



Add data and files to R packages

What else can I do with an R package?



What else can I do with an R package?

Store data and files



What else can I do with an R package?

Store data and files

Create R Markdown and other templates



What else can I do with an R package?

Store data and files

Create R Markdown and other templates

Launch and store Shiny apps



Data in packages

data in ggplot2

```
## # A tibble: 11 × 2
##   data          description
##   <chr>         <chr>
## 1 diamonds      Prices of over 50,000 round cut diamonds
## 2 economics     US economic time series
## 3 economics_long US economic time series
## 4 faithfuld     2d density estimate of Old Faithful data
## 5 luv_colours    'colors()' in Luv space
## 6 midwest       Midwest demographics
## 7 mpg           Fuel economy data from 1999 to 2008 for 3...
## 8 msleep        An updated and expanded version of the ma...
## 9 presidential  Terms of 11 presidents from Eisenhower to...
## 10 seals         Vector field of seal movements
## 11 txhousing     Housing sales in TX
```



Data packages

data in [babynames](#)

```
## # A tibble: 4 × 2
##   data      description
##   <chr>      <chr>
## 1 applicants Applicants.
## 2 babynames  Baby names.
## 3 births    Births
## 4 lifetables Lifetables
```



Data packages

data in claremontrun



```
## # A tibble: 7 × 2
##   data                description
##   <chr>              <chr>
## 1 character_visualization Counts of character speech, thoug...
## 2 characters          Descriptions of character actions...
## 3 comic_bechdel       Whether or not an issue of anothe...
## 4 covers              Data on covers of issues of Uncan...
## 5 issue_collaborators Data about other collaborators on...
## 6 locations           Locations of issues in the Clarem...
## 7 xmen_bechdel        Whether or not an issue of Uncann...
```





Add data to your package

1. Include raw data and cleaning scripts
using `use_data_raw()`
2. Clean the data in the file created
above, then use `use_data()`
3. For non-exported data,
`use_data(internal = TRUE)`
4. Document your data

Data dictionary

```
data_dictionary <-  
  tibble::tibble(  
    database = "daily_active_users",  
    variable = c("users", "sector"),  
    description = c(  
      "Active reactor-using households",  
      "Midgar Sector #"  
    ),  
  )
```



```
use_data_raw("data_dictionary")
```

```
shinRa
├── .Rbuildignore
├── .gitignore
├── DESCRIPTION
├── NAMESPACE
├── R/
│   ├── themes.R
│   └── data-raw
│       └── data_dictionary.R
├── man
│   └── theme_mako.Rd
├── tests
│   ├── testthat
│   │   └── test-themes.R
│   └── testthat.R
├── vignettes
│   └── intro-to-shinRa.Rmd
└── shinRa.Rproj
```



```
use_data_raw("data_dictionary")  
data_dictionary.R
```

```
## code to prepare `data_dictionary` dataset goes here  
usethis::use_data(data_dictionary, overwrite = TRUE)
```



```
use_data_raw("data_dictionary")  
data_dictionary.R
```

```
## code to prepare `data_dictionary` dataset goes here
```

```
data_dictionary <-  
  tibble::tibble(  
    database = "daily_active_users",  
    variable = c("users", "sector"),  
    description = c(  
      "Active reactor-using households",  
      "Midgar Sector #"  
    ),  
  )
```

```
usethis::use_data(data_dictionary, overwrite = TRUE)
```



```
use_data_raw("data_dictionary")  
data_dictionary.R
```

```
## code to prepare `data_dictionary` dataset goes here
```

```
data_dictionary <-  
  tibble::tibble(  
    database = "daily_active_users",  
    variable = c("users", "sector"),  
    description = c(  
      "Active reactor-using households",  
      "Midgar Sector #"  
    ),  
  )
```

```
usethis::use_data(data_dictionary, overwrite = TRUE)
```



use_data(data_dictionary)

```
shinRa
├── .Rbuildignore
├── .gitignore
├── DESCRIPTION
├── NAMESPACE
├── R/
│   ├── themes.R
│   └── data
│       └── data_dictionary.rda
├── data-raw
│   └── data_dictionary.R
├── man
│   └── theme_mako.Rd
├── tests
│   ├── testthat
│   │   └── test-themes.R
│   └── testthat.R
├── vignettes
│   └── intro-to-shinRa.Rmd
└── shinRa.Rproj
```



```
library(shinRa)
data_dictionary
```

```
## # A tibble: 2 × 3
##   database          variable description
##   <chr>            <chr>      <chr>
## 1 daily_active_users users    Active reactor-using househol...
## 2 daily_active_users sector    Midgar Sector #
```



Your Turn 1

Let's create a data dictionary for avalanche and add the results to a vignette. First, run `use_data_raw()`. Call the data "data_dictionary". In the data processing file, put this code before the `use_data()` line. Then, source the script. This will run `use_data()` for you.

Open `R/tables.R`. Add a function called `gt_data_dictionary()` that wraps `data_dictionary` in `gt::gt()`. You can use `gt_donations()` as a starting point for the new function.

Re-document and re-build the package.

Open `vignettes/data-dictionary.Rmd`. On line 24, run `gt_data_dictionary()` and knit the vignette.



Your Turn 1

```
use_data_raw("data_dictionary")  
source("data-raw/data_dictionary.R")
```

```
#' Create gt table for the data dictionary  
#'  
#' @return a `gt` table  
#' @export  
gt_data_dictionary <- function() {  
  gt::gt(data_dictionary)  
}
```

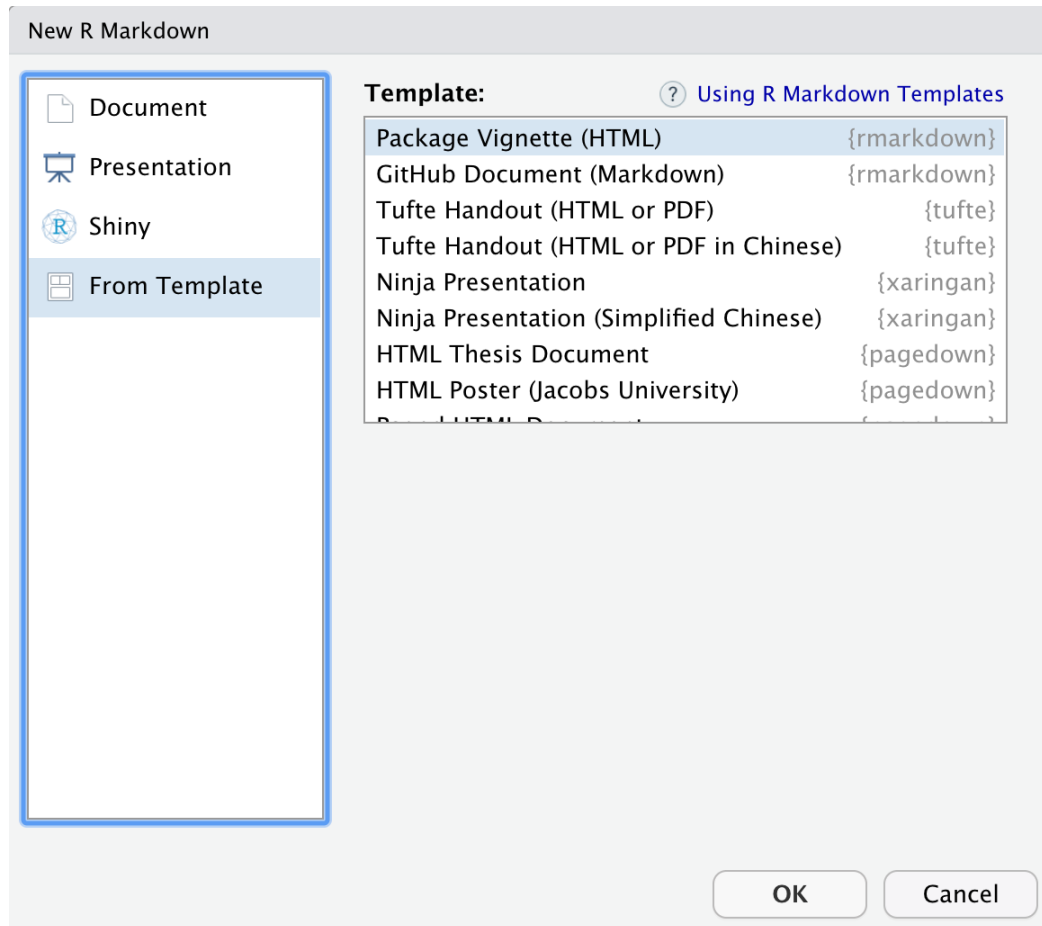




Including data for tests

1. Hard-code it in a `helper-` or `test-` file.
2. Put a (small) file in `tests/testthat`
3. Use internal data
`(use_data(internal = TRUE))`
4. Use exported data `(use_data())`

R Markdown Templates

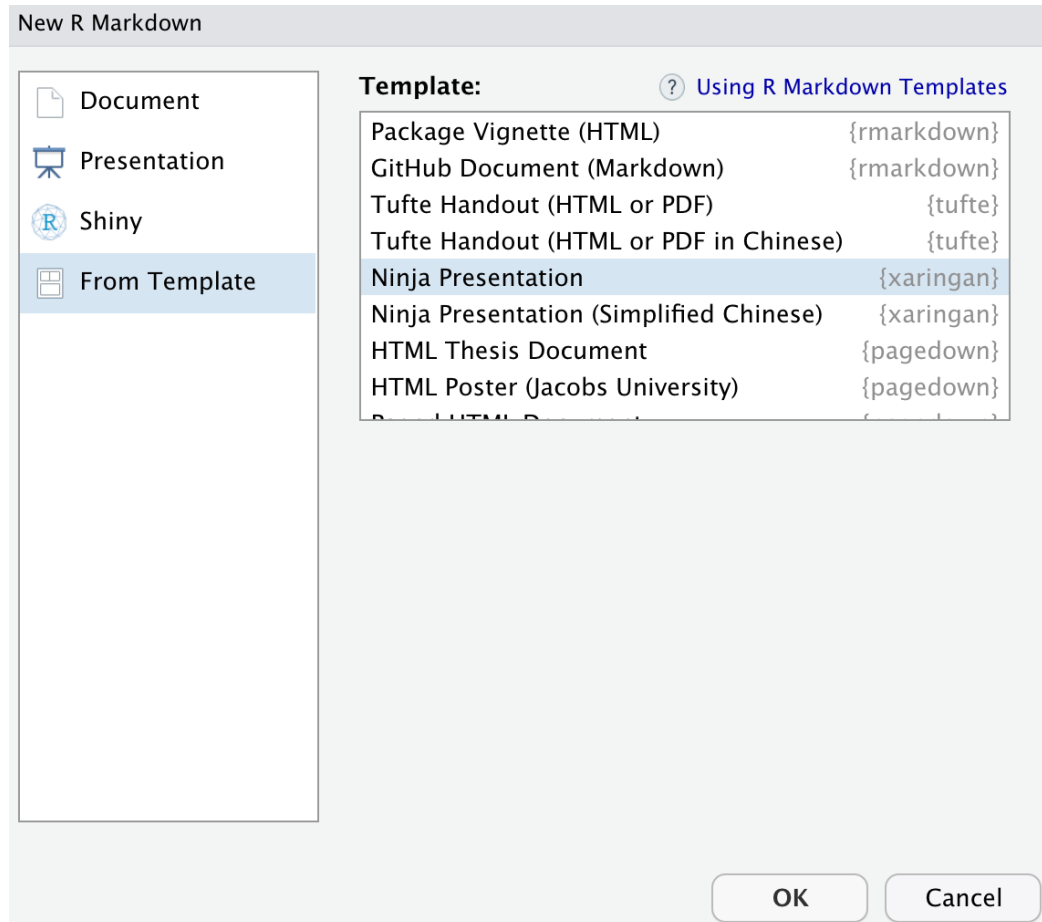


```
use_rmarkdown_template("report")
```

```
shinRa
├── .Rbuildignore
├── .gitignore
├── DESCRIPTION
├── NAMESPACE
├── R/
│   ├── themes.R
│   ├── data-raw
│   └── data_dictionary.R
├── inst
│   ├── rmarkdown
│   │   └── templates
│   │       └── report
│   │           ├── skeleton
│   │           │   └── skeleton.Rmd
│   │           └── template.yaml
├── man
│   └── theme_mako.Rd
├── tests
│   ├── testthat
│   │   └── test-themes.R
│   └── testthat.R
├── vignettes
│   └── intro-to-shinRa.Rmd
└── shinRa.Rproj
```



xaringan template



xaringan template: template.yaml

```
name: Ninja Presentation
description: >
  Create a presentation using the xaringan package based
  on remark.js.
create_dir: false
```



xaringan template: skeleton.Rmd

```
title: "Presentation Ninja"
subtitle: "✂ <br/>with xaringan"
author: "Yihui Xie"
institute: "RStudio, Inc."
date: "2016/12/12 (updated: `r Sys.Date()`)"
output:
  xaringan::moon_reader:
    lib_dir: libs
    nature:
      highlightStyle: github
      highlightLines: true
      countIncrementalSlides: false
---

background-image: url(https://upload.wikimedia.org/wikipedia/commons/b/be/Sharingan_triple.svg)

```{r setup, include=FALSE}
options(htmltools.dir.version = FALSE)
```

???

Image credit: [Wikimedia Commons](https://commons.wikimedia.org/wiki/File:Sharingan_triple.svg)

---

class: center, middle

# xaringan

### /fa:.'riŋ.ɡan/

---

class: inverse, center, middle

# Get Started
```



xaringan Chinese template: template.yaml

```
name: Ninja Presentation (Simplified Chinese)
description: >
  Create a presentation using the xaringan package based
  on remark.js.
create_dir: true
```



xaringan Chinese template

```
## inst/rmarkdown/templates/xaringan_zh-CN/skeleton/  
## └─ skeleton.Rmd  
## └─ zh-CN.css
```



xaringan Chinese template

New R Markdown

Document
Presentation
Shiny
From Template

Template: [? Using R Markdown Templates](#)

| | |
|---|-------------|
| Package Vignette (HTML) | {rmarkdown} |
| GitHub Document (Markdown) | {rmarkdown} |
| Tufte Handout (HTML or PDF) | {tufte} |
| Tufte Handout (HTML or PDF in Chinese) | {tufte} |
| Ninja Presentation | {xaringan} |
| Ninja Presentation (Simplified Chinese) | {xaringan} |
| HTML Thesis Document | {pagedown} |
| HTML Poster (Jacobs University) | {pagedown} |

This template contains multiple files. Create a new directory for these files:

Name:
Untitled

Location:
~/Google Drive/Active/r_teaching_warehous [Browse...](#)

OK Cancel



Your Turn 2

Create a new R Markdown template called "avalanche-report" using `use_rmarkdown_template()`. For the `template_description` argument, set it to: "A weekly report of AVALANCHE activities."

Inside the `exercises/` folder, there is a file called `report.Rmd`. Copy and paste its contents into `inst/rmarkdown/templates/avalanche-report/skeleton/skeleton.Rmd`, which you just created.

Re-build the package (`build()` or `Cmd/Ctrl + Shift + B`).

Create a new R Markdown document using `File > New File > R Markdown...` Then, find your template under the "From Template" tab. Open it.



Your Turn 2

```
use_rmarkdown_template(  
  "template_description",  
  "A weekly report of AVALANCHE activities."  
)
```



On `inst/`

We can put *any* arbitrary file in `inst/`.



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Be careful not to name the folders the same as any of the top-level package folders, e.g. `R/` or `data/`.



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We can put any arbitrary file in `inst/`.

Be careful not to name the folders the same as any of the top-level package folders, e.g. `R/` or `data/`.

Access content with `system.file()` or `fs::path_package()`



system.file()

```
system.file(  
  file.path("rmarkdown", "templates", "report.Rmd"),  
  package = "shinRa",  
  mustWork = TRUE  
)
```



system.file()

```
system.file(  
  file.path("rmarkdown", "templates", "report.Rmd"),  
  package = "shinRa",  
  mustWork = TRUE  
)
```

```
## [1] "path/to/shinRa/rmarkdown/templates/report.Rmd"
```



Other templates



Other templates

Analysis workflows or projects



Other templates

Analysis workflows or projects

**More detailed R Markdown
templates**



Other templates

Analysis workflows or projects

More detailed R Markdown
templates

**YAML and other configuration
files**



Templates with usethis

```
use_cran_comments()
```



Templates with usethis

`use_cran_comments()`

```
use_cran_comments <- function(open = interactive()) {  
  check_is_package("use_cran_comments()")  
  use_template(  
    "cran-comments.md",  
    data = list(rversion = glue("{version$major}.{version$minor}"))  
    ignore = TRUE,  
    open = open  
  )  
}
```



Templates with usethis

`use_cran_comments()`

```
use_cran_comments <- function(open = interactive()) {  
  check_is_package("use_cran_comments()")  
  use_template(  
    "cran-comments.md",  
    data = list(rversion = glue("{version$major}.{version$minor}")),  
    ignore = TRUE,  
    open = open  
  )  
}
```



use_template() and inst/templates

```
## # A tibble: 55 × 2
##   path                                type
##   <chr>                             <fct>
## 1 CODE_OF_CONDUCT.md               file
## 2 Jenkinsfile                     file
## 3 Makefile                         file
## 4 NEWS.md                          file
## 5 addins.dcf                       file
## 6 appveyor.yml                     file
## 7 article.Rmd                      file
## 8 circleci-config.yml              file
## 9 citation-template.R              file
## 10 code-cpp11.cpp                   file
## # ... with 45 more rows
```



cran-comments.md

```
# ## Test environments
# * local R installation, R {{{ rversion }}}
# * ubuntu 16.04 (on travis-ci), R {{{ rversion }}}
# * win-builder (devel)
#
# ## R CMD check results
#
# 0 errors | 0 warnings | 1 note
#
# * This is a new release.
```



whisker

```
whisker::whisker.render(  
  "## Test environments  
  * local R installation, R {{{ rversion }}}  
  * ubuntu 16.04 (on travis-ci), R {{{ rversion }}}  
  * win-builder (devel)  
  
  ## R CMD check results  
  
  0 errors | 0 warnings | 1 note  
  
  * This is a new release.",  
  data = list(rversion = glue::glue("{version$major}.{version$minor}"))  
)
```



whisker

```
## ## Test environments
## * local R installation, R 4.1.1
## * ubuntu 16.04 (on travis-ci), R 4.1.1
## * win-builder (devel)
##
## ## R CMD check results
##
## 0 errors | 0 warnings | 1 note
##
## * This is a new release.
```



Creating a template:

inst/templates/config.yml

```
edit_template("config.yml")  
  
# run without arguments to open a menu of existing templates  
edit_template()
```

In config.yml:

```
name: {{{name}}}
  affiliation: Shinra, Inc.
description: {{{description}}}
```



```
use_data_raw("data_dictionary")
```

```
shinRa
├── .Rbuildignore
├── .gitignore
├── DESCRIPTION
├── NAMESPACE
├── R/
│   ├── themes.R
│   └── data-raw
│       └── data_dictionary.R
├── man
│   └── theme_mako.Rd
├── tests
│   ├── testthat
│   │   └── test-themes.R
│   └── testthat.R
├── vignettes
│   └── intro-to-shinRa.Rmd
└── shinRa.Rproj
```



Wrapping `use_template()`

```
use_yaml_template <- function(path, name, description) {  
  usethis::use_template(  
    "config.yml",  
    save_as = file.path(path, "config.yml"),  
    package = "shinRa",  
    data = list(name = name, description = description)  
  )  
}
```



Create a template file

```
name: {{{name}}}
affiliation: Shinra, Inc.
description {{{description}}}
```

Create a wrapper function

```
use_yaml_template <- function(path, name, description) {
  usethis::use_template(
    "config.yml",
    save_as = file.path(path, "config.yml"),
    package = "shinRa",
    data = list(name = name, description = description)
  )
}
```



```
name: {{{name}}}
affiliation: Shinra, Inc.
description {{{description}}}
```

whisk data

```
use_yaml_template <- function(path, name, description) {
  usethis::use_template(
    "config.yml",
    save_as = file.path(path, "config.yml"),
    package = "shinRa",
    data = list(name = name, description = description)
  )
}
```



```
use_yaml_template(  
    ".",  
    "Malcolm Barrett",  
    "A project to analyze reactor data"  
)
```

```
name: Malcolm Barrett  
  affiliation: Shinra, Inc.  
description: A project to analyze reactor data
```



Your Turn 3

Let's create a `usethis`-style function to help set up analysis projects. In the folder `exercises/templates/`, there are three files: `"packages.R"`, `"analysis.R"`, and `"report.Rmd"`. Open them up and take a look. Note that `report.Rmd` has some whisker variables in the YAML!

Copy the files to `inst/templates` by running this code in the console:

```
fs::dir_copy("exercises/templates/", "inst/templates")
```

Open `R/create_analysis.R`. `create_analysis()` is going to help us set up the project directory, but we need to complete it. In lines 22, 23, and 25, add the template names: `"packages.R"`, `"analysis.R"`, and `"report.Rmd"`.

Remember that `"report.Rmd"` has data to whisk. We need to tell it what to pass to the final file. The `data` argument takes a named list. For this argument, write: `list(author = author, title = title)`.

Below `create_analysis()` is a helper function, `usethis::use_template()`, to create files from templates. Change the package argument to `"avalanchr"`.



Your Turn 3

```
create_analysis <- function(path = ".", folder = "avalanche_analysis")
  analysis_path <- fs::path(path, folder)
  if (fs::dir_exists(analysis_path)) fs::dir_delete(analysis_path)

  usethis::ui_done("Writing {usethis::ui_path(folder)}")
  fs::dir_create(analysis_path)

  use_avalanche_template("packages.R", folder = folder)
  use_avalanche_template("analysis.R", folder = folder)
  use_avalanche_template(
    "report.Rmd",
    folder = folder,
    data = list(author = author, title = title)
  )

  invisible(analysis_path)
}
```



Your Turn 3

```
use_avalanche_template <- function(template, folder, data = list()) {  
  usethis::use_template(  
    template = template,  
    save_as = fs::path(folder, template),  
    data = data,  
    package = "avalanchr"  
  )  
}
```

```
create_analysis()
```



Shiny apps

Add shiny app to `inst/shinyapps/` (or something similar)



Shiny apps

Add shiny app to `inst/shinyapps/` (or something similar)

Then, use an R function like this to launch it:

```
launch_app <- function(app) {  
  app_dir <- system.file(  
    "shinyapps",  
    app,  
    package = "shinRa",  
    mustWork = TRUE  
  )  
  shiny::runApp(app_dir)  
}
```



Shiny apps

Add shiny app to `inst/shinyapps/` (or something similar)

Then, use an R function like this to launch it:

```
launch_app <- function(app) {  
  app_dir <- system.file(  
    "shinyapps",  
    app,  
    package = "shinRa",  
    mustWork = TRUE  
  )  
  shiny::runApp(app_dir)  
}
```



Shiny apps

Add shiny app to `inst/shinyapps/` (or something similar)

Then, use an R function like this to launch it:

```
launch_app <- function(app) {  
  app_dir <- system.file(  
    "shinyapps",  
    app,  
    package = "shinRa",  
    mustWork = TRUE  
  )  
  shiny::runApp(app_dir)  
}
```

See ["Supplementing your R package with a Shiny app"](#) for more.



Your Turn 4

There is an app in the `examples/` folder called `plot_app/`. It has two Shiny files: `ui.R` and `server.R`.

Run `use_package("shiny")`

Create a folder in `inst/` called `shinyapps`

Create an R file with `use_r()` called "launch_app".

Write a function to launch the app

Add a roxygen skeleton and add a title and describe any parameters you used (if you used any)

Re-build your package and launch the app with your function



Your Turn 4

```
#' Launch Reactor Data Shiny App
#'
#' @return a shiny app
#' @export
launch_app <- function() {
  app_dir <- system.file(
    "shinyapps",
    "shiny_reactor_report",
    package = "avalanchr",
    mustWork = TRUE
  )

  shiny::runApp(app_dir)
}
```

```
launch_app()
```



With `inst/`, the world is
yours



**With `inst/`, the world is
yours**

**Source files with `inst/scripts`
and `sys.source()`**



**With `inst/`, the world is
yours**

Source files with `inst/scripts`
and `sys.source()`

**Add citations to `inst/CITATION`
(`use_citation()`)**



With `inst/`, the world is yours

Source files with `inst/scripts`
and `sys.source()`

Add citations to `inst/CITATION`
(`use_citation()`)

Much more. See [R Packages, ed 2](#)



Ignoring files at the top-level

`use_build_ignore()`: don't include when building R package



Ignoring files at the top-level

`use_build_ignore()`: don't include when building R package

`use_git_ignore()`: don't commit (credentials, certain rendered files, etc)



Ignoring files at the top-level

`use_build_ignore()`: don't include when building R package

`use_git_ignore()`: don't commit (credentials, certain rendered files, etc)

Try `git_vaccinate()`



RStudio Add-ins

Small shiny apps using `miniui`
and RStudio.

Create one with `use_addin()`

See ["Shiny Gadgets"](#) and ["Designing Gadget UI"](#)

