

# *Graphic Design with ggplot2*

## **Working with Colors:** Solution Exercise 1

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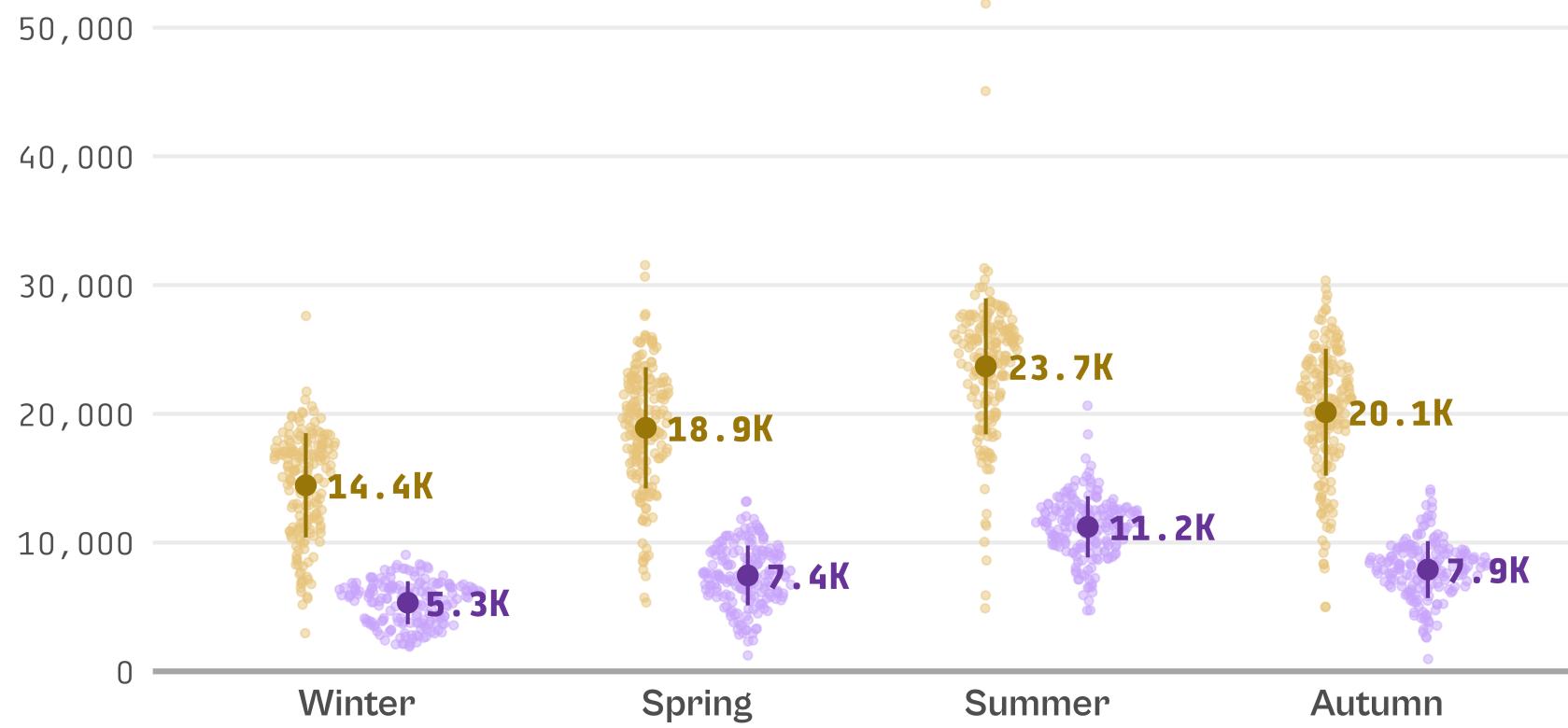
# Exercise

- Create a similar visualization as close as possible:

## Reported bike shares in London during day and night times

TfL bike sharing data from 2015 to 2016 per season and time of day.

Errorbars show the mean  $\pm$  standard deviation.



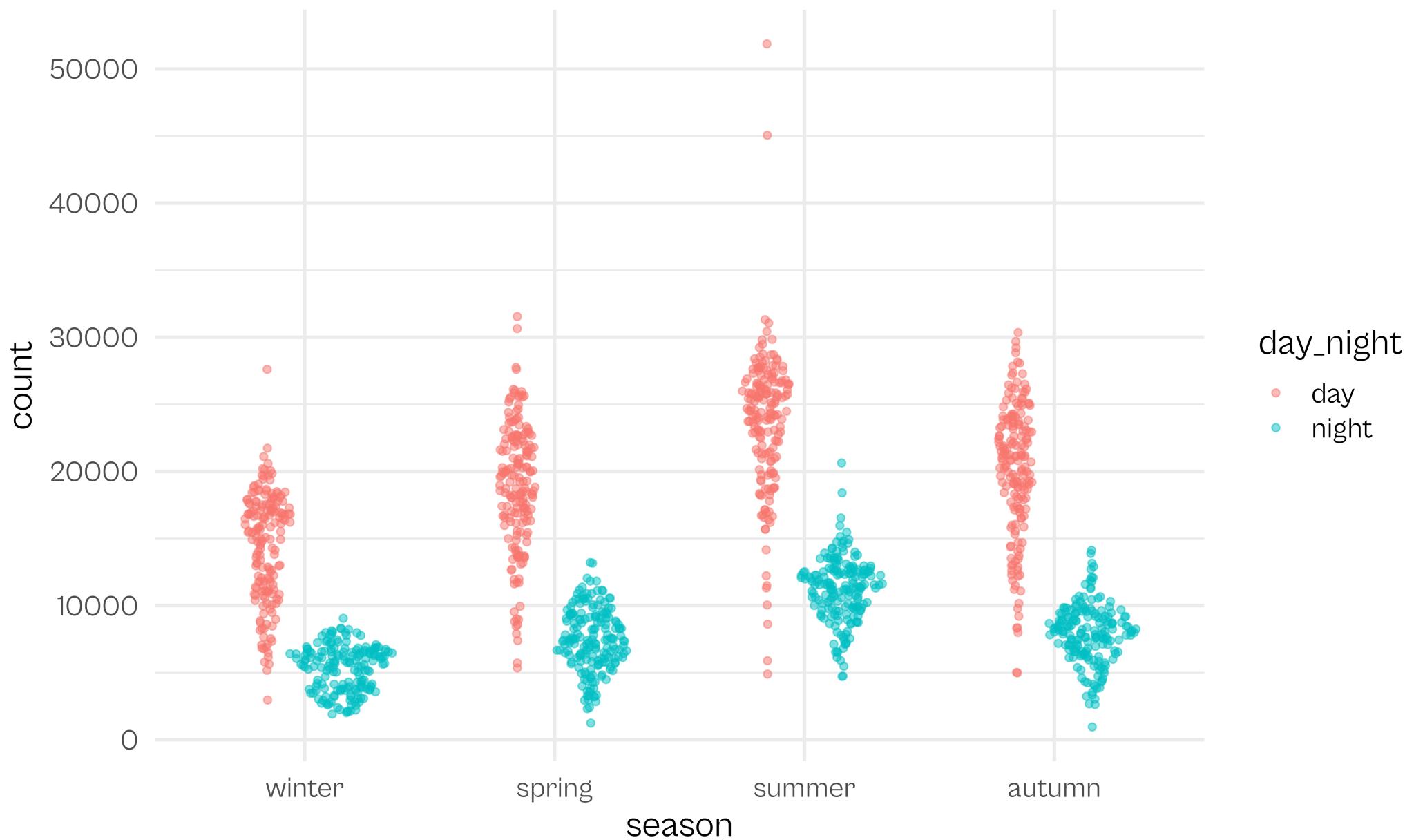
# Import the Data Set

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

# Create Sina Plot

```
1 ggplot(  
2   bikes,  
3   aes(x = season, y = count)  
4 ) +  
5   ggforce::geom_sina(  
6   aes(color = day_night),  
7   position = position_dodge(width = .6),  
8   alpha = .5  
9 ) +  
10 theme_minimal(  
11   base_size = 18,  
12   base_family = "Cabinet Grotesk"  
13 )
```

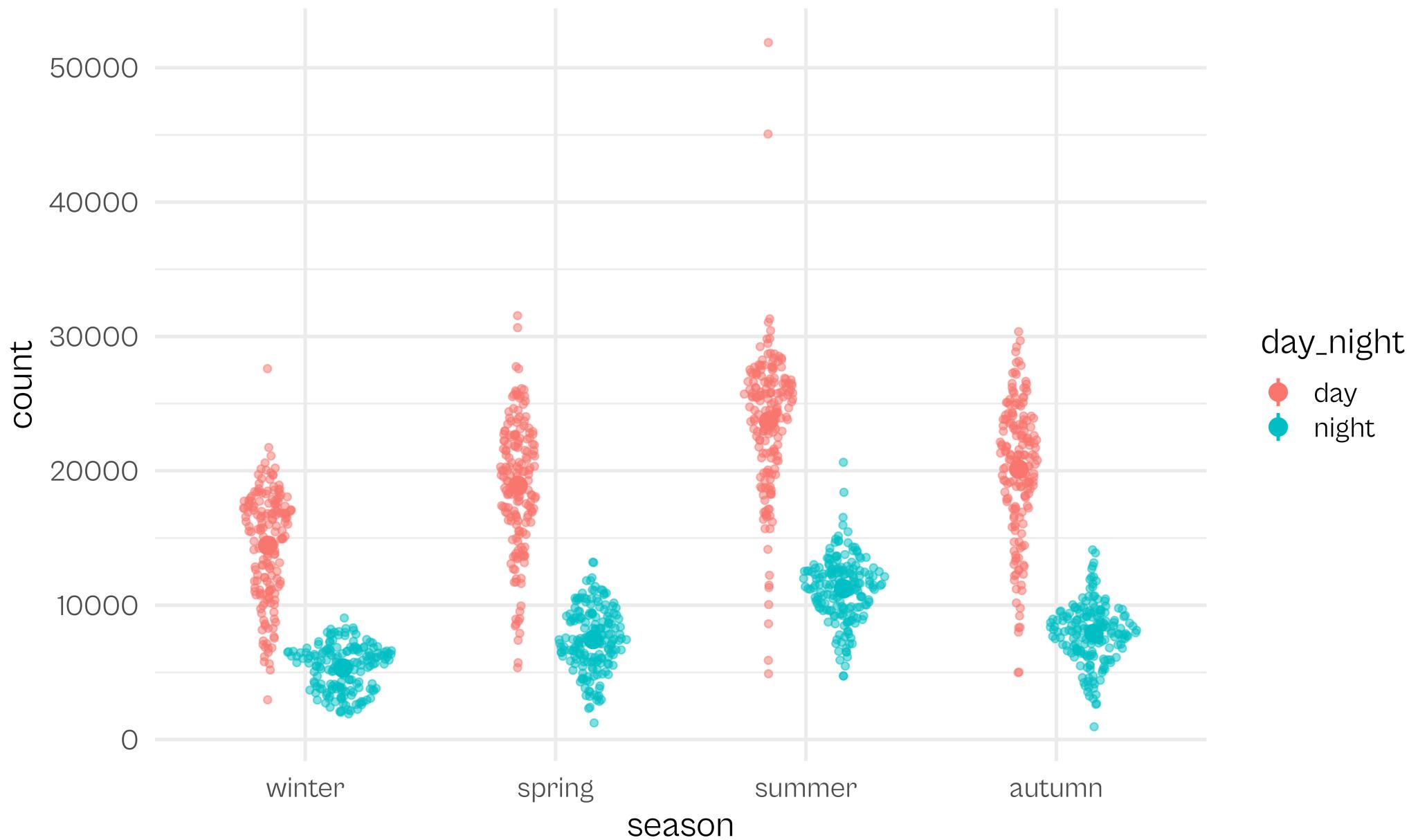
# Create Sina Plot



# Add Errorbars

```
1 ggplot(  
2   bikes,  
3   aes(x = season, y = count)  
4 ) +  
5   ggforce::geom_sina(  
6   aes(color = day_night),  
7   position = position_dodge(width = .6),  
8   alpha = .5  
9 ) +  
10  stat_summary(  
11   aes(color = day_night),  
12   position = position_dodge(width = .6),  
13   size = .8  
14 ) +  
15  theme_minimal(  
16   base_size = 18,  
17   base_family = "Cabinet Grotesk"  
18 )
```

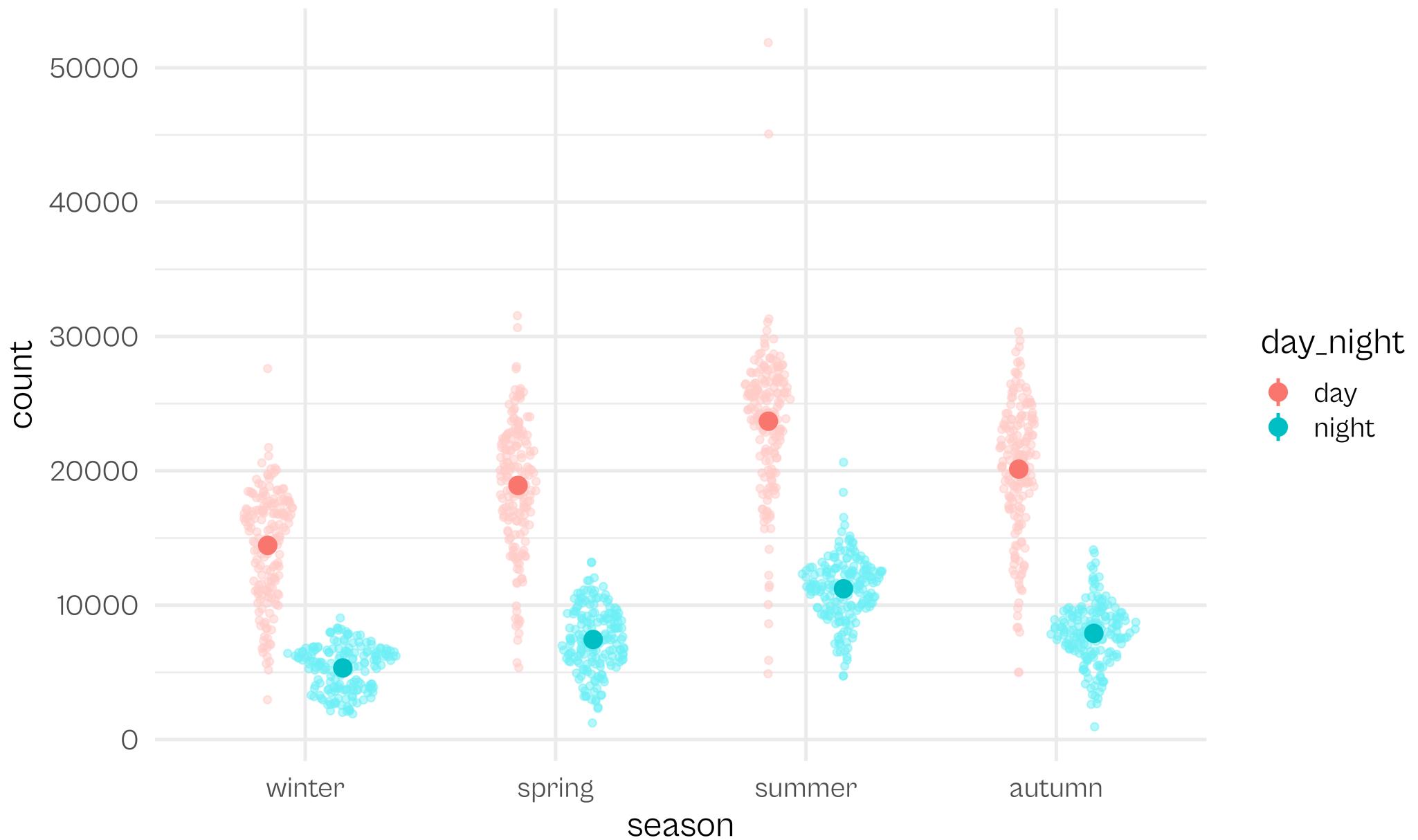
# Add Errorbars



# Use Lighter Point Colors

```
1 ggplot(  
2   bikes,  
3   aes(x = season, y = count)  
4 ) +  
5   ggforce::geom_sina(  
6   aes(color = stage(  
7     day_night,  
8     after_scale = lighten(color, .6)  
9   )),  
10  position = position_dodge(width = .6),  
11  alpha = .5  
12 ) +  
13  stat_summary(  
14  aes(color = day_night),  
15  position = position_dodge(width = .6),  
16  size = .8  
17 ) +  
18  theme_minimal(  
19  base_size = 18,
```

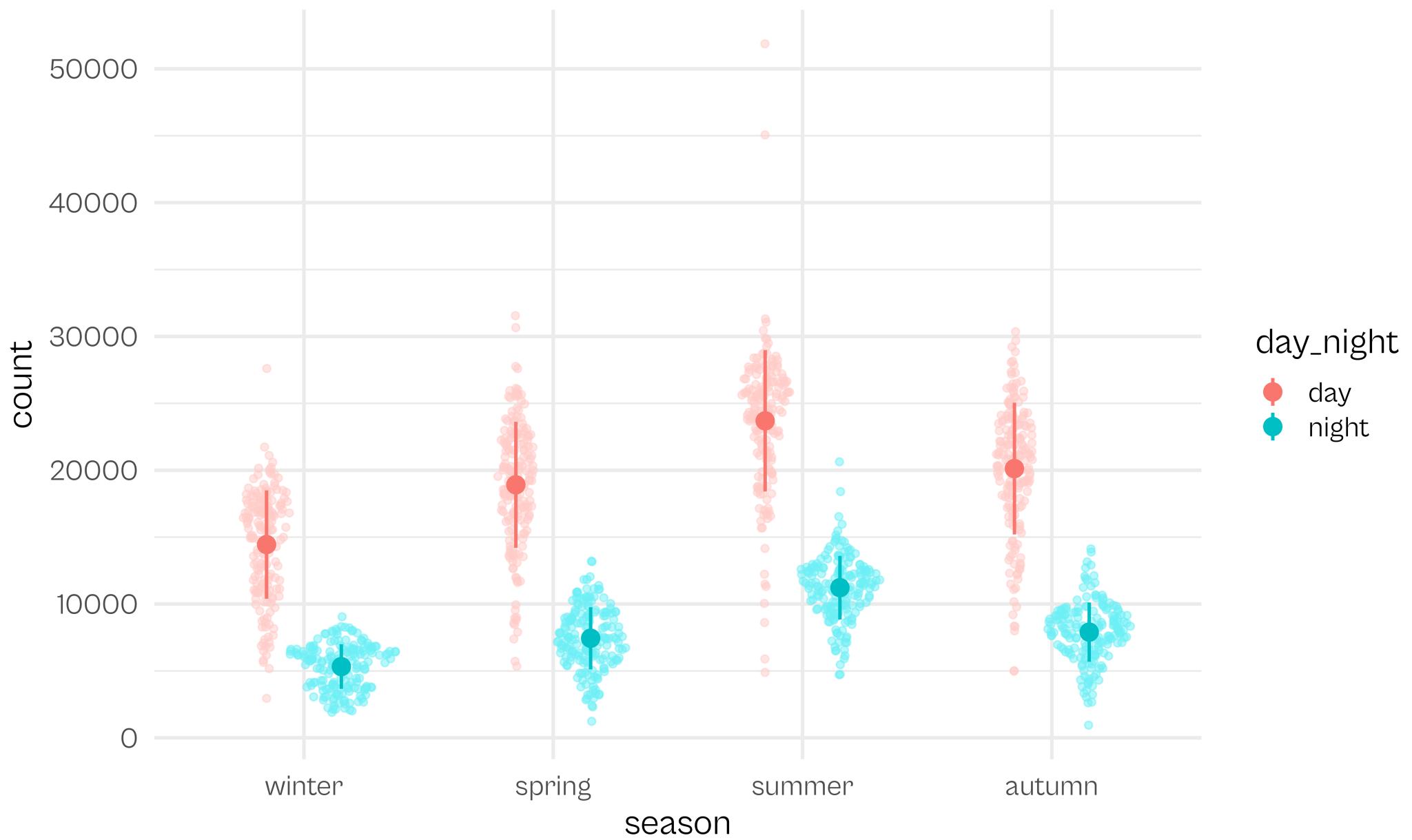
# Use Lighter Point Colors



# Use Standard Deviation

```
1 p1 <- ggplot(  
2   bikes,  
3   aes(x = season, y = count)  
4 ) +  
5   ggforce::geom_sina(  
6   aes(color = stage(  
7     day_night,  
8     after_scale = lighten(color, .6)  
9   )),  
10  position = position_dodge(width = .6),  
11  alpha = .5  
12 ) +  
13  stat_summary(  
14  aes(color = day_night),  
15  fun = mean,  
16  fun.max = function(y) mean(y) + sd(y),  
17  fun.min = function(y) mean(y) - sd(y),  
18  position = position_dodge(width = .6),  
19  size = .8
```

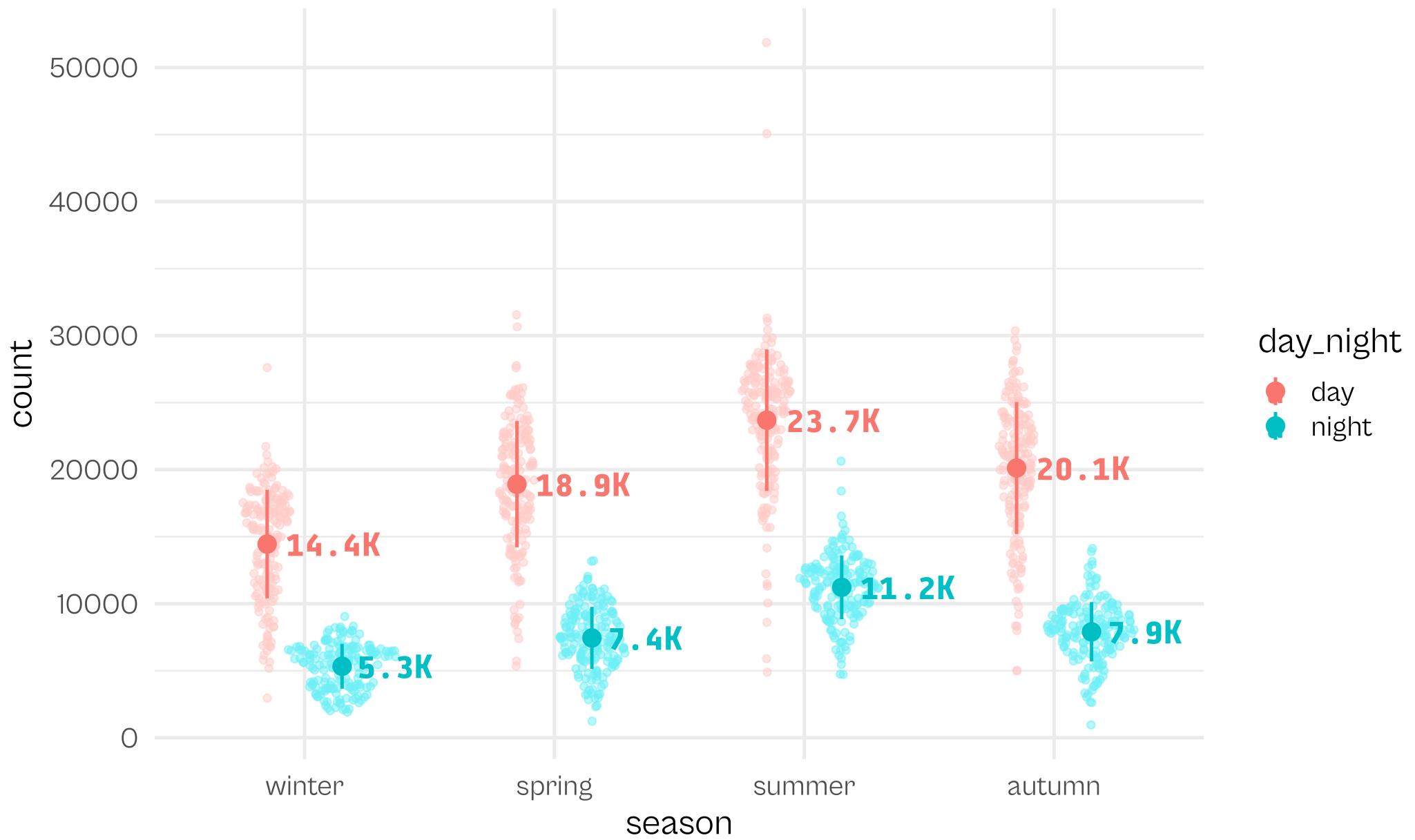
# Add Annotations



# Add Annotations

```
1 p2 <- p1 +
2   stat_summary(
3     geom = "text",
4     aes(
5       color = day_night,
6       label = paste0(
7         sprintf("%2.1f", stat(y) / 1000), "K"
8       )
9     ),
10    position = position_dodge(width = .6),
11    hjust = -.2, family = "Tabular",
12    size = 5.5, fontface = "bold"
13  )
14
15 p2
```

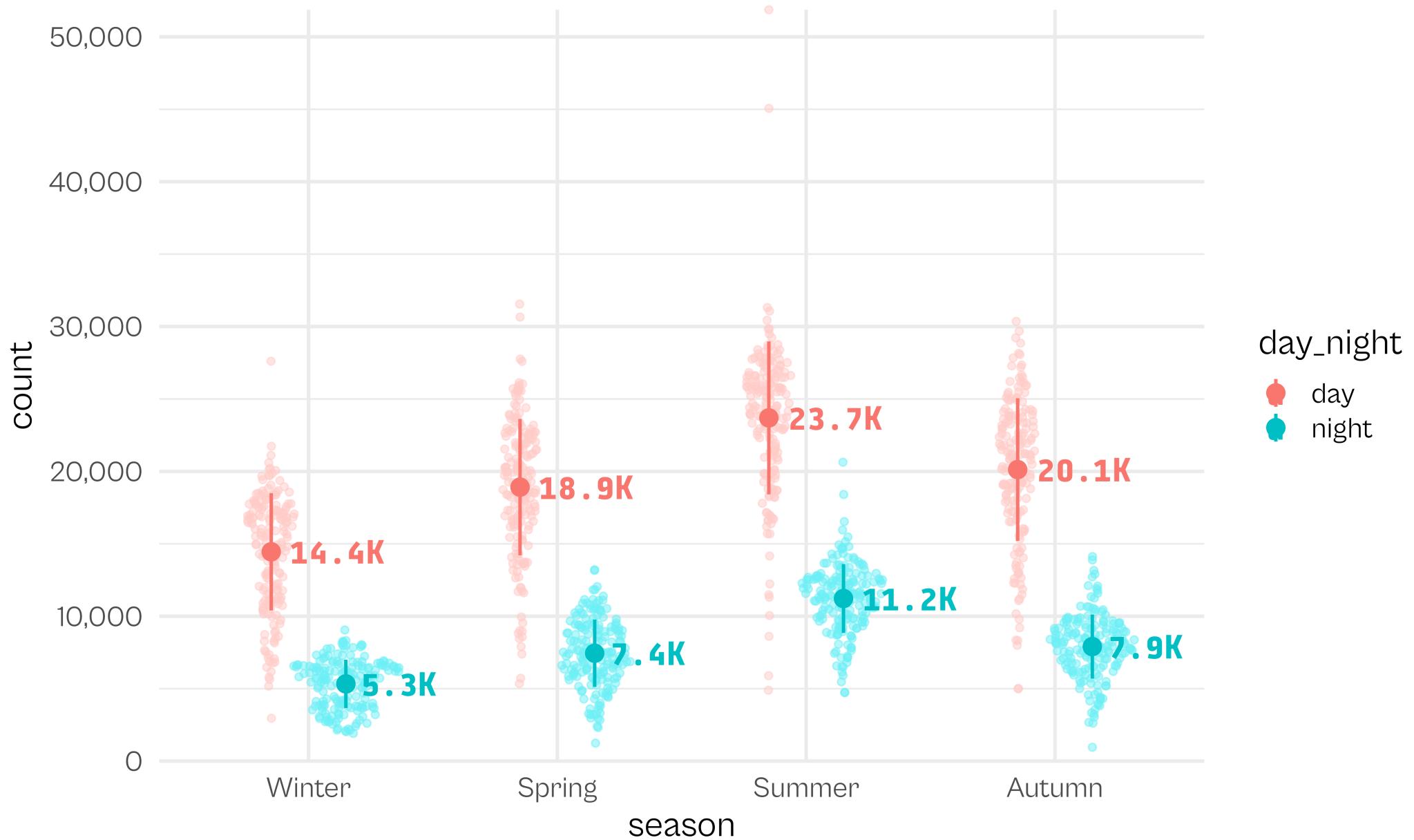
# Add Annotations



# Adjust Axes + Clipping

```
1 p3 <- p2 +
2   coord_cartesian(clip = "off") +
3   scale_x_discrete(
4     labels = str_to_title
5   ) +
6   scale_y_continuous(
7     labels = scales::comma_format(),
8     expand = c(0, 0),
9     limits = c(0, NA)
10  )
11
12 p3
```

# Adjust Axes + Clipping

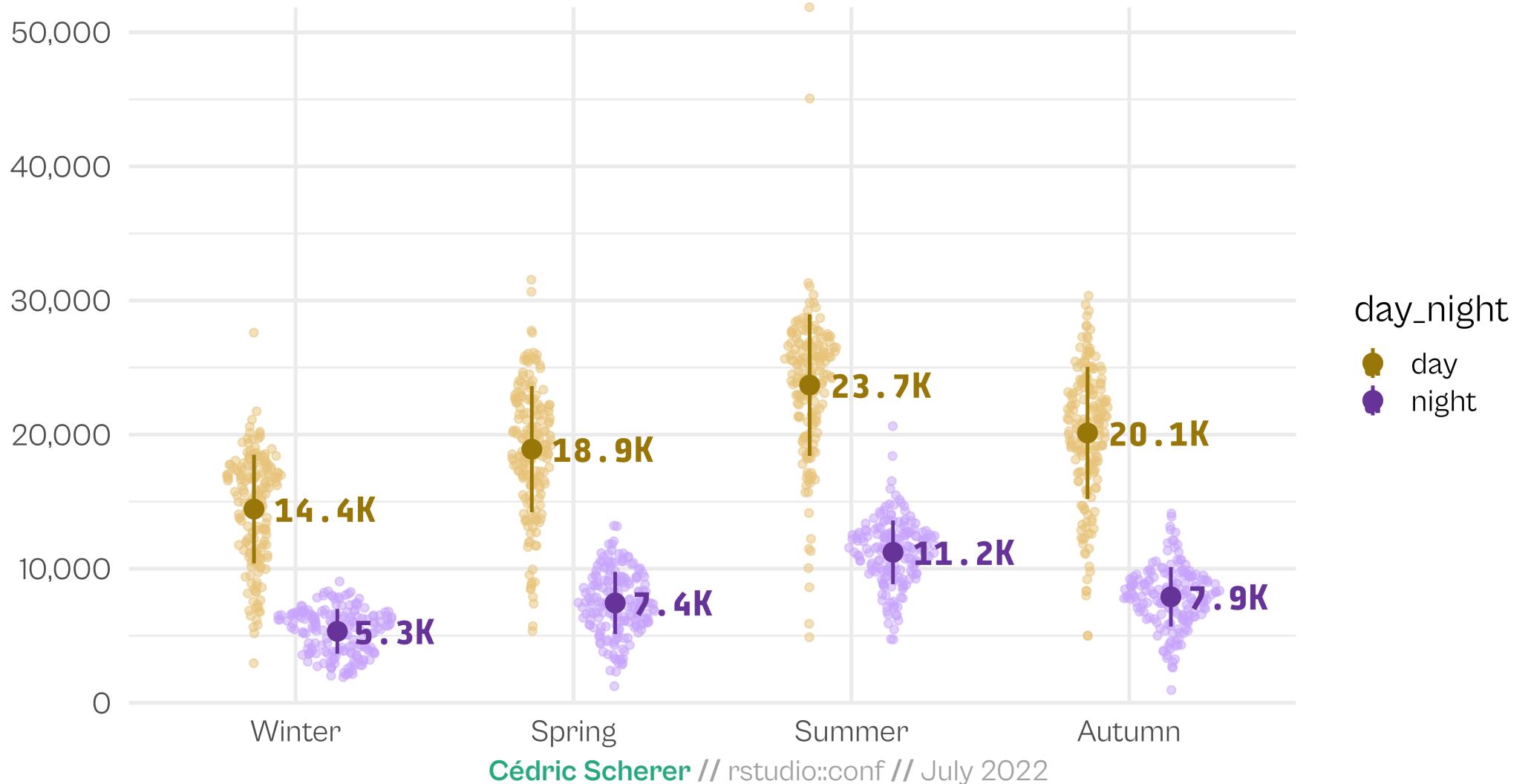


# Add Colors + Labels

```
1 colors <- c("#987708", "#663399")
2
3 p4 <- p3 +
4   scale_color_manual(
5     values = colors
6   ) +
7   labs(
8     x = NULL, y = NULL,
9     title = paste0("Reported bike shares in London during <span style='color:", colors[1], ";'>day</",
10    subtitle = "TfL bike sharing data from 2015 to 2016 per season and time of day.\nErrorbars show
11  )
12
13 p4
```

# Add Colors + Labels

Reported bike shares in London during `day`  
TfL bike sharing data from 2015 to 2016 per season and time of day.  
Errorbars show the mean  $\pm$  standard deviation.



# Theme Styling

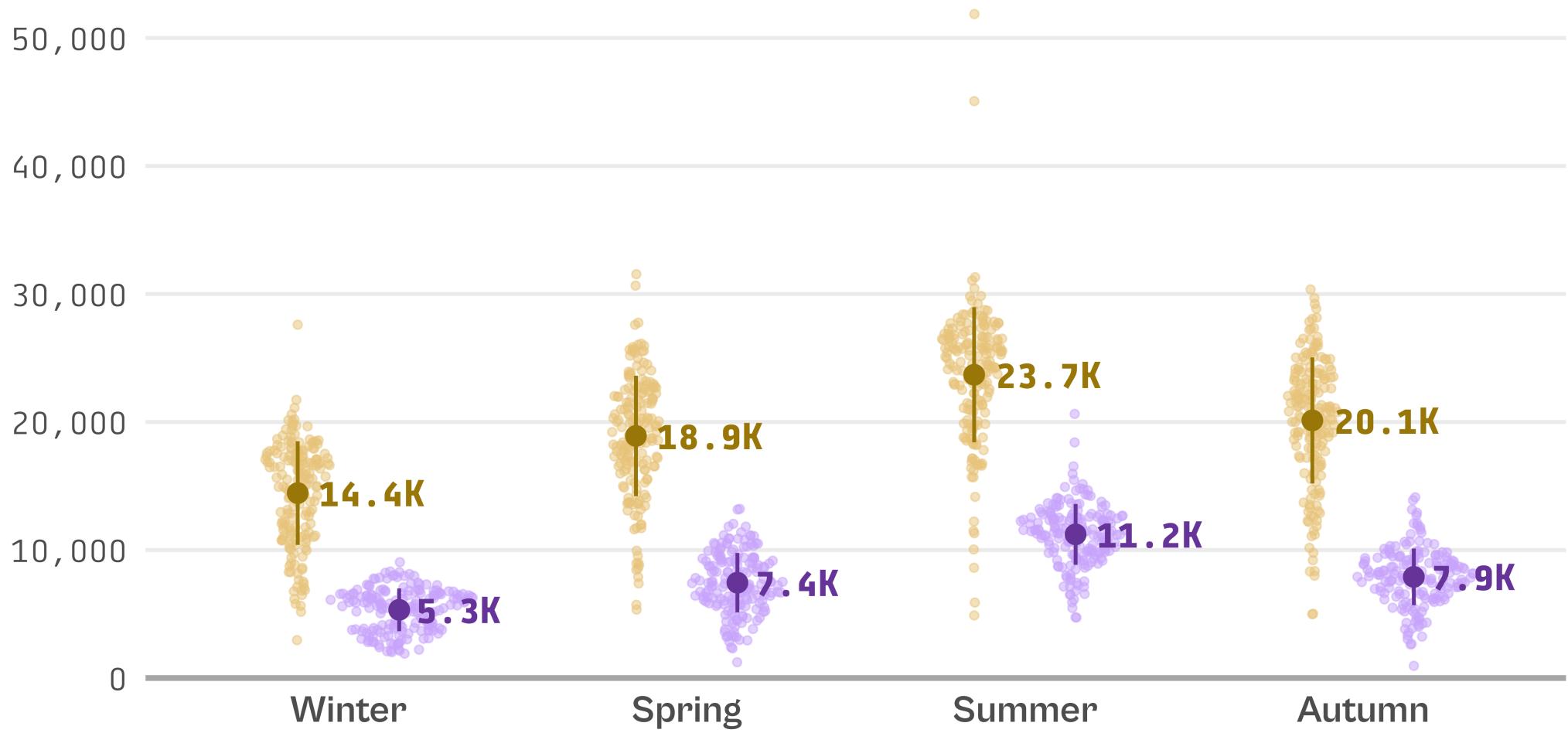
```
1 p4 +
2   theme(
3     legend.position = "none",
4     panel.grid.major.x = element_blank(),
5     panel.grid.minor = element_blank(),
6     plot.title.position = "plot",
7     plot.title = ggtext::element_markdown(face = "bold", size = 26),
8     plot.subtitle = element_text(color = "grey30", margin = margin(t = 6, b = 12)),
9     axis.text.x = element_text(size = 17, face = "bold"),
10    axis.text.y = element_text(family = "Tabular"),
11    axis.line.x = element_line(size = 1.2, color = "grey65"),
12    plot.margin = margin(rep(15, 4))
13  )
```

# Theme Styling

## Reported bike shares in London during day and night times

TfL bike sharing data from 2015 to 2016 per season and time of day.

Errorbars show the mean  $\pm$  standard deviation.



# Full Code

```
1 library(tidyverse)
2 library(colorspace)
3 library(ggtext)
4
5 bikes <- readr::read_csv(
6   "https://raw.githubusercontent.com/z3tt/graphic-design-ggplot2/main/data/london-bikes-custom.csv",
7   col_types = "Dcffffillllddddc"
8 )
9
10 bikes$season <- forcats::fct_inorder(bikes$season)
11
12 colors <- c("#987708", "#663399")
13
14 ggplot(bikes, aes(x = season, y = count)) +
15   ggforce::geom_sina(
16     aes(
17       color = stage(
18         day_night, after_scale = lighten(color, .6)
19     )),
```