R Markdown Workflow

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Contents

This is from the sixth chapter of learn.r-journalism.com.

Why a clear data analysis workflow?

- Check analysis and track errors
- Share results with colleagues for stories or editing
- Send methodology to sources for bullet-proofing
- To easily adjust when presented with new data
- Easily switch between work environments (desktop and laptop)
- Scavenge and repurpose code in future projects

Constraints

- Workflow has to be platform agnostic
- Easy to deploy for yourself and others
- Free open source software
- Input has to be real raw data in whatever format it is (and wherever it is)
- But have a backup for when internet is not accessible
- Output has to work – whether html, PDF, or web app
- IDE agnostic (be able to run it from a command line without Rstudio)

Four components

1. Software
    - R
    - Rstudio
    - Git for version control
2. Clear file organization
3. One R script to pull it all together
4. Hosting the html output internally or publicly with Github pages

Thanks

These are all things I picked up from browsing other presentations and repos.

Much thanks to Jenny Bryan and Joris Muller from whom I cobbled many of these ideas and practices from.

Also to BuzzFeed, FiveThirtyEight, ProPublica, Chicago Tribune, Los Angeles Times, and TrendCT.org

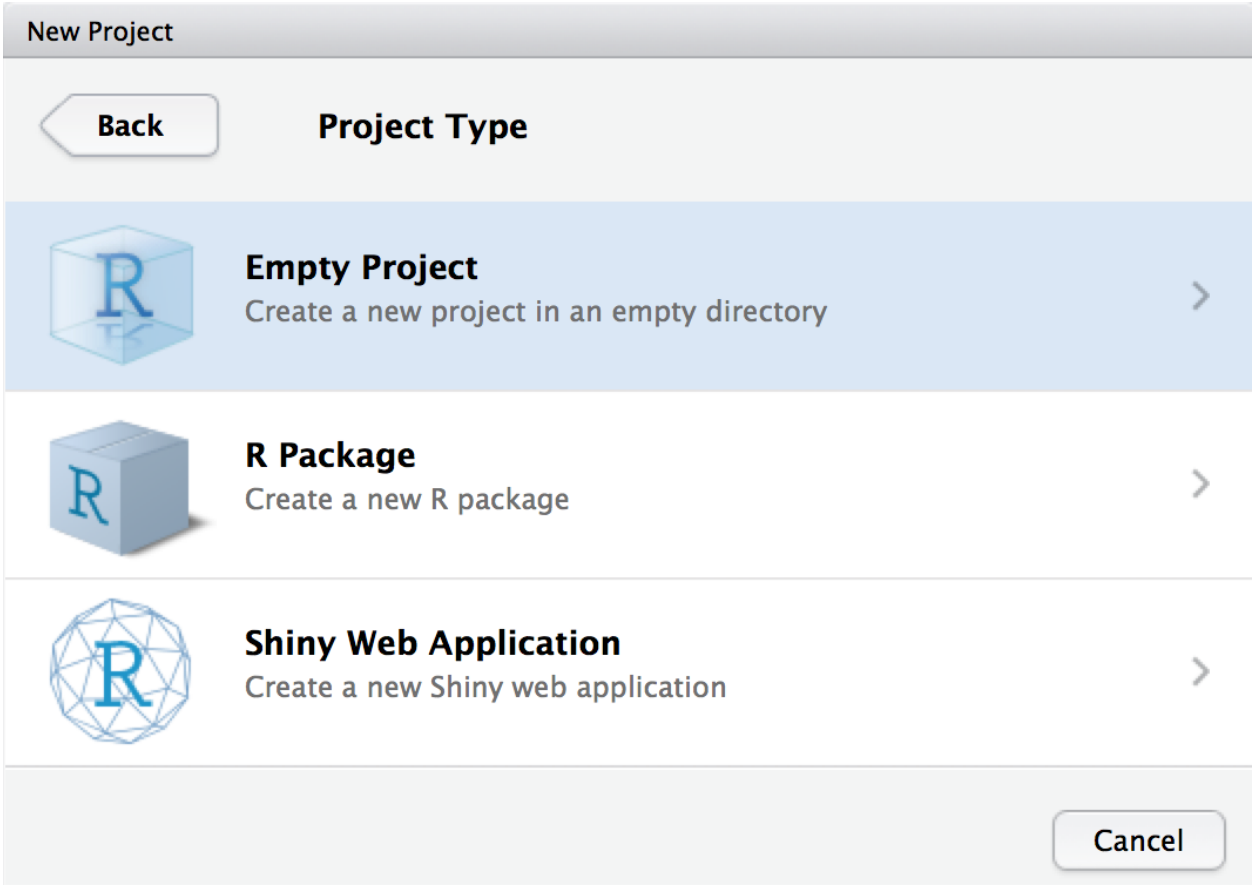
Comment your code

Anything that appears on a line after `#` will be treated as a comment. That means it will be ignored when the code in the script is executed.

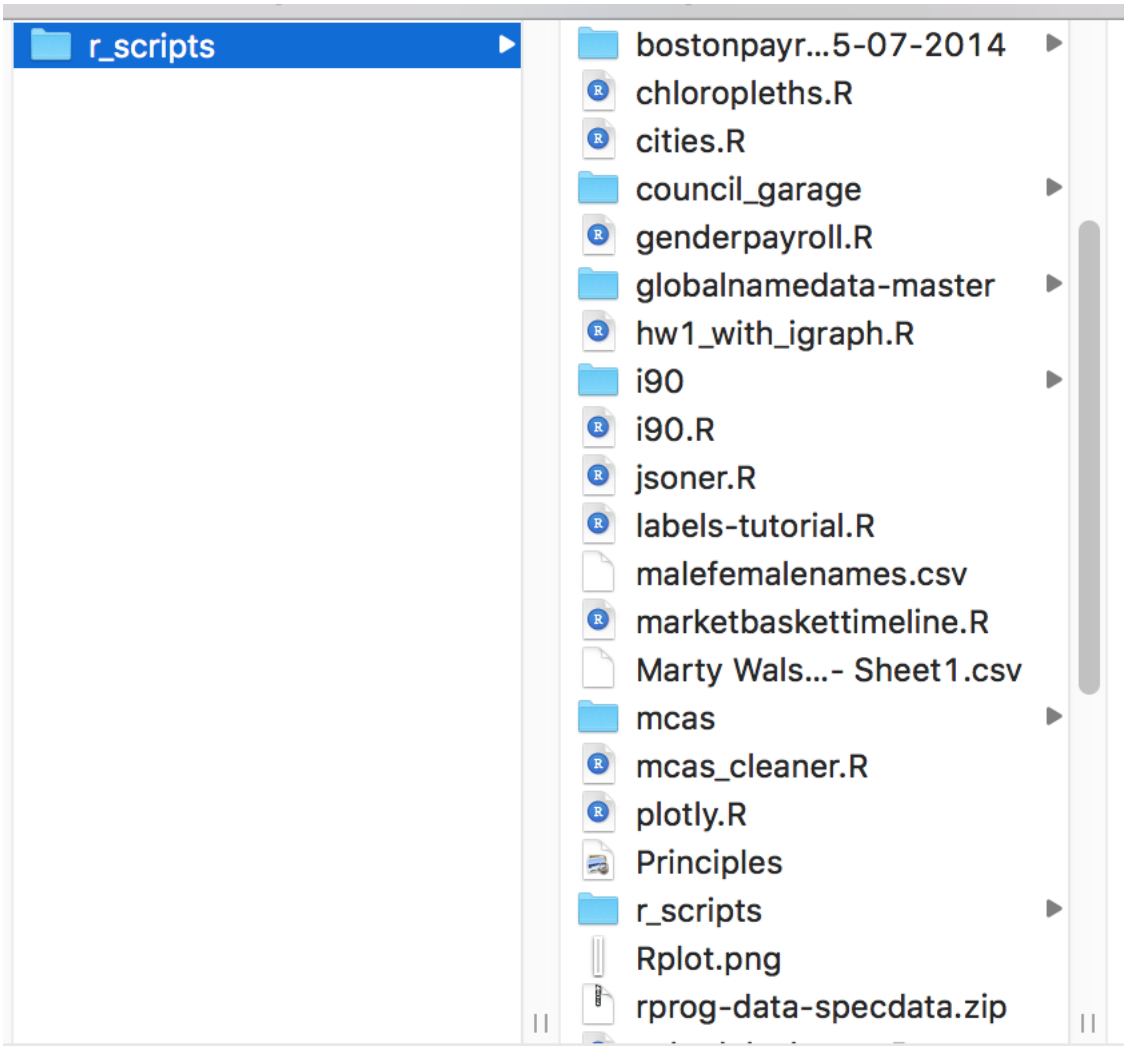
Use this to explain what the code does.

Get into this habit early. Future readers of the code will be grateful for the clear documentation you leave behind– including yourself months from now.

Use projects to organize

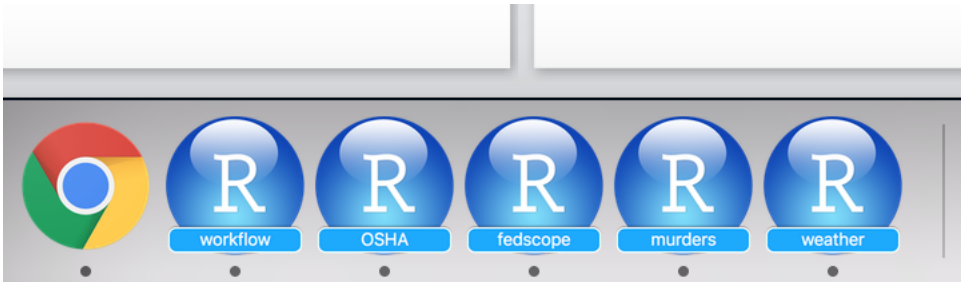


Do not dump your scripts into a folder



One folder per project

- RStudio project
- Git repo
- Can run parallel projects



Use portable file paths

DO NOT USE `setwd()`

Keep everything relative to your project directory and it will work on everyone who downloads your project repo folder.

```
here("Test", "Folder", "text.txt")
##> [1] "/Users/IRE/Projects/NICAR/2018/workflow/Test/Folder/test.txt"
cat(readLines(here("Test", "Folder", "text.txt")))
##> You found the text file nested in these subdirectories!
```

Files organization

At minimum

```
name_of_project
|--data
    |--2017report.csv
    |--2016report.pdf
    |--summary2016_2017.csv
|--docs
    |--01-analysis.Rmd
    |--01-analysis.html
|--scripts
    |--exploratory_analysis.R
|--name_of_project.Rproj
|--run_all.R
```

Optimal

```
name_of_project
|--raw_data
    |--WhateverData.xlsx
    |--2017report.csv
    |--2016report.pdf
|--output_data
    |--summary2016_2017.csv
|--rmd
    |--01-analysis.Rmd
|--docs
    |--01-analysis.html
    |--01-analysis.pdf
    |--02-deeper.html
    |--02-deeper.pdf
|--scripts
    |--exploratory_analysis.R
    |--pdf_scraper.R
|--name_of_project.Rproj
|--run_all.R
```

{{% notice info %}} Everything below is for more advanced users but I'm putting it here for future reference. {{% /notice %}}

Creating folder shortcut

```
folder_names <- c("raw_data", "output_data", "rmd", "docs", "scripts")

sapply(folder_names, dir.create)
```

Organization principles

- Directory names are obvious to anyone looking
- Reports and the script files are not in the same directory
- Reports are sorted using 2-digit numbers. Tell your story clearly.

Source to the online data

Normal data file

```
if (!file.exists("data/bostonpayroll2013.csv")) {

  dir.create("data", showWarnings = F)
  download.file(
  "https://website.com/data/bostonpayroll2013.csv",
  "data/bostonpayroll2013.csv")
}

payroll <- read_csv("data/bostonpayroll2013.csv")
```

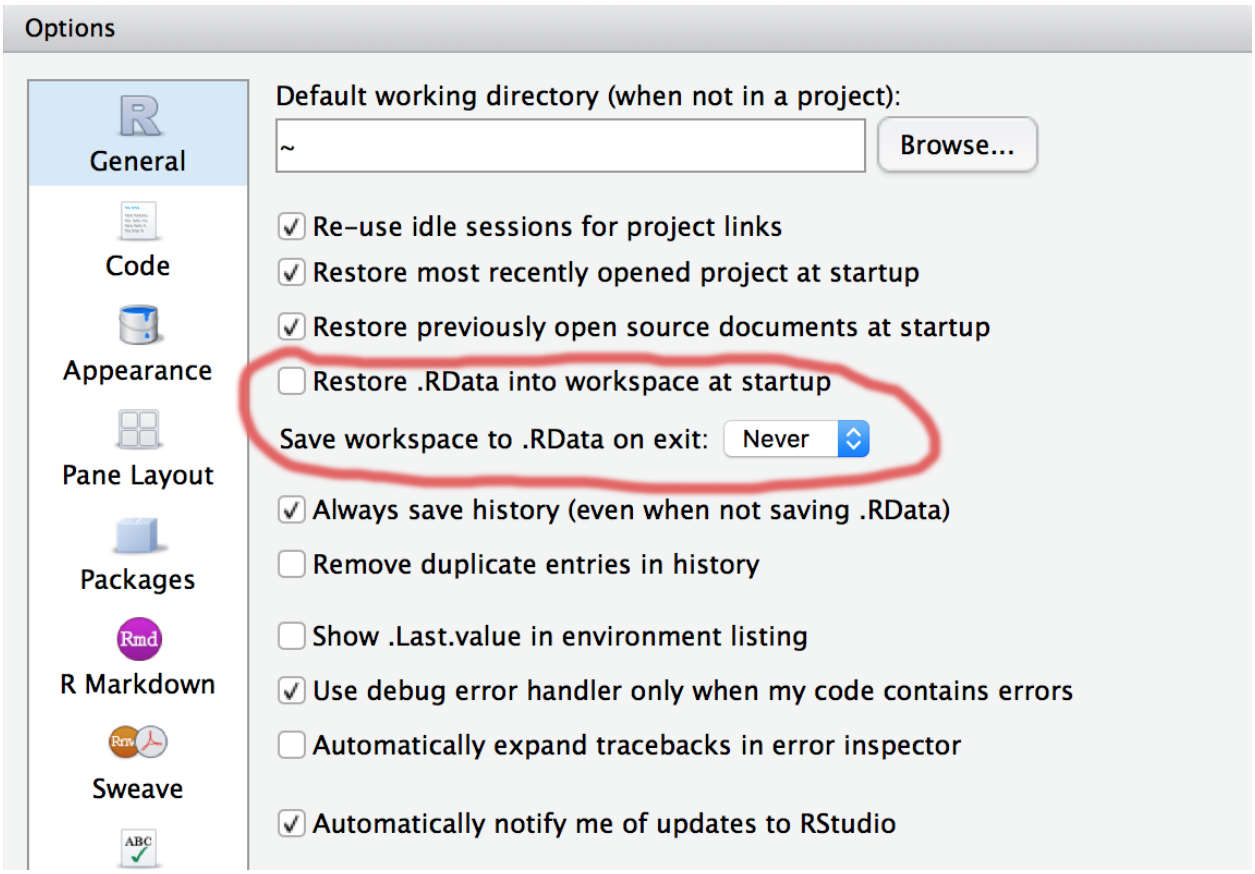
Dealing with a zip file

```
if (!file.exists("data/employment/2016-12/FACTDATA_DEC2016.TXT")) {

  dir.create("data", showWarnings = F)
  temp <- tempfile()
  download.file(
  "https://website.com/data/bostonpayroll2013.zip",
  temp)
  unzip(temp, exdir="data", overwrite=T)
  unlink(temp)
}

payroll <- read_csv("data/bostonpayroll2013.csv")
```

Operate without a net

Never save workspace to .RData on exiting RStudio and uncheck Restore .RData on startup.

This will make sure you've optimized your data ingesting and cleaning process and aren't working with a misstep in your process.


Options
General
Code
Appearance
Pane Layout
Packages
R Markdown
Sweave
Default working directory (when not in a project):
~
Browse...
Re-use idle sessions for project links
Restore most recently opened project at startup
Restore previously open source documents at startup
Restore .RData into workspace at startup
Save workspace to .RData on exit:
Never
Always save history (even when not saving .RData)
Remove duplicate entries in history
Show .Last.value in environment listing
Use debug error handler only when my code contains errors
Automatically expand tracebacks in error inspector
Automatically notify me of updates to RStudio