Lab 02 - Plastic waste

Negar Maleki

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Load packages and data

```
# Load the tidyverse package
library(tidyverse)
```

```
plastic_waste <- read.csv(here::here("data/plastic-waste.csv"))
```

Exercises

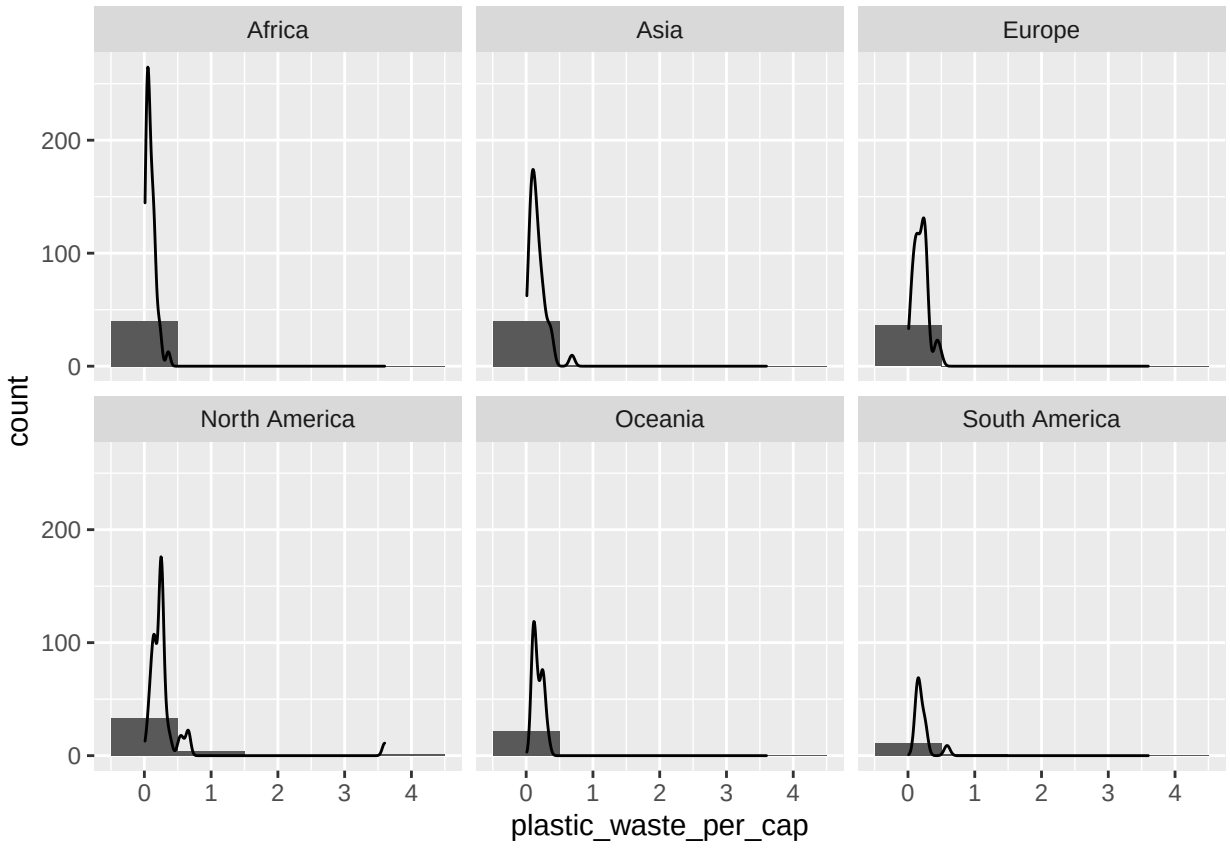
Exercise 1

```
# 1-1
hist_1 <- ggplot(plastic_waste) +
  aes(x = plastic_waste_per_cap) +
  geom_histogram(binwidth = 1) +
  facet_wrap(~continent)

hist_1 +
  geom_density(aes(y = after_stat(count)))
```

```
## Warning: Removed 51 rows containing non-finite values (stat_bin).
```

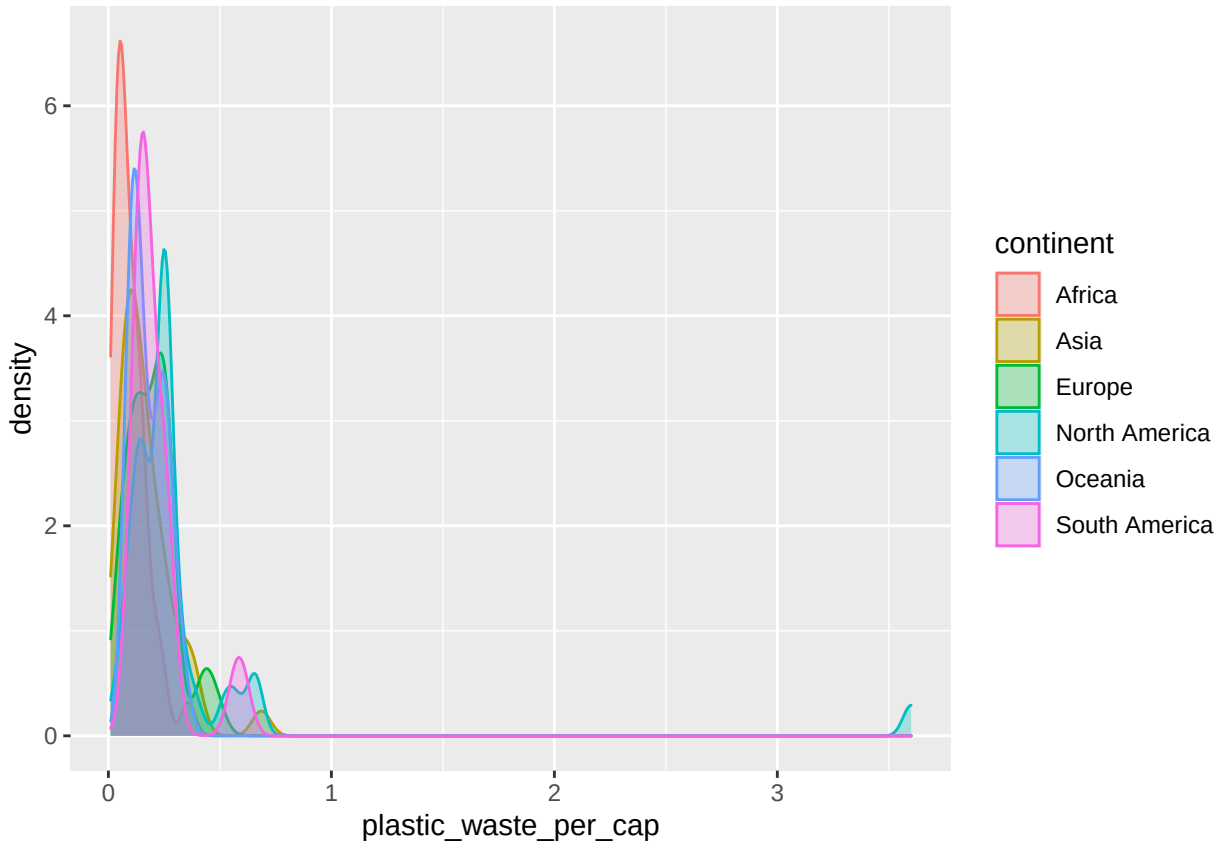
```
## Warning: Removed 51 rows containing non-finite values (stat_density).
```



Exercise 2

```
# insert code here
ggplot(plastic_waste) +
  aes(x = plastic_waste_per_cap, color=continent, fill=continent) +
  geom_density(alpha=0.3)
```

```
## Warning: Removed 51 rows containing non-finite values (stat_density).
```



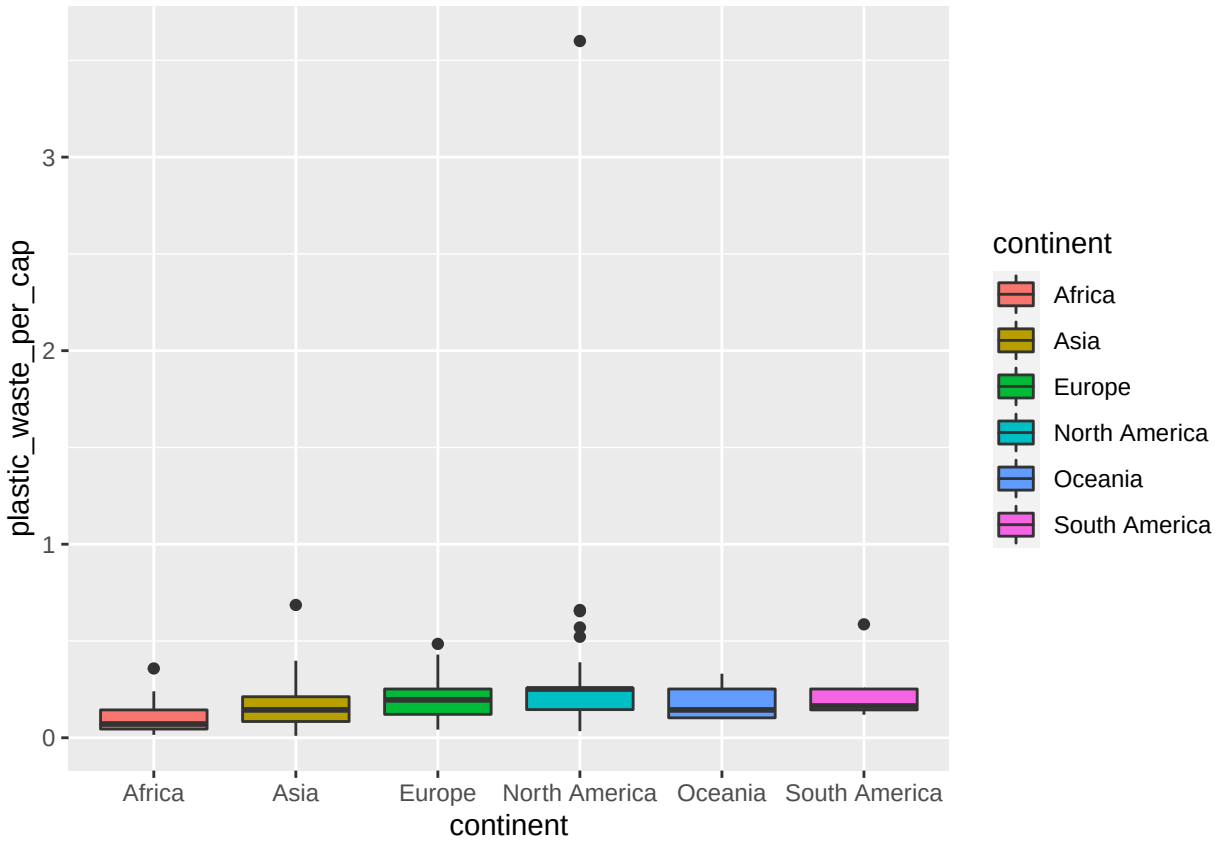
Exercise 3

When specified inside aes, an aesthetic is mapped to the value of a variable in the data. Since there is a mapping between the data and the visible aesthetic, there is a legend which shows that mapping. Outside of an aes call, the aesthetic is just set to a specific value.

Exercise 4

```
p <- ggplot(plastic_waste) +
  aes(x = continent, y = plastic_waste_per_cap, fill=continent) +
  geom_boxplot()
p
```

```
## Warning: Removed 51 rows containing non-finite values (stat_boxplot).
```

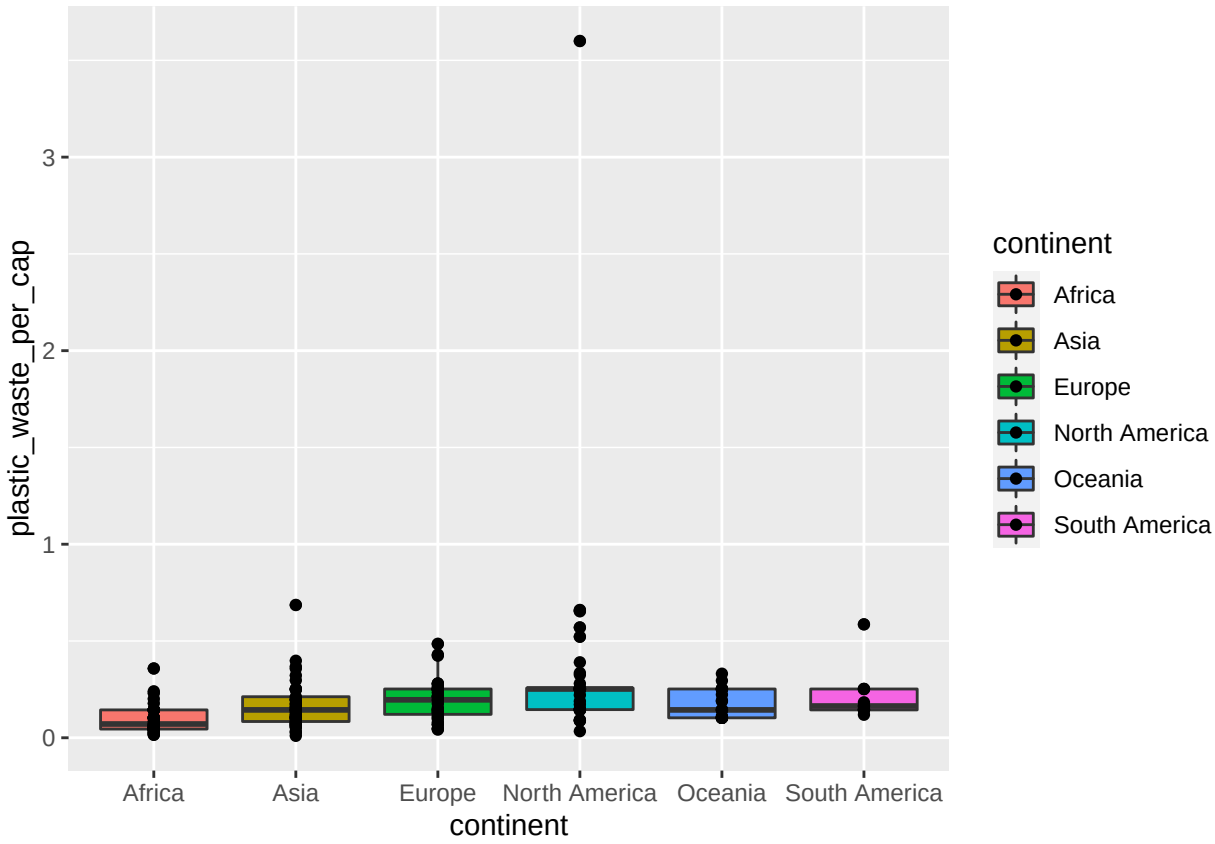


Exercise 5

```
p +
  geom_point()
```

```
## Warning: Removed 51 rows containing non-finite values (stat_boxplot).
```

```
## Warning: Removed 51 rows containing missing values (geom_point).
```



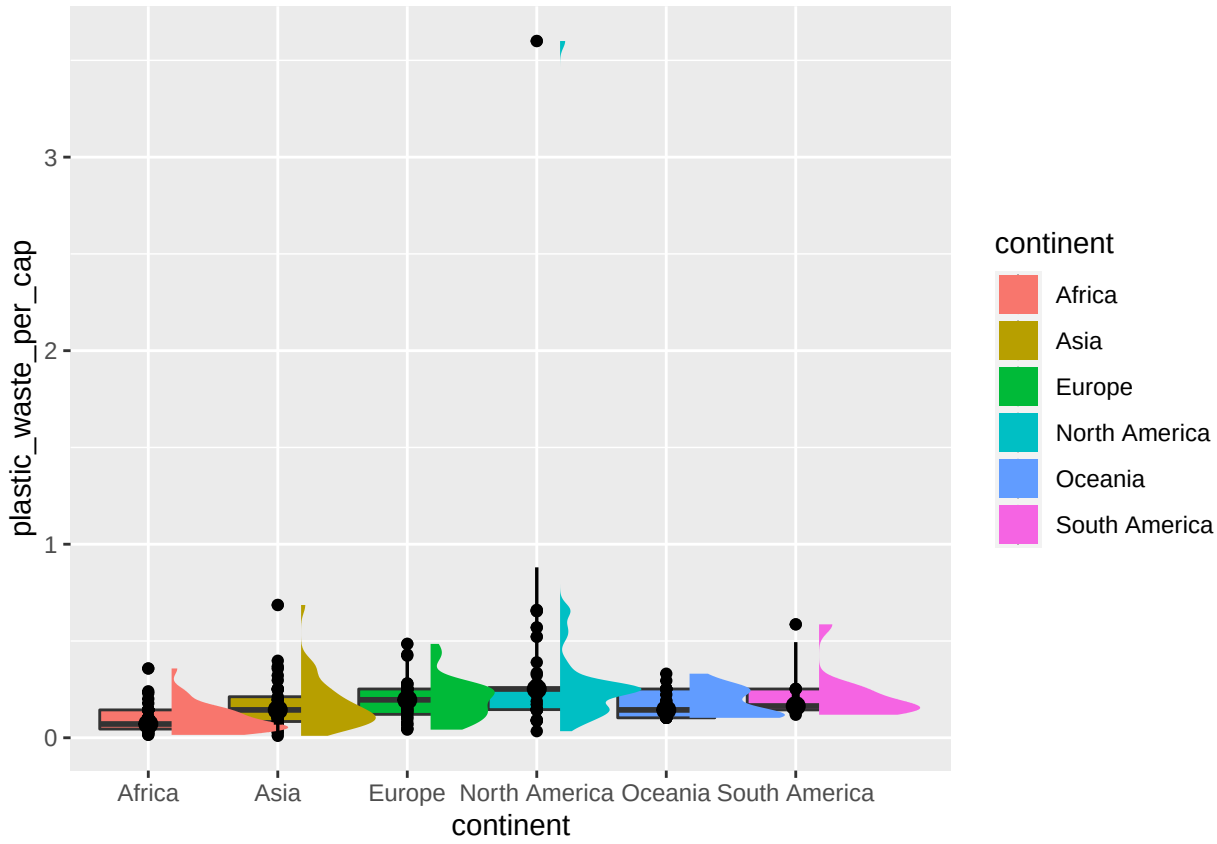
Exercise 6

```
p +
  geom_point() +
  ggdist::stat_halfeye(justification = -.2)
```

```
## Warning: Removed 51 rows containing non-finite values (stat_boxplot).
```

```
## Warning: Removed 51 rows containing missing values (stat_slabinterval).
```

```
## Warning: Removed 51 rows containing missing values (geom_point).
```




```
t <- ggplot(data = plastic_waste,
       mapping = aes(x = continent,
                     y = plastic_waste_per_cap)) +
  geom_violin()+
  geom_boxplot(width=.3, fill="green") +
  stat_summary(fun.y=median, geom="point")
```

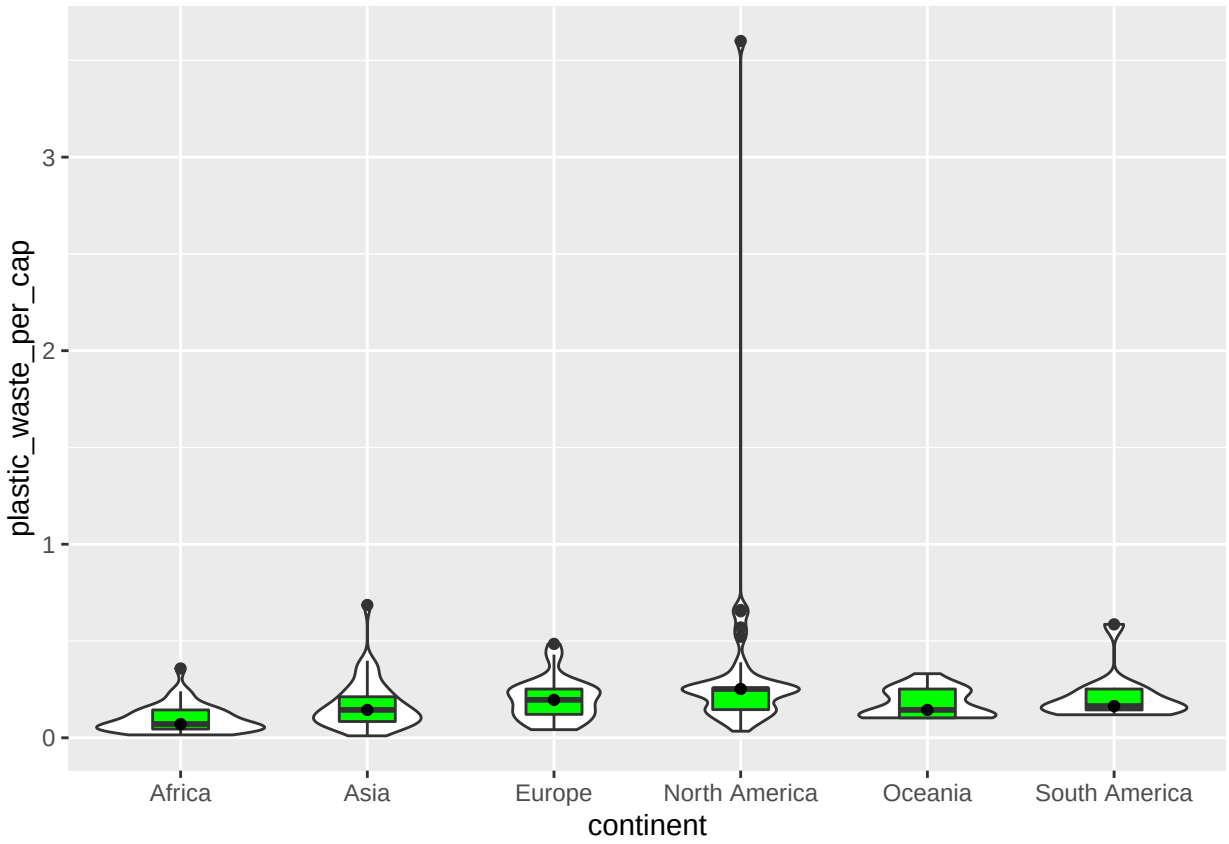
```
## Warning: `fun.y` is deprecated. Use `fun` instead.
```

```
t
```

```
## Warning: Removed 51 rows containing non-finite values (stat_ydensity).
```

```
## Warning: Removed 51 rows containing non-finite values (stat_boxplot).
```

```
## Warning: Removed 51 rows containing non-finite values (stat_summary).
```



Exercise 7

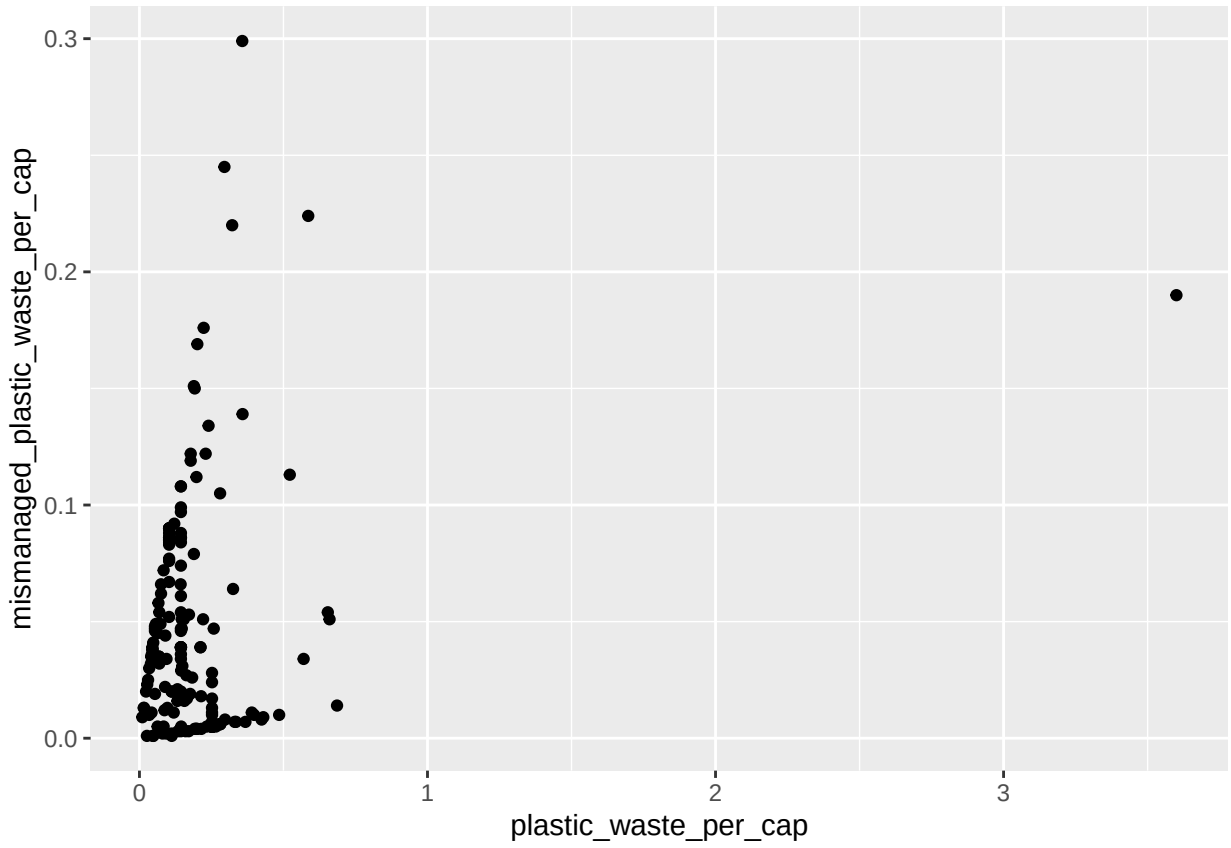
What does the density or data points show that the boxplot does not? Distribution of other data out of box plot.

Exercise 8

As we can see in below plot, plastic_waste_per_cap and mismanaged_plastic_waste_per_cap have positive correlation. It means by increasing mismanaged_plastic_waste_per_cap, plastic_waste_per_cap will increase.

```
ggplot(plastic_waste) +
  aes(x = plastic_waste_per_cap, y = mismanaged_plastic_waste_per_cap) +
  geom_point()
```

```
## Warning: Removed 51 rows containing missing values (geom_point).
```

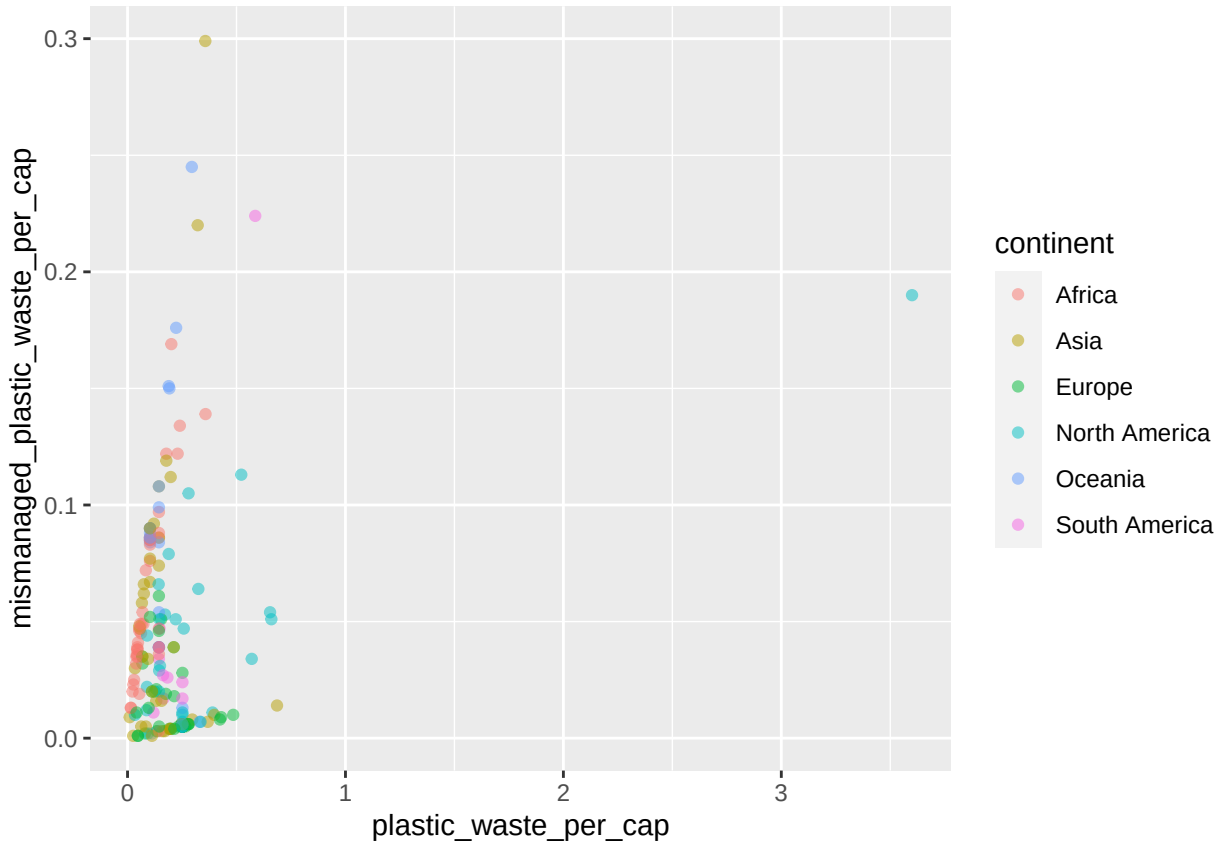


Exercise 9

As below plot shows, there does not seem to be any clear distinctions between continents with respect to how plastic waste per capita and mismanaged plastic waste per capita are associated.

```
ggplot(plastic_waste) +
  aes(x = plastic_waste_per_cap, y = mismanaged_plastic_waste_per_cap, color=continent) +
  geom_point(alpha=0.5)
```

```
## Warning: Removed 51 rows containing missing values (geom_point).
```



Exercise 10

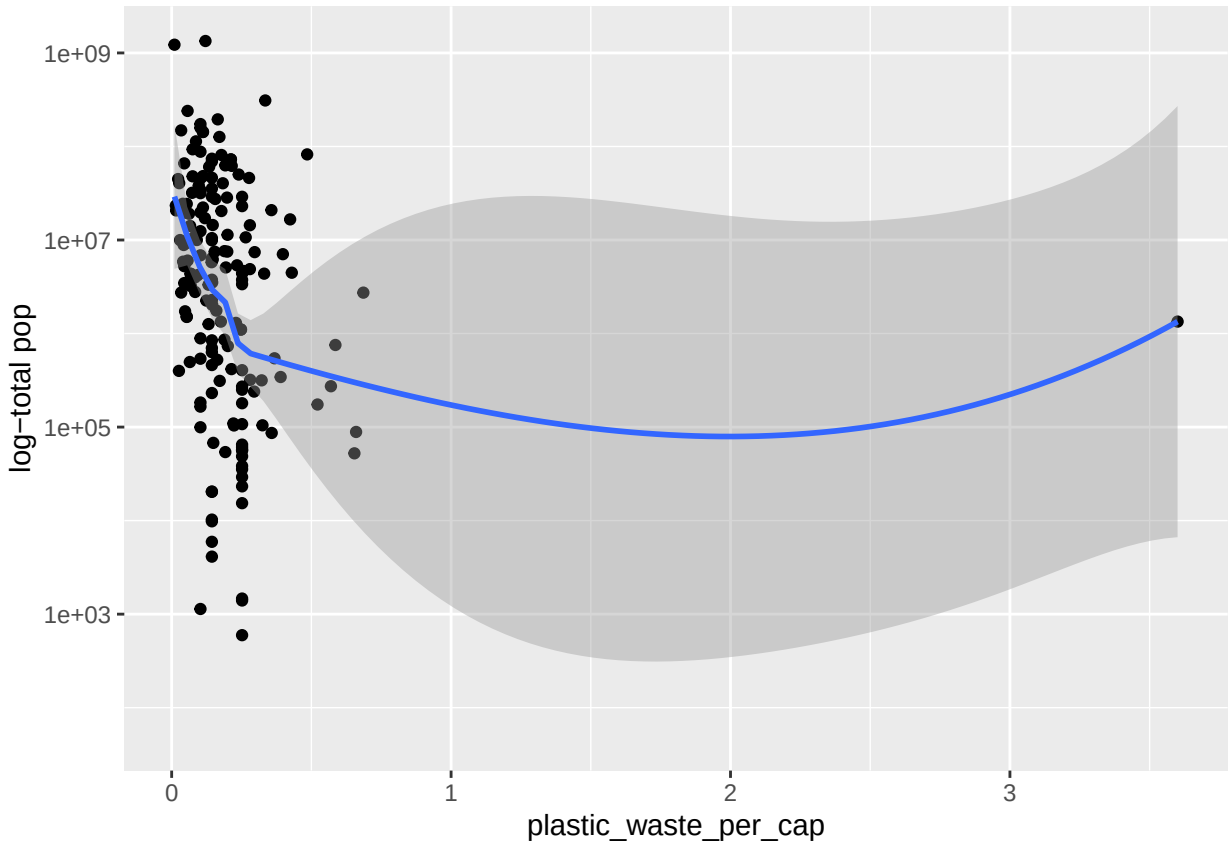
Remove this text, and add your answer for Exercise 7 here.

```
ggplot(plastic_waste) +
  aes(x = plastic_waste_per_cap, y = total_pop) +
  geom_point() +
  scale_y_log10(name="log-total pop") +
  geom_smooth()
```

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

```
## Warning: Removed 61 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 61 rows containing missing values (geom_point).
```

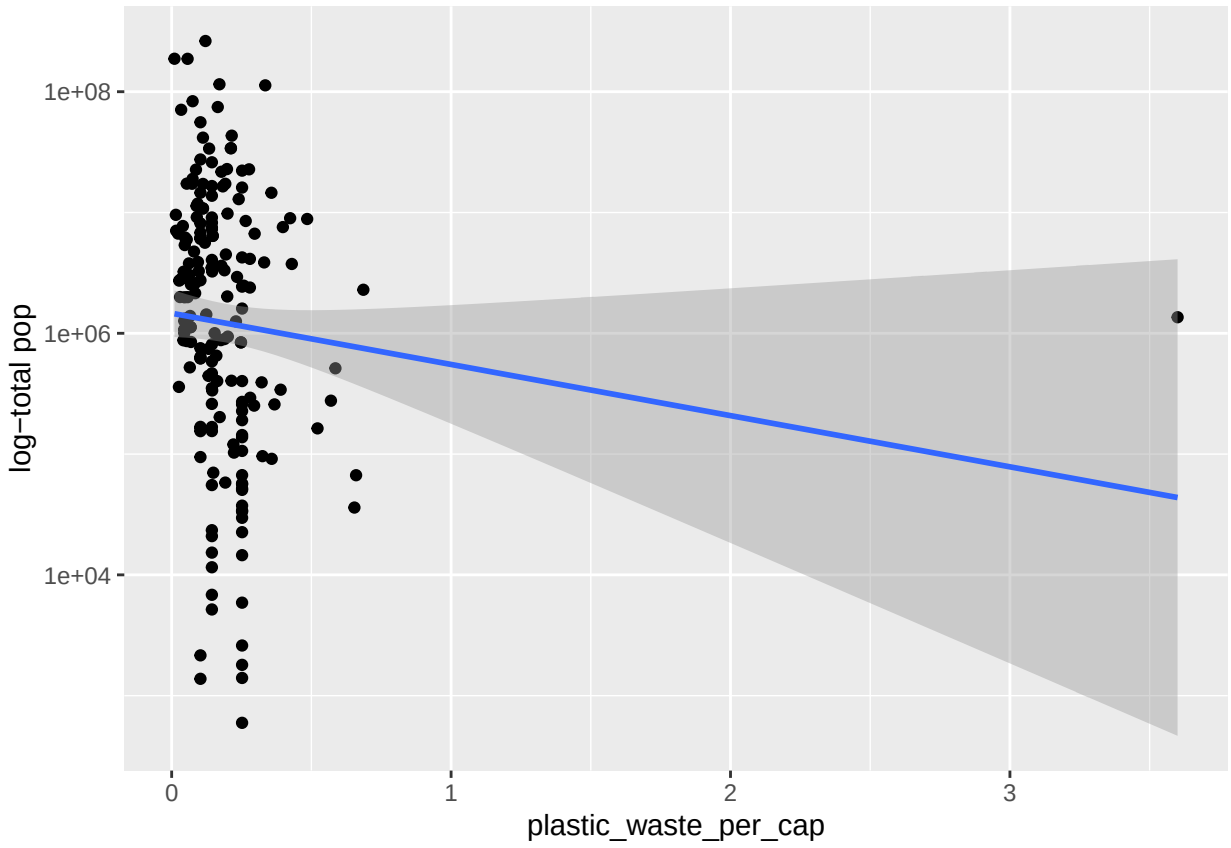



```
ggplot(plastic_waste) +
  aes(x = plastic_waste_per_cap, y = coastal_pop) +
  geom_point() +
  scale_y_log10(name="log-total pop") +
  geom_smooth(method = "lm")
```

```
## `geom_smooth()` using formula 'y ~ x'
```

```
## Warning: Removed 51 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 51 rows containing missing values (geom_point).
```



Do either of these pairs of variables appear to be more strongly associated? No, they don't.

Exercise 11

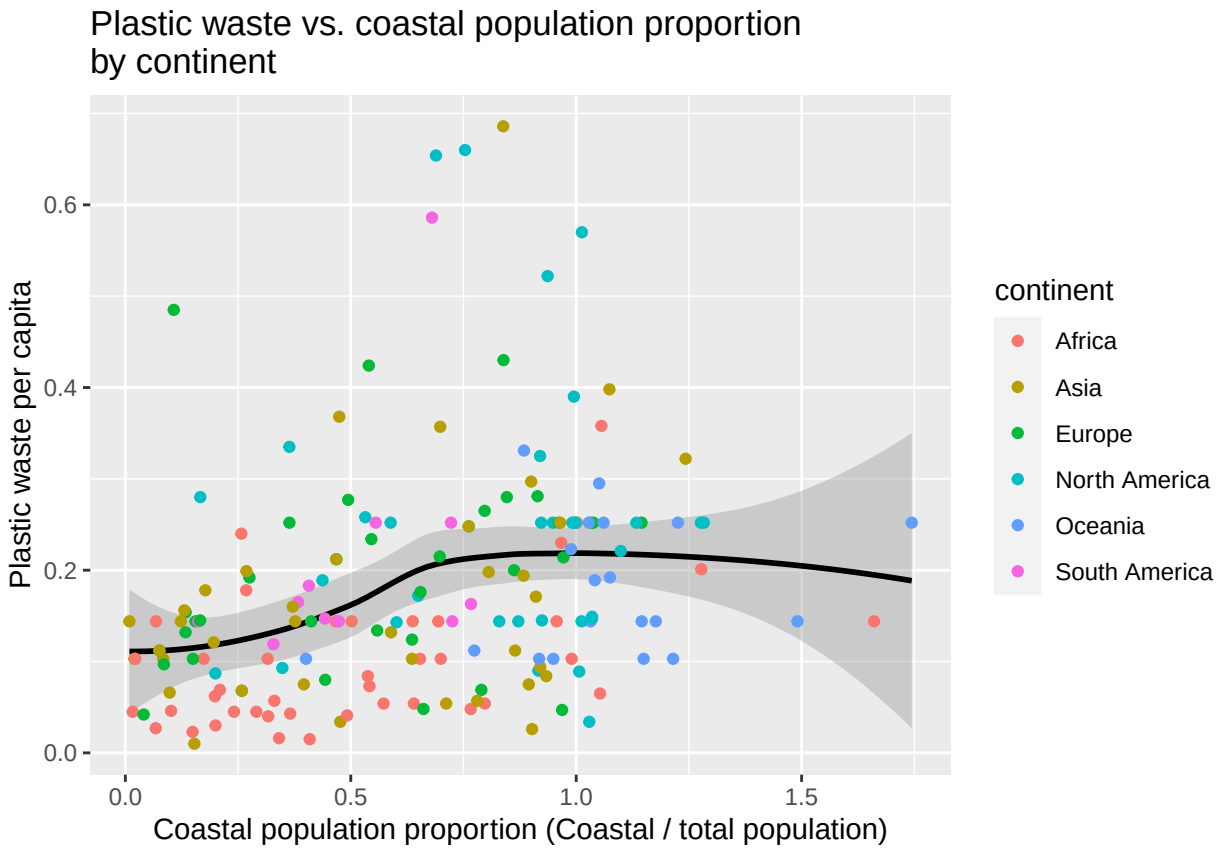
Remove this text, and add your answer for Exercise 11 here.

```
x_axis <- plastic_waste$coastal_pop/plastic_waste$total_pop
plastic_waste$Coastal_population_proportion <- x_axis
ggplot(plastic_waste |>
  filter(plastic_waste_per_cap < 3)) +
  aes(x = Coastal_population_proportion, y = plastic_waste_per_cap) +
  geom_smooth(color='black') +
  geom_point(aes(color=continent)) +
  ggtitle("Plastic waste vs. coastal population proportion
by continent") +
  xlab("Coastal population proportion (Coastal / total population)") + ylab("Plastic waste per capita")
```

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

```
## Warning: Removed 10 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 10 rows containing missing values (geom_point).
```



Pro-Tips

Excercise 3

Try this :D

```
ggplot(data = plastic_waste,
       mapping = aes(x = continent,
                     y = plastic_waste_per_cap)) +
  geom_violin()+
  geom_boxplot(width=.3, fill="green") +
  stat_summary(fun.y=median, geom="point")
```

Exercise 5

Helpful reference:http://www.sthda.com/english/wiki/ggplot2-themes-and-background-colors-the-3-elements