R + LaTeX= knitr

Cara Feldscher
feldsch3@msu.edu

Michigan State University

R-Ladies
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1. Why I care about R

2. Why I care about LaTeX

3. How to use knitr

4. Why you might care

5. Final notes

Why I care about R

Actually, I don't think I need to answer this!

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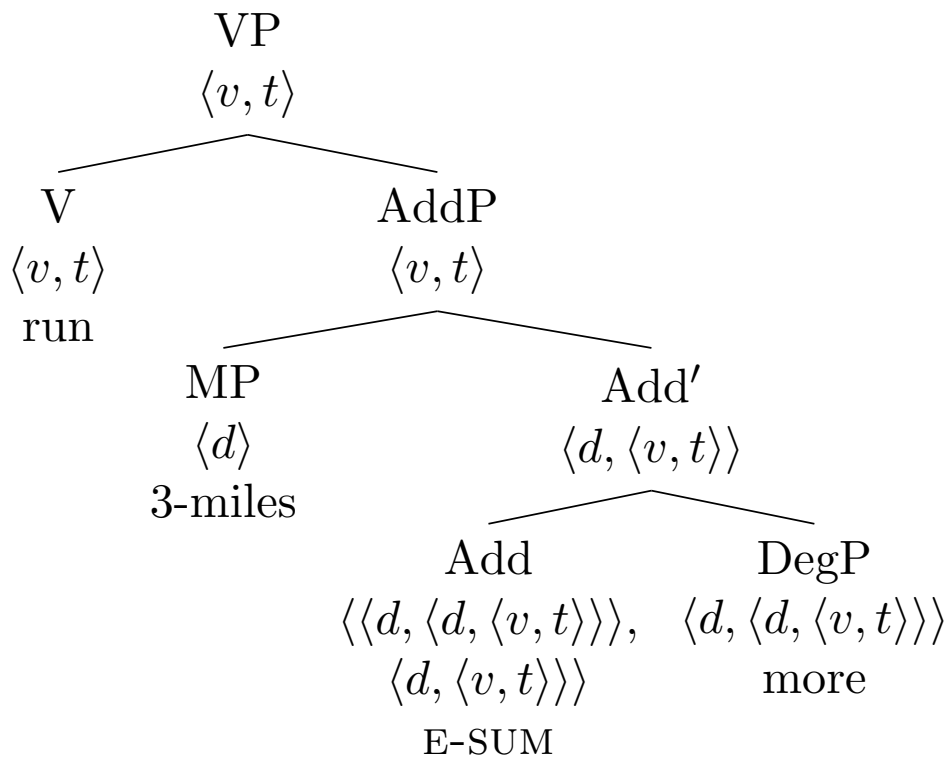
Secret handshakes

(1)



(2) $[\![\text{E-SUM}_v]\!] = \lambda f_{\langle d,\langle d,\langle v,t\rangle\rangle\rangle} \lambda d \lambda v' \left[\begin{array}{l} \mu(v') = d \wedge \\ f(\mu(v))(d)(v \oplus v') \end{array} \right]$

Control, flexibility

Write your own commands.

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```
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2     \newcommand{\denotation}[1]{\ensuremath{\
    llbracket \text{#1} \rrbracket}}
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% Easily changeable!!!
\newcommand{\denotation}[1]{I hearby declare that #1 means}
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% Easily changeable!!!
\newcommand{\denotation}[1]{I hearby declare
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(9) $[\![\text{cat}]\!] = ...$

(10) I hearby declare that cat means...

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An abstract requirement I had once...

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```
1       \documentclass[a4paper,10pt]{article}
2       \usepackage[top=4.5cm,right=4cm,bottom=6.5
    cm,left=5cm % Options
3       ]{geometry}
4       \usepackage{times} % TNR, deprecated?
5       \usepackage{setspacing}
6       \singlespacing
```

Convenience

Automated:

[1] Someone brought up bibtex last week and I agree that it's great!

Convenience

Automated:

- Bibliography and citations[1]
- Labeling and referencing (figures, sections, etc.)
- Commands (as per previous slide)

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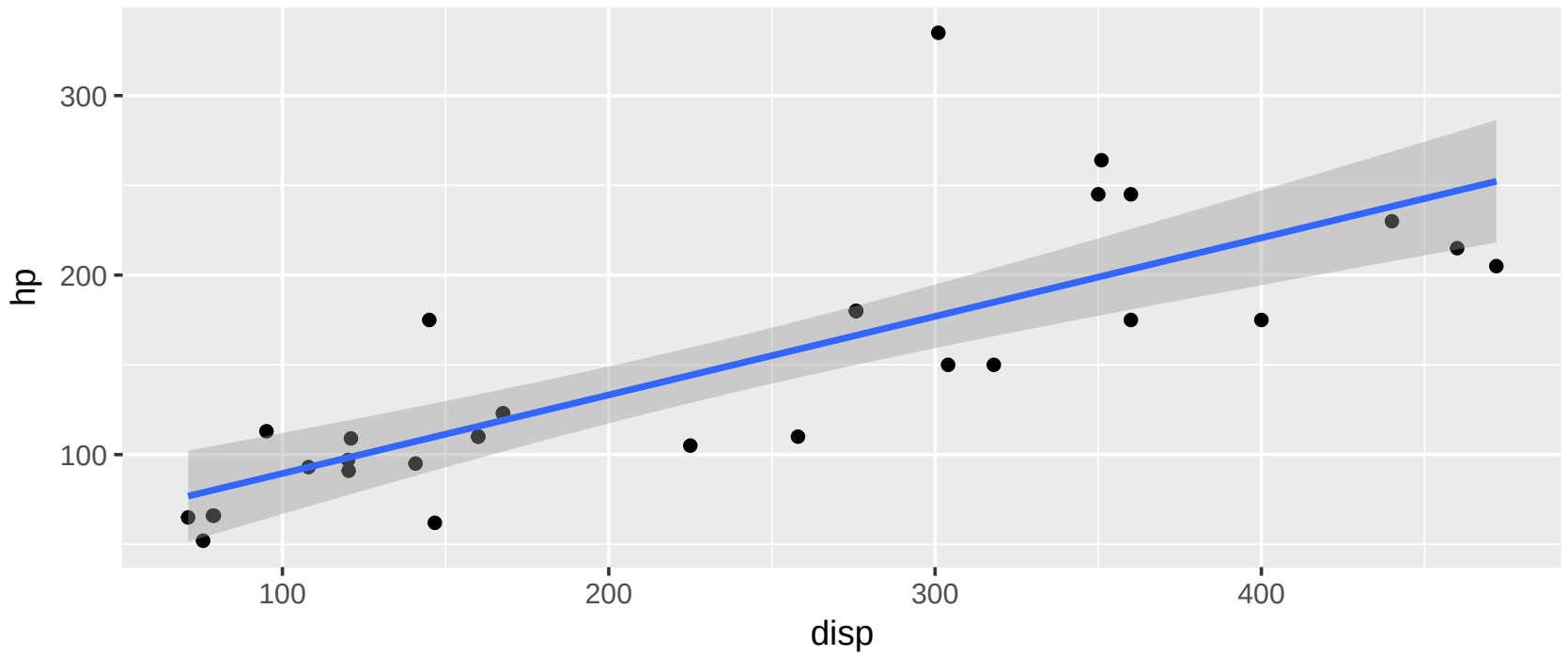
Minimal Working Example 1

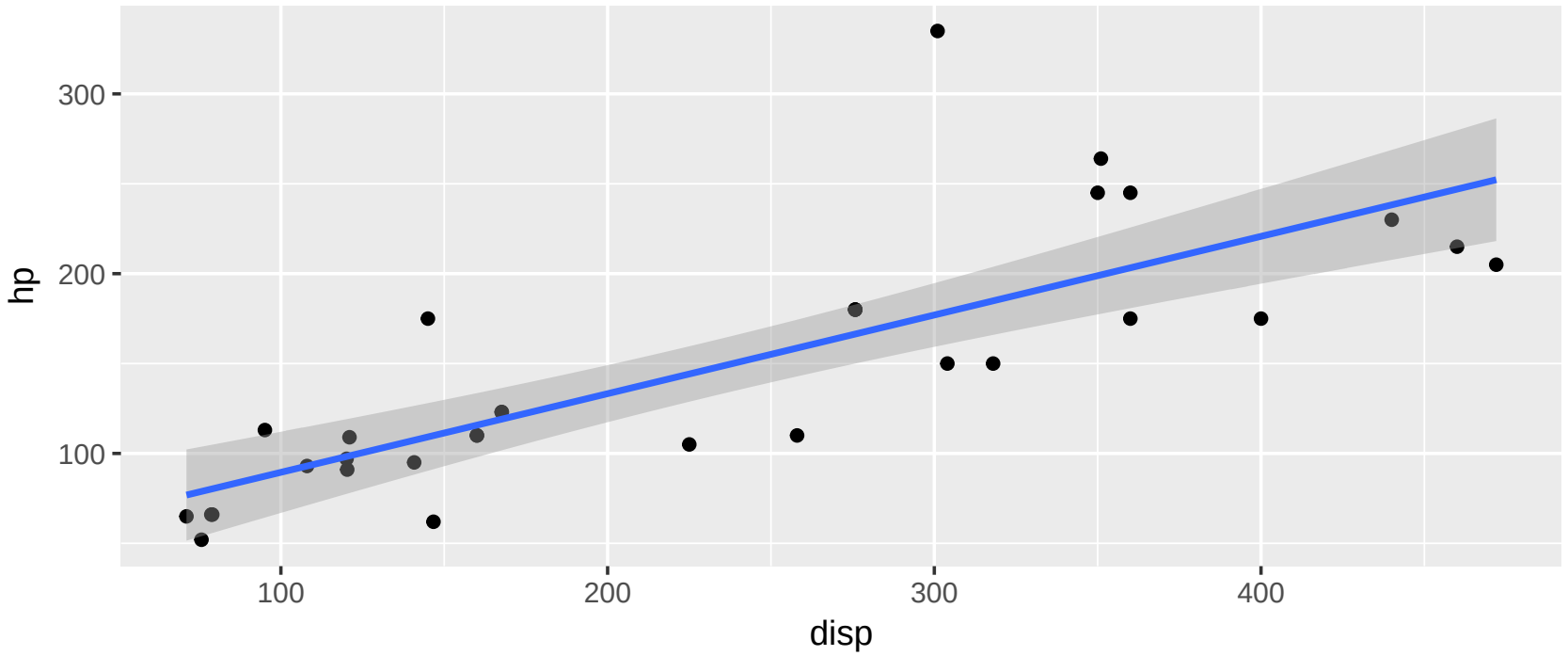
- `echo`= TRUE
- `eval`= TRUE

```
library(ggplot2)
data("mtcars")
# Is there a relationship between displacement and HP?
ggplot(mtcars, aes(x=disp, y=hp)) +
geom_point()+
geom_smooth(method = "lm")
```



Minimal Working Example 2

- `echo`= FALSE
- `eval`= TRUE



Minimal Working Example 3

- `echo`= TRUE
- `eval`= FALSE

```
library(ggplot2)
data("mtcars")
# Is there a relationship between displacement and HP?
ggplot(mtcars, aes(x=disp, y=hp)) +
geom_point()+
geom_smooth(method = "lm")
```

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The code is in your document

Reproducibility!

The code is in your document

Say goodbye to:

- Forgetting to update your graph after you add data.
- Grabbing the wrong graph.
- Saving over the graph you want.
- Copy pasting the wrong code into your paper.

The code is in your document

Display it if you want, not if you don't, and change your mind whenever you want.

LaTeXis cool

LaTeXis cool, for all the aforementioned reasons.

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LaTeXis cool, for all the aforementioned reasons.
...Or you can use Markdown.

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Final notes

- Thanks Yihui! (website, github)
- Compiles slowly!
- No tex spellcheck or autocomplete.

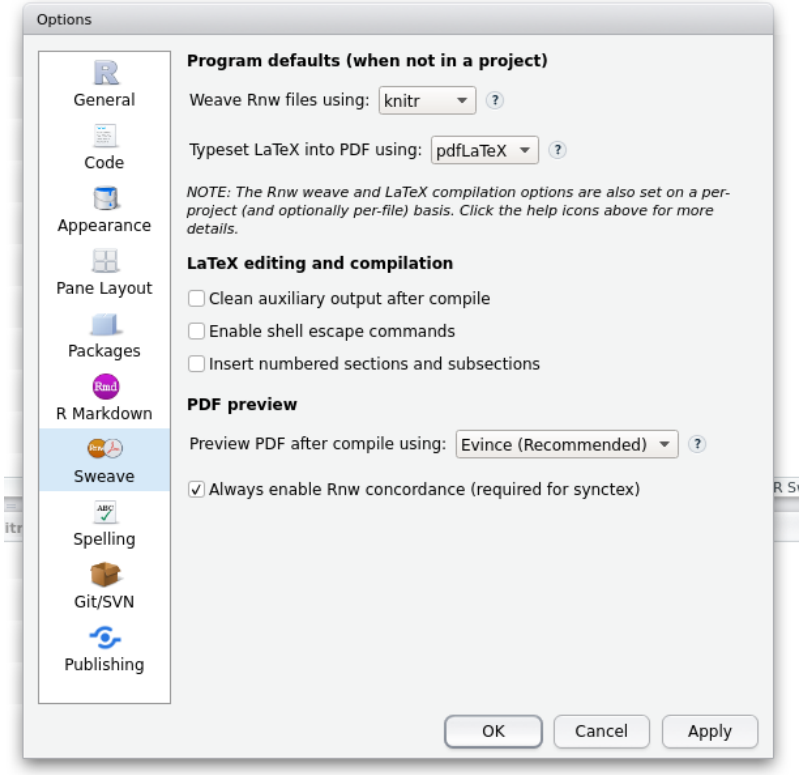
Thanks!

If you want the slides or code, it's available through R-Ladies, or at https://github.com/cfeldscher.
Set up instructions follow in appendix slides.

Set-up

Knitr set up:

1. Install package `knitr`



2. Global settings
3. Create a wholly LaTeX(or Markdown) document in RStudio.
4. Where you want R code