Data Visualisation geom Encyclopedia

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Invalid Date

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Preface

This is a Quarto book.

To learn more about Quarto books visit https://quarto.org/docs/books.

2 Introduction

3 Data wrnging

```
library(tidyverse)
```

4 Data

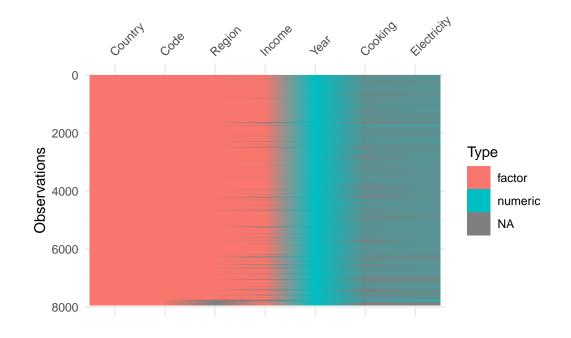
```
library(drone)
```

library(tibble)
data(worldbankdata)
worldbankdata

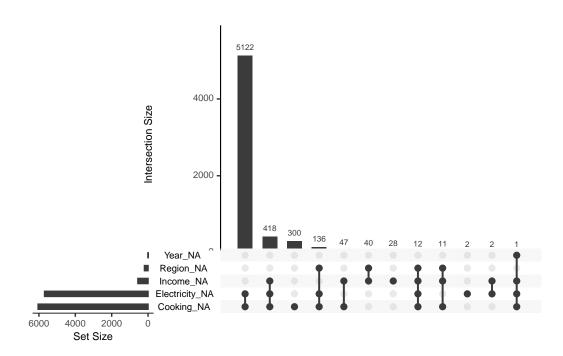
# A tibble: 7,937 x 7										
	Country	Code	Region	ı			Year	${\tt Cooking}$	Electricity	Income
	<fct></fct>	<fct></fct>	<fct></fct>				<dbl></dbl>	<dbl></dbl>	<dbl></dbl>	<fct></fct>
1	Aruba	ABW	Latin	${\tt America}$	&	${\tt Caribbean}$	1990	NA	100	H
2	Aruba	ABW	Latin	America	&	${\tt Caribbean}$	2000	NA	91.7	H
3	Aruba	ABW	Latin	America	&	${\tt Caribbean}$	2013	NA	100	H
4	Aruba	ABW	Latin	America	&	${\tt Caribbean}$	2014	NA	100	H
5	Aruba	ABW	Latin	America	&	${\tt Caribbean}$	2015	NA	100	H
6	Aruba	ABW	Latin	America	&	${\tt Caribbean}$	2016	NA	100	H
7	Aruba	ABW	Latin	America	&	${\tt Caribbean}$	2017	NA	100	H
8	Aruba	ABW	Latin	America	&	${\tt Caribbean}$	2018	NA	100	H
9	Aruba	ABW	Latin	America	&	Caribbean	2019	NA	100	H
10	Aruba	ABW	Latin	America	&	Caribbean	2020	NA	100	H
# 1	i 7,927 i	more r	ows							

4.1 Data description

```
library(visdat)
vis_dat(worldbankdata)
```



library(naniar)
gg_miss_upset(worldbankdata)



5 Different formats of the dataset

```
library(tidyverse)
```

5.1 Subset of datasets created from the worldbankdata

```
wbd.M <- worldbankdata |>
  filter(Income == "L")

wdb.Bangladesh <- worldbankdata |>
  filter(Country == "Bangladesh") |> filter(Year != 2000)
```

Part I

A

6 A: geom_a

6.1 geom_area

6.1.1 Package

ggplot2 (Wickham 2016)

6.1.2 Description

Create an area plot. This cover the space between x-axis and line that connects the data points.

6.1.3 Understandable aesthetics

alpha, colour, linetype, linewidth

6.1.4 The statistical transformation to use on the data for this layer

```
stat_align
```

6.1.5 See also

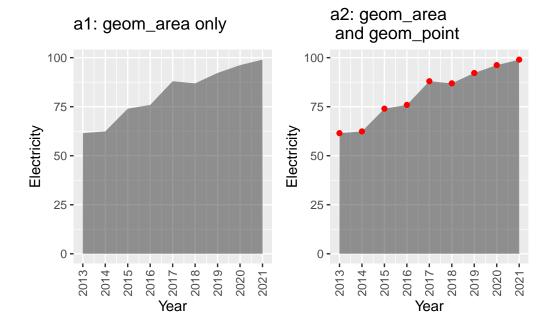
```
geom_line, geom_ribbon
```

6.1.6 Example

```
a1 <- worldbankdata |>
  filter(Country == "Bangladesh") |>
  filter(Year >= 2013 & Year <= 2021) |>
  ggplot(aes(x=Year, y=Electricity)) +
  geom_area(alpha=0.5) +
```

```
theme(axis.text.x = element_text(angle = 90, vjust = 0.5, hjust=1)) +
scale_x_continuous(breaks = 2013:2021) +
labs(title = "a1: geom_area only")

a2 <- worldbankdata |>
filter(Country == "Bangladesh") |>
filter(Year >= 2013 & Year <= 2021) |>
ggplot(aes(x=Year, y=Electricity)) +
geom_area(alpha=0.5) +
theme(axis.text.x = element_text(angle = 90, vjust = 0.5, hjust=1)) +
scale_x_continuous(breaks = 2013:2021) +
geom_point(col="red") +
labs(title = "a2: geom_area \n and geom_point")
a1 | a2
```



6.2 geom_abline

6.2.1 Package

ggplot2 (Wickham 2016)

6.2.2 Description

Description Draw a straight line (Y = mX + c) for a given slope (m) and intercept (c).

6.2.3 Understandable aesthetics

Unlike most other geoms, geom_abline does not depend on the x and y variables that we map for the main plot. geom_abline has its own independent characteristics: intercept and slope.

6.2.4 Statistics layer(s)

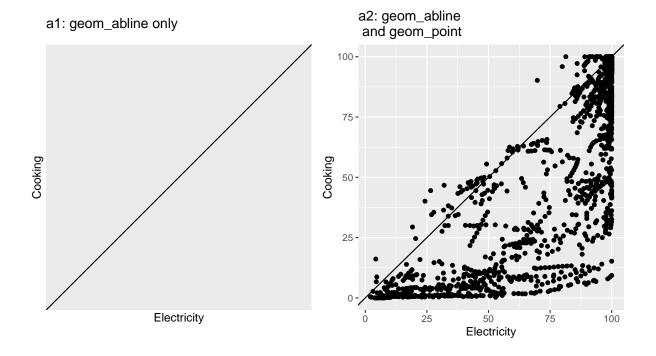
None (geom_abline is independent from the data layer.)

6.2.5 See also:

geom_point, geom_vline, geom_hline

6.2.6 Example

```
a1 <- ggplot(worldbankdata, aes(y = Cooking, x=Electricity)) +
    geom_abline(intercept = 0, slope = 1) +
    labs(title="a1: geom_abline only") +
    theme(aspect.ratio = 1)
a2 <- ggplot(worldbankdata, aes(y = Cooking, x=Electricity)) +
    geom_abline(intercept = 0, slope = 1) +
    geom_point() +
    labs(title = "a2: geom_abline \n and geom_point") +
    theme(aspect.ratio = 1)
a1 | a2</pre>
```



6.3 geom_alluvium

6.3.1 Package

ggalluvial(Brunson and Read 2019; Brunson 2020)

6.3.2 Description

Create alluvial plot. An alluvial plot is a type of diagram that is particularly useful for visualizing categorical data and the flow or transition between different categorical variables over multiple stages or categories

6.3.3 Understandable aesthetics

x, y, ymin, ymax, alpha, colour, fill, linetype, size, group (group is used internally; arguments are ignored)

6.3.4 Statistics layer(s)

alluvium

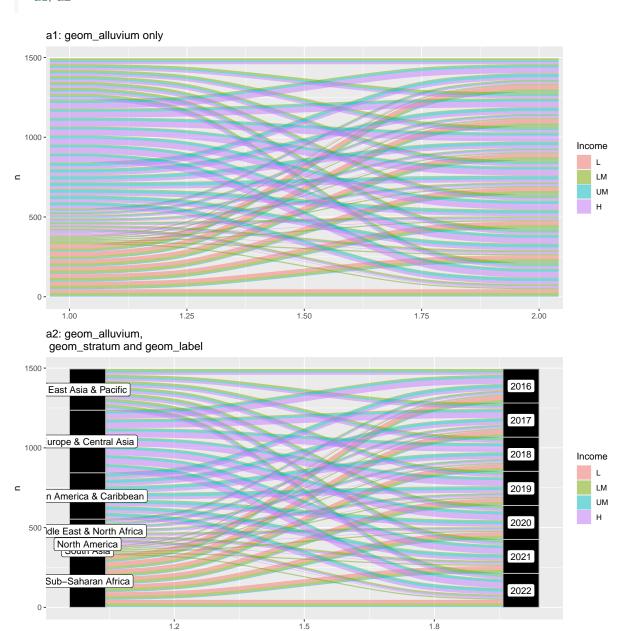
6.3.5 See also

```
geom_stratum, geom_flow, geom_lode
```

6.3.6 Example

```
library(ggalluvial)
  freq.table <- worldbankdata |>
    select(Country, Region, Year, Income) |>
    filter(Year > 2015) |>
    group_by(Region, Year, Income) |>
    summarise(n = n()) >
    drop_na()
  freq.table
# A tibble: 153 x 4
           Region, Year [49]
# Groups:
  Region
                        Year Income
                                        n
   <fct>
                       <dbl> <fct> <int>
1 East Asia & Pacific 2016 LM
                                       13
2 East Asia & Pacific 2016 UM
                                       10
3 East Asia & Pacific 2016 H
                                       14
4 East Asia & Pacific 2017 LM
                                       13
5 East Asia & Pacific 2017 UM
                                       10
6 East Asia & Pacific 2017 H
                                       14
7 East Asia & Pacific 2018 LM
                                       13
8 East Asia & Pacific 2018 UM
                                       10
9 East Asia & Pacific 2018 H
                                       14
10 East Asia & Pacific 2019 LM
                                       12
# i 143 more rows
  a1 <- freq.table |>
    ggplot(aes(y = n, axis1 = Region, axis2 = Year)) +
    geom_alluvium(aes(fill = Income), width = 1/12) +
    labs(title = "a1: geom_alluvium only")
  a2 <- freq.table |>
    ggplot(aes(y = n, axis1 = Region, axis2 = Year)) +
    geom_alluvium(aes(fill = Income), width = 1/12) +
    geom_stratum(width = 1/12, fill = "black", color = "grey") +
```

```
geom_label(stat = "stratum", aes(label = after_stat(stratum))) +
  labs(title = "a2: geom_alluvium, \n geom_stratum and geom_label")
a1/a2
```



6.4 geom_arc

6.4.1 Package

ggforce(Pedersen 2022)

6.4.2 Description

Draw a circle or a segment of a circle.

6.4.3 Understandable aesthetic

required aesthetics

```
{\tt x0-starting\ coordinate\ of\ x-axis\ ,\ y0-starting\ coordinate\ of\ x-axis\ ,\ r-radius\ ,\ {\tt start},\ {\tt end\ optional\ }}
```

color, linewidth, linetype, alpha, lineend

6.4.4 The statistical transformation to use on the data for this layer

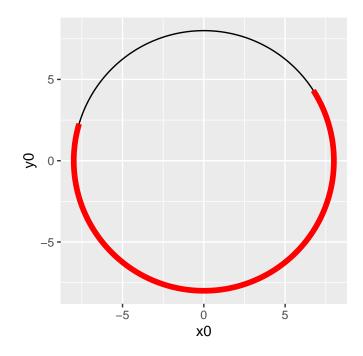
```
stat_arc
```

6.4.5 See also

```
geom_arc2, geom_arc_bar
```

6.4.6 Example

```
library(ggforce)
ggplot() +
   geom_arc(aes(x0=0, y0=0, r=8, start=1, end=8)) +
   geom_arc(aes(x0=0, y0=0, r=8, start=1, end=5), col="red",size=2) + theme(aspect.ratio = 0.000)
```



6.5 geom_arc_bar

6.5.1 Package

ggforce(Pedersen 2022)

6.5.2 Description

To draw pie chart and donut chart defining centre point, a radius and a start and end angle.

6.5.3 Understandable aesthetic

required aesthetics

 ${\tt x0}$ - starting coordinate of x-axis , ${\tt y0}$ - starting coordinate of x-axis, ${\tt r}$ - radius, ${\tt start}$, ${\tt end}$ optional

color, linewidth, linetype, alpha, lineend

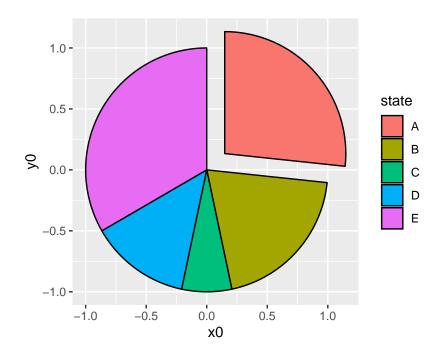
6.5.4 The statistical transformation to use on the data for this layer

```
stat_arc
```

6.5.5 See also

```
geom_arc, geom_arc_bar
```

6.5.6 Example



Part II

B

7 geom_b

7.1 geom_

Part III

C

- 8 geom_a
- 8.1 geom_abline

Part IV

D

- 9 geom_a
- 9.1 geom_abline

Part V

Ε

geom_a

10.1 geom_abline

Part VI

F

- 11 geom_a
- 11.1 geom_abline

Part VII

G

geom_a

12.1 geom_abline

Part VIII

Н

13 geom_h

13.1 geom_hline

13.1.1 Package

ggplot2 (Wickham 2016)

13.1.2 Description

Draw a horizontal line (Y = c) for a given value of c, which is known as yintercept.

13.1.3 Understandable aesthetics

Unlike most other geoms, geom_hline does not depend on the x and y variables that we map for the main plot. geom_hline has its own independent characteristics: yintercept. The yintercept can be passed either as a arguments or aesthetic.

13.1.4 Statistics layer(s)

None

13.1.5 See also

geom_point, geom_vline, geom_hline

13.1.6 Example

```
a1 <- ggplot(worldbankdata, aes(y = Cooking, x= Electricity)) + geom_hline(yintercept = 50
    labs(title="a1: `geom_hline` only") +
    theme(aspect.ratio = 1)</pre>
```

```
a2 <- ggplot(worldbankdata, aes(y = Cooking, x=Electricity)) +
    geom_point() +
    geom_hline(yintercept = 50) +
    labs(title="a2: `geom_point +\n geom_hline` both") +
    theme(aspect.ratio = 1)
a1 | a2</pre>
```

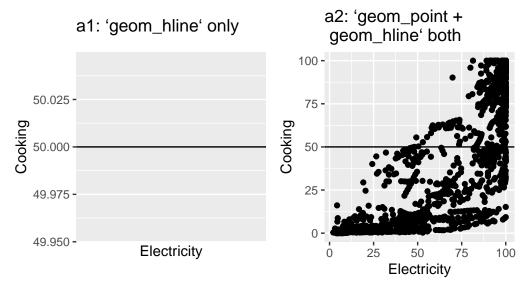


Figure 13.1: Illustration of (A) geom_hline and (B) use of geom_point and geom_hline both

Part IX

Part X

J

Part XI

K

Part XII

Part XIII

M

Part XIV

N

Part XV

Part XVI

P

- geom_a
- 21.1 geom_abline

Part XVII

Q

Part XVIII

R

- 23 geom_a
- 23.1 geom_abline

Part XIX

S

geom_s

Part XX

T

25 geom_t

Part XXI

U

26 geom_u

Part XXII

V

27 geom_v

Part XXIII

W

28 geom_w

Part XXIV

X

Part XXV



Part XXVI

Z

31 geom_z

32 Summary

In summary, this book has no content whatsoever.

References

Brunson, Jason Cory. 2020. "Ggalluvial: Layered Grammar for Alluvial Plots." *Journal of Open Source Software* 5 (49).

Brunson, Jason Cory, and Quentin D Read. 2019. "Package 'Ggalluvial'."

Pedersen, Thomas Lin. 2022. *Ggforce: Accelerating 'Ggplot2'*. https://CRAN.R-project.org/package=ggforce.

Wickham, Hadley. 2016. *Ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag New York. https://ggplot2.tidyverse.org.