Exercise 1

- Explore the TfL bike share data visually:
  create a timeseries of reported bike shares on weekend days
  - Highlight day and night encoded by colors and shapes.
  - Connect the points of each period with lines.
    - What is the difference between `geom_line()` and `geom_path()`?
  - Apply your favorite theme to the plot.
  - Add meaningful labels.
  - Bonus: use shape to encode Saturday vs Sunday instead.
- Save the plot as a vector graphic with a decent plot size.

Import the Data Set

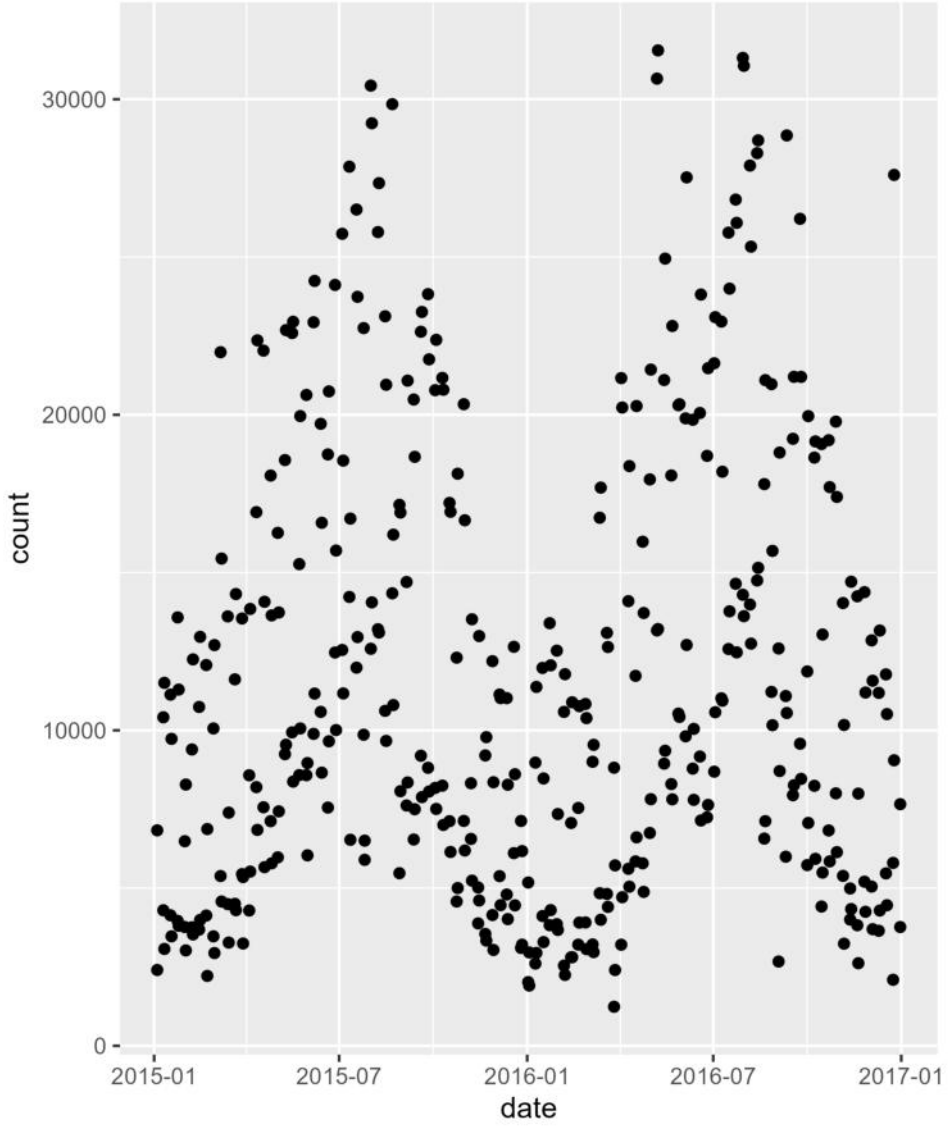
```
bikes <- readr::read_csv(
  here::here("data", "london-bikes-custom.csv"),
  col_types = "Dcfffilllddddc"
)

bikes$season <- forcats::fct_inorder(bikes$season)

library(tidyverse)
```

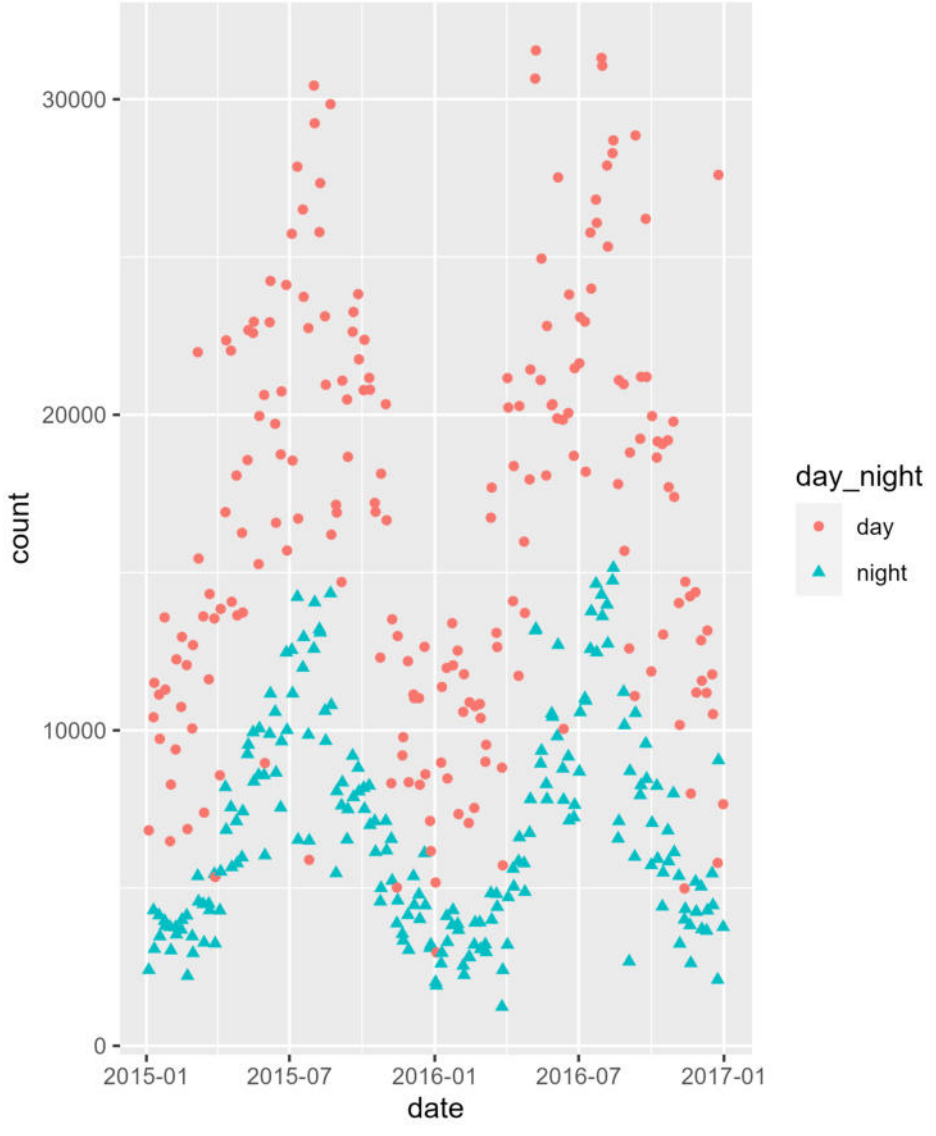
Scatterplot Counts vs. Date

```
1  ggplot(
2      filter(bikes, is_weekend == TRUE),
3      aes(x = date, y = count)
4    ) +
5    geom_point()
```



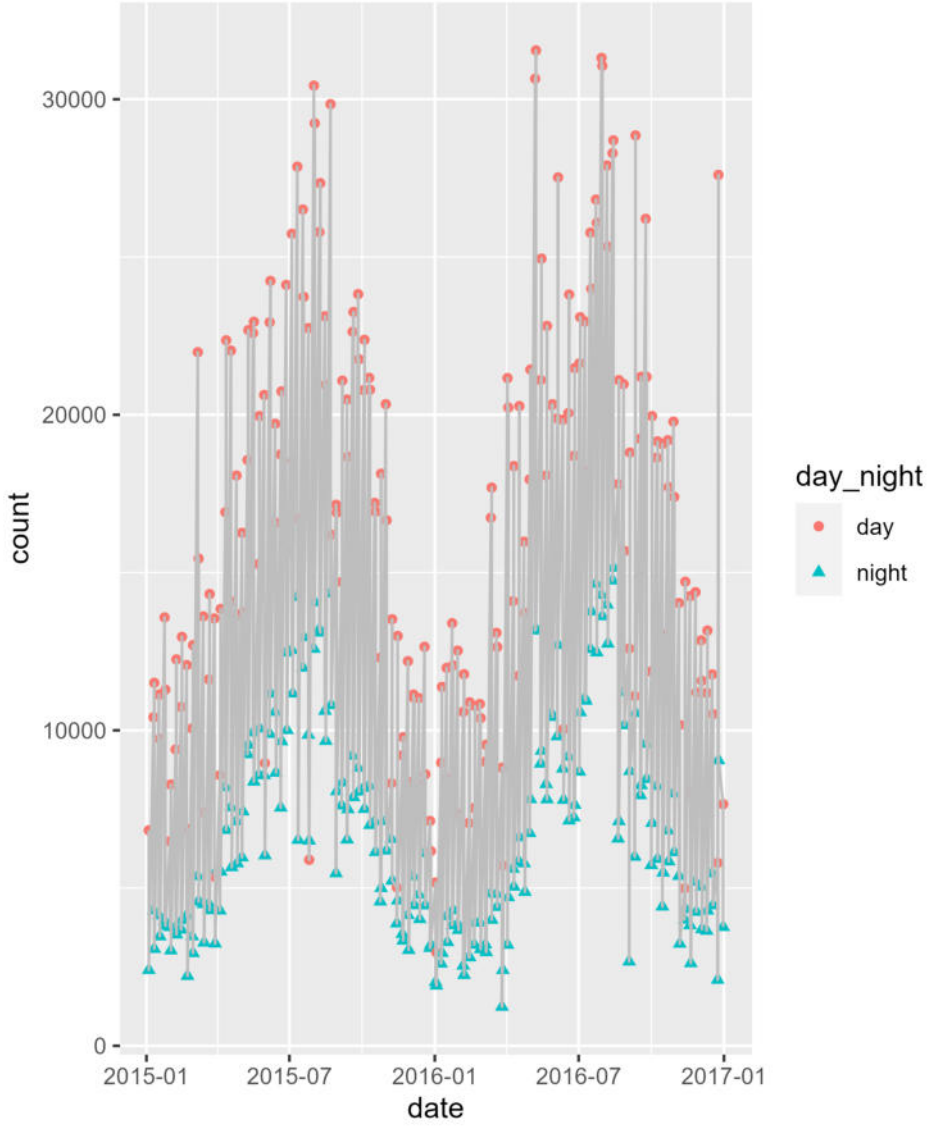
Encode Day Period by Colors and Shapes

```
ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_point(
    aes(color = day_night,
        shape = day_night)
  )
```



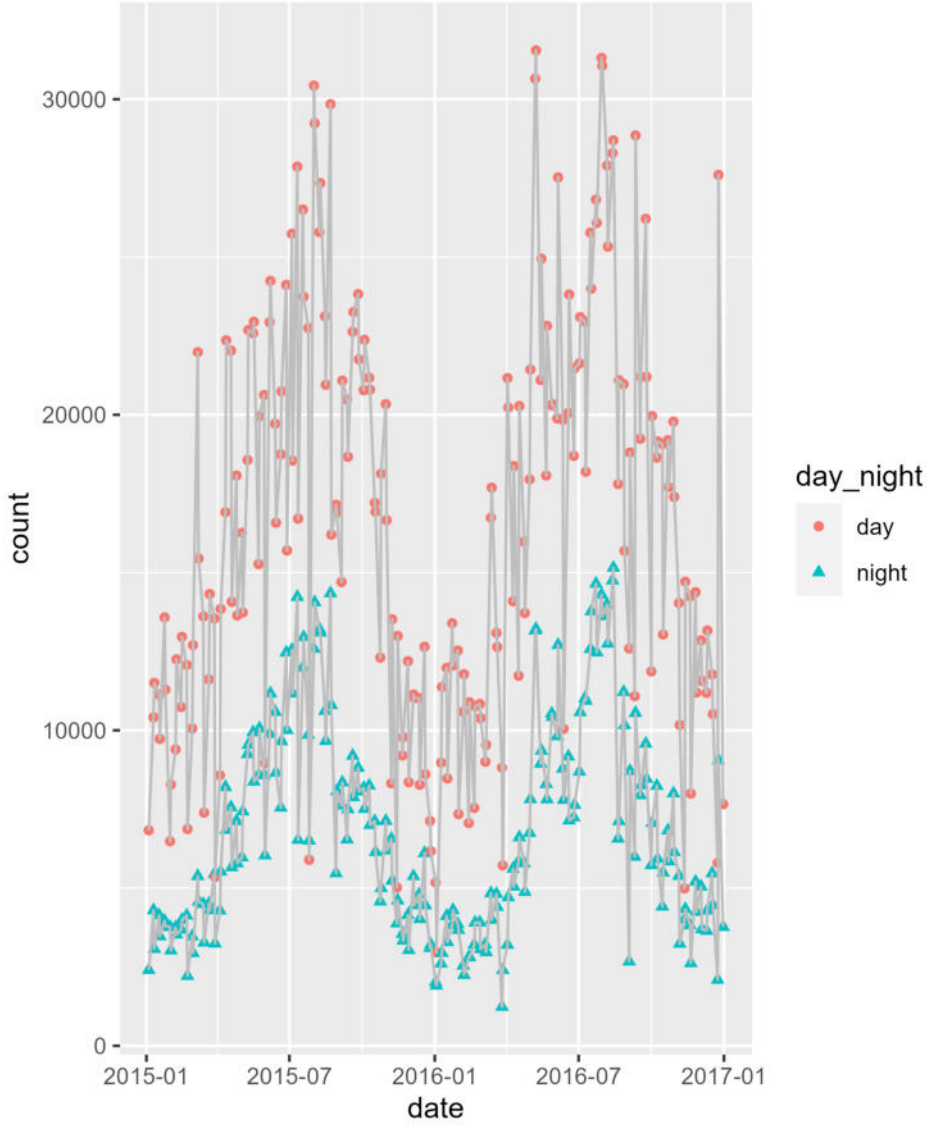
Add Line

```
ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_point(
    aes(color = day_night,
        shape = day_night)
  ) +
  geom_line(
    color = "grey"
  )
```



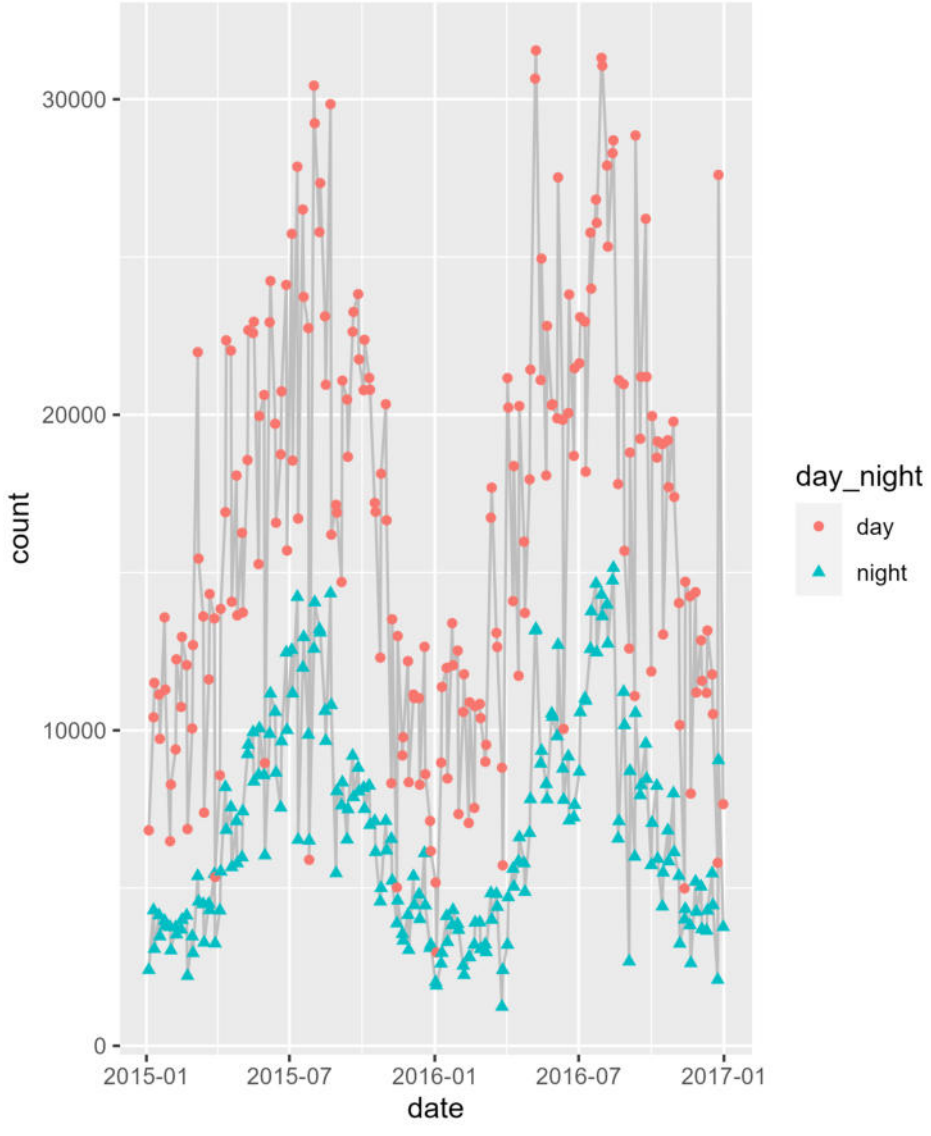
Group Lines by Day Period

```
ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_point(
    aes(color = day_night,
        shape = day_night)
  ) +
  geom_line(
    aes(group = day_night),
    color = "grey"
  )
```



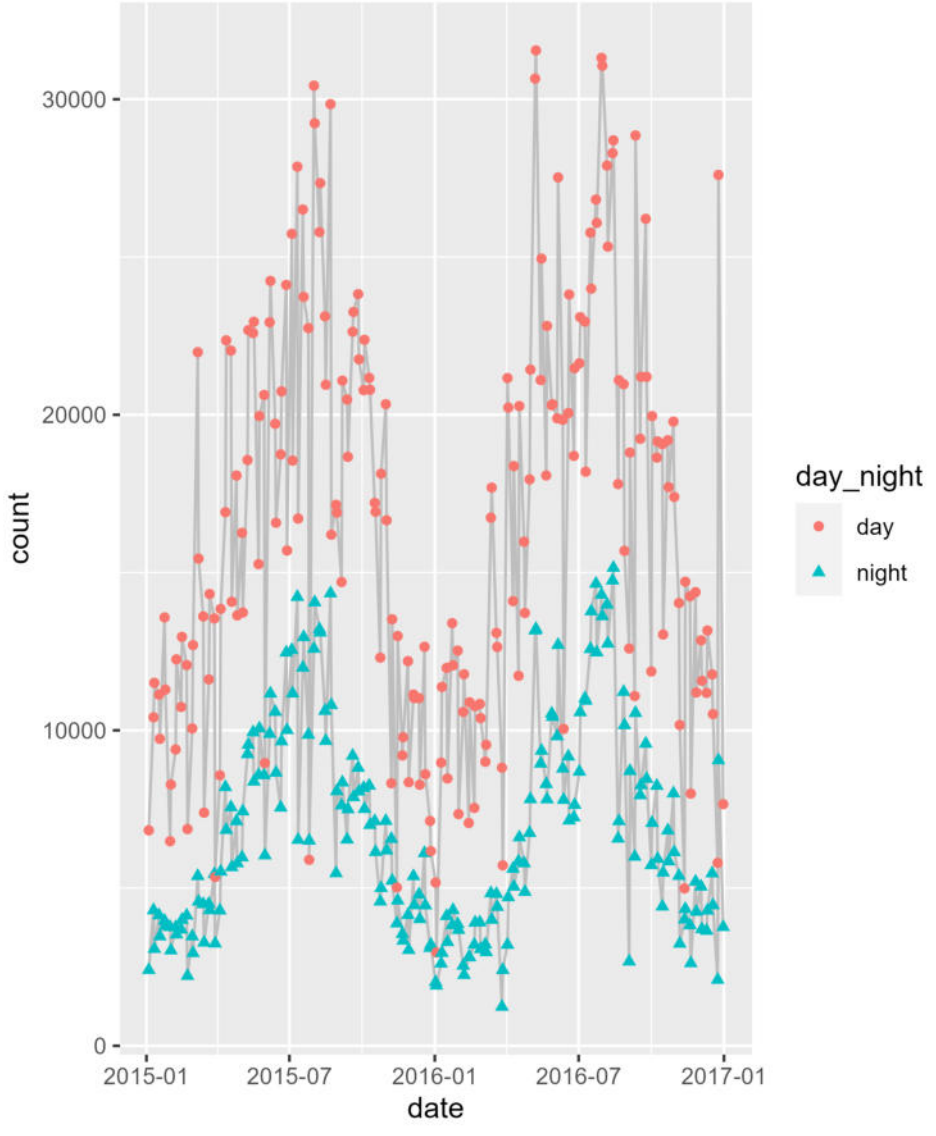
Order Layers

```
ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_line(
    aes(group = day_night),
    color = "grey"
  ) +
  geom_point(
    aes(color = day_night,
        shape = day_night)
  )
```



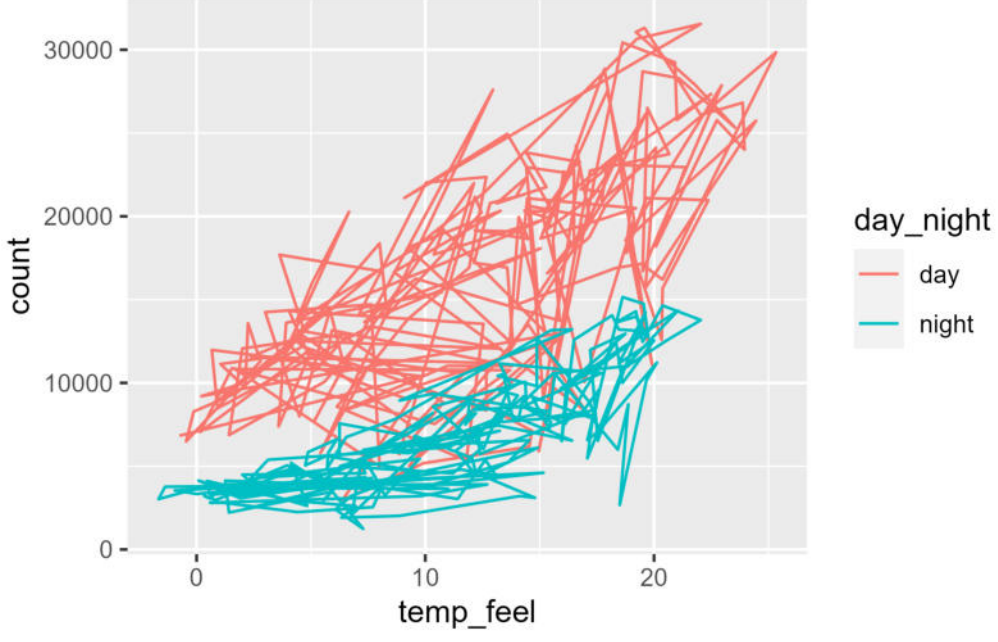
Use `geom_path()` instead

```
ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_path(
    aes(group = day_night),
    color = "grey"
  ) +
  geom_point(
    aes(color = day_night,
        shape = day_night)
  )
```

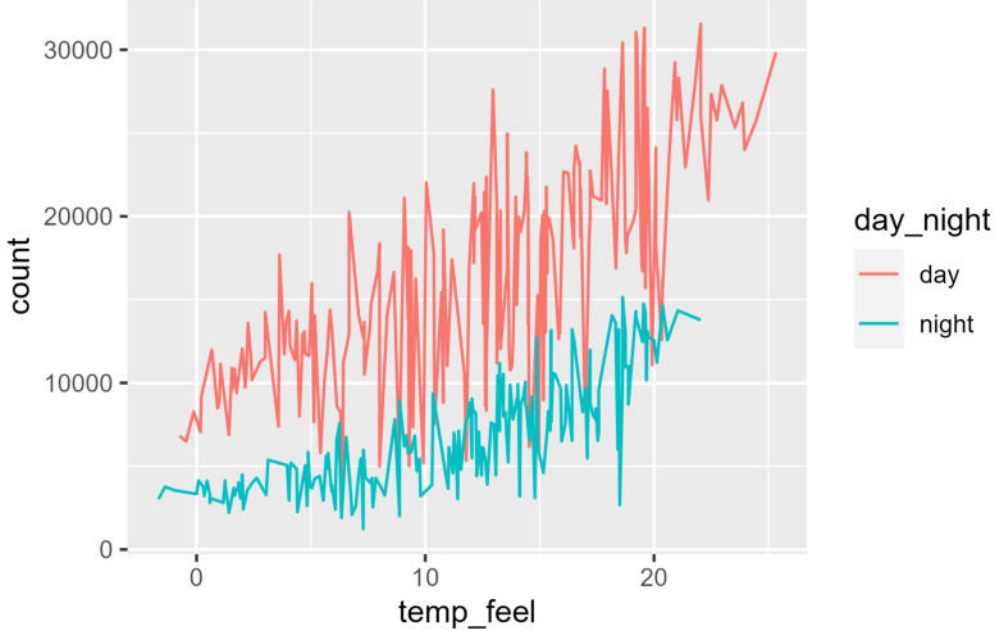


`geom_line()` vs. `geom_path()`

```
1  ggplot(
2      filter(bikes, is_weekend == TRUE),
3      aes(x = temp_feel, y = count)
4    ) +
5    geom_path(
6      aes(color = day_night)
7    )
```



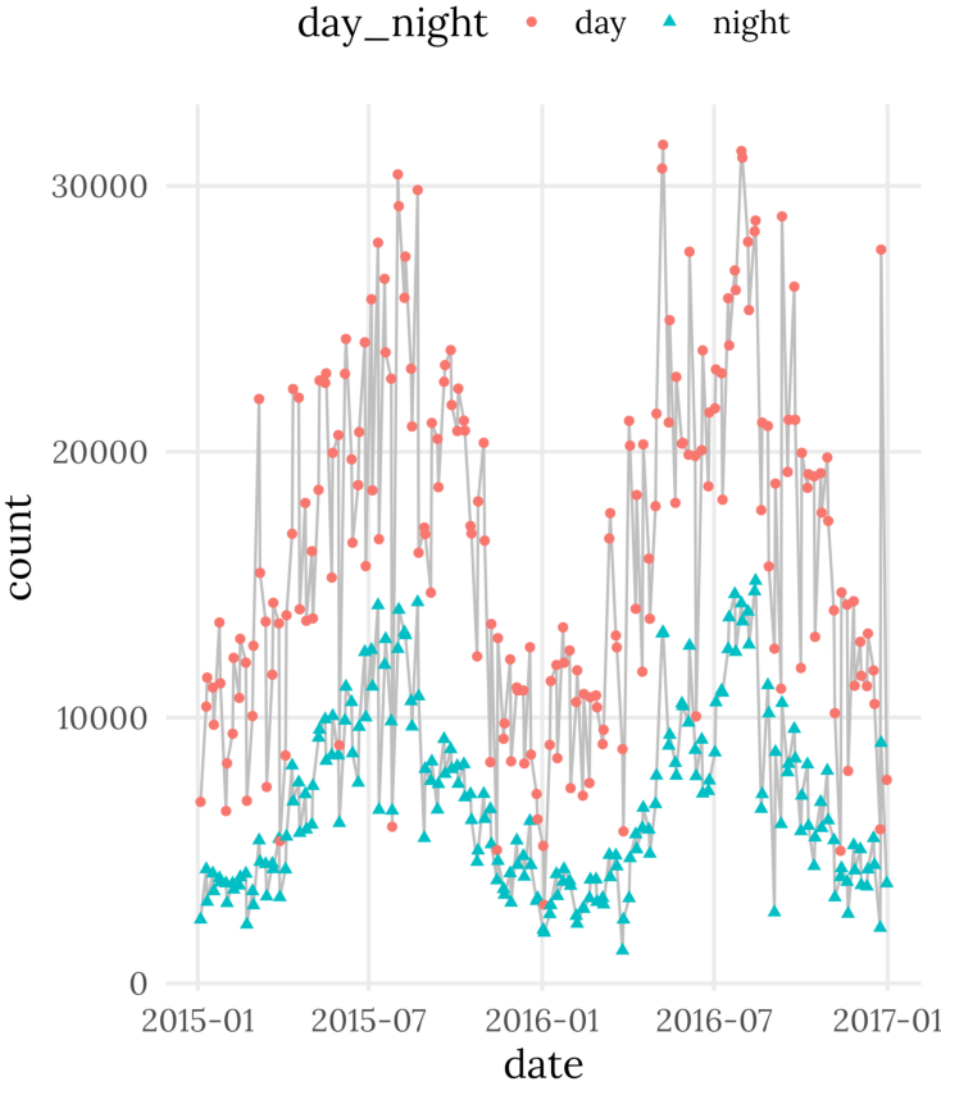

```
1  ggplot(
2      filter(bikes, is_weekend == TRUE),
3      aes(x = temp_feel, y = count)
4    ) +
5    geom_line(
6      aes(color = day_night)
7    )
```



Apply a Theme

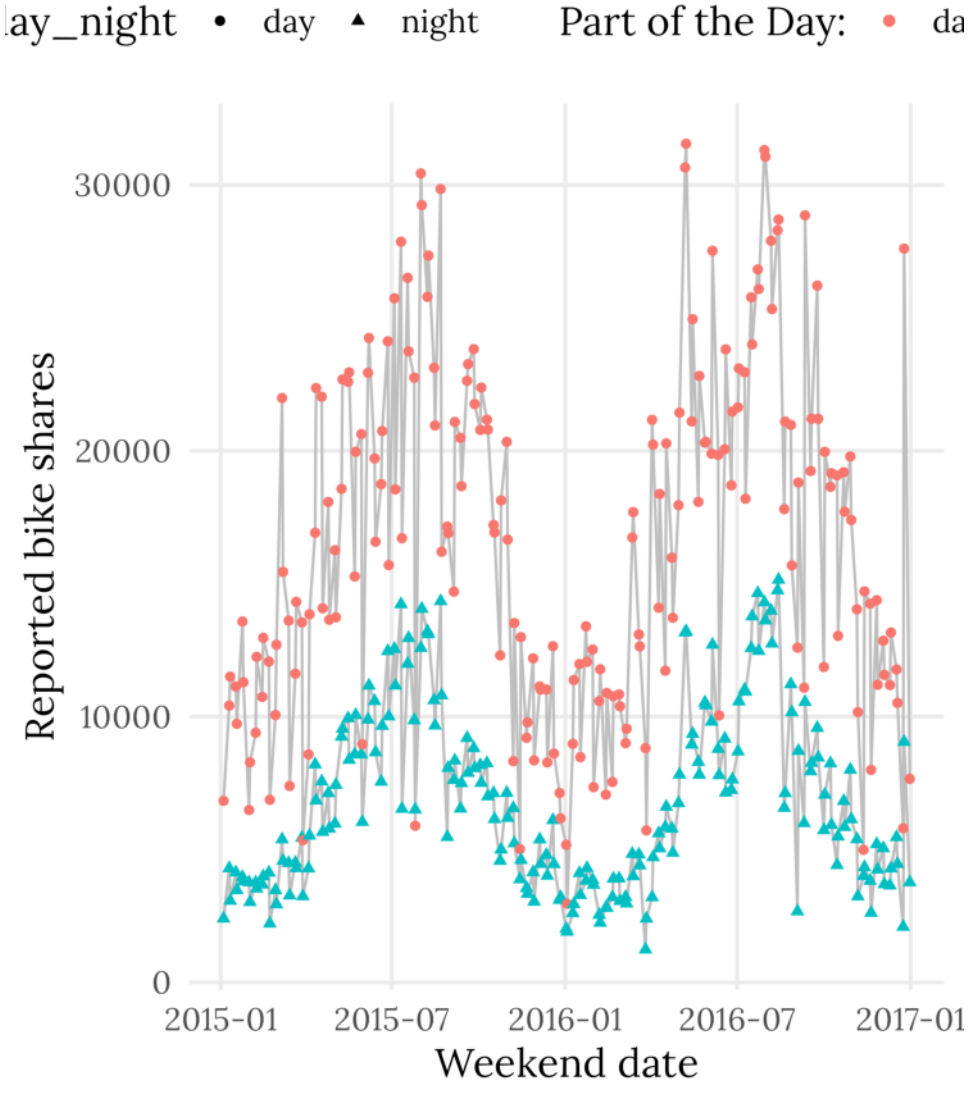
```
g <- ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_line(
    aes(group = day_night),
    color = "grey"
  ) +
  geom_point(
    aes(color = day_night,
        shape = day_night)
  )

g +
  theme_minimal(
    base_size = 15,
    base_family = "Lora"
  ) +
  theme(
    legend.position = "top",
    panel.grid.minor = element_blank()
  )
```



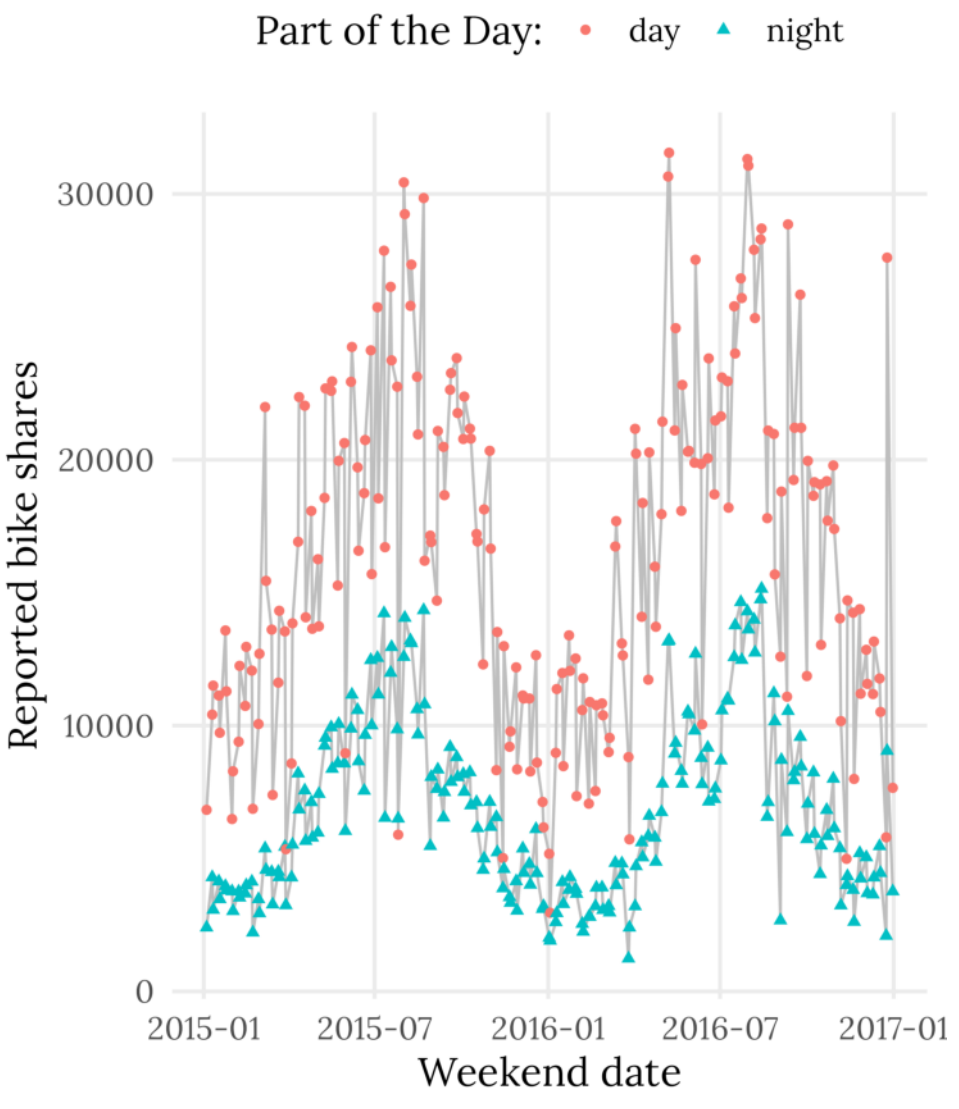
Add Meaningful Labels

```
g +
  labs(
    x = "Weekend date",
    y = "Reported bike shares",
    color = "Part of the Day:"
  ) +
  theme_minimal(
    base_size = 15,
    base_family = "Lora"
  ) +
  theme(
    legend.position = "top",
    panel.grid.minor = element_blank()
  )
```



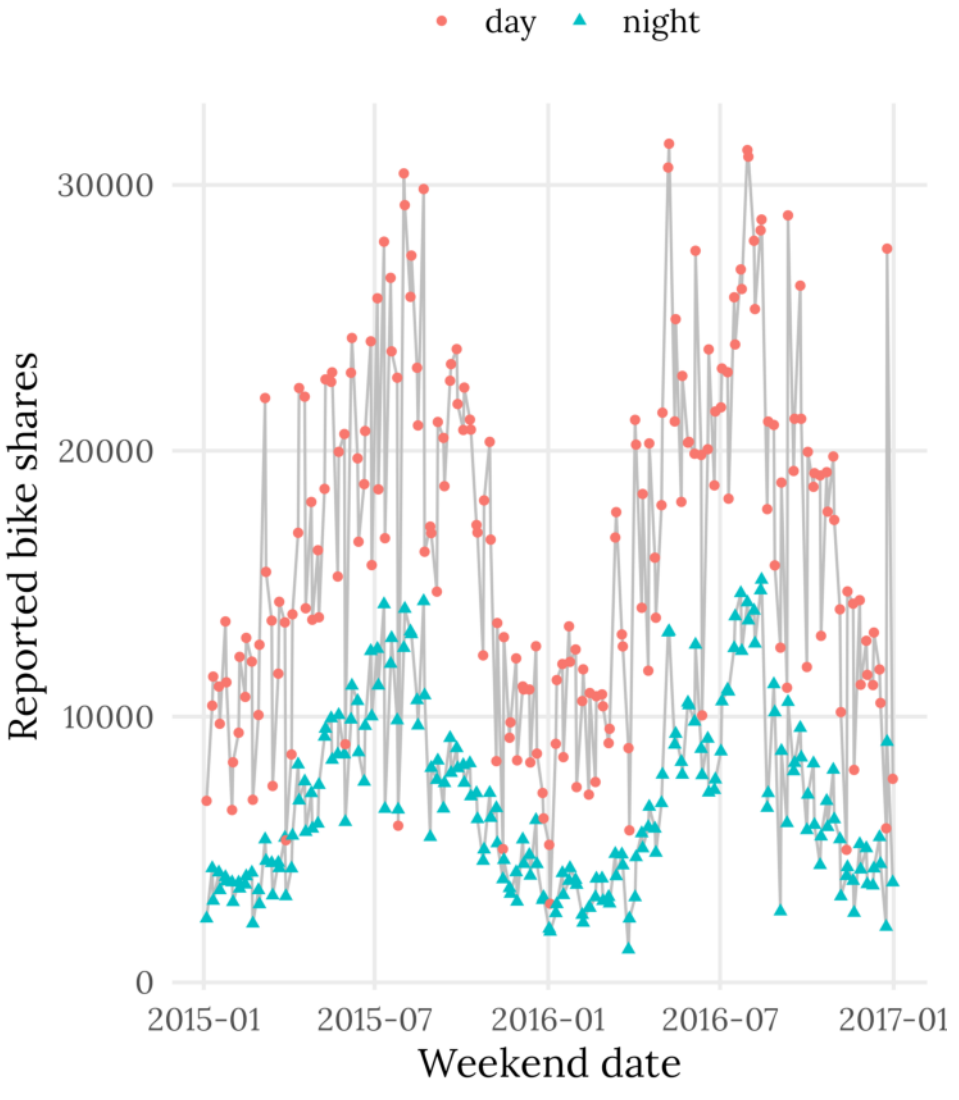
Add Meaningful Labels

```
g +
  labs(
    x = "Weekend date",
    y = "Reported bike shares",
    color = "Part of the Day:",
    shape = "Part of the Day:"
  ) +
  theme_minimal(
    base_size = 15,
    base_family = "Lora"
  ) +
  theme(
    legend.position = "top",
    panel.grid.minor = element_blank()
  )
```



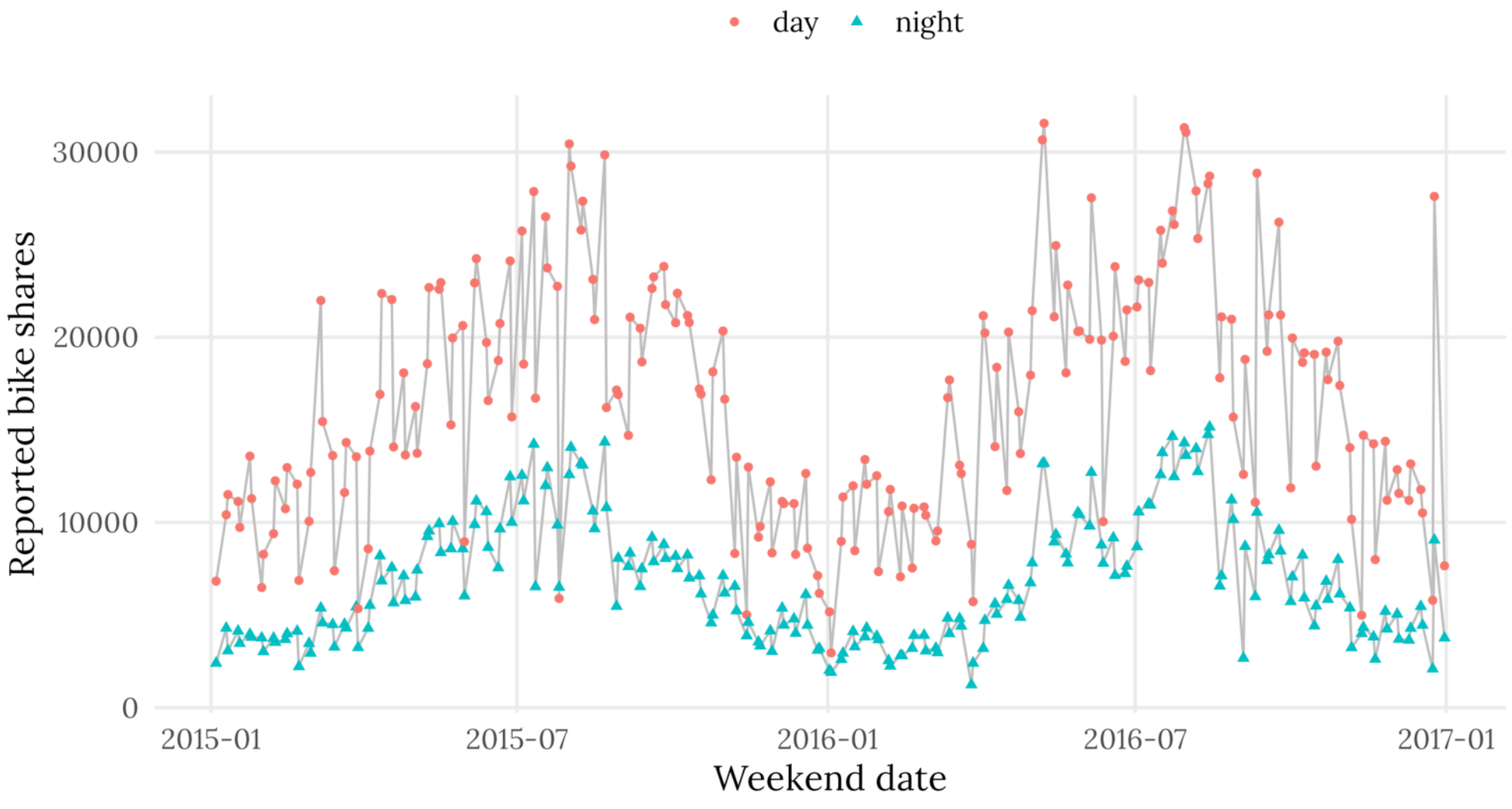
Add Meaningful Labels

```
g +
  labs(
    x = "Weekend date",
    y = "Reported bike shares",
    color = NULL,
    shape = NULL
  ) +
  theme_minimal(
    base_size = 15,
    base_family = "Lora"
  ) +
  theme(
    legend.position = "top",
    panel.grid.minor = element_blank()
  )
```



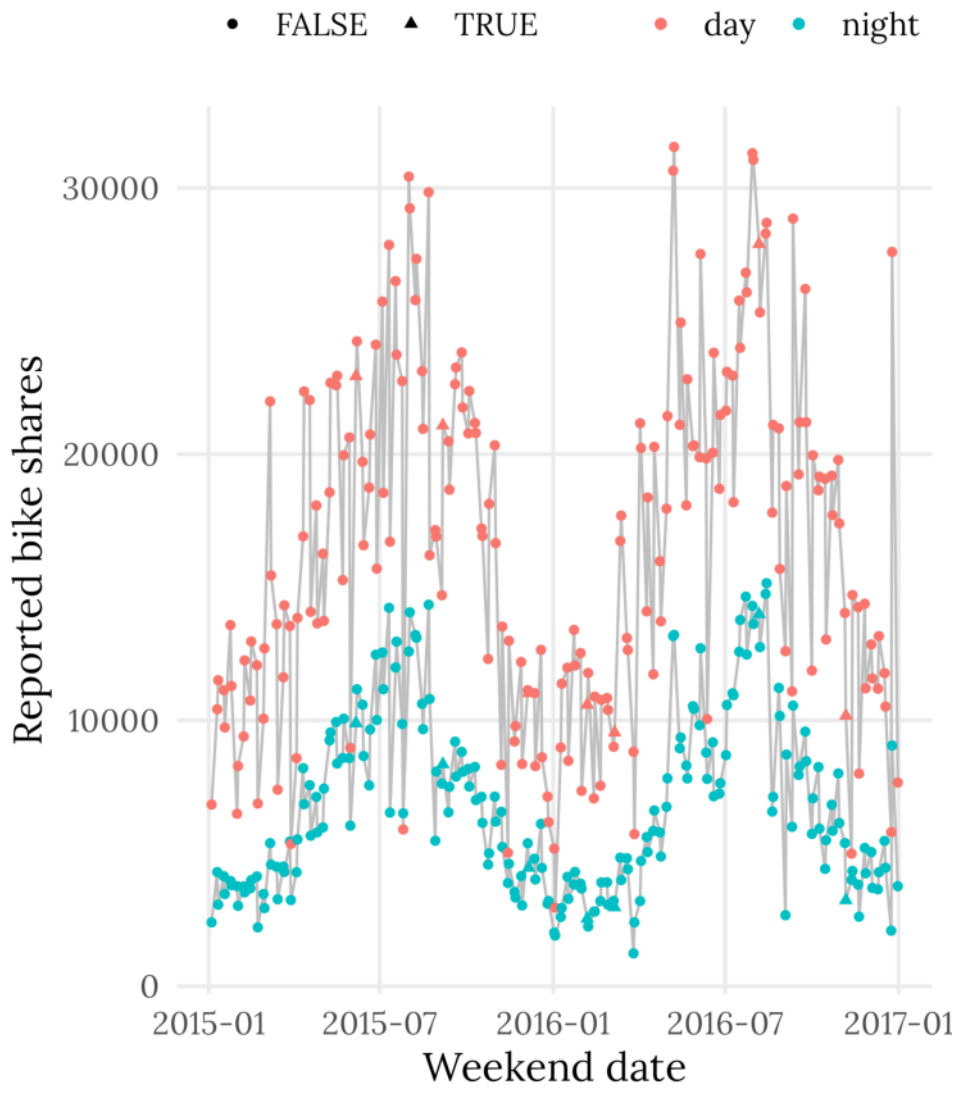
Save the Plot

```
1 ggsave(here::here("exercises", "plots", "02_concepts_pt1_ex1.pdf"),
2        width = 9, height = 5, device = cairo_pdf)
```



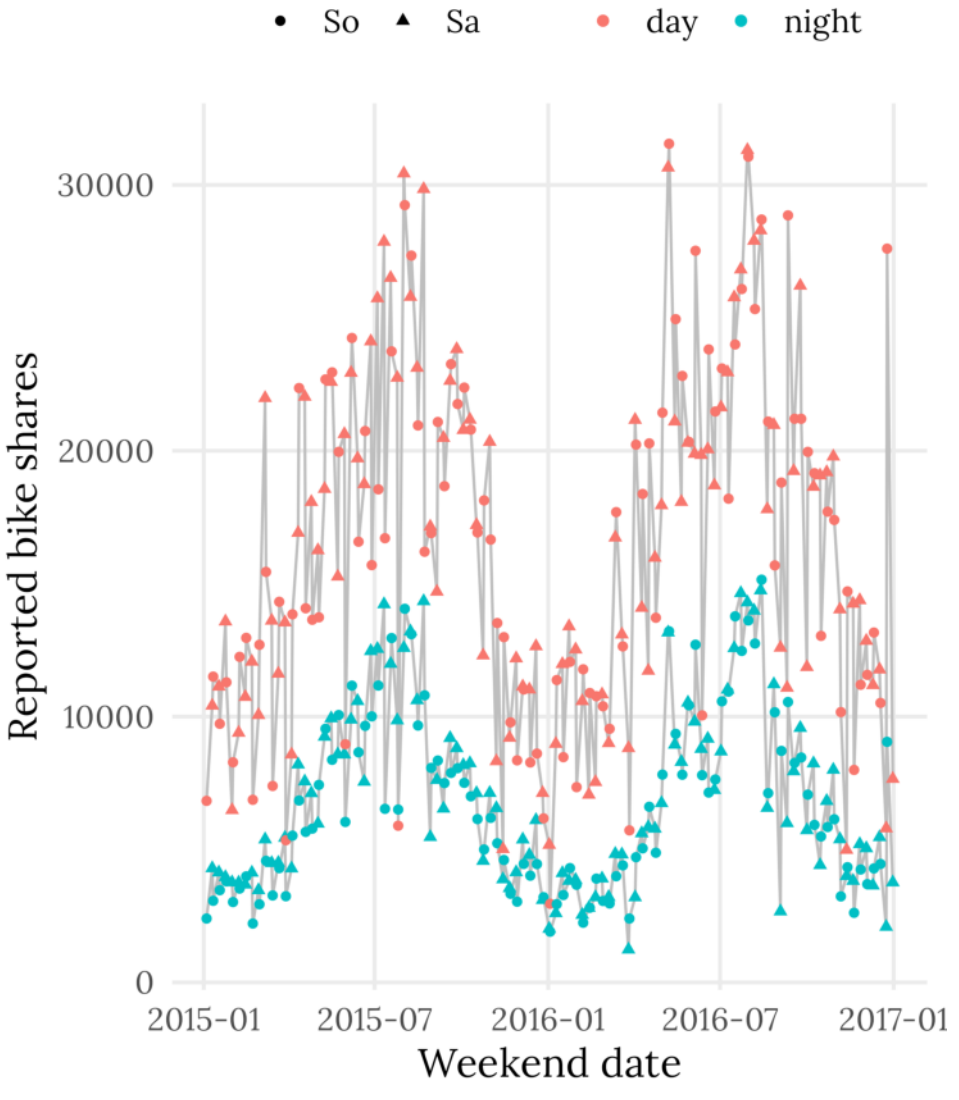
Bonus: Use Shape to Encode Sat vs Sun

```
ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_line(
    aes(group = day_night),
    color = "grey"
  ) +
  geom_point(
    aes(color = day_night,
        shape = lubridate::day(date) == 6)
  ) +
  labs(
    x = "Weekend date",
    y = "Reported bike shares",
    color = NULL,
    shape = NULL
  ) +
  theme_minimal(
    base_size = 15,
    base_family = "Lora"
  ) +
  theme(
```



Bonus: Use Shape to Encode Sat vs Sun

```
ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_line(
    aes(group = day_night),
    color = "grey"
  ) +
  geom_point(
    aes(color = day_night,
        shape = lubridate::wday(date, label =
  ) +
  labs(
    x = "Weekend date",
    y = "Reported bike shares",
    color = NULL,
    shape = NULL
  ) +
  theme_minimal(
    base_size = 15,
    base_family = "Lora"
  ) +
  theme(
```



Bonus: Use Shape to Encode Sat vs Sun

```
invisible(
  Sys.setlocale("LC_TIME", "C")
)

ggplot(
    filter(bikes, is_weekend == TRUE),
    aes(x = date, y = count)
  ) +
  geom_line(
    aes(group = day_night),
    color = "grey"
  ) +
  geom_point(
    aes(color = day_night,
        shape = lubridate::wday(date, label =
  ) +
  labs(
    x = "Weekend date",
    y = "Reported bike shares",
    color = NULL,
    shape = NULL
  ) +
  theme_minimal(
```