Show and Tell: R Version

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(she, her, hers)
@JoscelinRocha

Disclaimer: I got too excited and organization quickly stopped being a priority

Agenda

What can you import?

Agenda

What can you import?

What can you export?

Agenda

What can you import?

What can you export?

Visualization

Agenda

What can you import?

What can you export?

Visualization

Fun other stuff

Agenda

What can you import?

What can you export?

Visualization

Fun other stuff

More resources

What can you import?

CSV (Comma Separated Values) Files

```r
# Using base R
data <- read.csv("file.csv")

# OR

# Using the readr package (part of the tidyverse)
library(readr)
data <- read_csv("file.csv")
```

CSV (Comma Separated Values) Files

```r
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# OR

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library(readr)
data <- read_csv("file.csv")
```

Excel Files

```r
# Using the readxl package (part of the tidyverse)
library(readxl)

data <- read_excel("file.xlsx")
```

JSON (JavaScript Object Notation) Files

```
# Using the jsonlite package
library(jsonlite)

data <- fromJSON("file.json")
```

JSON (JavaScript Object Notation) Files

```
# Using the jsonlite package
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data <- fromJSON("file.json")
```

XML (eXtensible Markup Language) Files

```
# Using the XML package
library(XML)

data <- xmlParse("file.xml")
```

SPSS Files

```r
# Using the haven package (part of the tidyverse)
library(haven)

data <- read_sav("file.sav")
```

SPSS Files

```r
# Using the haven package (part of the tidyverse)
library(haven)

data <- read_sav("file.sav")
```

SAS Files

```r
# Using the haven package (part of the tidyverse)
library(haven)

data <- read_sas("file.sas7bdat")
```

Stata Files

```
# Using the haven package (part of the tidyverse)
library(haven)

data <- read_dta("file.dta")
```

Stata Files

```
# Using the haven package (part of the tidyverse)
library(haven)

data <- read_dta("file.dta")
```

SQLite Databases

```
# Using the DBI and RSQLite packages
library(DBI)
library(RSQLite)

con <- dbConnect(RSQLite::SQLite(), "file.db")
data <- dbGetQuery(con, "SELECT * FROM table_name")
dbDisconnect(con)
```

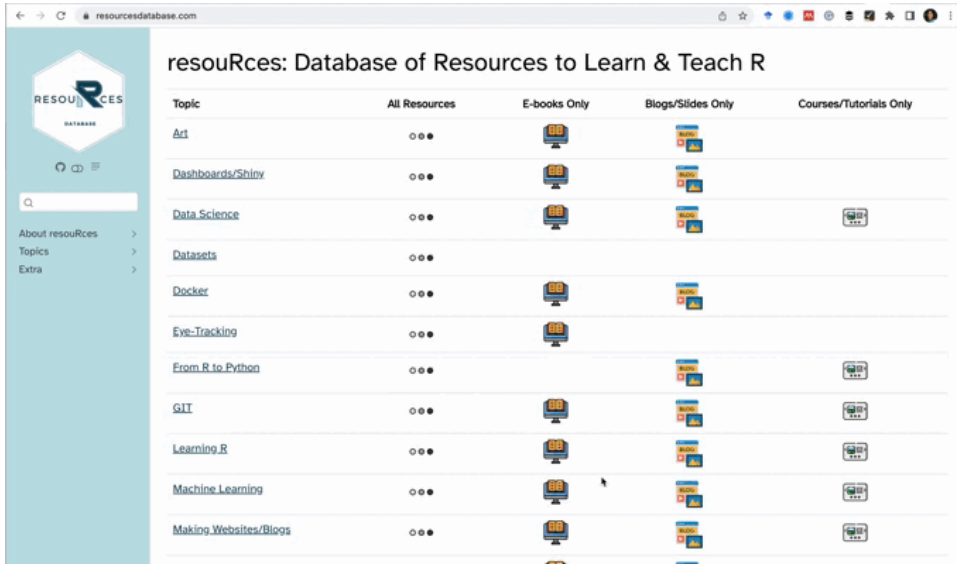
What can you export?

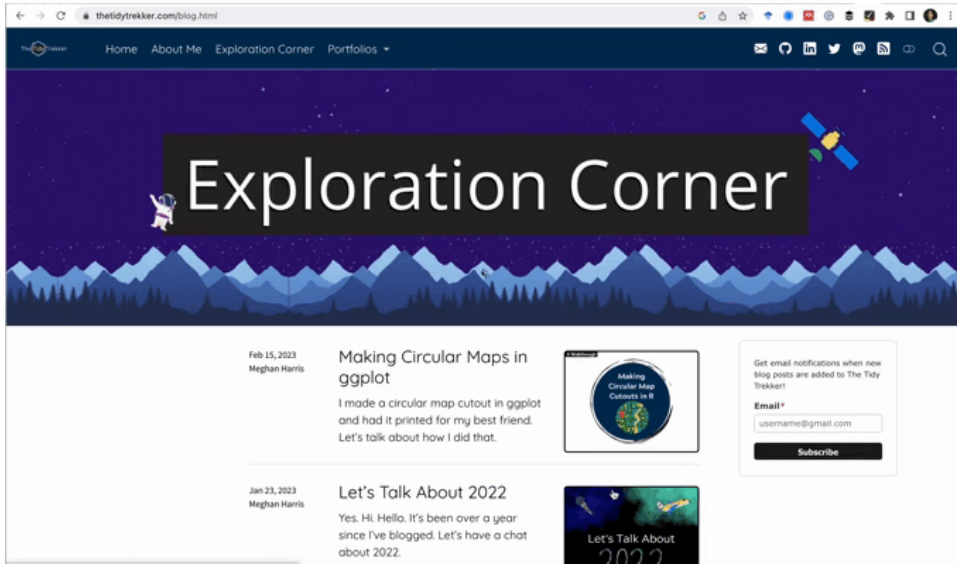
You can create slides

Using ***Quarto*** or ***Xaringan*** (like the one you are looking at right now)

You can make website or blogs

Using ***Quarto***, ***blogdown***, ***hugodown***, or ***distill***

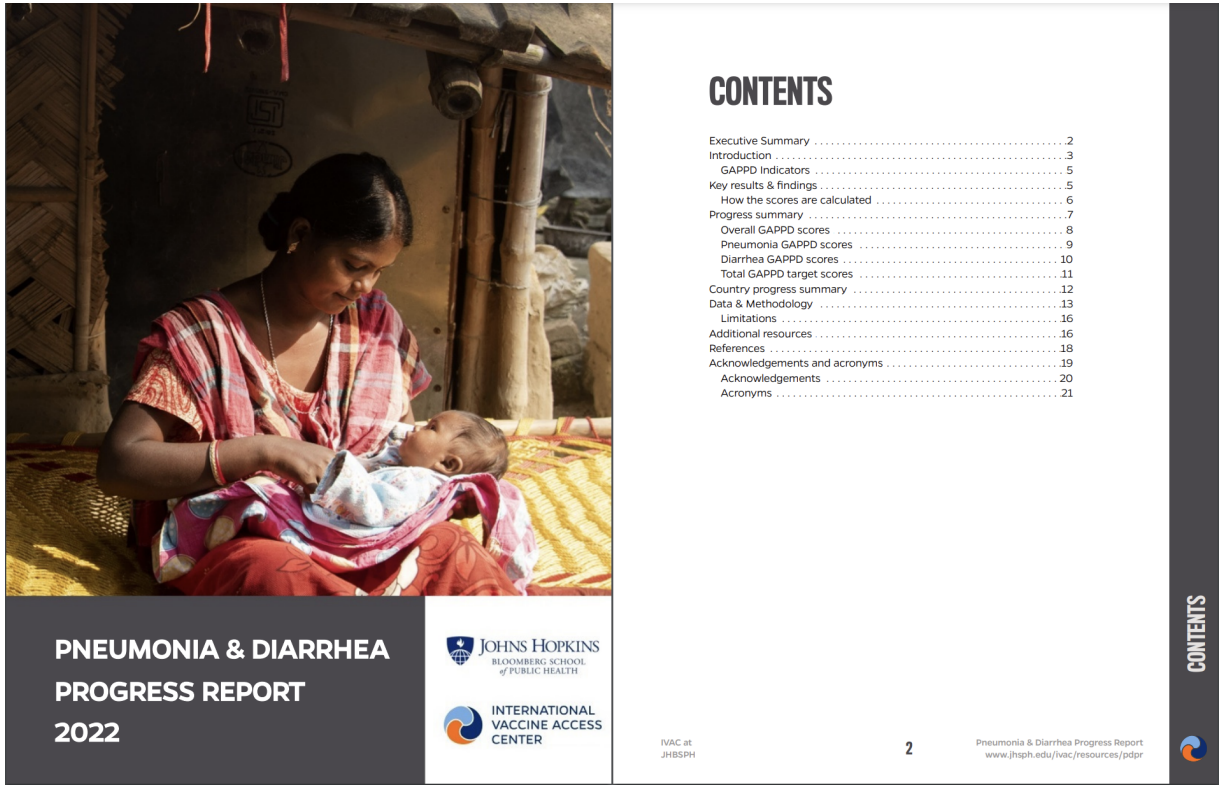




You can make reproducible reports

Using ***Quarto***, ***markdown***

https://www.jhsph.edu/ivac/wp-content/uploads/2019/10/PDPR_2022.pdf



PNEUMONIA & DIARRHEA PROGRESS REPORT 2022

JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH

INTERNATIONAL VACCINE ACCESS CENTER

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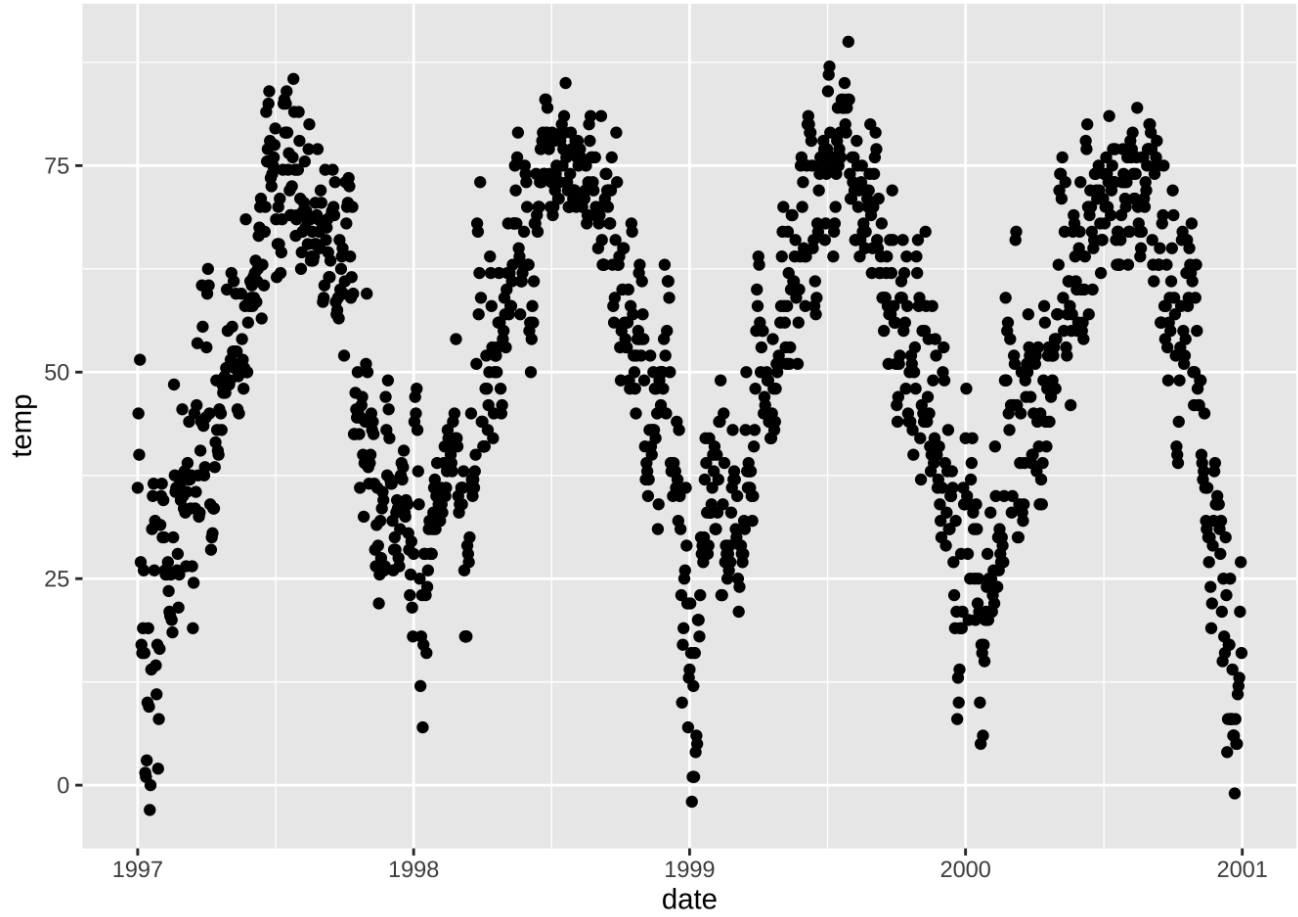
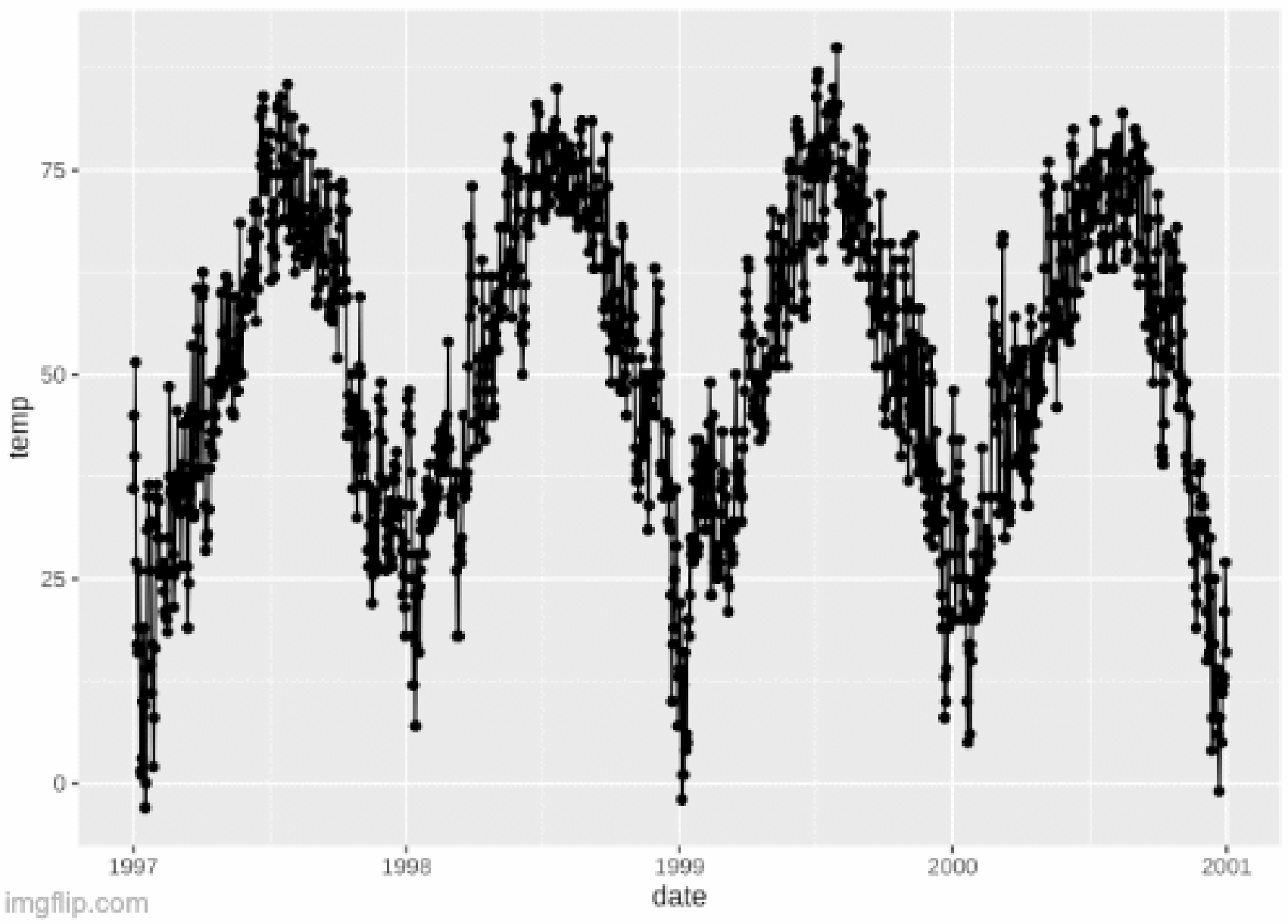
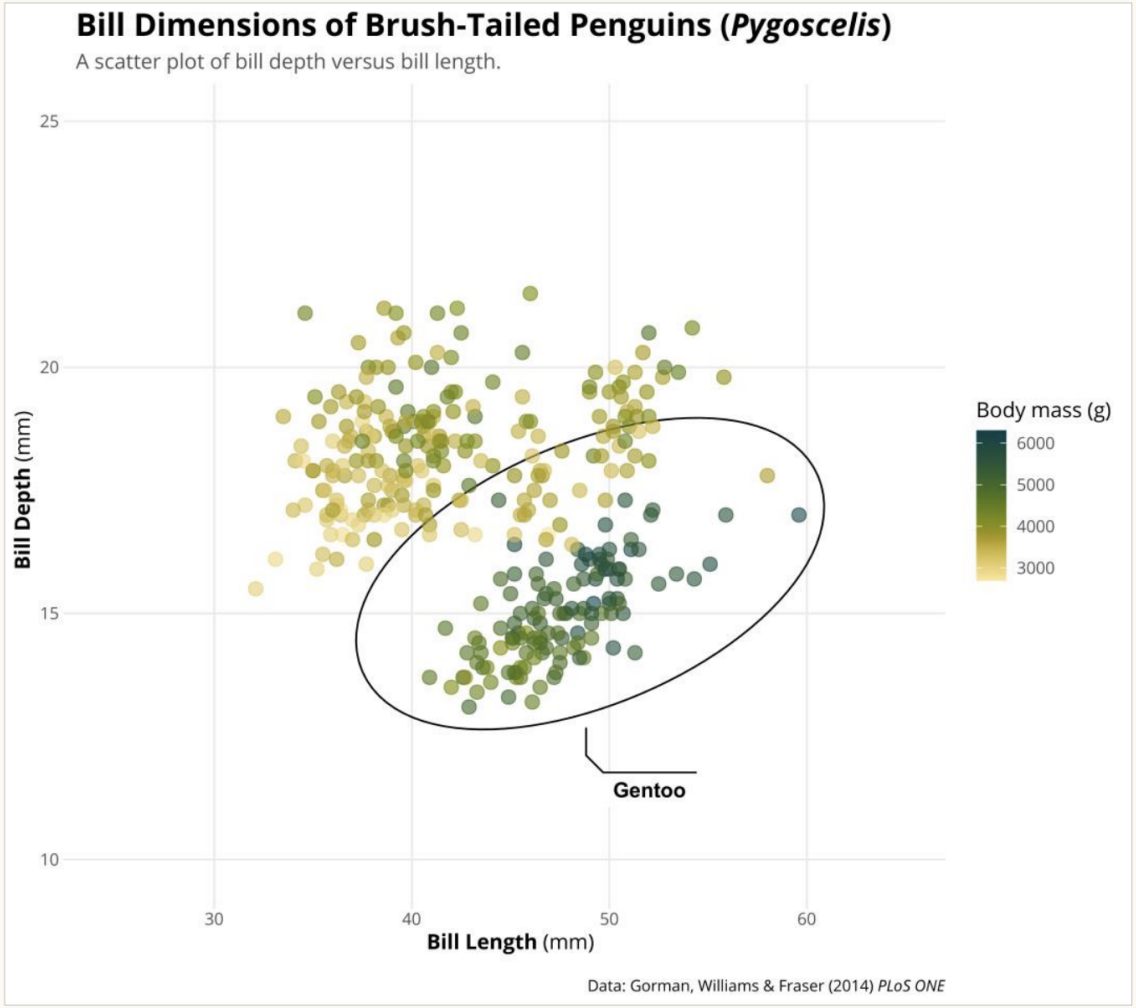
Visualization

If you are patient enough, you could make a default graph like this one

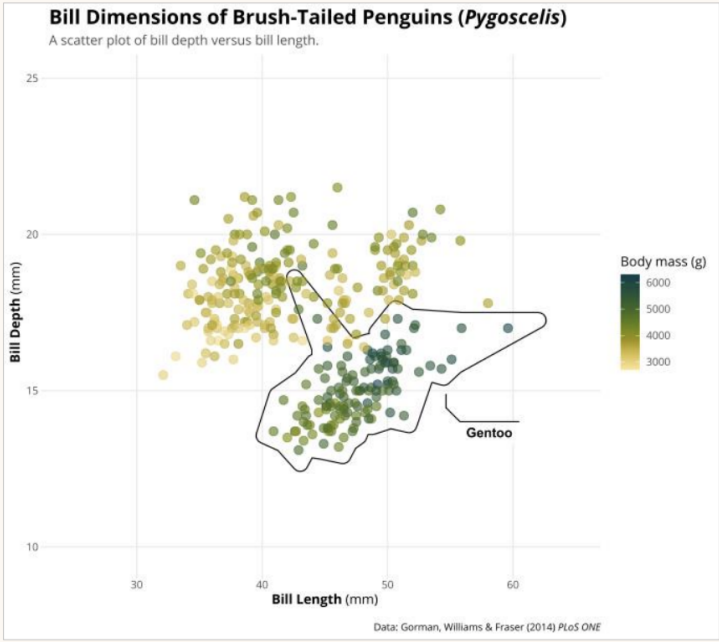



75
50
25
0
temp
1997
1998
1999
2000
2001
date
imgflip.com

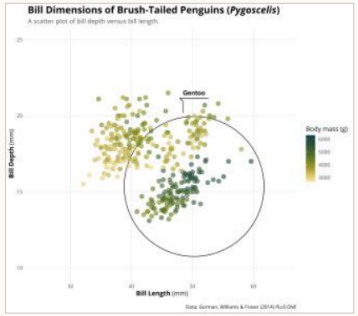
{ggforce} Fancy Annotations



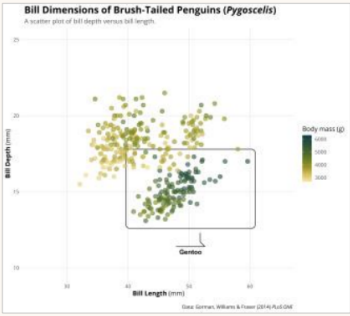
`geom_mark_ellipsoid()`



`geom_mark_hull()`



`geom_mark_circle()`

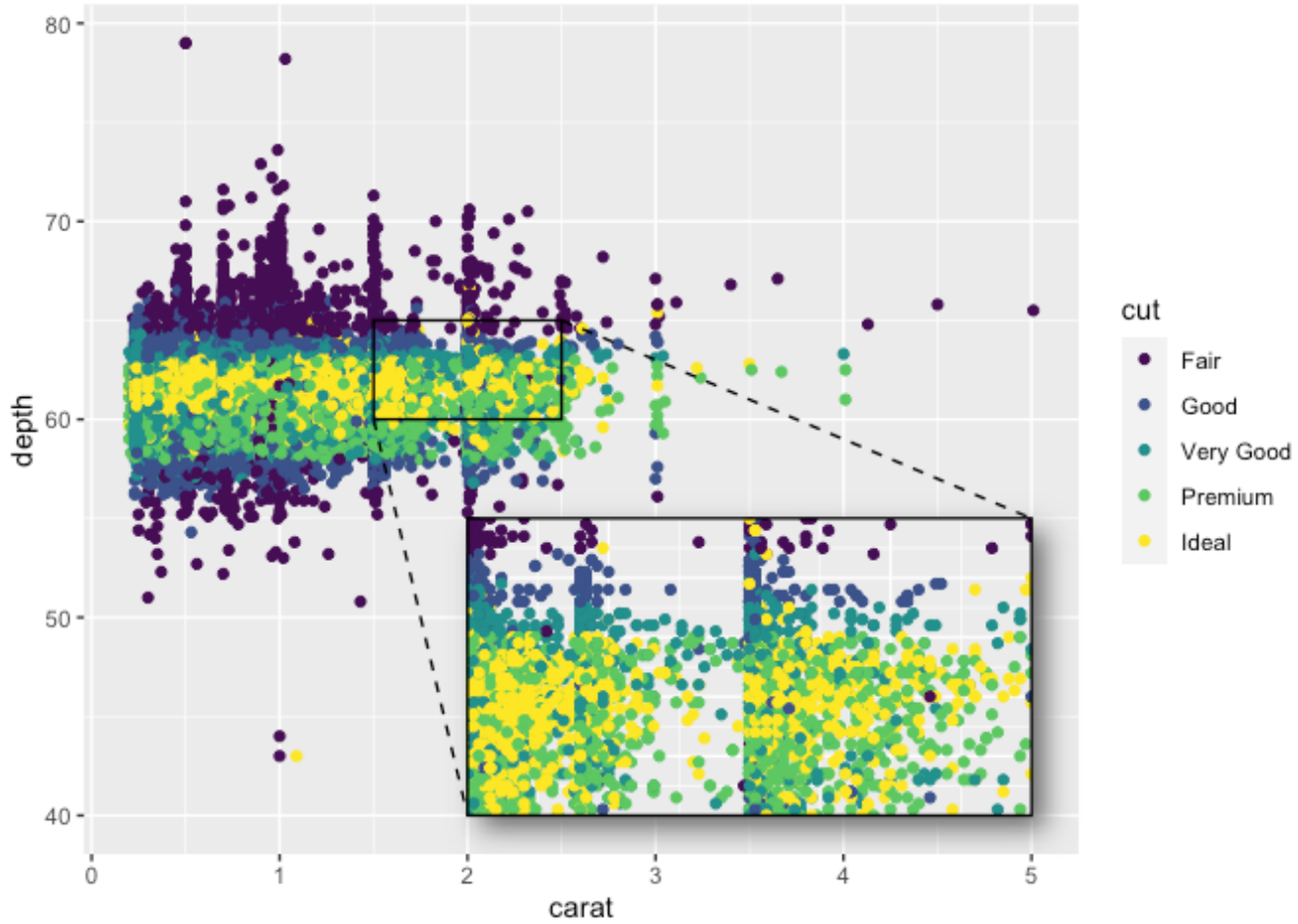


`geom_mark_rect()`

cedricscherer.com cedricphilippscherer@gmail.com @CedScherer @Z3tt

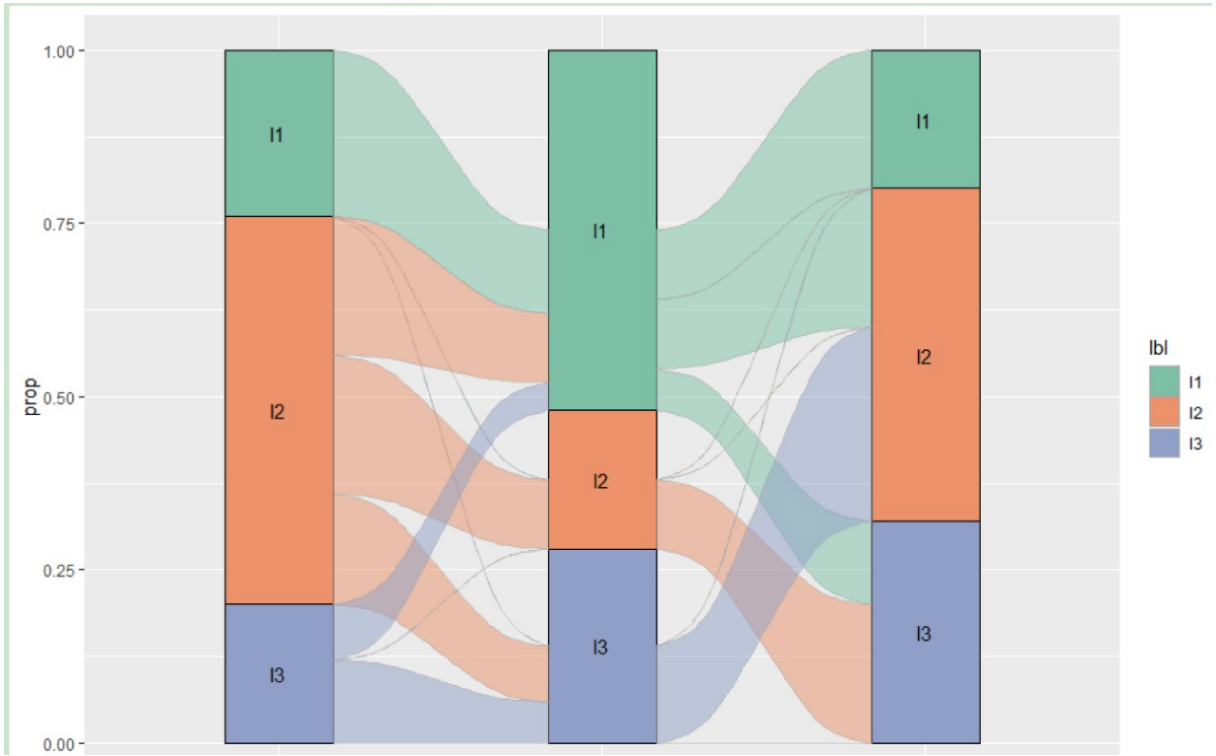
ggmagnify

Creates a magnified inset of graph. The area can be a rectangle, an ellipse, or any shape.



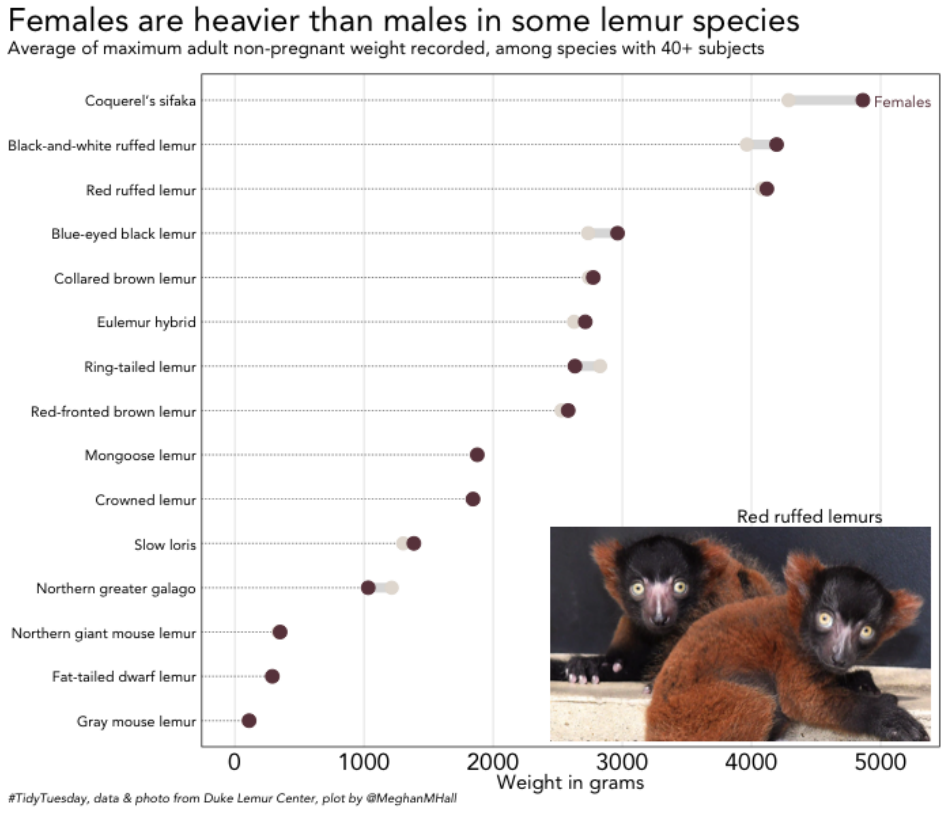
ggalluvial

A ggalluvial plot, also known as an alluvial diagram, is a type of visualization used to show how categorical data is distributed among different groups. It is particularly useful for visualizing how categorical variables are related to each other across different levels of a grouping variable.



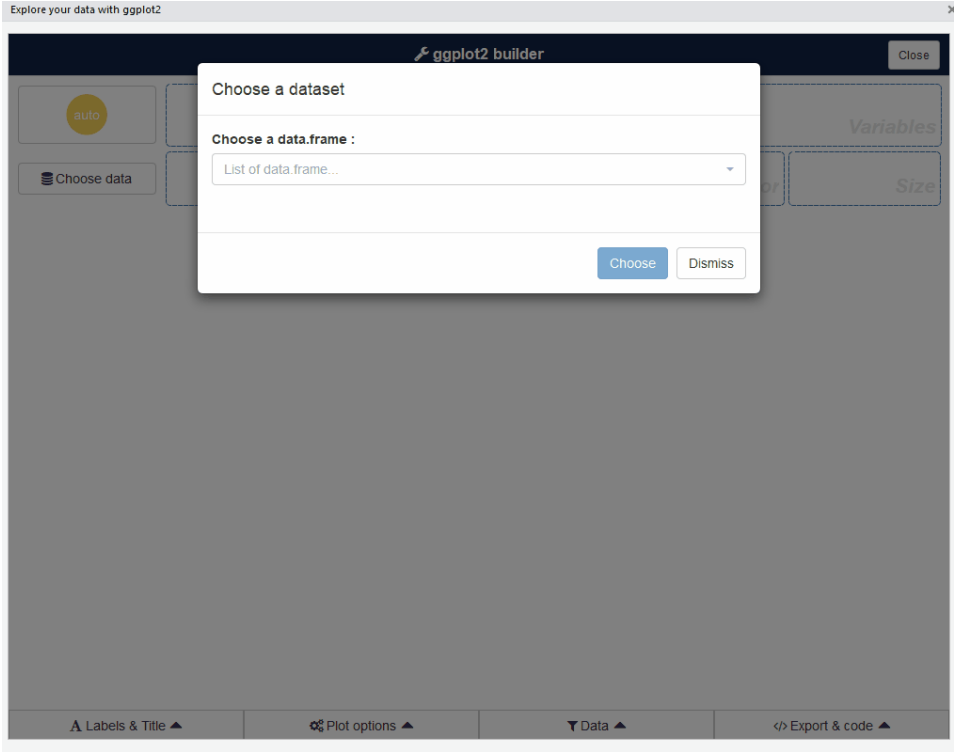
cowplot

The cowplot package provides various features that help with creating publication-quality figures, such as a set of themes, functions to align plots and arrange them into complex compound figures, and functions that make it easy to annotate plots and or mix plots with images.



esquisse

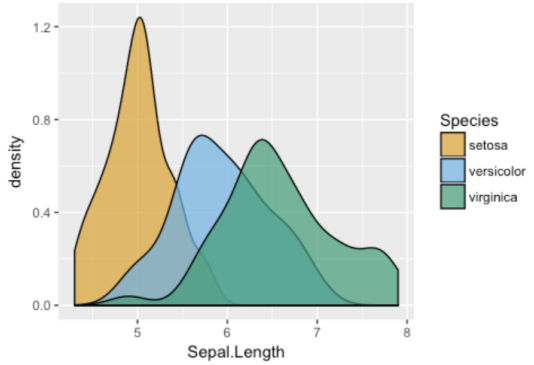
This addin allows you to interactively explore your data by visualizing it with the ggplot2 package. It allows you to draw bar plots, curves, scatter plots, histograms, boxplot and sf objects, then export the graph or retrieve the code to reproduce the graph..



colorblindr

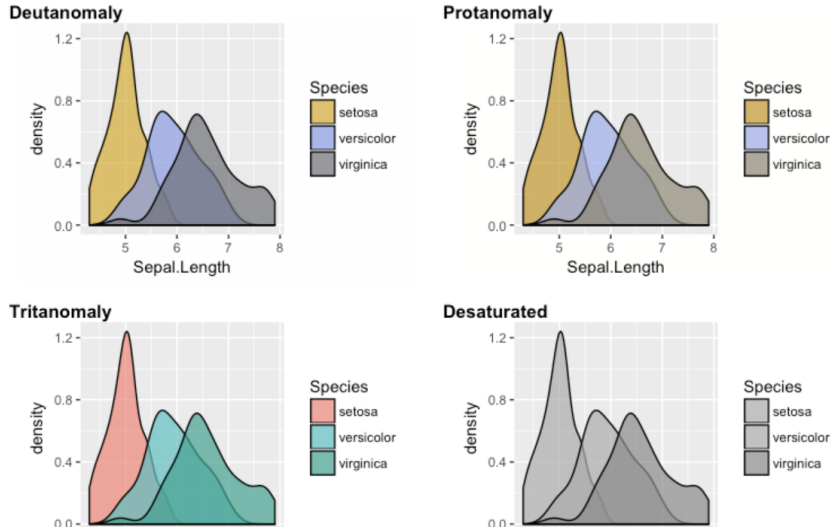
Simulate colorblindness in production-ready R figures.

This package depends on the development versions of cowplot and colorspace, so you must load those packages first.



That figure after color-vision-deficiency simulation:

```
cvd_grid(fig2)
```



colorblindcheck

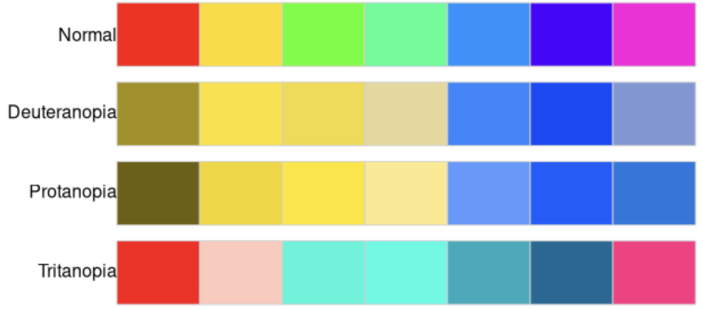
The colorblindcheck accepts a vector of hexadecimal color descriptions as the input. It can be created using different existing R functions (e.g. rainbow()) or packages (e.g. colorspace, RColorBrewer, rcartocolor, etc.).

It allows finding which colors are the most or the least similar and to compare the behavior of color palettes for different color vision deficiencies.

```
library(colorblindcheck)
rainbow_pal = rainbow(n = 7)
rainbow_pal
#> [1] "#FF0000" "#FFDB00" "#49FF00" "#00FF92" "#0092FF" "#4900FF" "#FF00DB"
```

The primary function in this package is `palette_check()`, which creates a summary comparison between the original input palette and simulations of color vision deficiencies - deuteranopia, protanopia, and tritanopia.

```
palette_check(rainbow_pal, plot = TRUE)
```

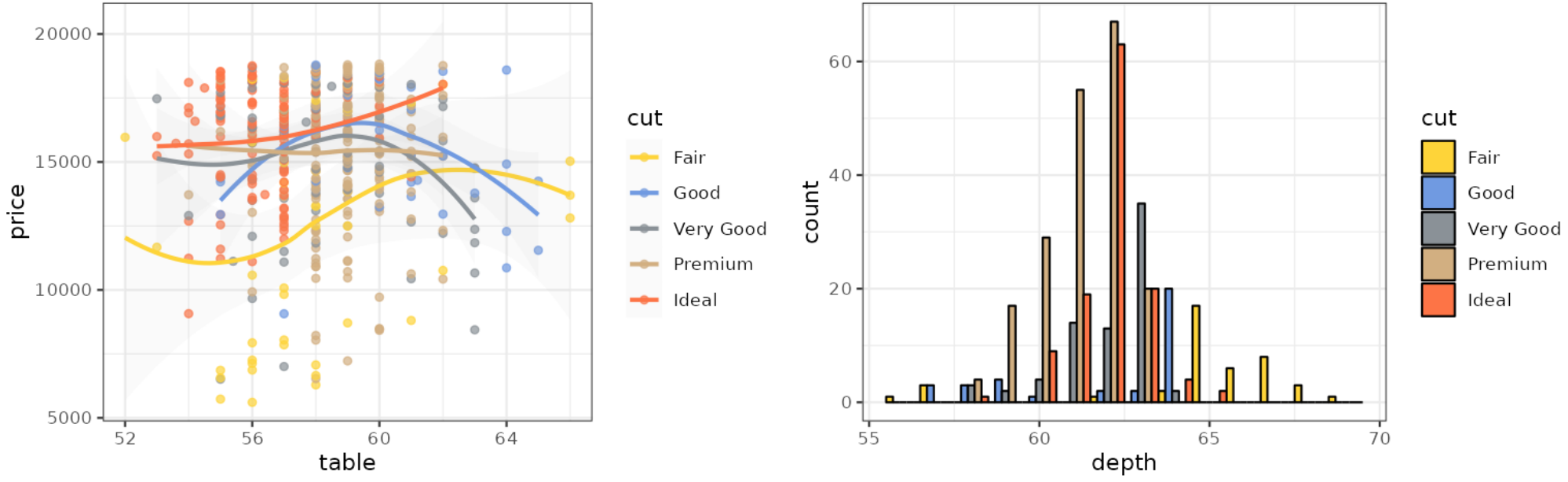


Buffer

```
#>           name n tolerance ncp ndcp  min_dist mean_dist  max_dist
#> 1       normal 7  12.13226  21   21 12.132257  61.06471 107.63470
#> 2 deuteranopia 7  12.13226  21   19  2.572062  44.29065  85.87461
#> 3   protanopia 7  12.13226  21   17  3.647681  47.63882  83.28286
#> 4   tritanopia 7  12.13226  21   20  2.025647  47.41585  83.77189
```

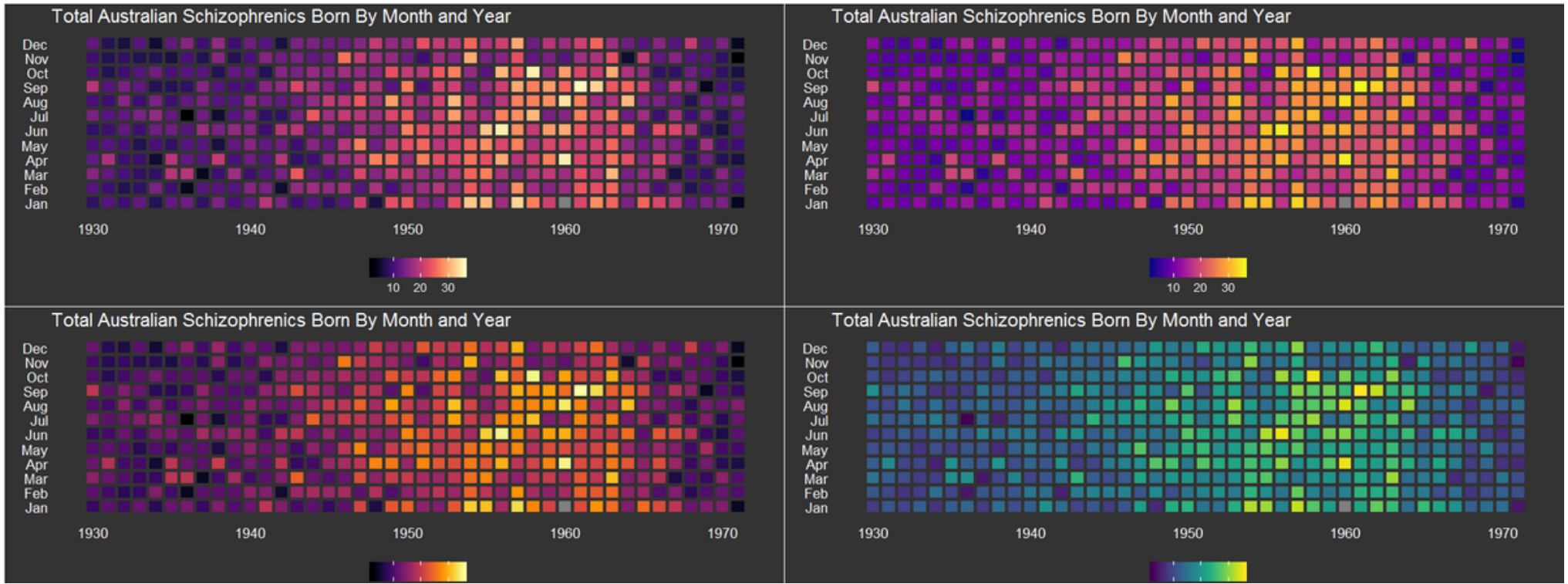
ggsci

offers a collection of high-quality color palettes inspired by colors used in scientific journals, data visualization libraries, science fiction movies, and TV shows.



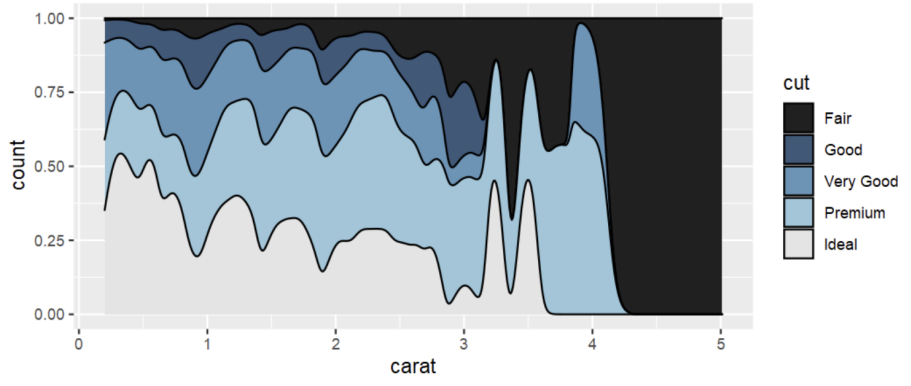
viridis

viridis, and its companion package viridisLite provide a series of color maps that are designed to improve graph readability for readers with common forms of color blindness and/or color vision deficiency. The color maps are also perceptually-uniform, both in regular form and also when converted to black-and-white for printing.

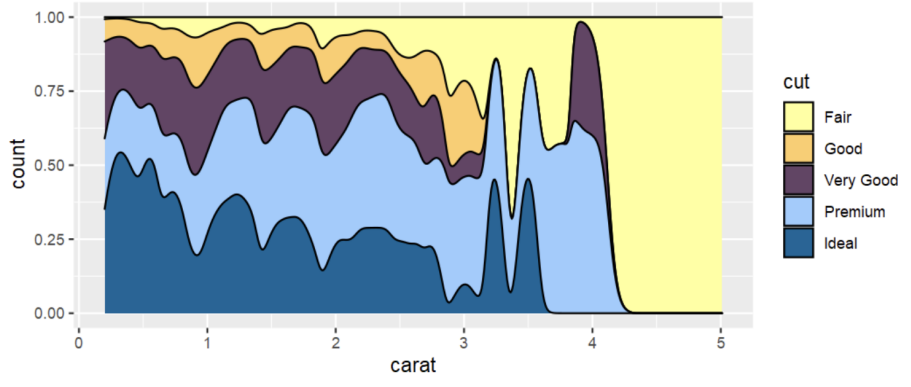


trekcolors

The trekcolors package provides a collection of color palettes based on Star Trek. It also offers functions for custom palettes and scale_* functions for use with ggplot2.




```
p <- ggplot(diamonds, aes(carat, stat(count), fill = cut)) +
  geom_density(position = "fill")
p + scale_fill_lcars("2357")
```



MetBrewer

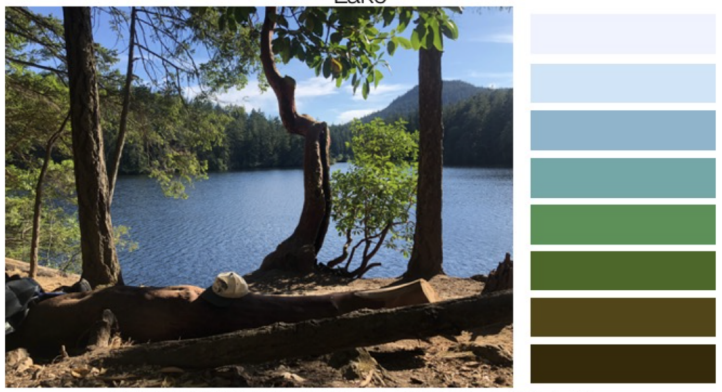
Palettes inspired by works at the Metropolitan Museum of Art in New York. Pieces selected come from various time periods, regions, and mediums.

VanGogh2

PNWColors

Four years spent in the most beautiful place in the world, immortalized in an R color palette package.

Lake



#362904, #54450f, #45681e, #4a9152, #64a8a8, #85b6ce, #cde5f9, #eef3ff

- Best after-work sun spot West of the Mississippi -- Whistle Lake, Anacortes, Washington

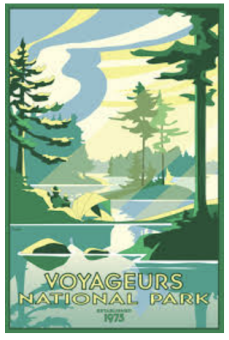
Sunset

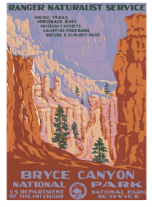
#41476b,#675478,#9e6374,#c67b6f,#de9b71,#efbc82,#fbdfa2

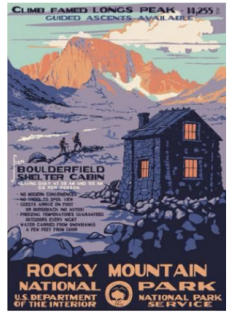
- Washington Park sunset -- Anacortes, Washington

National Park Colors

nationalparkcolors







Example

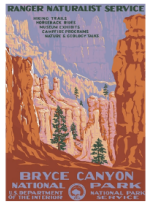
There are 25 total palettes to choose from.

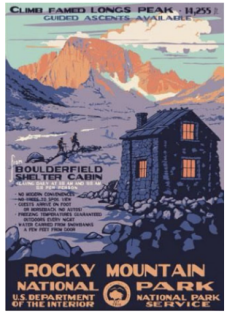
```
library(nationalparkcolors)

names(park_palettes)
#>  [1] "SmokyMountains" "RockyMountains" "Yellowstone"    "Arches"
#>  [5] "ArcticGates"    "MtMckinley"     "GeneralGrant"   "Hawaii"
#>  [9] "CraterLake"     "Saguaro"        "GrandTeton"     "BryceCanyon"
#> [13] "MtRainier"      "Badlands"       "Redwoods"       "Everglades"
#> [17] "Voyageurs"      "BlueRidgePkwy"  "Denali"         "GreatBasin"
#> [21] "ChannelIslands" "Yosemite"       "Acadia"         "DeathValley"
#> [25] "Zion"
```

National Park Colors

nationalparkcolors





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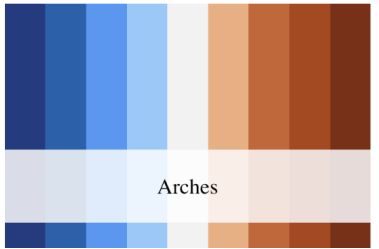
#> [13] "MtRainier"      "Badlands"       "Redwoods"       "Everglades"
#> [17] "Voyageurs"      "BlueRidgePkwy"  "Denali"         "GreatBasin"
#> [21] "ChannelIslands" "Yosemite"       "Acadia"         "DeathValley"
#> [25] "Zion"
```

NatParksPalettes

Acadia NP, USA

- Bass Harbor Head Lighthouse on Mount Desert Island, Jon Bilous, Dreamstime, LINK
- Colorblind-Friendly

Arches NP, USA



Paletteer

The goal of paletteer is to be a comprehensive collection of color palettes in R using a common interface. Think of it as the “caret of palettes”.

```{r}
paletteer_d()
```

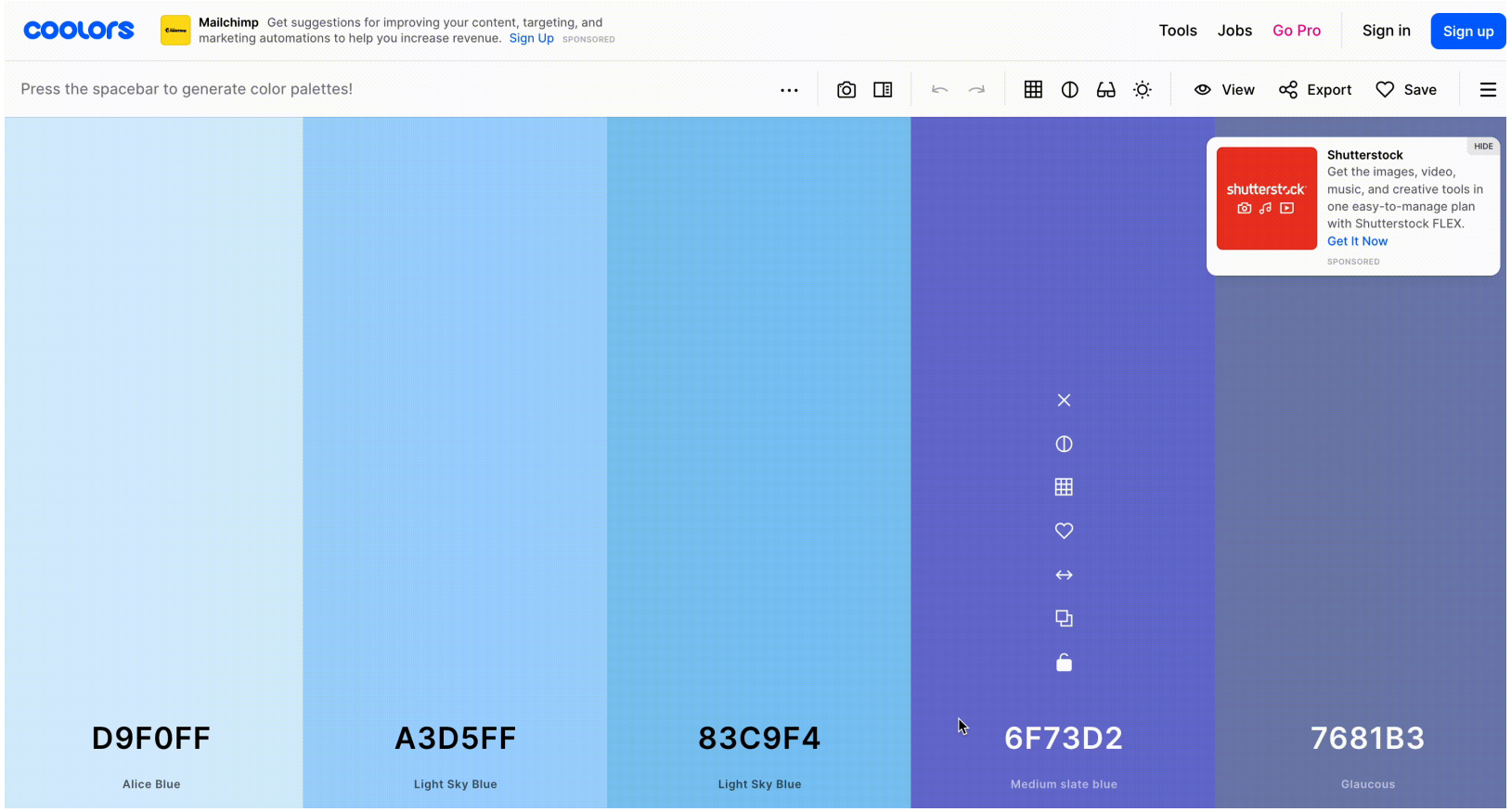
Comprehensive list of color palettes in r by Emil Hvitfedt

The goal of this repository is to have a one stop destination for anyone looking for a color palette to use in r. If you would like to help/contribute please feel free post an issue, PR or send a email to emilhhvitfeldt@gmail.com.

https://github.com/EmilHvitfeldt/r-color-palettes/blob/master/README.md#comprehensive-list-of-color-palettes-in-r

Coolors

Online color palette generator.

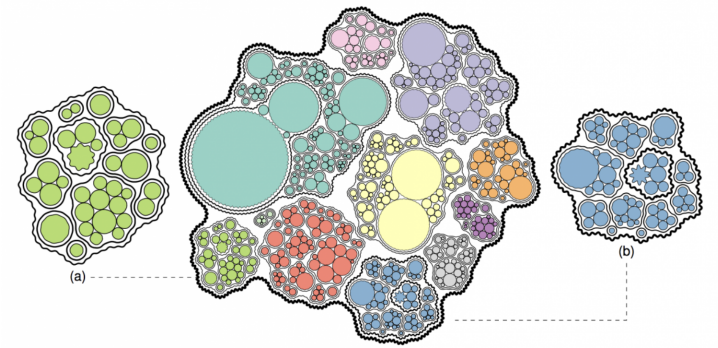


Other Fun Stuff

Xenographics: Weird but (sometimes) useful charts

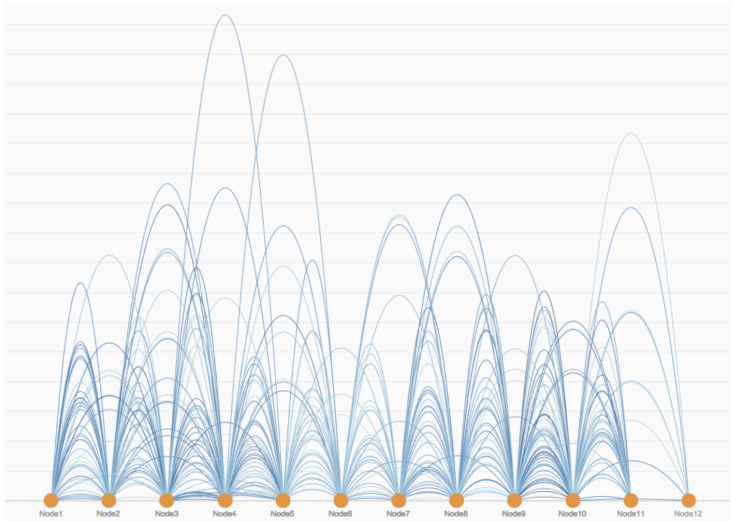
Xeno.graphics is a collection of unusual charts and maps, managed by Maarten Lambrechts. Its objective is to create a repository of novel, innovative and experimental visualizations to inspire you, to fight xenographphobia and popularize new chart types.

Bubble treemap



We present a novel type of circular treemap, where we intentionally allocate extra space for additional visual variables. With this extended visual design space, we encode hierarchically structured data along with their uncertainties in a combined diagram.

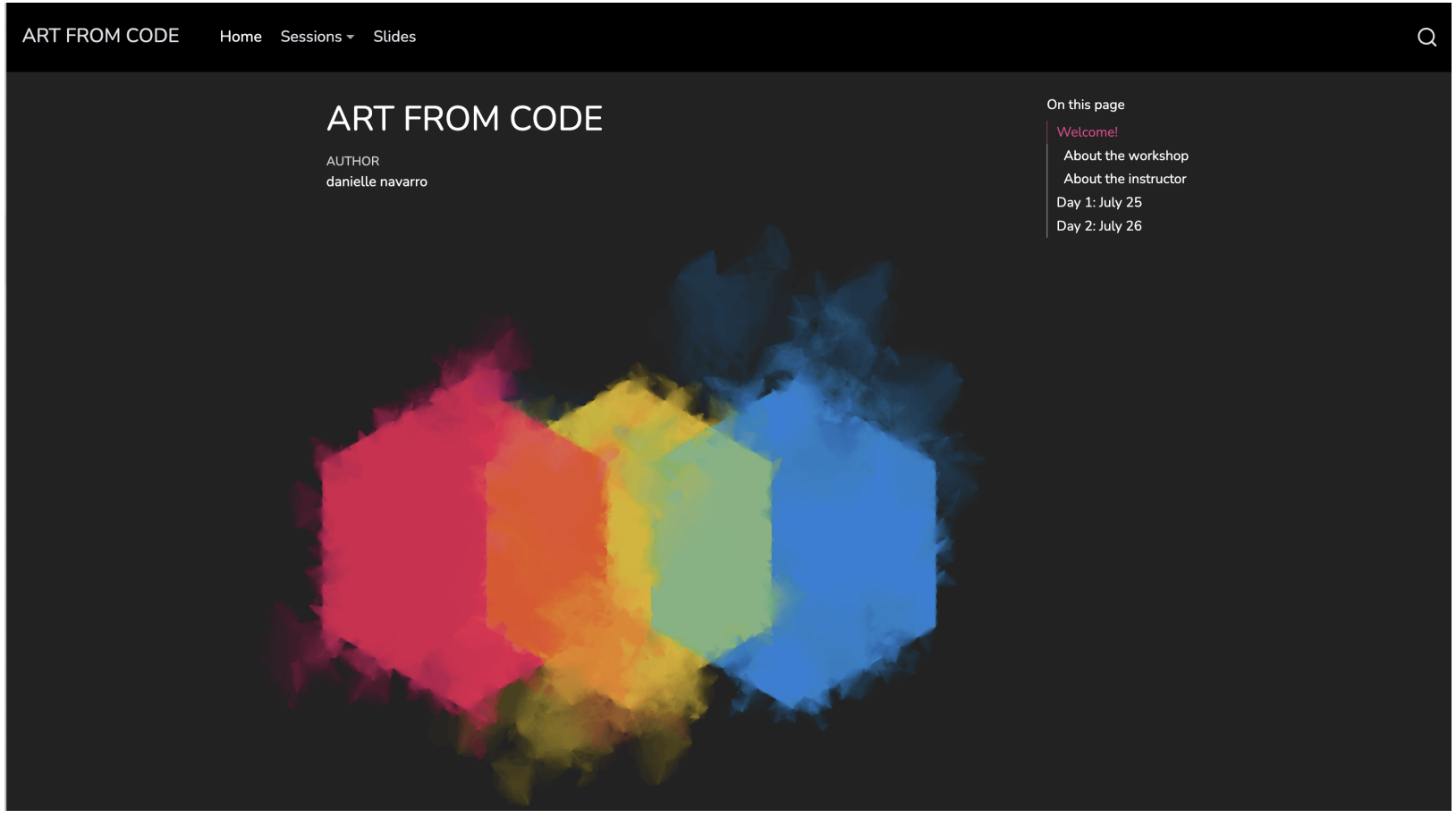
Jump plot



The jump plot allows for scalable graphing of sequence event data with multiple variations to successfully visualize the performance of your workflow.

Art with R

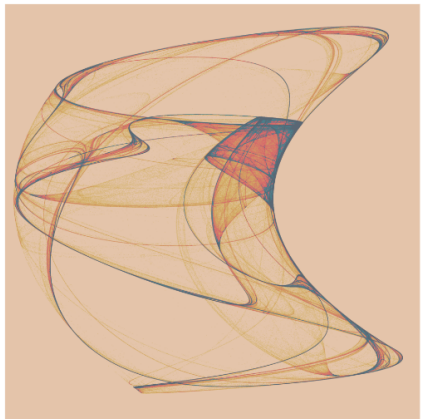
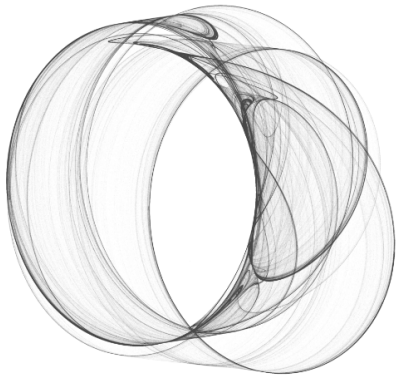
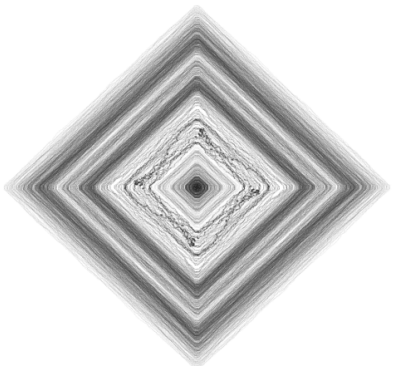
Daniel Navarro: https://art-from-code.netlify.app/



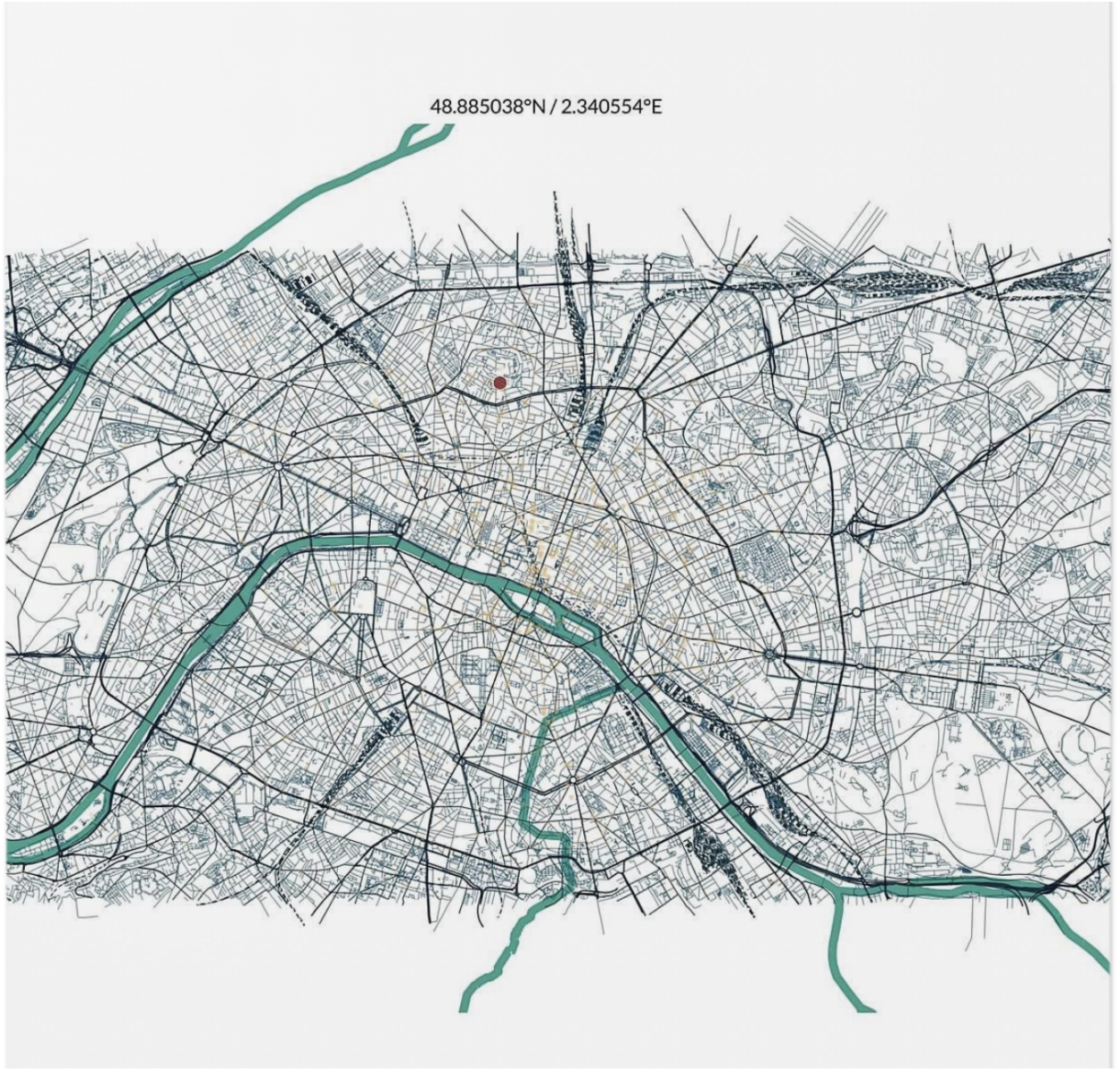
February: strange attractors

Strange attractors

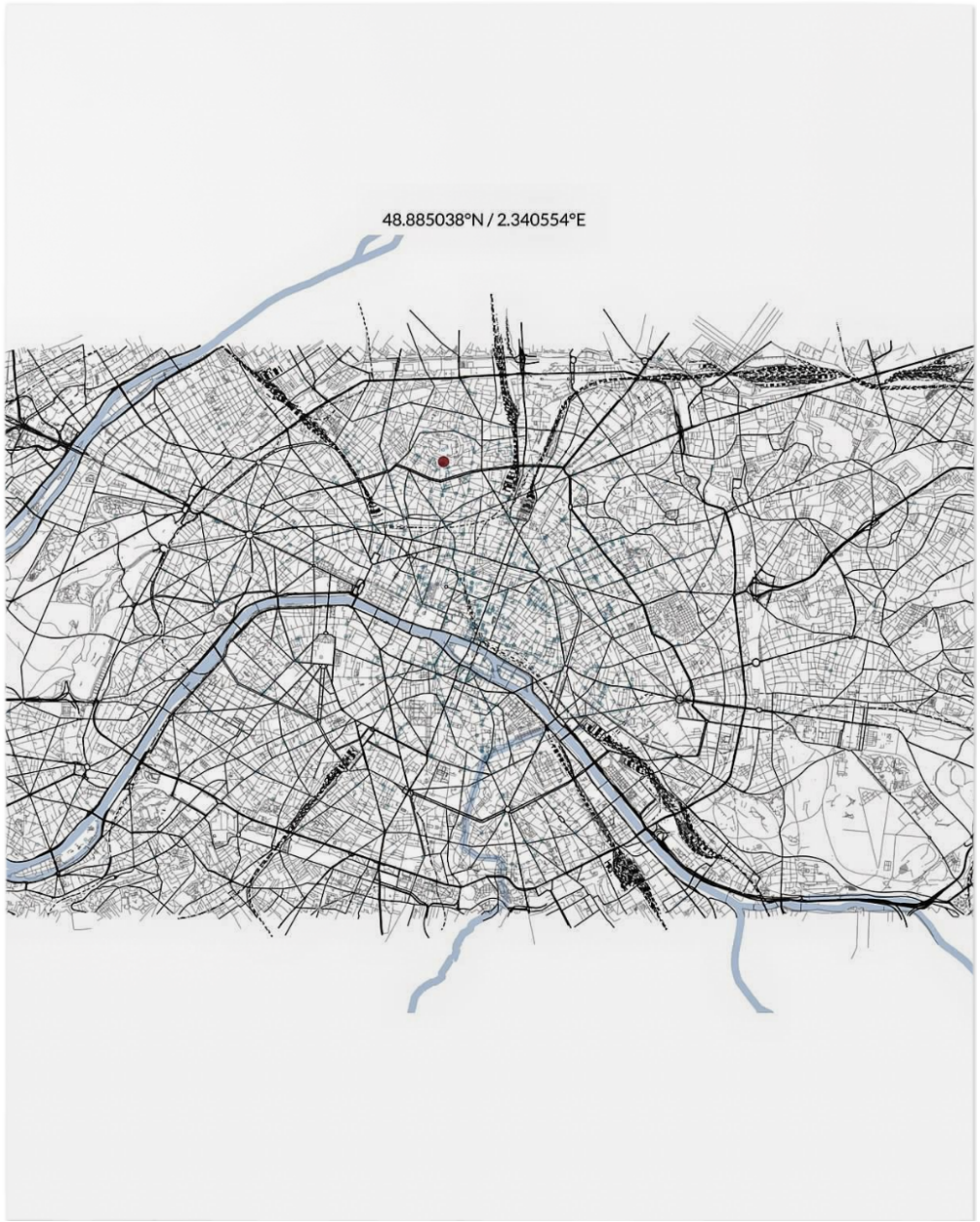
Blog post: https://www.williamrchase.com/post/strange-attractors-12-months-of-art-february/


Chase: https://github.com/will-r-chase/aRt



I make similar maps for gifts


48.885038°N / 2.340554°E

The Vitae package

The vitae package makes creating and maintaining a Résumé or CV with R Markdown simple. It provides a collection of LaTeX and HTML templates, with helpful functions to add content to the documents.

grateful: Facilitate citation of R packages

`grateful` citation report

R packages used

Package	Version	Citation
base	4.2.3	R Core Team (2023)
lme4	1.1.32	Bates et al. (2015)
tidyverse	2.0.0	Wickham et al. (2019)
vegan	2.6.4	Oksanen et al. (2022)

You can paste this paragraph directly in your report:

We used R version 4.2.3 (R Core Team 2023) and the following R packages: lme4 v. 1.1.32 (Bates et al. 2015), tidyverse v. 2.0.0 (Wickham et al. 2019), vegan v. 2.6.4 (Oksanen et al. 2022).

Package citations

Bates, Douglas, Martin Mächler, Ben Bolker, and Steve Walker. 2015. "Fitting Linear Mixed-Effects Models Using lme4." *Journal of Statistical Software* 67 (1): 1–48. https://doi.org/10.18637/jss.v067.i01.

Oksanen, Jari, Gavin L. Simpson, F. Guillaume Blanchet, Roeland Kindt, Pierre Legendre, Peter R. Minchin, R. B. O'Hara, et al. 2022. *vegan: Community Ecology Package*. https://github.com/vegandevs/vegan.

R Core Team. 2023. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/.

Wickham, Hadley, Mara Averick, Jennifer Bryan, Winston Chang, Lucy D'Agostino McGowan, Romain François, Garrett Grolemund, et al. 2019. "Welcome to the tidyverse." *Journal of Open Source Software* 4 (43): 1686. https://doi.org/10.21105/joss.01686.

2 ways to make code look neater

Using the AlignAssign package

```
1
2  # Alt + click + drag for multiple cursors
3
4  status ← status %||% "active"
5  team ← team %||% character()
6  priority ← priority %||% 1L
7  deadline ← dealine %||% NA_character_
8  tags ← tags %||% character()
9  path ← path %||% NA_character_
10 urls ← urls %||% empty_url()
11 tasks ← tasks %||% empty_task()
12
13 # Align Cursors Addin using keyboad shortcut
14
```

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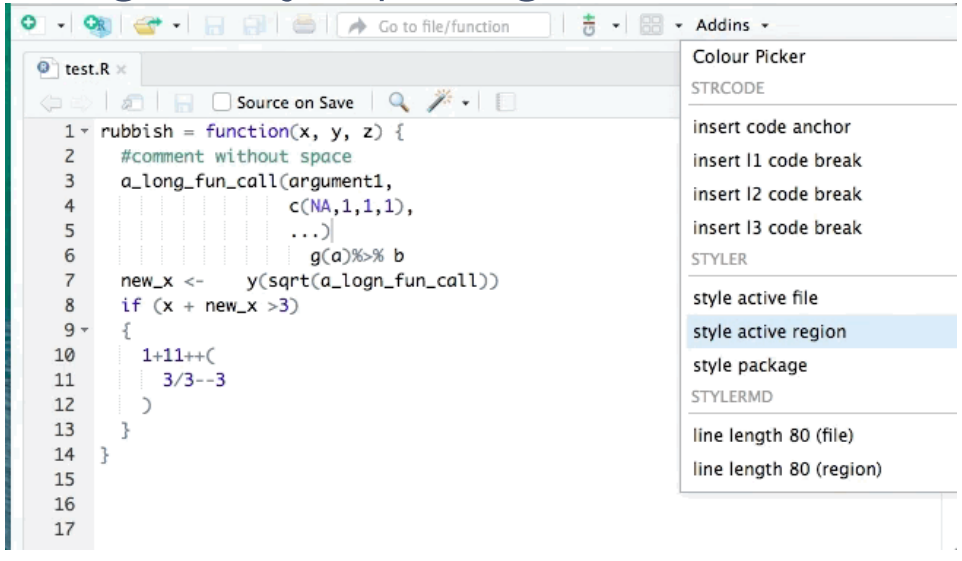
12
13 # Align Cursors Addin using keyboad shortcut
14
```

Using the styler package



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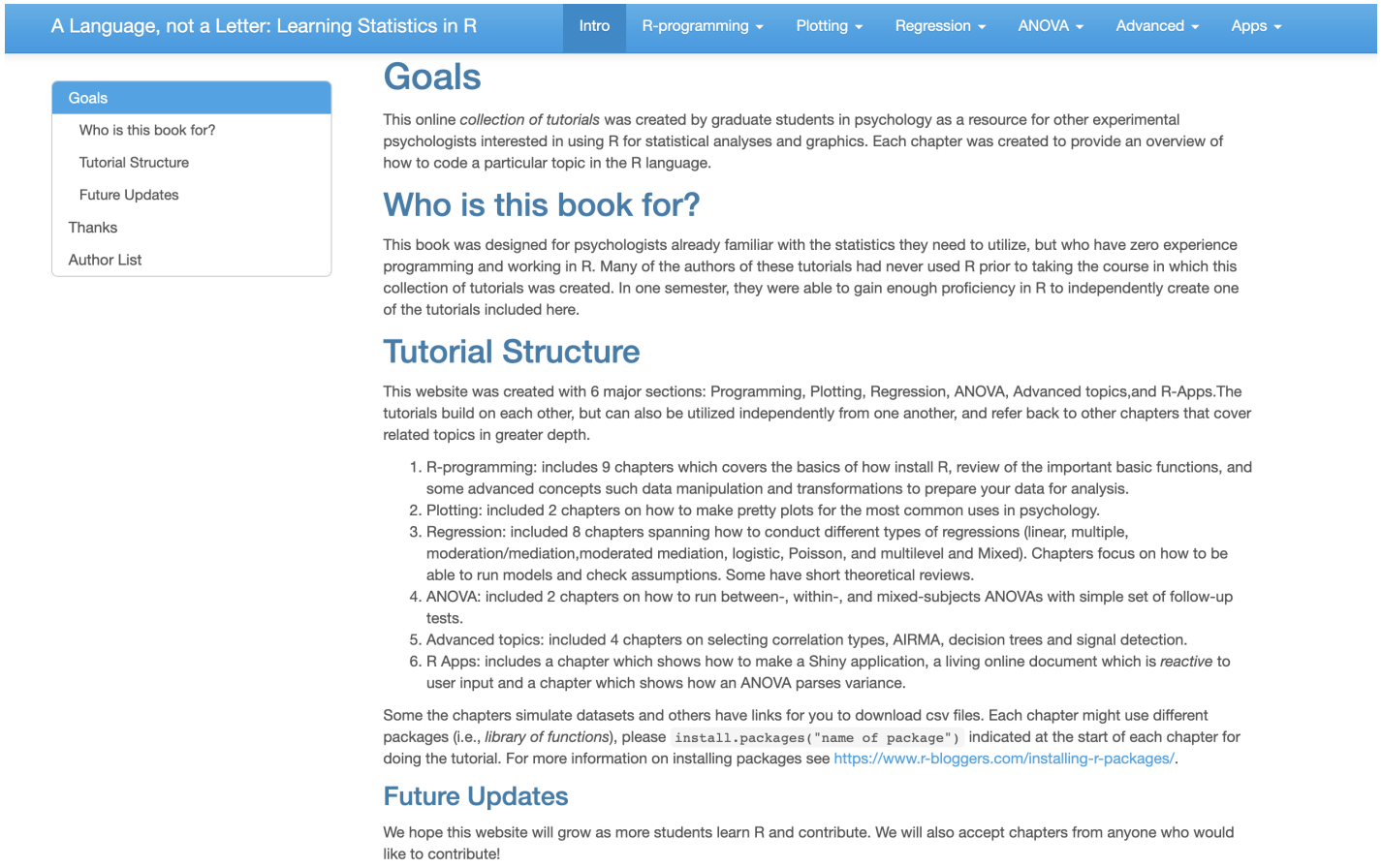

https://ademos.people.uic.edu/index.html

YaRrr! The Pirate's Guide to R by Nathaniel D. Phillips

https://bookdown.org/ndphillips/YaRrr/

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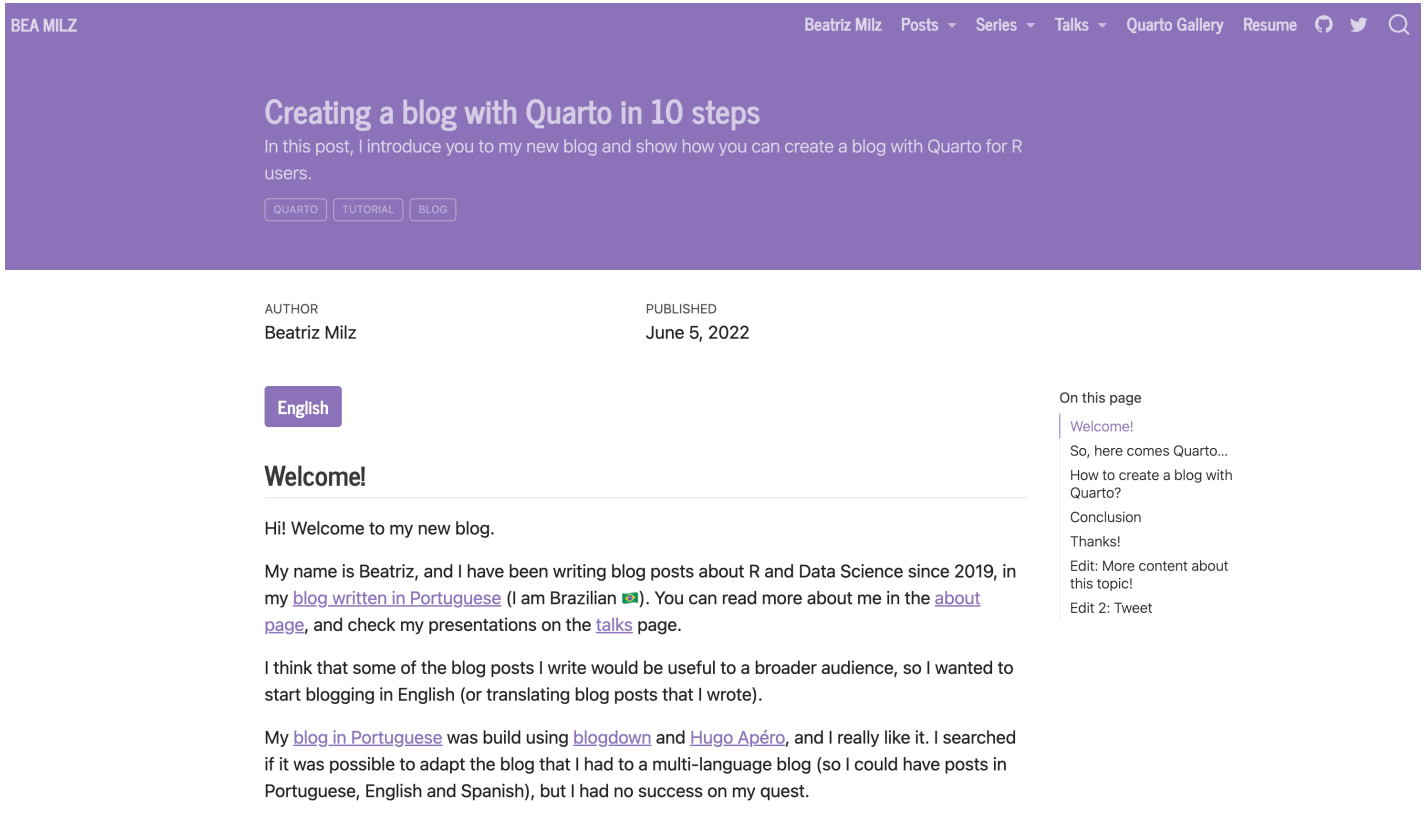

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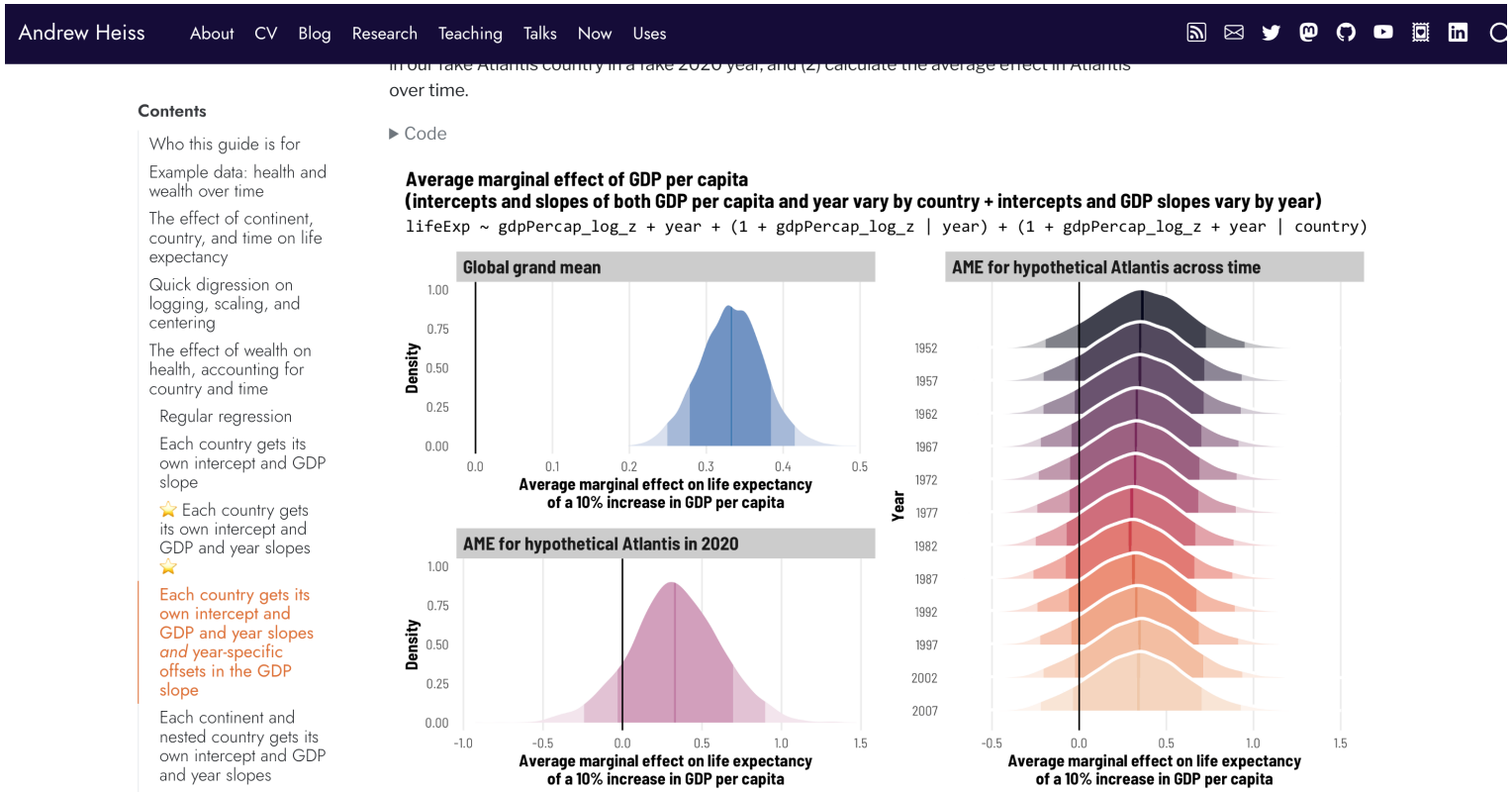

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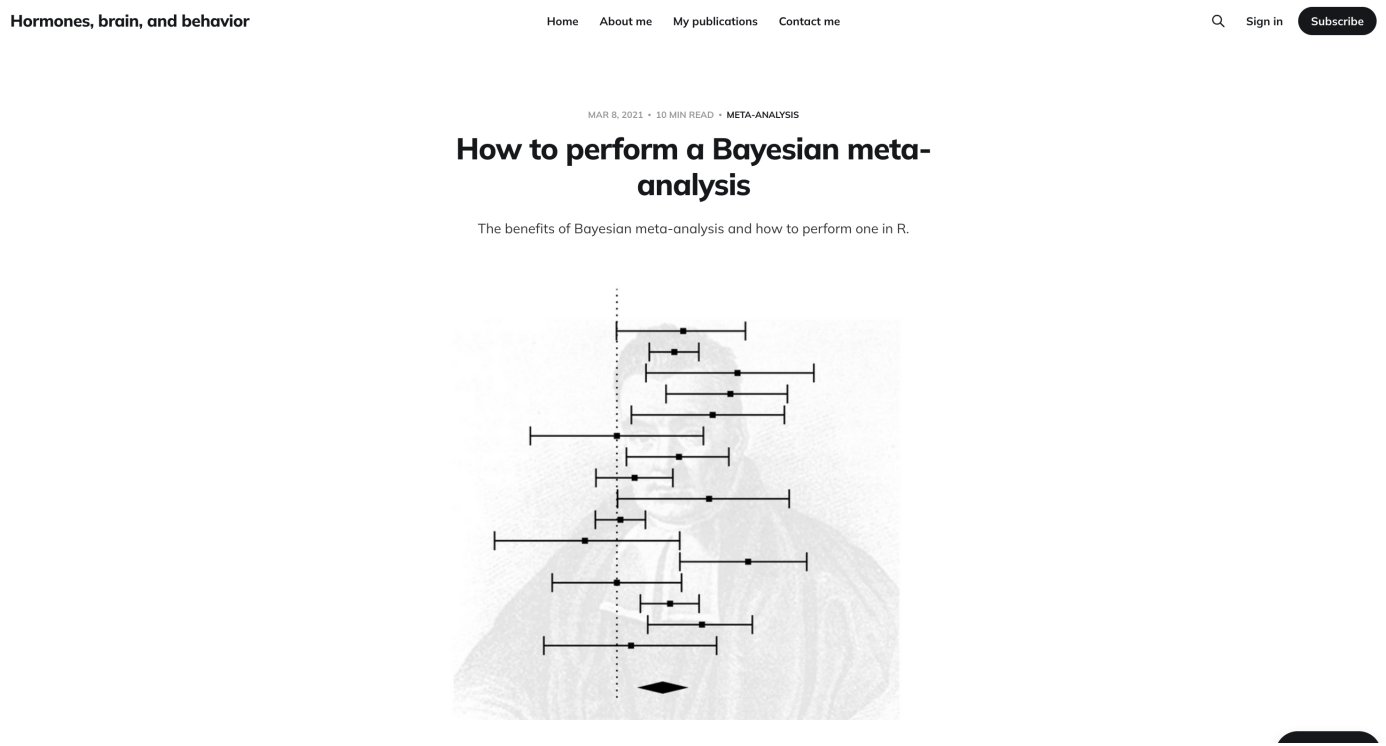

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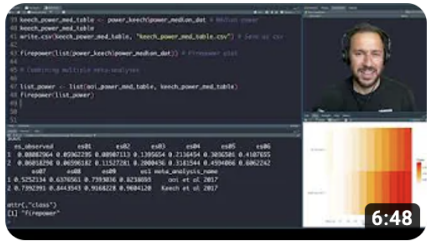

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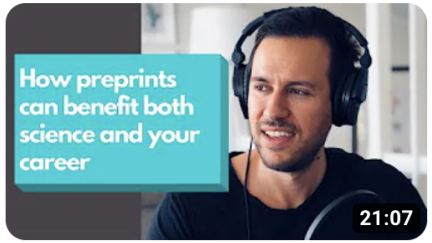

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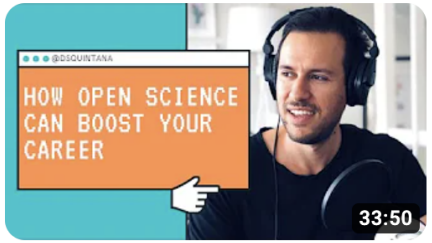

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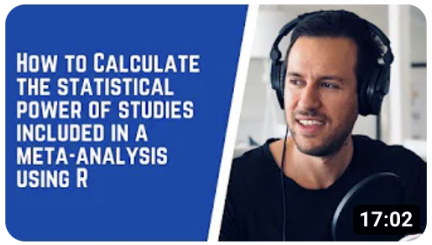

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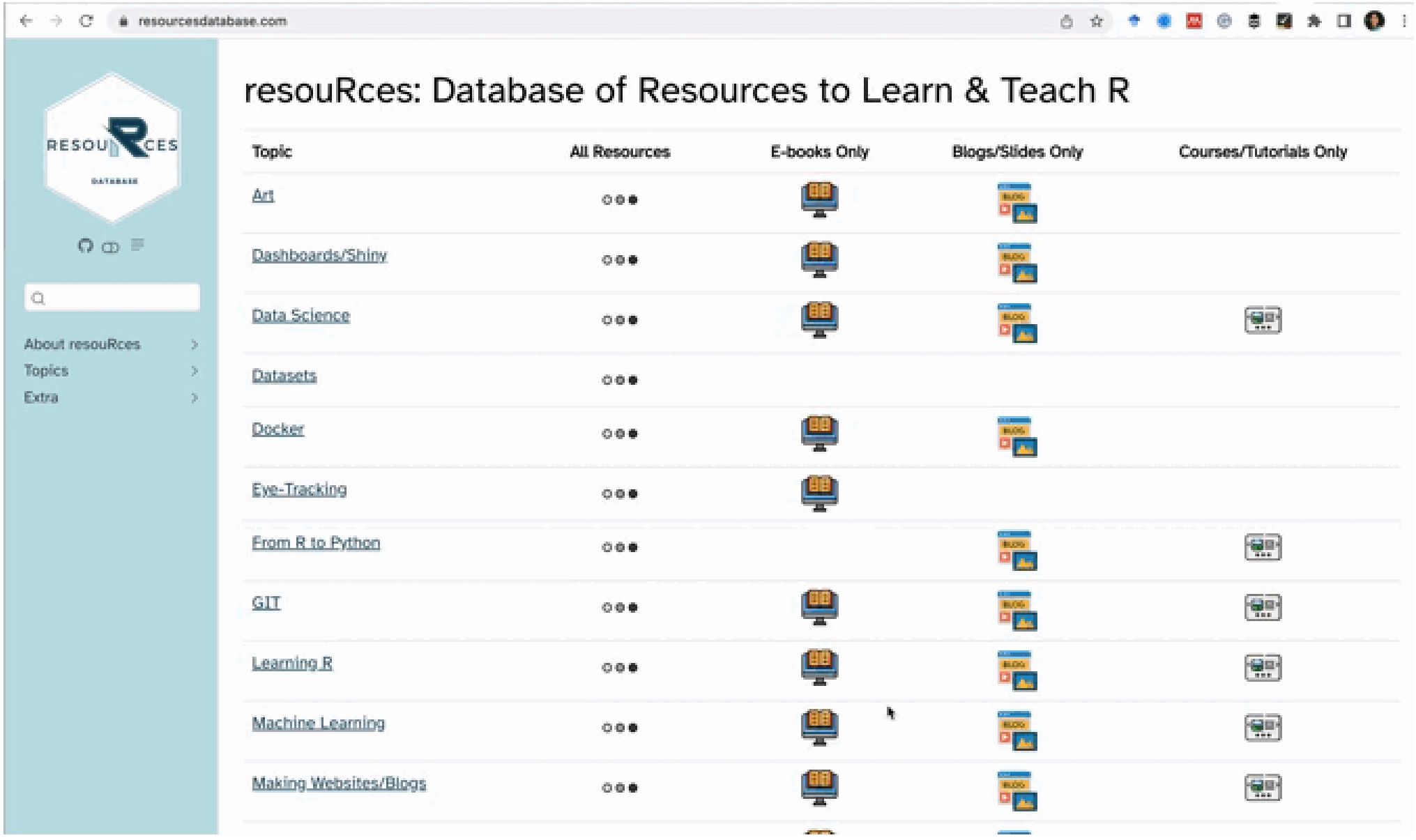
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