0 0 0 1
## 48  0 0 0 0 0 0 1 0 1 0 0 0 2 0 0 0 0 0 0 0 0
## 49  0 0 0 0 0 0 0 0 2 0 0 0 1 0 0 0 0 0 0 0 0
## 50  0 1 0 0 0 0 3 1 1 1 0 1 0 0 0 0 0 0 0 0 0
## 51  0 0 0 0 0 0 1 0 3 0 0 0 1 3 0 0 0 0 0 0 0
## 52  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 53  0 0 2 0 0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0
## 54  0 0 0 1 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0
## 55  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 56  0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 2 0 0 0 0 0
## 57  0 0 0 0 0 0 1 0 0 0 2 0 1 0 0 0 1 0 0 0 0
## 58  1 0 0 0 0 0 0 1 0 0 0 3 0 0 0 0 0 0 0 0 0
## 59  0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0
## 60  0 0 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0
## 61  0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0
## 62  0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## 63  0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0
## 64  0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
```

RStudio

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```
R > 4.5.2 - ~/
```

```
44 2 0 0 0 1 0 1 0 0 0 0 0 0 2 2 0 0 0 0 0
45 2 0 0 0 1 0 1 0 0 0 0 0 0 2 2 0 0 0 0 0
46 2 1 0 1 0 2 0 2 2 1 0 0 2 0 1 0 0
47 0 1 0 0 0 0 1 0 1 0 0 2 0 0 0 0 0 0 1
48 0 1 0 0 0 0 1 0 1 0 0 2 0 0 0 0 0 0 1
49 0 0 0 0 0 0 1 0 2 0 0 2 0 0 0 0 0 0 0
50 0 1 0 0 0 0 0 3 1 1 1 0 1 0 0 0 0 0 0
51 0 0 0 0 0 0 1 0 3 0 0 0 1 3 0 0 0 0 0 0
52 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
53 0 0 2 0 0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0
54 0 0 1 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0
55 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
56 0 0 0 0 0 1 0 0 0 0 2 0 0 0 0 0 0 0 0 0
57 0 0 0 0 0 0 1 0 0 2 0 1 0 0 0 1 0 0 0 0
58 1 0 0 0 0 0 1 0 0 0 3 0 0 0 1 0 0 0 0 0
59 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
60 0 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0
61 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0
62 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
63 0 0 0 1 1 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0
64 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
65 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
66 0 0 1 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0
67 1 0 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0
68 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
69 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
70 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
72 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
81 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
```

>

>

>

> #4th Practical Performing one-sample t-tests using t.test()

```
t <- t.test("4")
```

[1] "4"

```
> t.test_one <- t.test (df$BMZ, mu=25)
```

```
print(t.test_one)
```

One Sample t-test

```
data: df$BMZ
```

```
t = 24.379, df = 767, p-value < 2.2e-16
```

```
alternative hypothesis: true mean is not equal to 25
```

```
95 percent confidence interval:
```

```
31.43410 32.55106
```

```
sample estimates:
```

```
mean of x
```

```
31.99258
```

>

Environment History Connections Tutorial

A + Global Environment

Data

- bmi_df 248 obs. of 2 variables
- df 768 obs. of 11 variables
- diabetes 768 obs. of 9 variables
- t_test_one List of 10
- t_test_paired List of 10
- t_test_two List of 10

Values

- bmi_counts "table" int [1:248] 11 3 1 1 1 1 2 3 1 1 ...
- cross-tab "table" int [1:52, 1:17] 21 17 8 9 13 9 5 2 3 1 ...

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- CVTE
- darkhive
- darklock
- desktop.ini
- Downloads - Shortcut.lnk
- downloadshive
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```
R > # Load the dataset
R > data(bmi)
R > # Perform one-sample t-test
R > t.test_bmi <- t.test(df$bmi, mu=25)
R > print(t.test_bmi)
```

One Sample t-test

```
data: df$bmi
t = 24.579, df = 767, p-value < 2.2e-16
alternative hypothesis: true mean is not equal to 25
95 percent confidence interval:
31.3410 32.5510
sample estimates:
mean of x
31.99258
```

Environment History Connections Tutorial

Data

- bmi_1df 248 obs. of 2 variables
- df 768 obs. of 11 variables
- diabetes 768 obs. of 9 variables
- t_test_one List of 10
- t_test_paired List of 10
- t_test_two List of 10

Vignettes

- bmi_counts 'table' int [1:248(1d)] 11 3 1 1 1 1 2 3 1 1 ...
- cross_tab 'table' int [1:12, 1:17] 21 17 8 9 13 9 5 2 3 1 ...

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Home

- RDatasets
- Rhistory
- adminmanager.hive
- adminmanager.lock
- Custom Office Templates
- CVTE
- darkhive
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- Desktop
- Downloads - Shortcut.lnk
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- dumps
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The screenshot shows the RStudio interface with the following details:

- File Menu:** File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help.
- Source Tab:** Contains R code for t-tests and paired t-tests on the "dfbmi" dataset.
- Console Tab:** Displays the output of the R code, including statistical results and p-values.
- Environment Tab:** Shows the global environment with objects like "bmi_tdf", "df", "diabetes", etc.
- Plots Tab:** Shows a histogram of the "bmi_tdf" data.
- Packages Tab:** Shows available packages: tidyverse, dplyr, purrr, readr, tibble, ggplot2, tidyverse, dplyr, purrr, readr, tibble.
- Help Tab:** Shows help documentation for "t.test".
- Viewer Tab:** Shows the "RData" file.
- Presentation Tab:** Shows presentation files.
- File Explorer:** Shows the file structure of the current project, including RData, Rhistory, administrator.hive, administrator.lock, Custom Office Templates, CVTE, darkhive, desktop.ini, Downloads - Shortcut.lnk, downloads.hive, downloads.lock, dumps, F122 DHEERAJ SINGH 9th PRACTICAL.pdf, F122 DHEERAJ SINGH 10th PRACTICAL.pdf, F122 Dheeraj Singh PowerPoint.pptm, favourite.hive, favourite.lock, first.py, HTML, kmpico.zip, and My Music.