

R Toolkit Digest



*...dose of hidden gems, packages,
and practical R tricks...*

Improving Grouped Bar Charts

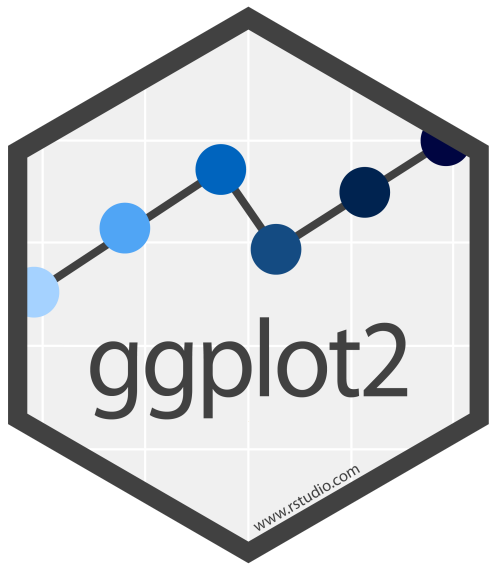
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#RToolkitDigest



ggplot2

I learned a small ggplot2 trick that makes grouped bar charts look much cleaner.

Before diving into the trick, here's a quick refresher.



ggplot2

- (created by Hadley Wickham) is based on the Grammar of Graphics, where plots are built layer by layer.

What is the Grammar of Graphics?

It's a **layered framework** for constructing visualizations in a structured way.

Rather than treating charts as single drawings, it breaks them into reusable components.

This makes visualizations easier to build, customize, and extend.



Basic Structure

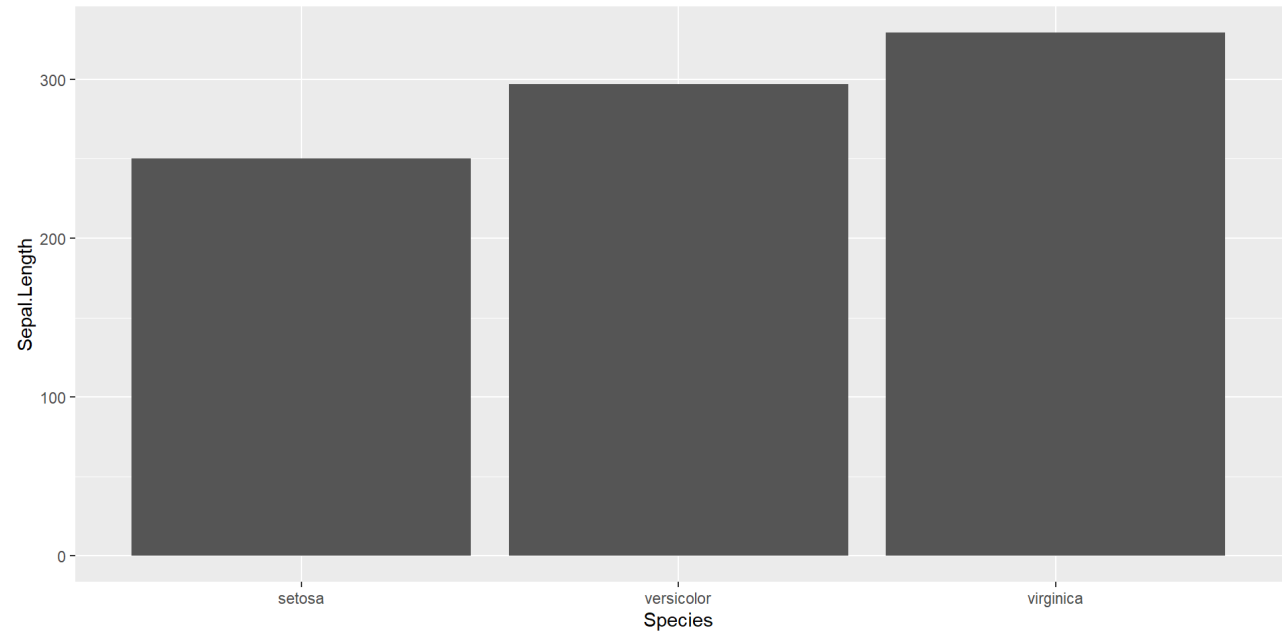
```
ggplot(data, aes(x, y)) +  
  geom_()
```

Every ggplot follows a simple structure:

- `data` → the dataset being used
- `aes()` → variables mapped to the visualization
- `geom_()` → type of visualization (`_bar`, `_col`, `_hist`, `_point`)

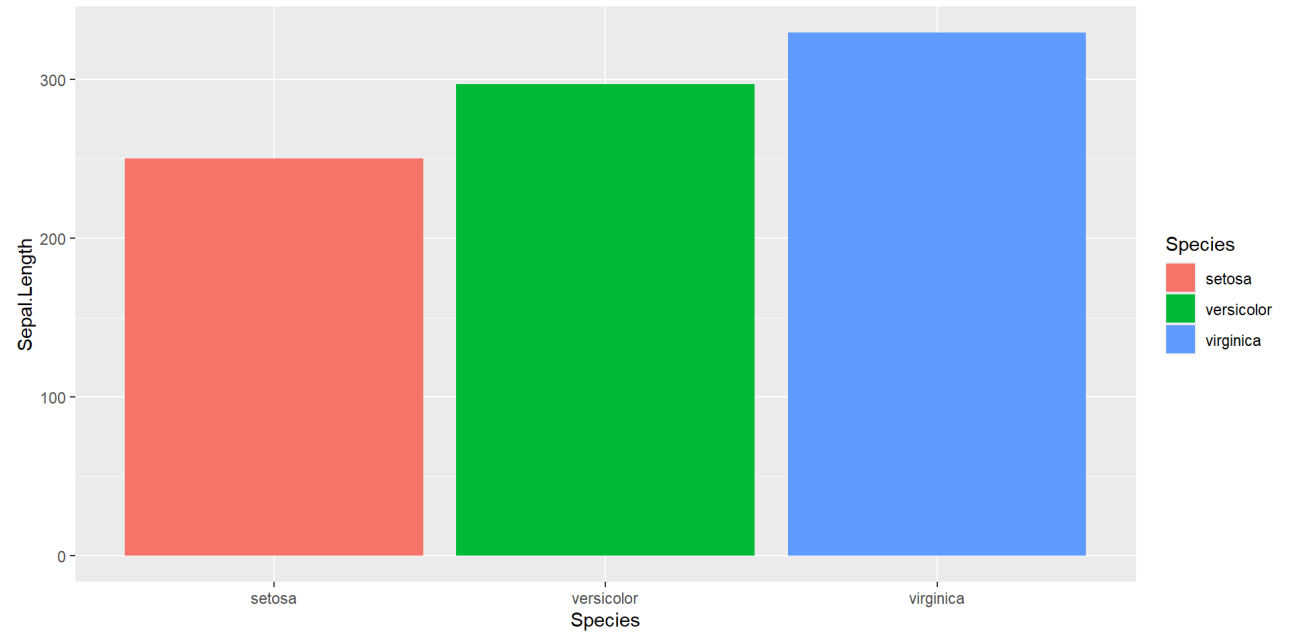
Illustration with Iris Dataset

```
1 library(ggplot2)
2
3 ggplot(iris, aes(
4   x = Species,
5   y = Sepal.Length)
6 ) +
7 geom_col()
```



Adding Color with `fill`

```
1 library(ggplot2)
2
3 ggplot(iris, aes(
4   x = Species,
5   y = Sepal.Length,
6   fill = Species)
7 ) +
8 geom_col()
```



`fill = Species` tells ggplot2 to assign a different color to each species category automatically.

Now to the Trick

So far, we've seen how ggplot2 builds visualizations using layers and aesthetics.

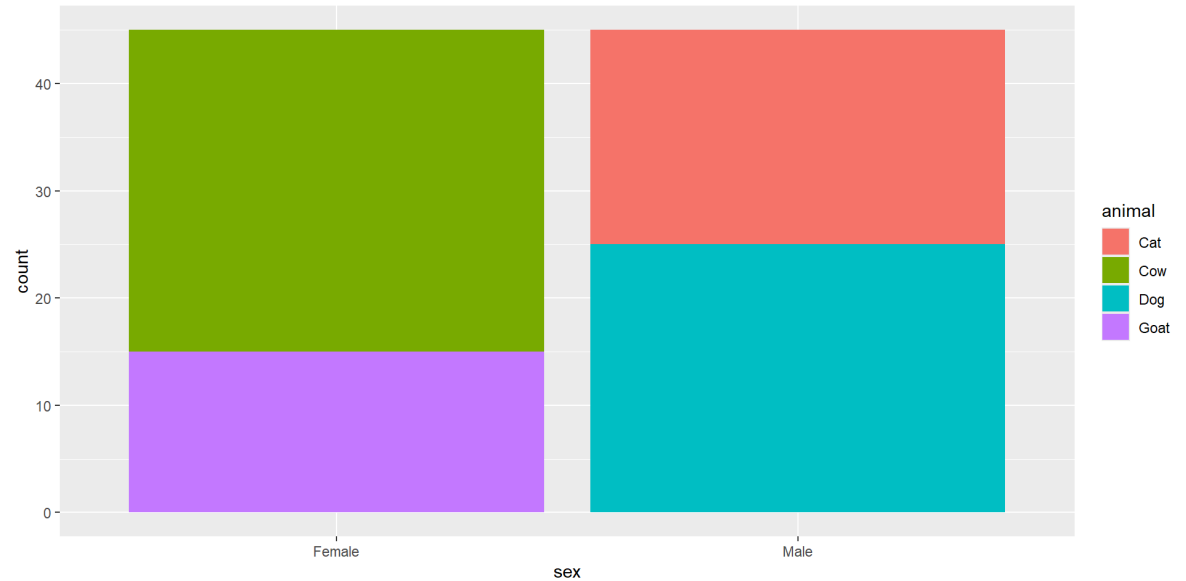
But one thing I recently discovered is that we can also control the spacing between grouped bars.

Check out this data frame:

sex	animal	count
Male	Cat	20
Male	Dog	25
Female	Cow	30
Female	Goat	15

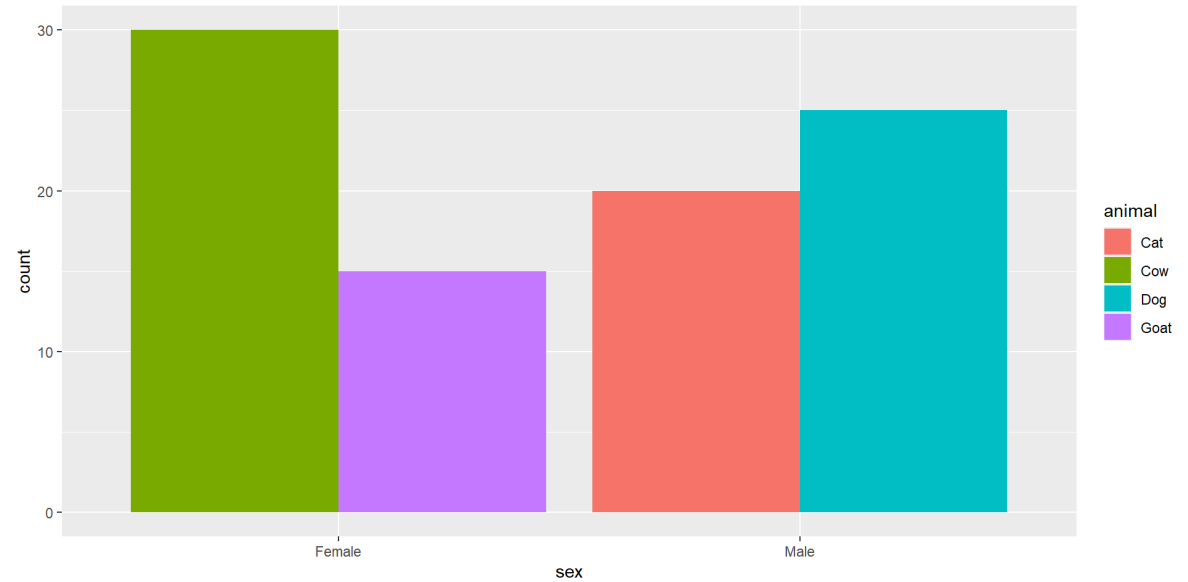
I would normally plot it like this:

```
1 library(ggplot2)
2
3 ggplot(data,
4         aes(x = sex,
5             y = count,
6             fill = animal)) +
7   geom_bar(stat = "identity")
```



Or like this:

```
1 library(ggplot2)
2
3 ggplot(data,
4         aes(x = sex,
5             y = count,
6             fill = animal)) +
7   geom_col(position = "dodge")
```



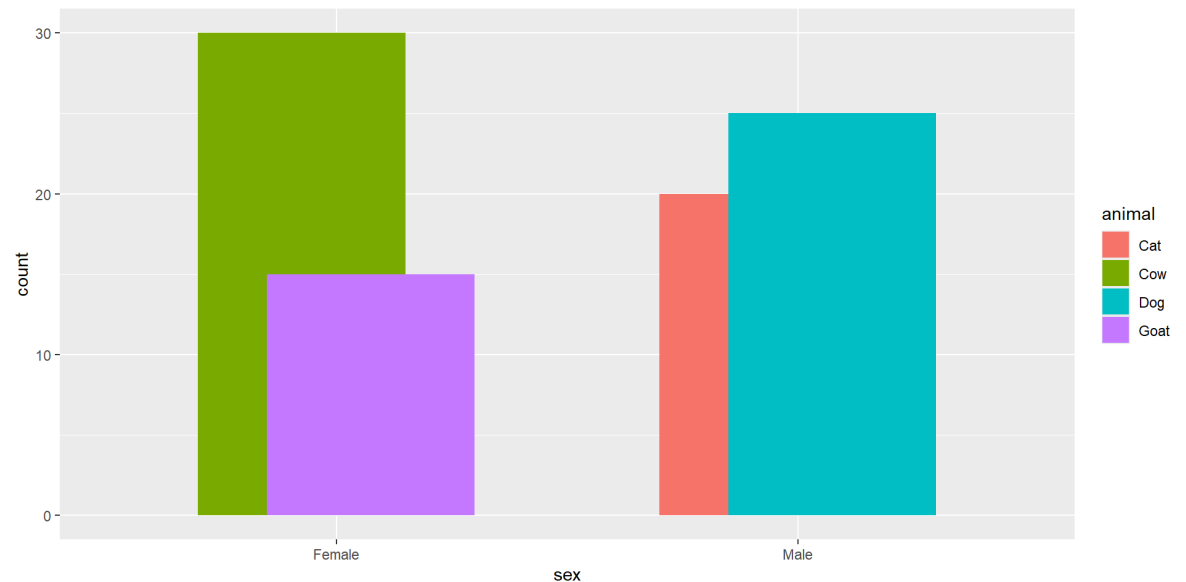
It gets the job done, but...

I discovered you can control the spacing using:

```
position = position_dodge(width = 0.3)
```

Like this:

```
1 ggplot(data,  
2     aes(x = sex,  
3         y = count,  
4         fill = animal)) +  
5   geom_col(  
6     position = position_dodge(width = 0.3)  
7   )
```



Insight:

Smaller widths bring bars closer together.

Larger widths create more spacing.

It's a subtle adjustment, but it gives much greater control over readability and presentation — especially when comparing categories side by side.

A Practical Example

Suppose we want to compare **targets versus achieved results** across countries.

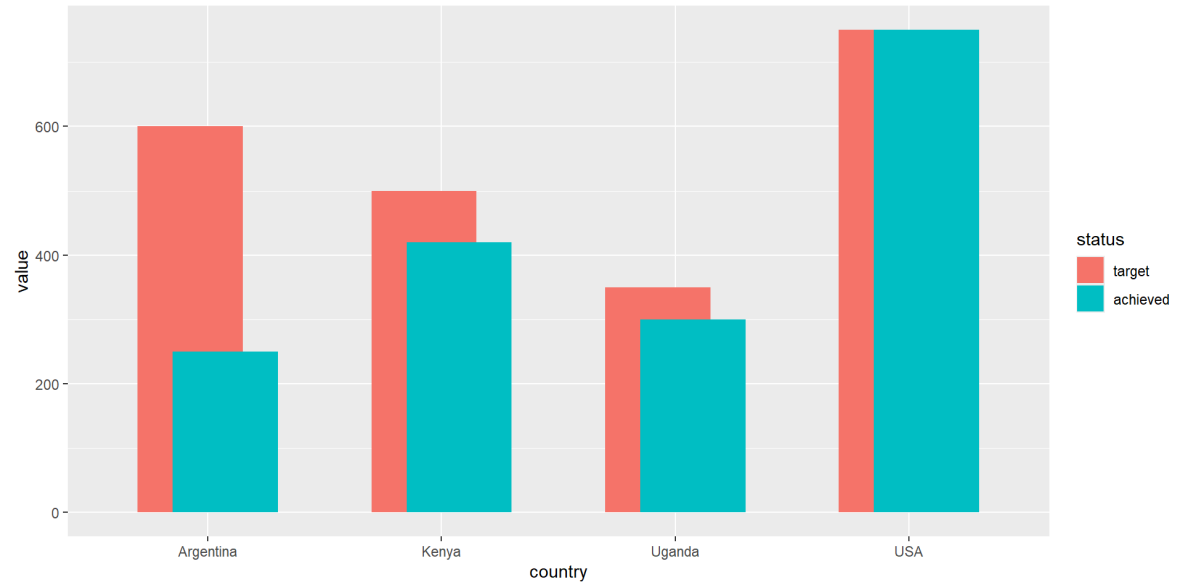
This is a common reporting scenario in monitoring, evaluation, and program dashboards.

With this [data](#), for instance...

country	target	achieved
Kenya	500	420
Argentina	600	250
Uganda	350	300
USA	750	750

Plotting comparison

```
1 plot_data <- data %>%
2   pivot_longer(
3     cols = c(target, achieved),
4     names_to = "status",
5     values_to = "value"
6   )
7
8 ggplot(
9   plot_data,
10  aes(
11    x = country,
12    y = value,
13    fill = status
14  )
15 ) +
16 geom_col(
17   position = position_dodge(width = 0.3)
18 )
```



Why Visualization Matters

Good visualizations do more than make reports look attractive.

They help us:

- communicate findings clearly
- simplify complex information
- reveal patterns and comparisons quickly
- support evidence-based decision making
- make reports more engaging and actionable

Takeaway:

A well-designed chart can communicate insights faster than paragraphs of text.

That's why small improvements in visualization — even something as simple as adjusting spacing with `position_dodge()` — can make a big difference.



Further Reading

- Dipanjan Sarkar (2018). *A Comprehensive Guide to the Grammar of Graphics for Effective Visualization of Multi-dimensional Data*. Towards Data Science. [Link](#)
- Hadley Wickham (2010). *A Layered Grammar of Graphics*. [Paper PDF](#)
- ggplot2 official site: <https://ggplot2.tidyverse.org>