



# An example poster using KnitR and LaTeX

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## Introduction

- This is an example poster created in  $\text{\LaTeX}$
- A few  $\text{\LaTeX}$  packages and other pieces of code and software are used to make this all work:
  - The beamer and beamerposter packages are integral to this poster
  - A slightly modified version of the beamerposter theme available from <http://www.nathanieljohnston.com/2009/08/latex-poster-template/> was used to style the visual aspects of the poster
  - KnitR was used to allow the output of R code (text, numbers, and figures) to be included directly in the poster

## Motivations

- Why use  $\text{\LaTeX}$  to make a poster? What advantages does it offer over PowerPoint or other alternatives?
  - $\text{\LaTeX}$  emphasizes a clear separation of content and form, allowing you to focus on the “what” rather than the “how”
  - $\text{\LaTeX}$  has easy, high-quality math typesetting
  - Bibliography systems like biblatex make managing citations and including them in your poster easy
  - If there’s something unique you need to be able to do (like write International Phonetic Alphabet, or draw diagrams), you can likely extend  $\text{\LaTeX}$  through packages to do so
  - KnitR, an R package, allows the results of R code to be included directly in the poster

## How it works

- The files
  - `beamerthemconfposter.sty` — contains definitions of the title and blocks, as well as colors and theme options
  - `beamerposter.sty` — provides the beamerposter package
  - `poster.Rnw` — the source file, which is turned into a .tex file by KnitR
- The source file
  - The poster is composed of a title and columns, with each column being subdivided into blocks
  - Blocks contain the content of the poster, and come in two flavors – normal (like the first block, “Introduction”) and alert (like the this block, “Motivations”)
  - R code is delimited by special characters `«»` and `@`

## Some examples

KnitR enables us to directly output figures and plots generated in R into the poster. The R source code is stored in `poster.Rnw`, so it’s easy to change at any time or return to for later reference. And, there’s a variety of options to control the size, scale, and characteristics of your figures. Here’s a few examples using the `iris` dataset in R

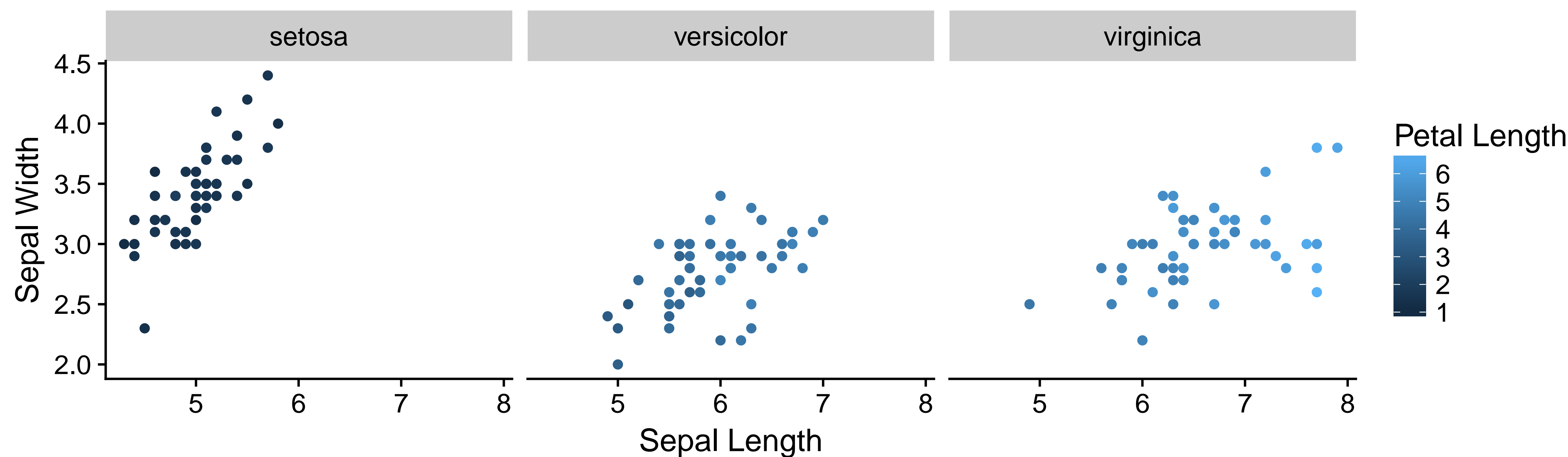


Figure 1: Sepal width versus sepal length, with color indicating petal length. Each panel shows a different species.

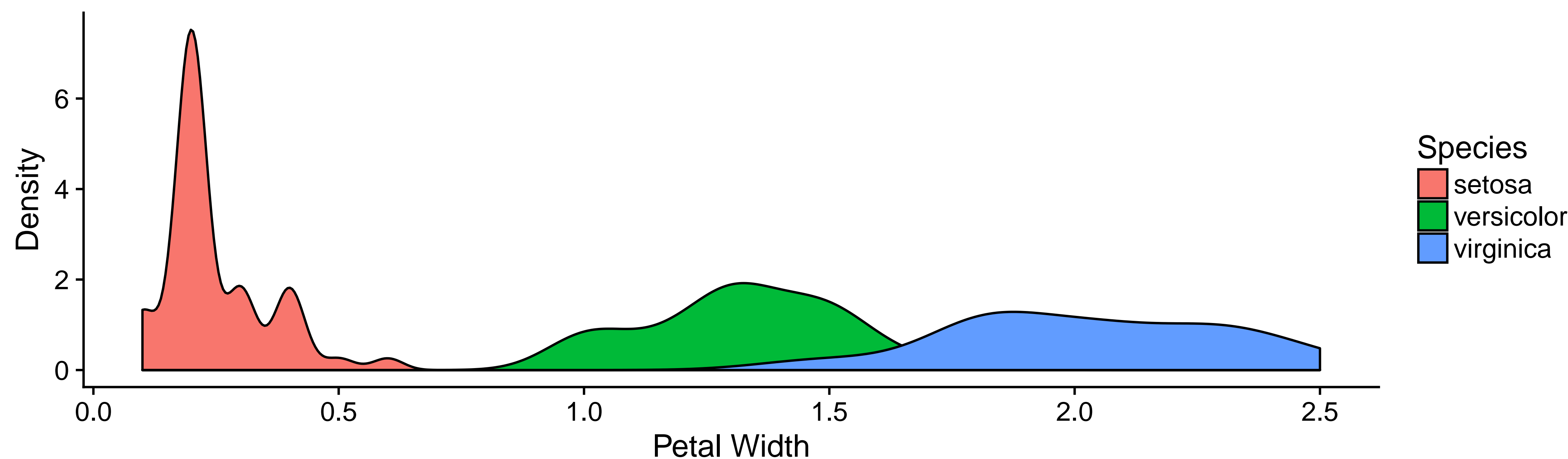


Figure 2: Density plots of petal width, with each species shown in a different color

And here are some more examples using the `diamonds` data set from `ggplot`:

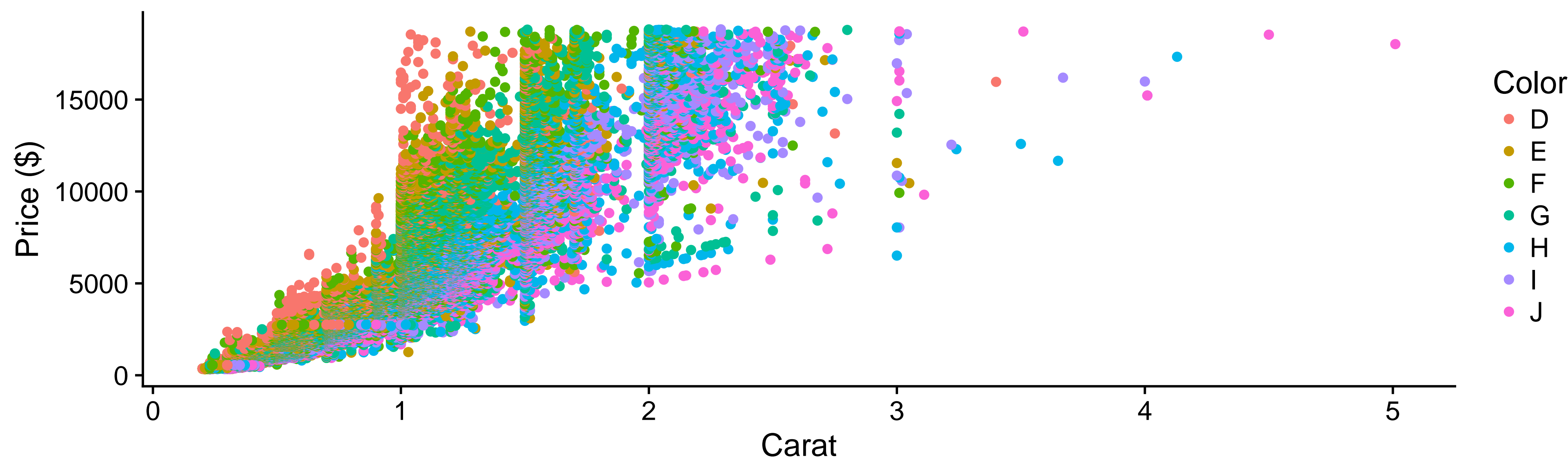


Figure 3: Diamond sale price versus carat (i.e., weight). Dot color indicates different diamond color ratings, from J (worst) to D (best).

## Resources

- $\text{\LaTeX}$  resources
  - <http://math.ucr.edu/~huerta/latexforbeginners.html> — A guide for brand-new users
  - <http://www.personal.kent.edu/~rmuhamma/Systems/latex.html> — Big collection of  $\text{\LaTeX}$  resources
- KnitR resources
  - <https://yihui.name/knitr/> — overview of KnitR

## An example compilation in Bash

```
cd /where/the/poster/dir/is
Rscript -e "library(knitr);
knitr('./poster.Rnw')"
latexmk -pdf poster.tex
```

## More examples of nice things $\text{\LaTeX}$ can do

- Math typesetting

$$\nabla \mathbf{f} = \frac{\partial \mathbf{f}}{\partial x} \hat{\mathbf{i}} + \frac{\partial \mathbf{f}}{\partial y} \hat{\mathbf{j}} + \frac{\partial \mathbf{f}}{\partial z} \hat{\mathbf{k}} \quad (1)$$

$$f(\zeta) = \int_{-\infty}^{\infty} f(x) e^{-2\pi i x \zeta} dx \quad (2)$$

- Tables

Parameter	Texas	Minnesota
Population (mil.)	27	6
Median income (thou. \$)	56	68

- Automated bibliographies

- You can cite sources inline: Ashmore (1991)
- You can also cite sources parenthetically (Shamma and Klein 2000; Dreyer and Delgutte 2006)
- You can change easily between citation styles with single commands (almost all types are supported)
- And then you can print out your bibliography as below

## References

Ashmore, Jonathon F. (1991). “The Electrophysiology of Hair Cells”. In: *Annual Review of Physiology* 53, pp. 465–476.

Dreyer, Anna and Bertrand Delgutte (2006). “Phase Locking of Auditory-Nerve Fibers to the Envelopes of High-Frequency Sounds: Implications for Sound Localization”. In: *Journal of Neurophysiology* 96, pp. 2326–2341. DOI: 10.1152/jn.00326.2006.

Shamma, Shihab and David Klein (2000). “The case of the missing pitch template: How harmonic templates emerge in the early auditory system”. In: *The Journal of the Acoustical Society of America* 2015.5, pp. 2631–2644.