EVRN 745 Assignment 3: gganimate guide

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1) Goals of the package

The main goal of gganimate is to extend to ggplot syntax and aesthetic scheme to the generation of animated graphs. It does this by adding a few new types of functions dealing with implemeting different types of animations and rendering the resultant `gganim` objects as GIF files. These functions are appended to the ggplot call using the expected `+` operator. Here are some examples of these functions and their uses:

`transition_*()` defines how the data should be spread out and how it relates to itself across time. `view_*()` `defines`how the positional scales should change along the animation. `shadow_*() defines` how data from other points in time should be presented in the given point in time. `enter_*()/exit_*()` defines how new data should appear and how old data should disappear during the course of the animation. `ease_aes()`defines how different aesthetics should be eased during transitions.

2) Examples demonstrating the functionality of the package

```
library(tidyverse)
```

```
## Warning: package 'tidyverse' was built under R version 4.1.3
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5      v purrr   0.3.4
## v tibble  3.1.8      v dplyr   1.0.10
## v tidyr   1.2.0      v stringr 1.4.0
## v readr   1.4.0      v forcats 0.5.1
```

```
## Warning: package 'tibble' was built under R version 4.1.3
```

```
## Warning: package 'tidyr' was built under R version 4.1.3
```

```
## Warning: package 'dplyr' was built under R version 4.1.3
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

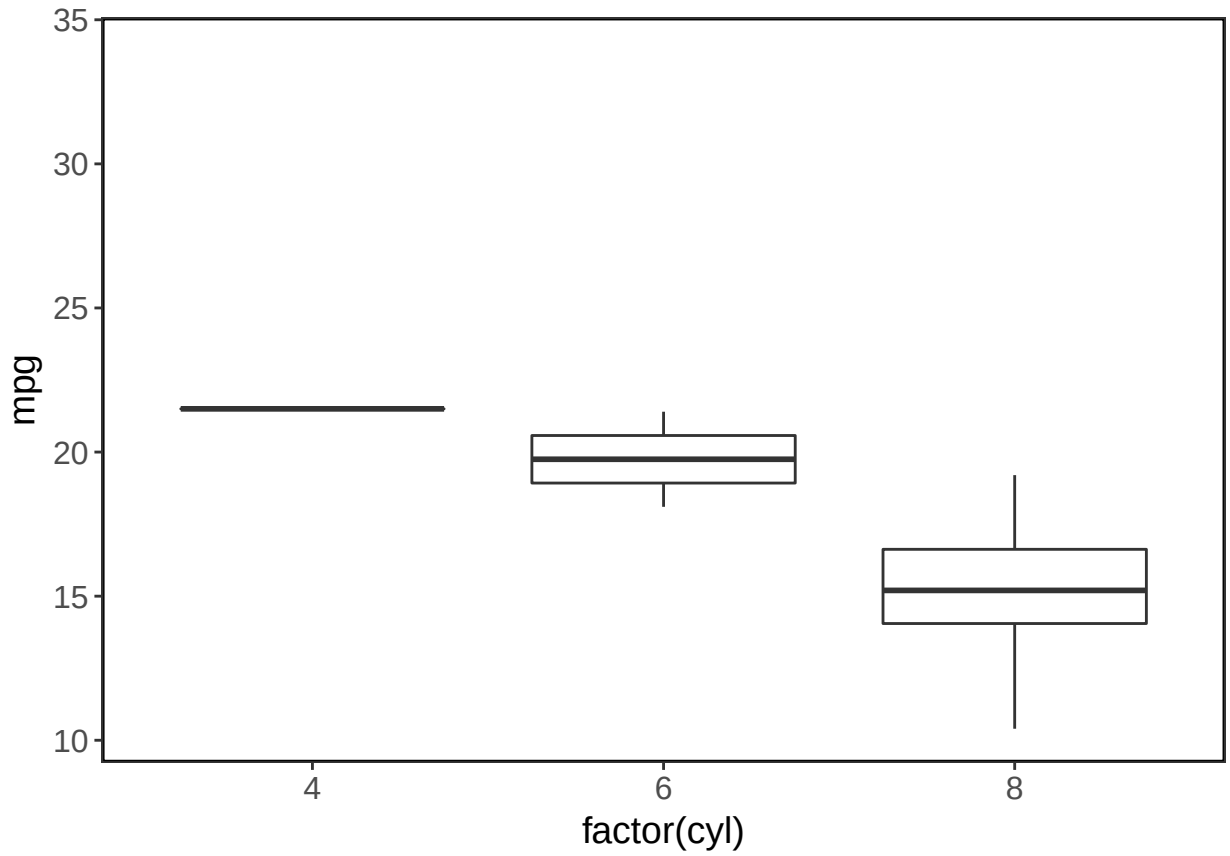
```
library(gganimate)
```

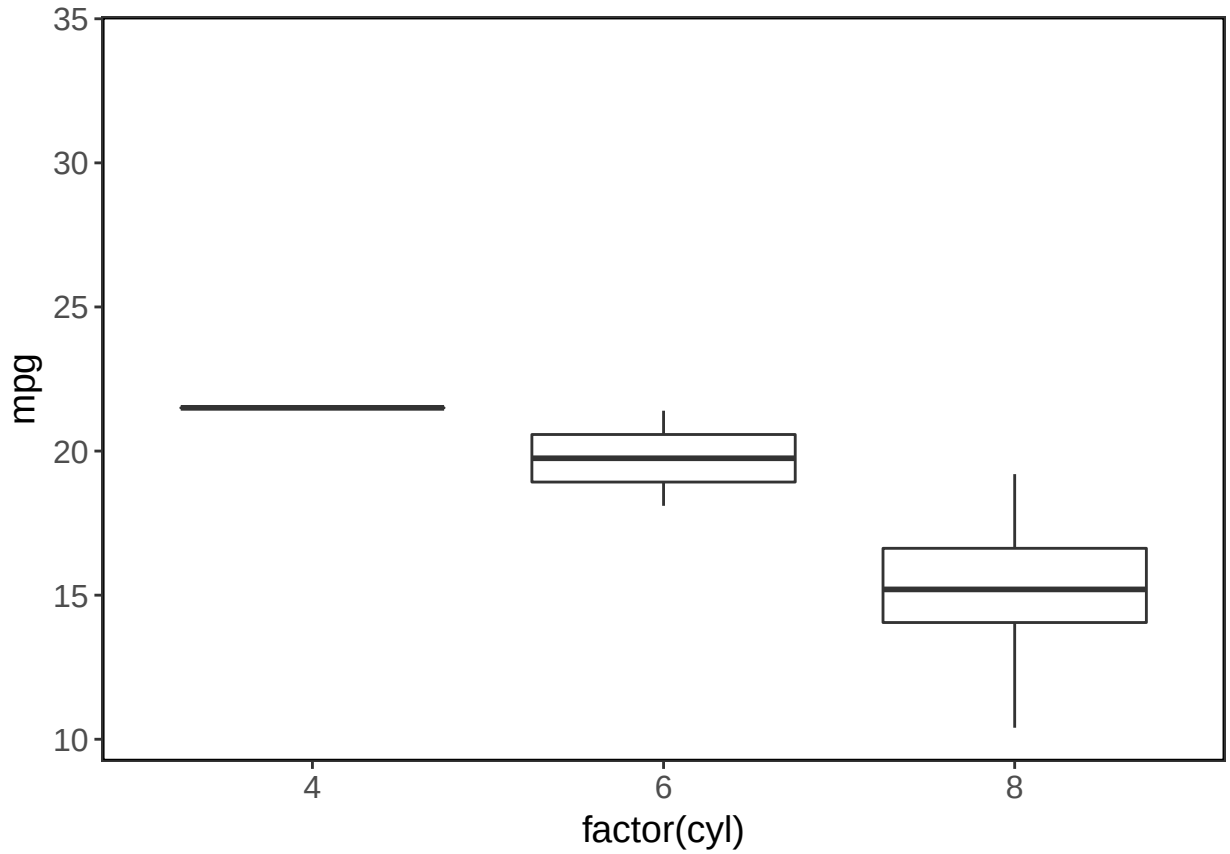
```
## Warning: package 'gganimate' was built under R version 4.1.3
```

```
library(gifski)
```

```
## Warning: package 'gifski' was built under R version 4.1.3
```

```
ggplot(mtcars, aes(factor(cyl), mpg)) +
  geom_boxplot() +
  # Here comes the gganimate code
  transition_states(
    gear,
    transition_length = 2,
    state_length = 1) +
  enter_fade() +
  exit_shrink() +
  ease_aes('sine-in-out') +
   theme_bw() +
  theme(panel.grid.major = element_blank(),
        panel.grid.minor = element_blank(),
        panel.background = element_rect(colour = "black", size = 1)) +
  theme(axis.text = element_text(size = 12),
        axis.title = element_text(size = 14))
```

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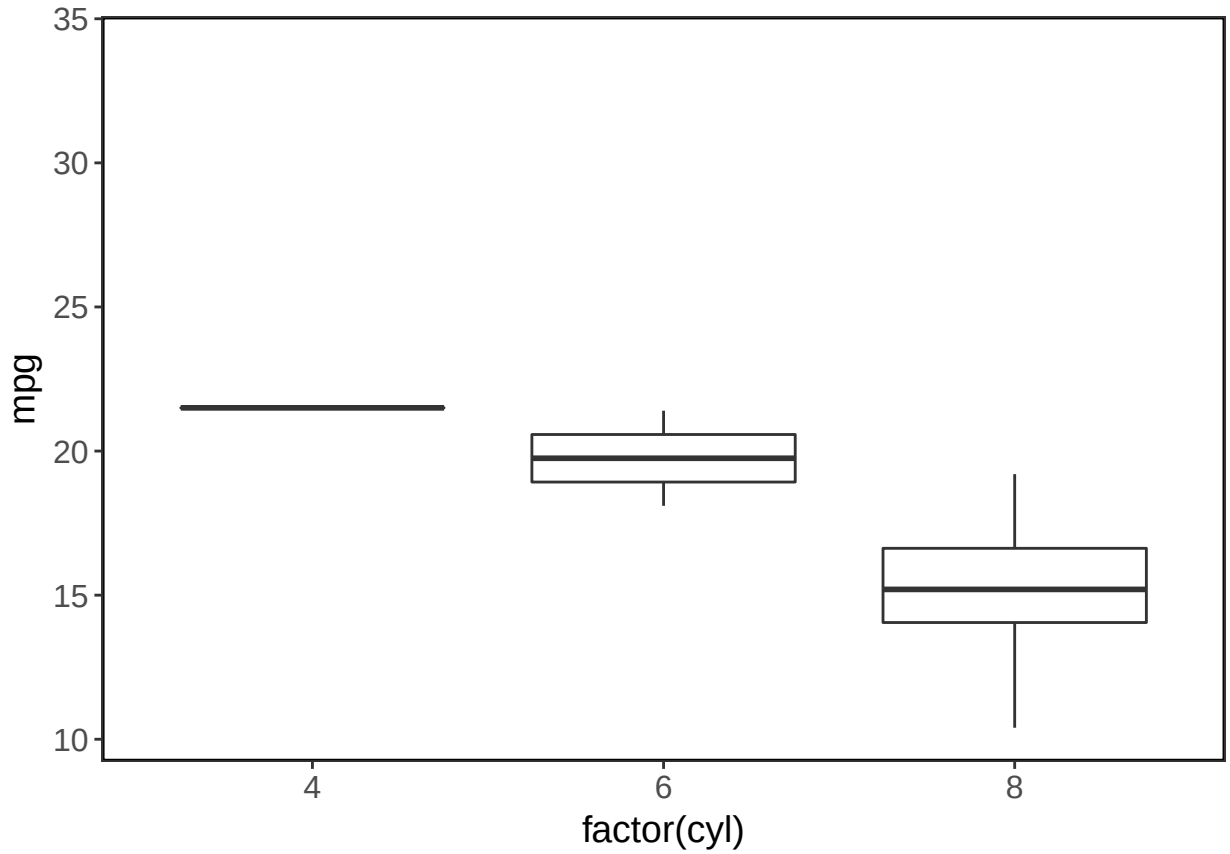
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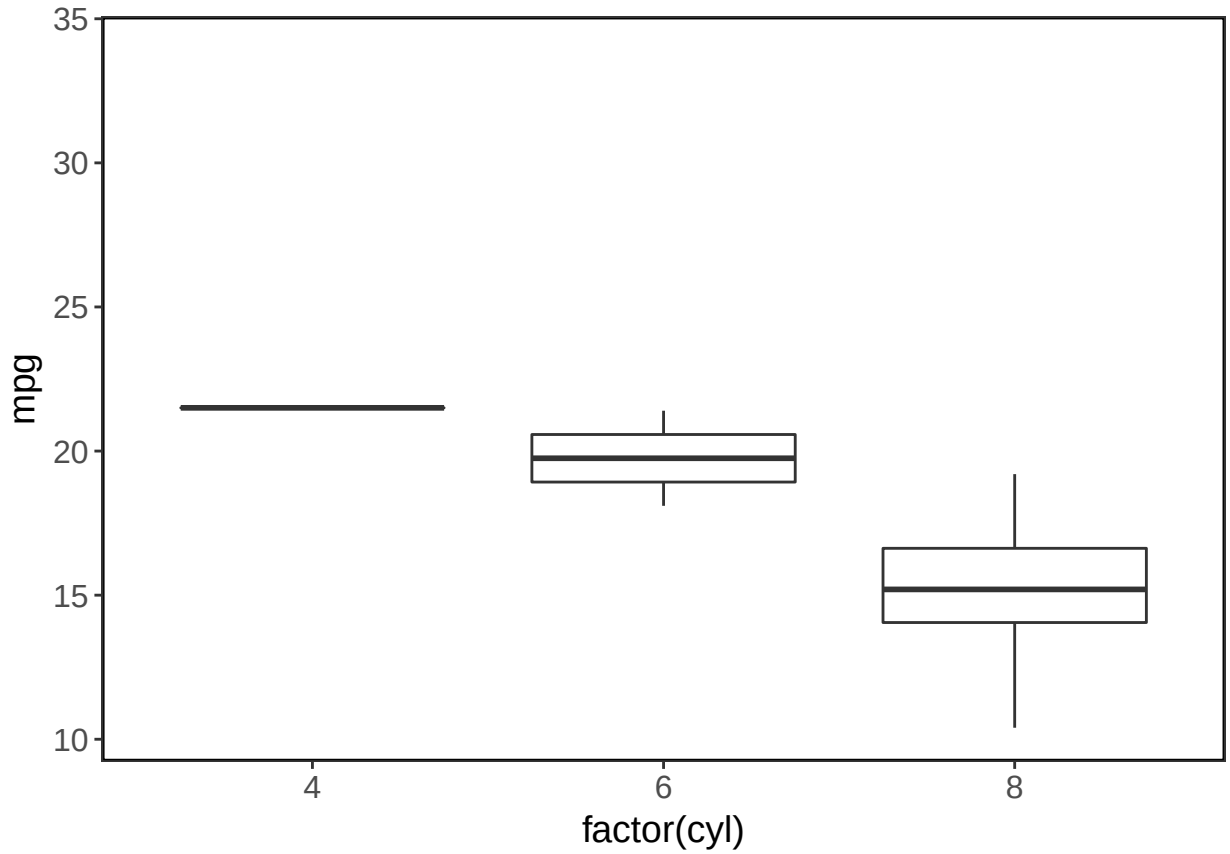
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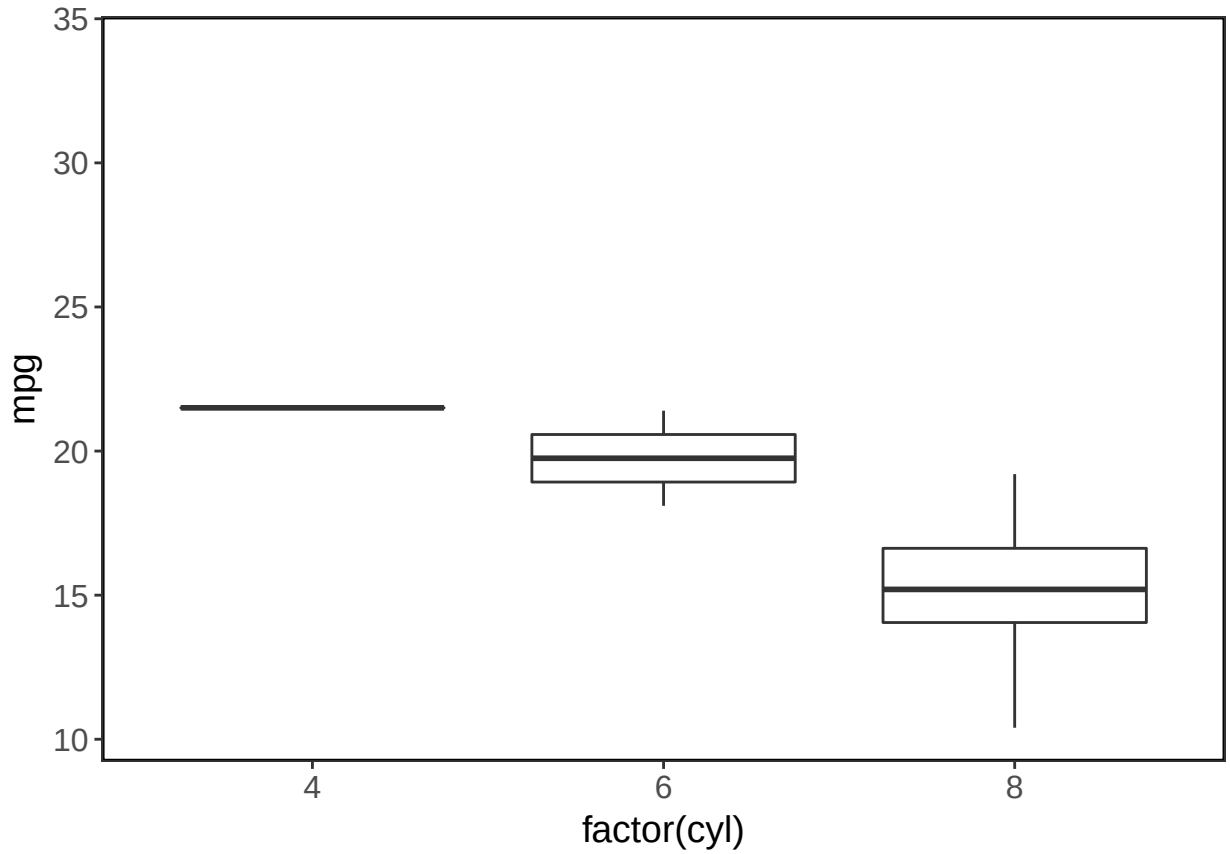
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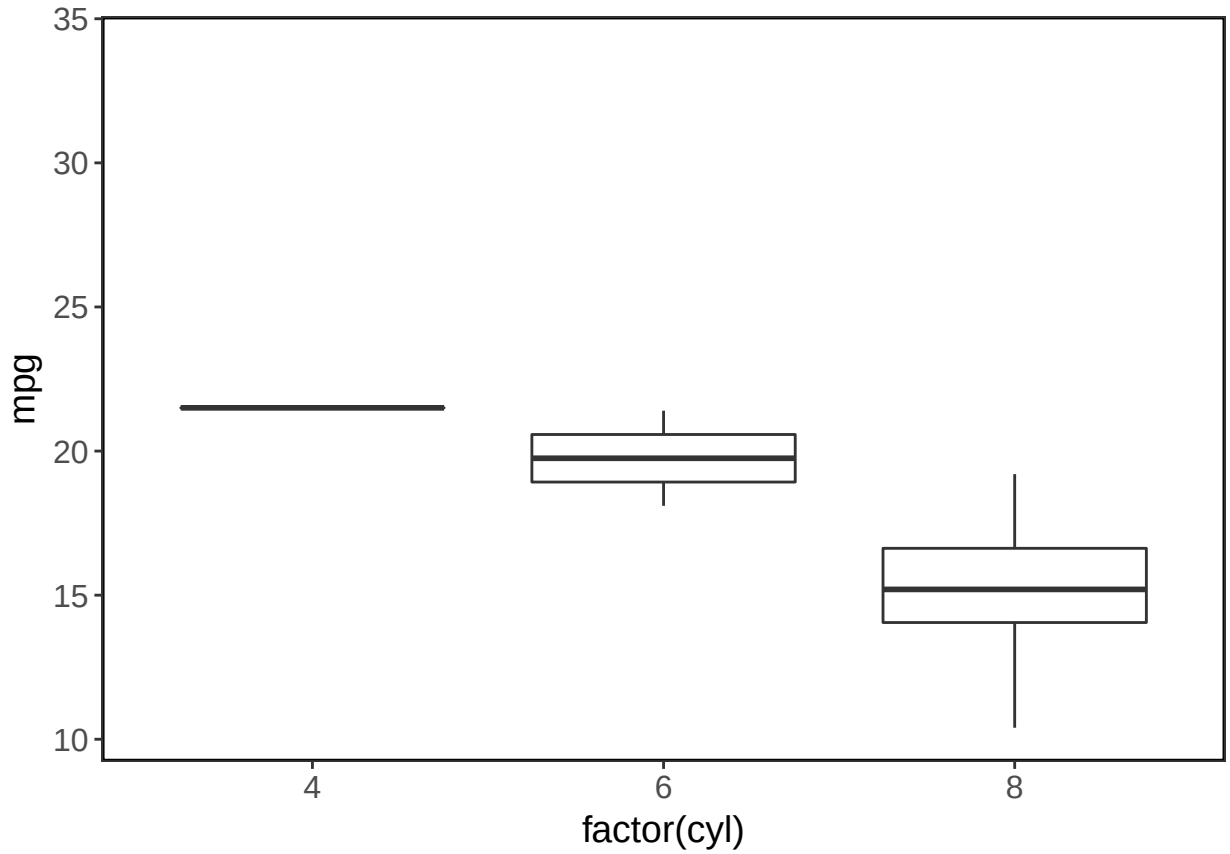
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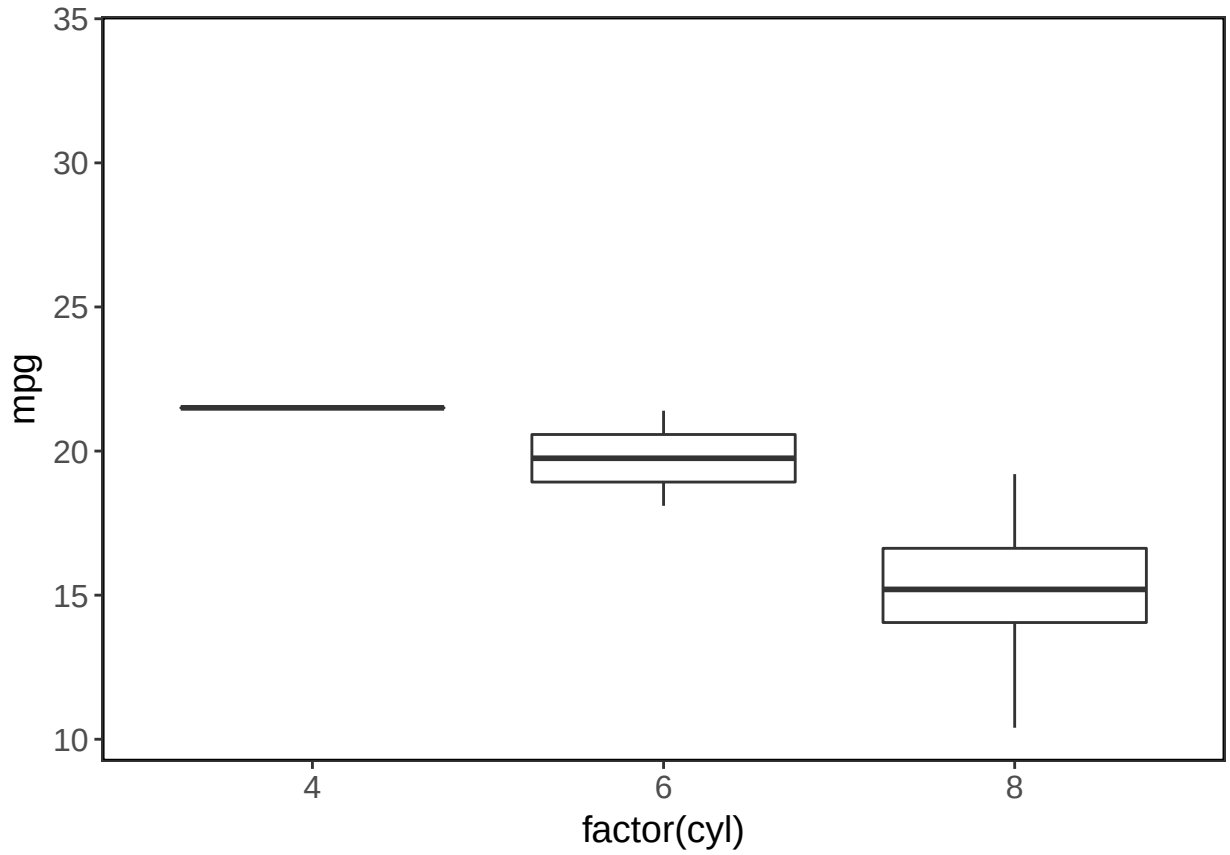
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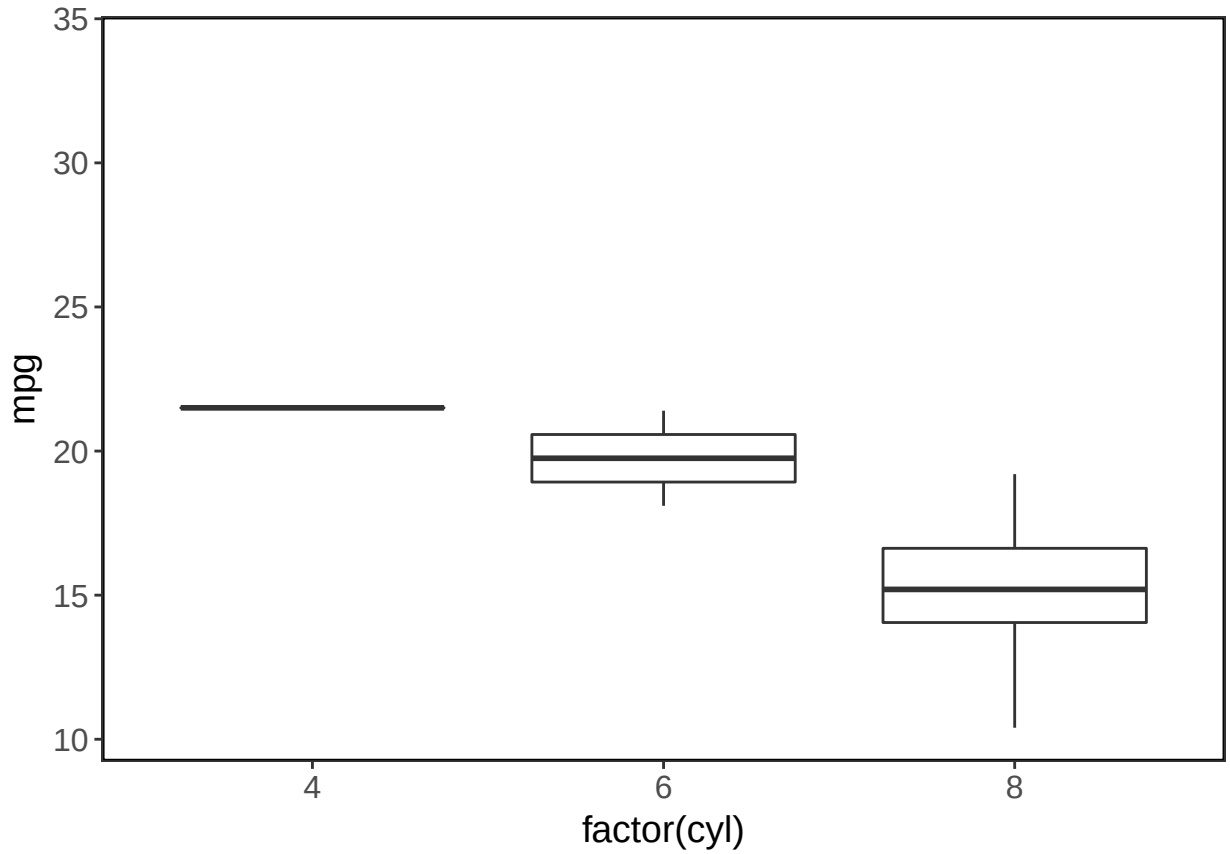
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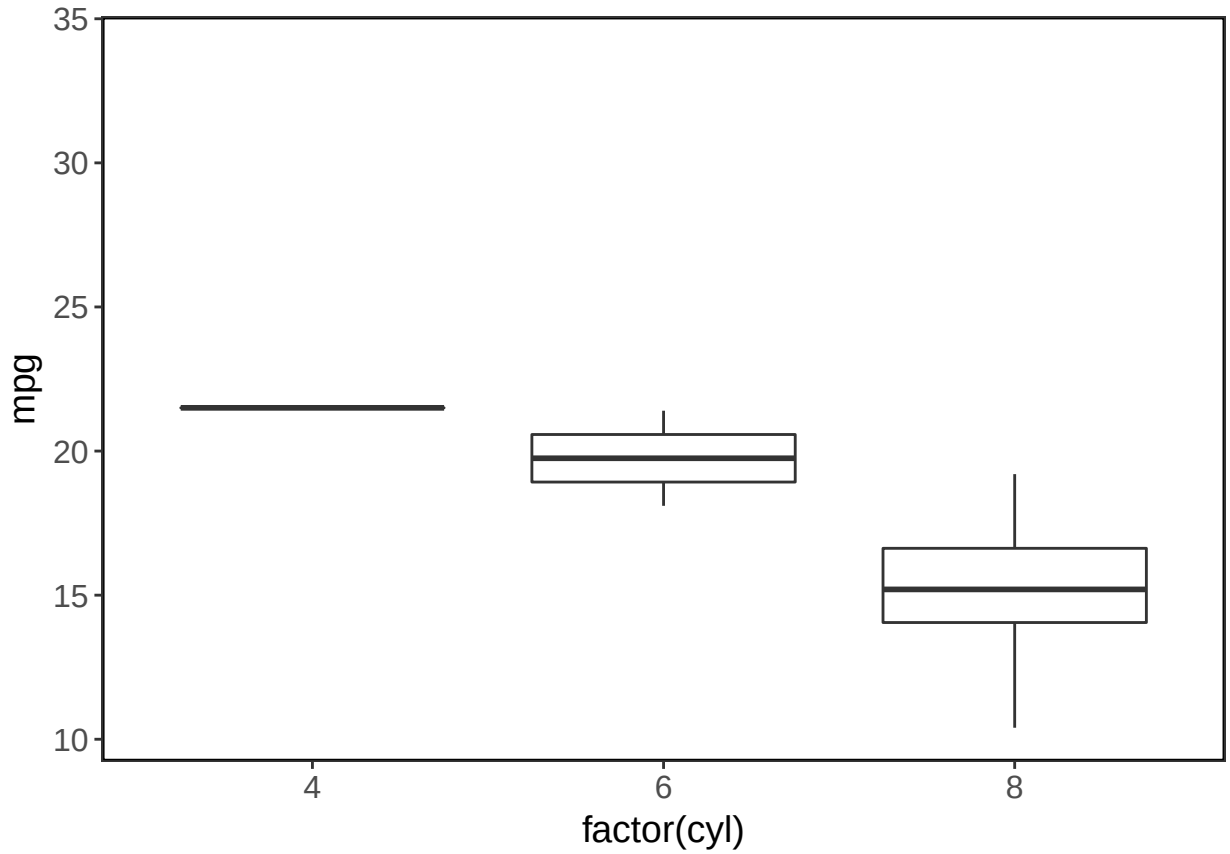
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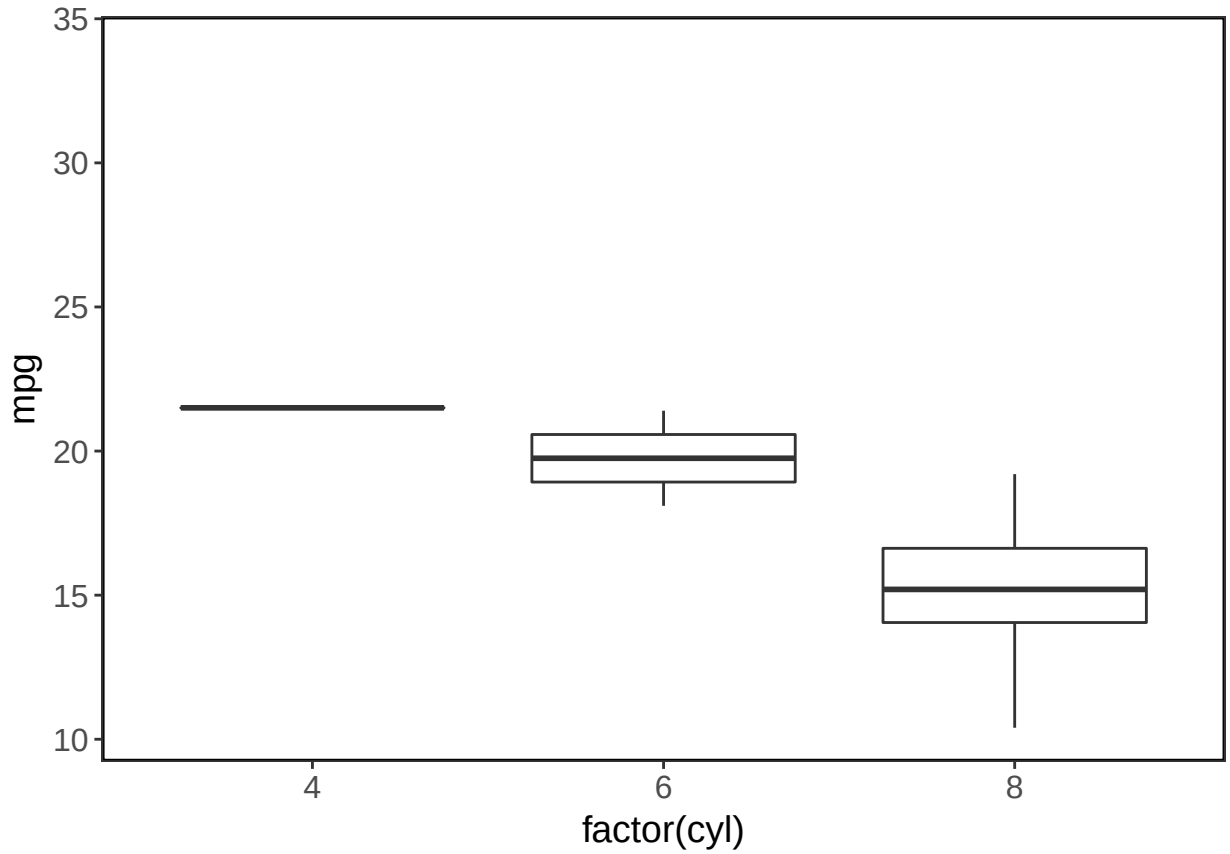
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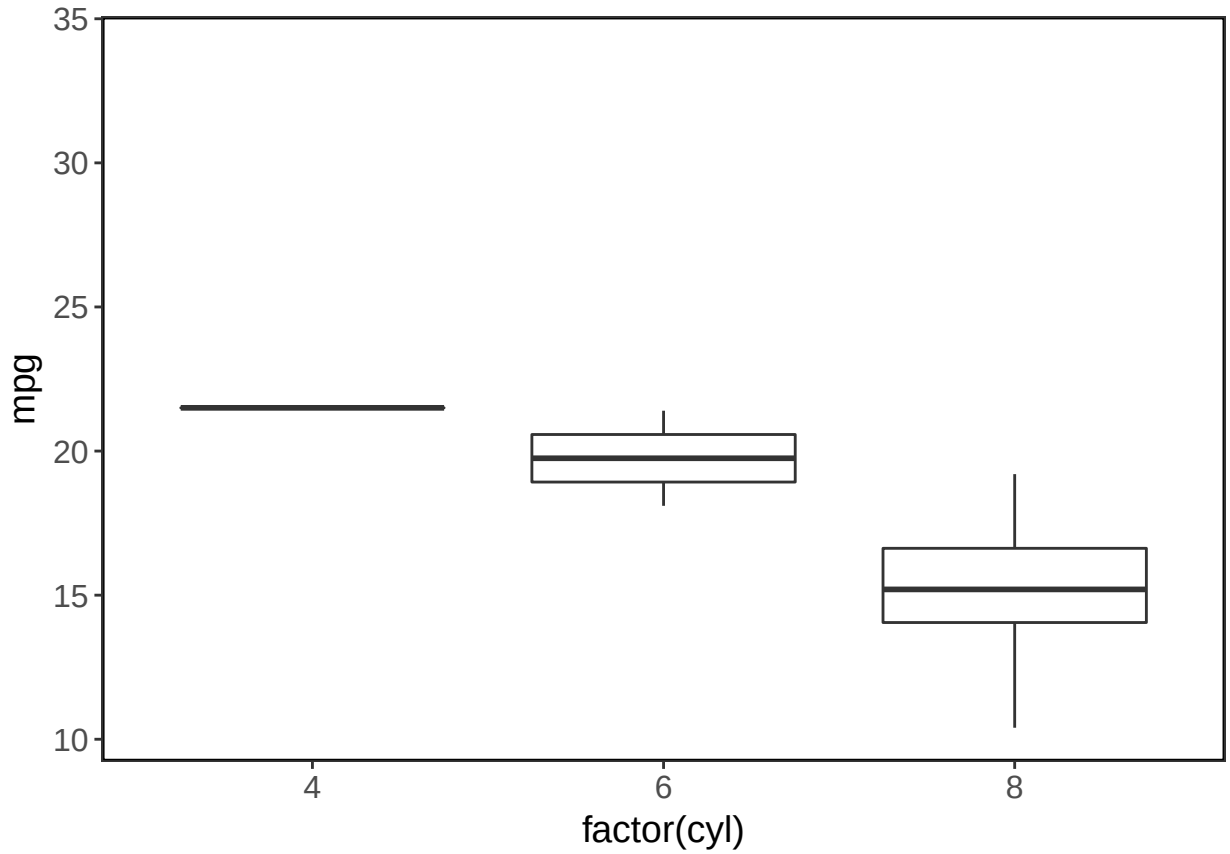
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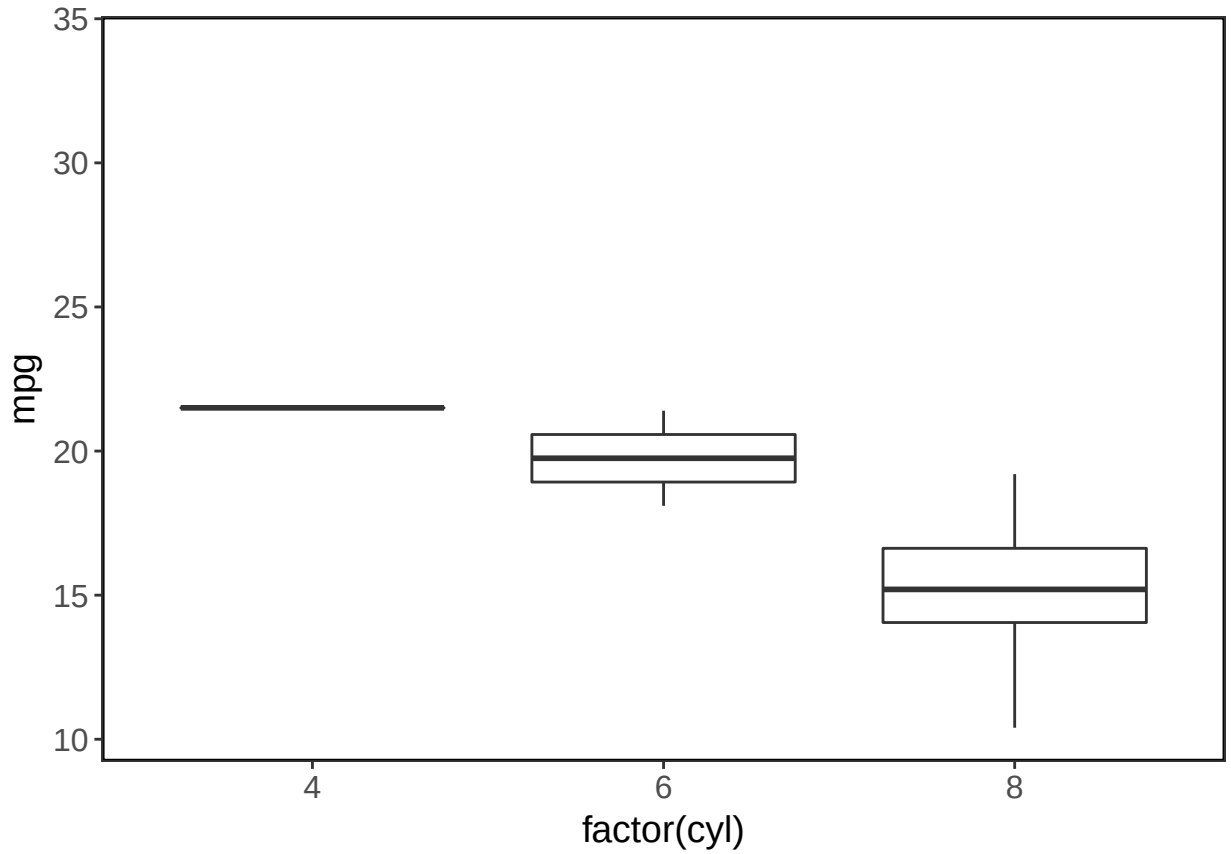
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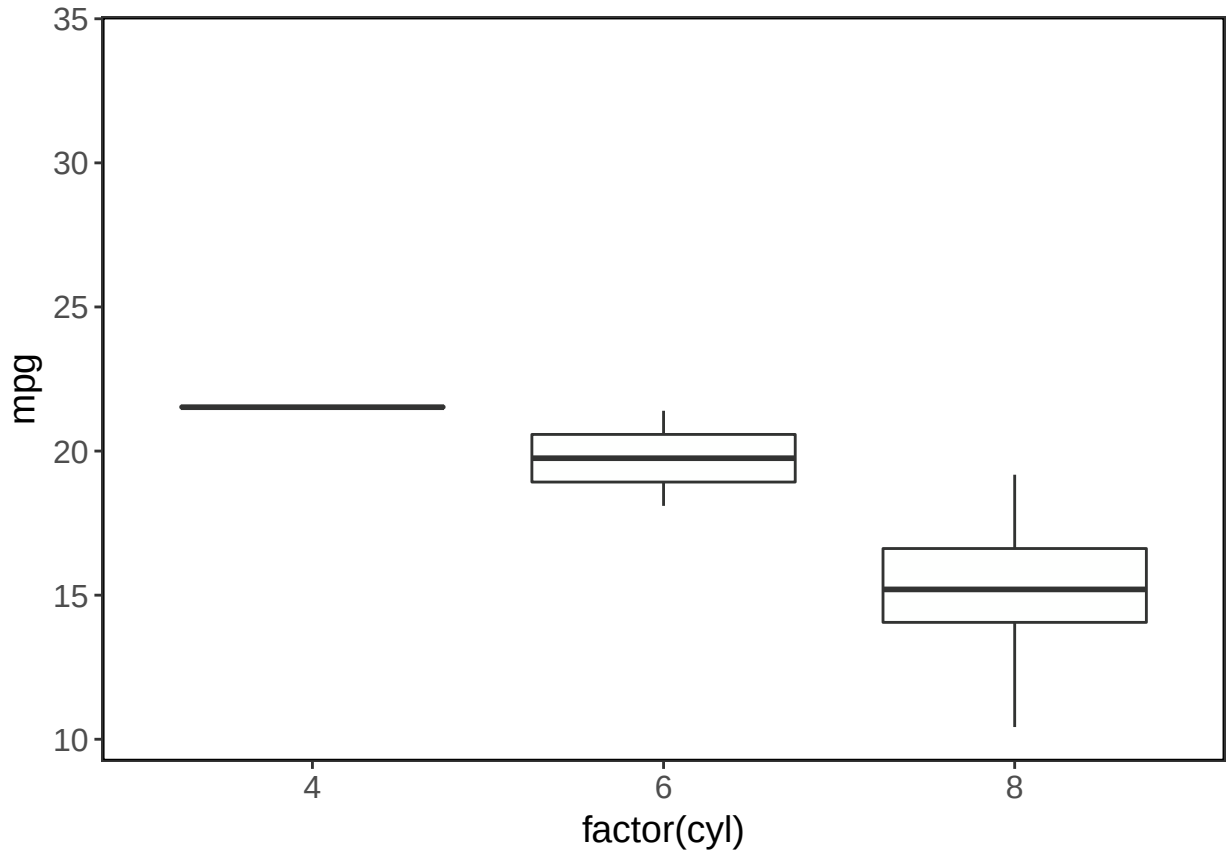
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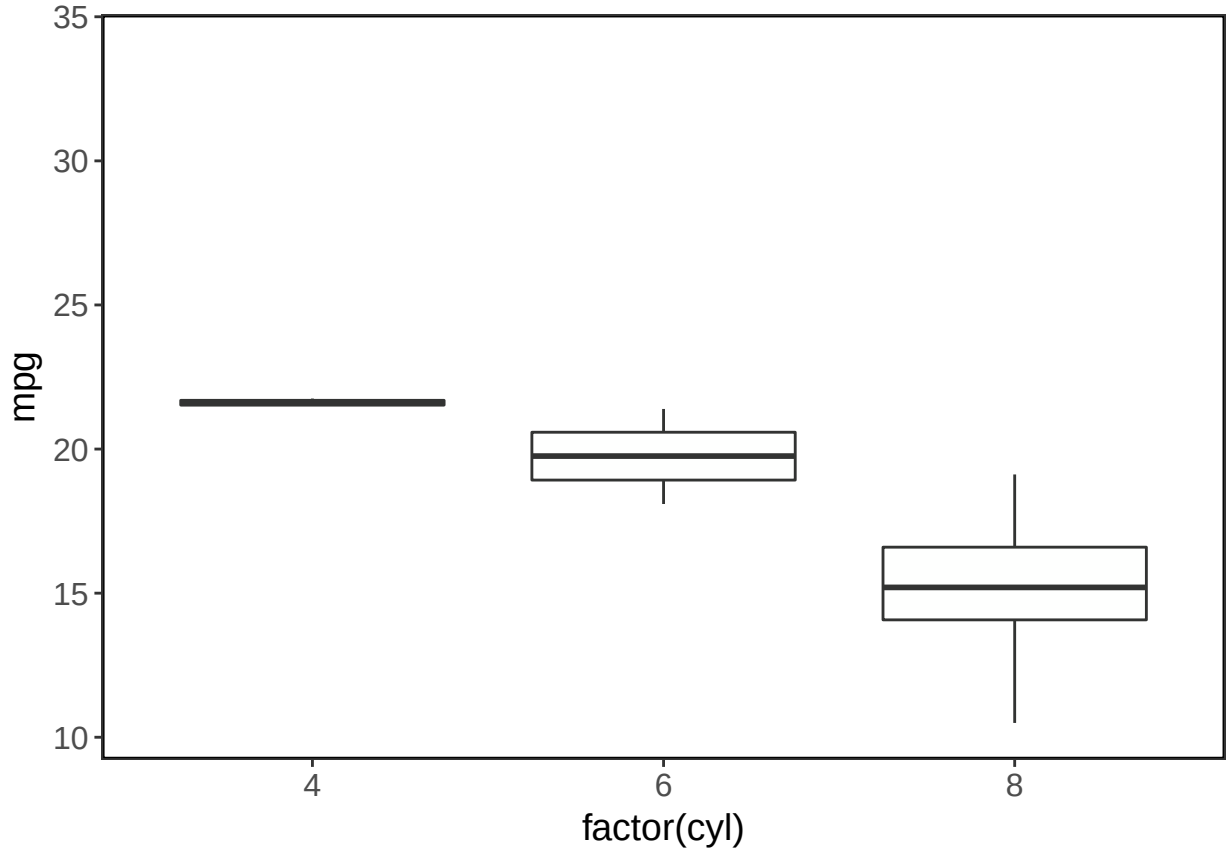
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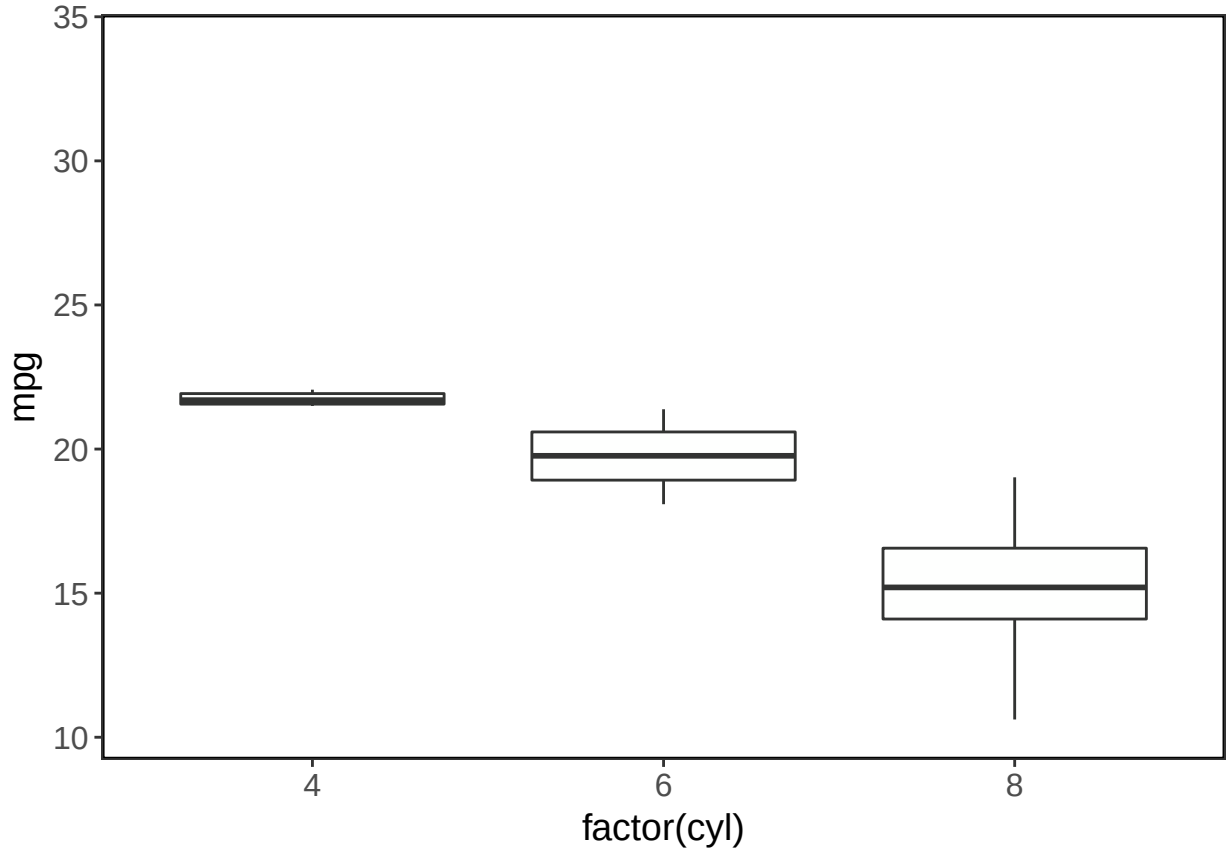
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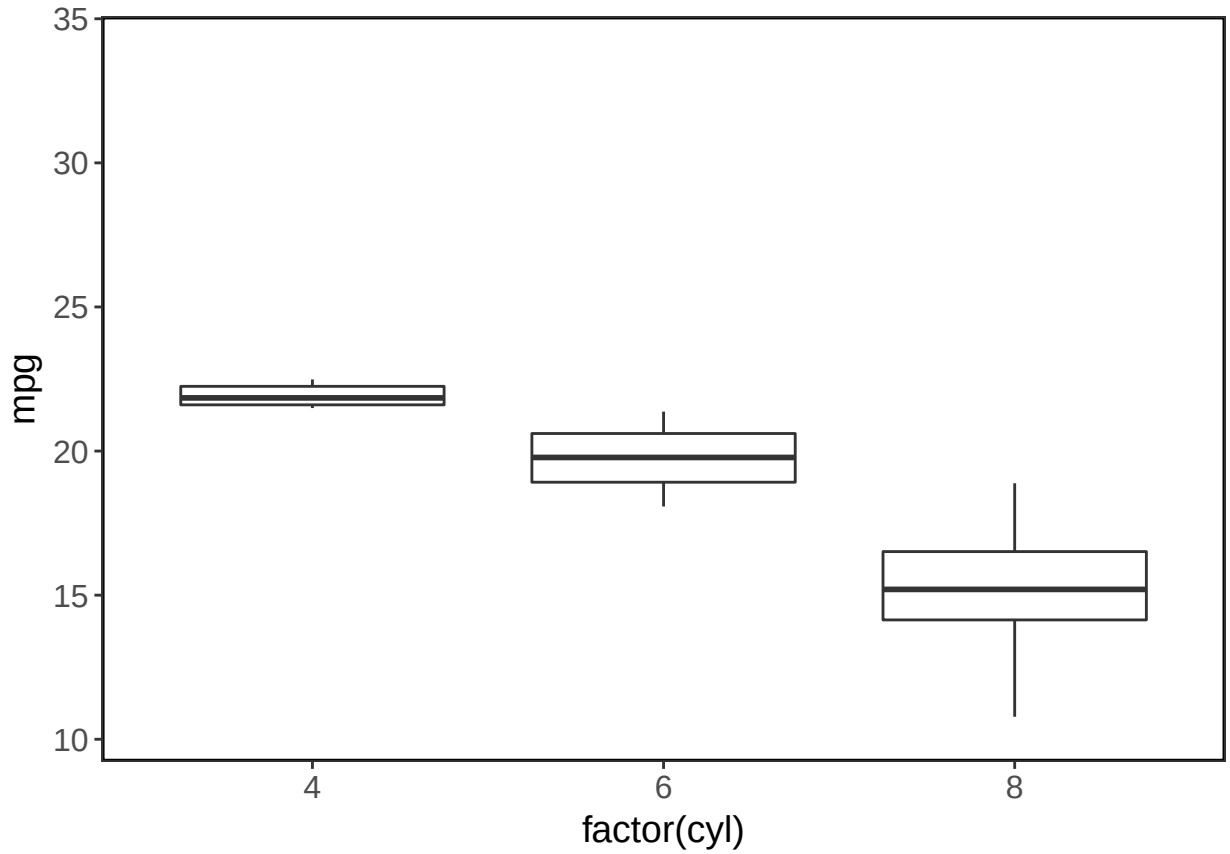
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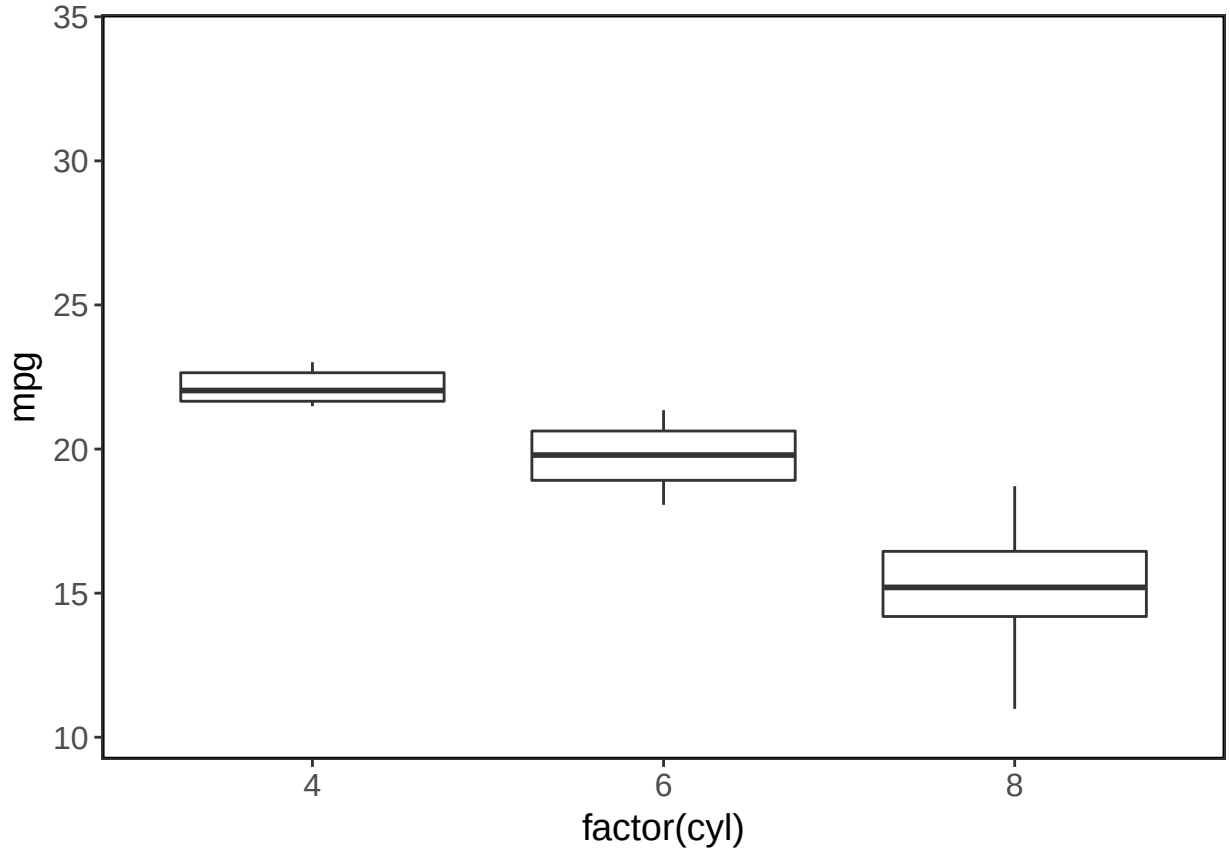
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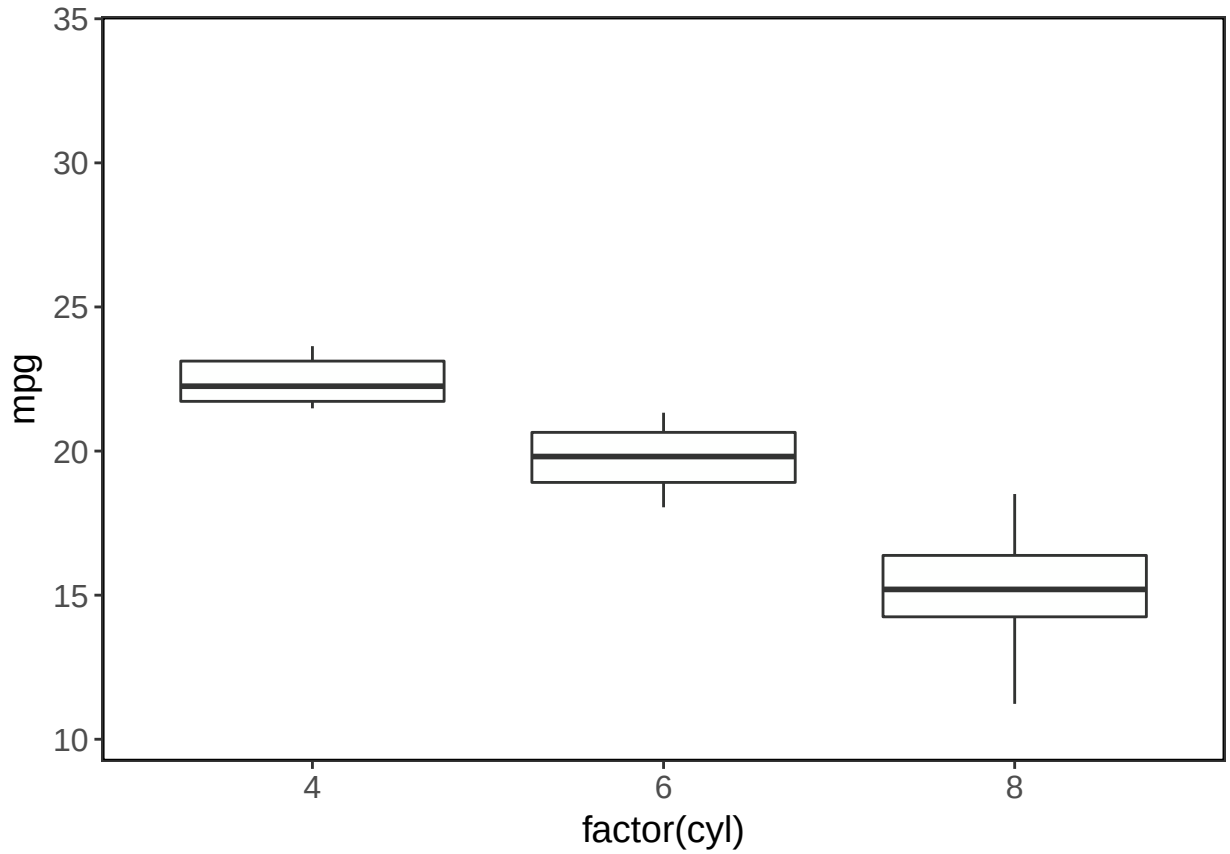
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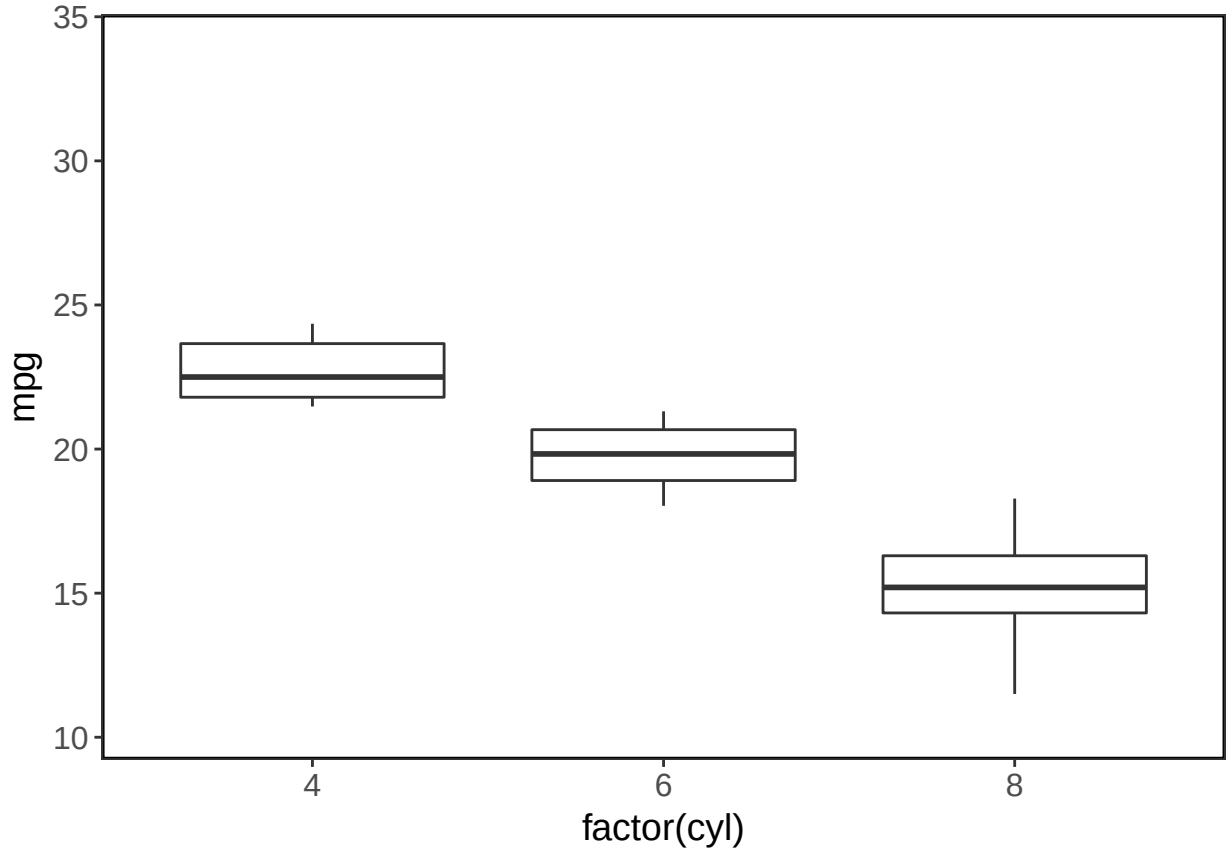
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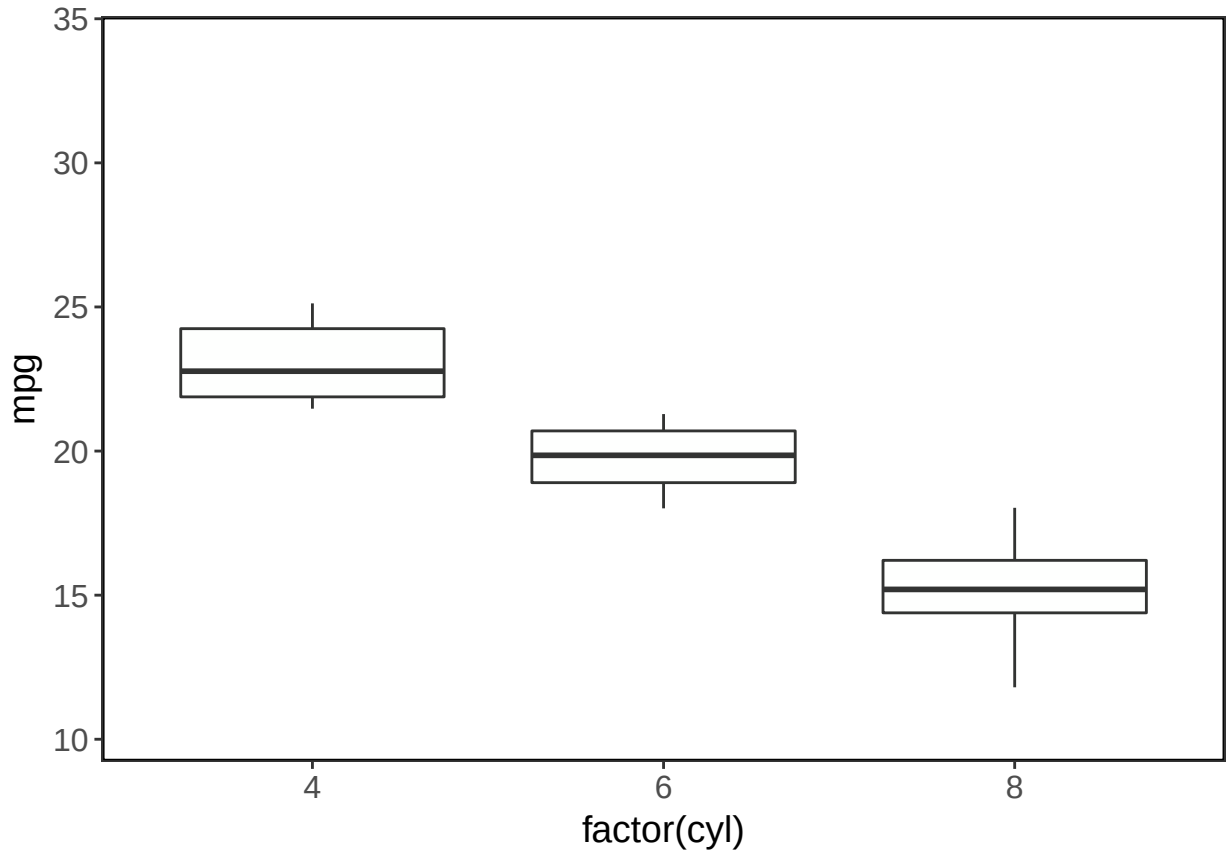
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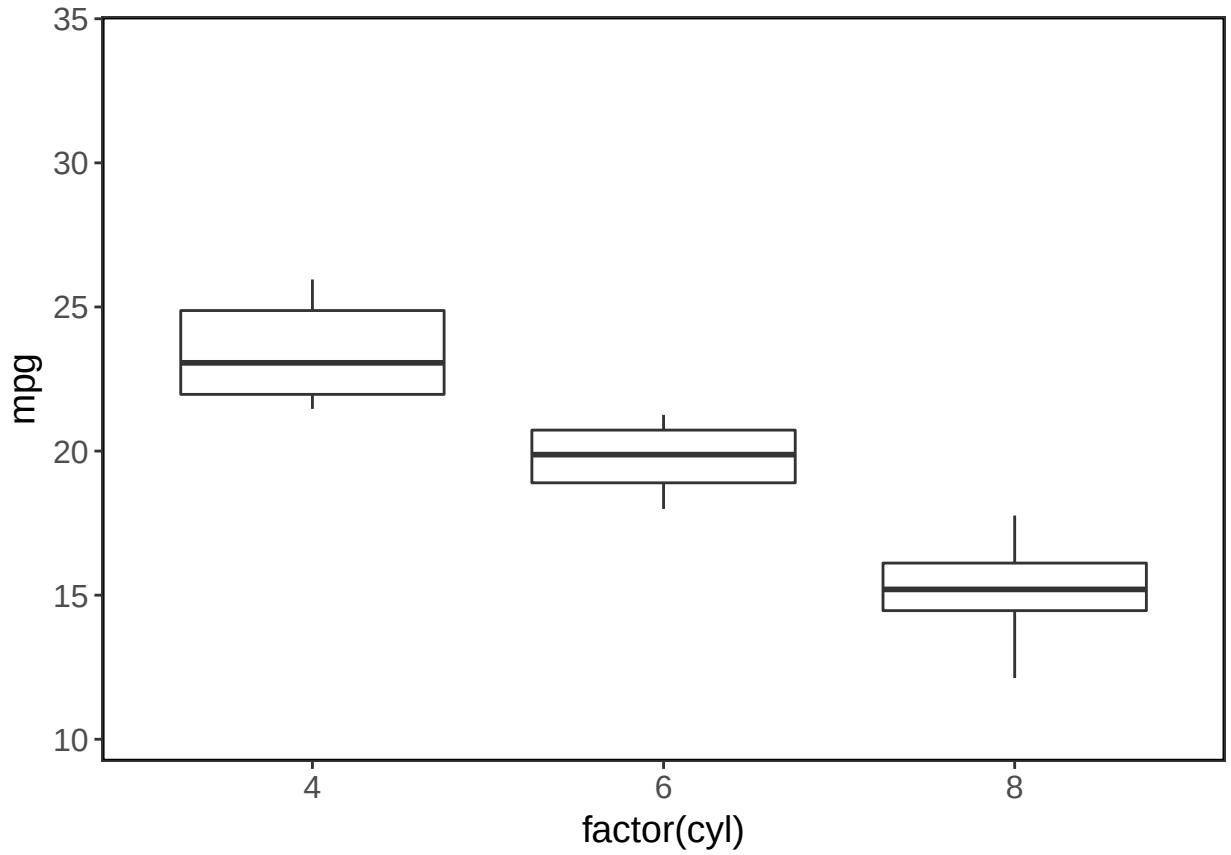
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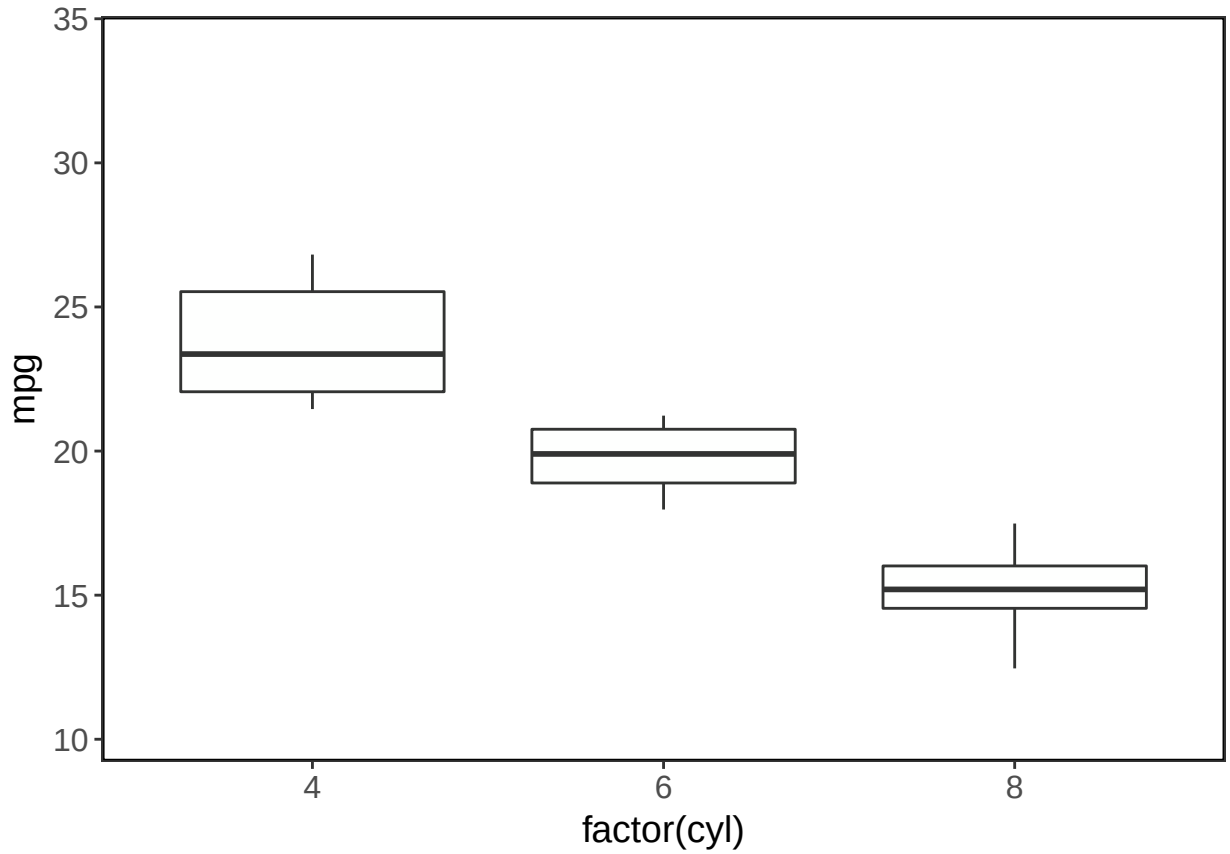
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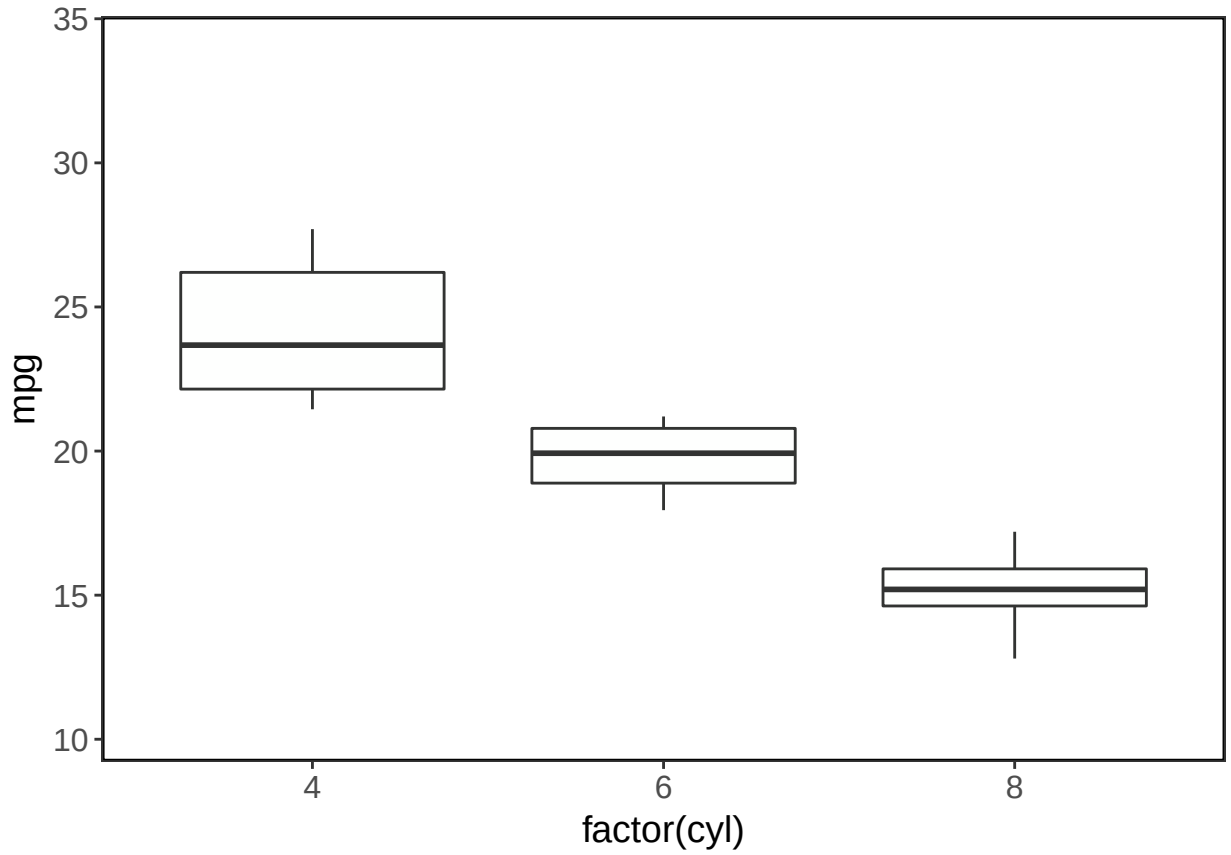
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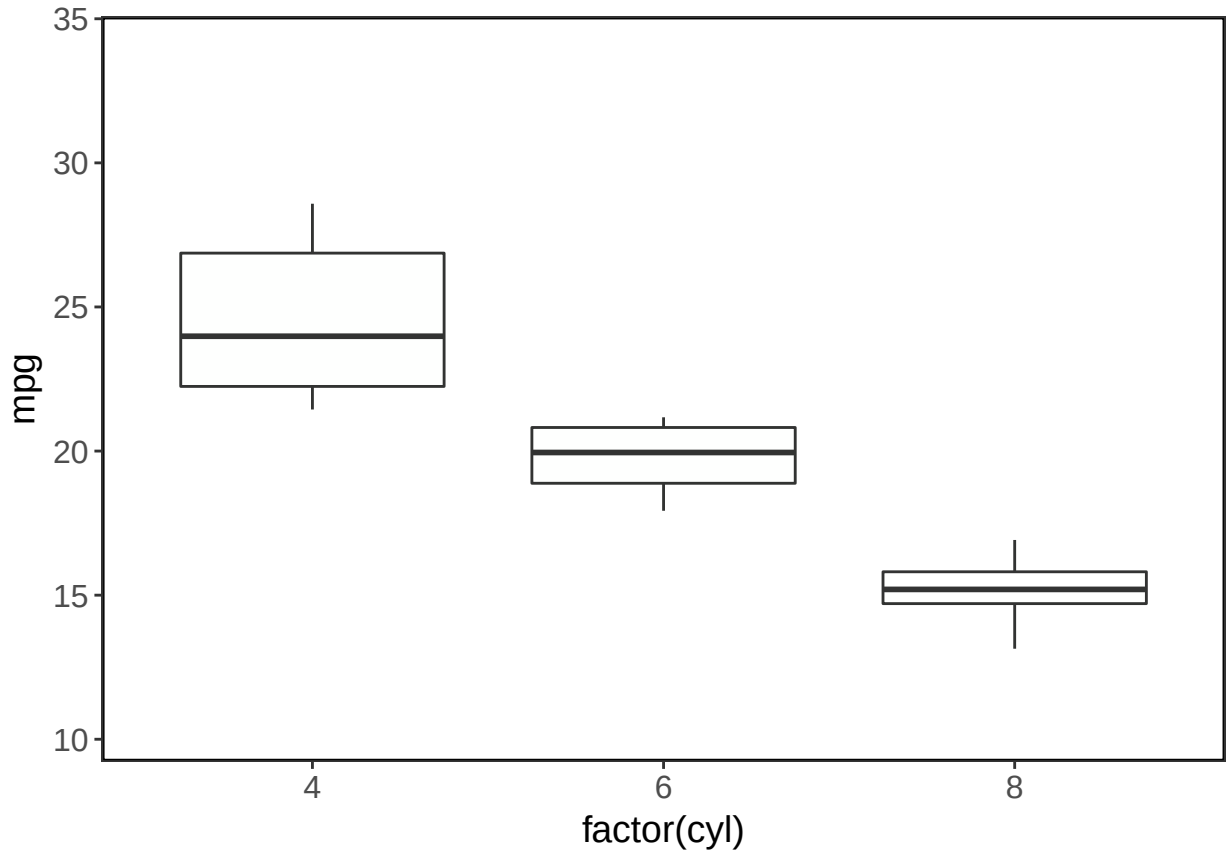
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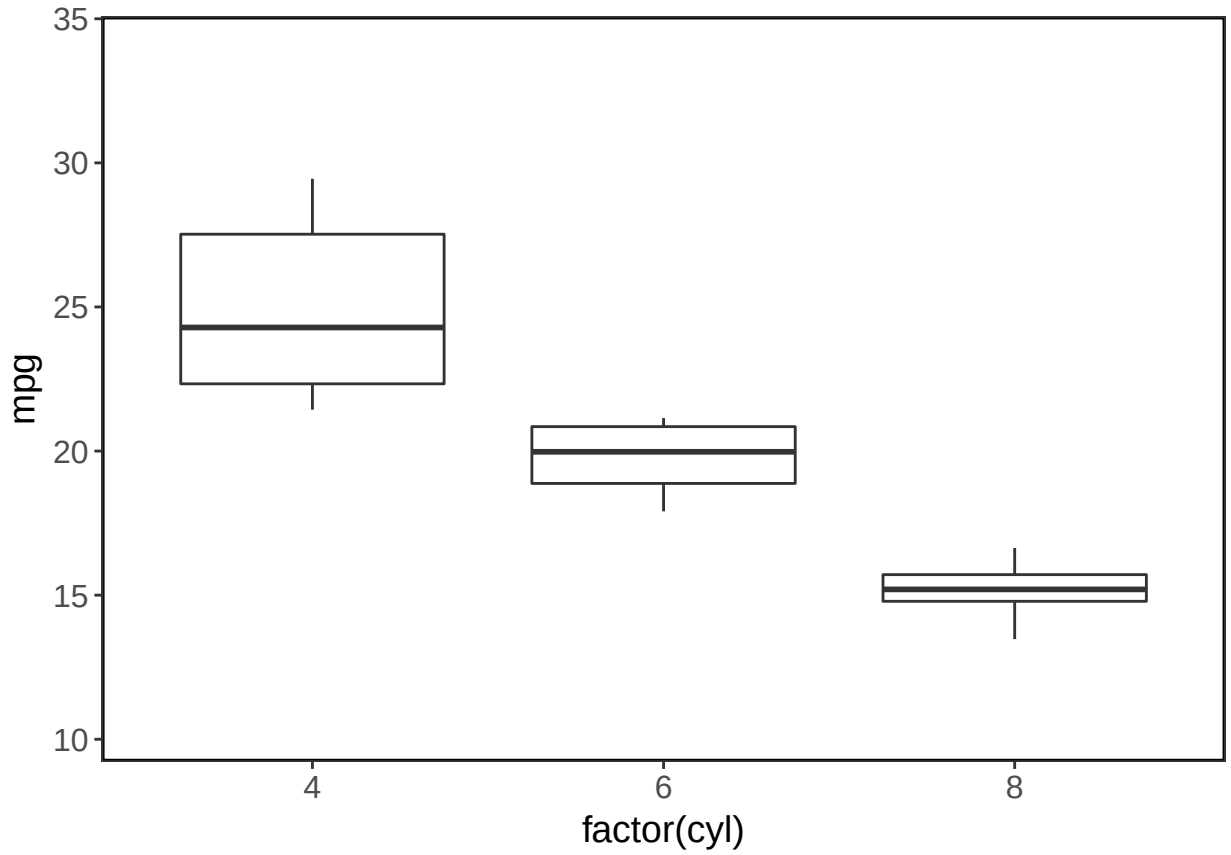
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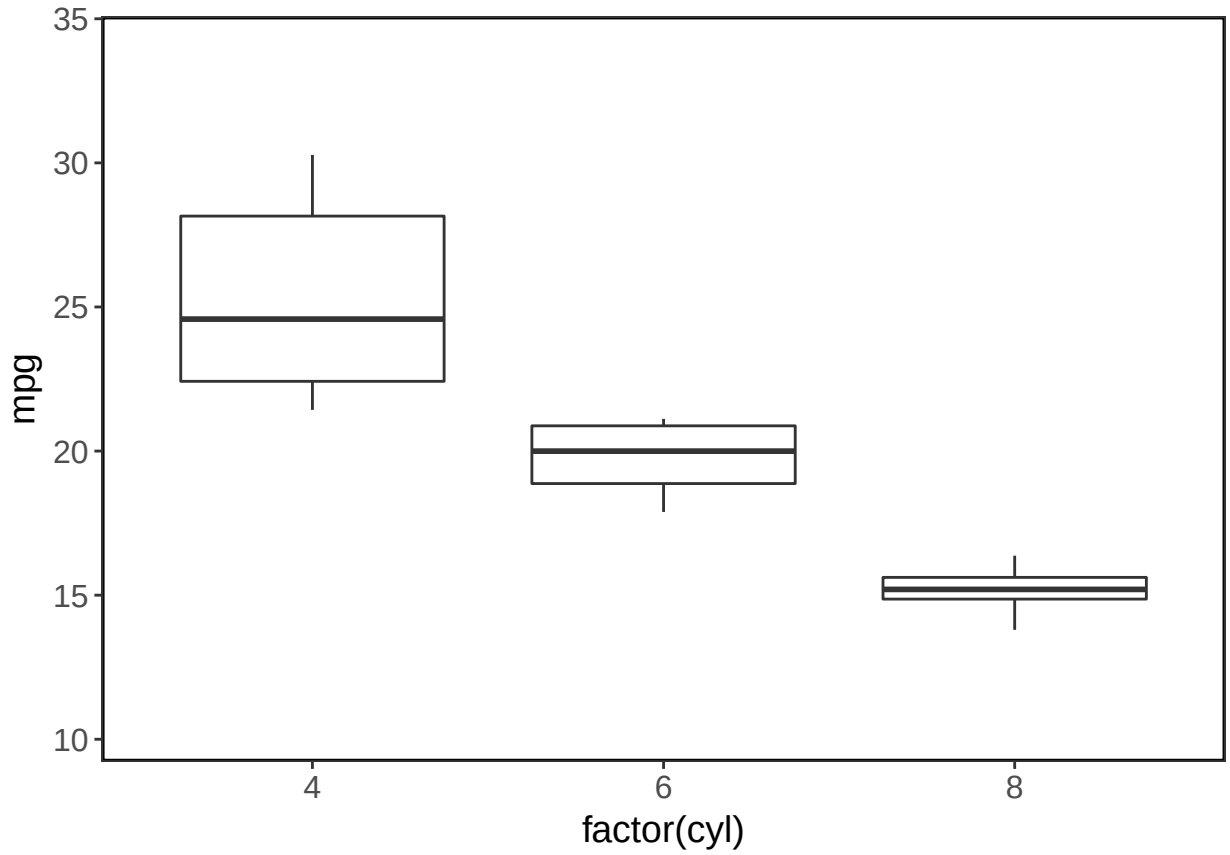
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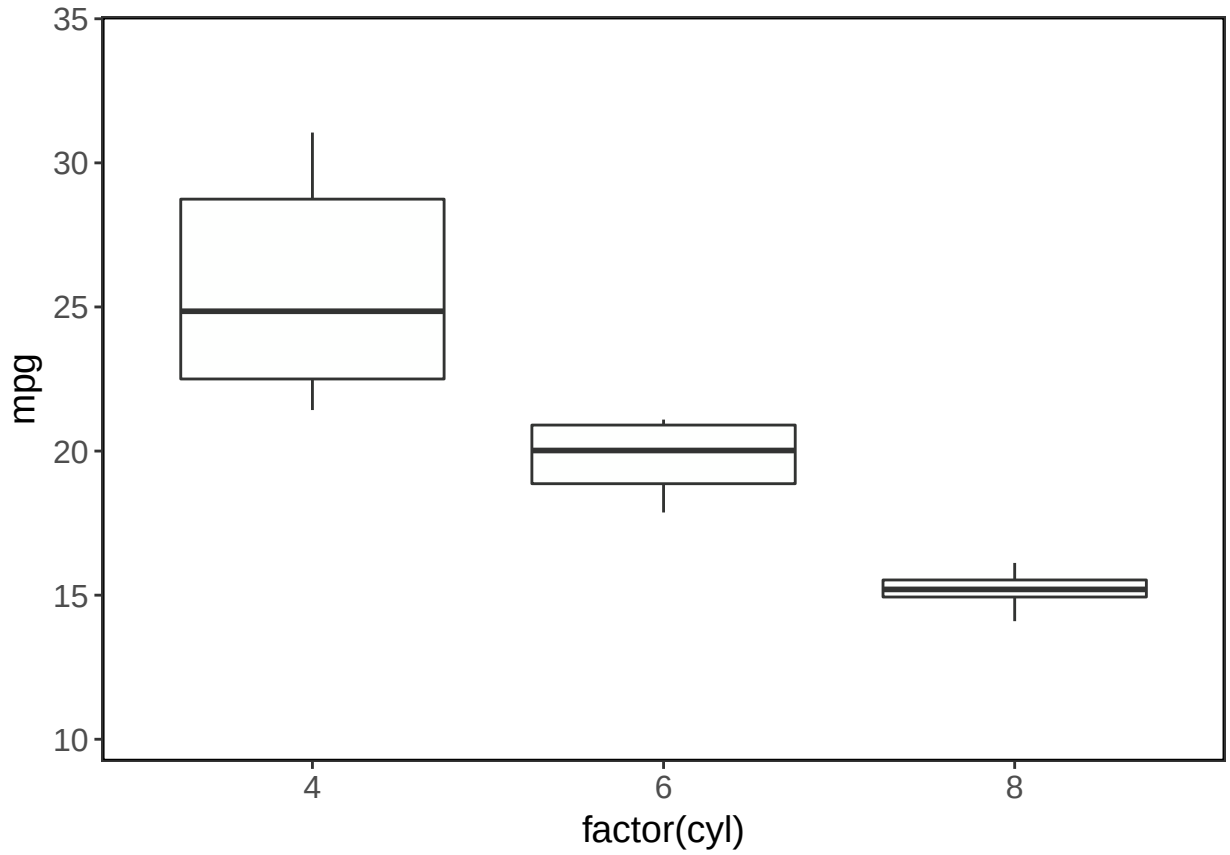
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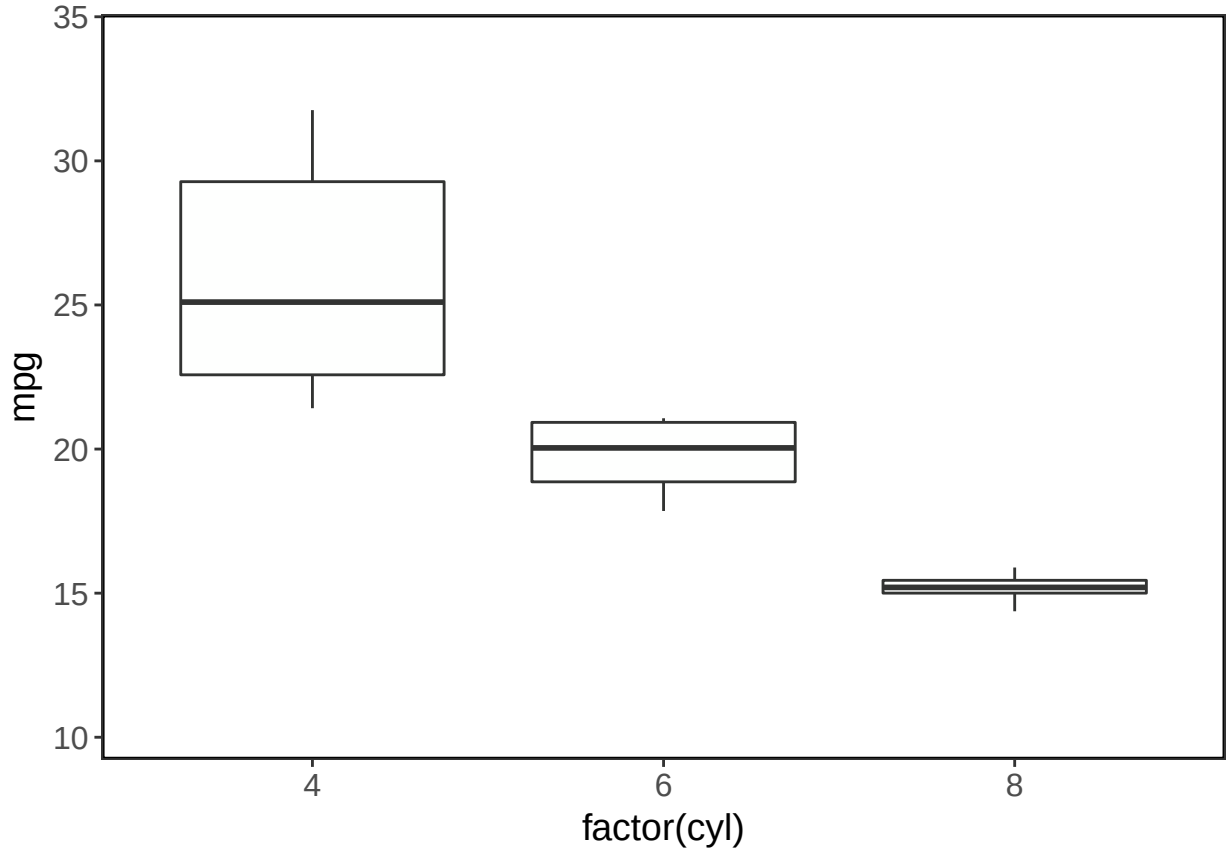
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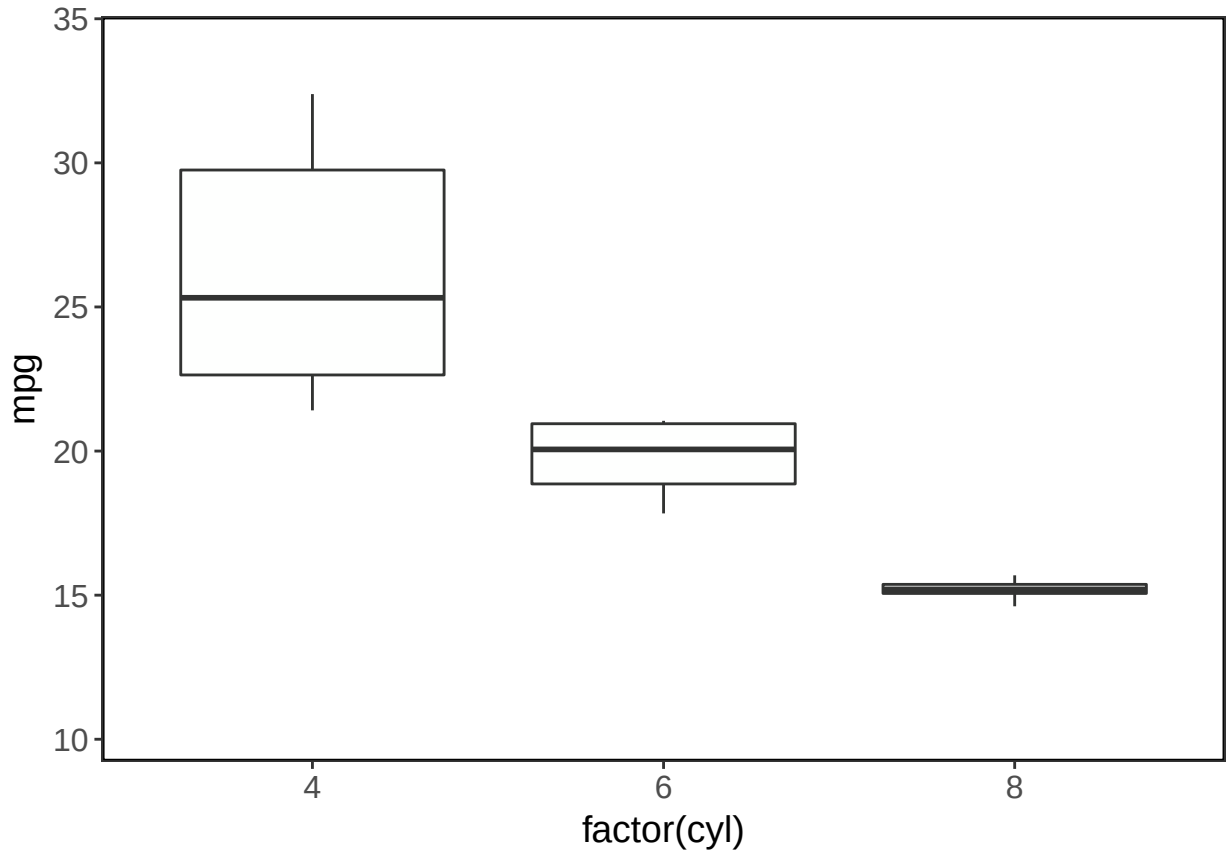
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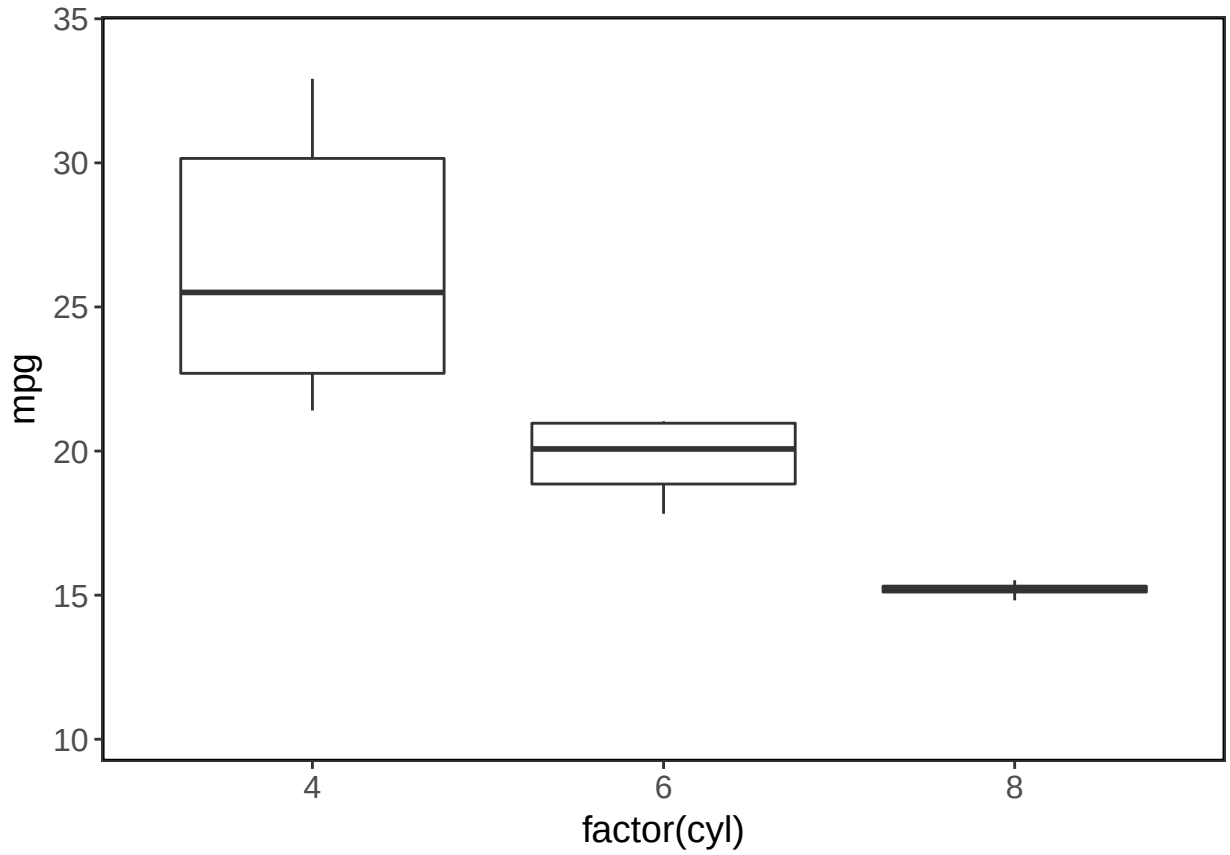
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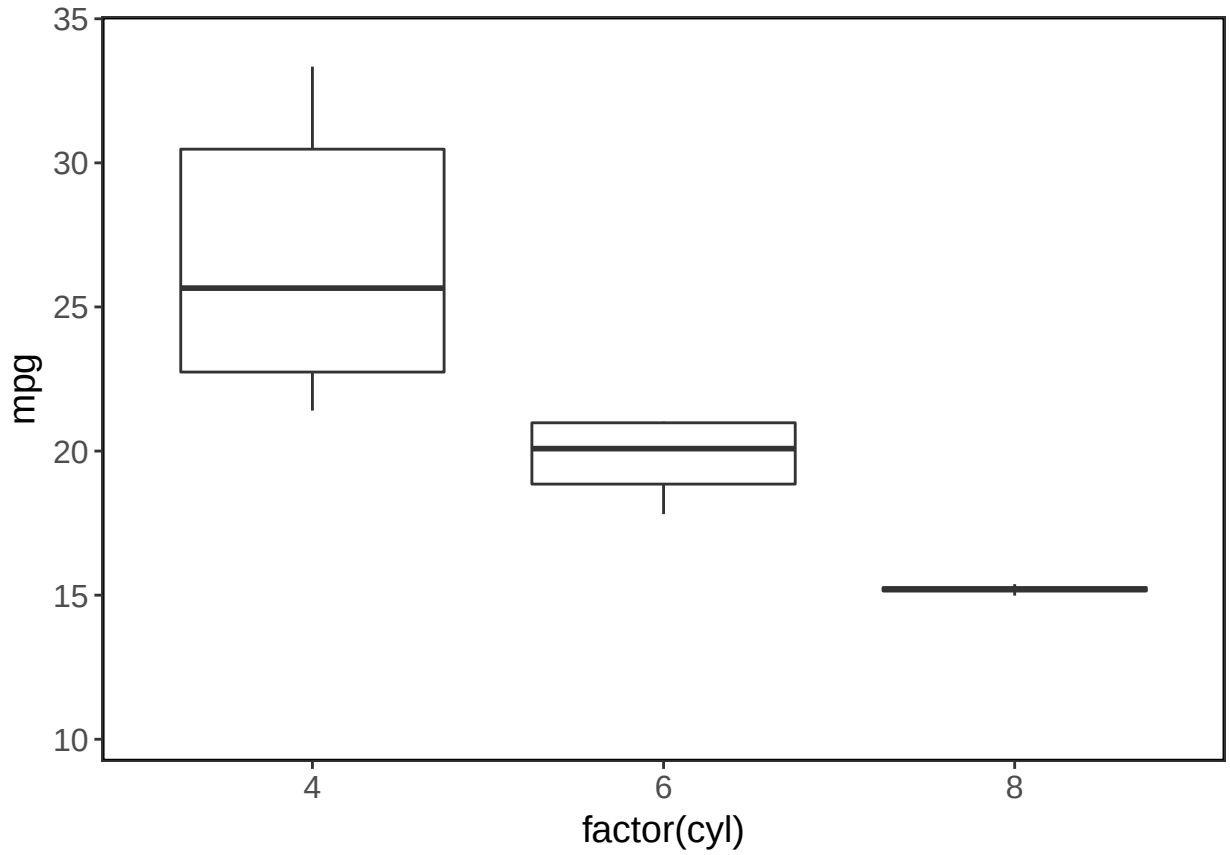
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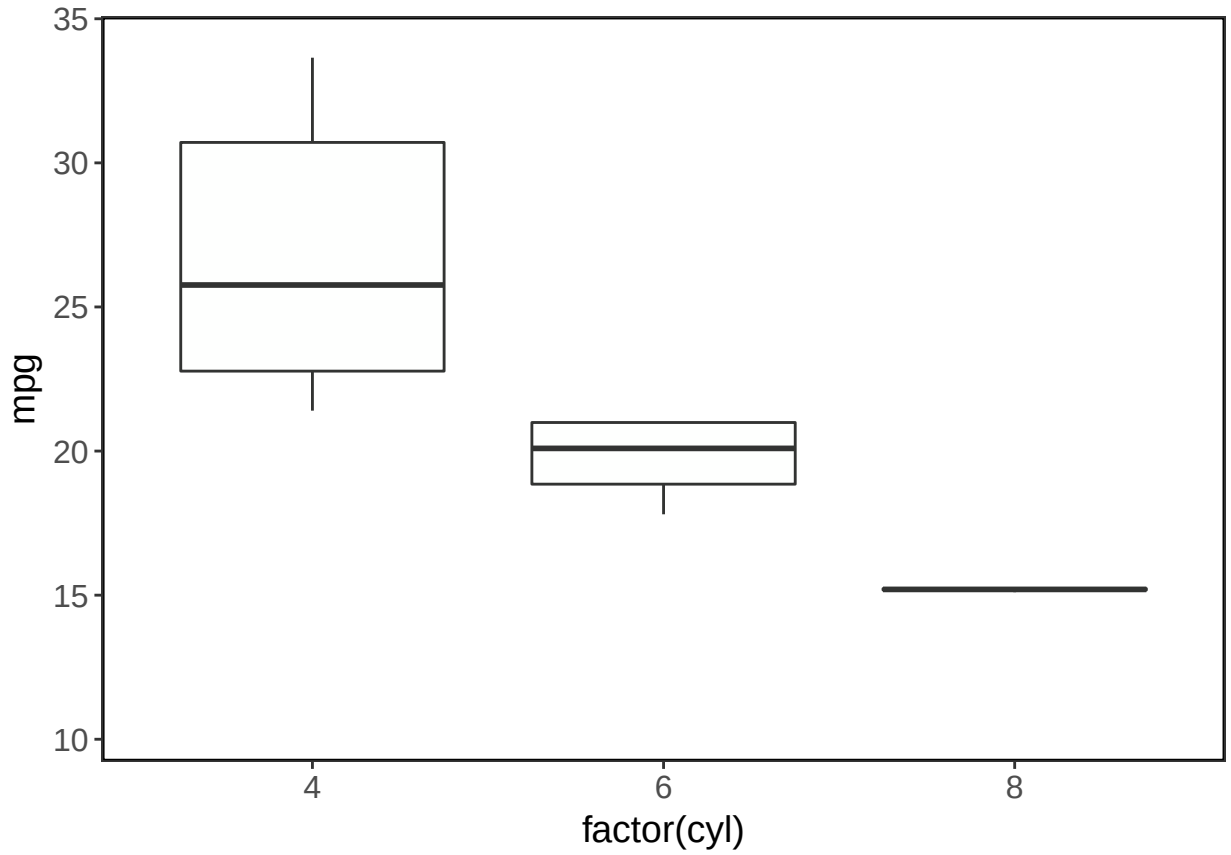
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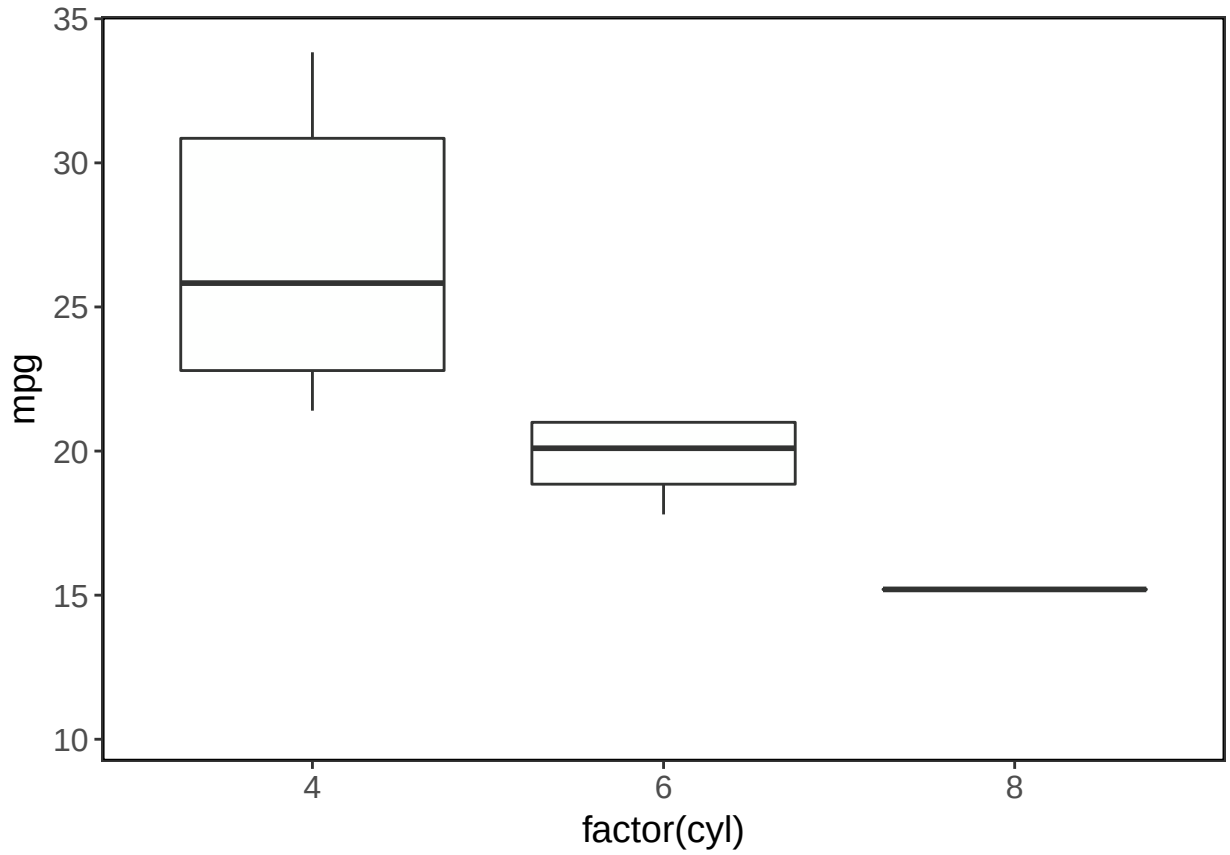
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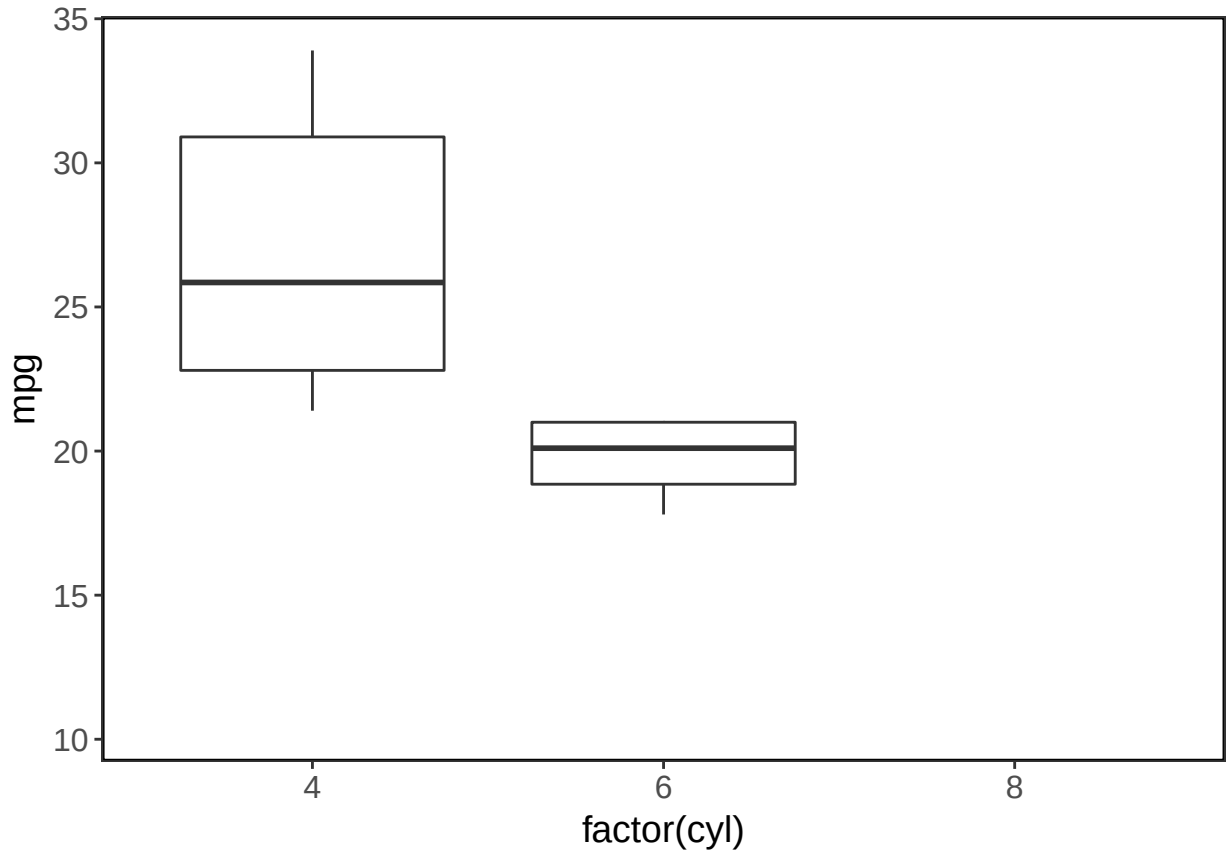
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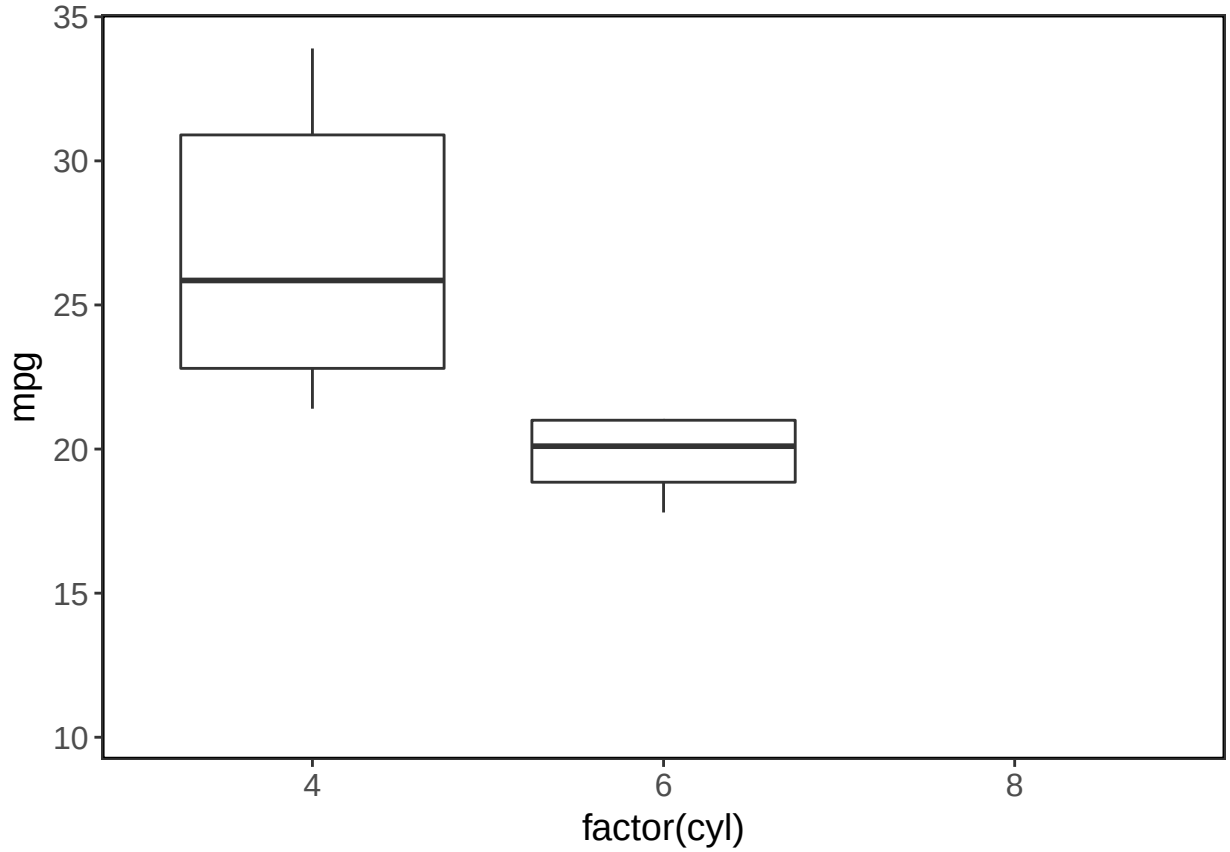
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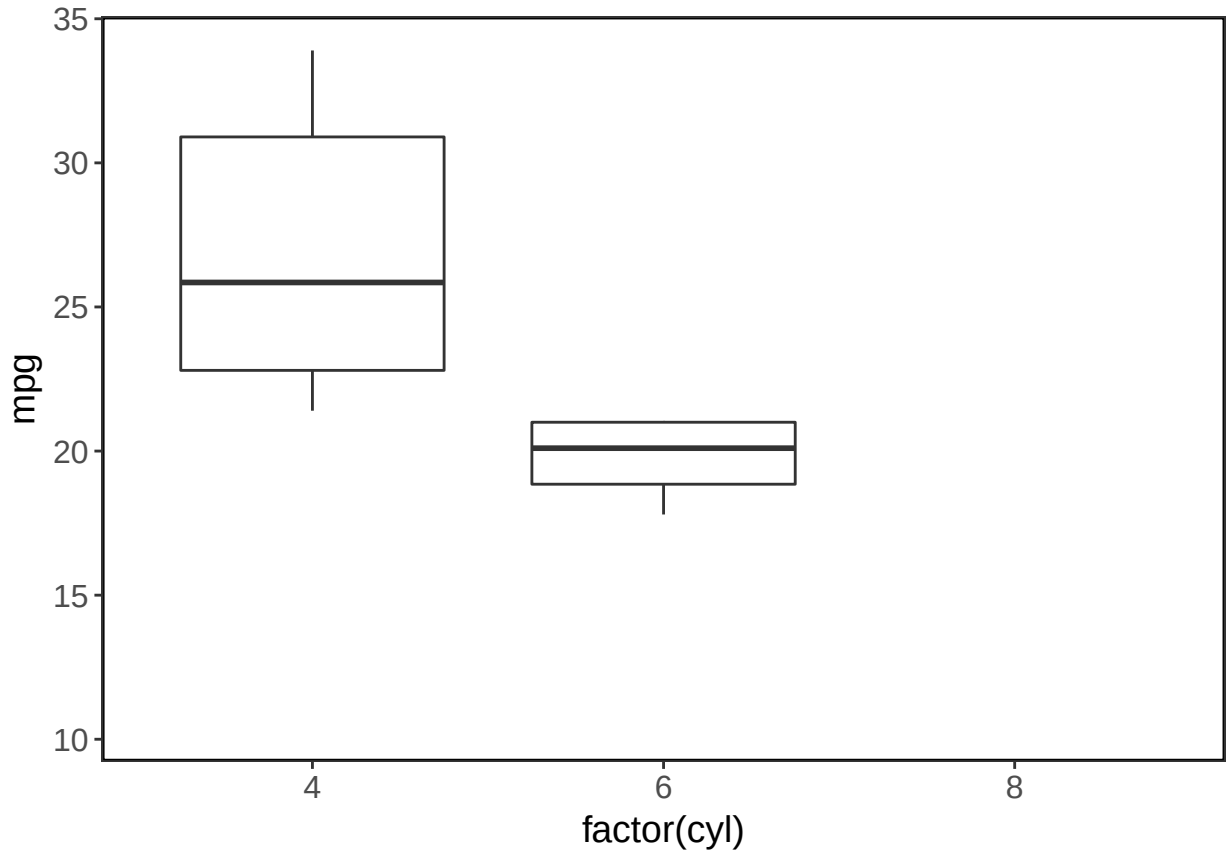
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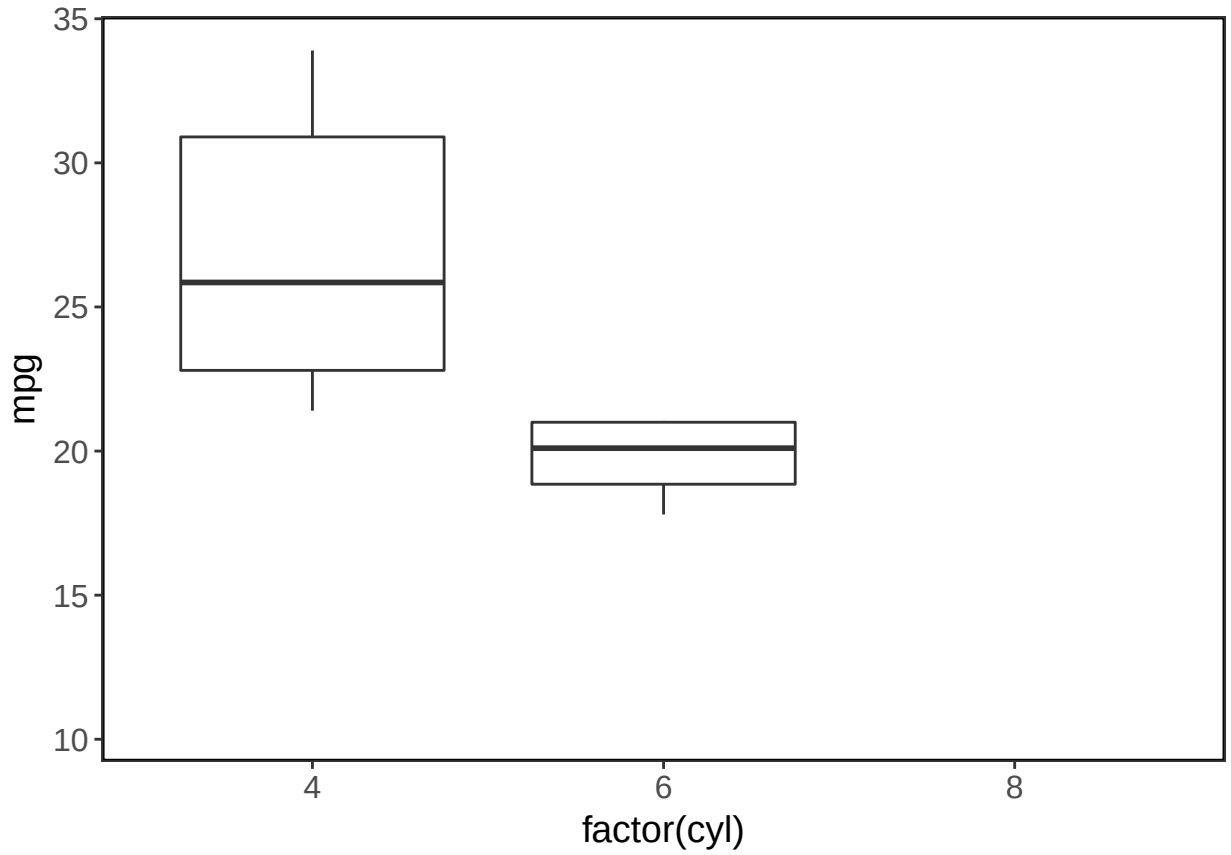
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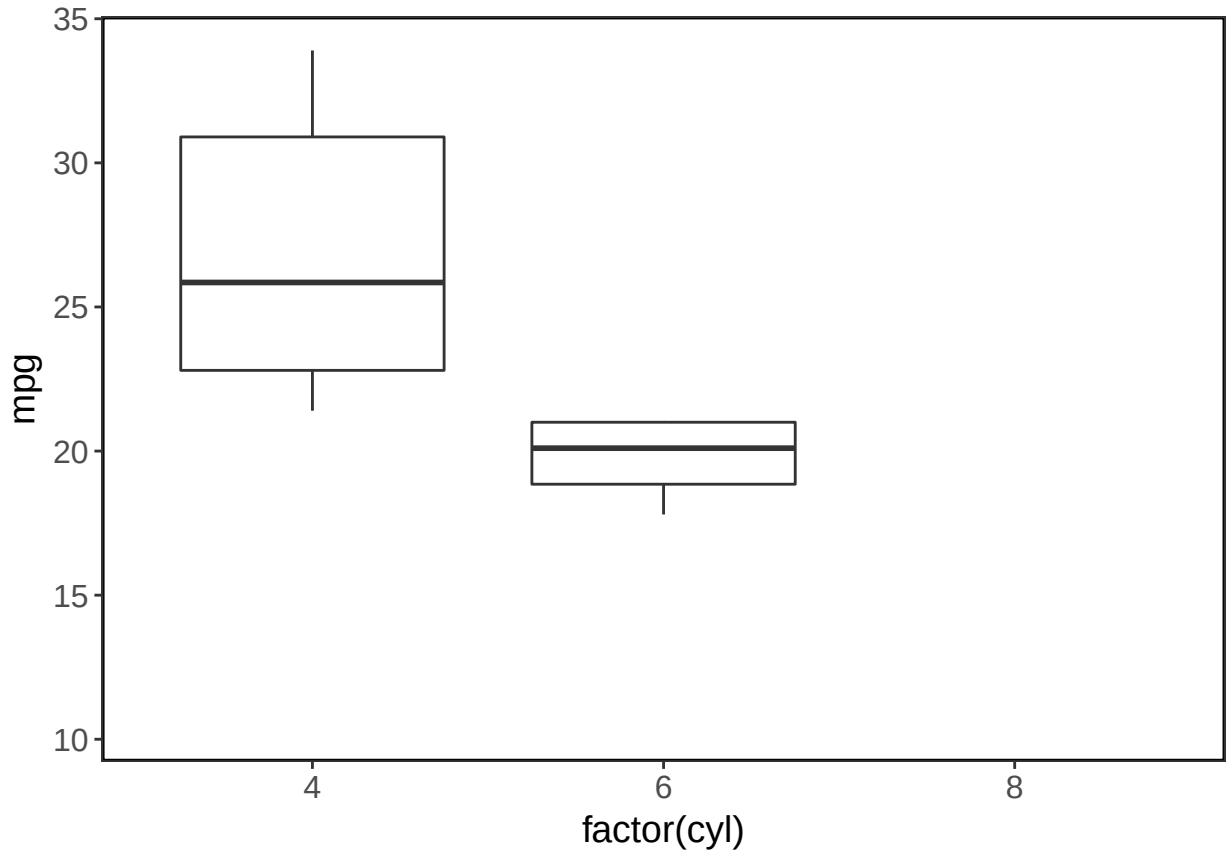
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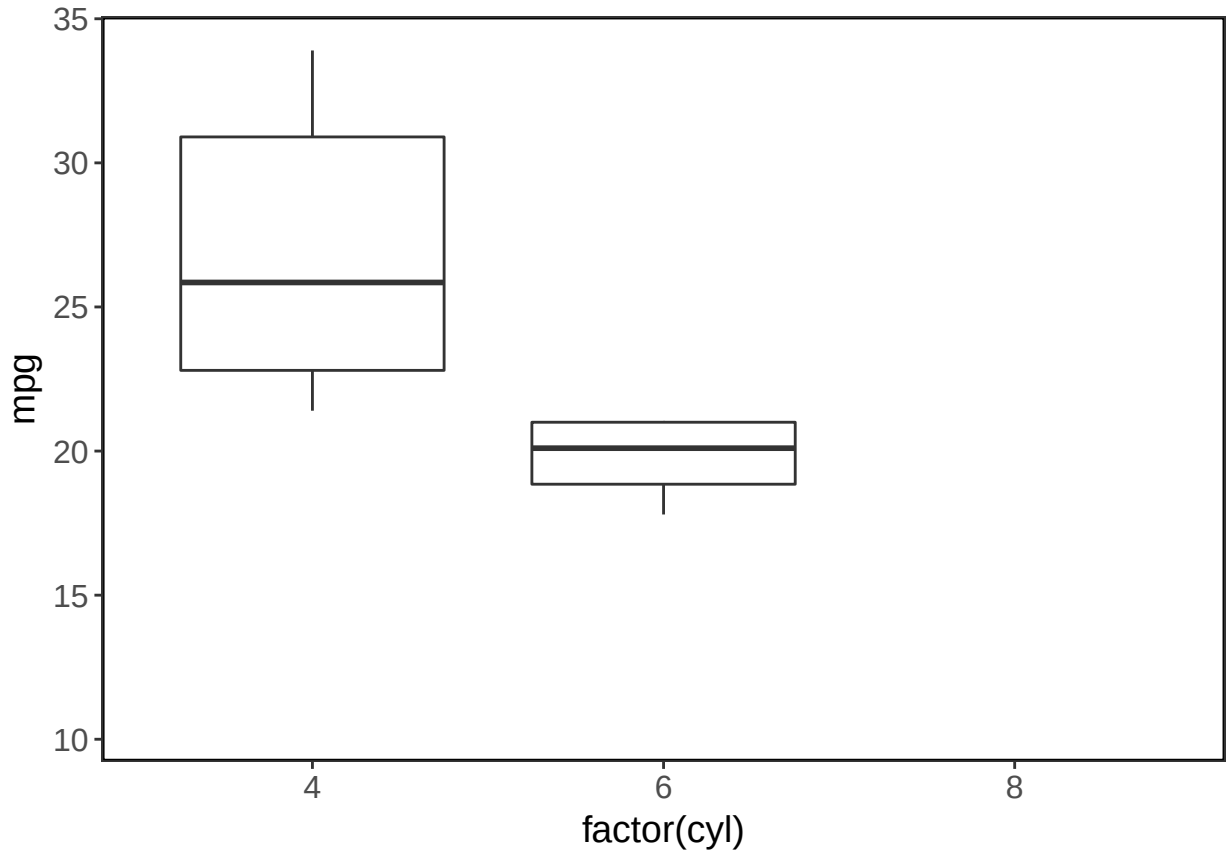
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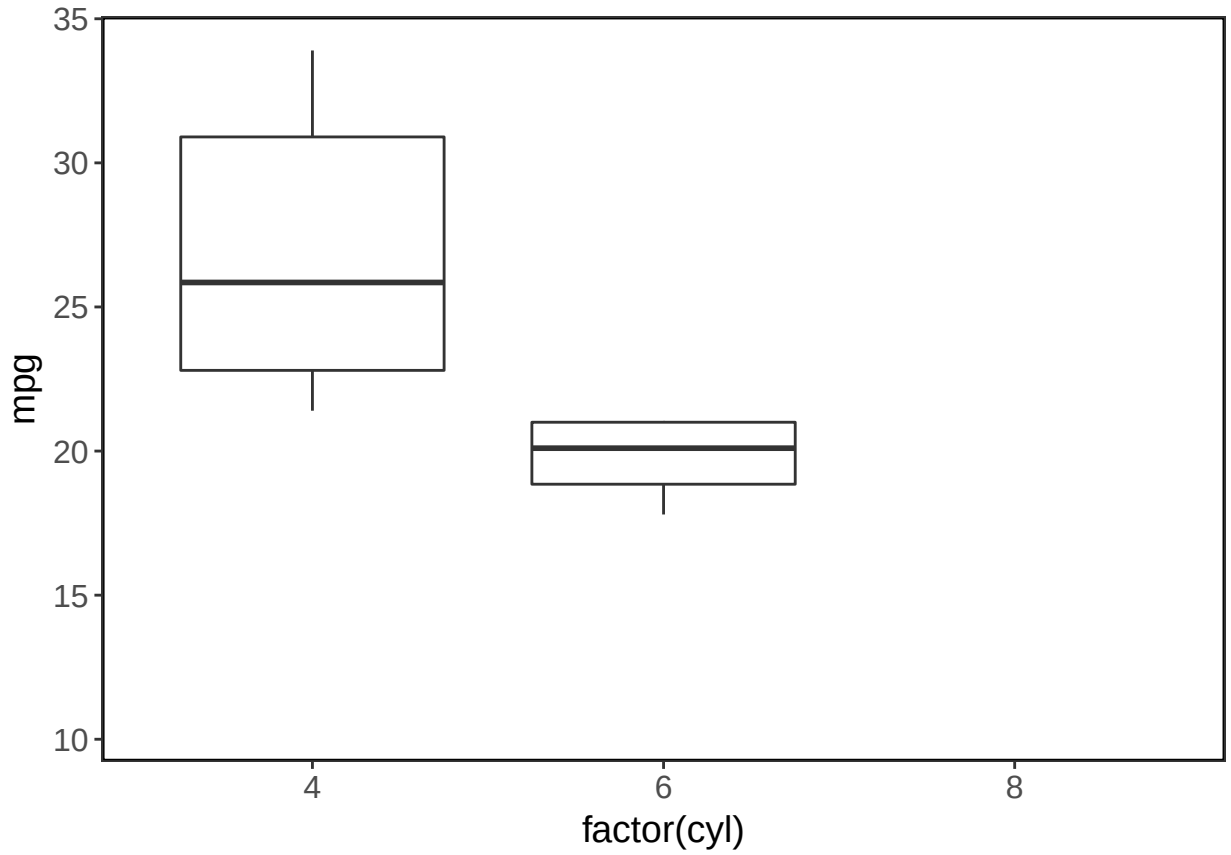
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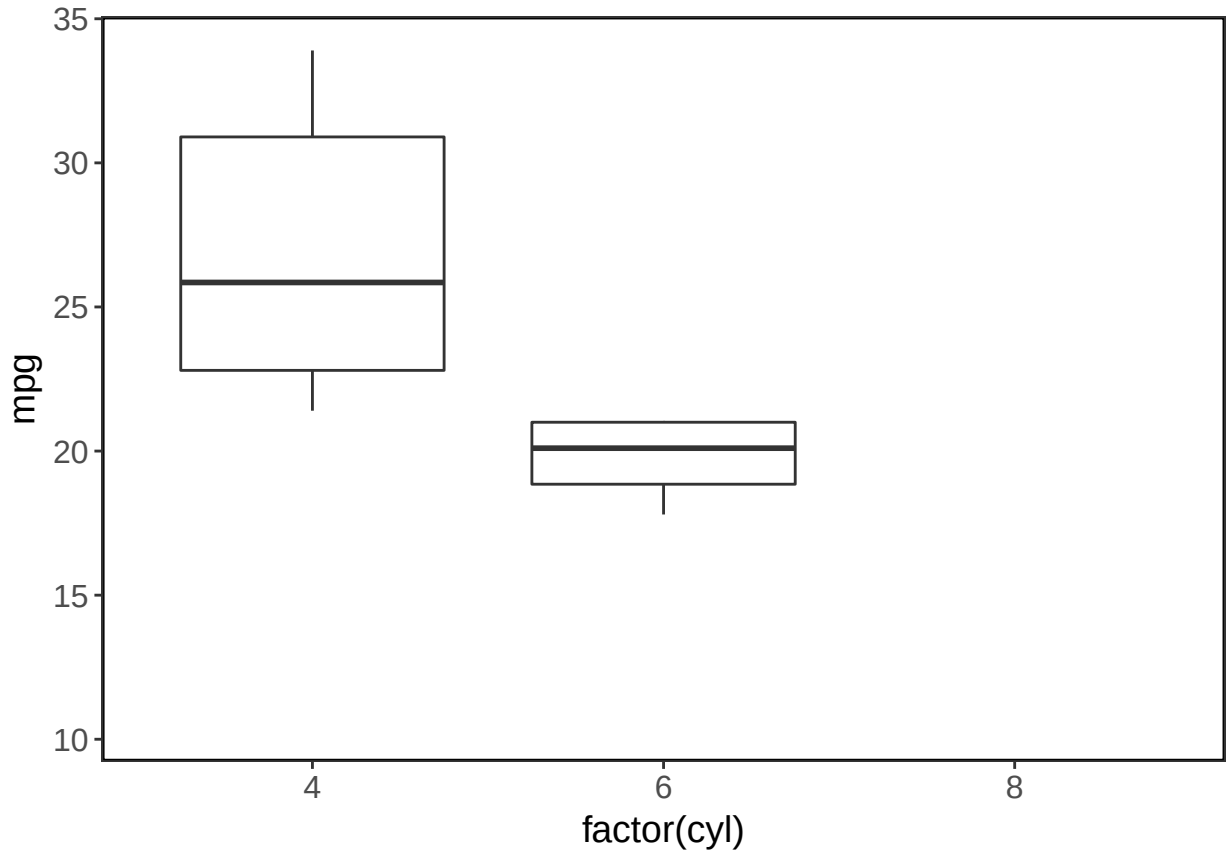
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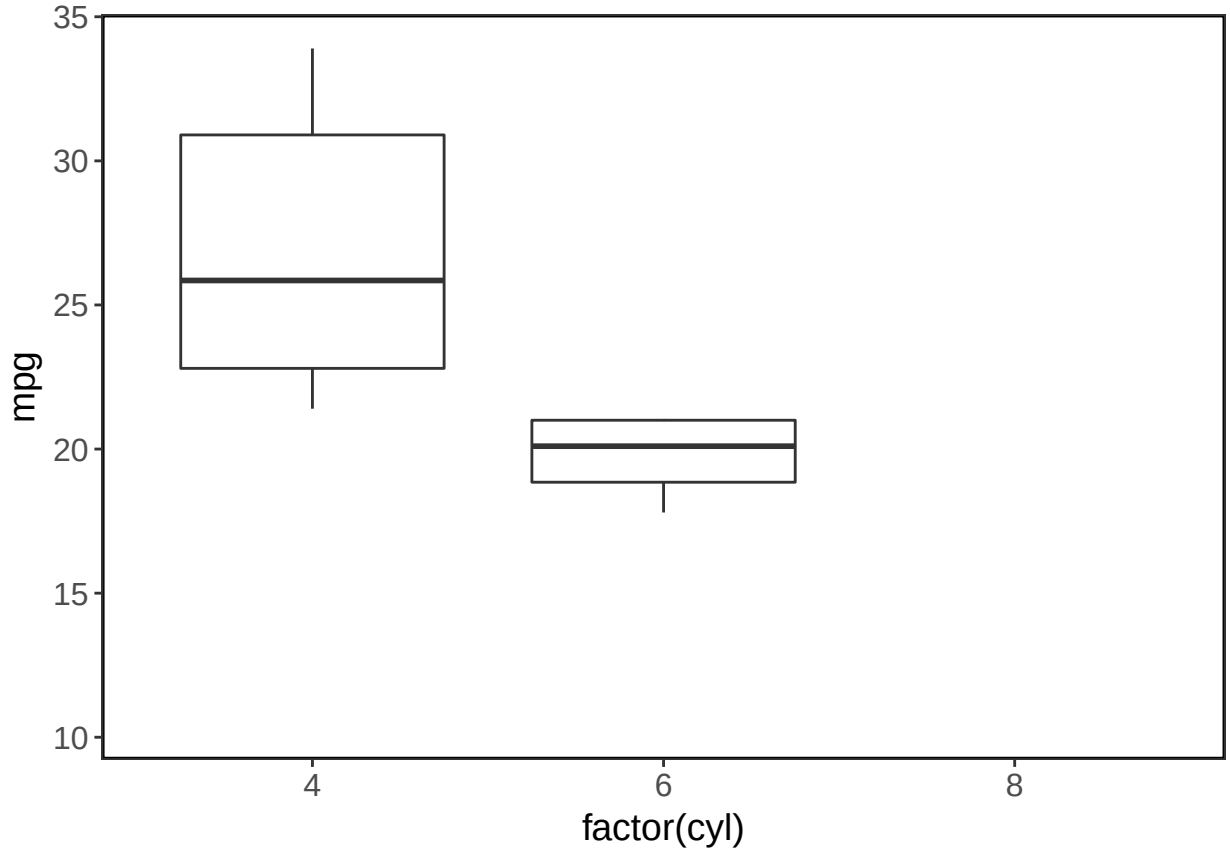
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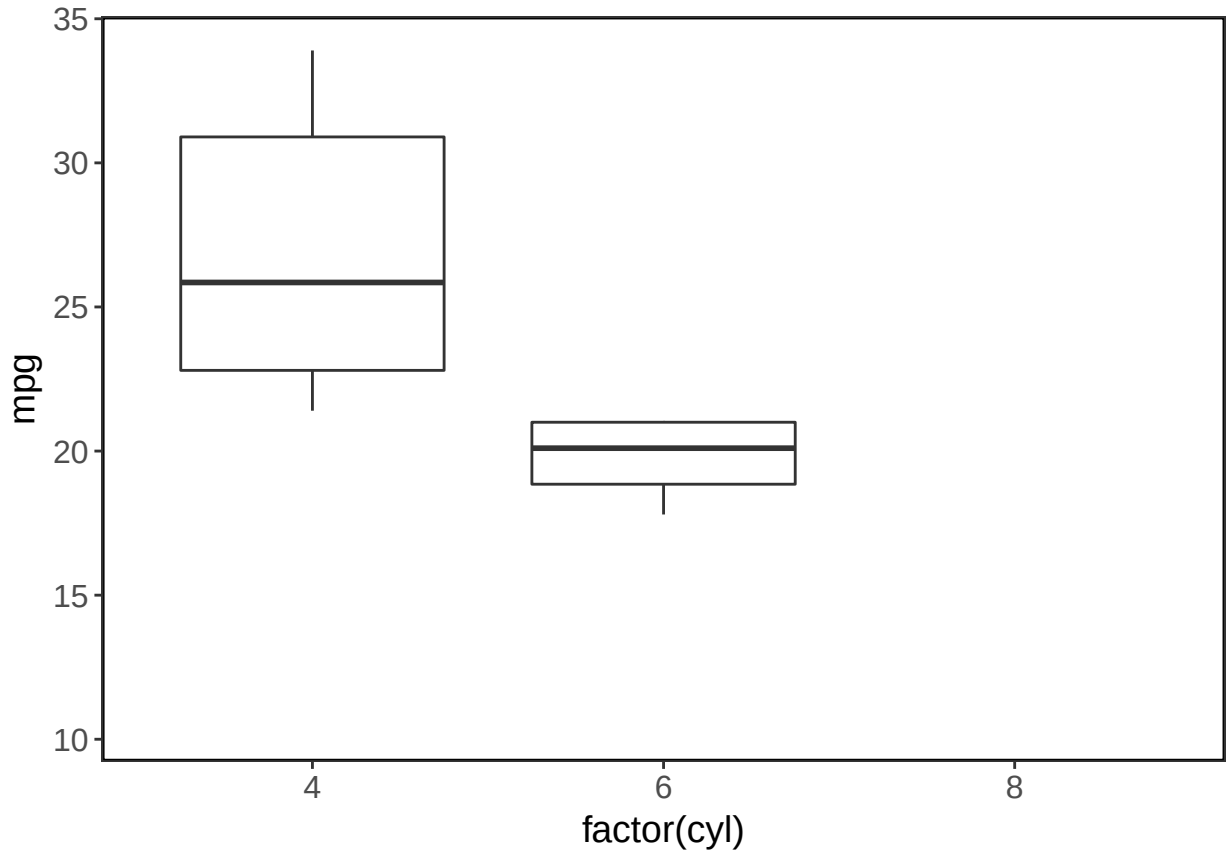
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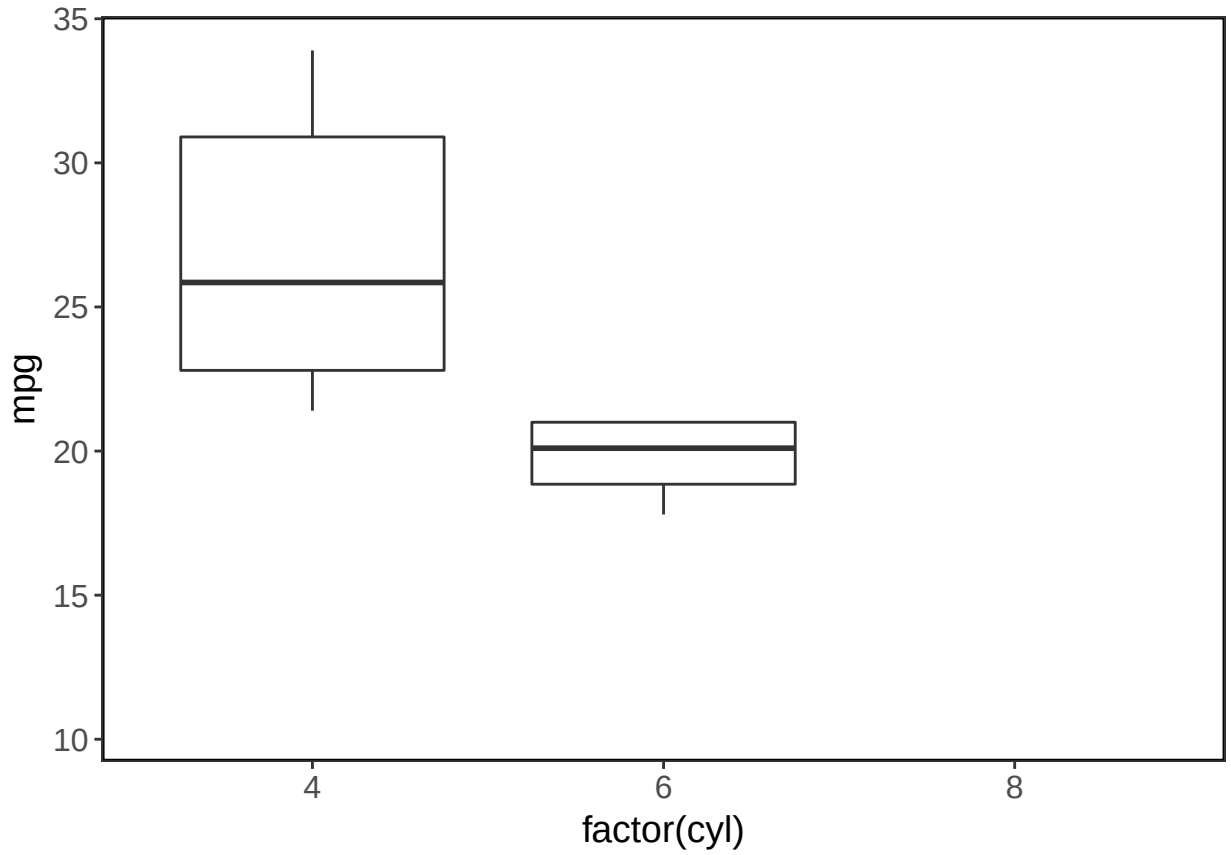
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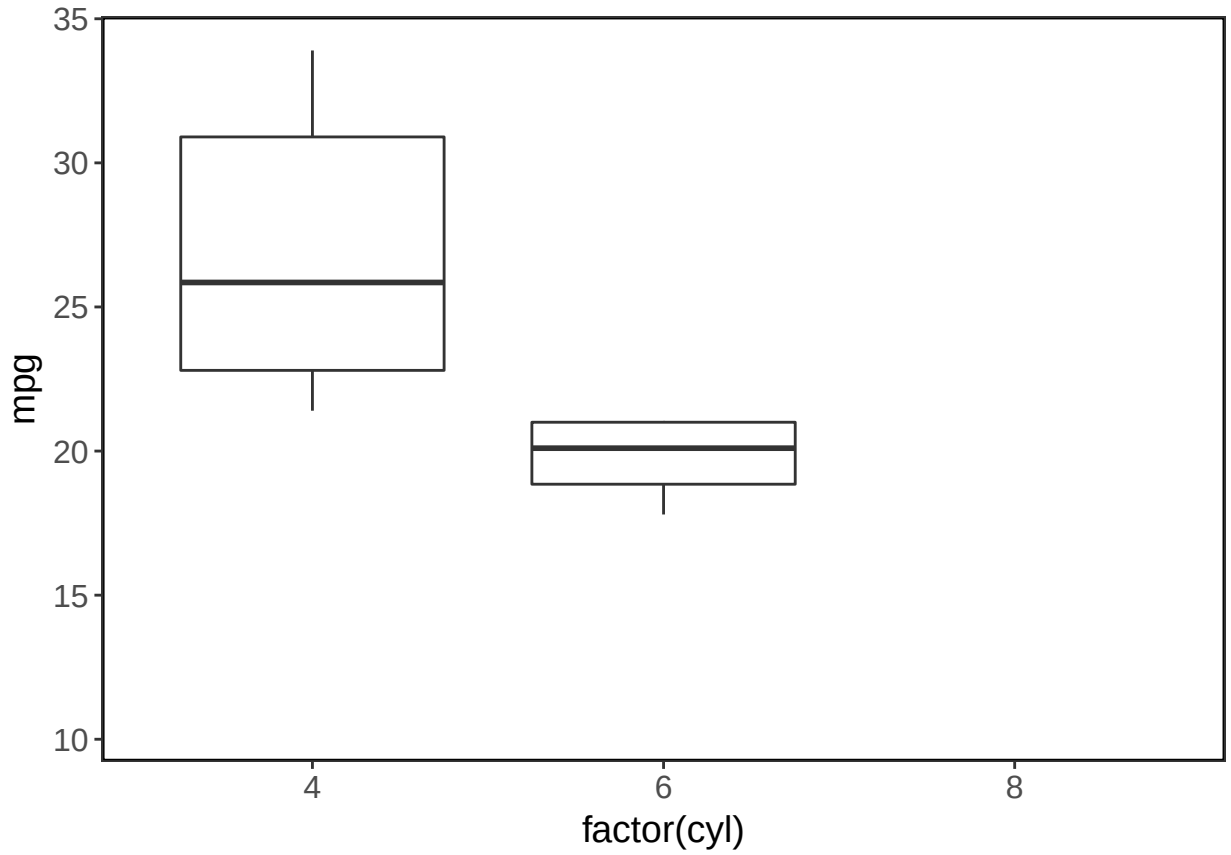
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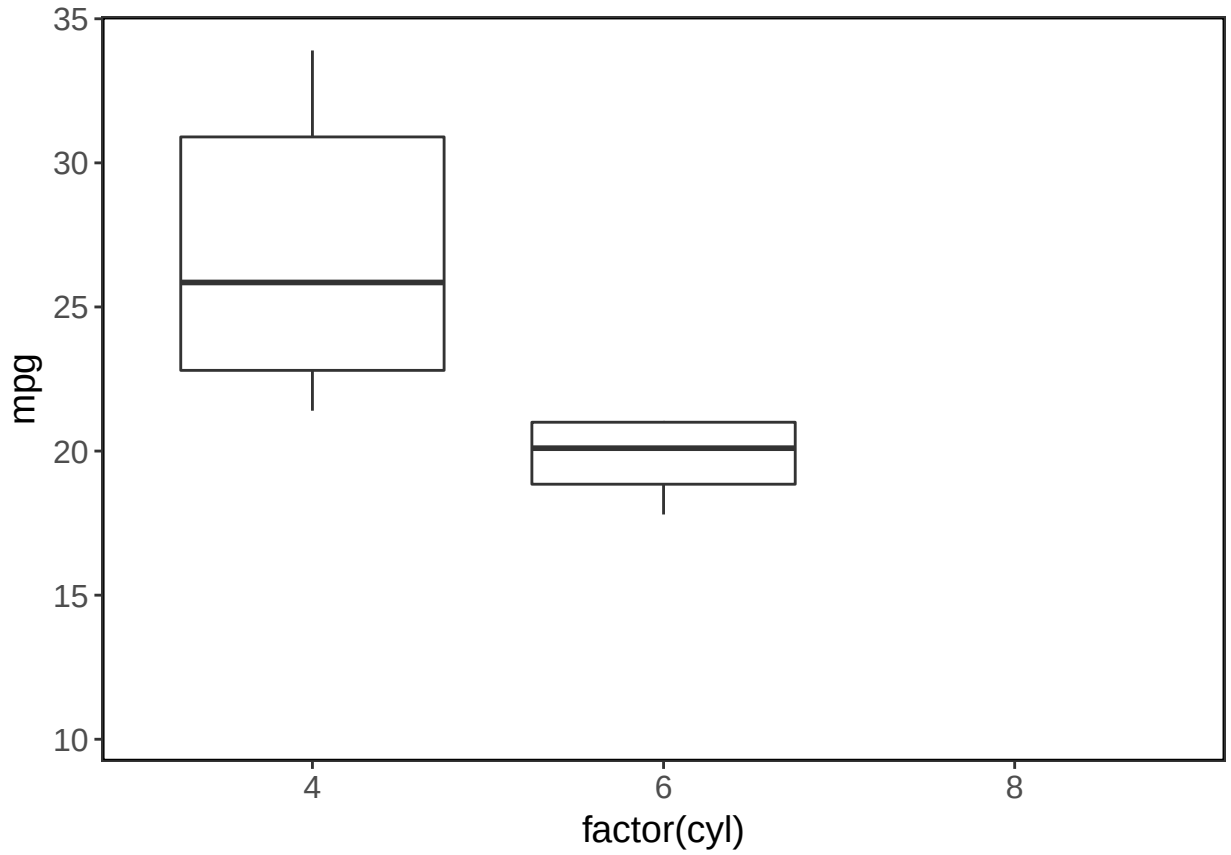
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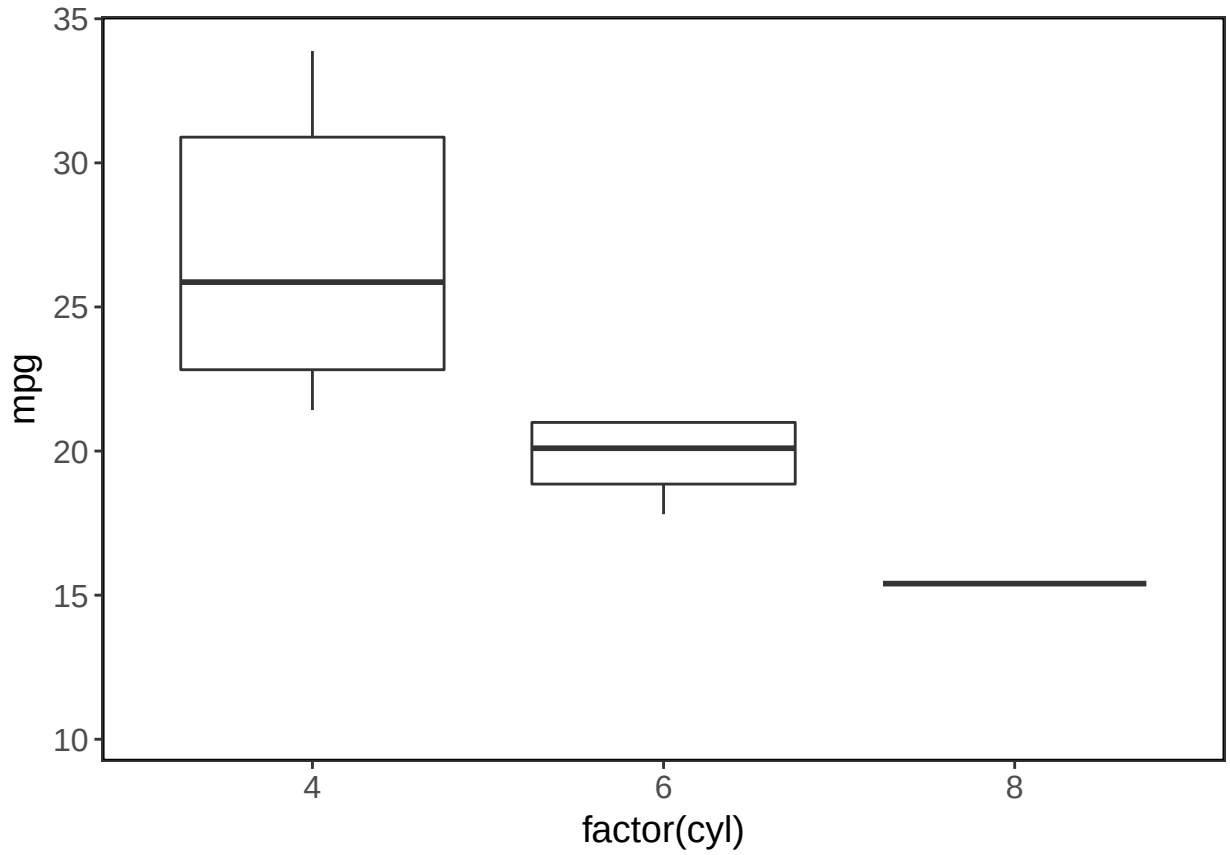
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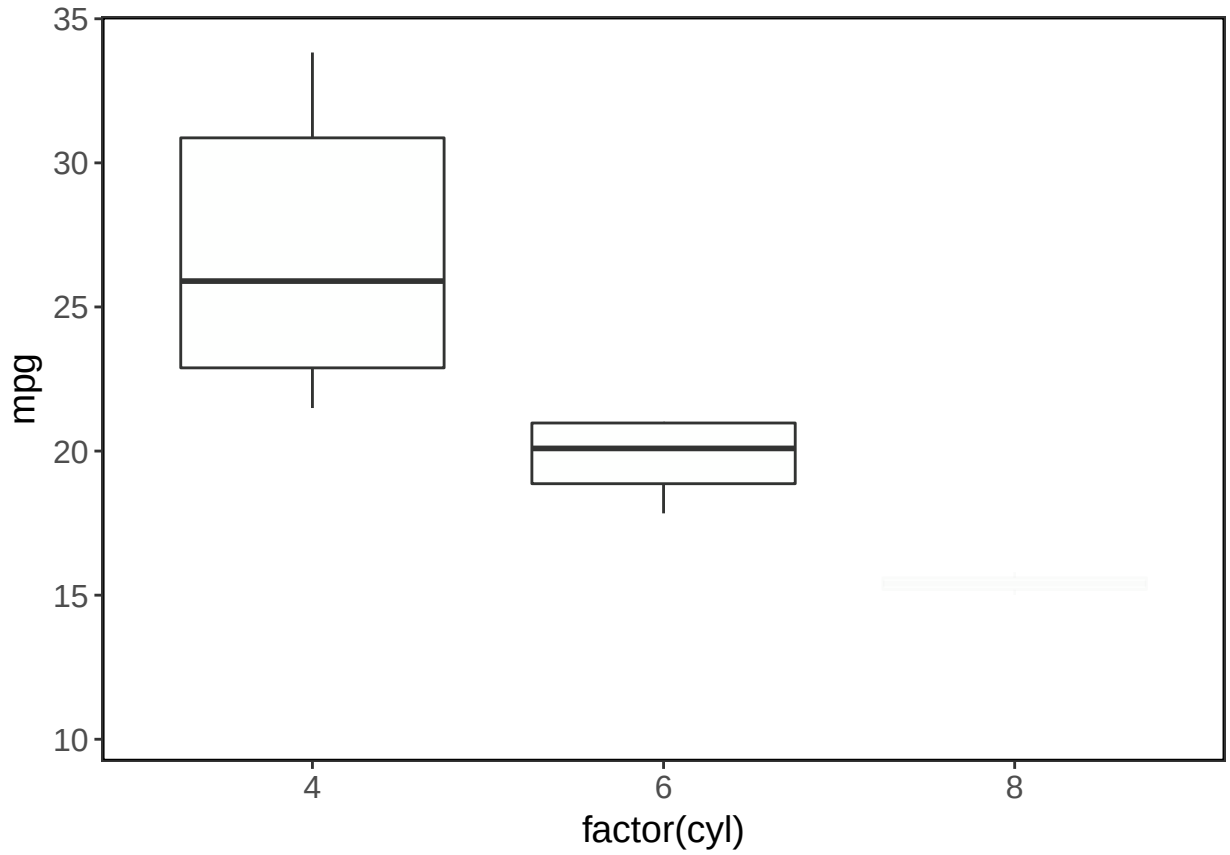
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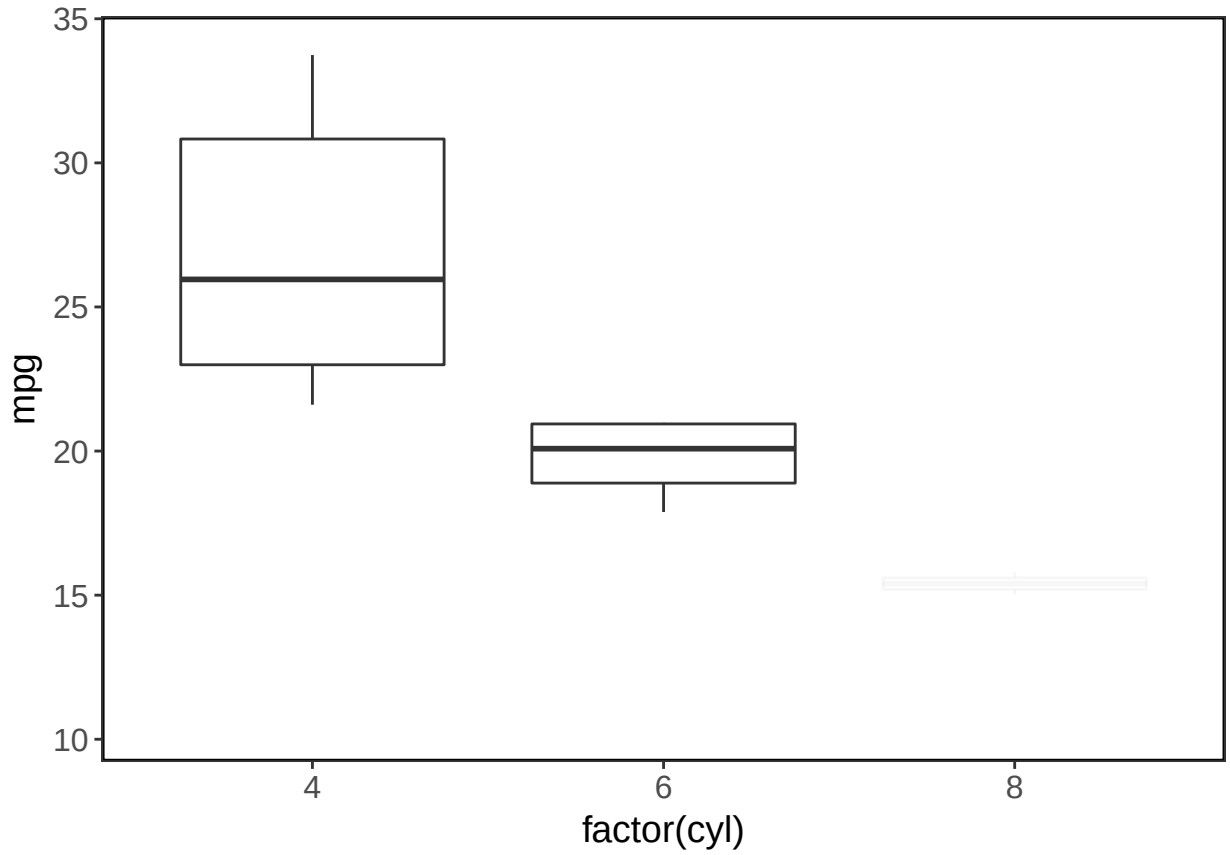
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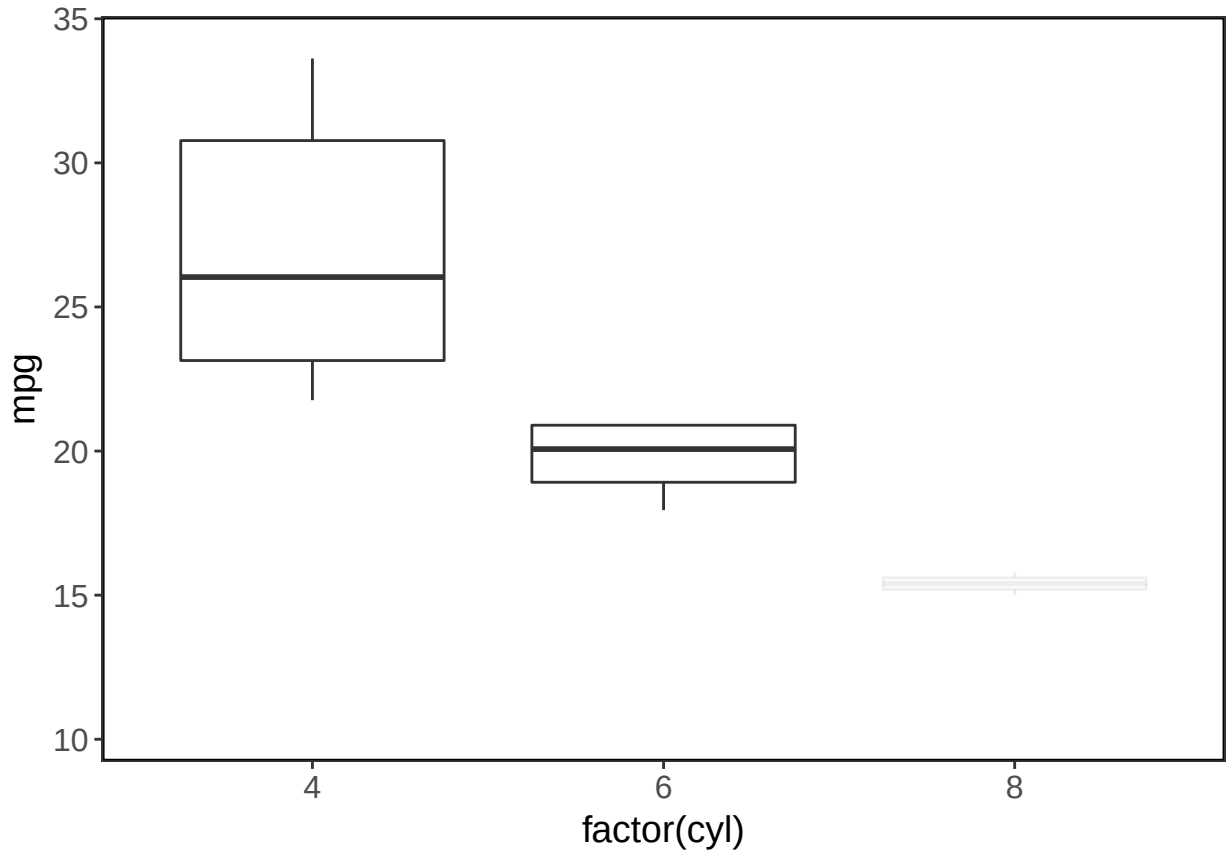
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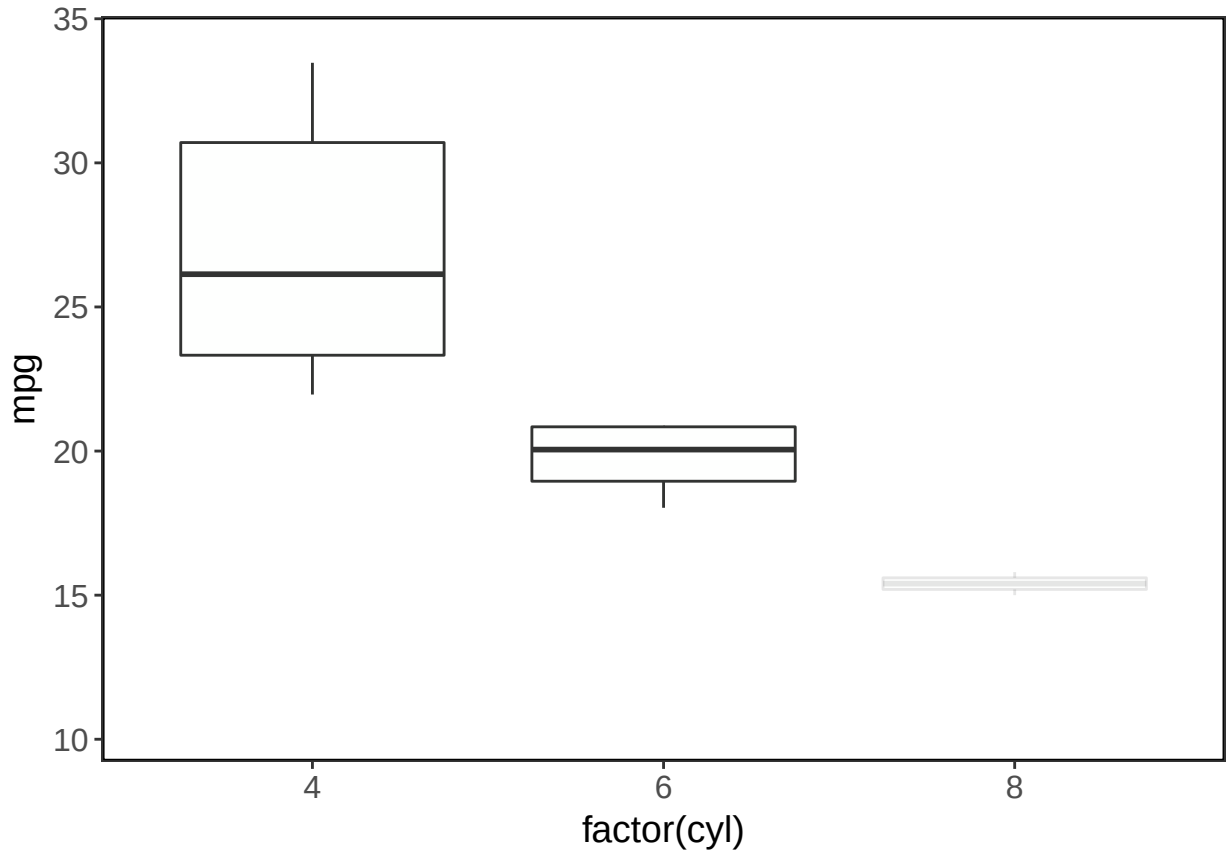
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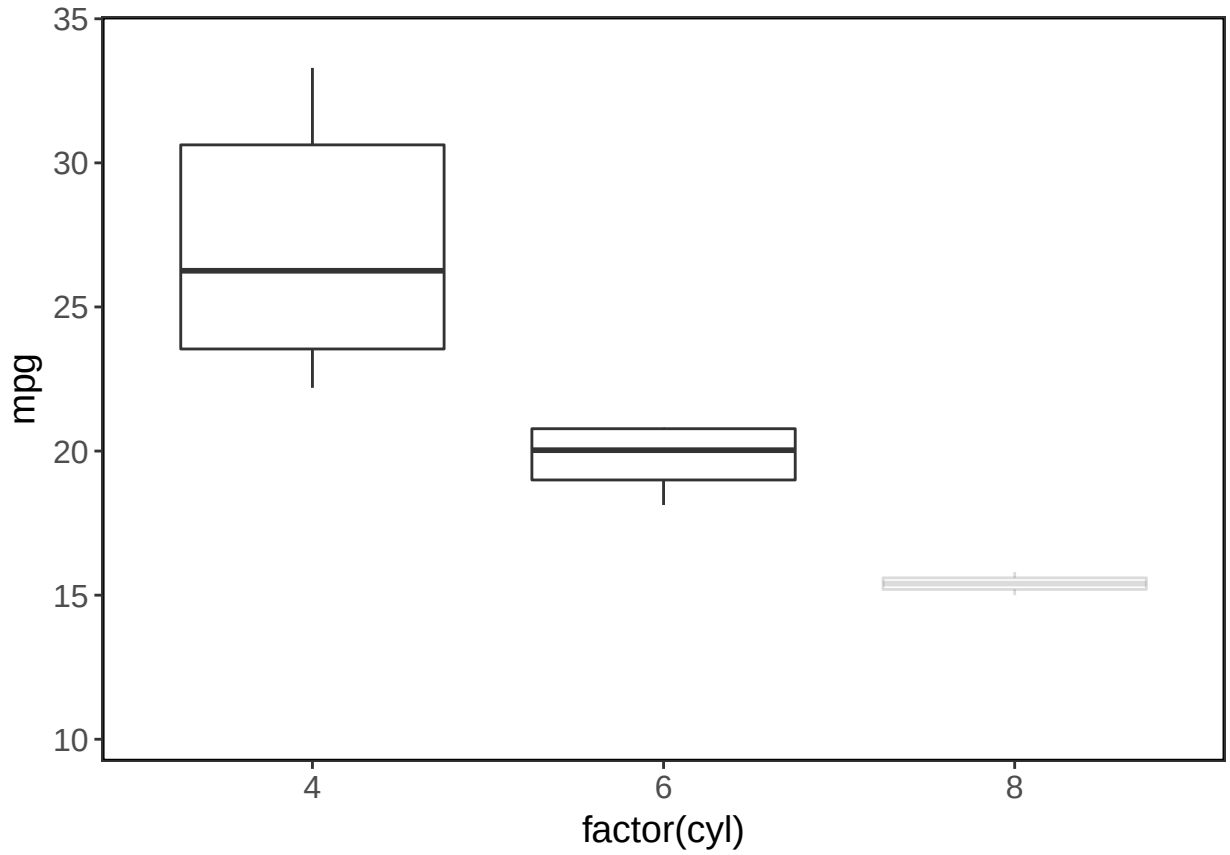
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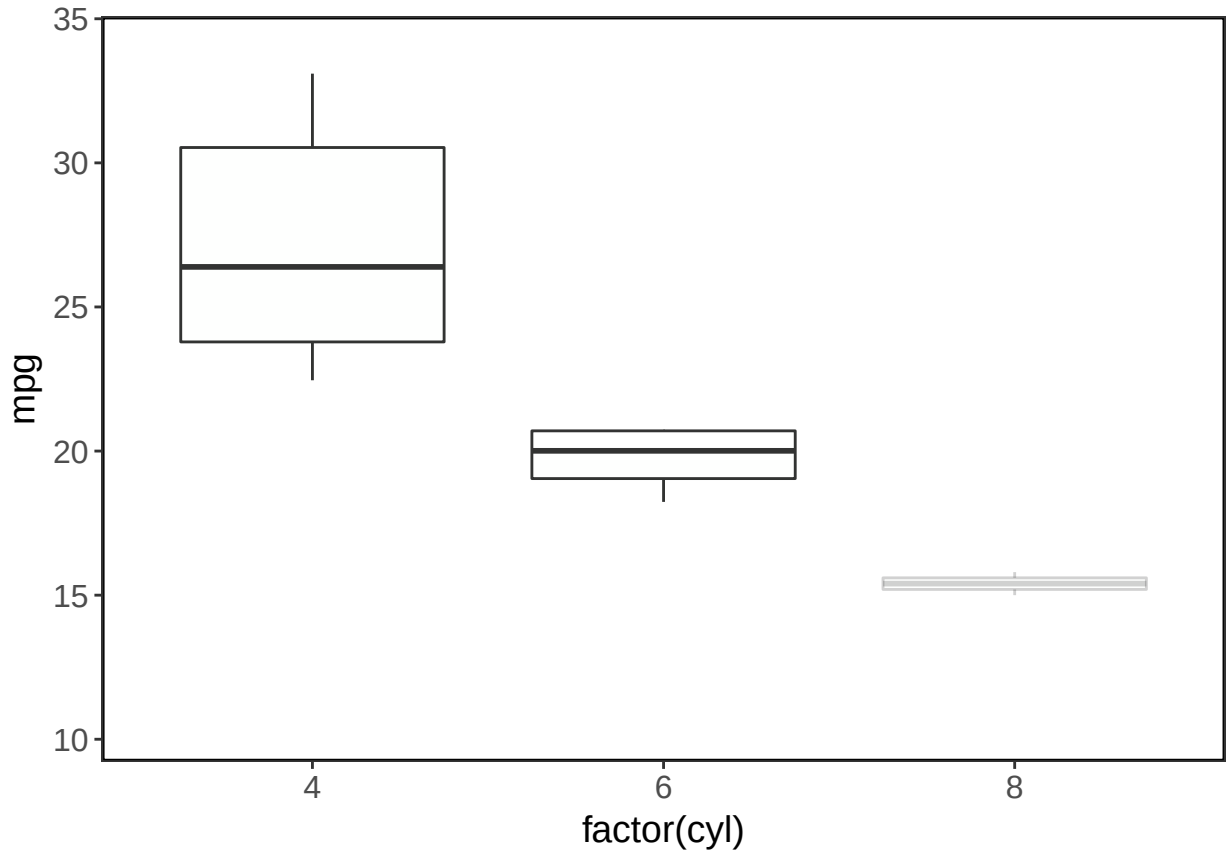
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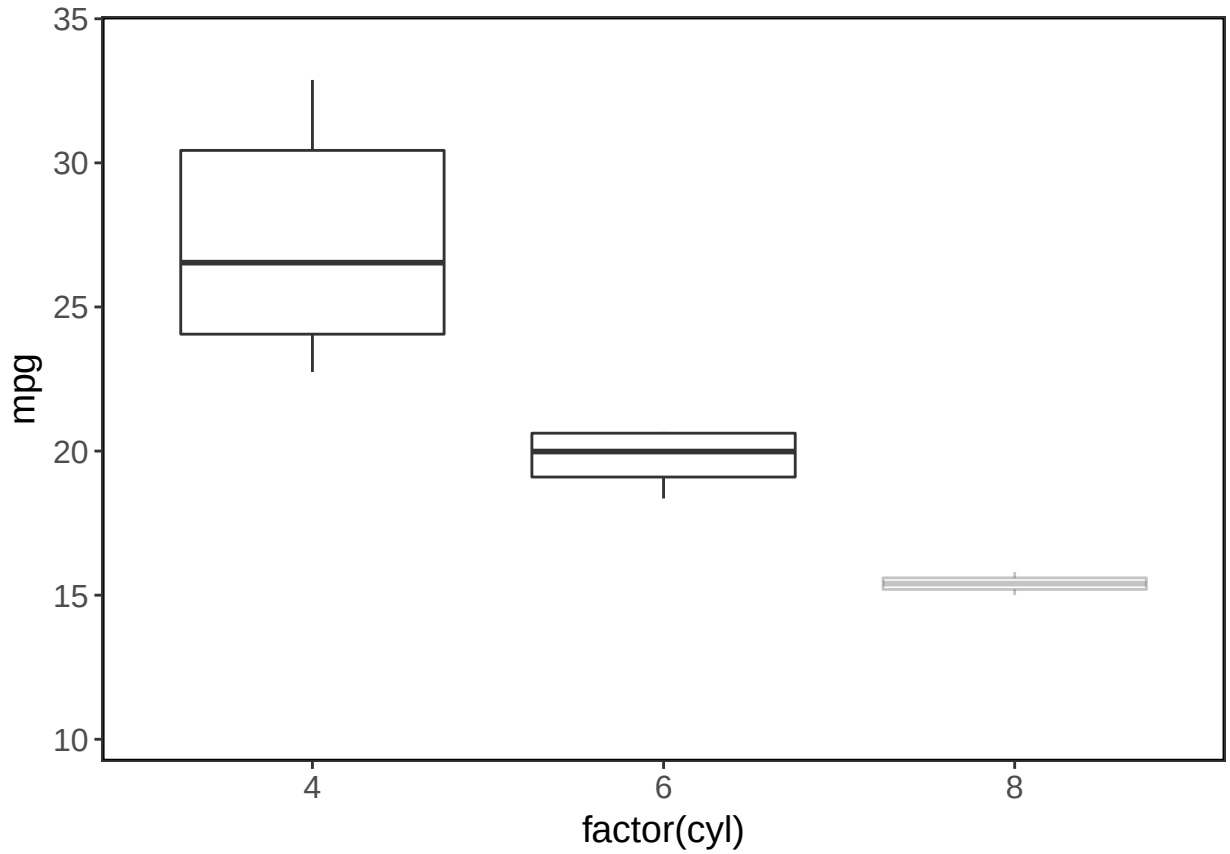
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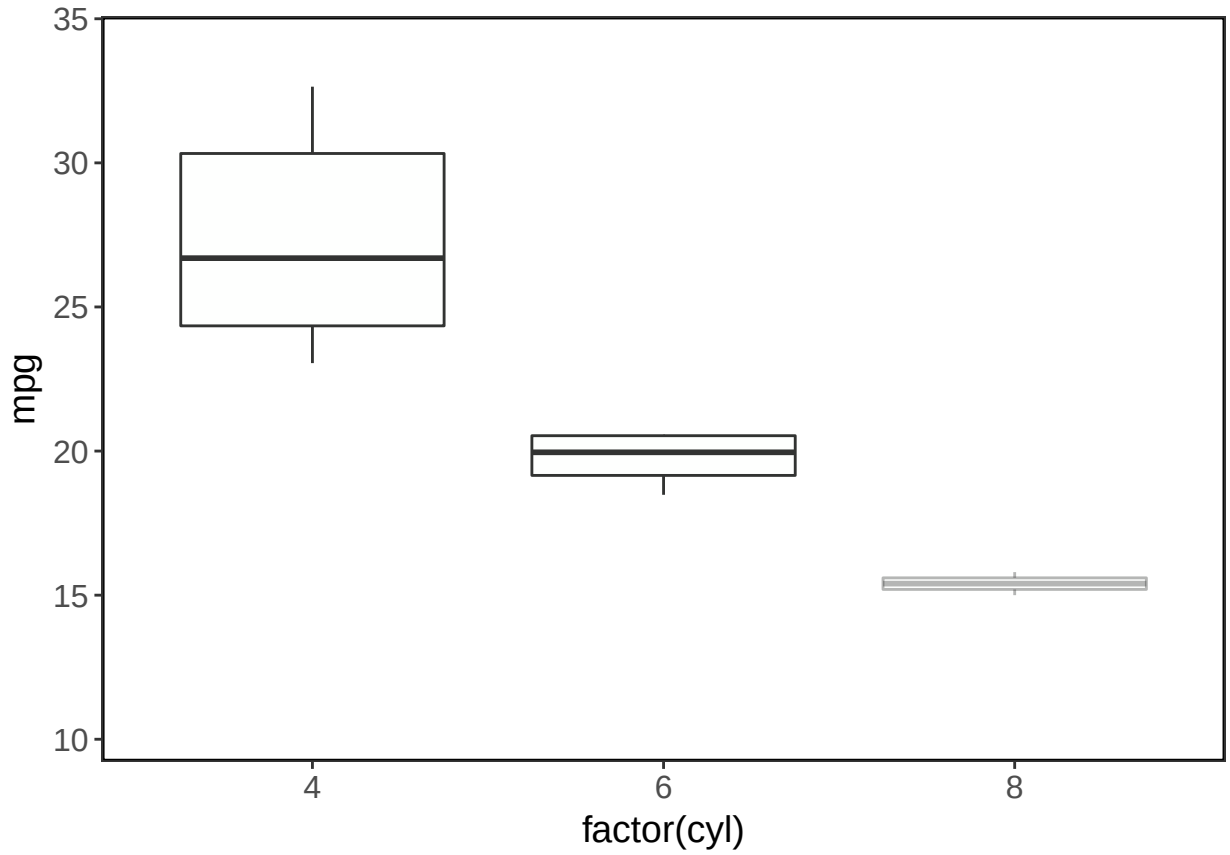
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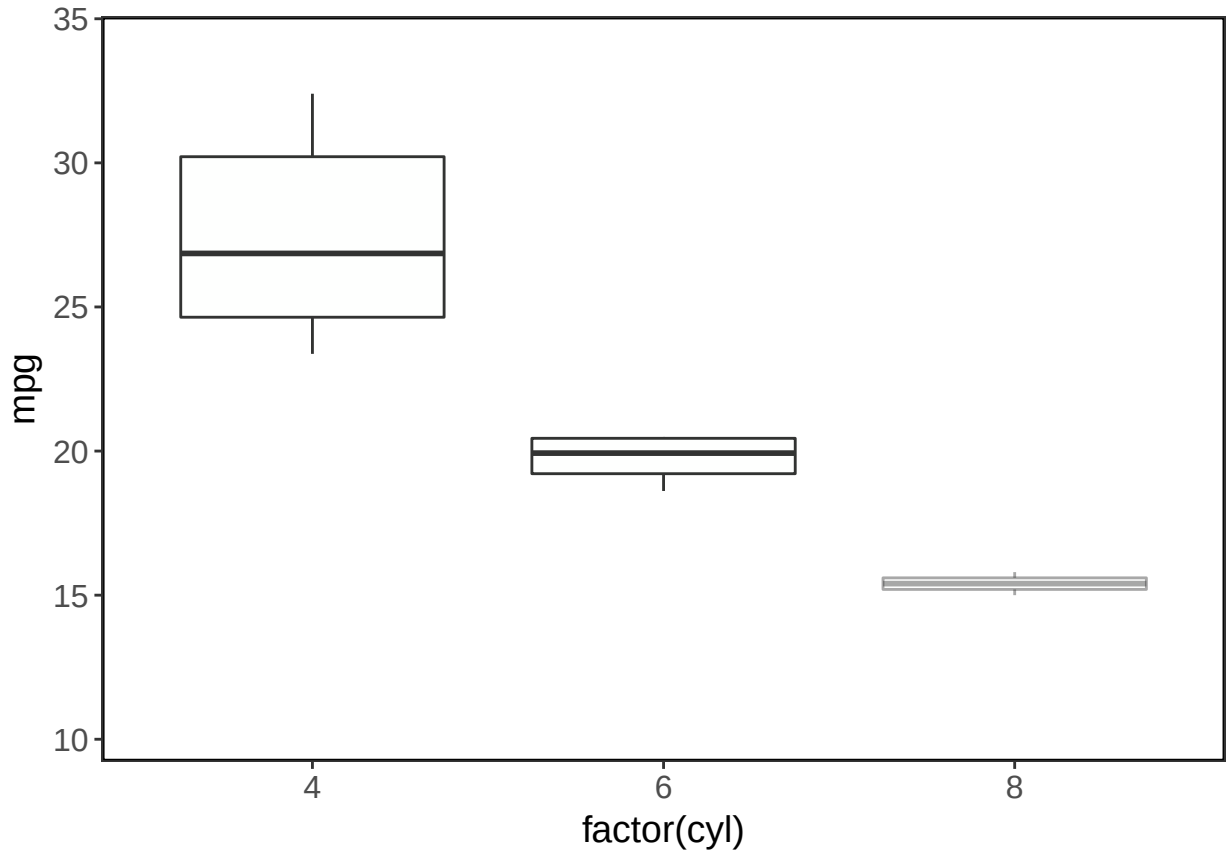
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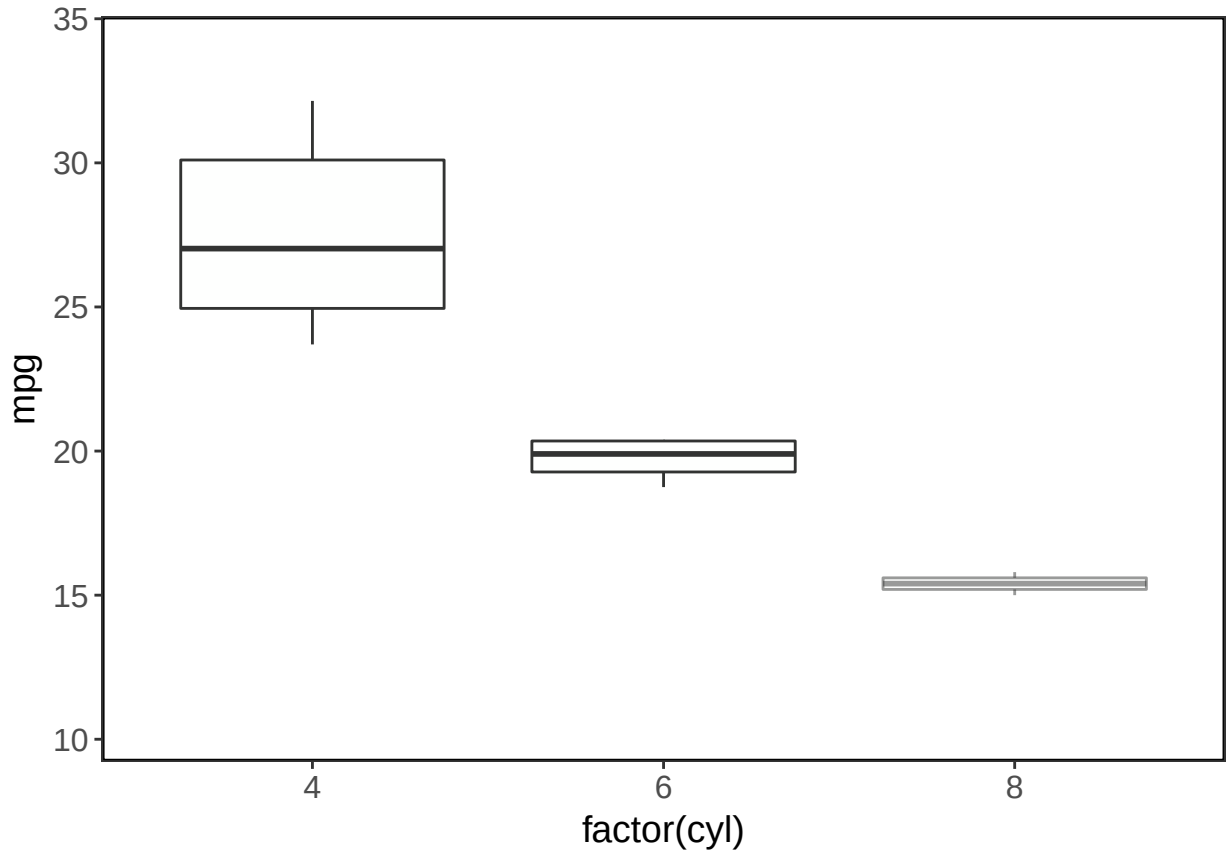
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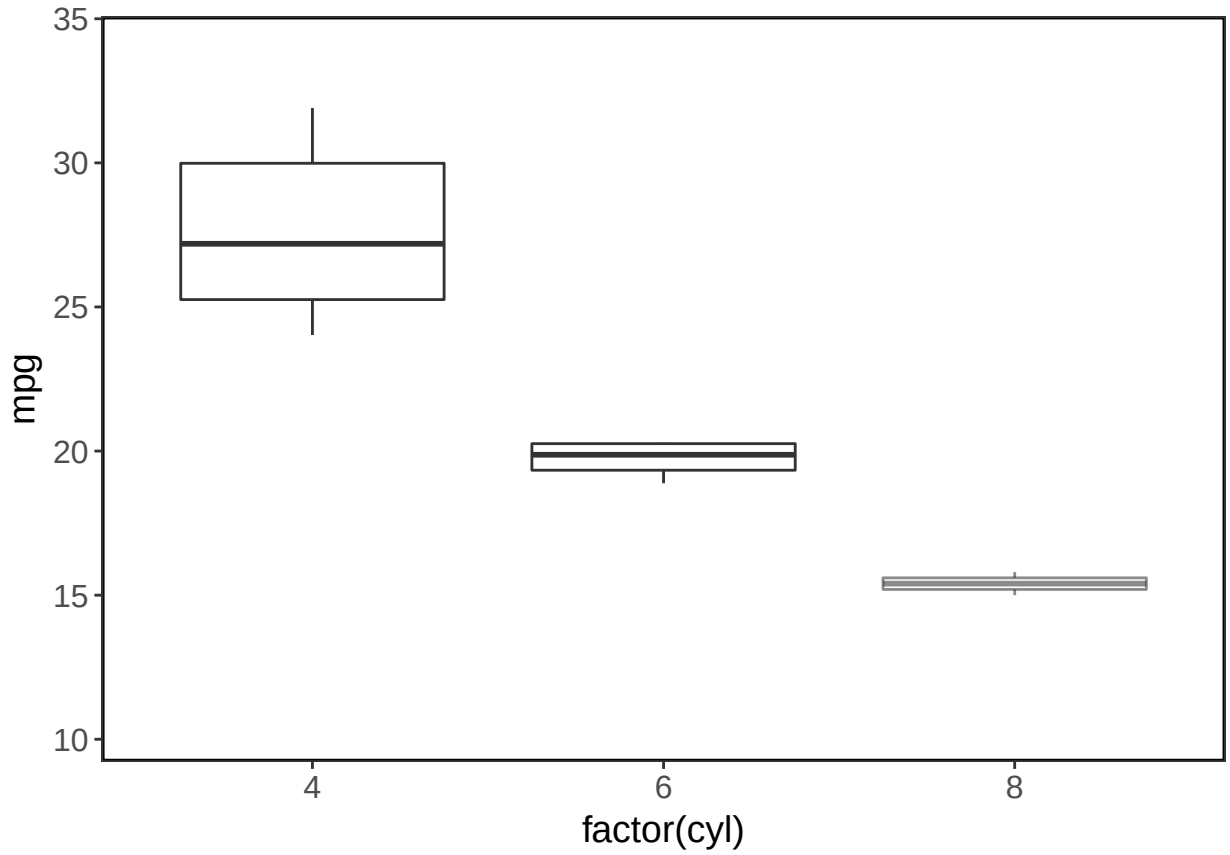
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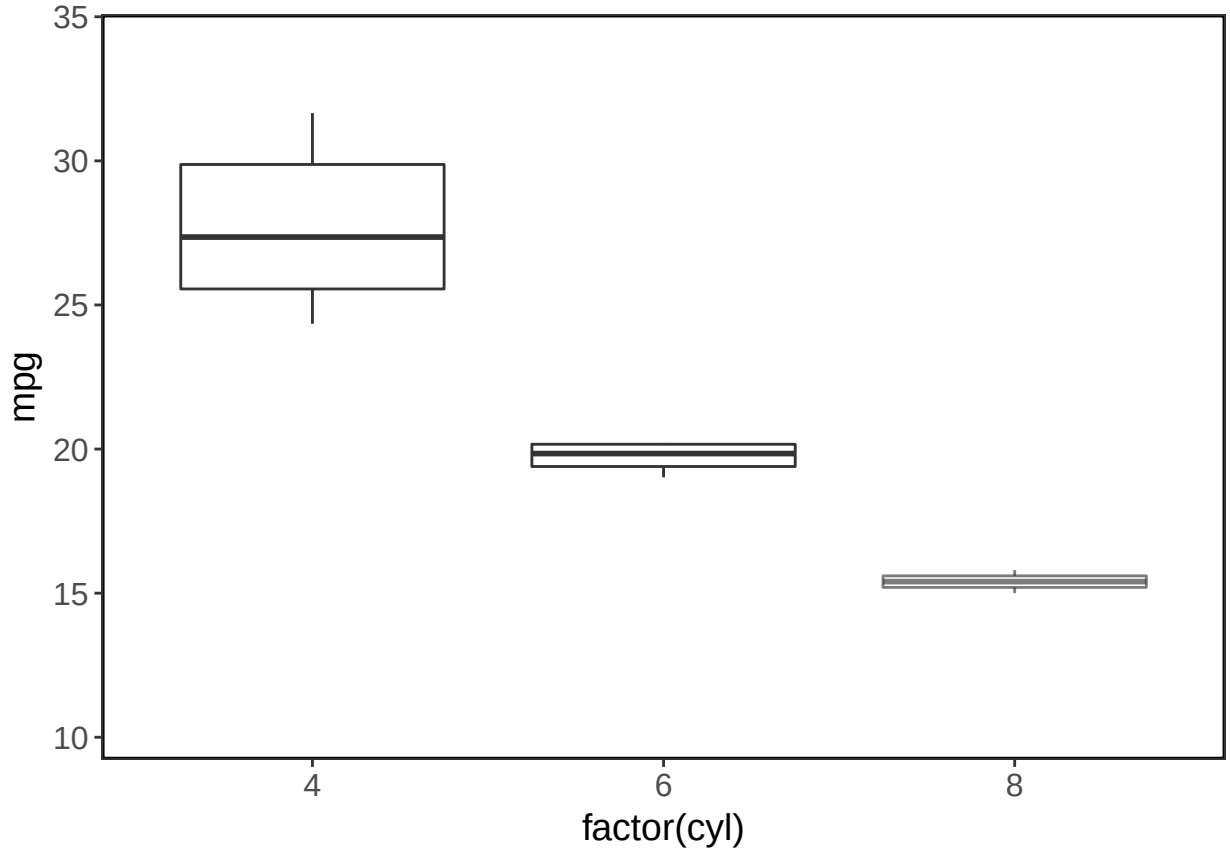
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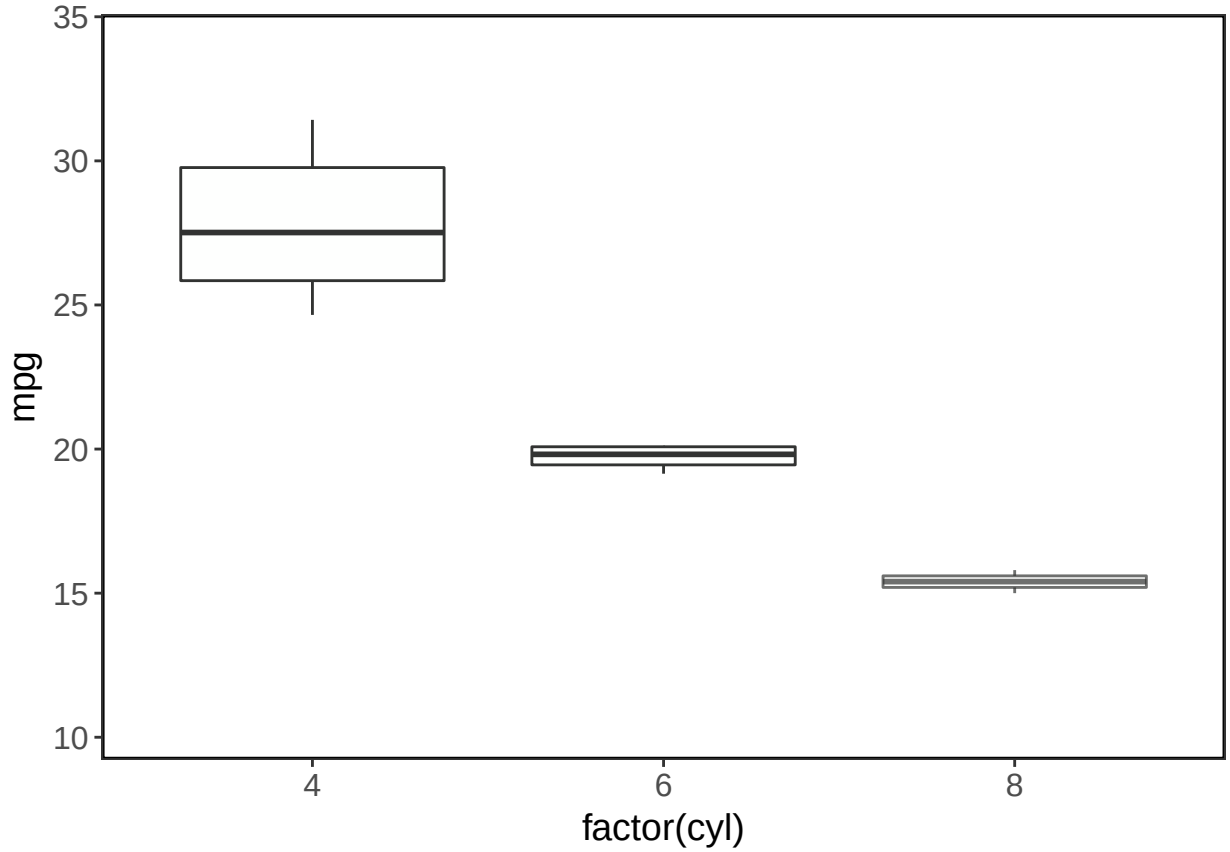
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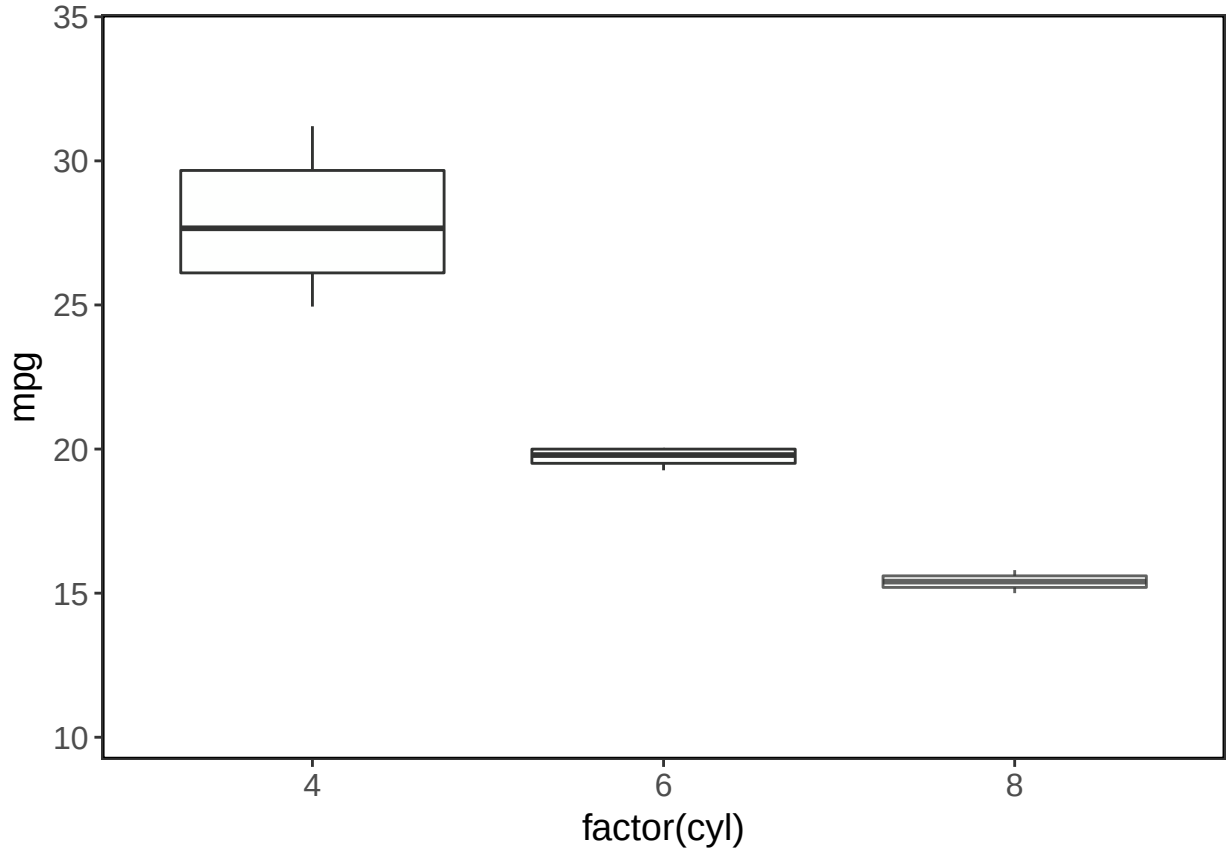
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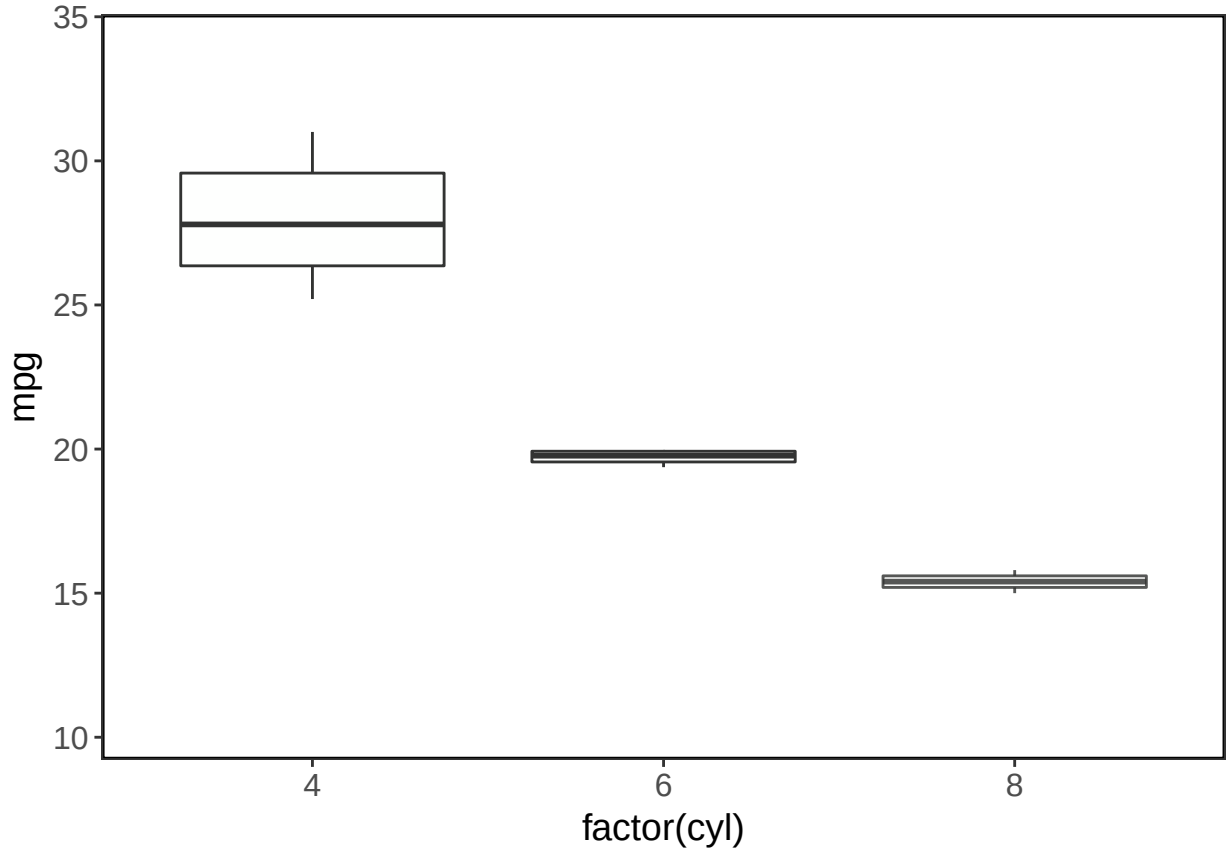
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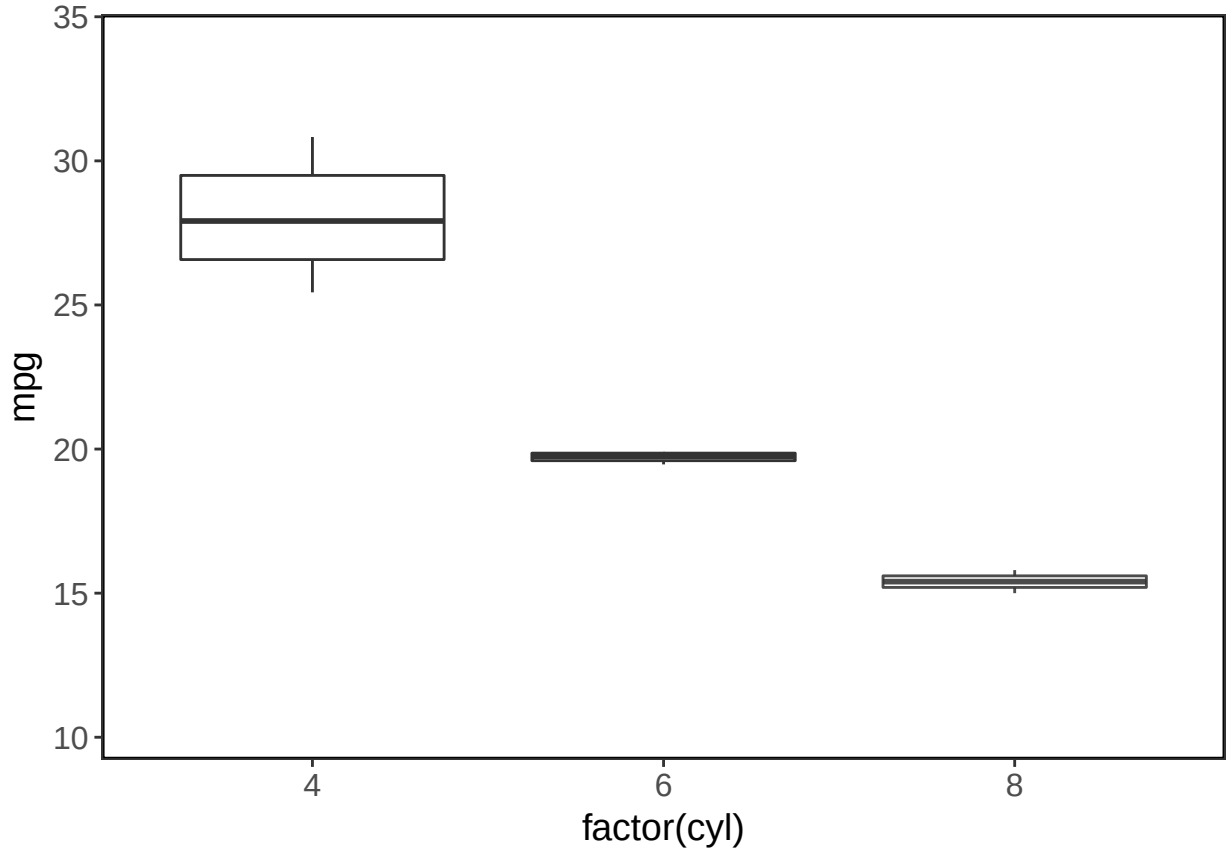
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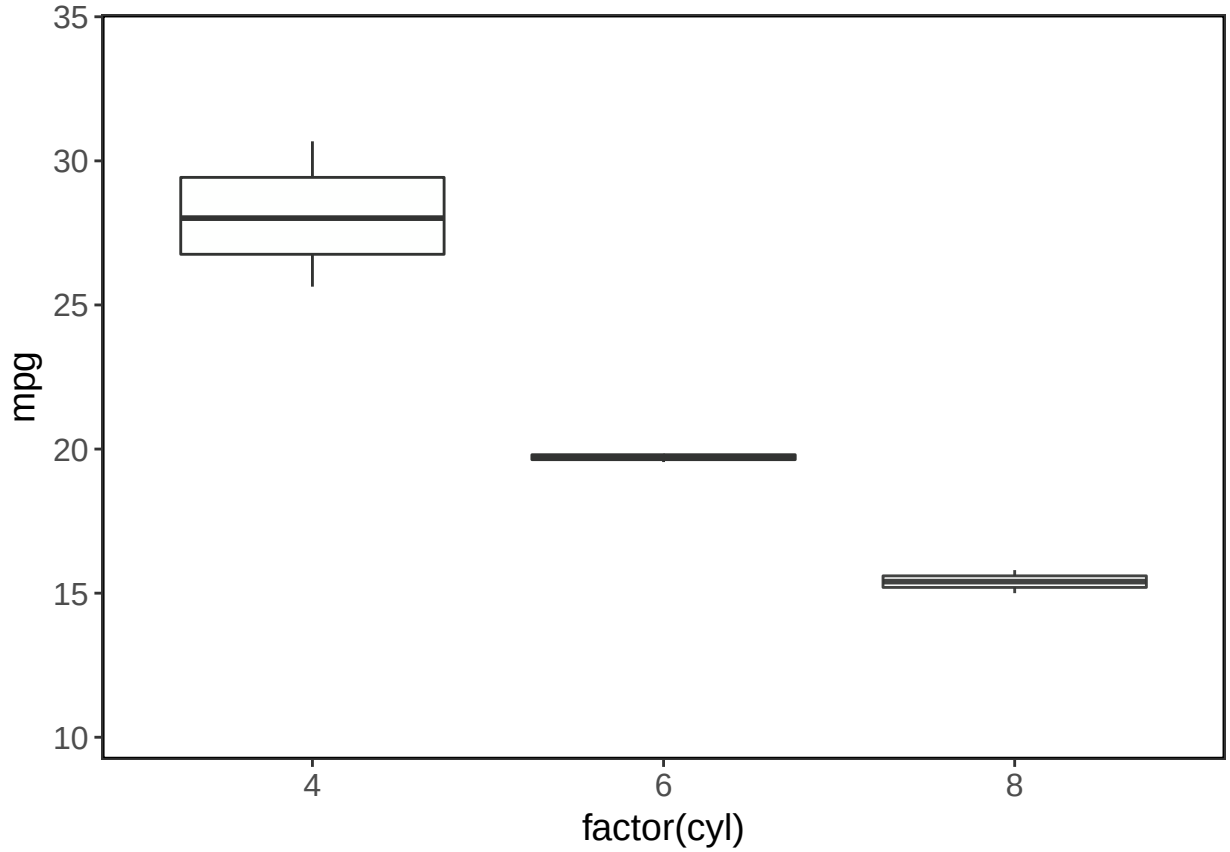
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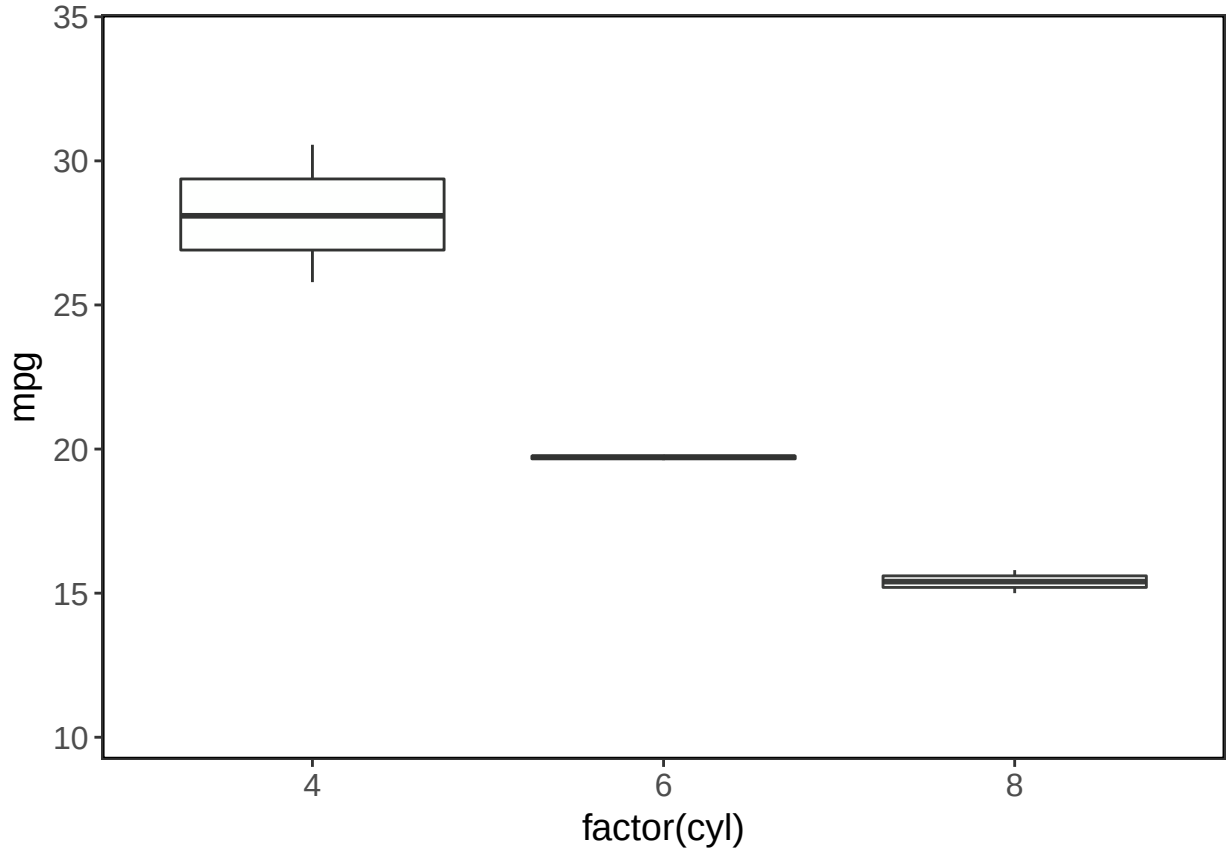
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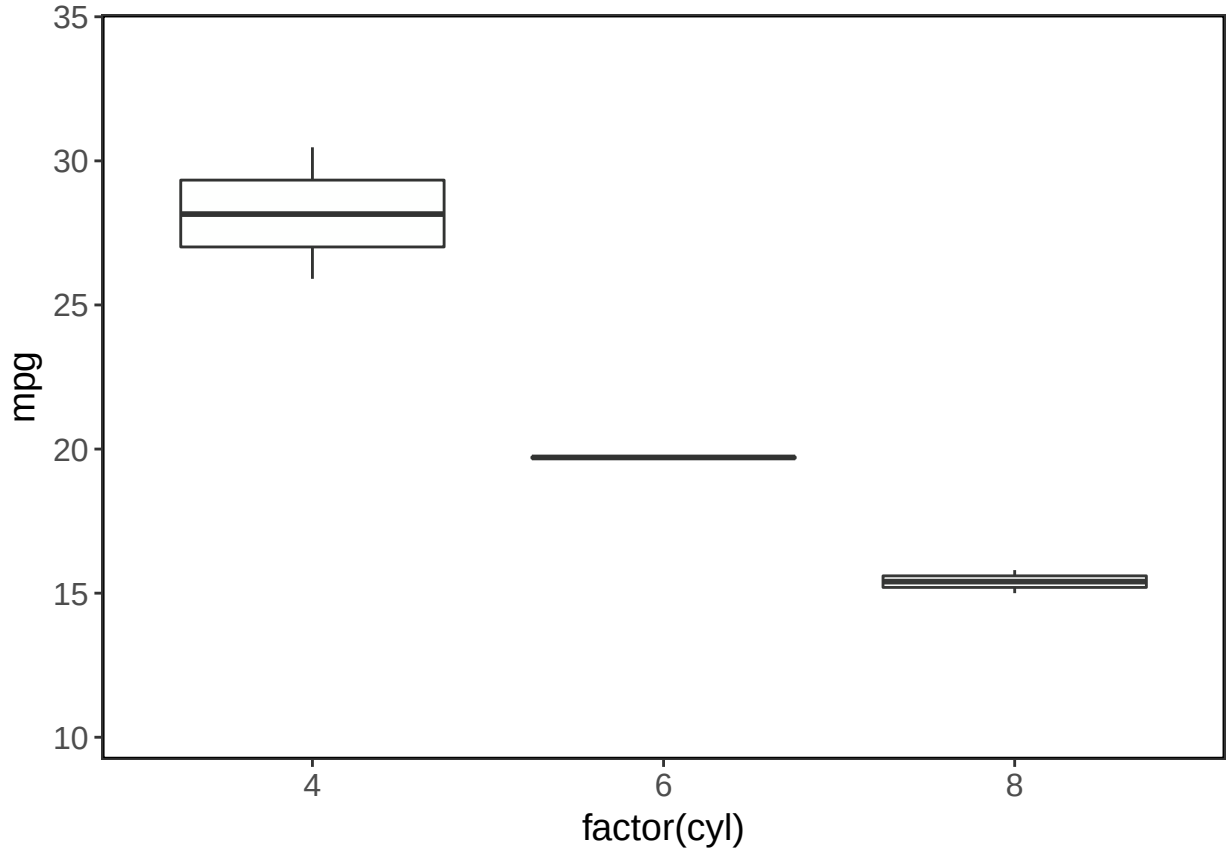
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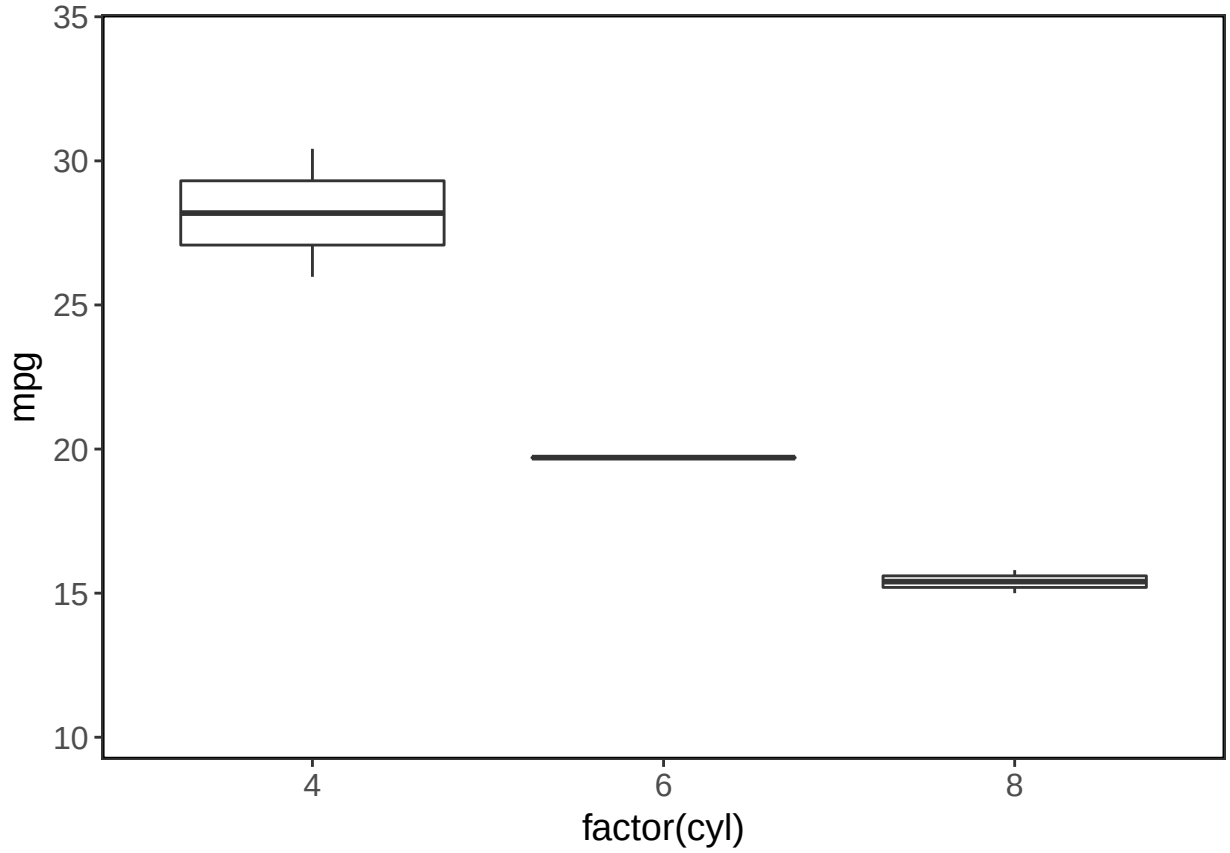
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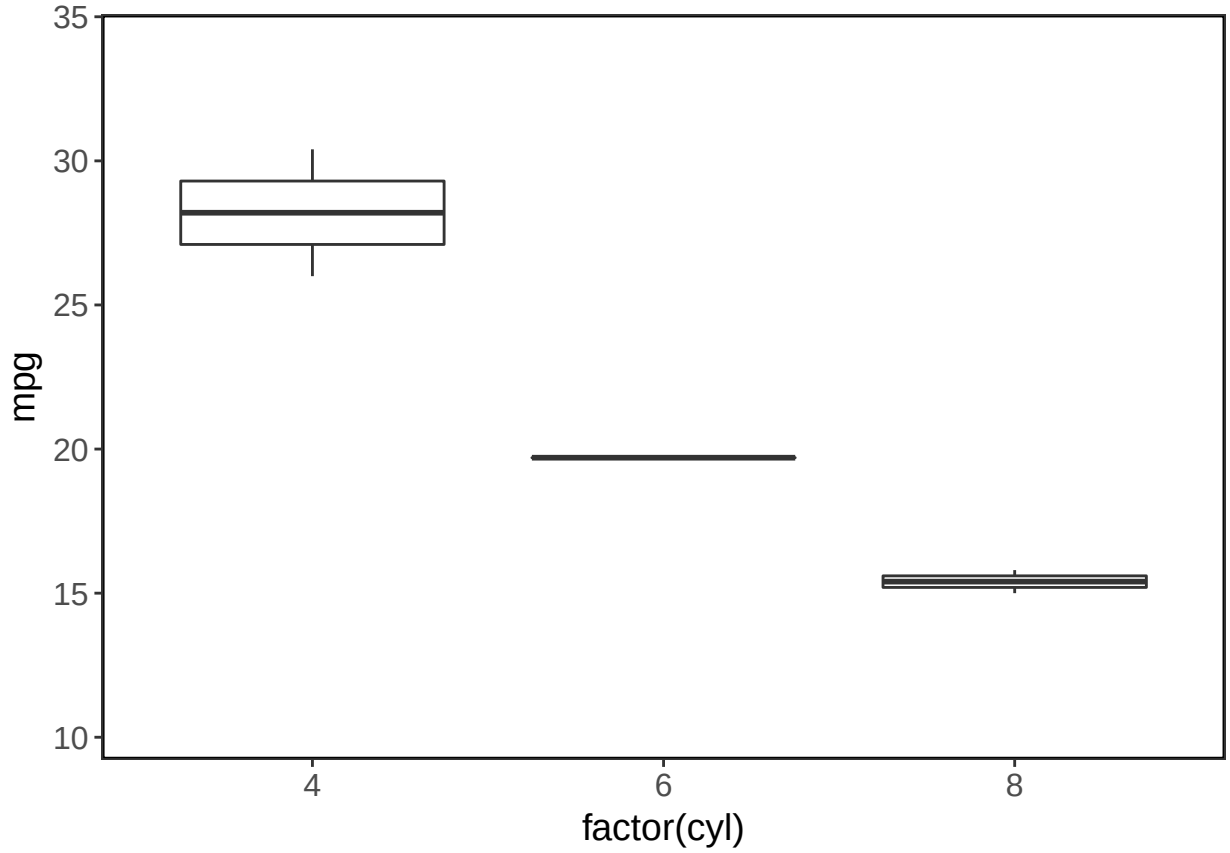
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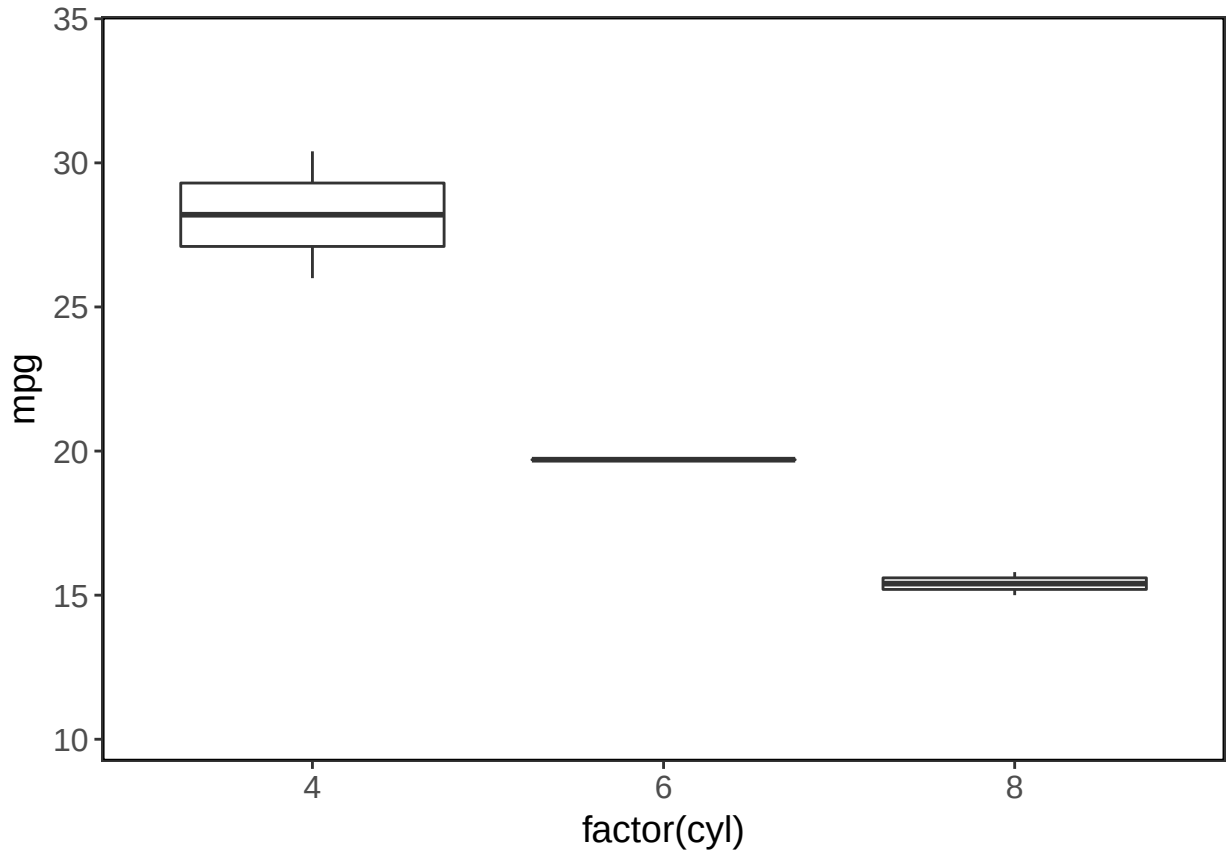
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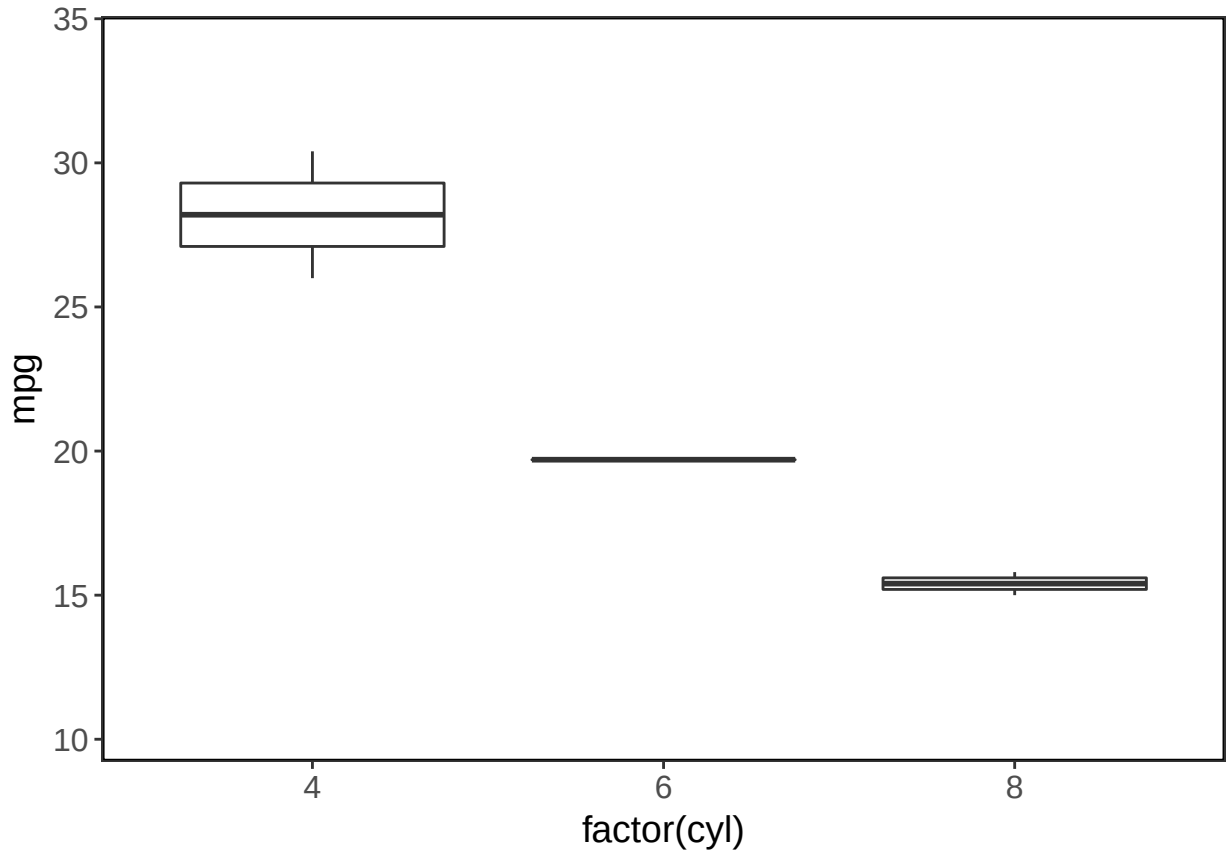
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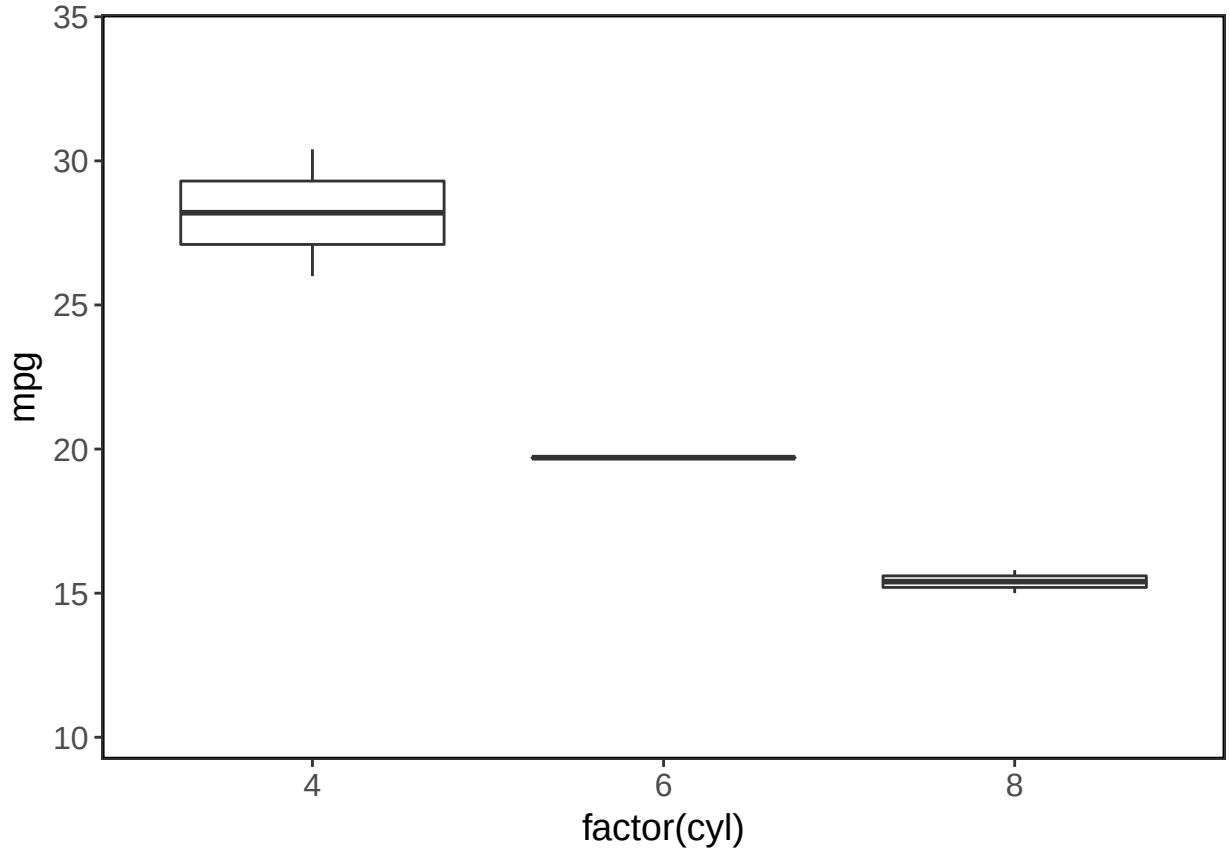
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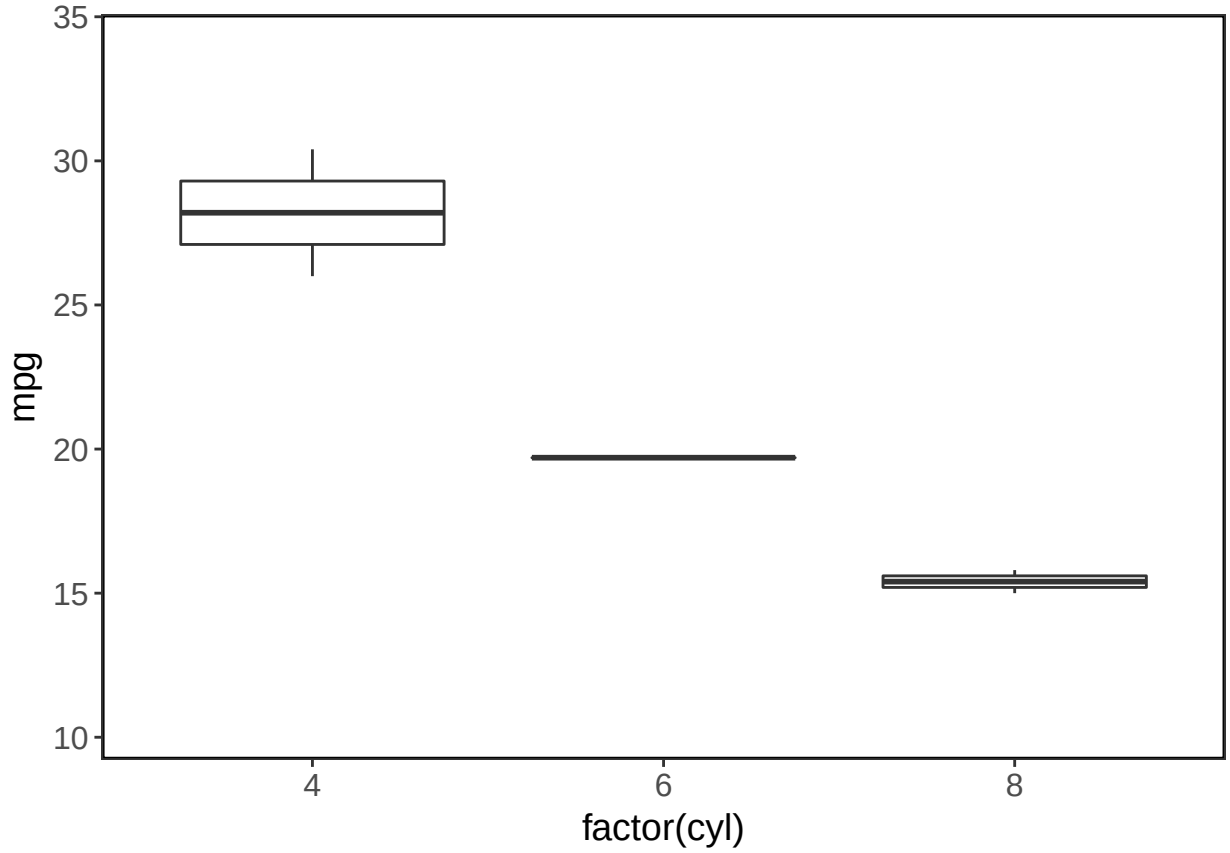
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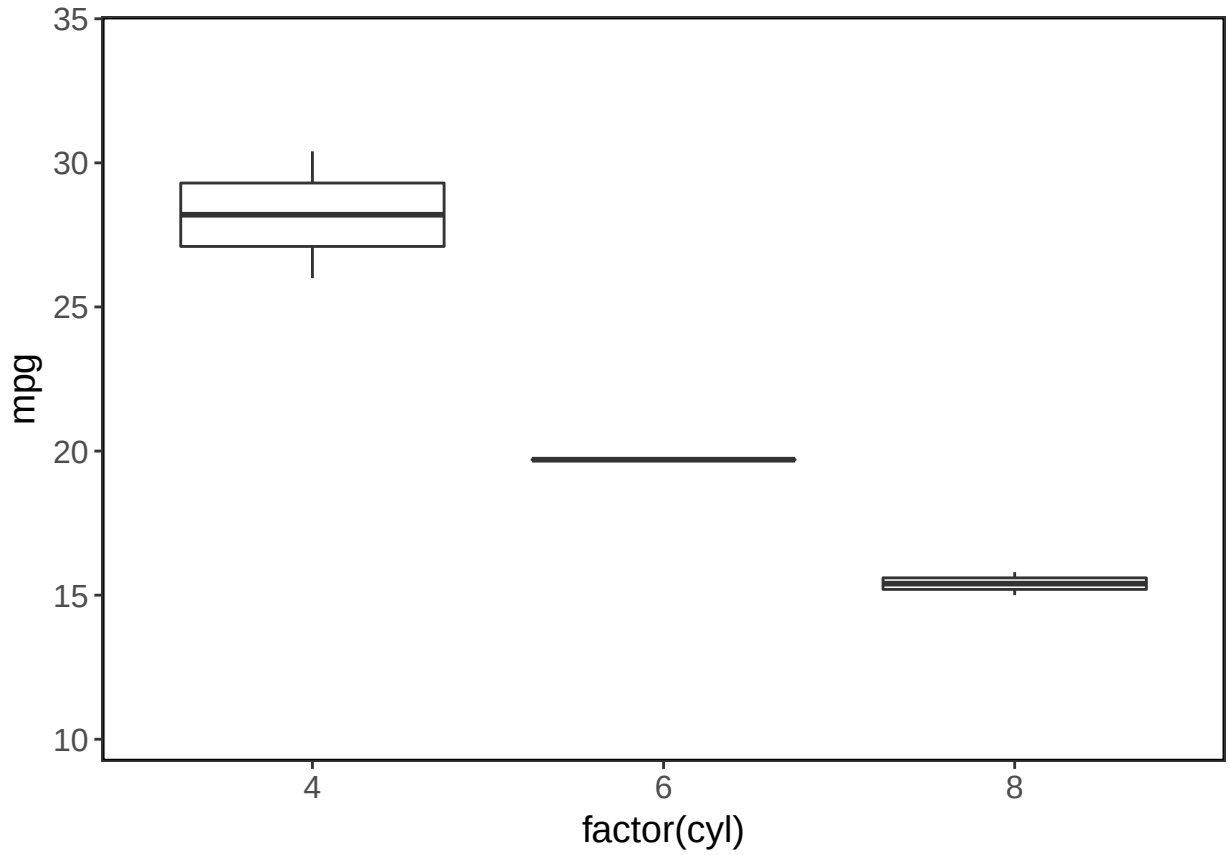
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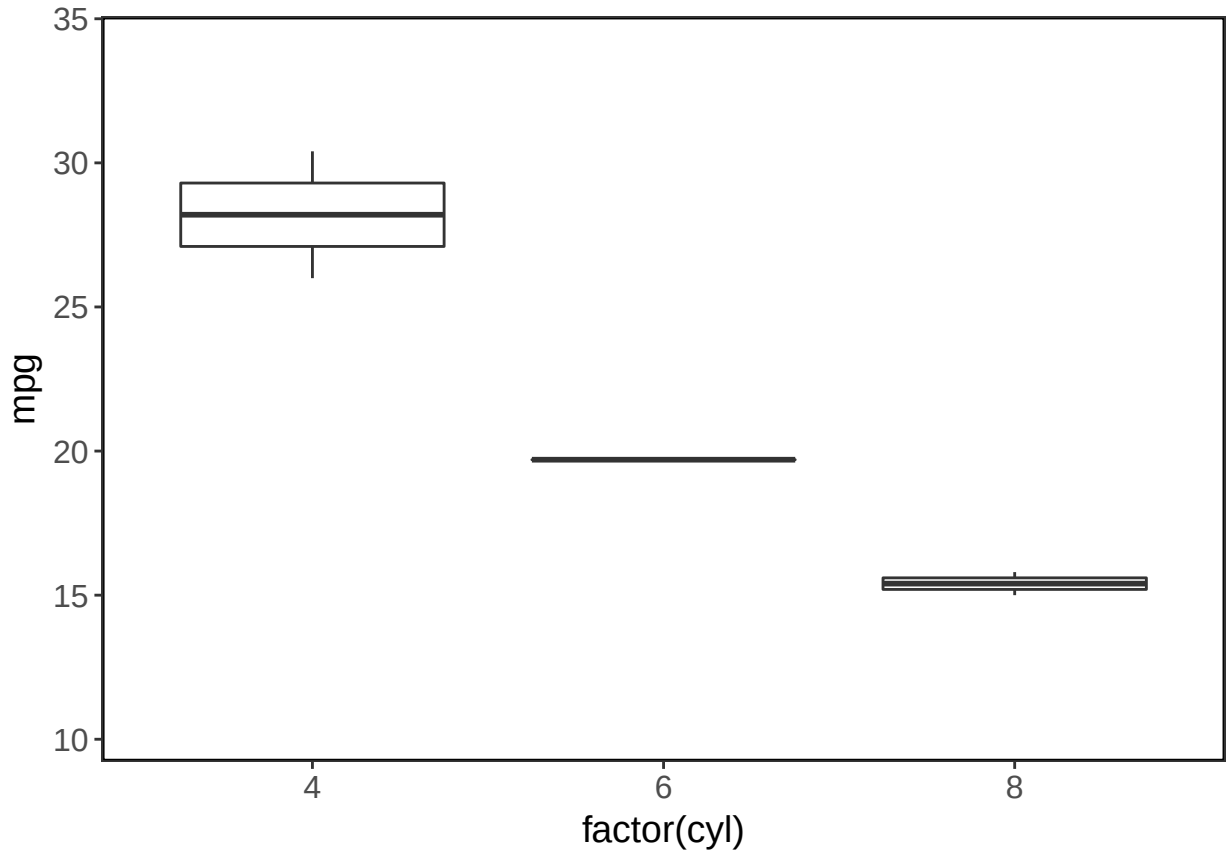
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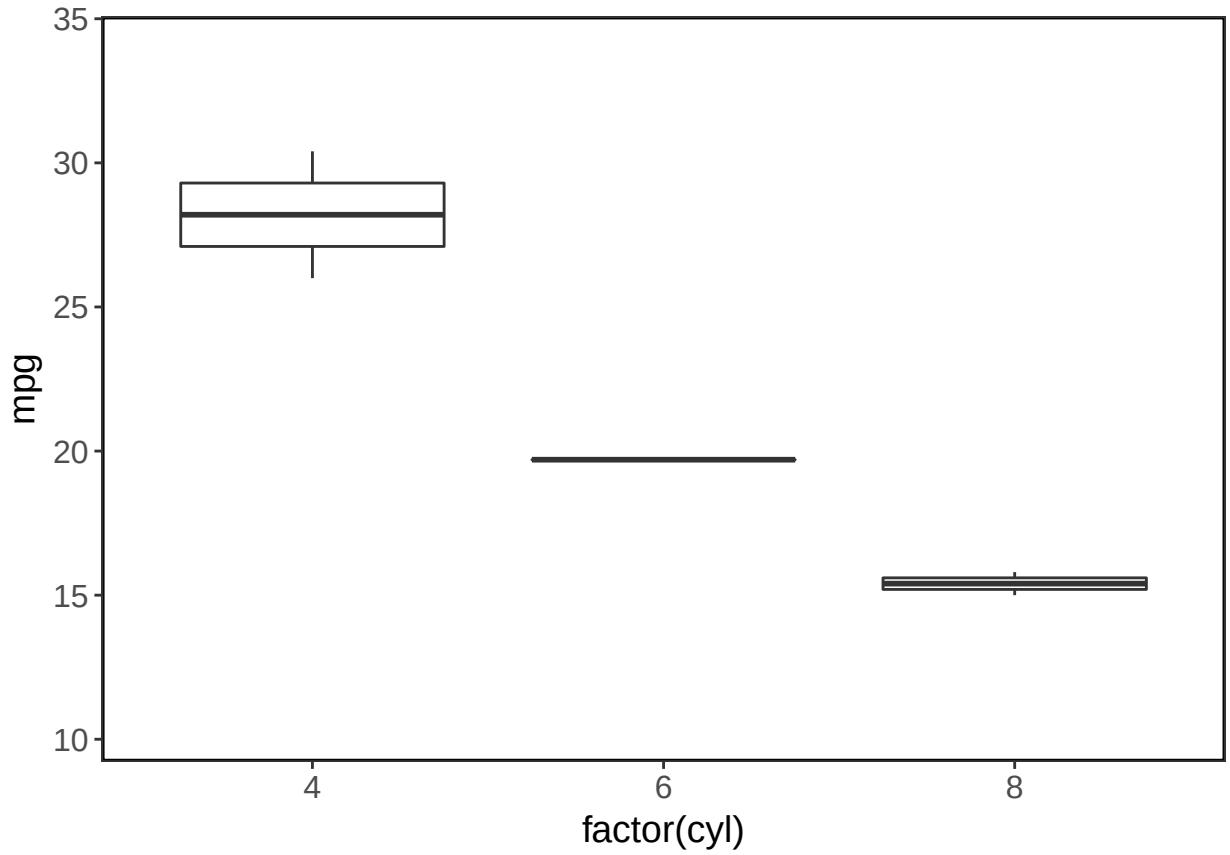
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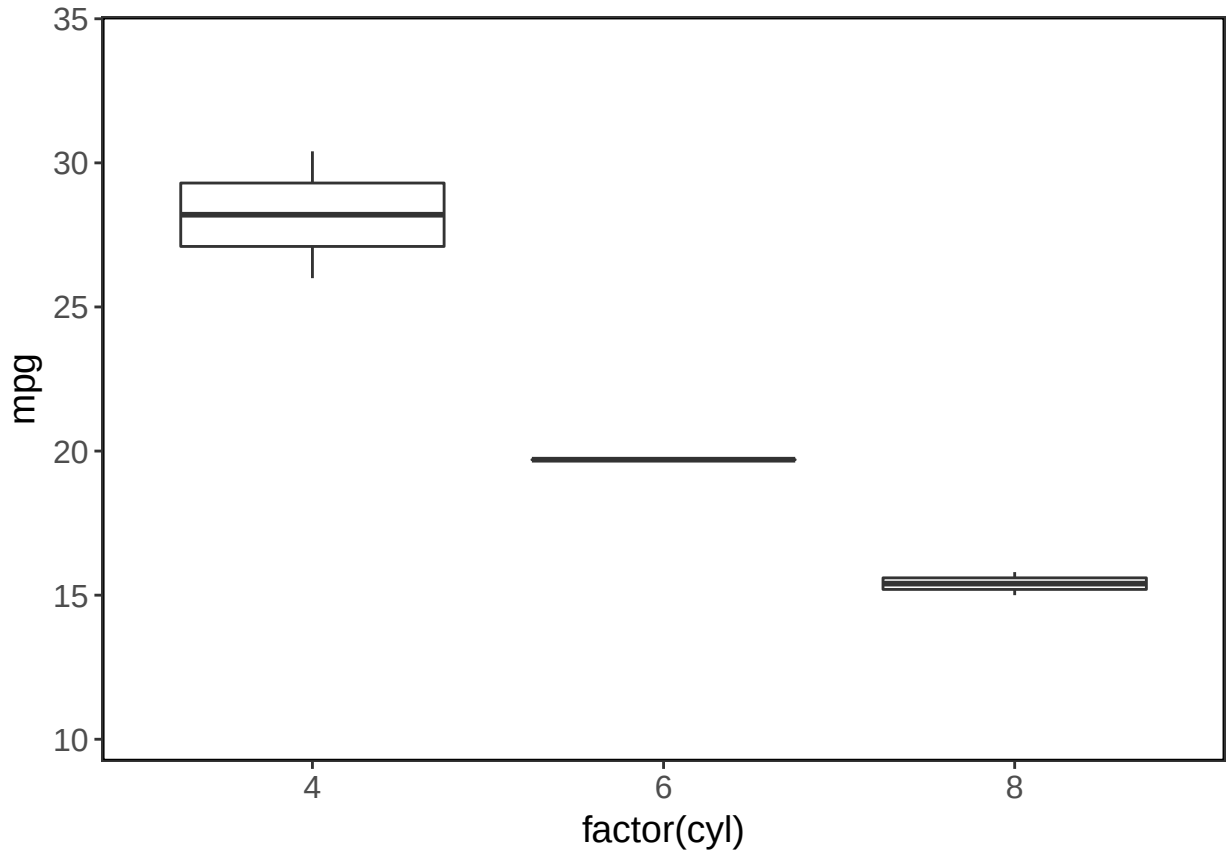
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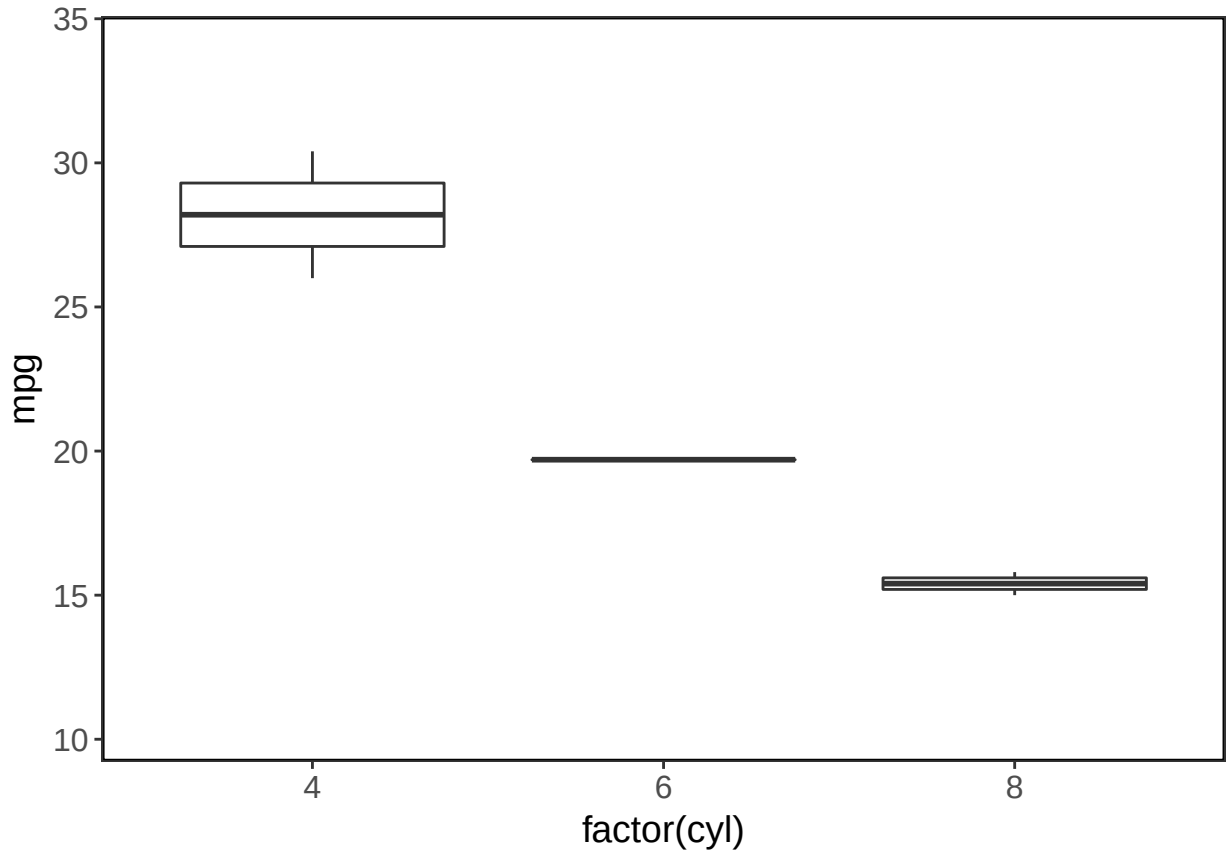
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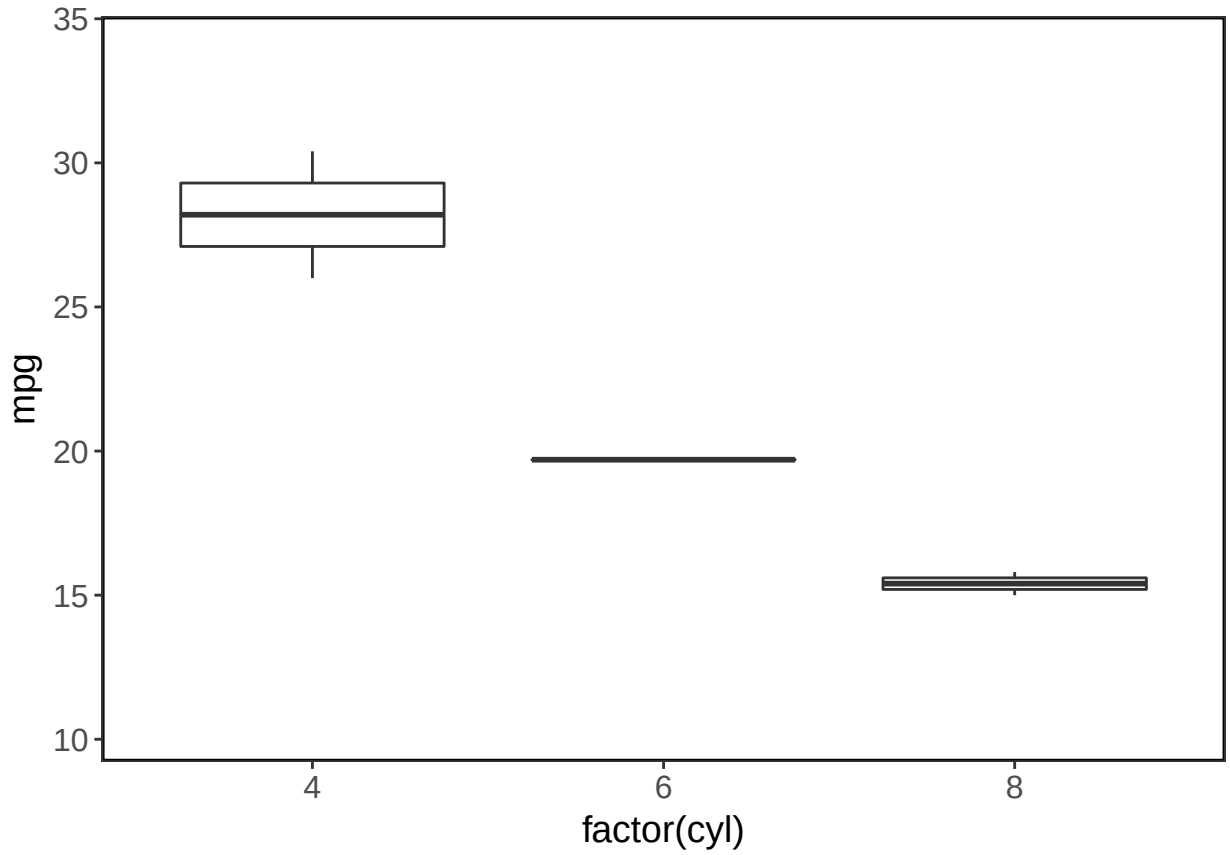
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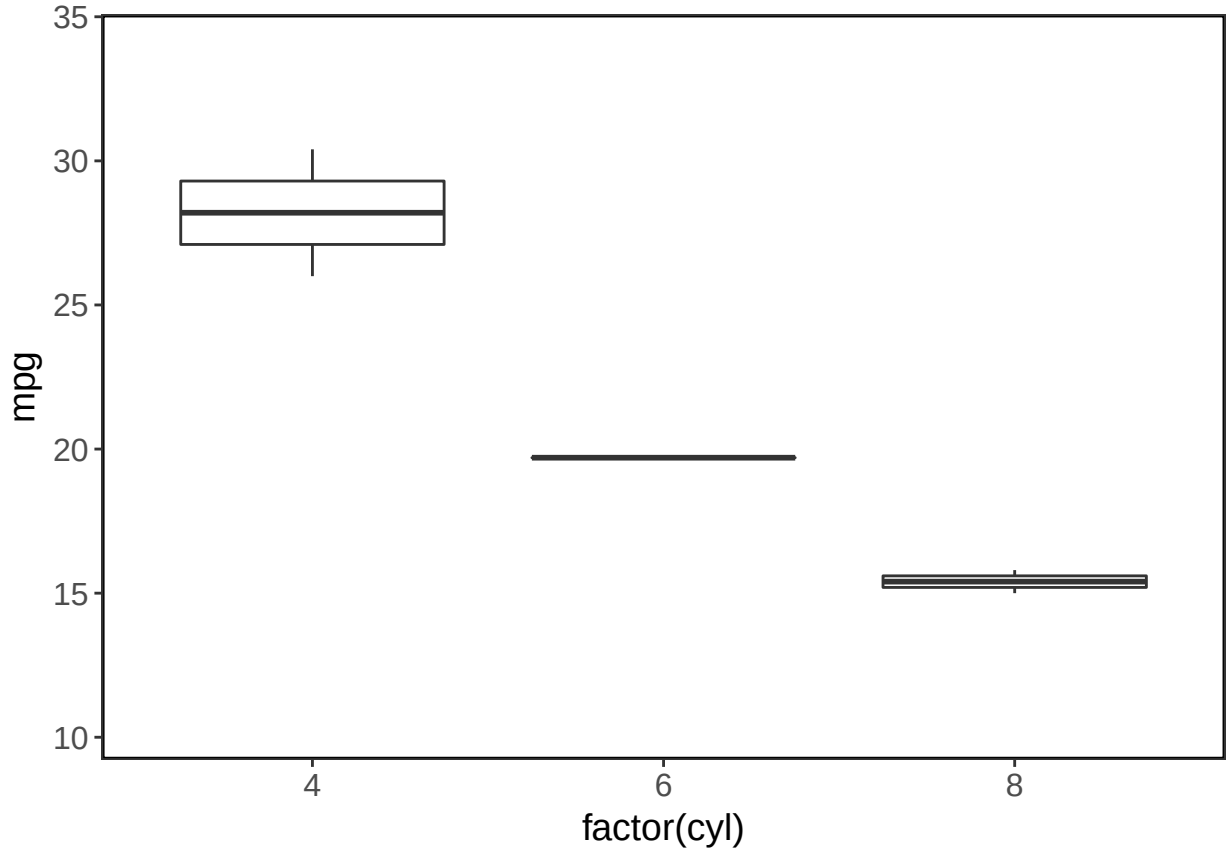
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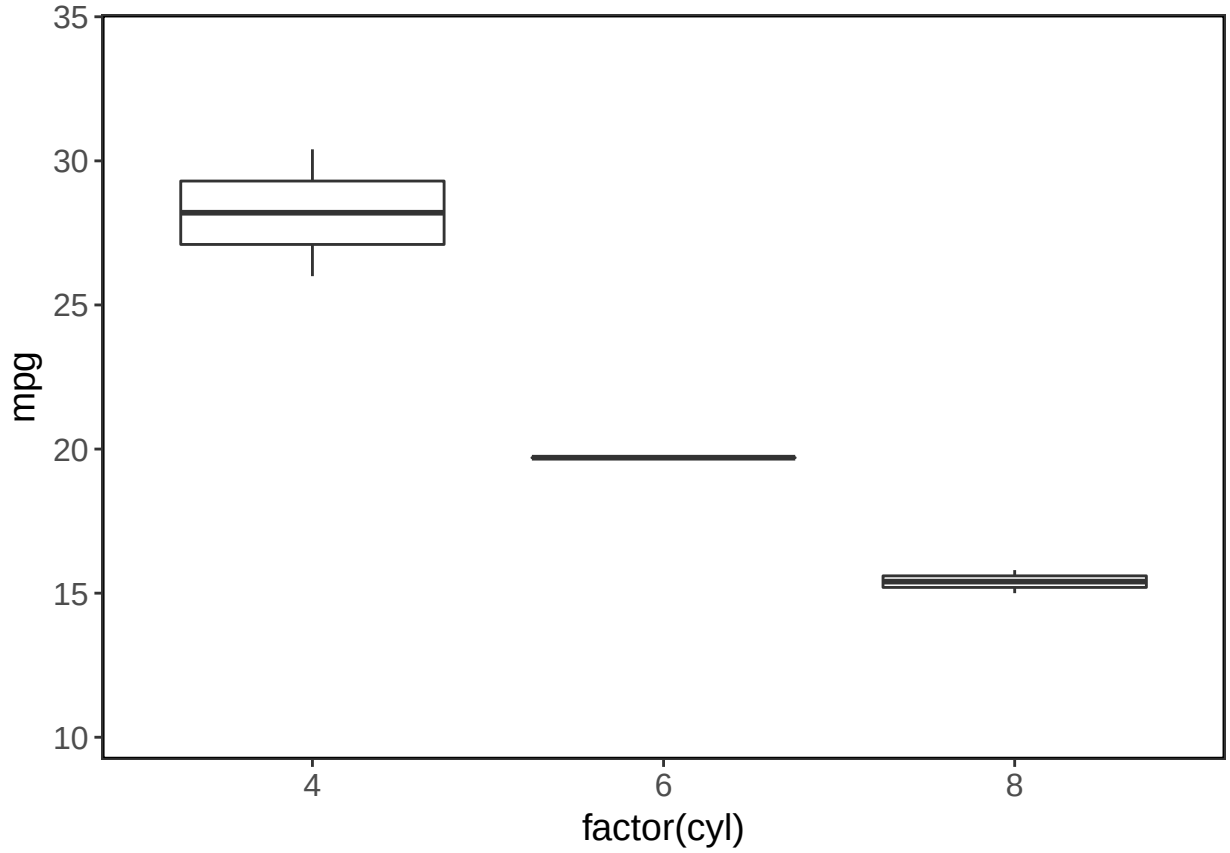
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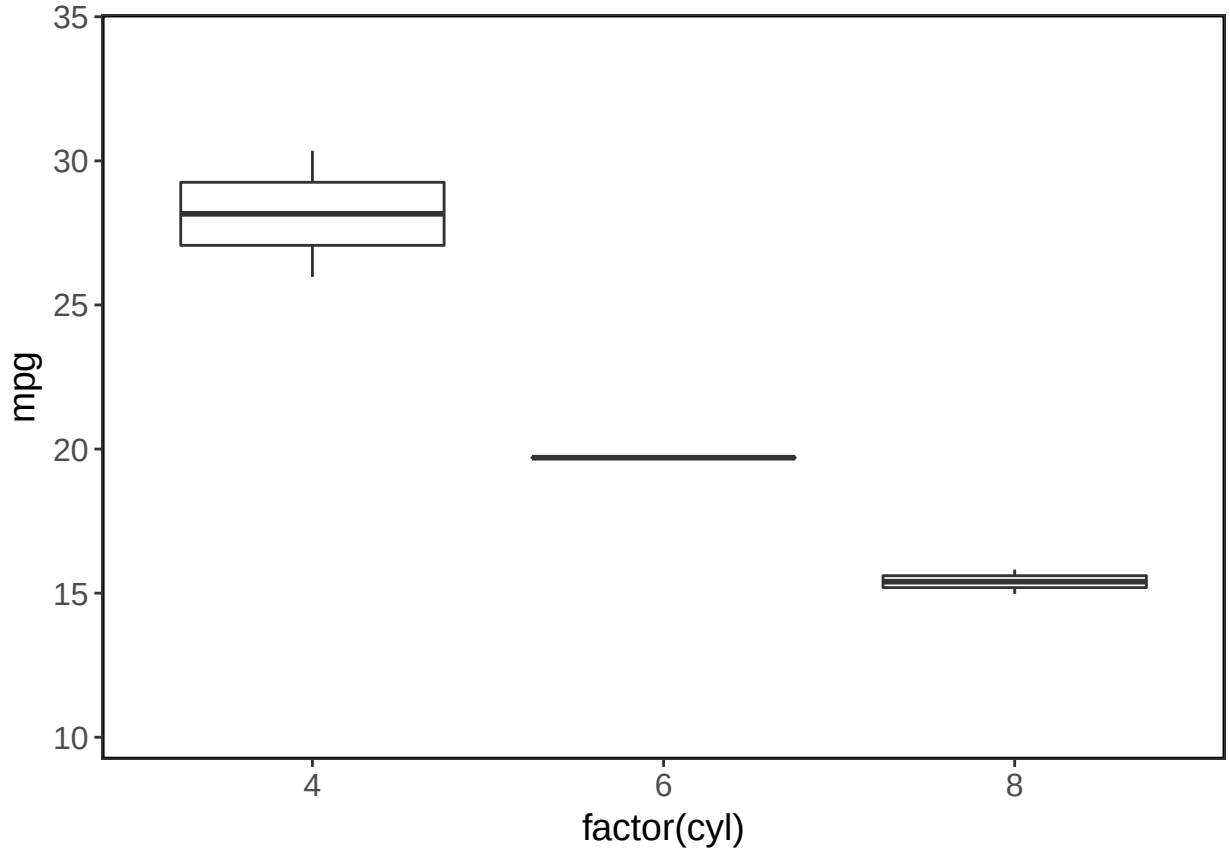
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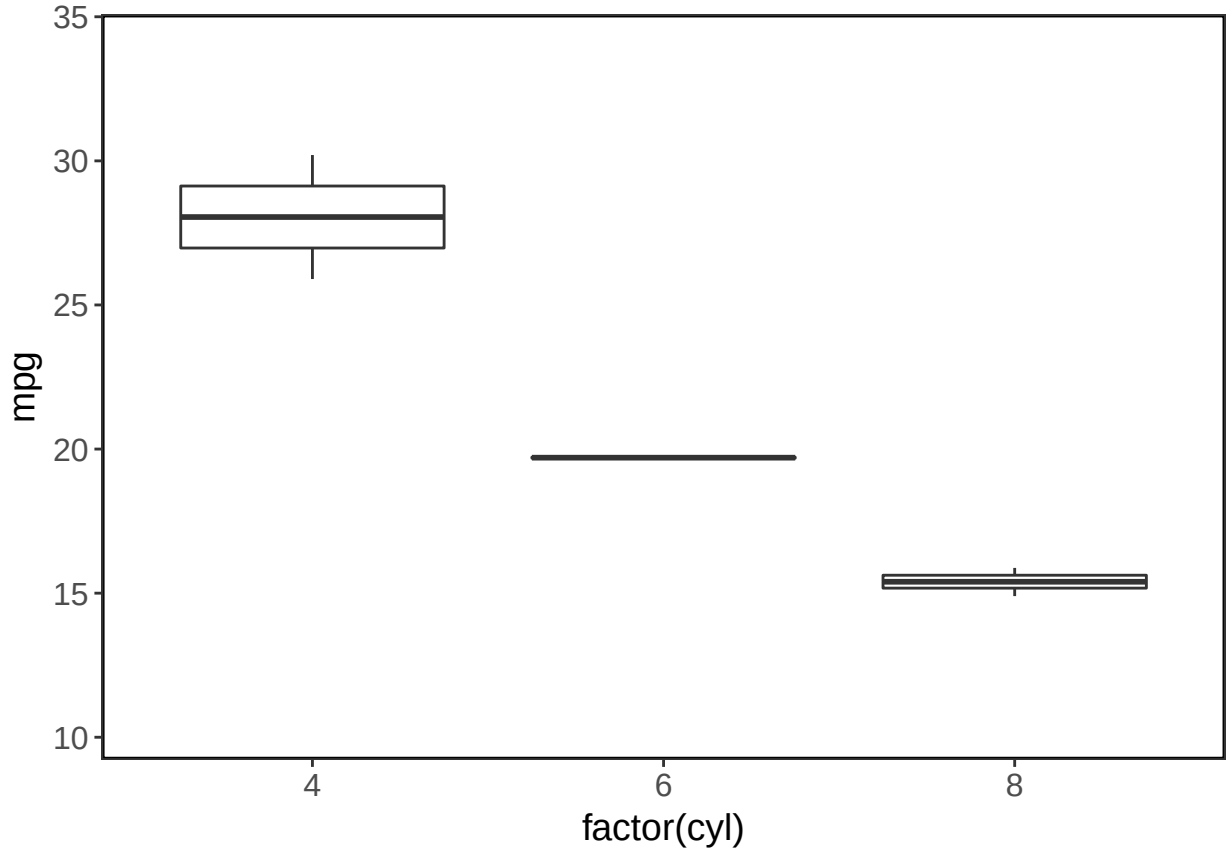
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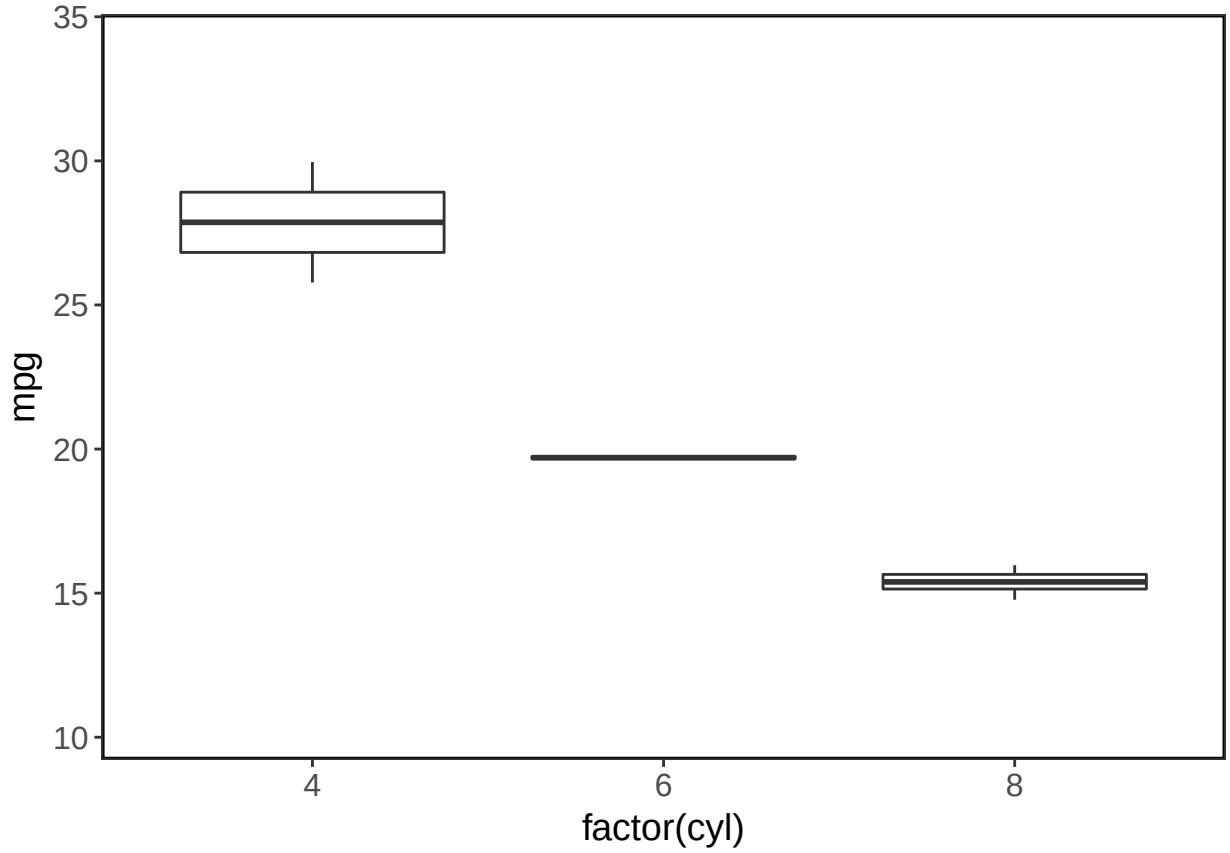
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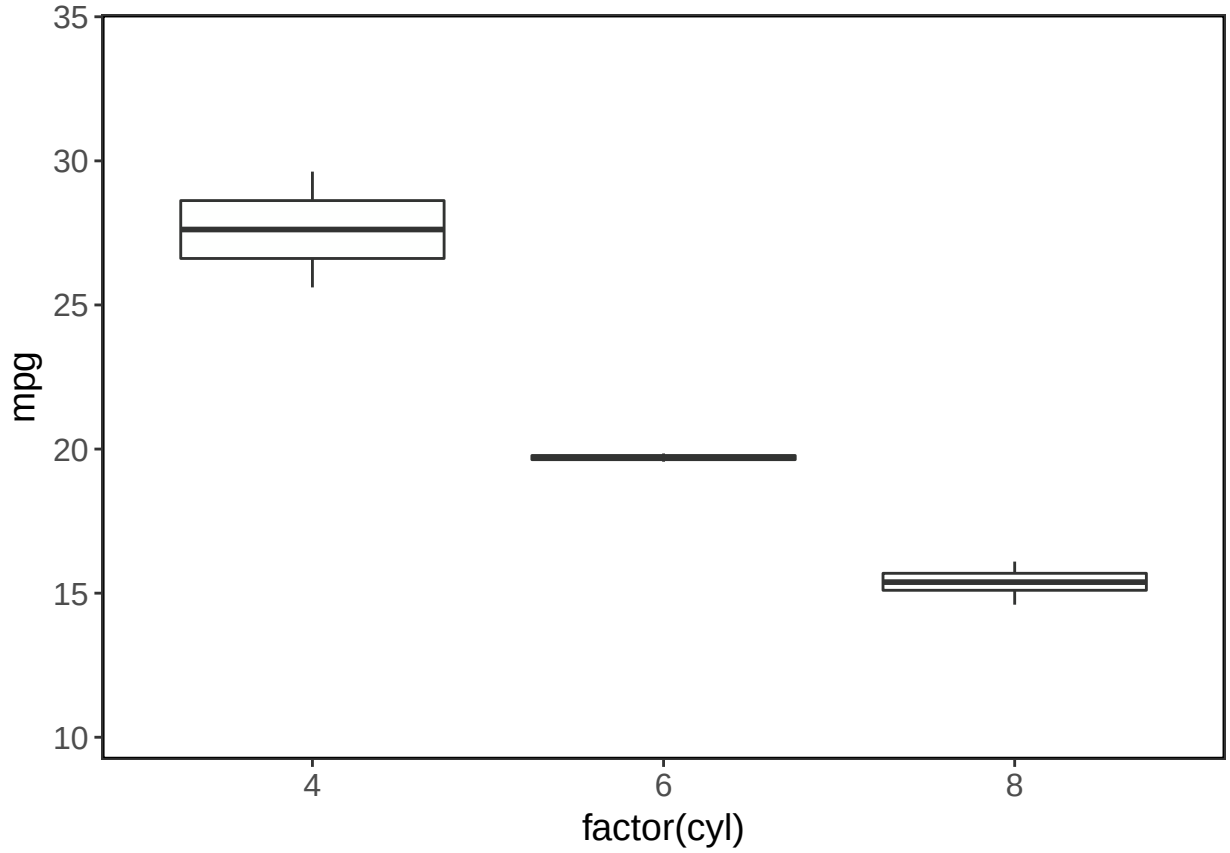
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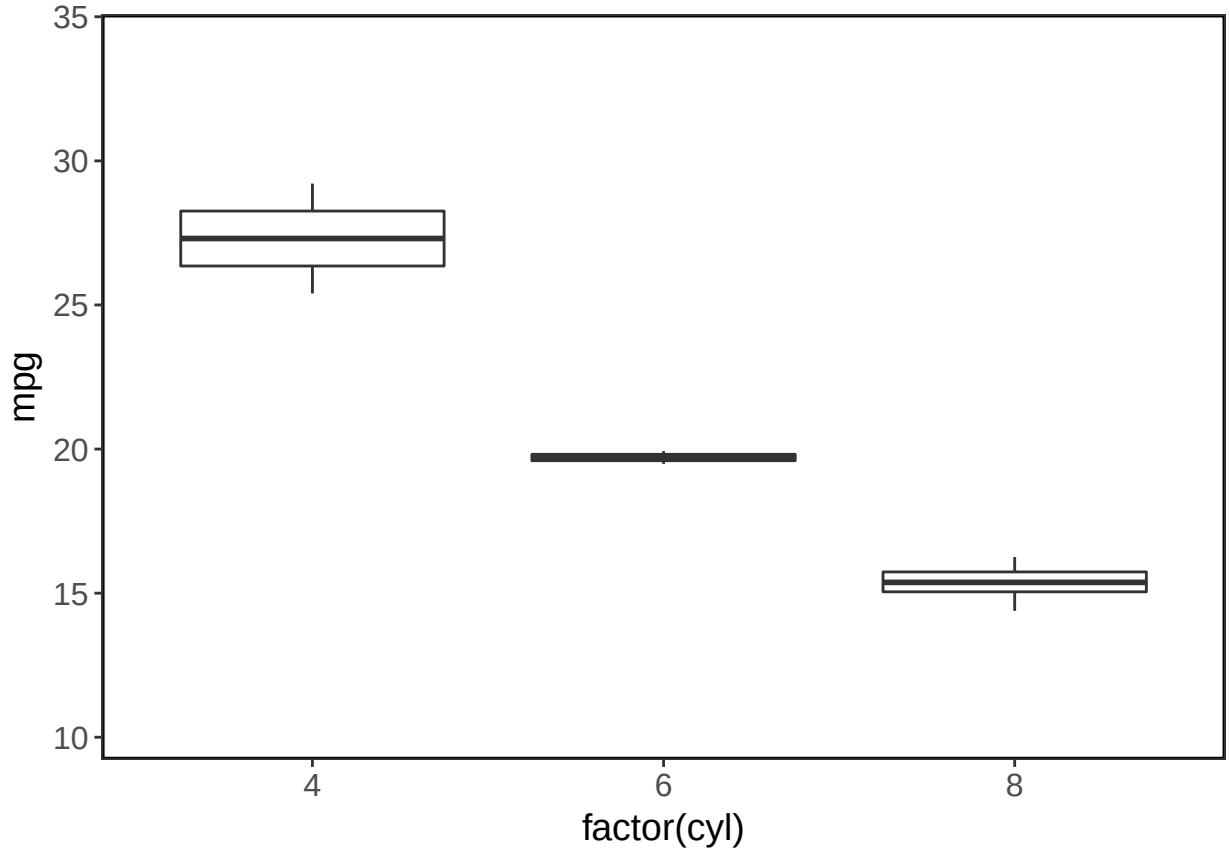
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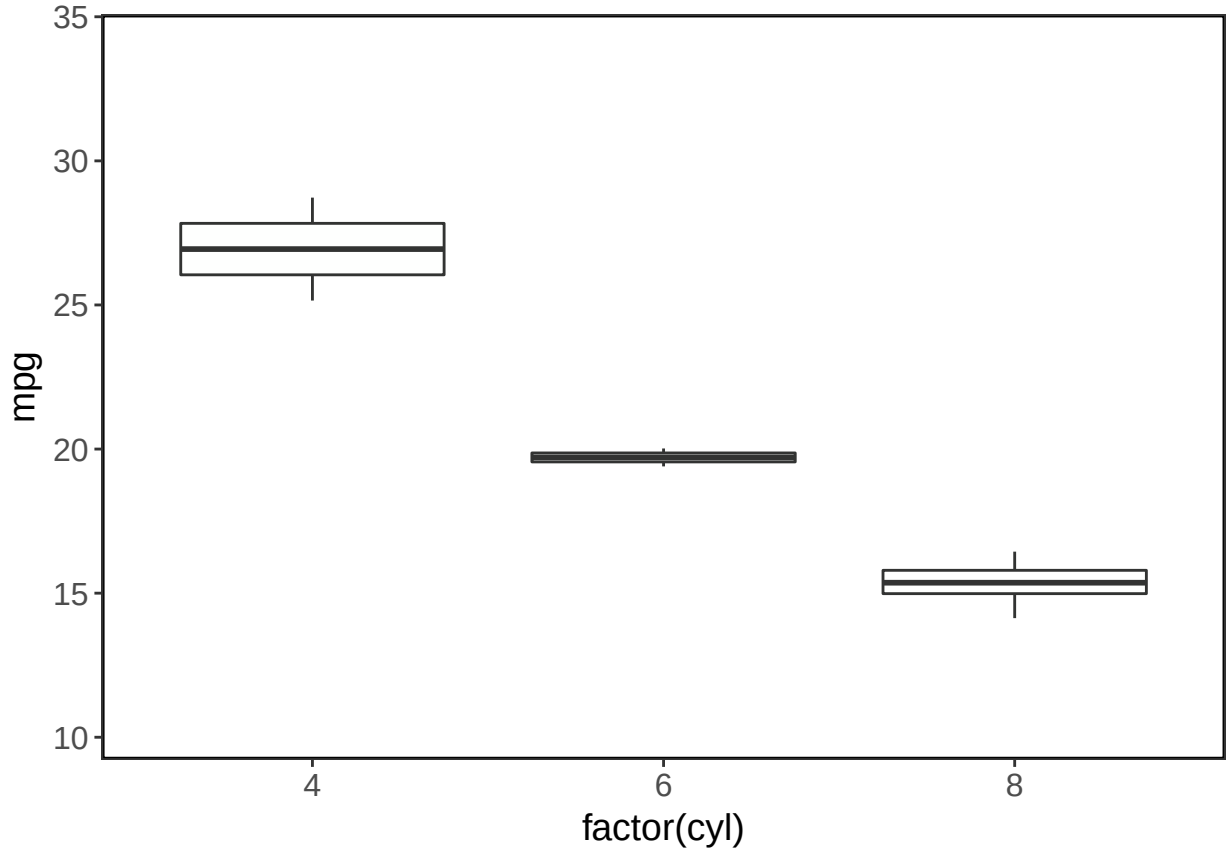
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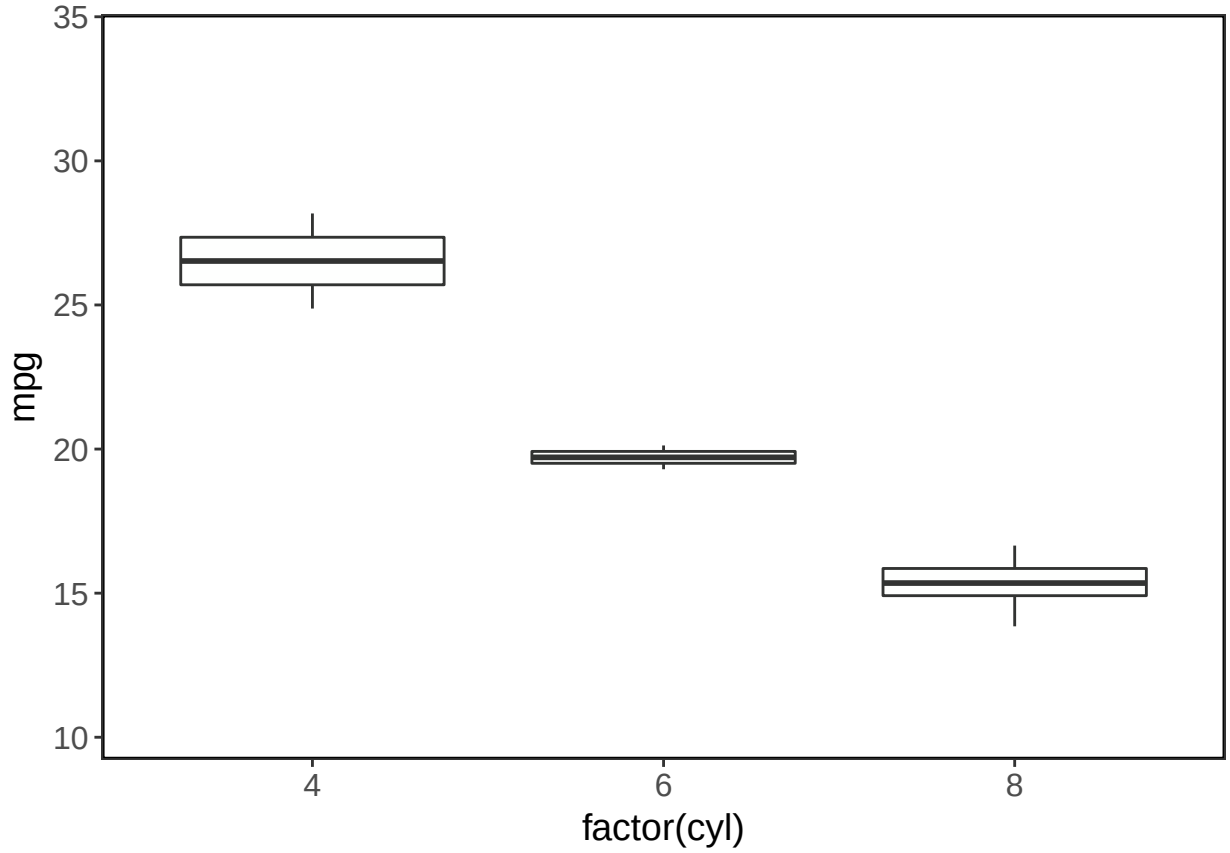
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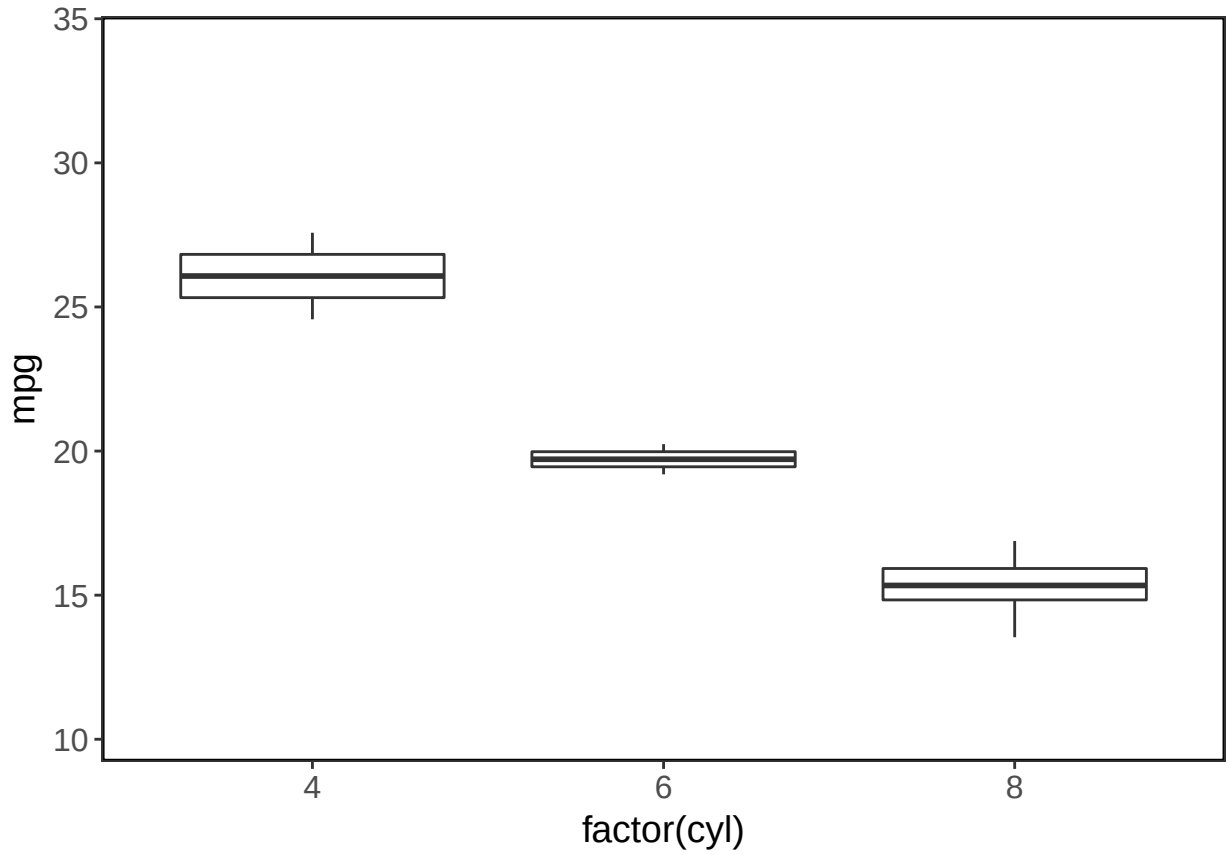
20
15
10
mpg
4
6
8
factor(cyl)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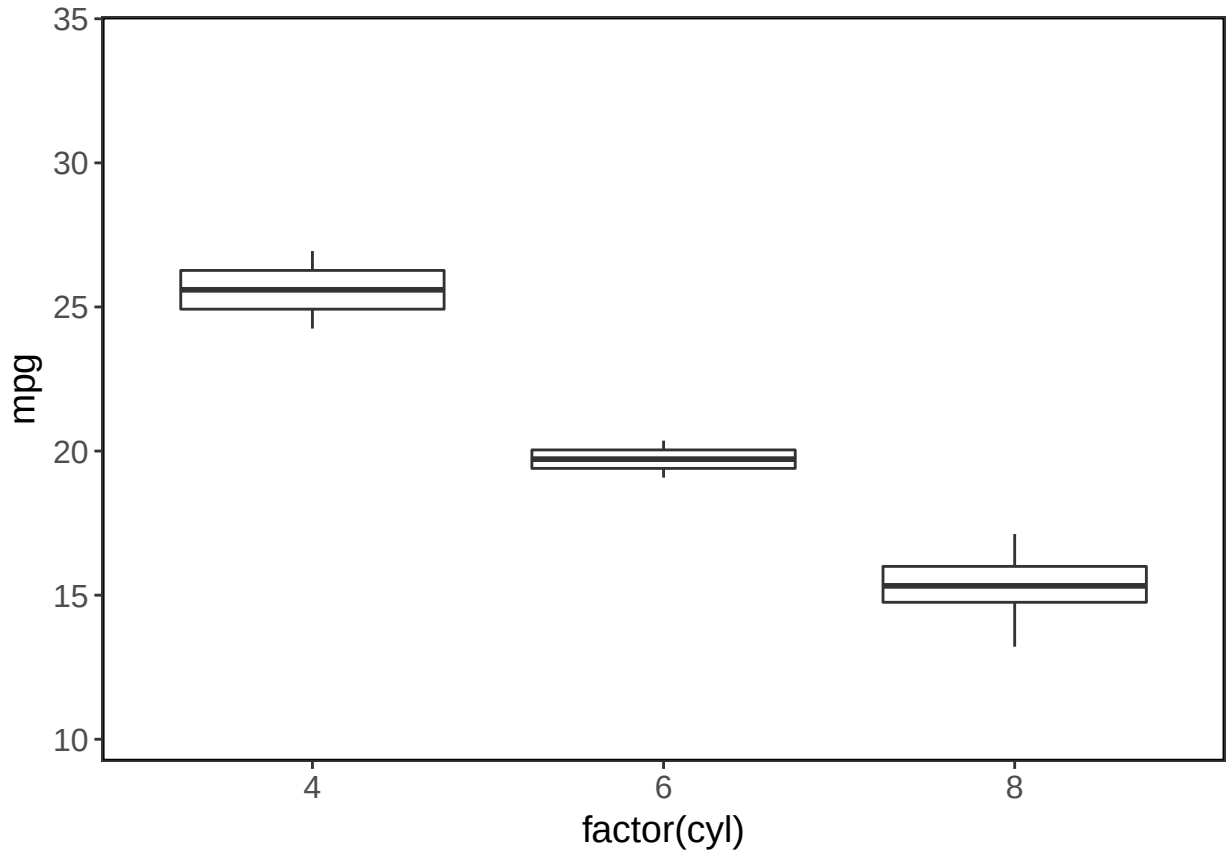
mpg
4
6
8
factor(cyl)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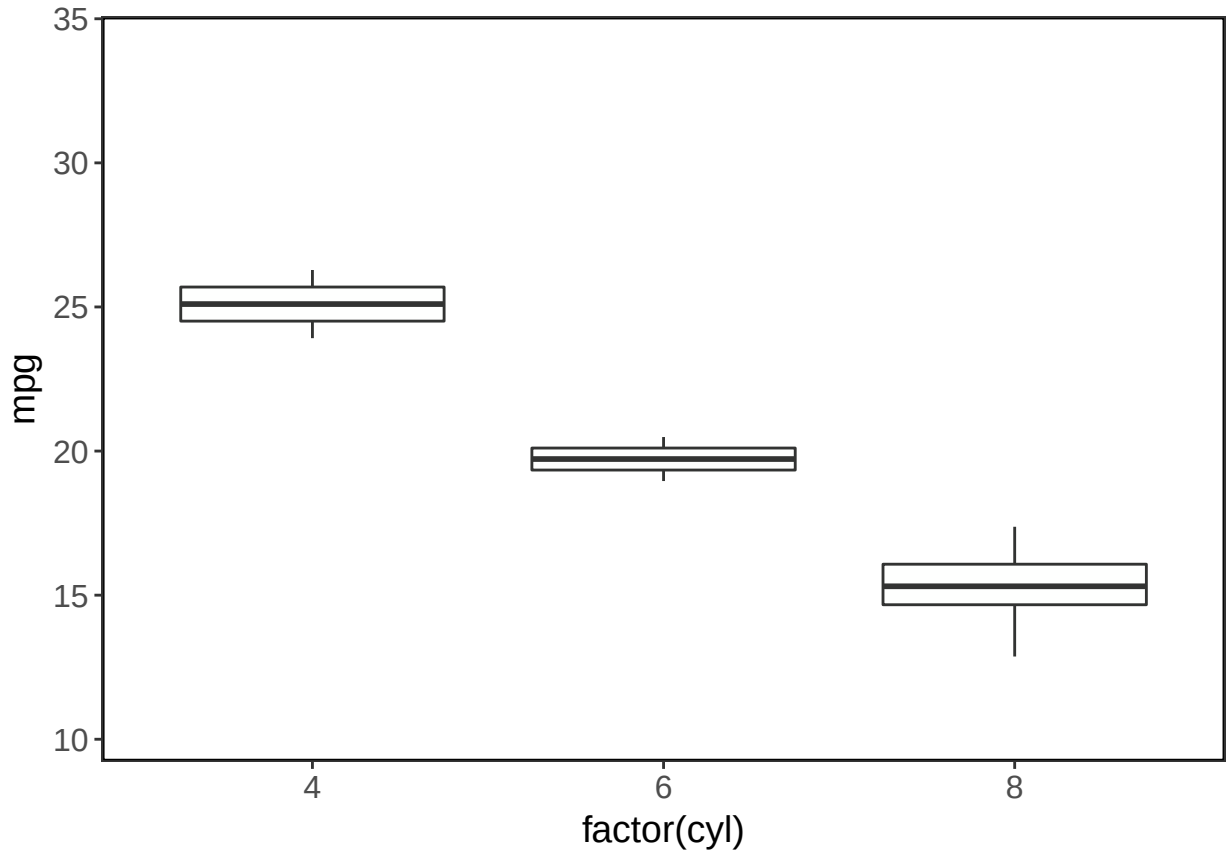
mpg
4
6
8
factor(cyl)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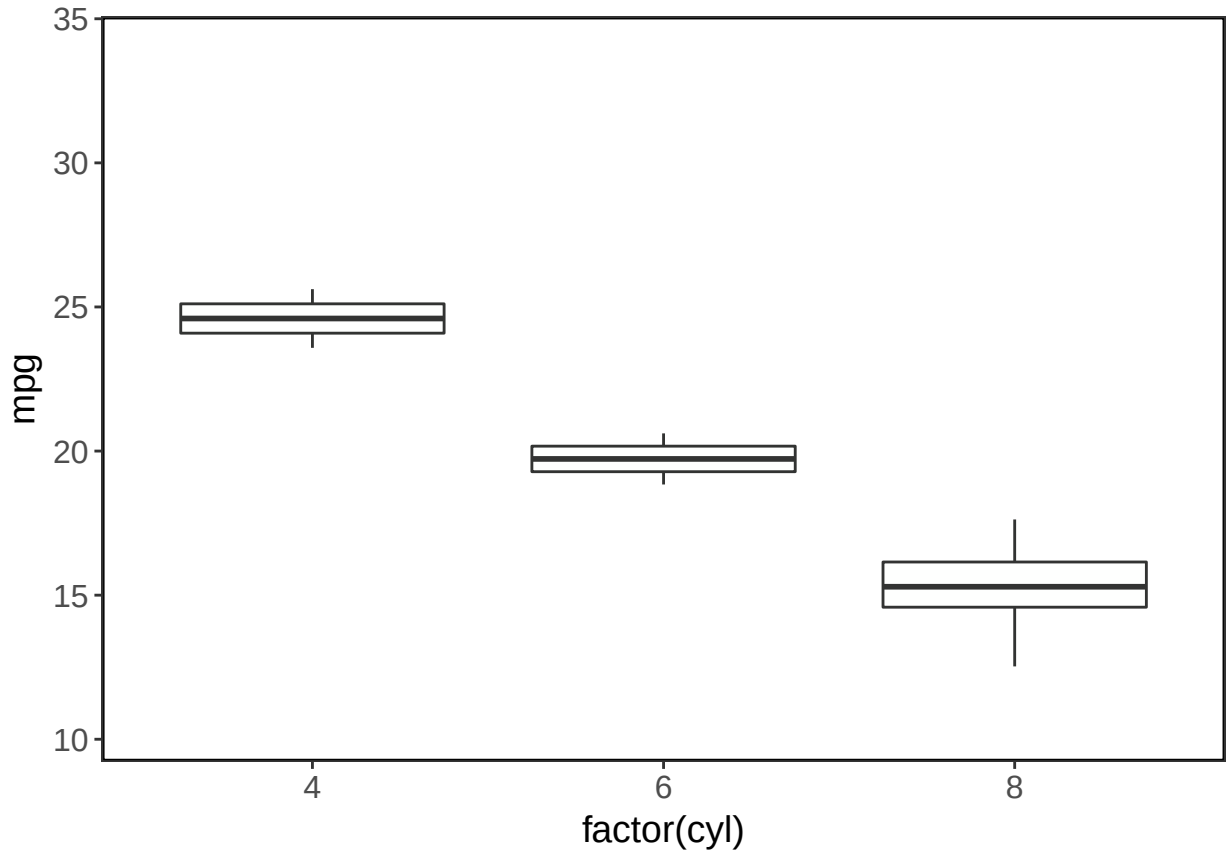
mpg
4
6
8
factor(cyl)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mpg
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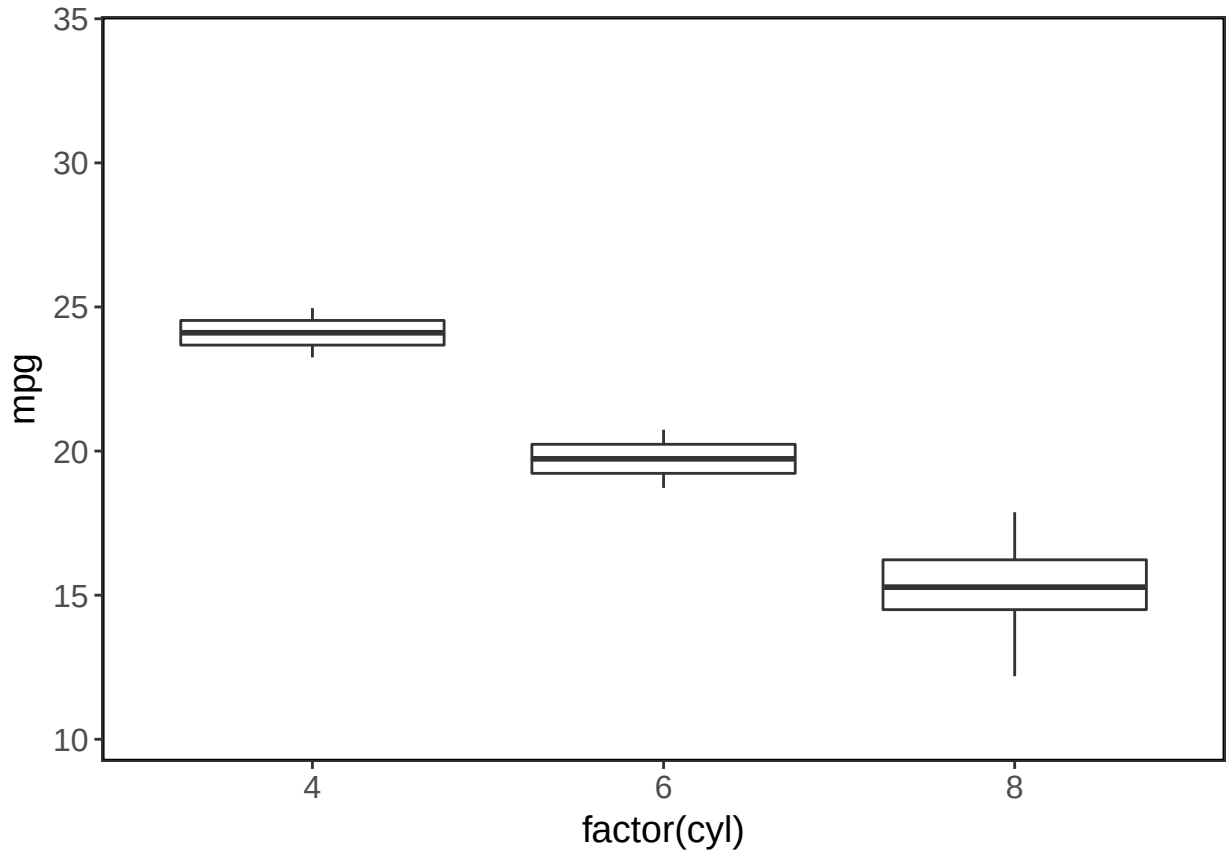
6
8
factor(cyl)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mpg
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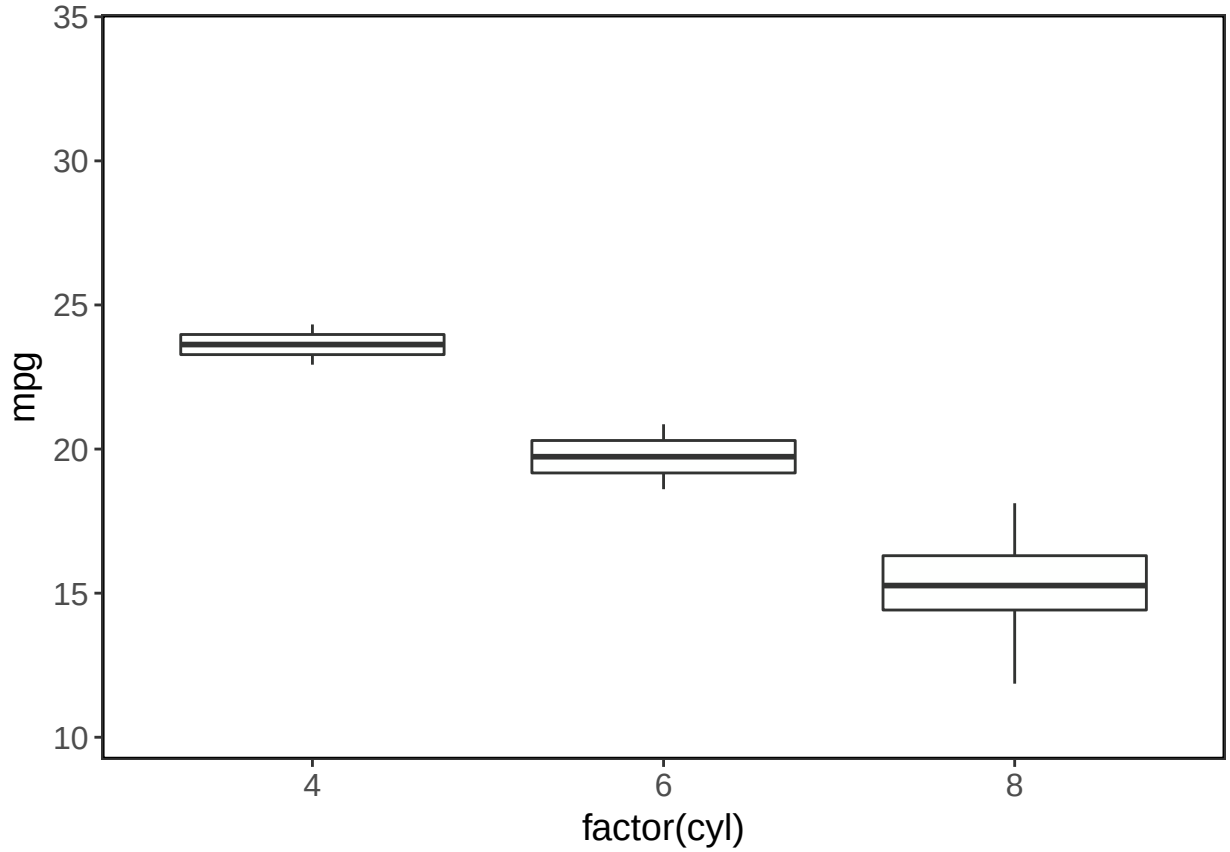
8
factor(cyl)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mpg
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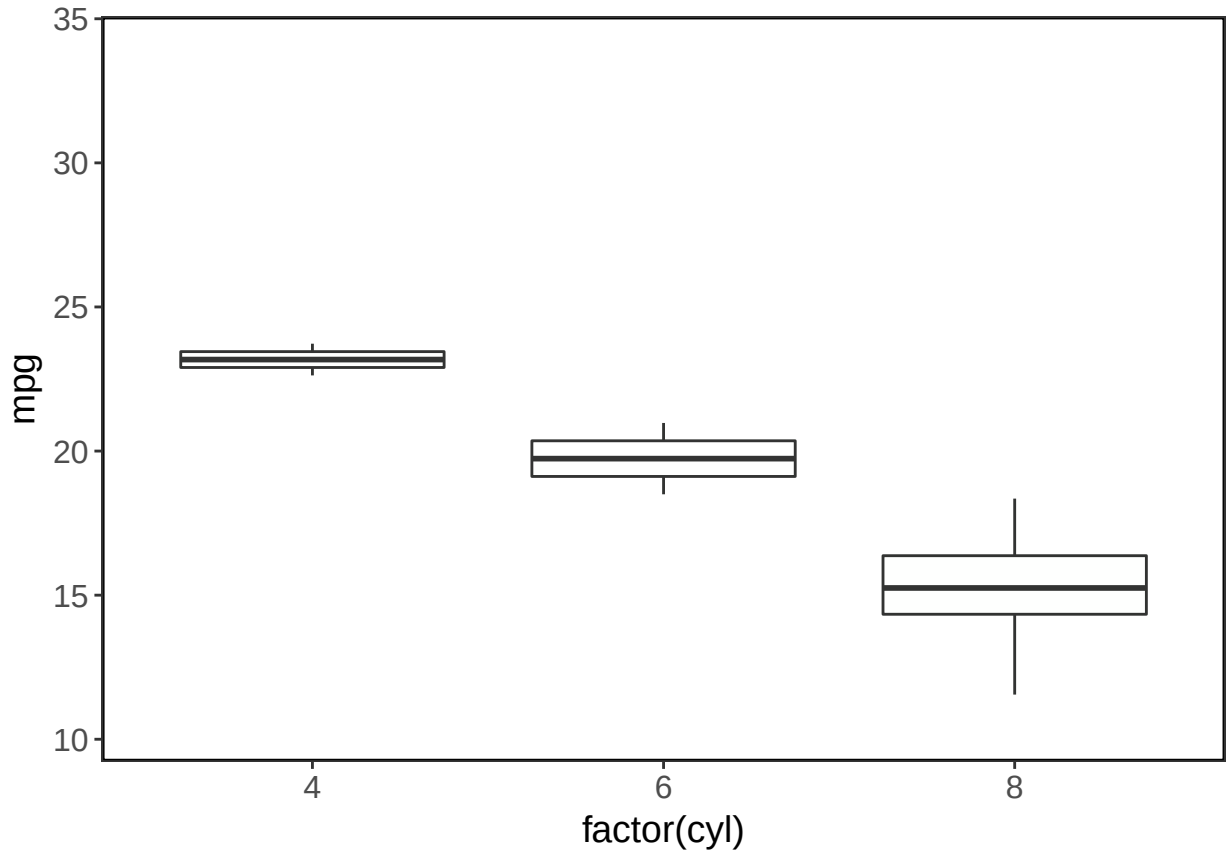
factor(cyl)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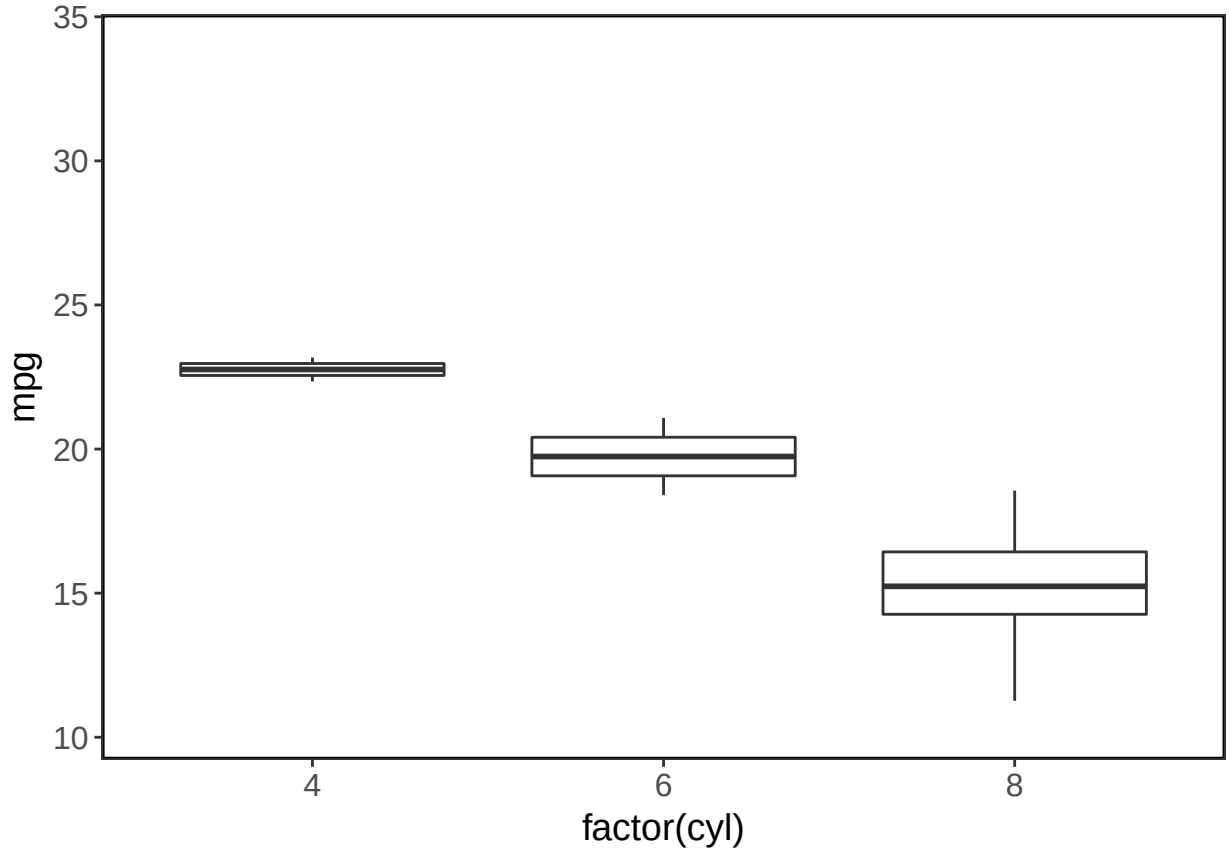
mpg
4
6
8
factor(cyl)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mpg
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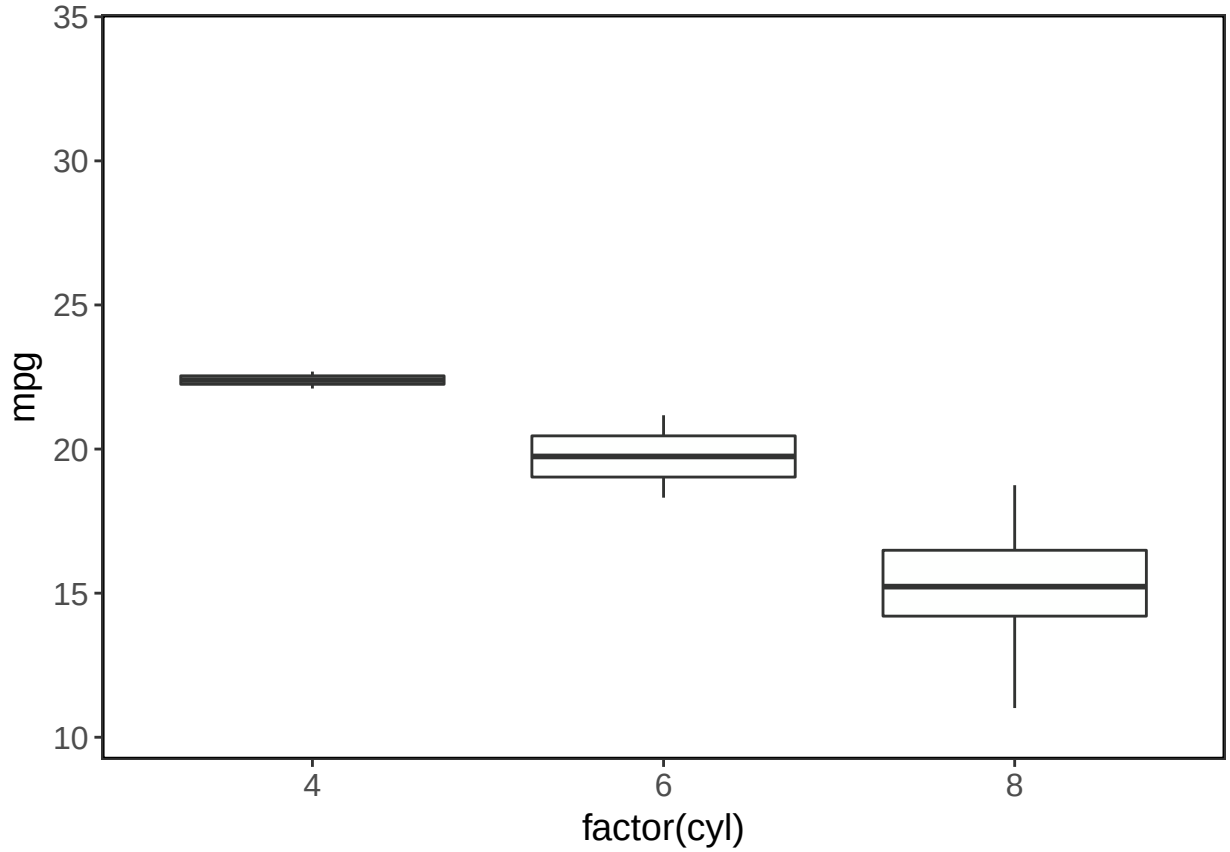
factor(cyl)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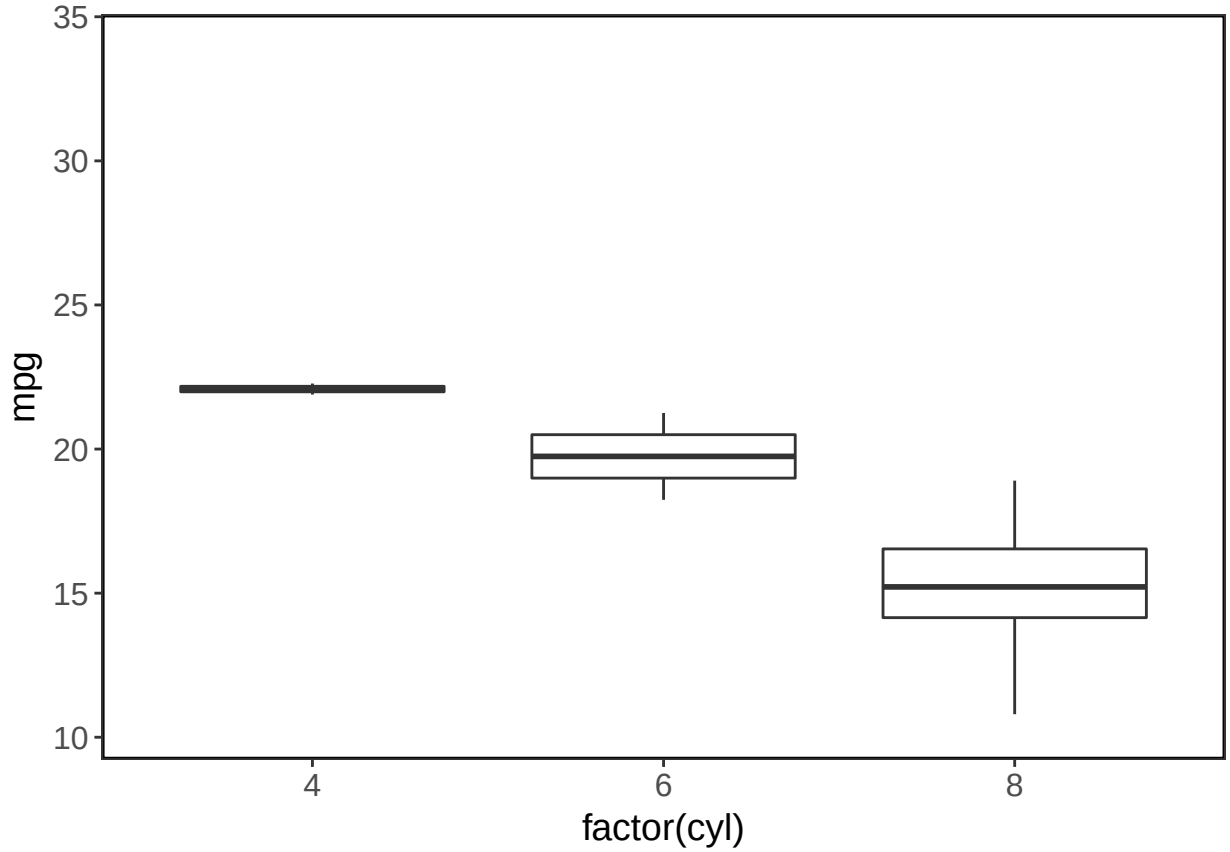
mpg
4
6
8
factor(cyl)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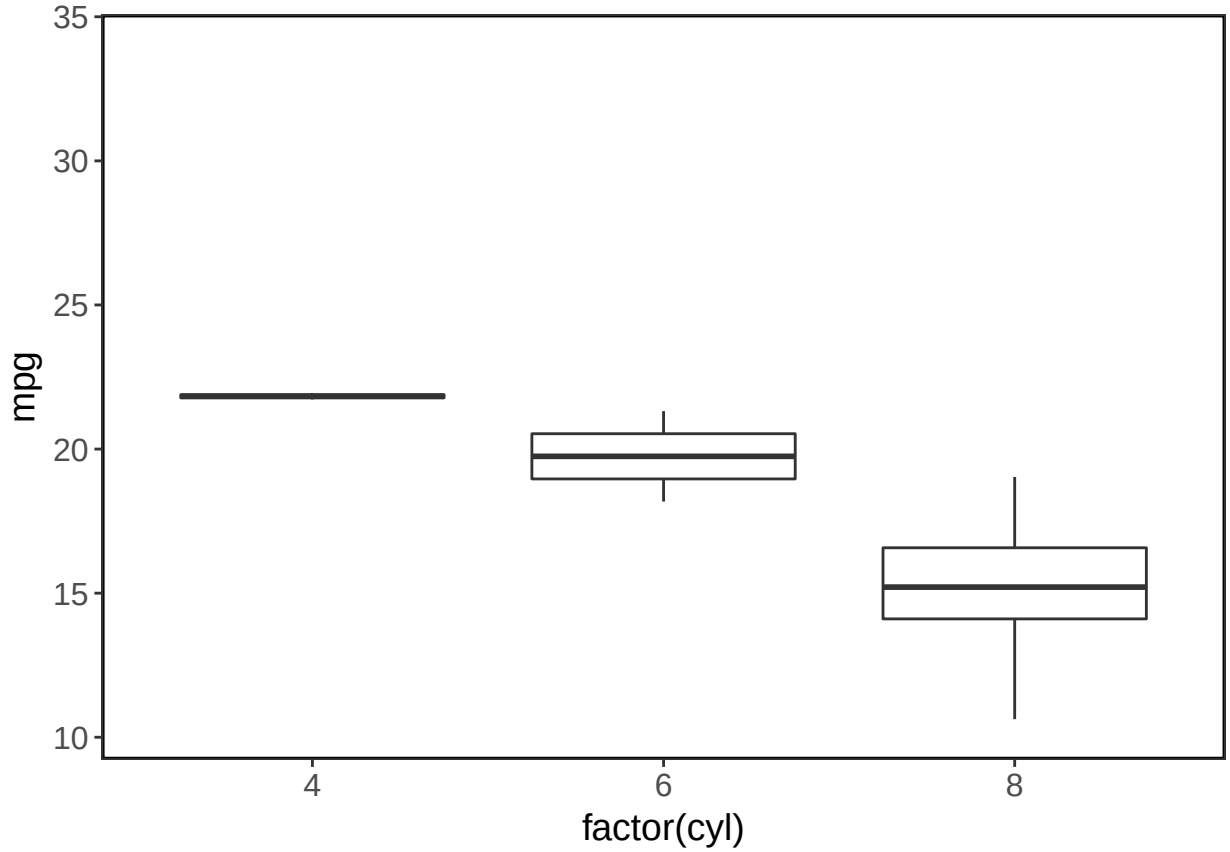
15
10
mpg
4
6
8
factor(cyl)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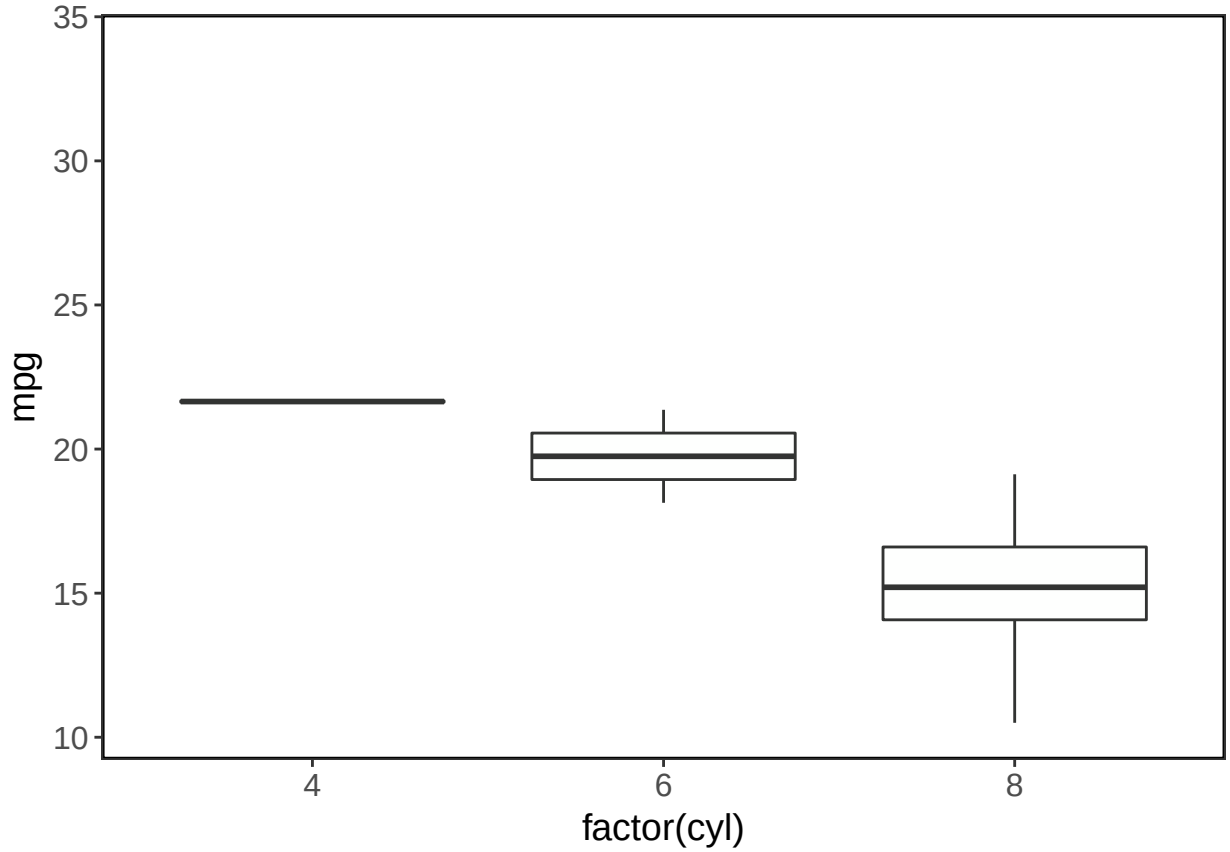
20
15
10
mpg
4
6
8
factor(cyl)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30
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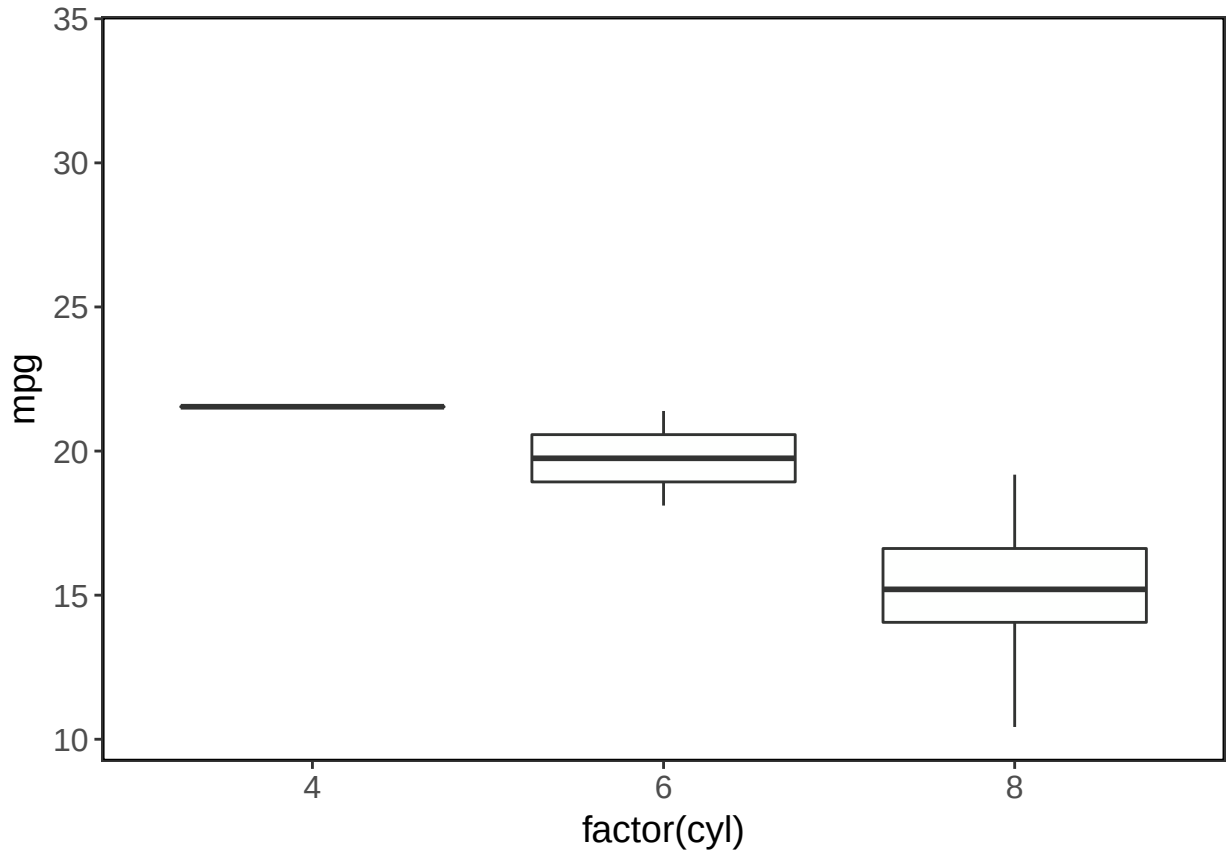
20
15
10
mpg
4
6
8
factor(cyl)

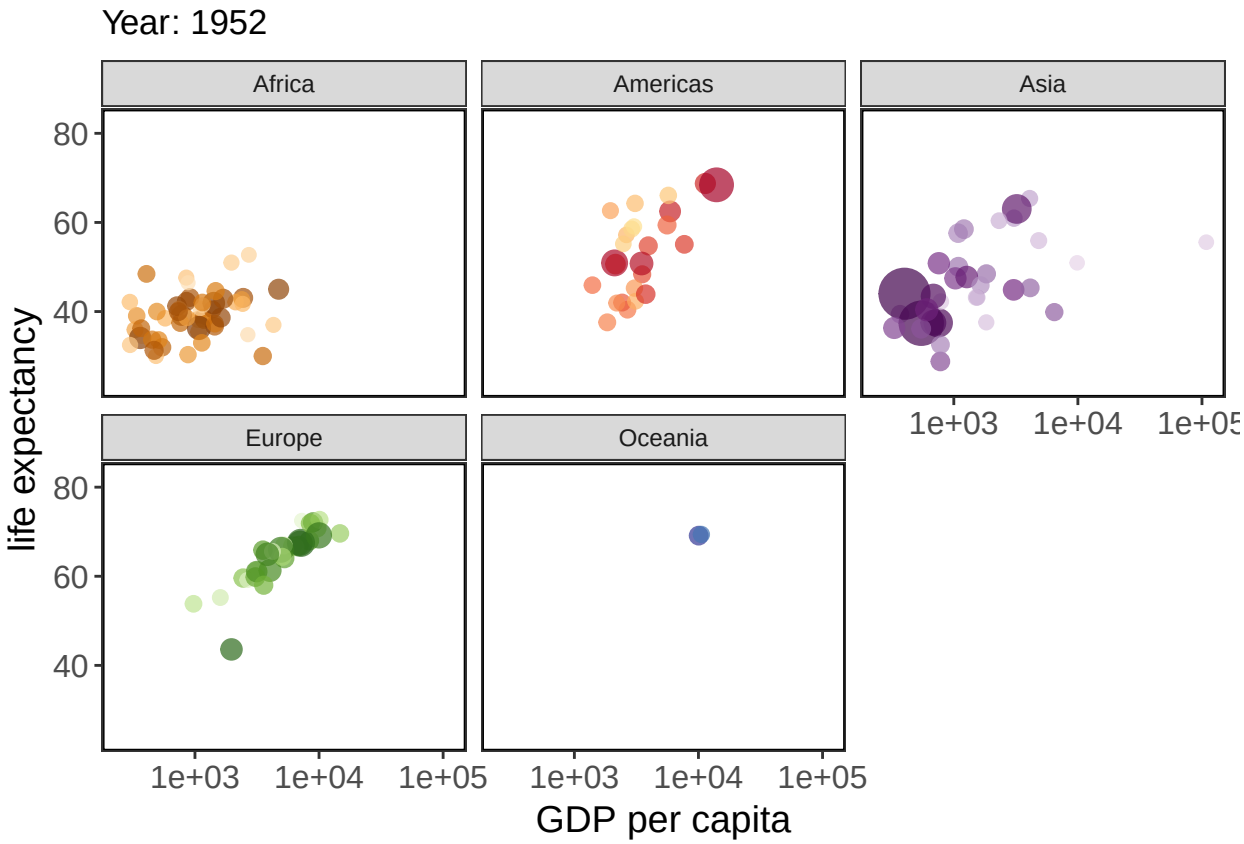


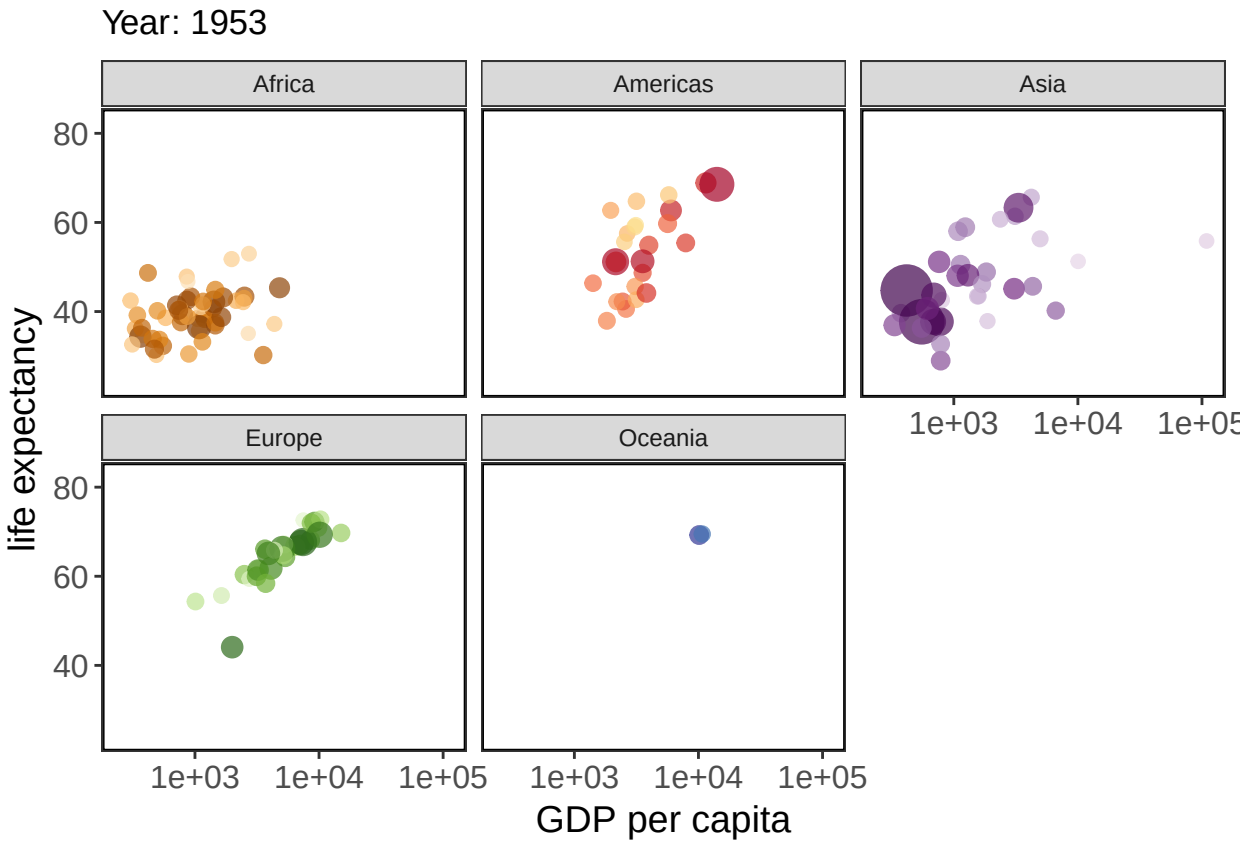
3) An example figure

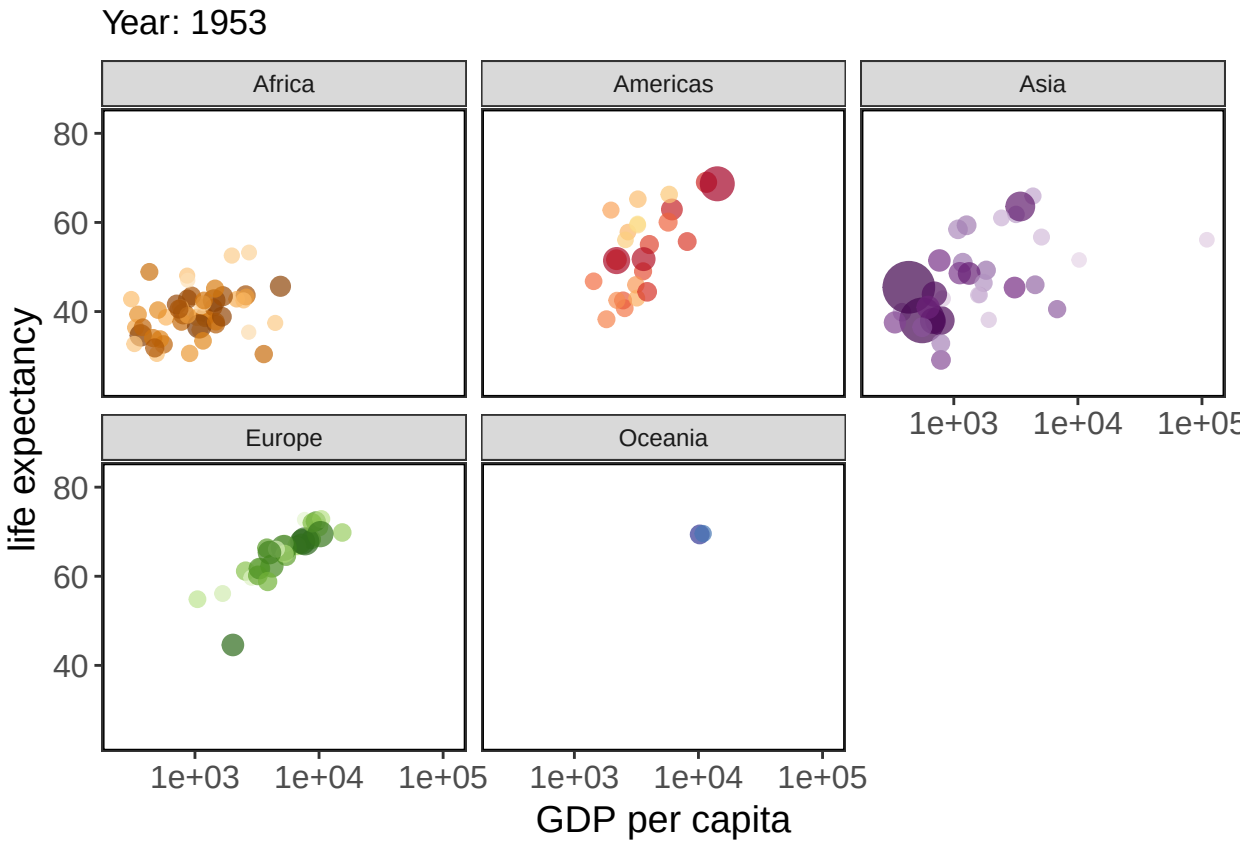
```
library(gapminder)
```

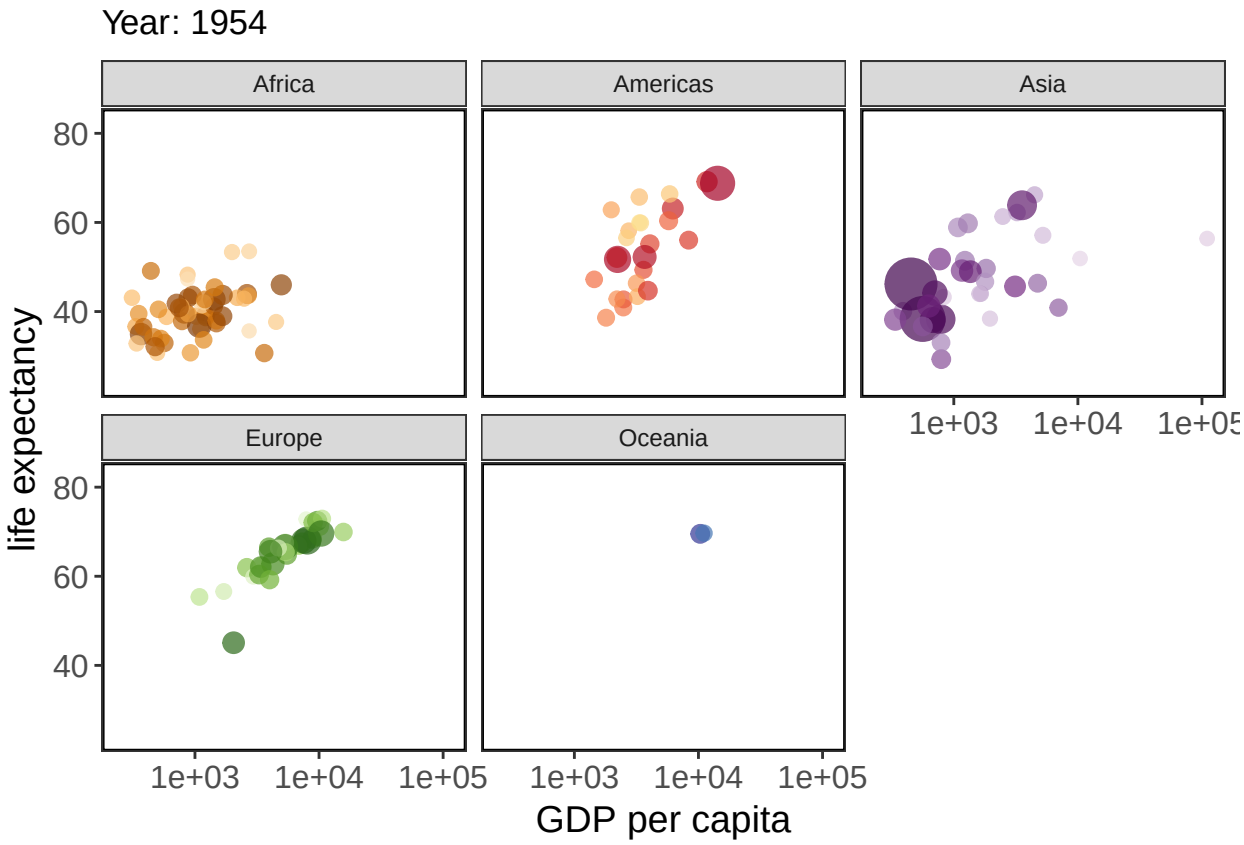
```
## Warning: package 'gapminder' was built under R version 4.1.3
```

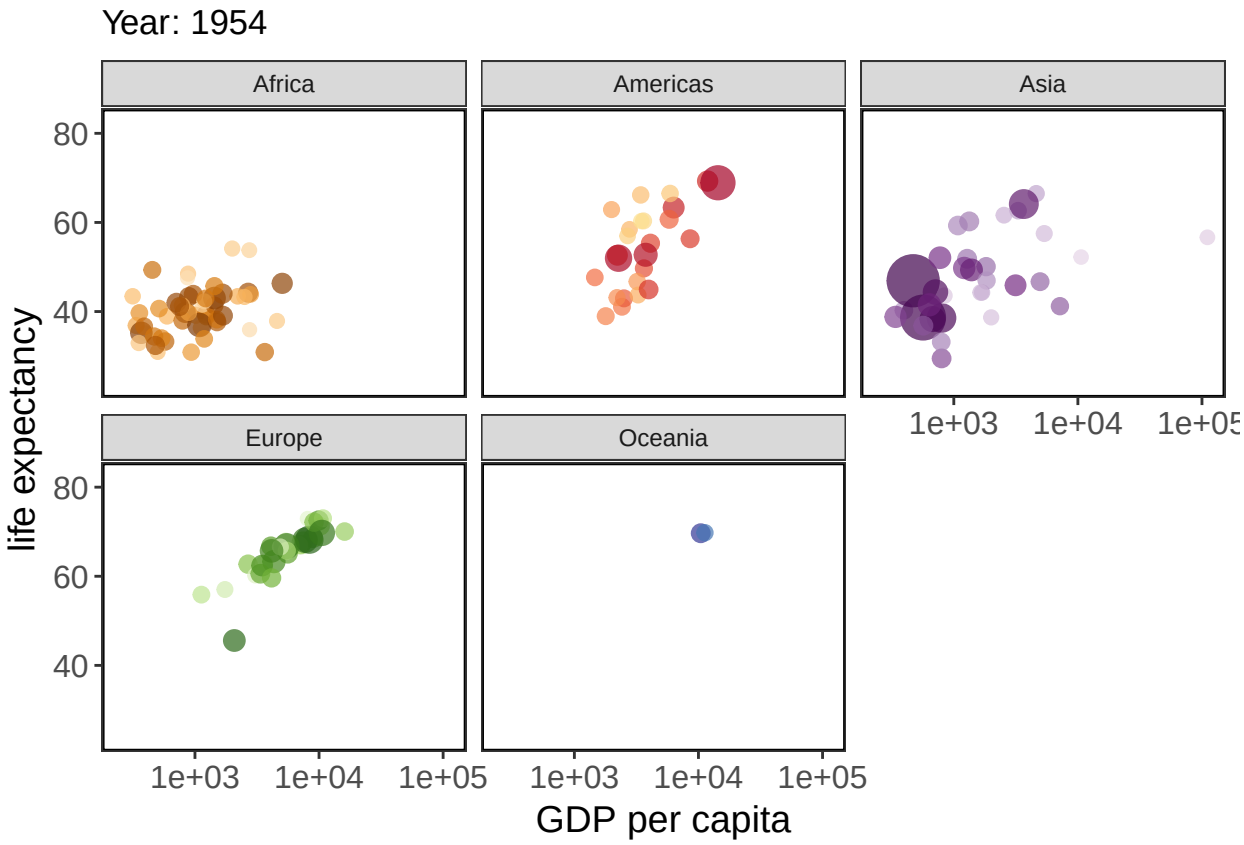
```
ggplot(gapminder, aes(gdpPercap, lifeExp, size = pop, colour = country)) +
  geom_point(alpha = 0.7, show.legend = FALSE) +
  scale_colour_manual(values = country_colors) +
  scale_size(range = c(2, 12)) +
  scale_x_log10() +
  facet_wrap(~continent) +
  # Here comes the gganimate specific bits
  labs(title = 'Year: {frame_time}', x = 'GDP per capita', y = 'life expectancy') +
  transition_time(year) +
  ease_aes('linear') +
  theme_bw() +
  theme(panel.grid.major = element_blank(),
        panel.grid.minor = element_blank(),
        panel.background = element_rect(colour = "black", size = 1)) +
  theme(axis.text = element_text(size = 12),
        axis.title = element_text(size = 14))
```

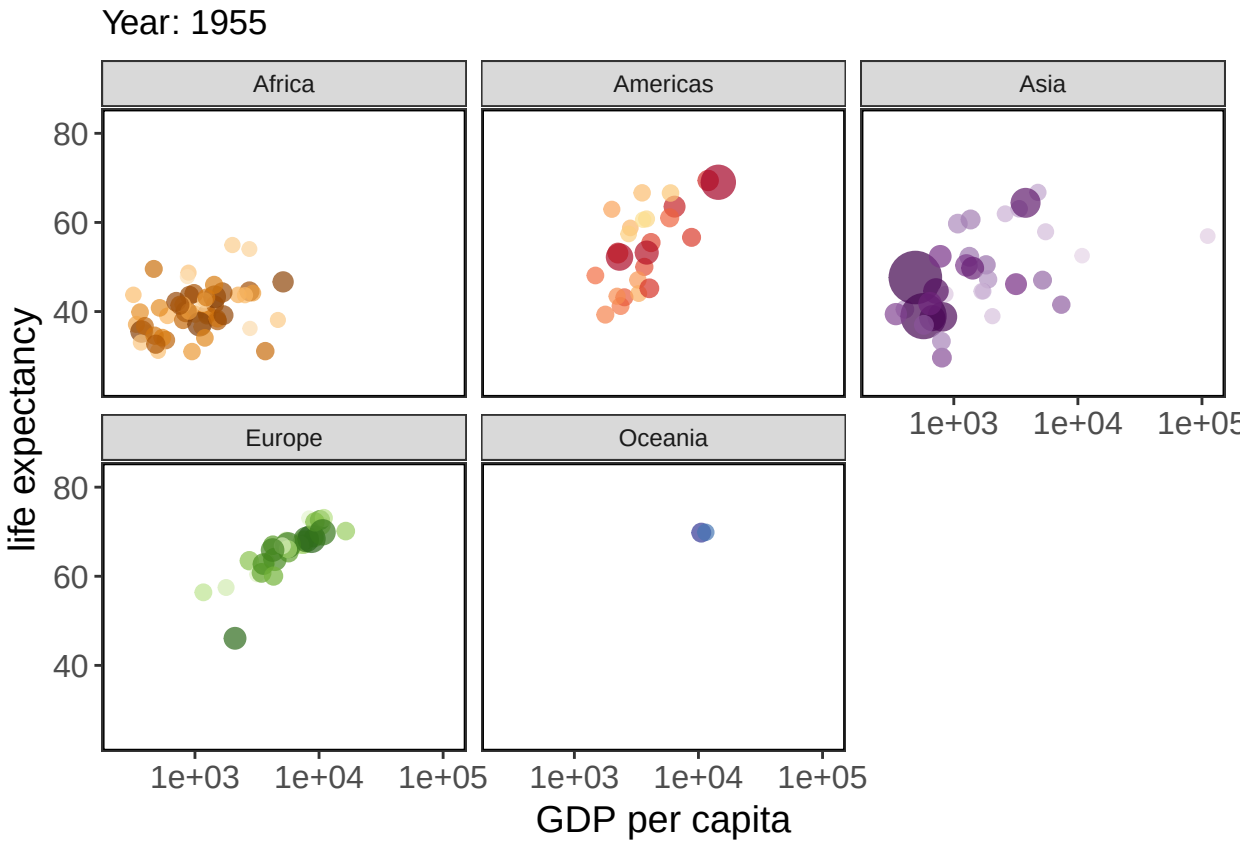

Year: 1952
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

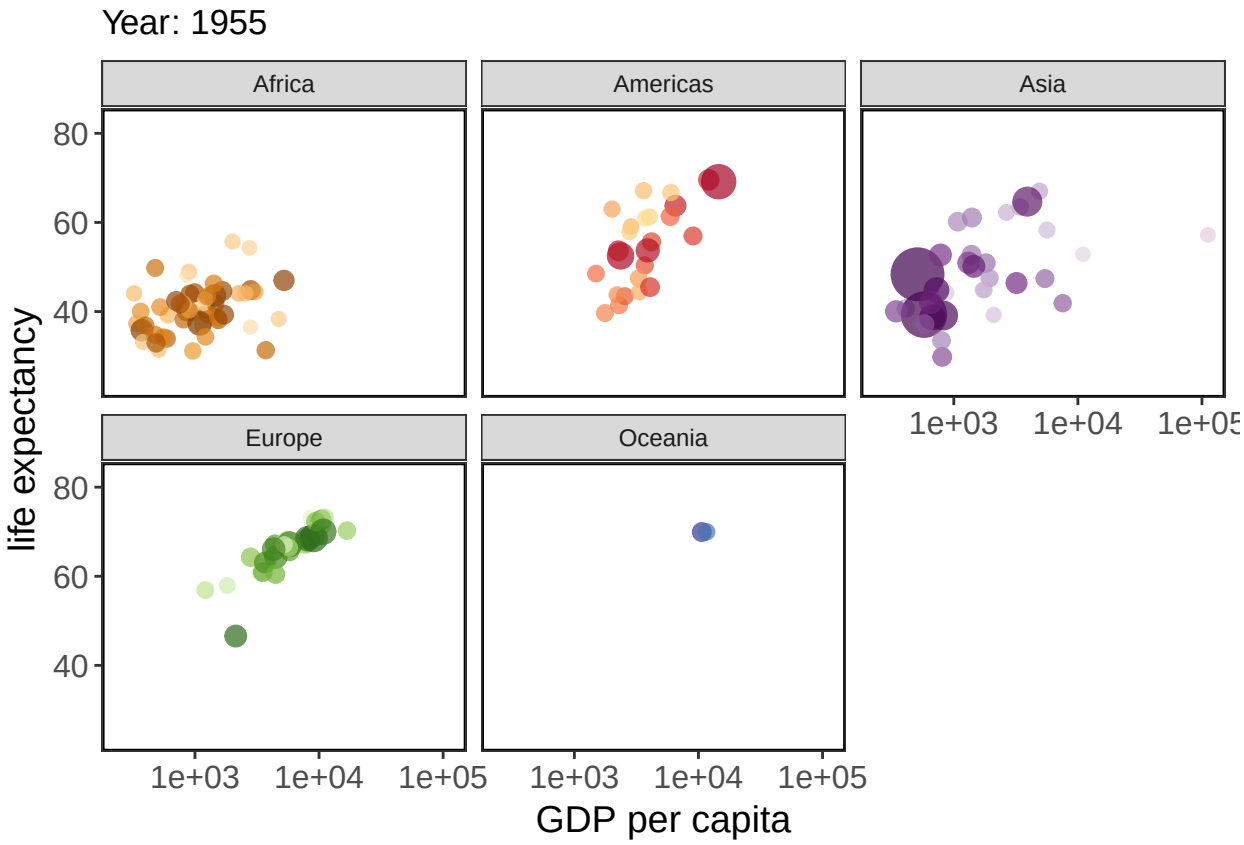

Year: 1953
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

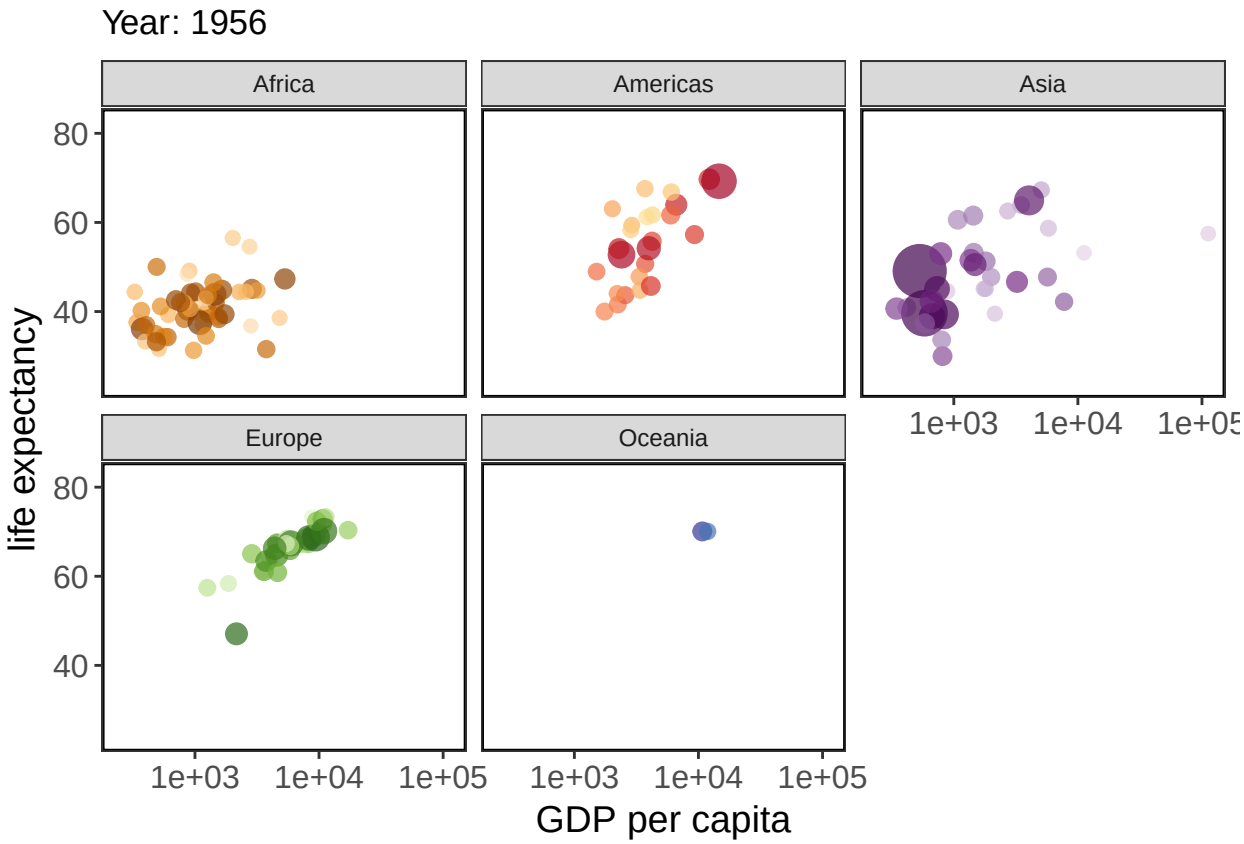

Year: 1953
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

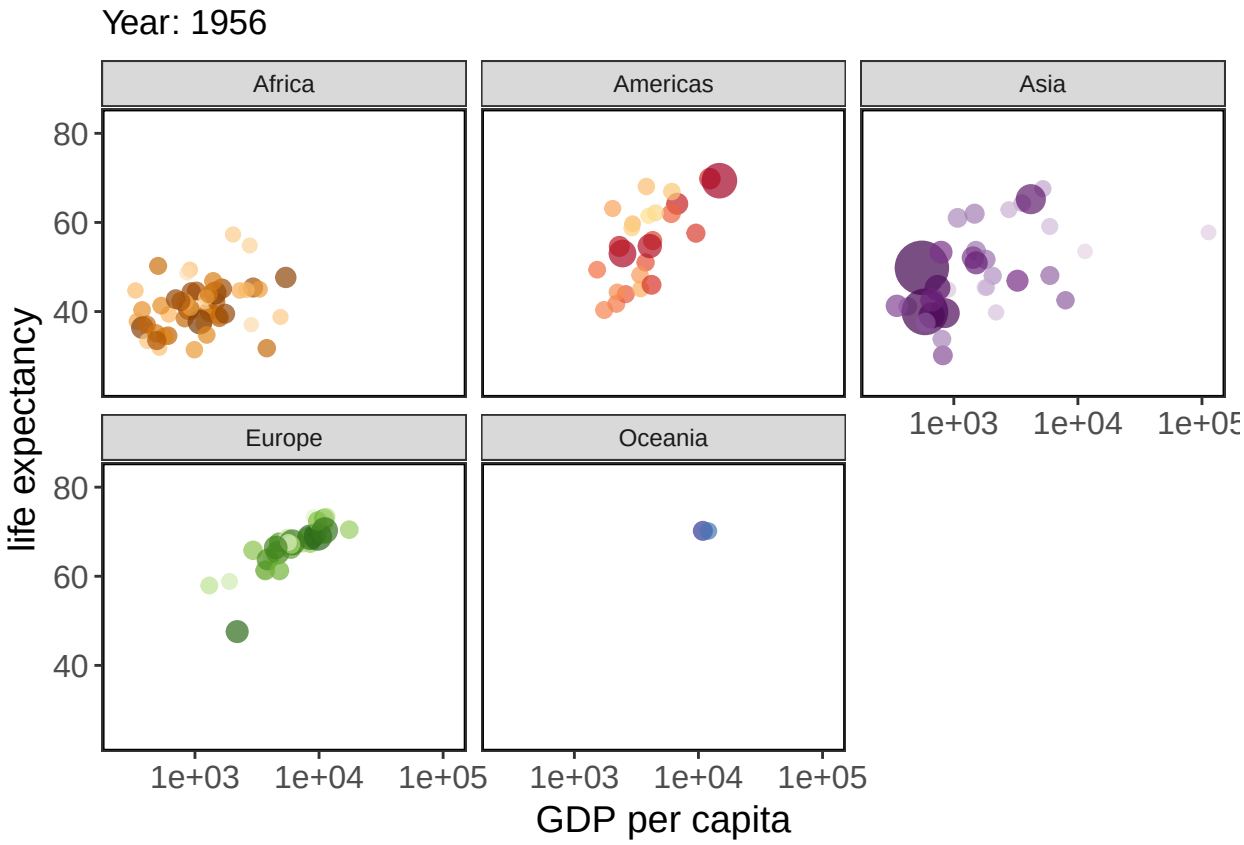

Year: 1954
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

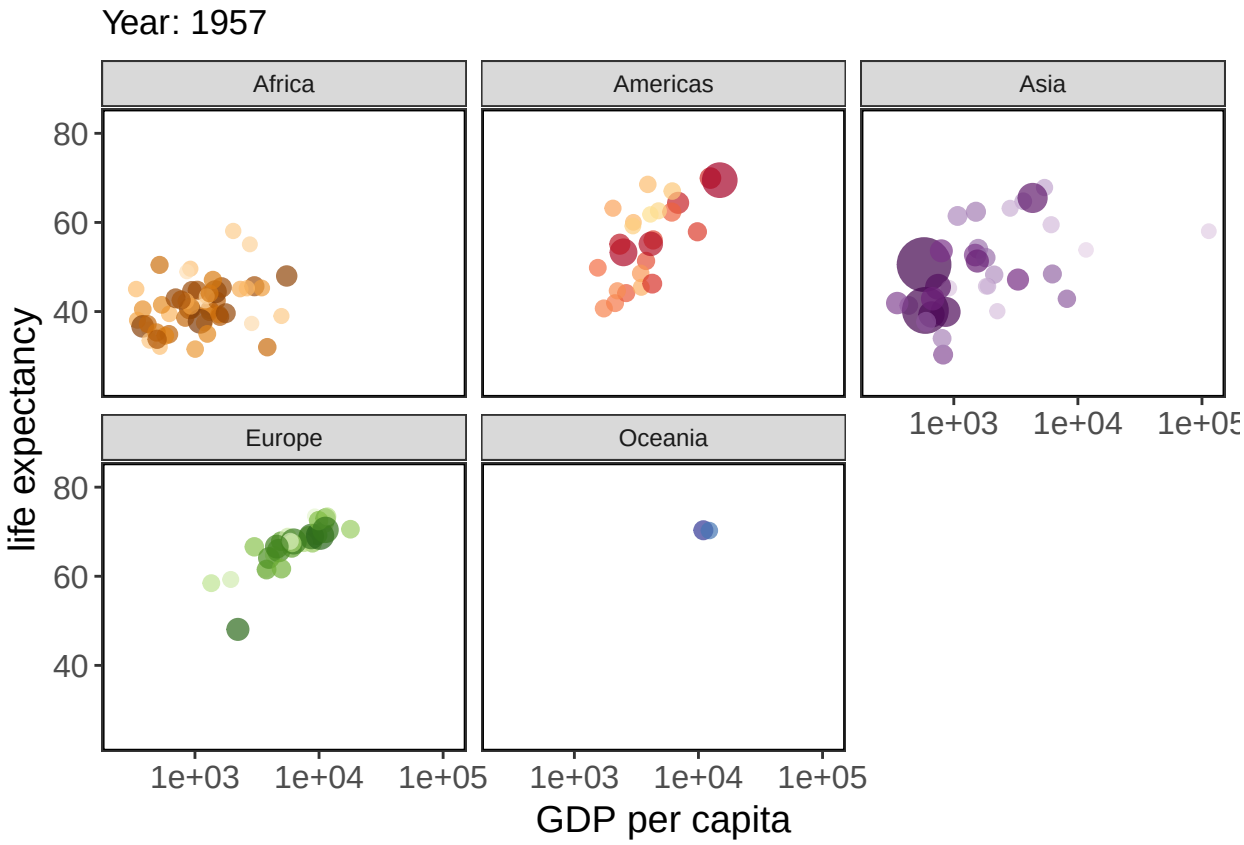

Year: 1954
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

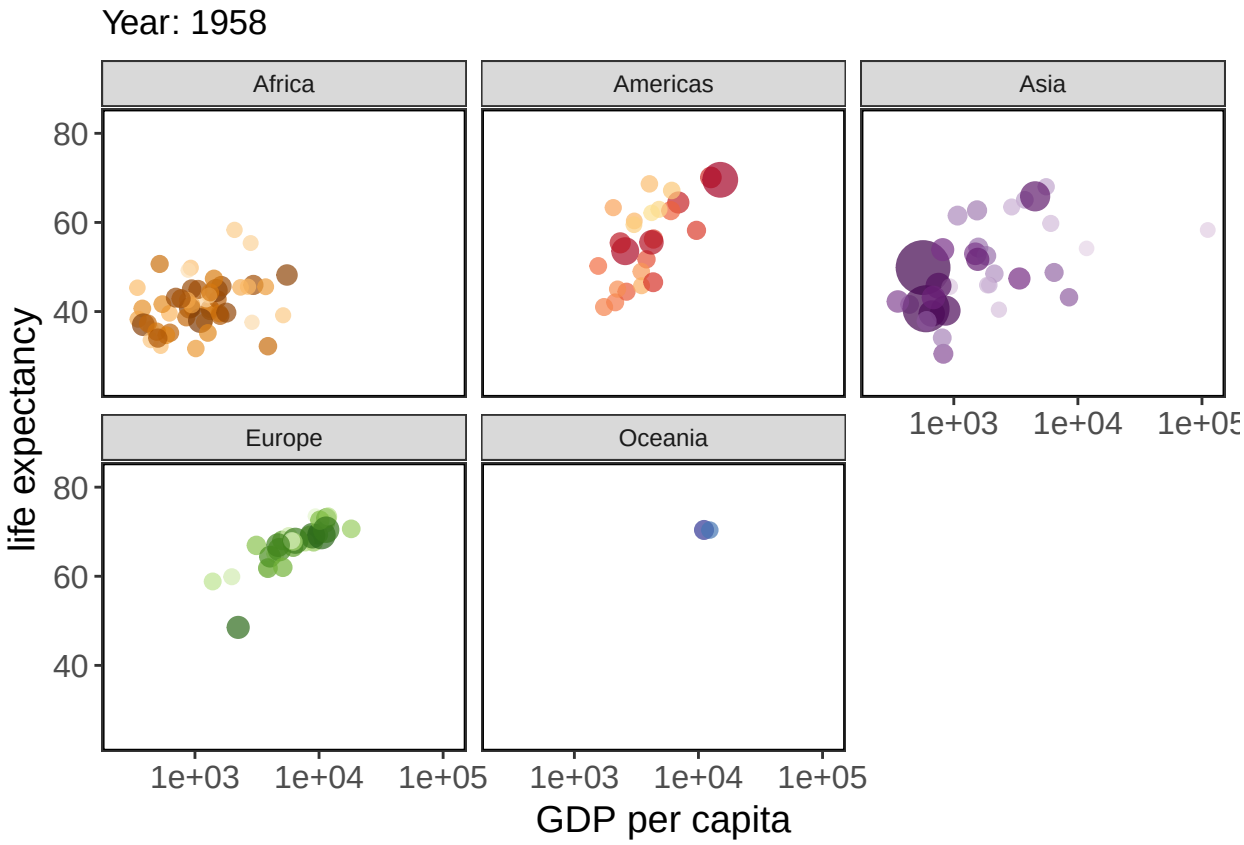

Year: 1955
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

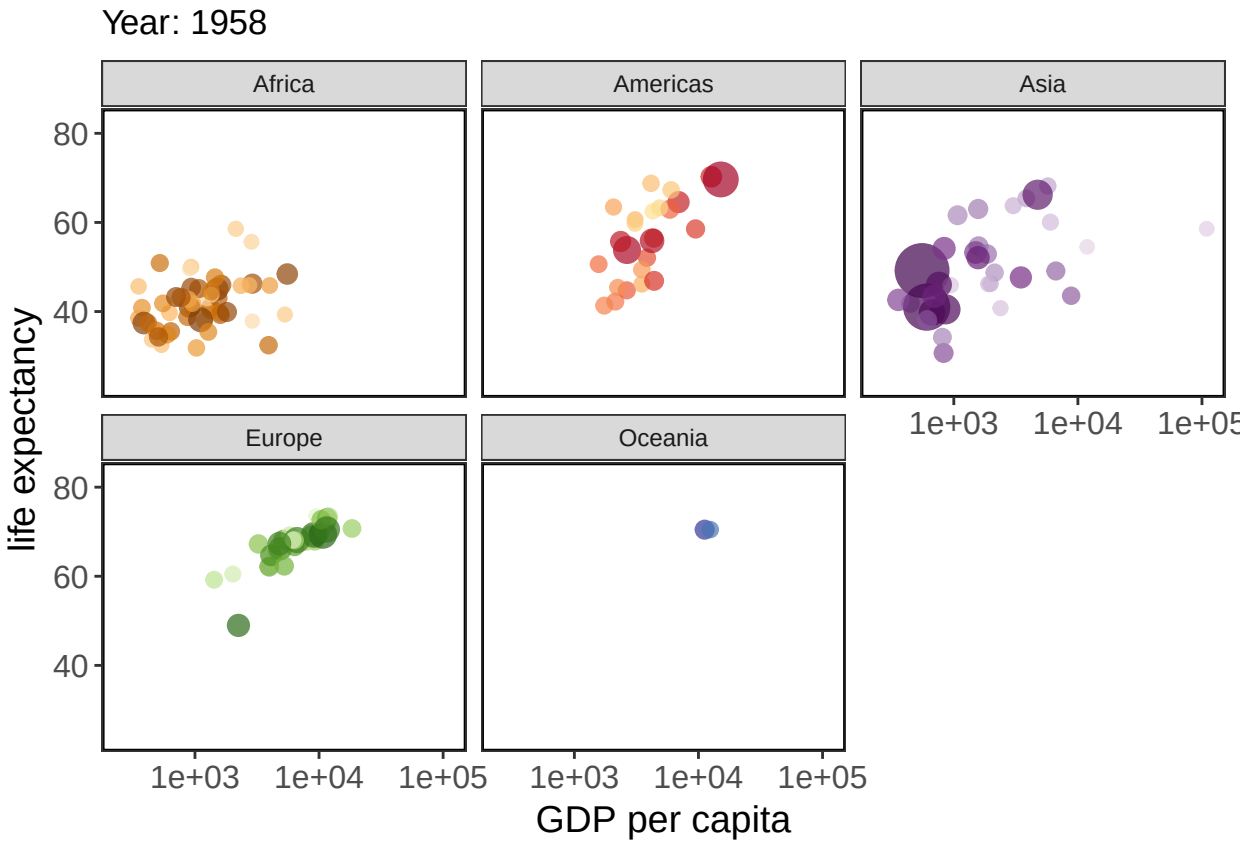

Year: 1955
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

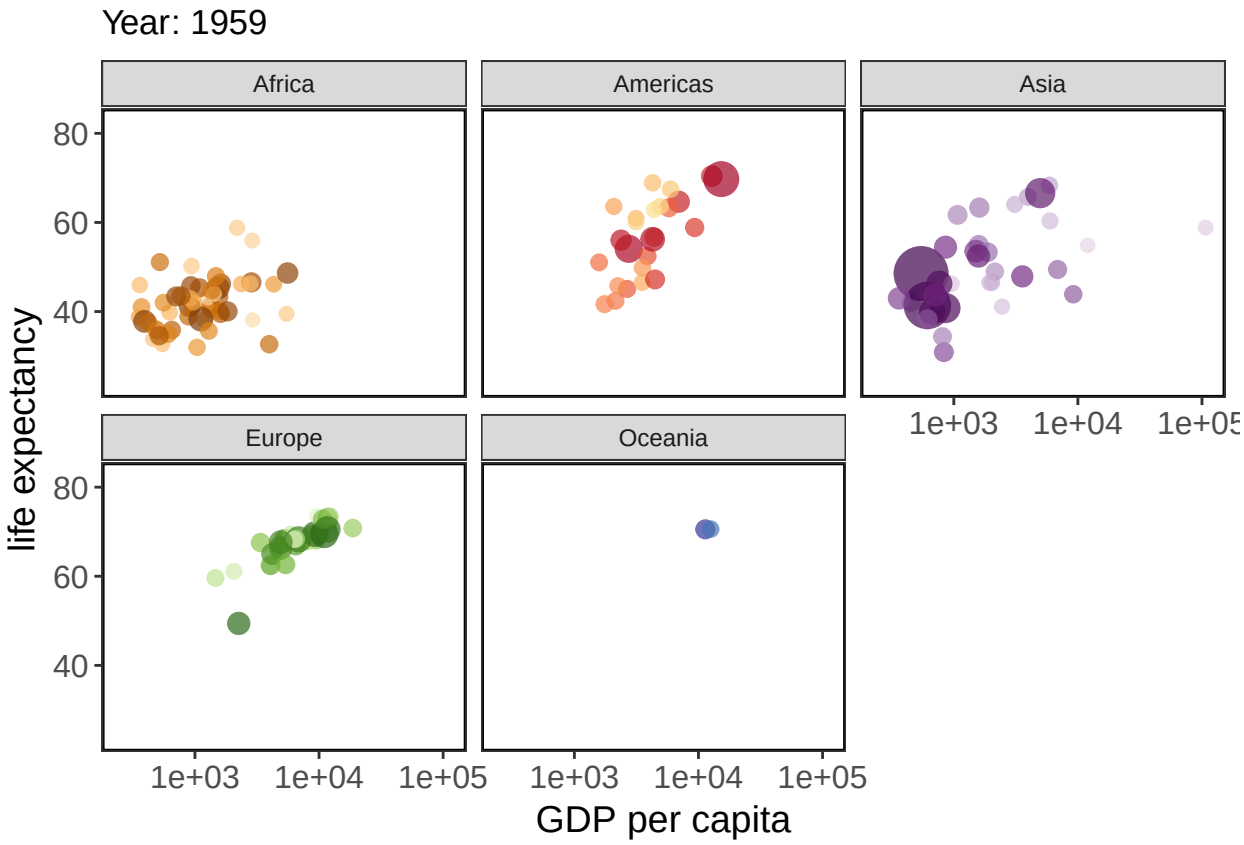

Year: 1956
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1956
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1957
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1958
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1958
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1959
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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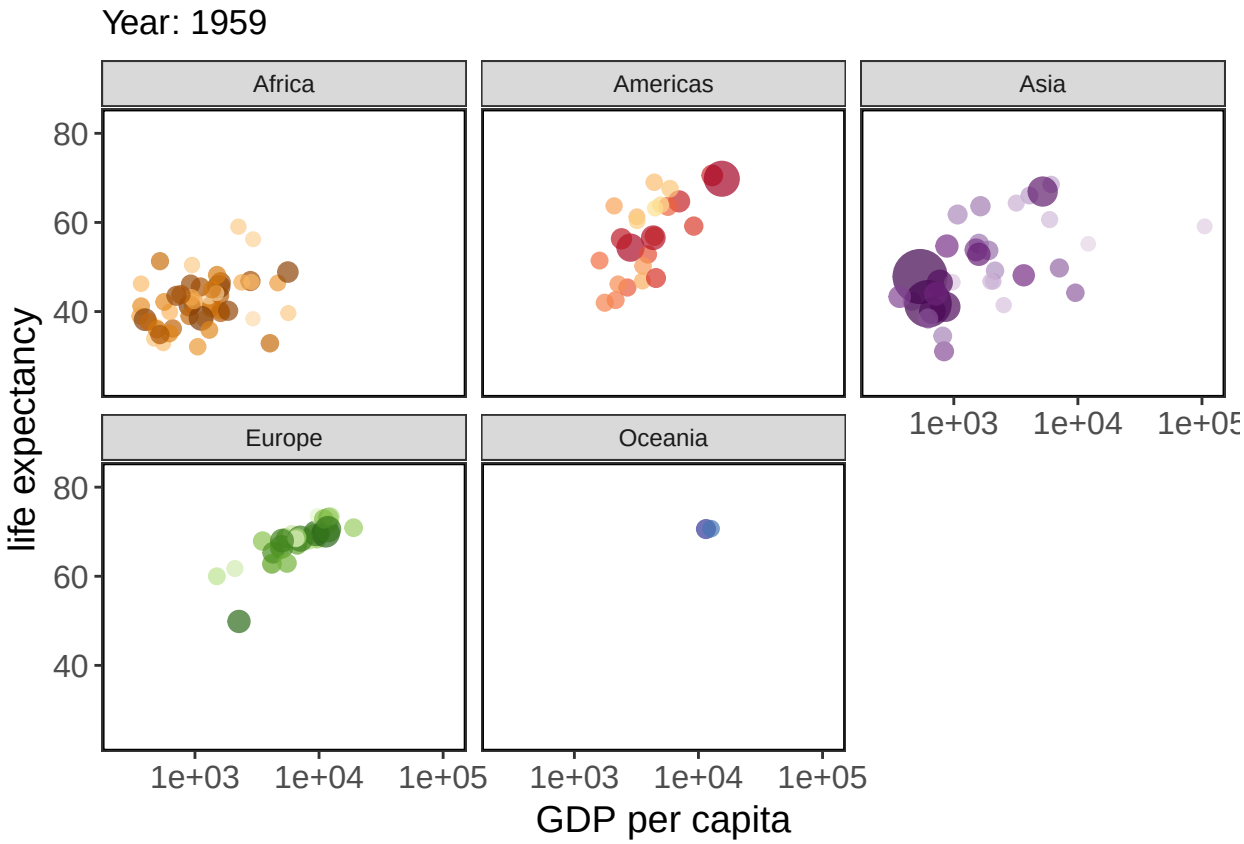
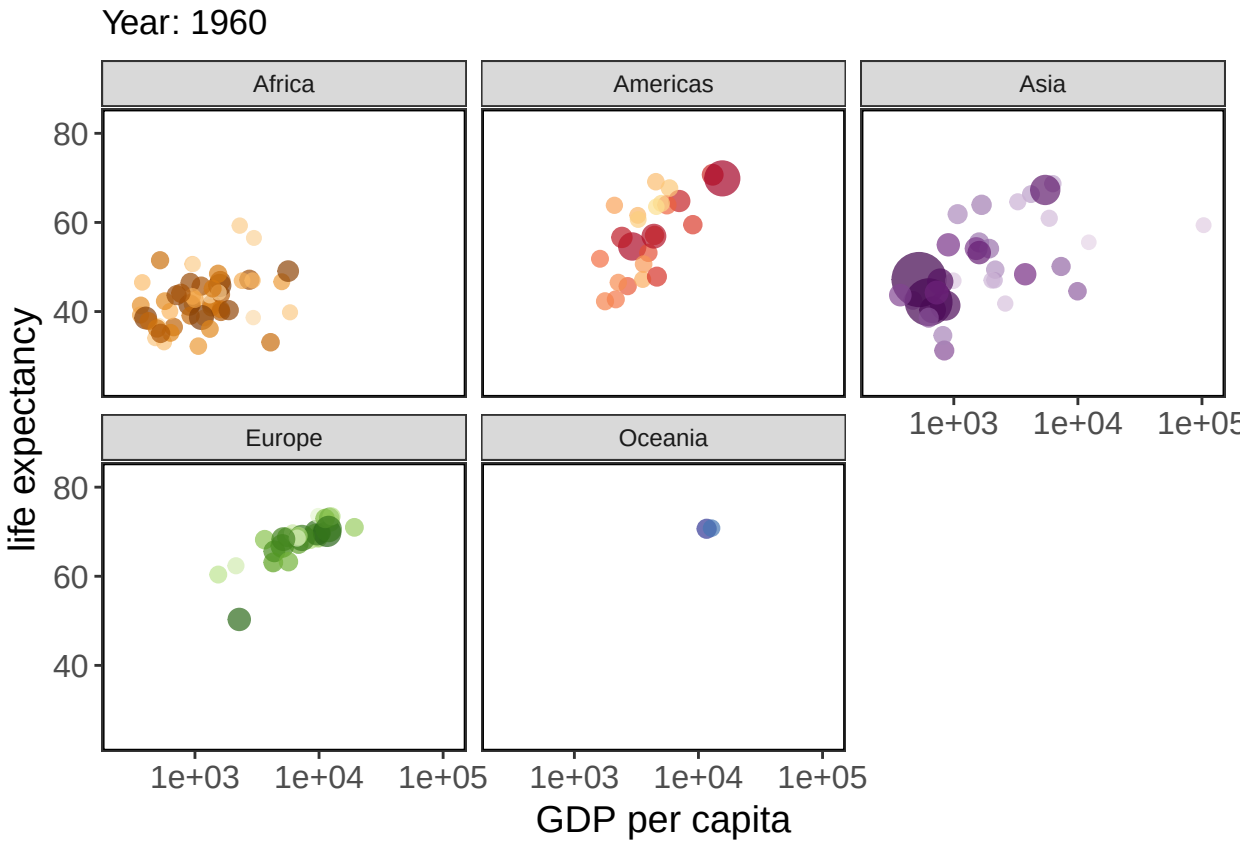
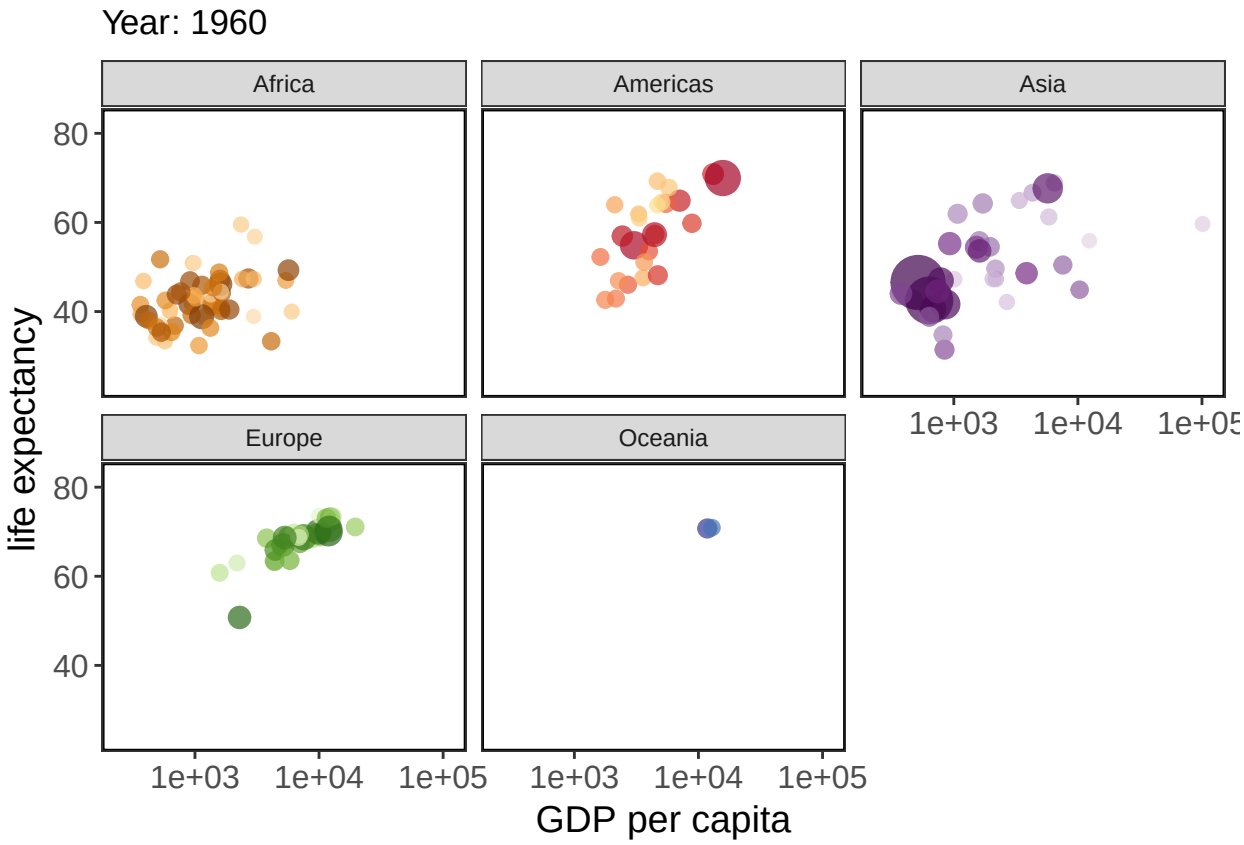
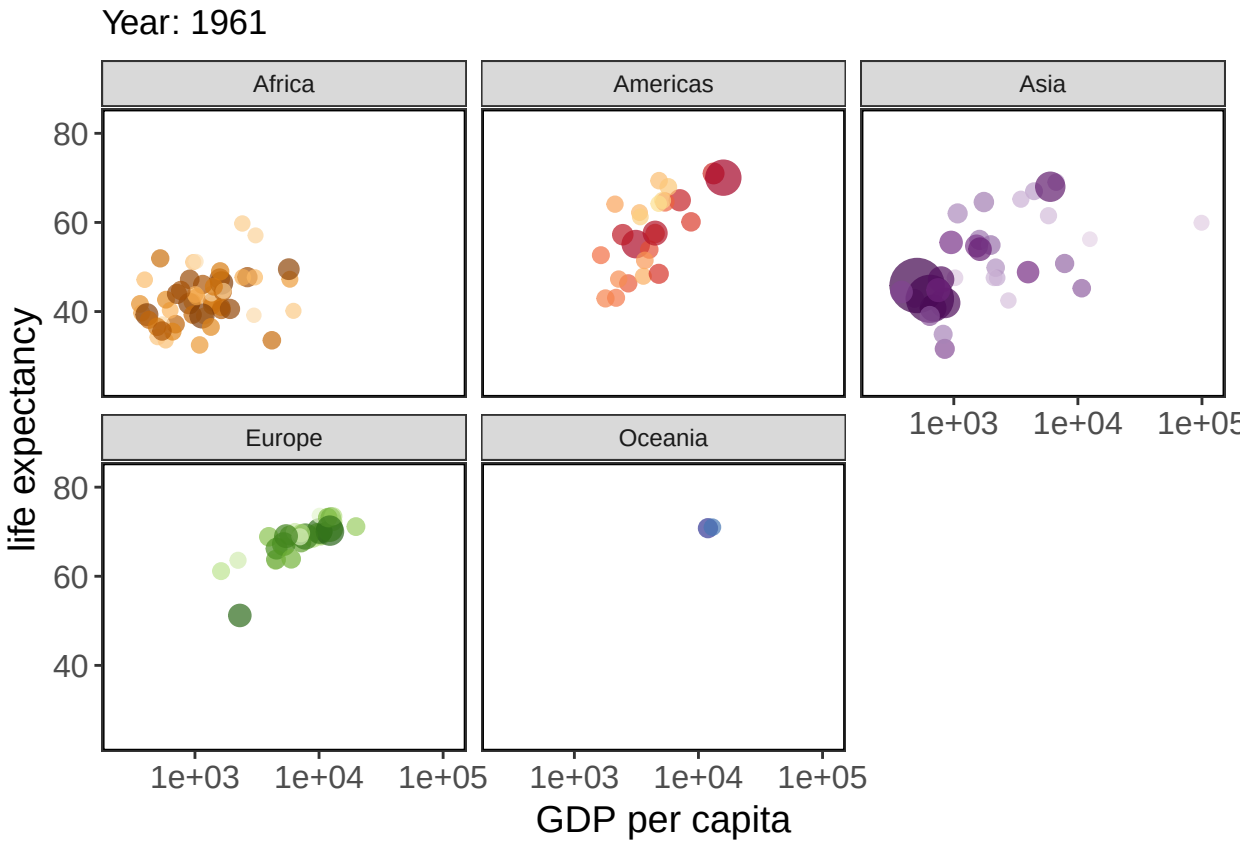
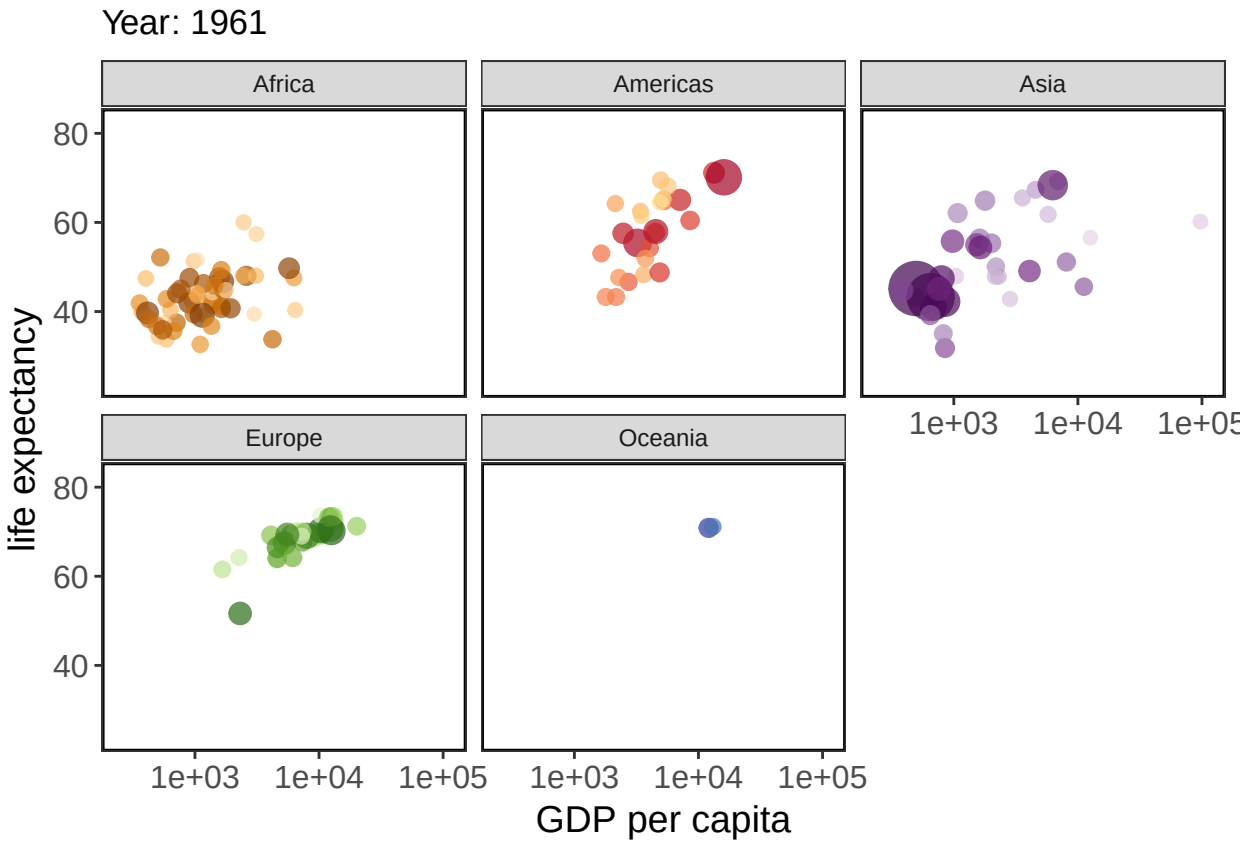
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1959
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1960
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1960
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1961
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1961
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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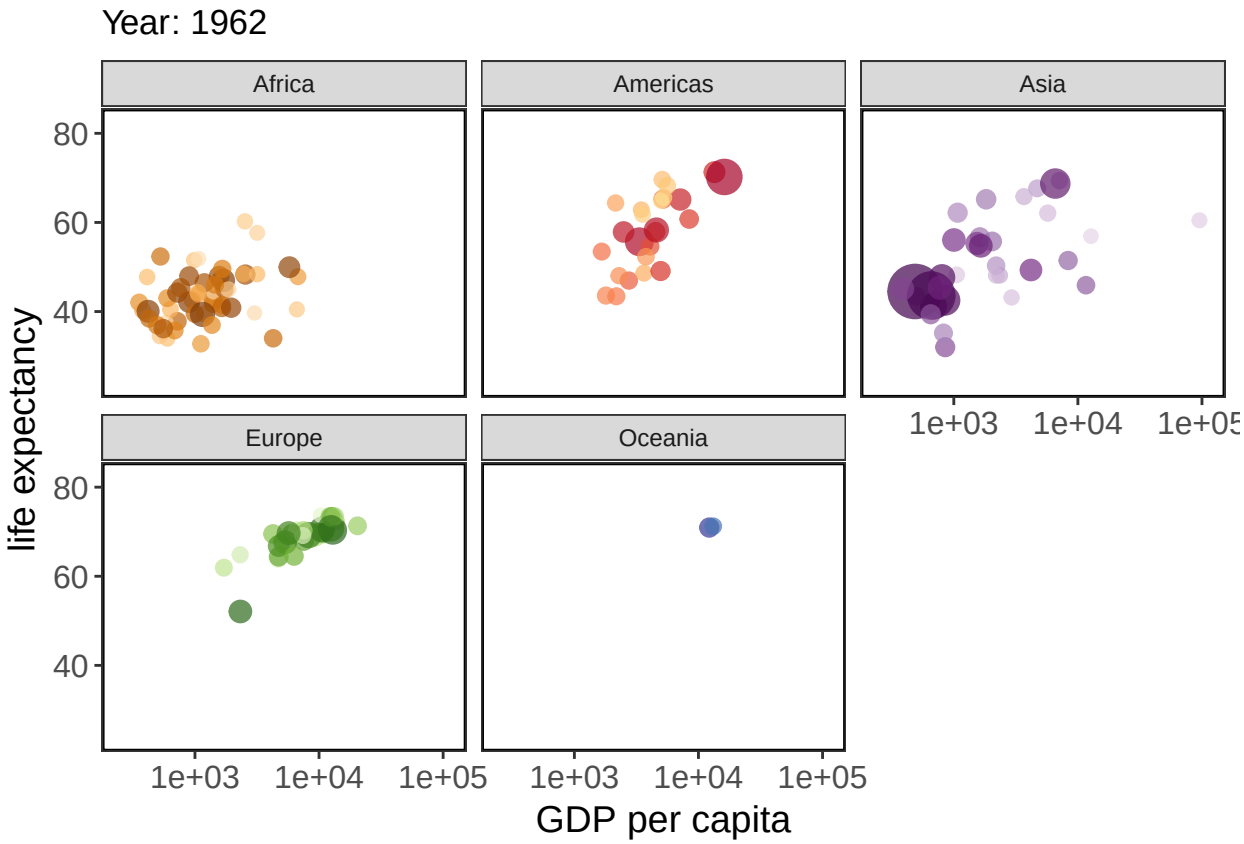
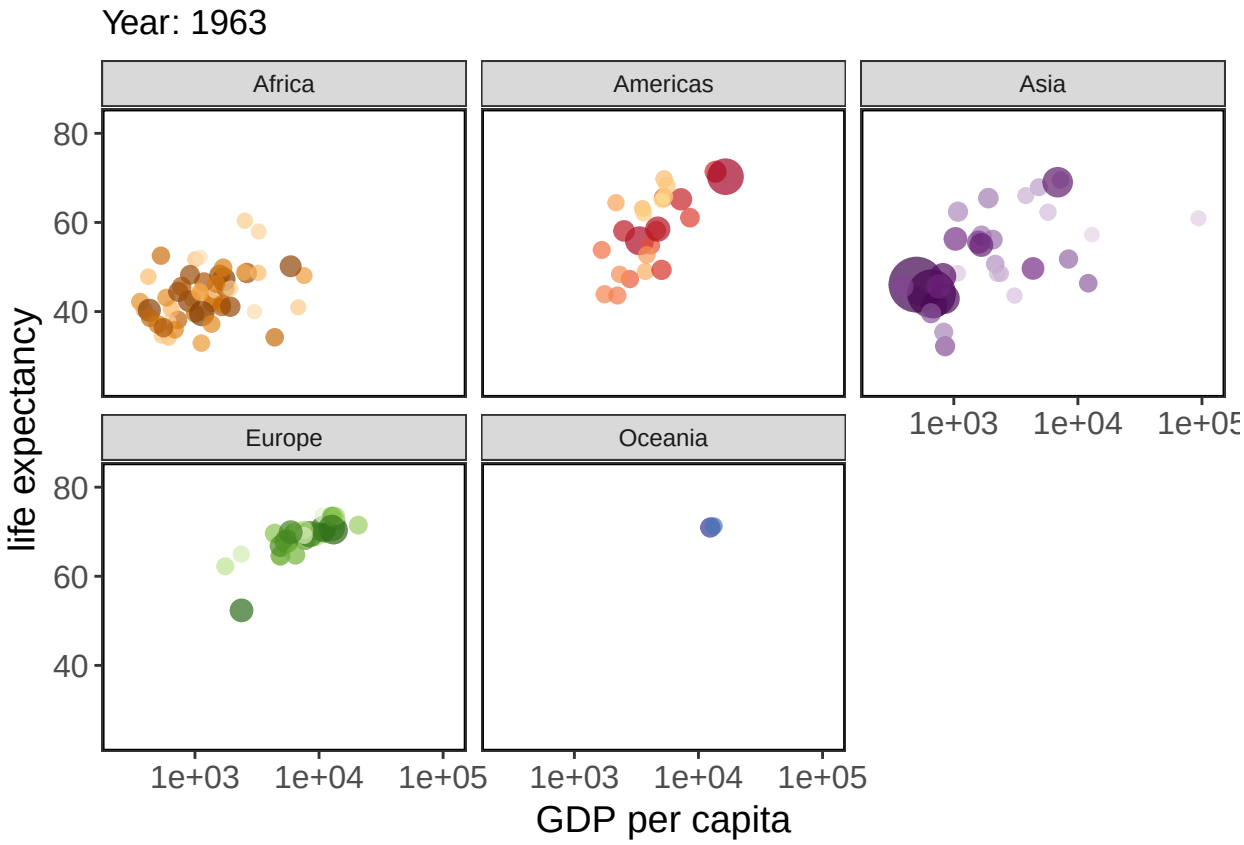
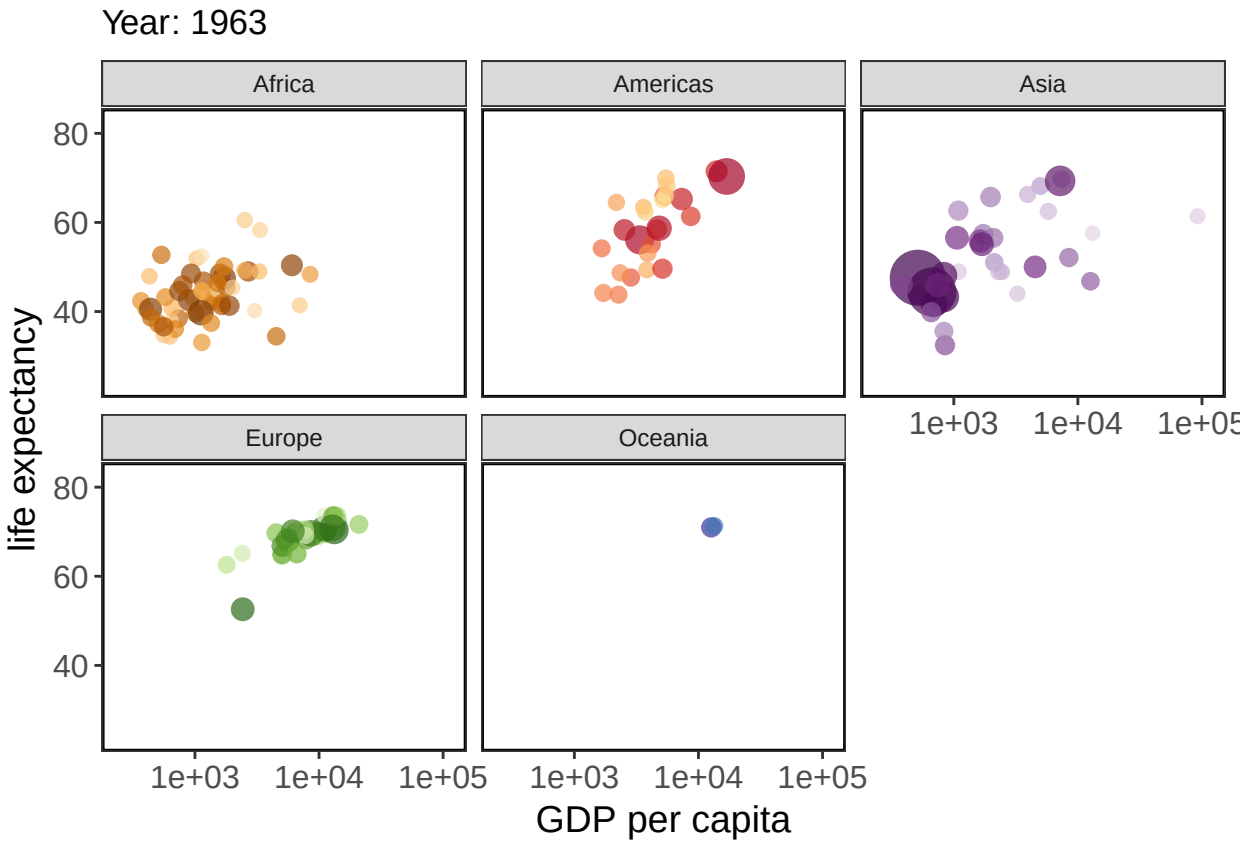
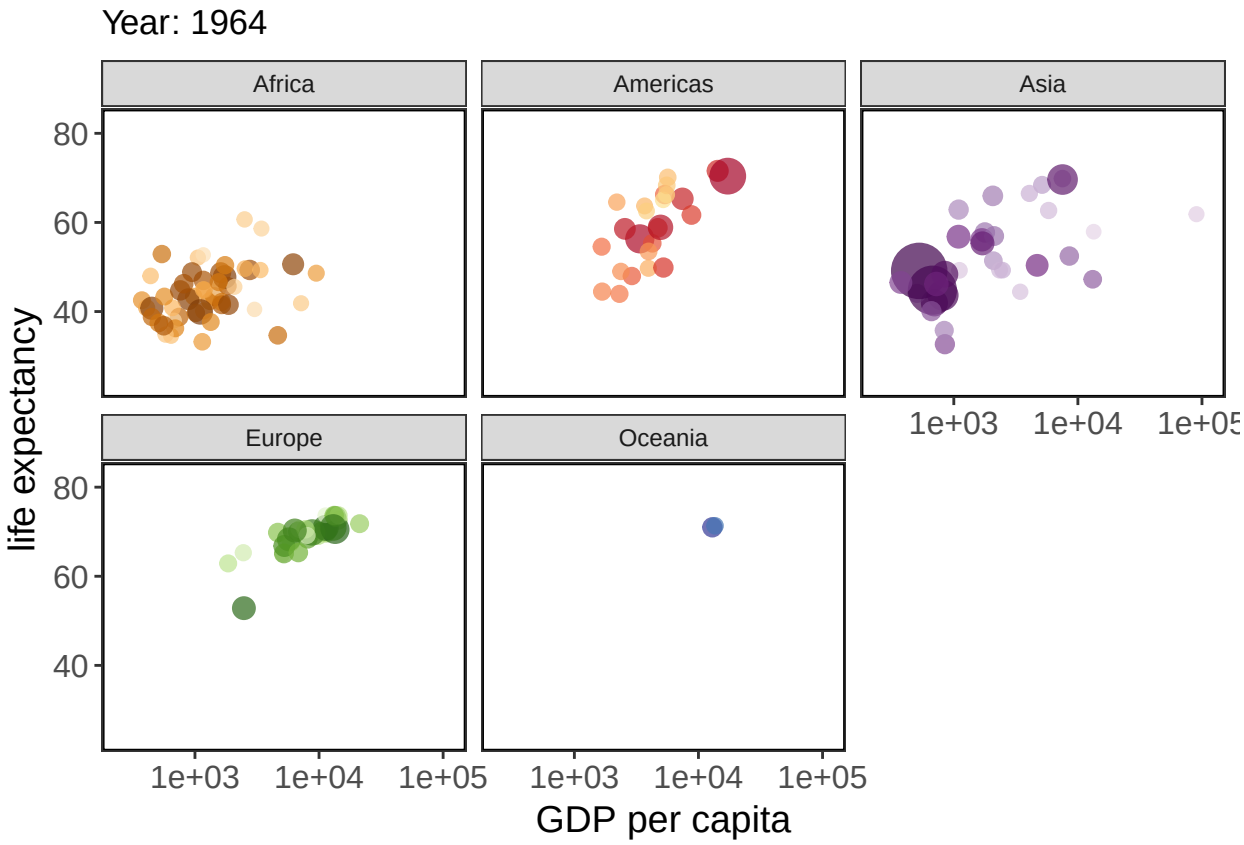
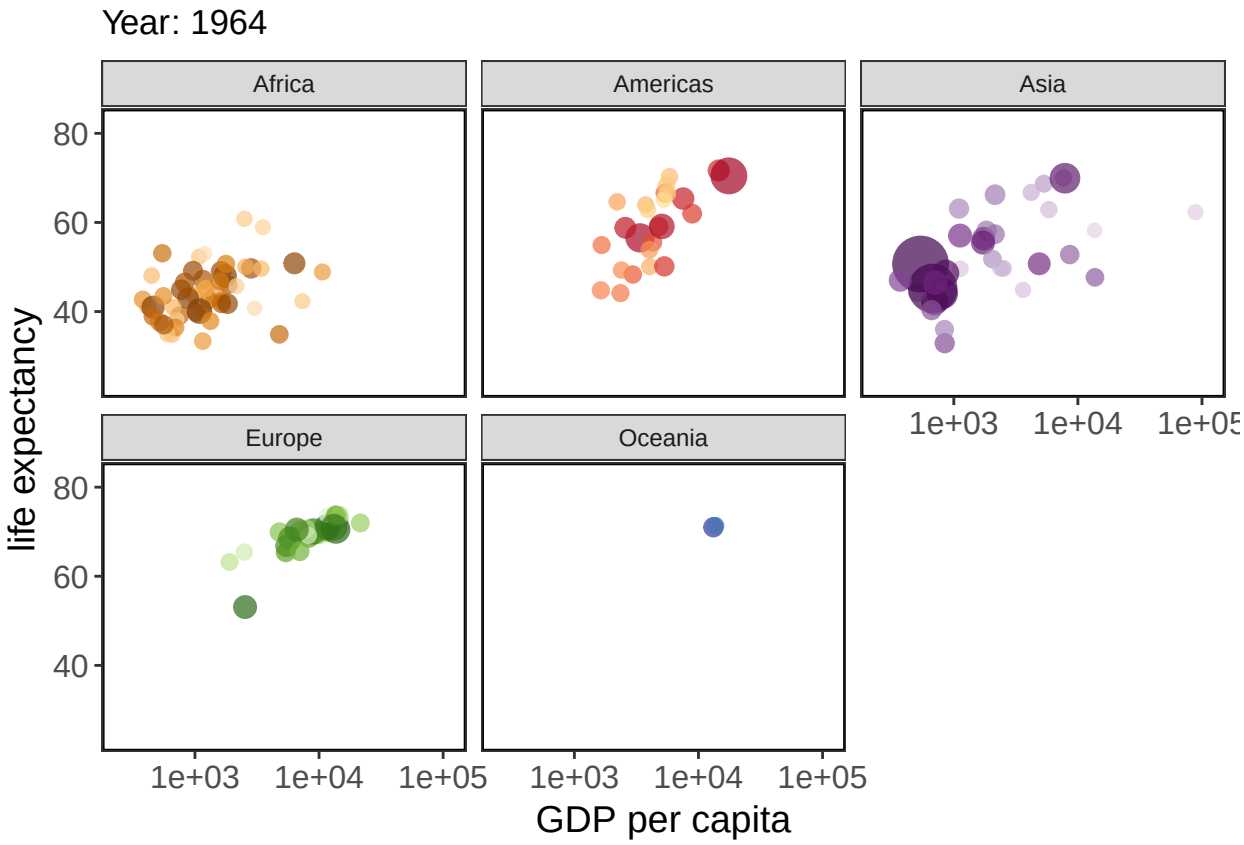
40
1e+03
1e+04
1e+05
GDP per capita

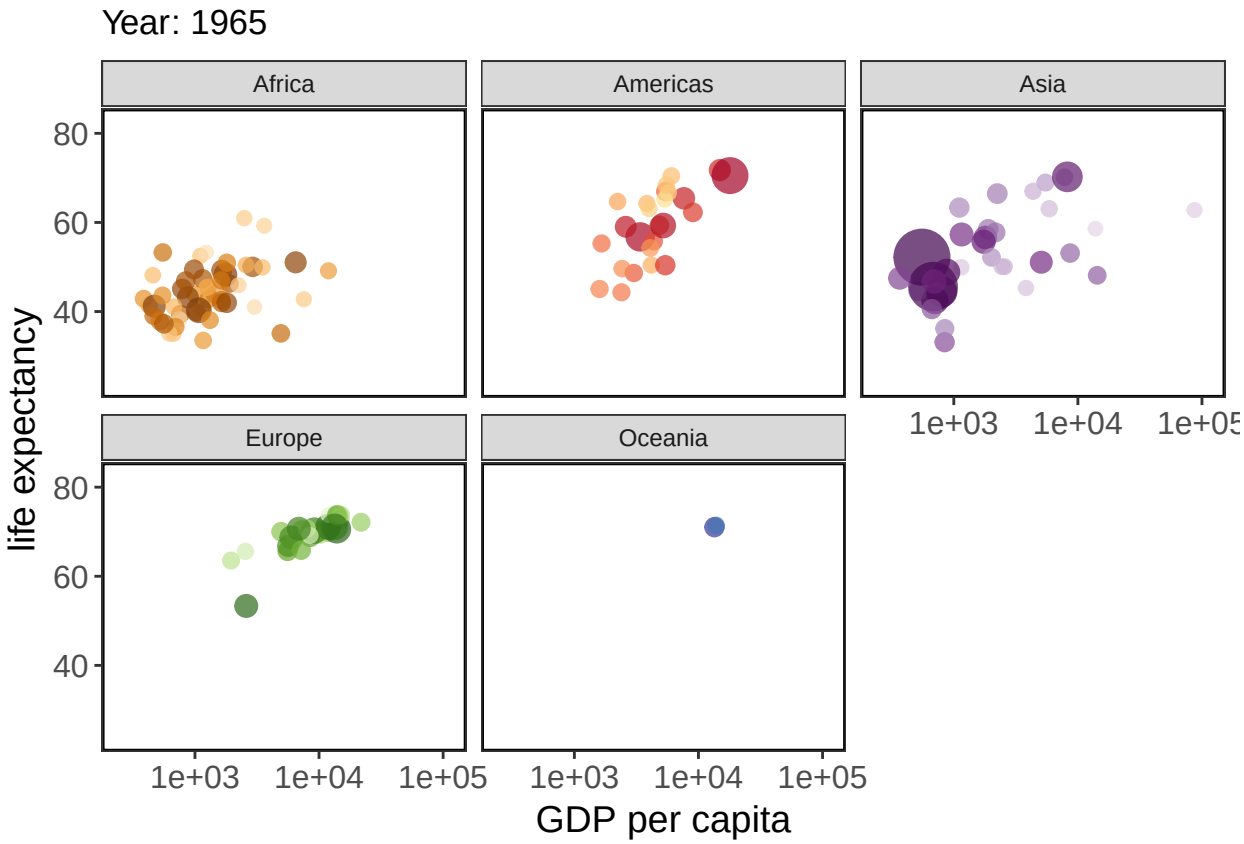

Year: 1962
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1963
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1963
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1964
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1964
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1965
Africa
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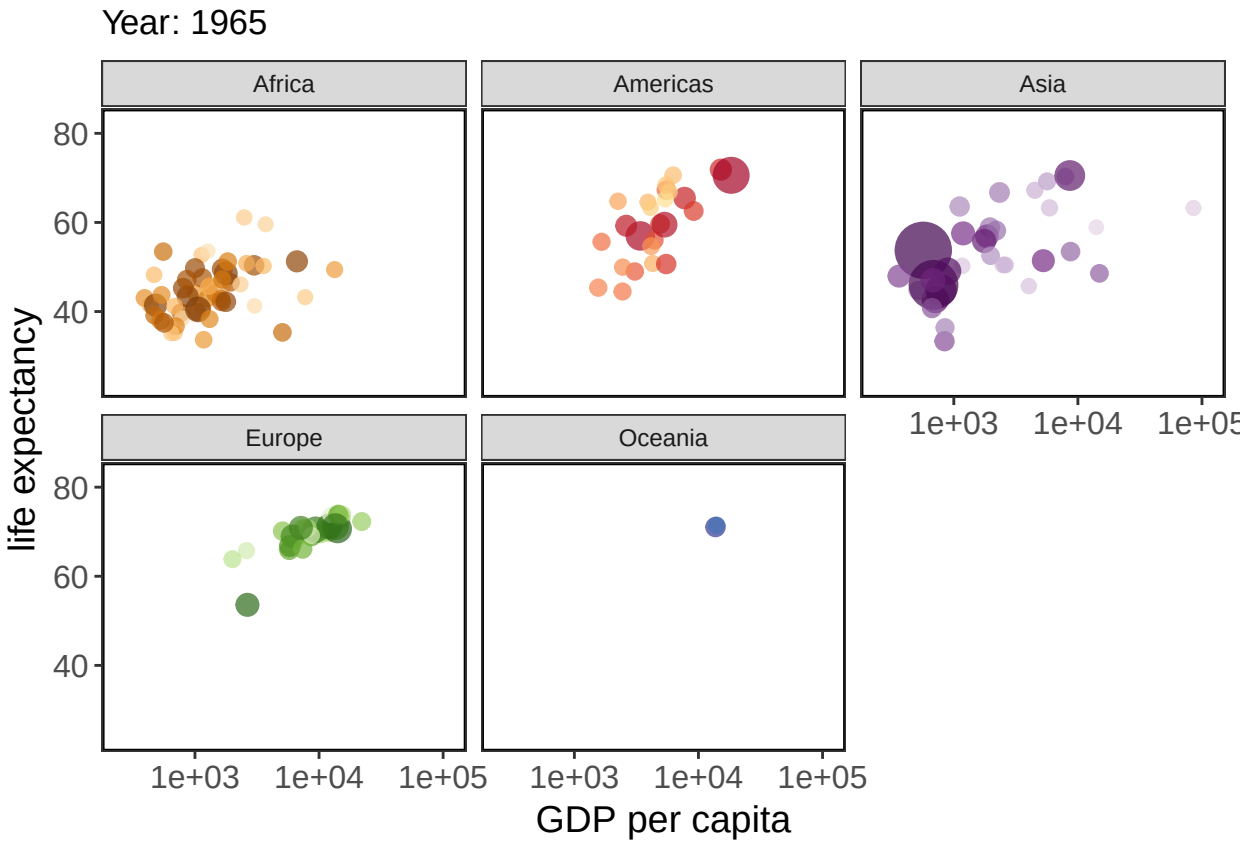
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1965
Africa
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Asia
Europe
Oceania
life expectancy
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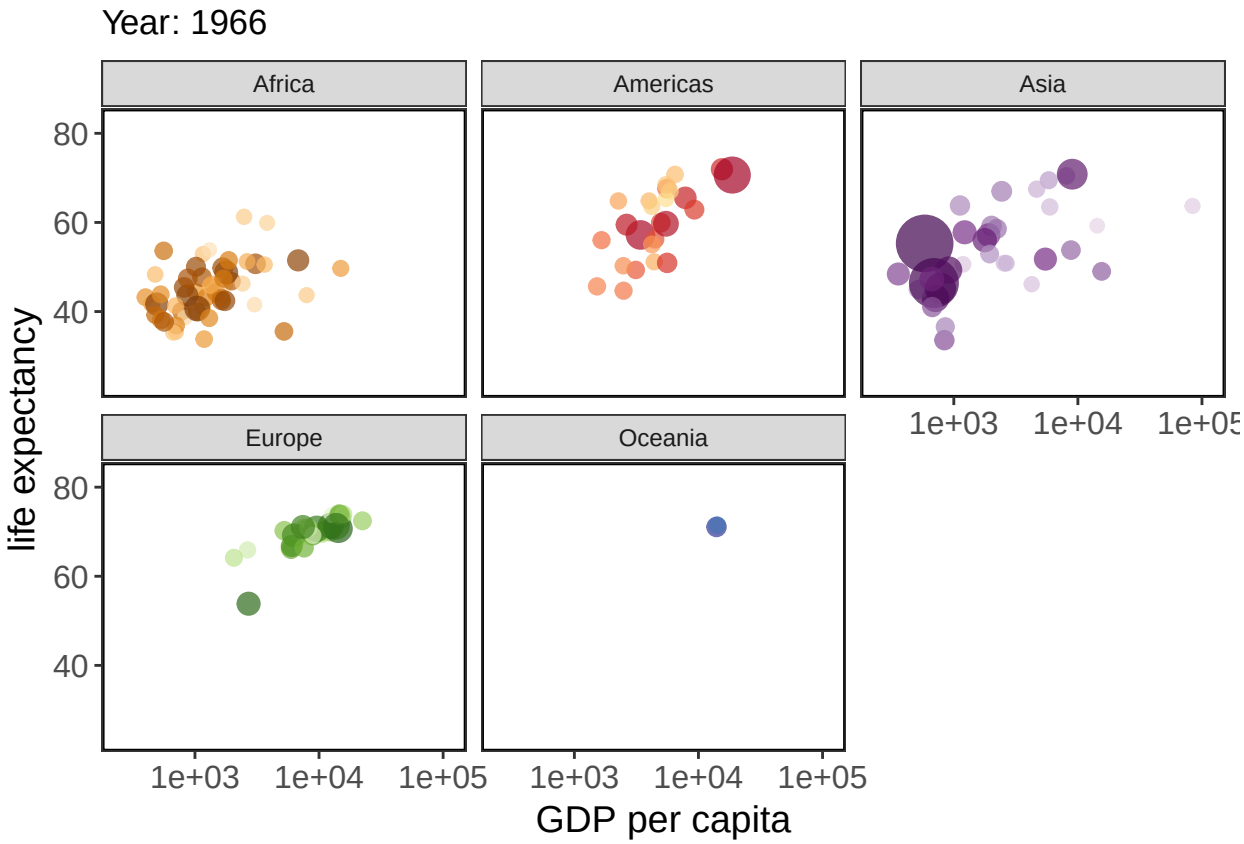
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1966
Africa
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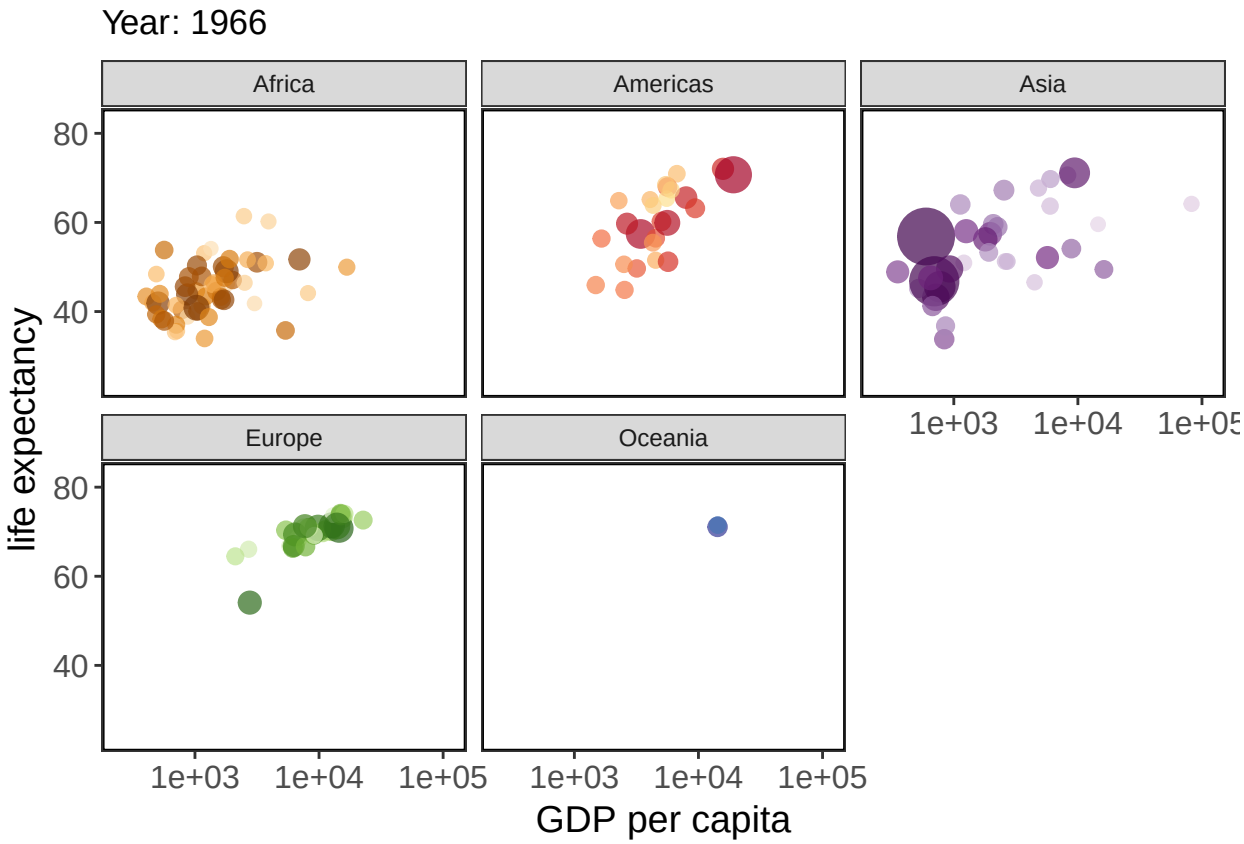
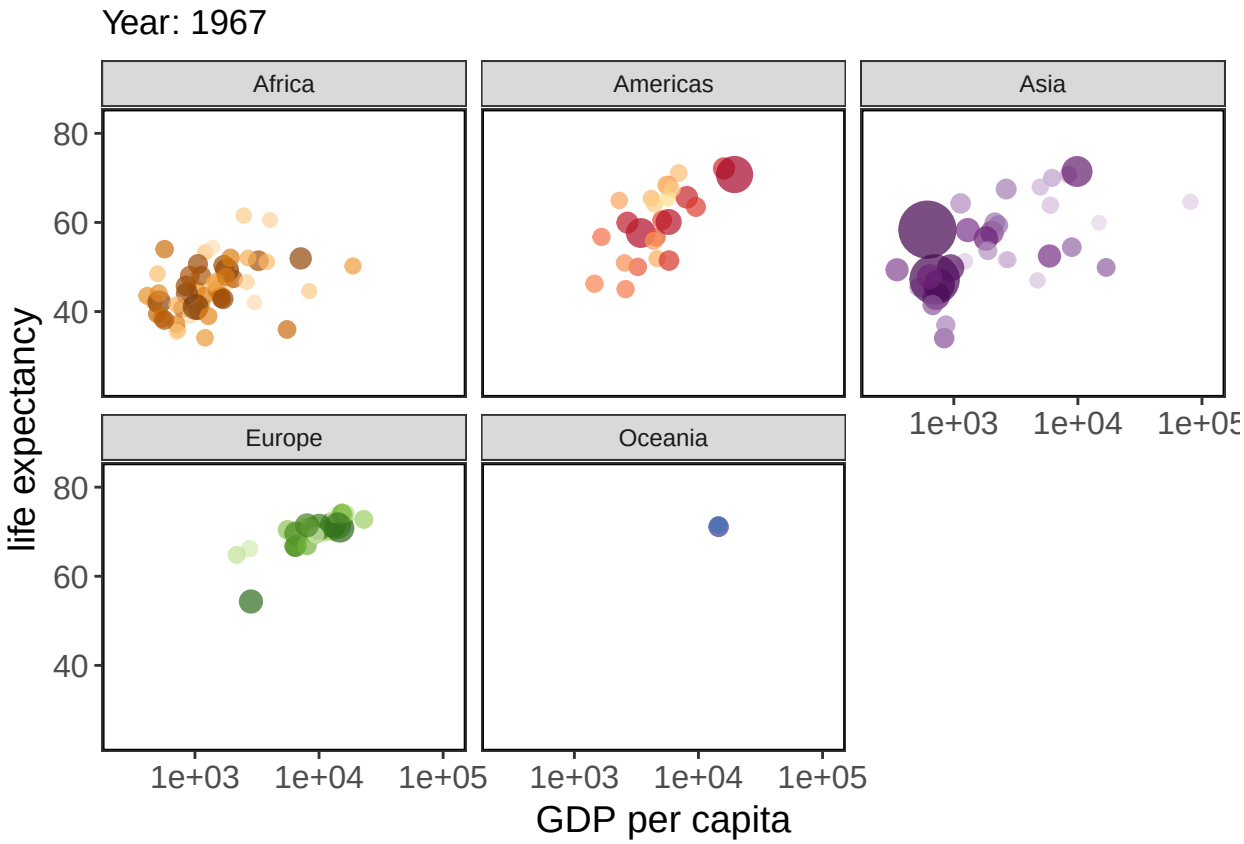
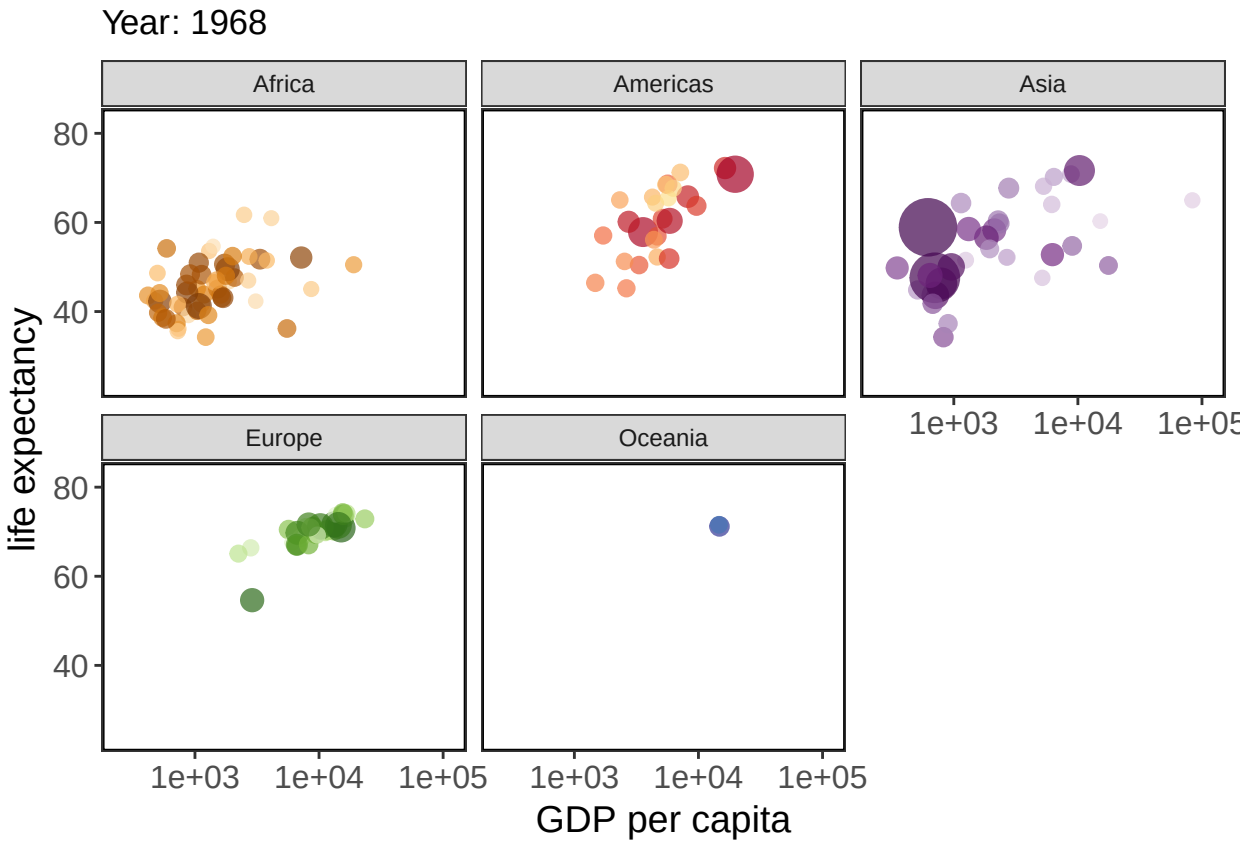
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1966
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1967
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita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Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
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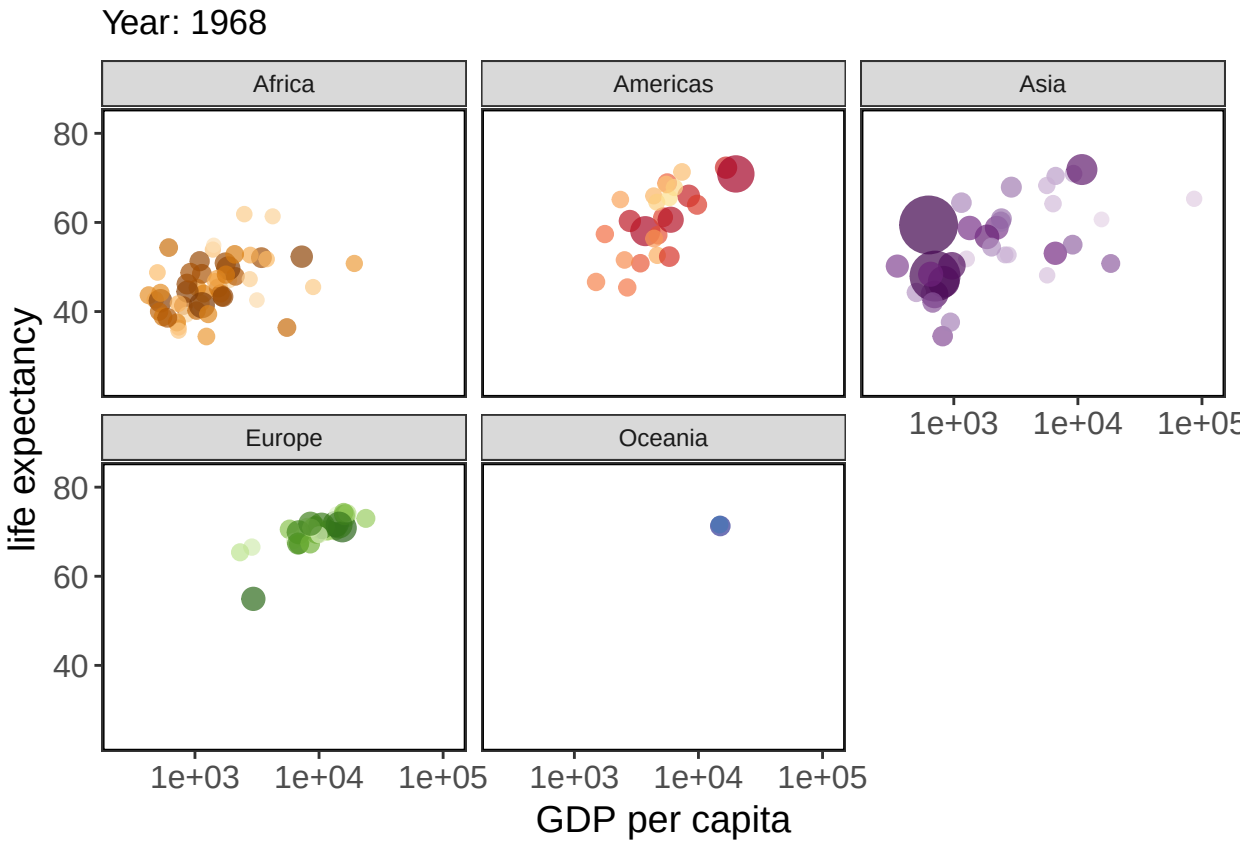
1e+04
1e+05
GDP per capita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Africa
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Asia
Europe
Oceania
life expectancy
80
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40
1e+03
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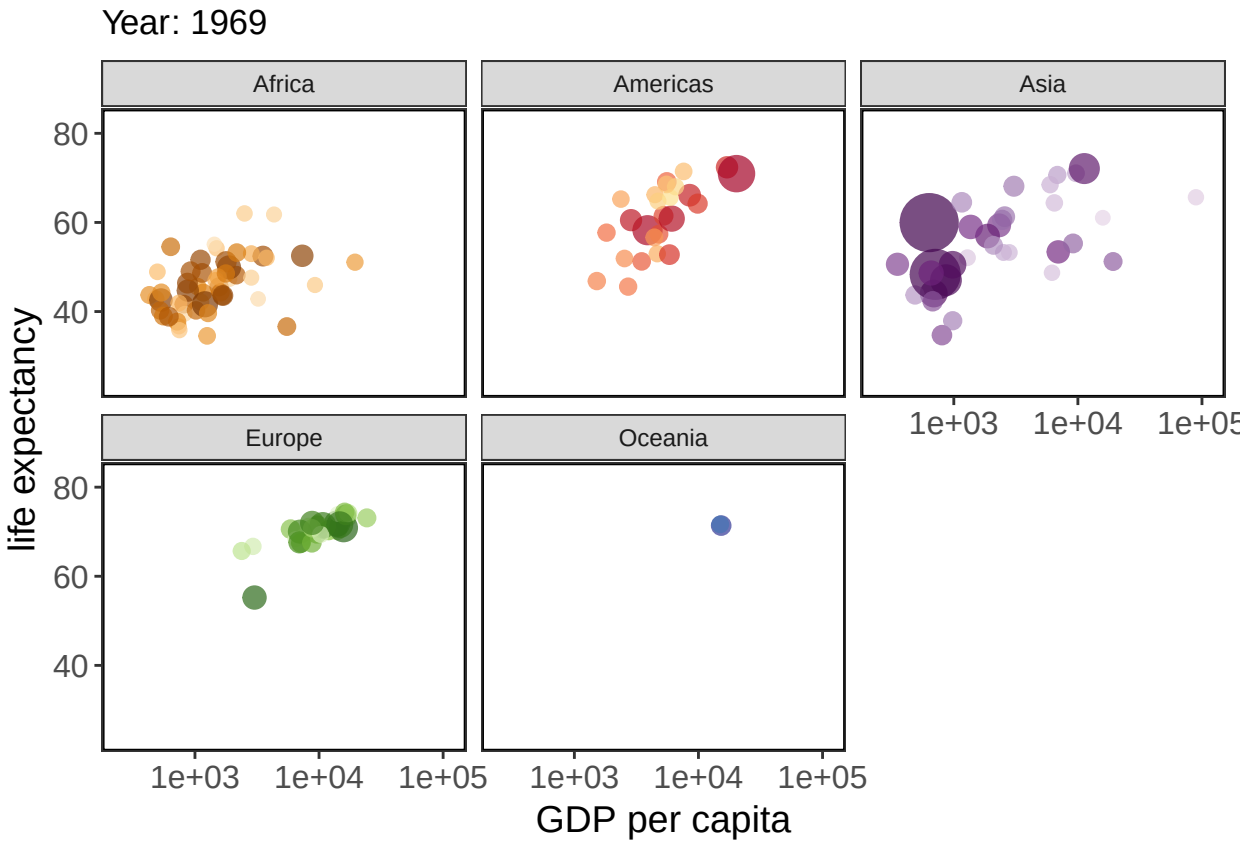
1e+05
GDP per capita


Year: 1969
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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40
1e+03
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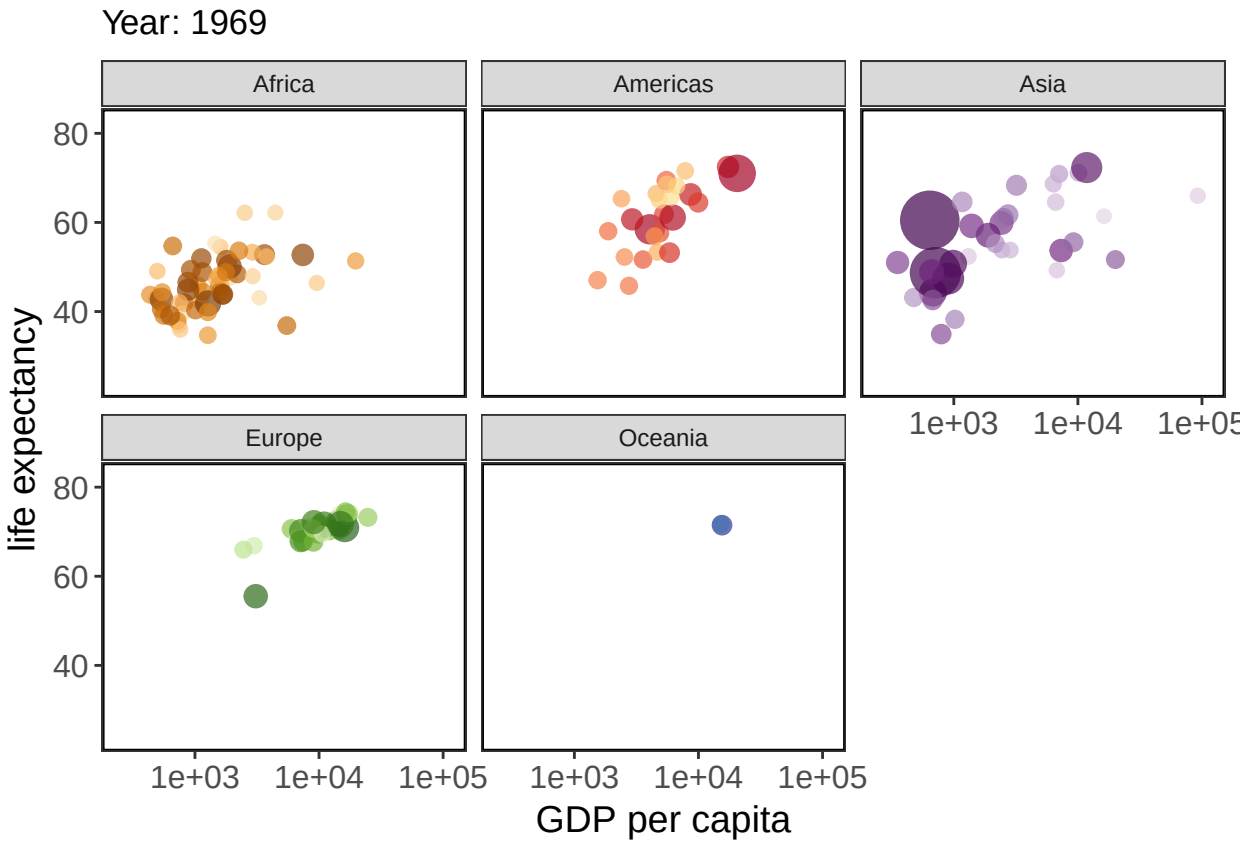
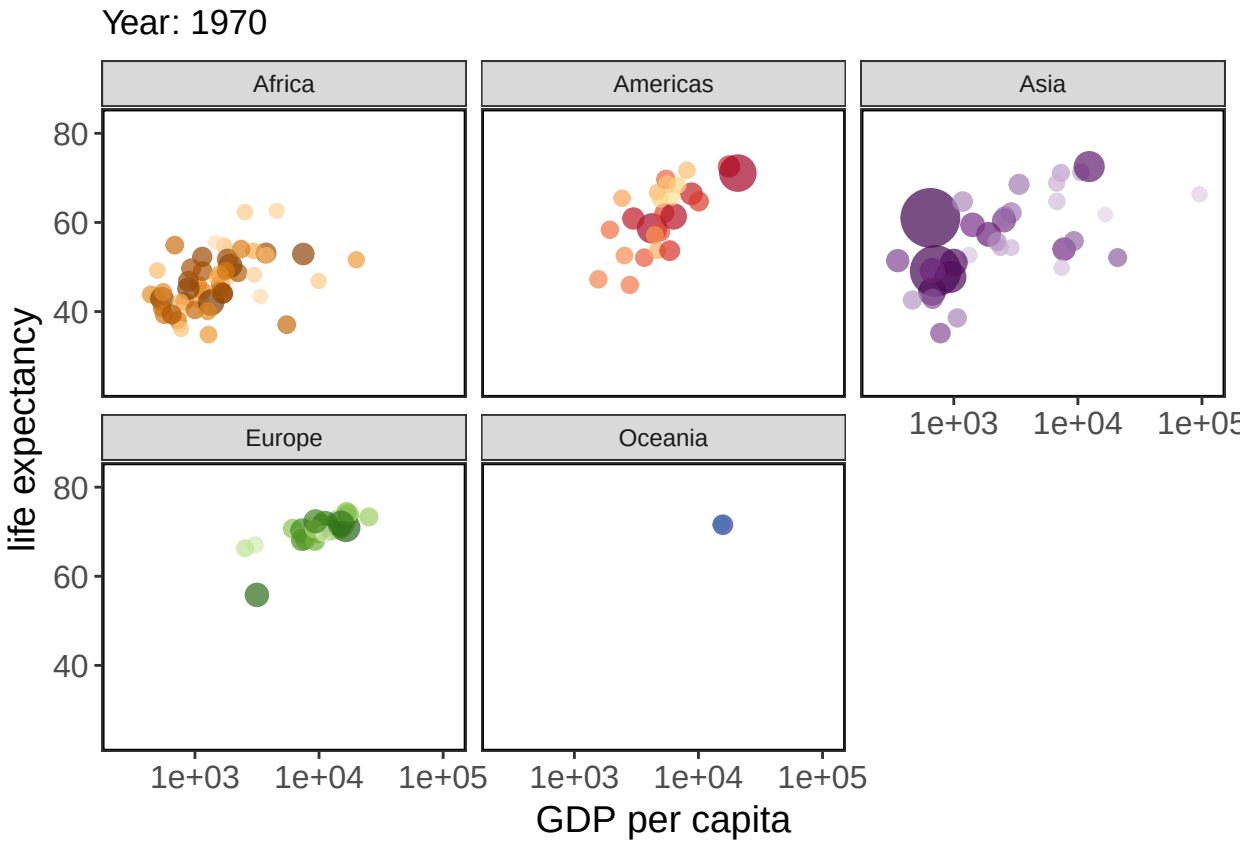
1e+05
GDP per capita


Year: 1969
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1970
Africa
Americas
Asia
Europe
Oceania
life expectancy
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40
1e+03
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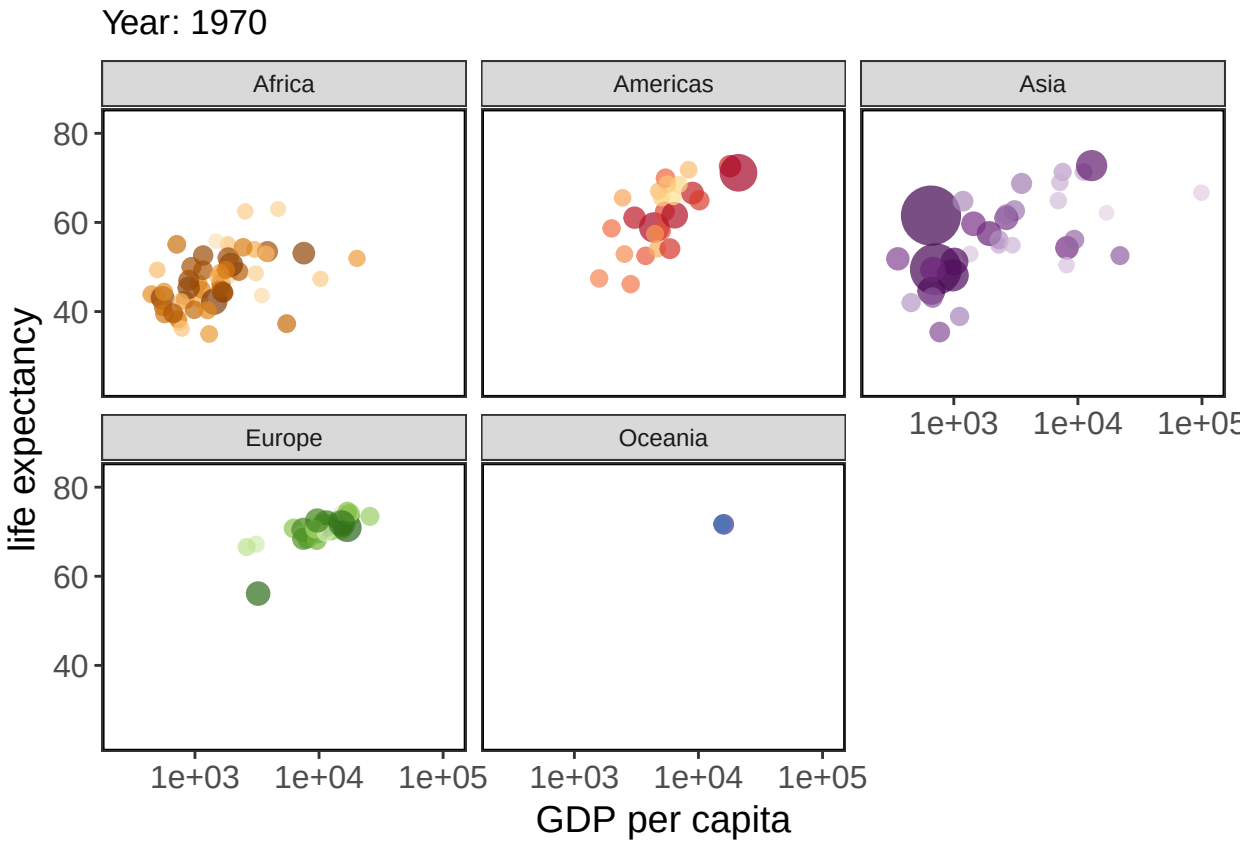
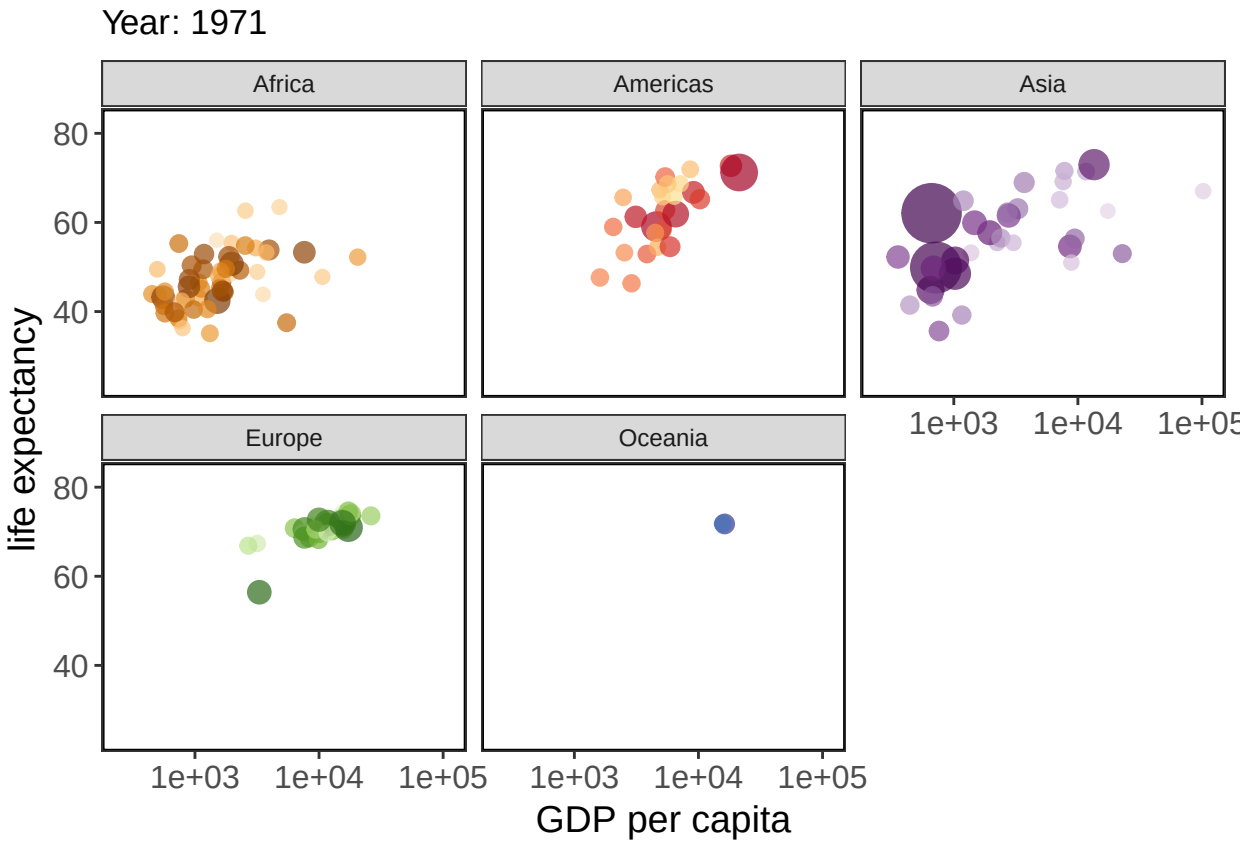
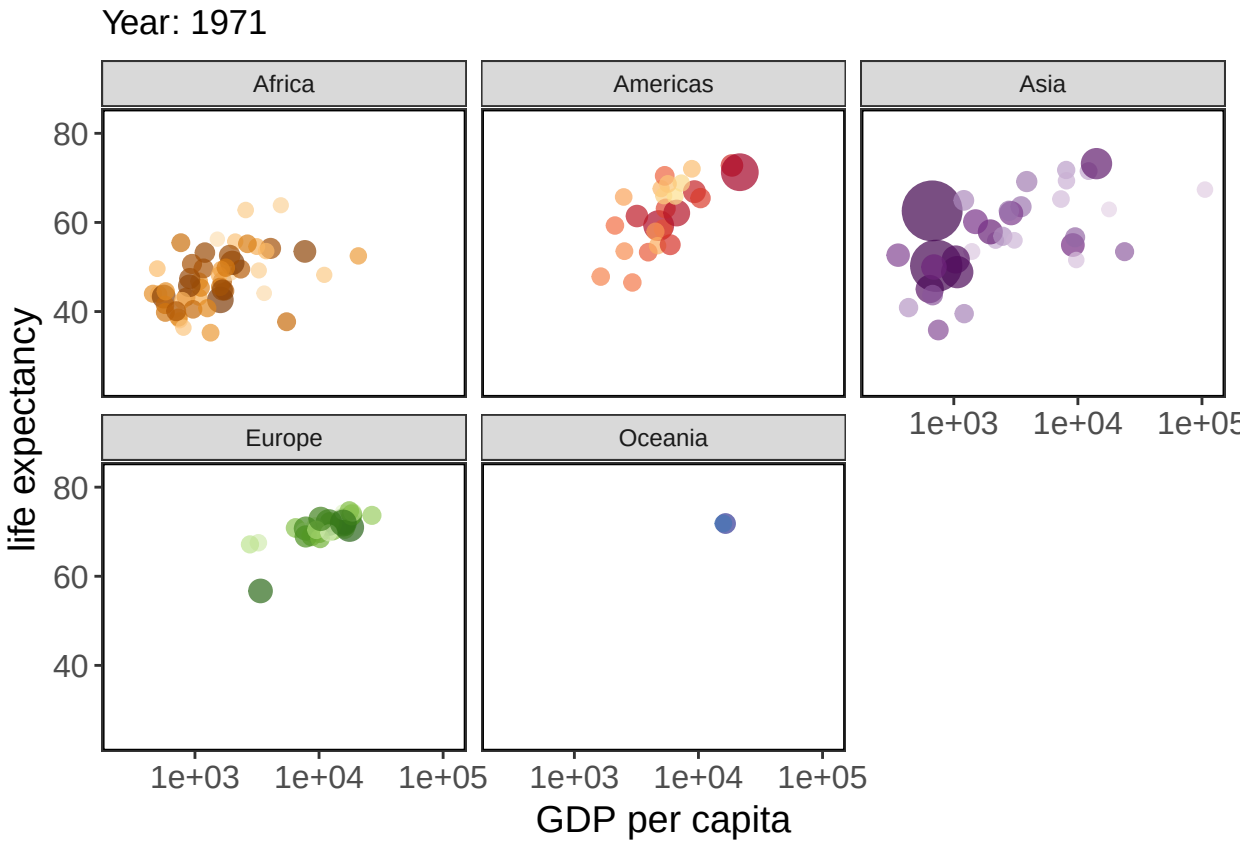
1e+05
GDP per capita


Year: 1970
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1971
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1971
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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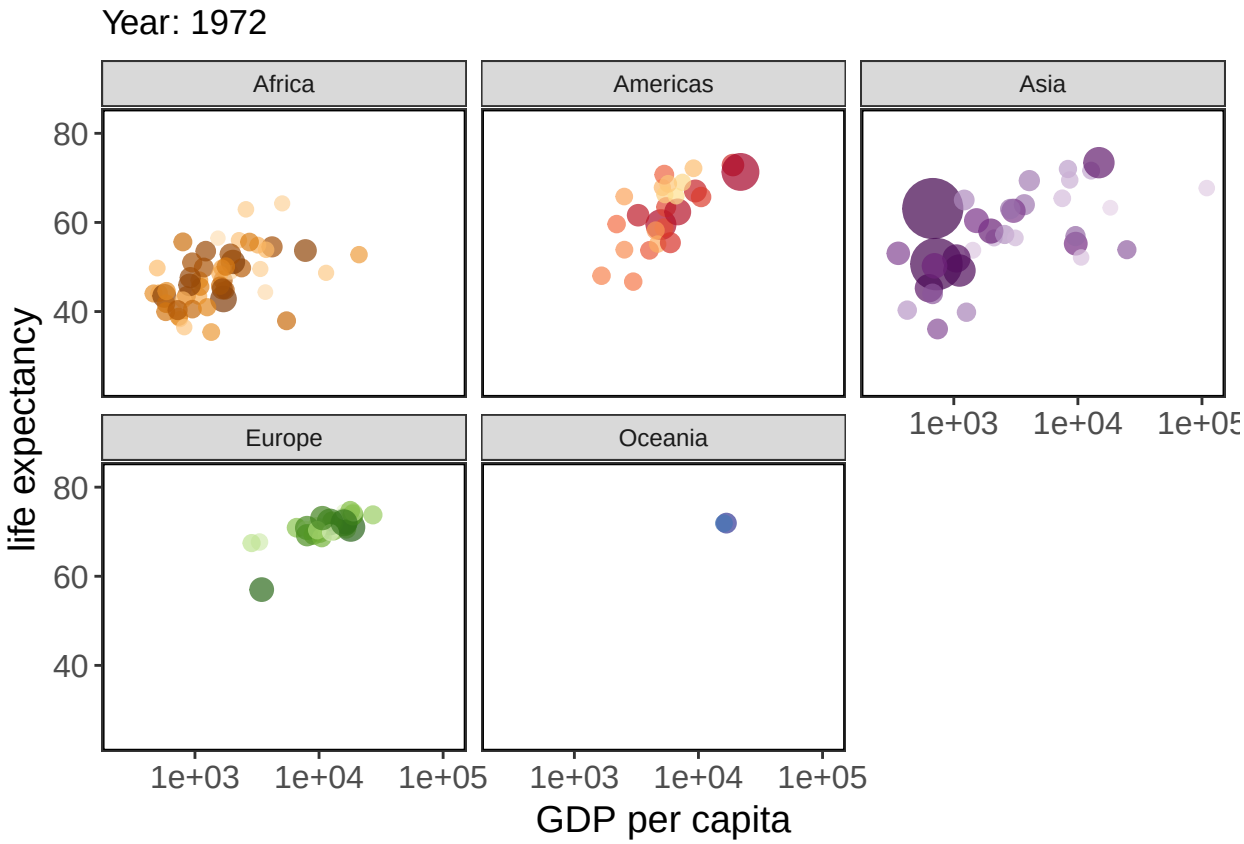
40
1e+03
1e+04
1e+05
GDP per capita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Africa
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Asia
Europe
Oceania
life expectancy
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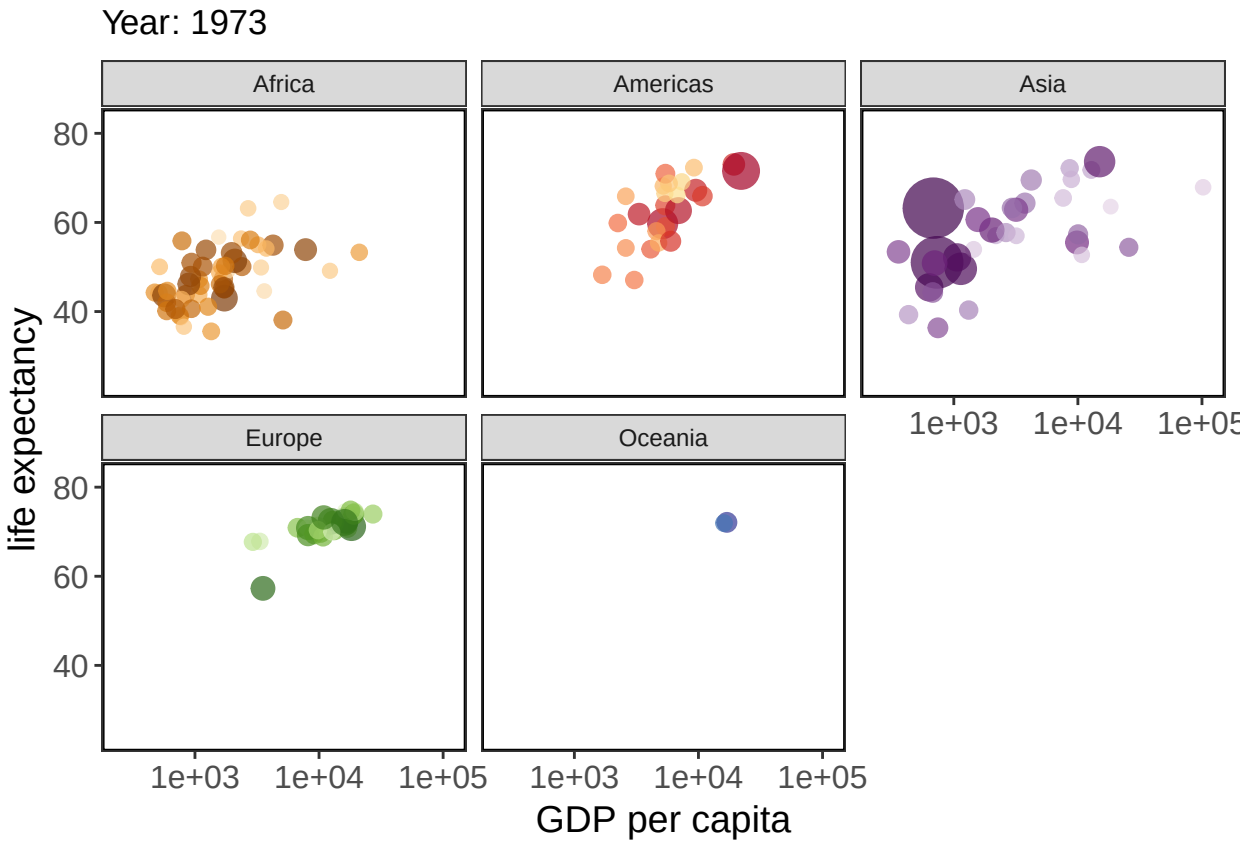
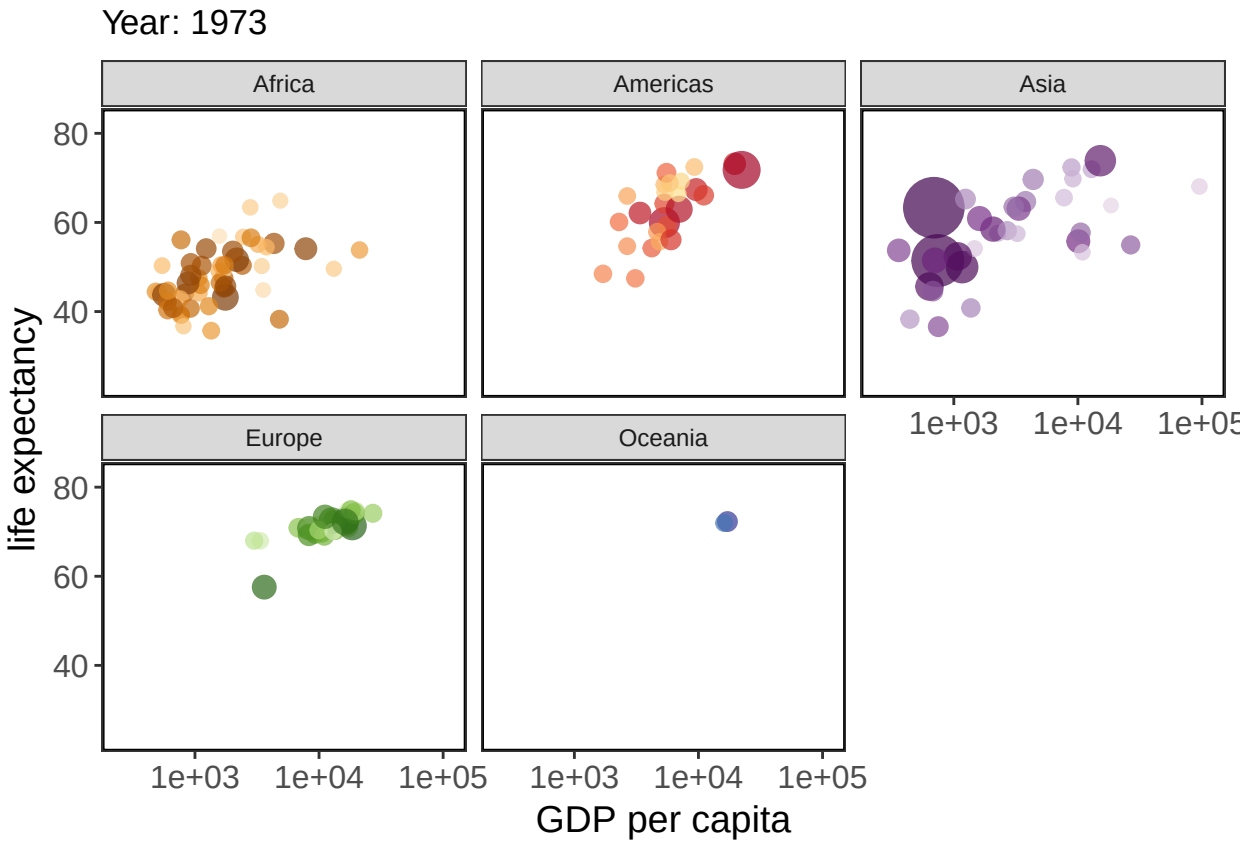
1e+03
1e+04
1e+05
GDP per capita


Year: 1973
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1973
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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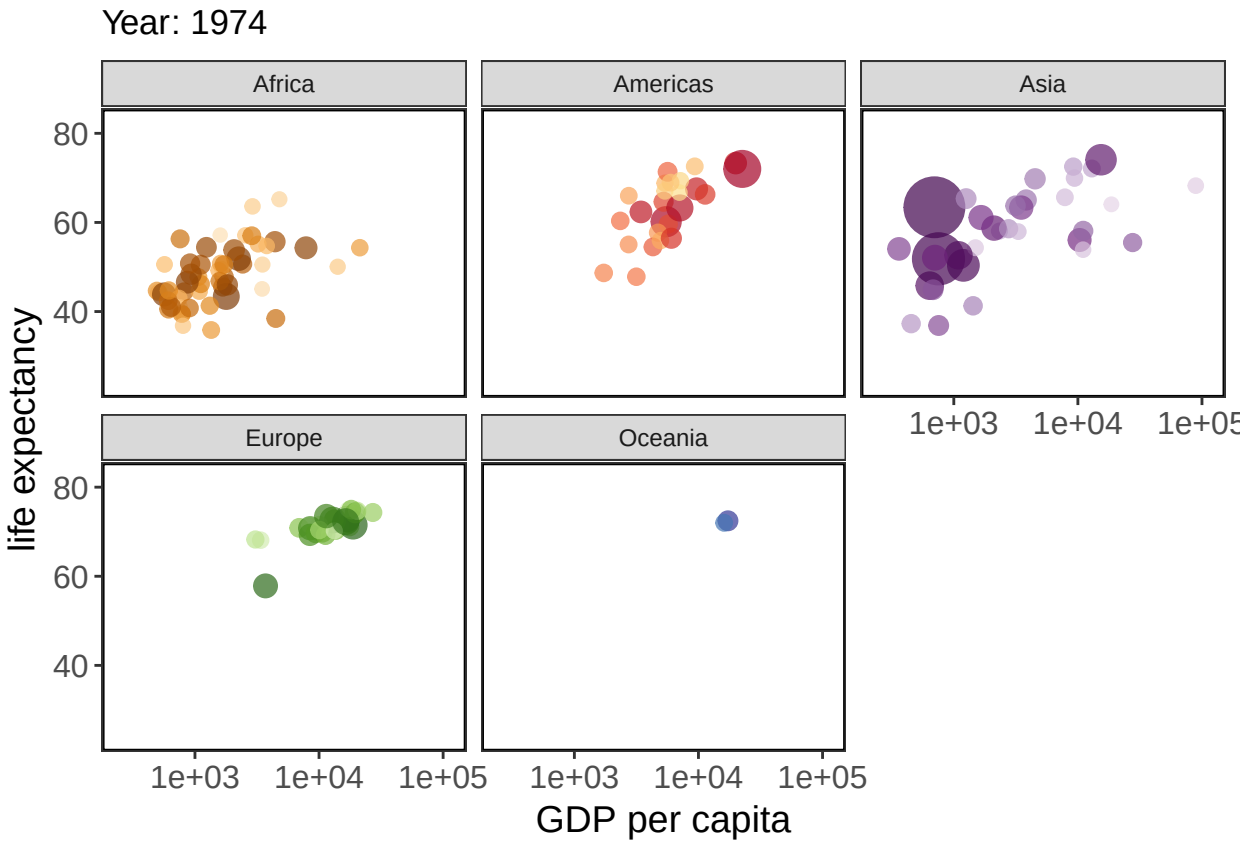
1e+03
1e+04
1e+05
GDP per capita


Year: 1974
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
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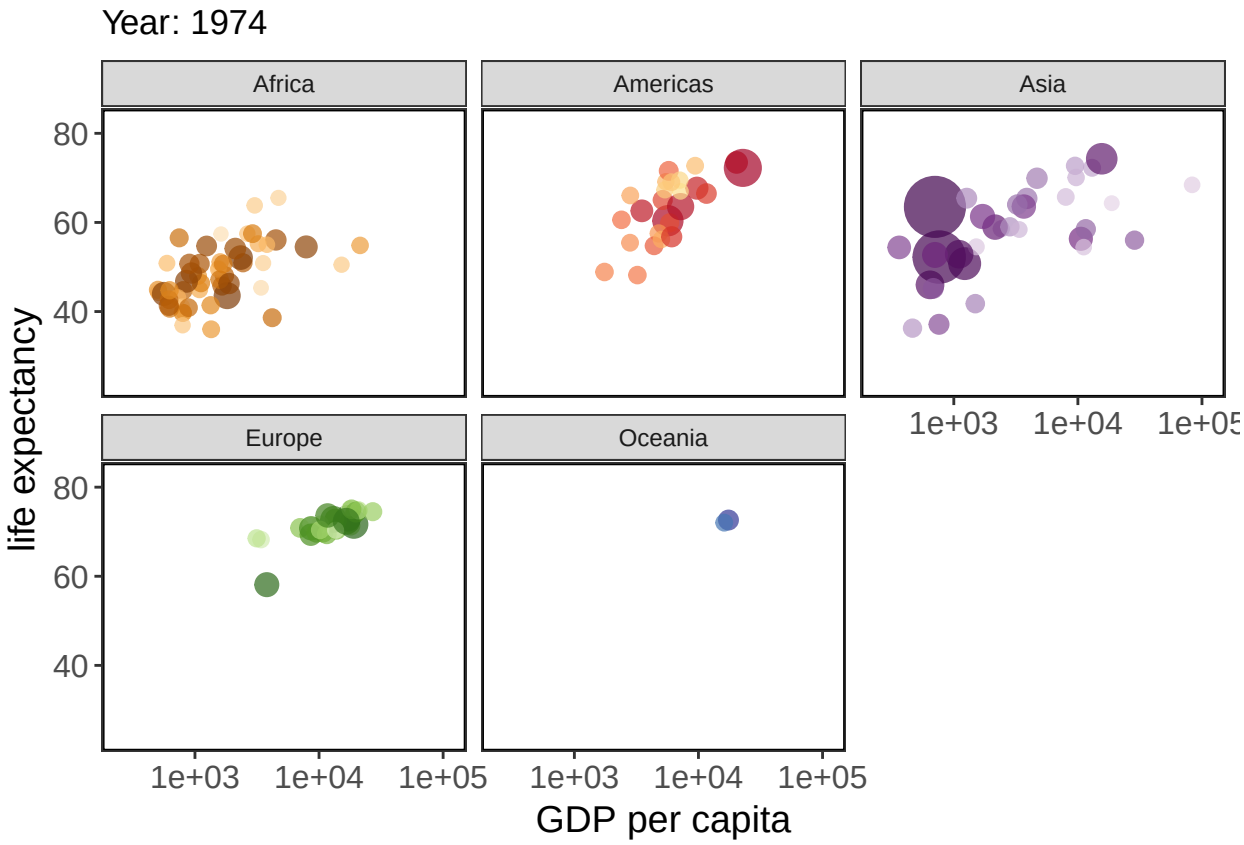
1e+03
1e+04
1e+05
GDP per capita


Year: 1974
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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40
1e+03
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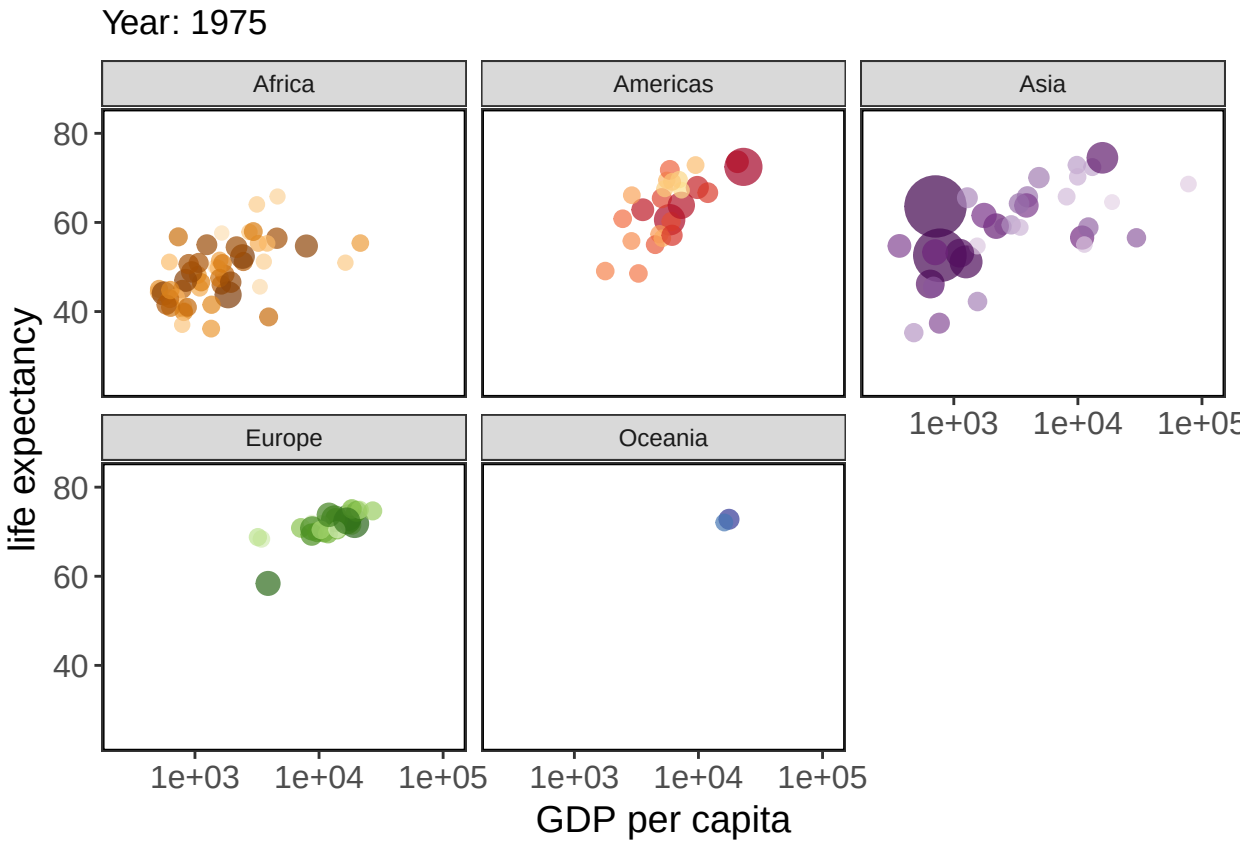
1e+05
GDP per capita


Year: 1975
Africa
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Asia
Europe
Oceania
life expectancy
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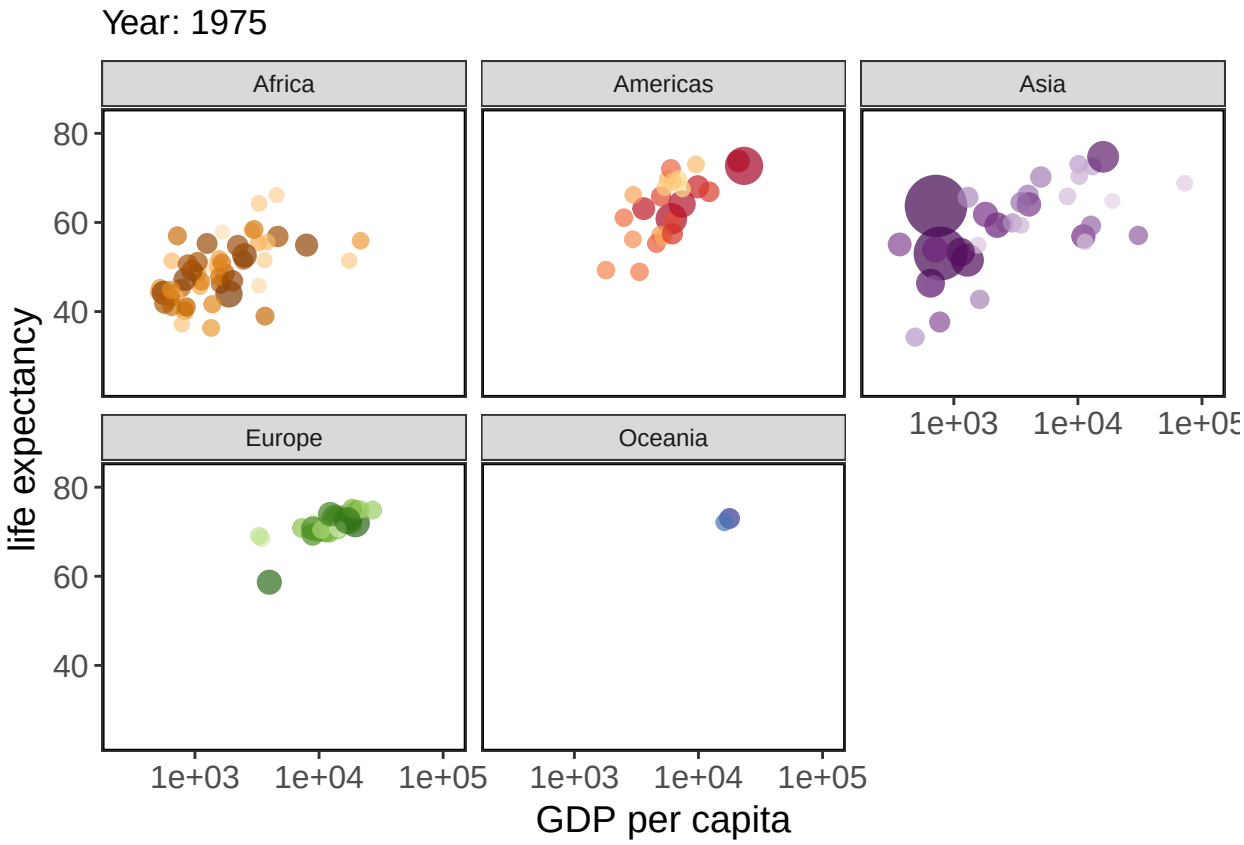
1e+03
1e+04
1e+05
GDP per capita


Year: 1975
Africa
Americas
Asia
Europe
Oceania
life expectancy
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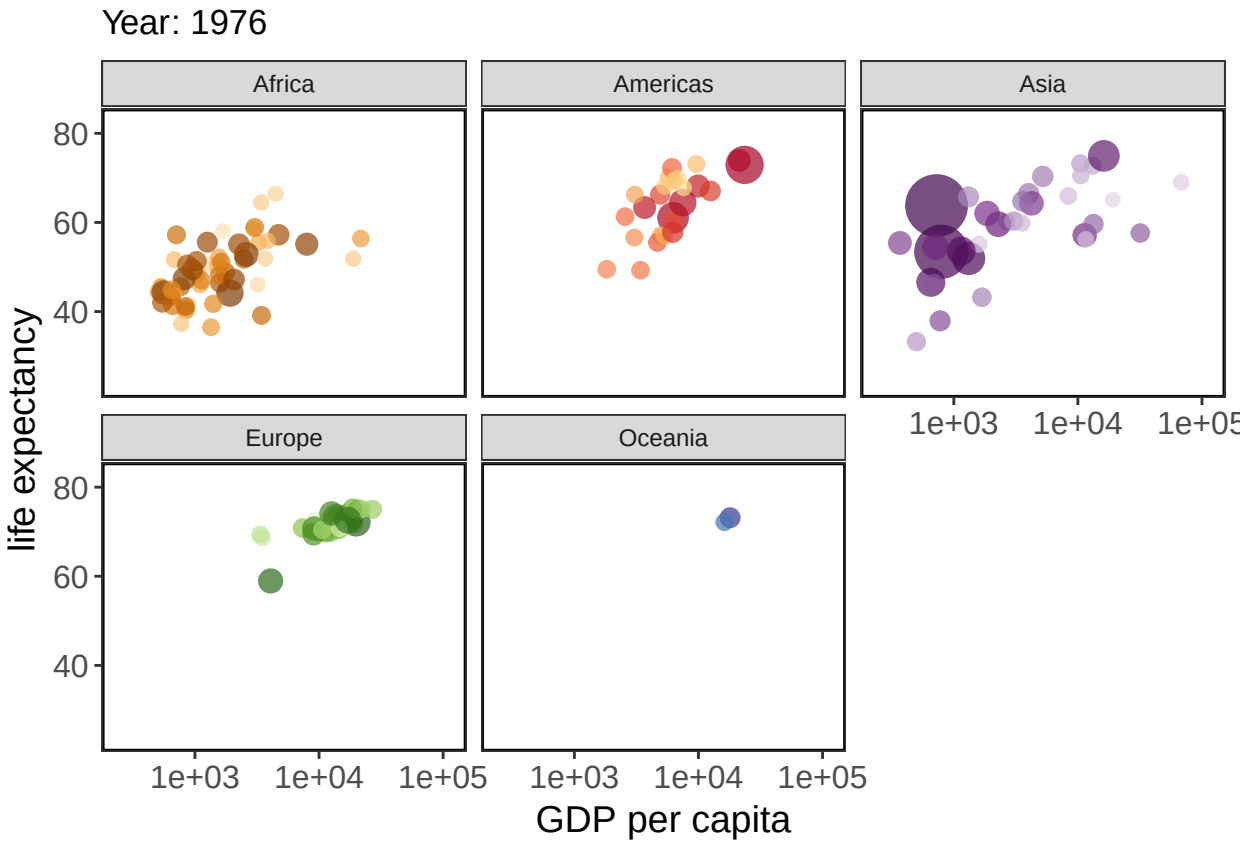
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1976
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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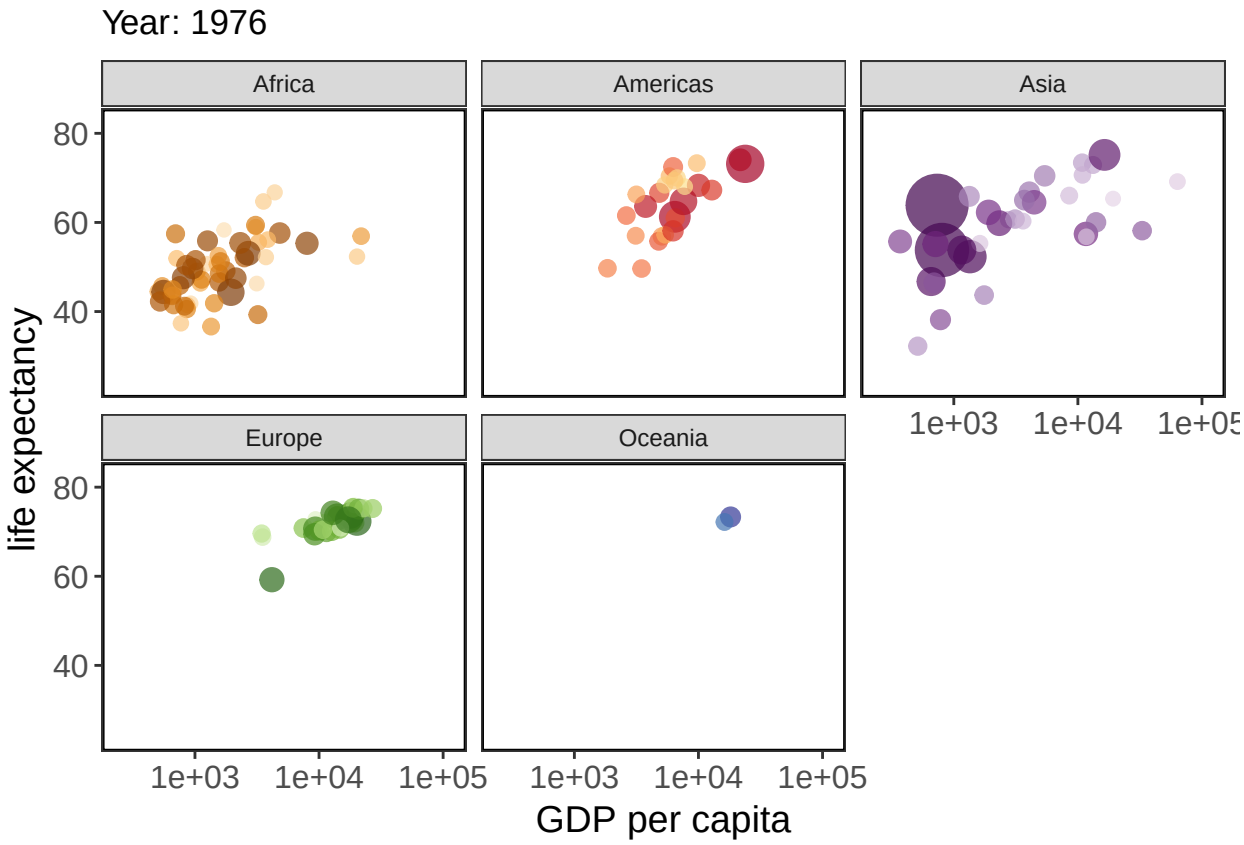
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1976
Africa
Americas
Asia
Europe
Oceania
life expectancy
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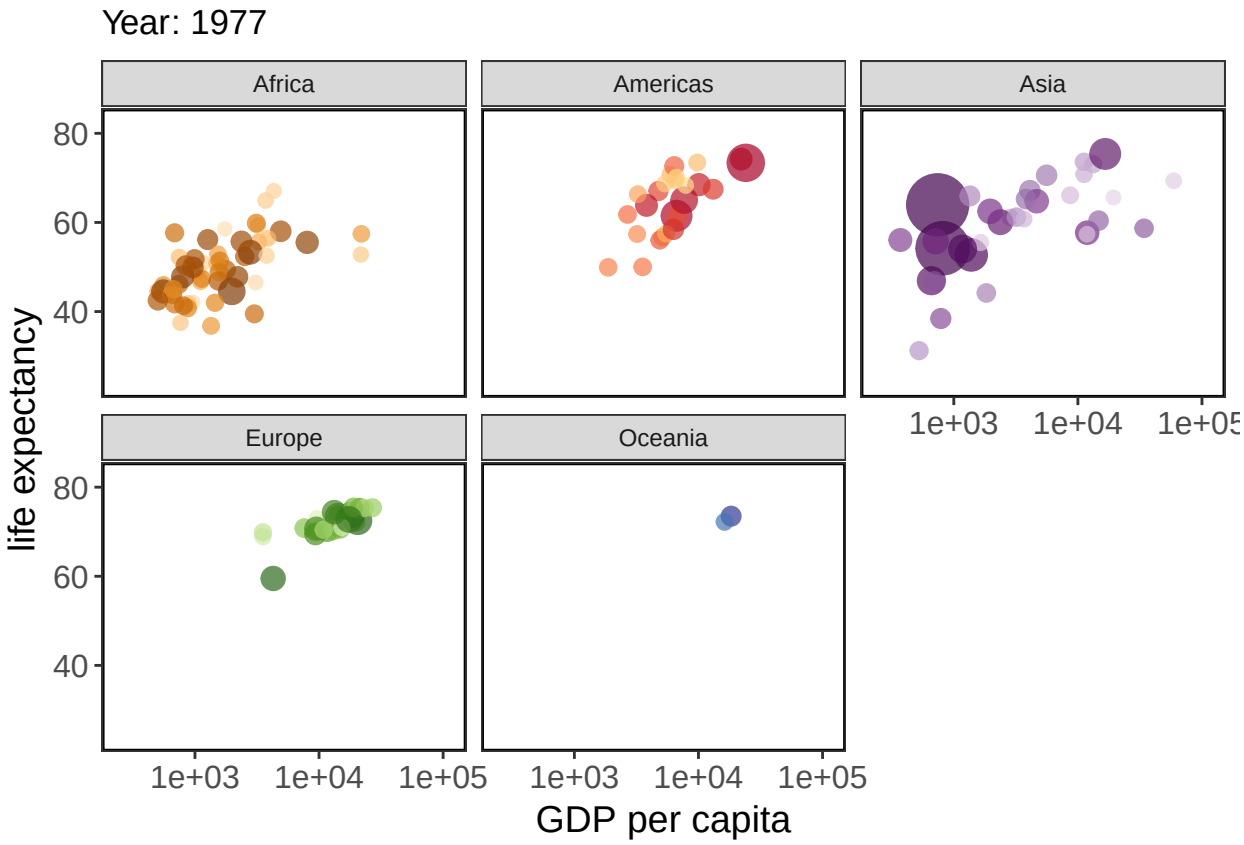
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1977
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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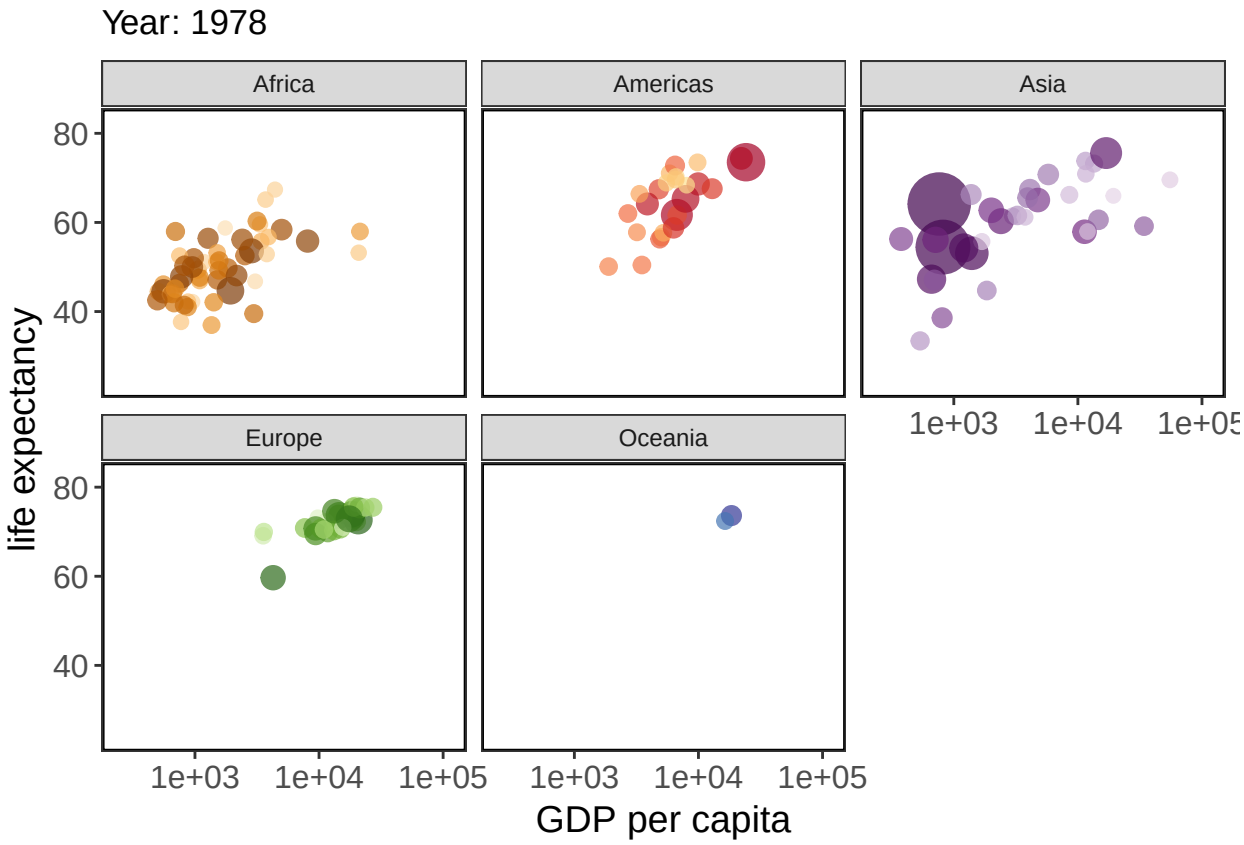
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1978
Africa
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Asia
Europe
Oceania
life expectancy
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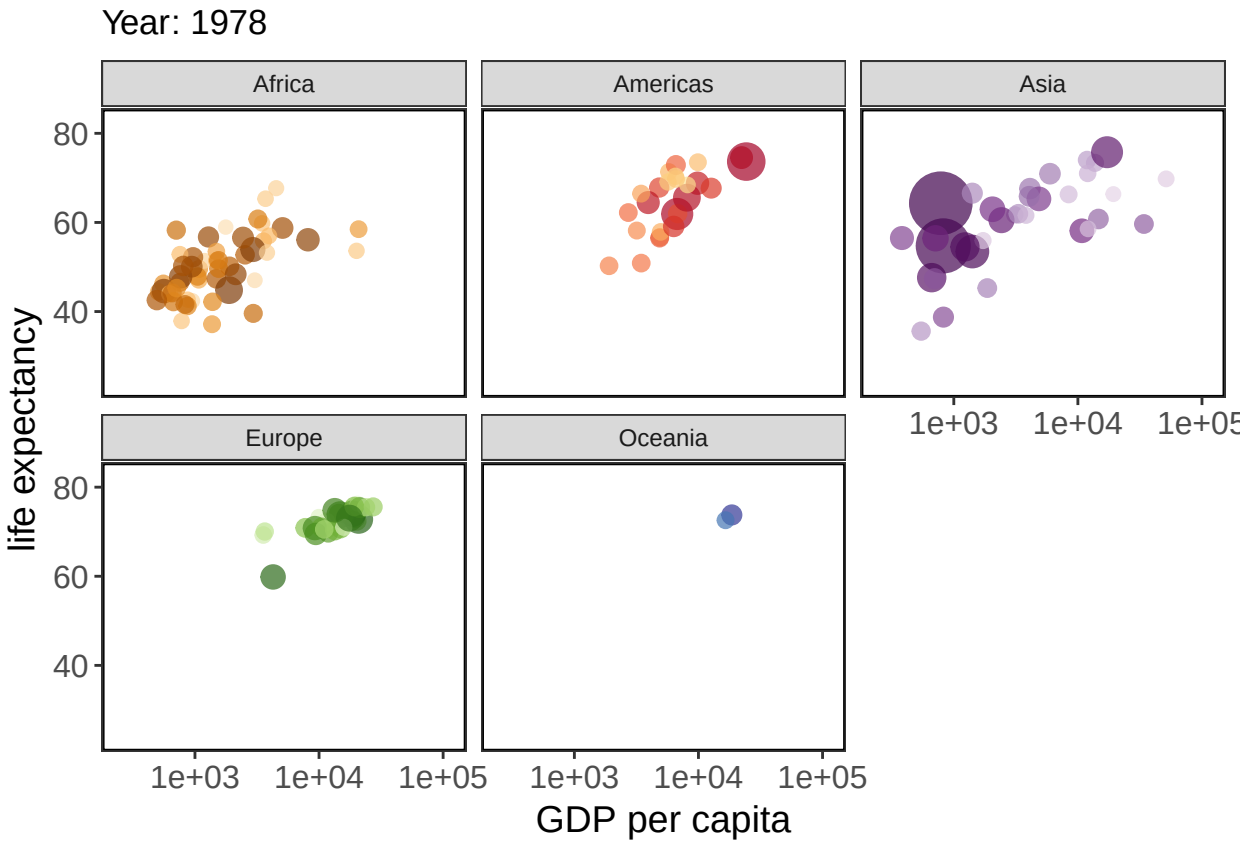
1e+03
1e+04
1e+05
GDP per capita


Year: 1978
Africa
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Asia
Europe
Oceania
life expectancy
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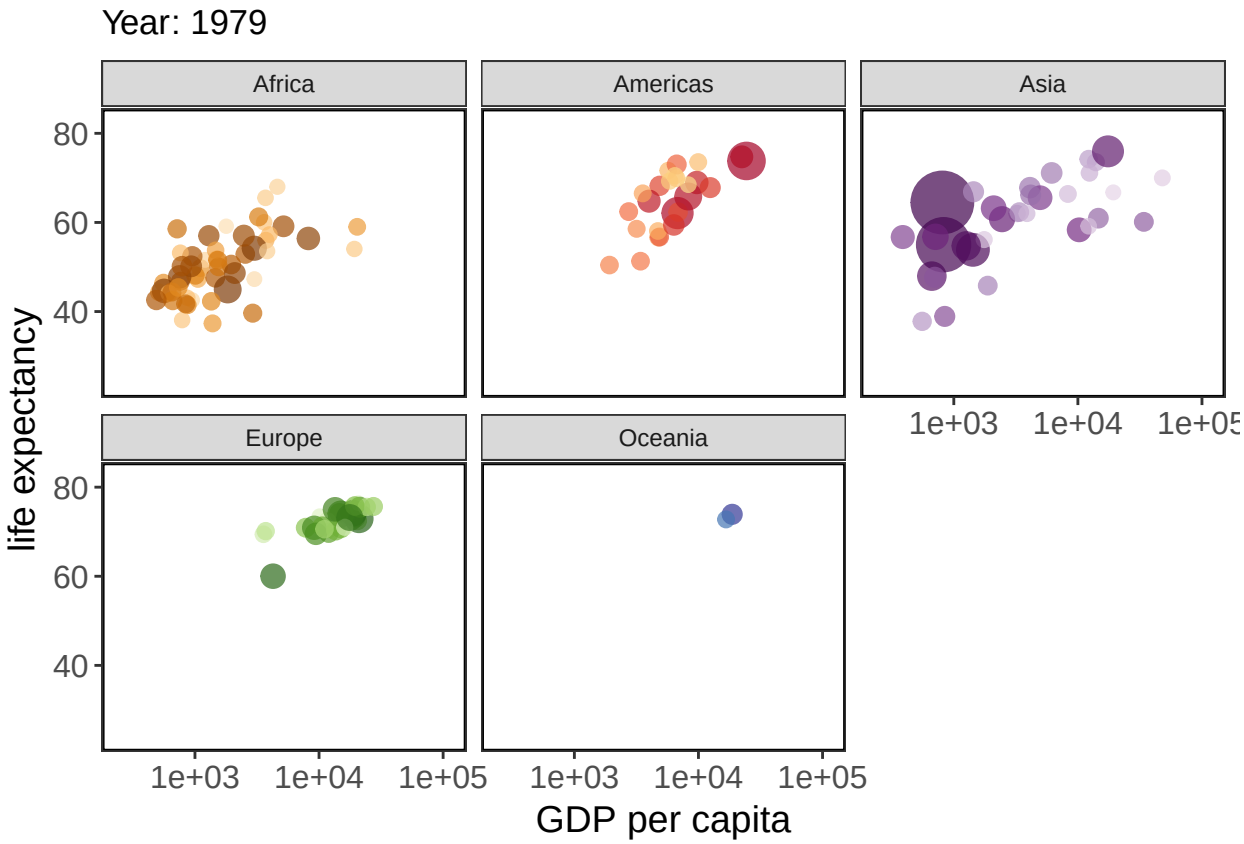
1e+03
1e+04
1e+05
GDP per capita


Year: 1979
Africa
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Asia
Europe
Oceania
life expectancy
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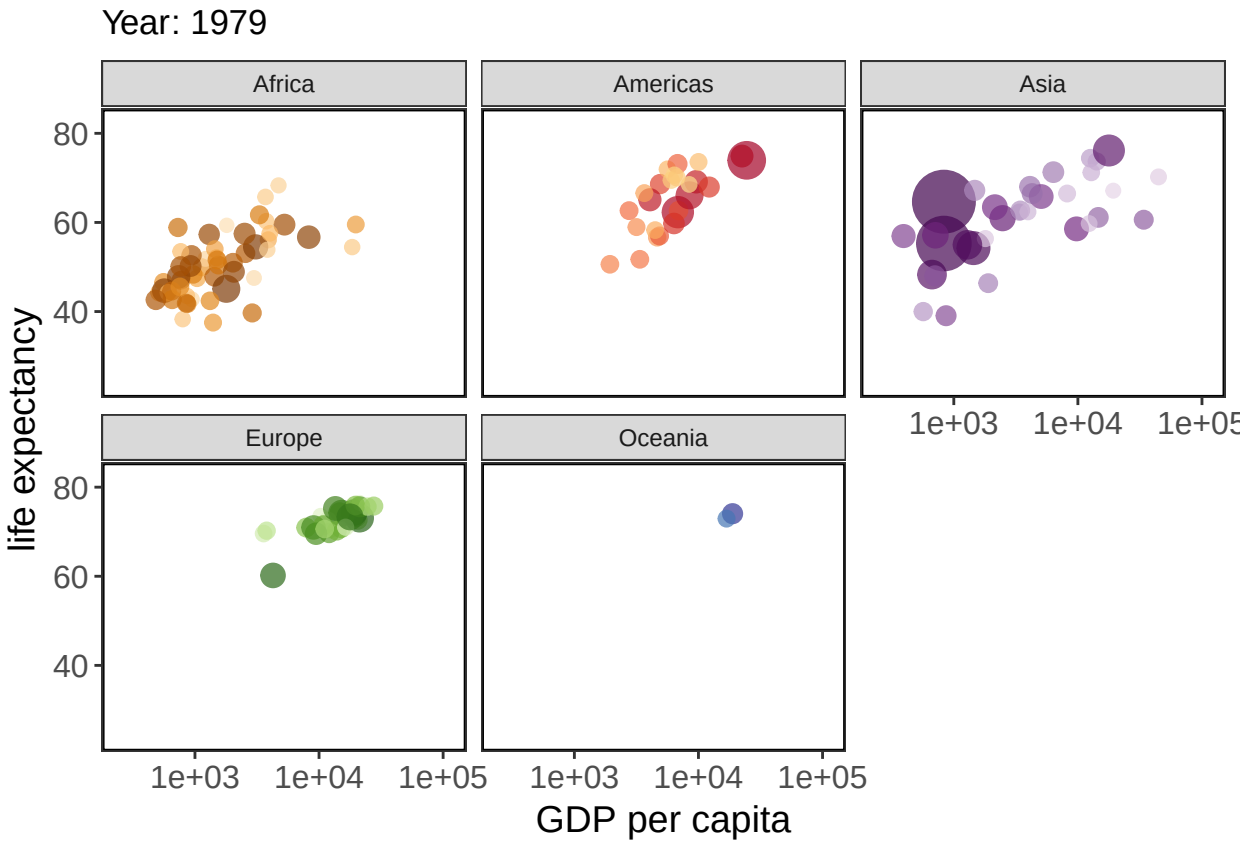
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1979
Africa
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Asia
Europe
Oceania
life expectancy
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1e+03
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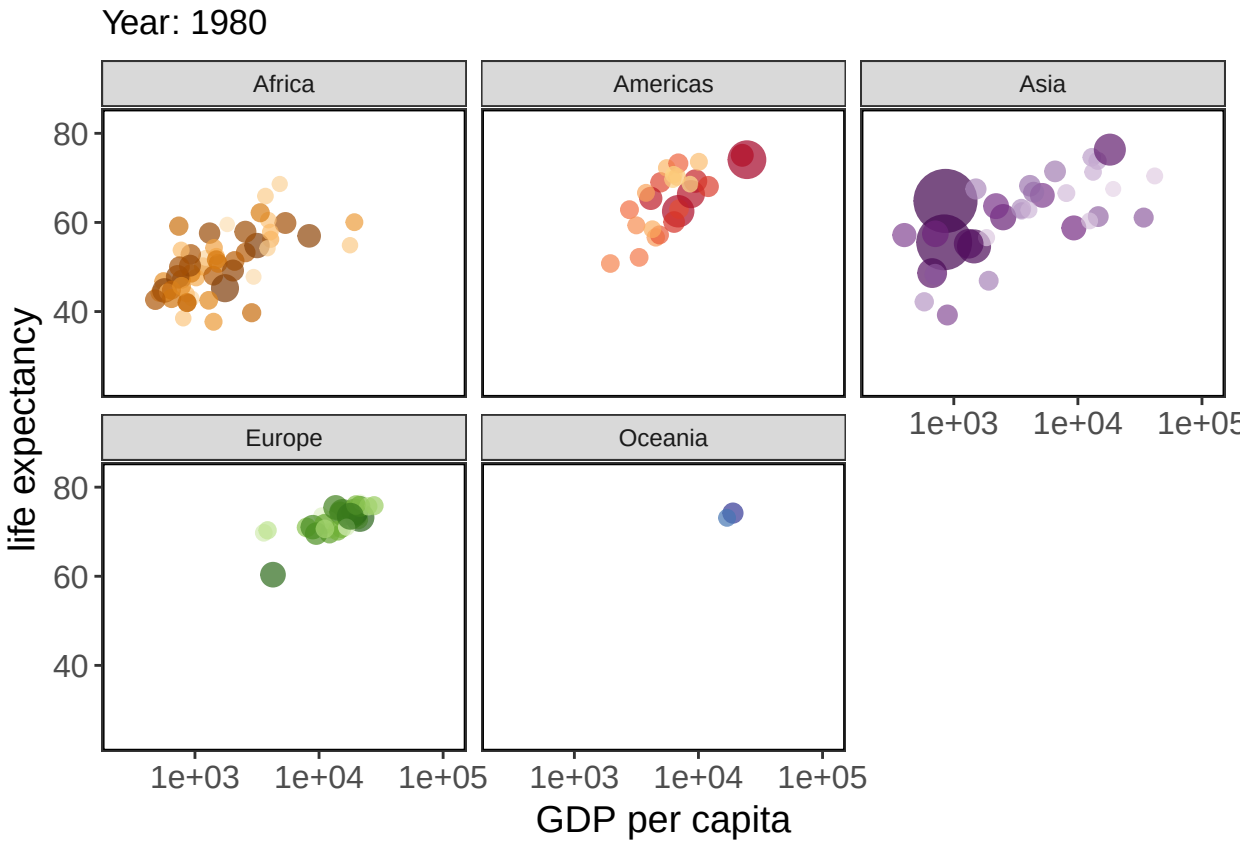
1e+05
GDP per capita


Year: 1980
Africa
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Asia
Europe
Oceania
life expectancy
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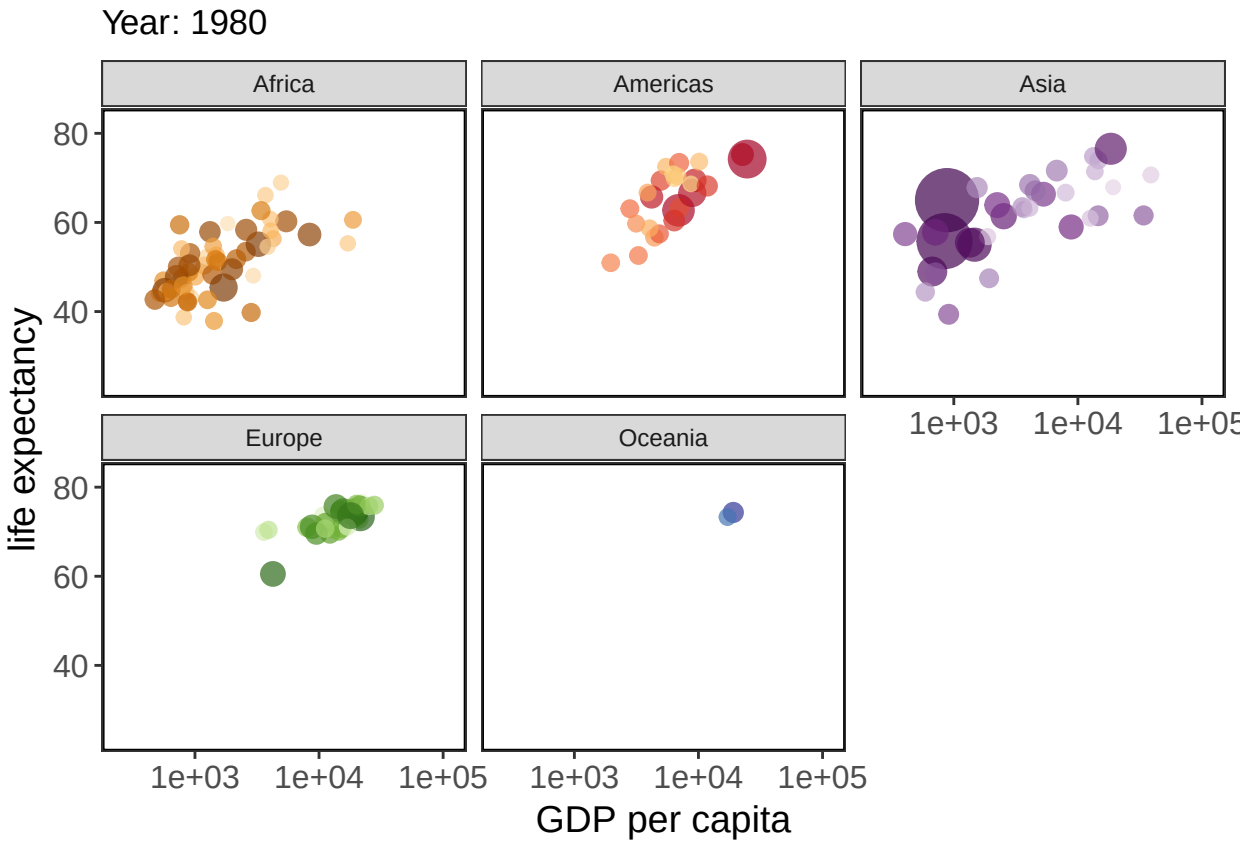
1e+03
1e+04
1e+05
GDP per capita


Year: 1980
Africa
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Asia
Europe
Oceania
life expectancy
80
60
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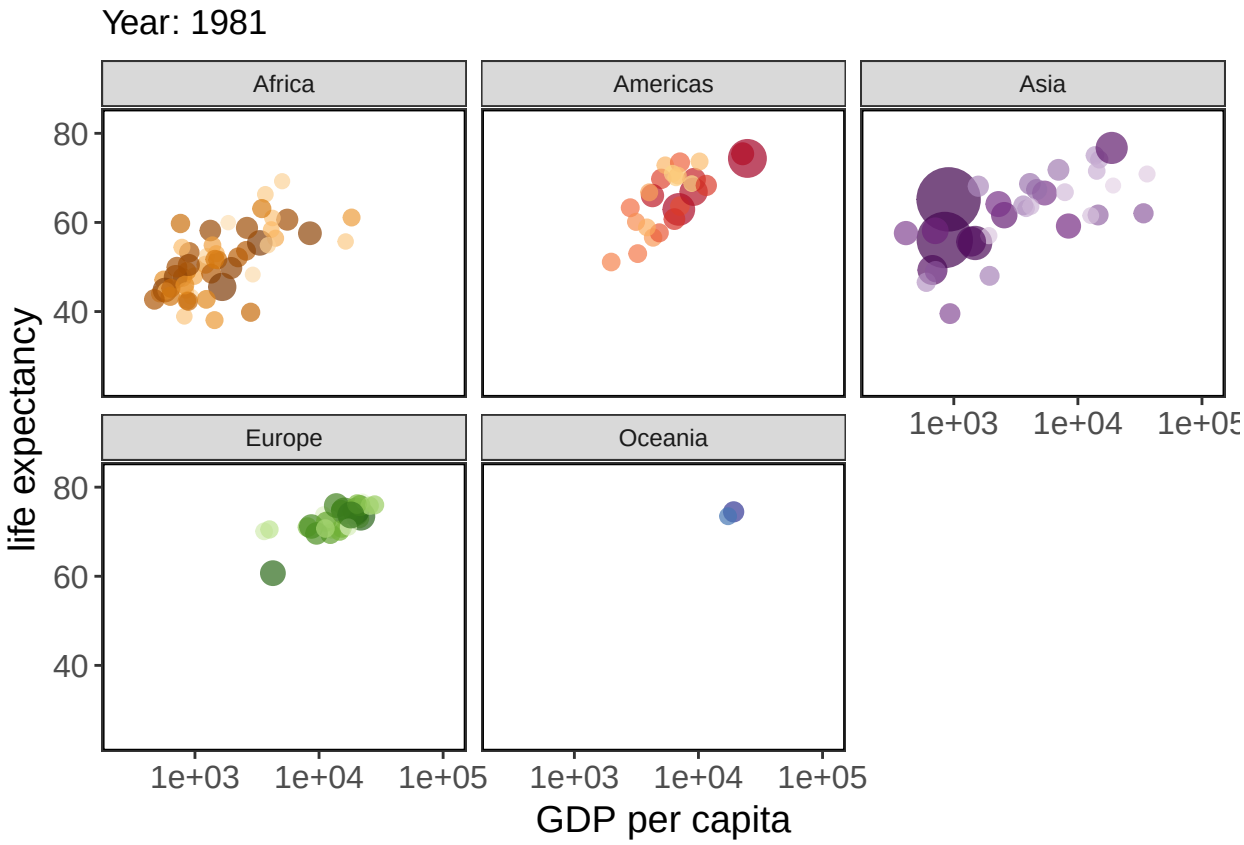
1e+03
1e+04
1e+05
GDP per capita


Year: 1981
Africa
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Asia
Europe
Oceania
life expectancy
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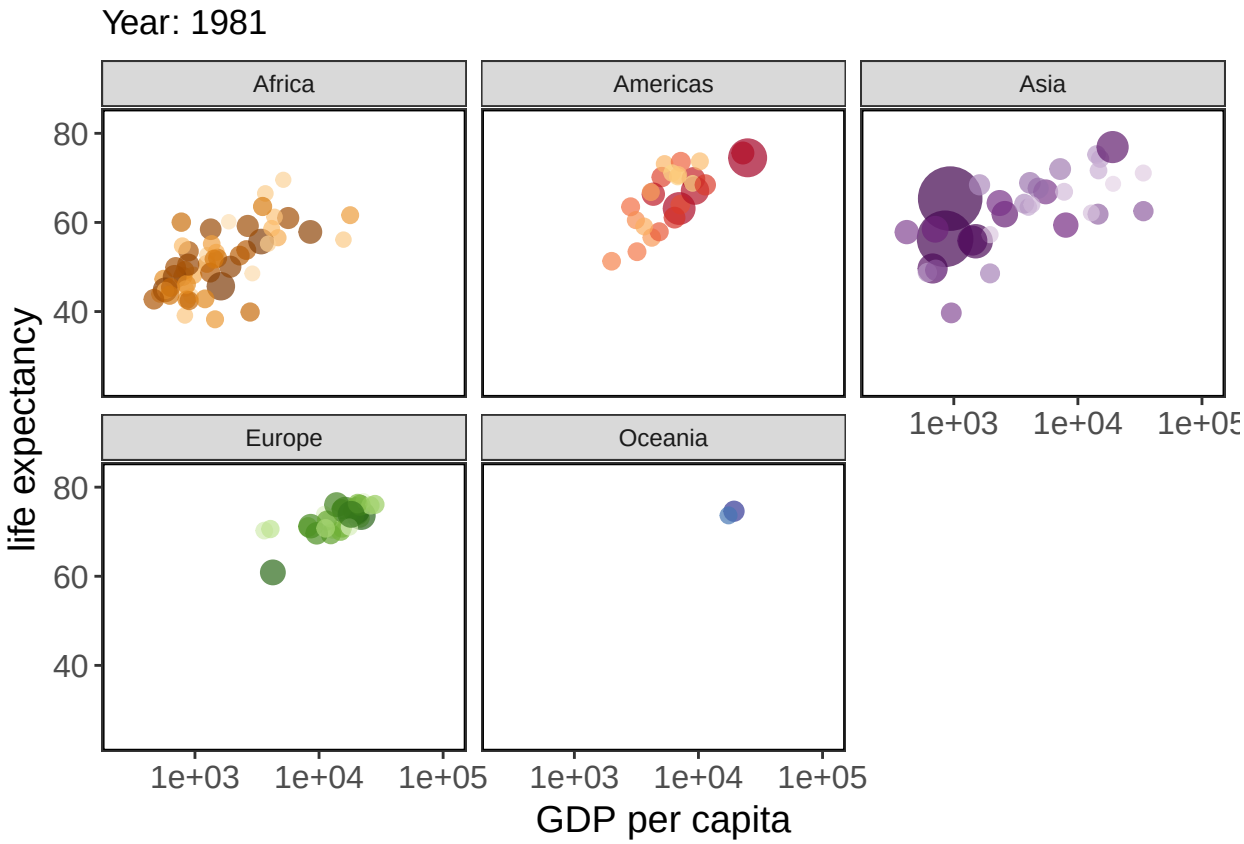
1e+03
1e+04
1e+05
GDP per capita


Year: 1981
Africa
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Asia
Europe
Oceania
life expectancy
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1e+03
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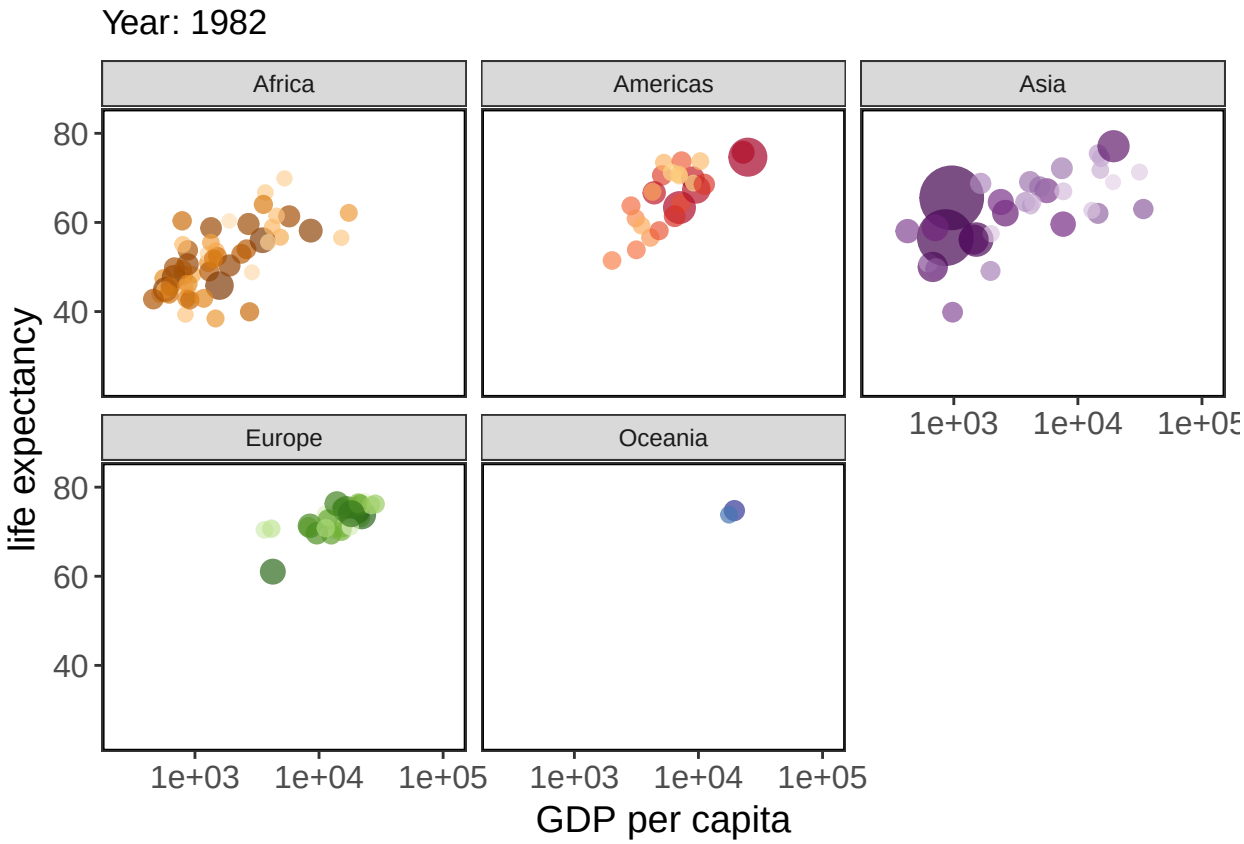
1e+05
GDP per capita


Year: 1982
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Asia
Europe
Oceania
life expectancy
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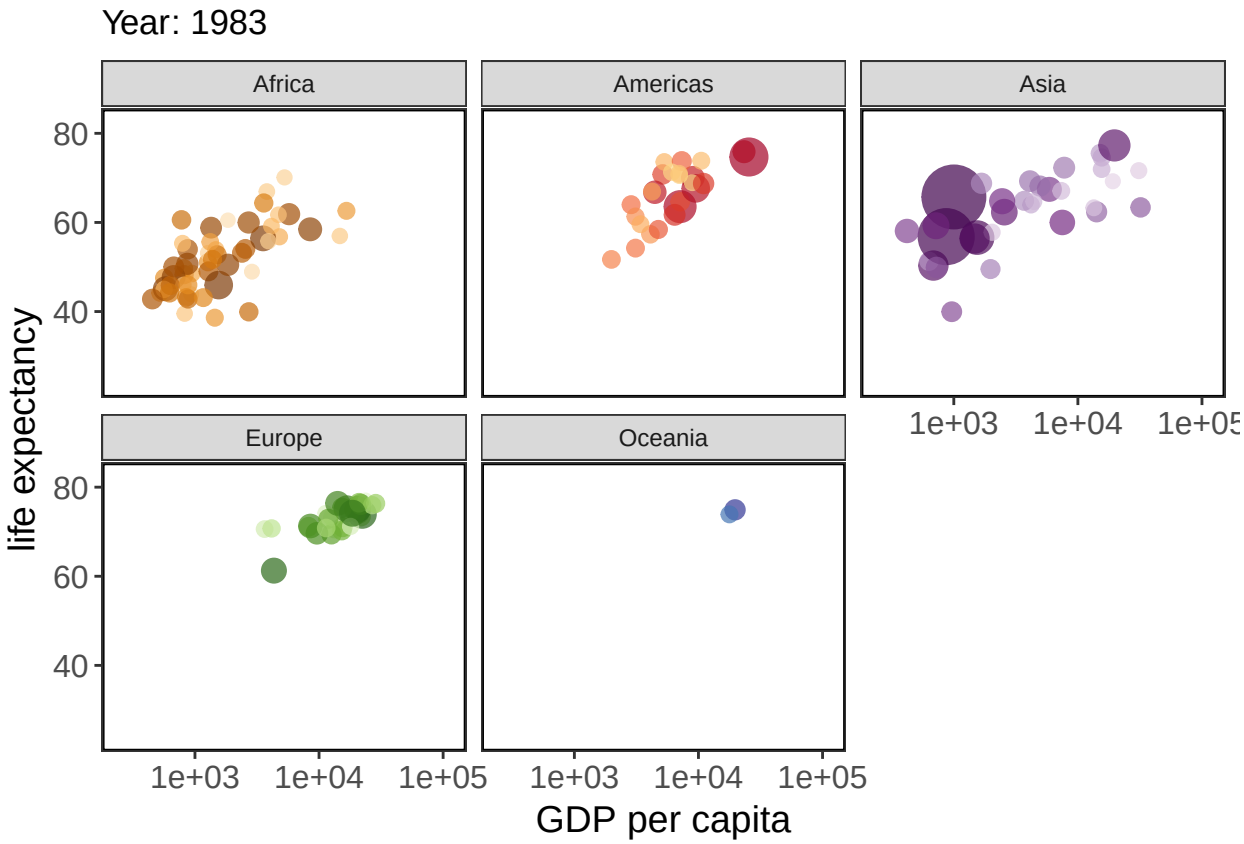
1e+03
1e+04
1e+05
GDP per capita


Year: 1983
Africa
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Asia
Europe
Oceania
life expectancy
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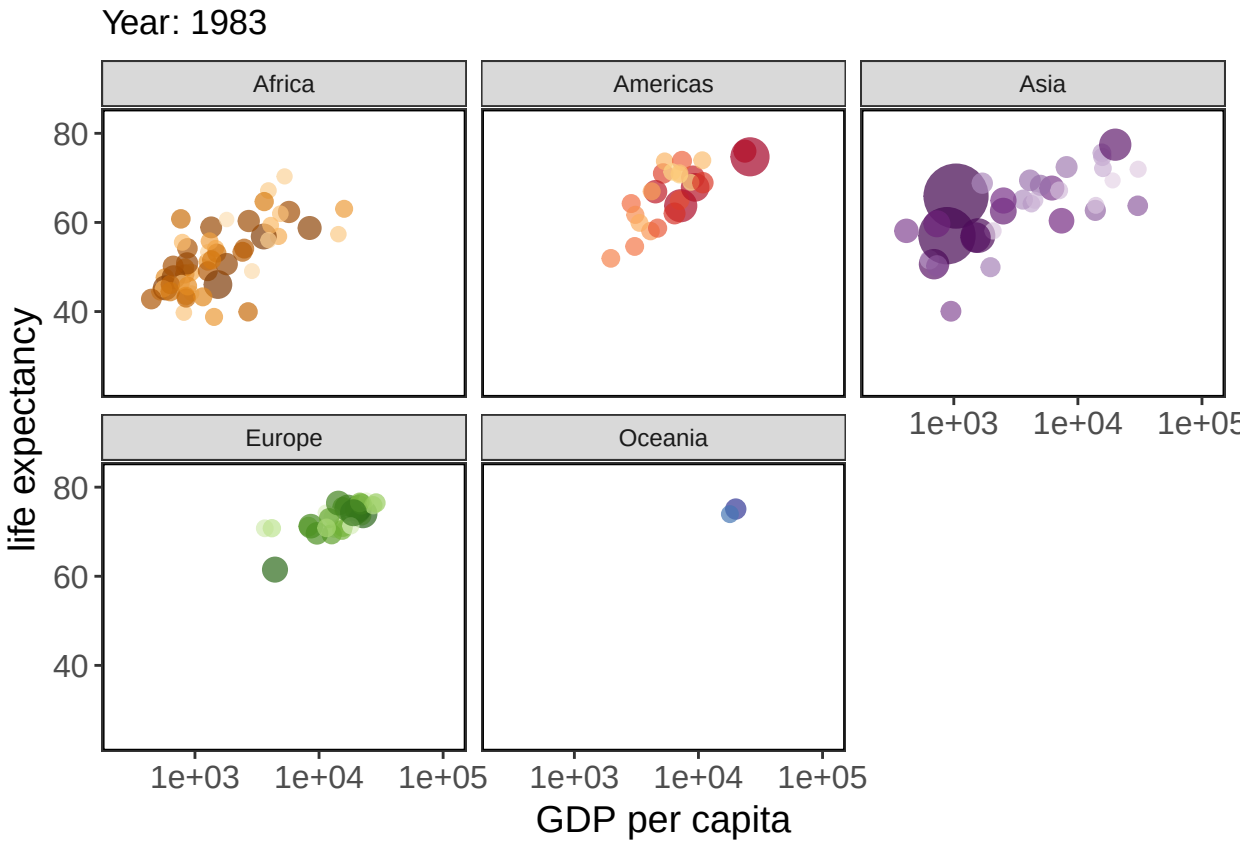
1e+03
1e+04
1e+05
GDP per capita


Year: 1983
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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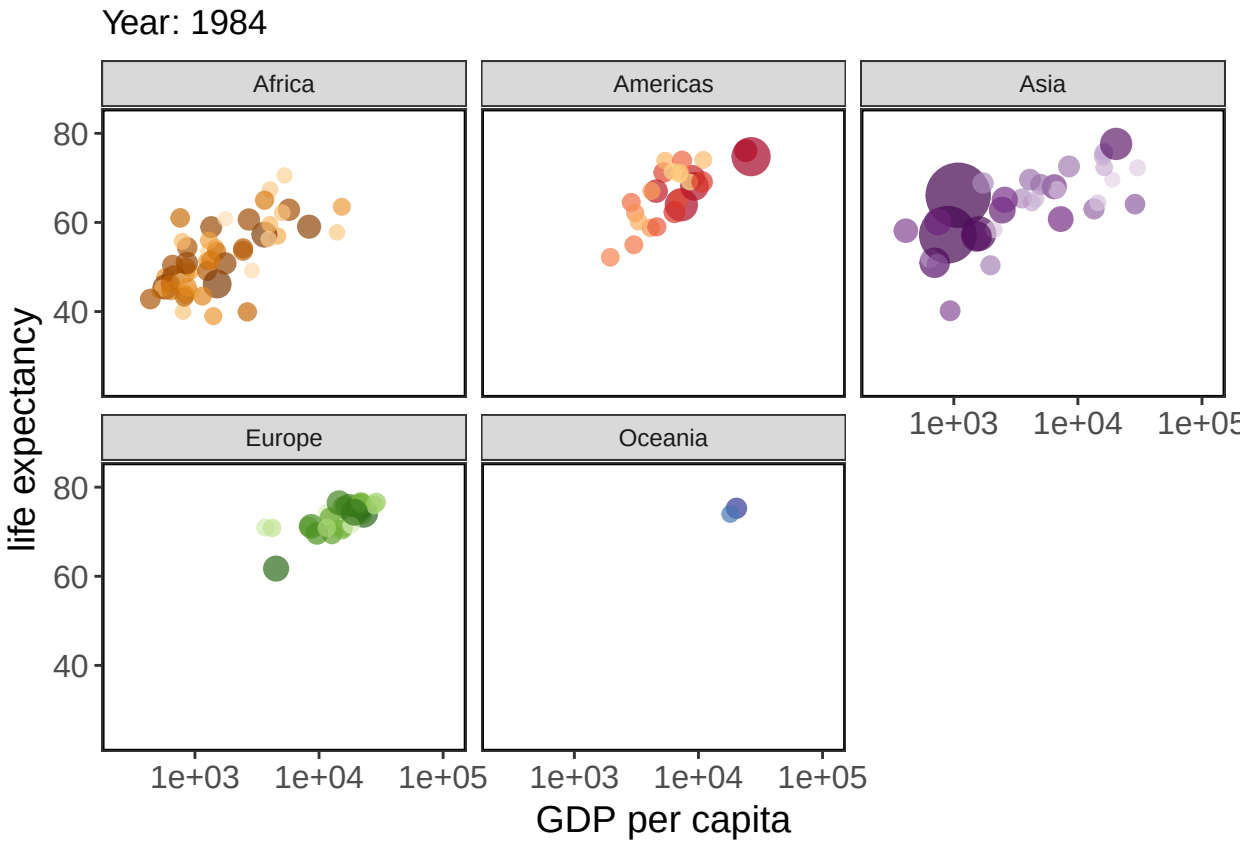
1e+03
1e+04
1e+05
GDP per capita


Year: 1984
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
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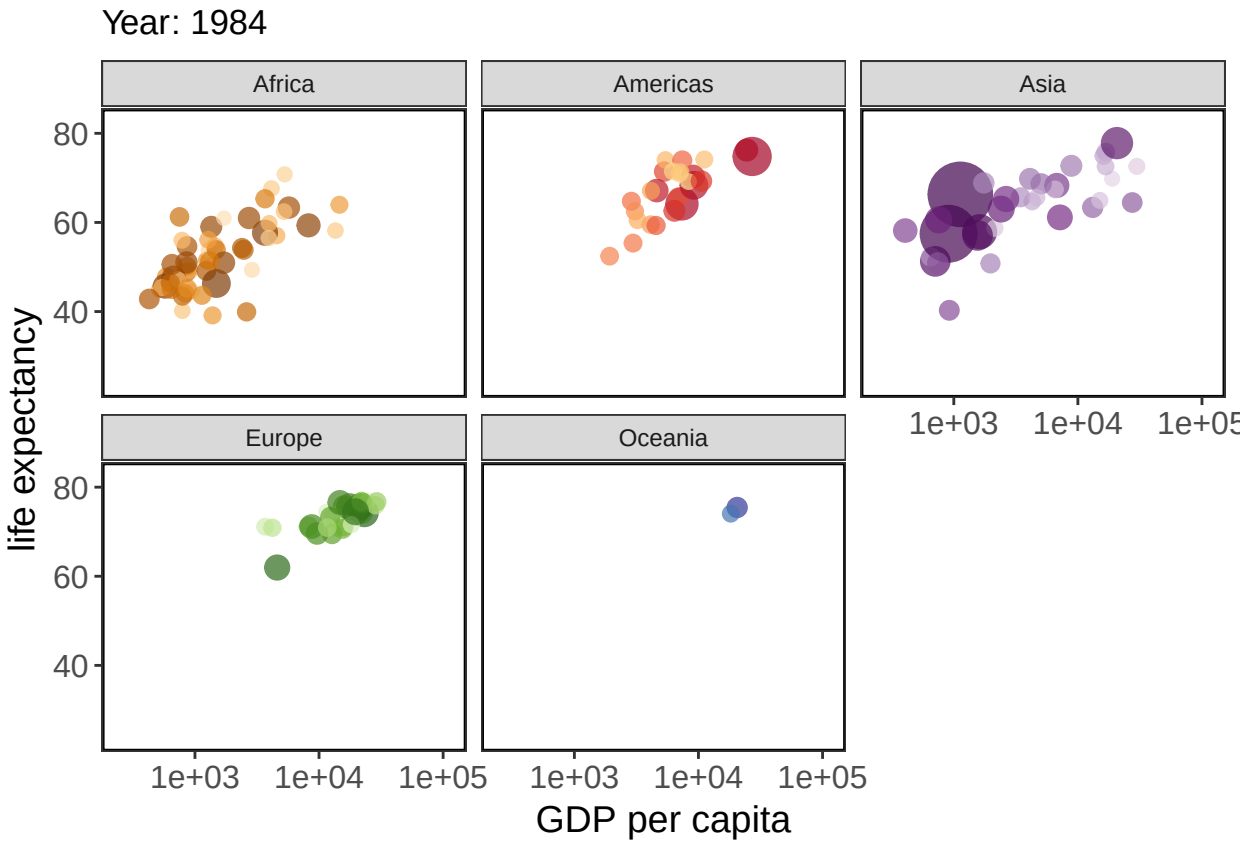
1e+03
1e+04
1e+05
GDP per capita


Year: 1984
Africa
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Oceania
life expectancy
80
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1e+03
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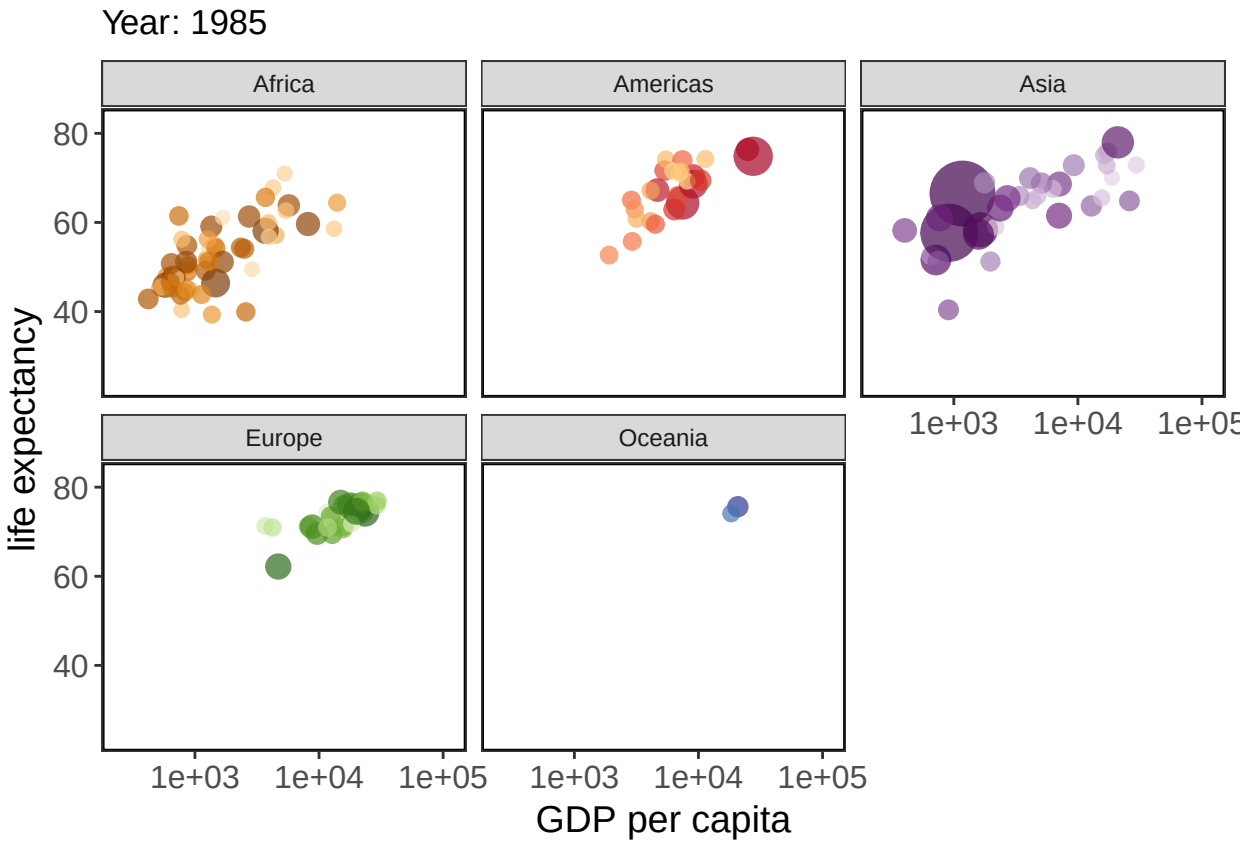
1e+05
GDP per capita


Year: 1985
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Europe
Oceania
life expectancy
80
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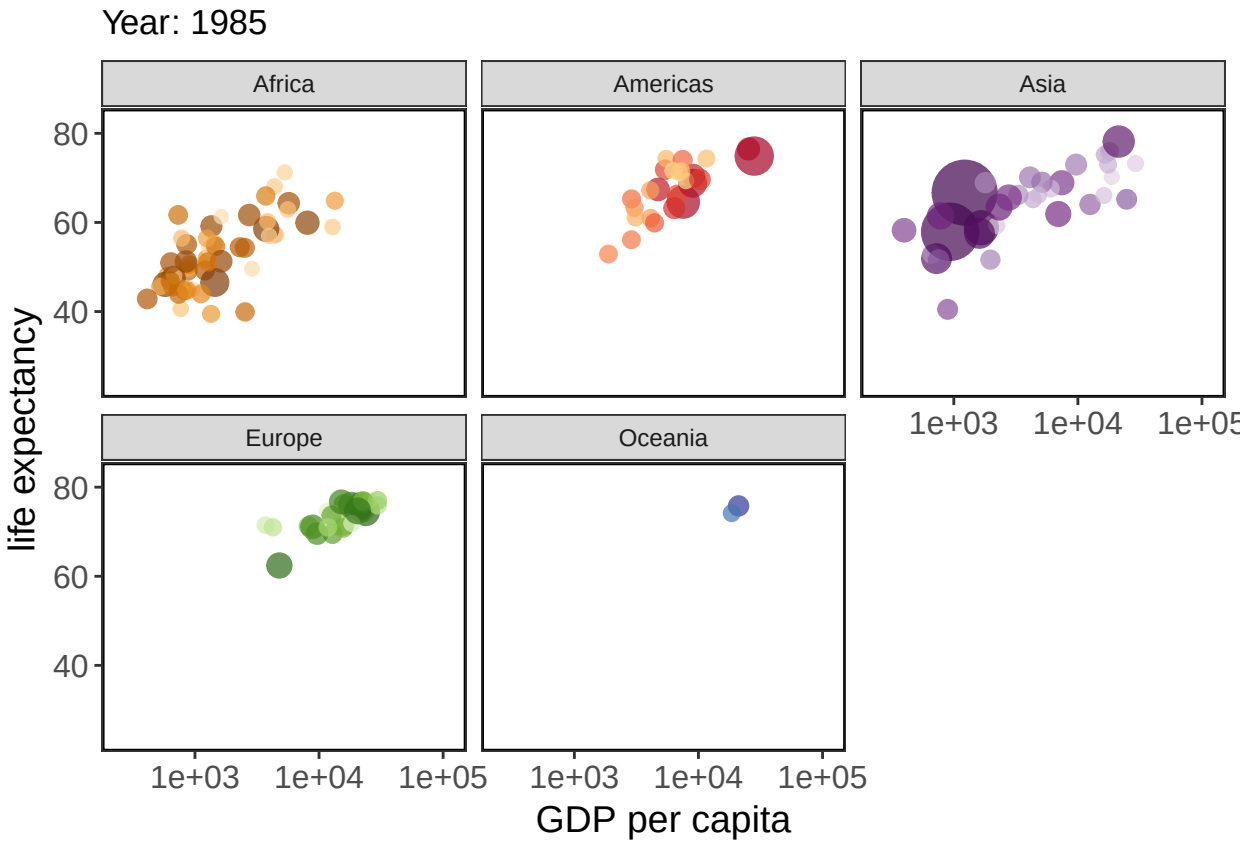
1e+03
1e+04
1e+05
GDP per capita


Year: 1985
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Europe
Oceania
life expectancy
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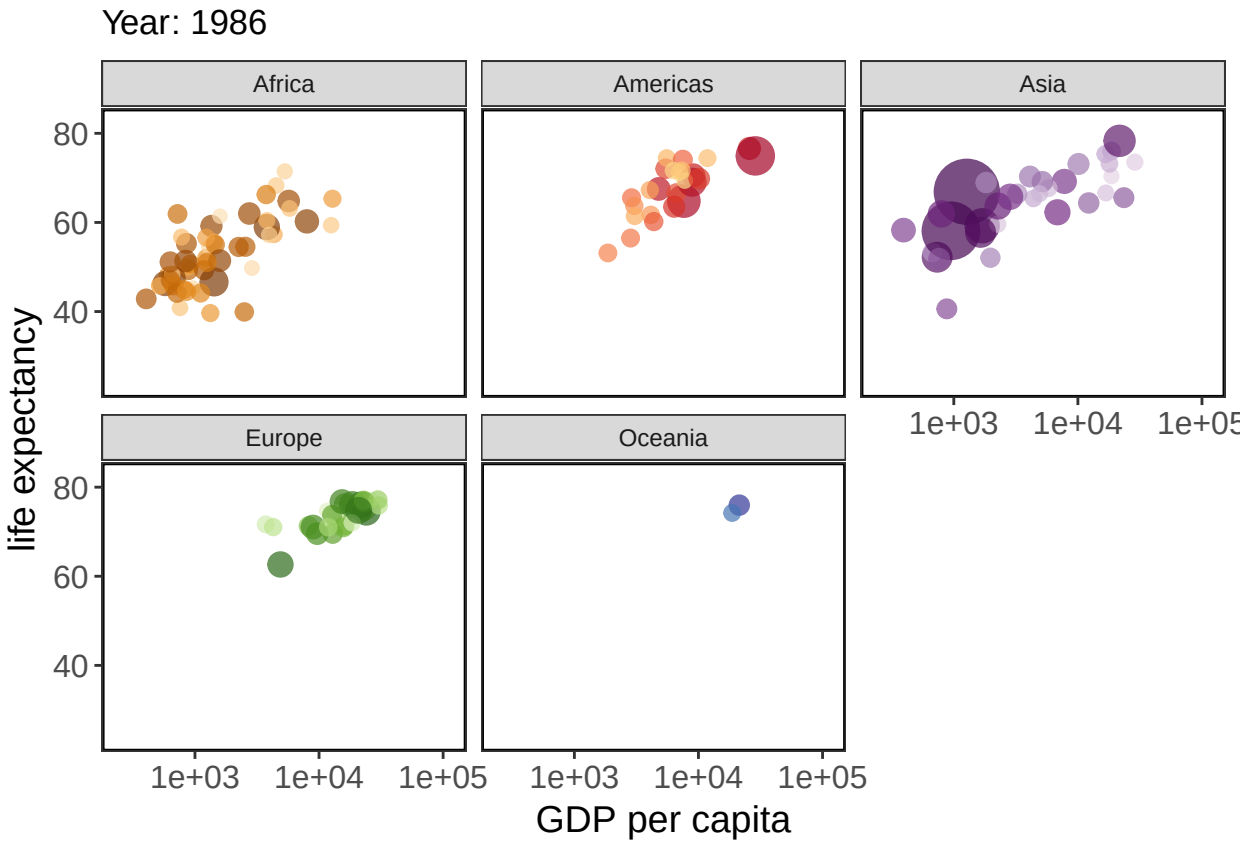
1e+04
1e+05
GDP per capita


Year: 1986
Africa
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Asia
Europe
Oceania
life expectancy
80
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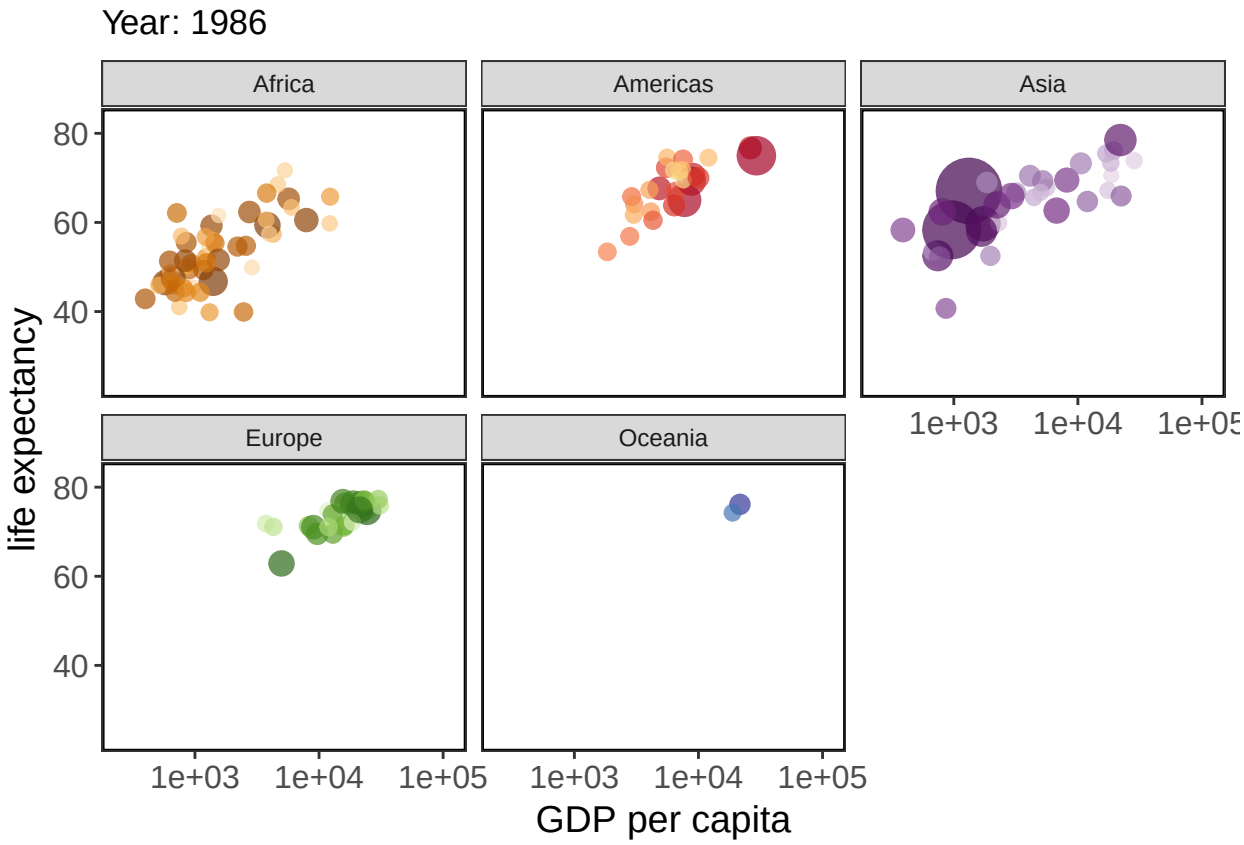
1e+03
1e+04
1e+05
GDP per capita


Year: 1986
Africa
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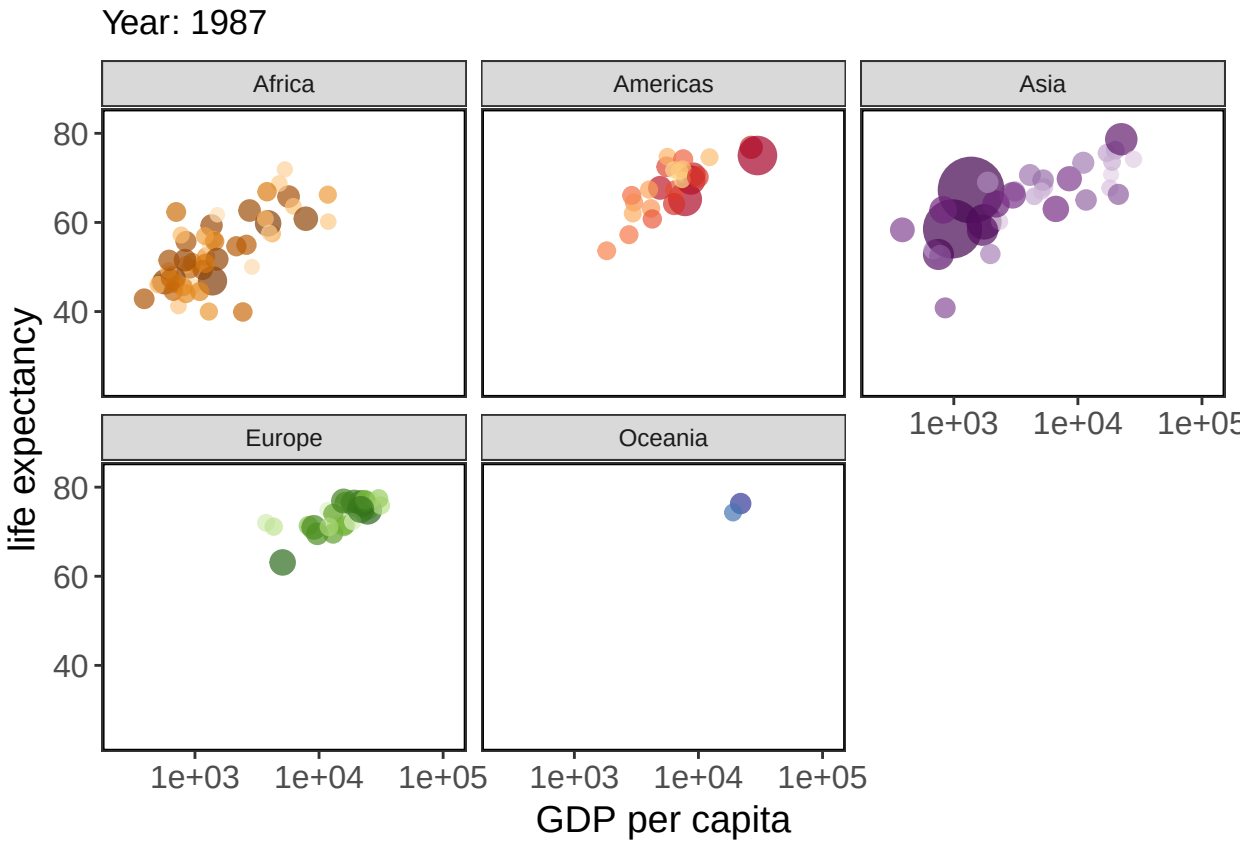
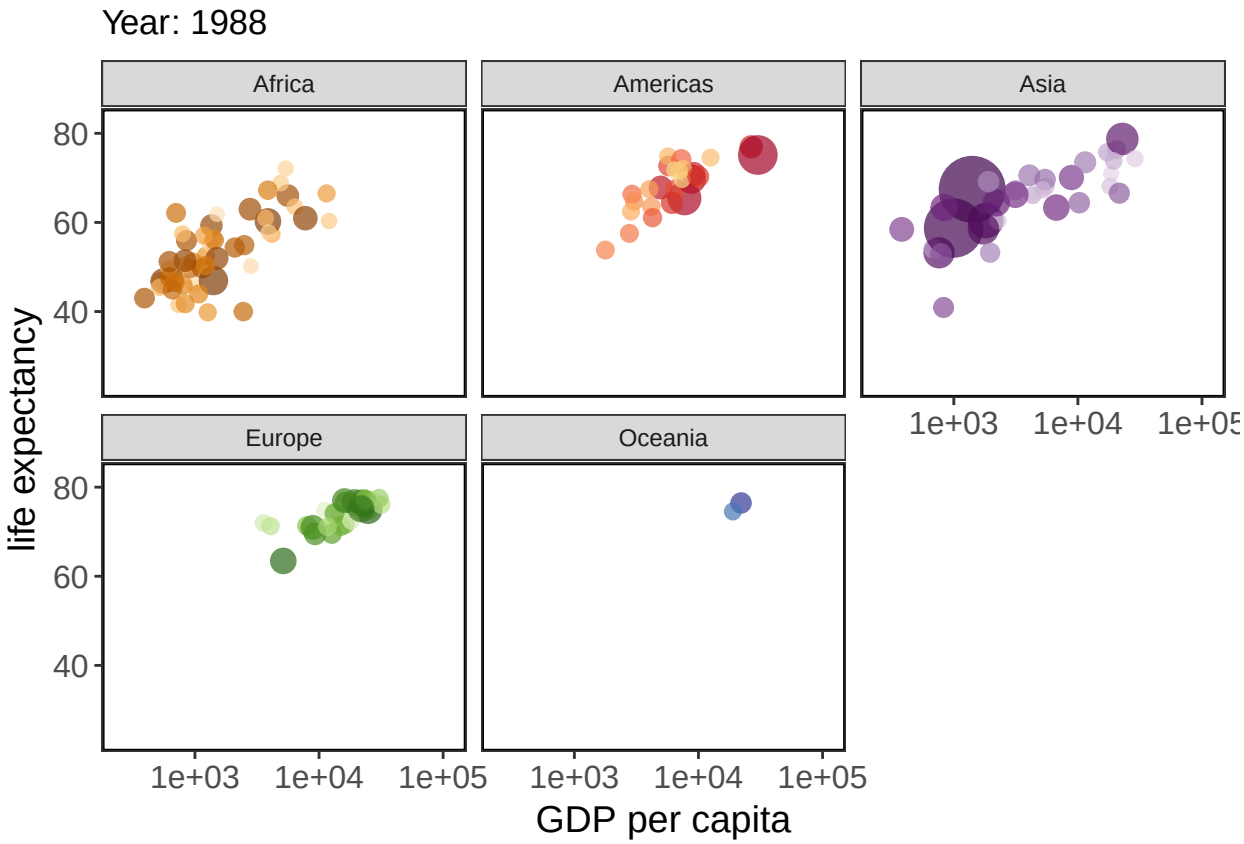
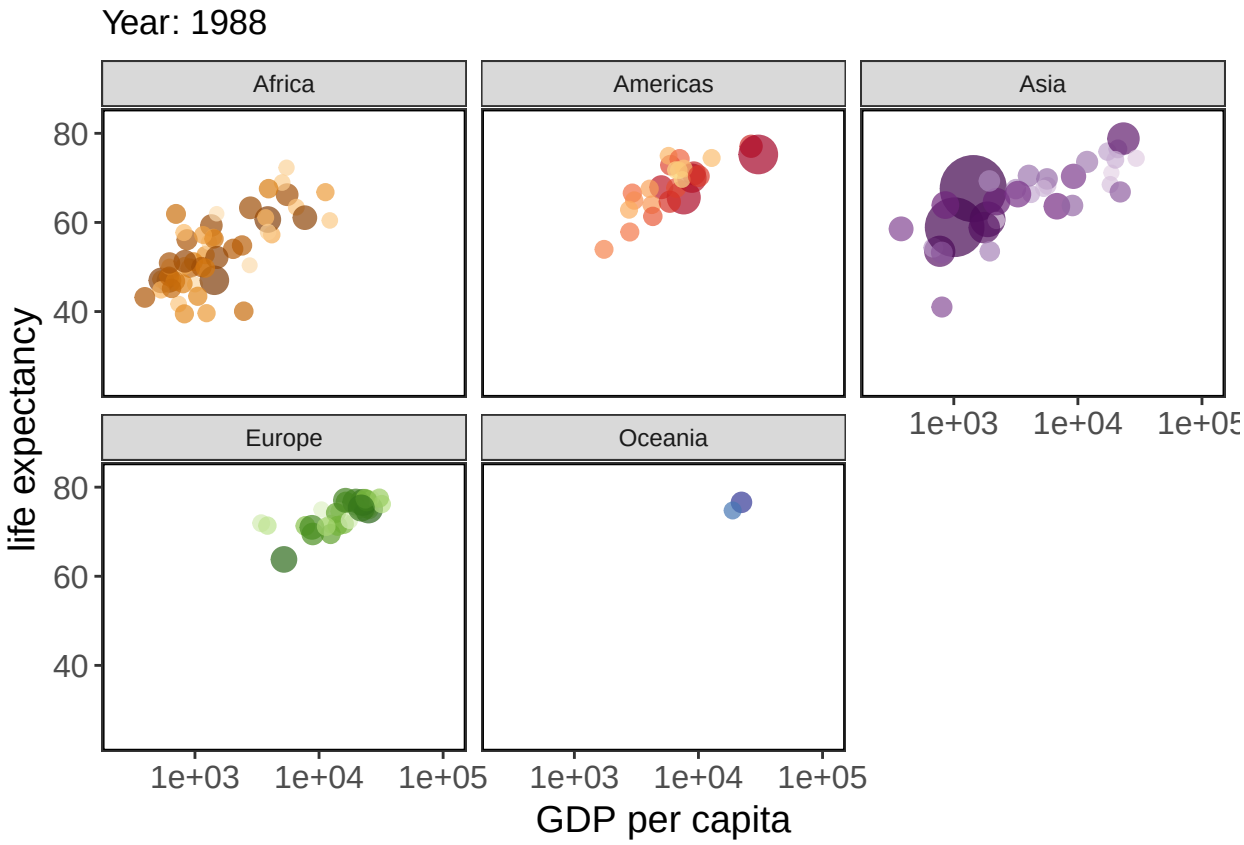
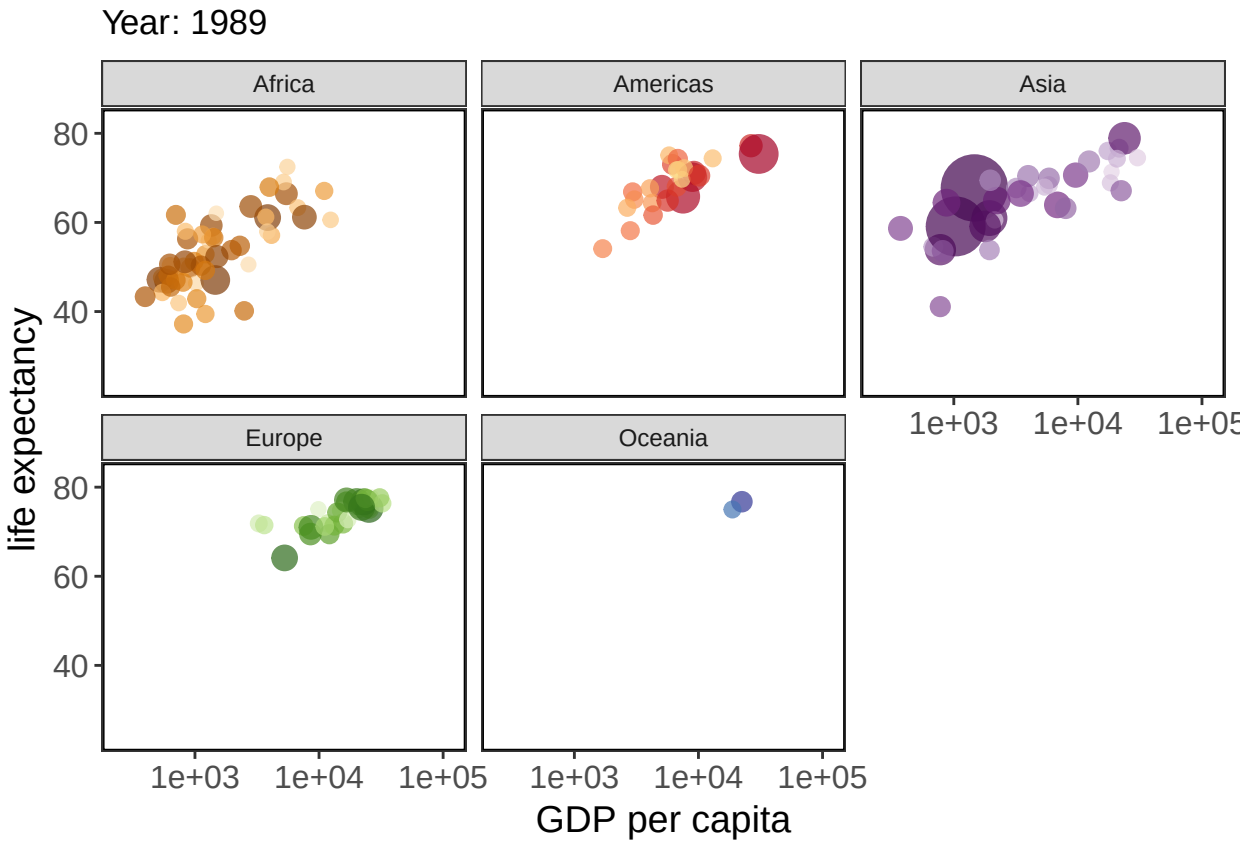
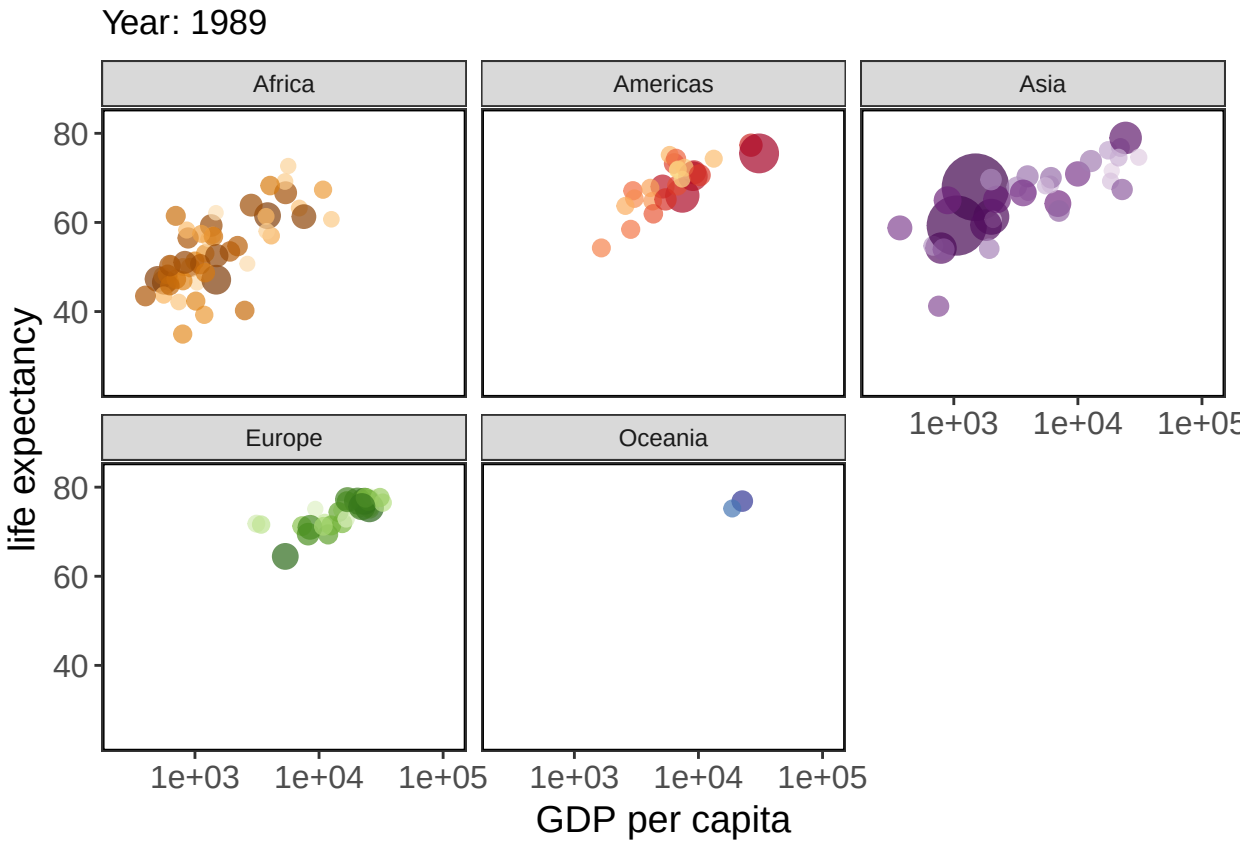
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

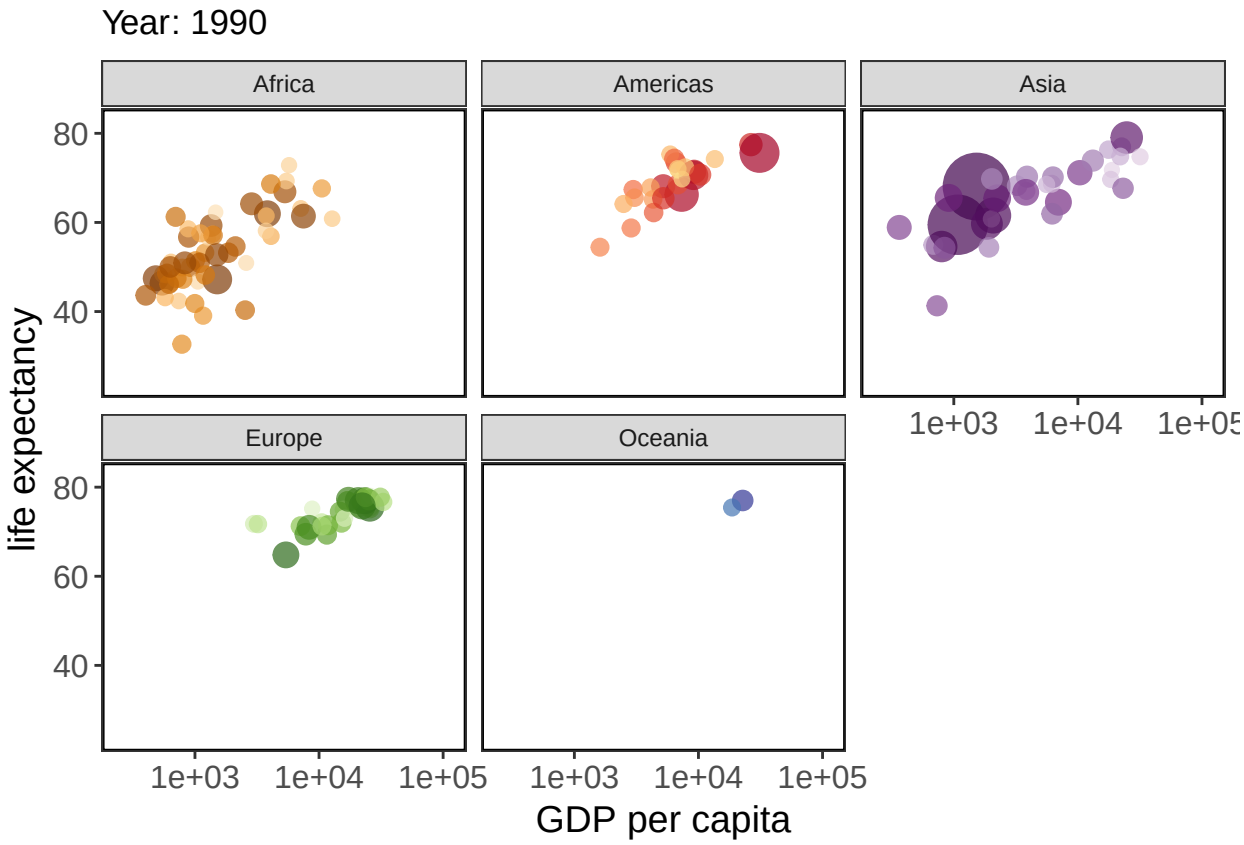

Year: 1987
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita

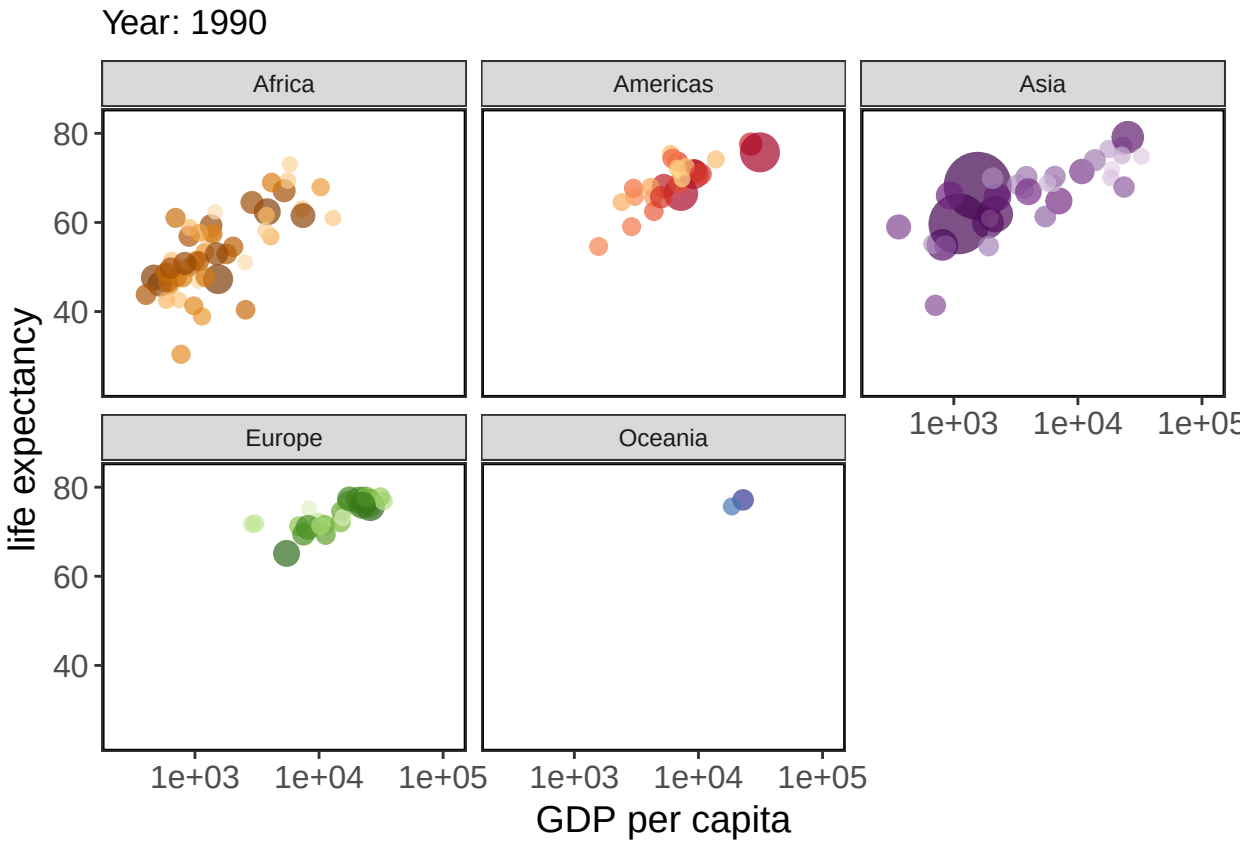

Year: 1988
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1988
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1989
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1989
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1990
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1990
Africa
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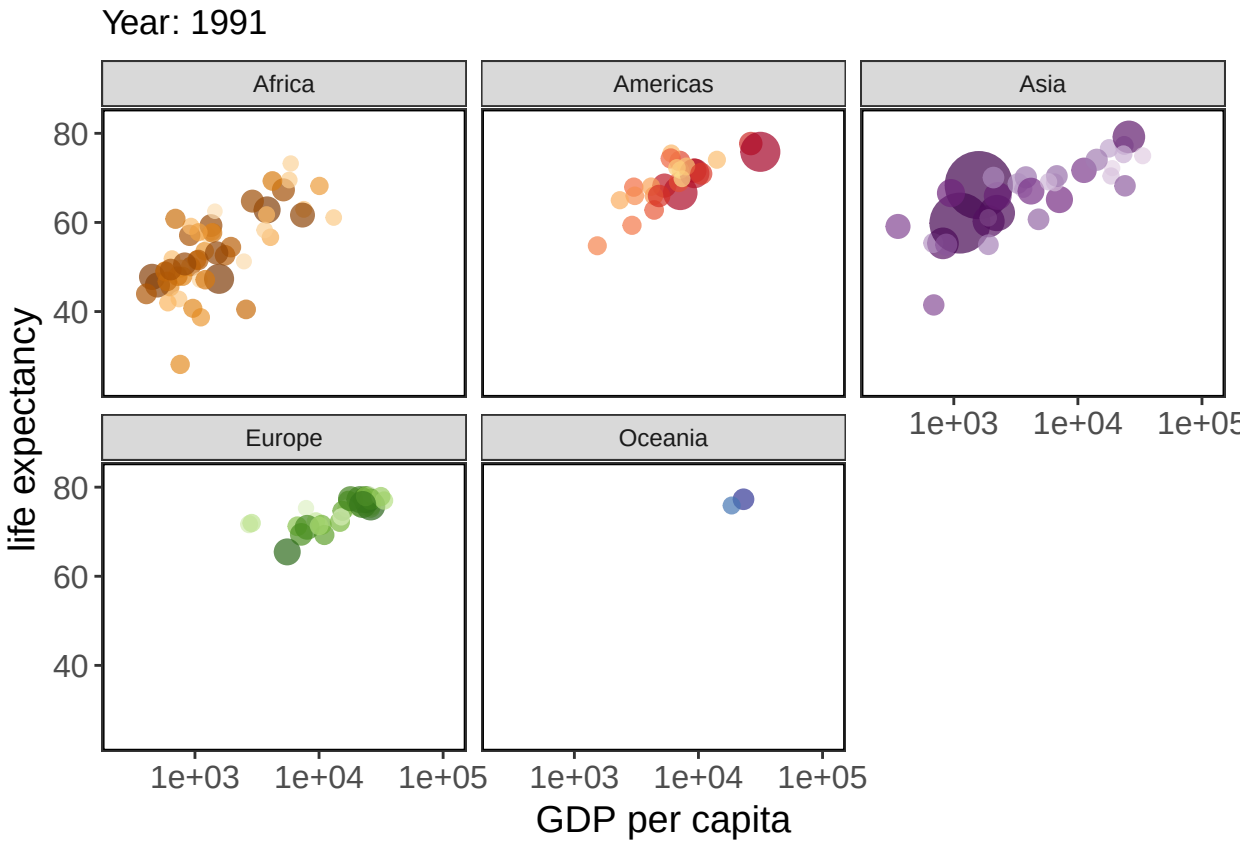
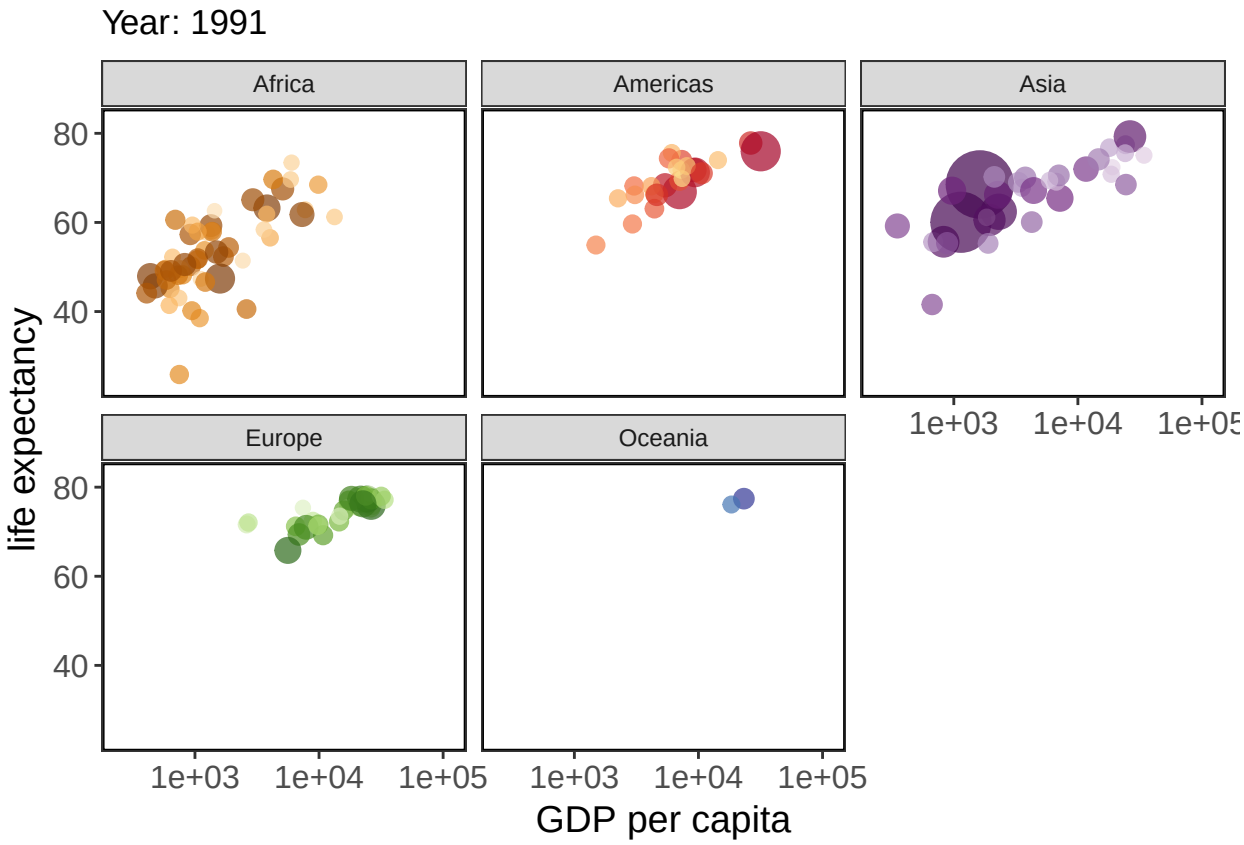
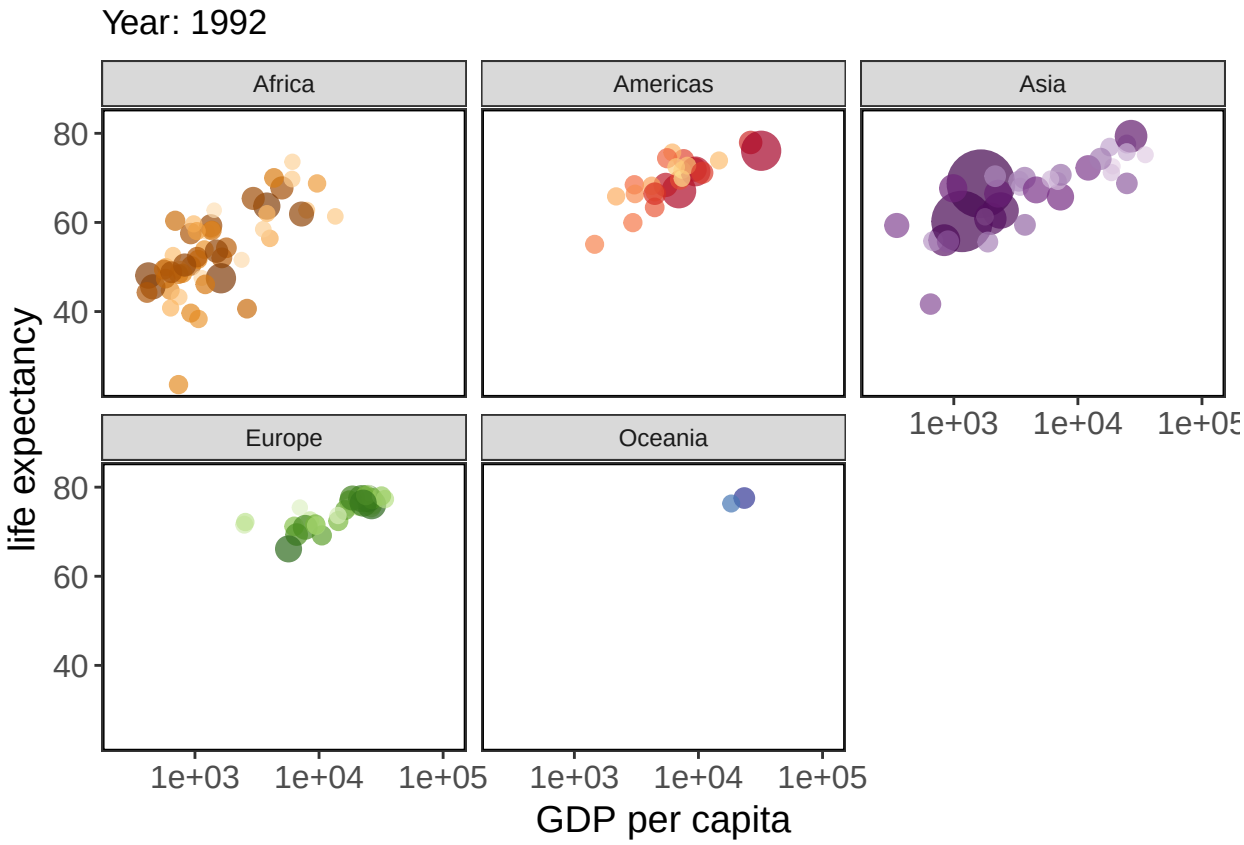
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1991
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1991
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1992
Africa
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Asia
Europe
Oceania
life expectancy
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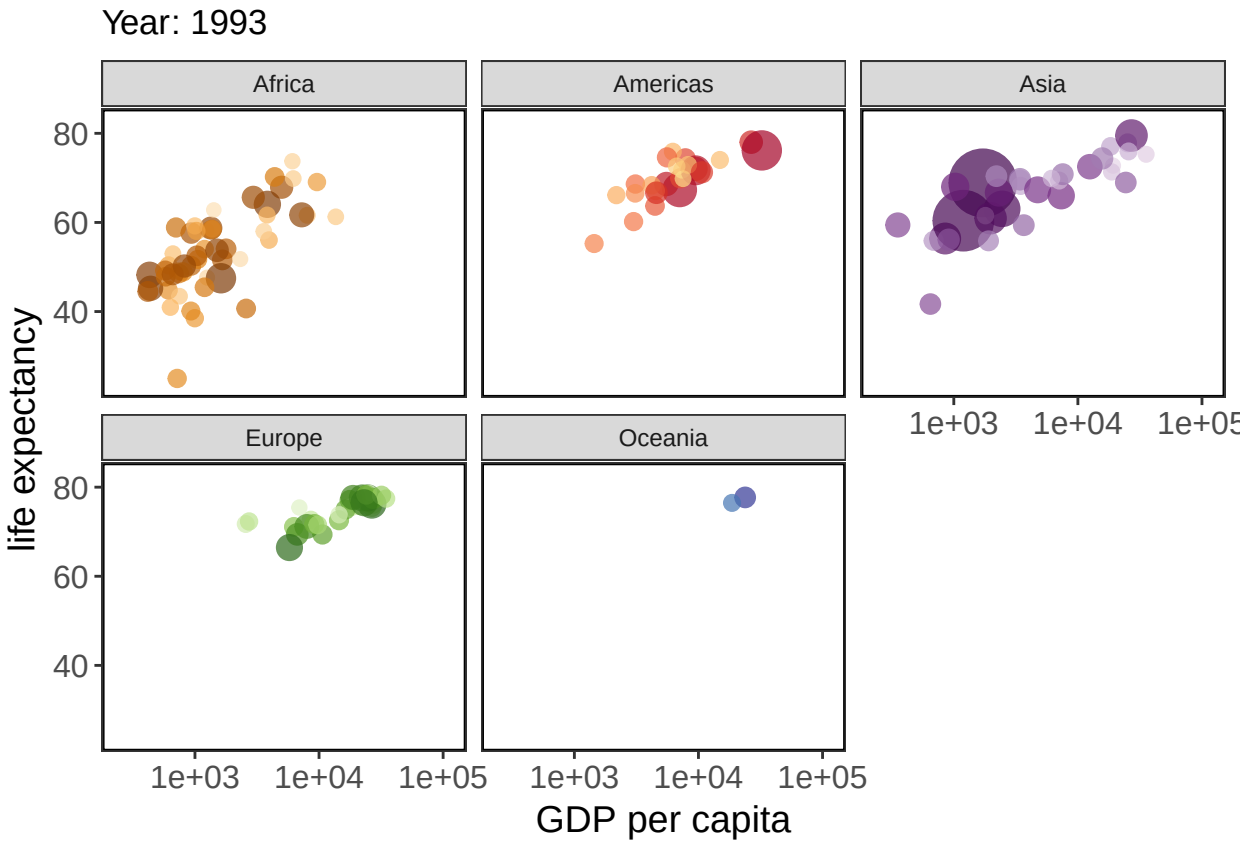
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1993
Africa
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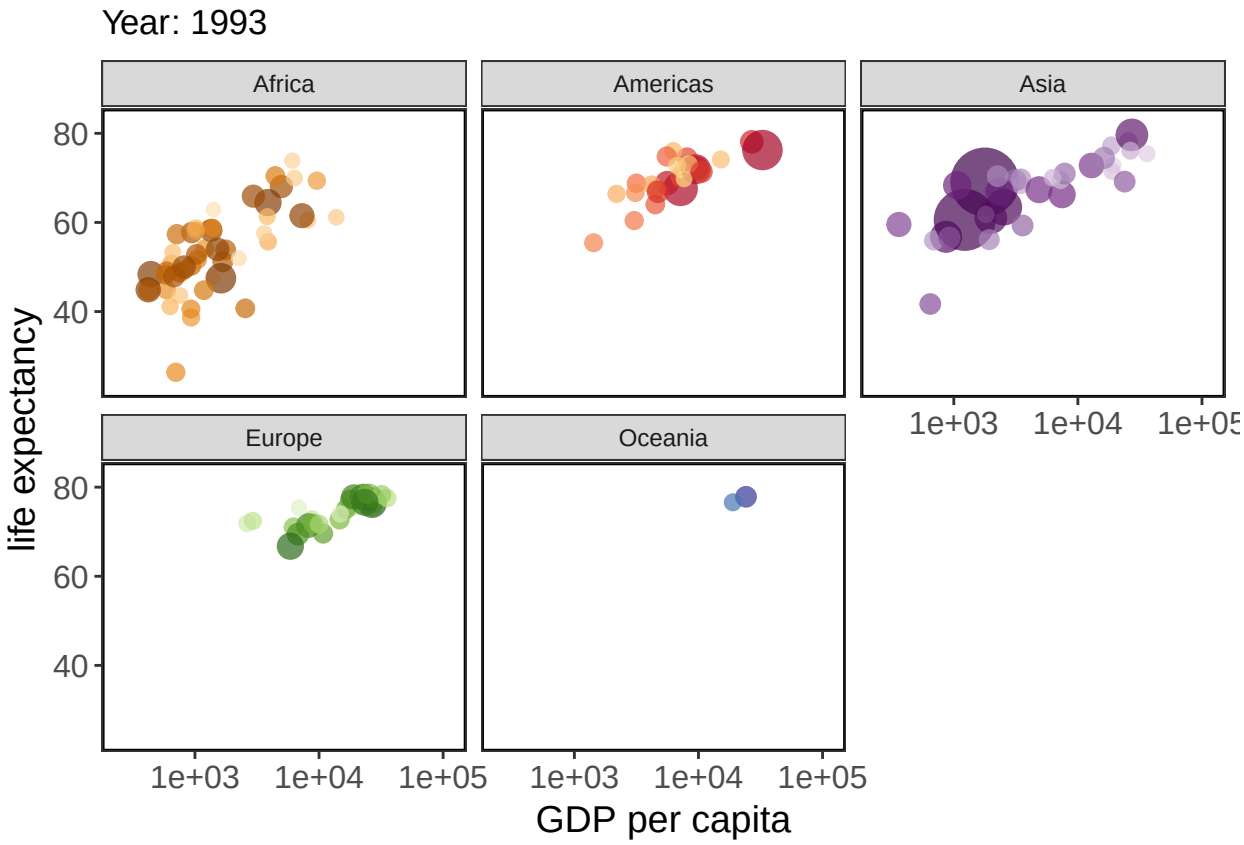
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1993
Africa
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Asia
Europe
Oceania
life expectancy
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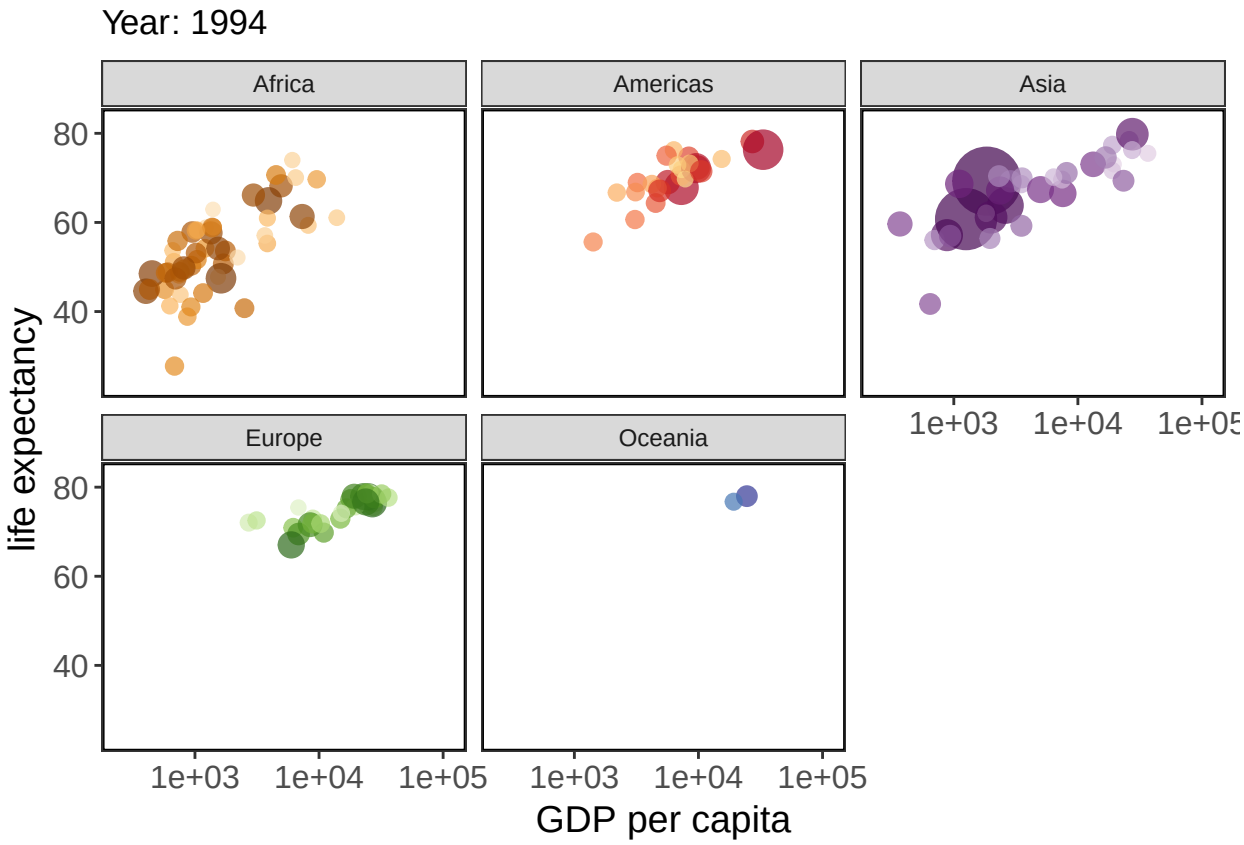
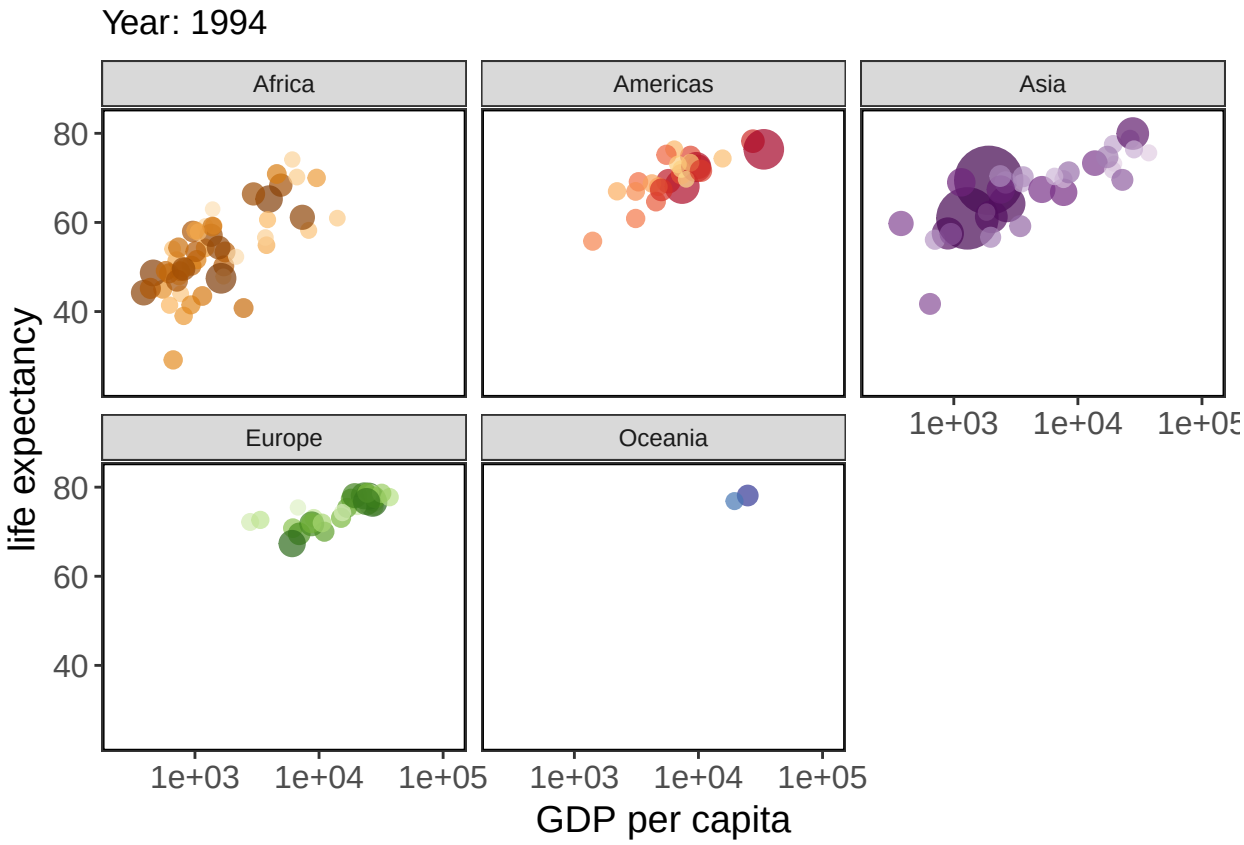
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1994
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1994
Africa
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Asia
Europe
Oceania
life expectancy
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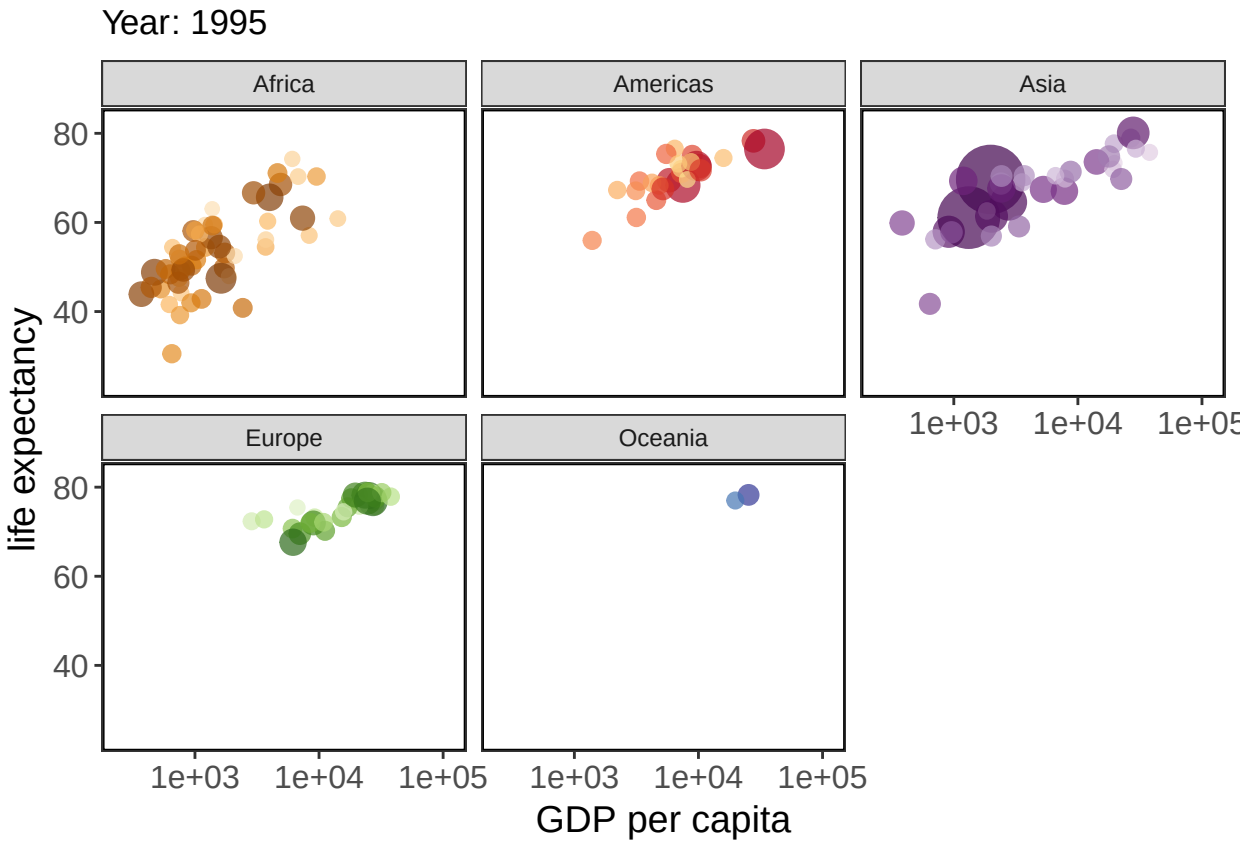
1e+03
1e+04
1e+05
GDP per capita


Year: 1995
Africa
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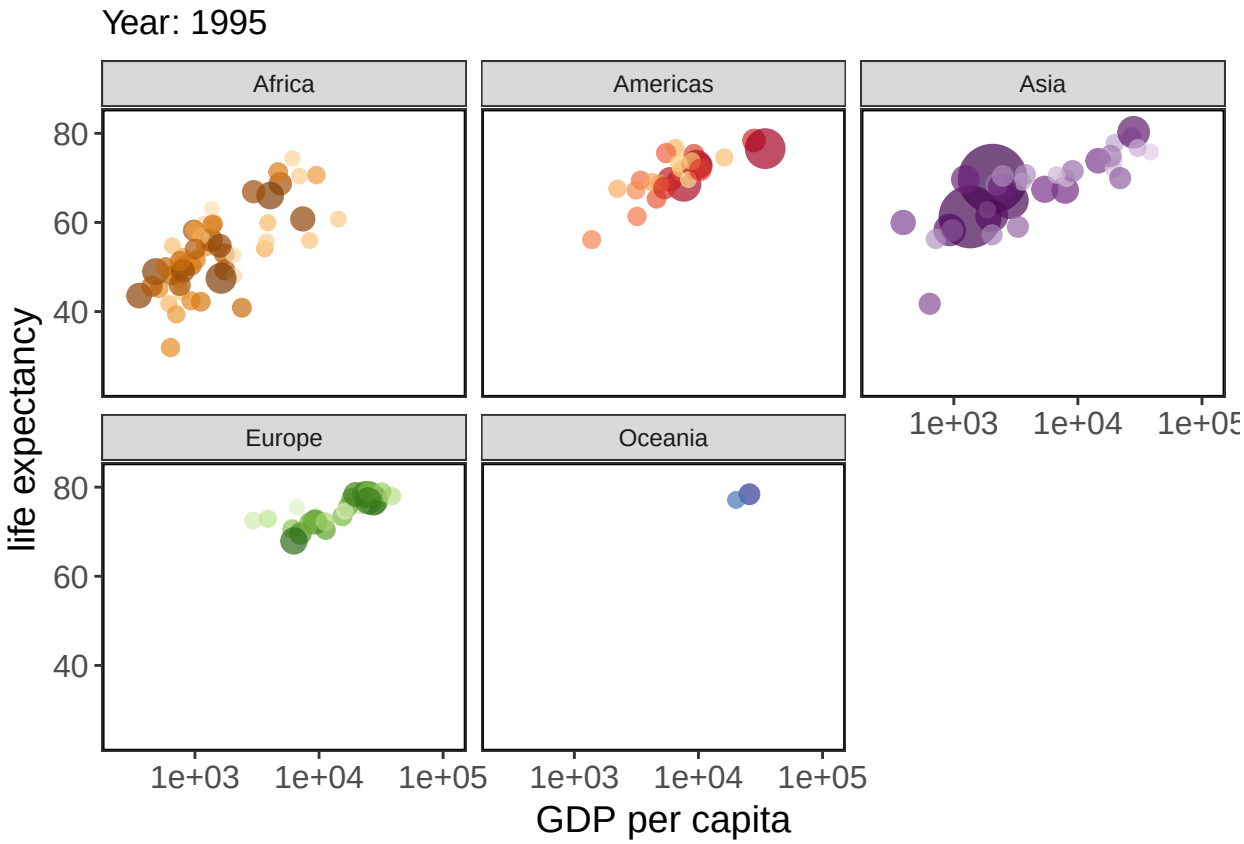
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1995
Africa
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Asia
Europe
Oceania
life expectancy
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60
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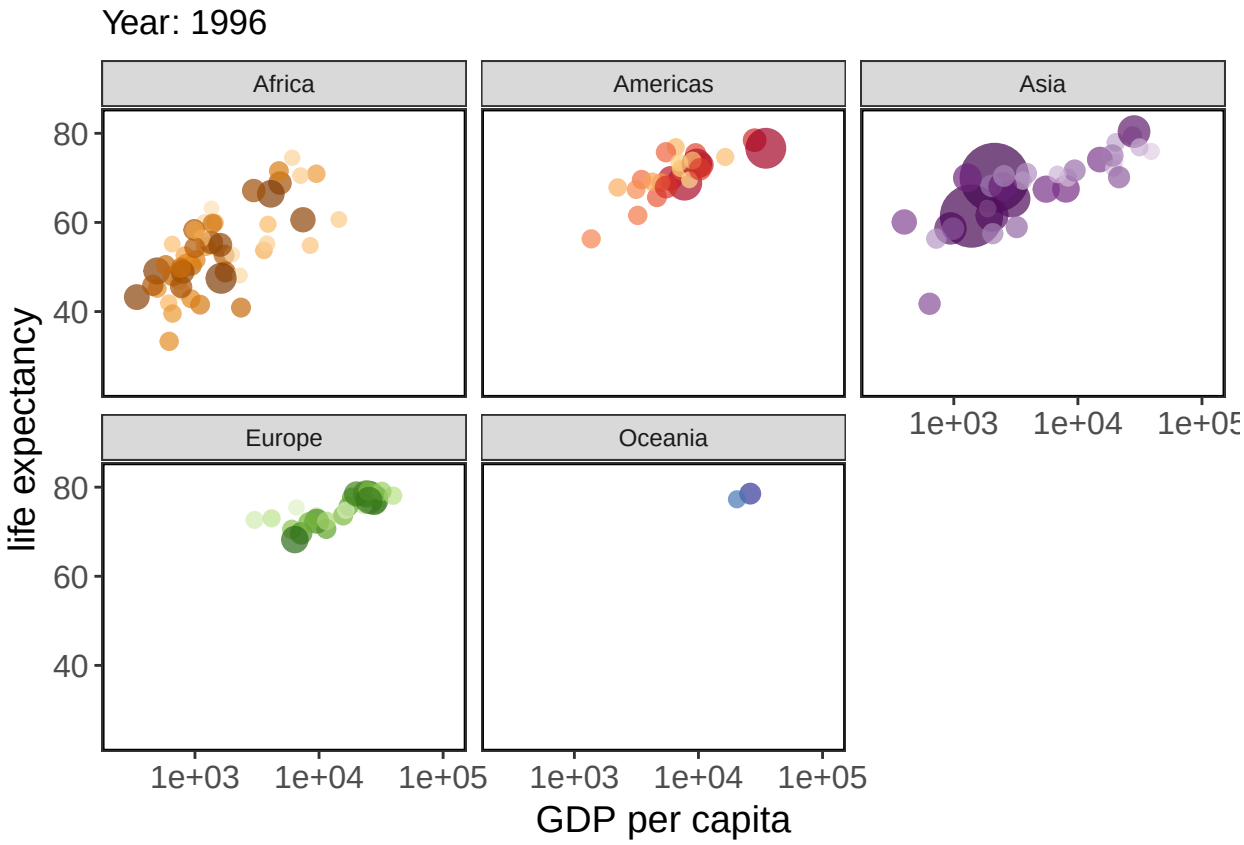
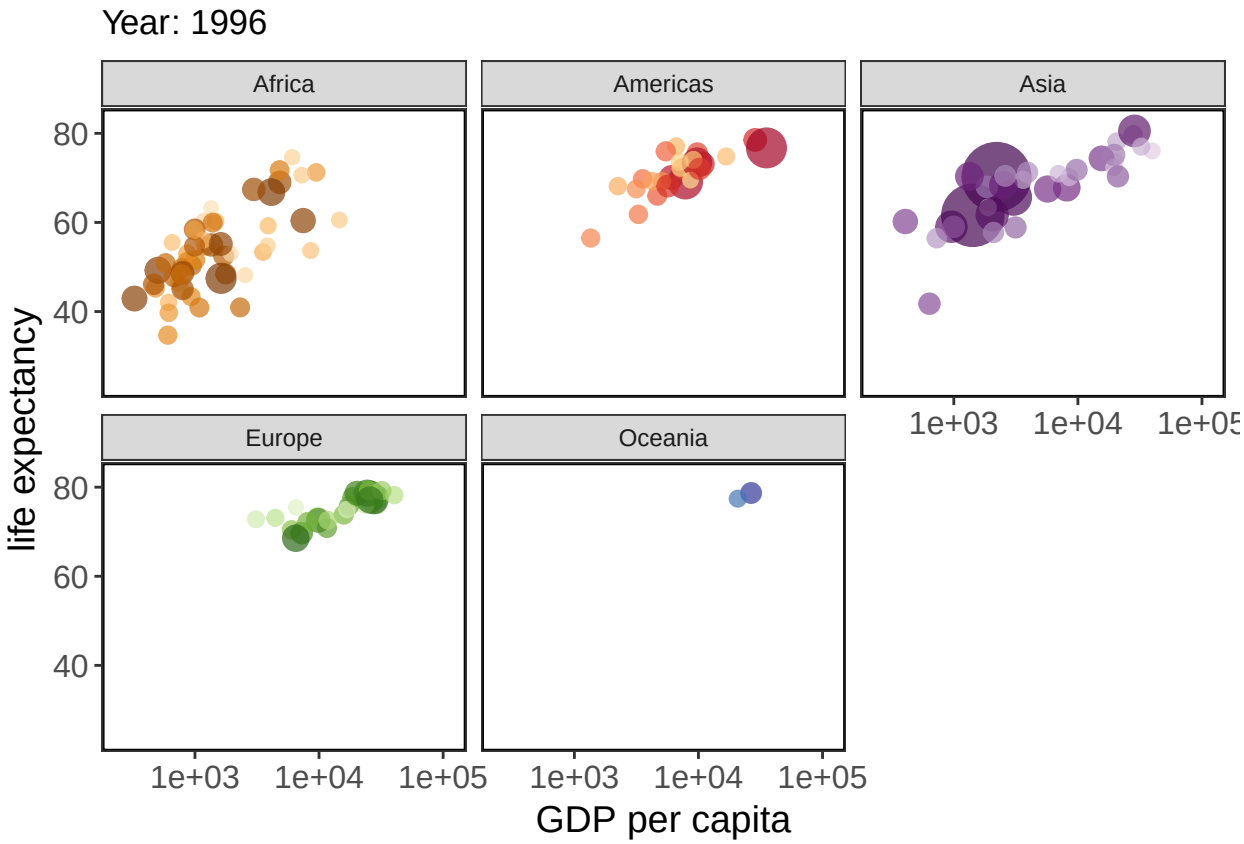
1e+03
1e+04
1e+05
GDP per capita


Year: 1996
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 1996
Africa
Americas
Asia
Europe
Oceania
life expectancy
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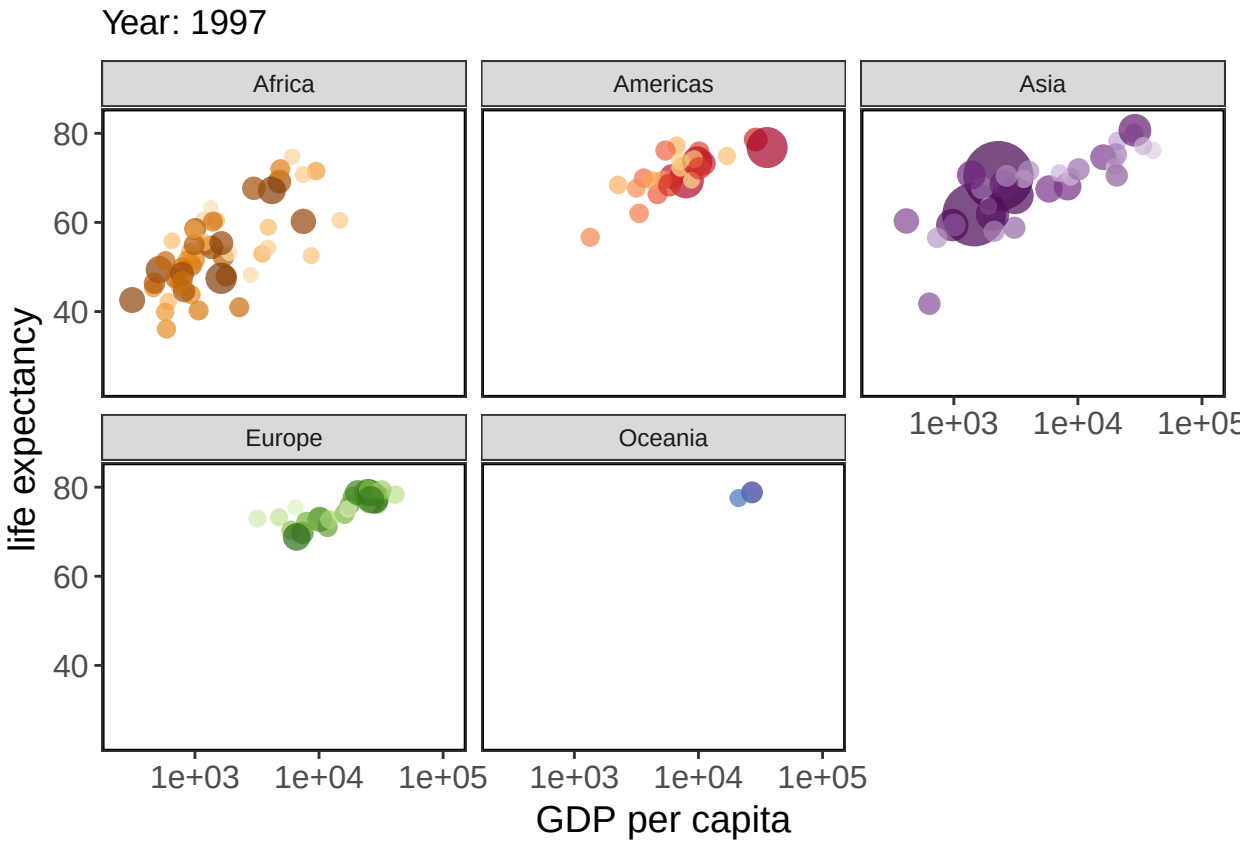
1e+03
1e+04
1e+05
GDP per capita


Year: 1997
Africa
Americas
Asia
Europe
Oceania
life expectancy
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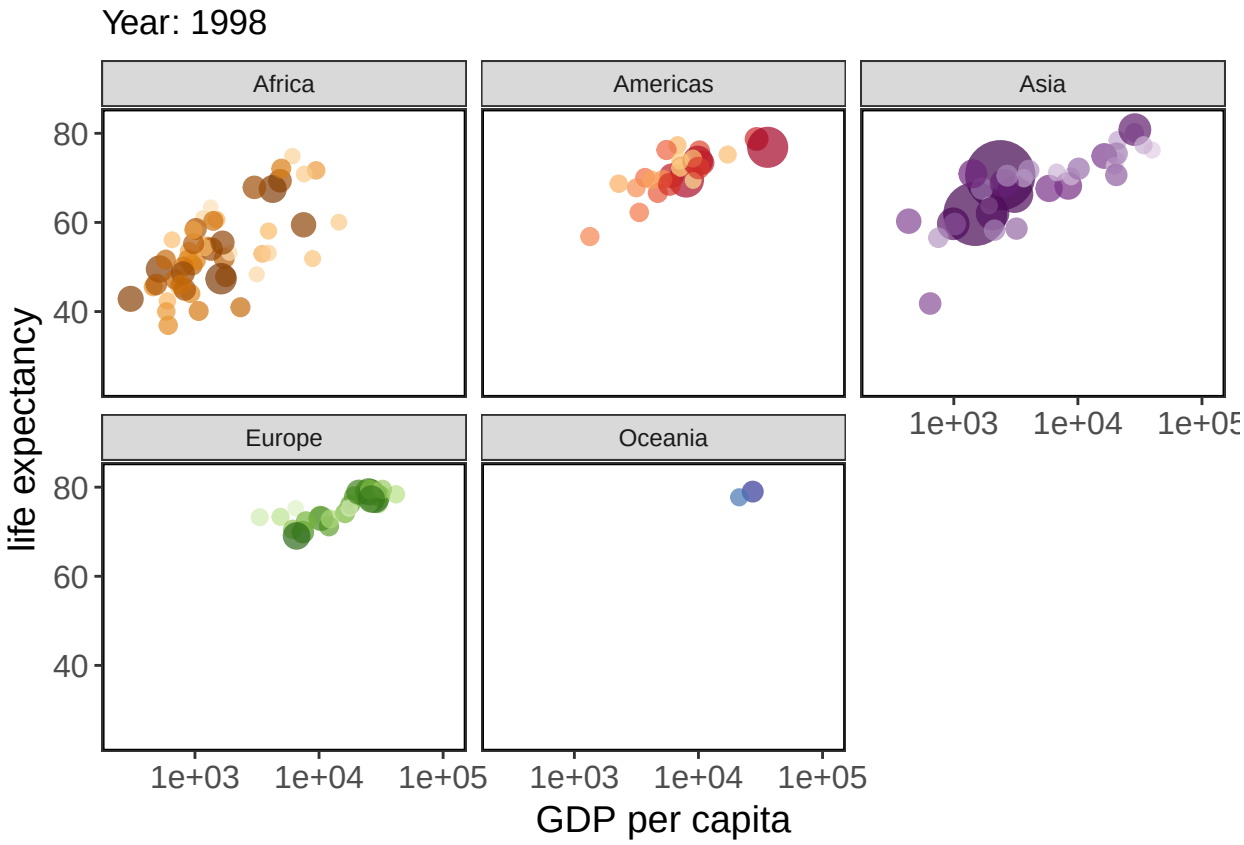
1e+03
1e+04
1e+05
GDP per capita


Year: 1998
Africa
Americas
Asia
Europe
Oceania
life expectancy
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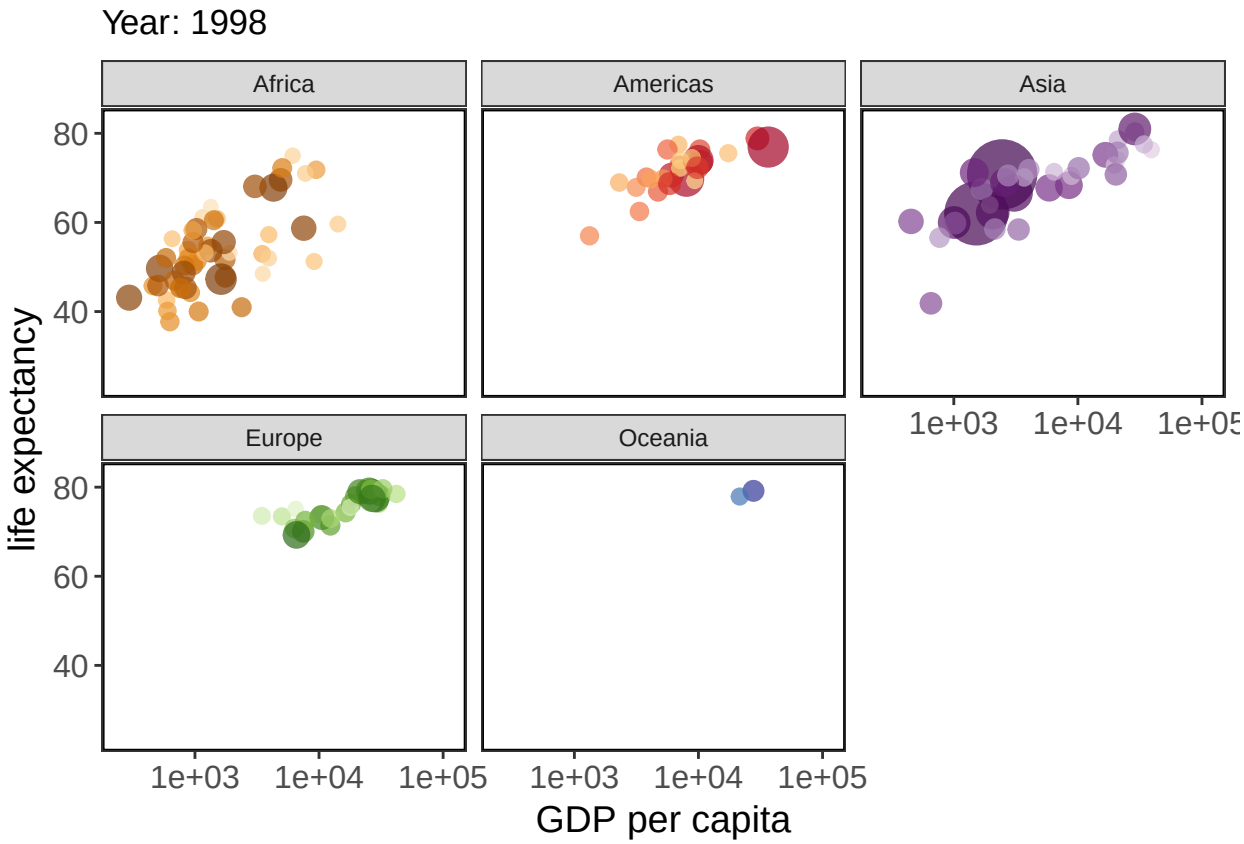
1e+03
1e+04
1e+05
GDP per capita


Year: 1998
Africa
Americas
Asia
Europe
Oceania
life expectancy
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1e+03
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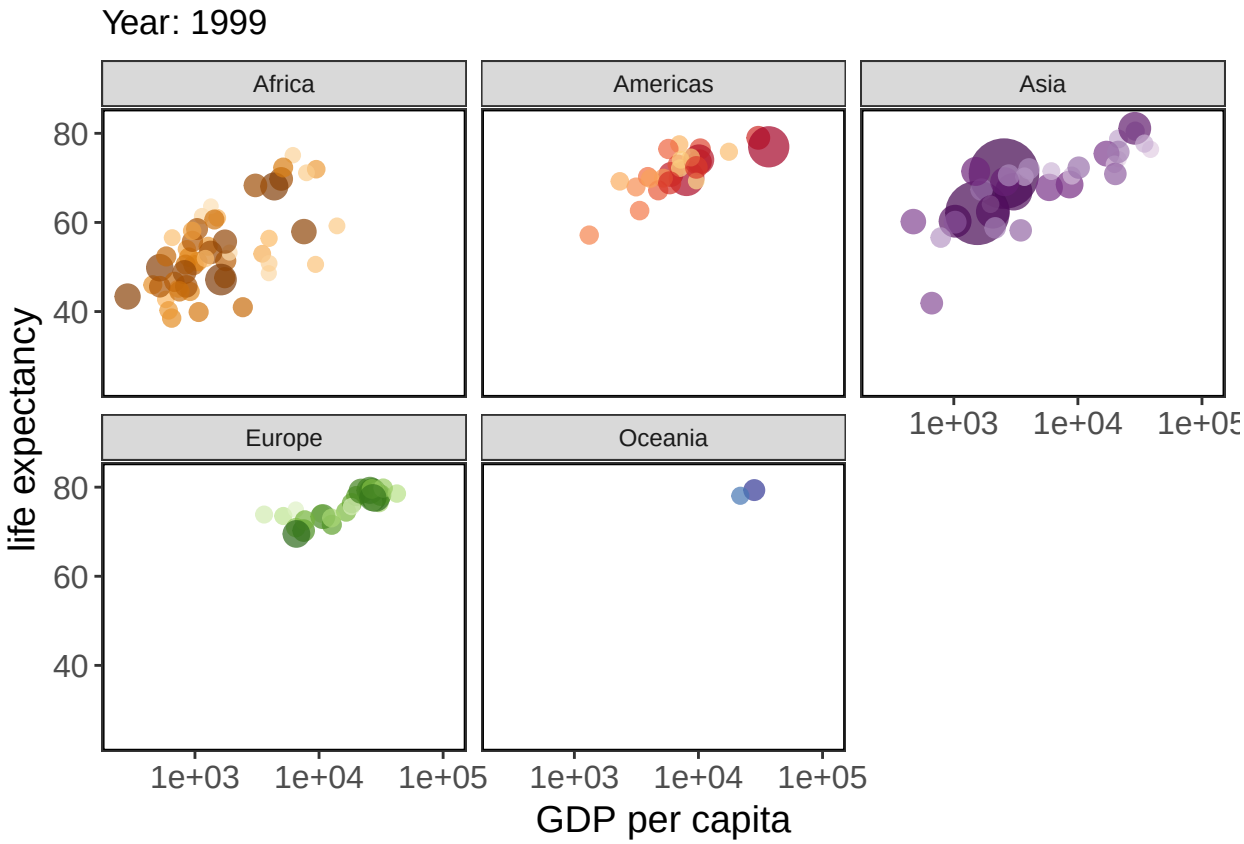
1e+05
GDP per capita


Year: 1999
Africa
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Asia
Europe
Oceania
life expectancy
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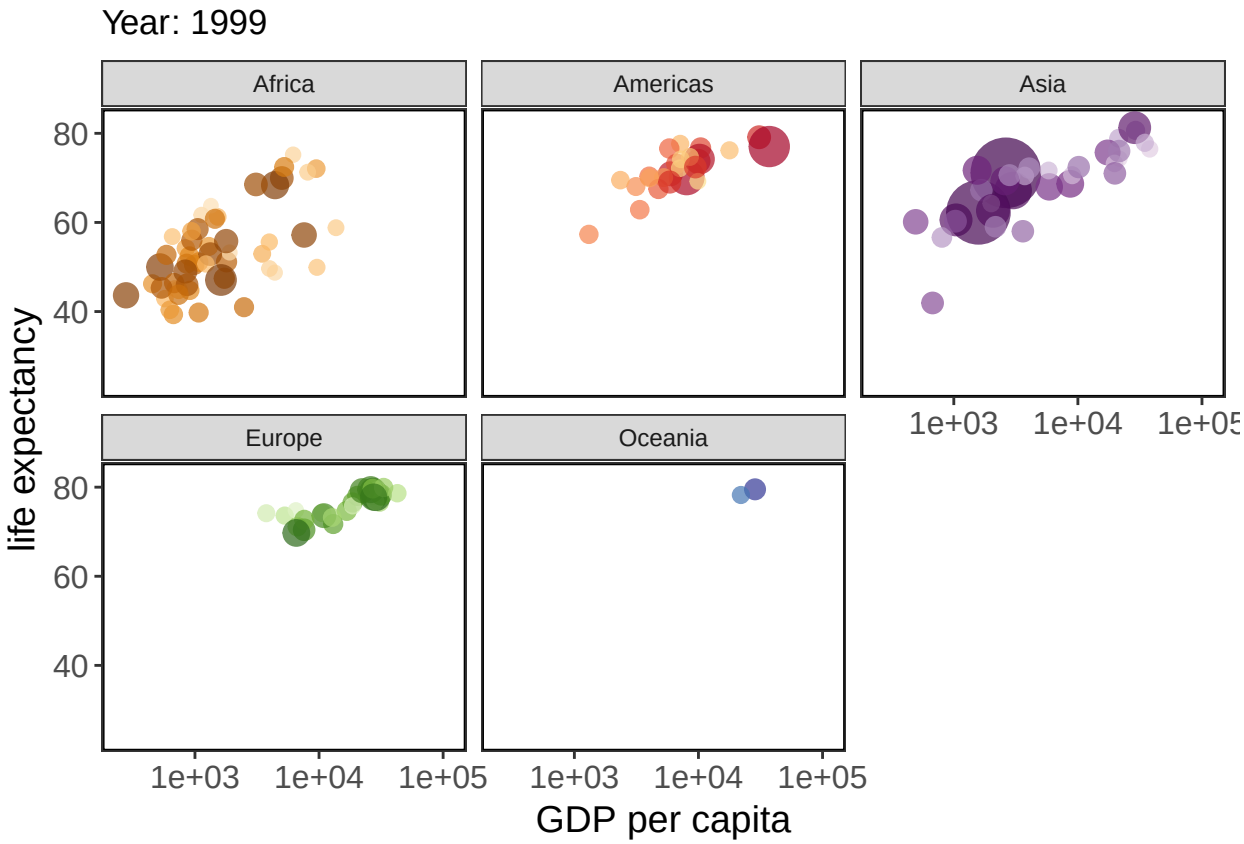
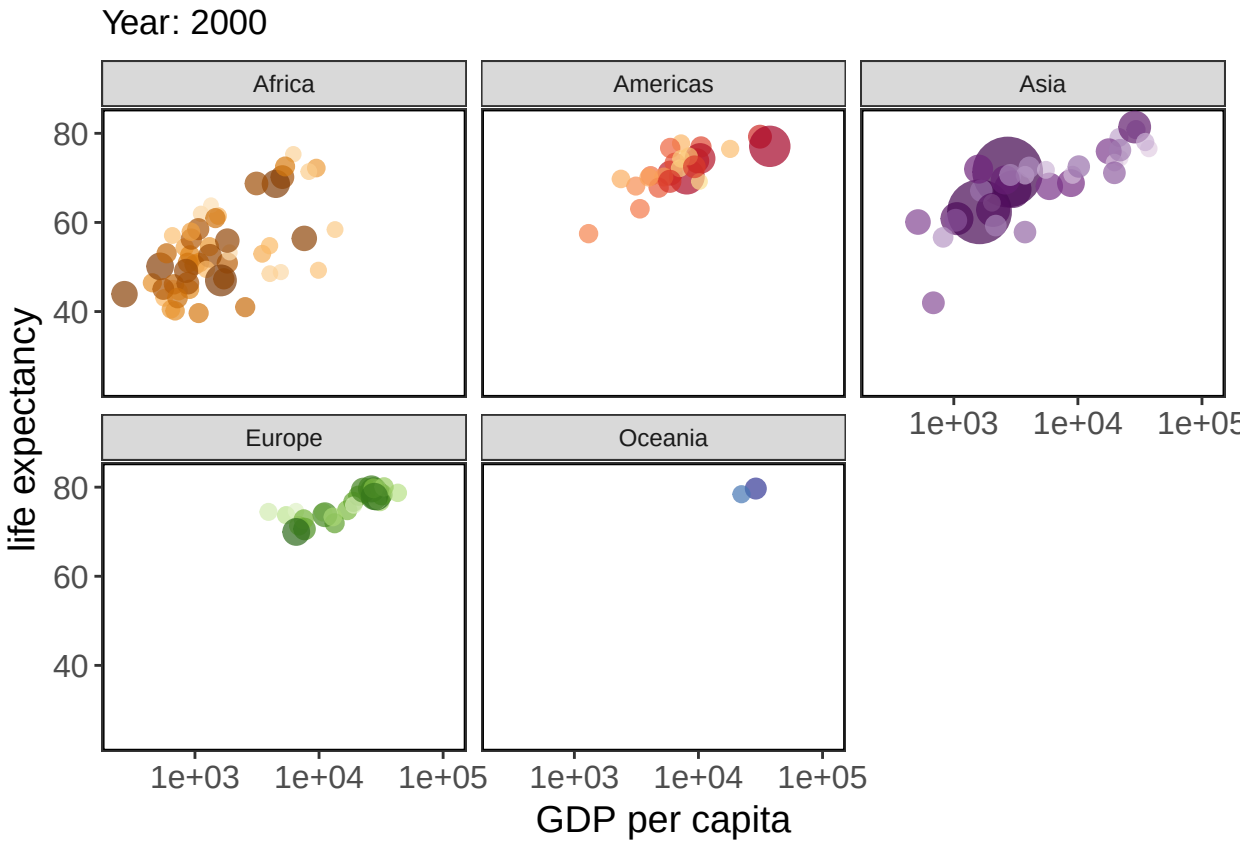
1e+03
1e+04
1e+05
GDP per capita


Year: 1999
Africa
Americas
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 2000
Africa
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Asia
Europe
Oceania
life expectancy
80
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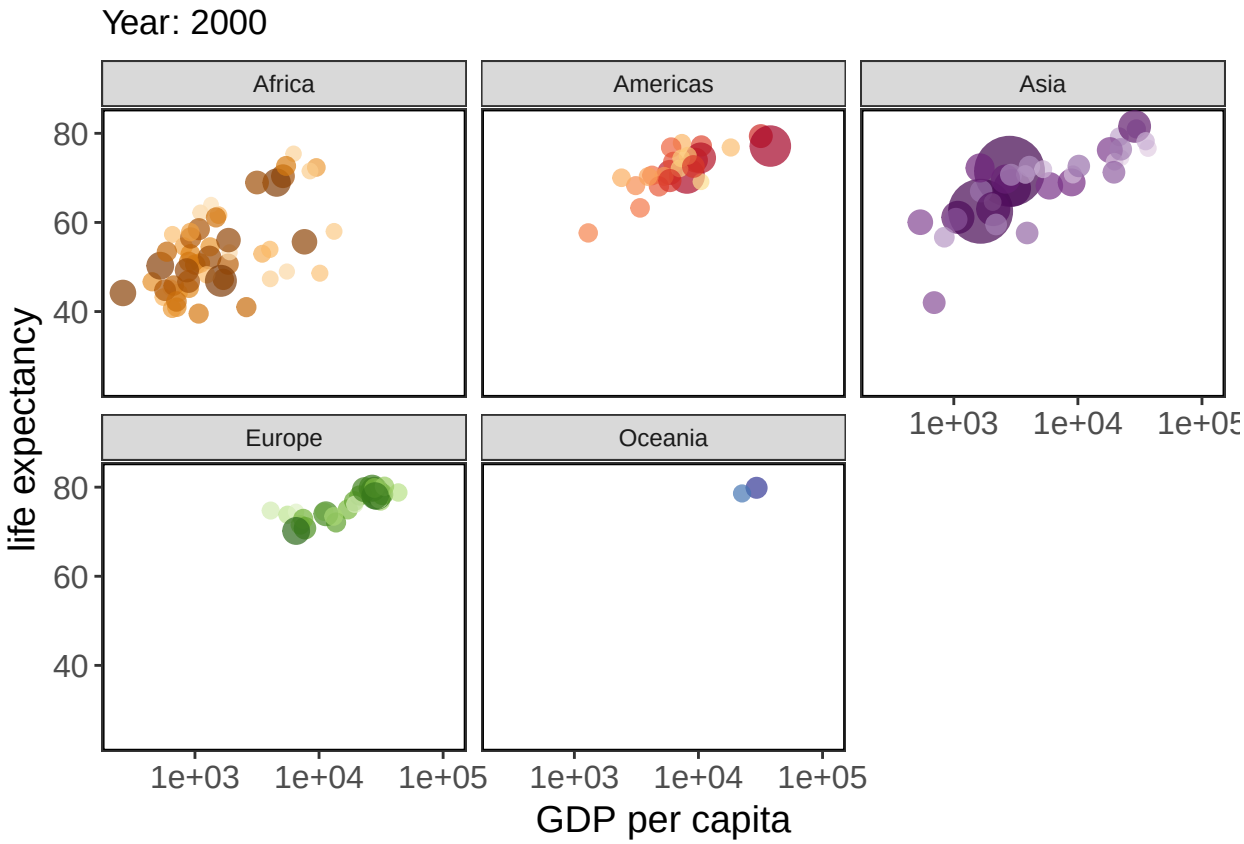
1e+03
1e+04
1e+05
GDP per capita


Year: 2000
Africa
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Asia
Europe
Oceania
life expectancy
80
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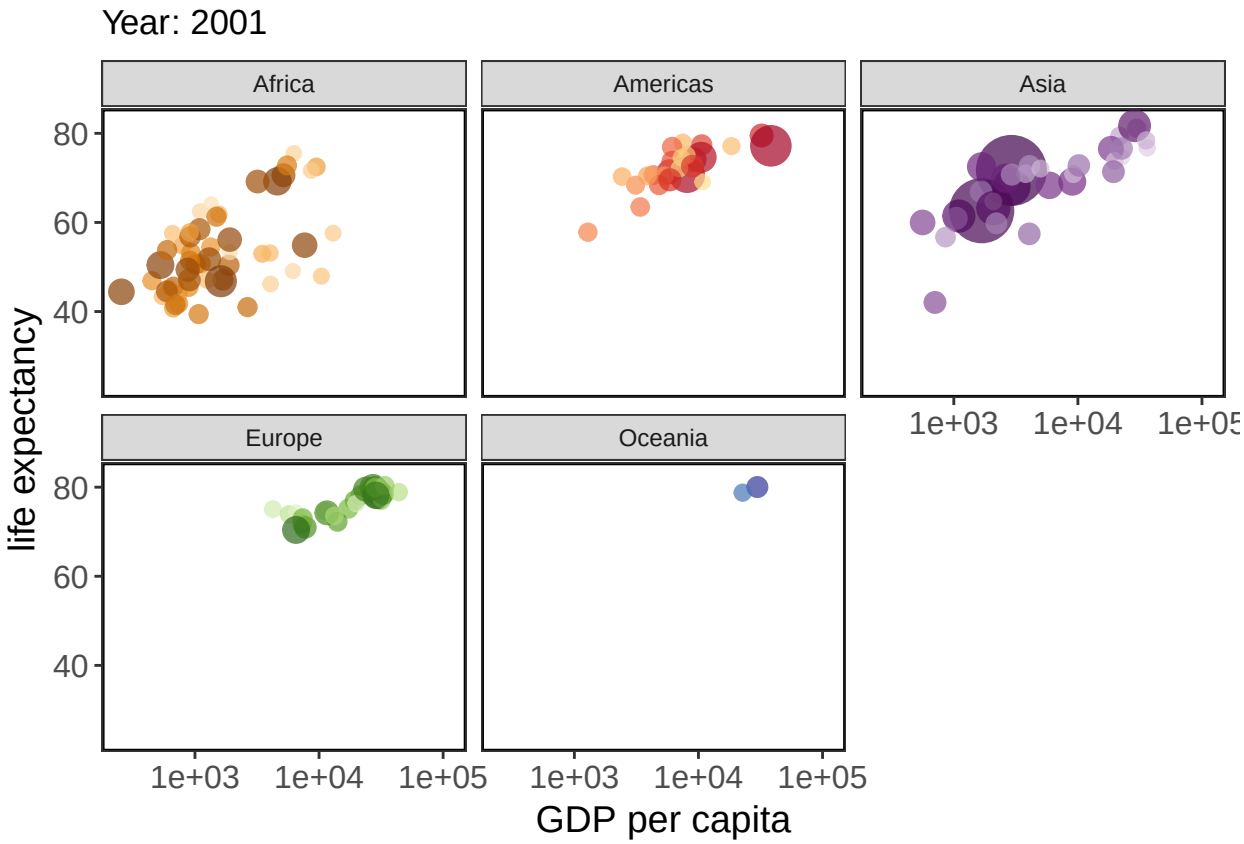
1e+03
1e+04
1e+05
GDP per capita


Year: 2001
Africa
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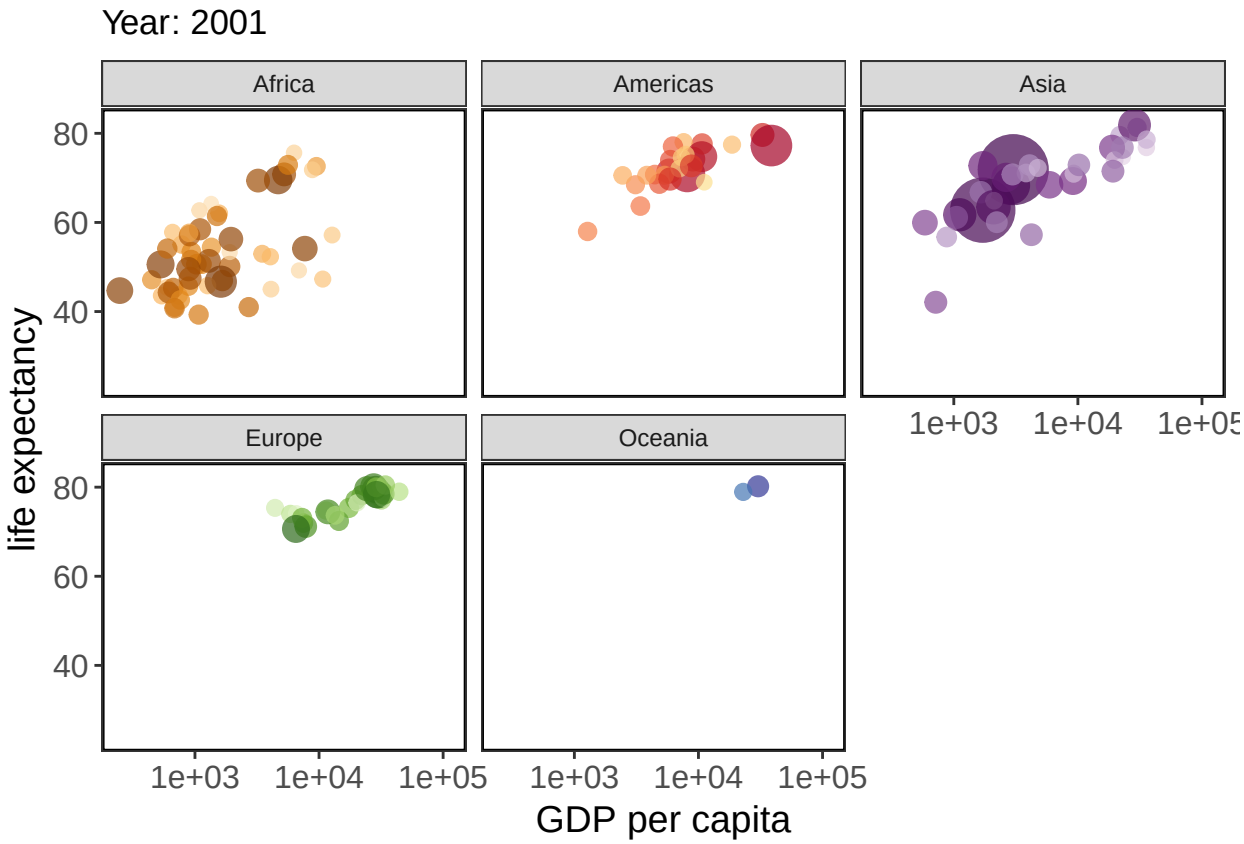
Asia
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 2001
Africa
Americas
Asia
Europe
Oceania
life expectancy
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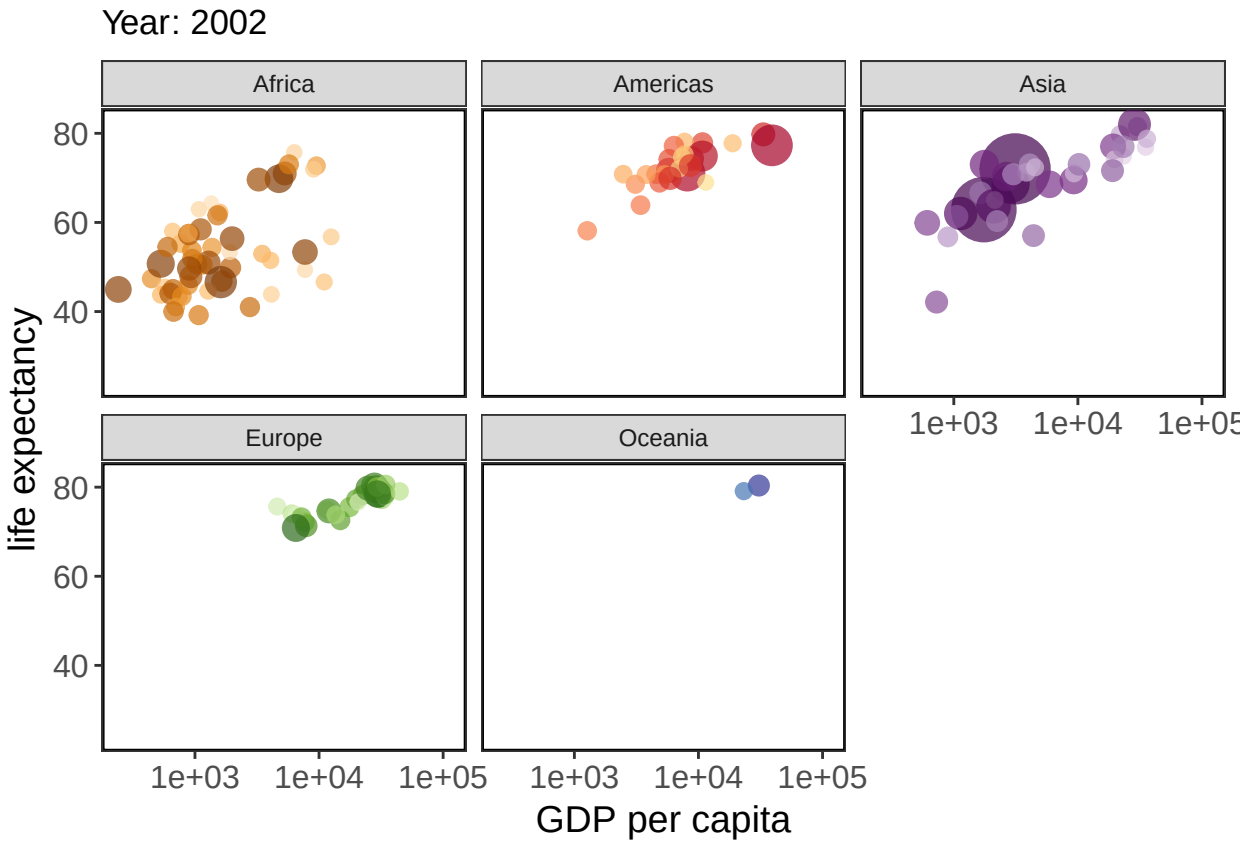
1e+03
1e+04
1e+05
GDP per capita


Year: 2002
Africa
Americas
Asia
Europe
Oceania
life expectancy
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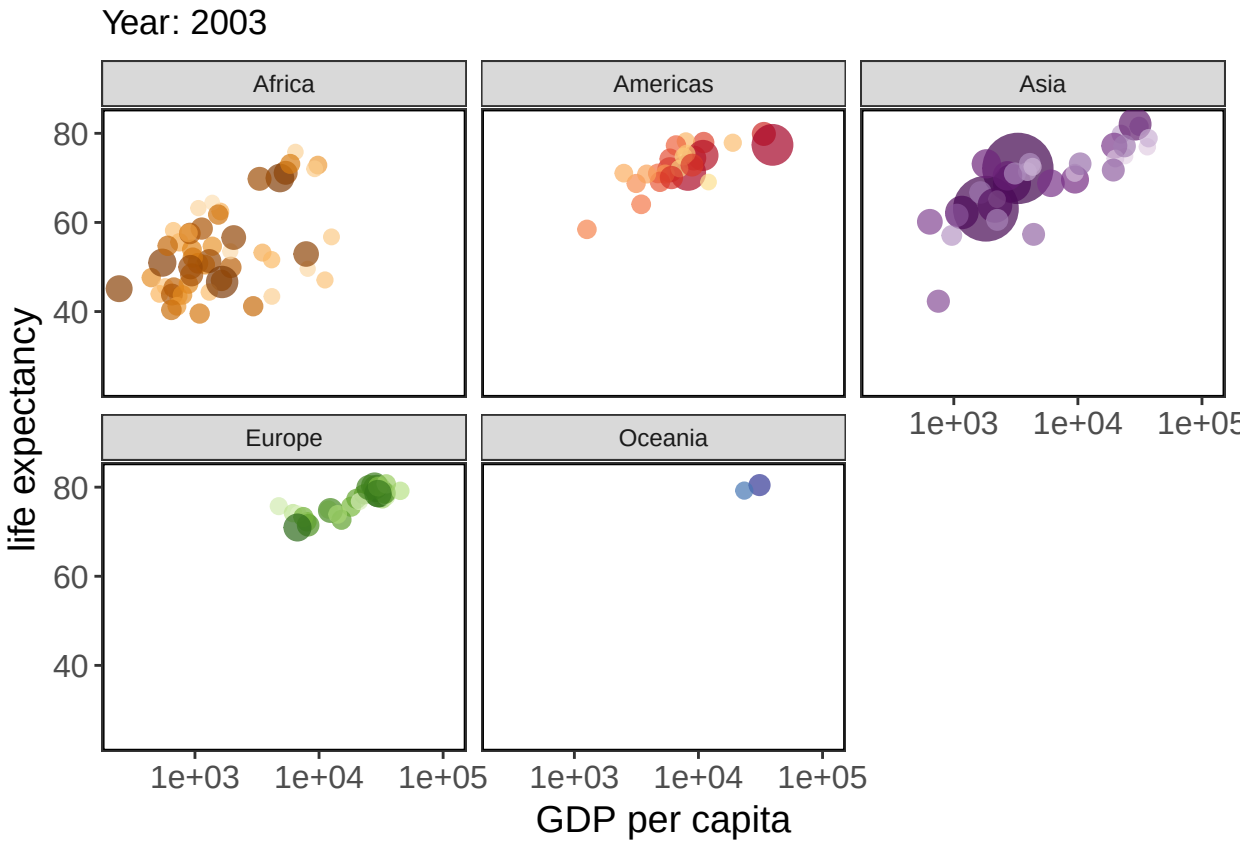
1e+03
1e+04
1e+05
GDP per capita


Year: 2003
Africa
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Asia
Europe
Oceania
life expectancy
80
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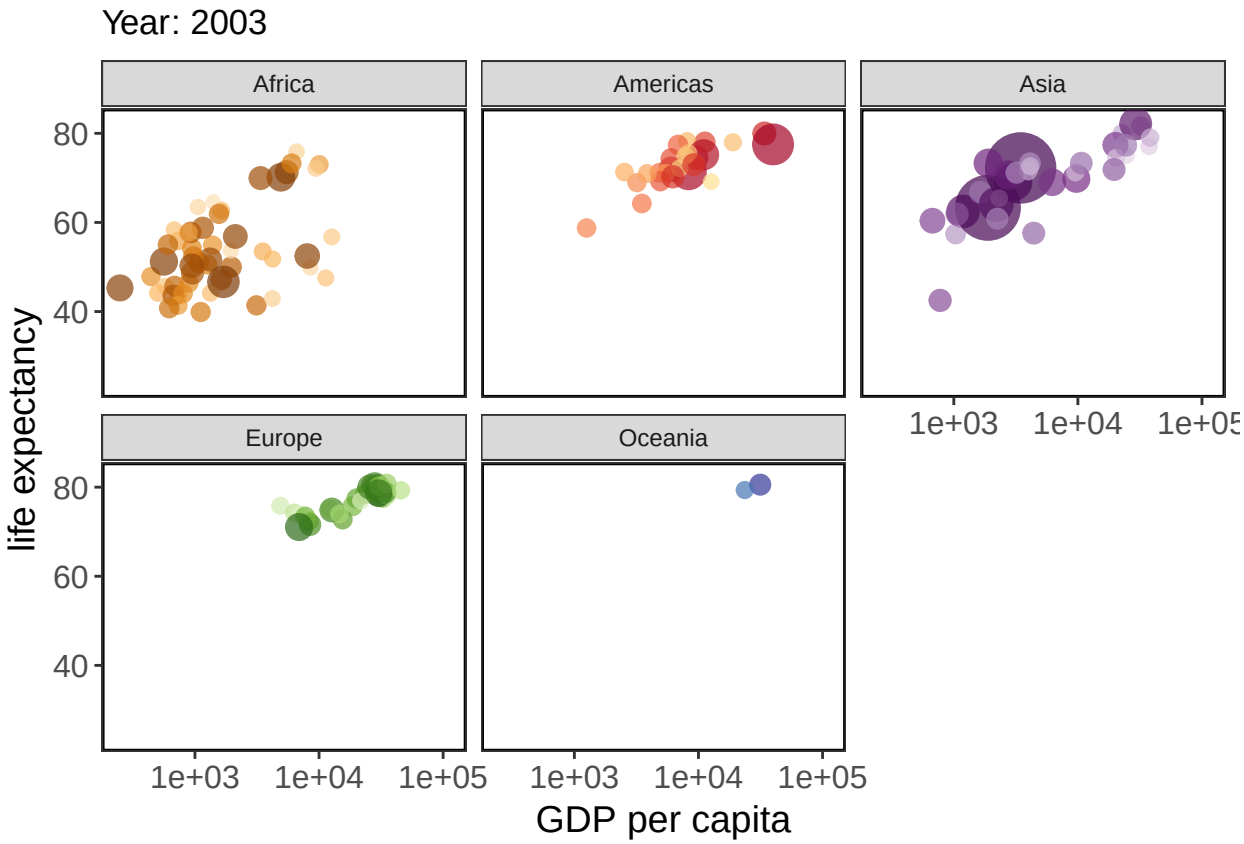
1e+03
1e+04
1e+05
GDP per capita


Year: 2003
Africa
Americas
Asia
Europe
Oceania
life expectancy
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1e+03
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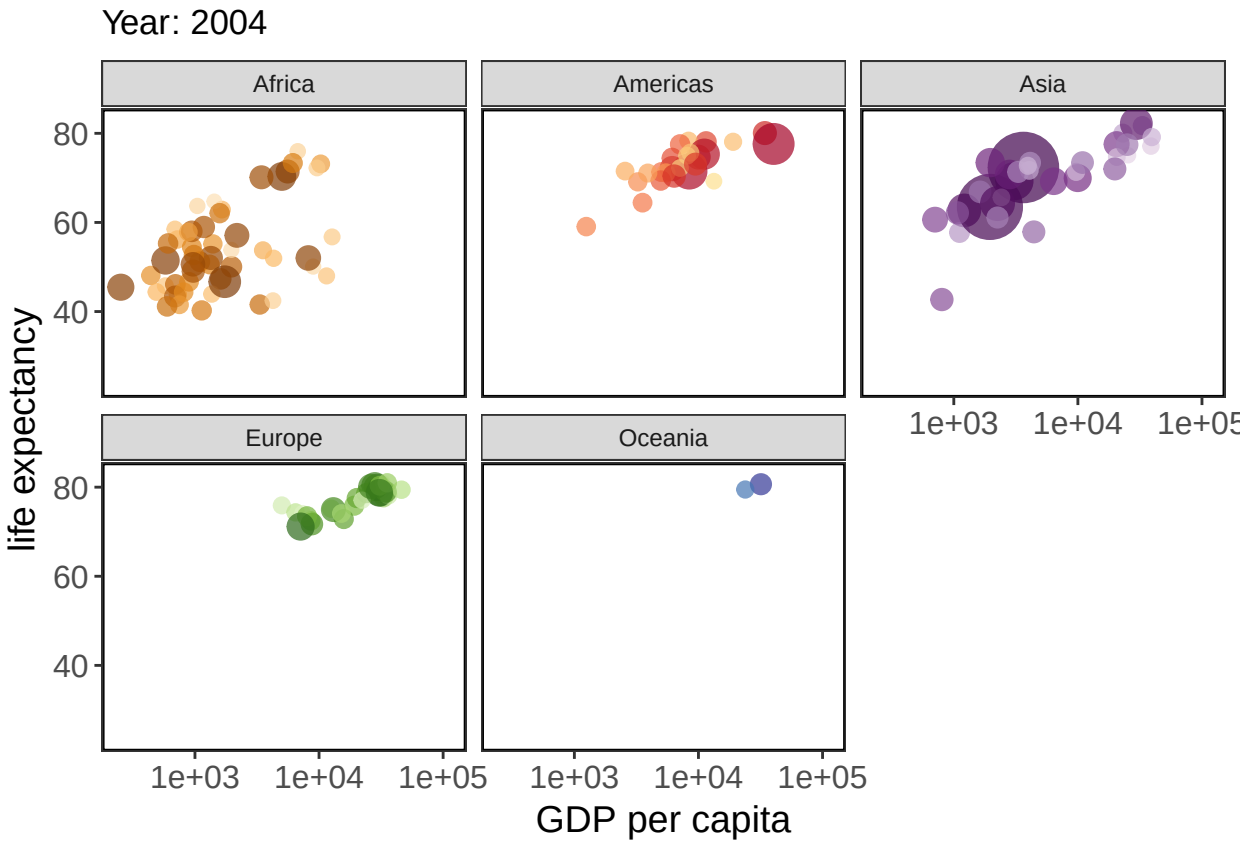
1e+05
GDP per capita


Year: 2004
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Europe
Oceania
life expectancy
80
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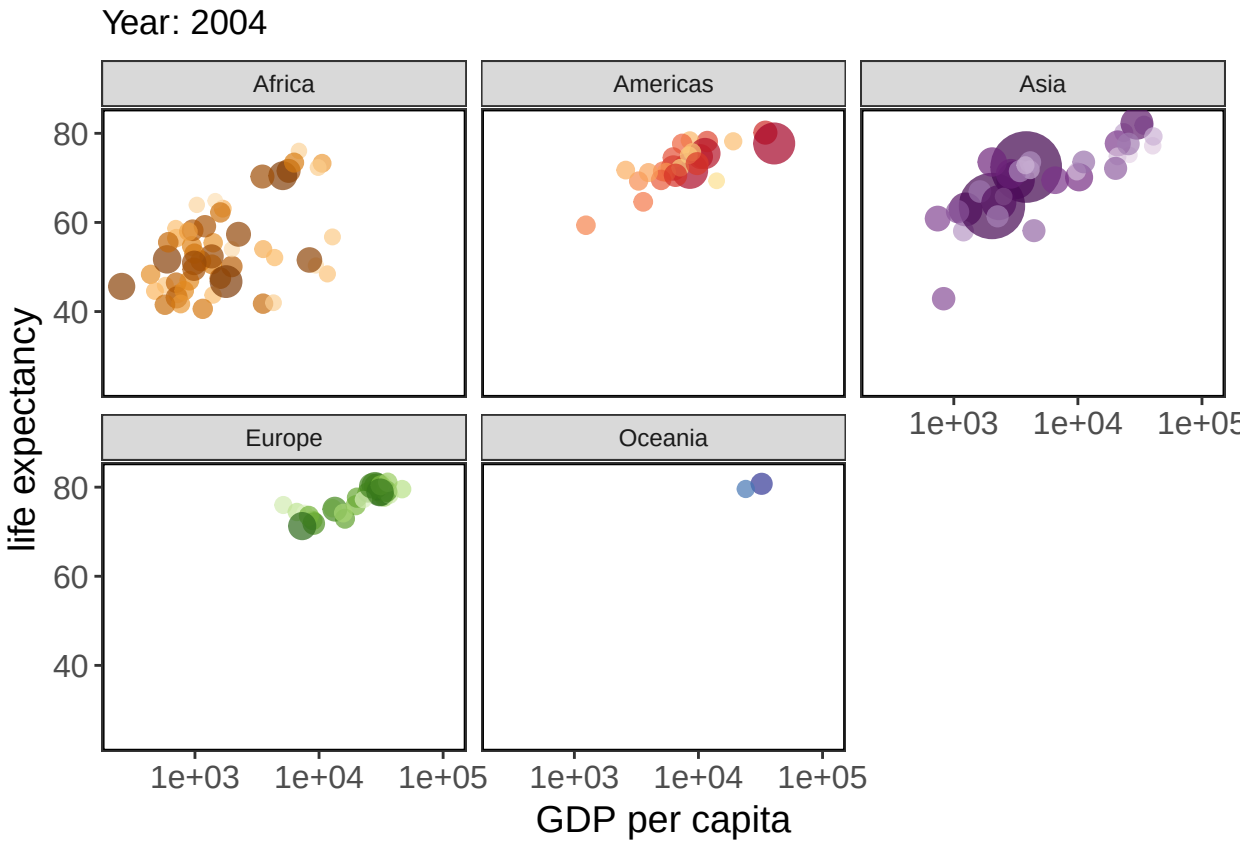
1e+03
1e+04
1e+05
GDP per capita


Year: 2004
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Europe
Oceania
life expectancy
80
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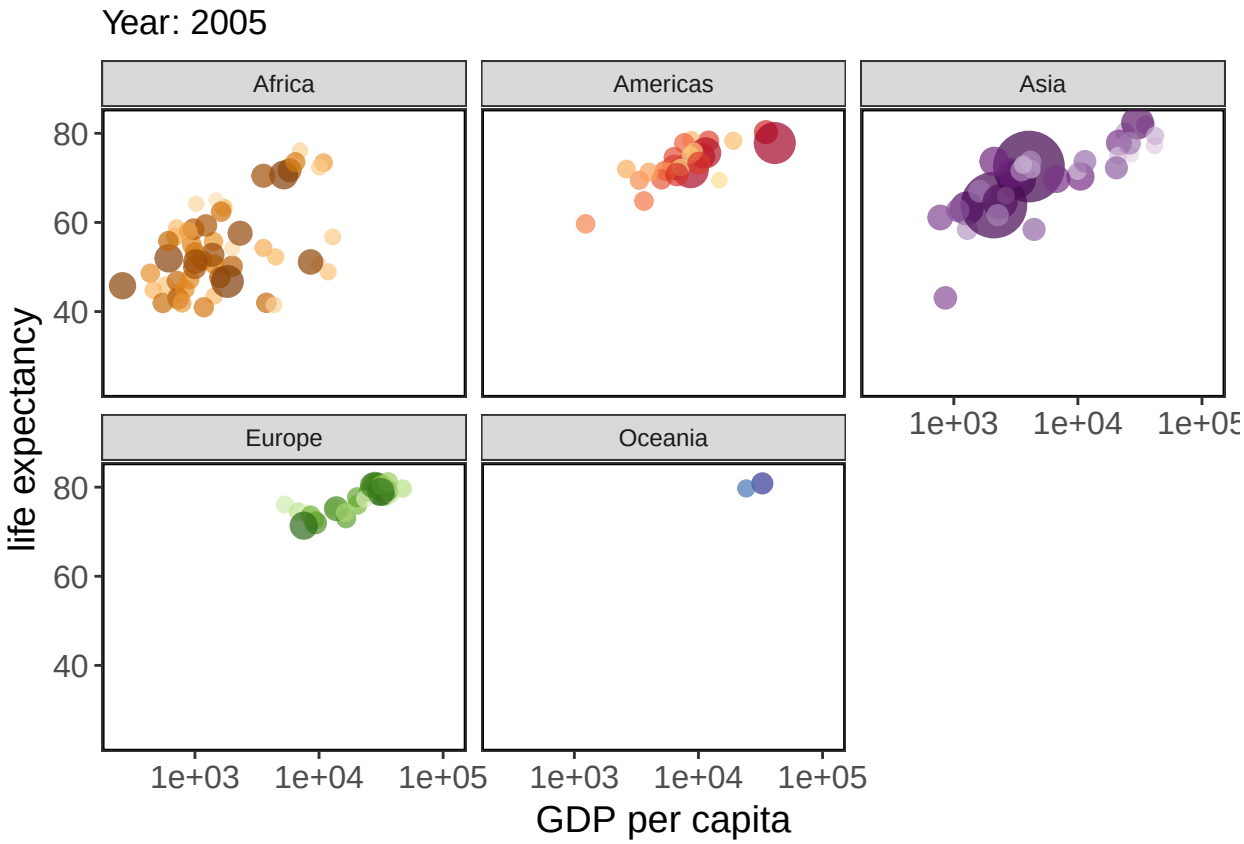
1e+03
1e+04
1e+05
GDP per capita


Year: 2005
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Americas
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Europe
Oceania
life expectancy
80
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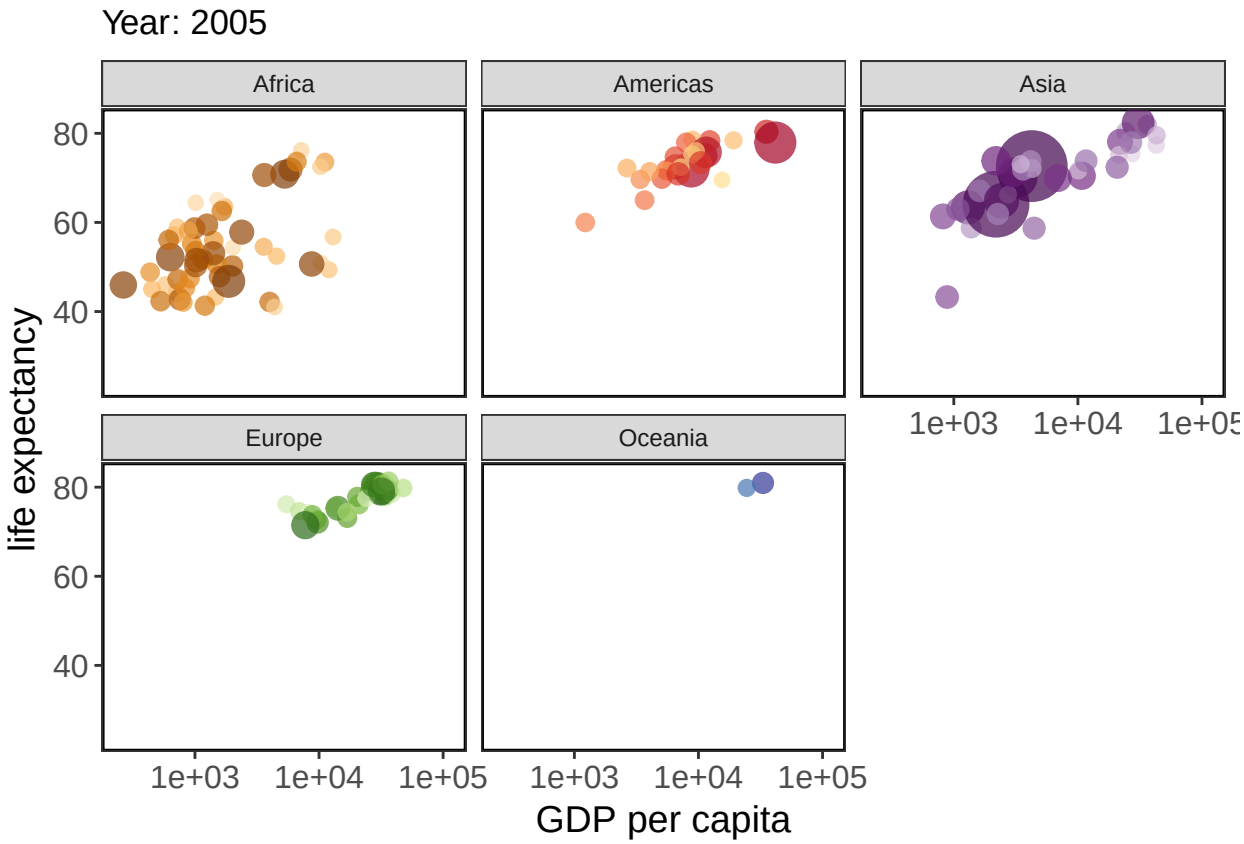
40
1e+03
1e+04
1e+05
GDP per capita


Year: 2005
Africa
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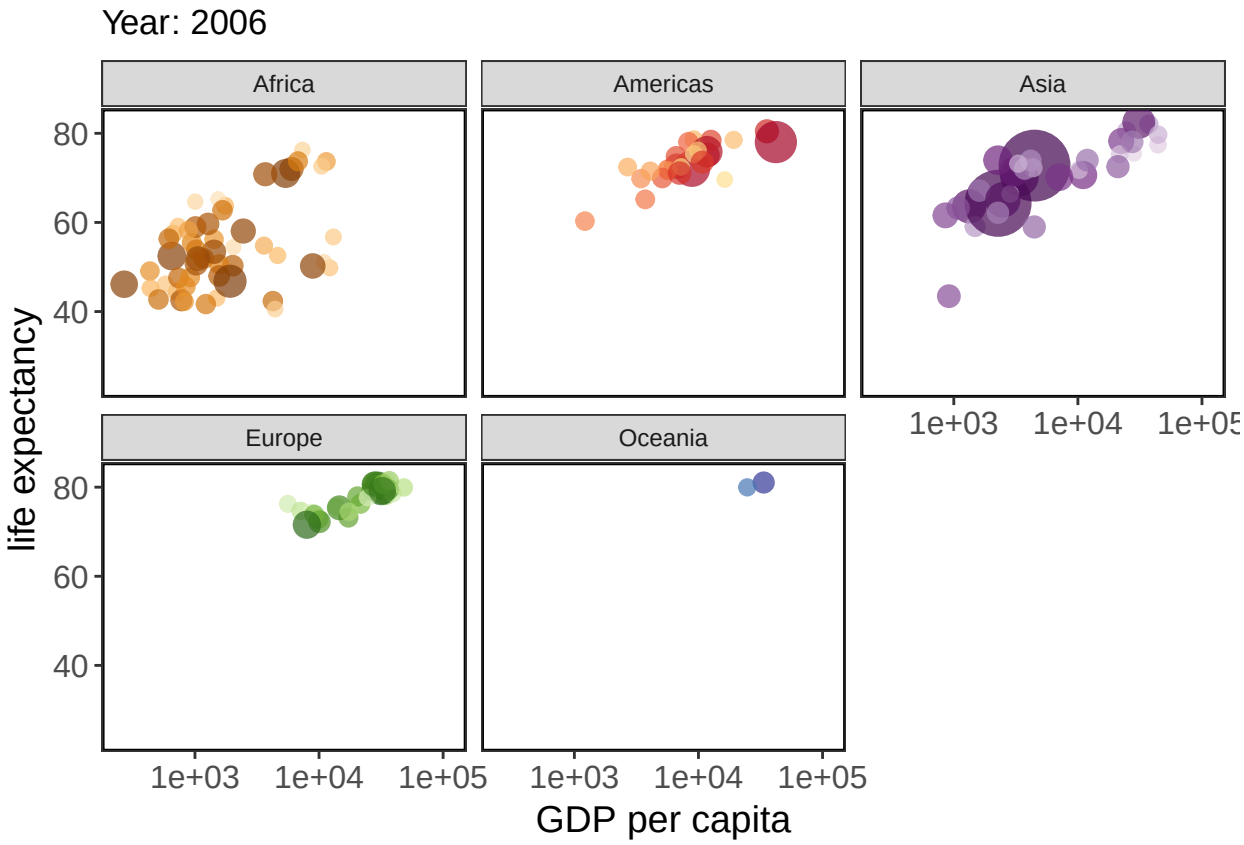
Europe
Oceania
life expectancy
80
60
40
1e+03
1e+04
1e+05
GDP per capita


Year: 2006
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Europe
Oceania
life expectancy
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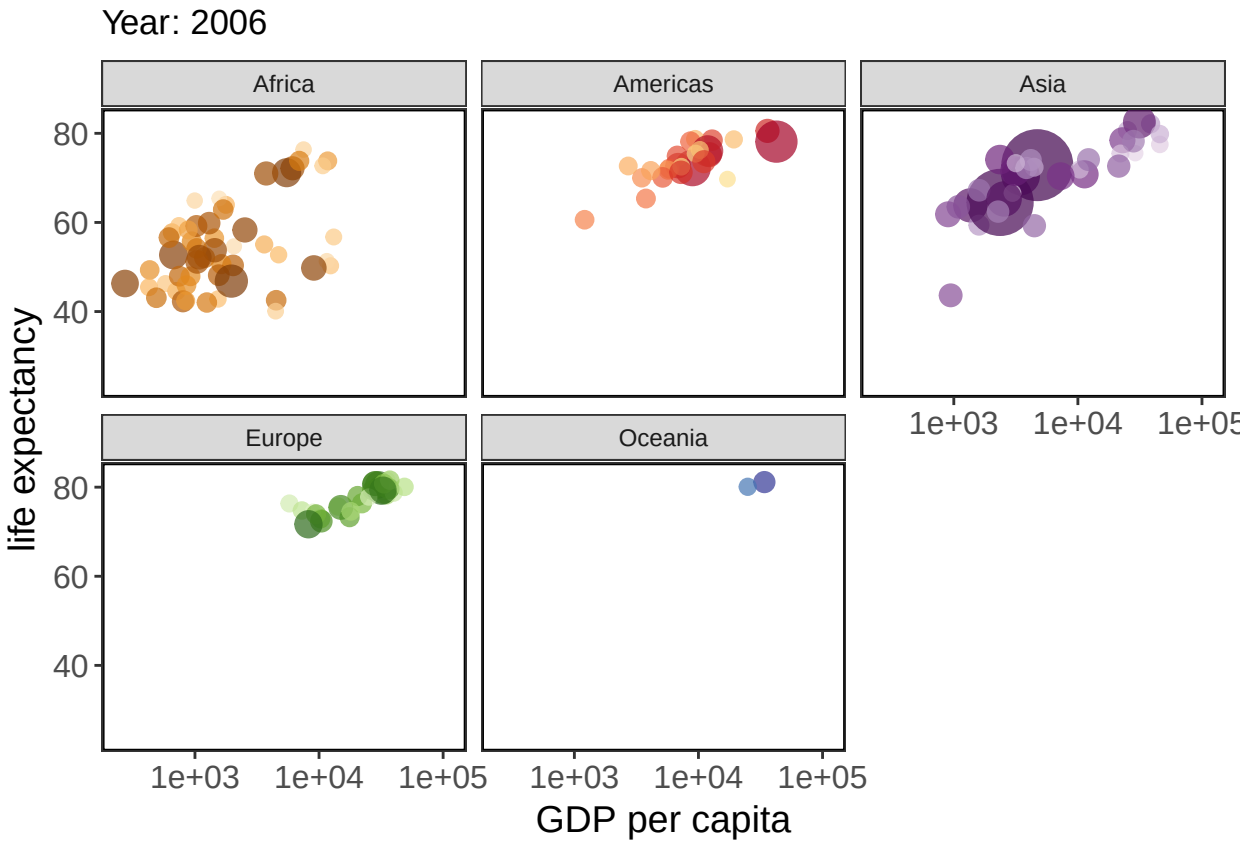
1e+04
1e+05
GDP per capita


Year: 2006
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Oceania
life expectancy
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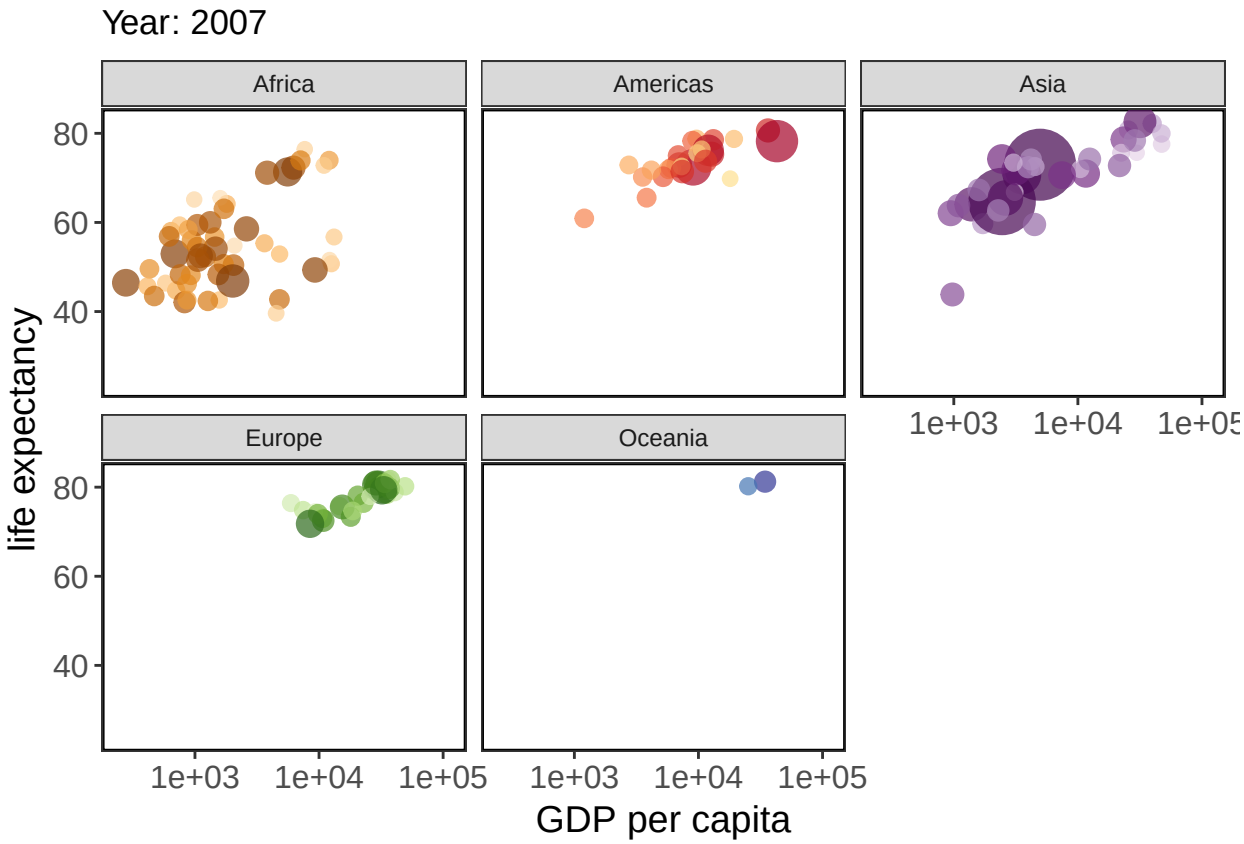
1e+03
1e+04
1e+05
GDP per capita


Year: 2007
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Asia
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Oceania
life expectancy
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40
1e+03
1e+04
1e+05
GDP per capita