

How to arrange graphics from ggplot2 on multipage pdfs

Rladies Lightning Talk

Lausanne Kick-off Meeting

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Use case:

Multi-page PDF with n similar plots

User defined:

- Number of plots per page
- arrangement on page

Let R figure out:

- How many pages are needed

Use case:

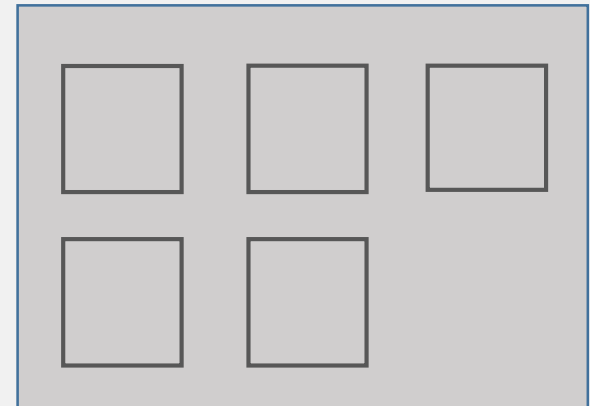
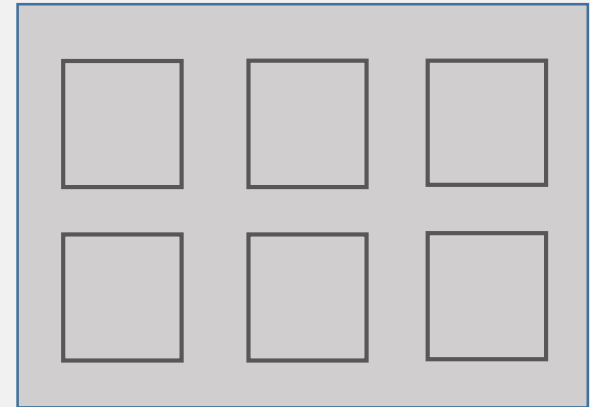
Multi-page PDF with n similar plots

User defined:

- Number of plots per page
- arrangement on page

Let R figure out:

- How many pages are needed



Last page only partially filled

R Base Graphics: use `pdf()` and `par(mfrow)`

of rows: 1

of columns: 3

Paper size

```
pdf("Rbase_plots.pdf", paper="a4r")  
par(mfrow=c(1,3))  
# create a number of plots here  
dev.off()
```

ggplot2 graphics: `par()` does not work

ggplot2 graphics: use `ggpubr::ggarrange()`

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Call to pdf() can stay the same

A list of ggplot2 graphics

```
pdf("ggplot2_plots.pdf", paper="a4r")  
ggpubr::ggarrange(plotlist = myplotlist,  
  nrow=1, ncol=3)  
dev.off()
```

of rows: 1

of columns: 3

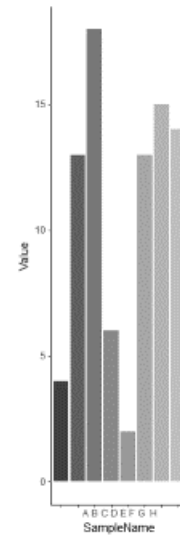
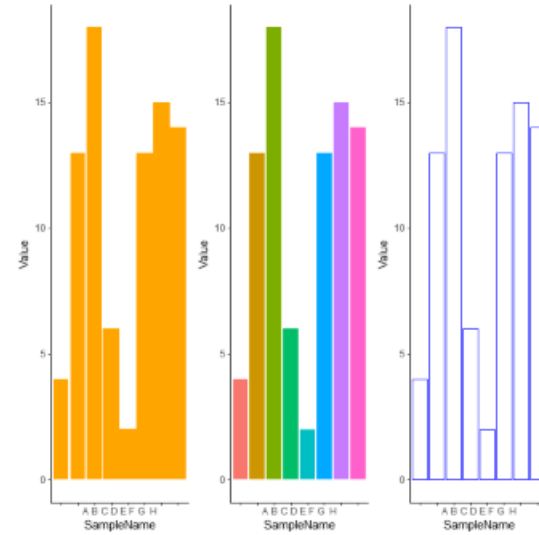
Input is a list()

```
library(ggplot2)
p1 <- ggplot( # plot 1)
p2 <- ggplot( # plot 2)
p3 <- ggplot( # plot 3)
P4 <- ggplot( # plot 4)
myplotlist <- list(p1, p2, p3, p4)

pdf("ggplot2_plots.pdf", paper="a4r")
ggpubr::ggarrange(plotlist = myplotlist,
                  nrow=1, ncol=3)
dev.off()
```

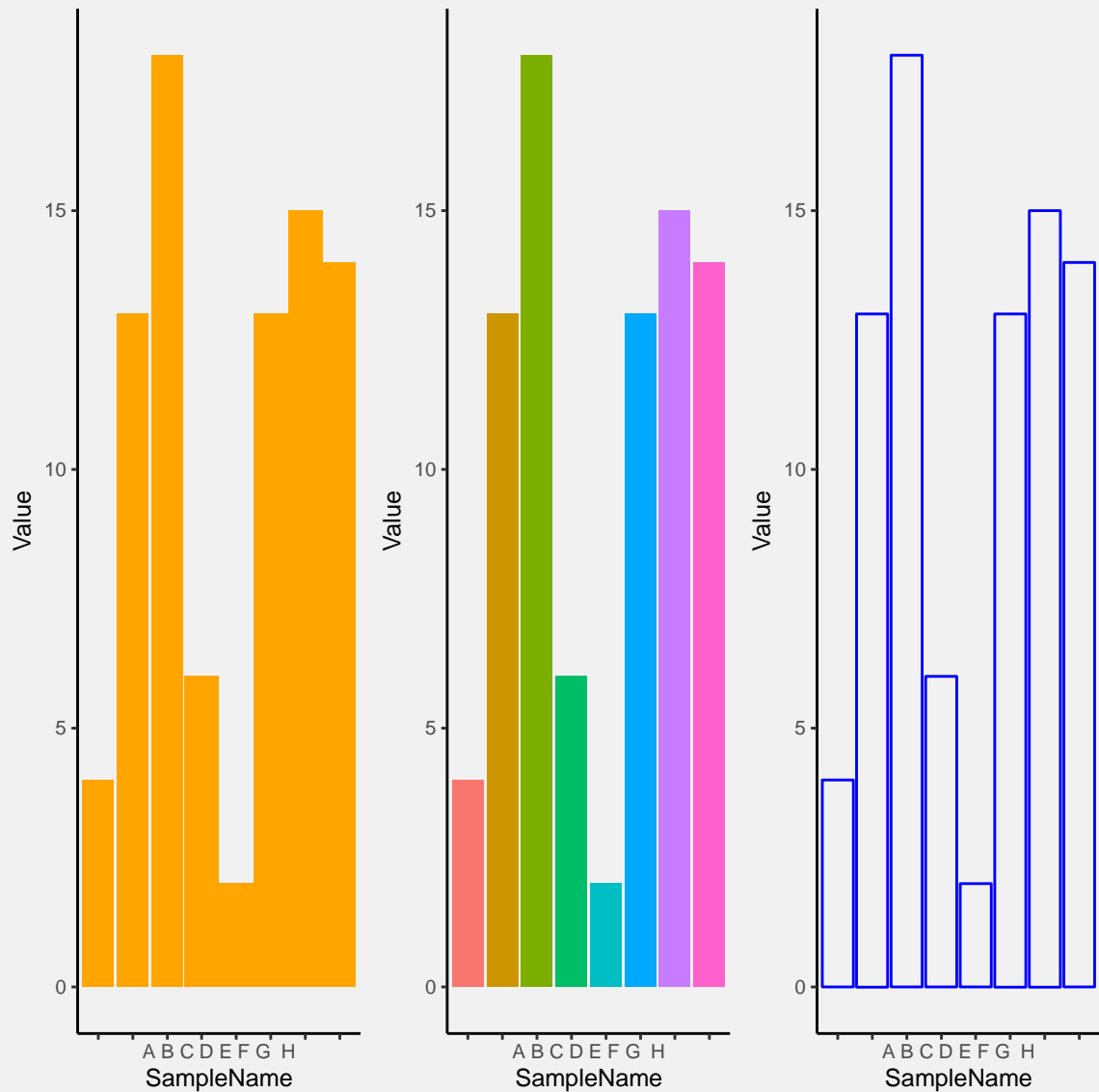
Example (ggarrange):

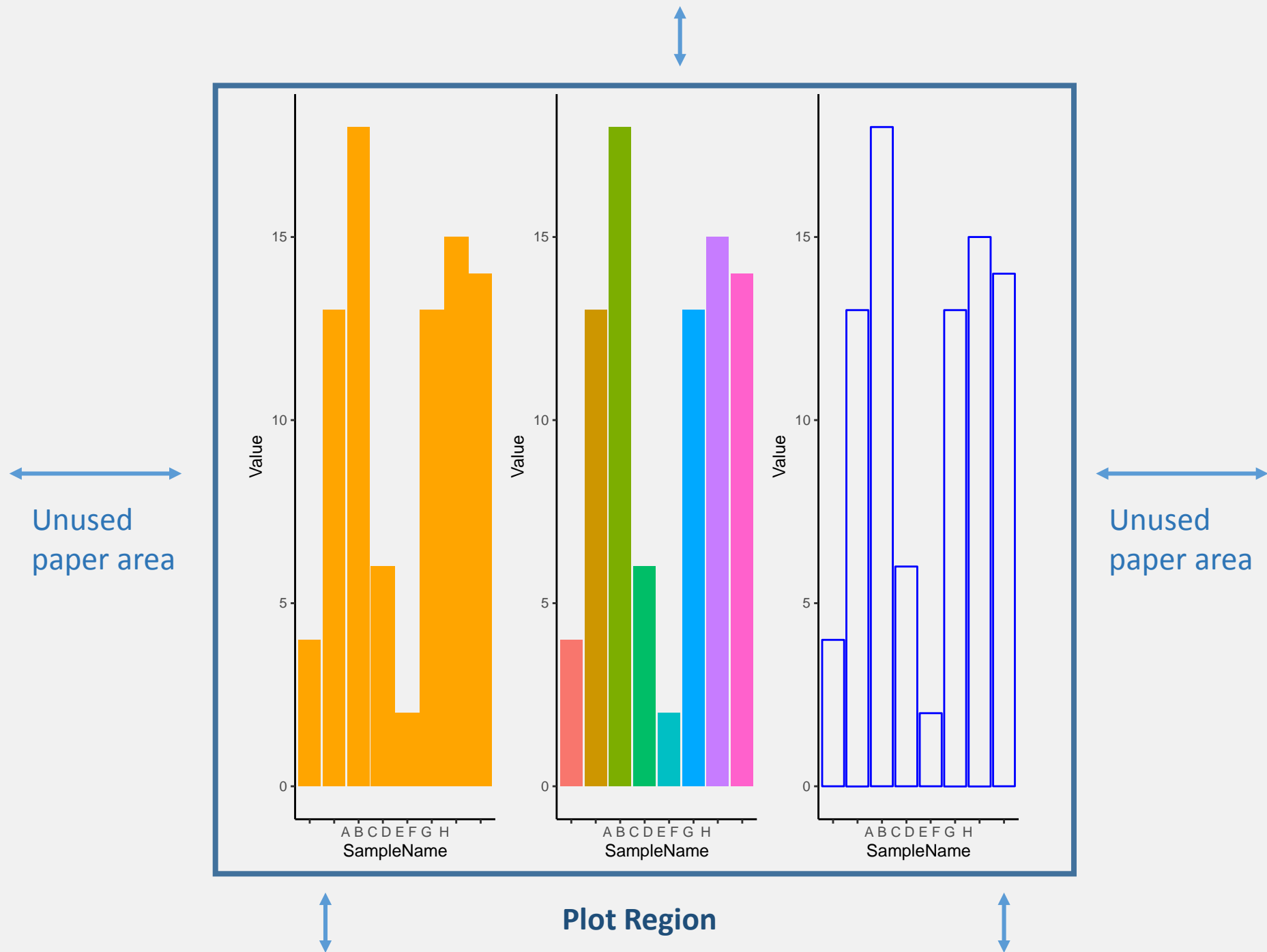
- 4 graphics
- 1 row, 3 cols (2 pages)



Let's fine-tune the plot arrangement

Version 0: automatic plot arrangement





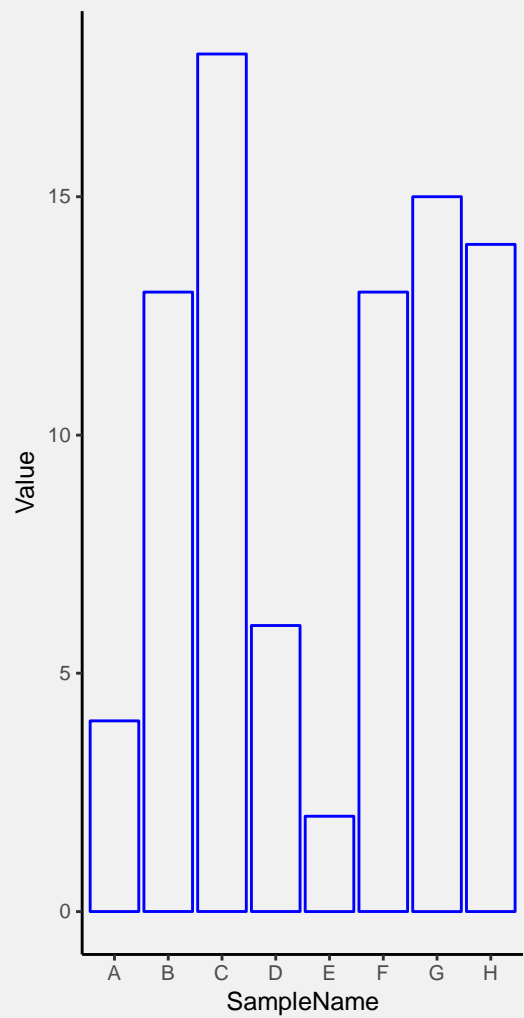
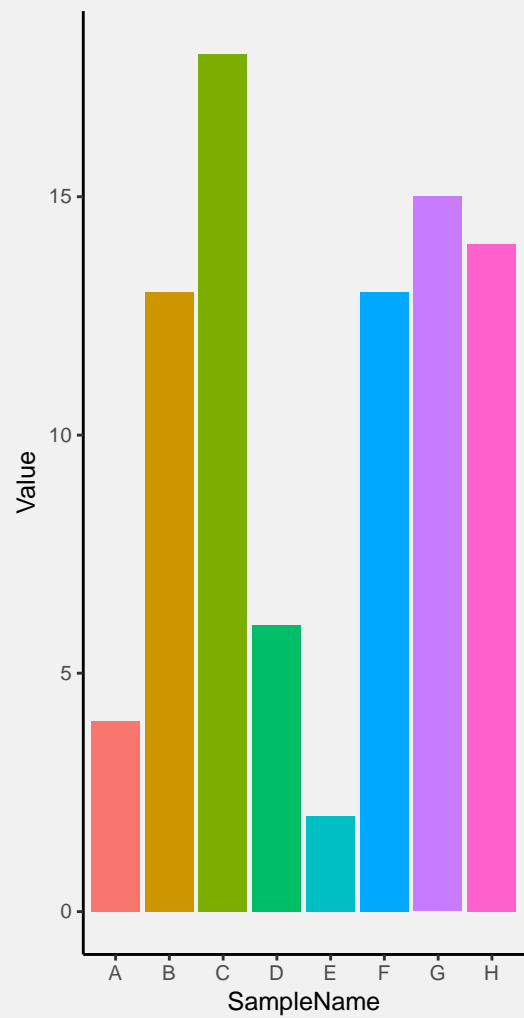
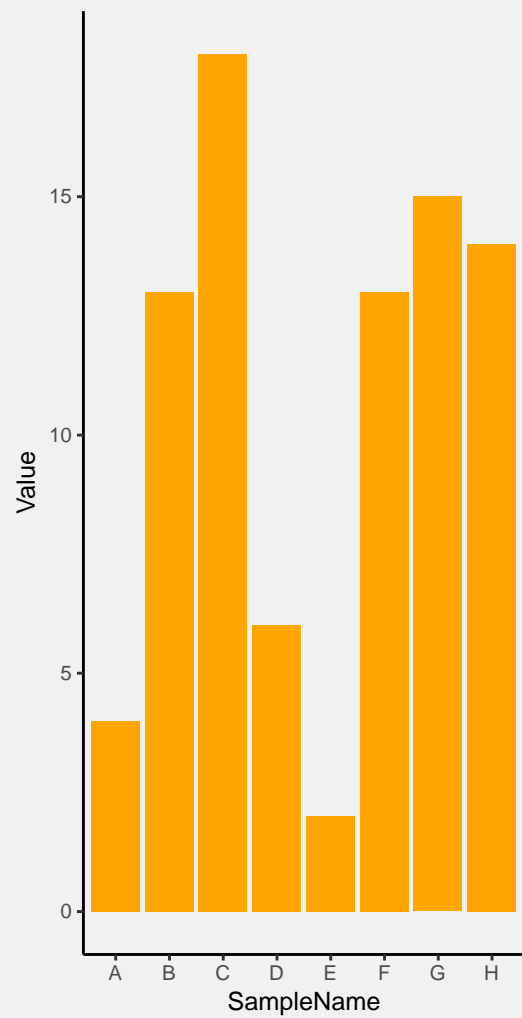
Improvement 1: Increase plot region

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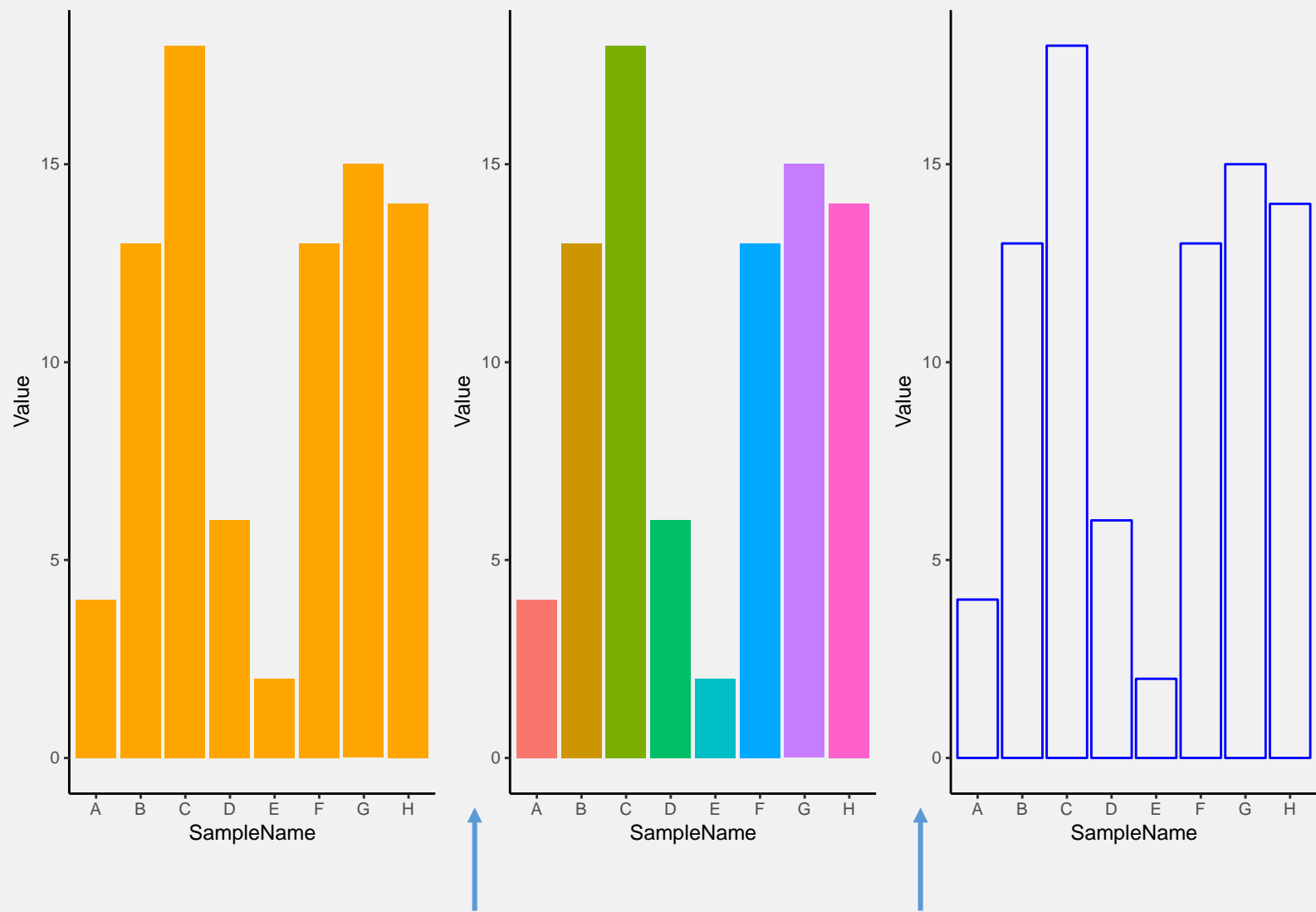
*Width and height in inches:
A little smaller than A4 dimensions
(8.27 x 11.69 “)*

```
pdf("ggplot2_plots.pdf", paper="a4r",  
    width=9.69, height=6.27))  
ggarrange(plotlist = myplotlist,  
           nrow=1, ncol=3)  
dev.off()
```


Version 1: Plot region resized!



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Very little white space between plots

Improvement 2: Margins around plots

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*Add a ggplot2::theme
to each plot*

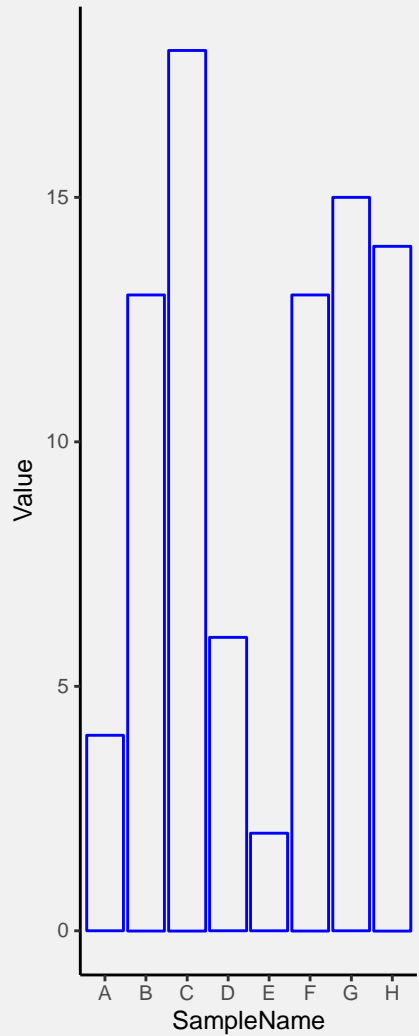
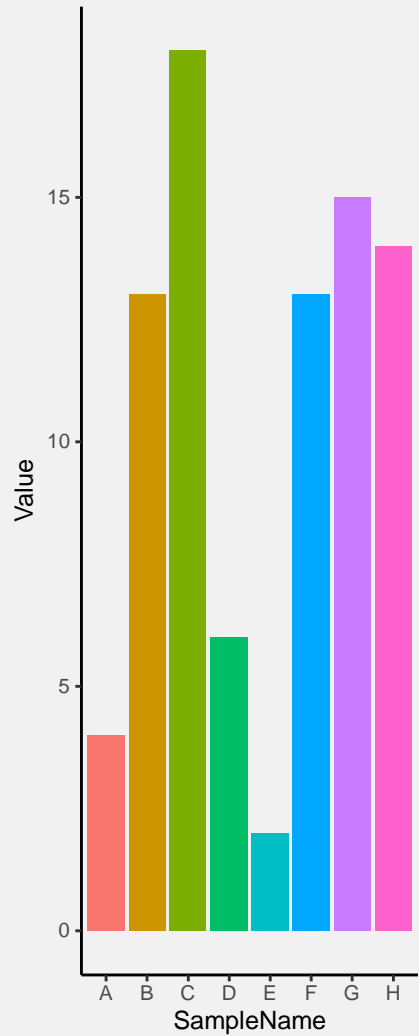
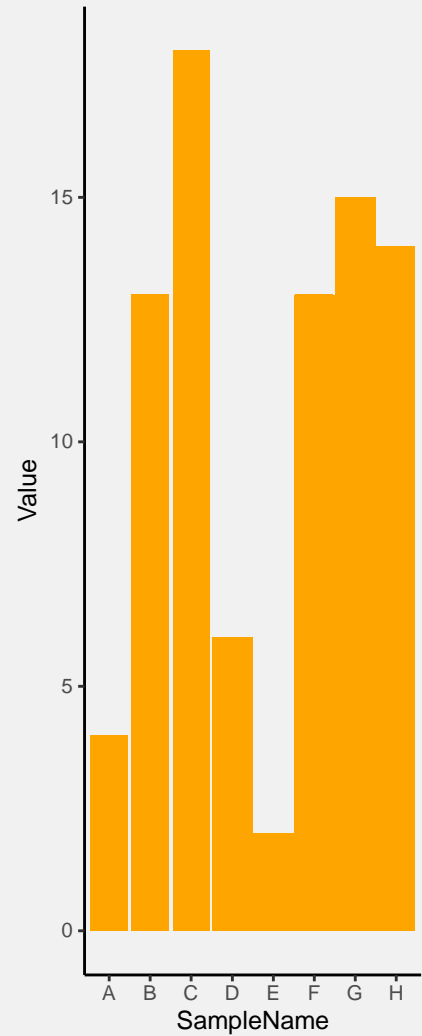
top, right, bottom, left

Choose unit: cm

```
plot.v2 <- plot +  
  theme(plot.margin = unit(c(0, 1, 0, 1), "cm"))
```

Default Margins: `unit(c(5.5, 5.5, 5.5, 5.5), "pt")`

Version 2: Plot margins widened!



Improvement 3: Choose an aspect ratio
(height/width)

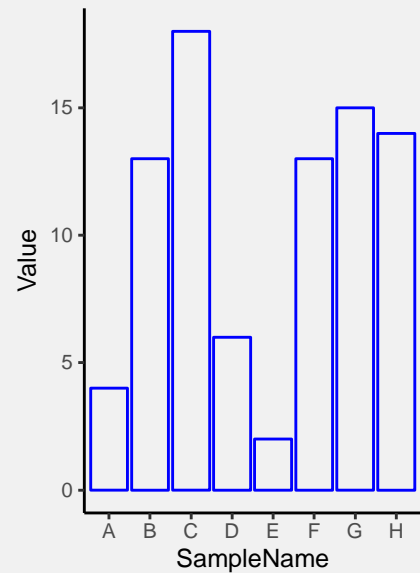
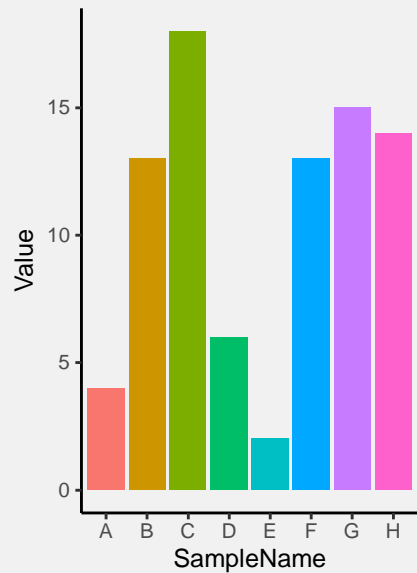
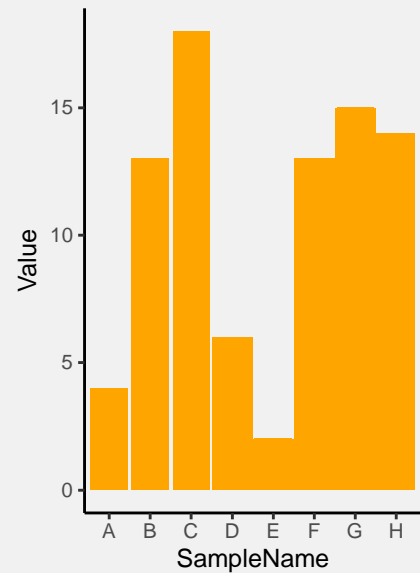
Improvement 3: Choose an aspect ratio

*Add a ggplot2::theme
to each plot*

```
plot.v2 <- plot +  
  theme(plot.margin = unit(c(0, 1, 0, 1), "cm"),  
        aspect.ratio = 3/2)
```

height/width

Version 3: Aspect ratio fixed to 3/2!



Summary:

Basic Task: Multi-page PDF with n similar plots

`pdf()`, `ggarrange()`

Improvement 1: Plot region on the page

`pdf()` `width`, `height`

Improvement 2: Margins around plots

`theme()` `plot.margin`

Improvement 3: Aspect ratio of plots

`theme()` `aspect.ratio`

THANK YOU