

# Assignment 2

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## R Markdown

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When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

## Make dataframe

First, make a data frame using **airquality** data. And then, we can see that there are NA values. Or you can briefly check data frame using *head* function.

```
library(ggplot2)
mydata <- data.frame(airquality)
mydata
```

```
##      Ozone Solar.R Wind Temp Month Day
## 1      41      190  7.4   67     5   1
## 2      36      118  8.0   72     5   2
## 3      12      149 12.6   74     5   3
## 4      18      313 11.5   62     5   4
## 5      NA       NA 14.3   56     5   5
## 6      28       NA 14.9   66     5   6
## 7      23      299  8.6   65     5   7
## 8      19       99 13.8   59     5   8
## 9       8       19 20.1   61     5   9
## 10     NA      194  8.6   69     5  10
## 11      7       NA  6.9   74     5  11
## 12     16      256  9.7   69     5  12
## 13     11      290  9.2   66     5  13
## 14     14      274 10.9   68     5  14
## 15     18       65 13.2   58     5  15
## 16     14      334 11.5   64     5  16
## 17     34      307 12.0   66     5  17
## 18      6       78 18.4   57     5  18
## 19     30      322 11.5   68     5  19
## 20     11       44  9.7   62     5  20
## 21      1        8  9.7   59     5  21
## 22     11      320 16.6   73     5  22
## 23      4       25  9.7   61     5  23
```

## 24	32	92	12.0	61	5	24
## 25	NA	66	16.6	57	5	25
## 26	NA	266	14.9	58	5	26
## 27	NA	NA	8.0	57	5	27
## 28	23	13	12.0	67	5	28
## 29	45	252	14.9	81	5	29
## 30	115	223	5.7	79	5	30
## 31	37	279	7.4	76	5	31
## 32	NA	286	8.6	78	6	1
## 33	NA	287	9.7	74	6	2
## 34	NA	242	16.1	67	6	3
## 35	NA	186	9.2	84	6	4
## 36	NA	220	8.6	85	6	5
## 37	NA	264	14.3	79	6	6
## 38	29	127	9.7	82	6	7
## 39	NA	273	6.9	87	6	8
## 40	71	291	13.8	90	6	9
## 41	39	323	11.5	87	6	10
## 42	NA	259	10.9	93	6	11
## 43	NA	250	9.2	92	6	12
## 44	23	148	8.0	82	6	13
## 45	NA	332	13.8	80	6	14
## 46	NA	322	11.5	79	6	15
## 47	21	191	14.9	77	6	16
## 48	37	284	20.7	72	6	17
## 49	20	37	9.2	65	6	18
## 50	12	120	11.5	73	6	19
## 51	13	137	10.3	76	6	20
## 52	NA	150	6.3	77	6	21
## 53	NA	59	1.7	76	6	22
## 54	NA	91	4.6	76	6	23
## 55	NA	250	6.3	76	6	24
## 56	NA	135	8.0	75	6	25
## 57	NA	127	8.0	78	6	26
## 58	NA	47	10.3	73	6	27
## 59	NA	98	11.5	80	6	28
## 60	NA	31	14.9	77	6	29
## 61	NA	138	8.0	83	6	30
## 62	135	269	4.1	84	7	1
## 63	49	248	9.2	85	7	2
## 64	32	236	9.2	81	7	3
## 65	NA	101	10.9	84	7	4
## 66	64	175	4.6	83	7	5
## 67	40	314	10.9	83	7	6
## 68	77	276	5.1	88	7	7
## 69	97	267	6.3	92	7	8
## 70	97	272	5.7	92	7	9
## 71	85	175	7.4	89	7	10
## 72	NA	139	8.6	82	7	11
## 73	10	264	14.3	73	7	12
## 74	27	175	14.9	81	7	13
## 75	NA	291	14.9	91	7	14
## 76	7	48	14.3	80	7	15
## 77	48	260	6.9	81	7	16

## 78	35	274	10.3	82	7	17
## 79	61	285	6.3	84	7	18
## 80	79	187	5.1	87	7	19
## 81	63	220	11.5	85	7	20
## 82	16	7	6.9	74	7	21
## 83	NA	258	9.7	81	7	22
## 84	NA	295	11.5	82	7	23
## 85	80	294	8.6	86	7	24
## 86	108	223	8.0	85	7	25
## 87	20	81	8.6	82	7	26
## 88	52	82	12.0	86	7	27
## 89	82	213	7.4	88	7	28
## 90	50	275	7.4	86	7	29
## 91	64	253	7.4	83	7	30
## 92	59	254	9.2	81	7	31
## 93	39	83	6.9	81	8	1
## 94	9	24	13.8	81	8	2
## 95	16	77	7.4	82	8	3
## 96	78	NA	6.9	86	8	4
## 97	35	NA	7.4	85	8	5
## 98	66	NA	4.6	87	8	6
## 99	122	255	4.0	89	8	7
## 100	89	229	10.3	90	8	8
## 101	110	207	8.0	90	8	9
## 102	NA	222	8.6	92	8	10
## 103	NA	137	11.5	86	8	11
## 104	44	192	11.5	86	8	12
## 105	28	273	11.5	82	8	13
## 106	65	157	9.7	80	8	14
## 107	NA	64	11.5	79	8	15
## 108	22	71	10.3	77	8	16
## 109	59	51	6.3	79	8	17
## 110	23	115	7.4	76	8	18
## 111	31	244	10.9	78	8	19
## 112	44	190	10.3	78	8	20
## 113	21	259	15.5	77	8	21
## 114	9	36	14.3	72	8	22
## 115	NA	255	12.6	75	8	23
## 116	45	212	9.7	79	8	24
## 117	168	238	3.4	81	8	25
## 118	73	215	8.0	86	8	26
## 119	NA	153	5.7	88	8	27
## 120	76	203	9.7	97	8	28
## 121	118	225	2.3	94	8	29
## 122	84	237	6.3	96	8	30
## 123	85	188	6.3	94	8	31
## 124	96	167	6.9	91	9	1
## 125	78	197	5.1	92	9	2
## 126	73	183	2.8	93	9	3
## 127	91	189	4.6	93	9	4
## 128	47	95	7.4	87	9	5
## 129	32	92	15.5	84	9	6
## 130	20	252	10.9	80	9	7
## 131	23	220	10.3	78	9	8

```
## 132    21      230 10.9   75     9    9
## 133    24      259  9.7   73     9   10
## 134    44      236 14.9   81     9   11
## 135    21      259 15.5   76     9   12
## 136    28      238  6.3   77     9   13
## 137     9       24 10.9   71     9   14
## 138    13      112 11.5   71     9   15
## 139    46      237  6.9   78     9   16
## 140    18      224 13.8   67     9   17
## 141    13       27 10.3   76     9   18
## 142    24      238 10.3   68     9   19
## 143    16      201  8.0   82     9   20
## 144    13      238 12.6   64     9   21
## 145    23       14  9.2   71     9   22
## 146    36      139 10.3   81     9   23
## 147     7       49 10.3   69     9   24
## 148    14       20 16.6   63     9   25
## 149    30      193  6.9   70     9   26
## 150    NA      145 13.2   77     9   27
## 151    14      191 14.3   75     9   28
## 152    18      131  8.0   76     9   29
## 153    20      223 11.5   68     9   30
```

```
head(mydata)
```

```
##      Ozone Solar.R Wind Temp Month Day
## 1      41      190  7.4   67     5   1
## 2      36      118  8.0   72     5   2
## 3      12      149 12.6   74     5   3
## 4      18      313 11.5   62     5   4
## 5      NA       NA 14.3   56     5   5
## 6      28       NA 14.9   66     5   6
```

## Remove NA

Next, to remove NA values, use *complete.cases* function. After removing NA values, save new data frame into new name. And after that, by using *is.na* function, we can find out that all NA values are removed.

```
good <- complete.cases(mydata)
```

```
mydata2 <- mydata[good,]
is.na(mydata2)
```

```
##      Ozone Solar.R Wind Temp Month Day
## 1 FALSE FALSE FALSE FALSE FALSE FALSE
## 2 FALSE FALSE FALSE FALSE FALSE FALSE
## 3 FALSE FALSE FALSE FALSE FALSE FALSE
## 4 FALSE FALSE FALSE FALSE FALSE FALSE
## 7 FALSE FALSE FALSE FALSE FALSE FALSE
## 8 FALSE FALSE FALSE FALSE FALSE FALSE
## 9 FALSE FALSE FALSE FALSE FALSE FALSE
## 12 FALSE FALSE FALSE FALSE FALSE FALSE
```

[illegible]

```

## 99 FALSE FALSE FALSE FALSE FALSE FALSE
## 100 FALSE FALSE FALSE FALSE FALSE FALSE
## 101 FALSE FALSE FALSE FALSE FALSE FALSE
## 104 FALSE FALSE FALSE FALSE FALSE FALSE
## 105 FALSE FALSE FALSE FALSE FALSE FALSE
## 106 FALSE FALSE FALSE FALSE FALSE FALSE
## 108 FALSE FALSE FALSE FALSE FALSE FALSE
## 109 FALSE FALSE FALSE FALSE FALSE FALSE
## 110 FALSE FALSE FALSE FALSE FALSE FALSE
## 111 FALSE FALSE FALSE FALSE FALSE FALSE
## 112 FALSE FALSE FALSE FALSE FALSE FALSE
## 113 FALSE FALSE FALSE FALSE FALSE FALSE
## 114 FALSE FALSE FALSE FALSE FALSE FALSE
## 116 FALSE FALSE FALSE FALSE FALSE FALSE
## 117 FALSE FALSE FALSE FALSE FALSE FALSE
## 118 FALSE FALSE FALSE FALSE FALSE FALSE
## 120 FALSE FALSE FALSE FALSE FALSE FALSE
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## 124 FALSE FALSE FALSE FALSE FALSE FALSE
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## 136 FALSE FALSE FALSE FALSE FALSE FALSE
## 137 FALSE FALSE FALSE FALSE FALSE FALSE
## 138 FALSE FALSE FALSE FALSE FALSE FALSE
## 139 FALSE FALSE FALSE FALSE FALSE FALSE
## 140 FALSE FALSE FALSE FALSE FALSE FALSE
## 141 FALSE FALSE FALSE FALSE FALSE FALSE
## 142 FALSE FALSE FALSE FALSE FALSE FALSE
## 143 FALSE FALSE FALSE FALSE FALSE FALSE
## 144 FALSE FALSE FALSE FALSE FALSE FALSE
## 145 FALSE FALSE FALSE FALSE FALSE FALSE
## 146 FALSE FALSE FALSE FALSE FALSE FALSE
## 147 FALSE FALSE FALSE FALSE FALSE FALSE
## 148 FALSE FALSE FALSE FALSE FALSE FALSE
## 149 FALSE FALSE FALSE FALSE FALSE FALSE
## 151 FALSE FALSE FALSE FALSE FALSE FALSE
## 152 FALSE FALSE FALSE FALSE FALSE FALSE
## 153 FALSE FALSE FALSE FALSE FALSE FALSE

```

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.