A LaTeX TEMPLATE FOR PAPERS SUBMITTED TO THE TRANSPORTATION RESEARCH BOARD

David Pritchard
davidpritchard.org

Gregory S. Macfarlane, Ph.D.

Chieh (Ross) Wang, Ph.D.
cw@crosswang.org

Word Count: 1130 words + 1 figure(s) x 250 + 1 table(s) x 250 = 1630 words

Submission Date: June 21, 2017

ABSTRACT

The Transportation Research Board has unique and seemingly arbitrary requirements for manuscripts submitted for review. These requirements make it difficult to write the manuscripts quickly, and no existing LaTeX style comes close to fooling the guidelines. This represents an initial effort at creating a template to meet the requirements of TRB authors using LaTeX, Sweave, or other literate programming software.

Keywords: Keyword1, Keyword2

INTRODUCTION

The Transportation Research Board (*1*) has unique and somewhat arbitrary requirements for papers submitted for review and publication. While the initial submission is required to be in PDF format, submissions for publication in Transportation Research Record must be in Microsoft Office format. On top of this, the manuscripts must be line-numbered, captions are bolded and employ atypical punctuation, and the references must be numbered when cited and then printed in order. More details about the manuscript details can be found online at `http://onlinepubs.trb.org/onlinepubs/AM/InfoForAuthors.pdf`.

It is assumed that the readers of this document have some significant level of experience in LaTeXand `bibtex`. As use of literate programming becomes more widespread in engineering and planning, it is possible that this template may need to be made more robust.

History

David Pritchard posted the original versions of this template in 2009 and updated it in 2011, soon after TRB began allowing PDF submissions. Gregory Macfarlane made significant adaptations to it in March 2012, allowing for Sweave integration and automatic word and table counts. Ross Wang automated the total word count and made some formatting modifications in July 2015. Version 2.1.1 has been made available on Github in January, 2016. Version 3.1 has been made available on Github (`https://github.com/chiehrosswang/TRB_LaTeX_rnw`) in June, 2017. Versions 2.1.1 Lite and 3.1 Lite were made available on GitHub (`https://github.com/chiehrosswang/TRB_LaTeX_tex`) in June, 2017 for users who do not need R and Sweave functions provided in the original verions.

FEATURES

The template has a number of features that enable quick and painless manuscript authoring.

Title Page

The standard LaTeX `\maketitle` command is not very versatile, so we have replaced it with a `titlepage` environment. This means that the writers will be required to manually enter spacings based on the number of contributors, but the current settings (12pt between authors, 36pt before, and 60pt after them) seems to work well.

Near the bottom of the title page, TRB requires a count of the manuscript's words, figures, and tables. This template generates these counts automatically. The figure and table counts are simply pulled from the LaTeX counters using the `totcount` package. The word count feature is not as straight-forward, as it utilizes a call to the system command `texcount`. Thus to compile the document writers must enable `\write18` in their `pdflatex` call.

In the newest version of this template, we added the total count automatically. The total count basically adds not only the word count, but also the equivalent count (250 words) for each figure and table. This is implemented using a cusomized command `\totalwordcount`. Please see the original code for more information.

Page Layout

The document has 1 inch margins as required, with the author's names in the left heading and the page number in the right. The authors heading will need to be edited by the writers;

automating this from the title page command is not currently possible. Paragraphs leading sections and subsections are not indented, while all subsequent paragraphs in that section are. Section types are defined as outlined by the Transportation Research Board (*1*)

The document is single-spaced in 12 point Times font. Times New Roman is a proprietary font and is therefore not available by installation in open-source software. While the differences between Times variants are negligible, Times New Roman itself can be used in Mac OSX by compiling under `xelatex`.

Line Numbers

Manuscript line numbering is implemented in the `trbunofficial.cls` class document. For initial submission, use `\documentclass[numbered]{trbunofficial}` at the beginning of the `.rnw` or `.tex` file to show pagewise line numbers. For final submission (if accepted for publication in Transportation Research Record), simply use `\documentclass{trbunofficial}` instead.

CAPTIONS

Figure 1 shows a Gumbel distribution as an example of captioning. As demonstrated, figure captions ought to be sentence capitalized, bolded, and can be somwhat longer than in other journals.

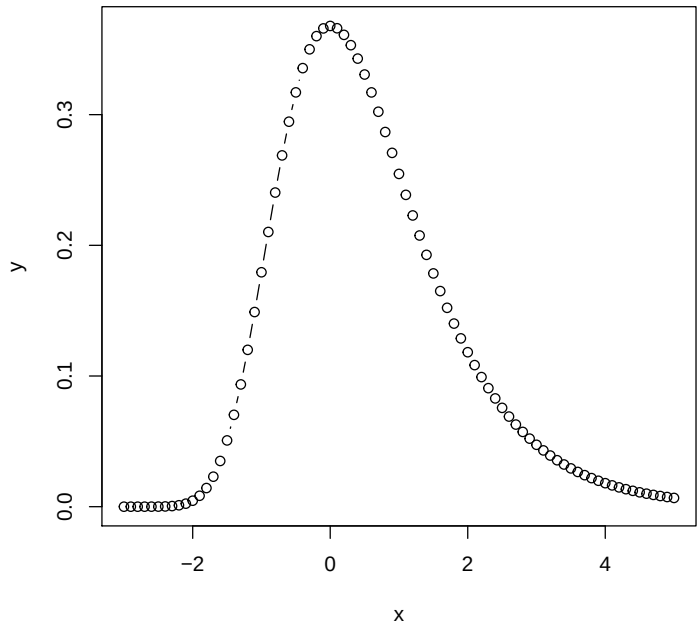

FIGURE 1 This is a random figure to test the counting functionality on the title page. It shows a Gumbel distribution with mode 0 and scale 1. The multinomial logit model assumes that the error terms are distributed identically and independently following this pattern.

Table captions are somewhat different, requiring initial capitals and are more of a title. An example of this is given in Table 1, showing the history of this template.

TABLE 1 A History of this Template

Version	Date	Author	Contributions
1.0	Sep 2009	Pritchard	Initial work
1.1	Mar 2011	Pritchard	Captions
2.0	Mar 2012	Macfarlane	Automation, documentation
2.1	Jul 2015	Wang	More automation and formatting
2.1.1	Jan 2016	Wang	Minor modifications and uploaded to Github
2.1.1 Lite	Jun 2017	Wang	TEX-only template
3.1	Jun 2017	Wang	Addition of `trbunofficial.cls`
3.1 Lite	Jun 2017	Wang	Addition of `trbunofficial.cls`

Bibliography

The TRB bibliography style is defined in the `trb.bst` file which should be in your document folder. A new command is specified, `\trbcite{}` which will print the authors and the number of the reference in the order in which it is supplied. Note that `\trbcite{}` prints both the author names and the reference number, if you simply need the number of the reference, use command `\cite{}`. The References section will be appended to the end of the document.

It is very easy to add reference to papers programs written by Bierlaire (*2*) and Bierlaire (*3*) or to papers like those written by Garrow et al. (*4*) and Koppelman and Garrow (*5*). You can even go back and refer to Biogéme by Bierlaire (*3*) a second time. You can also cite a group of similar references without printing author names (*1, 2*). This template also groups multiple reference numbers together if there are three or more consecutive numbers (*2–5*).

Equations

Intelligent driver model equations from wikipedia `https://en.wikipedia.org/wiki/Intelligent_driver_model` moved to the left using `amsmath` package with `fleqn` options.

$$\dot{x}_\alpha = \frac{\mathrm{d}x_\alpha}{\mathrm{d}t} = v_\alpha \tag{1}$$

$$\dot{v}_\alpha = \frac{\mathrm{d}v_\alpha}{\mathrm{d}t} = a\left(1 - \left(\frac{v_\alpha}{v_0}\right)^\delta - \left(\frac{s^*(v_\alpha, \Delta v_\alpha)}{s_\alpha}\right)^2\right) \tag{2}$$

$$s^*(v_\alpha, \Delta v_\alpha) = s_0 + v_\alpha T + \frac{v_\alpha \Delta v_\alpha}{2\sqrt{ab}} \tag{3}$$

TO DO'S

Two document types, extending from the `[numbered]` option, can be defined to differentiate the initial submission (i.e., with line numbers and in-line figures and tables) and the final manuscript (i.e., without line numbers and all figures and tables are attached to the end).

CONCLUSION

To make this document from source in a Unix-like OS, issue the following commands:

```
R CMD SWEAVE 'document.rnw'
pdflatex --shell-escape document.tex
bibtex document
pdflatex --shell-escape document.tex
pdflatex --shell-escape document.tex
```

The `--shell-escape` option is required to access the command line for the word count. Normally this feature is disabled because it is a route of entry for malicious software. We promise that there is no such debilitating code in this document, and we encourage you to examine any scripts for suspicious code before permitting `pdflatex` from accessing your system.

For R-Studio users using Sweave and .rnw files, you may enable shell escape command in the Global Options > Sweave settings. Moreover, if your computer does not have a Perl interpreter you will need one, such as the ActivePerl, for the wordcount to work properly.

ACKNOWLEDGEMENTS

The authors would like to thank Aleksandar Trifunovic (`https://github.com/akstrfn`) for creating the `trbunofficial` class document, which has been a very helpful improvement.

REFERENCES

[1] Transportation Research Board, *Information for Authors: a guide for preparing and submitting manuscripts for presentation at the TRB Annual Meeting and for Publication in TRB's Journal*. Washington, D.C., 2012.

[2] Bierlaire, M., BIOGEME: A free package for the estimation of discrete choice models. In *3rd Swiss Transportation Research Conference*, Ascona, Switzerland, 2003.

[3] Bierlaire, M., *An Introduction to BIOGEME Version 1.6*, 2008.

[4] Garrow, L. A., T. D. Bodea, and M. Lee, Generation of synthetic datasets for discrete choice analysis. *Transportation*, Vol. 37, No. 2, 2009, pp. 183–202.

[5] Koppelman, F. S. and L. A. Garrow, Efficiently Estimating Nested Logit Models with Choice-Based Samples: Example Applications. *Transportation Research Record, Journal of the Transportation Research Board*, Vol. 1921, No. 1, 2005, pp. 63–69.