



The pragmatic R programmer

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The Pragmatic Programmer




from journeyman
to master

Andrew Hunt
David Thomas

Foreword by Ward Cunningham

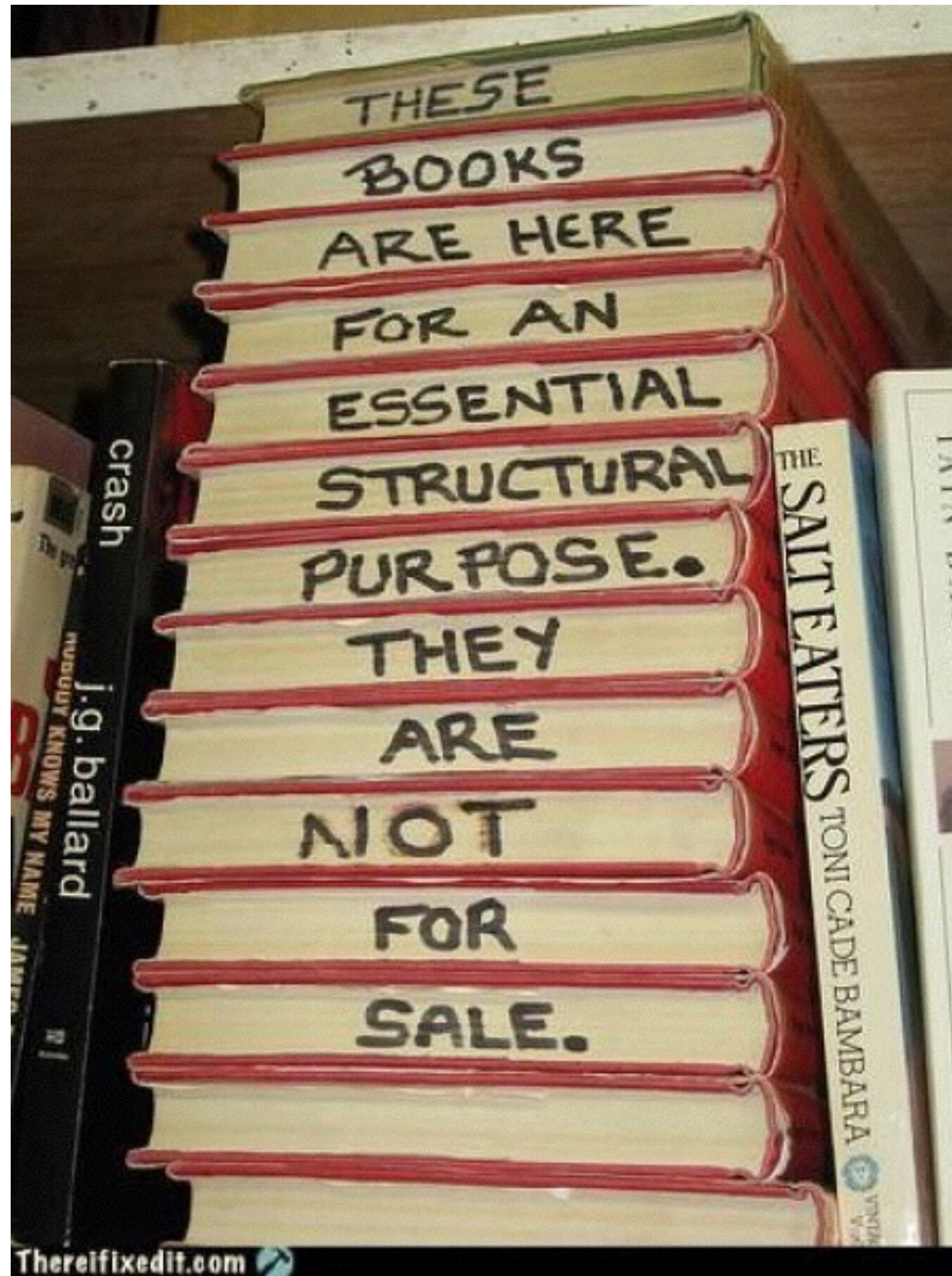
Outline/take-home messages

- (4) Don't live with broken windows, and (44) don't program by coincidence
- (11) **Don't repeat yourself**
- (12) **Make it easy to reuse**
- (68) Build documentation in, don't bolt it on



One broken window, left unrepaired for any substantial length of time, instills in the inhabitants of the building a sense of abandonment—a sense that the powers that be don't care about the building.

–The Pragmatic Programmer



Programming by coincidence

Don't repeat yourself: two sources of repetition

- **Impatient duplication:** I need something similar to what I did earlier
- **Inter-developer duplication:** I don't know that you already did this

Two sources of repetition

DO SOME FUNCTIONS

- **Inter-developer duplication:** I don't know that you already did this

Two sources of repetition

**DO SOME FUNCTIONS
PACKAGE THEM, MAKE THEM
AVAILABLE**

Demo: Functions as the unit of
repetition

When to start writing an R package

As soon as you have 2 functions.

<https://github.com/jtleek/rpackages>

Demo: Your first tiny package

LIKELIHOOD YOU WILL GET CODE WORKING
BASED ON HOW YOU'RE SUPPOSED TO INSTALL IT:



<http://xkcd.com/1742/>

[...] a link to a software library or package that implements the method— with complete documentation and ideally on a curated repository like CRAN or Bioconductor— can raise the impact of a paper substantially.

–Jeff Leek and Dimitris Rizopoulos, co-editors of Biostatistics

<https://medium.com/@biostatistics/what-makes-a-good-applied-methods-paper-8130f2e24f2a>

Demo: document your package,
put it on GitHub

GitHub is good for in-development packages. Mature packages should go to CRAN or Bioconductor

Packages for packages

```
library(devtools)  
library(roxygen2)
```

```
# important but not demo'd:  
library(testthat)  
library(knitr)
```


Take-home messages again

- (4) Don't live with broken windows, and (44) don't program by coincidence
- (11) **Don't repeat yourself**
- (12) **Make it easy to reuse**
- (68) Build documentation in, don't bolt it on


References + links

- The Pragmatic Programmer by Andrew Hunt and David Thomas
- Hilary Parker's nice & accurate tutorial to writing an R package (v. easy to start with): <https://hilaryparker.com/2014/04/29/writing-an-r-package-from-scratch/>
- Hadley Wickham's v. thorough guide to R packages: <http://r-pkgs.had.co.nz/>
- See especially the documentation bit: <http://r-pkgs.had.co.nz/man.html>
- Hadley Wickham's v. thorough guide to advanced R: <http://adv-r.had.co.nz/>
- Karl Broman's steps toward reproducible research: <http://kbroman.org/steps2rr/>
- How to be a Modern Scientist by Jeff Leek: <https://leanpub.com/modernscientist>

References + links

November 11

3:21 PM

 Search

Visited [Text formatting reference sheet - CRAN](#)

Details • Search

Visited [r - When documenting in Roxygen: How do I make an itemized list in ...](#)

Details • Search

Searched for [r markdown list](#)

Details • Search

References + links

The screenshot displays a mobile application interface with a teal header bar labeled "November 11" and a vertical ellipsis menu icon. Below the header, a timestamp "3:21 PM" is visible. A list of search results is shown, each with a document icon and a title. The first result is "Visited R: Fisher's Exact Test for Count Data" with a subtitle "Details • Search". The second result is "Searched for fisher exact test r" with a subtitle "Details • Search". At the bottom of the list, there is a right-pointing arrow icon followed by the text "6 items".

November 11

3:21 PM

Visited R

Visited R: Fisher's Exact Test for Count Data

Details • Search

Searched for fisher exact test r

Details • Search

→ 6 items

References + links

The image shows a screenshot of a calendar interface with a teal header bar containing the date "November 11" and a vertical ellipsis menu icon. Below the header, three search history items are displayed in a list. Each item includes a search icon, the search text, the visited link, and the time and details. A bottom bar shows a right arrow and "6 items".

November 11

Search
Visited [Basic text string functions in R | R-bloggers](#)
12:04 PM • Details

Search
Visited [R: Substrings of a Character Vector](#)
12:03 PM • Details

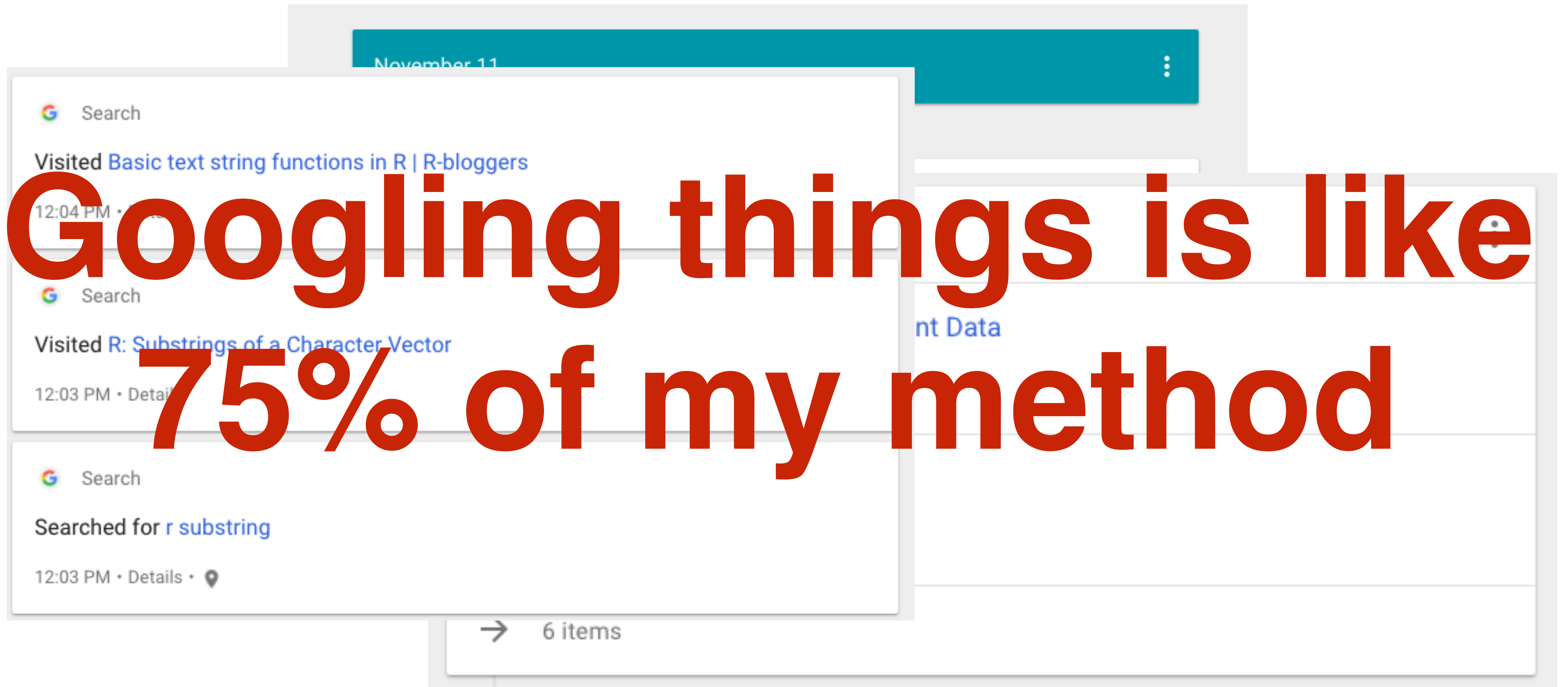
Search
Searched for [r substring](#)
12:03 PM • Details • 📍

→ 6 items

nt Data

References + links

**Googling things is like
75% of my method**



Further study

- Do literate programming with knitr: write your analysis as a reproducible report http://kbroman.org/knitr_knutshell/.
- Start working on your personal R package: <https://hilaryparker.com/2013/04/03/personal-r-packages/>
- Remember to put it on github!!! (Here's mine <https://github.com/3inar/einr>)
- Remember to document all functions!!!
- Google things
- Fix broken windows
- Email me (next slide) about joining the #r_users channel on our slack
- Write some tests for your package: <http://r-pkgs.had.co.nz/tests.html>



Thank you!

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Slides available at
3inar.github.io/talks/

