Using cowplot

Matteo Ceccarello

```
library(tidyverse)
library(ggthemes)
```

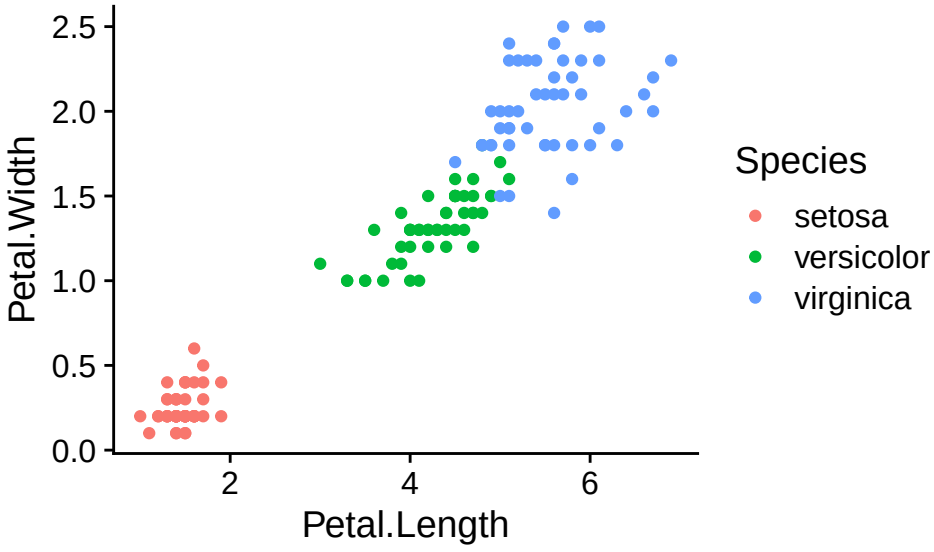
First of all, install the `cowplot` library

```
install.packages('cowplot')
```

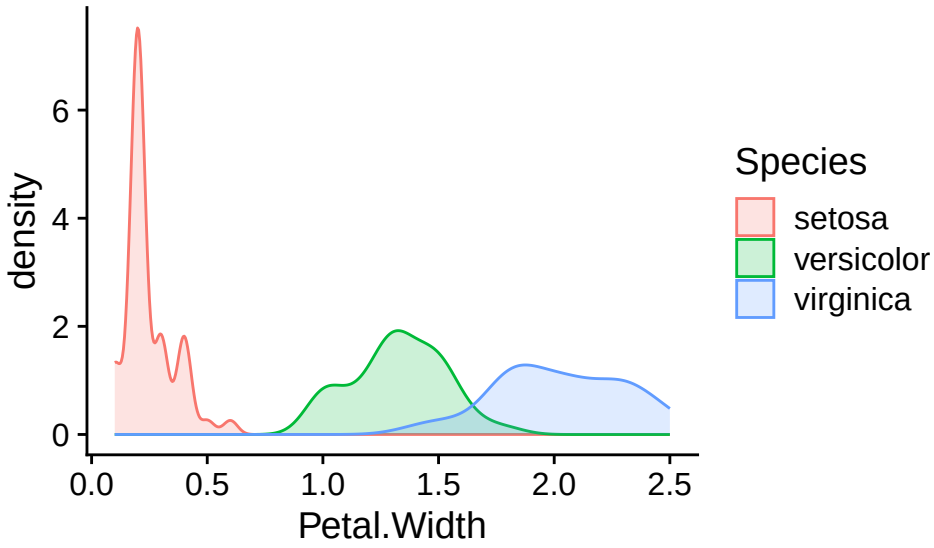
```
library(cowplot)
theme_set(theme_cowplot())
```

Arranging plots in a grid

```
scatter_petal <- ggplot(iris,
                        aes(x=Petal.Length, y=Petal.Width, color=Species)) +
  geom_point()
scatter_petal
```

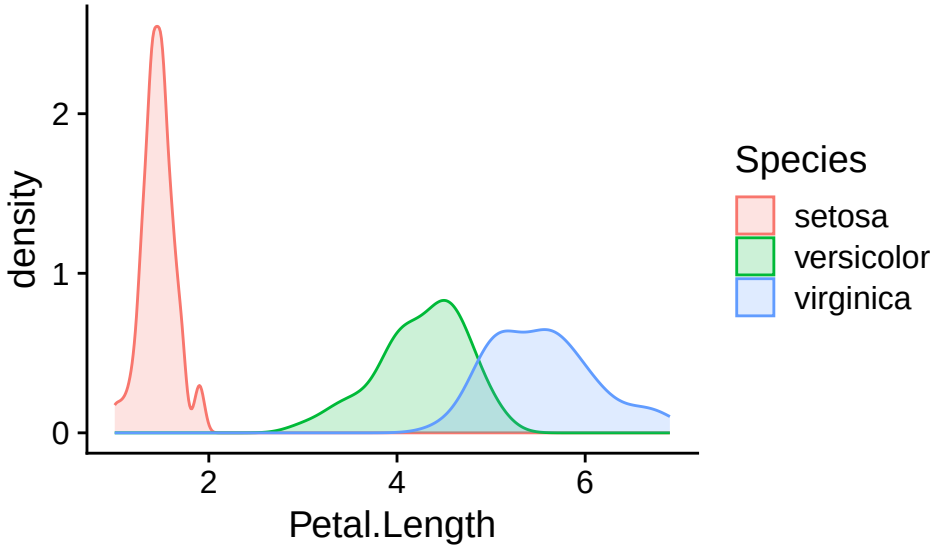



```
kde_width <- ggplot(iris,
                    aes(x=Petal.Width, color=Species, fill=Species)) +
  geom_density(alpha=0.2)
kde_width
```



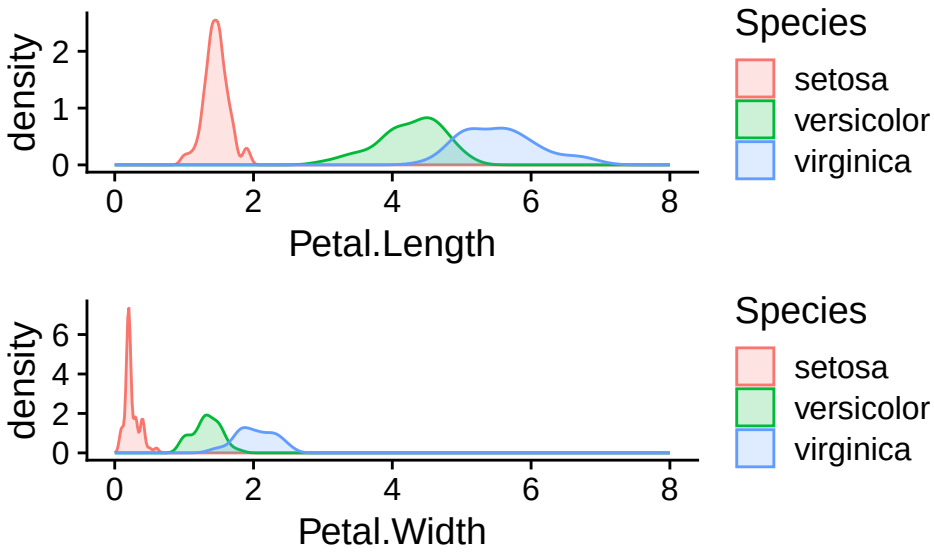

```
kde_length <- ggplot(iris,
                     aes(x=Petal.Length, color=Species, fill=Species)) +
  geom_density(alpha=0.2)

kde_length
```



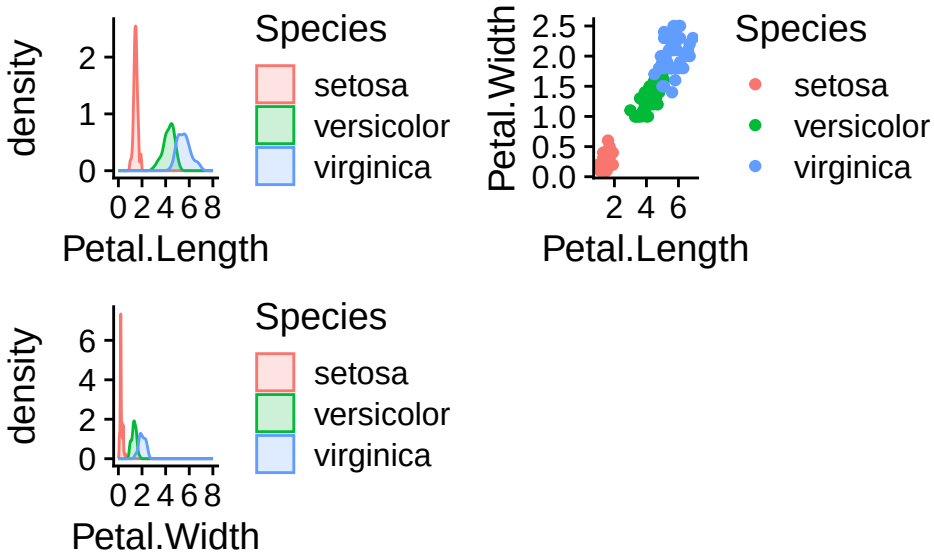
We can put the plot in a grid, aligning them on the x axis, appropriately changing the scales.

```
plot_grid(
  kde_length + scale_x_continuous(limits = c(0,8)),
  kde_width + scale_x_continuous(limits = c(0,8)),
  ncol=1,
  align="v"
)
```



We can use nulls to leave "holes" in the tables

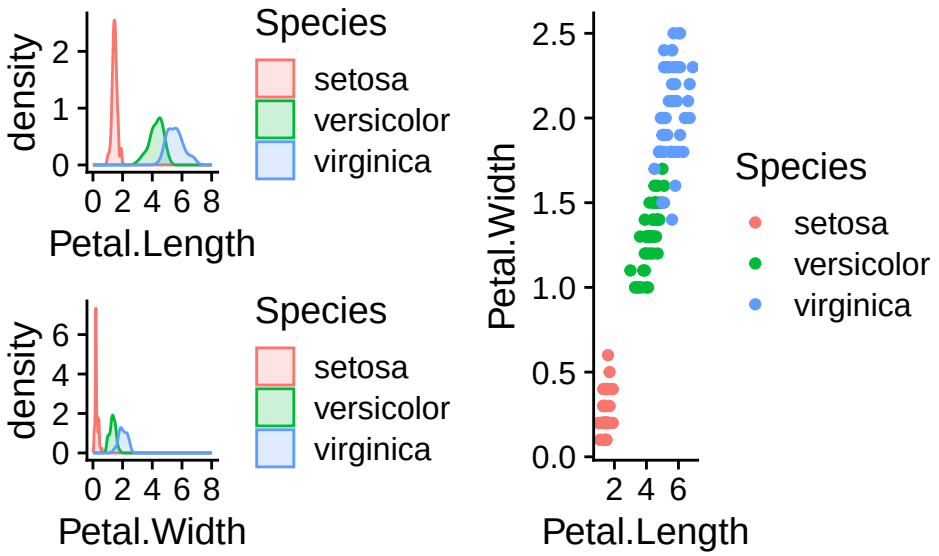
```
plot_grid(
  kde_length + scale_x_continuous(limits = c(0,8)),
  scatter_petal,
  kde_width + scale_x_continuous(limits = c(0,8)),
  NULL,
  ncol=2,
  align="v"
)
```



We can also nest grids into one another, to create more complex arrangements

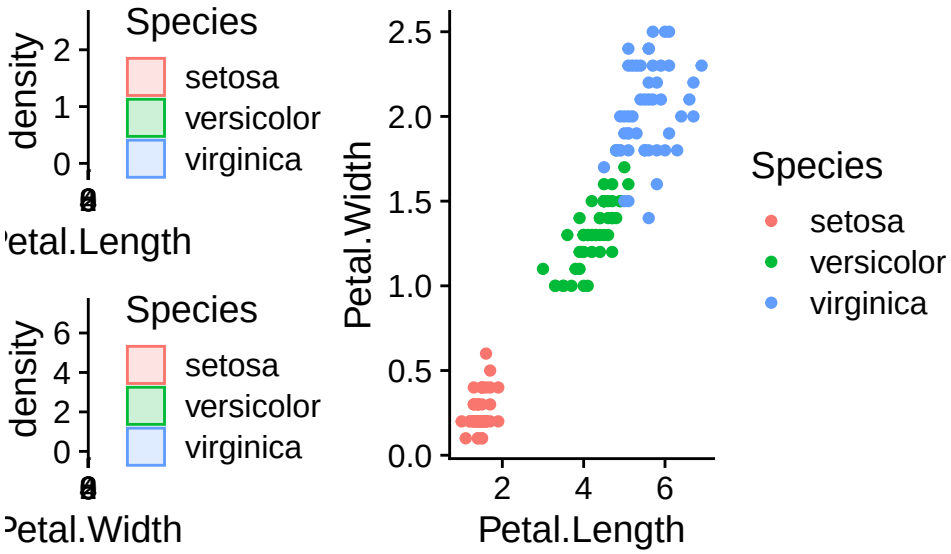
```
plot_grid(
  plot_grid(
    kde_length + scale_x_continuous(limits = c(0,8)),
    kde_width + scale_x_continuous(limits = c(0,8)),
    ncol=1,
    align="v"
  ),
```

```
  scatter_petal,
  ncol=2
)
```



And adjust the widths

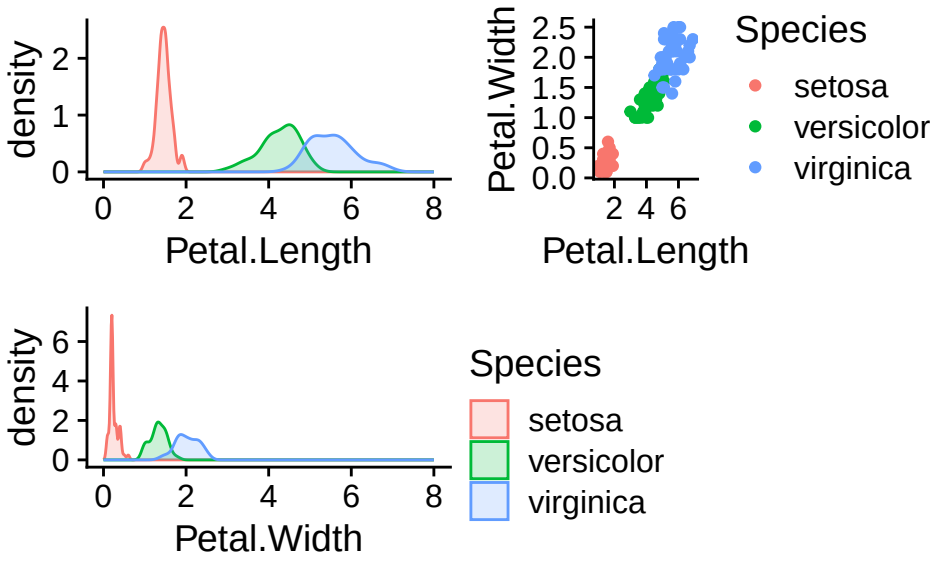
```
plot_grid(
  plot_grid(
    kde_length + scale_x_continuous(limits = c(0,8)),
    kde_width + scale_x_continuous(limits = c(0,8)),
    ncol=1,
    align="v"
  ),
  scatter_petal,
  ncol=2,
  rel_widths = c(1,2)
)
```



Shared legends

```
species_legend <- get_legend(kde_length)
```

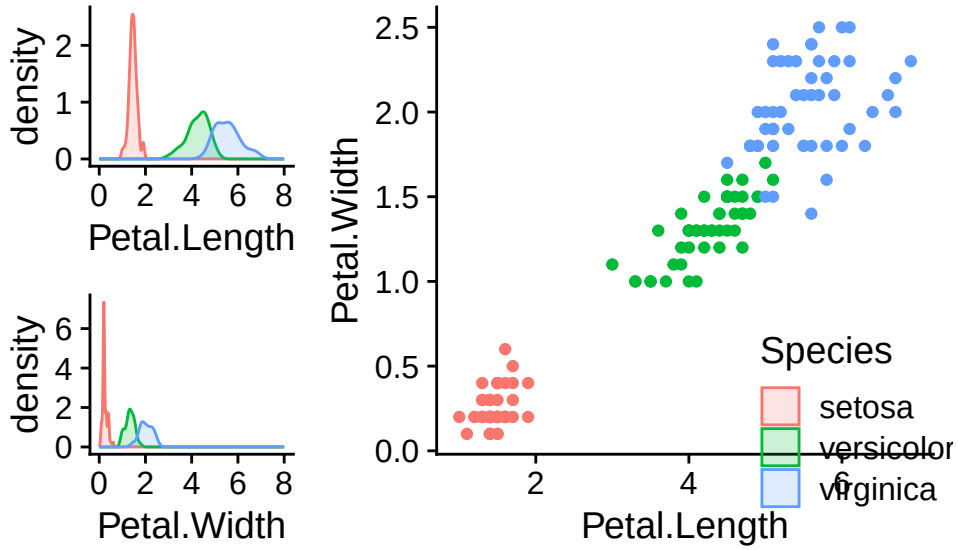
```
plot_grid(
  kde_length +
    scale_x_continuous(limits = c(0,8)) +
    theme(legend.position='none'),
  scatter_petal,
  kde_width +
    scale_x_continuous(limits = c(0,8)) +
    theme(legend.position='none'),
  species_legend,
  ncol=2,
  align="v",
  axis="b"
)
```



Plot overlays

```
iris_grid <- plot_grid(
  plot_grid(
    kde_length +
      scale_x_continuous(limits = c(0,8)) +
      theme(legend.position="none"),
    kde_width +
      scale_x_continuous(limits = c(0,8)) +
      theme(legend.position="none"),
    ncol=1,
    align="v"
  ),
  scatter_petal + theme(legend.position='none'),
  ncol=2,
  rel_widths = c(1,2)
)
```

```
ggdraw(iris_grid) +
  draw_grob(species_legend, x=0.8, y=-0.25)
```

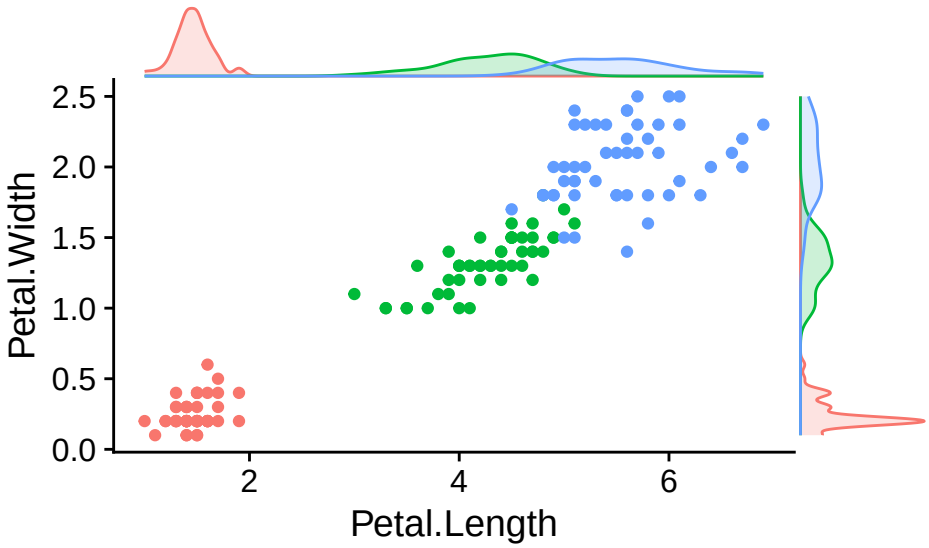


Margin plots

```
length_v <- kde_length + theme_void() + theme(legend.position="none")
width_v <- kde_width +
  coord_flip() +
  theme_void() +
  theme(legend.position="none")

p1 <- insert_xaxis_grob(
  scatter_petal + theme(legend.position = "none"),
  length_v,
  position="top"
)
p2 <- insert_yaxis_grob(
  p1,
  width_v,
  position="right"
)

ggdraw(p2)
```




```
length_box <- ggplot(iris, aes(y=Petal.Length)) +
  geom_boxplot(x=0) +
  coord_flip() +
  theme_void() +
  theme(legend.position = "none")
width_box <- ggplot(iris, aes(y=Petal.Width)) +
  geom_boxplot(x=0) +
  theme_void() +
  theme(legend.position = "none")

p1 <- insert_xaxis_grob(
  scatter_petal +
    theme(legend.position = "none",
          axis.line = element_blank()),
  length_v,
  position="top"
)
p2 <- insert_yaxis_grob(
  p1,
  width_v,
  position="right"
)

p3 <- insert_xaxis_grob(
  p2,
  length_box,
  position="bottom",
  height=unit(8, "pt")
)
p4 <- insert_yaxis_grob(
  p3,
  width_box,
  position="left",
  width=unit(8, "pt")
)
```

```
ggdraw(p4)
```