

RStudio

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Untitled1\* Go to file/function Addins

```
1 datasets::airquality
2 head(airquality,n=8)
3 |
```

Environment History Connections Tutorial

Search results: \$ min(state.x77\$Frost)

Files Plots Packages Help Viewer Presentation

3:1 (Top Level) R Script

Console Terminal Background Jobs

R 4.3.0 · ~/

```
> head(airquality,n=8)
  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
> |
```

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Untitled1\* Go to file/function Addins

```
1 datasets::airquality
2 head(airquality,n=8)
3 str(airquality)
4 |
```

Environment History Connections Tutorial

Search results: \$ min(state.x77\$Frost)

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4:1 (Top Level) R Script

Console Terminal Background Jobs

R 4.3.0 · ~/

```
> str(airquality)
'data.frame': 153 obs. of 6 variables:
 $ Ozone : int 41 36 12 18 NA 28 23 19 8 NA ...
 $ Solar.R: int 190 118 149 313 NA NA 299 99 19 194 ...
 $ Wind   : num 7.4 8 12.6 11.5 14.3 14.9 8.6 13.8 20.1 8.6 ...
 $ Temp   : int 67 72 74 62 56 66 65 59 61 69 ...
 $ Month  : int 5 5 5 5 5 5 5 5 5 ...
 $ Day    : int 1 2 3 4 5 6 7 8 9 10 ...
```

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Untitled1\* Go to file/function Addins

```
1 datasets::airquality
2 head(airquality,n=8)
3 str(airquality)
4 MAXMUM AND MINIMUM
5 min(airquality$Ozone)
6 max(airquality$Ozone)
7 min(airquality$Wind)
8 max(airquality$Wind)
```

Console Terminal Background Jobs

R 4.3.0 · ~/

```
$ Solar.R: int 190 118 149 313 NA NA 299 99 19 194 ...
$ Wind : num 7.4 8 12.6 11.5 14.3 14.9 8.6 13.8 20.1 8.6 ...
$ Temp : int 67 72 74 62 56 66 65 59 61 69 ...
$ Month : int 5 5 5 5 5 5 5 5 5 5 ...
$ Day : int 1 2 3 4 5 6 7 8 9 10 ...
> min(airquality$Ozone)
[1] NA
> max(airquality$Ozone)
[1] NA
> min(airquality$Wind)
[1] 1.7
> max(airquality$Wind)
[1] 20.7
> |
```

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Untitled1\* Go to file/function Addins

```
10 max(airquality$Wind-min(airquality$Wind))
11 mean(airquality$Wind)
12 sd(airquality$Wind)
```

Console Terminal Background Jobs

R 4.3.0 · ~/

```
> max(airquality$Wind-min(airquality$Wind))
[1] 19
> mean(airquality$Wind)
[1] 9.957516
> sd(airquality$Wind)
[1] 3.523001
> median(airquality$Wind)
[1] 9.7
> quantile(airquality$Wind,0.5)
50%
9.7
> #Quartile (First And Third)
> quantile(airquality$Wind,.25)
25%
7.4
> quantile(airquality$Wind,.75)
75%
11.5
> |
```

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Untitled1\* | Go to file/function | Addins | Project: (None)

```
12 sd(airquality$Wind)
13 median(airquality$Wind)
14 quantile(airquality$Wind,.5)
15 quantile(airquality$Wind,.25)
16 quantile(airquality$Wind,.75)
17 IQR(airquality$Wind)
18 quantile(airquality$Wind,.75)-quantile(airquality$Wind,.25)
19 sd(airquality$Wind)
20 var(airquality$Wind)
21 lapply(airquality[,1:5],sd)
22 | (Top Level) R Script
```

Environment History Connections Tutorial

Search results: \$ min(state.x77\$Frost)

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Console Terminal Background Jobs

R 4.3.0 · ~/

```
> IQR(airquality$Wind)
[1] 4.1
> 2nd Method to find IQR
Error: unexpected symbol in "2nd"
> quantile(airquality$Wind,.75)-quantile(airquality$Wind,.25)
75%
4.1
> # STANDARD DEVIATION AND VARIANCE
> sd(airquality$Wind)
[1] 3.523001
> var(airquality$Wind)
[1] 12.41154
```

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Untitled1\* | Go to file/function | Addins | Project: (None)

```
19 sd(airquality$Wind)
20 var(airquality$Wind)
21 lapply(airquality[,1:5],sd)
22 | (Top Level) R Script
```

Environment History Connections Tutorial

Search results: \$ min(state.x77\$Frost)

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Console Terminal Background Jobs

R 4.3.0 · ~/

```
> # USING LAPPLY FUNCTION TO COMPUTE THE STANDARD DEVIATION OF MULTIPLE VARIABLES AT THE SAME TIME
> lapply(airquality[,1:5],sd)
$Ozone
[1] NA

$Solar.R
[1] NA

$Wind
[1] 3.523001

$Temp
[1] 9.46527

$Month
[1] 1.416522

> |
```

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Untitled1\* | Go to file/function Addins

```
20 var(airquality$Wind)
21 lapply(airquality[,1:5],sd)
22 summary(airquality)
23 |
23:1 (Top Level) R Script
```

Environment History Connections Tutorial

Search results: \$ min(state.x77\$Frost)

Files Plots Packages Help Viewer Presentation

Console Terminal Background Jobs

R 4.3.0 ~/

```
> # SUMMARY OF ALL DATA
> summary(airquality)
   Ozone          Solar.R        Wind          Temp        
Min.   :  1.00   Min.   : 7.00   Min.   : 1.700   Min.   :56.00 
1st Qu.: 18.00   1st Qu.:115.8   1st Qu.: 7.400   1st Qu.:72.00 
Median : 31.50   Median :205.0   Median : 9.700   Median :79.00 
Mean   : 42.13   Mean   :185.9   Mean   : 9.958   Mean   :77.88 
3rd Qu.: 63.25   3rd Qu.:258.8   3rd Qu.:11.500   3rd Qu.:85.00 
Max.   :168.00   Max.   :334.0   Max.   :20.700   Max.   :97.00 
NA's   :37      NA's   :7      NA's   :7      NA's   :7      
```

Month Day

```
Min.   :5.000   Min.   : 1.00
1st Qu.:6.000   1st Qu.: 8.00
Median :7.000   Median :16.00
Mean   :6.993   Mean   :15.80
3rd Qu.:8.000   3rd Qu.:23.00
Max.   :9.000   Max.   :31.00
```

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Untitled1\* | Go to file/function Addins

```
21 lapply(airquality[,1:5],sd)
22 summary(airquality)
23 sd(airquality$Wind)/mean(airquality$Wind)
24 tab<-table(airquality$Wind)
25 sort(tab,decreasing = TRUE)
26:1 (Top Level) R Script
```

Environment History Connections Tutorial

Search results: \$ min(state.x77\$Frost)

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Console Terminal Background Jobs

R 4.3.0 ~/

```
> # COEFFICIENT OF VARIATION
> sd(airquality$Wind)/mean(airquality$Wind)
[1] 0.3538032
> # MODE
> sort(tab,decreasing = TRUE)
Error: object 'tab' not found
> tab<-table(airquality$Wind)
> sort(tab,decreasing = TRUE)

11.5   8  9.7 10.3  7.4  6.9  6.3  8.6  9.2 10.9 14.9 14.3 13.8
 15   11   11   11   10    9    8    8    8    8    8    6    5
 4.6   12   5.1   5.7 12.6 15.5 16.6 13.2  1.7   2.3   2.8   3.4   4
 4     4     3     3     3     3     3     2     1     1     1     1
 4.1 16.1 18.4 20.1 20.7
 1     1     1     1     1
```

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Untitled1\* | Go to file/function Addins

```
23 sd(airquality$Wind)/mean(airquality$Wind)
24 tab<-table(airquality$Wind)
25 sort(tab,decreasing = TRUE)
26 sort(table(airquality$Wind),decreasing = TRUE)
27 |
27:1 (Top Level) R Script
```

Console Terminal Background Jobs

R 4.3.0 · ~/

```
> tab<-table(airquality$Wind)
> sort(tab,decreasing = TRUE)

11.5   8  9.7 10.3  7.4  6.9  6.3  8.6  9.2 10.9 14.9 14.3 13.8
15     11  11  11  10    9    8    8    8    8    8    6    5
4.6    12  5.1  5.7 12.6 15.5 16.6 13.2  1.7  2.3  2.8  3.4  4
4     4   3   3   3   3   3   3   2   1   1   1   1   1
4.1  16.1 18.4 20.1 20.7
1     1   1   1   1
> sort(table(airquality$Wind),decreasing = TRUE)

11.5   8  9.7 10.3  7.4  6.9  6.3  8.6  9.2 10.9 14.9 14.3 13.8
15     11  11  11  10    9    8    8    8    8    8    6    5
4.6    12  5.1  5.7 12.6 15.5 16.6 13.2  1.7  2.3  2.8  3.4  4
4     4   3   3   3   3   3   3   2   1   1   1   1
4.1  16.1 18.4 20.1 20.7
1     1   1   1   1
> |
```

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Untitled1\* | Go to file/function Addins

```
27 cor(airquality$Wind,airquality$Month)
28 cor(airquality$Solar.R,airquality$Month)
29 cor(airquality$Wind,airquality$Day)
30 cor(airquality$Temp,airquality$Ozone)
31 |
31:1 (Top Level) R Script
```

Console Terminal Background Jobs

R 4.3.0 · ~/

```
> sort(table(airquality$Wind),decreasing = TRUE)

11.5   8  9.7 10.3  7.4  6.9  6.3  8.6  9.2 10.9 14.9 14.3 13.8
15     11  11  11  10    9    8    8    8    8    8    6    5
4.6    12  5.1  5.7 12.6 15.5 16.6 13.2  1.7  2.3  2.8  3.4  4
4     4   3   3   3   3   3   3   2   1   1   1   1
4.1  16.1 18.4 20.1 20.7
1     1   1   1   1
> # CORRELATION
> cor(airquality$Wind,airquality$Month)
[1] -0.1782926
> cor(airquality$Solar.R,airquality$Month)
[1] NA
> cor(airquality$Wind,airquality$Day)
[1] 0.0271809
> cor(airquality$Temp,airquality$Ozone)
[1] NA
> |
```

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Untitled1\*

```

31 airquality$Wind<-ifelse(airquality$Temp)< median(airquality$Temp),"small"
32 airquality$Wind
33 table(airquality$Wind)
34 table(head(airquality$Day,n=7),head(airquality$Wind,n=7))
35
35:1 (Top Level) R Script

```

Console Terminal Background Jobs

R 4.3.0 ~/

```

> # CONTINGENCY TABLE
> airquality$Wind<-ifelse(airquality$Temp)< median(airquality$Temp),"small"
1,"big")
> table(airquality$Wind)

big small
79 74

> table(airquality$Day,airquality$Wind)

  big small
1   3   2
2   3   2
3   3   2
4   4   1
5   4   1
6   4   1
7   4   1

```

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Untitled1\*

```

34 table(head(airquality$Day,n=7),head(airquality$Wind,n=7))
35 xtabs(~ airquality$Day+airquality$Wind)
36 mosaicplot(table(airquality$Temp,airquality$Month),color = TRUE,xlab="Temp",xlab="Month")
37
37:1 (Top Level) R Script

```

Console Terminal Background Jobs

R 4.3.0 ~/

```

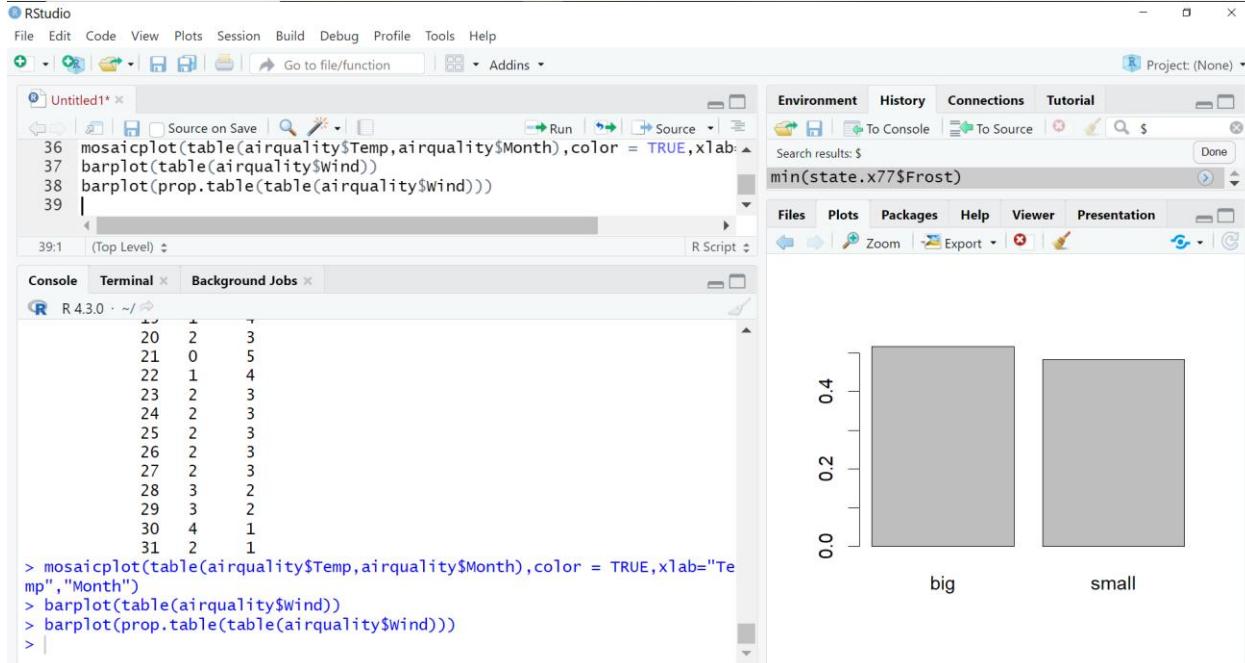
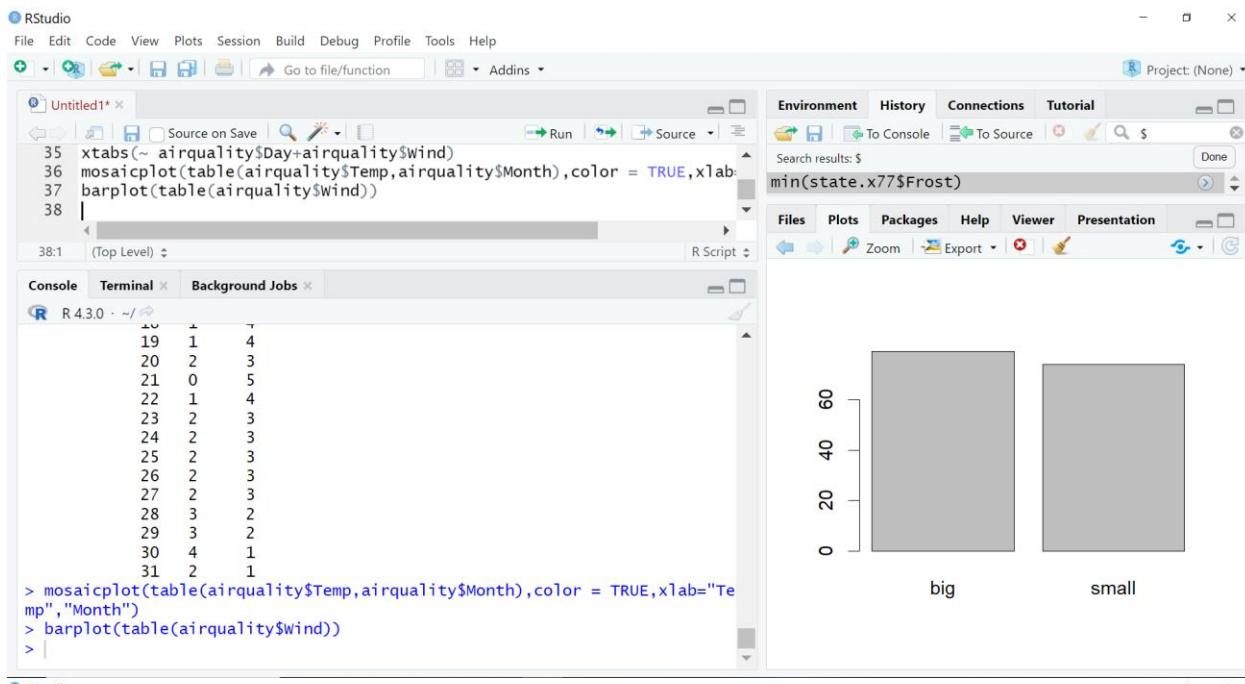
18 1 4
19 1 4
20 2 3
21 0 5
22 1 4
23 2 3
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25 2 3
26 2 3
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29 3 2
30 4 1
31 2 1

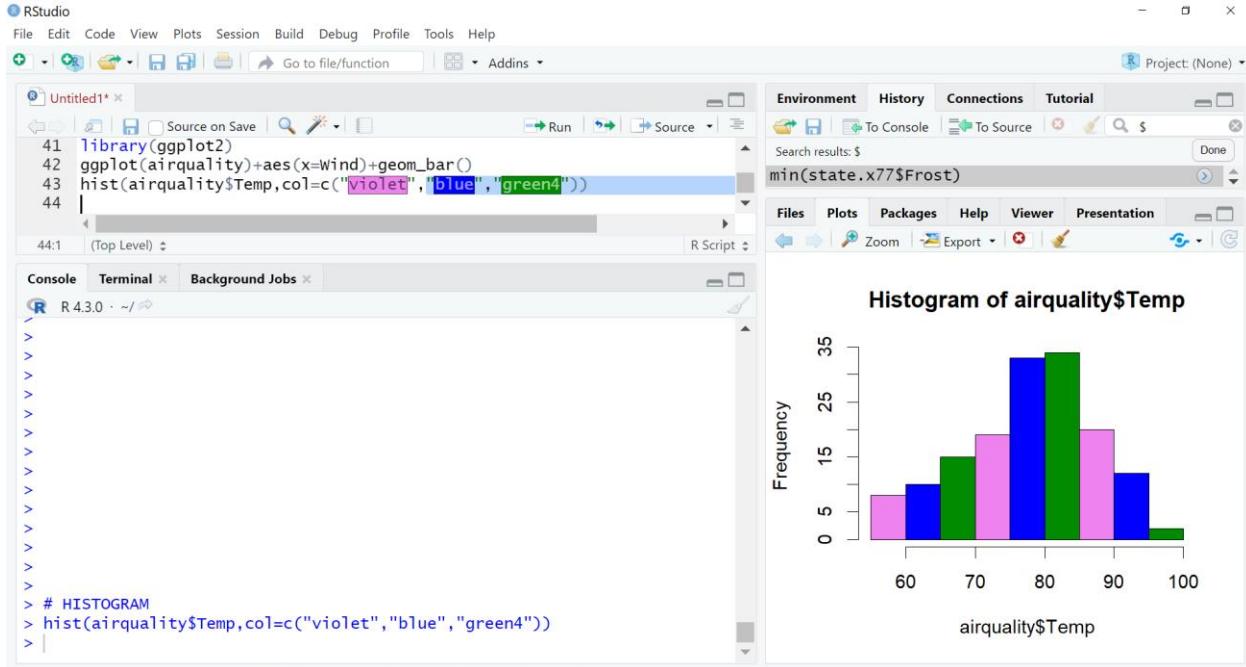
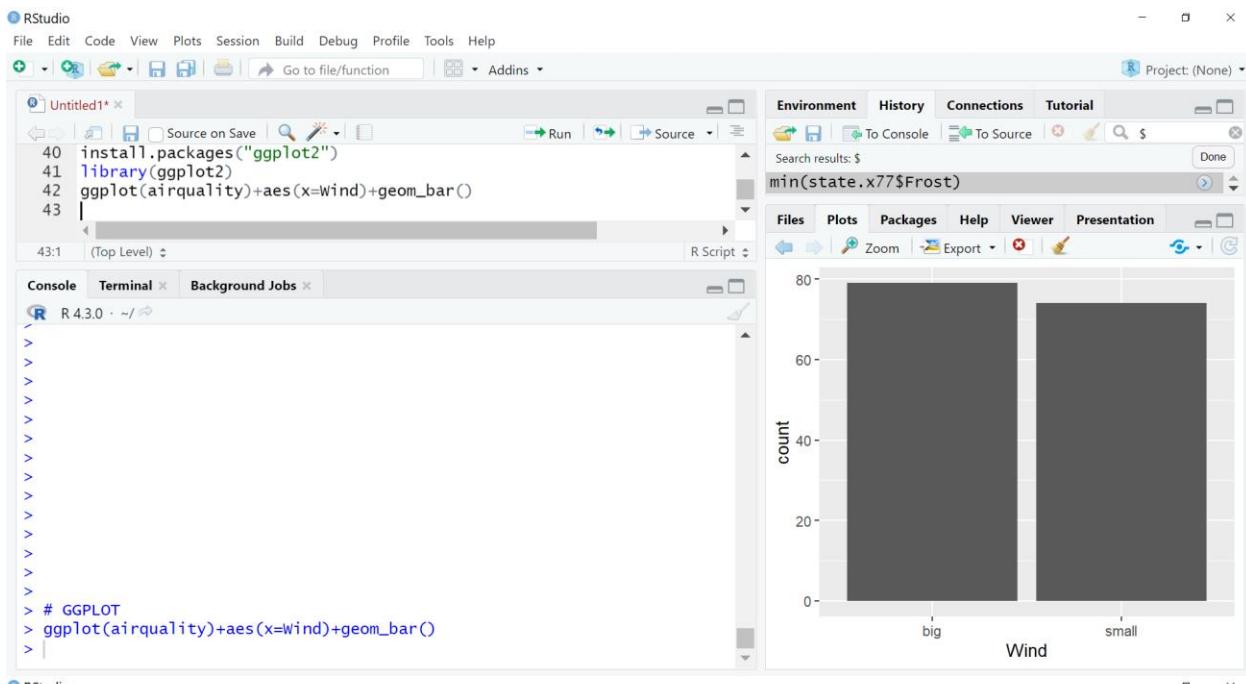
```

```

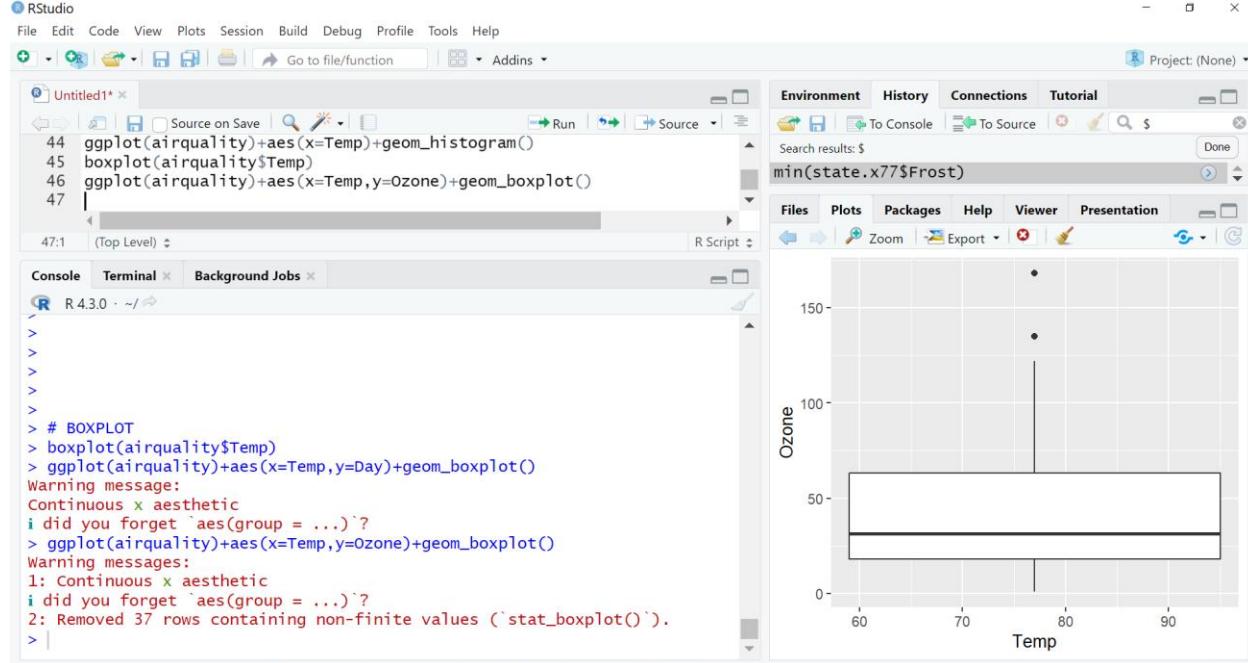
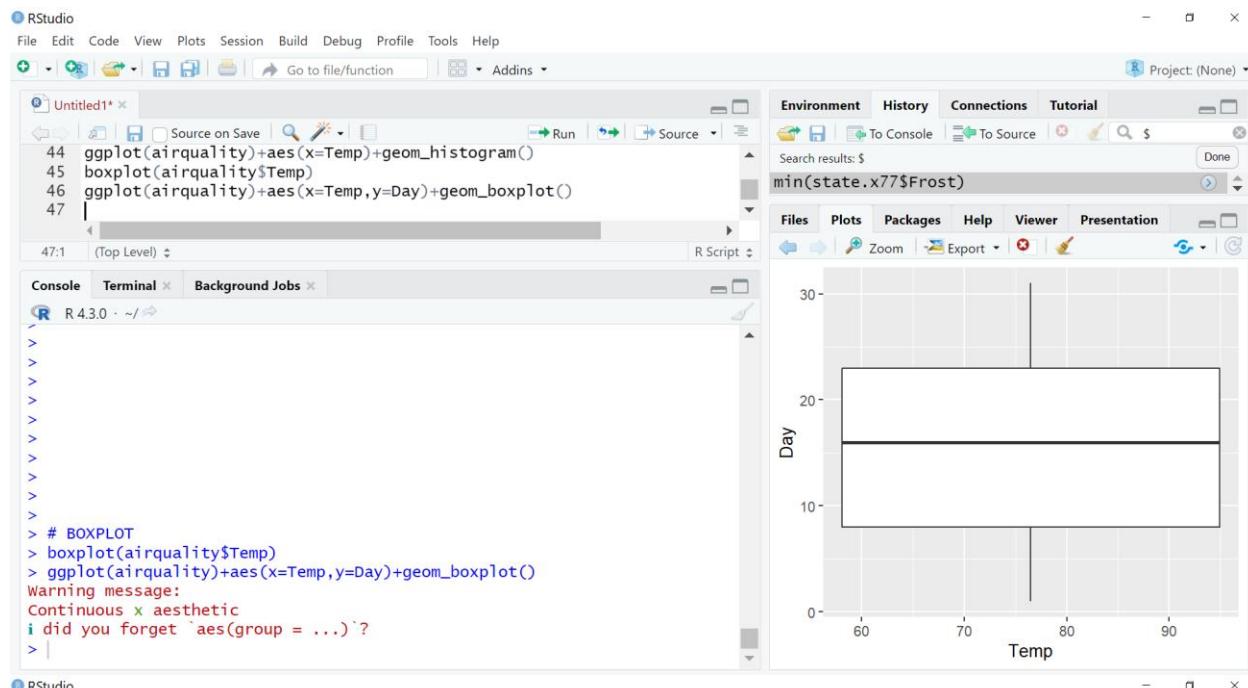
> mosaicplot(table(airquality$Temp,airquality$Month),color = TRUE,xlab="Temp",xlab="Month")
> |

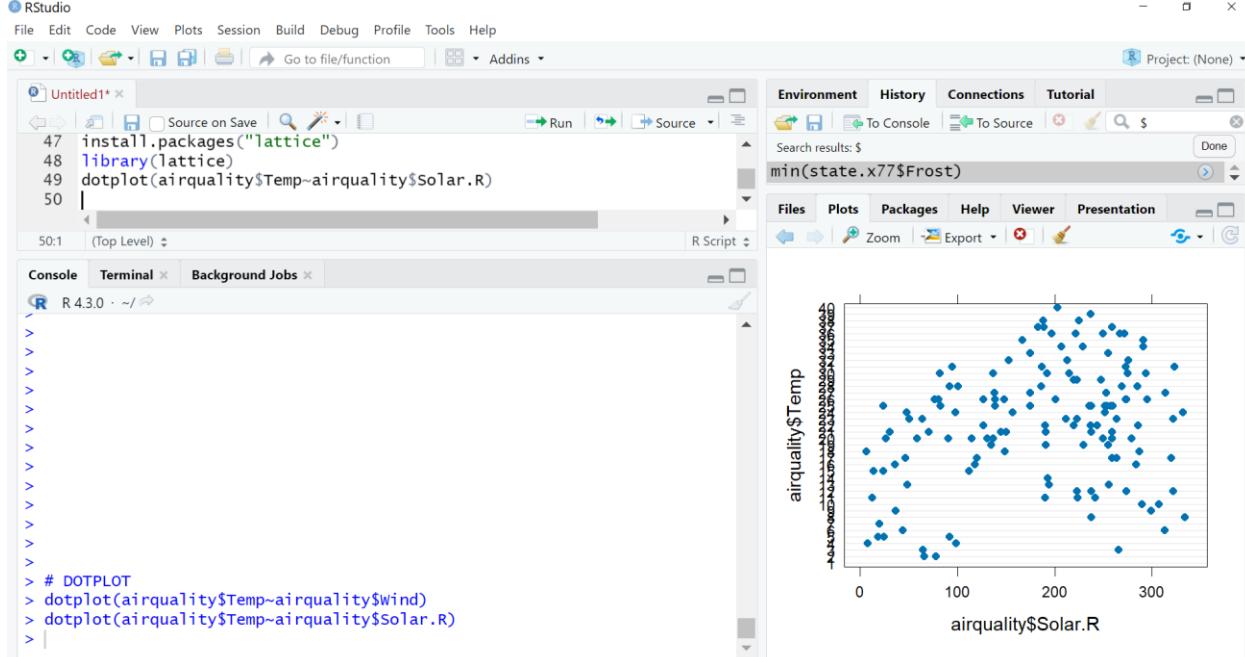
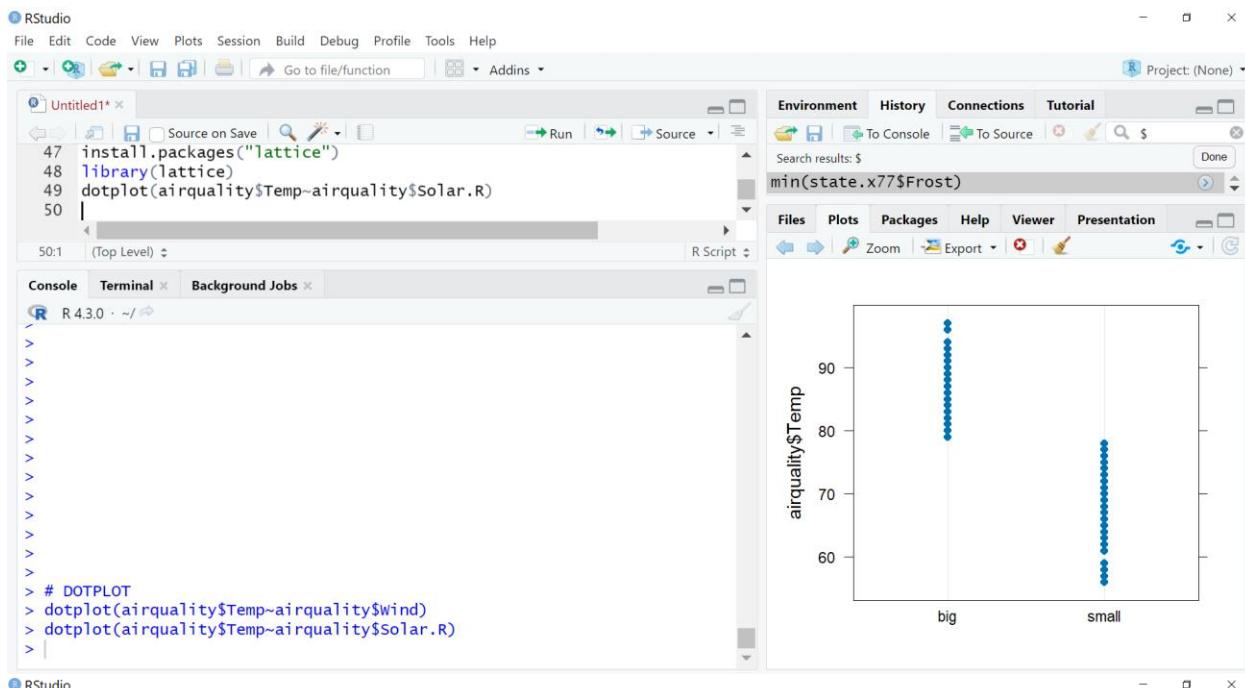
```











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Untitled1\* | Go to file/function | Addins | Project: (None)

```

49 y$Temp~airquality$Solar.R)
50 )+aes(x=Ozone,y=Day)+geom_dotplot(binaxis = "y",stackdir = "center")
51
52
51:1 (Top Level) R Script

```

Console Terminal Background Jobs | R 4.3.0 - ~/

```

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>
> ggplot(airquality)+aes(x=Ozone,y=Day)+geom_dotplot(binaxis = "y",stackdir = "center")
Bin width defaults to 1/30 of the range of the data. Pick better value
with `binwidth`.
Warning message:
Removed 37 rows containing missing values (`stat_bindot()`).
> |

```

Day

RStudio

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Untitled1\* | Go to file/function | Addins | Project: (None)

```

48 library(lattice)
49 dotplot(airquality$Temp~airquality$Solar.R)
50 ggplot(airquality)+aes(x=Ozone,y=Day)+geom_dotplot(binaxis = "y",stackdir = "center")
51 plot(airquality$Ozone,airquality$Solar.R)
52
51:42 (Top Level) R Script

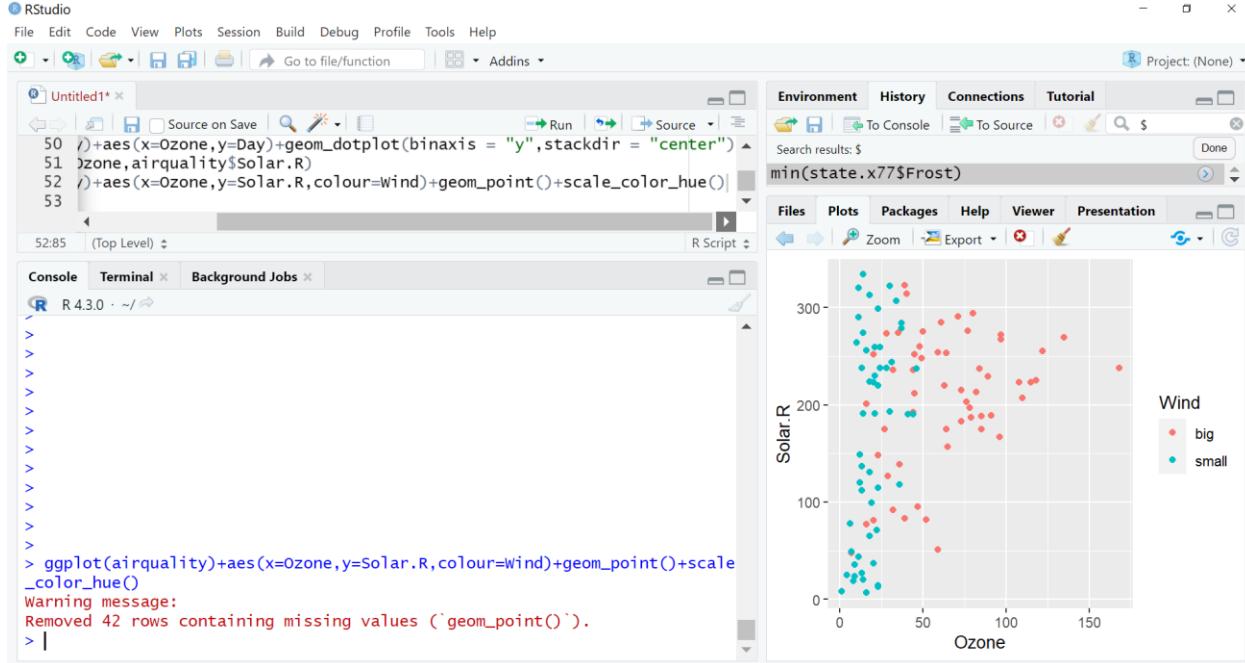
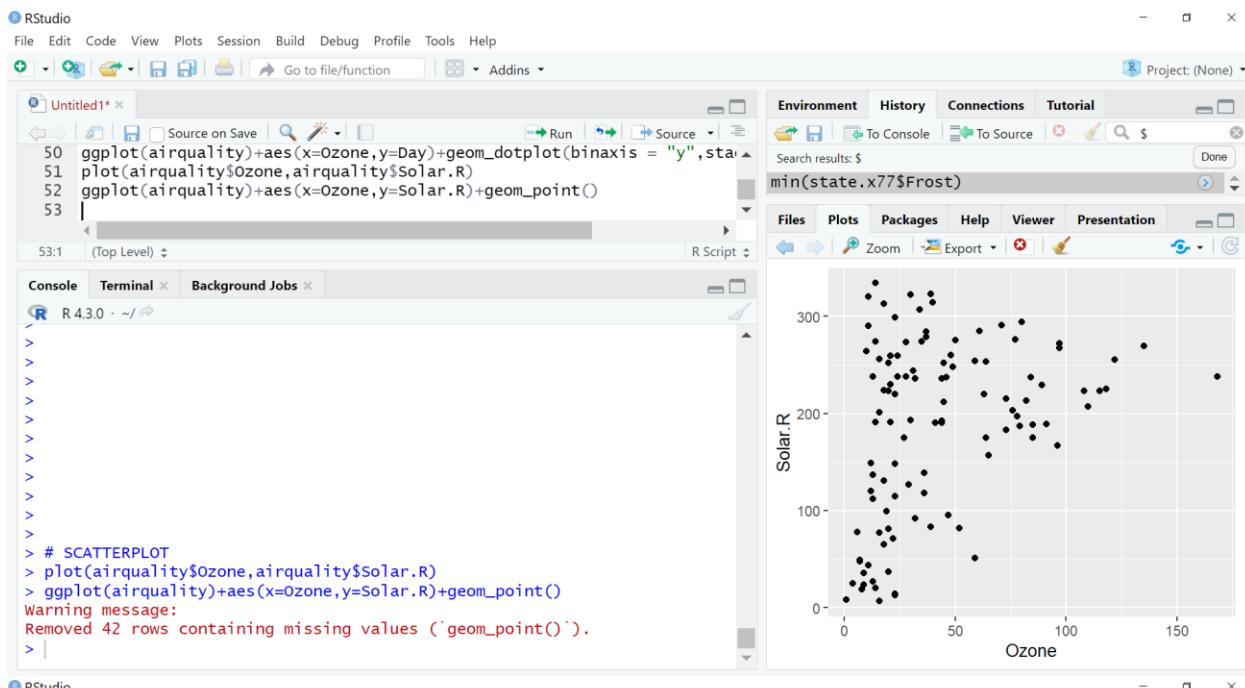
```

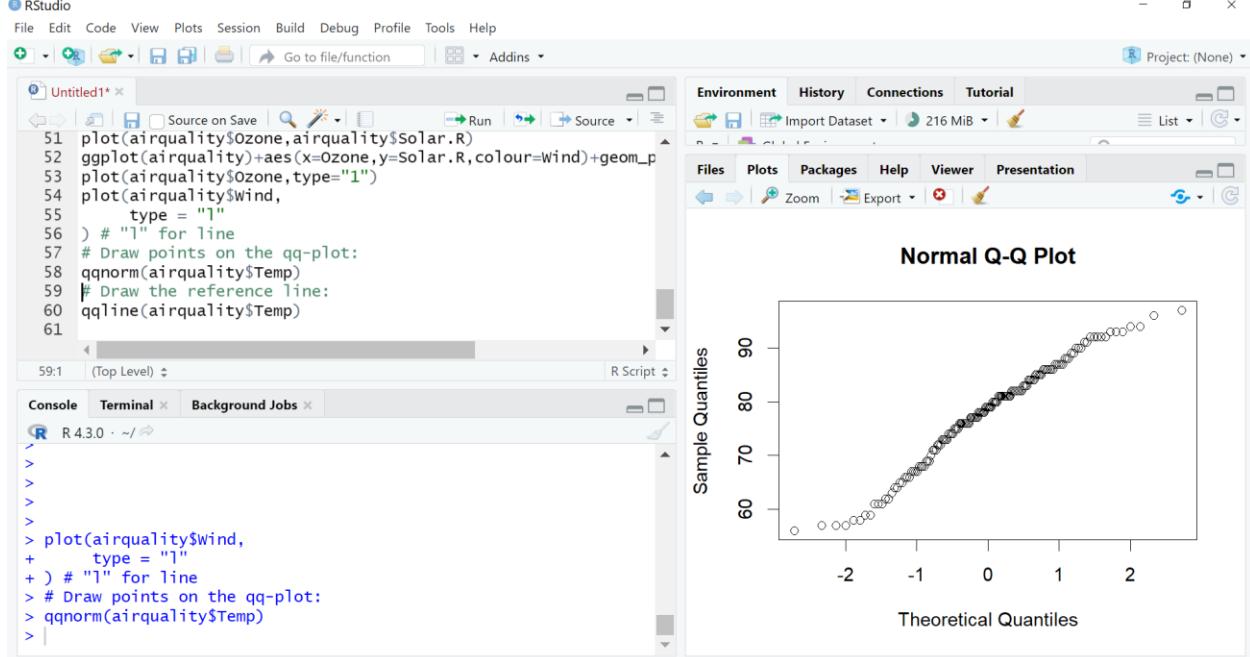
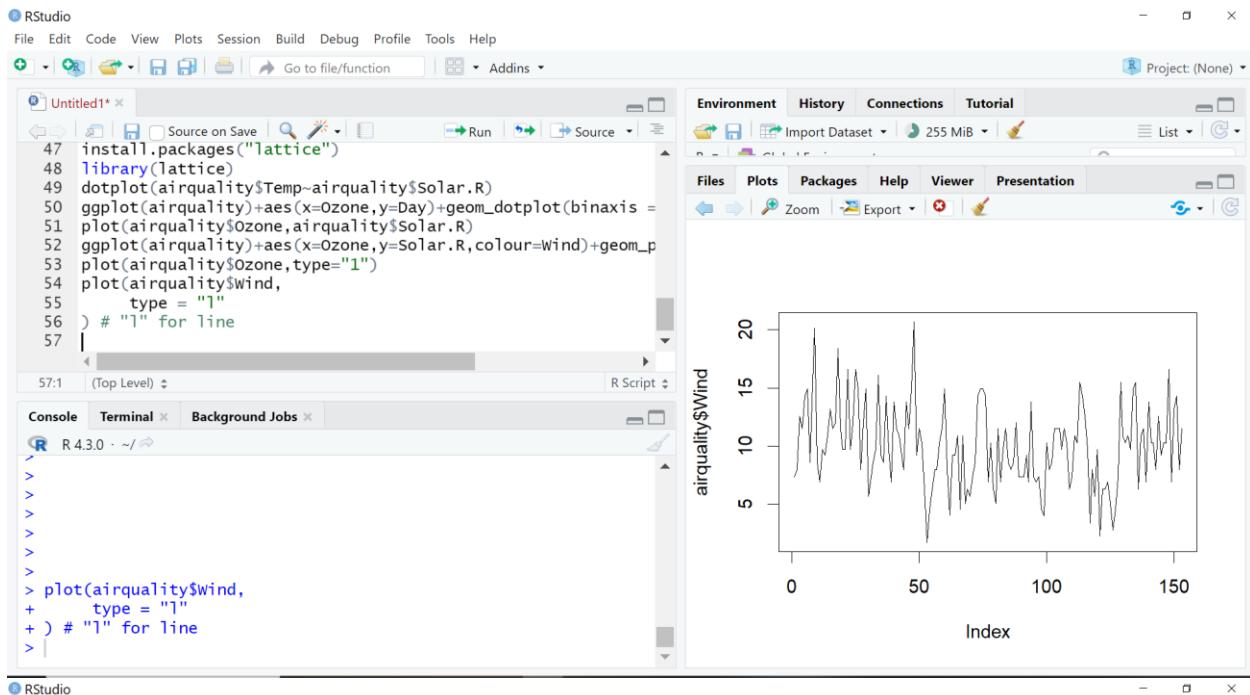
Console Terminal Background Jobs | R 4.3.0 - ~/

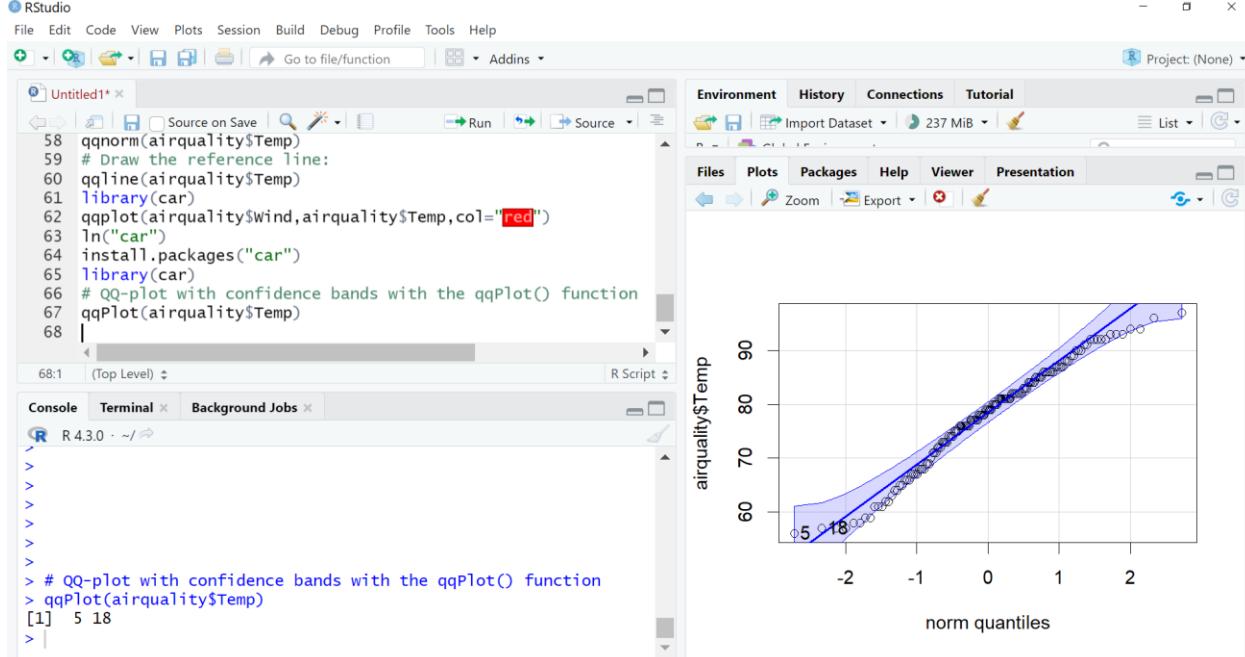
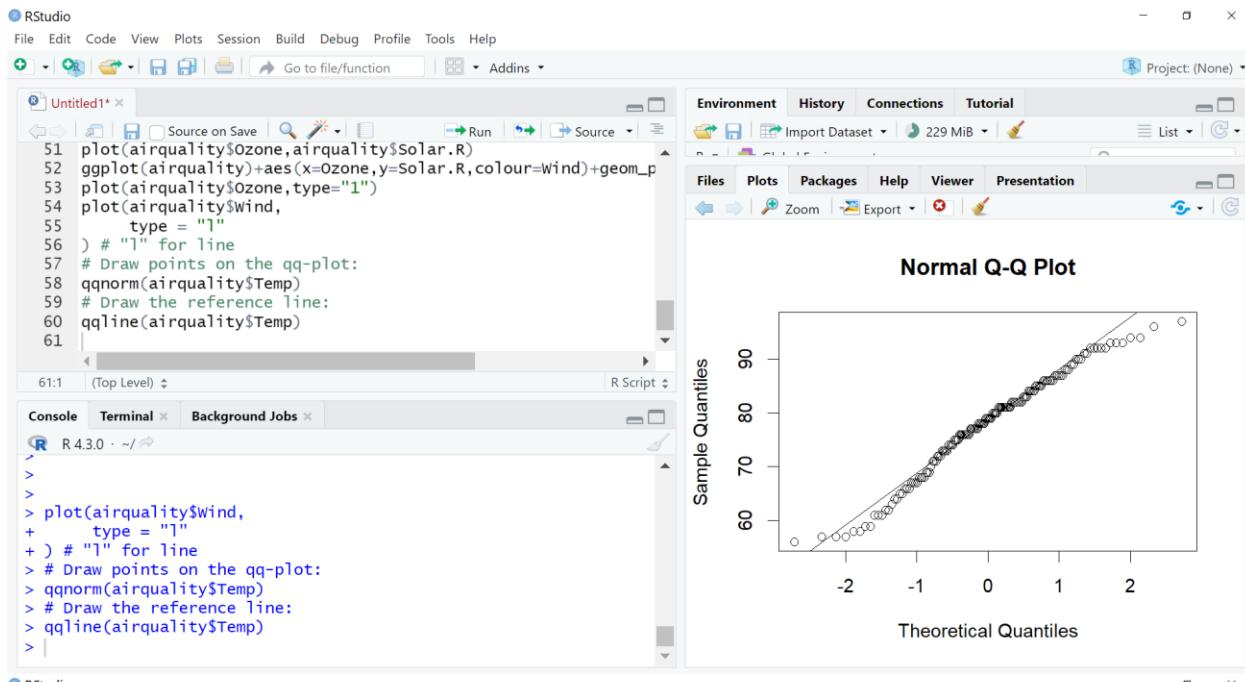
```

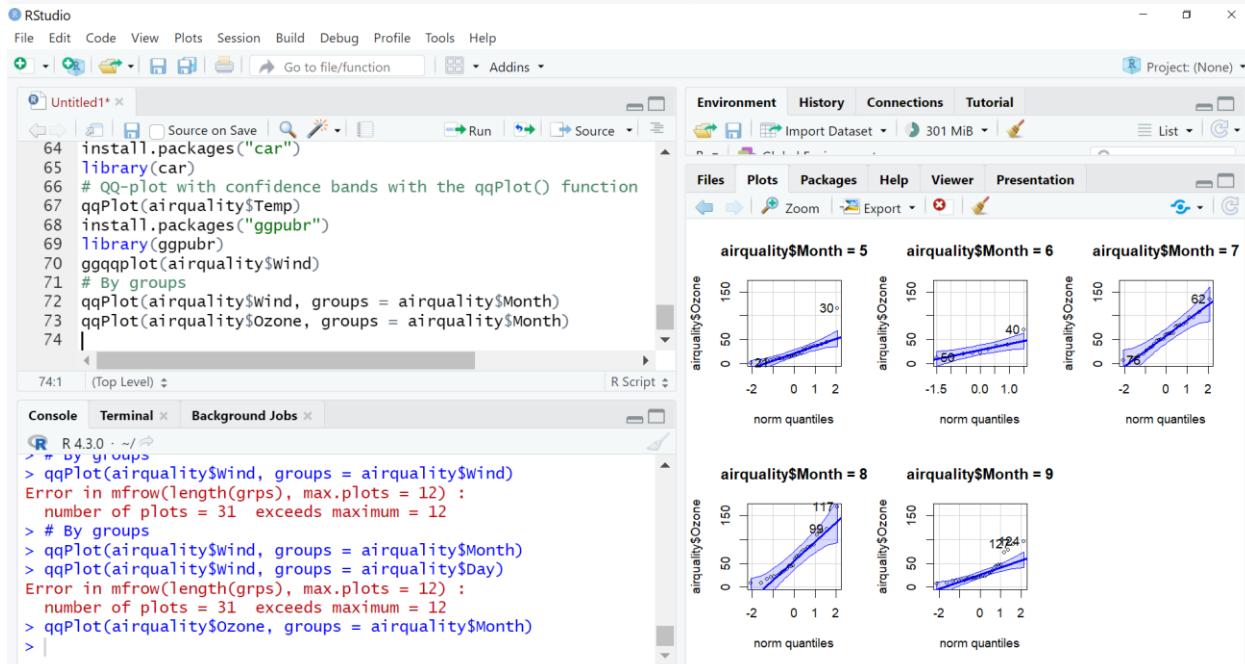
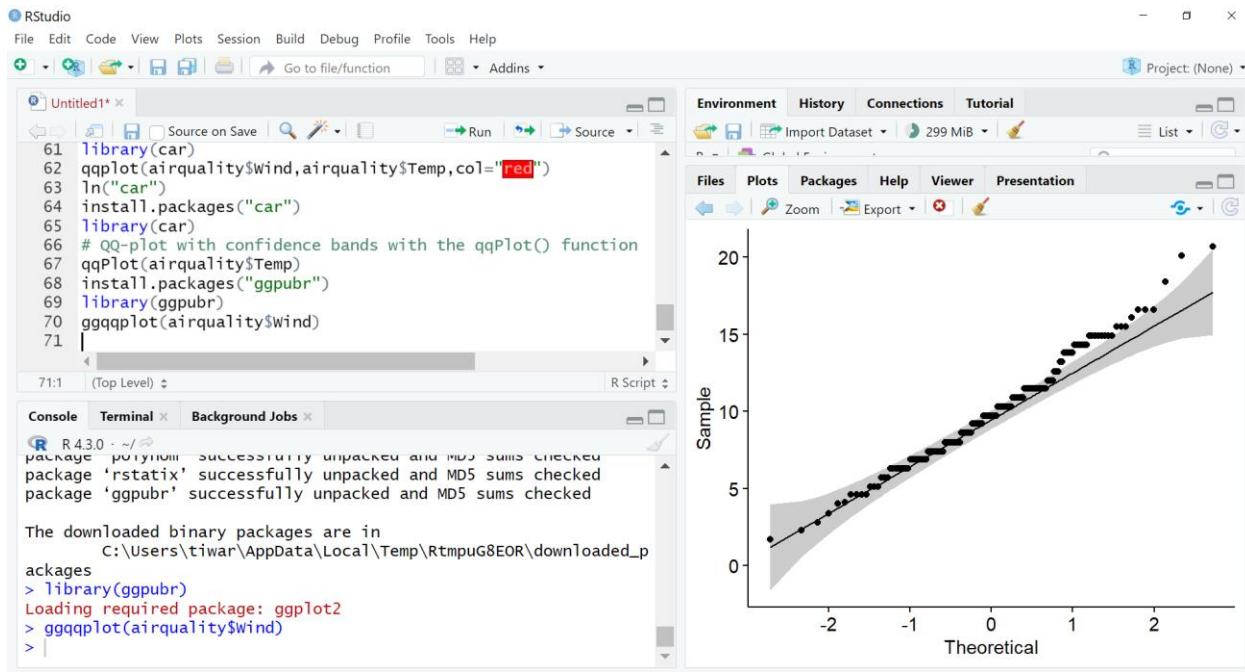
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>
> # SCATTERPLOT
> plot(airquality$Ozone,airquality$Solar.R)
> |

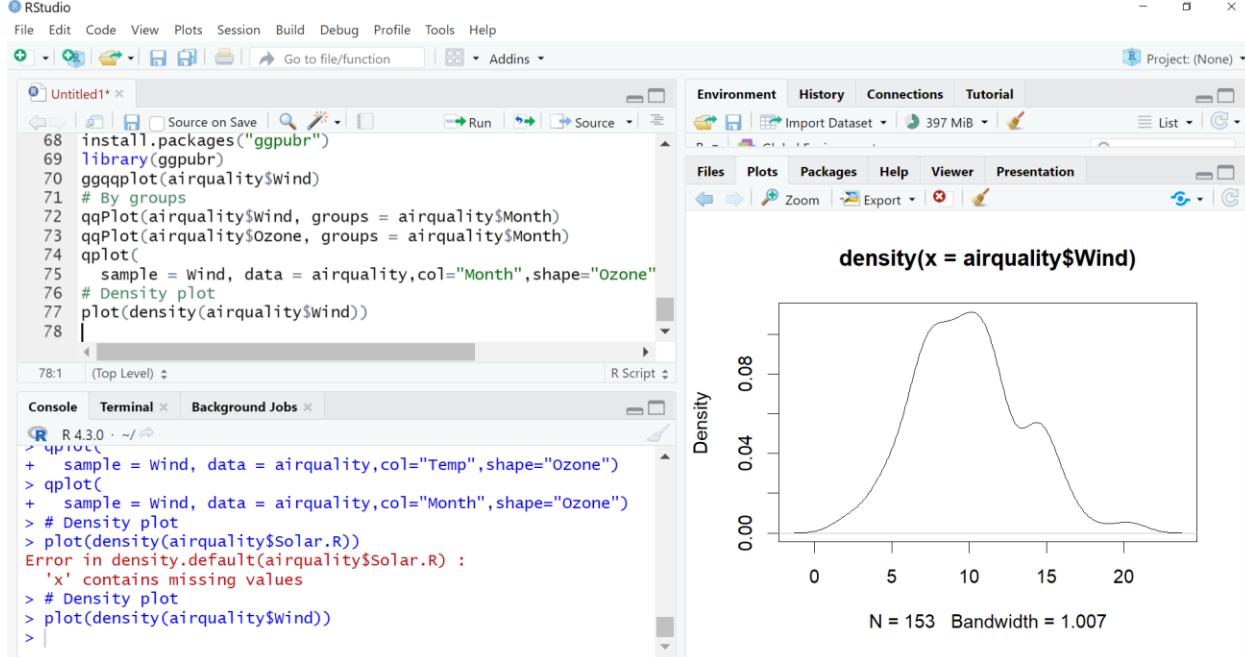
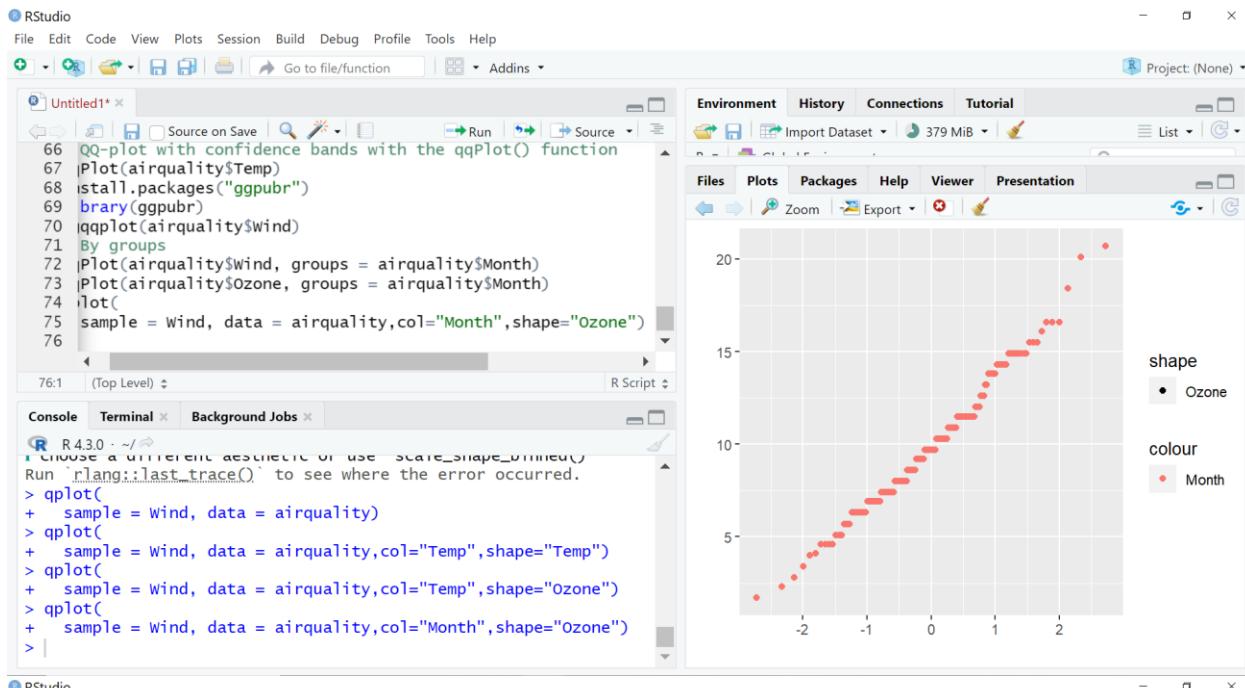
```

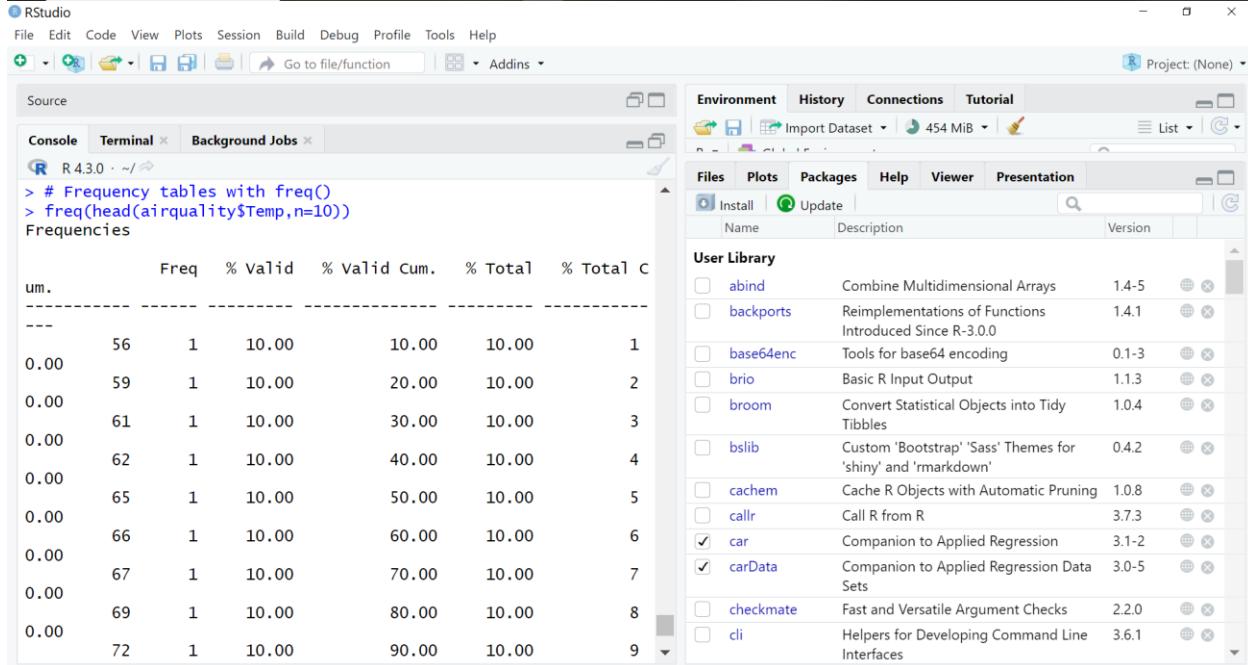
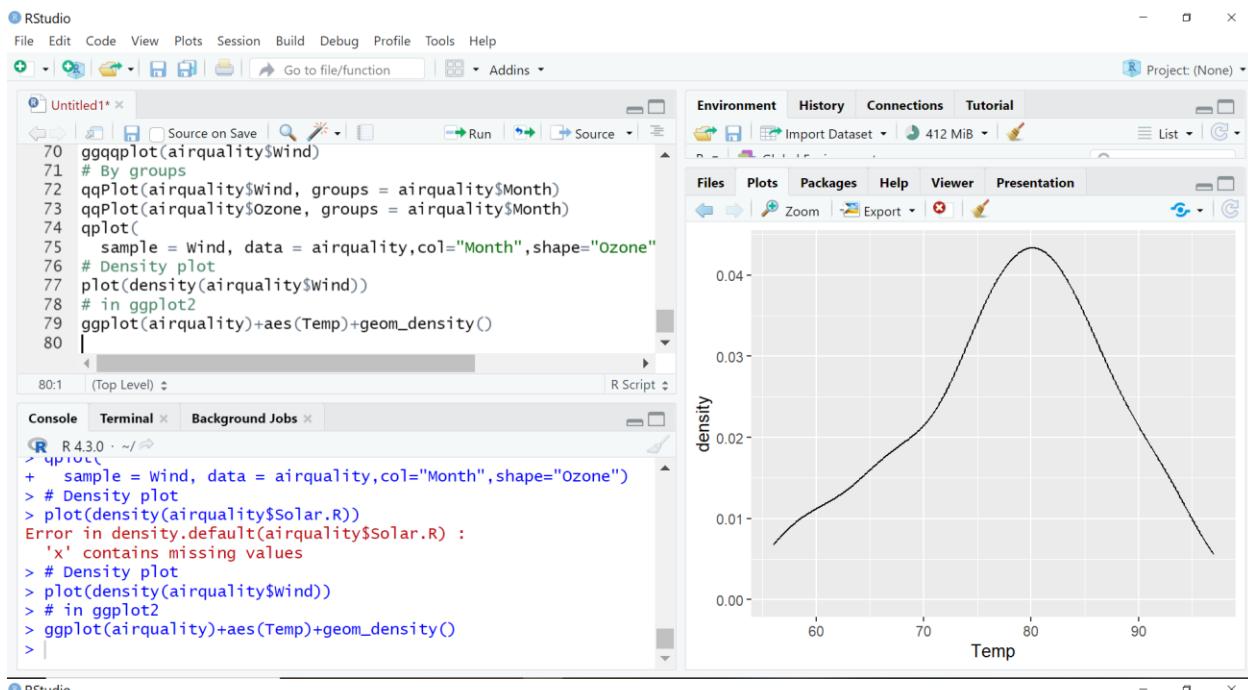












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Untitled1\* Go to file/function Addins

```
89 ## Cross-Tabulation, Row Proportions
90 # Summary
91 summary(airquality)
92
92:1 (Top Level) R Script
```

Console Terminal Background Jobs

R 4.3.0 ~/

```
> # Summary
> summary(airquality)
   Ozone          Solar.R          Wind
Min.   : 1.00   Min.   : 7.0   Min.   : 1.700
1st Qu.: 18.00  1st Qu.:115.8  1st Qu.: 7.400
Median : 31.50  Median :205.0  Median : 9.700
Mean   : 42.13  Mean   :185.9  Mean   : 9.958
3rd Qu.: 63.25 3rd Qu.:258.8  3rd Qu.:11.500
Max.   :168.00  Max.   :334.0  Max.   :20.700
NA's   :37      NA's   :7
```

	Temp	Month	Day
Min.	:56.00	Min. :5.000	Min. : 1.0
1st Qu.	:72.00	1st Qu.:6.000	1st Qu.: 8.0
Median	:79.00	Median :7.000	Median :16.0
Mean	:77.88	Mean :6.993	Mean :15.8
3rd Qu.	:85.00	3rd Qu.:8.000	3rd Qu.:23.0
Max.	:97.00	Max. :9.000	Max. :31.0

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