

# Using the **goodenuffR** package

*Everything...in its right place*

by Martin Frigaard

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[Created using the "λέξις" theme](#)

**goodenuffR** = good enuff practices in R computing



# Outline



1) The Problem

2) A Solution

3) Installation

4) Quick Start

5) Package functions

- `goodenuff_code()`
- `goodenuff_collab()`
- `goodenuff_data()`
- `goodenuff_doc()`
- `goodenuff_results()`
- `goodenuff_files()`

6) Using `goodenuffR`

# The Problem



*Where is my stuff?*

## THE VERGE: FILE NOT FOUND



# The Problem



 **Jenny Bryan**  @JennyBryan · 40m 

Knowing how to store stuff in a particular place, with a intentional name, is SO IMPORTANT 🙌🙌🙌🙌🙌

*Store stuff in a particular place*

# The Problem



 **dan nguyen** ✓ @dancow · 2h  
omg turns out I wasn't completely  
bullshitting all the times when I fussed to  
students that "file not found" would be  
their most common and soul-destroying  
"bug" when trying to learn programming

*Most soul-destroying "bug" when  
trying to learn programming*

# A Solution: goodenuffR!



Based on the excellent paper, *Good enough practices in scientific computing*








by Greg Wilson, Jennifer Bryan, Karen Cranston, Justin Kitzes, Lex Nederbragt, Tracy K. Teal

## PLOS COMPUTATIONAL BIOLOGY

OPEN ACCESS

PERSPECTIVE

### Good enough practices in scientific computing

Greg Wilson  , Jennifer Bryan , Karen Cranston , Justin Kitzes , Lex Nederbragt , Tracy K. Teal 

Published: June 22, 2017 • <https://doi.org/10.1371/journal.pcbi.1005510>

Article	Authors	Metrics	Comments	Media Coverage
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# A Solution



## The paper focuses on...

*"a minimum set of tools and techniques that we believe every researcher can and should consider adopting"*

## Specifically

- Data management
- Software
- Collaboration
- Project organization
- Tracking changes
- Manuscripts



# A Solution



## goodenuffR focuses on:

- Data management
- Project organization

## Specifically

```
|-- CITATION
|-- README
|-- LICENSE
|-- requirements.txt
|-- data
|   |-- birds_count_table.csv
|-- doc
|   |-- notebook.md
|   |-- manuscript.md
|   |-- changelog.txt
|-- results
|   |-- summarized_results.csv
|-- src
|   |-- sightings_analysis.py
|   |-- runall.py
```

# Installation



Available on GitHub here:

<https://github.com/mjfrigaard/goodenuffR>

Install **goodenuffR** using the code below:

```
install.packages("devtools")
devtools::install_github("mjfrigaard/goodenuffR")
```

# Quick Start



## In a fresh RStudio Session

The screenshot displays the RStudio interface with the following components:

- Environment Pane:** Shows "Environment is empty".
- Console:** Displays the R version 4.1.1 startup message:

```
R version 4.1.1 (2021-08-10) -- "Kick Things"
Copyright (C) 2021 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin17.0 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

Natural language support but running in an English locale

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
```
- Packages Pane:** Shows the "System Library" with the following table of installed packages:

Name	Description	Version
<input type="checkbox"/> abind	Combine Multidimensional Arrays	1.4-5
<input type="checkbox"/> acepack	ACE and AVAS for Selecting Multiple Regression Transformations	1.4.1
<input type="checkbox"/> anytime	Anything to 'POSIXct' or 'Date' Converter	0.3.9
<input type="checkbox"/> AppliedPredictiveMo...	Functions and Data Sets for 'Applied Predictive Modeling'	1.1-7
<input type="checkbox"/> arrow	Integration to 'Apache' 'Arrow'	5.0.0.2
<input type="checkbox"/> arsenal	An Arsenal of 'R' Functions for Large-Scale Statistical Summaries	3.6.3
<input type="checkbox"/> ash	David Scott's ASH Routines	1.0-15
<input type="checkbox"/> AsioHeaders	'Asio' C++ Header Files	1.16.1-1
<input type="checkbox"/> askpass	Safe Password Entry for R, Git, and SSH	1.1
<input type="checkbox"/> assertive	Readable Check Functions to Ensure Code Integrity	0.3-6
<input type="checkbox"/> assertive_base	A Lightweight Core of the 'assertive' Package	0.0-9

# Quick Start



1) Install `devtools`,  
then install and load  
`goodenuffR`

```
Console Terminal x Jobs x
R 4.1.1 · ~/R/ ↗
> install.packages("devtools")
trying URL 'https://cran.rstudio.com/bin/macosx/contrib/4.1/devtools_2.4.2.tgz'
Content type 'application/x-gzip' length 393913 bytes (384 KB)
=====
downloaded 384 KB

The downloaded binary packages are in
  /var/folders/3p/wzkys03s6p1cvmn8yzm93440000gn/T//Rtmp4rq8qj/downloaded_packages
> devtools::install_github("mjfrigaard/goodenuffR")
Using github PAT from envvar GITHUB_PAT
Downloading GitHub repo mjfrigaard/goodenuffR@HEAD
✓ checking for file '/private/var/folders/3p/wzkys03s6p1cvmn8yzm93440000gn/T/Rtmp4rq8qj/remotesf16118ee2b1d/mjfrigaard-goodenuffR-3da8f43/DESCRIPTION' ...
- preparing 'goodenuffR':
✓ checking DESCRIPTION meta-information ...
- checking for LF line-endings in source and make files and shell scripts
- checking for empty or unneeded directories
- building 'goodenuffR_0.1.0.tar.gz'

* installing *source* package 'goodenuffR' ...
** using staged installation
** R
** data
*** moving datasets to lazyload DB
** inst
** byte-compile and prepare package for lazy loading
** help
*** installing help indices
** building package indices
** testing if installed package can be loaded from temporary location
** testing if installed package can be loaded from final location
** testing if installed package keeps a record of temporary installation path
* DONE (goodenuffR)
> library(goodenuffR)
```

# Quick Start



2) Enter a project name

3) Enter the folder path  
for your project

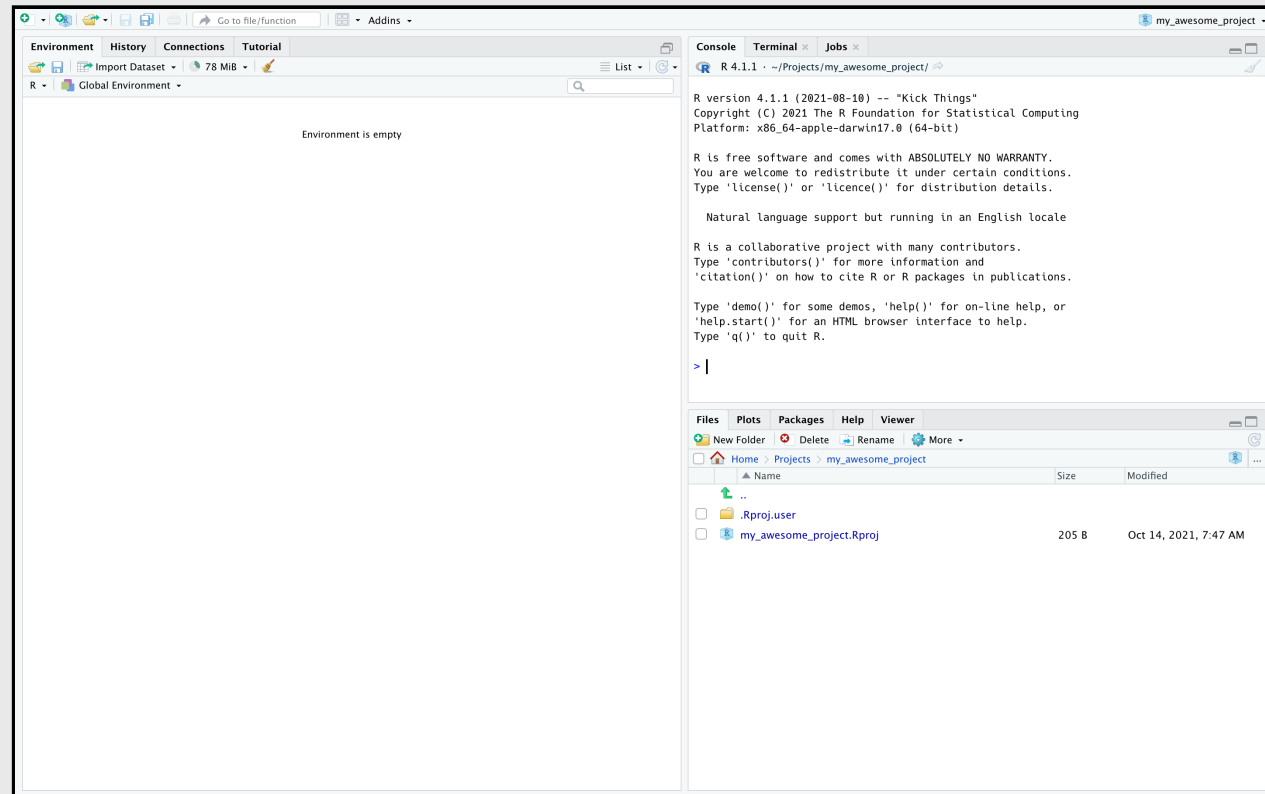
```
goodenuffR::goodenuff_project(  
  project_name = "my awesome project",  
  folder_path = "/Users/mjfrigaard/Projects")
```

**TIP: use *getwd()* in the Console or *pwd* in the Terminal to locate current folder**

# Quick Start



RStudio will open a new session for your project



# Quick Start



## 4) Run

```
goodenuffR::goodenuff_files()
```

```
Console Terminal Jobs
R 4.1.1 · ~/Projects/my_awesome_project/

R version 4.1.1 (2021-08-10) -- "Kick Things"
Copyright (C) 2021 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin17.0 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

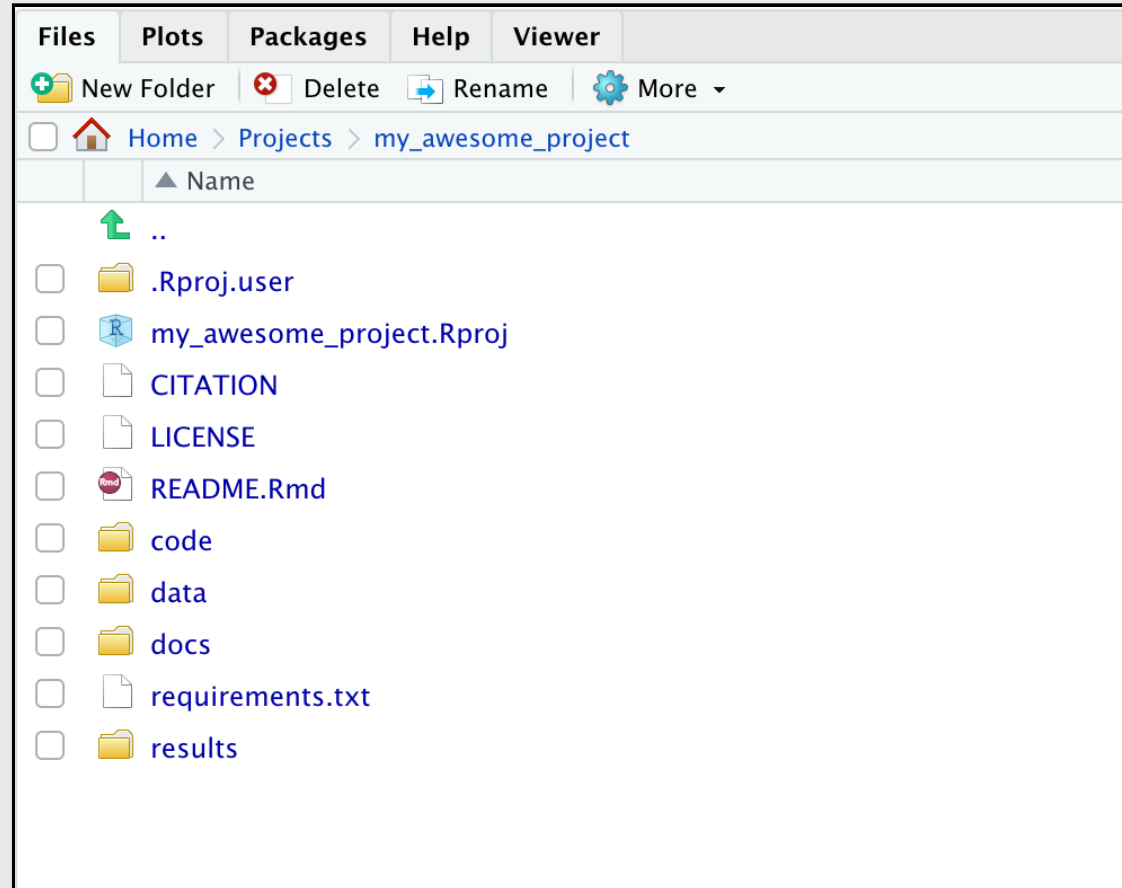
> goodenuffR::goodenuff_files()
trying URL 'https://creativecommons.org/publicdomain/zero/1.0/legalcode.txt'
downloaded 7048 bytes

trying URL 'https://raw.githubusercontent.com/rstudio/rmarkdown/main/inst/rmarkdown/templates/git_
_document/skeleton/skeleton.Rmd'
Content type 'text/plain; charset=utf-8' length 691 bytes
=====
downloaded 691 bytes
```

# Quick Start



Now you're good (enuff)  
to go!





# Package functions



## goodenuff\_code()

### Paper

- *readable, reusable, and testable*
- *short, single-purpose functions with clearly-defined inputs and outputs*
- *name all files to reflect their content or function*

## goodenuffR

```
goodenuffR::goodenuff_code()  
# └─ code  
#   └─ 01-import.R  
#     └─ 02-tidy.R  
#       └─ 03-wrangle.R  
#         └─ 04-visualize.R  
#           └─ 05-model.R  
#             └─ 06-communicate.R  
#               └─ runall.R
```

# Package functions



`goodenuff_code()`

## Paper

- *Place a brief explanatory comment at the start of every program*

## goodenuffR

Each `code` file has a header:

```
#=====  
# This is code to create:  
# Authored by and feedback to:  
# MIT License  
# Version:  
#=====
```

# Package functions



## goodenuff\_collab()

### Paper

- *Make the project citable*
- *Make the license explicit*
- *Create an overview of your project*
- *Make dependencies and requirements explicit*

## goodenuffR

```
goodenuffR::goodenuff_collab()  
# └─ CITATION  
# └─ LICENSE  
# └─ README.Rmd  
# └─ requirements.txt
```

# Package functions



## goodenuff\_data()

### Paper

- *Save the raw data*
- *Record all the steps used to process data*

## goodenuffR

```
goodenuffR::goodenuff_data()  
# data  
# └─ README.md  
# └─ raw
```

*Folder for keeping **raw/** data separate from other data files*

*Document in **README.md***

# Package functions



`goodenuff_data()` (BONUS!)

`data/README.md` provides some guidance on storing and documenting data.

```
# Project Data

For guidance please see:
https://help.osf.io/hc/en-us/articles/360019739054-How-to-Make-a-Data-Dictionary

## Additional Resources

1. Sharing data
http://bit.ly/data-4-sharing
2. Data in spreadsheets
http://bit.ly/data-in-sheets
3. External data (https://r-pkgs.org/)
https://r-pkgs.org/data.html

source:
https://swcarpentry.github.io/good-enough-practices-in-scientific-computing/
```

# Package functions



## goodenuff\_doc()

### Paper

- *Put text documents associated with the project in the `doc` directory*
- *Add a file called `CHANGELOG.txt` to the project's docs subfolder*
- *a running lab notebook describing various ideas for the project and how these were implemented*

## goodenuffR

```
goodenuffR::goodenuff_doc()  
# docs  
# |— changelog.txt  
# |— manuscript.Rmd  
# |— notebook.Rmd
```

# Package functions



## goodenuff\_results()

### Paper

- *Put raw data and metadata in a **data/** directory and files generated during cleanup and analysis in a **results/** directory*

## goodenuffR

```
goodenuffR::goodenuff_results()  
# results  
# └── figures  
# └── manuscript  
# └── tables
```

# Package functions



## goodenuff\_files()

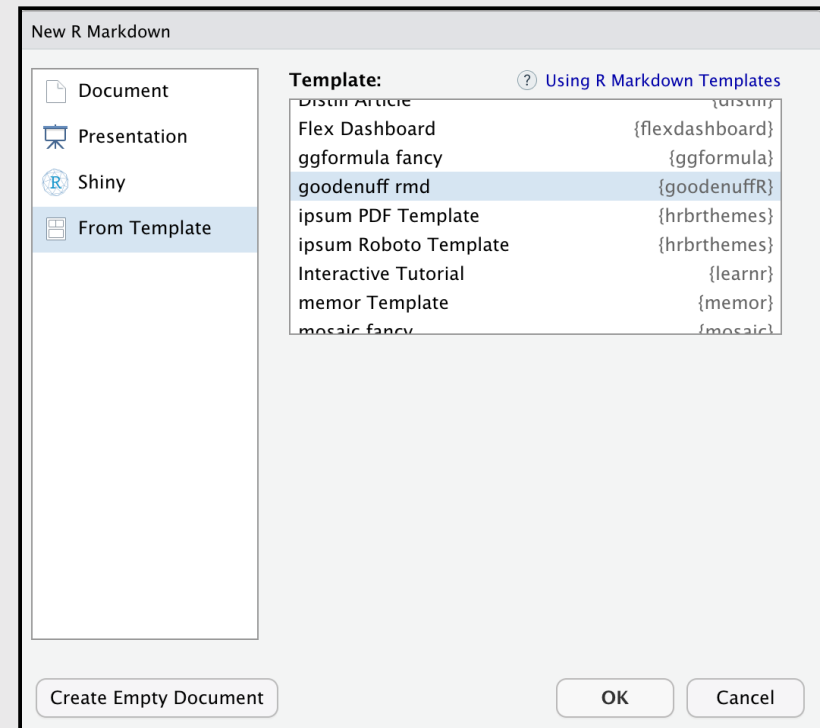
```
goodenuffR::goodenuff_files()
├── CITATION
├── LICENSE
├── README.Rmd
├── code
│   ├── 01-import.R
│   ├── 02-tidy.R
│   ├── 03-wrangle.R
│   ├── 04-visualize.R
│   ├── 05-model.R
│   ├── 06-communicate.R
│   └── runall.R
├── data
│   ├── README.md
│   └── raw
├── docs
│   ├── changelog.txt
│   ├── manuscript.Rmd
│   └── notebook.Rmd
├── my_project.Rproj
├── requirements.txt
└── results
    ├── figures
    ├── manuscript
    └── tables
```



# BONUS: RMarkdown Template



goodenuffR also comes with a rmarkdown template:



# Thank you!

## Feedback to

- @mjfrigaard on Github and Twitter
- mjfrigaard(at)pm.me email

