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A PREPRINT

December 22, 2021

**Abstract**

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## 1 Introduction

Here goes an introduction text

## 2 Headings: first level

You can use directly LaTeX command or Markdown text.

LaTeX command can be used to reference other section. See Section 2. However, you can also use **bookdown** extensions mechanism for this.

### 2.1 Headings: second level

You can use equation in blocks

$$\xi_{ij}(t) = P(x_t = i, x_{t+1} = j | y, v, w; \theta) = \frac{\alpha_i(t) a_{ij}^{w_t} \beta_j(t+1) b_j^{v_{t+1}}(y_{t+1})}{\sum_{i=1}^N \sum_{j=1}^N \alpha_i(t) a_{ij}^{w_t} \beta_j(t+1) b_j^{v_{t+1}}(y_{t+1})}$$

But also inline i.e  $z = x + y$

#### 2.1.1 Headings: third level

Another paragraph.

## 3 Examples of citations, figures, tables, references

You can insert references. Here is some text (**kour2014real?**; **kour2014fast?**) and see (**hadash2018estimate?**).

The documentation for **natbib** may be found at

You can use custom blocks with LaTeX support from **rmarkdown** to create environment.

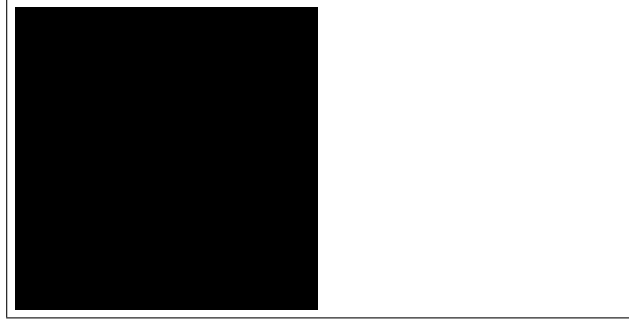


Figure 1: Sample figure caption.

Table 2: Sample table title

Part		
Name	Description	Size ( $\mu\text{m}$ )
Dendrite	Input terminal	$\sim 100$
Axon	Output terminal	$\sim 10$
Soma	Cell body	up to $10^6$

<http://mirrors.ctan.org/macros/latex/contrib/natbib/natnotes.pdf%7D>

Of note is the command `\citet`, which produces citations appropriate for use in inline text. You can insert LaTeX environment directly too.

```
\citet{hasselmo} investigated\dots
```

produces

Hasselmo, et al. (1995) investigated...

<https://www.ctan.org/pkg/booktabs>

### 3.1 Figures

You can insert figure using LaTeX directly.

See Figure 1. Here is how you add footnotes. [<sup>^</sup>Sample of the first footnote.]

But you can also do that using R.

```
plot(mtcars$mpg)
```

You can use **bookdown** to allow references for Tables and Figures.

### 3.2 Tables

Below we can see how to use tables.

See awesome Table~2 which is written directly in LaTeX in source Rmd file.

You can also use R code for that.

```
knitr::kable(head(mtcars), caption = "Head of mtcars table")
```

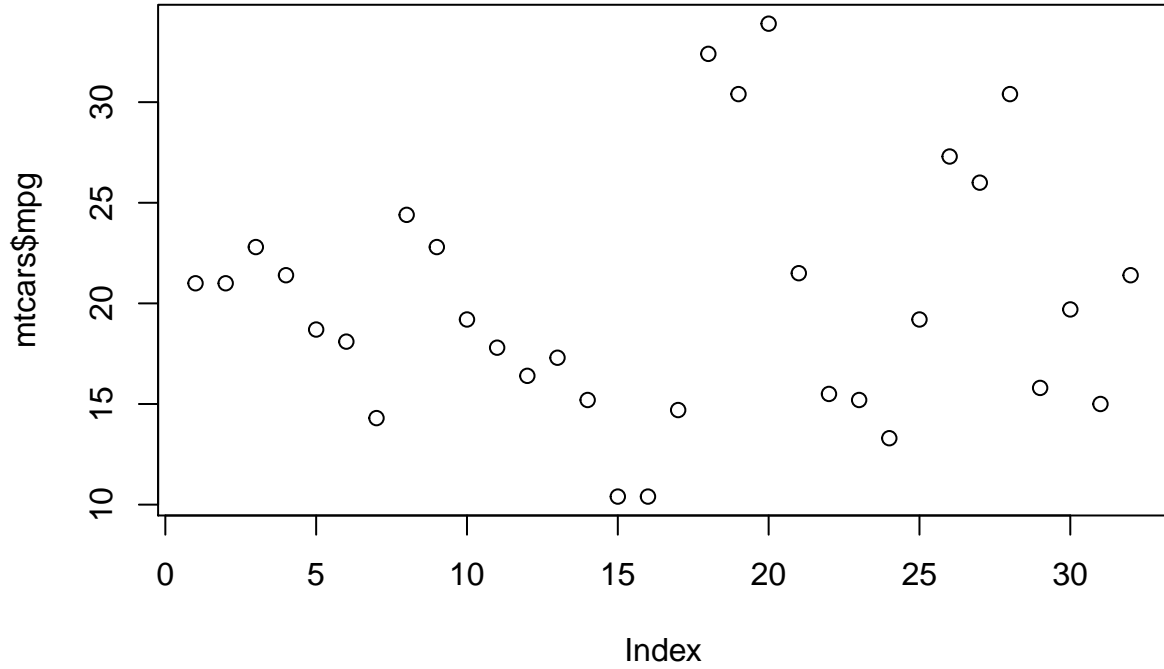


Figure 2: Another sample figure

Table 3: Head of mtcars table

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360	175	3.15	3.440	17.02	0	0	3	2
Valiant	18.1	6	225	105	2.76	3.460	20.22	1	0	3	1

### 3.3 Lists

- Item 1
- Item 2
- Item 3