R Markdown with LaTeX

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Introduction

This set of notes shows some examples of using LaTeX with R markdown.

The idea is to give examples which help if you are reasonably comfortable with R markdown but want *some* of the customisation of using LaTeX without having to become a LaTeX guru [1].

What is LaTeX?

Well if you have been 'Knit'ing to PDF inside RStudio you have been using LaTeX all the time. You may have already used things like \newpage to tidy up a document. The \newpage is actually a LaTeX command which is being detected by Knitr as it processes the document.

LaTeX is used extensively in academia particularly in any subject that requires a lot of maths notation. It is a different way of thinking about documents. You write your document in plain text and the various commands then format the document into something that looks nice. It means you can produce a PDF document with formulas and figures and tables without ever going near Word. But it is not for everyone. If you need a WYSIWYG editor then this is not for you.

In the past you would need to use a LaTeX editor of some kind (e.g. the cross platform open source program TeXMaker). With the advent of RStudio and R Markdown (*which I assume you are at least partly familiar with*) you can now write well formatted PDF documents with very little knowledge of LaTeX.

This set of notes will show you how you can extend your documents by using a small amount of LaTeX code in the text portion of your .Rmd R markdown document.

NOTE: if you go down this route you can't flip back to HTML output. The Knitr package will get a bit upset and probably miss out some of the LaTeX commands. It will look like it has worked, there will just be missing bits (give it a try . . .)

[1] Although if you do get proficient in this stuff you may well get the guru title

Some History

LaTeX is actually a typesetting programming language and was developed by Leslie Lamport in 1983. See this link for a more detailed description LaTeX History.

It is a layer of code over the top of the typesetting language TEXwhich was developed by the famous computer scientist Donald Knuth in 1978. See this link for more details Tex History

Useful YouTube links

- LaTeX Tutorial 1 - Creating a LaTeX Document

Font Sizes

Some large text

Some normalsize text

Compare this default R markdown line to the above 'normalsize' text.

Some small text which runs over several lines of text and allows us to put in more information in a smaller space. Which can be useful if the information is very dense.

This is footnotesize. Useful size for tables and other hard to fit in things.

References

Footnote Size Links

- [1] https://www.stata.com/manuals13/pss.pdf (Accessed 2019-05-02)
- [2] https://en.wikipedia.org/wiki/Sample_size_determination (Accessed 2019-05-03)
- [3] https://en.wikipedia.org/wiki/Power_(statistics) (Accessed 2019-05-03)
- [4] https://en.wikipedia.org/wiki/Effect_size (Accessed 2019-05-03)
- [5] https://en.wikipedia.org/wiki/Test_statistic (Accessed 2019-05-03)
- [6] https://blog.minitab.com/blog/adventures-in-statistics-2/understanding-analysis-of-variance-anova-and-the-f-test (Accessed 2019-05-03)