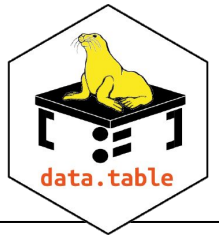
R Packages for Data Cleaning

R - Ladies Gaborone

25/01/2022



Overview

- Who I am
- Messy to tidy data
- R Packages for Data Cleaning
  - Janitor
  - Naniar
  - Amelia
  - Data wizard
  - data.table
- Demo in RStudio

Acknowledgements

- Paula Andrea
- R-Ladies Brisbane
- Computer Society of Botswana
- R-ladies Gaborone team

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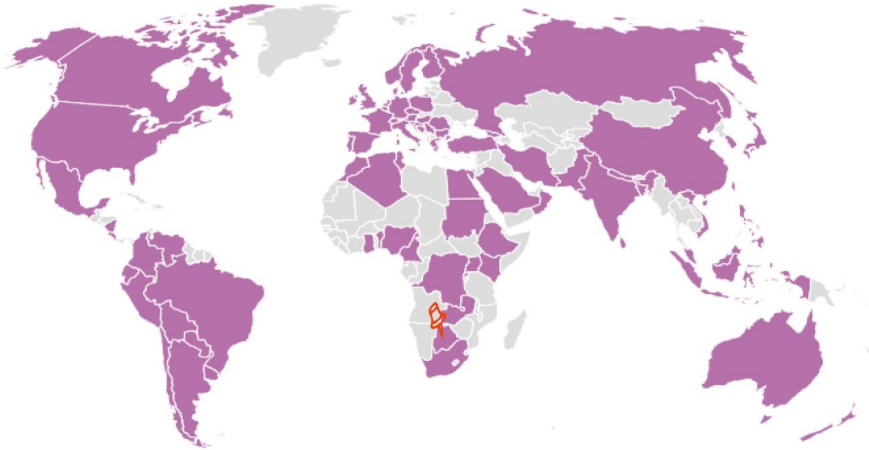
Where I’m from



From messy to tidy data

Data preparation is not objective

Depends on the problem you want to solve:

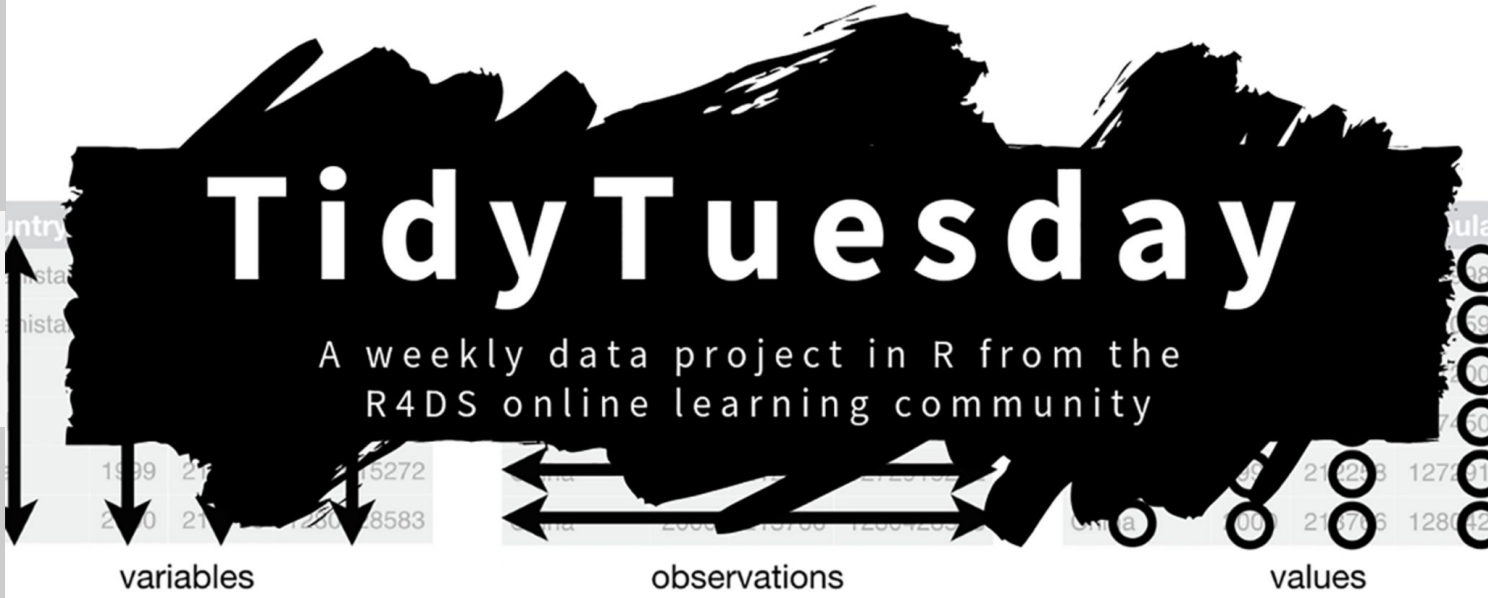
- Data organisation for facilitation
- Data analysis tools

Tasks for tidy data analysis

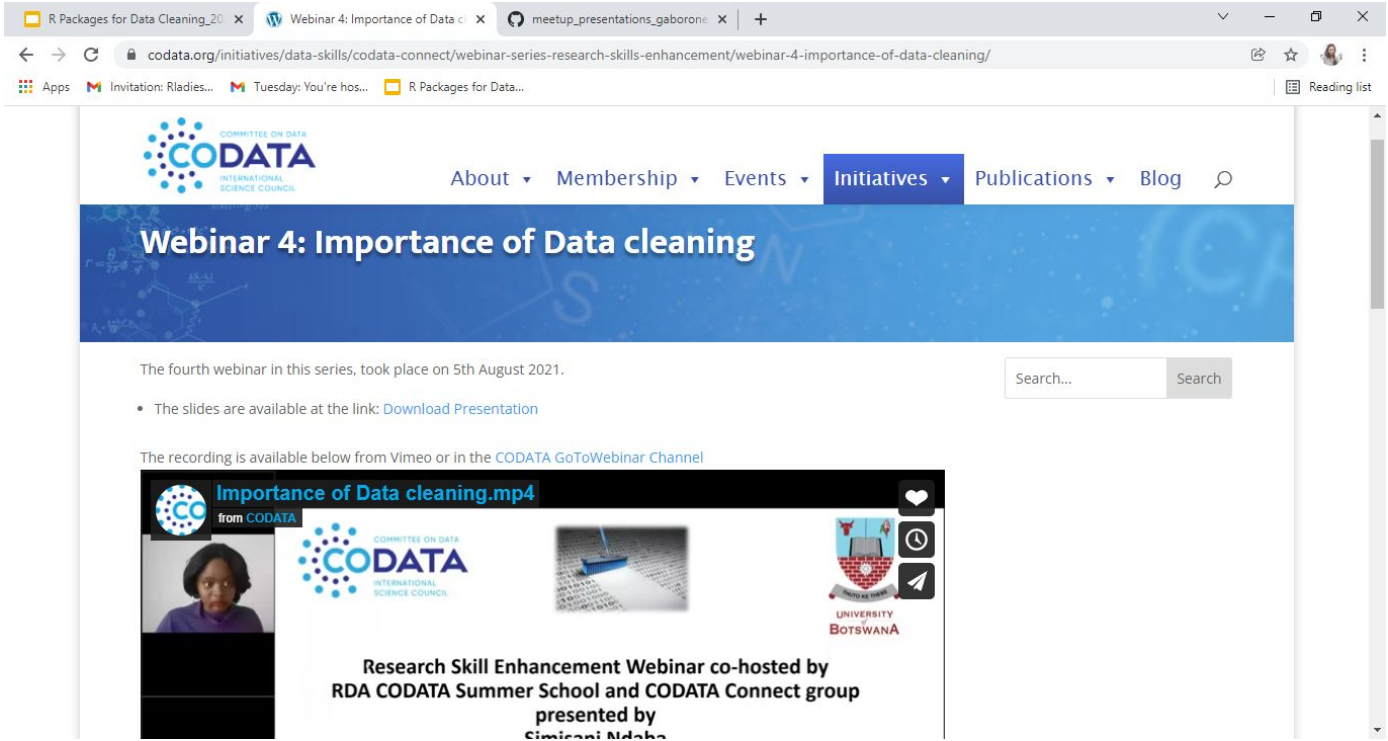
- Manipulation, visualisation and modelling

Data cleaning involves

- Exploration, visualisation and fixing errors (structural,outliers,NA,Validation rules)


TidyTuesday
A weekly data project in R from the
R4DS online learning community
variables
observations
values

https://codata.org/initiatives/data-skills/codata-connect/webinar-series-research-skills-enhancement/webinar-4-importance-of-data-cleaning/



R Packages for Data Cleaning

janitor

naniar

amelia

datawizard

data.table

Janitor _package

exploring and cleaning data

Functions: tabulations,duplications,

column names and formatting

The adorn_ functions dress up the results of these tabulations calls fast,

basic reporting

https://cran.r-project.org/web/packages/janitor/vignettes/janitor.html

Naniar_package

Naniar = NA in r

Developed by Nick Terney

A suite of tools for generating visualisation of missing values,

imputations and summarising missing data

Data structures used to track missing data

https://naniar.njtierney.com/articles/getting-started-w-naniar.html

Multiple Imputation using amelia_package

imputation=replacement of missing values

Method:

- Joint Model=Gaussian/Normal Distribution
- Conditional Model=linear regression
- PCA(Principal Component Analysis)

Amelia_package

Joint Modeling

amelia() uses the

- bootstrap, resampling algorithm and
- EM(Expectation Maximum) algorithm, maximum likelihood based model

Data.table_package

Alternative version to data.frame

Used on tabular data

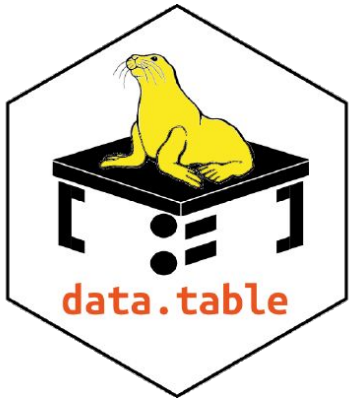
incredibly fast

DT syntax

DT[i , j, by]

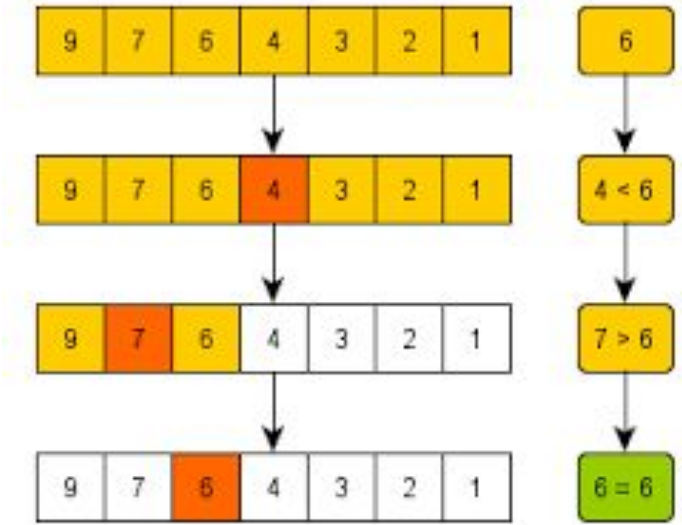
row, column, group by /SQL

Binary search using Keys(reference)



https://cran.r-project.org/web/packages/data.table/vignettes/datatable-intro.html

Binary Search....Data.table package cont..



Datawizard_package

A lightweight package to easily manipulate, clean, transform and prepare data for analysis

Data wrangling, transformation, visualisation, text formatting, data properties

https://easystats.github.io/datawizard/

Demo in RStudio

```
install.packages(janitor)
install.packages(naniar)
install.packages(datawizard)
install.packages(data.table)

#extra functionality
install.packages(amelia)
install.packages(dplyr)
install.packages(readr)
```

Thanks!

https://www.meetup.com/rladies-gaborone/

YouTube

https://github.com/rladies/meetup_presentations_gaborone