DS102.06.13 - Lesson 6 Hands-On

with mtcars dataset

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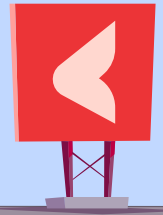
Requirements:

Use **`mtcars`** data frame to:

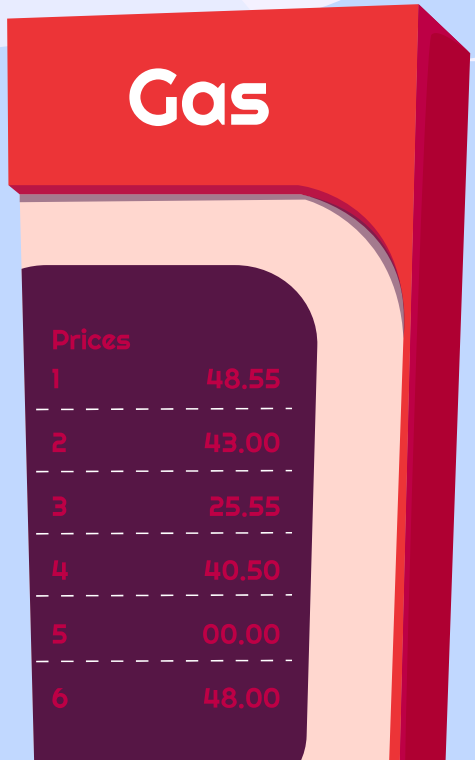
1. Create a box plot of **`mpg`** (miles per gallon) grouped by **`cyl`** (number of engine cylinders)
2. Use the **`summarize()`** and **`group_by()`** functions to compute:
   a. How many cars have 4 cylinders?
   b. How many cars have 6 cylinders?
   c. How many cars have 8 cylinders?
3. Prepare a report (PPT or similar) with all these elements and code used.



01

Box plot

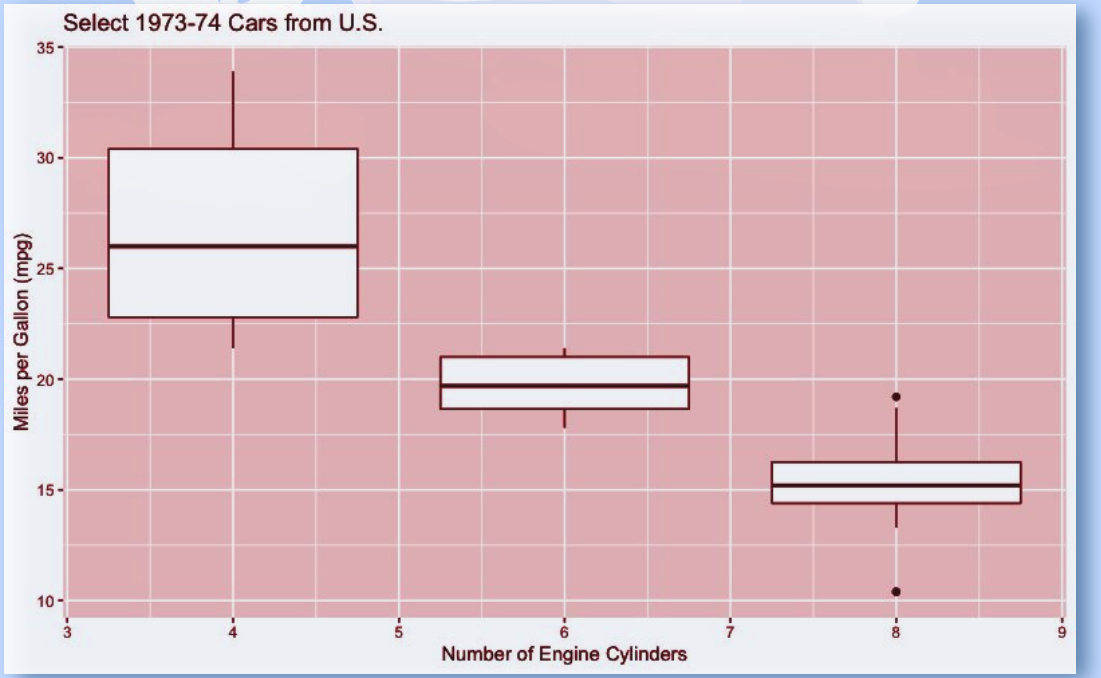
Create box plot of `mpg` grouped by `cyl`.



Box plot

CODE:

```
# create box plot of mpg grouped by cyl.
ggplot(mtcars, aes(x = cyl, y = mpg)) +
  geom_boxplot(aes(group=cyl)) +
  # make the plot look better
  ggtitle("Select 1973-74 Cars from U.S.") +
xlab("Number of Engine Cylinders") + ylab("Miles per Gallon (mpg)")
```



Does the box plot make sense?

Yes — with more cylinders, a car usually uses more gas.

"In general, the more cylinders an engine possesses, the faster power can be generated. This often comes at a tradeoff in fuel efficiency. More power requires more fuel, which means you will end up paying significantly more for gas over the lifetime of your vehicle."

- Source

02

Summary + Group

Use the `summarize()` and `group_by()` functions.

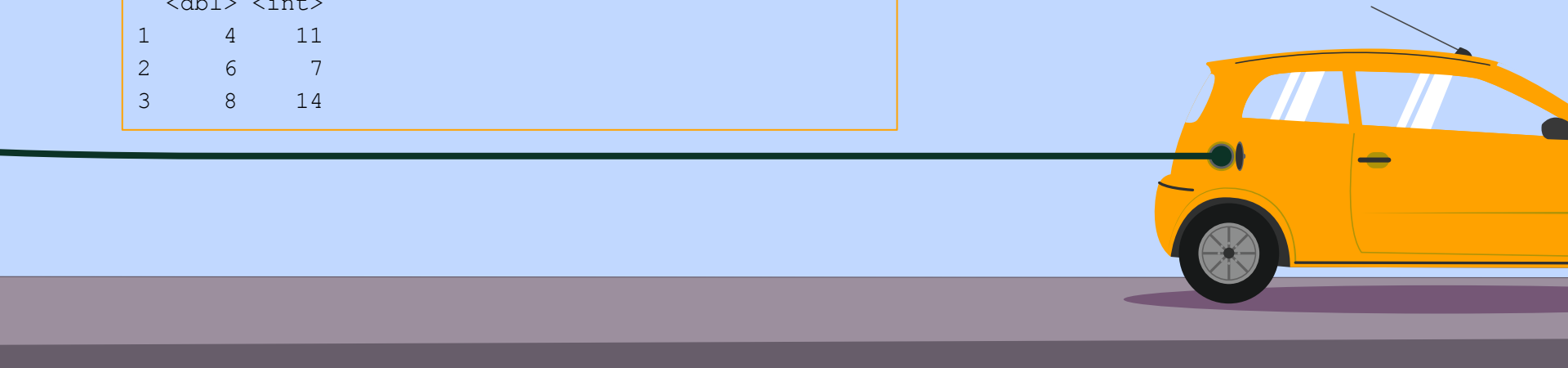
Using summarize() and group_by()

CODE:

```
# summarize count of cars by group: 4 cyl, 6 cyl, and 8 cyl.
mtcars %>% group_by(cyl) %>% summarize(count = n())
```

OUTPUT:

```
# A tibble: 3 × 2
    cyl count
  <dbl> <int>
1     4    11
2     6     7
3     8    14
```



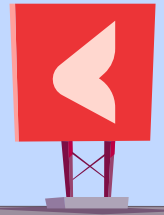
Summary results restated:

Engine Type:	Count:
4 cylinders	11
6 cylinders	7
8 cylinders	14

Conclusions:

For the dataset **`mtcars`** included in R:

- Cars with 8 cylinder engines were mentioned more frequently.
- There is an inverse relationship between cylinders and mpg (miles per gallon).
    - With a larger number of cylinders, mpg rating is lower.
- More cylinders means more power BUT comes at the price of fuel efficiency.




Thanks!
Market
1
Open