## MBA ESALO

## Data Wrangling

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Data Preparation in R



## Data wrangling

- We will mainly use the dplyr.
  - Dplyr is a package contained in the tidyverse
  - It contains useful functions for the manipulation/preparation of databases
  - Material for reference:
    - https://dplyr.tidyverse.org/
    - https://github.com/rstudio/cheatsheets/blob/master/data-transformation.pdf
    - Wickham, H. & Grolemund, G. R for Data Science: <a href="https://r4ds.had.conz/index.html">Wtps://r4ds.had.conz/index.html</a>



## Data wrangling

- Pipe: chaining of several functions in sequence
- Rename: change of variable names
- Mutate: change of variables content and creation of new variables
- Filter: selection of observations based on logical criteria
- **Select**: selection of variables
- Summarise: creation of tables with summary statistics (descriptive statistics)
- Group by: to group observations based on criteria
- **Join**: to join (*merge*) databases



# Projects creation and Scripts R Markdown

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#### R Markdown

- Introduction to R Markdown
- Basic formatting of the text
- Formulas insertion
- Chunks
- To generate outputs (HTML; PDF, DOC)
- Material for reference:
  - https://rmarkdown.rstudio.com/index.html



## Data Science & Analytics Projects in the GitHub

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#### Git

Useful software for version control

It records changes made in the files

- We will use it in conjunction with the Github
- To install the Git on the computer (<a href="https://git-scm.com/downloads">https://git-scm.com/downloads</a>)
  - It's just to pass all steps in the suggested configurations



#### Github

- Website used to keep the files
  - https://github.com/
- It's organized in repositories (folders) that can be shared, and they can be published.
  - It's useful to store and share portfolio of projects
- Computer files can be sent to Github (via Git)



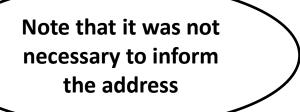
- Add and Commit
  - Create a folder on the desktop of your computer.
  - In RStudio, create a new scrip and write # Versão 1
  - Save this file in the folder with the name Versão Exemplo.R
  - Inside the folder, click using the mouse right button and choose Git Bash Here
  - In Git, write git init (it initializes Git in the selected folder)
  - Write git add "Versão Exemplo.R" (it adds the file to the index)
  - Use git commit -m "título", to generate versions (it is the versions)

The commit name, example: "First Version"

- Push
  - In your Github, create a new repository and name it as you like.
  - Copy the link from the created repository
  - In Git, write git remote add origin ......(folder link).......
  - Finally, type git push u origin master (it sends the file to the repository, remaining on the main branch)
    - It will request login into Github on the first time
  - After update, it is possible to verify that the file is already in your Github!



- Versions creation and comparison
  - Open the file Example Version and write another line: # Versão 2
  - After saving, close it, and open the Git Bash Here in the folder pressing the mouse right button
  - Use the same procedures:
  - git add "Versão Exemplo.R"
  - git commit -m "Segunda Versão"
  - git push –u origin master



The new version is already available in Github and we can compare them!



- Creating branches in the repository
  - In the previous command, we change the main branching of the repository
  - We could create new branches in Github
  - git checkout -b "nome da nova branch"
  - In Git, there is already the indication of the change from "master" to "new"
  - The same add and commit procedures
  - git push -u origin "nome da nova branch"

- Importing repositories (Clone and Pull)
  - It can be useful to save files on your computer that are in the Github
  - A way of "downloading" these files is through the clone function
  - Create a folder on your computer
  - Inside the folder, open the Git Bash Here pressing the mouse right button
  - In the Github, click on code and copy the link in the repository chosen
  - In Git, type git clone ......(repository link)......
  - After changes in Github, indicate cd "repository" to download again
  - Then, type git pull (the file was updated on the computer)



- Copying public repository (Fork)
  - It is possible to copy repositories that are published in the Github
  - Search for some theme of interest
  - Access the repository
  - On the top right corner, there is the Fork button
  - After clicking it, you can see the repository on your list (on your profile)

## Git, Github and RStudio

• It is possible to integrate Git, Github and RStudio

- In RStudio, click on File → New Project → Version Control → Git
  - In "Repository URL" indicate the link of the repository in Github

- After creating a document (R Script, R Markdown), click on Git and make commit and then push
  - It is also possible create pull of the files of the repository that was indicated

## Functions and Iterations with Purrr Package

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### Functions, Purrr

- Creating functions in R
- Assign conditions ("IF")
- Iterations with Purrr (map functions)
- Material for reference:
  - Wickham, H. & Grolemund, G. R for Data Science: Wtps://r4ds.had.conz/index.html
  - https://github.com/rstudio/cheatsheets/blob/master/purrr.pdf

