

# *Graphic Design with ggplot2*

**Concepts of the {ggplot2} Package Pt. 1:**

Solution Exercise 1

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# Exercise 1

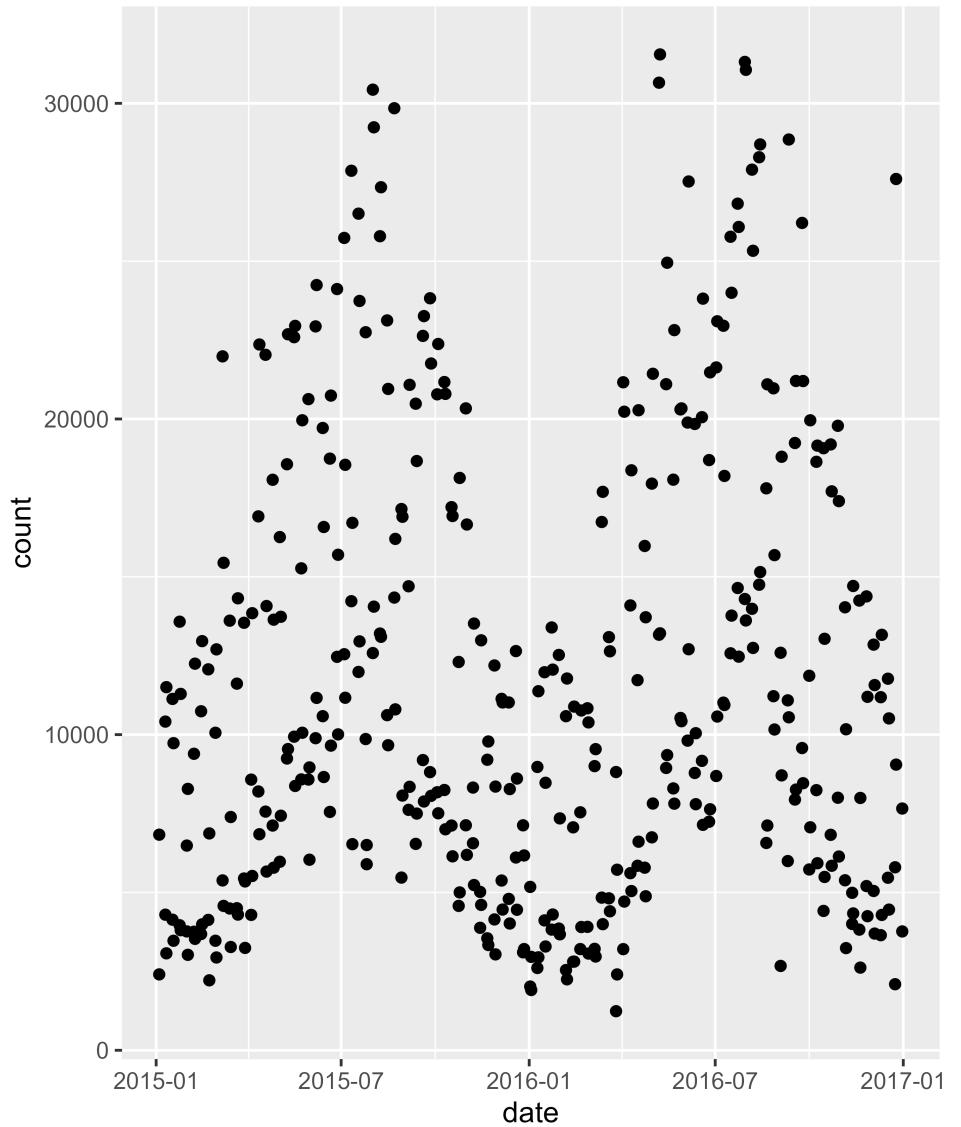
- Explore the TfL bike share data visually:  
**create a timeseries of reported bike shares on weekend days**
  - Highlight day and night encoded by colors and shapes.
  - Connect the points of each period with lines.
    - What is the difference between `geom_line()` and `geom_path()`?
  - Apply your 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

```
1 bikes <- readr::read_csv(  
2   "https://raw.githubusercontent.com/z3tt/graphic-design-ggplot2/main/data/london-bikes-custom.csv",  
3   col_types = "Dcffffillllddddc"  
4 )  
5  
6 bikes$season <- forcats::fct_inorder(bikes$season)  
7  
8 library(tidyverse)
```

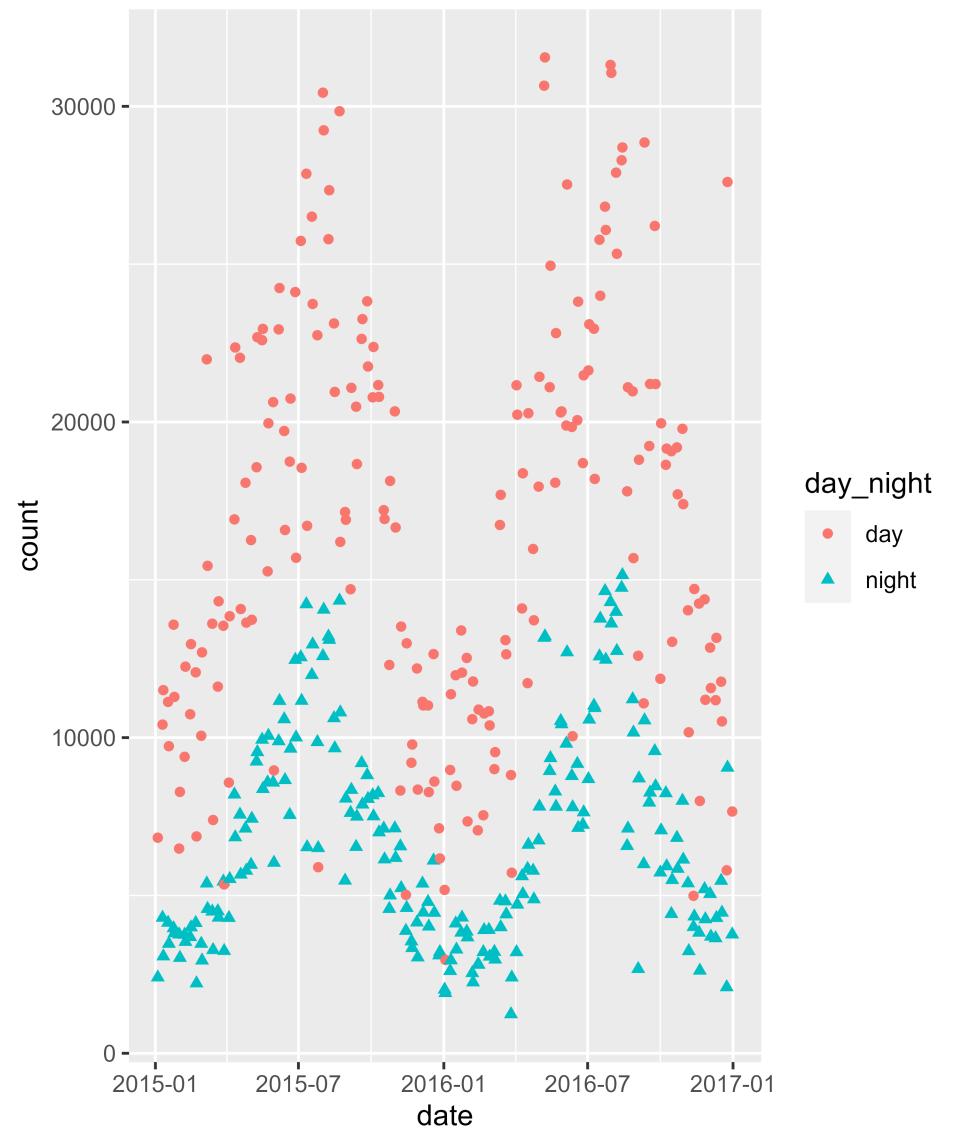
# Scatterplot Counts vs. Date

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



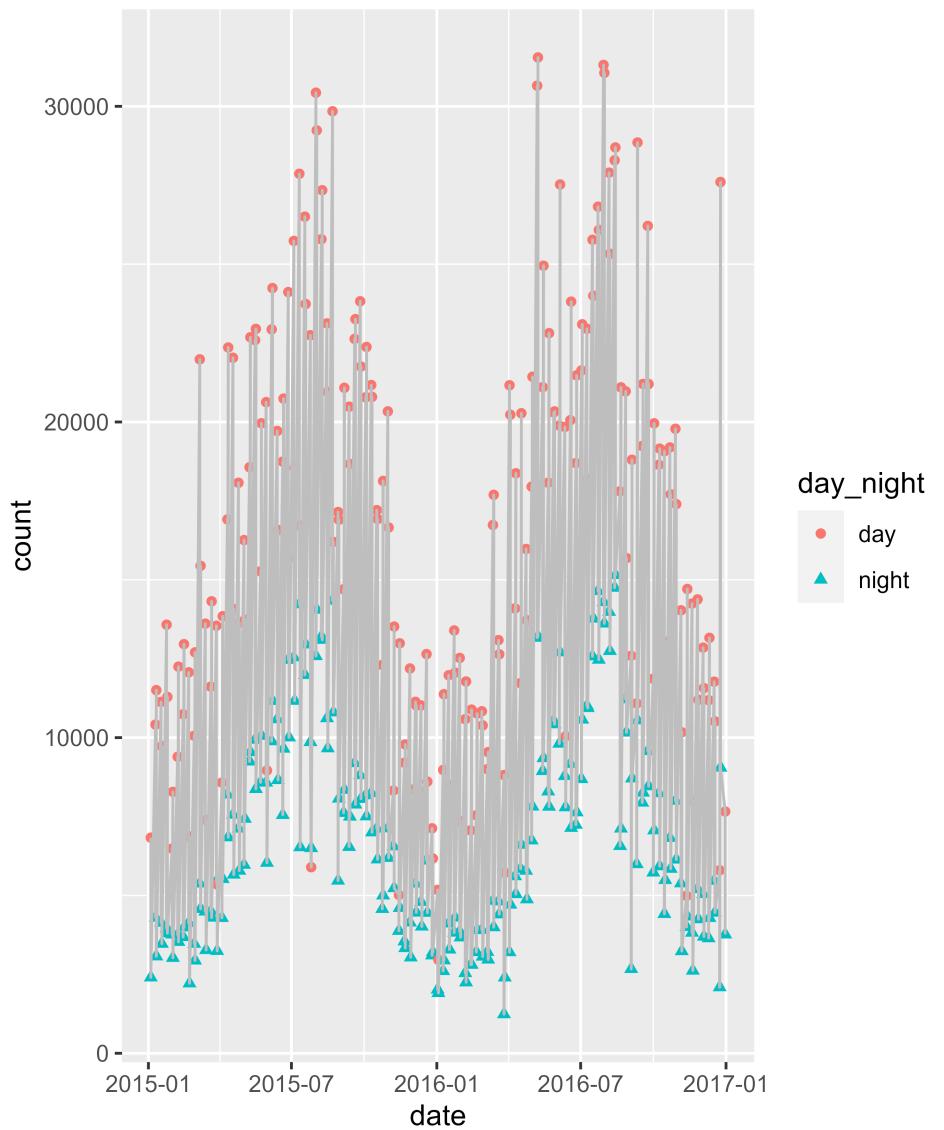
# Encode Day Period by Colors and Shapes

```
1 ggplot(  
2   filter(bikes, is_weekend == TRUE),  
3   aes(x = date, y = count))  
4 ) +  
5 geom_point(  
6   aes(color = day_night,  
7     shape = day_night))  
8 )
```



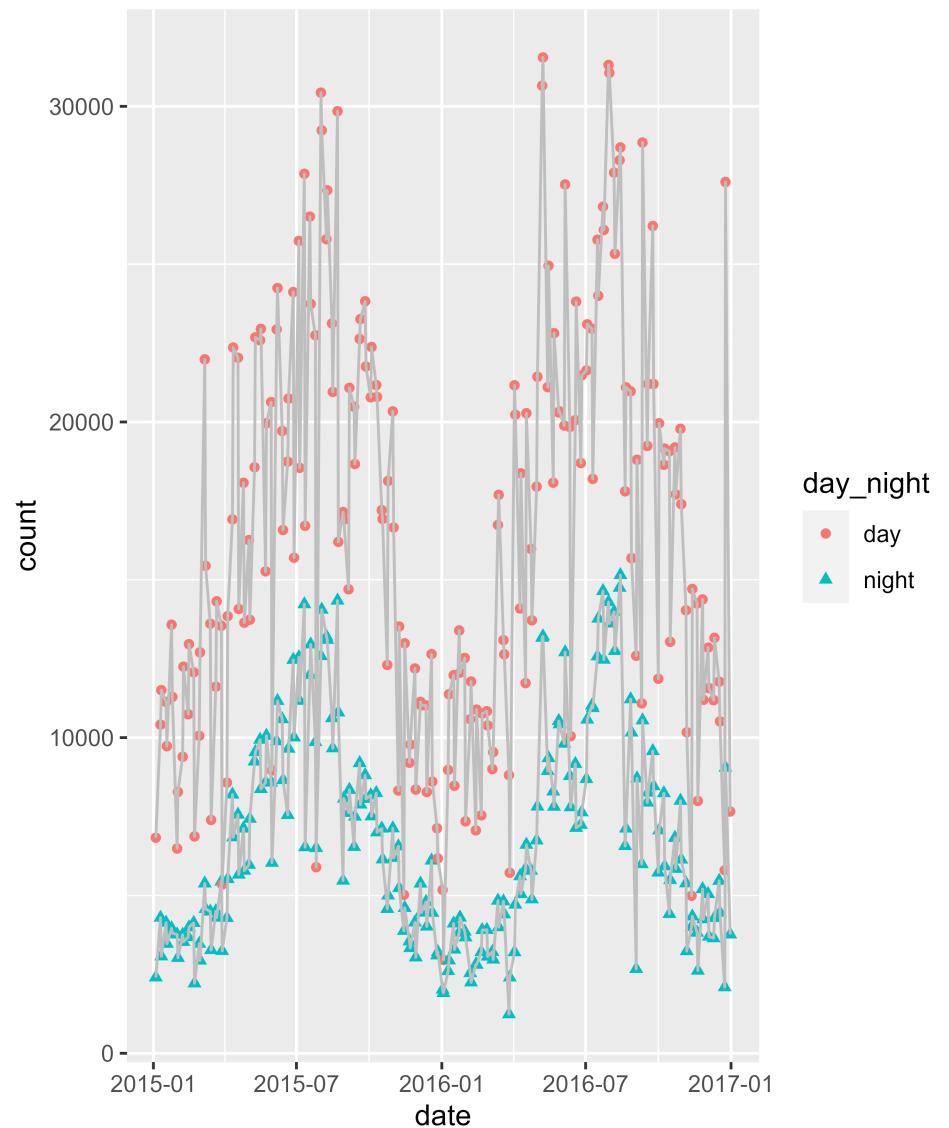
# Add Line

```
1 ggplot(  
2     filter(bikes, is_weekend == TRUE),  
3     aes(x = date, y = count))  
4 ) +  
5 geom_point(  
6     aes(color = day_night,  
7           shape = day_night))  
8 ) +  
9 geom_line(  
10    color = "grey")  
11 )
```



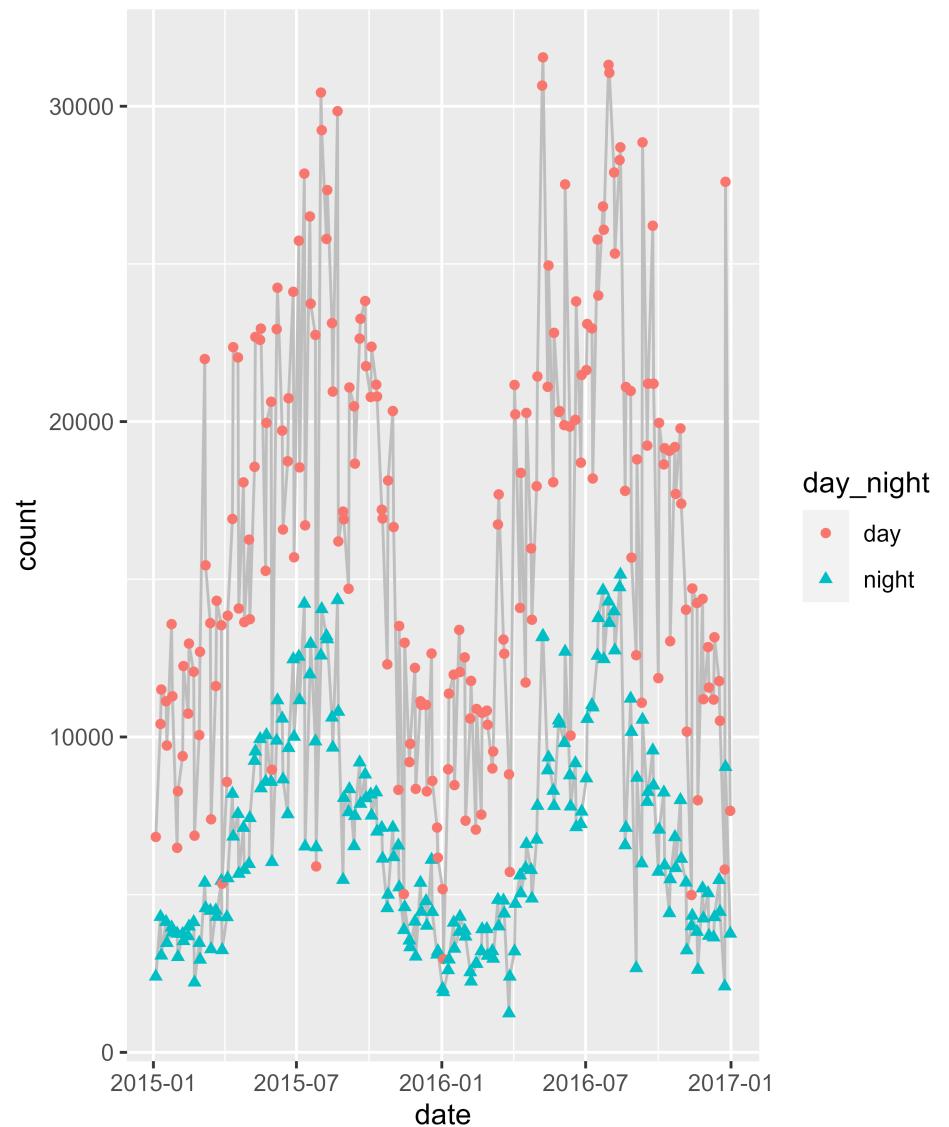
# Group Lines by Day Period

```
1 ggplot(  
2   filter(bikes, is_weekend == TRUE),  
3   aes(x = date, y = count))  
4 ) +  
5   geom_point(  
6     aes(color = day_night,  
7           shape = day_night))  
8 ) +  
9   geom_line(  
10    aes(group = day_night),  
11    color = "grey")  
12 )
```



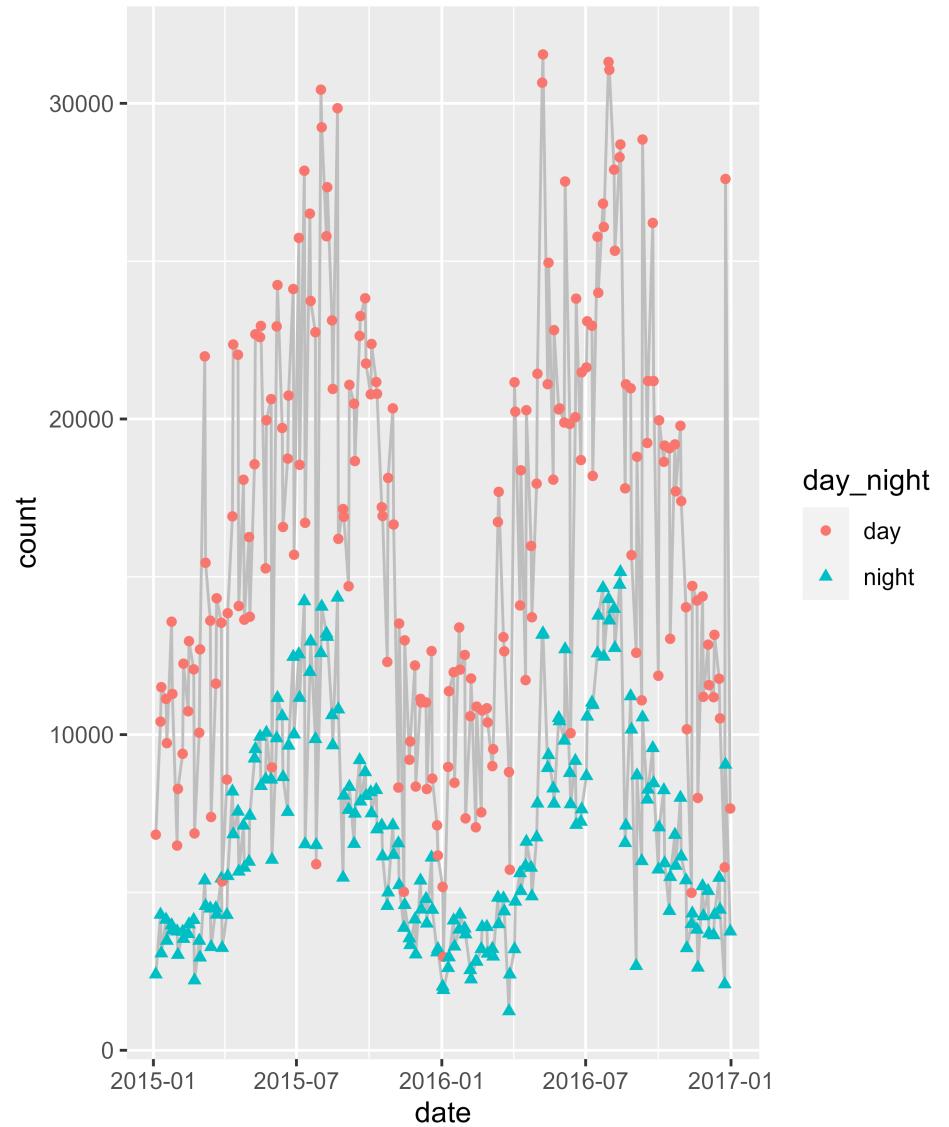
# Order Layers

```
1 ggplot(  
2   filter(bikes, is_weekend == TRUE),  
3   aes(x = date, y = count))  
4 ) +  
5   geom_line(  
6   aes(group = day_night),  
7   color = "grey")  
8 ) +  
9   geom_point(  
10  aes(color = day_night,  
11    shape = day_night))  
12 )
```



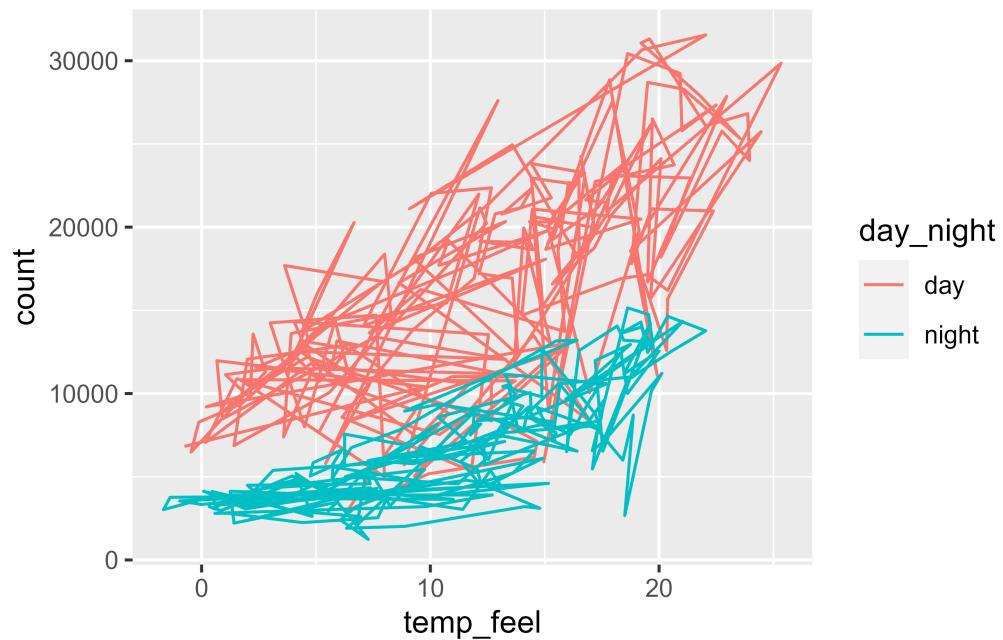
# Use `geom\_path()` instead

```
1 ggplot(  
2   filter(bikes, is_weekend == TRUE),  
3   aes(x = date, y = count))  
4 ) +  
5   geom_path(  
6     aes(group = day_night),  
7     color = "grey"  
8 ) +  
9   geom_point(  
10    aes(color = day_night,  
11           shape = day_night)  
12 )
```

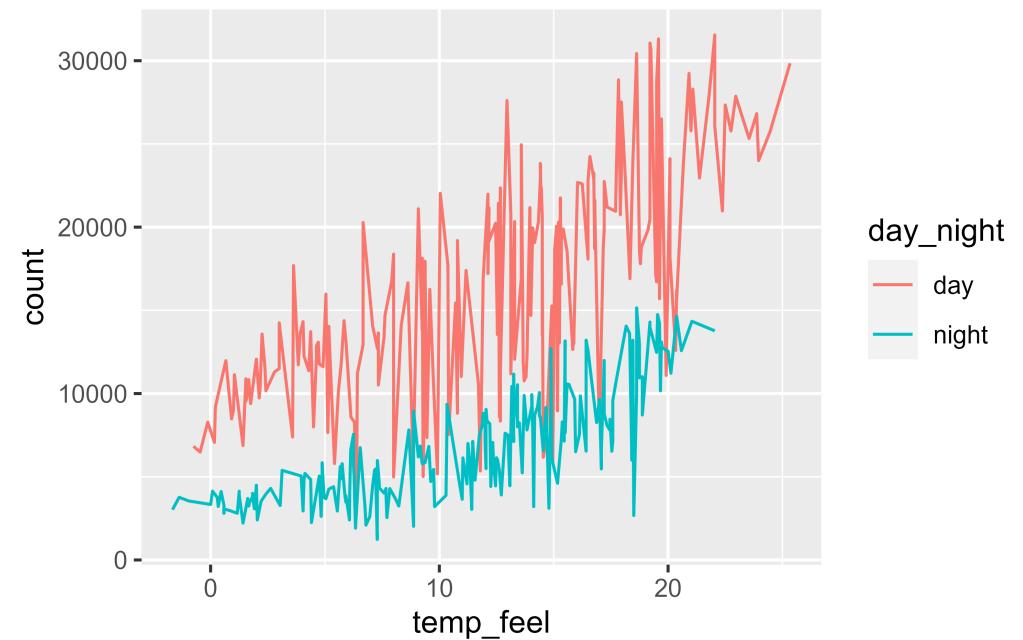


# ``geom_line()`` vs. ``geom_path()``

```
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 )
```

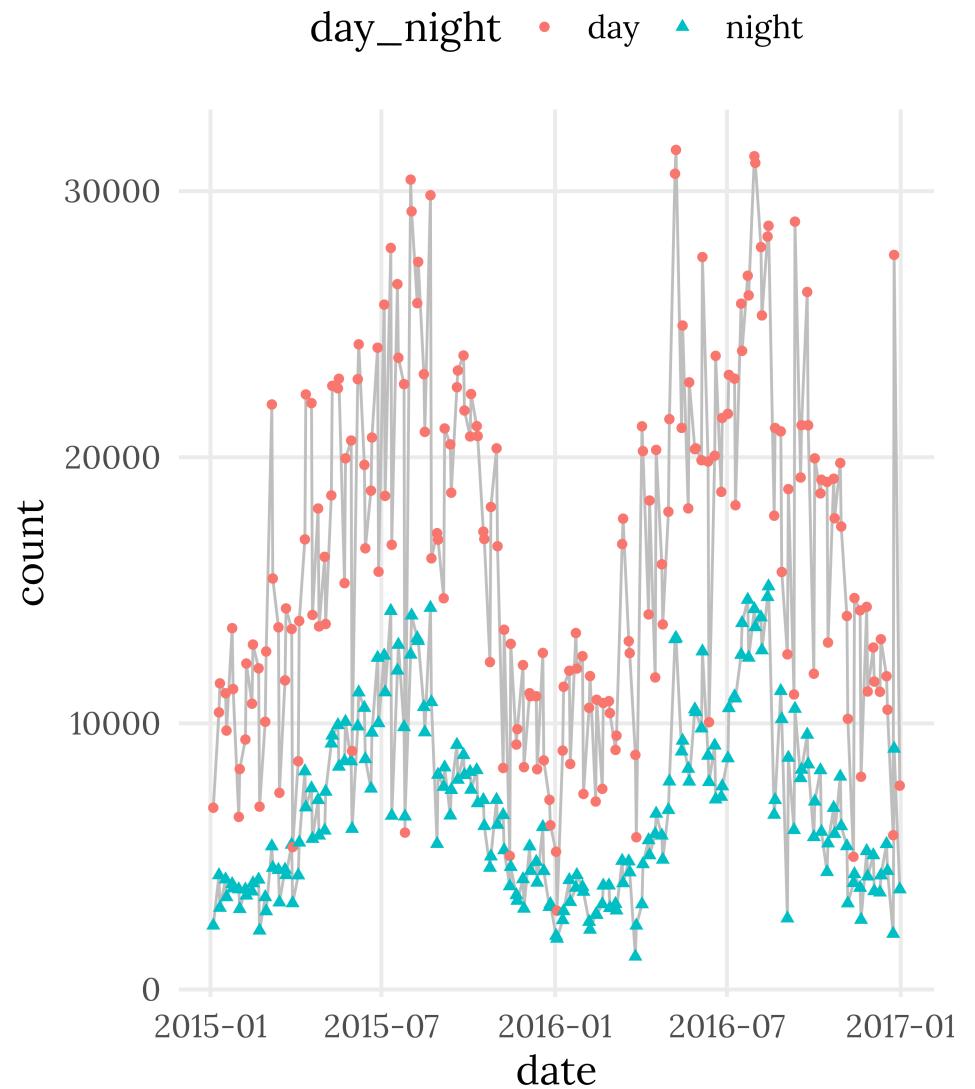


```
1 ggplot(  
2   filter(bikes, is_weekend == TRUE),  
3   aes(x = temp_feel, y = count)  
4 ) +  
5   geom_line(  
6   aes(color = day_night)  
7 )
```



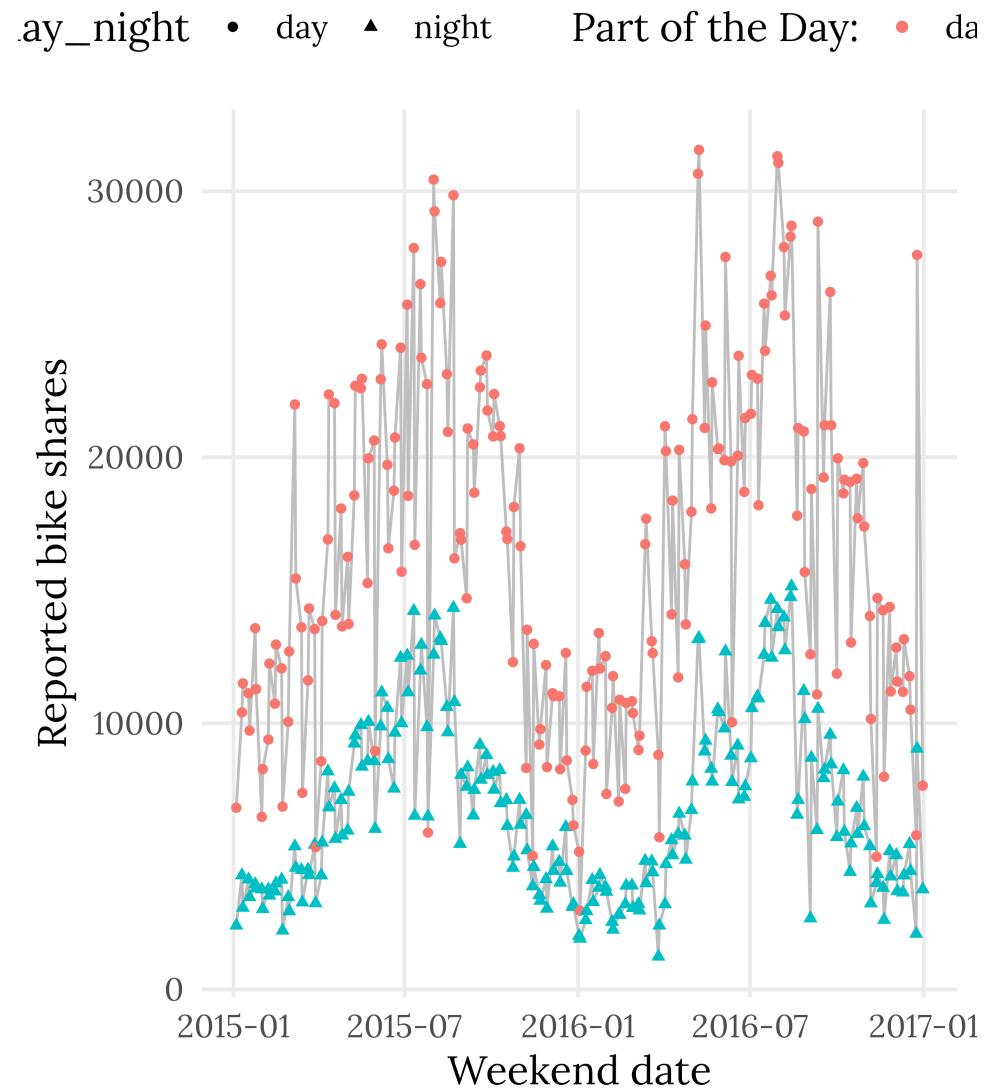
# Apply a Theme

```
1 g <- ggplot(  
2   filter(bikes, is_weekend == TRUE),  
3   aes(x = date, y = count))  
4 ) +  
5 geom_line(  
6   aes(group = day_night),  
7   color = "grey"  
8 ) +  
9 geom_point(  
10  aes(color = day_night,  
11    shape = day_night)  
12 )  
13  
14 g +  
15 theme_minimal(  
16   base_size = 15,  
17   base_family = "Lora"  
18 ) +  
19 theme(  
20   legend.position = "top",  
21   panel.grid.minor = element_blank()  
22 )
```



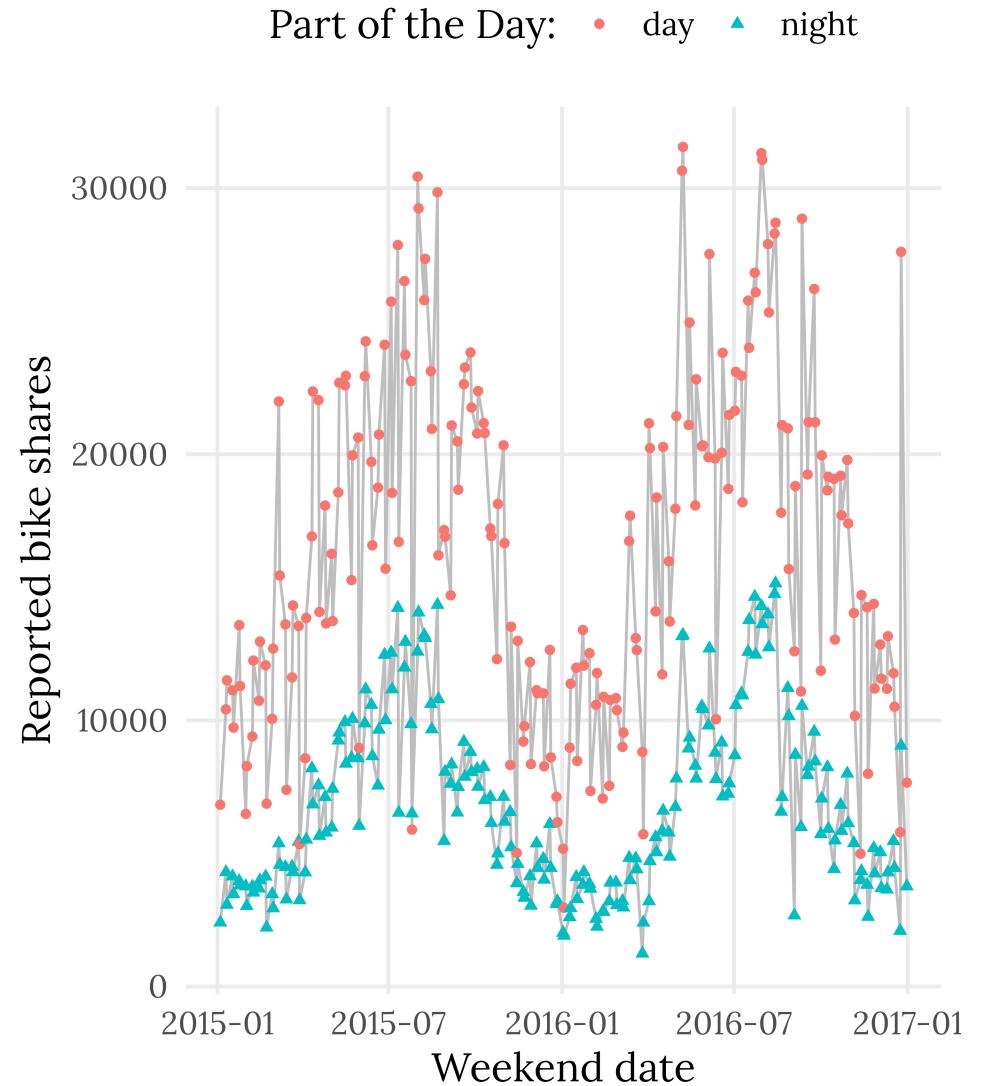
# Add Meaningful Labels

```
1 g +
2   labs(
3     x = "Weekend date",
4     y = "Reported bike shares",
5     color = "Part of the Day:"
6   ) +
7   theme_minimal(
8     base_size = 15,
9     base_family = "Lora"
10) +
11 theme(
12   legend.position = "top",
13   panel.grid.minor = element_blank()
14)
```



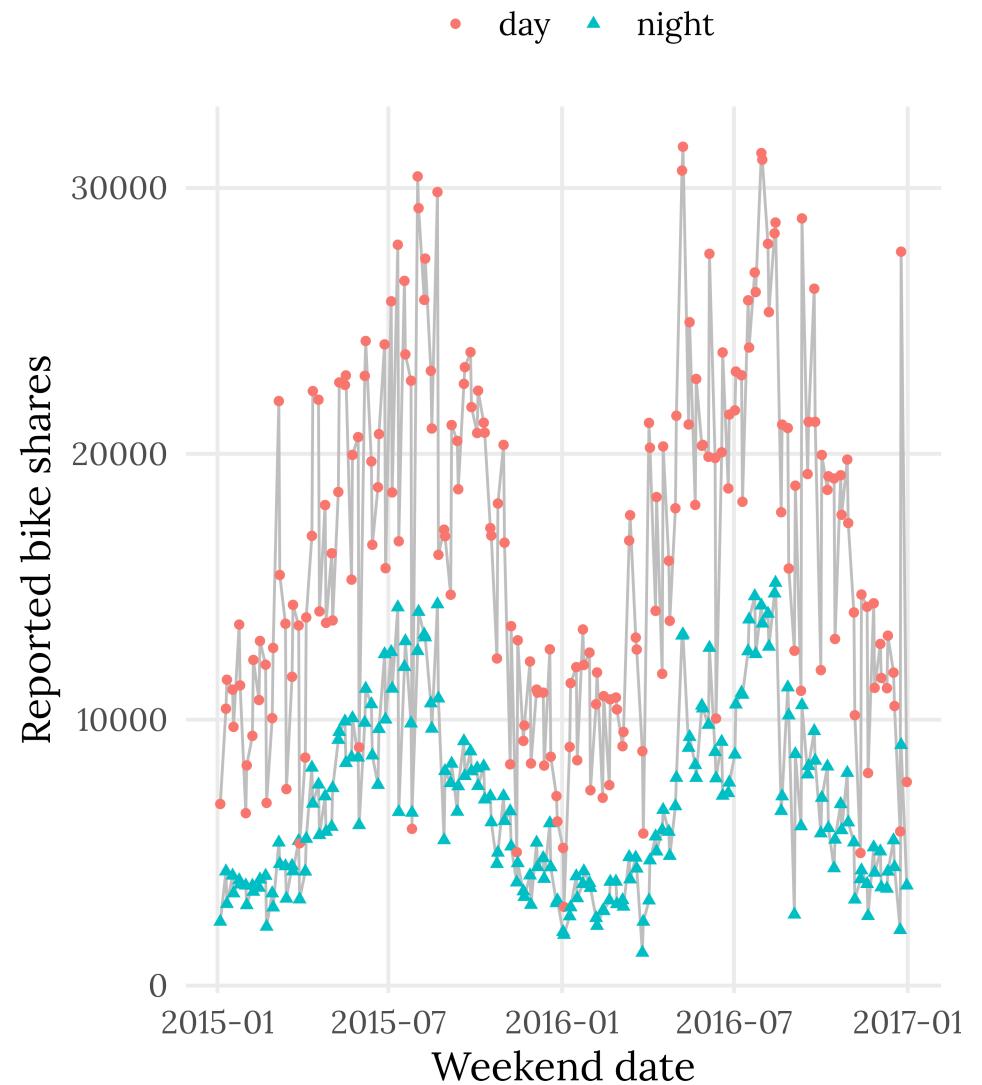
# Add Meaningful Labels

```
1 g +
2   labs(
3     x = "Weekend date",
4     y = "Reported bike shares",
5     color = "Part of the Day:",
6     shape = "Part of the Day:"
7   ) +
8   theme_minimal(
9     base_size = 15,
10    base_family = "Lora"
11  ) +
12  theme(
13    legend.position = "top",
14    panel.grid.minor = element_blank()
15 )
```



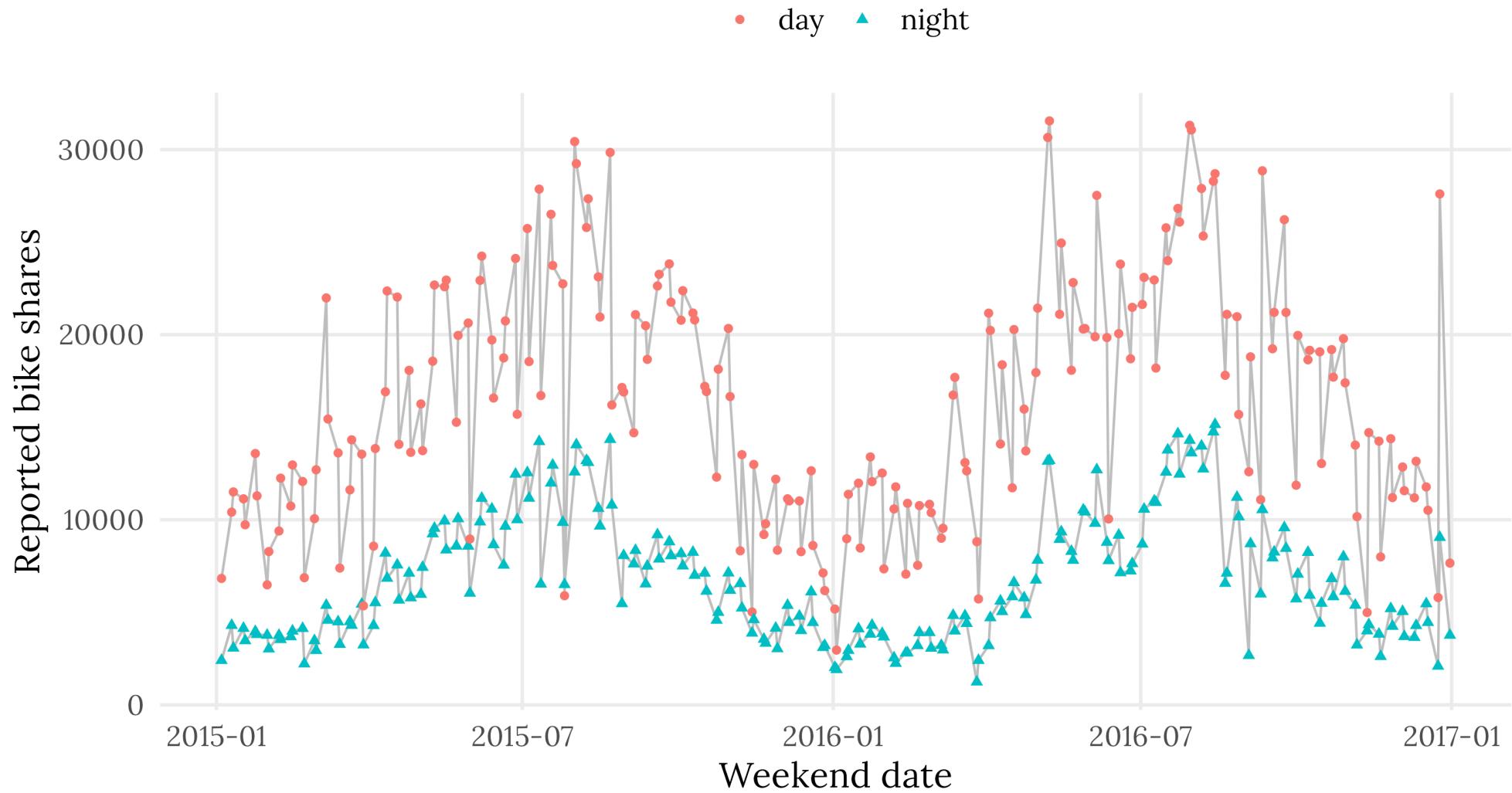
# Add Meaningful Labels

```
1 g +
2   labs(
3     x = "Weekend date",
4     y = "Reported bike shares",
5     color = NULL,
6     shape = NULL
7   ) +
8   theme_minimal(
9     base_size = 15,
10    base_family = "Lora"
11  ) +
12  theme(
13    legend.position = "top",
14    panel.grid.minor = element_blank()
15 )
```



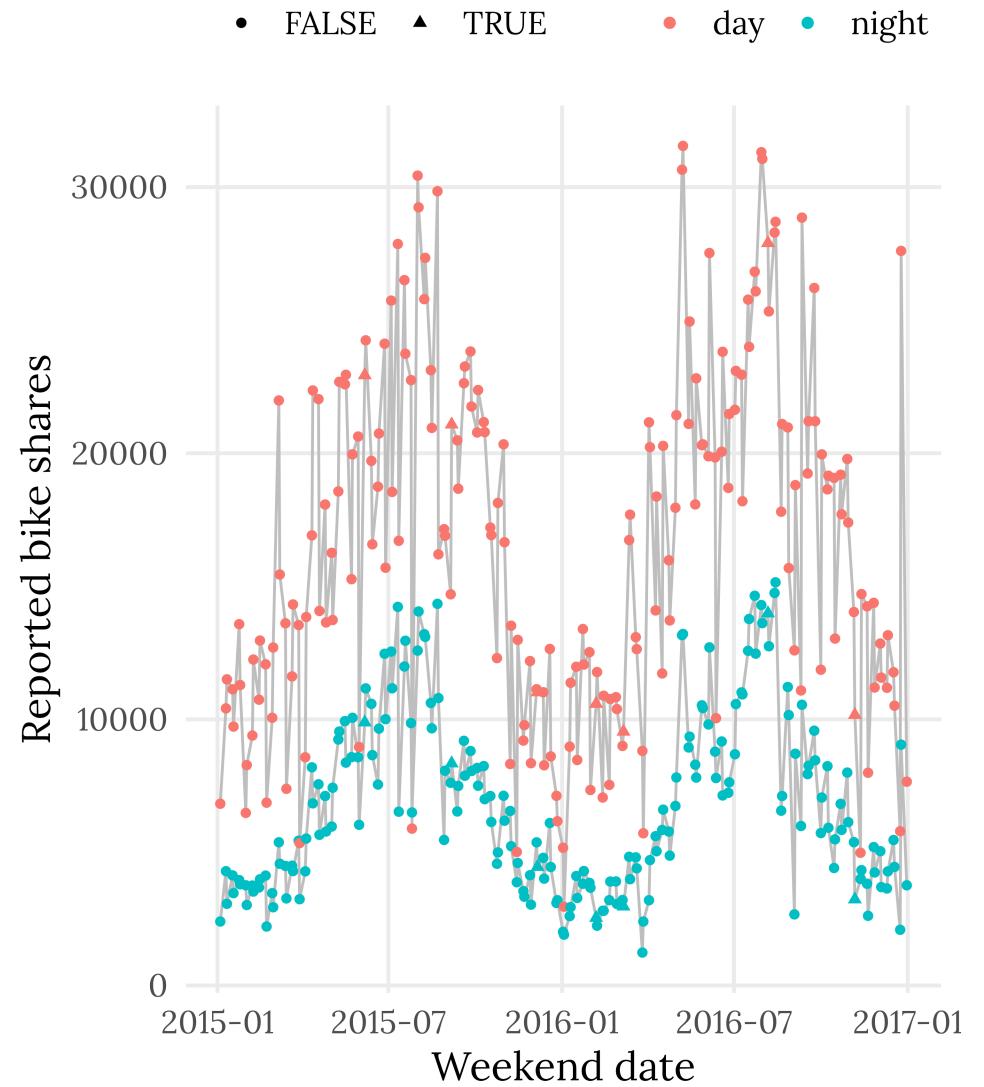
# Save the Plot

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



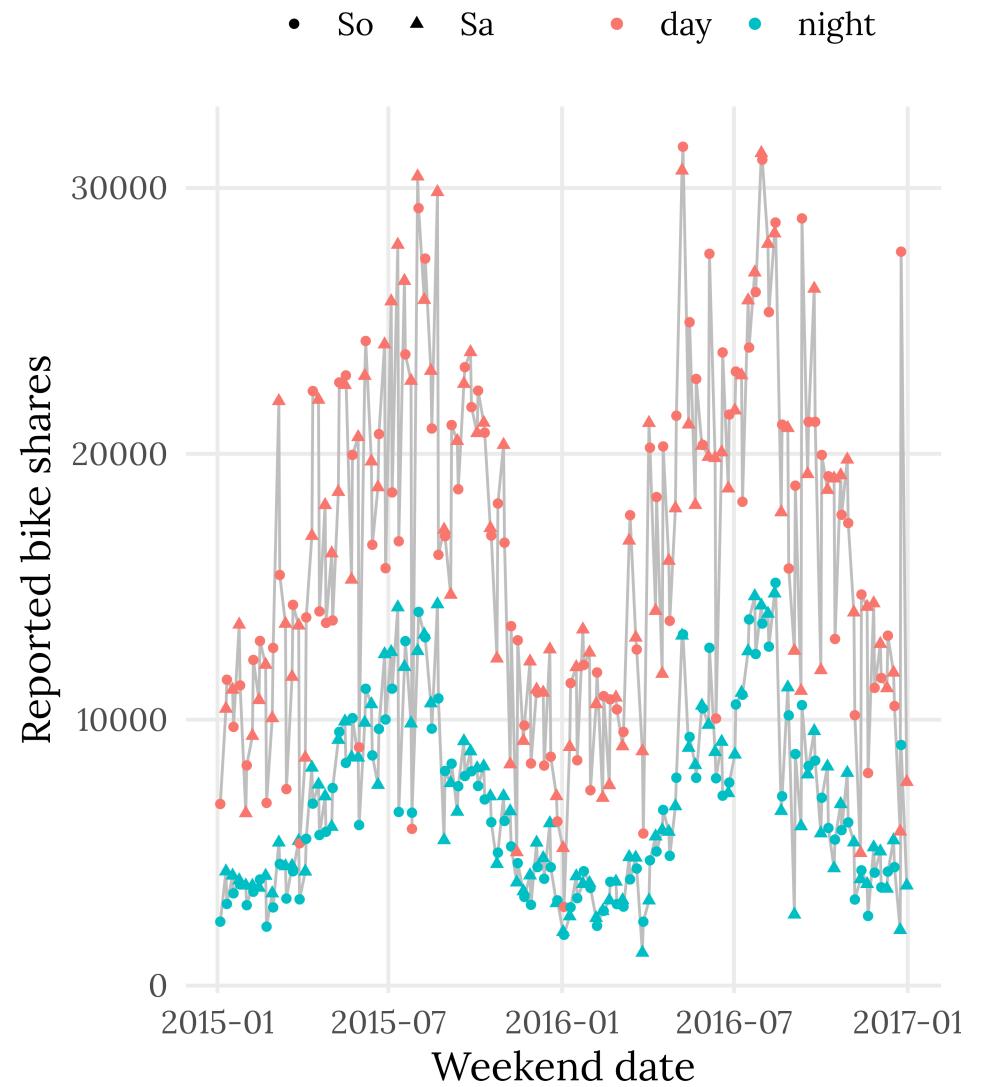
# Bonus: Use Shape to Encode Sat vs Sun

```
1 ggplot(  
2   filter(bikes, is_weekend == TRUE),  
3   aes(x = date, y = count))  
4 ) +  
5   geom_line(  
6     aes(group = day_night),  
7     color = "grey"  
8 ) +  
9   geom_point(  
10    aes(color = day_night,  
11           shape = lubridate::day(date) == 6)  
12 ) +  
13   labs(  
14     x = "Weekend date",  
15     y = "Reported bike shares",  
16     color = NULL,  
17     shape = NULL  
18 ) +  
19   theme_minimal(  
20     base_size = 15,  
21     base_family = "Lora"  
22 ) +  
23   theme(
```



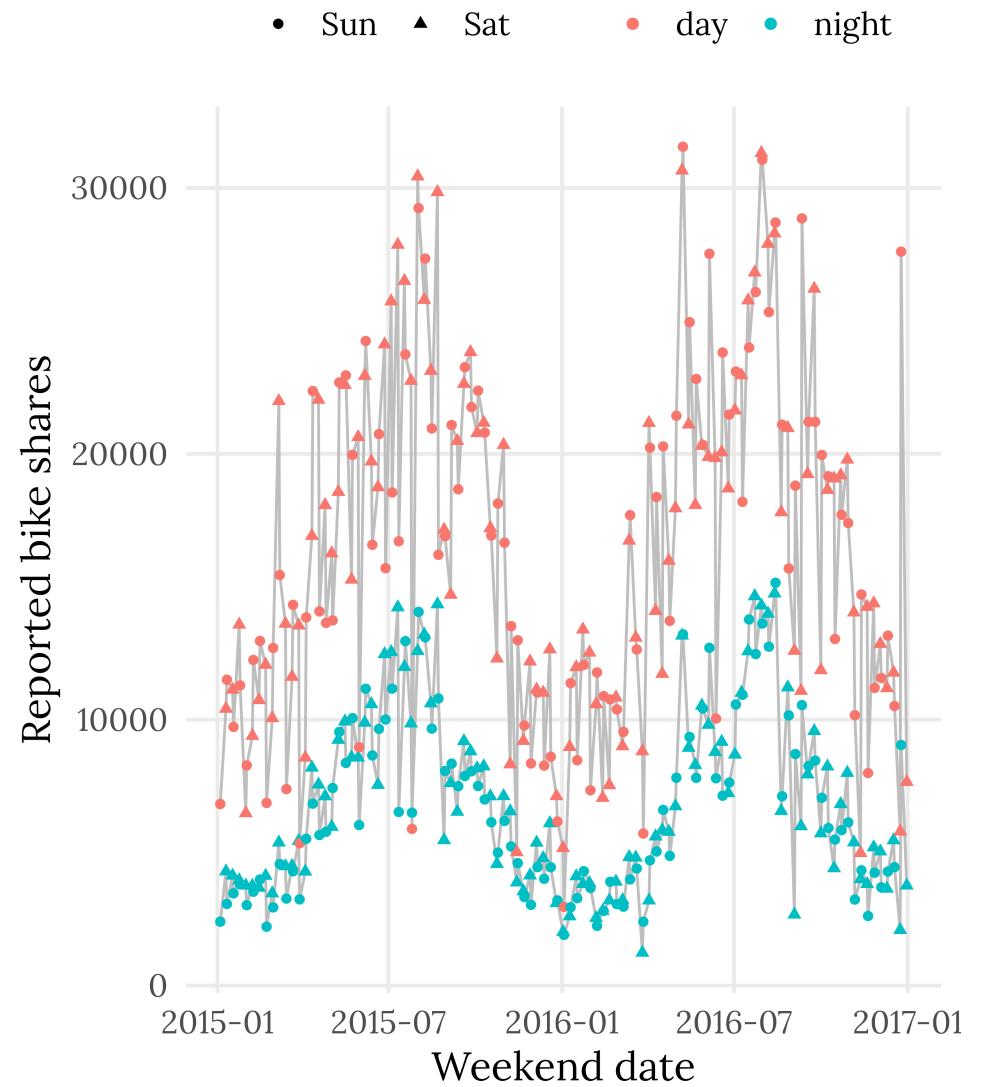
# Bonus: Use Shape to Encode Sat vs Sun

```
1 ggplot(  
2   filter(bikes, is_weekend == TRUE),  
3   aes(x = date, y = count))  
4 ) +  
5   geom_line(  
6     aes(group = day_night),  
7     color = "grey"  
8 ) +  
9   geom_point(  
10    aes(color = day_night,  
11           shape = lubridate::wday(date, label =  
12           ) +  
13   labs(  
14     x = "Weekend date",  
15     y = "Reported bike shares",  
16     color = NULL,  
17     shape = NULL  
18 ) +  
19   theme_minimal(  
20     base_size = 15,  
21     base_family = "Lora"  
22 ) +  
23   theme(
```



# Bonus: Use Shape to Encode Sat vs Sun

```
1 invisible(  
2   Sys.setlocale("LC_TIME", "C")  
3 )  
4  
5 ggplot(  
6   filter(bikes, is_weekend == TRUE),  
7   aes(x = date, y = count)  
8 ) +  
9   geom_line(  
10  aes(group = day_night),  
11  color = "grey"  
12 ) +  
13  geom_point(  
14  aes(color = day_night,  
15    shape = lubridate::wday(date, label =  
16 ) +  
17  labs(  
18  x = "Weekend date",  
19  y = "Reported bike shares",  
20  color = NULL,  
21  shape = NULL  
22 ) +  
23  theme_minimal()
```



# Save the Plot

```
1 ggsave(here:::here("exercises", "plots", "02_concepts_pt1_ex1_bonus.pdf"),
2       width = 9, height = 5, device = cairo_pdf)
```

