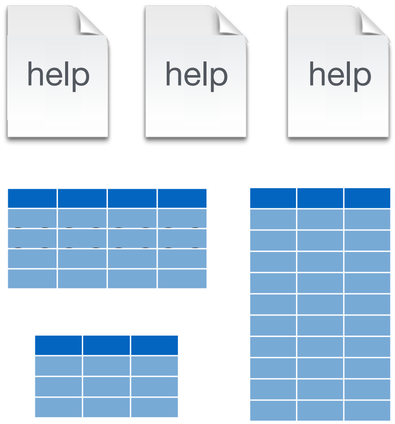
the Tidyverse and ggplot2

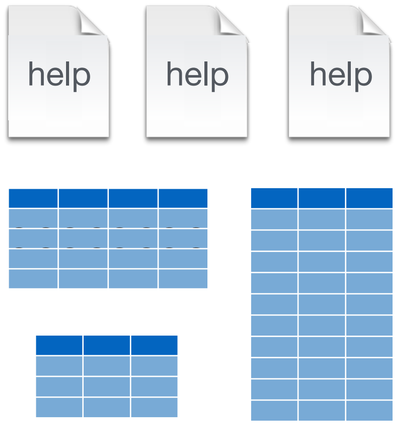
Sungkyu Jung

excepted from slides at Rstudio.com (00-Tidyverse-webinar)

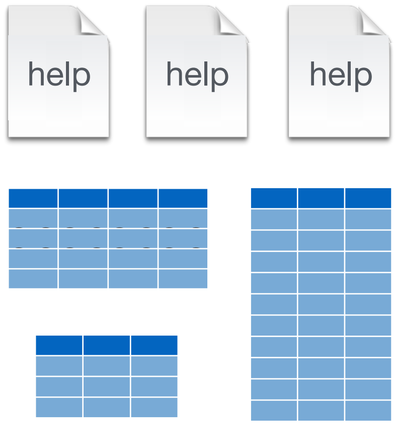
R Packages



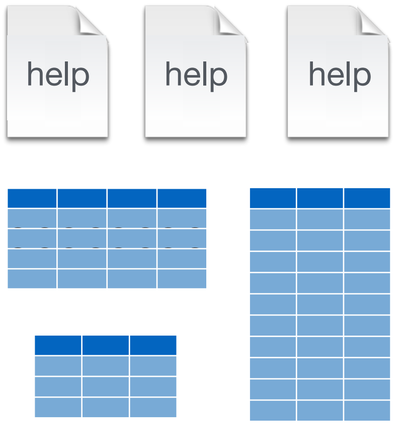
function1()
function2()
function3()
function4()



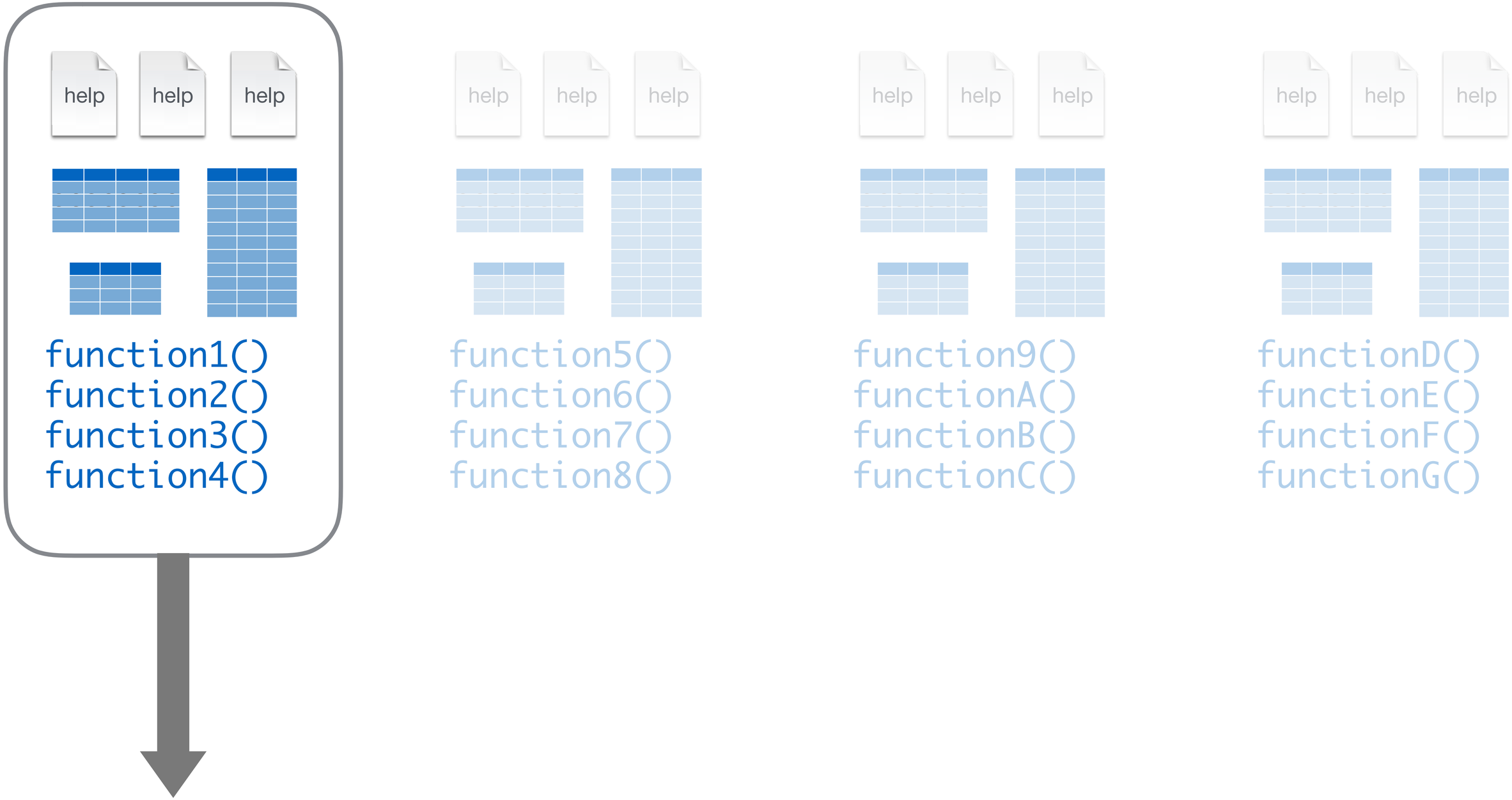
function5()
function6()
function7()
function8()



function9()
functionA()
functionB()
functionC()



functionD()
functionE()
functionF()
functionG()


help
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function1()
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function3()
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function9()
functionA()
functionB()
functionC()
help
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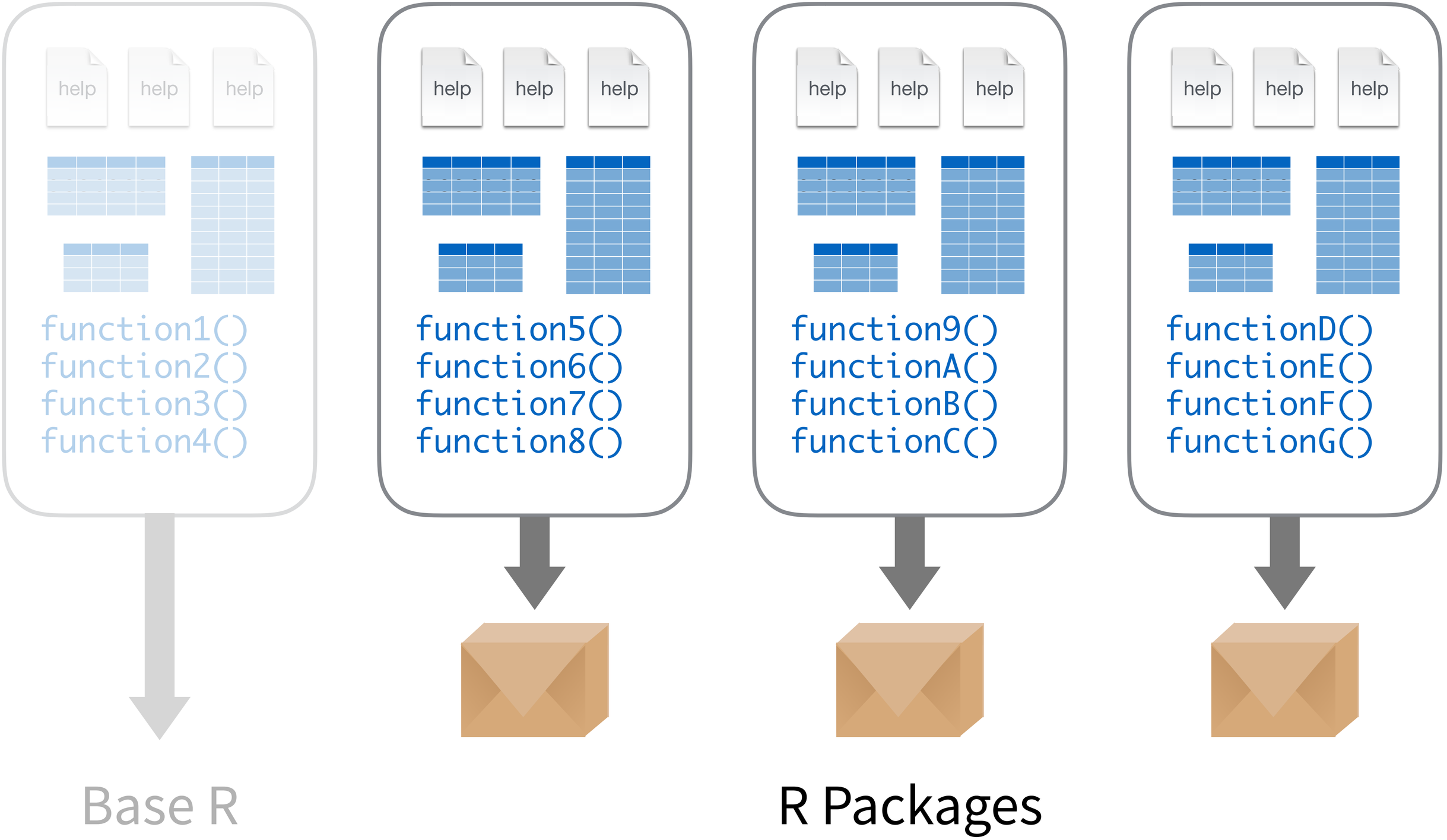
functionE()
functionF()
functionG()

Base R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functionA()
functionB()
functionC()
help
help
help
functionD()
functionE()
functionF()
functionG()
Base R
R Packages

Using packages

1

```
install.packages("foo")
```

Downloads files to computer

1 x per computer

Using packages

1

```
install.packages("foo")
```

Downloads files to computer

1 x per computer

2

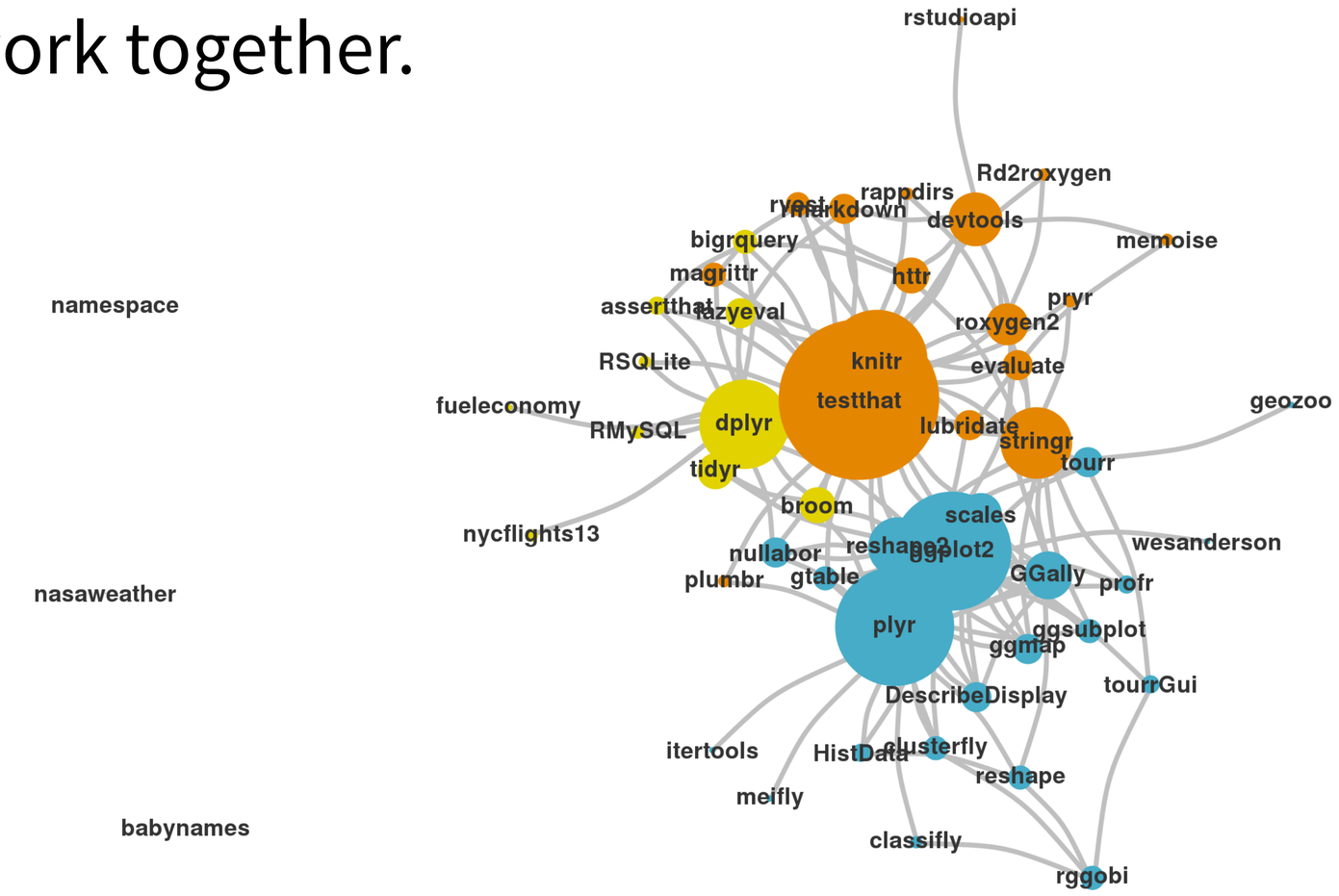
```
library("foo")
```

Loads package

1 x per R Session

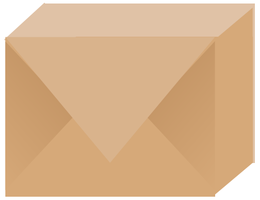
The Tidyverse

A collection of modern R packages that share common philosophies, embed best practices, and are designed to work together.



Display by Adolfo Álvarez

tidyverse



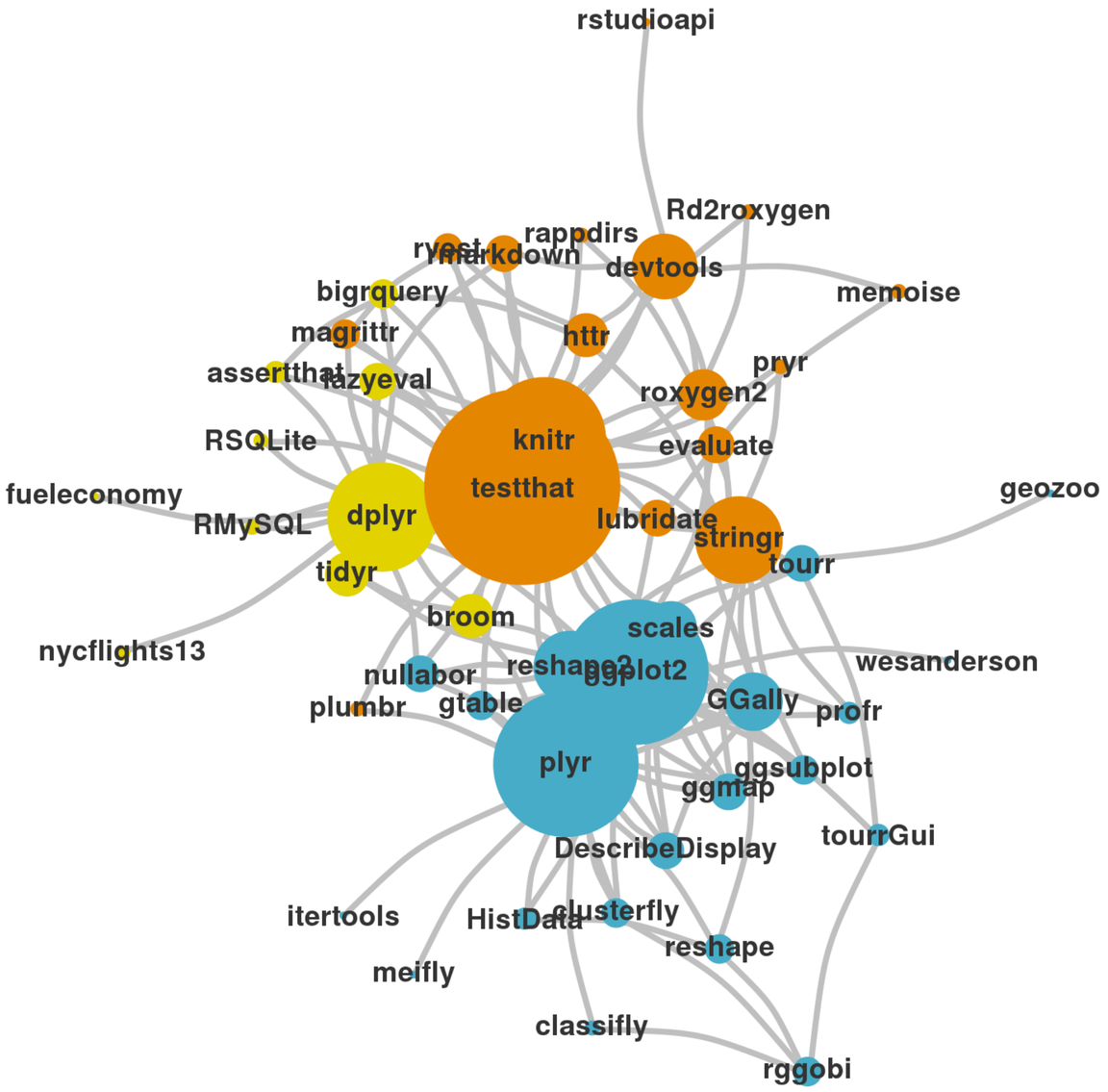
An R package that serves as a short cut for installing and loading the components of the tidyverse.

```
library("tidyverse")
```

```
install.packages("tidyverse")
```

does the equivalent of

```
install.packages("ggplot2")
install.packages("dplyr")
install.packages("tidyr")
install.packages("readr")
install.packages("purrr")
install.packages("tibble")
install.packages("hms")
install.packages("stringr")
install.packages("lubridate")
install.packages("forcats")
install.packages("DBI")
install.packages("haven")
install.packages("httr")
install.packages("jsonlite")
install.packages("readxl")
install.packages("rvest")
install.packages("xml2")
install.packages("modelr")
install.packages("broom")
```



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does the equivalent of

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install.packages("tibble")
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install.packages("stringr")
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does the equivalent of

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library("tibble")
```

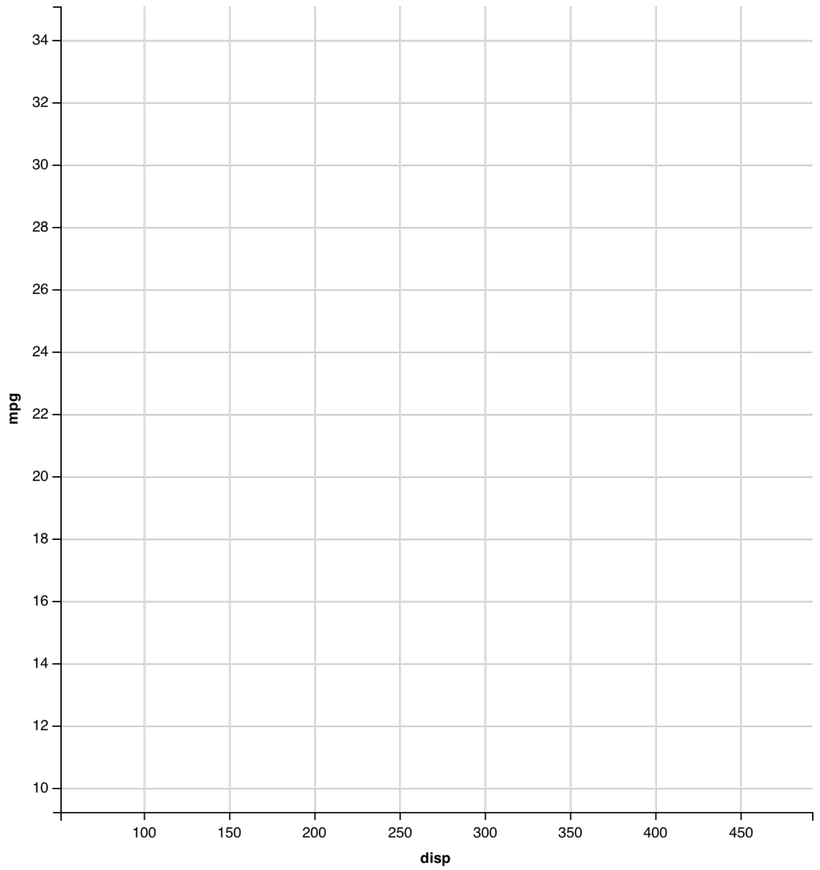
Visualization tools

Six functions

- arrange()
- filter()
- select()
- mutate()
- summarise()
- group_by()

Grammar of Graphics

mpg	cyl	disp	hp
21.0	6	160.0	2
21.0	6	160.0	2
22.8	4	108.0	1
21.4	6	258.0	2
18.7	8	360.0	3
18.1	6	225.0	2
14.3	8	360.0	5
24.4	4	146.7	1
22.8	4	140.8	1
19.2	6	167.6	2
17.8	6	167.6	2
16.4	8	275.8	3
17.3	8	275.8	3
15.2	8	275.8	3
10.4	8	472.0	4
10.4	8	460.0	4
14.7	8	440.0	4
32.4	4	78.7	1
30.4	4	75.7	1
33.9	4	71.1	1



data **geom**

mappings

fill

mpg	cyl	disp	hp
21.0	6	160.0	2
21.0	6	160.0	2
22.8	4	108.0	1
21.4	6	258.0	2
18.7	8	360.0	3
18.1	6	225.0	2
14.3	8	360.0	5
24.4	4	146.7	1
22.8	4	140.8	1
19.2	6	167.6	2
17.8	6	167.6	2
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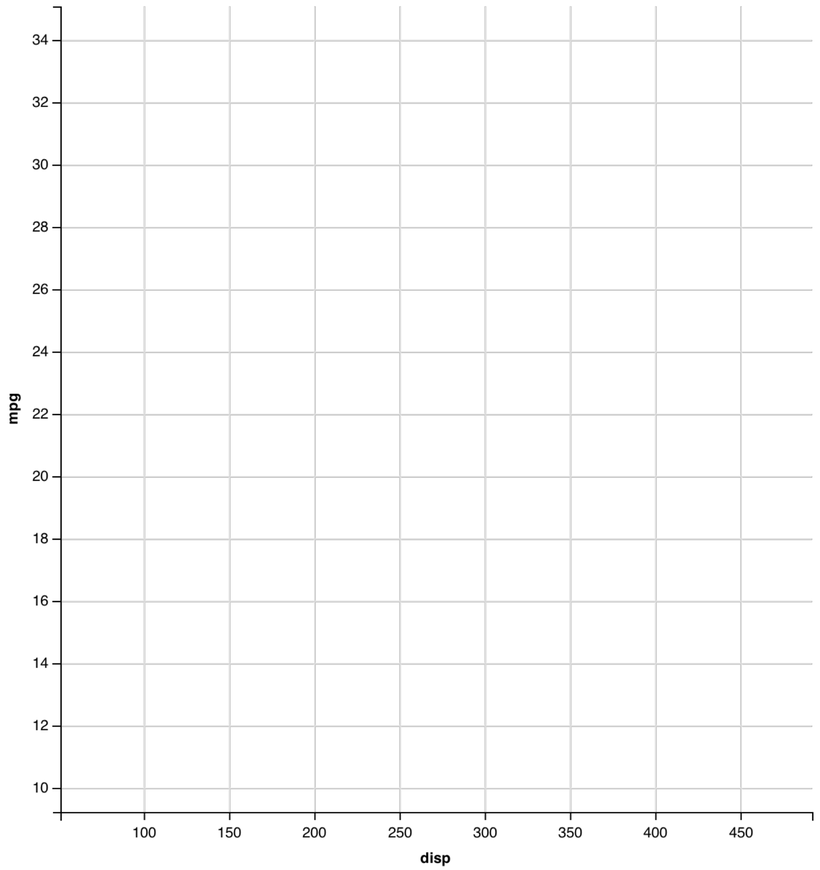
17.3	8	275.8	3
15.2	8	275.8	3
10.4	8	472.0	4
10.4	8	460.0	4
14.7	8	440.0	4
32.4	4	78.7	1
30.4	4	75.7	1
33.9	4	71.1	1

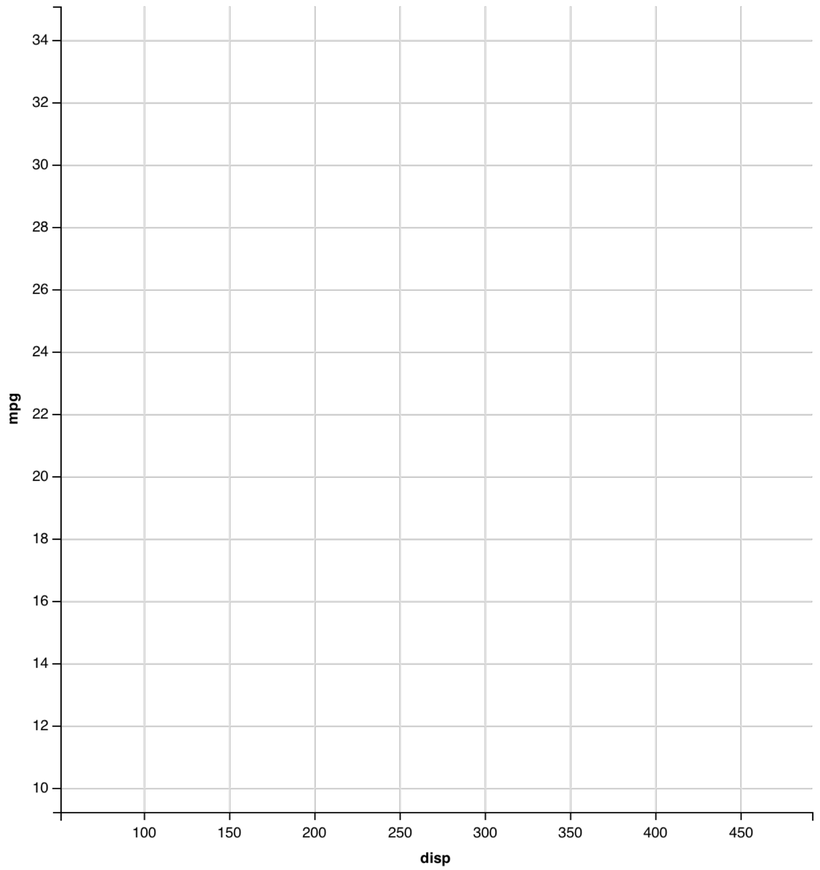


data **geom**

mappings

shape fill

mpg	cyl	disp	hp
21.0	6 ✚	160.0	2
21.0	6 ✚	160.0	2
22.8	4 ●	108.0	1
21.4	6 ✚	258.0	2
18.7	8 ♦	360.0	3
18.1	6 ✚	225.0	2
14.3	8 ♦	360.0	5
24.4	4 ●	146.7	1
22.8	4 ●	140.8	1
19.2	6 ✚	167.6	2
17.8	6 ✚	167.6	2
16.4	8 ♦	275.8	3
17.3	8 ♦	275.8	3
15.2	8 ♦	275.8	3
10.4	8 ♦	472.0	4
10.4	8 ♦	460.0	4
14.7	8 ♦	440.0	4
32.4	4 ●	78.7	1
30.4	4 ●	75.7	1
33.9	4 ●	71.1	1



data geom

mappings

shape x fill

mpg	cyl	disp	hp
21.0	6	160.0	2
21.0	6	160.0	2
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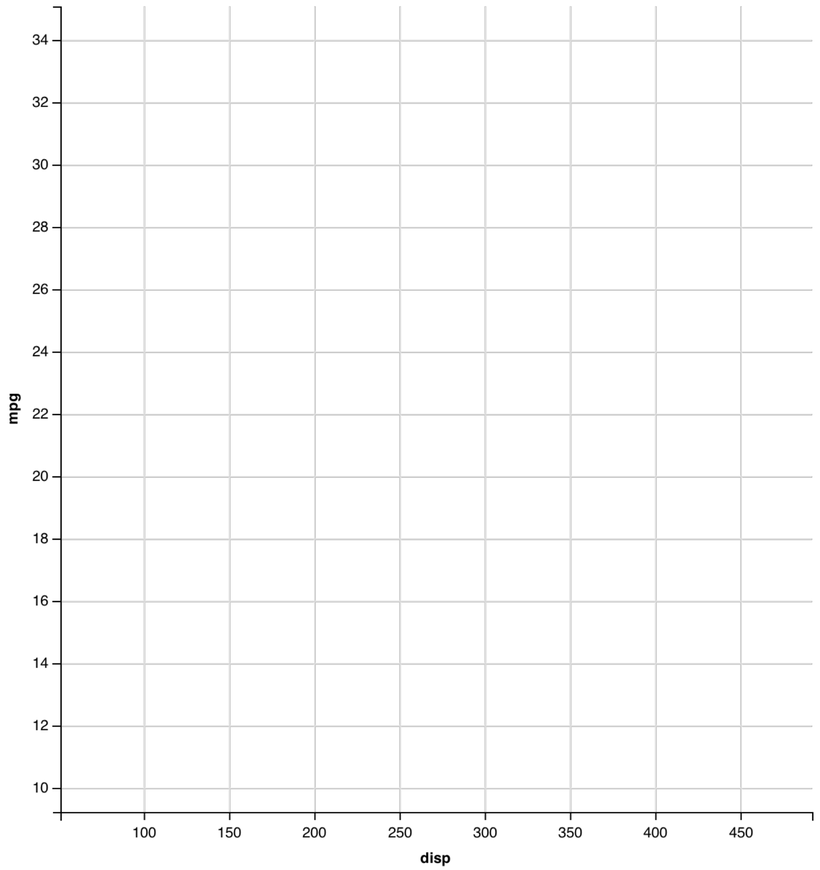

data geom

mappings

y shape x fill

mpg	cyl	disp	hp
21.0	6	160.0	2
21.0	6	160.0	2
22.8	4	108.0	1
21.4	6	258.0	2
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16.4	8	275.8	3
17.3	8	275.8	3
15.2	8	275.8	3
10.4	8	472.0	4
10.4	8	460.0	4
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32.4	4	78.7	1
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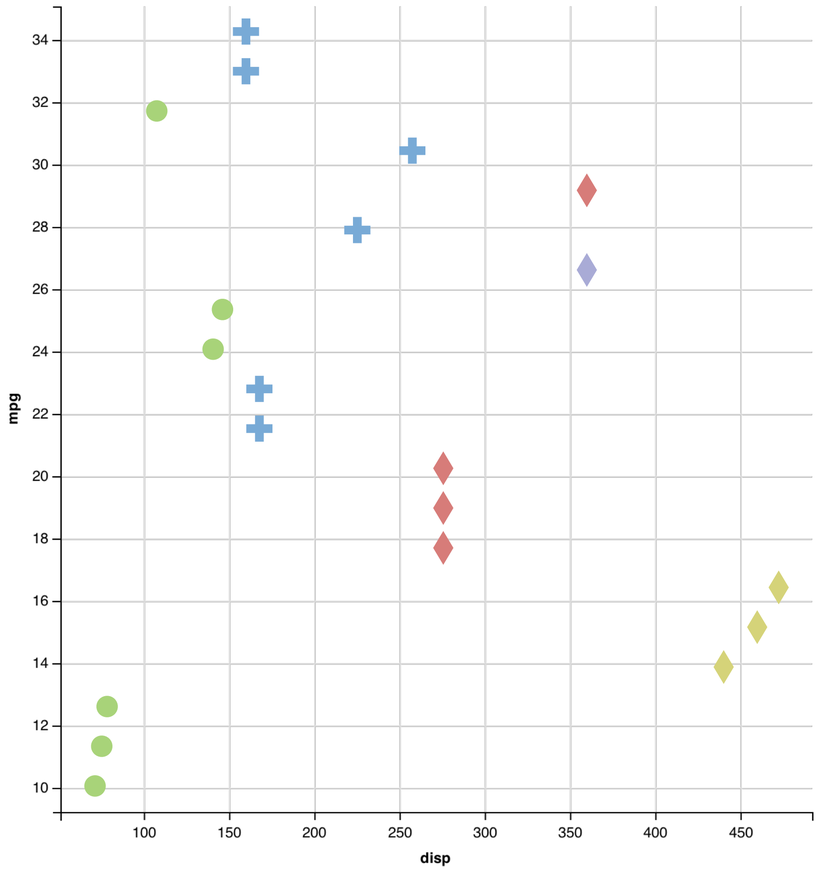

data geom

mappings

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mpg	cyl	disp	hp
21.0	6	160.0	2
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10.4	8	460.0	4
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32.4	4	78.7	1
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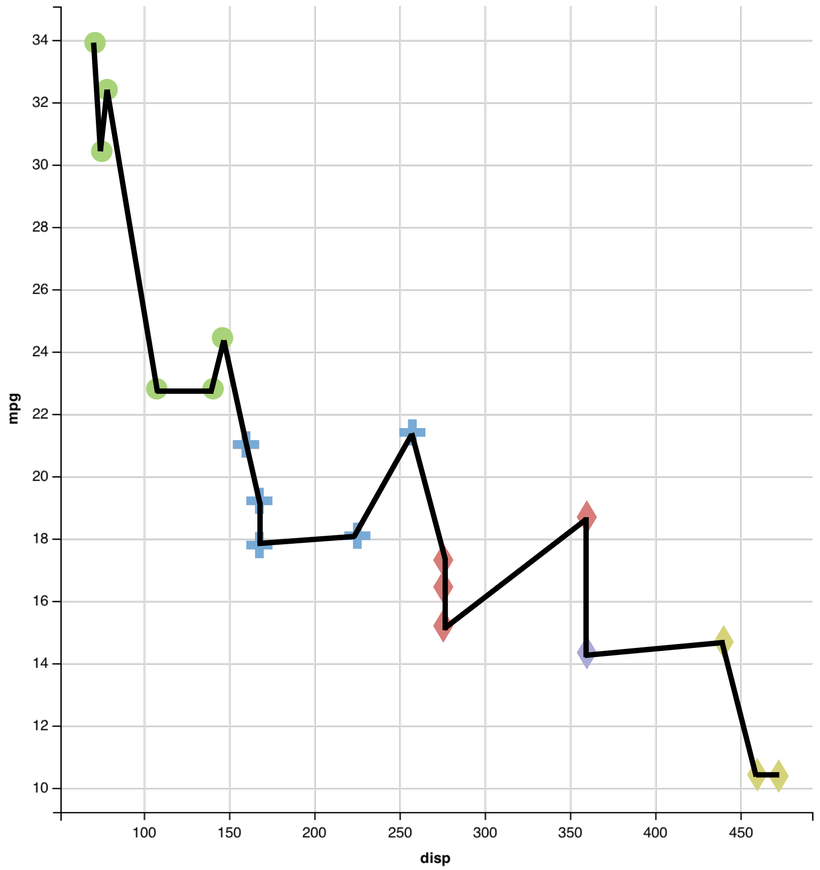

data

geom

points

lines

mappings

y x

mpg	cyl	disp	hp
21.0	6	160.0	2
21.0	6	160.0	2
22.8	4	108.0	1
21.4	6	258.0	2
18.7	8	360.0	3
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32.4	4	78.7	1
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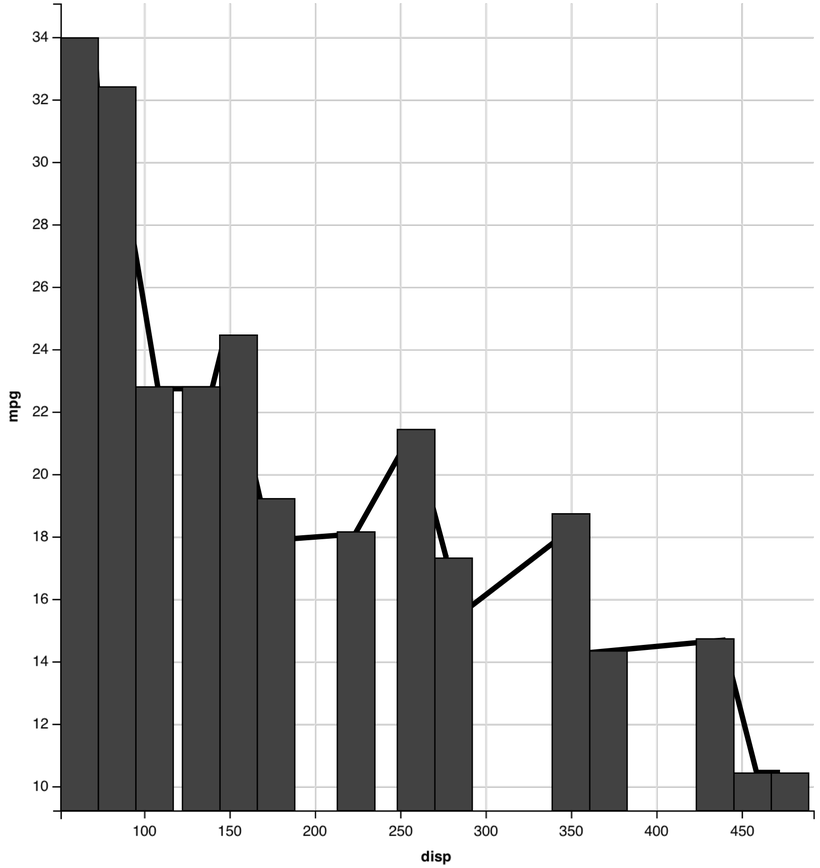

data **geom**

points

lines

bars

mappings

y fill

mpg	cyl	disp	hp
21.0	6	160.0	2
21.0	6	160.0	2
22.8	4	108.0	1
21.4	6	258.0	2
18.7	8	360.0	3
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15.2	8	275.8	3
10.4	8	472.0	4
10.4	8	460.0	4
14.7	8	440.0	4
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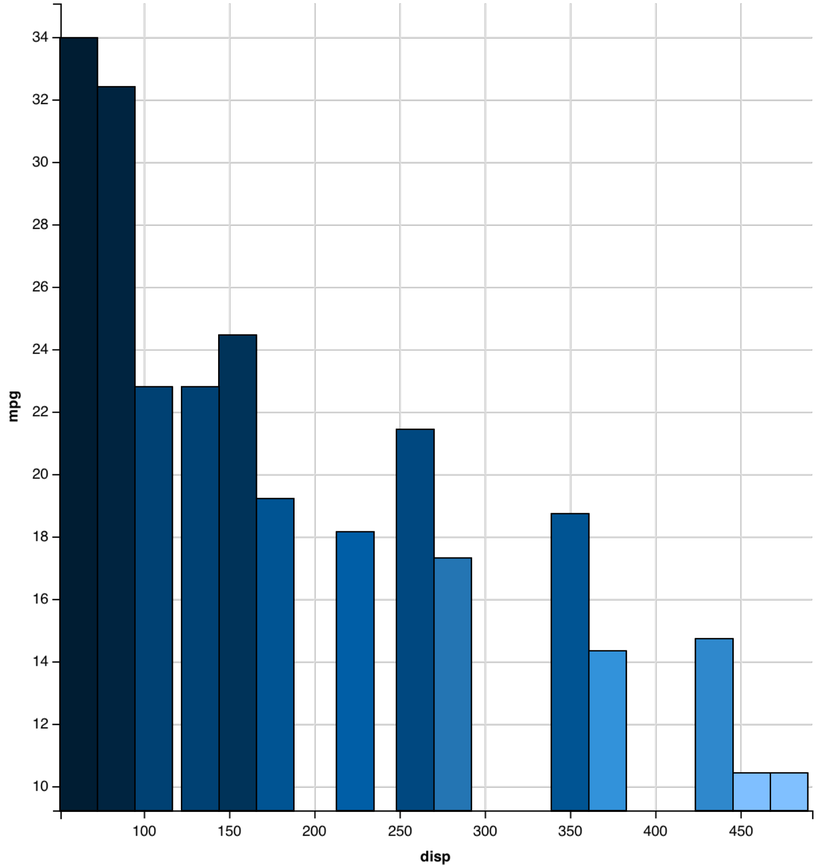

data

geom

points

lines

bars

To make a graph

[template]

```
ggplot(data = <DATA>) +
  <GEOM_FUNCTION>(mapping = aes(<MAPPINGS>))
```

To make a graph

mpg	cyl	disp	hp
21.0	6	160.0	2
21.0	6	160.0	2
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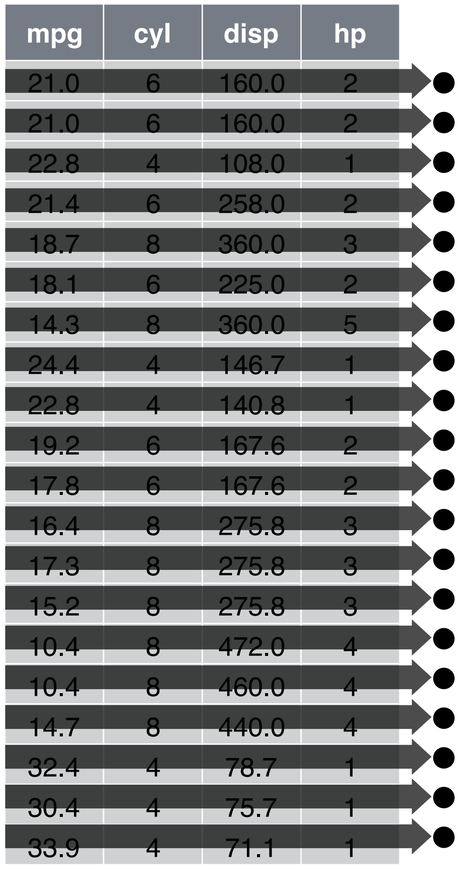
32.4	4	78.7	1
30.4	4	75.7	1
33.9	4	71.1	1

data

1. Pick a **data** set

```
ggplot(data = <DATA>) +
  <GEOM_FUNCTION>(mapping = aes(<MAPPINGS>))
```

To make a graph



data **geom**

1. Pick a **data** set

```
ggplot(data = <DATA>) +
  <GEOM_FUNCTION>(mapping = aes(<MAPPINGS>))
```

2. Choose a **geom** to display cases

To make a graph

mappings

fill

mpg	cyl	disp	hp
21.0	6	160.0	2
21.0	6	160.0	2
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data **geom**

1. Pick a **data** set

```
ggplot(data = <DATA>) +
  <GEOM_FUNCTION>(mapping = aes(<MAPPINGS>))
```

2. Choose a **geom** to display cases

3. **Map** aesthetic properties to variables