

R library ggplot2

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ecosystem



readr
dplyr
tidyr
ggplot2
stringr
lubridate
forcats

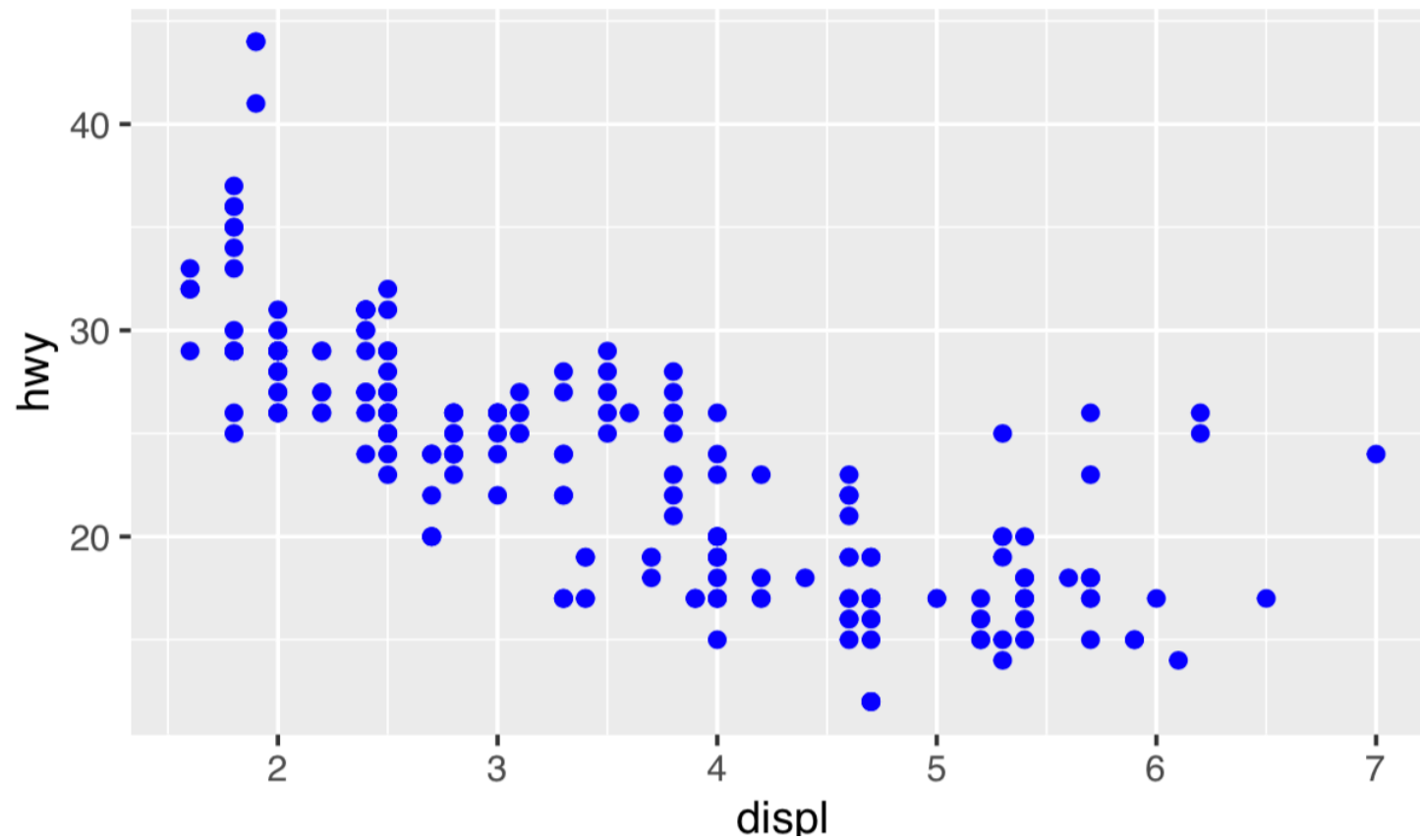
Introduction

Graphs in **ggplot2** are created in layers

1. Select the dataframe
2. Select the geometric object
3. Use an aesthetic function
4. Use optional objects

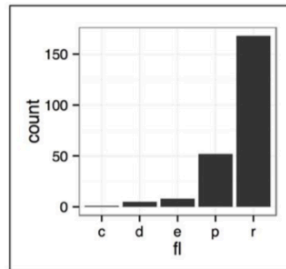
Introduction

```
ggplot(data = mpg) + geom_point(mapping = aes(x = displ, y = hwy), color = "blue")
```

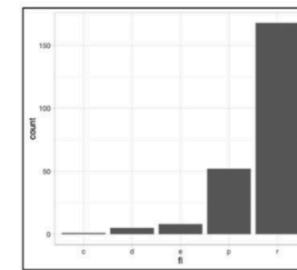


Introduction

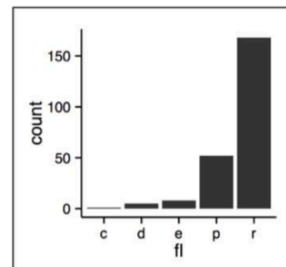
The background
is defined by the
theme object



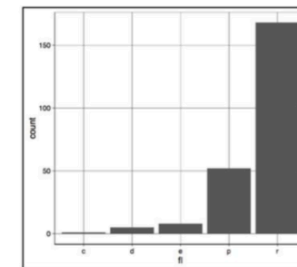
theme_bw()
White background
with grid lines



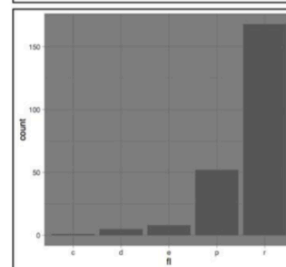
theme_light()
Light axes and grid
lines



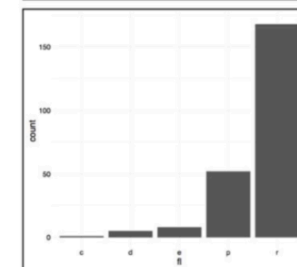
theme_classic()
Classic theme,
axes but no grid
lines



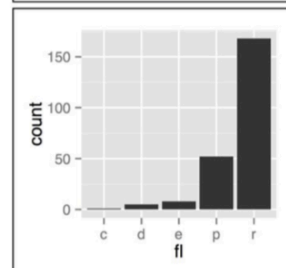
theme_linedraw()
Only black lines



theme_dark()
Dark background
for contrast



theme_minimal()
Minimal theme, no
background



theme_gray()
Grey background
(default theme)

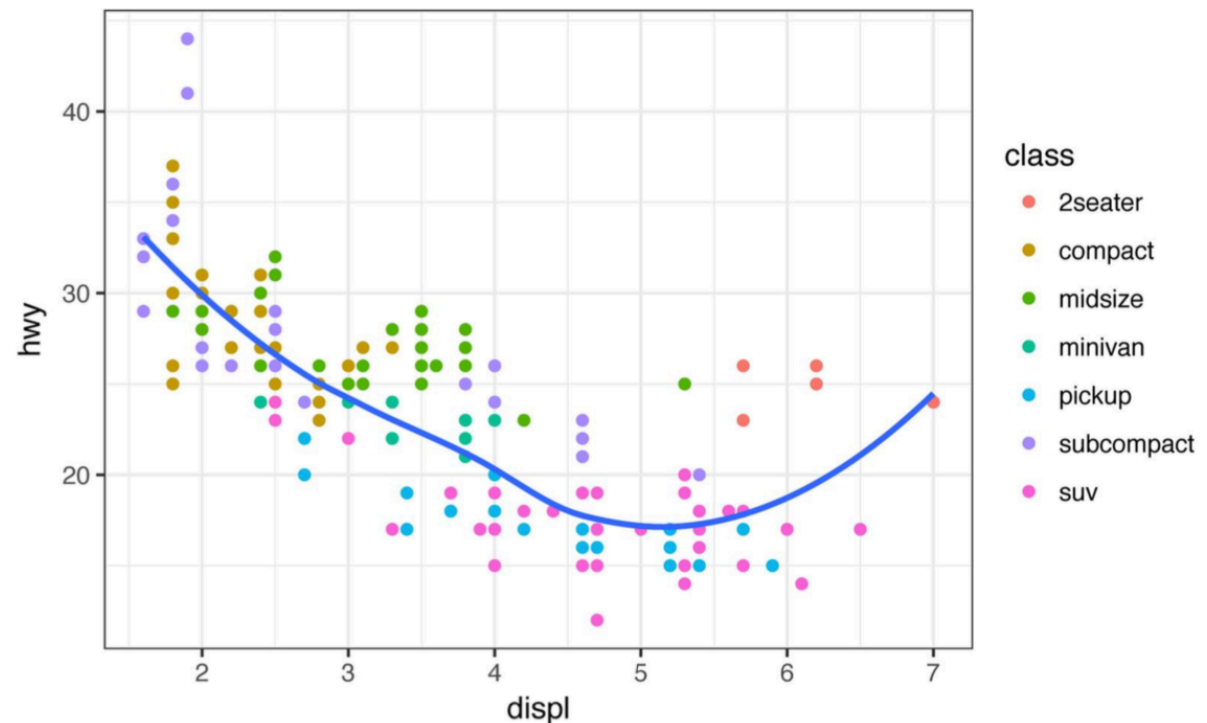


theme_void()
Empty theme, only
geoms are visible

Introduction

```
ggplot(mpg, aes(displ, hwy)) +  
  geom_point(aes(color = class)) +  
  geom_smooth(se = FALSE) +  
  theme_bw()
```

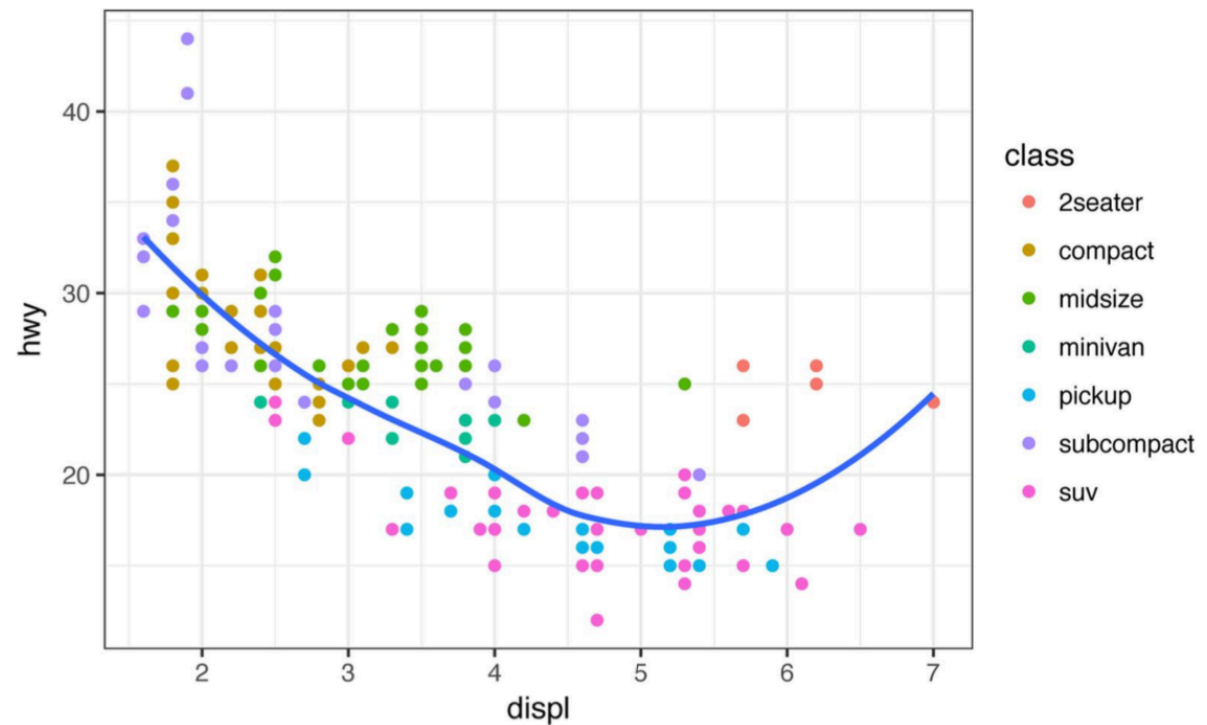
Notice
the use of
layers



Introduction

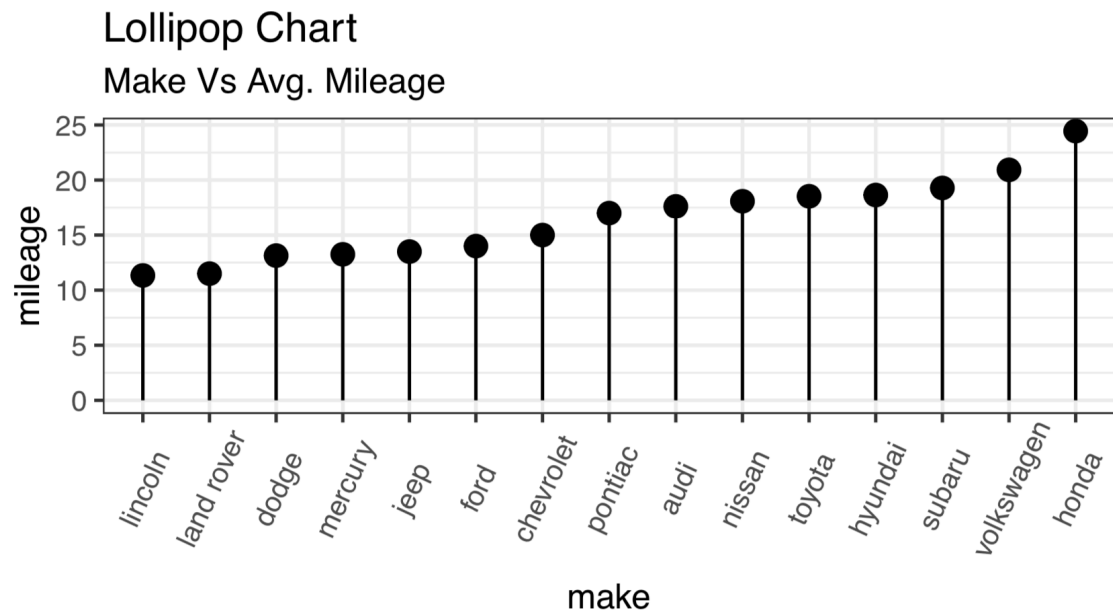
```
theme_set(theme_bw())
```

```
ggplot(mpg, aes(displ, hwy)) +  
  geom_point(aes(color = class)) +  
  geom_smooth(se = FALSE) +  
  theme_bw()
```



Introduction

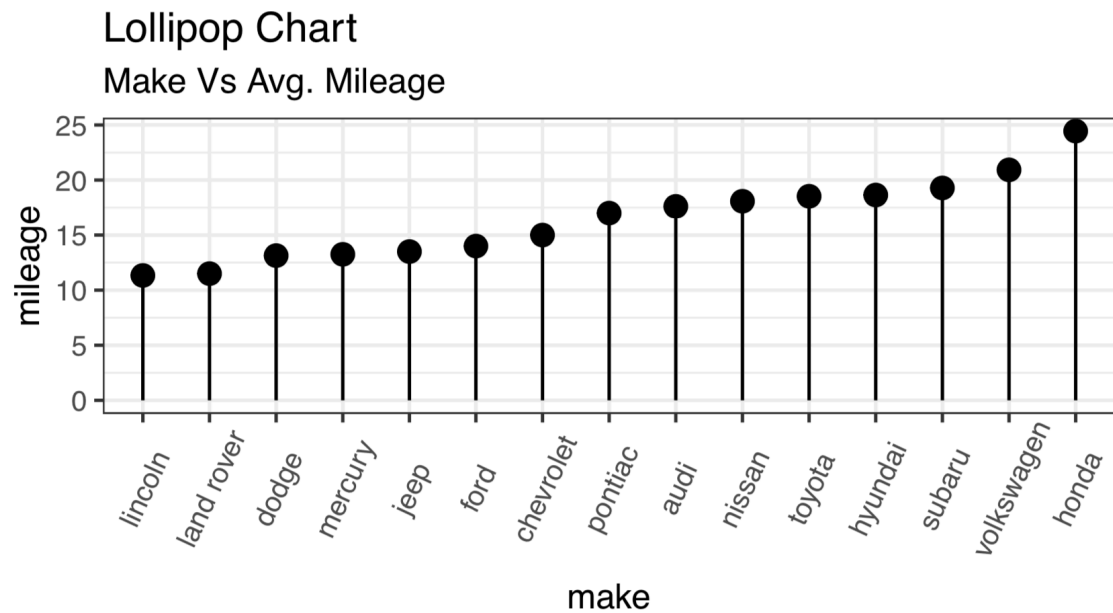
```
#### Lollipop Chart
ggplot(cty_mpg, aes(x=make, y=mileage)) +
  geom_point(size=3) +
  geom_segment(aes(x=make, xend=make,
                  y=0, yend=mileage)) +
  labs(title = "Lollipop Chart",
       subtitle = "Make Vs Avg. Mileage",
       caption = "Source: mpg") +
  theme(axis.text.x = element_text(angle=65, vjust=0.6))
```



Source: mpg

Introduction

```
#### Lollipop Chart
ggplot(cty_mpg, aes(x=make, y=mileage)) +
  geom_point(size=3) +
  geom_segment(aes(x=make, xend=make,
                  y=0, yend=mileage)) +
  labs(title = "Lollipop Chart",
       subtitle = "Make Vs Avg. Mileage",
       caption = "Source: mpg") +
  theme(axis.text.x = element_text(angle=65, vjust=0.6))
```



Source: mpg

geom() functions

geom_abline
geom_bar
geom_bin2d
geom_blank
geom_boxplot
geom_contour
geom_count
geom_crossbar
geom_density
geom_density_2d
geom_dotplot
geom_errorbarh
geom_freqpoly
geom_hex

..

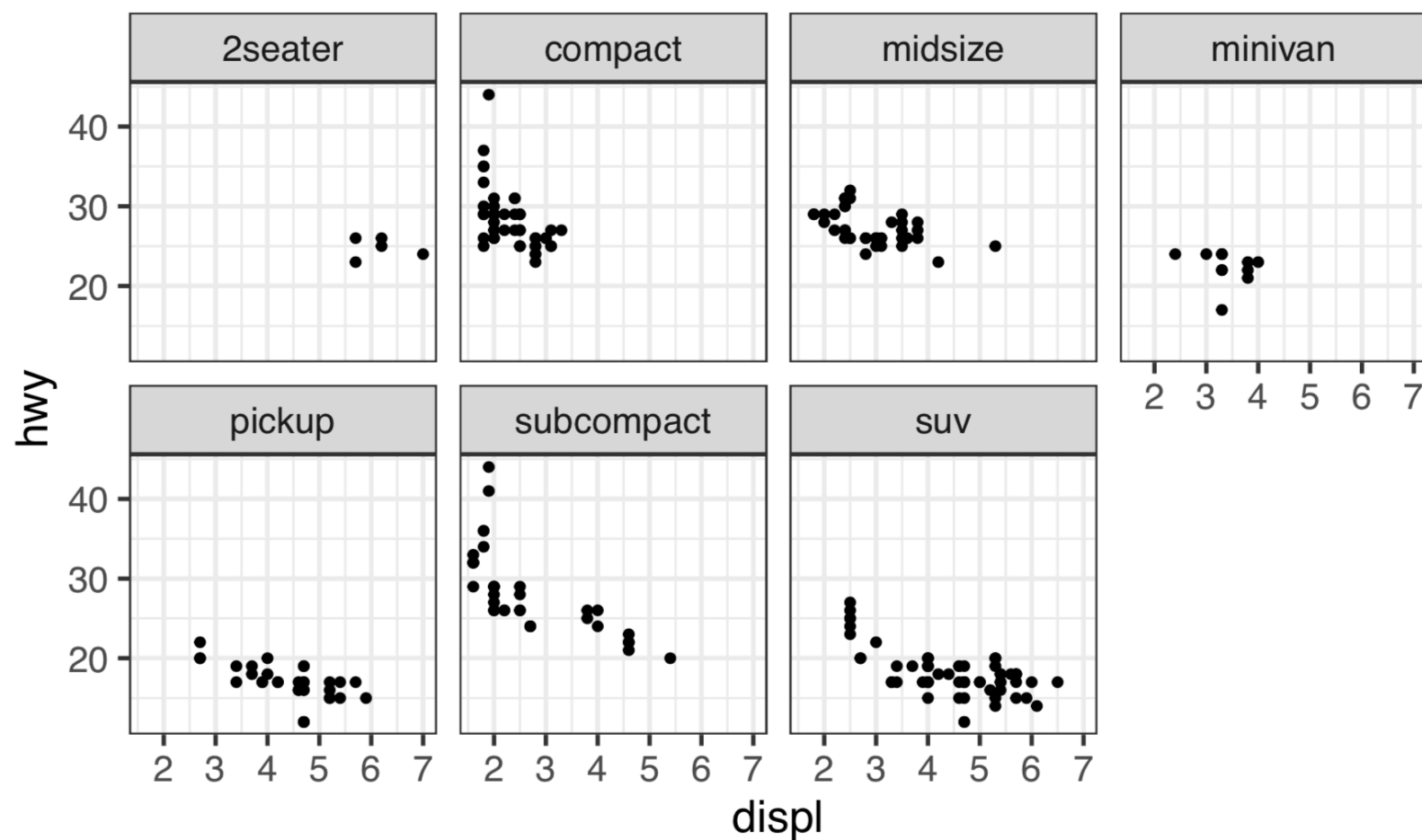
geom_jitter
geom_label
geom_map
geom_path
geom_point
geom_polygon
geom_qq_line
geom_quantile
geom_raster
geom_ribbon
geom_rug
geom_segment
geom_smooth
geom_spoke
geom_violin

geom() functions

Geom	Description	Aesthetics
geom_abline	line	color, linetype
geom_bar	barplot	x,color,fill
geom_boxplot	Boxplot	x,y,fill
geom_point	Scatterplot	x,y,color,shape
geom_smooth	fitted line	x,y,color,fill
geom_text	text	x,y,label,angle
geom_violin	violin plot	x,y,color,fill

FACETS –split the plot into subplots (facets)

```
ggplot(data = mpg) +  
  geom_point(mapping = aes(x = displ, y = hwy), size = 0.7) +  
  facet_wrap(~ class, nrow = 2)
```



ggplot2 – Extended libraries

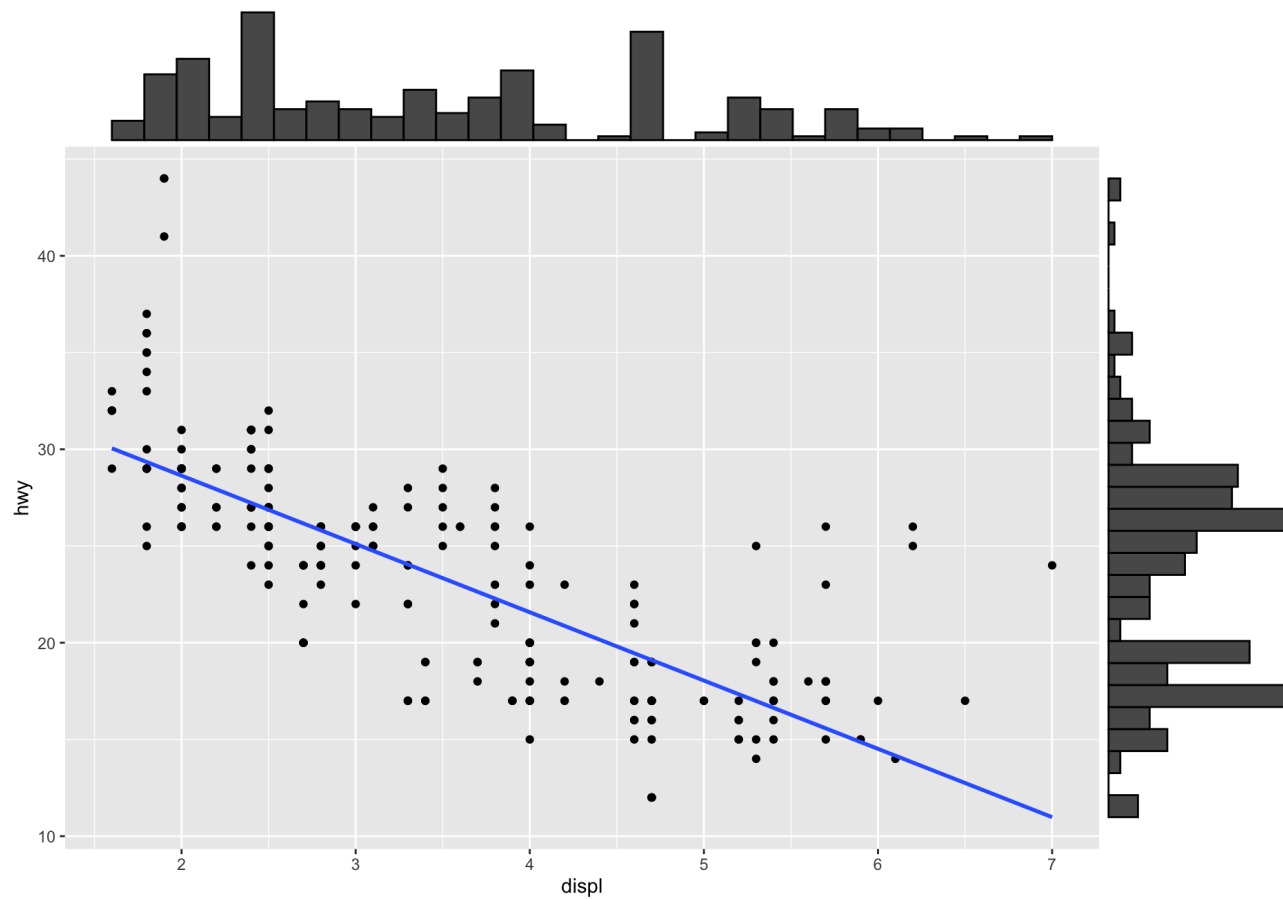
- Contributions from independent R users
- Functions and geom objects for special purpose
- See

<http://www.ggplot2-exts.org/gallery/>

ggplot2 – Extended libraries

- ggExtra Marginal plots
- ggalt Encircle subset of data
- grid Annotations on the plot

```
library(ggExtra)
g = ggplot(mpg, mapping = aes(x = displ, y = hwy)) +
  geom_point() +
  geom_smooth(method='lm',se=FALSE)
ggMarginal(g,type = 'histogram')
```



```

library(grid)
#
gg = ggplot(mpg) + geom_point(mapping = aes(x = displ, y = hwy, color = class))
text1 = 'outliers?'
specs1 = grid.text(text1,x = 0.25,y=0.94,
                    gp = gpar(fontsize=10,fontface='bold',col='red'))
gg + annotation_custom(specs1)

```

