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A demonstration of the LaTeXclass file for Statistics in Medicine with Rmarkdown

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This paper describes the use of the aTeX `simauth.cls` class file for setting papers for Statistics in Medicine using Rmarkdown.

Keywords: Class file; LaTeX; Statist. Med.; Rmarkdown;

1. Introduction

Many authors submitting to research journals use LaTeXto prepare their papers. This paper describes the `simauth.cls` class file which can be used to convert articles produced with other LaTeXclass files into the correct form for publication in *Statistics in Medicine*.

The `simauth.cls` class file preserves much of the standard LaTeXinterface so that any document which was produced using the standard LaTeX`article` style can easily be converted to work with the `simauth` style. However, the width of text and typesize will vary from that of `article.cls`; therefore, *line breaks will change* and it is likely that displayed mathematics and tabular material will need re-setting.

In the following sections we describe how to lay out your code to use `simauth.cls` to reproduce the typographical look of *Statistics in Medicine*. However, this paper is not a guide to using LaTeXand we would refer you to any of the many books available (see, for example, [1–3]).

2. The Three Golden Rules

Before we proceed, we would like to stress *three golden rules* that need to be followed to enable the most efficient use of your code at the typesetting stage:

1. keep your own macros to an absolute minimum;
2. as `TeX` is designed to make sensible spacing decisions by itself, do *not* use explicit horizontal or vertical spacing commands, except in a few accepted (mostly mathematical) situations, such as `\,` before a differential˜d, or `\quad` to separate an equation from its qualifier;
3. follow the *Statistics in Medicine* reference style.

3. Getting Started

The `simauth` class file should run on any standard LaTeXinstallation. If any of the fonts, class files or packages it requires are missing from your installation, they can be found on the *TeX Collection* DVDs or from CTAN.

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Details on Rmarkdown can be found online http://rmarkdown.rstudio.com/.

Statistics in Medicine is published using Times fonts and this is achieved by using the `times` option as `\documentclass[times]{simauth}`. Times fonts are also used for mathematics. This is achieved by adding the LaTeXpackage `mathtime`. Being `mathtime` not available on TeXLive installations, the default template does not include it. If you need/want to re-enable it, add the option `keep_tex: TRUE` to the YAML header as follows and edit the resulting `.tex` file manually.

```
output:
  rticles::sim_article:
    keep_tex: TRUE
```

If for any reason you have a problem using Times you can easily resort to Computer Modern fonts by removing the `times` option.

4. The Article Header Information

Configure the YAML header including the following elements:

- `title`: Title
- `author`: Author(s) information, as a string, see below
- `address`: List containing `address` and `num` for defining `author` affiliations
- `corraddr`: Corresponding author address
- `authabbr`: Short author list for header
- `date`: Date of submission
- `year`: Year of submission
- `abstract`: Limited to 250 words
- `keywords`: Up to 6 keywords
- `bibliography`: Bibtex `.bib` file

4.1. Author information

In order to obtain better results, author(s) information should be provided as a string with LaTeXelements:

```
author: "A.U. Thor\\affilnum{a,b}, O. Tro\\affilnum{b} and O. Vriga\\affilnum{c}"
```

4.2. Remarks

1. In `authabbr` use *et al.* if there are three or more authors.
2. Note the use of `affilnum` and `num` to link names and addresses. The author for correspondence can be marked via a custom `address` entry and `corraddr` is used to give that author's address, which will be printed as a footnote, prefaced by *Correspondence to:*.
3. For submitting a double-spaced manuscript, add `doublespace` as an option to a `classoption` line in the YAML header: `classoption: doublespace`.
4. Use `\cgs` for giving details of financial sponsors. These details will be printed as a footnote, with *Contract/grant sponsor:* inserted in the appropriate places. This has to be implemented using LaTeX, and not Rmarkdown.
5. The abstract should be capable of standing by itself, in the absence of the body of the article and of the bibliography. Therefore, it must not contain any reference citations.
6. Keywords are separated by semicolons.

5. The Body of the Article

5.1. Mathematics

`simauth.cls` makes the full functionality of `AmS/TeX` available. We encourage the use of the `align`, `gather` and `multline` environments for displayed mathematics.

Use mathematics in Rmarkdown as usual.

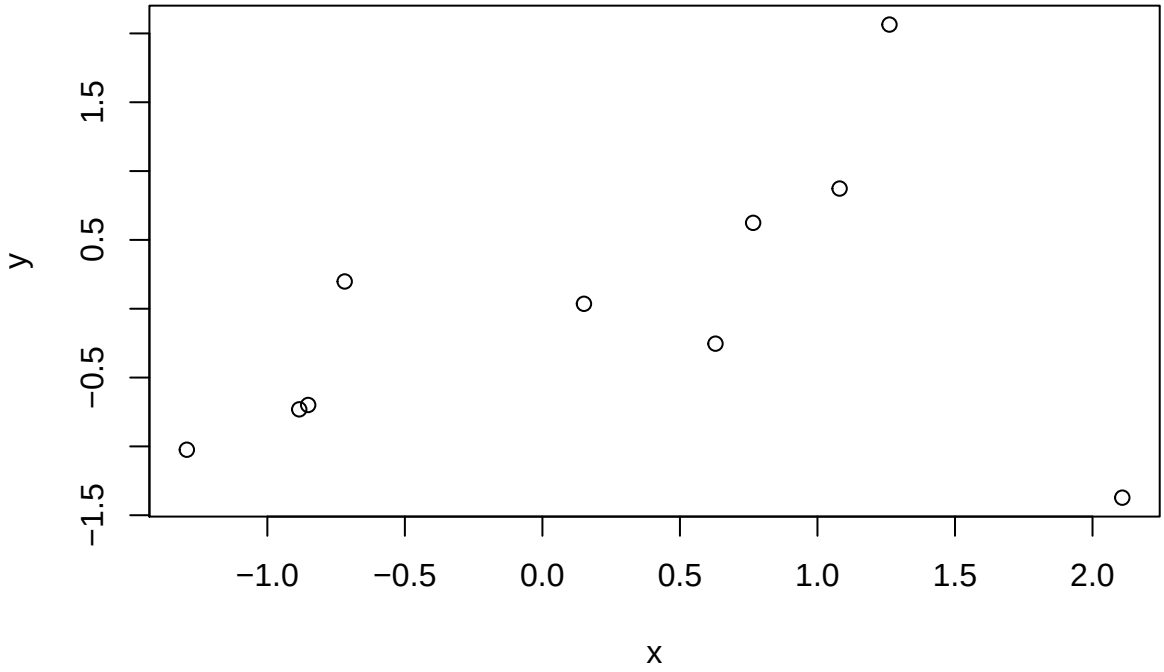

Figure 1. Fancy Caption

5.2. *Figures and Tables*

`simauth.cls` uses the `graphicx` package for handling figures.

Figures are supported from R code too:

```
x = rnorm(10)
y = rnorm(10)
plot(x, y)
```

. . . and can be referenced: 1. It is a quirky hack at the moment, see https://github.com/yihui/knitr/issues/323.

Analogously, use Rmarkdown to produce tables as usual:

```
library(xtable)
xtable(head(cars), caption = "A table", label = "tab:table")
```

% latex table generated in R 3.4.3 by xtable 1.8-2 package % Sun Mar 11 18:48:00 2018

	speed	dist
1	4.00	2.00
2	4.00	10.00
3	7.00	4.00
4	7.00	22.00
5	8.00	16.00
6	9.00	10.00

Table 1. A table

Referenced via 1.

5.3. *Cross-referencing*

The use of the Rmarkdown equivalent of the LaTeXcross-reference system for figures, tables, equations, etc., is encouraged (using `[@<name>]`, equivalent of `\ref{<name>}` and `\label{<name>}`). That works well for citations in Rmarkdown, not so well for figures and tables. In that case, it is possible to revert to standard LaTeXsyntax.

Example: [4, 5].

5.4. Acknowledgements

An Acknowledgements section is started with `\ack` or `\acks` for *Acknowledgement* or *Acknowledgements*, respectively. It must be placed just before the References. Define the content of the acknowledgment section in the YAML header.

5.5. Bibliography

Link a `.bib` document via the YAML header, and bibliography will be printed at the very end (as usual). Remember to include a `#Bibliography` section.

The default bibliography style is provided by Wiley as in `wileyj.bst`. It is possible to provide a custom style by providing a `.csl/.bst` in the `bibliographystyle` field of the YAML header.

5.6. Double Spacing

If you need to double space your document for submission please use the `doublespace` option in the header.

6. Copyright Statement

Please be aware that the use of this LaTeXclass file is governed by the following conditions.

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