Improved_ma615-sep13

Shixin Liang

9/20/2019

Class assignment:

Using the MPG dataset, which is available with the ggplot2 library, produce a document that includes the following elements: headers, text, tables, and plots.

Tables should include a comparison of city and highway mileage by the class of car and the best three car models for city and highway mileage for all the years in which data is available.

Plot the data displaying as much of the data as you can. Put continuous variables on the axes and include a locally smoothed regression line to show the relationship with mileage. Also make a box plot comparing city and highway MPG by class of car.

Tables

This example is flawed even though the code works. Explain. And now that you know how to produce the table can you improve the code by using an **apply** functional?

Explain: This example is flawed because it uses a for loop, which runs very slow in R. It can be improved by using a tapply functional.

	cty_mean	hwy_mean
2seater	15.40	24.80
compact	20.13	28.30
midsize	18.76	27.29
minivan	15.82	22.36
pickup	13.00	16.88
subcompact	20.37	28.14
suv	13.50	18.13

The next table is a bit tricky.

	Milage		Milage		Milage		Milage
new beetle	26	new beetle	35	corolla	27	corolla	36
civic	24.8	corolla	32.67	civic	24	civic	33.75
corolla	24.67	civic	31.6	gti	21.5	camry	30

Plots

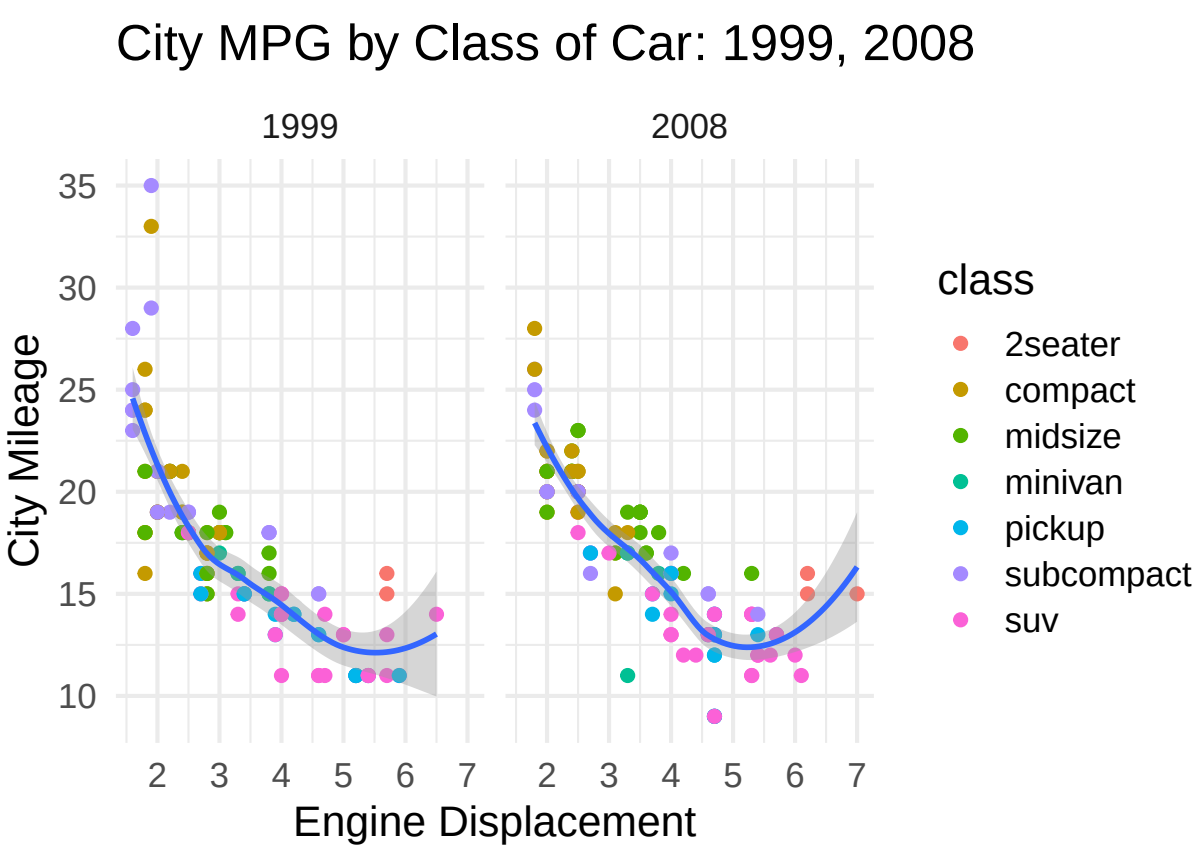
```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```

Table 1: Mean City and Highway MPG by Car Class

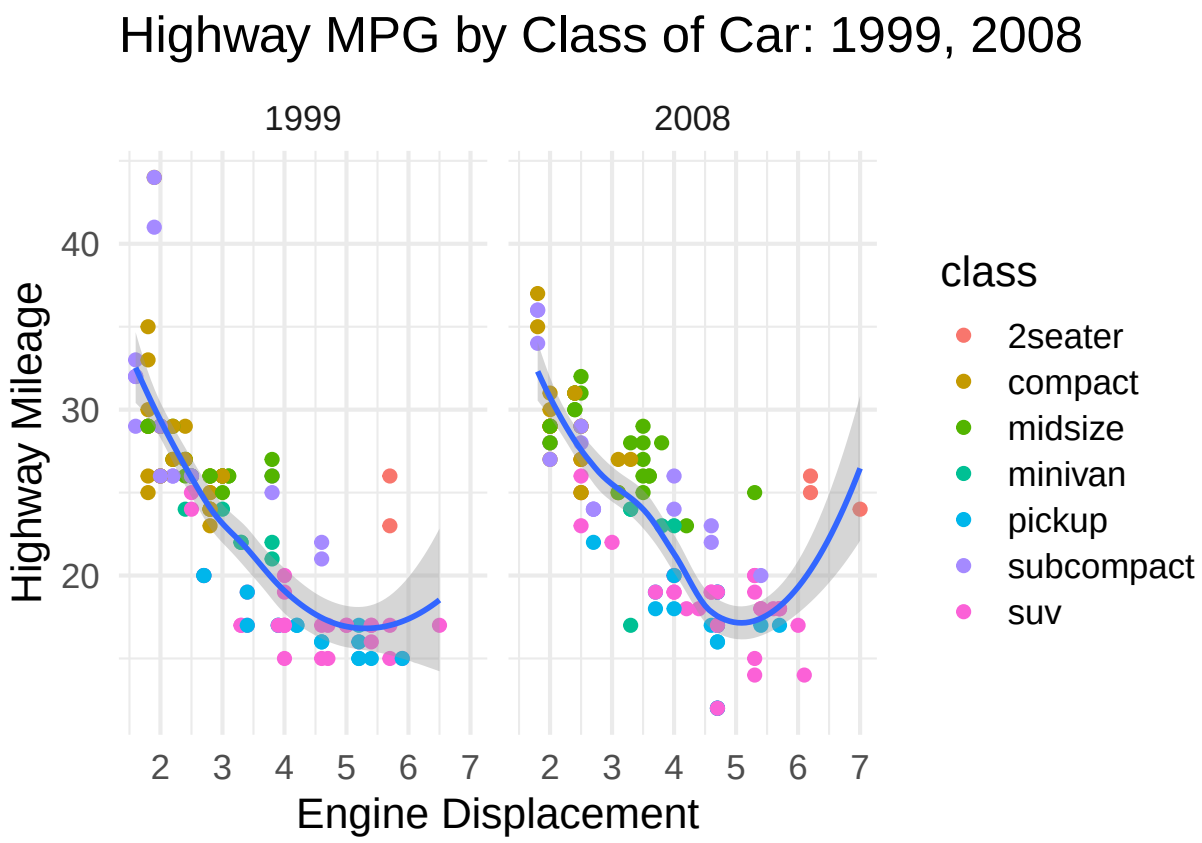
	City	Highway
2seater	15.40	24.80
compact	20.13	28.30
midsize	18.76	27.29
minivan	15.82	22.36
pickup	13.00	16.88
subcompact	20.37	28.14
suv	13.50	18.13

Table 2: Top 3 MPG Performing Cars: 1999, 2008

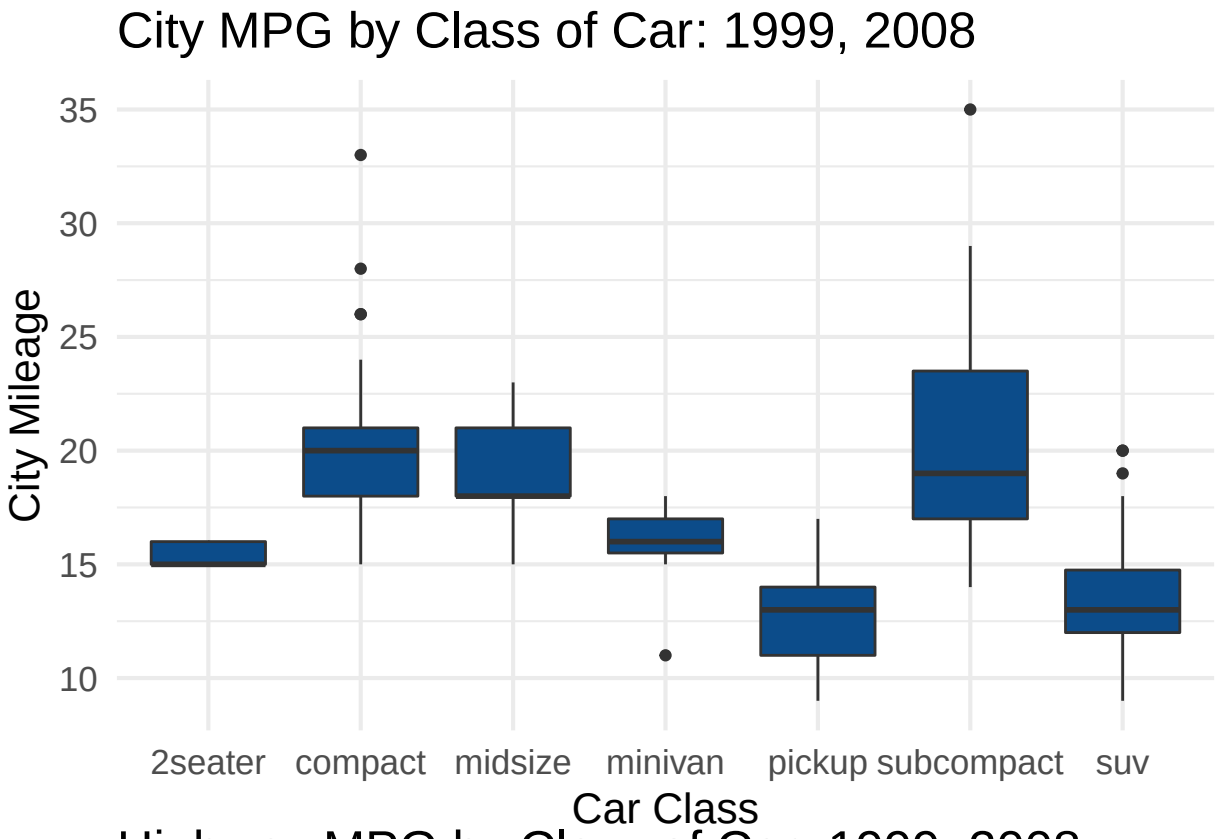
City 1999		Highway 1999		City 2008		Highway 2008	
	Milage		Milage		Milage		Milage
new beetle	26	new beetle	35	corolla	27	corolla	36
civic	24.8	corolla	32.67	civic	24	civic	33.75
corolla	24.67	civic	31.6	gti	21.5	camry	30

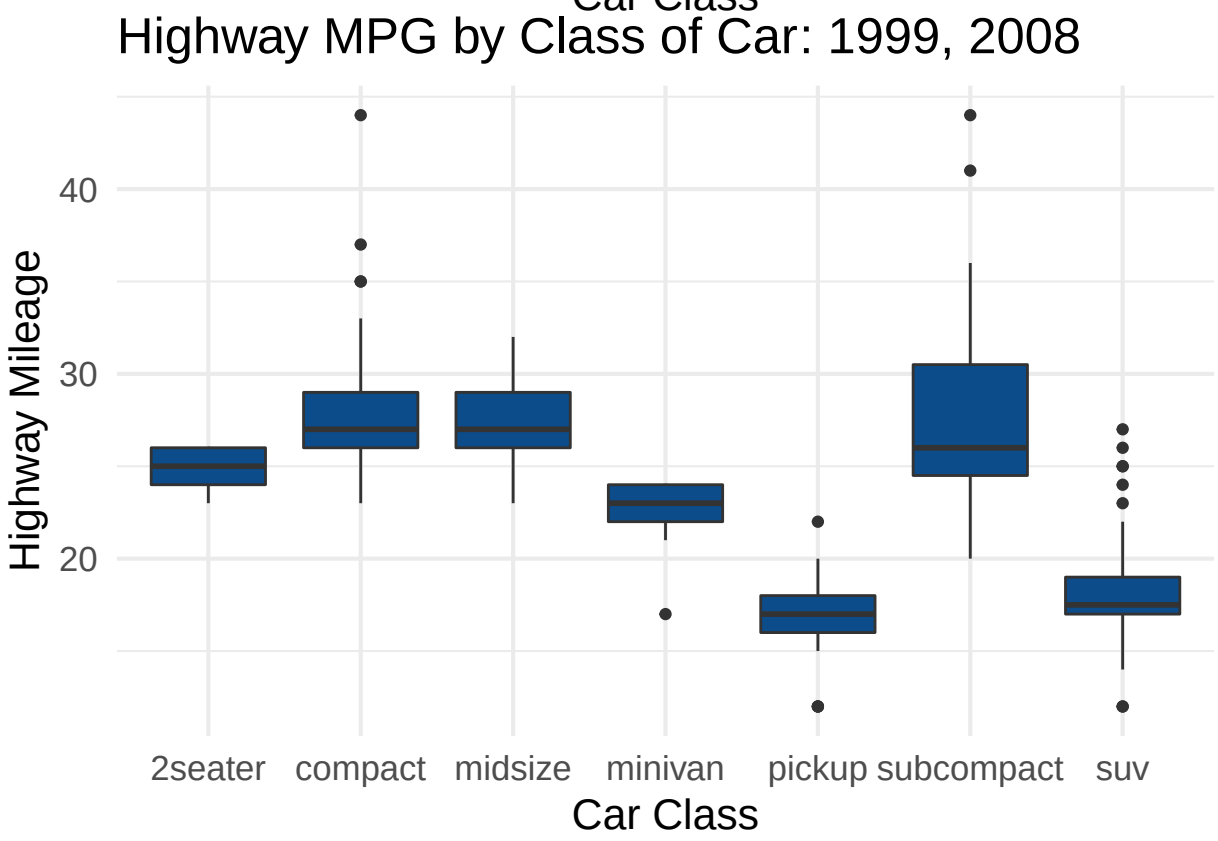



```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```


Highway MPG by Class of Car: 1999, 2008
1999
2008
Highway Mileage
40
30
20
2
3
4
5
6
7
Engine Displacement
class
2seater
compact
midsize
minivan
pickup
subcompact
suv

Boxplots


City MPG by Class of Car: 1999, 2008
City Mileage
35
30
25
20
15
10
2seater
compact
midsize
minivan
pickup
subcompact
suv
Car Class


Highway MPG by Class of Car: 1999, 2008
Highway Mileage
40
30
20
2seater
compact
midsize
minivan
pickup
subcompact
suv
Car Class