

Learning *R*

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Getting Output from *R*
How to save output and write reports - Advanced.

1. Getting output from *R* - Advanced
 - 1.1 Rmarkdown
 - 1.2 Rmarkdown - multiple reports
 - 1.3 Sweave
 - 1.4 Sweave - multiple reports

How do you get output from R into other documents?

- Introductory
 - Separate files for text fragments and graphs
 - Simple Notebooks
- Advanced
 - Markdown documents that get 90% of the way there
 - Sweave using LaTeX that give final product with no intervention

Extracting output from *R* - R Markdown

- A rudimentary script with *R* code and basic document formatting
- Creates a combined document (default in HTML), but there are converters to other word processors
- Suitable for a preliminary report for review but not production

Rstudio → File → NewFile → New Markdown.
Examine the *SampleRMarkdown.Rmd* file in the *sampledata/Rmarkdown/SingleReport* directory.

Parts of the Rmarkdown document.

- YAML header
- Text with Markdown
- Code chunks begin with “`{r}`” and end with “”.
- Inline code chunks have format ‘`r code`’.

Get the cheat sheet from *Rstudio* help.

Look at *Rstudio* options on debugging the report.

Try generating different document types

- HTML is easiest.
- Word documents can use a style file.
- PDF documents require LaTeX to be installed.

Get the cheat sheet from *Rstudio* help.

Create a report from the analysis of accidents. It should include the following elements.

- Summary of the number of accidents by month with proportion of fatal accidents.
- Figure of number of accidents per day.
- Analysis of proportion of fatalities by day of the week and by month.
- Graph of the results of the above.

Often a separate report is generated for each subset of the data.

- File 1 - report for the subset of the data
- File 2 - repeatedly calls File 1
- Be careful about passing data from File 2 to File 1

Extracting output from R - R Markdown - Multiple Report

```
1  dir.create("reports")
2
3  # for each manufacturer create a report
4  # these reports are saved in output_dir with the name spec
5  plyr::d_ply(cereal[ cereal$mfr %in% c("K","G"),], "mfr", fun
6    #browser()
7    rmarkdown::render('Report.Rmd', # report file
8                      output_format=type,
9                      output_file = paste("report_", my.cereal
10                                         substr(type,1,-1+reg
11                                         output_dir = 'reports')
12  }, type="html_document")
```

Examine the two files in the
sampladata/Rmarkdown/MultipleReport directory.

Create the same report from the analysis of accidents for EACH month. It should include the following elements.

- The month being analyzed
- Summary of the number of accidents by month with proportion of fatal accidents.
- Figure of number of accidents per day.
- Analysis of proportion of fatalities by day of the week and by month.
- Graph of the results of the above.

Ultimate in turn-key reports.

- Single document with *R* code, document code, etc
- Integration by L^AT_EX (steep learning curve)
- Simple changes to data are automatically propagated throughout the report. Suitable for high production environments where “same” output is regularly produced and no user intervention is needed (e.g. monthly reports at hospitals).

Look at *SampleSweave.Rnw* in the *sampladata/Sweave/SingleReport* directory.

Create a report from the analysis of accidents. It should include the following elements.

- Summary of the number of accidents by month with proportion of fatal accidents.
- Figure of number of accidents per day.
- Analysis of proportion of fatalities by day of the week and by month.
- Graph of the results of the above.

Similar to doing this in *RMarkdown* except use the *brew* package.
Look at *SampleSweave.Rnw* in the
sampledata/Sweave/MultipleReport directory for details.

Create a separate report for each month.

Wide range of documents can be created

- Tradeoff between time and reproducibility and repeatedness.
- Sweave has a considerable learning curve to get very polished documents with tables and figures properly placed.

Many other options available - look at *Rstudio* File → New menu.