

SHETH L.U.J & SIR M.V COLLEGE OF SCIENCE

SUBJECT : Data Analysis with SAS / SPSS / R

AIM : Generating descriptive statistics using summary() or describe() (R).

OUTPUT

The first screenshot shows the RStudio interface with the following console output:

```
R 4.5.2 - ~/R/
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

> library(psych)
> eq <- read.csv("earthquake.csv")
> str(eq)
'data.frame': 80829 obs. of 22 variables:
 $ time      : chr "2015-12-30 23:20:56.840000+00:00" "2015-12-30 21:29:23.040000+00:00" "2015-12-30 19:50:48.210000+00:00" "2015-12-30 18:26:34.610000+00:00" ...
 $ latitude  : num 0.0229 -30.6777 -40.5641 -24.4715 -5.9568 ...
 $ longitude : num 123.8 -71.7 173.4 -175.9 155 ...
 $ depth     : num 143.1 25.6 142.4 24.2 184.6 ...
 $ mag       : num 4.6 4.5 4.6 4.9 4.5 4.5 4.5 4.5 4.5 ...
 $ magType   : chr "mb" "mb" "mb" "mb" ...
 $ nst       : num NA NA NA NA NA NA NA NA ...
 $ gap       : num 51 180 65 77 94 57 192 134 50 51 ...
 $ dmin      : num 1.488 0.085 0.653 5.097 3.292 ...
 $ rms       : num 0.83 0.94 0.7 0.99 0.76 0.75 0.67 0.6 0.85 0.95 ...
 $ net       : chr "us" "us" "us" "us" ...
 $ id        : chr "us10004aif" "us10004ahx" "us10004agf" "us10004bul" ...
 $ updated   : chr "2016-03-18T01:13:08.040Z" "2016-03-18T01:13:08.040Z" "2022-08-02T02:00:26.953Z" "2016-11-10T22:06:33.391Z" ...
 $ place     : chr "101 km SE of Gorontalo, Indonesia" "52 km W of Ovalle, Chile" "61 km ENE of Takaka, New Zealand" "south of Tonga"
 $ type      : chr "earthquake" "earthquake" "earthquake" "earthquake" ...
 $ horizontalError: num 6.4 3.9 7.3 13.7 11.6 7.4 14.2 7.5 8.5 7.7 ...
 $ depthError  : num 6.7 5.4 6.3 4.7 8.2 5.8 12.7 7.7 5.4 4.7 ...
 $ magError     : num 0.083 0.192 0.097 0.074 0.101 0.053 0.14 0.136 0.043 0.085 ...
 $ magNst      : num 43 8 34 57 29 103 15 20 177 43 ...
 $ status       : chr "reviewed" "reviewed" "reviewed" "reviewed" ...
 $ locationSource : chr "us" "us" "us" "us" ...
 $ magSource    : chr "us" "us" "us" "us" ...

> head(eq)
      time latitude longitude depth mag magType nst gap dmin rms net id updated
1 2015-12-30 23:20:56.840000+00:00 0.0229 123.8194 143.05 4.6 mb NA 51 1.488 0.83 us us10004aif 2016-03-18T01:13:08.040Z
2 2015-12-30 21:29:23.040000+00:00 -30.6777 -71.7346 25.62 4.5 mb NA 180 0.085 0.94 us us10004ahx 2016-03-18T01:13:08.040Z
3 2015-12-30 19:50:48.210000+00:00 -40.5641 173.4219 142.40 4.6 mb NA 65 0.653 0.70 us us10004agf 2022-08-02T02:00:26.953Z
4 2015-12-30 18:26:34.610000+00:00 -24.4715 -175.8716 24.21 4.9 mb NA 77 5.097 0.99 us us10004bul 2016-11-10T22:06:33.391Z
5 2015-12-30 14:46:47.730000+00:00 -5.9568 154.9611 184.56 4.5 mb NA 94 3.292 0.76 us us10004btx 2016-03-18T01:13:08.040Z
6 2015-12-30 12:57:36.210000+00:00 33.8836 137.3211 338.23 4.5 mb NA 57 1.066 0.75 us us10004aep 2016-03-18T01:13:08.040Z
```

The second screenshot shows the RStudio interface with the following console output:

```
> print("--- 1. Descriptive Statistics for Earthquake Data ---")
[1] "--- 1. Descriptive Statistics for Earthquake Data ---"
```

The Environment pane on the right shows the 'eq' data frame with 80829 observations and 22 variables.

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SUBJECT : Data Analysis with SAS / SPSS /R

RStudio

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Source

```
R - R 4.5.2 ~ / ~  
8.0402
```

	place	type	horizontalError	depthError	magError	magNst	status	locationSource	magSource
1	101 km SE of Gorontalo, Indonesia earthquake		6.4	6.7	0.083	43	reviewed	us	u
2	52 km W of Ovalle, Chile earthquake		3.9	5.4	0.192	8	reviewed	us	u
3	61 km ENE of Takaka, New Zealand earthquake		7.3	6.3	0.097	34	reviewed	us	u
4	south of Tonga earthquake		13.7	4.7	0.074	57	reviewed	us	u
5	70 km NW of Panguna, Papua New Guinea earthquake		11.6	8.2	0.101	29	reviewed	us	u
6	79 km SSE of Toba, Japan earthquake		7.4	5.8	0.053	103	reviewed	us	u

```
> print("--- 1. Descriptive Statistics for Earthquake Data ---")  
[1] "--- 1. Descriptive Statistics for Earthquake Data ---"  
> # A. Using Base R summary()  
> print("Summary of Earthquake Magnitude (mag):")  
[1] "Summary of Earthquake Magnitude (mag):"  
> summary(eq$mag)  
Min. 1st Qu. Median Mean 3rd Qu. Max.  
4.500 4.500 4.700 4.804 4.900 8.800  
> print("Summary of Earthquake Depth (depth):")  
[1] "Summary of Earthquake Depth (depth):"  
> summary(eq$depth)  
Min. 1st Qu. Median Mean 3rd Qu. Max.  
-1.01 10.00 13.66 62.10 57.29 683.36  
> print("Detailed Description of Magnitude and Depth:")  
[1] "Detailed Description of Magnitude and Depth:"  
> describe(eq[, c("mag", "depth")])  
vars n mean sd median trimmed mad min max range skew kurtosis se  
mag 1 80829 4.8 0.37 4.70 4.73 0.30 4.50 8.80 4.30 2.34 8.31 0.0  
depth 2 80829 62.1 113.44 13.66 33.35 6.36 -1.01 683.36 684.37 3.38 11.58 0.4  
> View(eq)  
>
```

Environment History Connections Tutorial

Data

eq 80829 obs. of 22 varia...

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RStudio

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Source

```
R - R 4.5.2 ~ / ~  
8.0402
```

	time	latitude	longitude	depth	mag	magType	nst	gap	dmin	rms	net	id	updated
1	2015-12-30 23:20:56.840000+00:00	0.02290	123.8194	143.05	4.60	mb	NA	51	1.4880	0.83	us	us10004aif	2016-03-18T01:13:08.040Z
2	2015-12-30 21:29:23.040000+00:00	-30.67770	-71.7346	25.62	4.50	mb	NA	180	0.0850	0.94	us	us10004ahx	2016-03-18T01:13:08.040Z
3	2015-12-30 19:50:48.210000+00:00	-40.56410	173.4219	142.40	4.60	mb	NA	65	0.6530	0.70	us	us10004agf	2022-08-02T02:00:26.953Z
4	2015-12-30 18:26:34.610000+00:00	-24.47150	-175.8716	24.21	4.90	mb	NA	77	5.0970	0.99	us	us10004bu1	2016-11-10T22:06:33.391Z
5	2015-12-30 14:46:47.730000+00:00	-5.95680	154.9611	184.56	4.50	mb	NA	94	3.2920	0.76	us	us10004btx	2016-03-18T01:13:08.040Z
6	2015-12-30 12:57:36.210000+00:00	33.88360	137.3211	338.23	4.50	mb	NA	57	1.0660	0.75	us	us10004aep	2016-03-18T01:13:08.040Z
7	2015-12-30 12:50:12.930000+00:00	-18.05050	-178.7085	607.86	4.50	mb	NA	192	3.0980	0.67	us	us10004bu0	2016-03-18T01:13:08.040Z
8	2015-12-30 11:53:51.690000+00:00	40.90130	142.7915	51.54	4.50	mb	NA	134	1.1460	0.60	us	us10004aeg	2016-03-18T01:13:08.040Z
9	2015-12-30 11:08:36+00:00	-21.97790	-174.4701	46.15	5.00	mb	NA	50	7.8800	0.85	us	us10004ae8	2016-11-10T22:06:32.298Z
10	2015-12-30 10:46:44+00:00	19.32140	121.1273	28.55	4.50	mb	NA	51	3.4790	0.95	us	us10004ae4	2016-03-18T01:13:08.040Z
11	2015-12-30 09:00:21.700000+00:00	-24.38920	-179.8923	513.83	4.50	mb	NA	111	12.7740	0.65	us	us10004btp	2016-03-18T01:13:08.040Z
12	2015-12-30 07:39:29.310000+00:00	48.58650	-123.3003	52.42	4.79	ml	27	81	0.1167	0.19	uw	uw61114971	2024-08-10T23:57:40.199Z
13	2015-12-30 03:25:34.030000+00:00	14.13700	-91.1098	81.05	5.00	mwr	NA	131	0.6850	0.83	us	us10004acp	2022-08-02T01:48:12.934Z
14	2015-12-30 02:58:36.450000+00:00	-34.41920	-109.3543	10.00	5.00	mb	NA	65	28.9740	0.80	us	us10004aci	2016-11-10T22:06:30.061Z
15	2015-12-29 23:36:18.430000+00:00	-40.61300	176.0554	36.37	4.80	mb	NA	97	0.1590	0.79	us	us10004abn	2016-03-18T01:13:07.040Z
16	2015-12-29 22:36:04.770000+00:00	-41.18030	44.2212	10.00	4.60	mb	NA	53	7.6180	0.90	us	us10004bts	2016-03-18T01:13:07.040Z
17	2015-12-29 21:28:30.670000+00:00	-56.31930	-26.8903	103.78	4.70	mb	NA	57	5.8490	0.59	us	us10004brq	2016-03-18T01:13:07.040Z
18	2015-12-29 20:25:11.910000+00:00	-34.58350	-109.4491	13.09	4.80	mb	NA	74	30.6970	0.68	us	us10004aa6	2016-11-10T22:06:28.940Z
19	2015-12-29 20:02:41.290000+00:00	-23.52290	-179.2840	564.34	4.50	mb	NA	214	6.2660	0.46	us	us10004bri	2016-03-18T01:13:07.040Z
20	2015-12-29 17:38:22.260000+00:00	-10.03300	114.2023	33.42	4.70	mb	NA	67	1.5530	1.08	us	us10004a9b	2016-03-18T01:13:06.040Z

Showing 1 to 20 of 80,829 entries, 22 total columns

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