

R and Python Living in Harmony

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Simply mix text and R-code

The data-frame `mtcars` has the following columns: `mpg`, `cyl`, `disp`, `hp`, `drat`, `wt`, `qsec`, `vs`, `am`, `gear`, `carb`.

Here are the first rows and columns:

```
##           mpg cyl disp  hp drat   wt  qsec vs am
## Mazda RX4      21.0  6  160 110 3.90 2.620 16.46 0  1
## Mazda RX4 Wag  21.0  6  160 110 3.90 2.875 17.02 0  1
## Datsun 710     22.8  4  108  93 3.85 2.320 18.61 1  1
## Hornet 4 Drive 21.4  6  258 110 3.08 3.215 19.44 1  0
```

And here is a plot:

```
ggplot(mtcars, aes(x = wt, y = mpg, colour = cyl, size = hp)) +
  geom_point() +
  geom_smooth()
```

Run Python in R and use the R-objects

```
print("This is printed by Python.")
```

```
## This is printed by Python.
```

Note that we can access all R-variables in the object 'r'. The following code fragments uses the object `df` from R:

```
mpg_py = r.df['mpg']
print(mpg_py[1:8])
```

```
## Mazda RX4 Wag           21.0
## Datsun 710              22.8
## Hornet 4 Drive         21.4
## Hornet Sportabout      18.7
## Valiant                 18.1
## Duster 360             14.3
## Merc 240D              24.4
## Name: mpg, dtype: float64
```

```
def averageOfList(num):
    sumOfNumbers = 0
    for t in num:
        sumOfNumbers = sumOfNumbers + t

    avg = sumOfNumbers / len(num)
    avg = round(avg, 2)
```

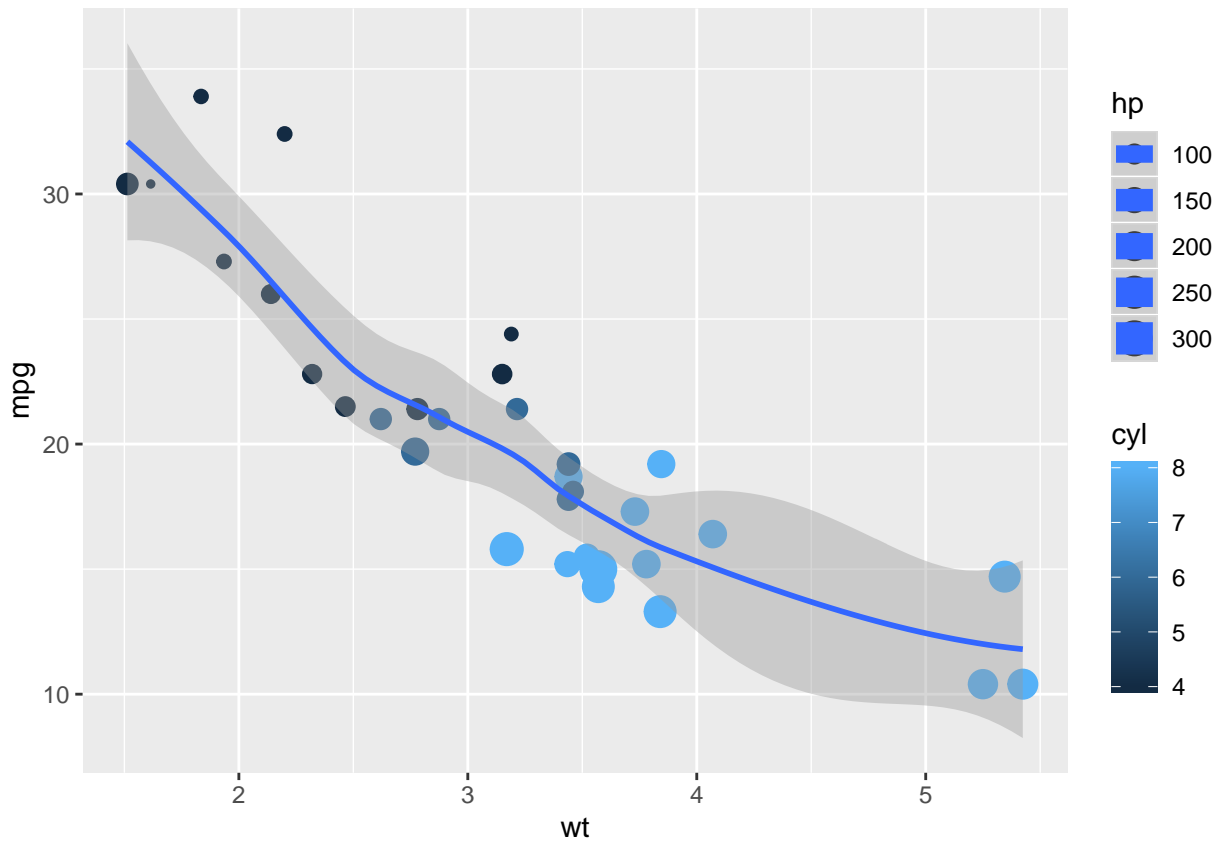


Figure 1: A plot generated by R on R-data.

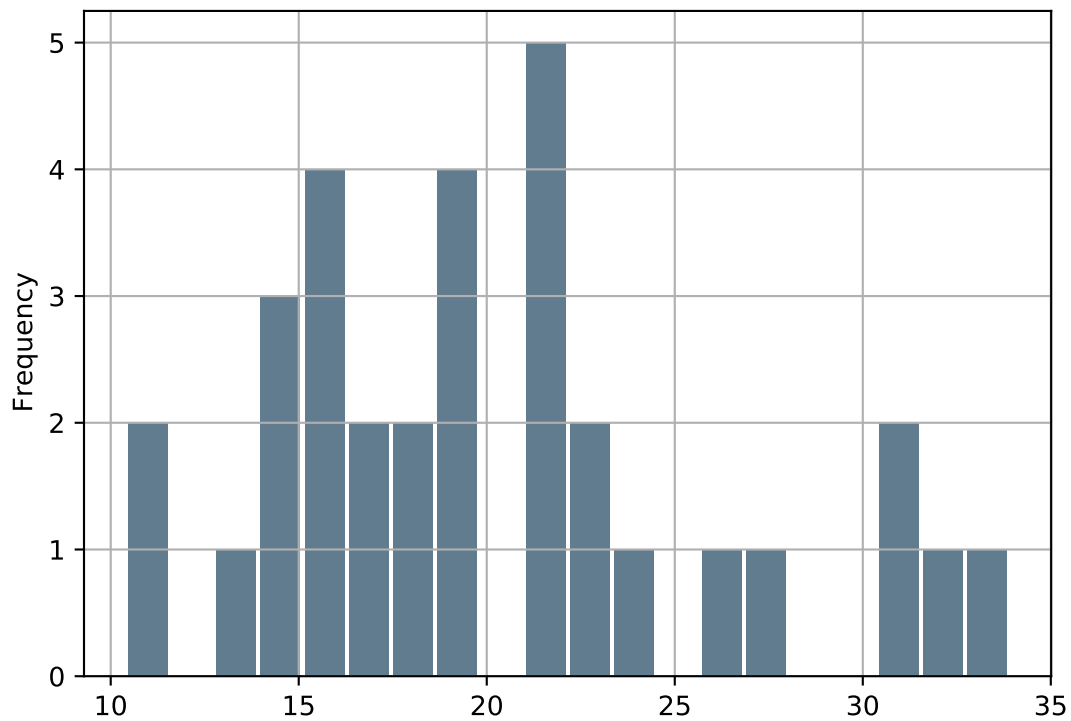
```
return avg

print("The average of MPG is:", averageOfList(mpg_py))

## The average of MPG is: 20.09
```

Print something in Python

```
mpg_py.plot.hist(grid=True, bins=20, rwidth=0.9,
                 color='#607c8e')
```



Use the Python objects in R

```
library(ggplot2)
library(tidyverse)
tbl <- tibble(mpg = py$mpg_py)

ggplot(tbl, aes(y = mpg)) + geom_boxplot(fill="khaki3")
```

