R Markdown Template

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This R Markdown template outlines some reproducibility suggestions for GWD thesis writers.

Dependencies

Describe all internal (e.g., R version) and external (e.g., data) dependencies needed to render the document.

Data and Folders

Example: The data are stored in the "data.txt" file in the "data" folder.

```
# Folders
dir.create("data", showWarnings = FALSE)
dir.create("figures", showWarnings = FALSE)
dir.create("output", showWarnings = FALSE)
```

Any files in the "output" folder that are read in using `readRDS()` should be mentioned here.

System

List any system dependencies needed to execute your code.

```
dependencies:
  - R>=4.1  # https://www.r-project.org/
```

R Packages

Install and load packages simultaneously with the **pacman** package.

```
# Packages
if (!require(pacman)) install.packages("pacman")
```

```
## Loading required package: pacman
```

```
pacman::p_load(tidyverse, brms, latex2exp)

# If you get the error "! LaTeX Error: File `framed.sty' not found." when rendering,
# un-comment and run the following 2 lines.
#install.packages(c('tinytex', 'rmarkdown'))
#tinytex::install_tinytex()
```

Code

The code to produce all tables, figures, etc. in your thesis goes here.

Modeling

If you run computationally intensive procedures (e.g., Bayesian hierarchical models, spatial data, etc.), you can use `saveRDS()` and `readRDS()` to run and save the output once, then read back in saved output later.

```
# Example adapted from http://paulbuerkner.com/brms/

fit1 <- brm(count ~ zAge + zBase * Trt + (1 | patient),
            data = epilepsy, family = poisson(), chains = 2,
            iter = 550, cores = 2, warmup = 50)

saveRDS(fit1, "output/fit1.RDS")
```

```
# Extract model output without rerunning each time

fit1 <- readRDS("output/fit1.RDS")
post.sum <- brms::posterior_summary(fit1)
```

Figures

Display your figures in the rendered R Markdown pdf and save them in the "figures" folder for use in your thesis.

The **latex2exp** package is useful for axis labels, legends, etc. because it parses LaTex strings.