Introduction to R programming

Wrapping up
14th October 2020

(*A more inspiring last lecture*)

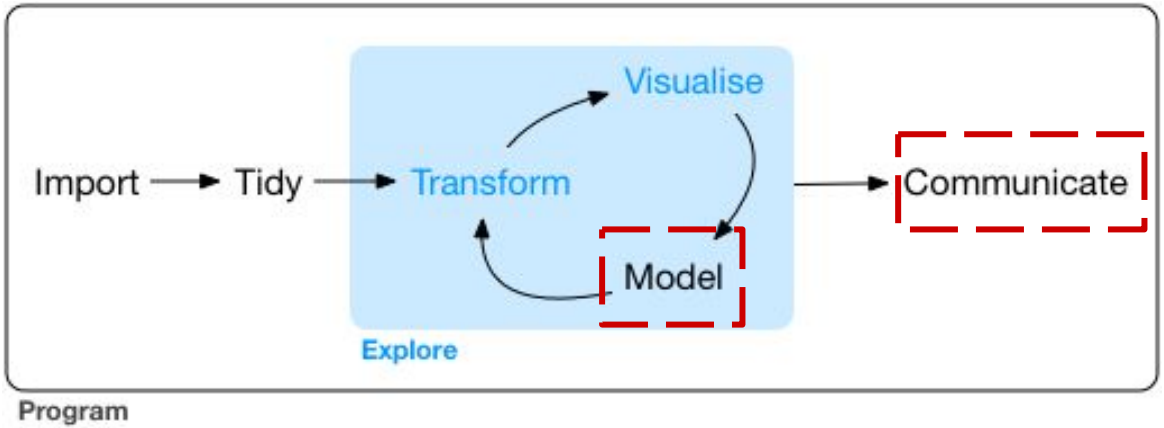
Next steps

From our side:

- Worksheet solutions (WS02 to WS04) and worksheet with typos fixed
- Final assignment (20% of total)
- Feedback form (for the whole course)

From your side:

- WS-04 submission
- Final assignment
- Continued learning



Source: Wickham & Grolemund (2017)
https://r4ds.had.co.nz/

tibble

Bind vectors to tibble (dataframe)

v1	a	b	c	d
v2	XX	XX	YY	YY
v3	1	2	3	4

v1	v2	v3
a	XX	1
b	XX	2
c	YY	3
d	YY	4

rbind

Bind rows having identical column structure

v1	v2	v3
a		
b		

v1	v2	v3
c		
d		

v1	v2	v3
a		
b		
c		
d		

cbind

Bind columns having identical numbers of rows

v1	v2	v3
a		
b		

v4	v5	v6
1		
2		

v1	v2	v3	v4	v5	v6
a			1		
b			2		

left_join & right_join

Match and join datasets

df1

v1	v2
a	1
b	2
c	2
d	1

df2

v1	v3
a	X
c	Y

left_join(df1, df2)

v1	v2	v3
a	1	X
b	2	NA
c	2	Y
d	1	NA

right_join(df1, df2)

v1	v2	v3
a	1	X
c	2	Y

mutate

Add new columns or recalculate existing columns

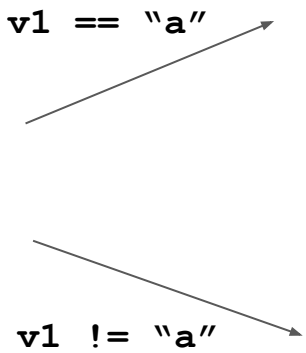
v1	v2	v3

v1	v2	v3	v4

filter

Create subsets of rows

v1	v2	v3
a		
b		
c		
d		
a		

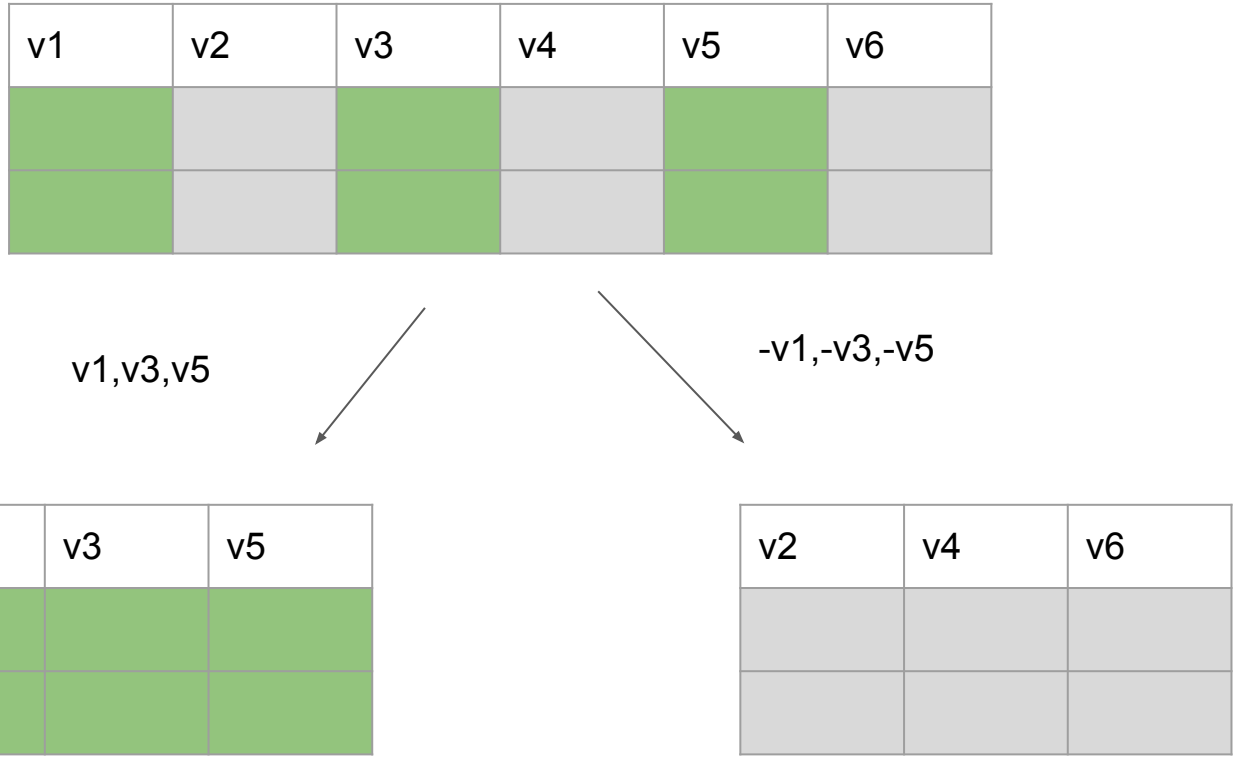


v1	v2	v3
a		
a		

v1	v2	v3
b		
c		
d		

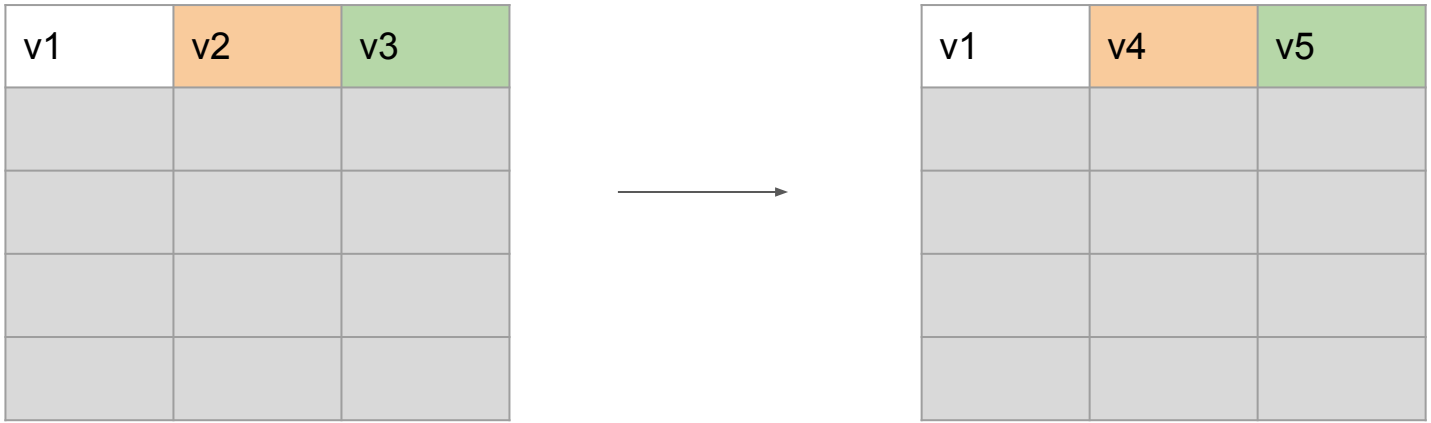
select

Create subsets of columns



rename

Modify column names



recode

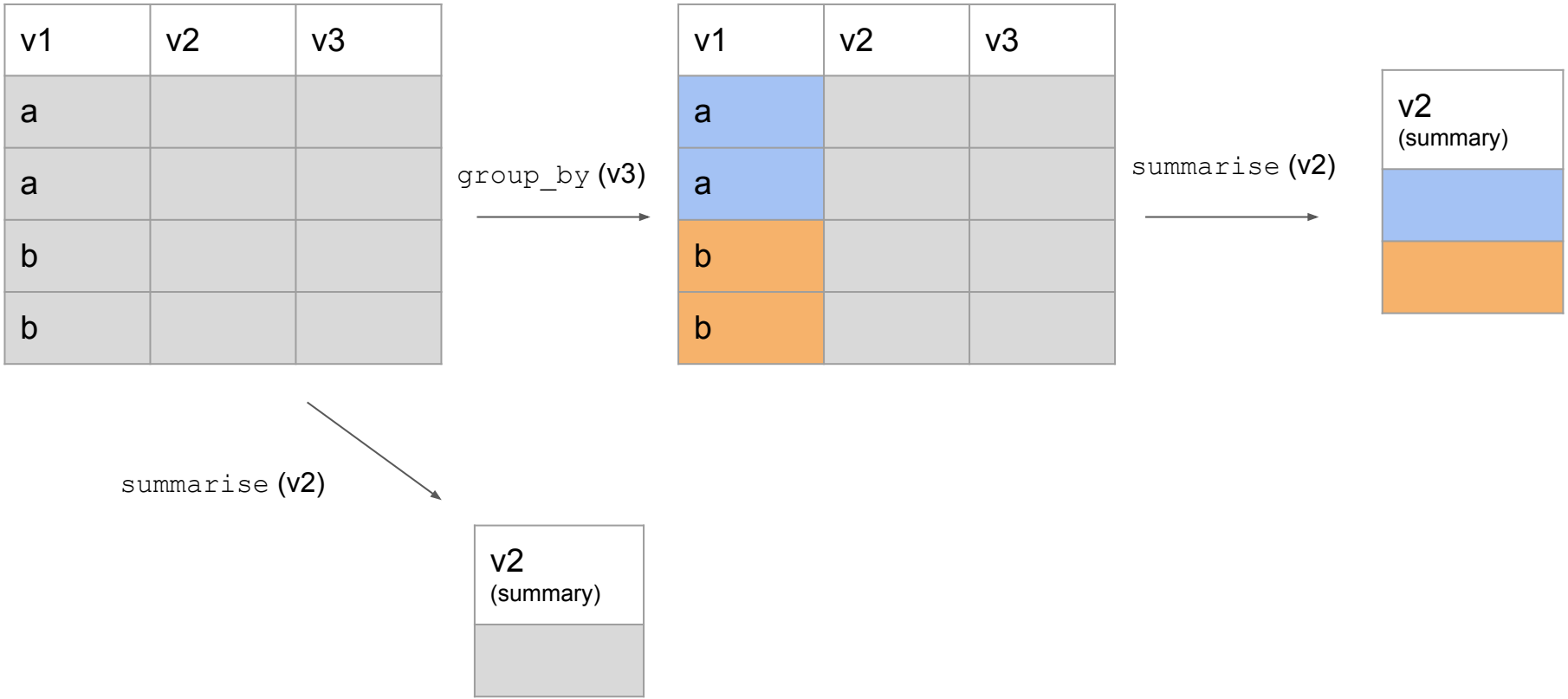
Modify data elements

v1	v2	v3
a		
b		
c		
d		

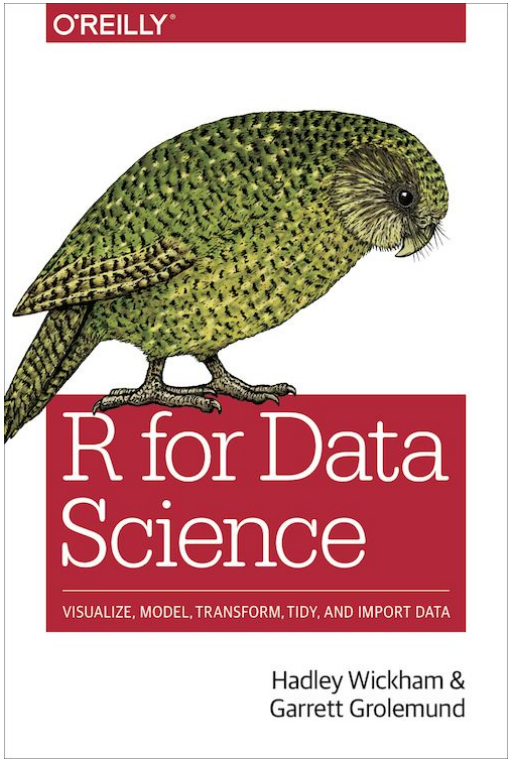
v1	v2	v3
X		
Y		
c		
d		

group_by & summarise

Summarise data

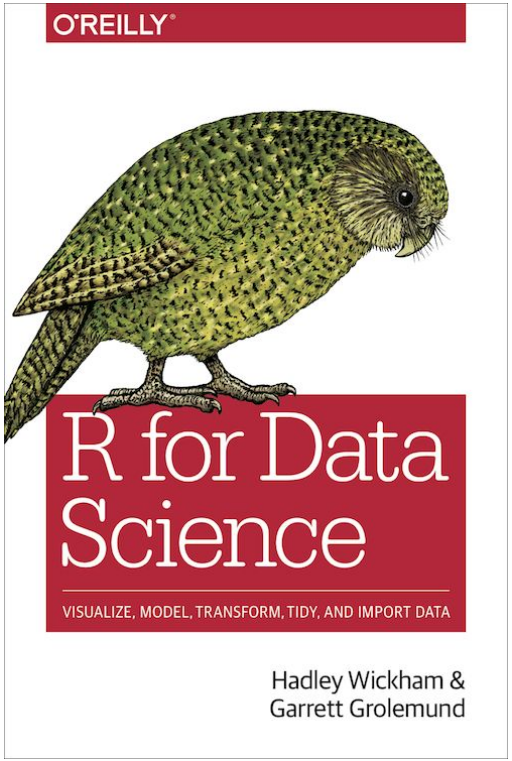


R for data science - Hadley Wickham and Garrett Grolemund



Link

R for data science - Hadley Wickham and Garrett Grolemund



[Link]

Section / Chapter	Month 1	Month 2	Month 3
I. Explore (2,3,4,5,6)			
II. Wrangle (9,10,11,12,13,14,15,16)			
III. Program (17,18,19,20,21)			
V. Communicate (26,27,28,29)			

Managing errors in R

Managing errors in R

1. Know your error - learn to pick up errors

```
>
> Liverwort <- filter(edidiv taxonGroup == "Liverwort")
Error: unexpected symbol in "Liverwort <- filter(edidiv taxonGroup"
```

Managing errors in R

1. Know your error - learn to pick up errors

```
>
> Liverwort <- filter(edidiv taxonGroup == "Liverwort")
Error: unexpected symbol in "Liverwort <- filter(edidiv taxonGroup"
```

2. Troubleshoot your error - get familiar with common errors and solutions to them

`'could not find function' // 'cannot open the connection' // "subscript out of bounds"`

Managing errors in R

1. Know your error - learn to pick up errors

```
>
> Liverwort <- filter(edidiv taxonGroup == "Liverwort")
Error: unexpected symbol in "Liverwort <- filter(edidiv taxonGroup"
```

2. Troubleshoot your error - get familiar with common errors and solutions to them

`'could not find function' // 'cannot open the connection' // "subscript out of bounds"`

3. Googling your errors*
   a. *"An online search for the error message (along with "R" and the function or package name) is always a good start"*
   b. *"For "how to …" type queries, a search will often result in tutorials, and even Youtube videos as well"*
   c. *R Help* `?fn`
   d. *Asking questions and reading other's questions - stackoverflow*

Managing errors in R

1. Know your error - learn to pick up errors

```
>
> Liverwort <- filter(edidiv taxonGroup == "Liverwort")
Error: unexpected symbol in "Liverwort <- filter(edidiv taxonGroup"
```

2. Troubleshoot your error - get familiar with common errors and solutions to them

`'could not find function' // 'cannot open the connection' // "subscript out of bounds" // 'Error: unexpected ')''`

3. Googling your errors*
   a. *"An online search for the error message (along with "R" and the function or package name) is always a good start"*
   b. *"For "how to …" type queries, a search will often result in tutorials, and even Youtube videos as well"*
   c. *R Help* `?fn`
   d. *Asking questions and reading other's questions - stackoverflow*

4. Write neater code (indenting, comments, sections)

Source: Troubleshooting in R (link1) | How to avoid common mistakes in R (link) | Troubleshooting in R (link2)

Learn R, in R.

swirl teaches you R programming and data science interactively, at your own pace, and right in the R console!

Link

Steps

1. `install.packages("swirl", dependencies = TRUE)`
2. `library(swirl)`

Steps

1. `install.packages("swirl", dependencies = TRUE)`
2. `library(swirl)`

There are several lesson plans available within Swirl (link)
We recommend **R programming**, installed this way:

3. `swirl::install_course("R Programming")`

Steps

```
1. install.packages("swirl", dependencies = TRUE)
2. library(swirl)
```

There are several lesson plans available within Swirl (link)
We recommend **R programming**, installed this way:

```
3. swirl::install_course("R Programming")
4. swirl()
```

Swirl is interactive: you respond to prompts with number (just like calling a customer care service!) - correct answers take you forward

Let's check out one lesson in the R programming course (follow along if you can)

Thank you

Anand Osuri
aosuri@ncf-india.org

Akshay Surendra
akshaysurendra1@gmail.com