

Data Visualisation geom Encyclopedia

Thiyanga S. Talagala

Invalid Date

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Preface

This is a Quarto book.

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

1

2 Introduction

3 Data wrnging

```
library(tidyverse)
```

```
-- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
v dplyr      1.1.3      v readr      2.1.4
v forcats    1.0.0      v stringr    1.5.1
v ggplot2    3.4.4      v tibble     3.2.1
v lubridate  1.9.3      v tidyr      1.3.0
v purrr      1.0.2
-- Conflicts ----- tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()     masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become
```

4 Data

```
library(drone)
```

```
library(tibble)
data(worldbankdata)
worldbankdata
```

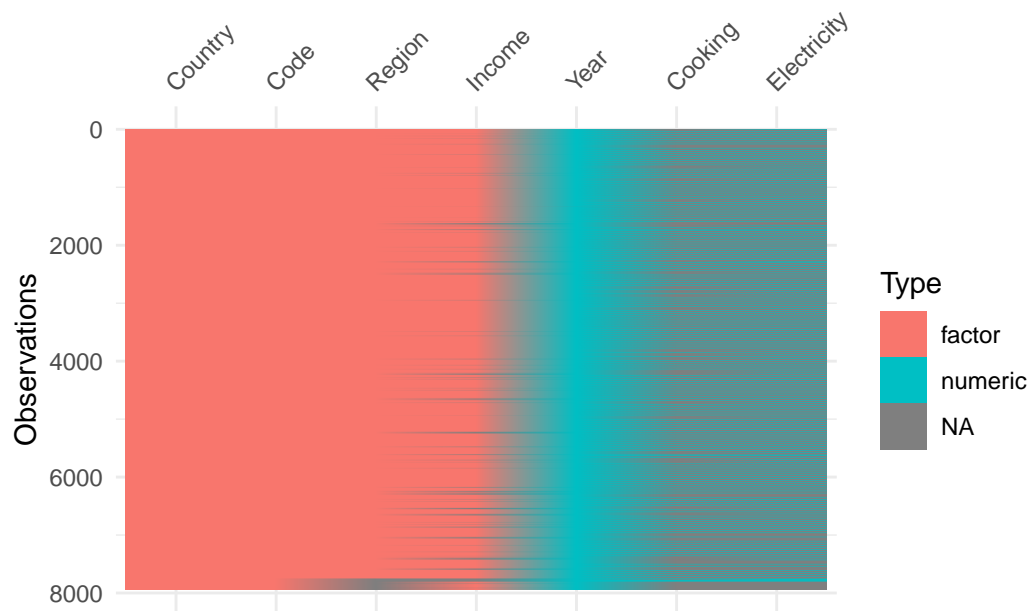
```
# A tibble: 7,937 x 7
```

	Country	Code	Region	Year	Cooking	Electricity	Income
	<fct>	<fct>	<fct>	<dbl>	<dbl>	<dbl>	<fct>
1	Aruba	ABW	Latin America & Caribbean	1990	NA	100	H
2	Aruba	ABW	Latin America & Caribbean	2000	NA	91.7	H
3	Aruba	ABW	Latin America & Caribbean	2013	NA	100	H
4	Aruba	ABW	Latin America & Caribbean	2014	NA	100	H
5	Aruba	ABW	Latin America & Caribbean	2015	NA	100	H
6	Aruba	ABW	Latin America & Caribbean	2016	NA	100	H
7	Aruba	ABW	Latin America & Caribbean	2017	NA	100	H
8	Aruba	ABW	Latin America & 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

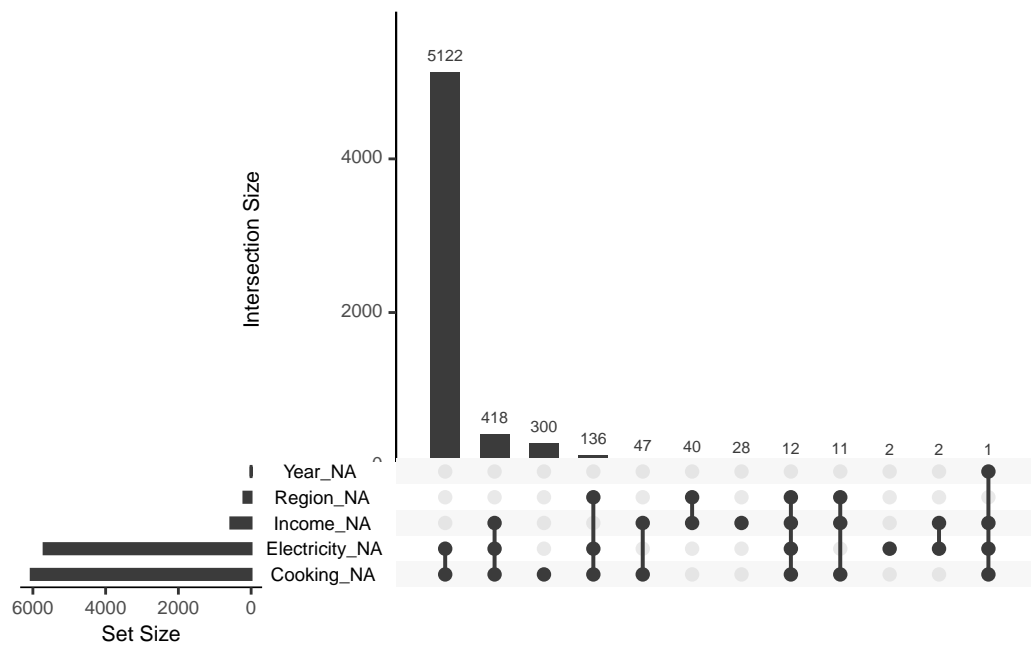
```
# i 7,927 more rows
```

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 covers 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) +
```

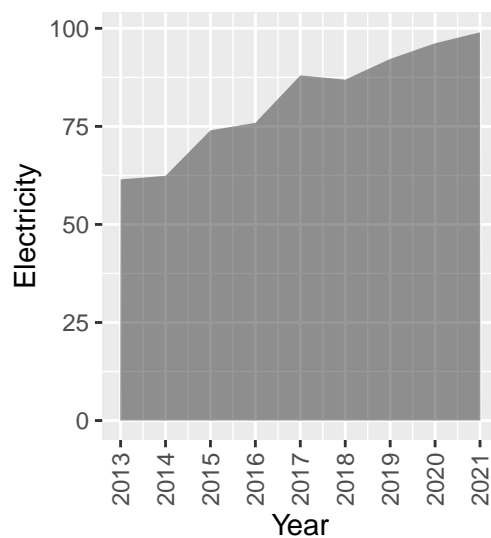
```

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")

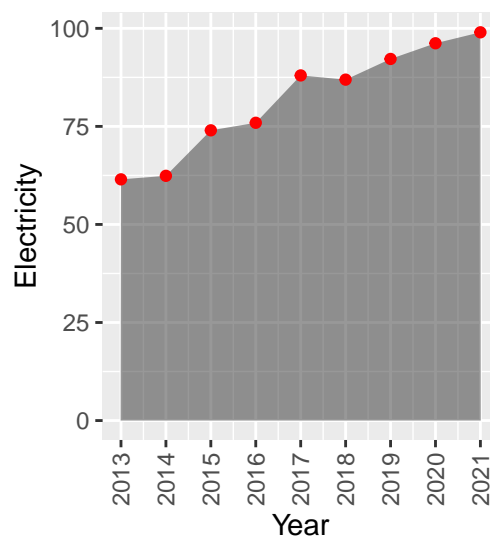
a2 <- worldbankdata |>
  filter(Country == "Bangladesh") |>
  filter(Year >= 2013 & Year <= 2021) |>
  ggplot(aes(x=Year, y=Electricity)) +
  geom_area(alpha=0.5) +
  theme(axis.text.x = element_text(angle = 90, vjust = 0.5, hjust=1)) +
  scale_x_continuous(breaks = 2013:2021) +
  geom_point(col="red")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

```

a1: geom_area only



a2: geom_area
and geom_point



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)

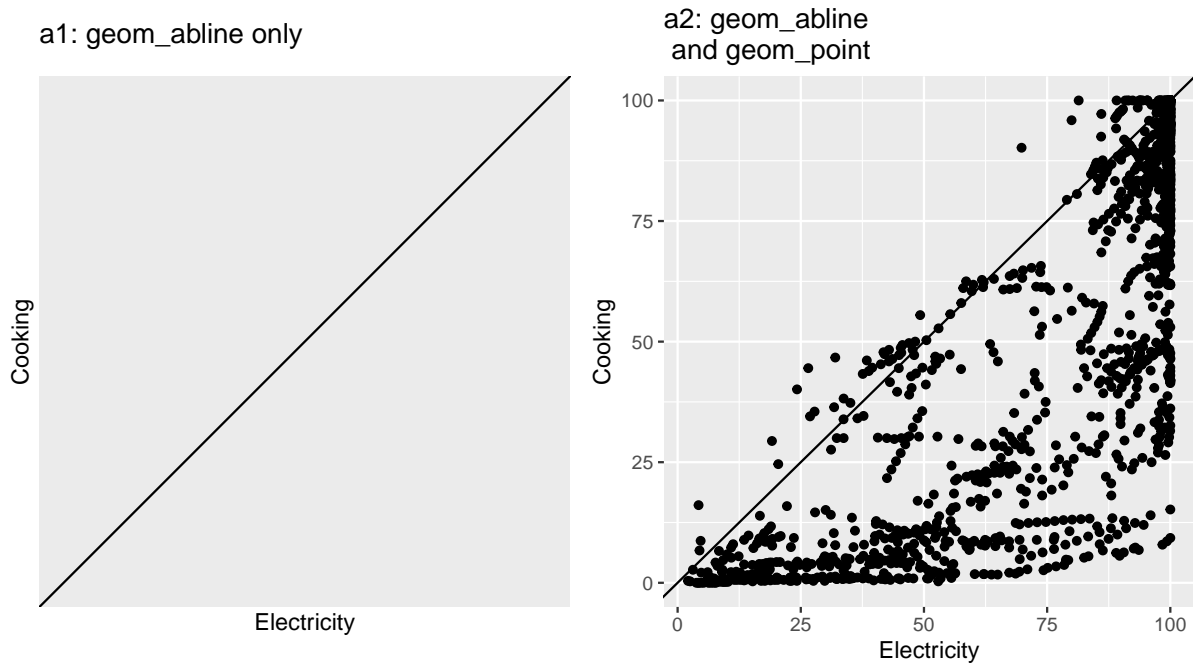
None (`geom_abline` is independent from the data layer.)

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
```



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

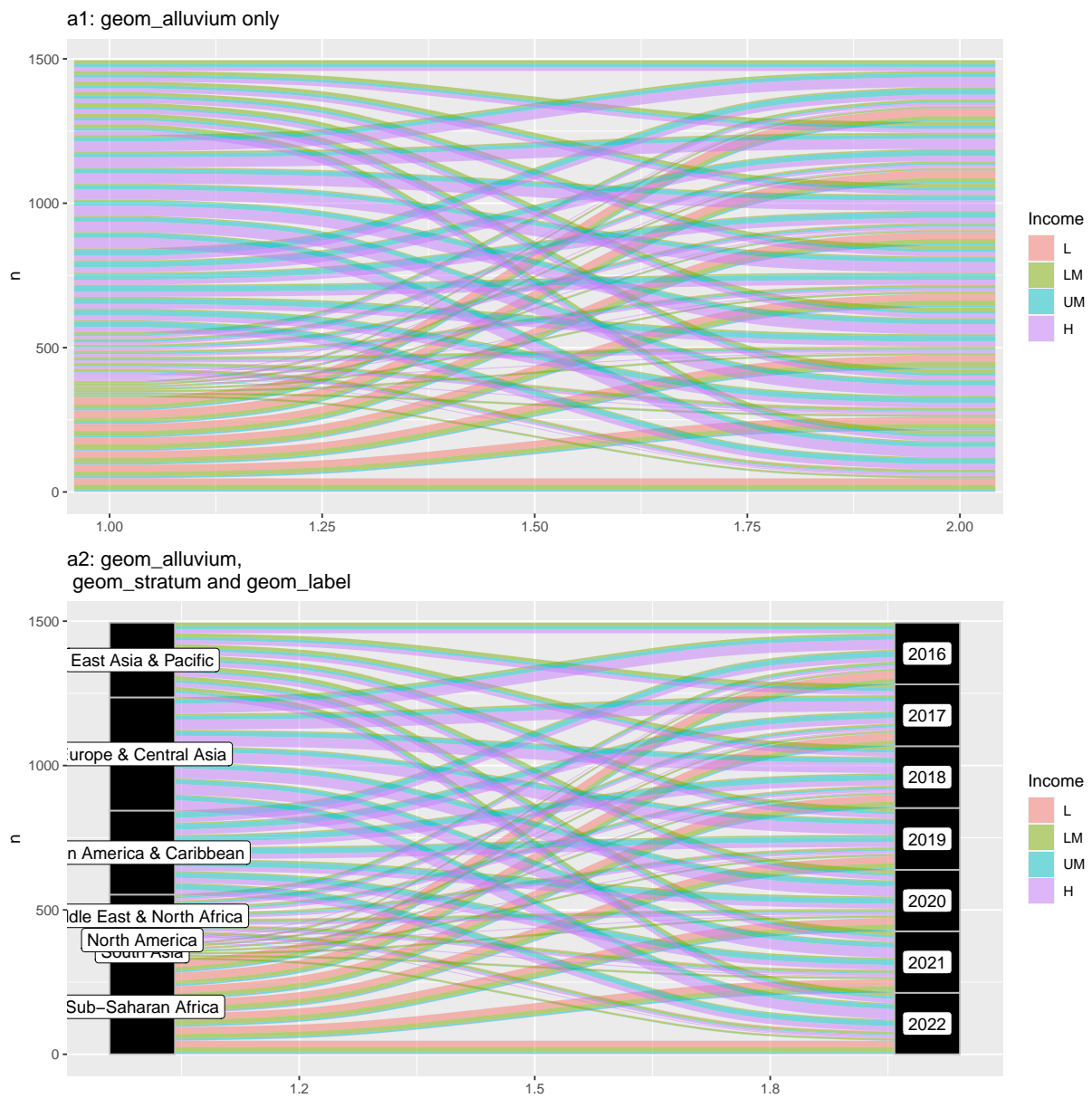
```
library(ggalluvial)
freq.table <- worldbankdata |>
  select(Country, Region, Year, Income) |>
  filter(Year > 2015) |>
  group_by(Region, Year, Income) |>
  summarise(n = n()) |>
  drop_na()
freq.table
```

```
# A tibble: 153 x 4
# Groups:   Region, Year [49]
  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

x0 - starting coordinate of x-axis , y0 - starting coordinate of x-axis, r - radius, start, end

optional

color, linewidth, linetype, alpha, lineend

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

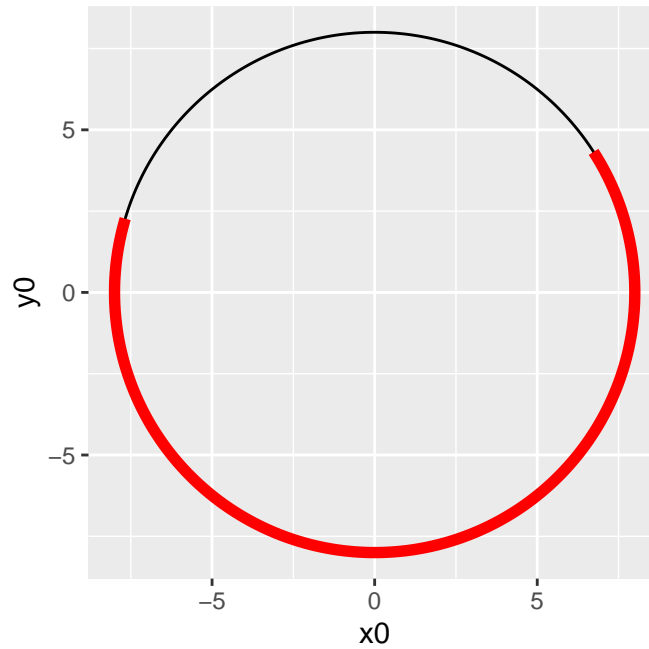
stat_arc

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 =
```



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

`x0` - starting coordinate of x-axis , `y0` - starting coordinate of x-axis, `r` - radius, `start`, `end`

optional

`color`, `linewidth`, `linetype`, `alpha`, `lineend`

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

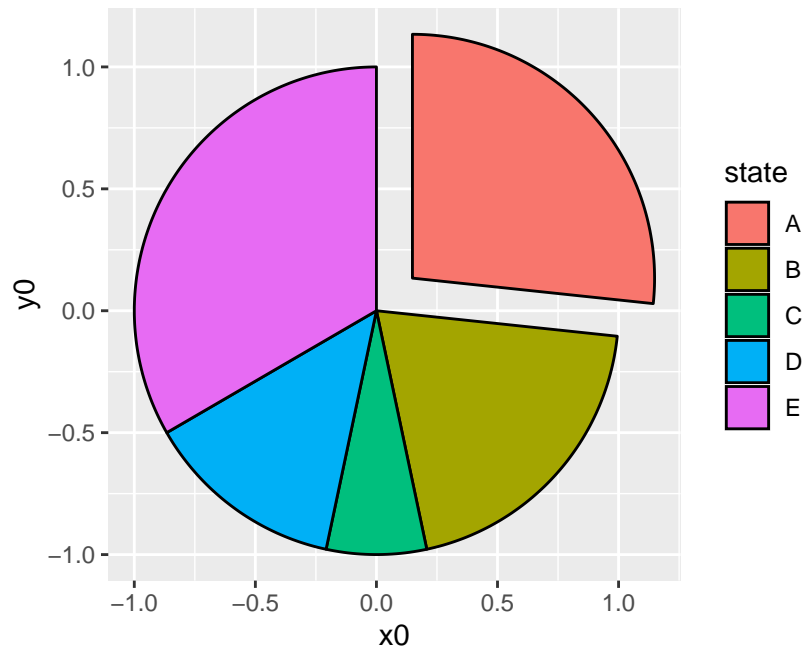
`stat_arc`

6.5.5 See also

[geom_arc](#), [geom_arc_bar](#)

6.5.6 Example

```
df <- data.frame(
  state = c('A', 'B', 'C',
            'D', 'E'),
  focus = c(0.2, 0, 0, 0, 0),
  start = c(0, 1, 2, 3, 4),
  end = c(1, 2, 3, 4, 2*pi),
  amount = c(4, 3, 1, 2, 5),
  stringsAsFactors = FALSE
)
ggplot(df) +
  geom_arc_bar(aes(x0 = 0, y0 = 0, r0 = 0, r = 1, amount = amount,
                  fill = state, explode = focus), stat = 'pie') +
  theme(aspect.ratio = 1)
```



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

E

10 geom_a

10.1 geom_abline

Part VI

F

11 geom_a

11.1 geom_abline

Part VII

G

12 geom_a

12.1 geom_abline

Part VIII

H

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)
```

```

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

```

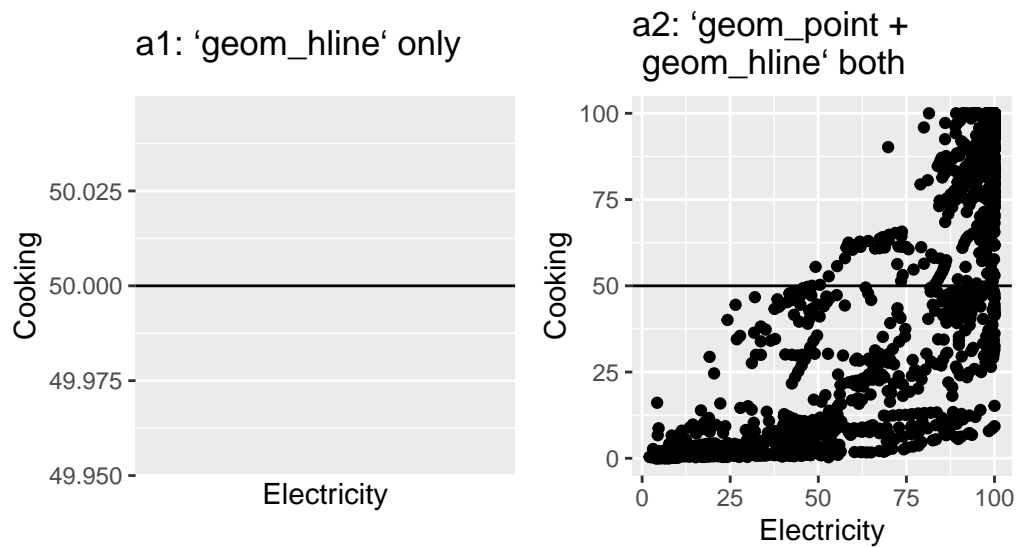


Figure 13.1: Illustration of (A) `geom_hline` and (B) use of `geom_point` and `geom_hline` both

Part IX

I

14 geom_a

14.1 geom_abline

Part X

J

15 geom_a

15.1 geom_abline

Part XI

K

16 geom_a

16.1 geom_abline

Part XII

L

17 geom_a

17.1 geom_abline

Part XIII

M

18 geom_a

18.1 geom_abline

Part XIV

N

19 geom_a

19.1 geom_abline

Part XV

O

20 geom_a

20.1 geom_abline

Part XVI

P

21 geom_a

21.1 geom_abline

Part XVII

Q

22 geom_a

22.1 geom_abline

Part XVIII

R

23 geom_a

23.1 geom_abline

Part XIX

S

24 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

29 geom_a

29.1 geom_abline

Part XXV

Y

30 geom_a

30.1 geom_abline

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>.