

R for Clinical Psychology: Overview and applications

A showcase of how data science can help to develop digital
health products

Dr. Chris Gaskell
Clinical Psychologist
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Chris Gaskell

Clinical Psychologist

Non-Epileptic Attack Disorder Service
Northern Care Alliance NHS Foundation Trust
Manchester, UK

🔗 chris-gaskell.com 🐦 [@chris-gaskell92](https://twitter.com/@chris-gaskell92) 🎙 [@chris-gaskell](https://www.linkedin.com/in/chris-gaskell)

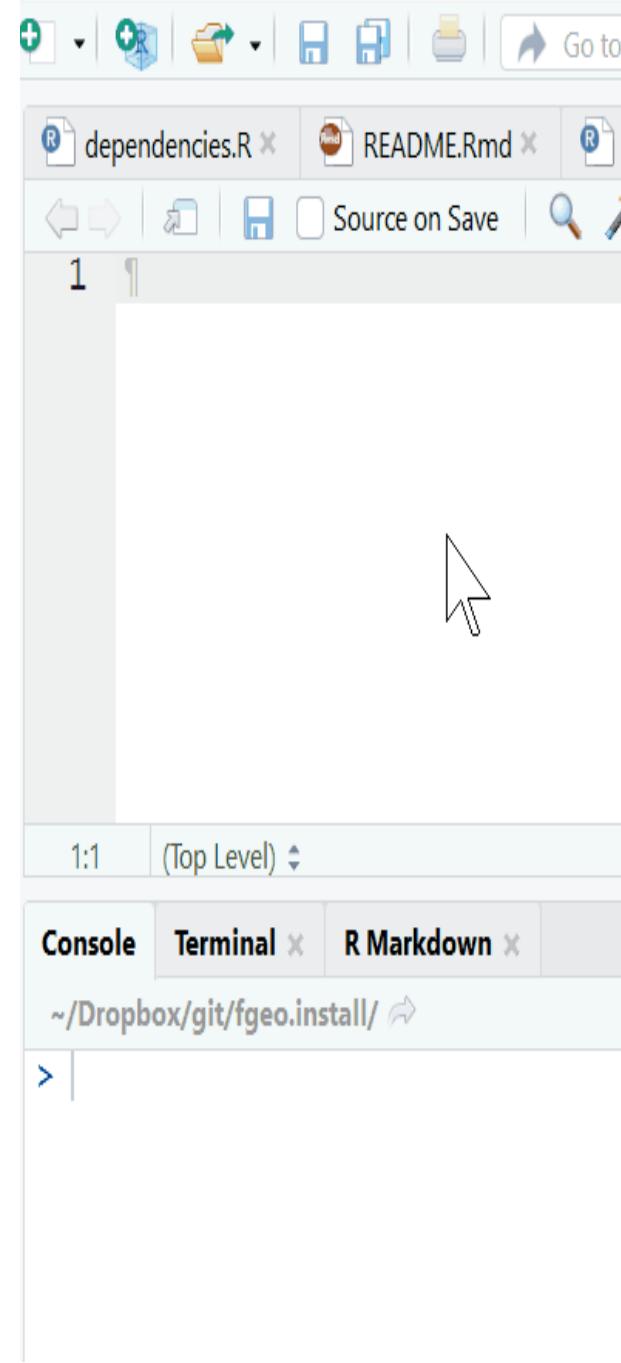
What is it?



- 💻 Programming language
- 📊📈 Statistical computing and graphics
- ✖️🖱 Command line interface (no point & click)

The command line

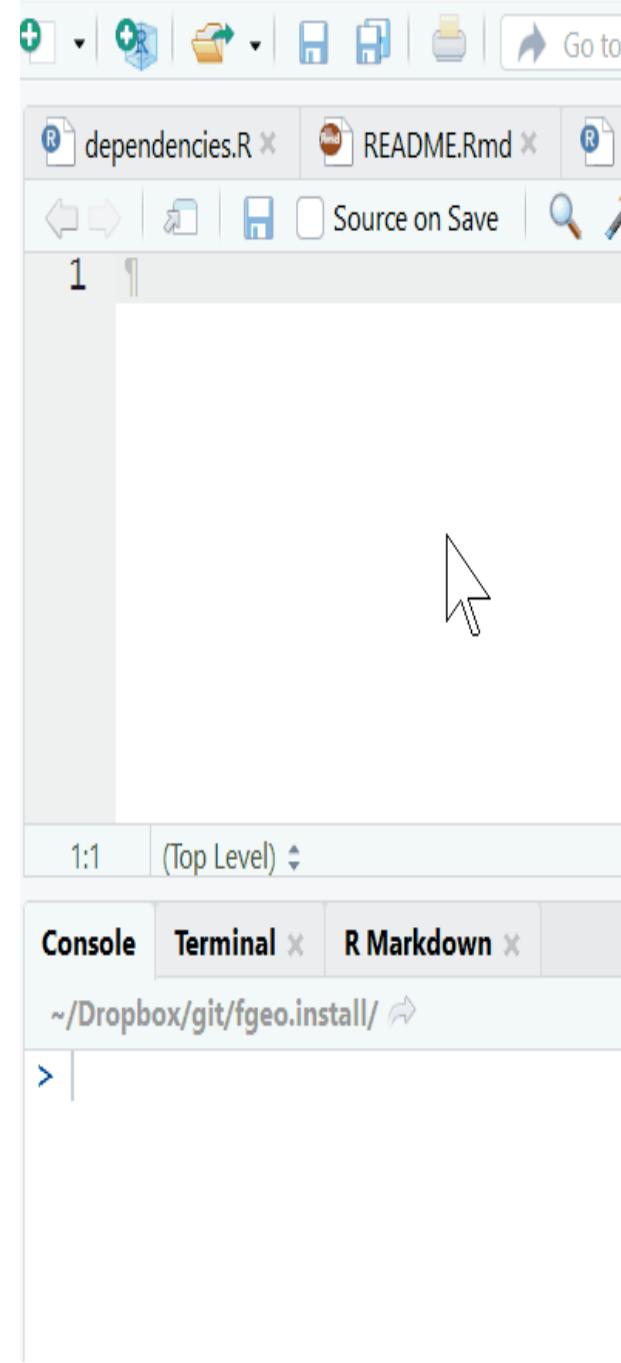
```
2+2  
## [1] 4
```



A place to give it a try

The command line

```
test = 4+2  
test  
## [1] 6
```

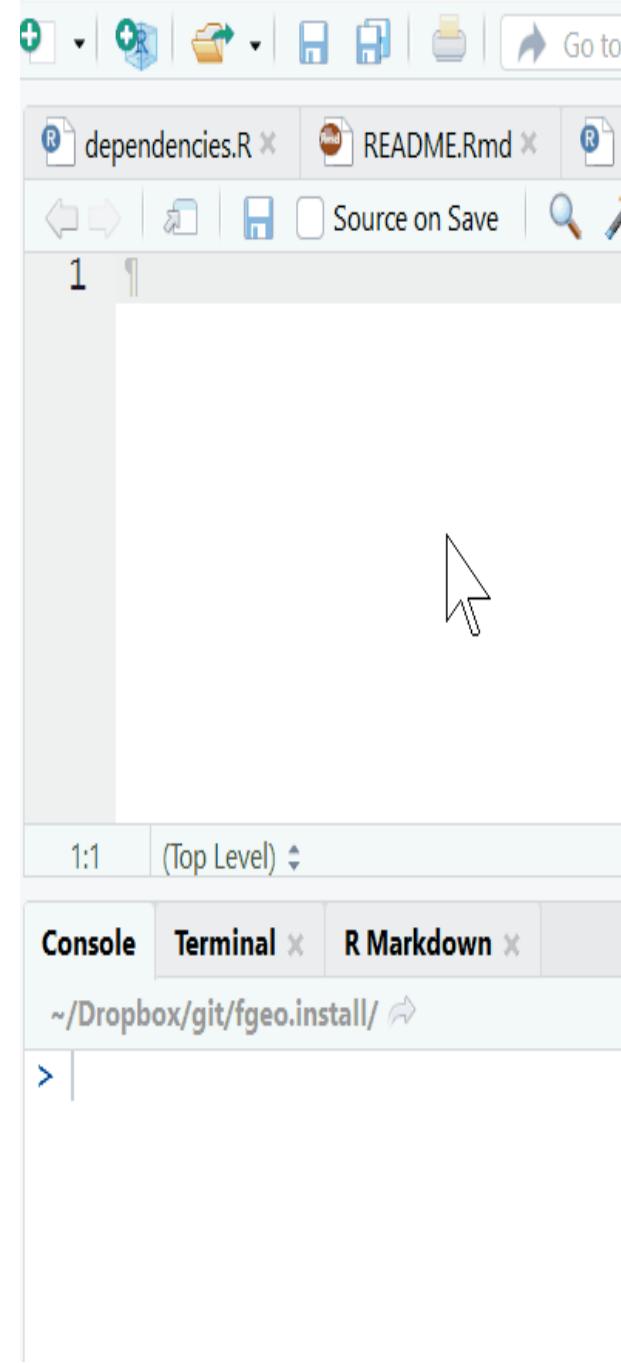


A place to give it a try

Functions

```
sqrt(81)  
## [1] 9  
  
round(3.14159, digits = 2)  
## [1] 3.14
```

- R has loads of functions built in.
- Also can be user defined.
- Groups of functions are held together within packages.
A place to give it a try



The screenshot shows the RStudio IDE. At the top, there's a toolbar with various icons. Below it, the file menu shows 'dependencies.R' and 'README.Rmd'. The main area has a code editor window with the number '1' at the top left. A cursor arrow is visible on the right side of the editor. Below the editor is a status bar showing '1:1 (Top Level)'. At the bottom, there are tabs for 'Console', 'Terminal', and 'R Markdown', with '~/Dropbox/git/fgeo.install/' listed under the console tab. A small blue arrow icon is next to the path.

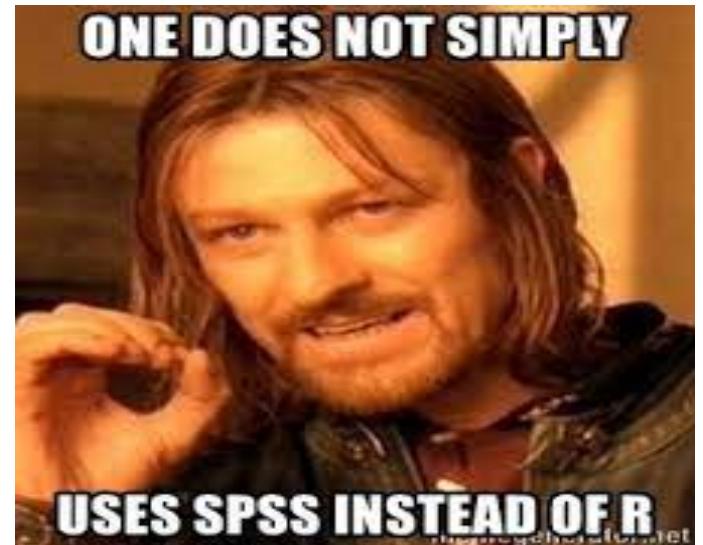
A Universe of Packages



Reasons to use R

- Data analysis & statistics
 - Highest functionality, up to date and bug free
- Data visualisations (high quality)
- Literate Programming
- Data/web products
- Open source
 - Free
 - Anyone code and contribute
 - Transparency & Replicability

And a supportive online community!



Traditional research workflow



1. Dats stored in MS Excel
2. Get it into SPSS
3. Run some analayses
4. Extract results? (pray they are done right)
5. Write up in MS Word

Any problems with this?

lack of integration? difficult to refine?

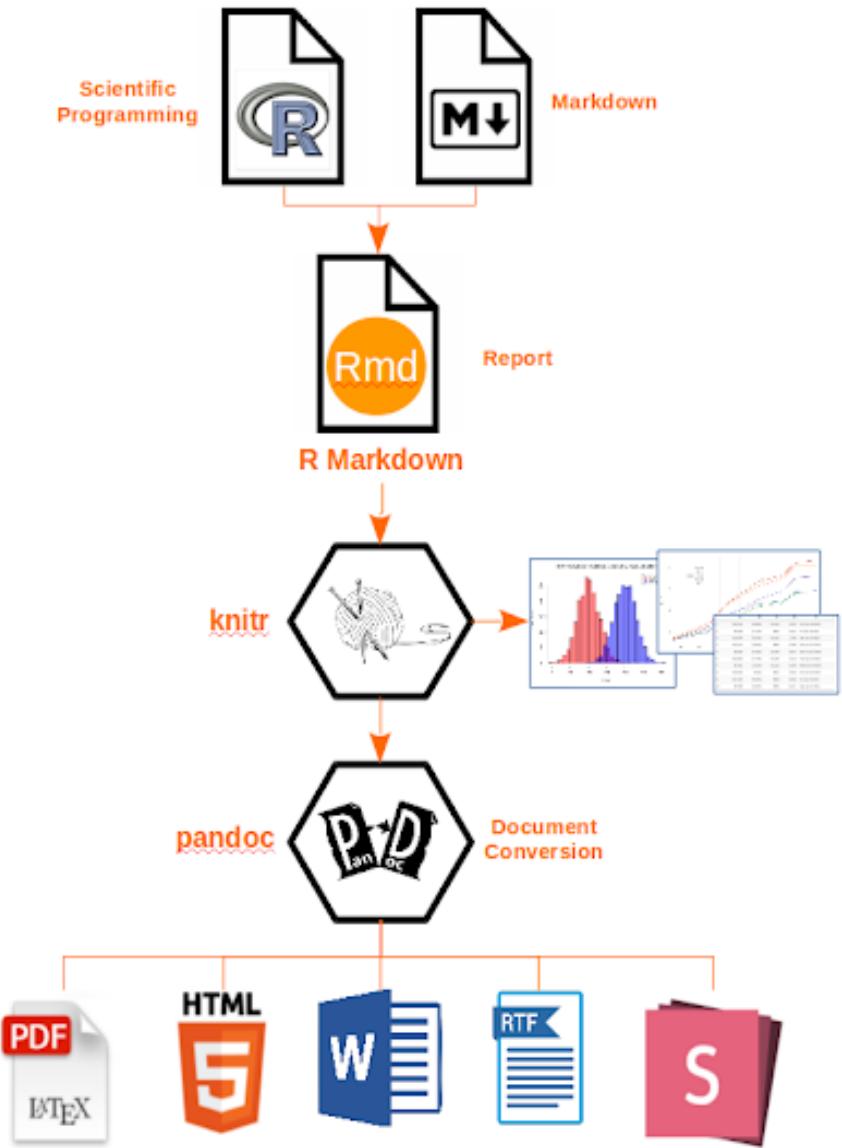
transparency and reproducability?

The time it takes to go back and repeat steps?

limited functionality and flexibility?

R Markdown workflow

- R offers a very different workflow.
- Literate programming approach.
 - Embed snippets of code within a document (then hit run).
 - If the original data changes then the report will change too.
- HTML is where it gets interesting.



Can all be shared using GitHub



Data products

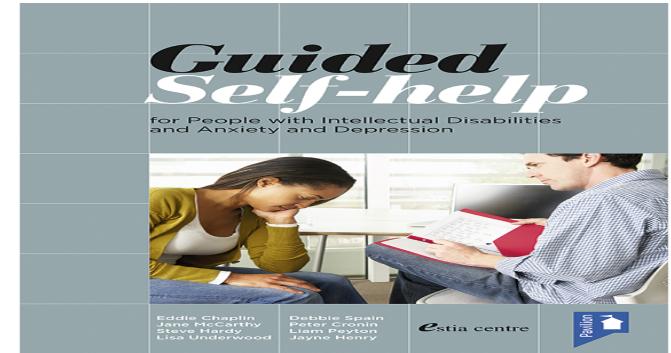
Is the product of psychological therapy changing?

CP delivery has needed to change:

1. Evidence based practice
2. Digital innovations
3. COVID-19

Issues that remain:

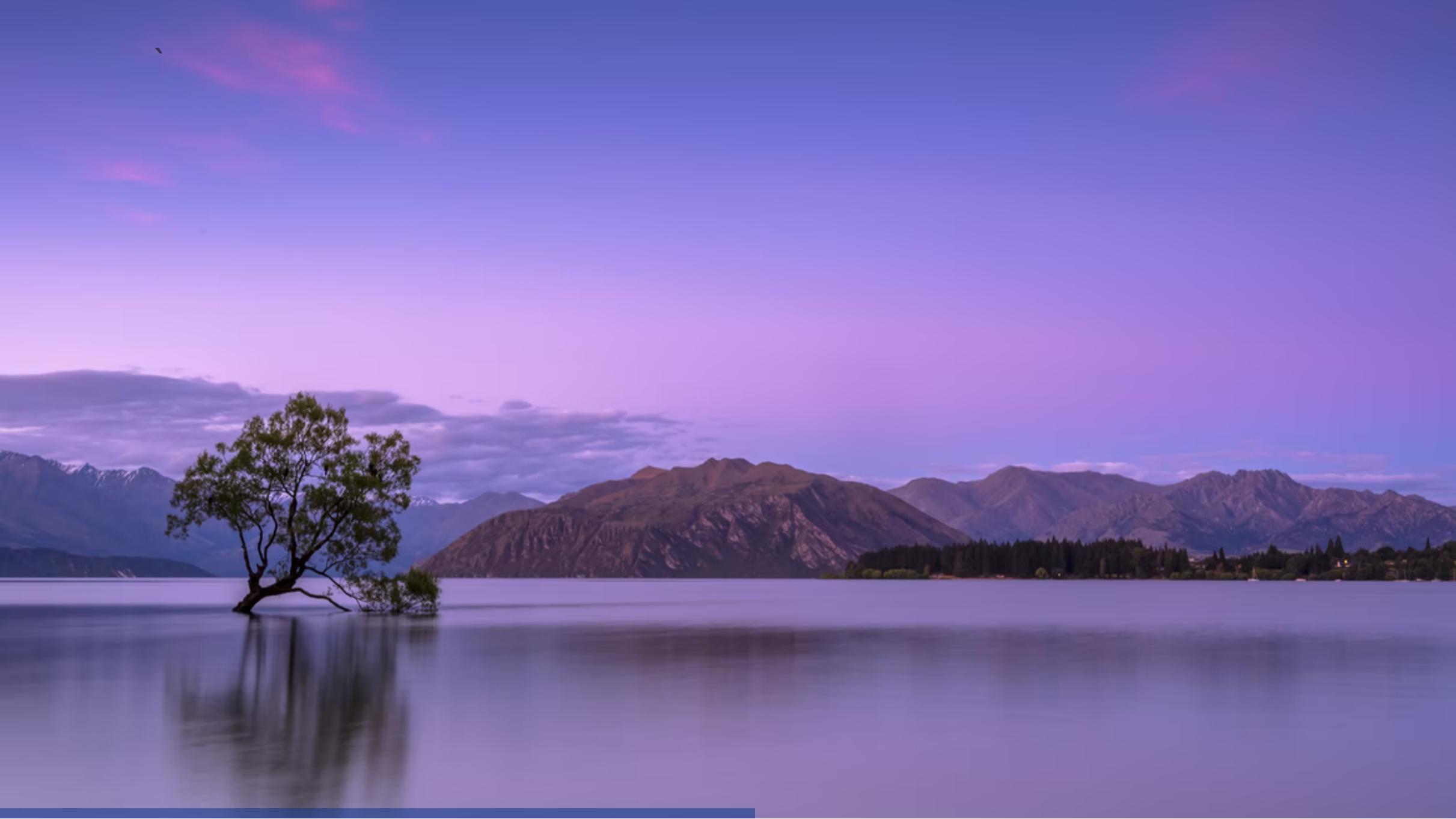
1. High demand
2. Acceptability



Applications of R to digital healthcare



- There is a need for improving how we cascade information/intervention (both for research and clinical purposes).
- Greater quality of information.
- Data products, resources, worksheets, teaching slides that people **actually** want to use.
- R is a good fit because it can produce good quality html products without the need to be an expert in html
- html is flexible, accessible and lightweight



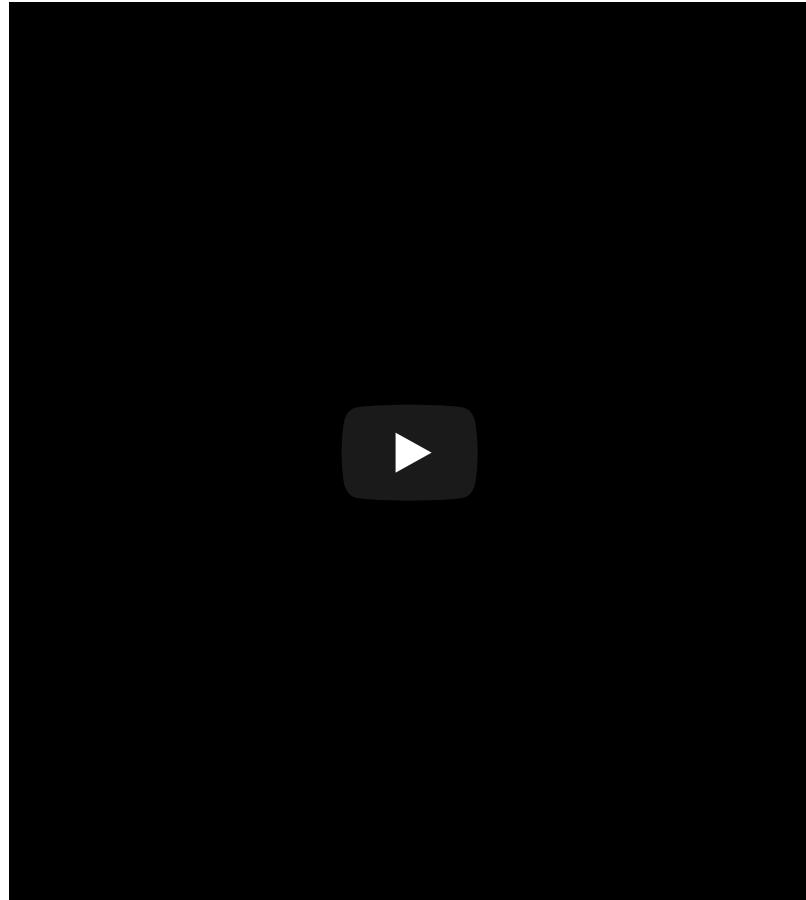




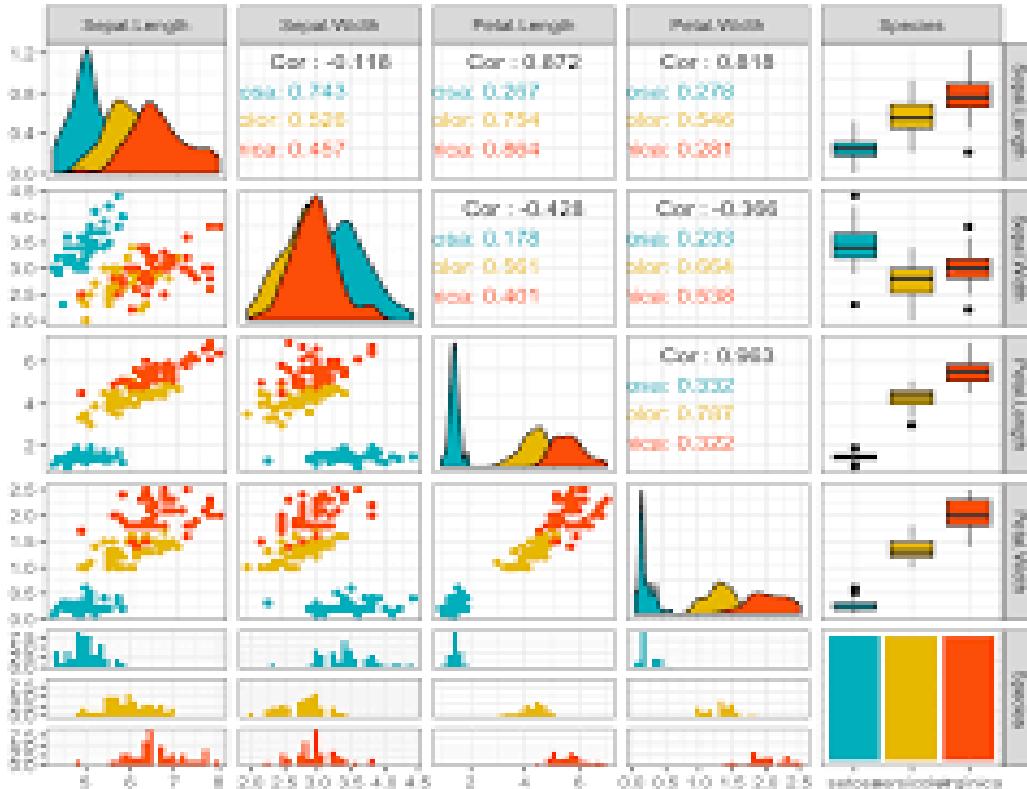
Embed Tweets



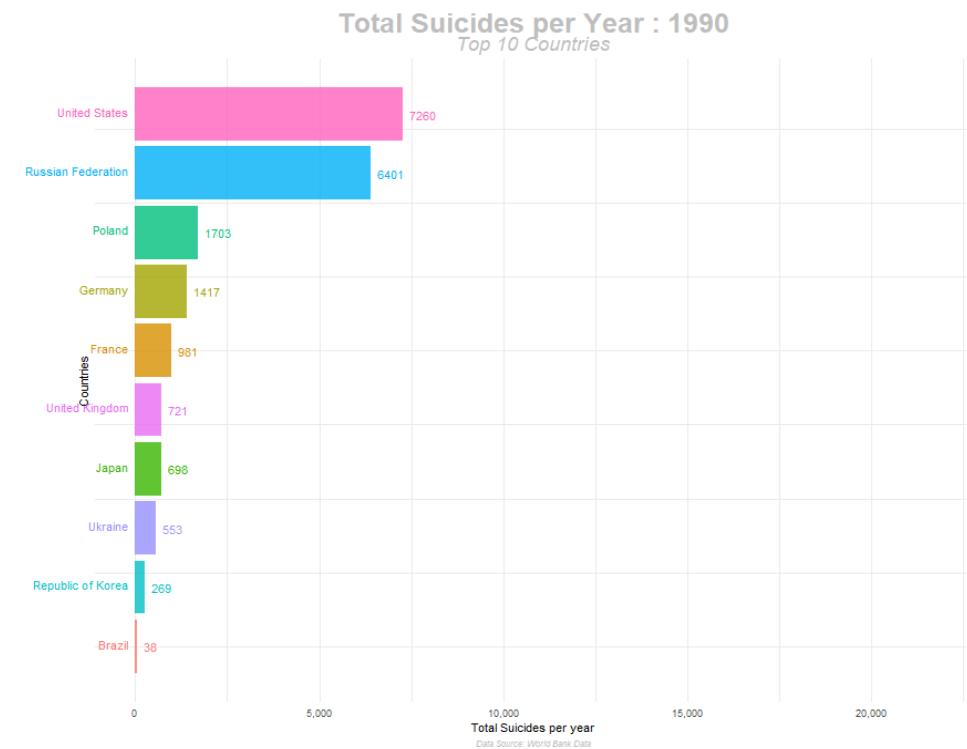
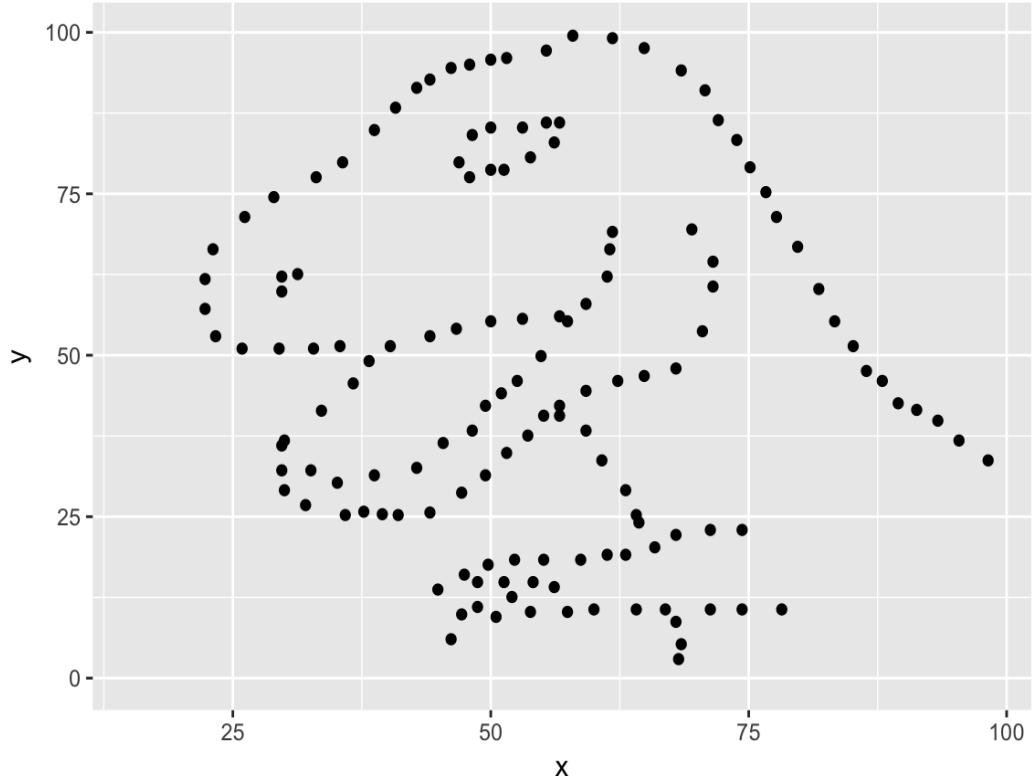
Embed Videos & Gifs



Great data visualization!



Which can even me animated



Applications

- Presentations
- Books
- Websites
- Shiny applications
- Automated Reports



Presentations

- Lightweight (embed videos, gifs, HD imgs).
- Host online (No need to send files).
www.r-for-cp.netlify.app

Clinical teaching about dissociative seizures

Academic teaching about practice based research



Websites

Static websites:

- Personal academic websites.
- Websites for teaching staff and students.
- Hosting resources.

[My dog's website \(bit of fun\)](#)

[Teaching workshop website](#)

[My personal site](#)



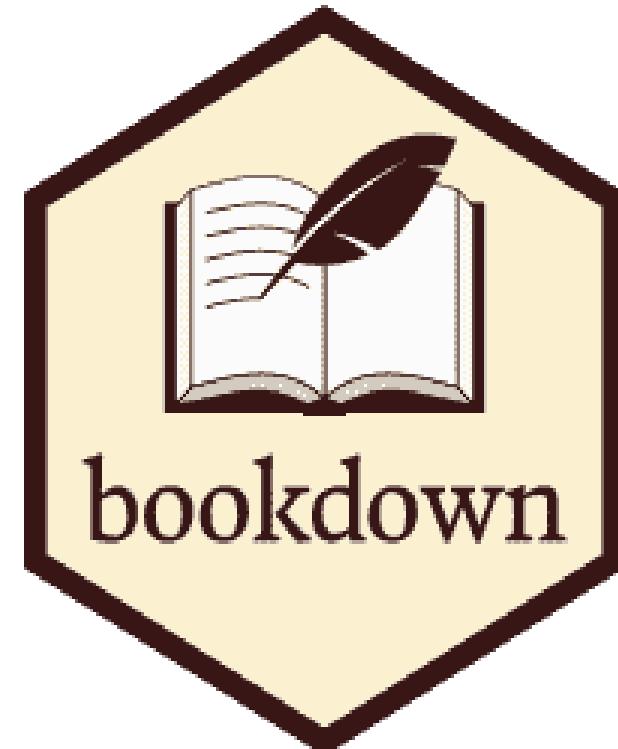
E-Books

Books that are:

- Polished, professional and interactive
- Can output to html, MsWord or pdf
- Protocols & treatment manuals
- Workbooks & resources for carers and patients.

The Bookdown example

An example book I made earlier for work



Applications

Apps that are interactive and reactive:

- [Neuropsychology Test Catalogue](#)
- [Gallery of applications](#)
- [Great looking data tables](#)



Academic Posters



DANKE!

THANK YOU!

MERCI!

GRAZIE!

GRACIAS!

DANK JE WEL!

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