An example poster using KnitR and LaTeX

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Introduction

- This is an example poster created in LaTeX
- A few 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 LaTeX to make a poster? What advantages does it offer over PowerPoint or other alternatives?

- LaTeX emphasizes a clear separation of content from form, allowing you to focus on the "what" rather than the "how"
- KnitR allows for syntax-highlighted R code, or the output of R code, to be included directly in the poster
- LaTeX has great tools for high-quality typesetting of math, like $\int 2x^2 dx$
- 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 LaTeX through packages to do so

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

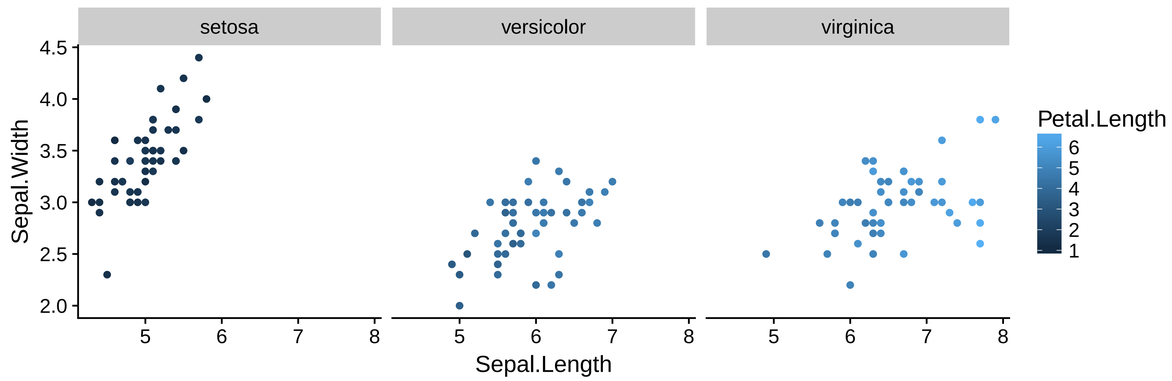
KnitR supports high-quality syntax-highlighting of R (and many other languages), as well as directly including the output of R in the output document

```
my_data = iris
my_summary = my_data %>% group_by(Species) %>% summarize(sepallen=mean(Sepal.Length),
                                                         sepalwid=mean(Sepal.Width),
                                                         petallen=mean(Petal.Length),
                                                         petalwid=mean(Petal.Width))
my_summary
```

```
## # A tibble: 3 x 5
##      Species sepallen sepalwid petallen petalwid
##       <fctr>    <dbl>    <dbl>    <dbl>    <dbl>
## 1     setosa      5.0      3.4      1.5     0.25
## 2 versicolor      5.9      2.8      4.3     1.33
## 3  virginica      6.6      3.0      5.6     2.03
```

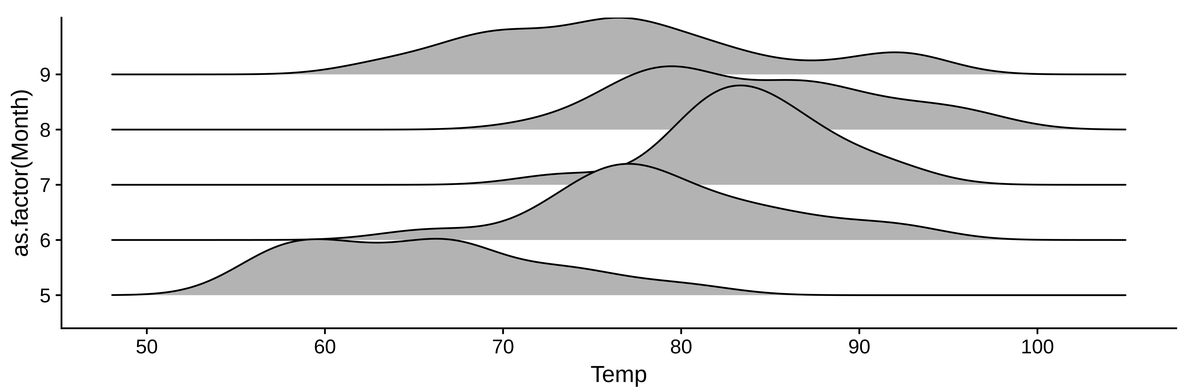
This functionality includes graphs!

```
ggplot(my_data, aes(x=Sepal.Length, y=Sepal.Width, color=Petal.Length)) +
    geom_point() + facet_wrap(~Species)
```



And, there's a variety of options to control whether or not your R code is visible or hidden and the size and characteristics of your output text and/or graphs. For example, here's a graph using the airquality data set in R, but the actual R code that generated the graph hidden in the output document.

```
## Picking joint bandwidth of 2.65
```



Resources

- `http://www.personal.kent.edu/~rmuhamma/Systems/latex.html` — Big collection of LaTeX resources
- `https://yihui.name/knitr/` — overview of KnitR
- `https://yihui.name/knitr/options/` — KnitR options to modify the behavior of R code chunks

An example compilation in Linux

```
Rscript -e "library(knitr);
knitr('./poster.Rnw')"
latexmk -pdf poster.tex
```

More examples of nice things 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