R Markdown Tutorial

Alicia Halhed

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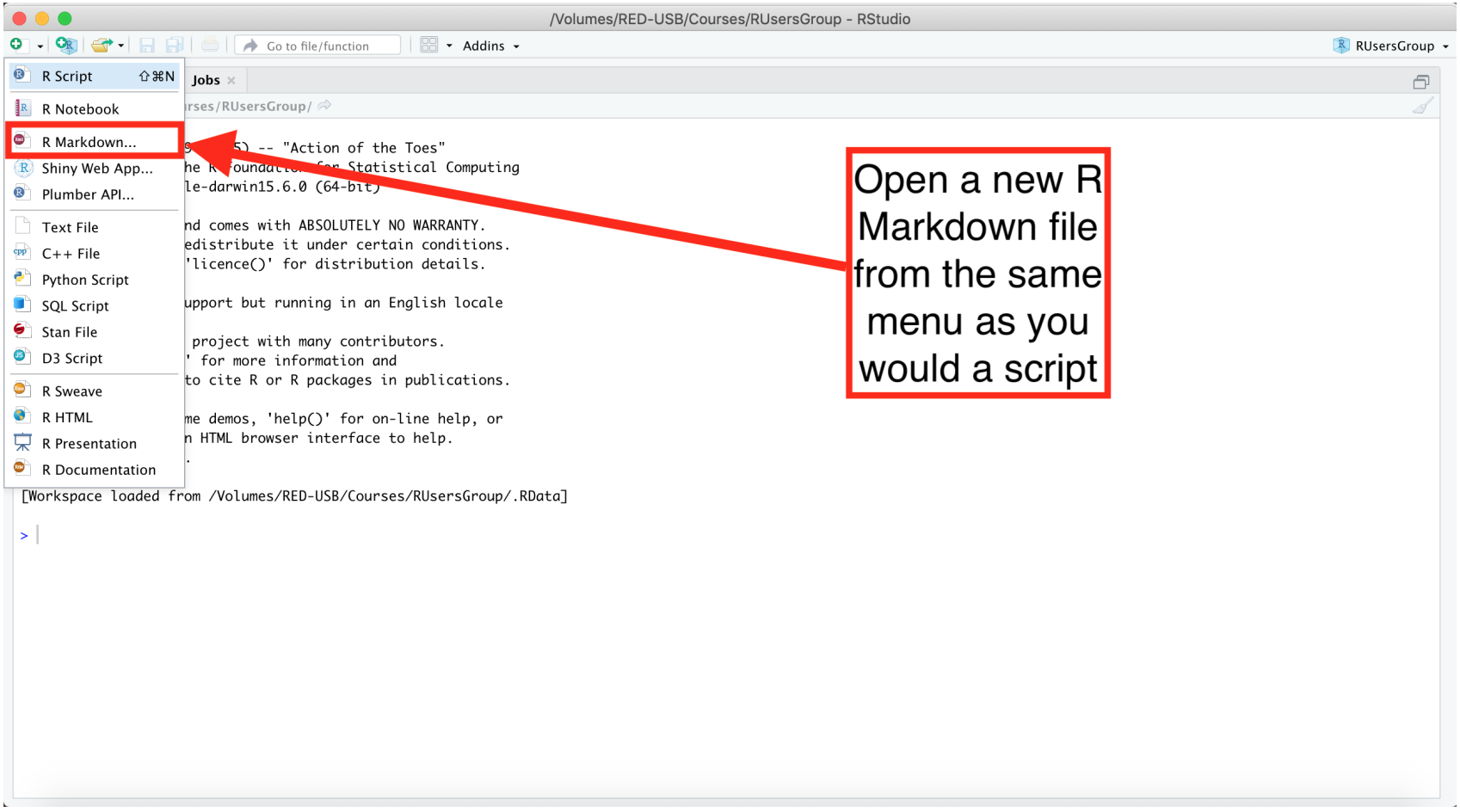
What is R Markdown?

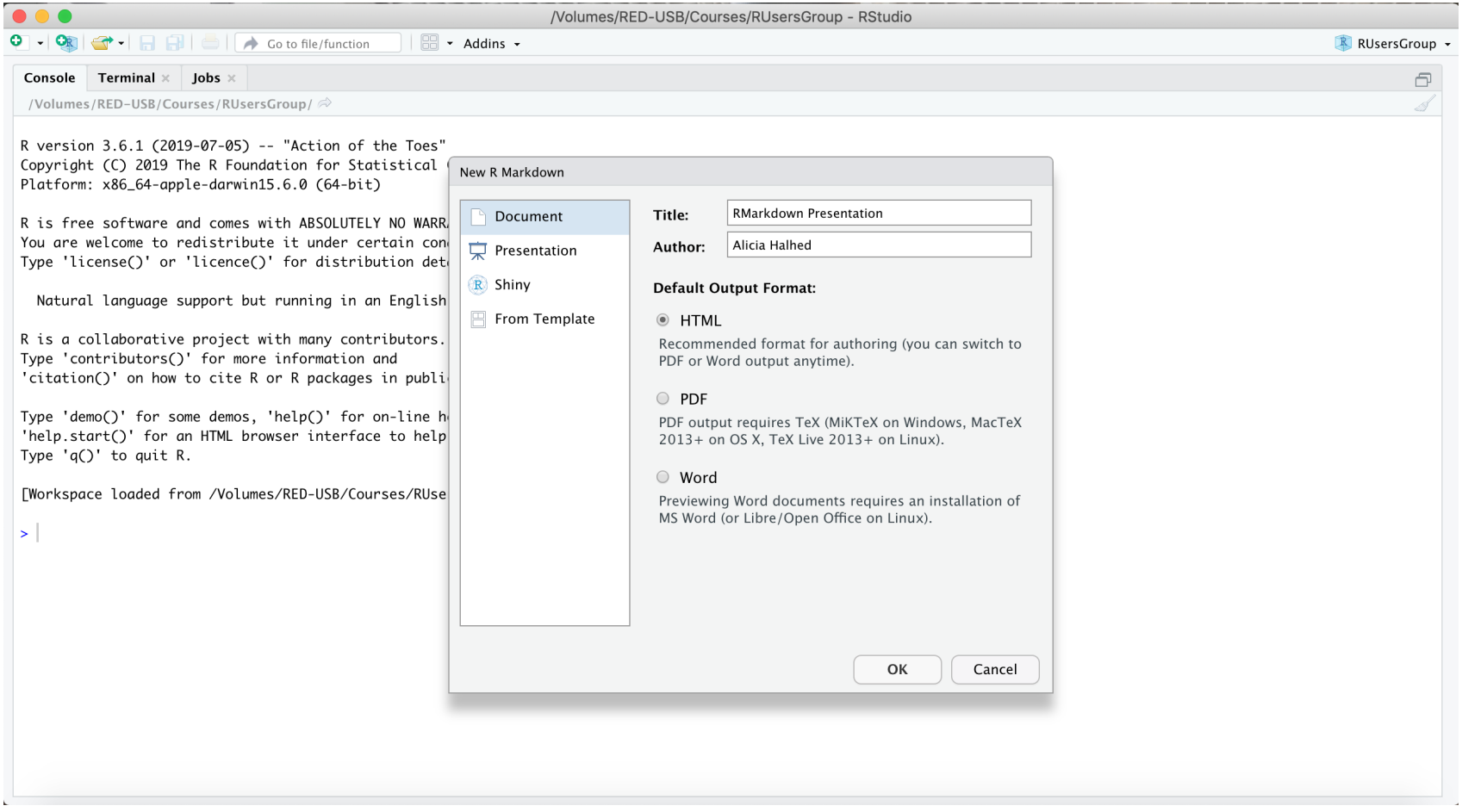
- R Markdown is a dynamic interface to **create reports** in R
- Available directly in RStudio
- Uses a simple syntax to format exported reports
- More information at rmarkdown.rstudio.com

Why should I work in R Markdown when R Script works just fine?

- Allows the export of R workspaces to various file formats (Word, HTML, PDF, etc)
- Helps keep code organized in the R workspace
- Simplifies writing explanations of methods used in R

Getting Started in R Markdown

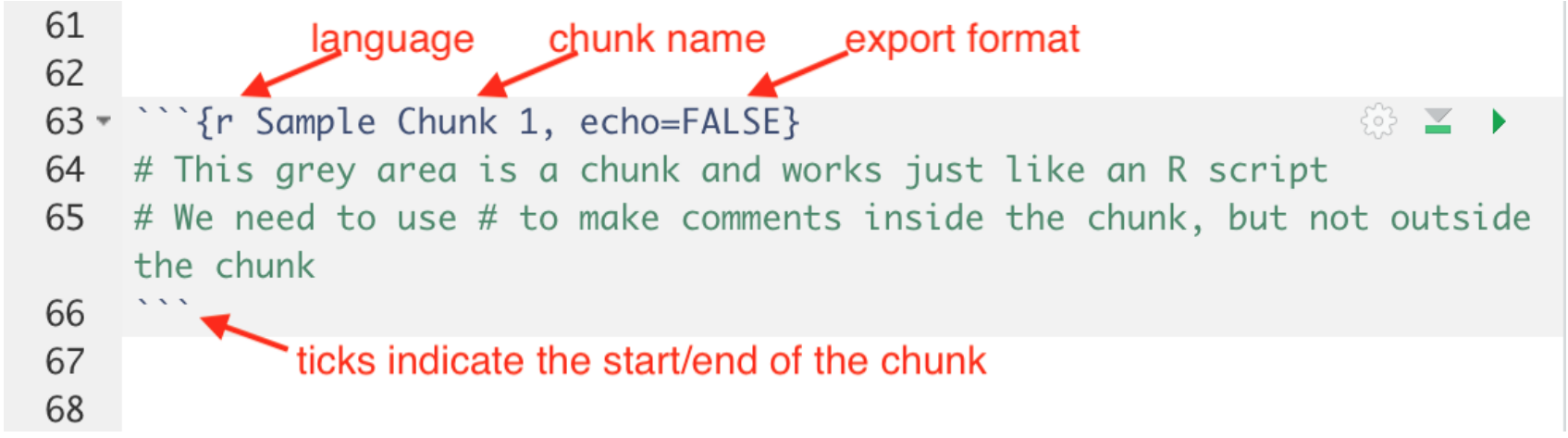



/Volumes/RED-USB/Courses/RUsersGroup - RStudio
Go to file/function
Addins
RUsersGroup
Console
Terminal
Jobs
/Volumes/RED-USB/Courses/RUsersGroup/
R version 3.6.1 (2019-07-05) -- "Action of the Toes"
Copyright (C) 2019 The R Foundation for Statistical
Platform: x86_64-apple-darwin15.6.0 (64-bit)
R is free software and comes with ABSOLUTELY NO WARR
You are welcome to redistribute it under certain con
Type 'license()' or 'licence()' for distribution det
Natural language support but running in an English
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publi
Type 'demo()' for some demos, 'help()' for on-line h
'help.start()' for an HTML browser interface to help
Type 'q()' to quit R.
[Workspace loaded from /Volumes/RED-USB/Courses/RUse
>
New R Markdown
Document
Presentation
Shiny
From Template
Title:
RMarkdown Presentation
Author:
Alicia Halhed
Default Output Format:
HTML
Recommended format for authoring (you can switch to PDF or Word output anytime).
PDF
PDF output requires TeX (MiKTeX on Windows, MacTeX 2013+ on OS X, TeX Live 2013+ on Linux).
Word
Previewing Word documents requires an installation of MS Word (or Libre/Open Office on Linux).
OK
Cancel

Working in R Markdown

- Writing scripts in R Markdown is very similar to working with an R Script.
- R code gets embedded into "chunks" in the R markdown file that can be formatted to your export needs.
  - Each chunk is formatted individually, so we can change the output based on what we are coding
- There are keyboard shortcuts for inserting code chunks
  - Mac users: control-option-i **or** command-option-i
  - PC users: control-alt-i
- Chunks of other coding languages (bash, SQL, Python, etc) can also be inserted into the same R Markdown file

Chunk in R Markdown (not exported)



Chunk in R Markdown (exported)

```r
# This is what an exported code chunk looks like
data("mtcars")
```

Chunk in R Markdown (exported with output)

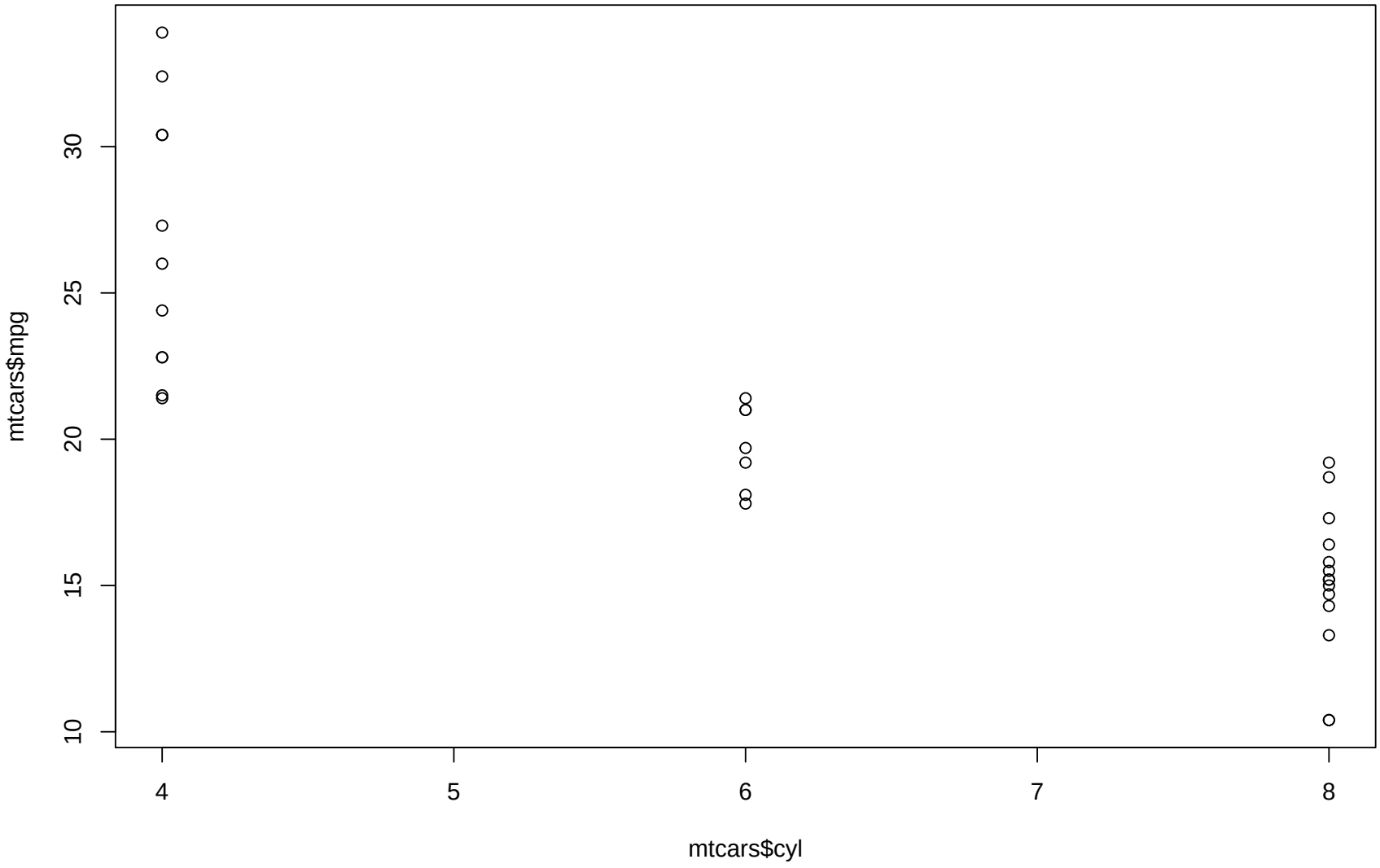
```
head(mtcars)
```

```
##                   mpg cyl disp  hp drat    wt  qsec vs
## Mazda RX4         21.0   6  160 110 3.90 2.620 16.46  0
## Mazda RX4 Wag     21.0   6  160 110 3.90 2.875 17.02  0
## Datsun 710        22.8   4  108  93 3.85 2.320 18.61  1
## Hornet 4 Drive    21.4   6  258 110 3.08 3.215 19.44  1
## Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0
## Valiant           18.1   6  225 105 2.76 3.460 20.22  1
```

Plots in R Markdown

- Plots, as with other R outputs, will appear below the code chunk where code is located
  - This applies to both the R workspace and the knit file
- Can specify in the chunk header whether or not to include the code in the knit file

```
plot(mtcars$mpg~mtcars$cyl)
```



Inline coding

- If you would like to include R outputs within the knit text, inline coding may be an option
- What is the product of 2^2?
  - The answer is 4
- Simply typing the answer is possible, but coding it in simplifies creating the report for more complex problems

Final thoughts

- There are ~~not any~~ resources available to help with the markdown syntax
  - See R Markdown cheat sheet
- You don't *have* to create reports with every R Markdown file
- Mac users: you *may* need to download **XQuartz** for PDF export formats
- Have FUN!