

Graphic Design with ggplot2

Working with Colors: Solution Exercise 1

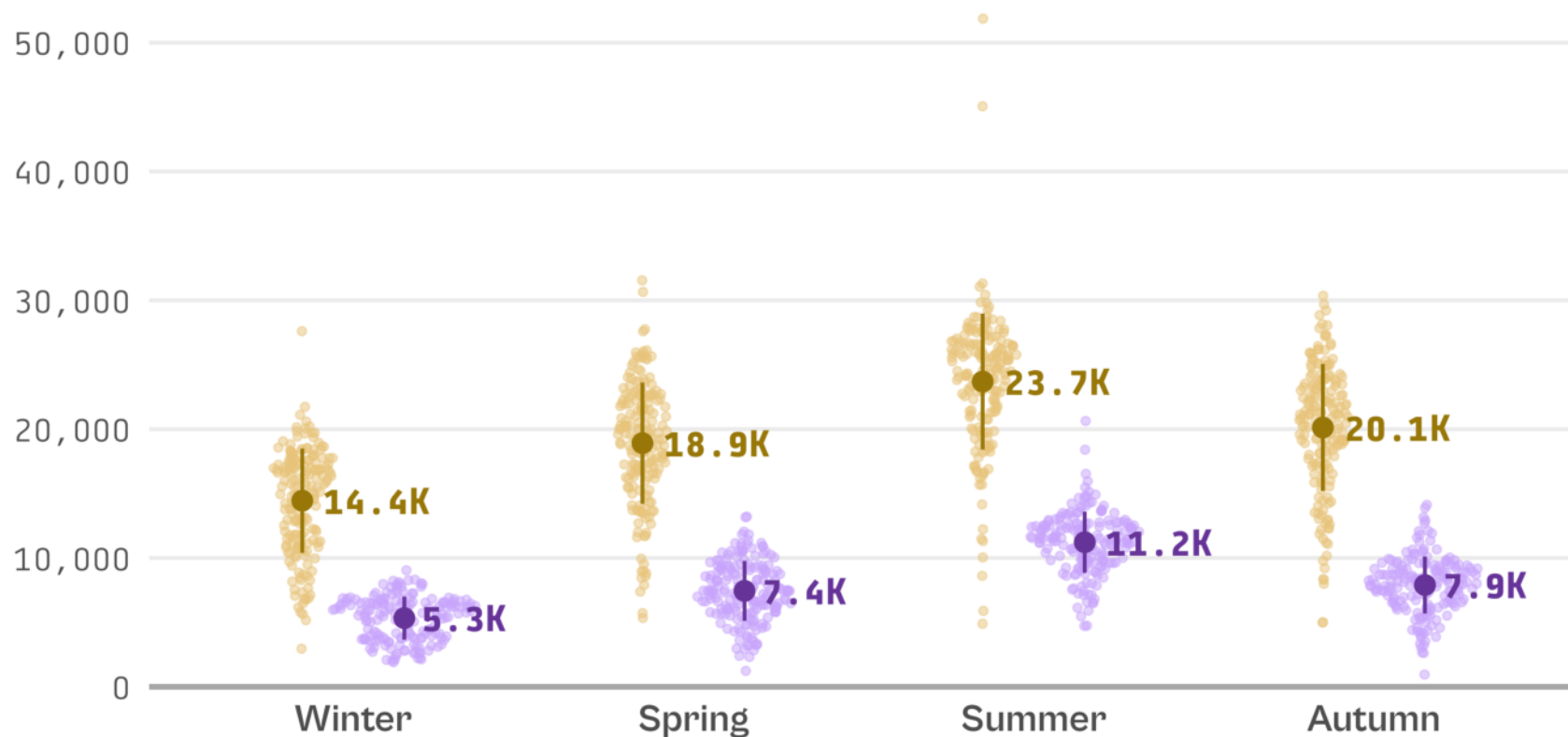
Cédric Scherer // rstudio::conf // July 2022

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.



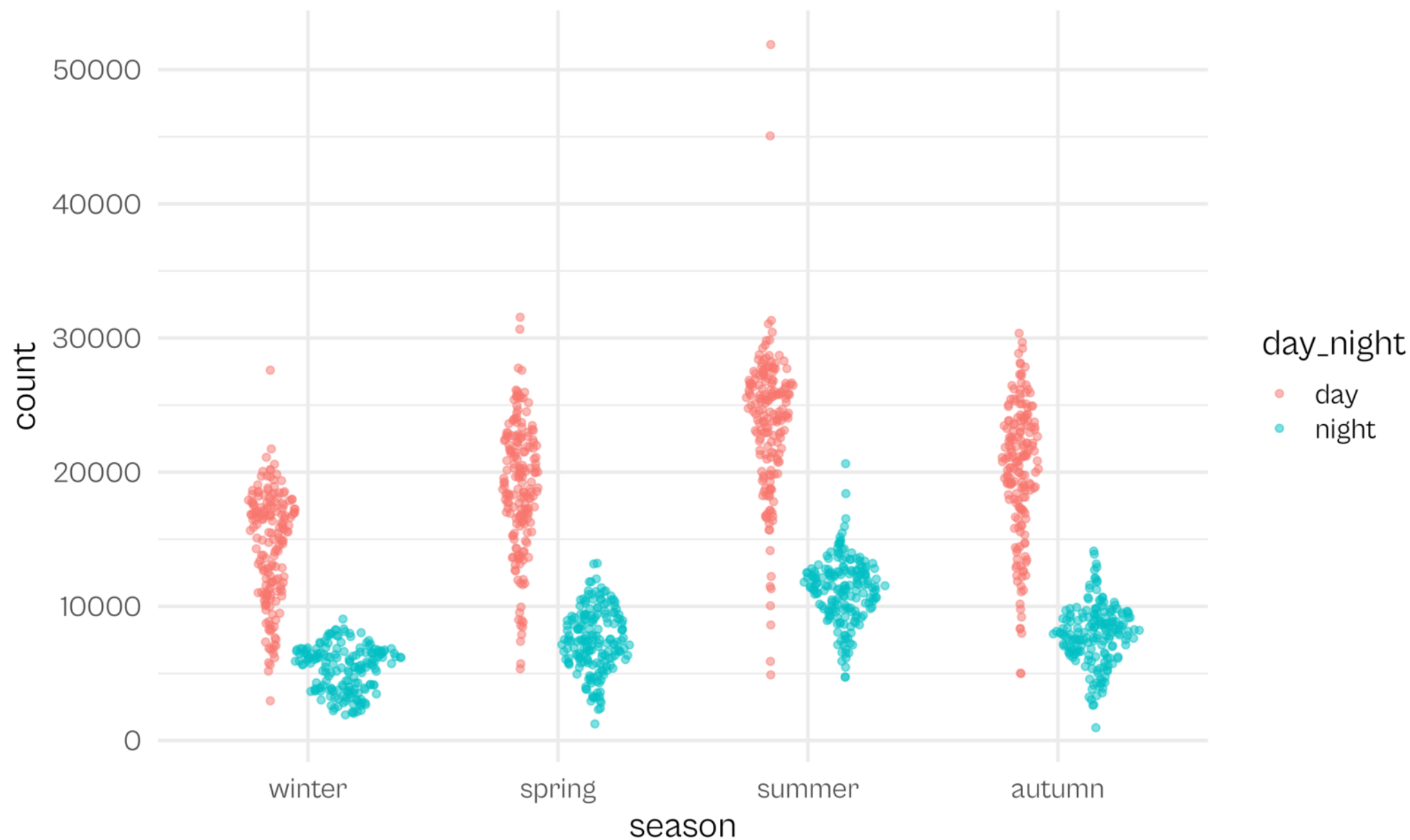
Import the Data Set

```
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 = "Dcfffflll1dddc"
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 )
```

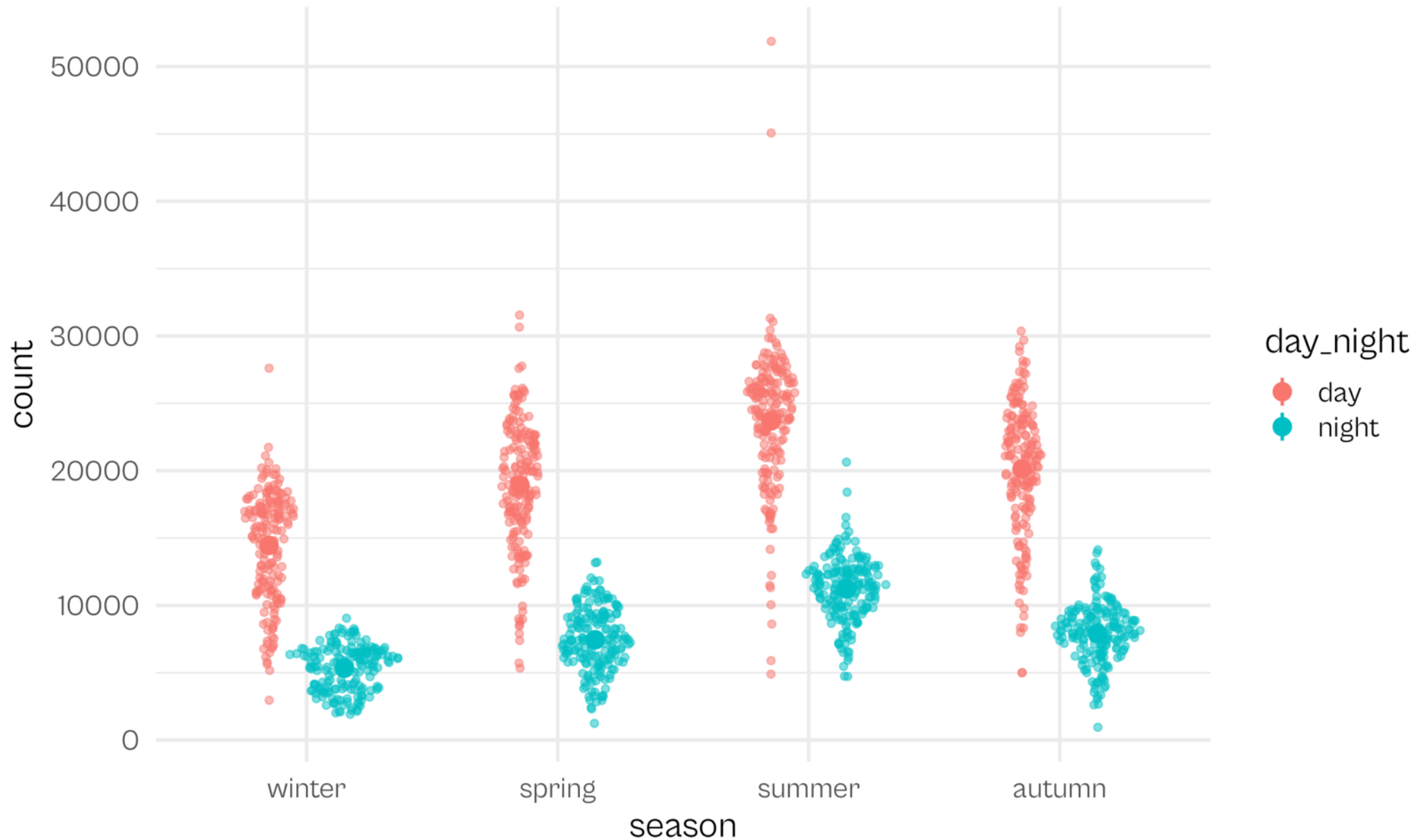
Create Sina Plot



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 )
```

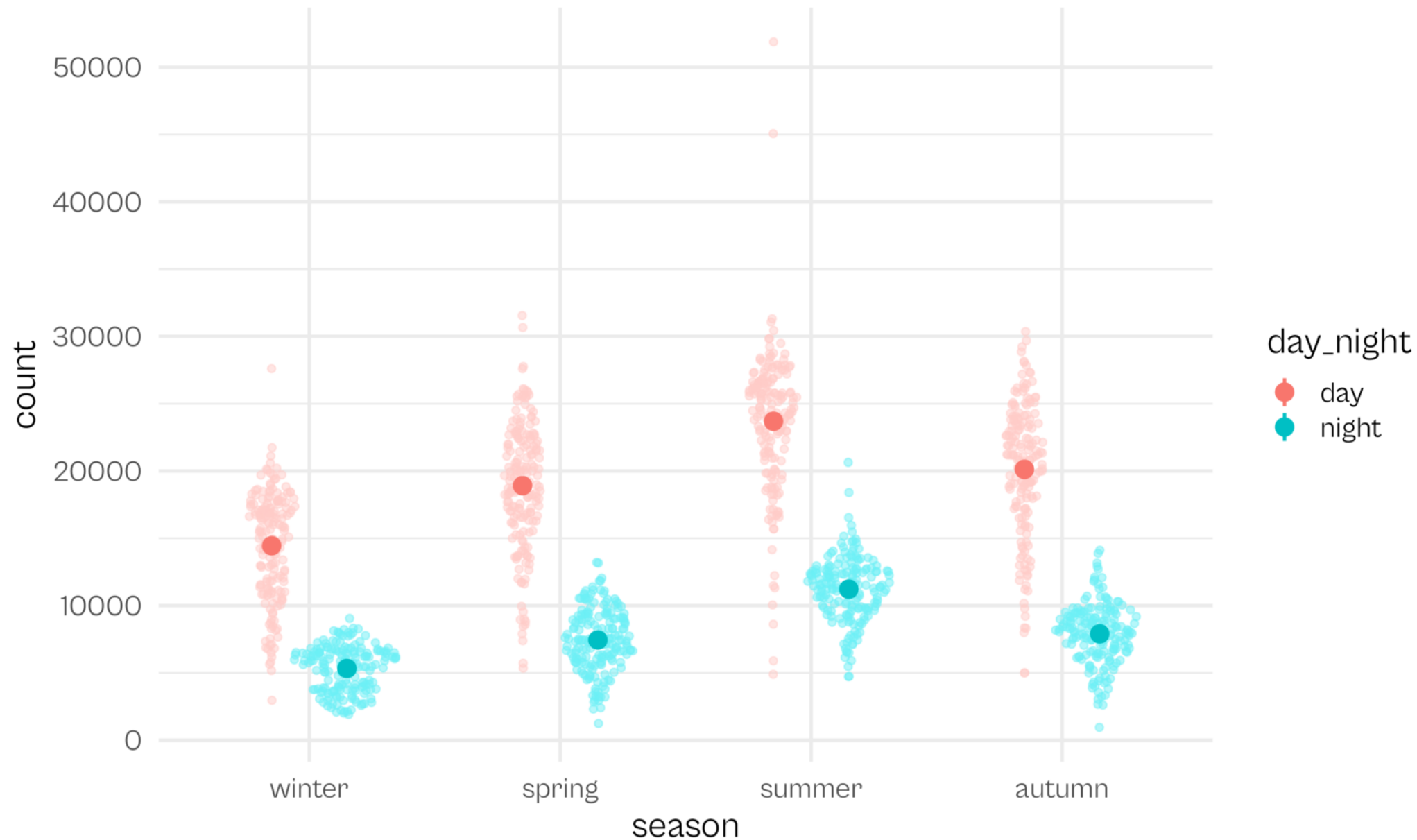
Add Errorbars



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,
```

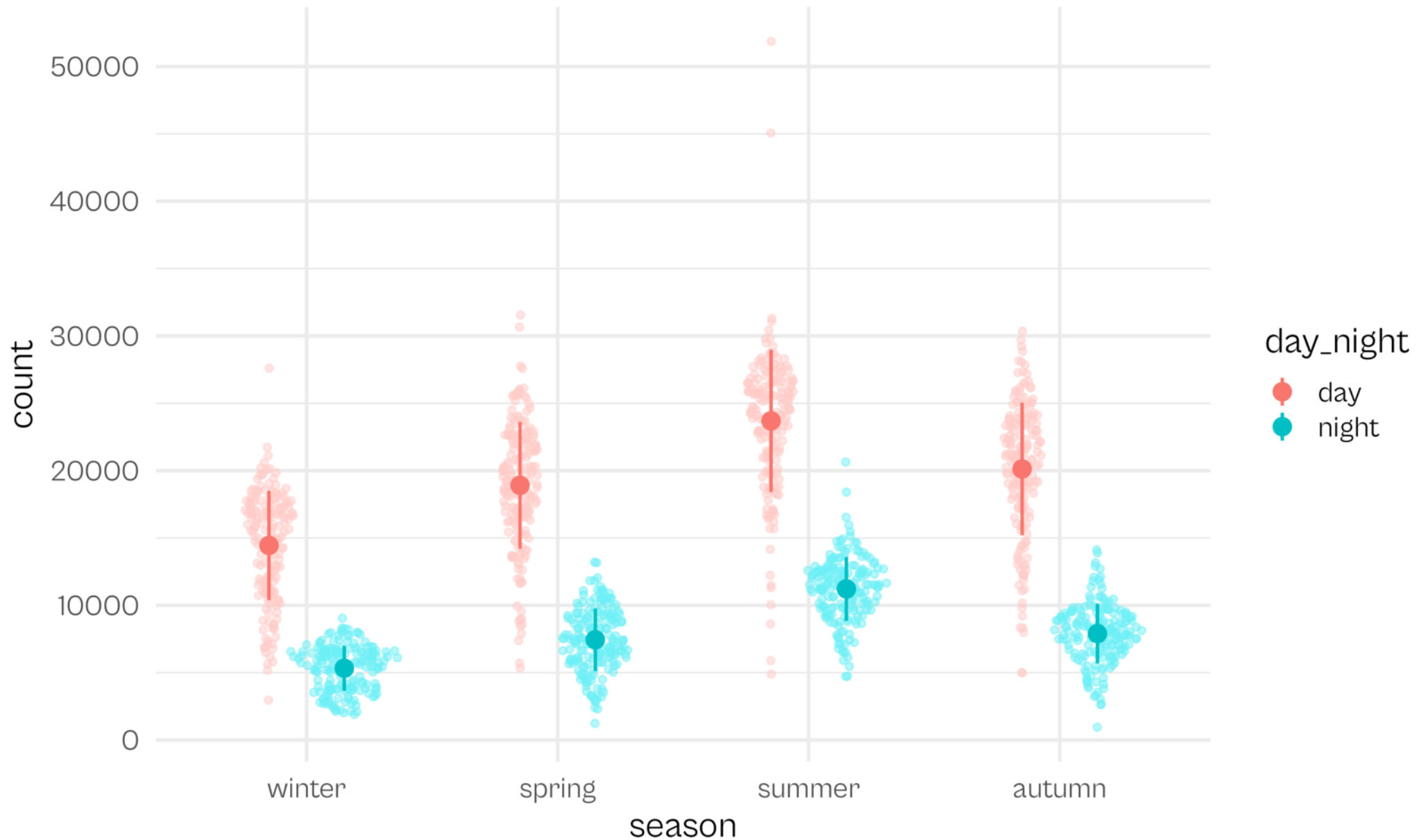

Use Lighter Point Colors



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
```

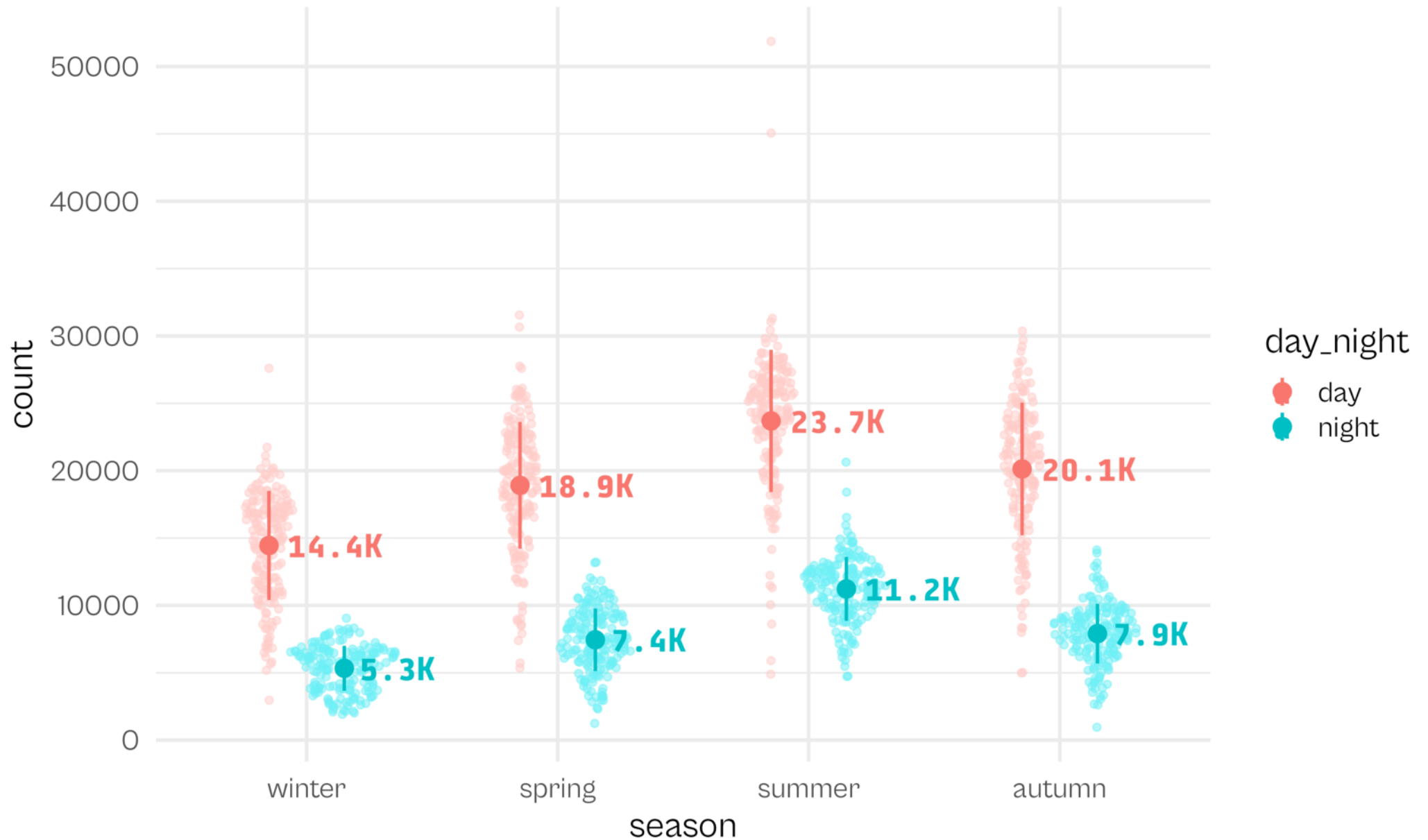
Add Annotations



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
```

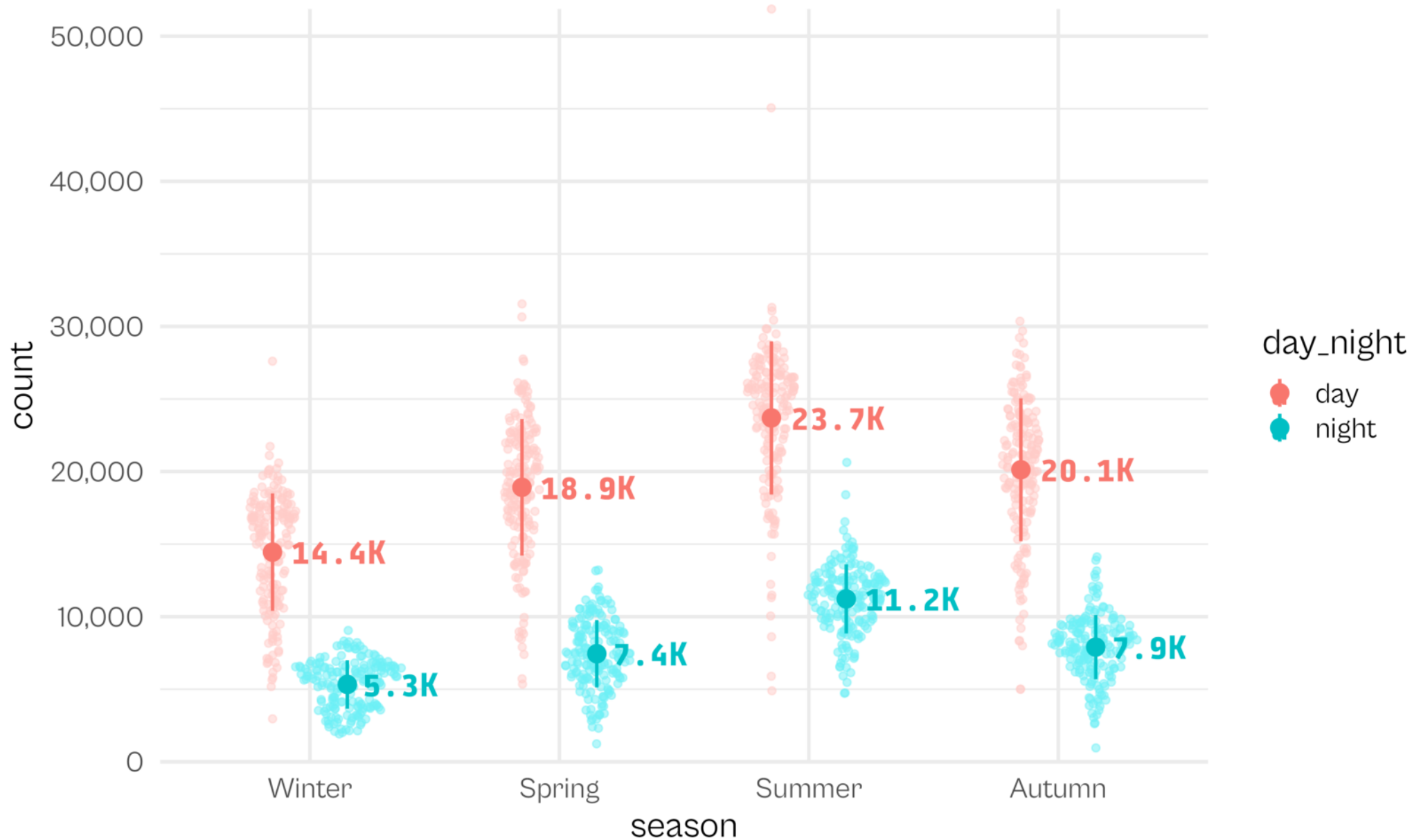
Add Annotations



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

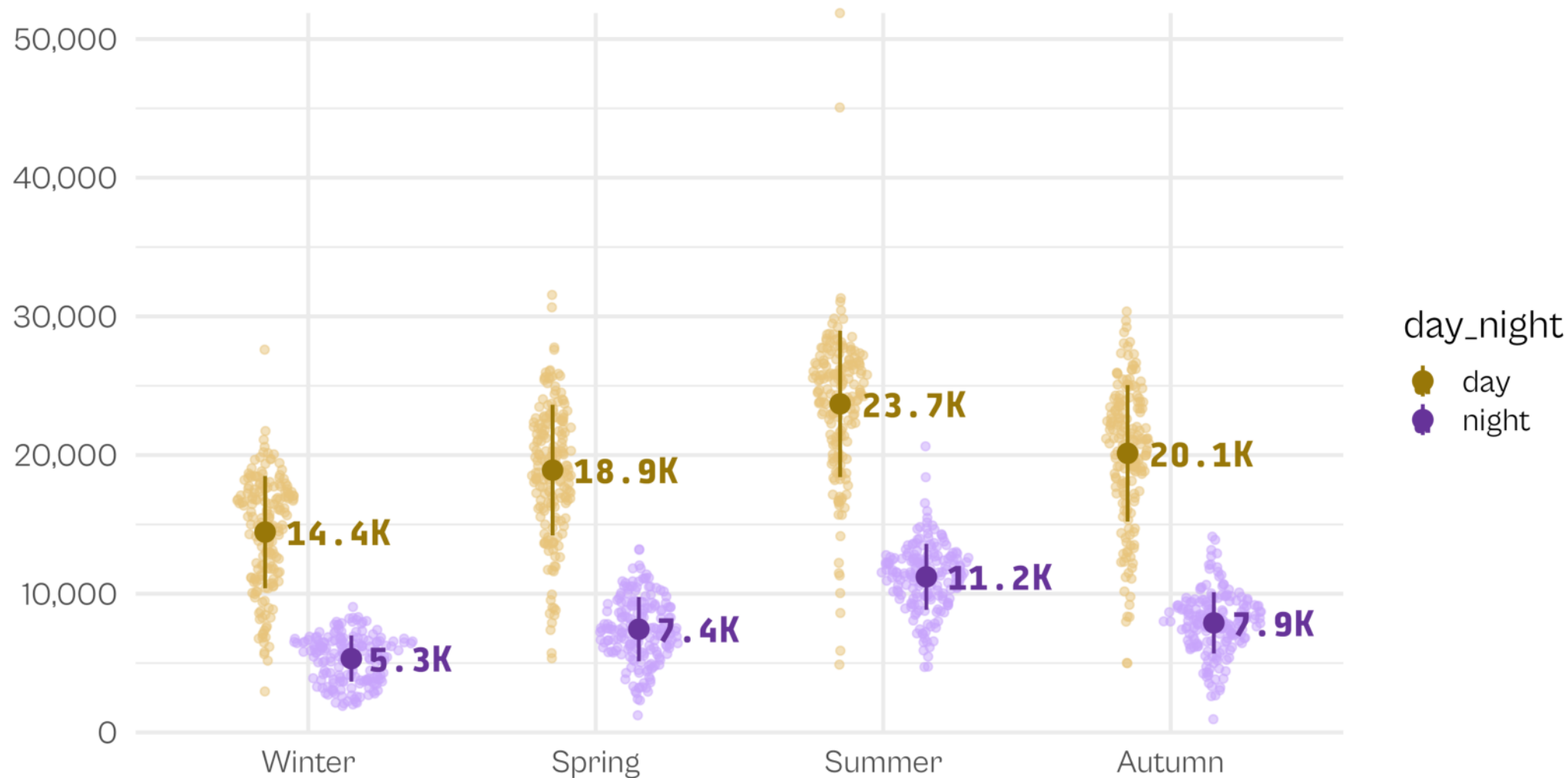


Add Colors + Labels

```
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.



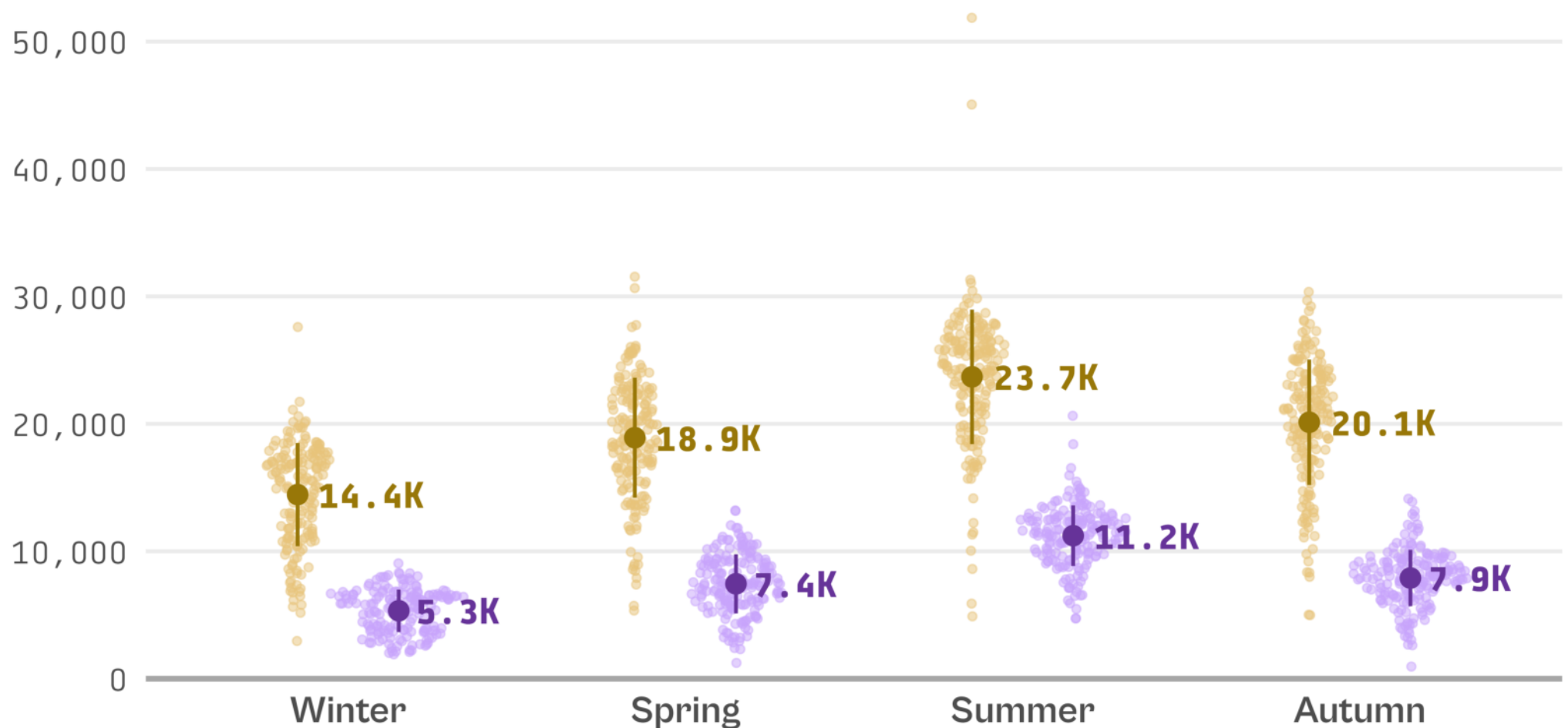
Theme Styling

```
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 = "Dcffffilllddddc"
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       ),
```