

# RMarkdown - Exercises

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## Before you start

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- You will need to install the `arsenal` package. To do this type:
  - `install.packages(arsenal)`
- RMarkdown 'cheatsheets' are available directly in RStudio
  - Help -> Cheatsheets
- Example RMarkdown files and associated outputs are available in the solutions

## Exercise 1. Default documents and output styles

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- Generate a default Rmarkdown document with html output
- Change the output options to PDF and Word.
  - Question:** What changes happen to the YAML?
  - Question:** Which output format do you think looks best?

*Note:* Your computer may not have Latex installed, if so see the solutions for the PDF output

## Exercise 2. Lists and formatting

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- Replace the contents of the Rmarkdown document (from `## R Markdown` on line 12 onwards) with a numbered list of your 5 New Year's resolutions (you can make these up...<sup>^</sup>!)
  - Give your document a title, change the author and check the date is correct
  - Make bold any/all resolutions you still haven't broken
  - Strikethrough resolutions you have broken and add the date as an indented bullet point (`*note:` 4 blank spaces to indent)
  - 'Knit' the document to your preferred output (check it looks as expected)
  - Optional:* Explore other text formatting options described on the RMarkdown cheatsheet

## Exercise 3. Embedding plots, tables and inline maths

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- Start a new Rmarkdown document, select your preferred output style
- Delete the default text (from line 12)
- Plots:
  - Insert a blank chunk or R code
  - Add the code for a plot to this chunk (use plots from previous sessions or start with the `mpg` dataset in the `ggplot2` package)
- Tables:
  - Insert another blank chunk of R code, include the option `results="asis"` in the chunk options - what happens?
  - Add the following code in a chunk to create a table:

```
library(BristolVis)
library(arsenal)
table_one <- tableby(diet ~ bmi + sex,
```

```

data = bmi,
test=TRUE, # include tests of associations between diet and exposures
total=TRUE, # include a total column
control=tableby.control(digits=1)) # to control how many decimal places
are in the table
summary(table_one)

```

iii. \*Optional 1:\* Compare outputs from the `arsenal` package with tables generated by the `table` or `fTable` commands.

iv. *Optional 2:* Explore other tables which can be generated by the `arsenal` package

e. Inline R code

i. Add a new heading 'Inline R code' after the latest chunk

ii. Combine text and inline R code to describe the number of rows in the `BristolVis::bmi` dataset (`nrow(BristolVis::bmi)`)

iii. Describe the mean BMI (`bmi$bmi`) and its associated standard deviation.

iv. *Optional:* format the mean and standard deviation to show only 1 decimal place.

## Exercise 4. Chunk options

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- Using the previous Rmarkdown document use chunk option `echo=TRUE/FALSE` to change whether the R code is printed in the output
- Use the chunk option `eval=TRUE/FALSE` to control whether the code in the chunk is run
- Change the size of the first plot by varying the `fig.width` or `fig.height` chunk options
- Add a caption to the boxplot using the `fig.cap = "Caption text goes in here"` option
  - Vary the output formats, does the caption still look right?

## Exercise 5. Optional: RNotebook

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- Load a new RNotebook
  - File -> New File -> R Notebook
- Click the 'Preview' button
  - Does the output include a plot?
- In the RNotebook run the chunk of R code containing the plot by clicking on the green 'play' in the top right corner of the chunk
- Add in code chunks from previous exercises and explore whether chunks have to be run in order or can be run out of order
- Explore toggling the visibility of code in the output document

## Solutions

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- Exercise 1 - [Rmd file](#), [html output](#), [pdf output](#), [word output](#)
- Exercise 2 - [Rmd file](#), [html output](#), [pdf output](#), [word output](#)
- Exercise 3 - [Rmd file](#), [html output](#), [pdf output](#), [word output](#)
- Exercise 4 - [Rmd file](#), [html output](#), [pdf output](#), [word output](#)
- Exercise 5 - [Rmd file](#), [html output](#)