

Sheth L.U.J. & Sir M.V. College

15. Generating basic summaries using str() or summary() (R).

The screenshot shows the RStudio interface with the following details:

- Data View:** Displays a data frame titled "Food_Delivery_Route_Efficiency_Dataset" with 200 rows and 10 columns. The columns include: order_id, distance_km, delivery_time_min, traffic_level, route_length_km, delivery_mode, weather, order_time, restaurant_zone, and customer_zone.
- Environment View:** Shows various objects defined in the R session, such as combined_d, df, df_clean, df_no_dupl, df_small, duplicate, duplicate_10, flower_cle, flower_df, Food_deliv, iris, iris_clean, long_df, processed, traffic_pf, unique_ord, unique_rout, and wide_df. It also lists their sizes and variable types.
- Console View:** Shows the command "showing 1 to 27 of 200 entries, 10 total columns".
- Bottom Bar:** Includes system icons for battery, signal, and time (2.20.36 PM, 08-12-2025), and language settings (ENG IN).

The screenshot shows the RStudio interface with the following details:

- Code View:** Displays the R script "S081_R_Practical15.R" containing the following code:

```
1 # 15. Basic Summaries using str() and summary()
2 # Dataset: Food Delivery Route Efficiency
3 # -----
4 #
5 # library(dplyr)
6 #
7 #
8 # -----
9 # 1. LOAD YOUR DATA
10 #
11 #
12 df <- read.csv(
13   "C:/Users/itlab/OneDrive/Desktop/S081_R_Studio/Food_Delivery_Route_Efficiency_Dataset.csv",
14   na.strings = c("", "NA")
15 )
16 print(" --- Data Loaded Successfully --- ")
17 #
18 # 2. USING str() - structure of dataset
19 #
20 str(df)
21 #
22 #
23 print(" --- OUTPUT OF str() --- ")
24 str(df)
25 #
26 # -----
27 # 3. USING summary() - statistical summary
28 #
29 #
30 print(" --- OUTPUT OF summary() [original] --- ")
31 summary(df)
32 #
33 # -----
34 # 4. IMPROVING SUMMARY USING FACTORS
35 # Convert character columns to factors for better summary
36 #
37 #
38 df$traffic_level <- as.factor(df$traffic_level)
39 df$delivery_mode <- as.factor(df$delivery_mode)
40 df$weather <- as.factor(df$weather)
41 df$restaurant_zone <- as.factor(df$restaurant_zone)
42 df$customer_zone <- as.factor(df$customer_zone)
```
- Environment View:** Shows the same objects as the first RStudio session, including combined_d, df, df_clean, df_no_dupl, df_small, duplicate, duplicate_10, flower_cle, flower_df, Food_deliv, iris, iris_clean, long_df, processed, traffic_pf, unique_ord, unique_rout, and wide_df.
- Bottom Bar:** Includes system icons and language settings (ENG IN).

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RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Project: (None)

S081_R_Practical13.R S081_R_Practical14.R S081_R_Practical15.R Food_Delivery_Route_Efficiency_Dataset

Source

```
1/ print(" --- Data Loaded Successfully ---")
18
19 # 2. USING str() - Structure of Dataset
20
21 #
22
23 print(" --- OUTPUT OF str() ---")
str(df)
25
26 #####
27 # 3. USING summary() - Statistical Summary
28 #
29
30 print(" --- OUTPUT OF summary() [original] ---")
summary(df)
32
33 #
34 # 4. IMPROVING SUMMARY USING FACTORS
35 # Convert character columns to factors for better summary
36 #
37
38 df$traffic_level <- as.factor(df$traffic_level)
39 df$delivery_mode <- as.factor(df$delivery_mode)
40 df$weather <- as.factor(df$weather)
41 df$restaurant_zone <- as.factor(df$restaurant_zone)
42 df$customer_zone <- as.factor(df$customer_zone)
43
44 print(" --- OUTPUT OF summary() [After Factor Conversion] ---")
summary(df)
46
47 #
48 # 5. specific summaries (Examples)
49 #
50
51 avg_delivery_time <- mean(df$delivery_time_min, na.rm = TRUE)
52 max_distance <- max(df$distance_km, na.rm = TRUE)
53 min_route_length <- min(df$route_length_km, na.rm = TRUE)
54
55 print(paste("Average Delivery Time (min):", avg_delivery_time))
56 print(paste("Maximum Delivery Distance (km):", max_distance))
57 print(paste("Minimum Route Length (km):", min_route_length))
58
```

Environment History Connections Tutorial

Data

- combined_d... 10150 obs. of 2 variables
- df 200 obs. of 10 variables
- df_clean 200 obs. of 11 variables
- df_no_dupe... 200 obs. of 10 variables
- df_small 200 obs. of 4 variables
- Duplicate_... 205 obs. of 10 variables
- Duplicate_... 10 obs. of 10 variables
- flower_cle... 10000 obs. of 2 variables
- flower_df 10000 obs. of 4 variables
- Food_deliv... 200 obs. of 10 variables
- iris 150 obs. of 5 variables
- iris_clean 150 obs. of 2 variables
- long_df 600 obs. of 3 variables
- processed_... 200 obs. of 21 variables
- traffic_p... 200 obs. of 4 variables
- unique_ord... 200 obs. of 10 variables
- unique_rout... 200 obs. of 10 variables
- wide_df 200 obs. of 4 variables

values

- avg_delive... 44.7445
- current_t... 2025-12-08 14:15:16 IST
- max_distan... 12
- min_route... 0.58

Files Plots Packages Help Viewer Presentation

Console

USD/INR +0.25%

Search

2.20.27 PM 08-12-2025

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Project: (None)

Source

```
> # 15. Basic Summaries using str() and summary()
> # Dataset: Food Delivery Route Efficiency
> #
>
> library(dplyr)
>
> # 1. LOAD YOUR DATA
> #
>
> df <- read.csv(
+ "c:\\\\users\\\\itab\\\\oneDrive\\\\Desktop\\\\S081_R_Studio\\\\Food_Delivery_Route_Efficiency_Dataset.csv",
+ na.strings = c("", "NA")
+ )
>
> print(" --- Data Loaded Successfully ---")
[1] " --- Data Loaded Successfully ---"
>
> # 2. USING str() - Structure of dataset
> #
>
> print(" --- OUTPUT OF str() ---")
[1] " --- OUTPUT OF str() ---"
> str(df)
'data.frame': 200 obs. of 10 variables:
 $ order_id : int 1 2 3 4 5 6 7 8 9 10 ...
 $ distance_km : num 7.97 0.9 11.12 4.9 10.4 ...
 $ delivery_time_min: num 63.8 7.6 78.24.8 56.76.8 54.4 52.9 81.4 17.1 ...
 $ traffic_level : chr "High" "High" "Medium" "Low" ...
 $ route_length_km : num 9.75 1.28 16.65 5.25 11.34 ...
 $ delivery_mode : chr "Bicycle" "Car" "Bike" "Scooter" ...
 $ weather : chr "Clear" "Cloudy" "Rainy" "Rainy" ...
 $ order_time : chr "2025-01-01 15:29" "2025-01-03 00:47" "2025-01-04 17:32" "2025-01-01 14:12" ...
 $ restaurant_zone : chr "South" "West" "South" "Central" ...
 $ customer_zone : chr "North" "North" "Central" "Central" ...
>
> # 3. USING summary() - Statistical summary
> #
>
> print(" --- OUTPUT OF summary() [original] ---")
```

Environment History Connections Tutorial

Data

- combined_d... 10150 obs. of 2 variables
- df 200 obs. of 10 variables
- df_clean 200 obs. of 11 variables
- df_no_dupe... 200 obs. of 10 variables
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- flower_cle... 10000 obs. of 2 variables
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- Food_deliv... 200 obs. of 10 variables
- iris 150 obs. of 5 variables
- iris_clean 150 obs. of 2 variables
- long_df 600 obs. of 3 variables
- processed_... 200 obs. of 21 variables
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- unique_ord... 200 obs. of 10 variables
- unique_rout... 200 obs. of 10 variables
- wide_df 200 obs. of 4 variables

values

- avg_delive... 44.7445
- current_t... 2025-12-08 14:15:16 IST
- max_distan... 12
- min_route... 0.58

Files Plots Packages Help Viewer Presentation

Air: Very poor Today

Search

2.21.09 PM 08-12-2025

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RStudio

```

File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Background Jobs
[R - R 4.5.2 - ~]
> # =====
> # 3. USING summary() - statistical summary
> #
> #
> print("---- OUTPUT OF summary() [Original] ----")
[1] "---- OUTPUT OF summary() [Original] ----"
> summary(df)
  order_id      distance_km      delivery_time_min traffic_level
Min.   : 1.00   Min.   :0.530   Min.   : 2.40   Length:200
1st Qu.: 50.75  1st Qu.:3.688   1st Qu.:23.73   Class :character
Median :100.50  Median :6.845   Median :44.65   Mode  :character
Mean   :100.50  Mean   :6.625   Mean   :44.74
3rd Qu.:150.25  3rd Qu.:9.797  3rd Qu.:63.90
Max.   :200.00  Max.   :12.000  Max.   :108.80
route_length_km delivery_mode      weather      order_time
Min.   : 0.580  Length:200   Length:200   Length:200
1st Qu.: 4.420  Class  :character  Class  :character  Class  :character
Median : 8.520  Mode   :character  Mode   :character  Mode   :character
Mean   : 8.156
3rd Qu.:11.800
Max.   :17.290
restaurant_zone customer_zone
Length:200
Class :character
Mode  :character
  
```

> # =====

> # 4. IMPROVING SUMMARY USING FACTORS

> # Convert character columns to factors for better summary

> #

> df\$traffic_level <- as.factor(df\$traffic_level)

> df\$delivery_mode <- as.factor(df\$delivery_mode)

> df\$weather <- as.factor(df\$weather)

> df\$restaurant_zone <- as.factor(df\$restaurant_zone)

> df\$customer_zone <- as.factor(df\$customer_zone)

>

> print("---- OUTPUT OF summary() [After Factor Conversion] ----")

[1] "---- OUTPUT OF summary() [After Factor Conversion] ----"

Air: Very poor
Today

RStudio

```

File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Background Jobs
[R - R 4.5.2 - ~]
> # Convert character columns to factors for better summary
> #
> df$traffic_level <- as.factor(df$traffic_level)
> df$delivery_mode <- as.factor(df$delivery_mode)
> df$weather <- as.factor(df$weather)
> df$restaurant_zone <- as.factor(df$restaurant_zone)
> df$customer_zone <- as.factor(df$customer_zone)
>
> print("---- OUTPUT OF summary() [After Factor Conversion] ----")
[1] "---- OUTPUT OF summary() [After Factor Conversion] ----"
> summary(df)
  order_id      distance_km      delivery_time_min traffic_level
Min.   : 1.00   Min.   :0.530   Min.   : 2.40   High   :68
1st Qu.: 50.75  1st Qu.:3.688   1st Qu.:23.73   Low    :65
Median :100.50  Median :6.845   Median :44.65   Medium :67
Mean   :100.50  Mean   :6.625   Mean   :44.74
3rd Qu.:150.25  3rd Qu.:9.797  3rd Qu.:63.90
Max.   :200.00  Max.   :12.000  Max.   :108.80
route_length_km delivery_mode      weather      restaurant_zone
Min.   : 0.580  Length:200   Length:200   Central:47
1st Qu.: 4.420  Bike   :49    Cloudy:55   East   :38
Median : 8.520  Car    :47    Rainy :55    North  :30
Mean   : 8.156  Scooter:52   Windy :50    South  :34
3rd Qu.:11.800
Max.   :17.290
customer_zone
Central:38
East   :45
North  :46
South  :36
West   :35
  
```

> # =====

> # 5. Specific summaries (Examples)

> #

> avg_delivery_time <- mean(df\$delivery_time_min, na.rm = TRUE)

> max_distance <- max(df\$distance_km, na.rm = TRUE)

> min_route_length <- min(df\$route_length_km, na.rm = TRUE)

>

> min(route_length_km, delivery_time_min, na.rm = TRUE)

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RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function Addins
Source
Console Background Jobs
R 4.2.3 ~ /
> df\$customer_zone <- as.factor(df\$customer_zone)
>
> print(" --- OUTPUT OF summary() [After Factor Conversion] ---")
[1] " --- OUTPUT OF summary() [After Factor Conversion] ---"
> summary(df)
order_id distance_km delivery_time_min traffic_level
Min. : 1.00 Min. : 0.530 Min. : 2.40 High :68
1st Qu.: 50.75 1st Qu.: 3.688 1st Qu.: 23.73 Low :65
Median :100.50 Median : 6.845 Median : 44.65 Medium:67
Mean :100.50 Mean : 6.625 Mean : 44.74
3rd Qu.:150.25 3rd Qu.: 9.797 3rd Qu.: 63.00
Max. :200.00 Max. :12.000 Max. :108.80
route_length_km delivery_mode weather order_time restaurant_zone
Min. : 0.580 Bicycle:S2 Clear :40 Length:200 Central:47
1st Qu.: 4.420 Bike :49 Cloudy:55 Class :character East :28
Median : 8.520 Car :47 Rainy :55 Mode :character North :30
Mean : 8.156 Scooter:52 Windy :50 South :54
3rd Qu.:11.800 west :41
Max. :17.290
customer_zone
Central :18
East :45
North :46
South :36
West :35
>
> # =====
> # 5. Specific summaries (Examples)
> # =====
>
> avg_delivery_time <- mean(df\$delivery_time_min, na.rm = TRUE)
> max_distance <- max(df\$distance_km, na.rm = TRUE)
> min_route_length <- min(df\$route_length_km, na.rm = TRUE)
>
> print(paste("Average Delivery Time (min):", avg_delivery_time))
[1] "Average Delivery Time (min): 44.7445"
> print(paste("Maximum delivery distance (km):", max_distance))
[1] "Maximum Delivery Distance (km): 12.000000"
> print(paste("Minimum Route Length (km):", min_route_length))
[1] "Minimum Route Length (km): 0.58"
> |
Environment History Connections Tutorial Project: (None)
Import 161 MB R Global Environment
Data combined_d... 10150 obs. of 2 variables
df 200 obs. of 10 variables
df_clean 200 obs. of 11 variables
df_no_dupl... 200 obs. of 10 variables
df_small 200 obs. of 4 variables
duplicate... 205 obs. of 10 variables
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flower_cle... 10000 obs. of 2 variables
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iris 150 obs. of 5 variables
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long_df 600 obs. of 3 variables
processed... 200 obs. of 21 variables
traffic_cpl... 200 obs. of 4 variables
unique_ord... 200 obs. of 10 variables
unique_rout... 200 obs. of 10 variables
wide_df 200 obs. of 4 variables
Values avg_delive... 44.7445
current_til... 2025-12-08 14:15:16 IST
max_distan... 12
min_route... 0.58
Files Plots Packages Help Viewer Presentation
Present Print Edit ENG IN 2.21.42 PM 08-12-2025

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