Customize your traces

INTERACTIVE DATA VISUALIZATION WITH PLOTLY IN R

Adam Loy
Statistician, Carleton College

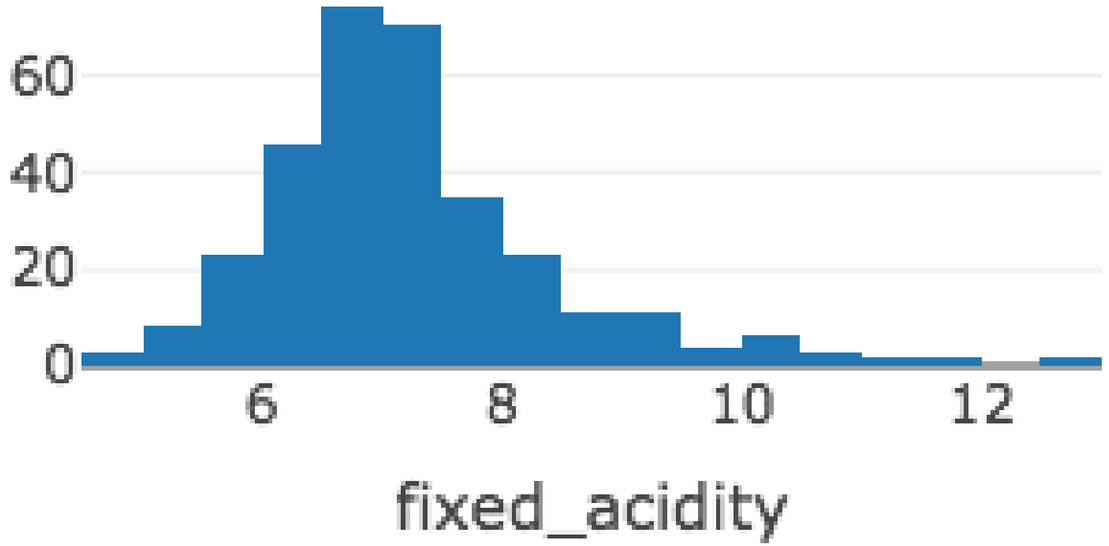
DataCamp

Wine quality data

```
glimpse(winequality)
```

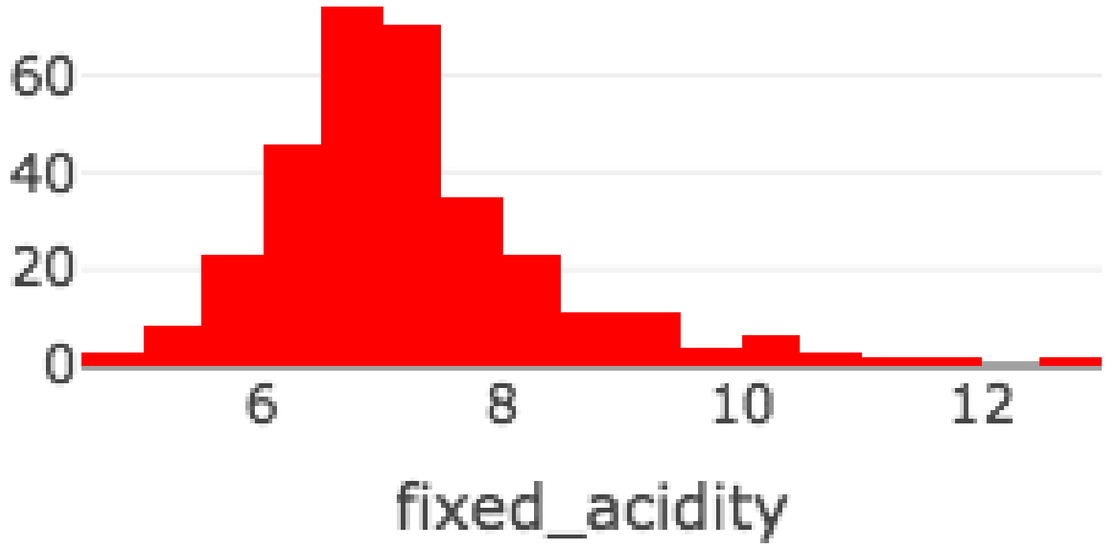
```
Observations: 325
Variables: 14
$ type             <chr> "red", "red", "red", "red", "red", "red", ...
$ fixed_acidity    <dbl> 8.2, 8.2, 8.0, 10.2, 8.6, 6.1, 10.7, 9.1, 7.2...
$ volatile_acidity <dbl> 0.885, 0.640, 0.715, 0.360, 0.520, 0.590, 0.6...
$ citric_acid      <dbl> 0.20, 0.27, 0.22, 0.64, 0.38, 0.01, 0.22, 0.3...
$ residual_sugar   <dbl> 1.40, 2.00, 2.30, 2.90, 1.50, 2.10, 2.70, 2.1...
...
$ sulphates        <dbl> 0.46, 0.62, 0.54, 0.66, 0.52, 0.56, 0.98, 0.8...
$ alcohol          <dbl> 10.0, 9.1, 9.5, 12.5, 9.4, 11.4, 9.9, 11.2, 1...
$ quality          <int> 5, 6, 6, 6, 5, 5, 6, 6, 6, 7, 6, 5, 4, 6, 6, ...
$ quality_label    <chr> "low", "medium", "medium", "medium", "low", ...
```

Color



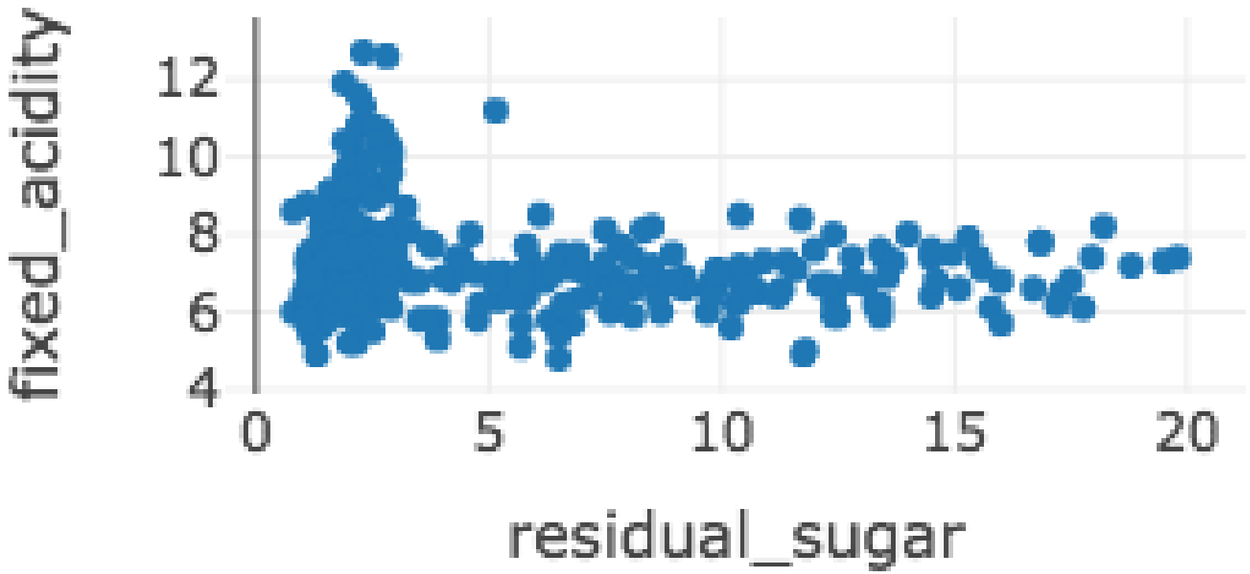

```
winequality %>%
   plot_ly(x = ~fixed_acidity) %>%
   add_histogram()
```

Color



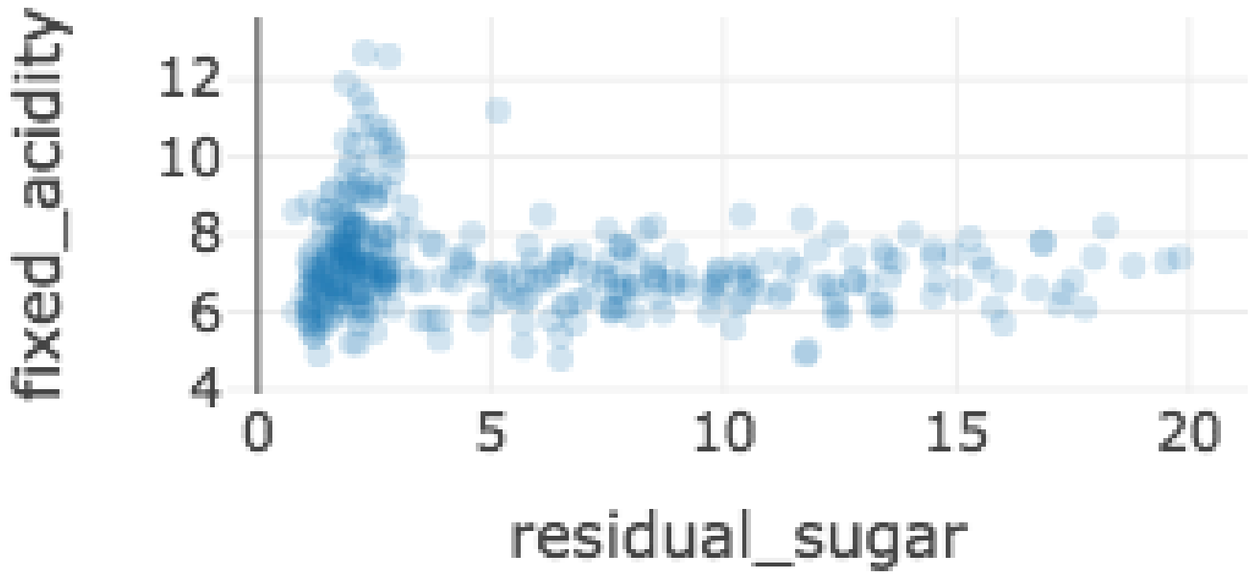

```
winequality %>%
   plot_ly(x = ~fixed_acidity) %>%
   add_histogram(color = I("red")) # Setting color
```

Opacity



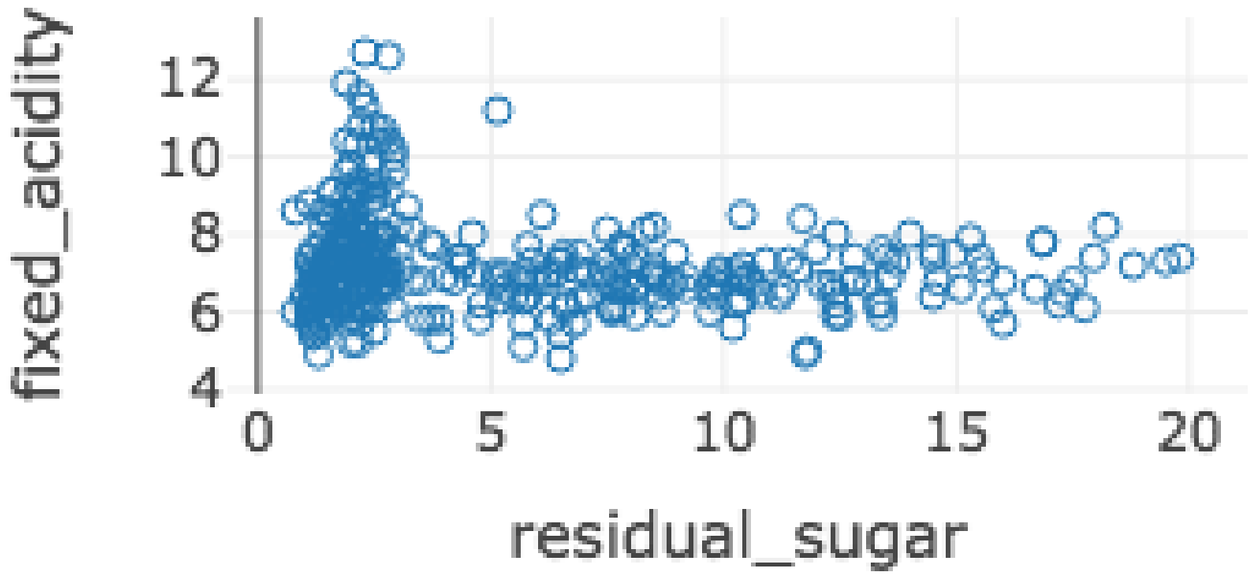

```
winequality %>%
  plot_ly(x = ~residual_sugar, y = ~fixed_acidity) %>%
  add_markers()
```

Opacity




```
winequality %>%
  plot_ly(x = ~residual_sugar, y = ~fixed_acidity) %>%
  add_markers(marker = list(opacity = 0.2))           # Adjust opacity
```

Symbols




```
winequality %>%
  plot_ly(x = ~residual_sugar, y = ~fixed_acidity) %>%
  add_markers(marker = list(symbol = "circle-open"))   # Change symbol
```

Marker options

- `opacity`
- `color`
- `symbol` (scatter/box)
- `size` (scatter)
- `width` (bar/histogram)

Let's practice!

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Thoughtful use of color

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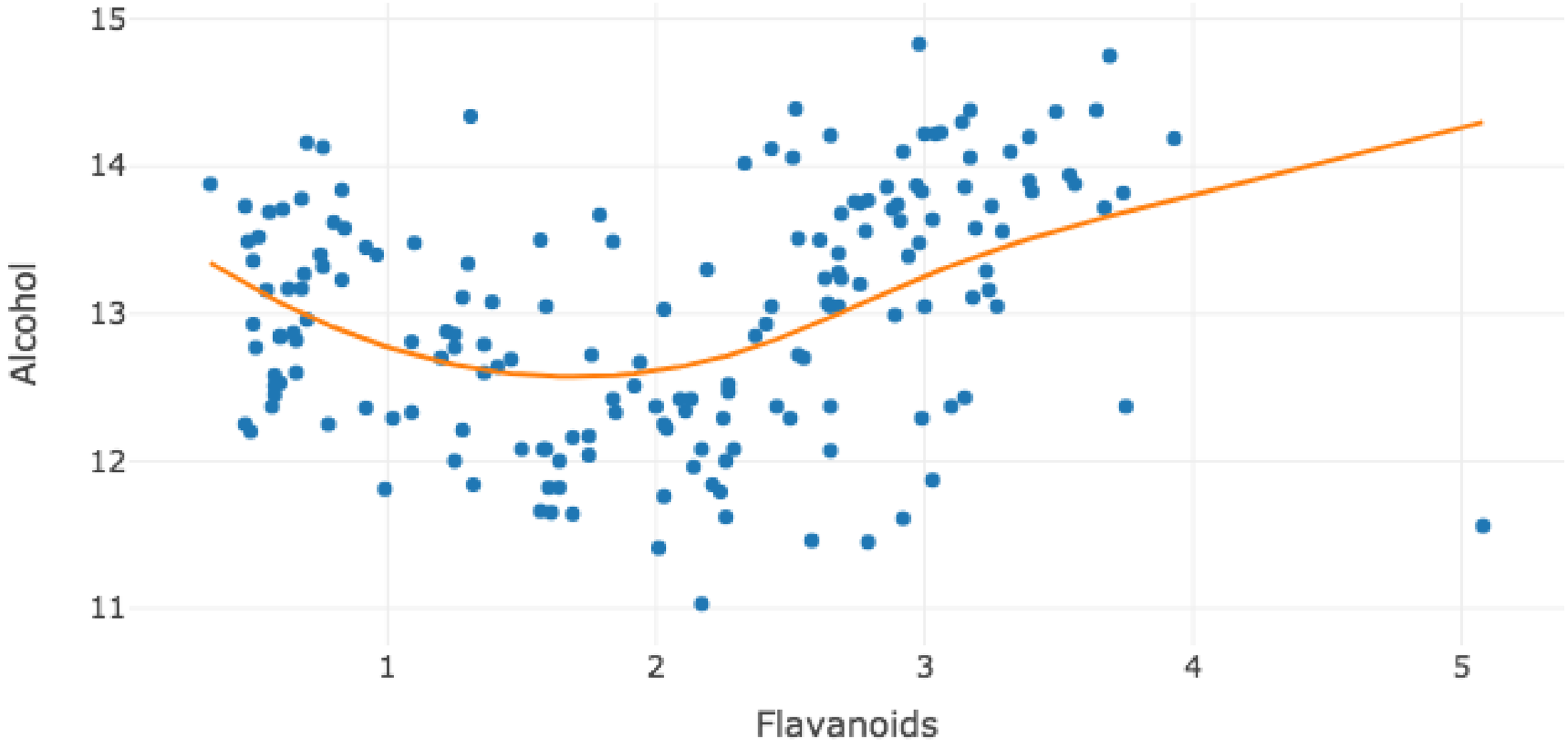
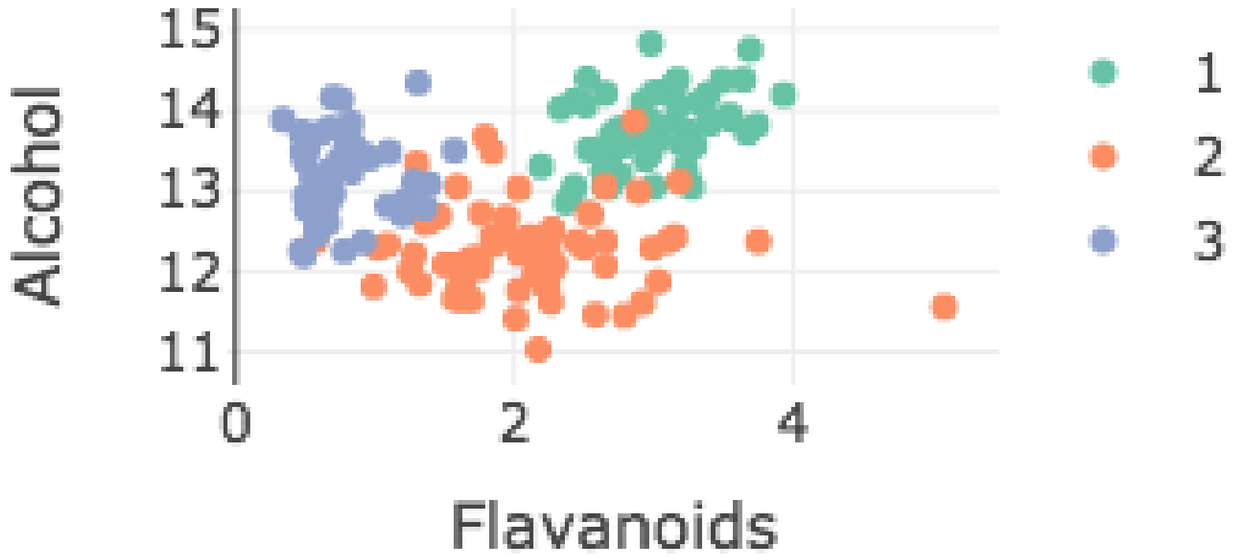
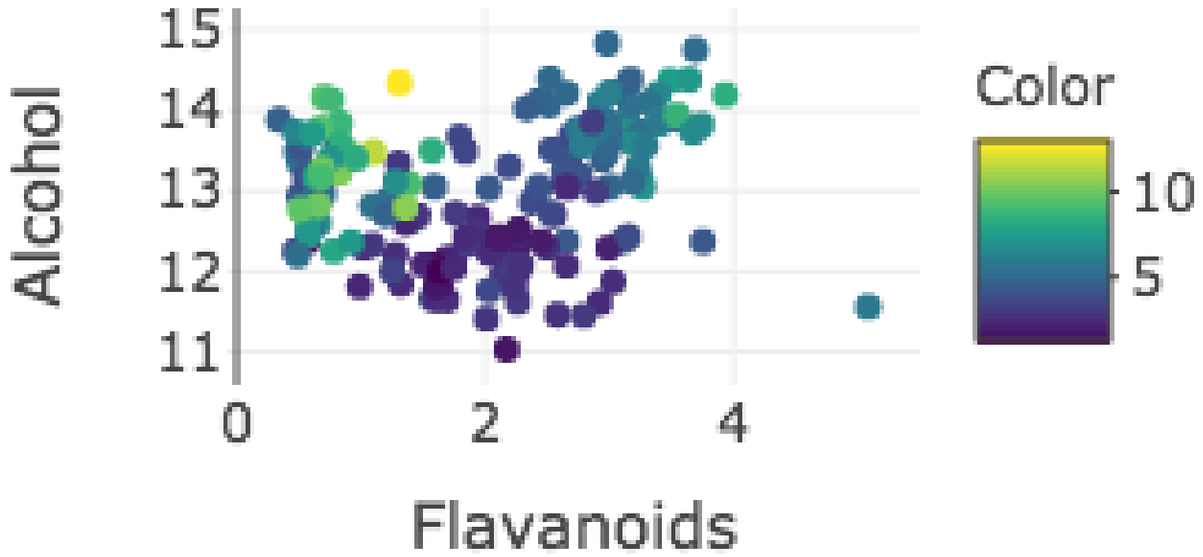

15
14
13
12
11
Alcohol
1
2
3
4
5
Flavanoids

Adding a third variable



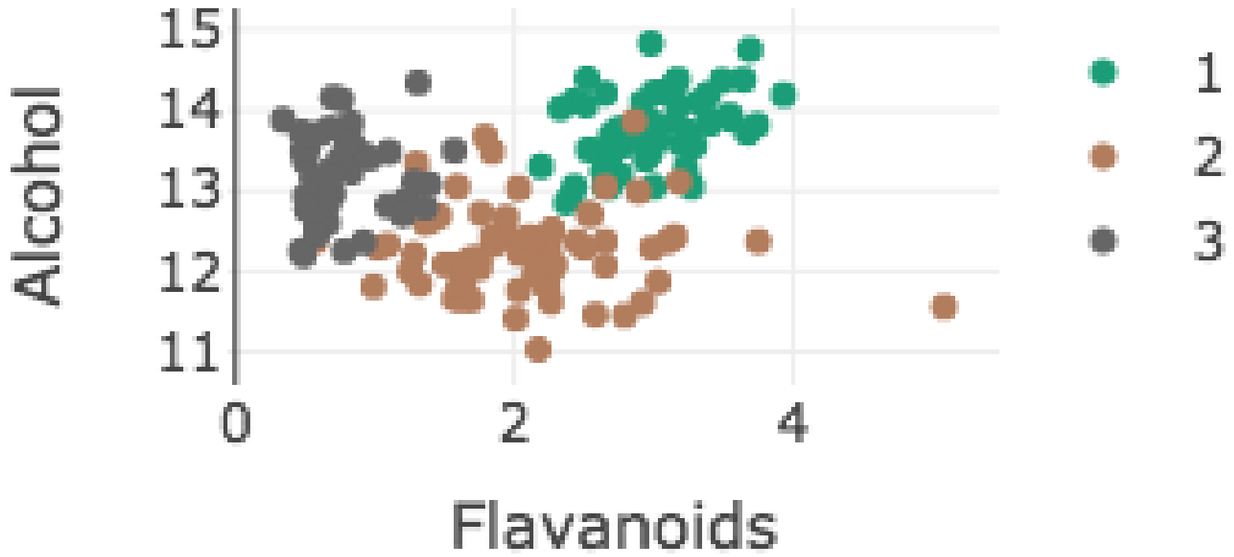

```
wine %>%
  plot_ly(x = ~Flavanoids, y = ~Alcohol, color = ~Type) %>%
  add_markers()
```

Adding a quantitative variable



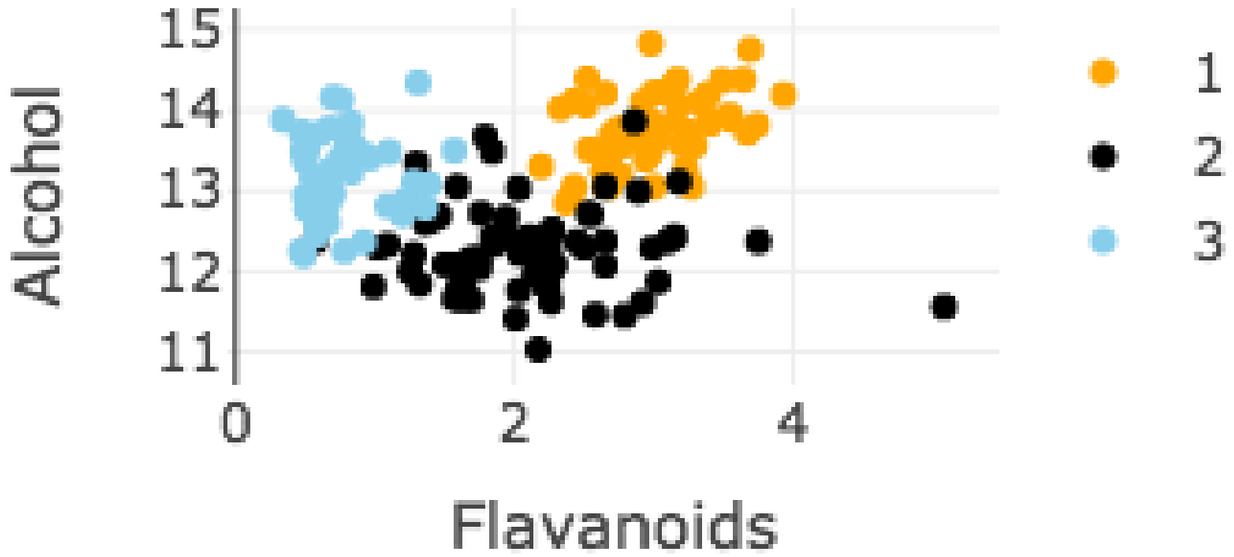

```
wine %>%
  plot_ly(x = ~Flavanoids, y = ~Alcohol, color = ~Color) %>%
  add_markers()
```

RColorBrewer palettes




```
wine %>%
  plot_ly(x = ~Flavanoids, y = ~Alcohol, color = ~Type) %>%
  add_markers(colors = "Dark2")
```

Manual palettes




```
wine %>%
  plot_ly(x = ~Flavanoids, y = ~Alcohol, color = ~Type) %>%
```

```
  add_markers(colors = c("orange", "black", "skyblue"))
```

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Labeling your data

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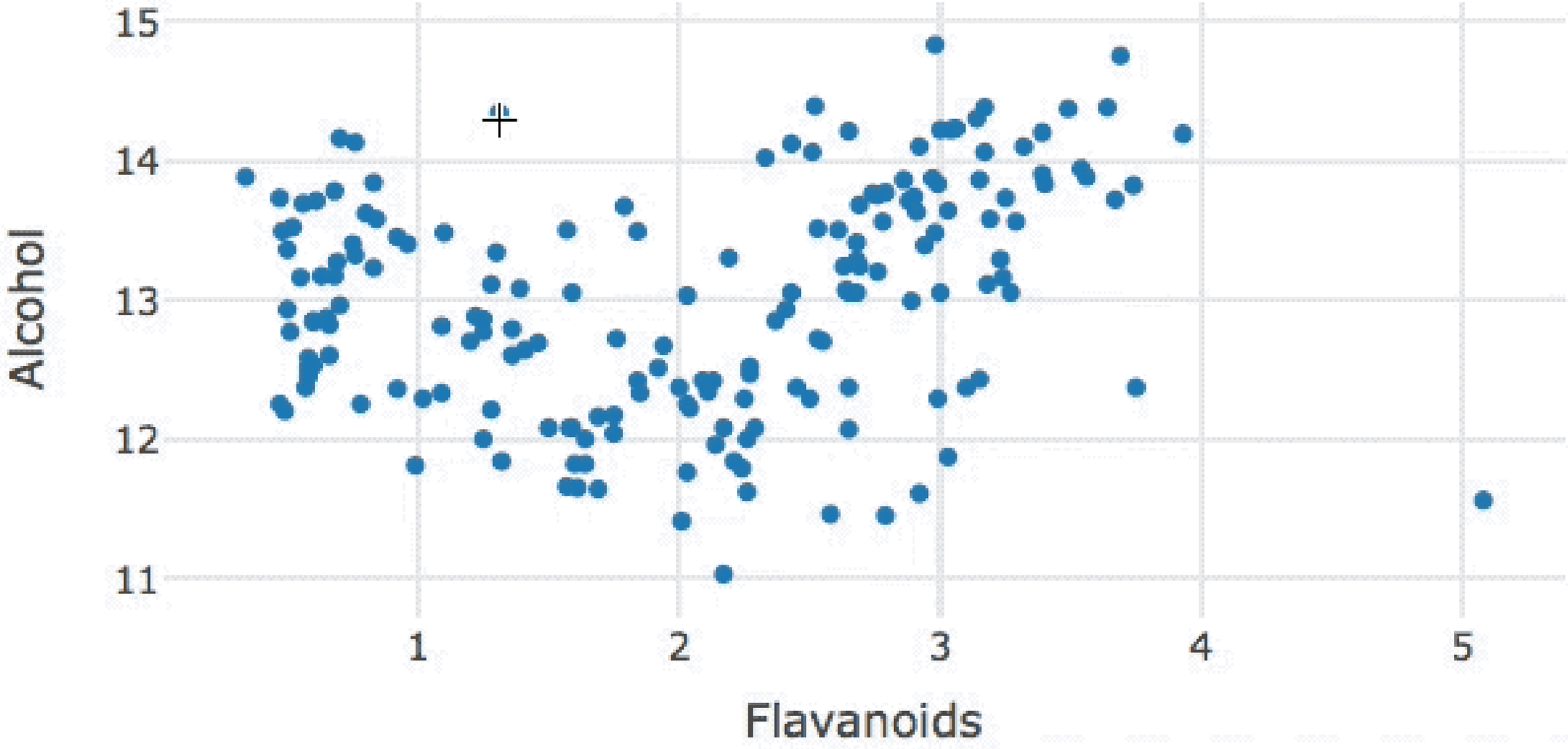
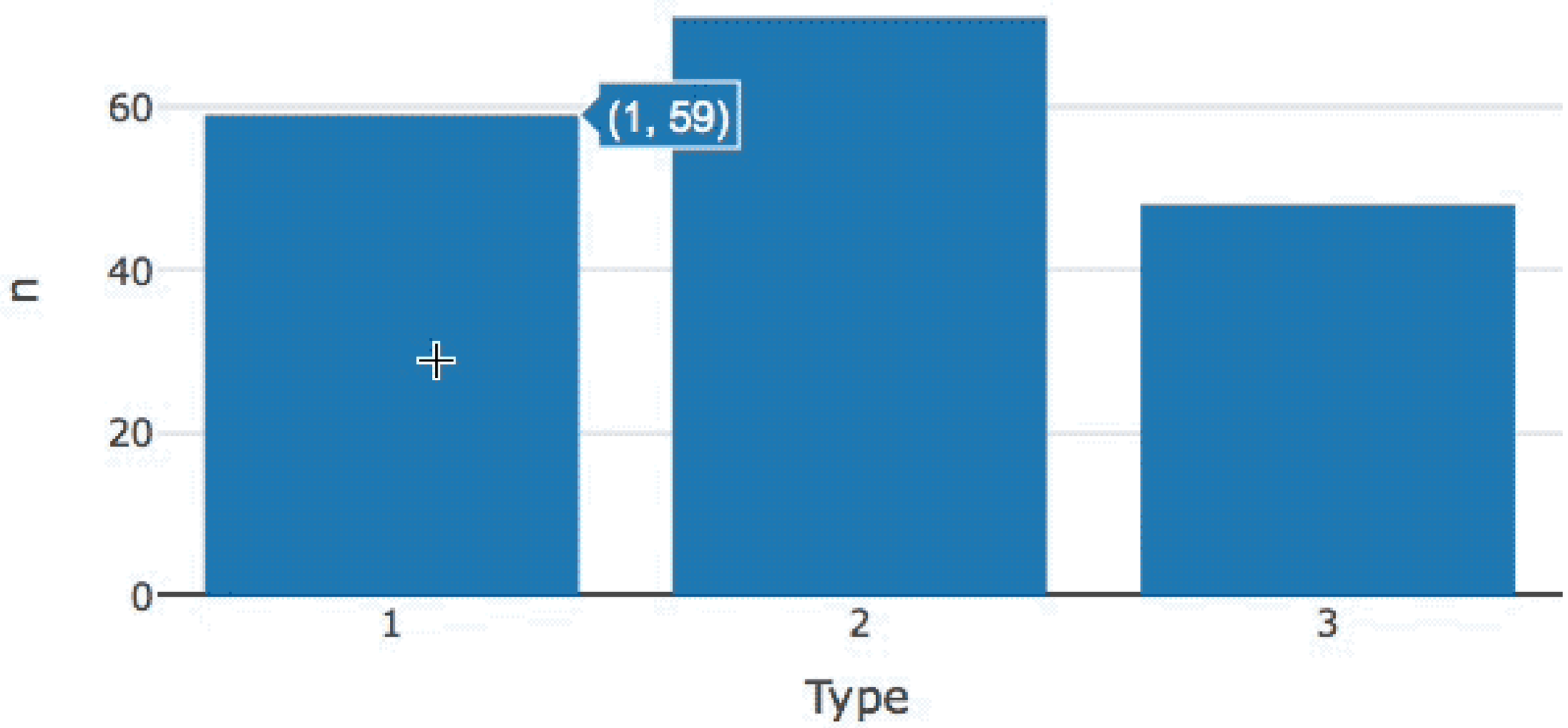
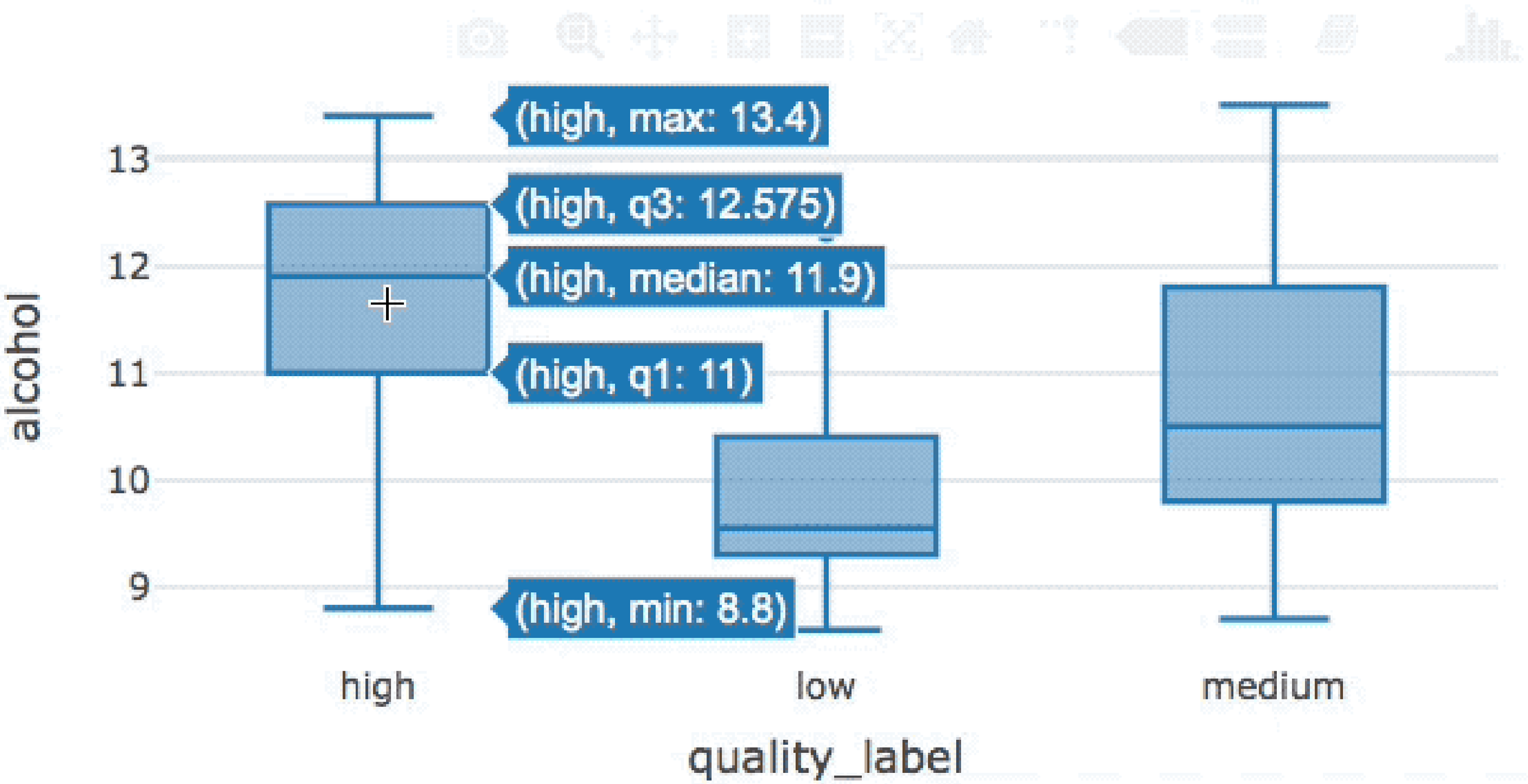

15
14
13
12
11
Alcohol
1
2
3
4
5
Flavanoids


(1, 59)
60
40
20
0
1
2
3
Type


(high, max: 13.4)
(high, q3: 12.575)
(high, median: 11.9)
(high, q1: 11)
(high, min: 8.8)
13
12
11
10
9
alcohol
high
low
medium
quality_label

Changing the default

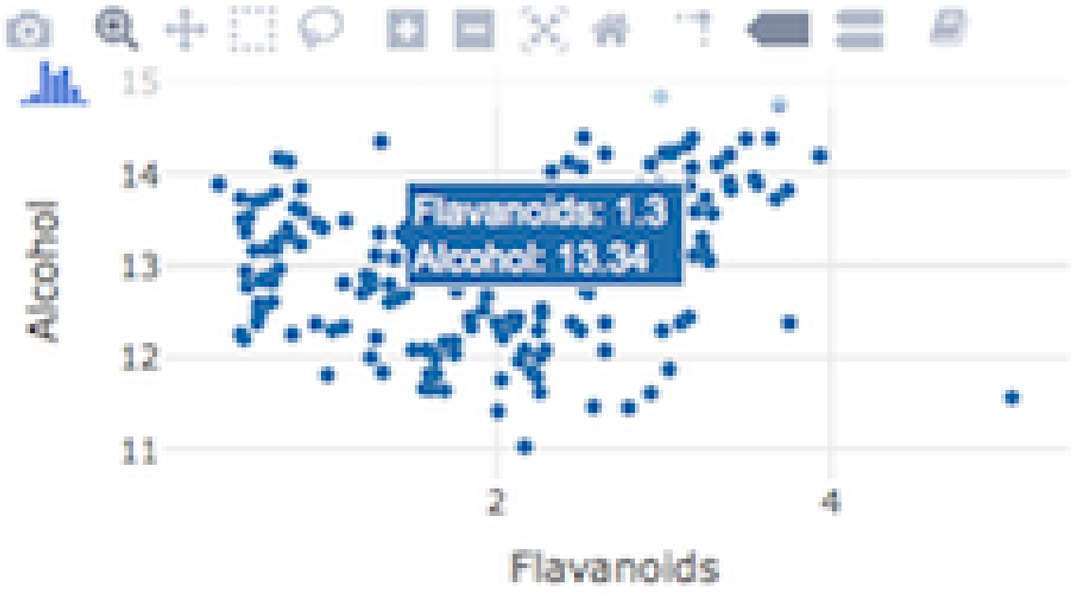
```
wine %>%
 count(Type) %>%
 plot_ly(x = ~Type, y = ~n,
     # Changing the default info displaye
         hoverinfo = "y"
 ) %>%
 add_bars()
```

`hoverinfo =`

- `"all"`
- `"x"`
- `"y"`
- `"x+y"`
- `"x+y+z"`

Custom hover text

```
wine %>%
  plot_ly(x = ~Flavanoids, y = ~Alcohol,
    hoverinfo = "text",
    text = ~paste("Flavanoids:", Flavanoids, "<br
                  "Alcohol:", Alcohol)
          ) %>%
  add_markers()
```



- tilde, `~`, to map columns to aesthetic parameters

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Customizing your layout

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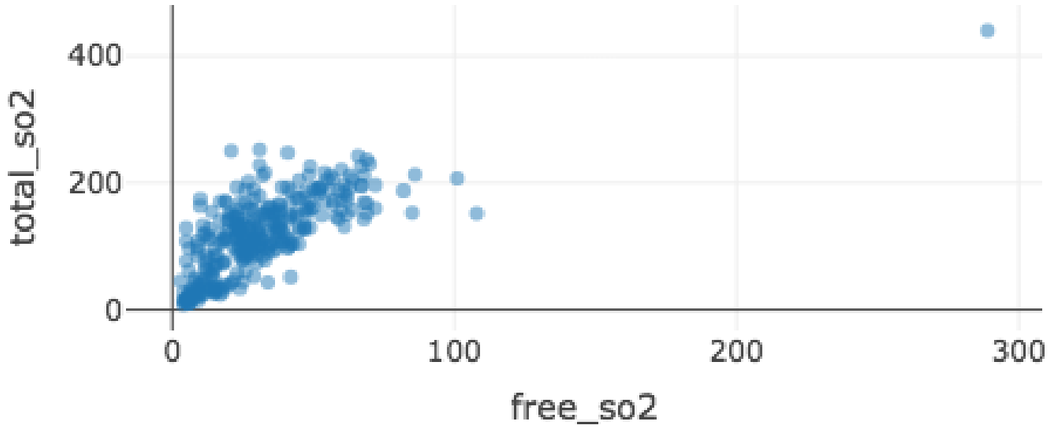
layout()

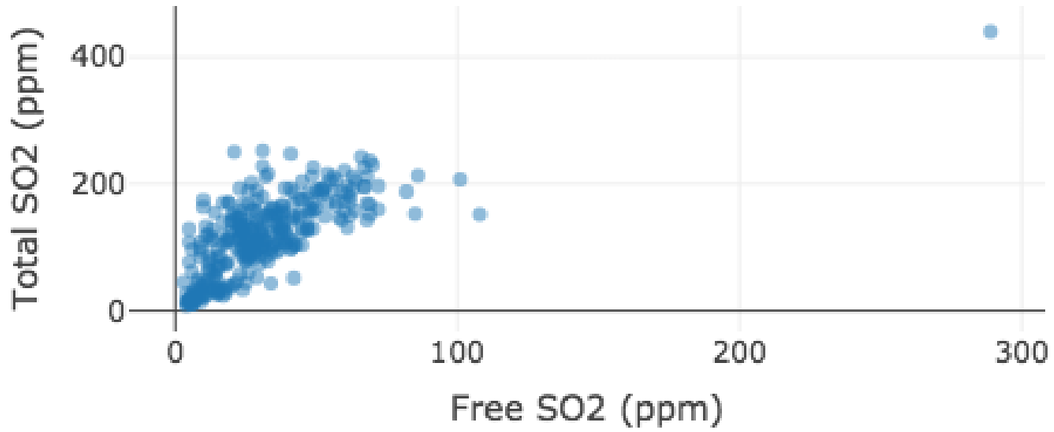
- **axes:** type, labels, tick marks, transformations, etc.
- **legend:** position
- **canvas:** grid lines, background color
- **size**: height, width, margins

Axis labels



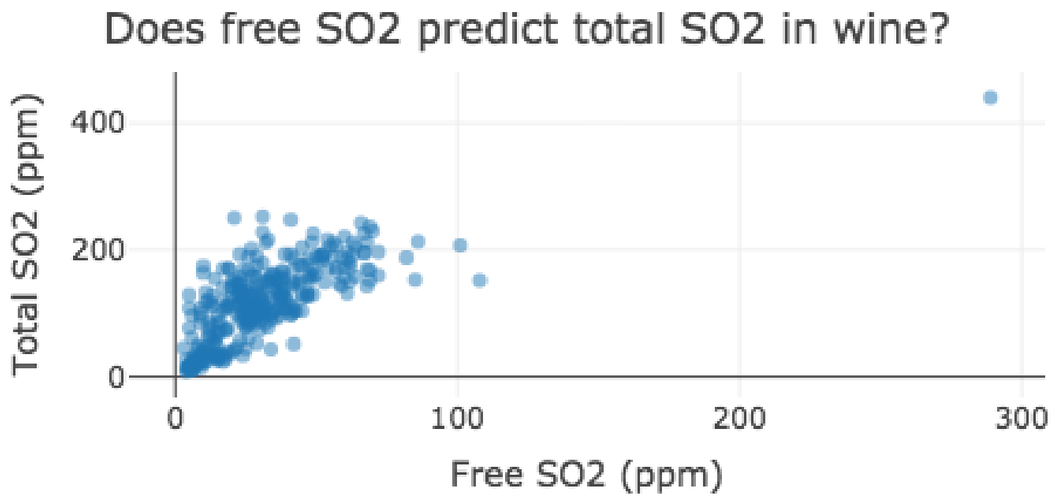

```
winequality %>%
  plot_ly(x = ~free_so2, y = ~total_so2) %>%
  add_markers(marker = list(opacity = 0.2))
```

Axis labels



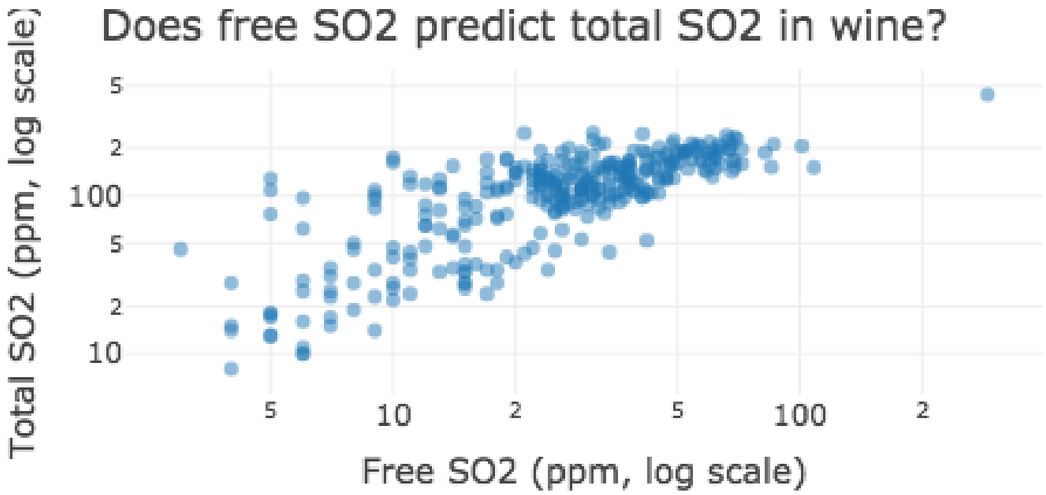

```
winequality %>%
  plot_ly(x = ~free_so2, y = ~total_so2) %>%
  add_markers(marker = list(opacity = 0.2)) %>%
  layout(xaxis = list(title = "Free SO2 (ppm)"),
         yaxis = list(title = "Total SO2 (ppm)"))
```

Titles



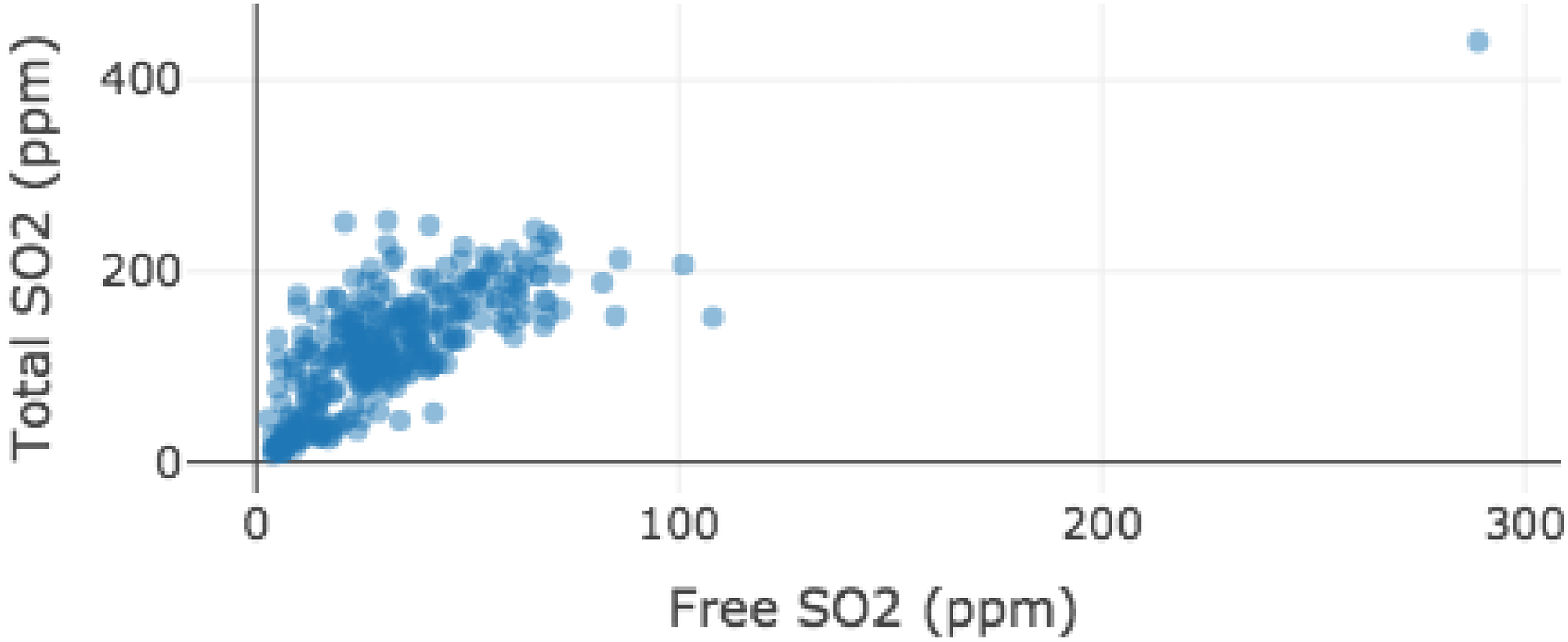

```
winequality %>%
  plot_ly(x = ~free_so2, y = ~total_so2) %>%
  add_markers(marker = list(opacity = 0.2)) %>%
  layout(xaxis = list(title = "Free SO2 (ppm)"),
         yaxis = list(title = "Total SO2 (ppm)"),
         title = "Does free SO2 predict total SO2 in wine?")
```

Transforming axes

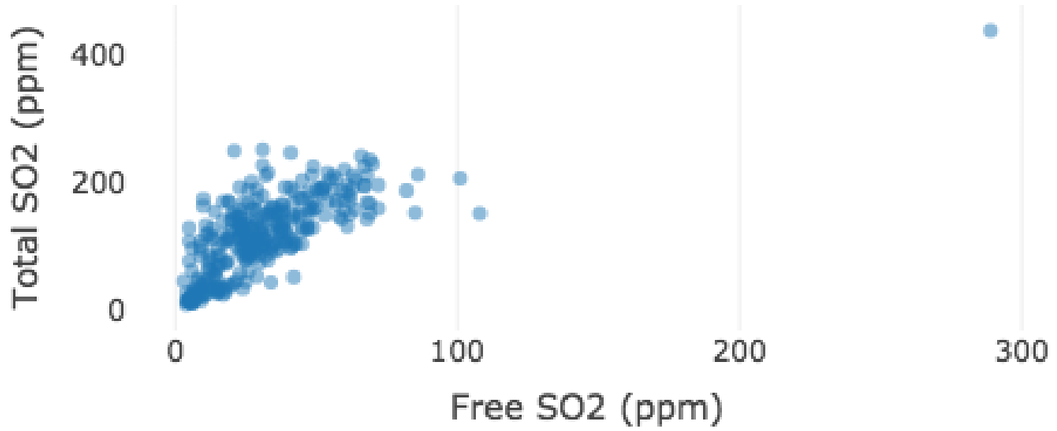



```
winequality %>%
  plot_ly(x = ~free_so2, y = ~total_so2) %>%
  add_markers(marker = list(opacity = 0.2)) %>%
  layout(xaxis = list(title = "Free SO2 (ppm, log scale)", type = "log"),
         yaxis = list(title = "Total SO2 (ppm, log scale)", type = "log"),
         title = "Does free SO2 predict total SO2 in wine?")
```

Customizing the grid

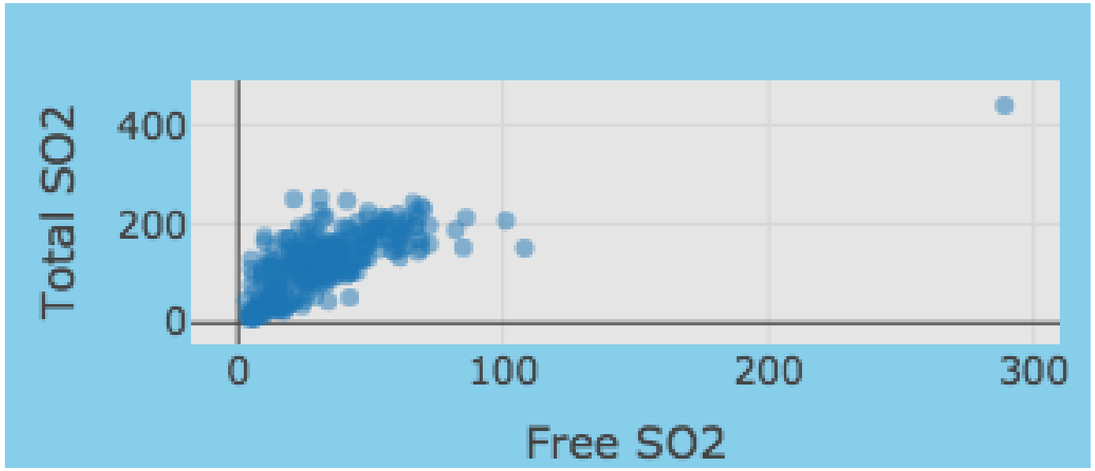


Customizing the grid




```
winequality %>%
  plot_ly(x = ~free_so2, y = ~total_so2) %>%
  add_markers(marker = list(opacity = 0.5)) %>%
  layout(xaxis = list(title = "Free SO2 (ppm)", zeroline = FALSE),
         yaxis = list(title = "Total SO2 (ppm)", zeroline = FALSE,
                      showgrid = FALSE))
```

Customizing the canvas




```
winequality %>%
  plot_ly(x = ~free_so2, y = ~total_so2) %>%
  add_markers(marker = list(opacity = 0.5)) %>%
  layout(xaxis = list(title = "Free SO2 (ppm)"),
         yaxis = list(title = "Total SO2 (ppm)"),
```

```
         plot_bgcolor = toRGB("gray90"),
         paper_bgcolor = toRGB("skyblue"))
```

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