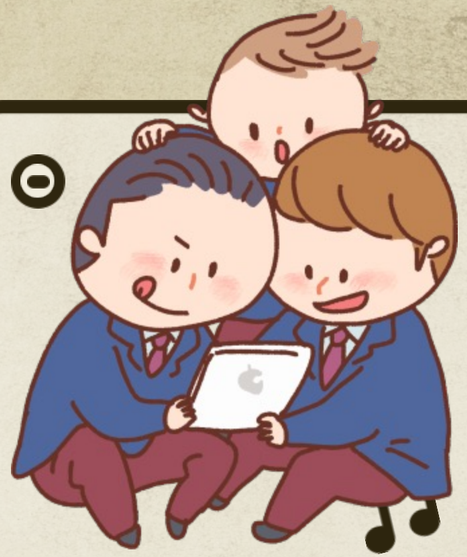


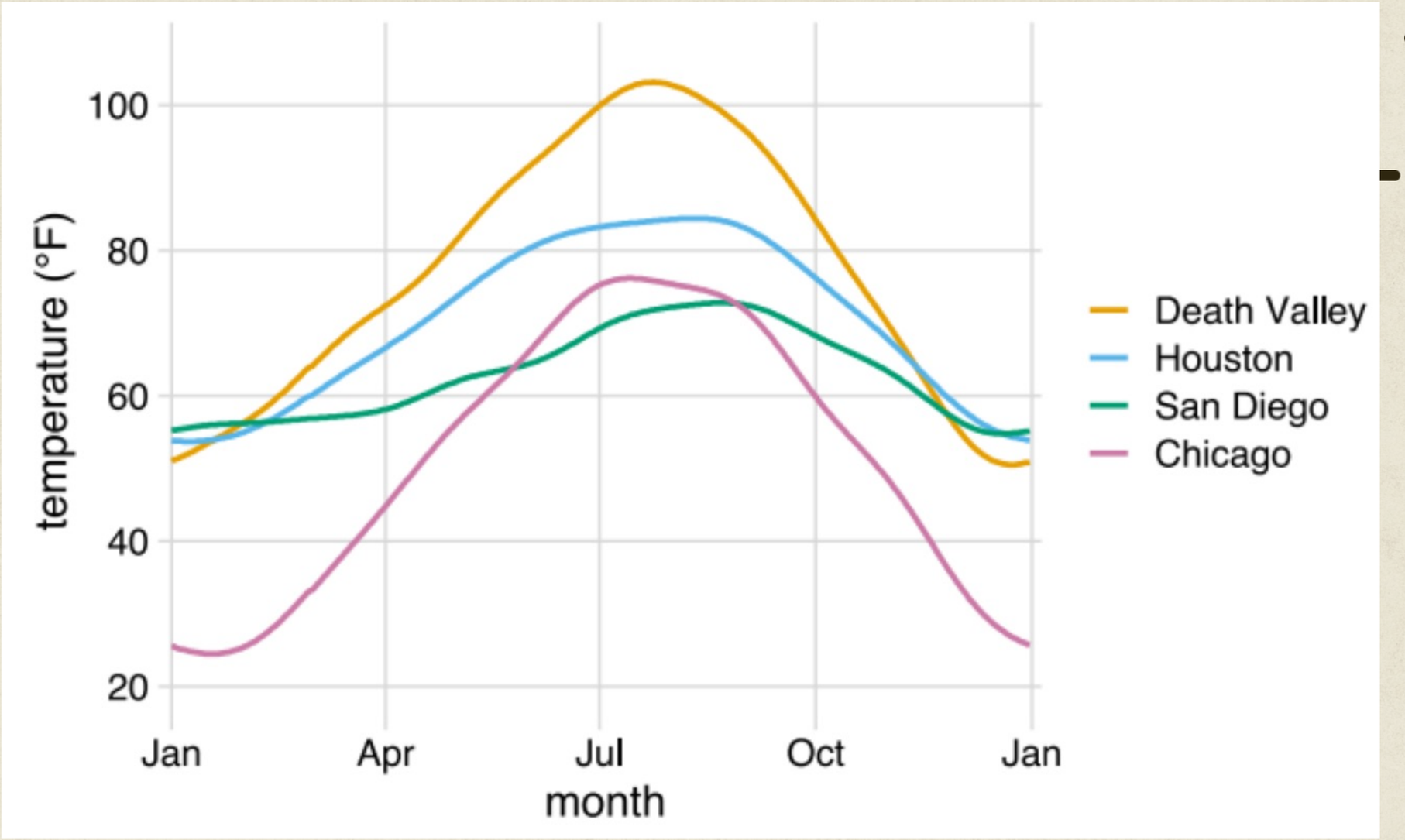
Mapping

Plots map data onto graphical elements

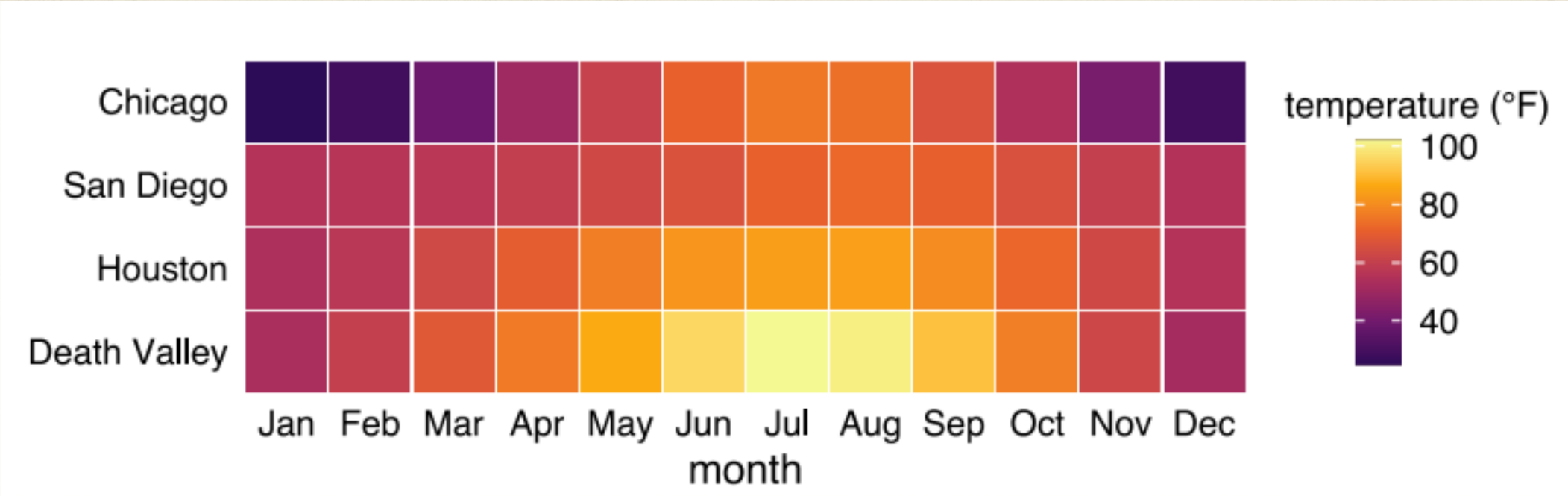
데이터: 다양한 지역의 평균 기온

location	day_of_year	month	temperature
Death Valley	1	01	51.0
Death Valley	2	01	51.2
Death Valley	3	01	51.3
Death Valley	4	01	51.4
Death Valley	5	01	51.6
Death Valley	6	01	51.7
Death Valley	7	01	51.9
Death Valley	8	01	52.0
Death Valley	9	01	52.2
Death Valley	10	01	52.3
Death Valley	11	01	52.5

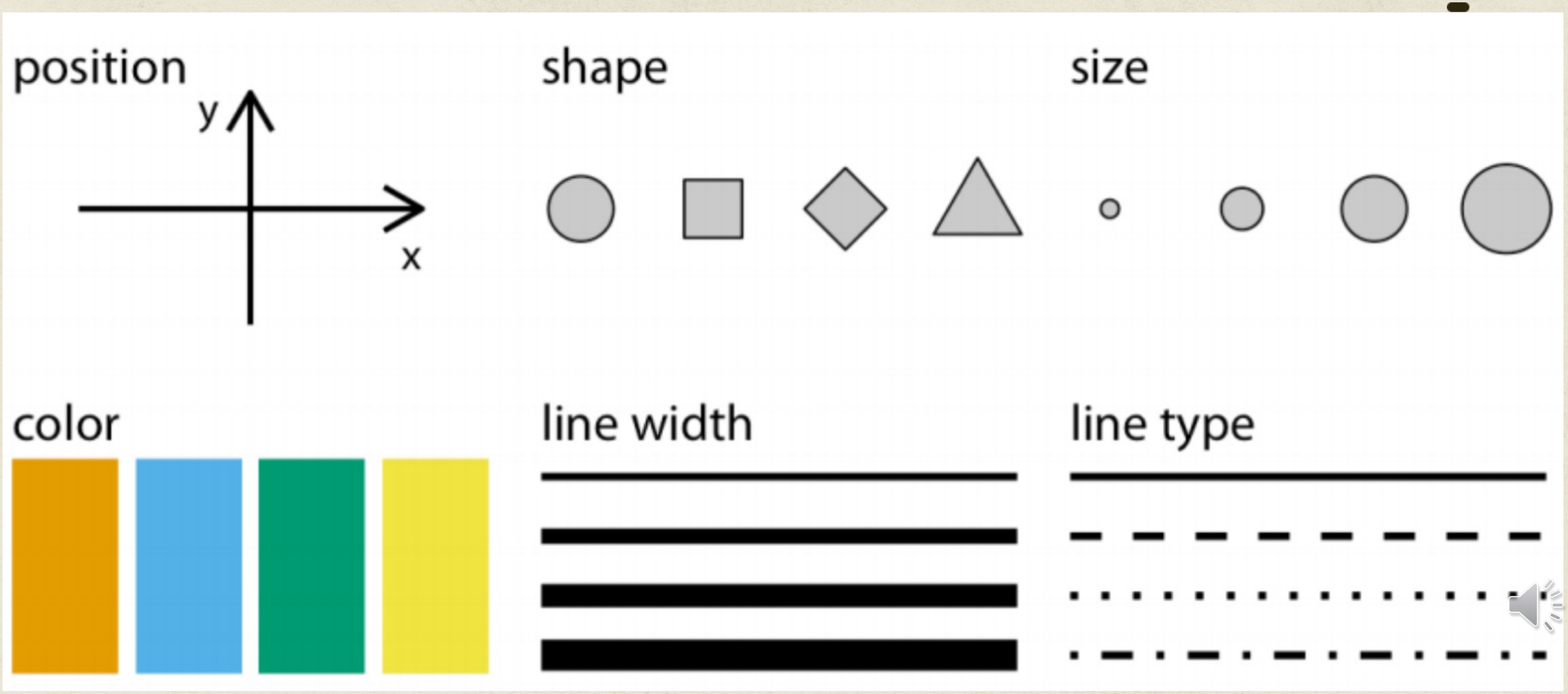
Temperatures mapped onto y



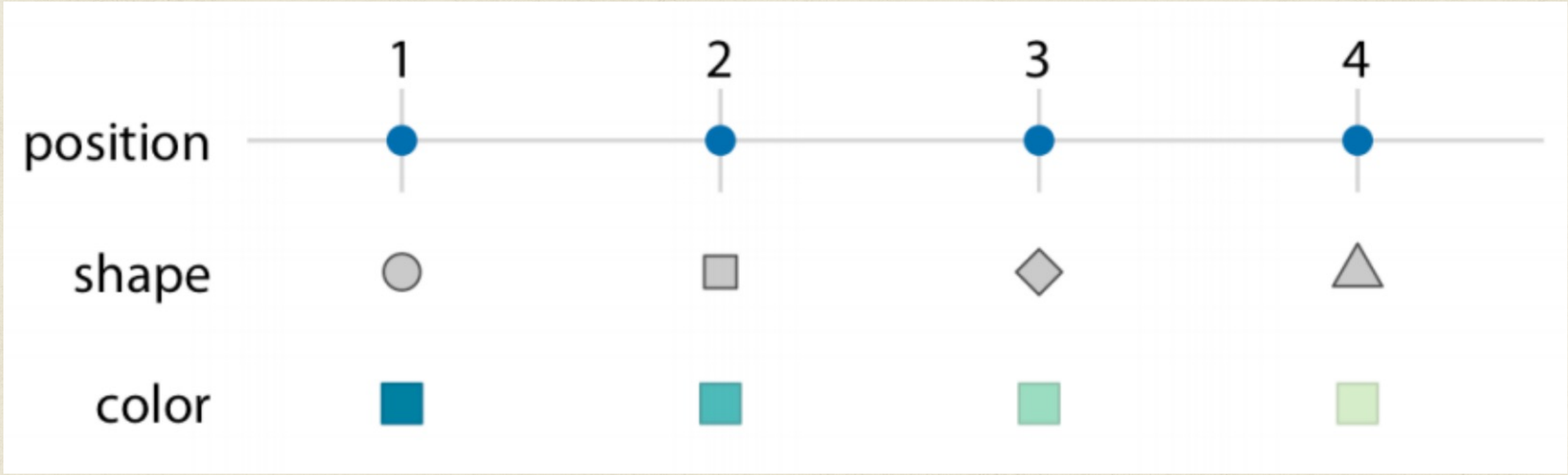
Temperatures mapped onto y



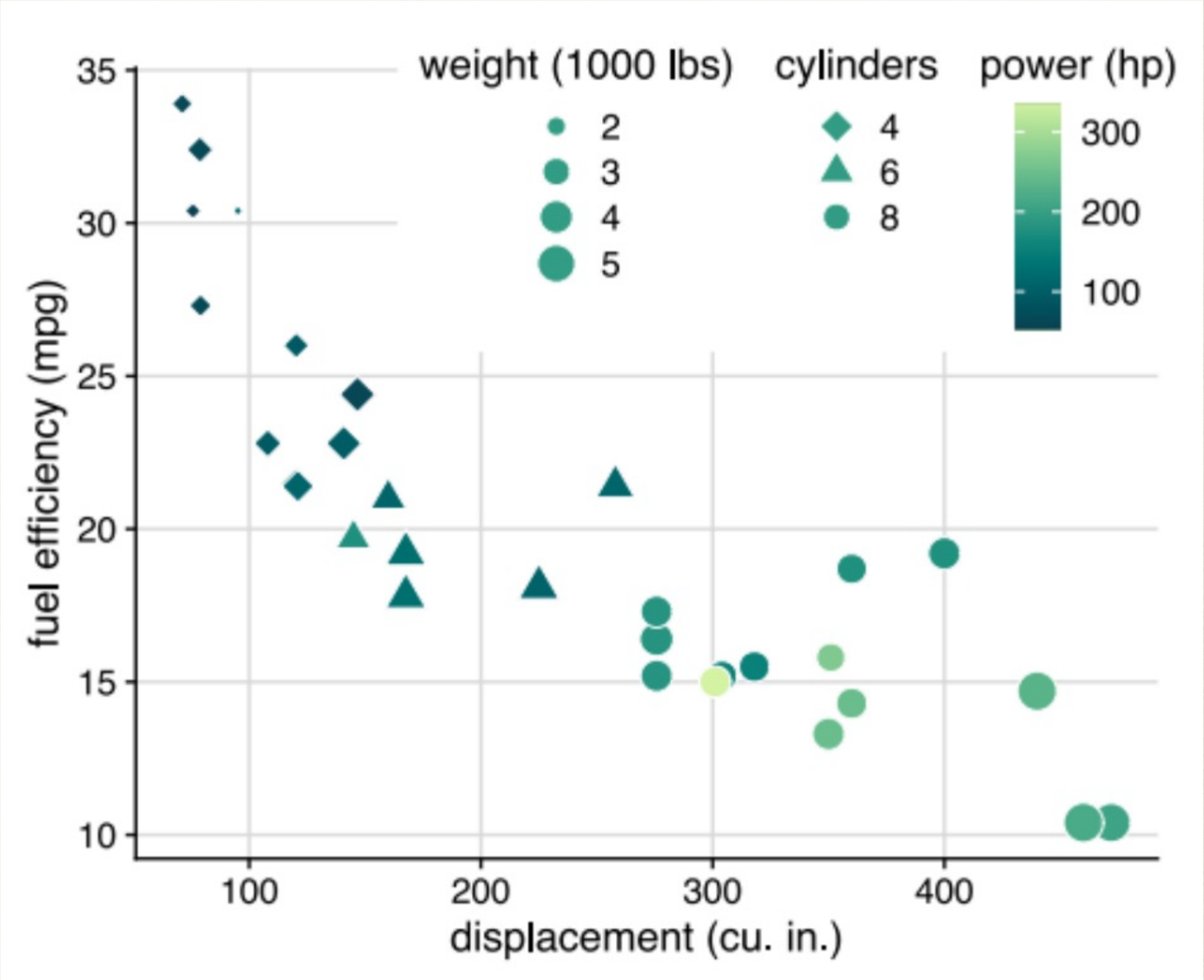
Commonly used aesthetics



같은 데이터를 다르게 표현하기



다른 요소 동시에 사용


weight (1000 lbs)
2
3
4
5
cylinders
4
6
8
power (hp)
300
200
100
fuel efficiency (mpg)
35
30
25
20
15
10
100
200
300
400
displacement (cu. in.)

Creating aesthetic mappings in ggplot

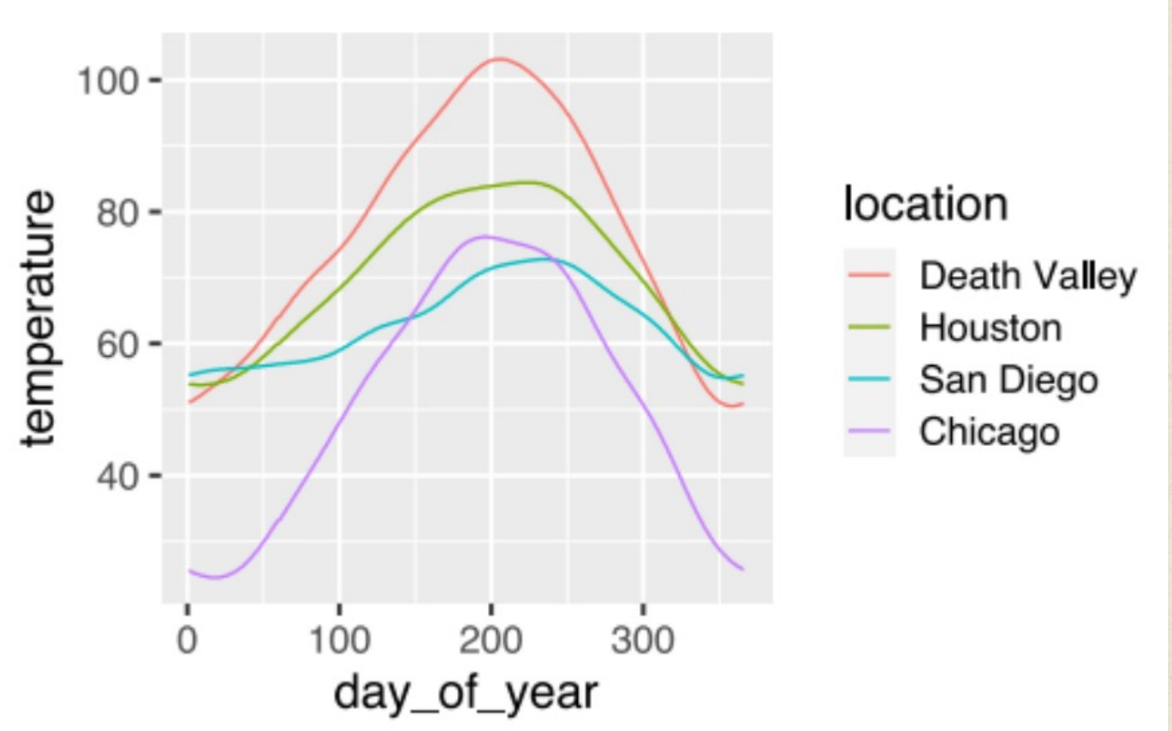
Getting the data

- 모든 예제에서는 온도 데이터를 사용합니다.

```
temperatures <- read_csv("https://wilkelab.org/DSC385/datasets/tempnormals.csv") %>%
  mutate(
    location = factor(
      location, levels = c("Death Valley", "Houston", "San Diego", "Chicago")
    )
  ) %>%
  select(location, station_id, day_of_year, month, temperature)
```

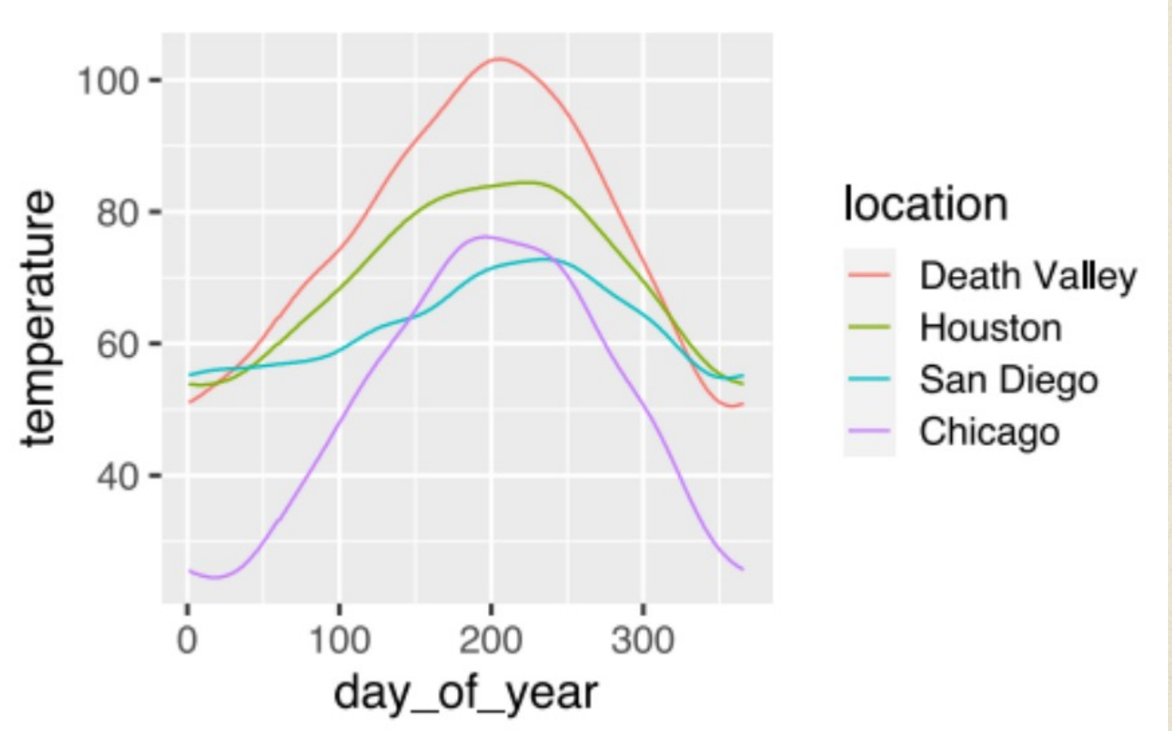
We define the mapping with aes()

```
ggplot(
  data = temperatures,
  mapping = aes(x = day_of_year, y = temperature, color = location)
) + geom_line()
```



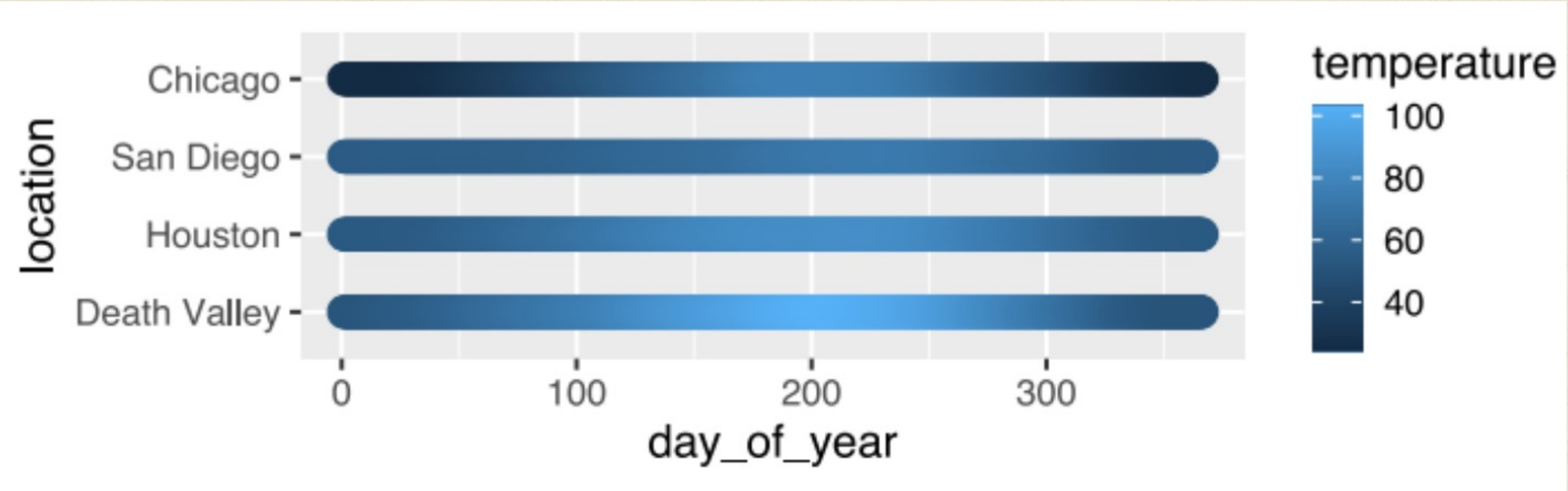
We define the mapping with aes()

```
ggplot(
  data = temperatures,
  mapping = aes(x = day_of_year, y = temperature, color = location)
) + geom_line()
```



We define the mapping with aes()

```
ggplot(
  data = temperatures,
  mapping = aes(x = day_of_year, y = location, color = temperature)
) + geom_point(size = 5)
```



We frequently omit argument names

Long form, all arguments are named:

```
ggplot(
  data = temperatures,
  mapping = aes(x = day_of_year, y = location, color = temperature)
) + geom_point(size = 5)
```

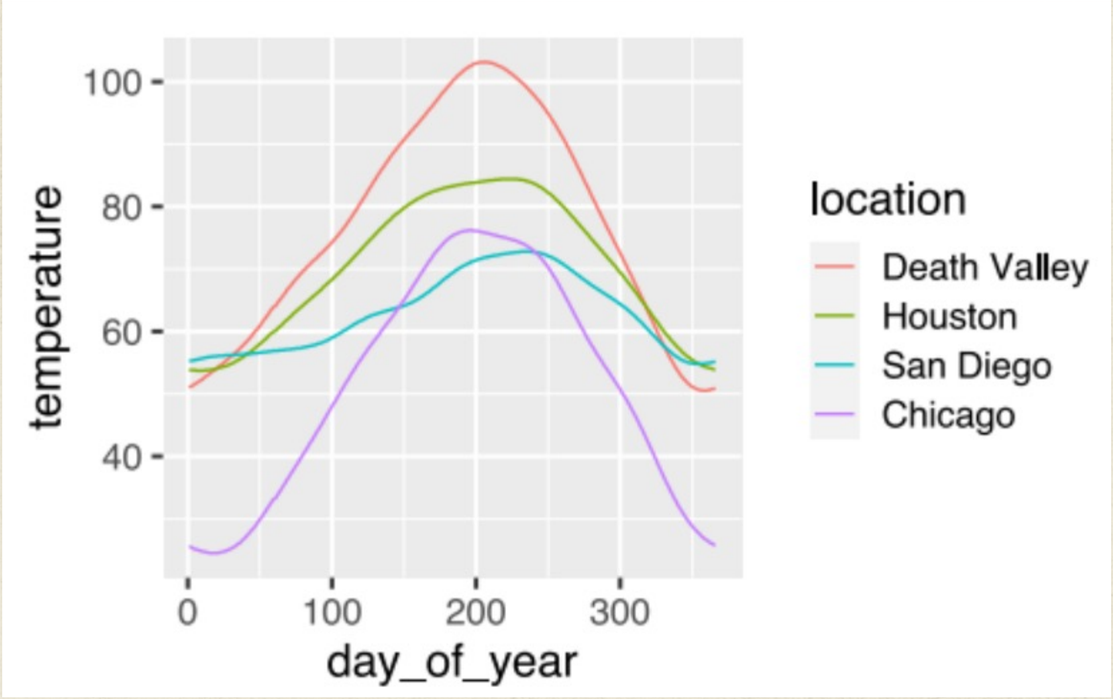
Abbreviated form, common arguments remain unnamed:

```
ggplot(temperatures, aes(day_of_year, location, color = temperature))
  geom_point(size = 5)
```

The geom

The geom determines how the data is shown

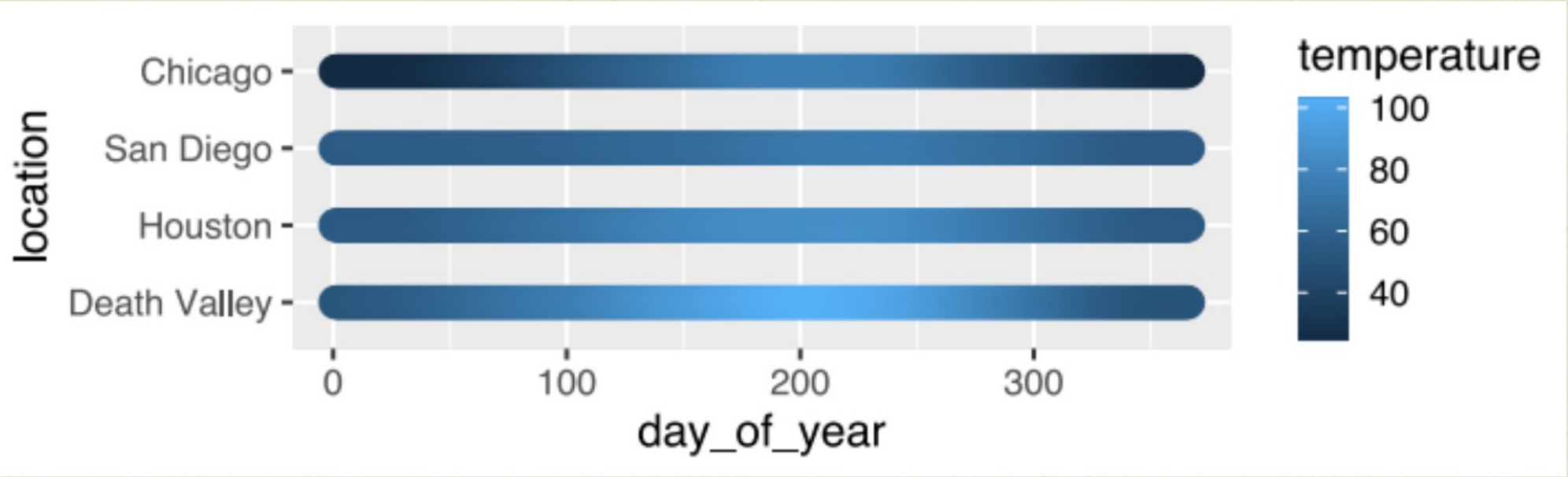
```
ggplot(temperatures, aes(day_of_year, temperature, color = location))
  geom_line()
```



The geom

The geom determines how the data is shown

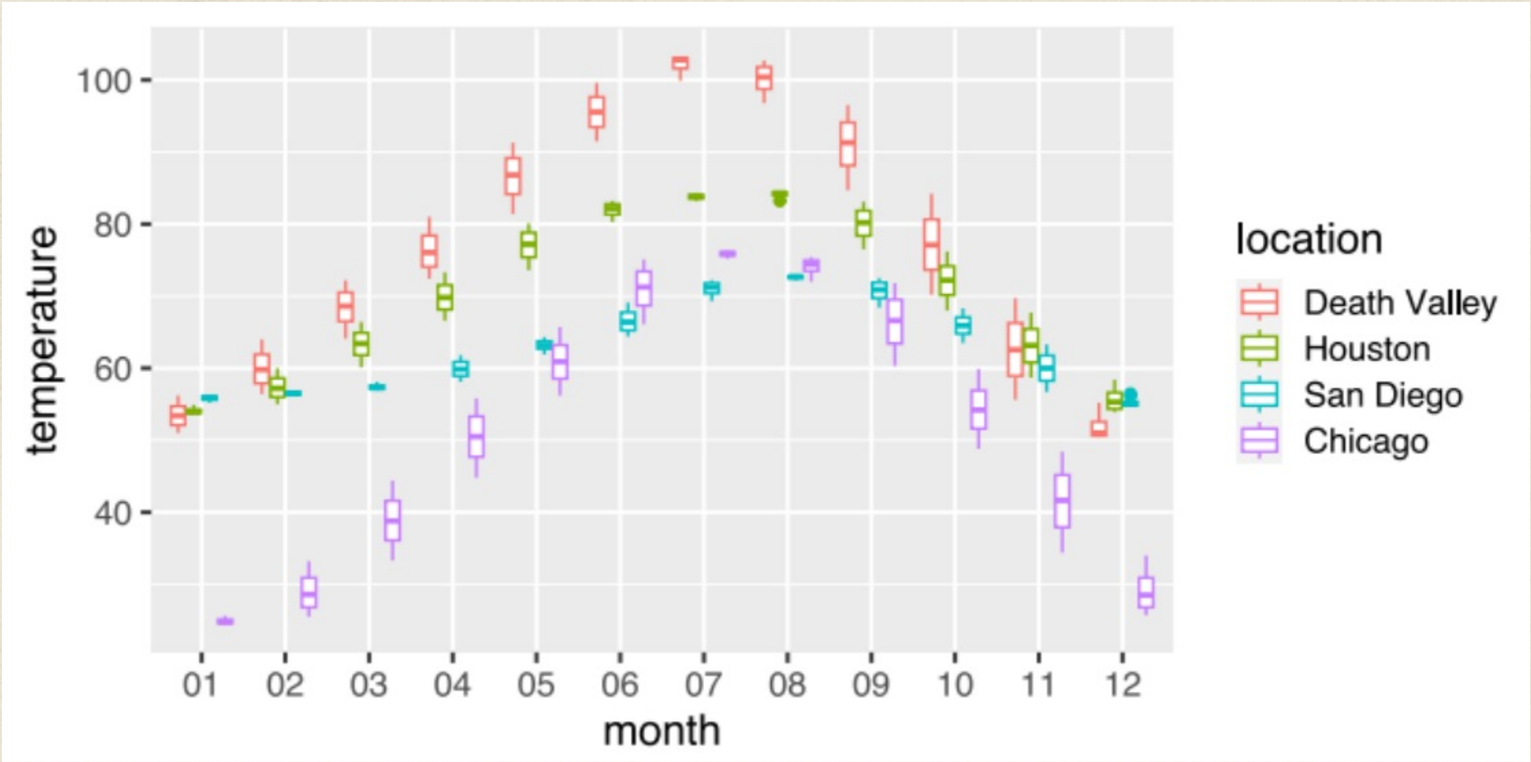
```
ggplot(temperatures, aes(day_of_year, location, color = temperature))
  geom_point(size = 5)
```



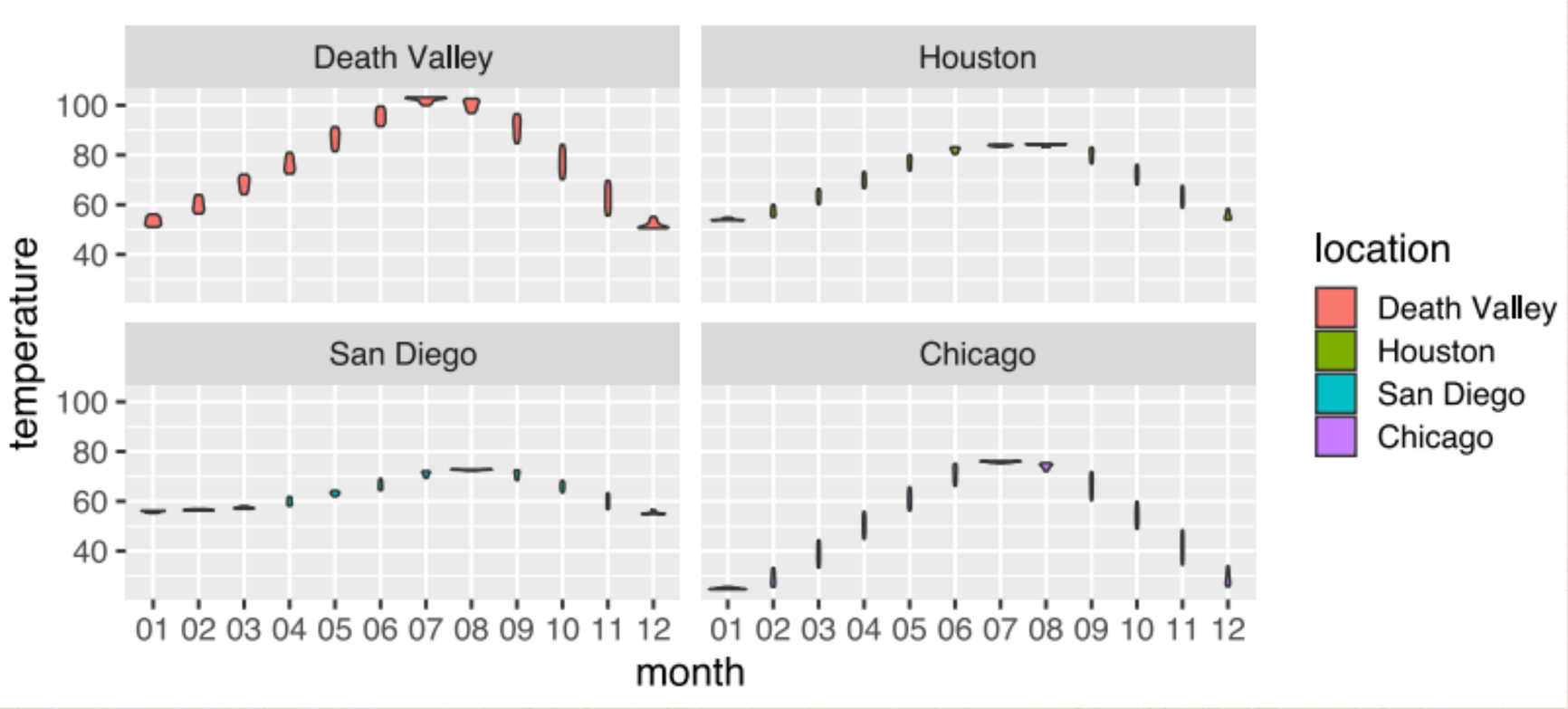
The geom

The geom determines how the data is shown

```
ggplot(temperatures, aes(month, temperature, color = location)) +
  geom_boxplot()
```



```
ggplot(temperatures, aes(month, temperature, fill = location)) +
  geom_violin() +
  facet_wrap(vars(location)) # make separate panel per location
```



The geom

Important: color and fill apply to different elements

color

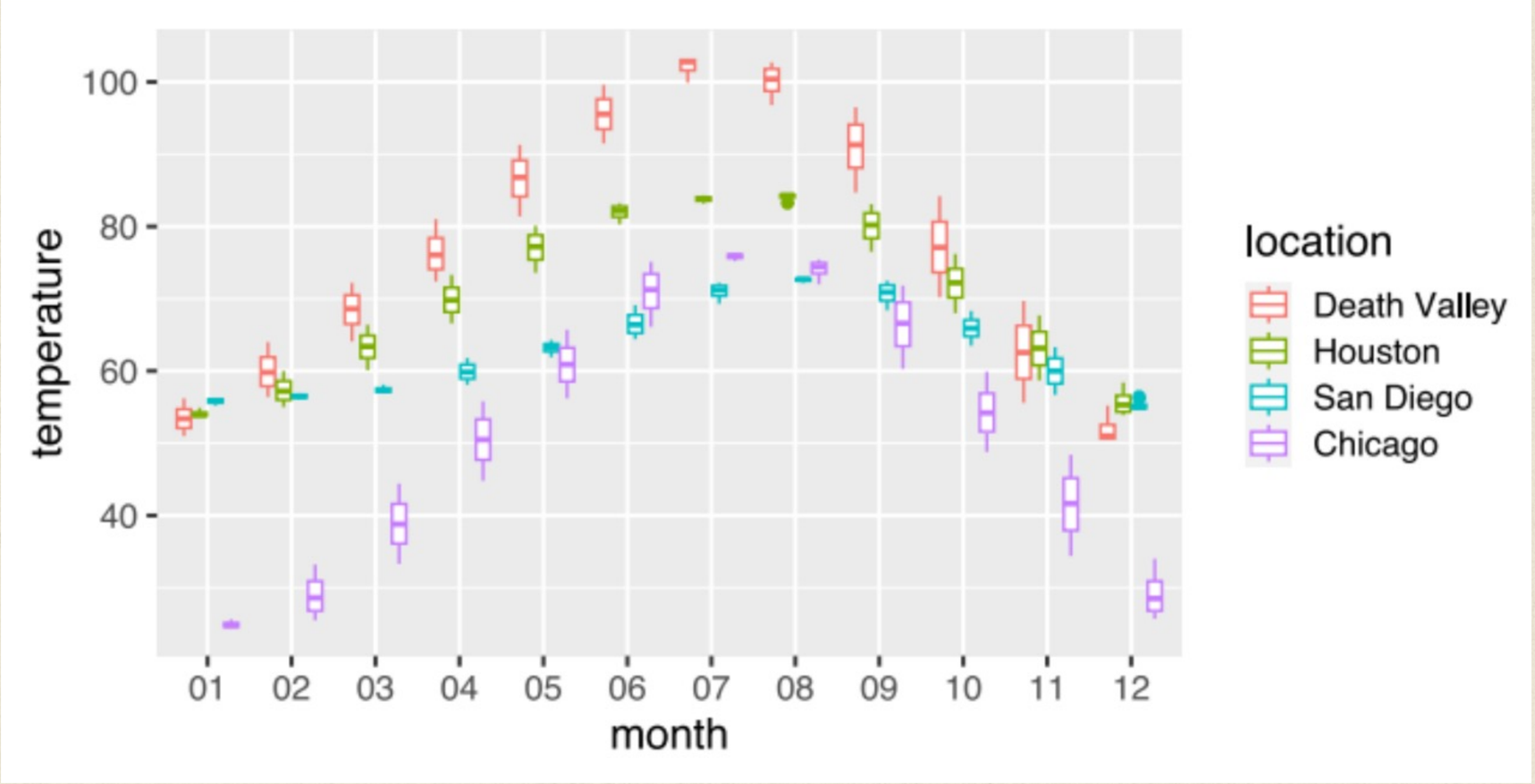
Applies color to points, lines, text, borders

fill

Applies color to any filled areas

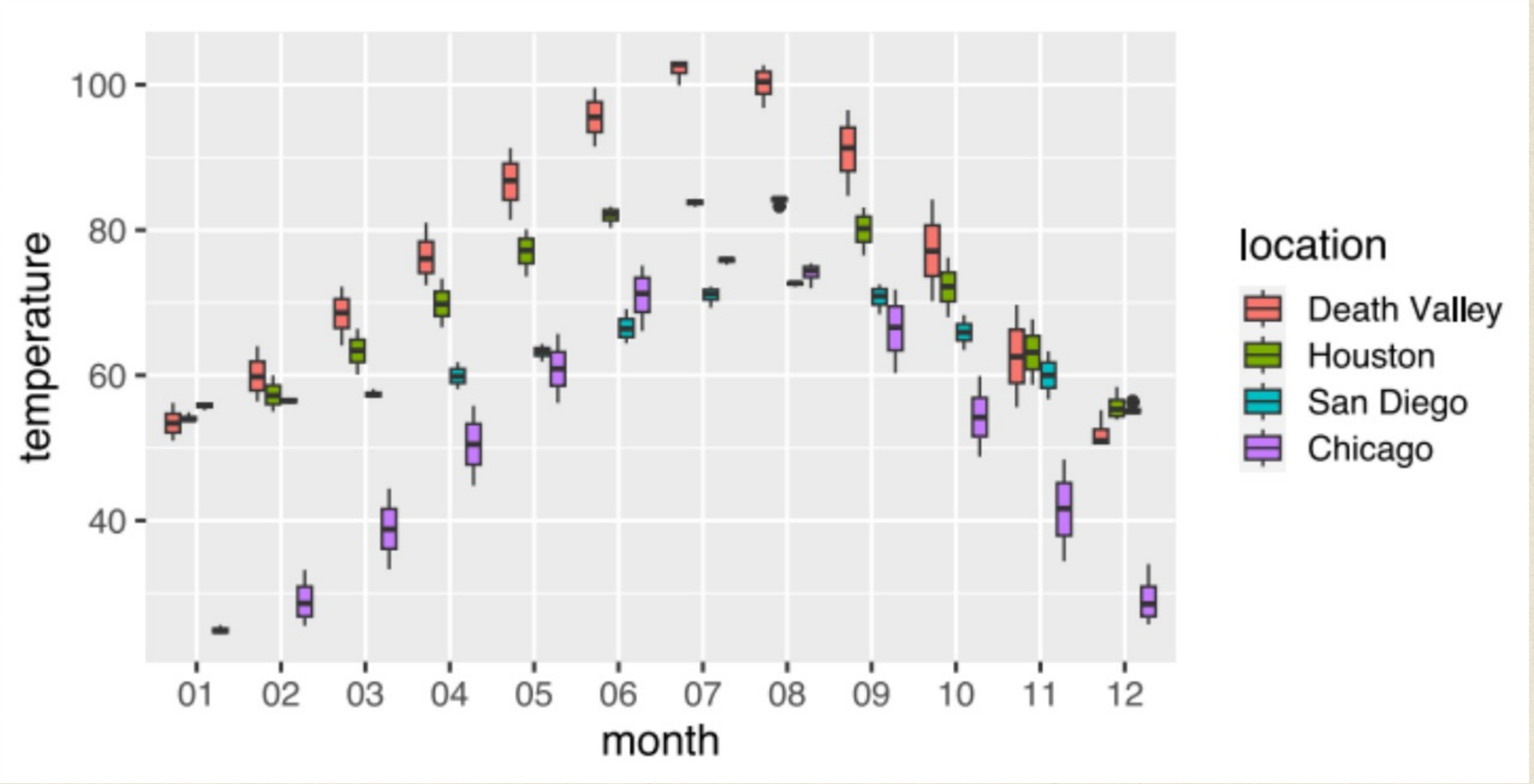
The geom

```
ggplot(temperatures, aes(month, temperature, color = location)) +
  geom_boxplot()
```



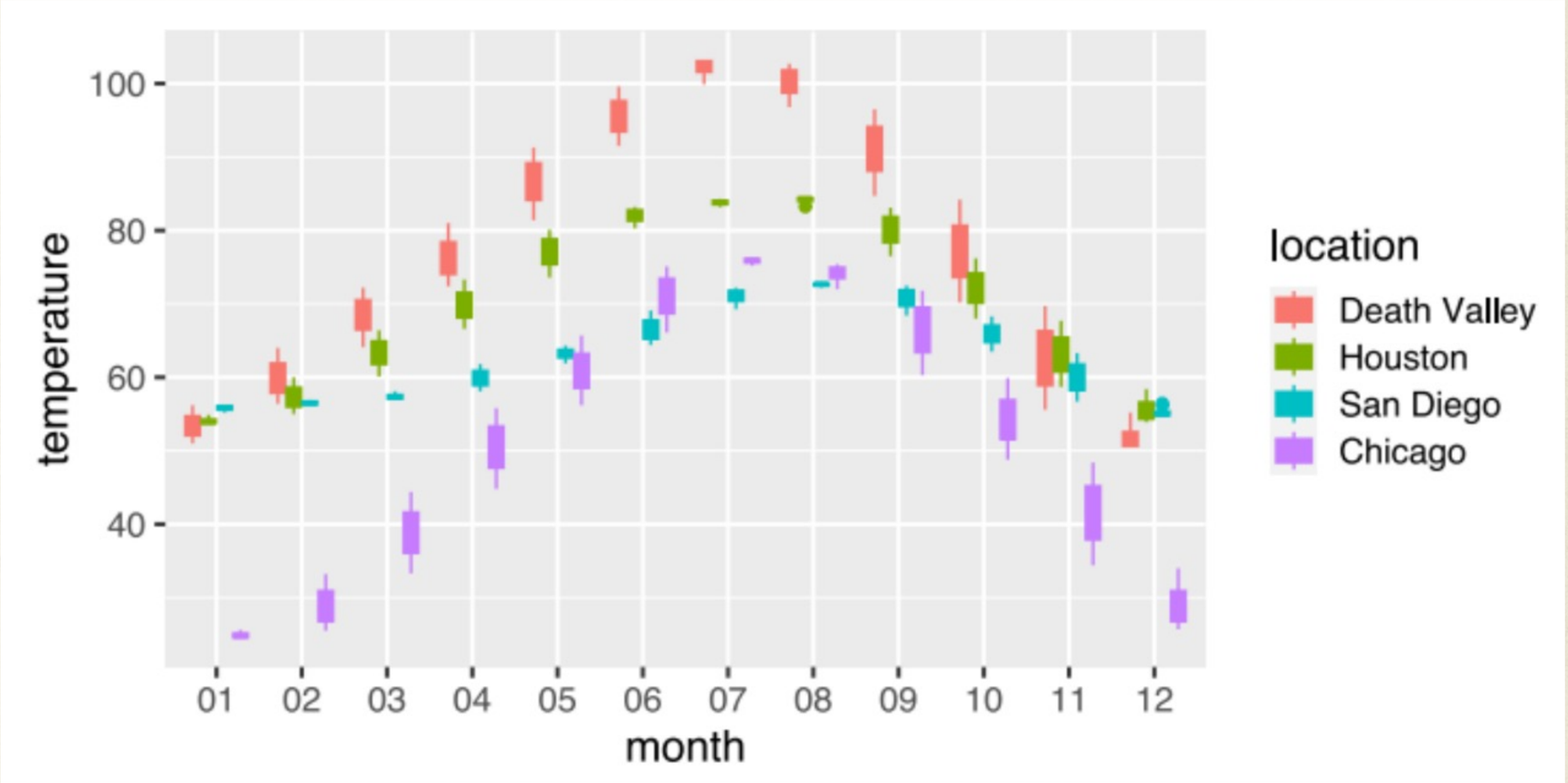
The geom

```
ggplot(temperatures, aes(month, temperature, fill = location)) +
  geom_boxplot()
```



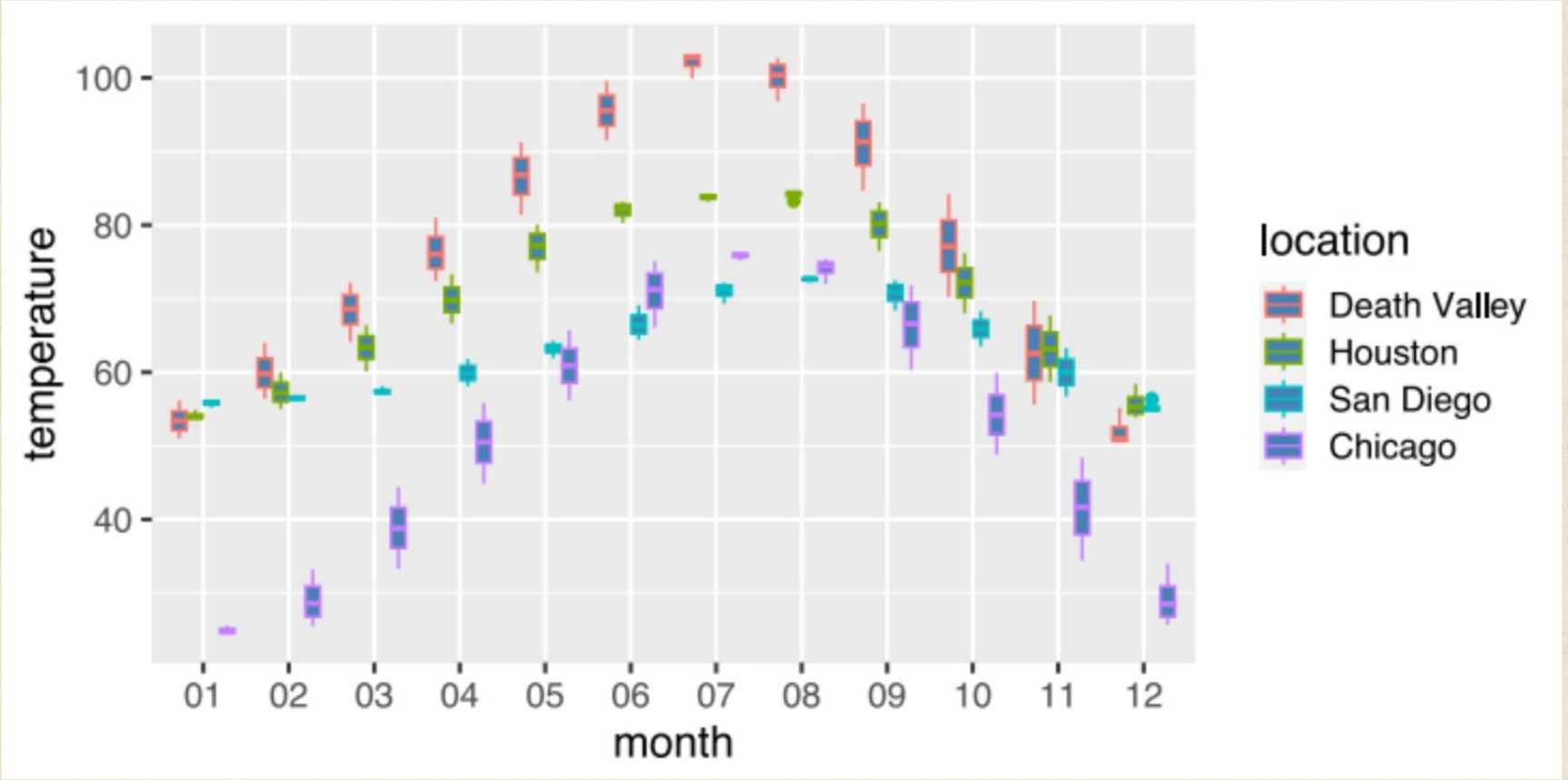
The geom

```
ggplot(temperatures, aes(month, temperature, color = location, fill = location)) +
  geom_boxplot()
```



The geom

```
ggplot(temperatures, aes(month, temperature, color = location)) +
  geom_boxplot(fill = "steelblue")
```



Visualizing amounts

예시

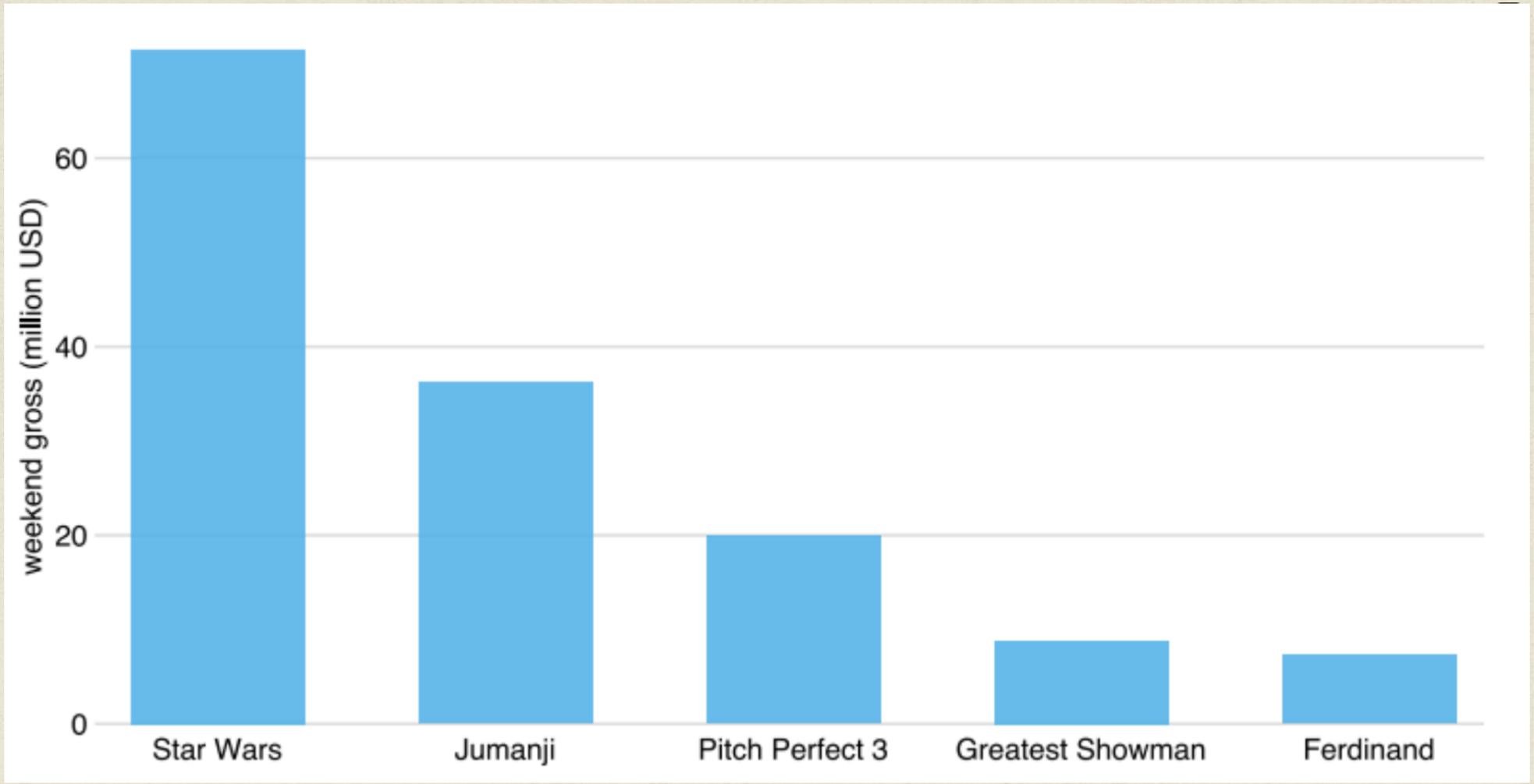
We often encounter datasets containing simple amounts

rank	title	amount
1	Star Wars	71.57
2	Jumanji	36.17
3	Pitch Perfect 3	19.93
4	Greatest Showman	8.81
5	Ferdinand	7.32

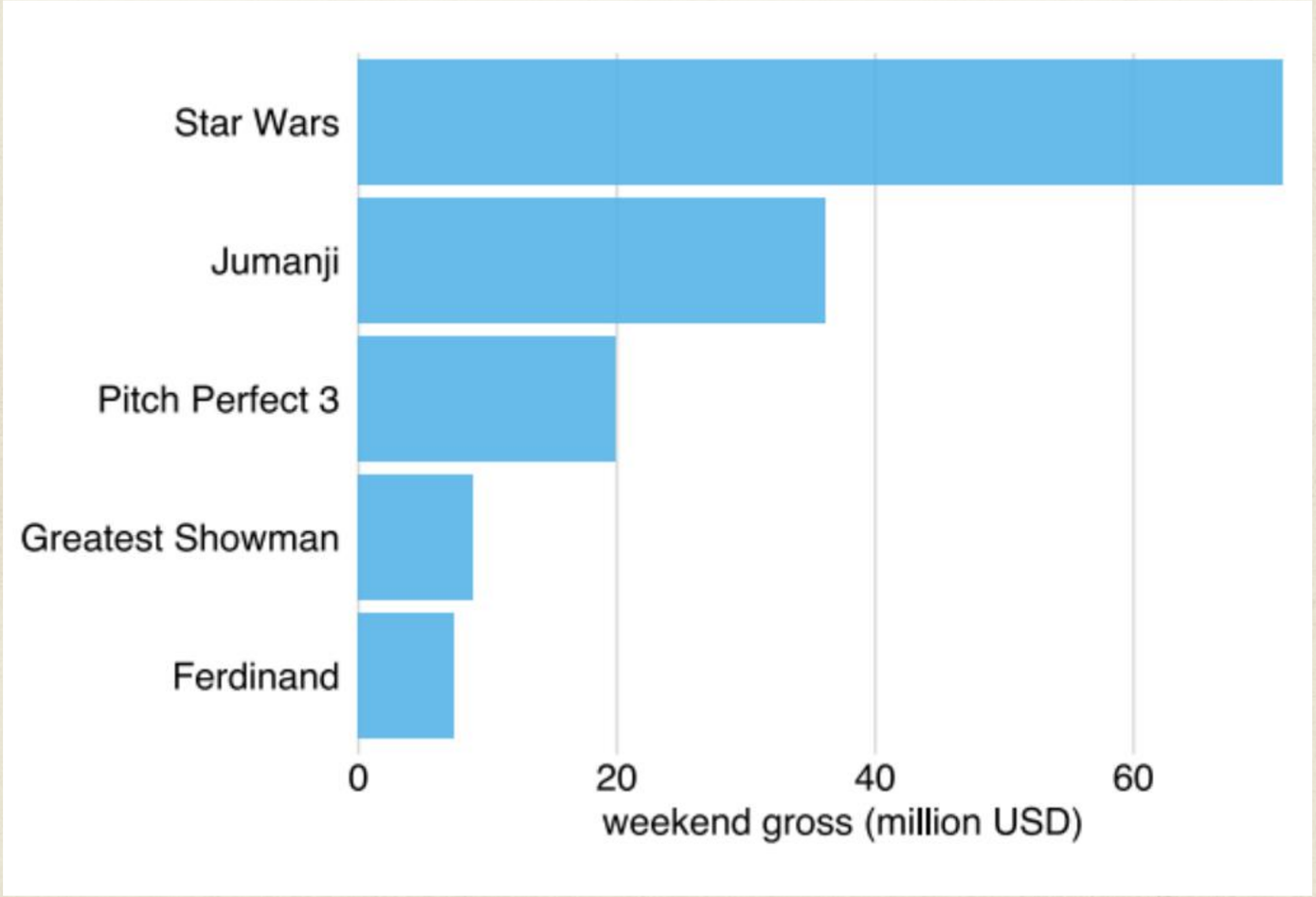
출처: Highest grossing movies Dec. 2017

출처: Box office mojo

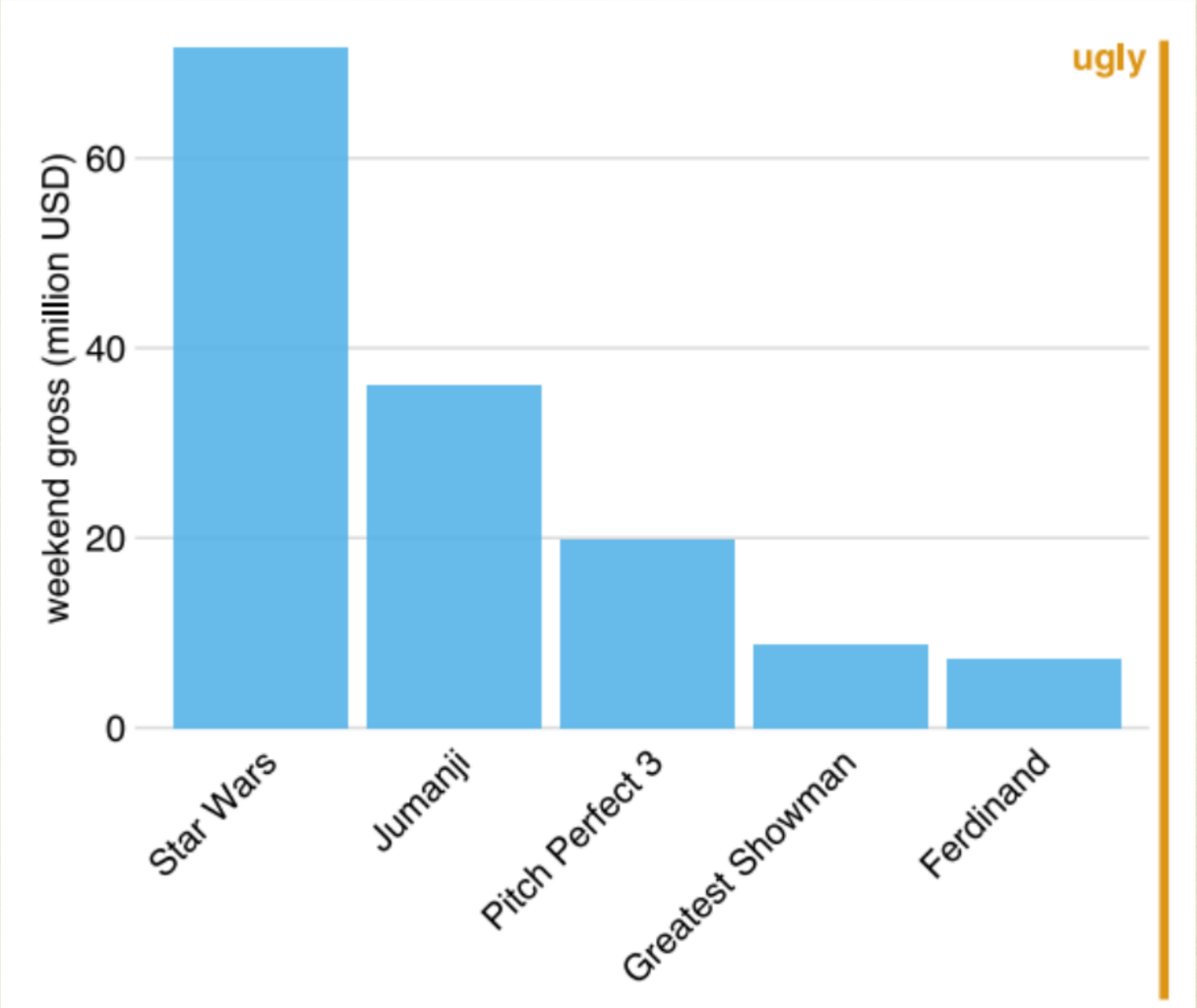
예시: bar plots


weekend gross (million USD)
60
40
20
0
Star Wars
Jumanji
Pitch Perfect 3
Greatest Showman
Ferdinand

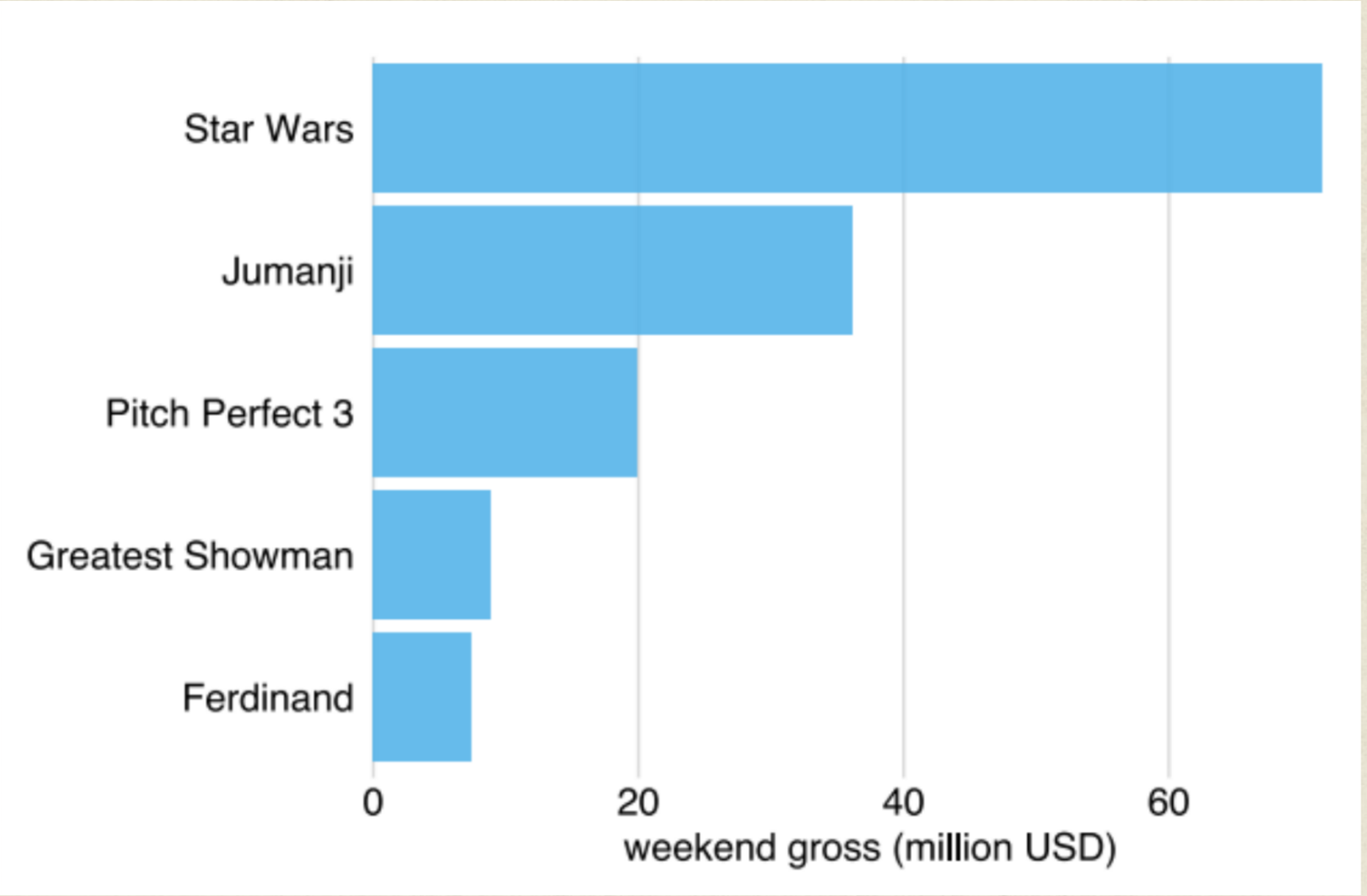
예시: bar plots


Star Wars
Jumanji
Pitch Perfect 3
Greatest Showman
Ferdinand
0
20
40
60
weekend gross (million USD)

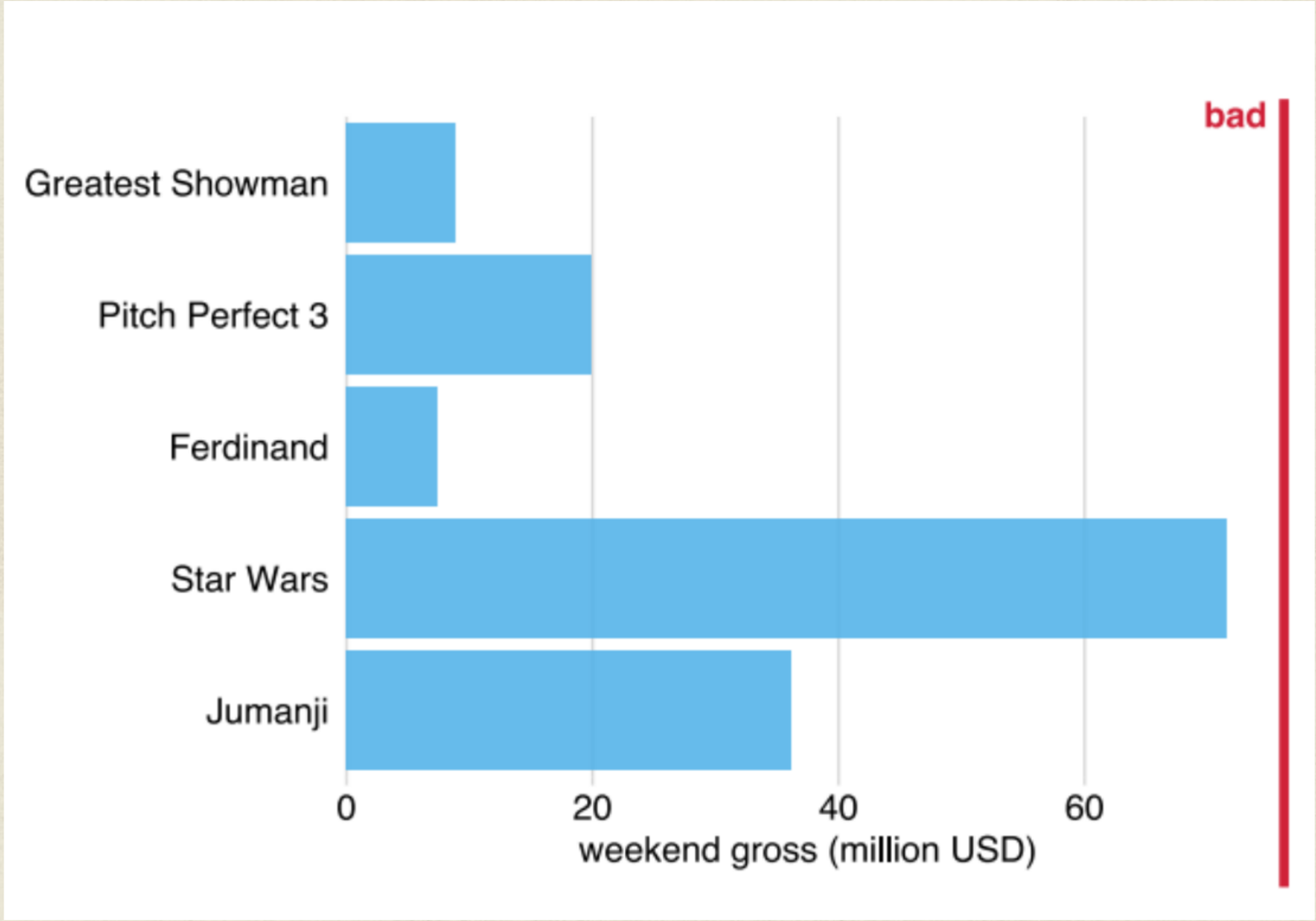
Avoid


ugly
weekend gross (million USD)
60
40
20
0
Star Wars
Jumanji
Pitch Perfect 3
Greatest Showman
Ferdinand

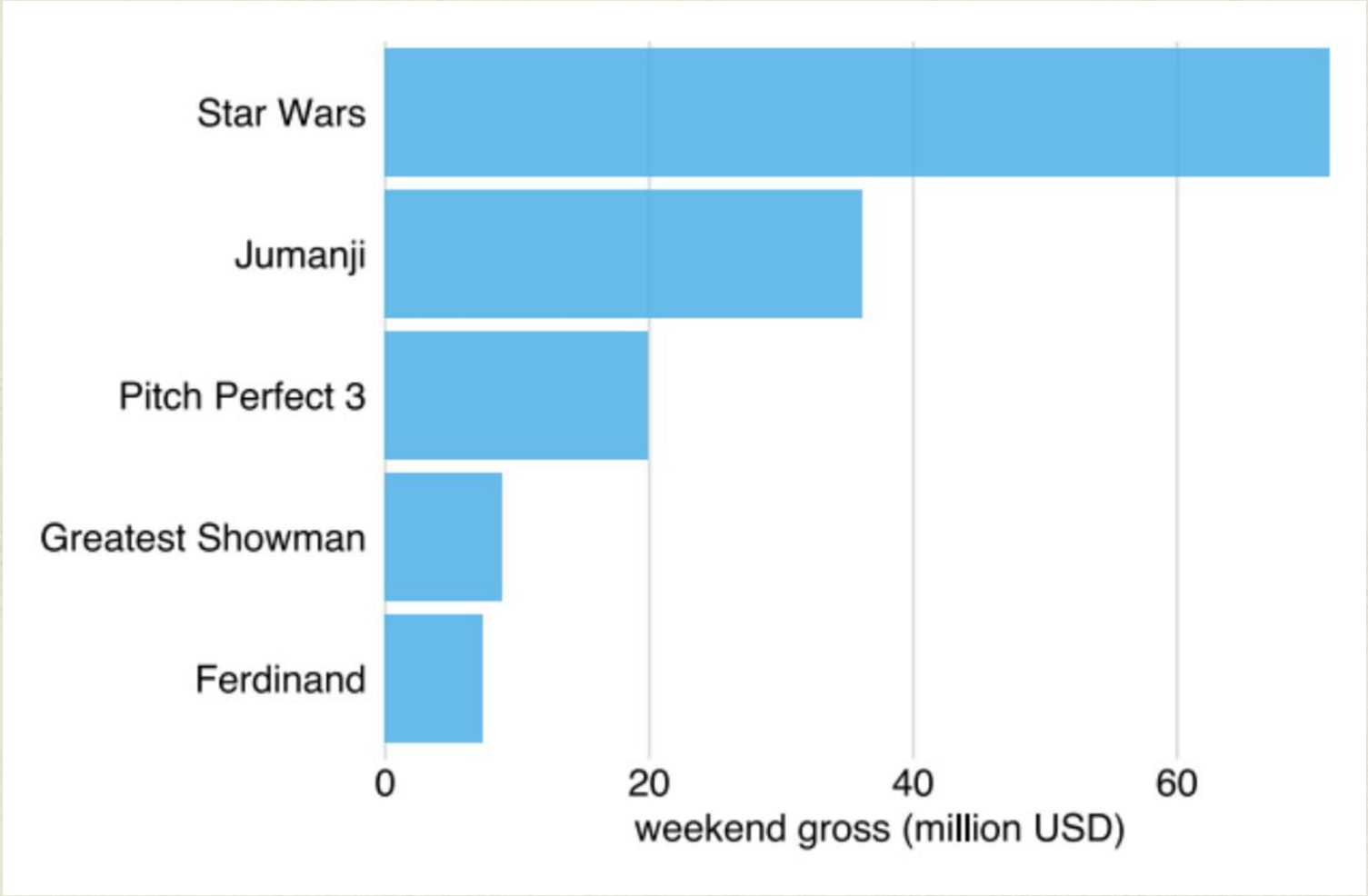
Avoid


Star Wars
Jumanji
Pitch Perfect 3
Greatest Showman
Ferdinand
0
20
40
60
weekend gross (million USD)

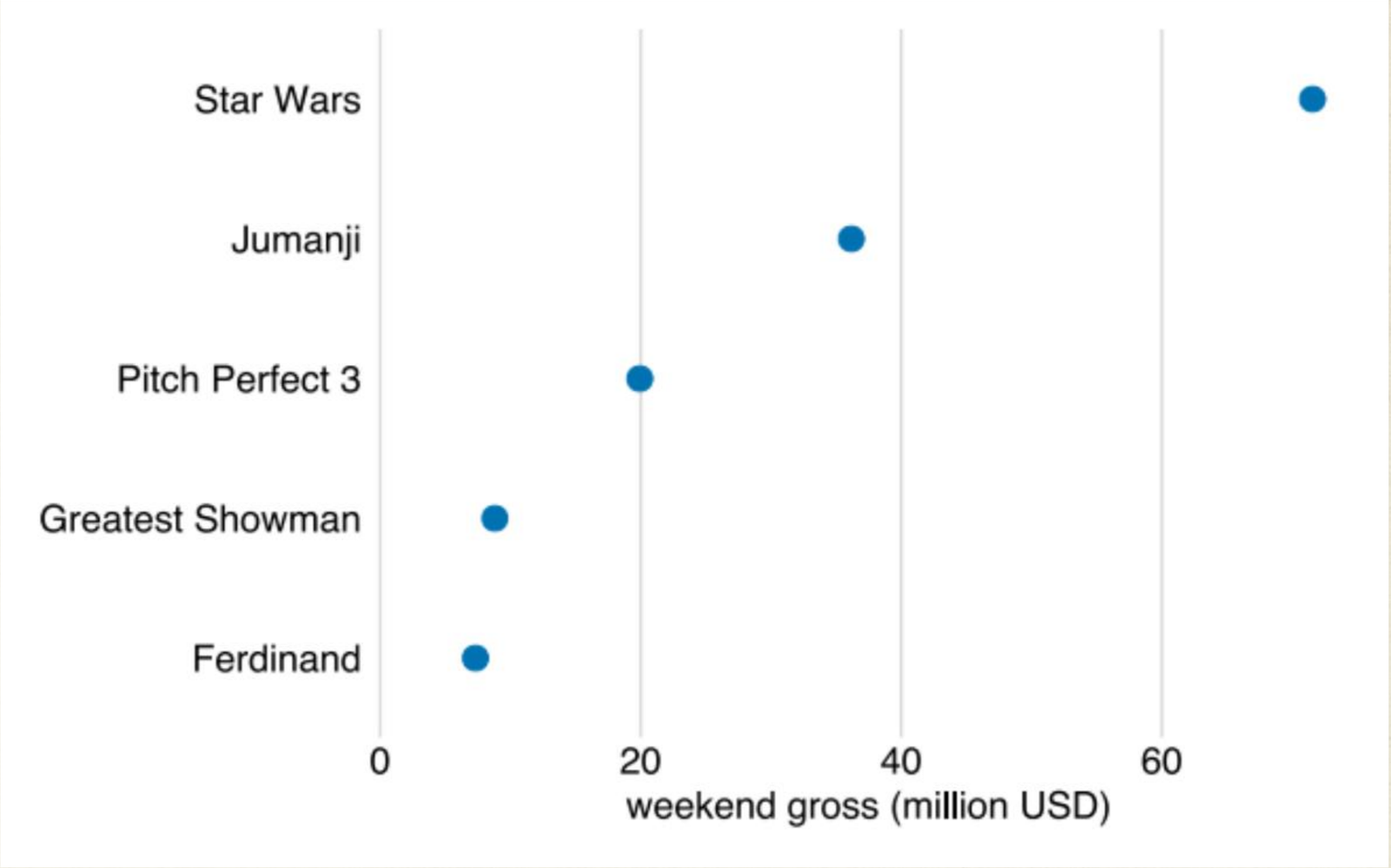
주의: 바(bar) 순서


bad
Greatest Showman
Pitch Perfect 3
Ferdinand
Star Wars
Jumanji
0
20
40
60
weekend gross (million USD)

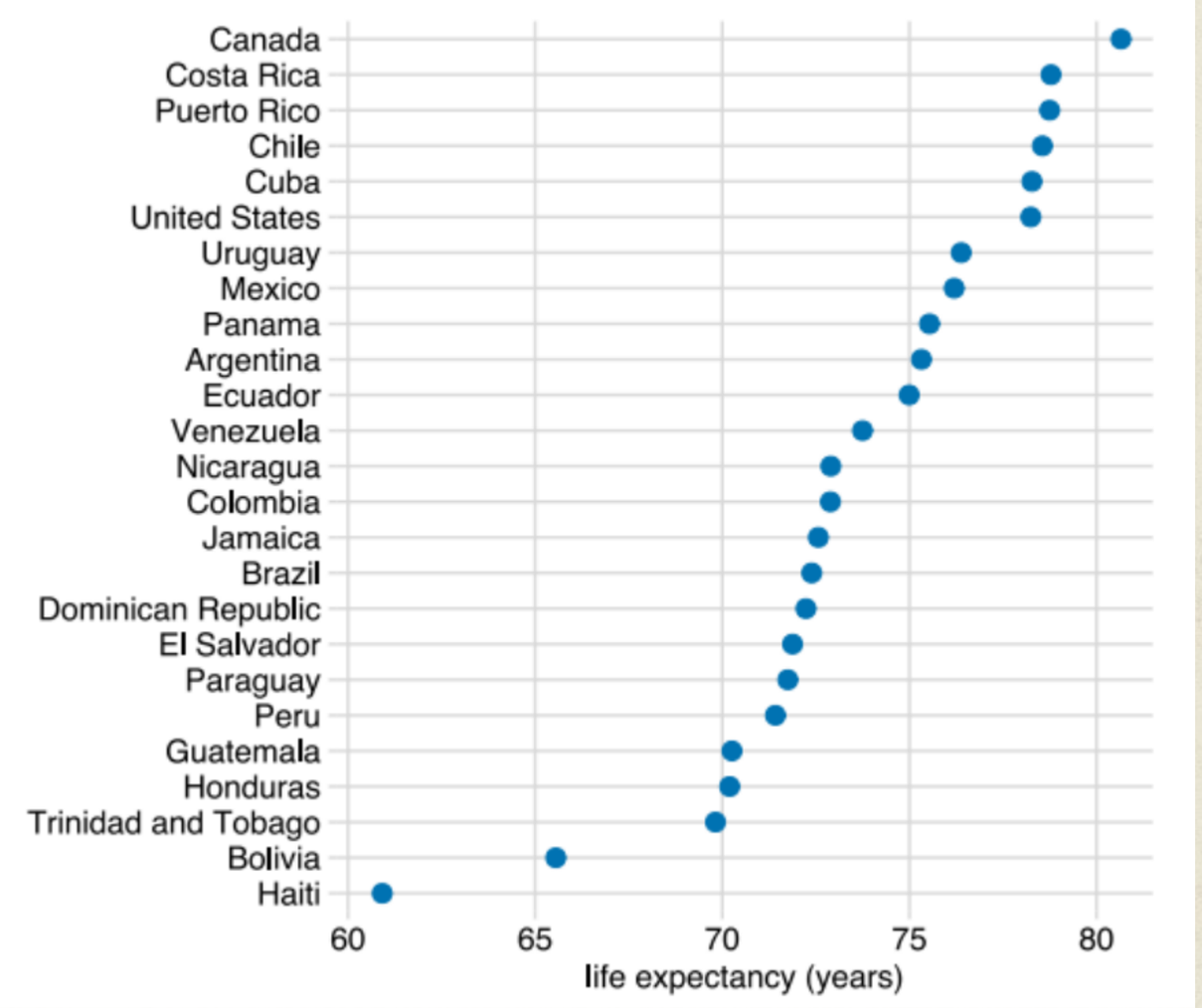
주의: 막대(bar) 순서


Star Wars
Jumanji
Pitch Perfect 3
Greatest Showman
Ferdinand
0
20
40
60
weekend gross (million USD)

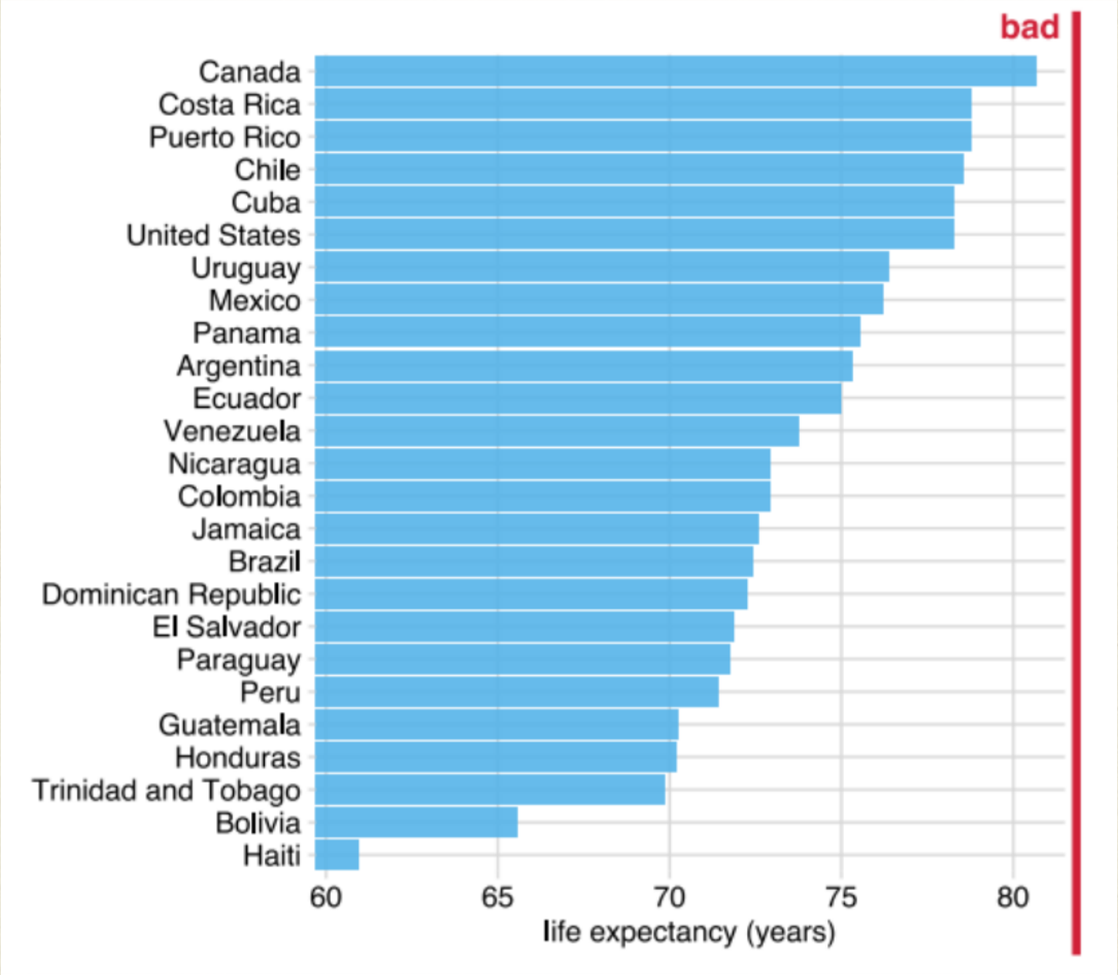
막대 대신 점


Star Wars
Jumanji
Pitch Perfect 3
Greatest Showman
Ferdinand
0
20
40
60
weekend gross (million USD)

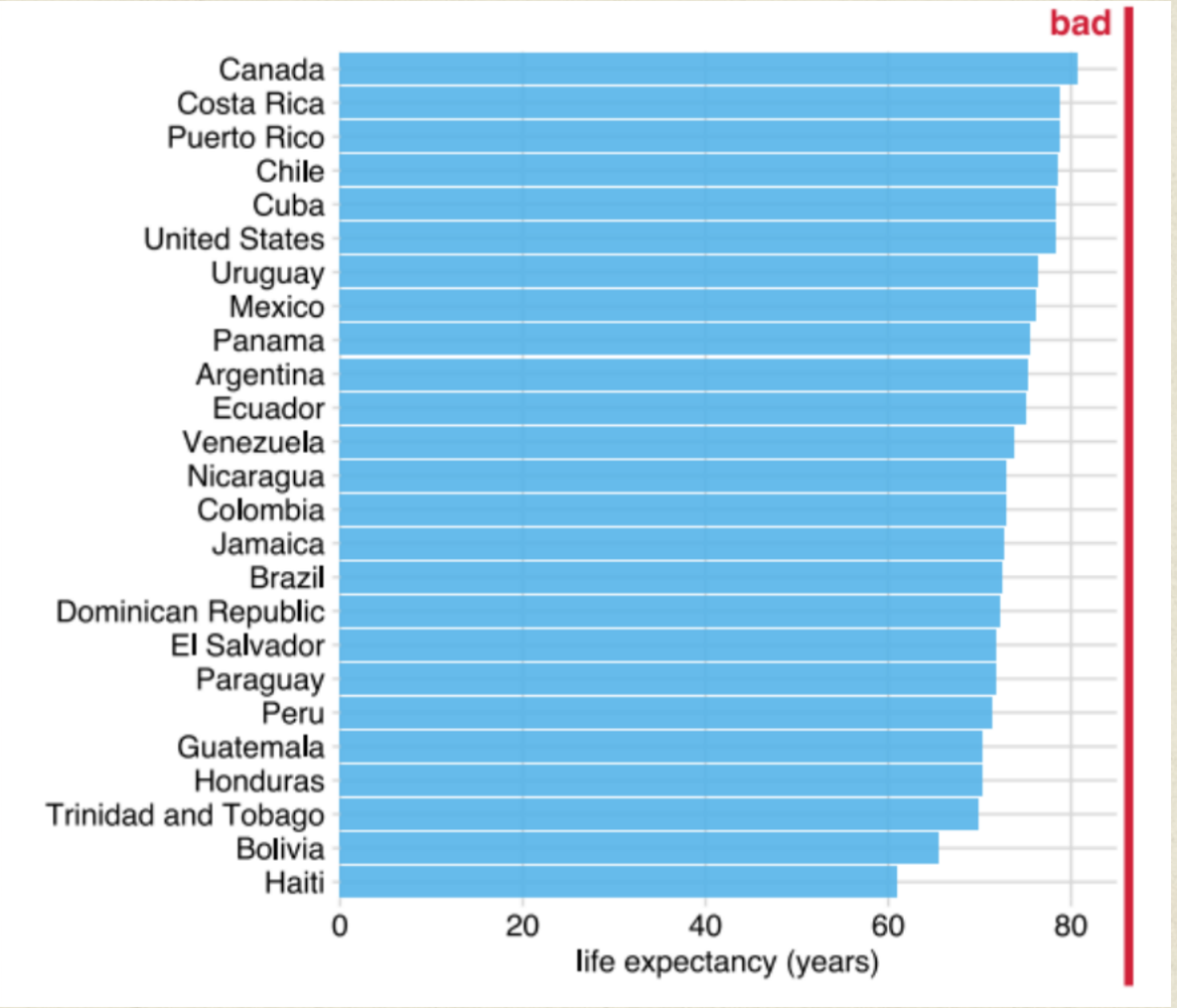
점(dots)을 선호하는 경우



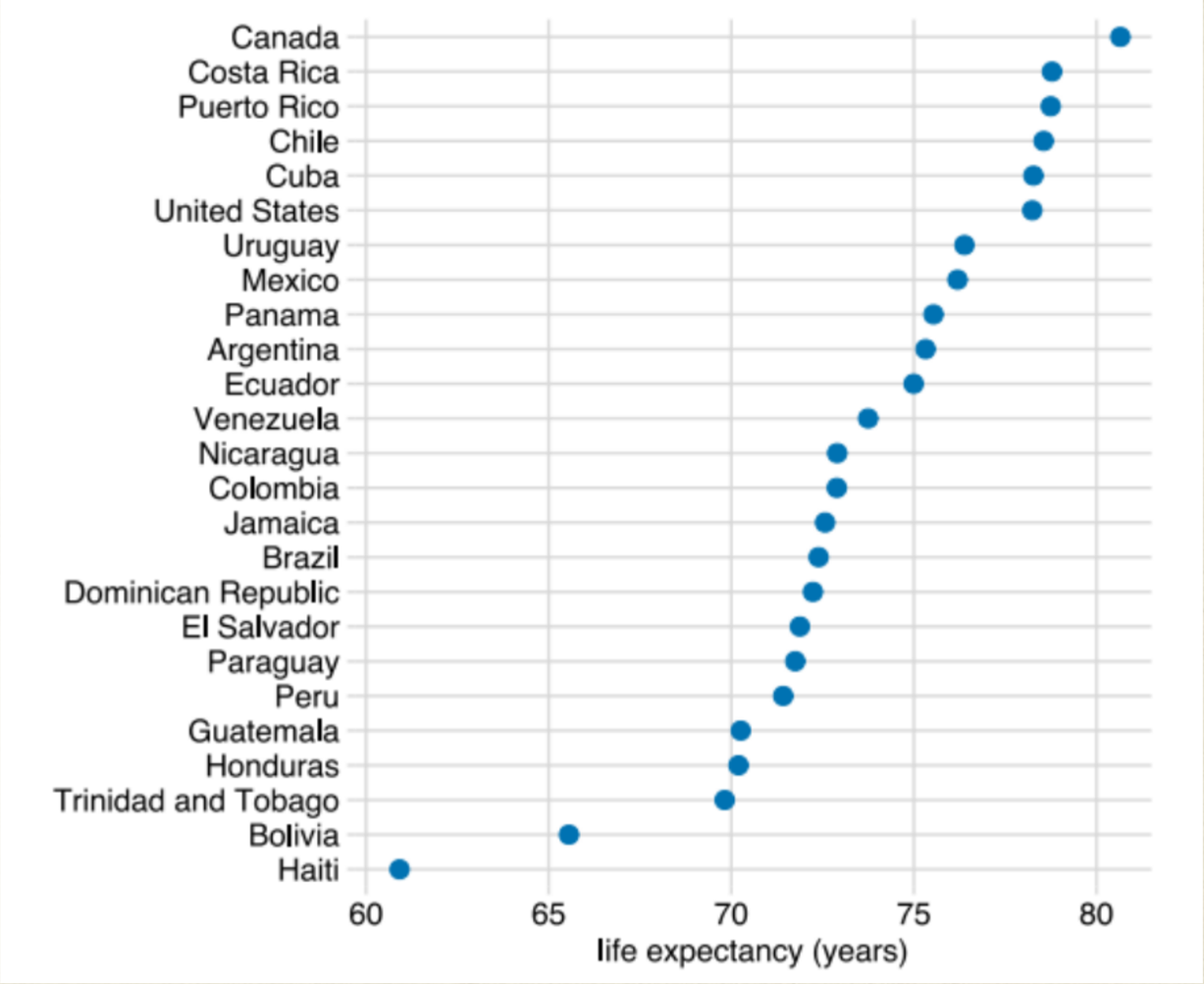
점(dots)을 선호하는 경우



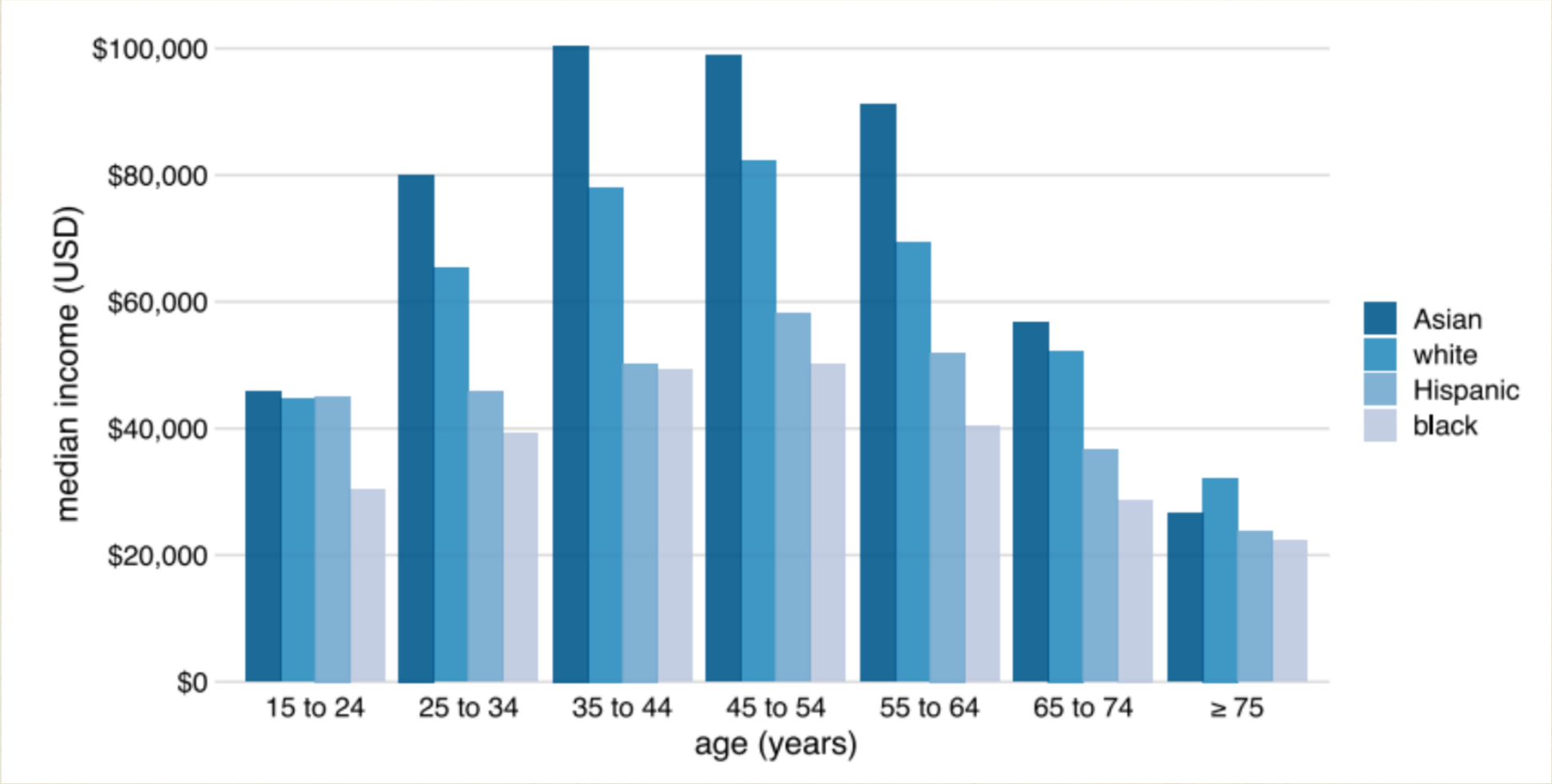
점(dots)을 선호하는 경우



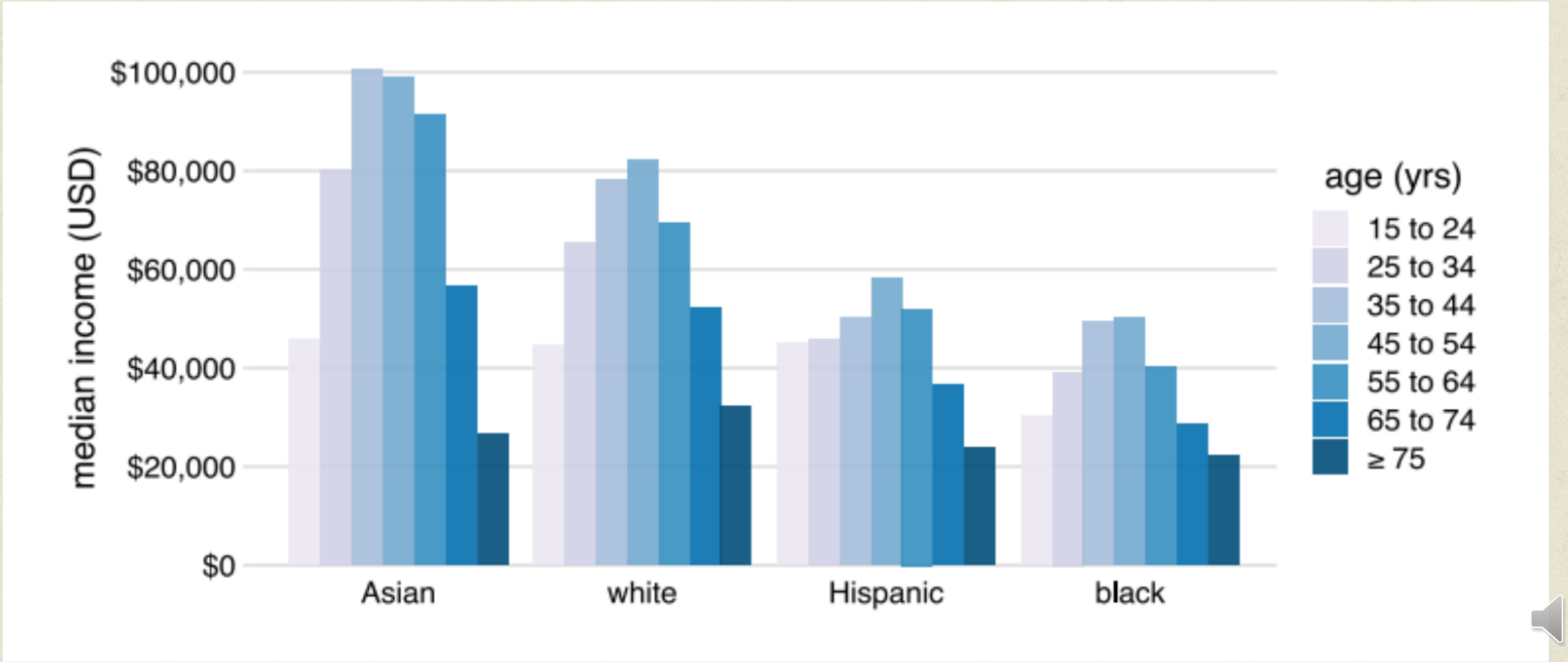
점(dots)을 선호하는 경우



Grouped bars



Grouped bars



Grouped bars