

# Journal Paper Template : An RMarkdown template for writing a journal article

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## Abstract

Abstract text goes here. This template was created by Dana Miller is adapted from code and text in the submitted manuscript “Ceiling fans - Predicting indoor air speeds based on full scale laboratory measurements” by Paul Raftery et al. All data and analysis code in this paper is available at <https://github.com/dmgt/draft-template>.

Keywords:

Ceiling fan; Air speed distribution; Full-scale laboratory testing; Rotational speed; Fan diameter; Fan direction

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## Highlights:

- Highlight 1
- Highlight 2
- Highlight 3
- Highlight 4
- Highlight 5

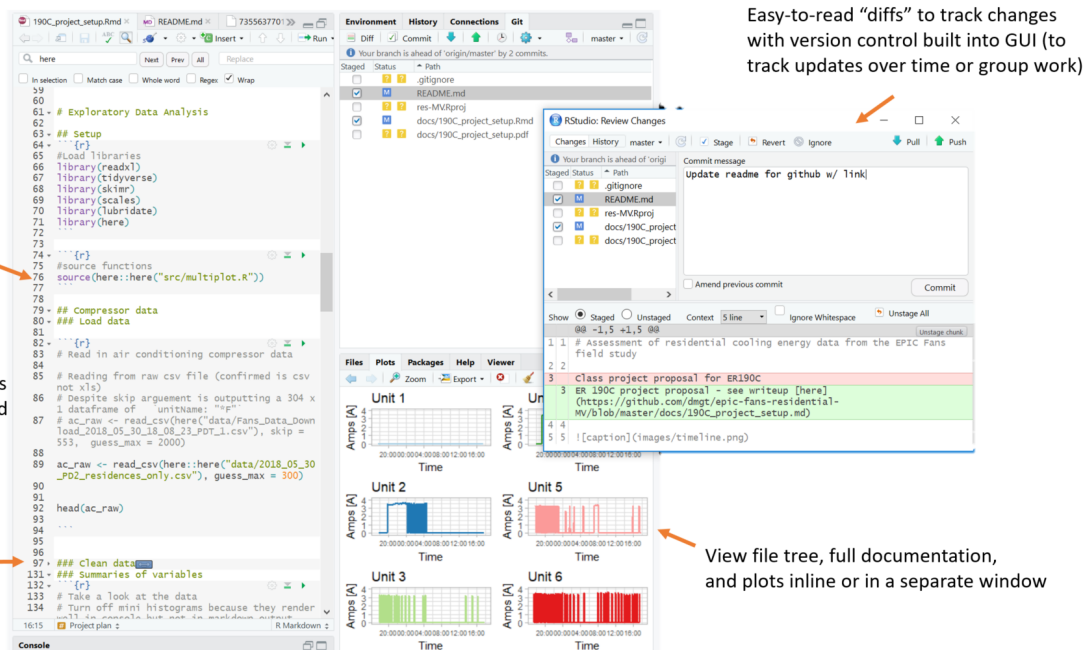
## Graphical Abstract

### Rstudio Project + Rmarkdown notebook

Notebook with  
markdown text  
and interactive  
code chunks  
(in python or R)

File paths are  
relative + data is  
included in repo  
so entire project  
can be run on  
other people's PCs  
when downloaded  
from GitHub

Show/hide  
sections of code  
for compact  
navigation



## 1. Introduction

### 1.1. *Benefits of air movement in buildings*

Here is an example of an introductory paragraph with citations. The following paragraph is from [1] :

Having the ability to increase the air speed in a room in a controlled manner provides many advantages. It increases the heat transfer from occupants to the environment by convection and evaporation, allowing them to remain comfortable in warmer conditions [2–4]. Many laboratory studies show that air movement provides comfort in warmer conditions [5–8] even at 30°C and 80% RH [9] and this is accepted in existing thermal comfort standards (e.g. [10]). A field study intervention adding ceiling fans to an air-conditioned office found that occupants were equally or more comfortable at 26-27°C with increased air movement than at 23°C without [11]. Giving occupants control over air movement provides an instantaneous way to respond to changing thermal comfort needs, responding faster than possible with Heating Ventilation and Air Conditioning (HVAC) equipment designed to condition the whole room [12].

### 1.2. *Terminology*

Here is an example of a short terminology section, with terms quoted from [1].

- Fan rotational speed ( $N$ ): Physical fan rotational speed (rpm).
- Fan airflow ( $Q$ ): Volumetric airflow rate through the fan blades ( $\text{m}^3/\text{s}$ ).
- Blade height ( $H$ ): Distance from floor to blade, measured at hub (m).

### 1.3. *Another subtitle*

More text

### 1.4. *Objective*

This paper’s primary goals are: (1) goal one; and (2) goal two

## 2. Methods

### 2.1. Example data

The data in this template are is `iris` dataset freely available at the [University of California Irvine Machine Learning Repository](#), originally published by R.A. Fischer in 1936. The dataset and its variables are described in the included `iris-names` file under `SupplementaryMaterial/Data` ). The `iris` dataset is also available by default when you load R, but in this case we're reading it in as a csv file to simulate working with external data.

### 2.2. Another subtitle

Here is an example of including a figure (which is included at the end of the paper) Figure 1 is a saved .png image. It appears that SVG images aren't recognized when markdown file is converted to PDF.

Here is a footnote.<sup>1</sup>

### 2.3. Another subtitle

Here is another footnote and an example of programatically calculating a number to be reported in the text<sup>2</sup>. In the next sentence, the number of iris classes is calculated from a short piece of code, and the result is included as a variable, so that you don't need to manually update the number in the text if more data is added or the analysis changes. Figure 2 shows each of the 3 iris classes in this experiment. The number for the figure refence in the previous sentence is also being automatically generated based on its order in the paper.

### 2.4. Reproducible research

We wrote this paper using R Markdown. All of the text, references, bibliography, data analysis and visualization occurs in one file (`Manuscript.Rmd`), which automatically builds the document that we submitted to the editor. The supplementary material contains the .Rmd file as well as the entire measurement dataset.

## 3. Results

### 3.1. Subtitle

Here is another example of using variables in the text that are directly calculated from the underlying data. The median, lower and upper quartiles of the *versicolor* petal lengths are 4.35, 4, and 4.6 cm respectively.

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<sup>1</sup>Example footnote.

<sup>2</sup>Another footnote.

### 3.2. Example of a violin plot

Figure 3 shows petal widths by iris type.

#### 3.2.1. Math example

Here is an example of an equation written using LATEX. The constants are made up for this example :

$$AB_{avg} = 1 * \frac{\sqrt{c}}{D} - 0.23 * \frac{E}{F} = 45$$

Here is another equation:

$$CD_{rated} = \frac{4 * Q}{\pi * D^2} = 1.91 \text{ m/s}$$

### 3.3. Limitations

It is important to include a discussion of limitations in any paper. Limitations of this template include:

- Figures are included after the txt, not at the location where they are discussed in the text
- No example of a table yet

## 4. Conclusions

Text.

## 5. Acknowledgements

Agency (grant number 12345) supported this work, with cost share provided by the Center for the Built Environment and Collaborating Manufacturer. We thank Person1 and Person2 for setting up and acquiring data for this experiment, and Person3 for preparing the first figure.

## 6. Declaration of interest

All authors declare no conflict of interest.

## References

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1	<a href="https://www.r-project.org/logo/">R logo, from https://www.r-project.org/logo/</a> , used under the terms of the Creative Commons Attribution-ShareAlike 4.0 International license (CC-BY-SA 4.0)	8
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Figure 1: R logo, from <https://www.r-project.org/logo/>, used under the terms of the Creative Commons Attribution-ShareAlike 4.0 International license (CC-BY-SA 4.0)



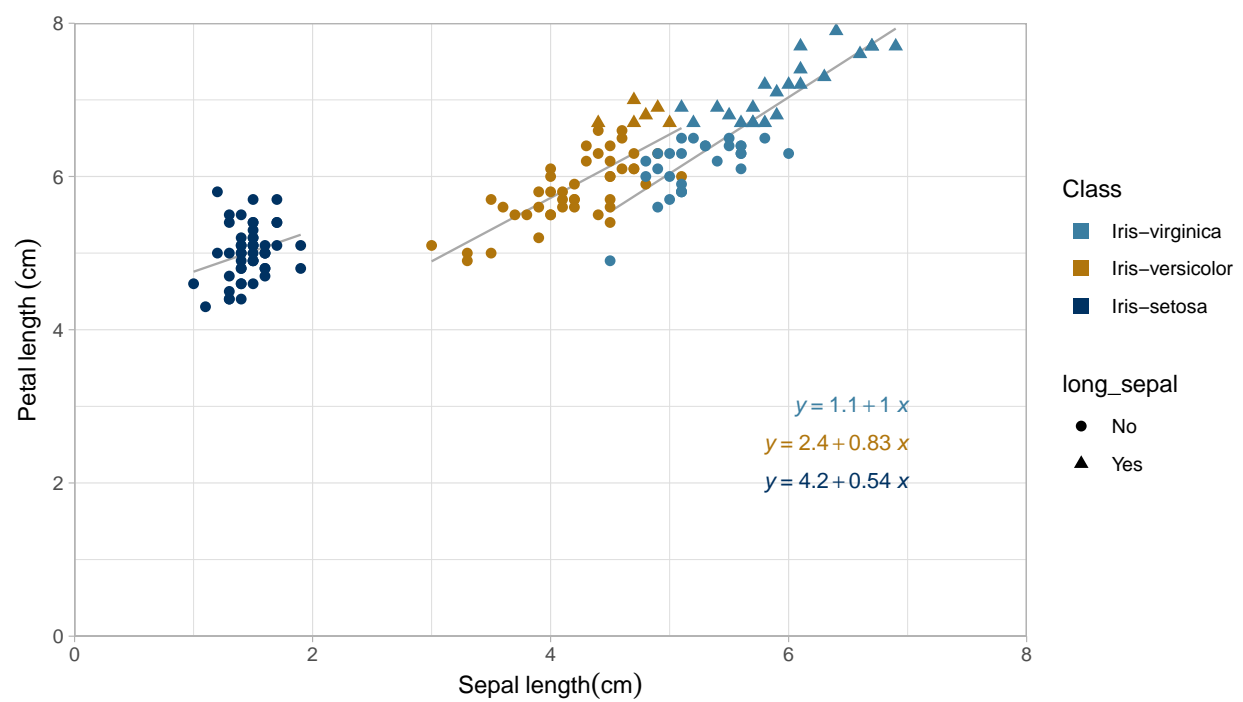


Figure 2: Petal and sepal lengths from iris dataset

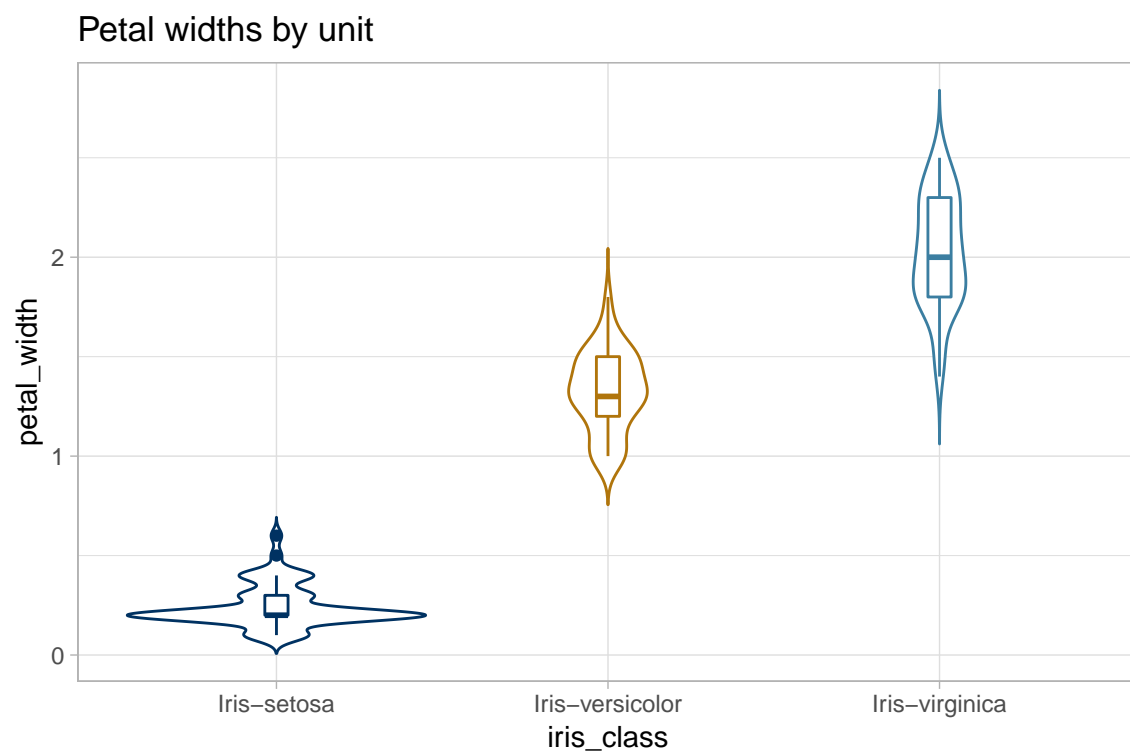


Figure 3: Petal widths by class