Presenting Data with R Markdown

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R Markdown

- Plain-text format
- Embedded R code evaluated in-place
- Go from raw data to final figures in a single step
- Markdown
- knitr
- pandoc

Why use R Markdown?

- Reproducibility
- Automation (saves time, avoid tedious formatting)
- Durability

General workflow

1. Create a folder with your data.
2. Write text and R code in an .Rmd file
3. `knitr` compiles .Rmd => .md
4. `pandoc` converts .md => {.docx, .pdf, .html}

Example .Rmd document

````
## A Heading

This is some text in **bold** and *italic*.  With a
[link](http://www.example.com/).

```{r cars}
summary(cars)
```
````

Example output .md

A Heading

This is some text in **bold** and *italic*. With a link.

```
summary(cars)
```

```
##      speed           dist       
##  Min.   : 4.0   Min.   :  2.00  
##  1st Qu.:12.0   1st Qu.: 26.00  
##  Median :15.0   Median : 36.00  
##  Mean   :15.4   Mean   : 42.98  
##  3rd Qu.:19.0   3rd Qu.: 56.00  
##  Max.   :25.0   Max.   :120.00
```

YAML frontmatter

```
---
title: "Hello World"
author: "Jared Sampson"
date: "2/12/2017"
output: pdf_document
---
```

- YAML: “a human friendly data serialization standard”
- Goes at the top between 2 lines with —
- Document metadata and output settings

knitr general options

````
```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```
````

- Set default options applied to all code blocks inside `opts_chunk$set(...)`
- Note the `include=FALSE`: this code does not appear in the document

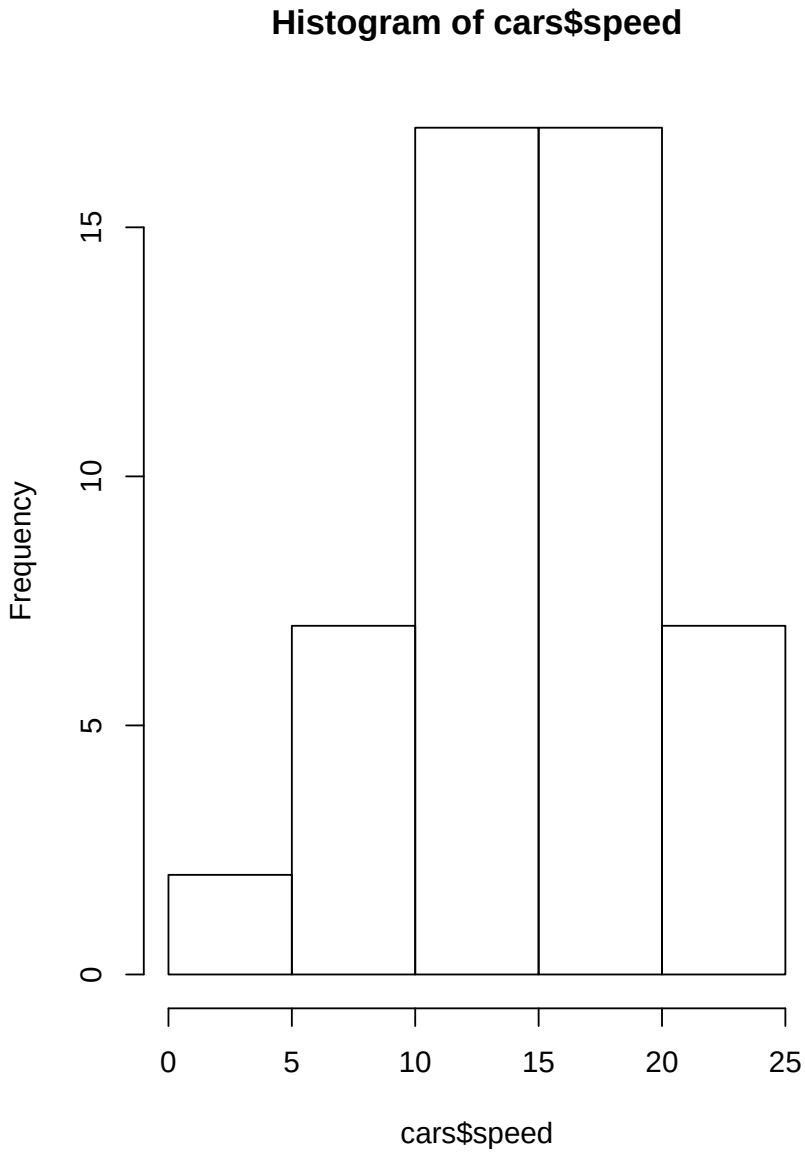
Make some plots

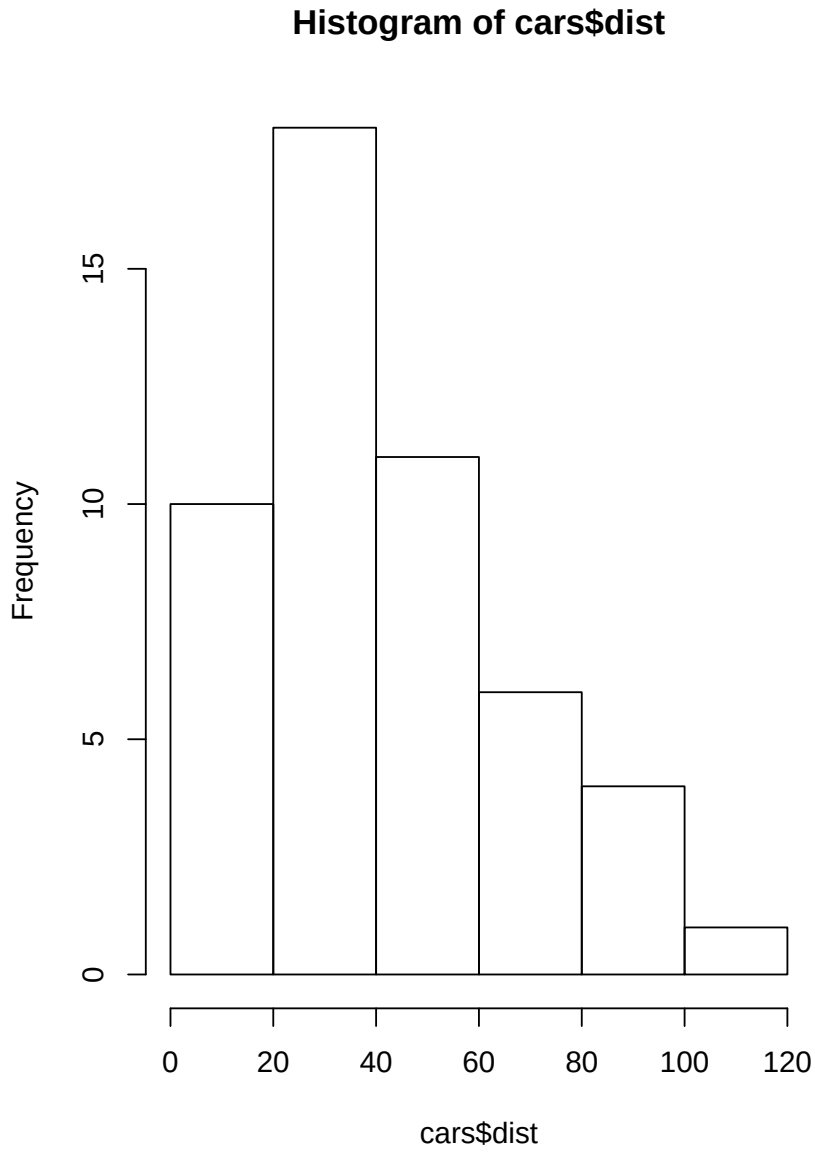
````
Here are 2 histograms from some car data.

```{r hist}
par(mfrow=c(1,2))
hist(cars$speed)
hist(cars$dist)
```
````

Make some plots

Here are 2 histograms from some car data.





Something a little more complex

```
```{r hrt, fig.width=4, fig.height=4, fig.align='left'}
dat <- data.frame(t=seq(0, 2*pi, by=0.01))
x_hrt <- function(t) 16*sin(t)^3
y_hrt <- function(t) 13*cos(t)-5*cos(2*t)-2*cos(3*t)-cos(4*
dat$x=x_hrt(dat$t)
dat$y=y_hrt(dat$t)
with(dat, plot(x, y, type='l'))
with(dat, polygon(x,y, col=rgb(1, 0, 0, 0.7)))
```
```

(modified from http://stackoverflow.com/a/8082714)

Happy Valentine's Day