



Introduction to R Workshop

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Course Introduction



Goals and Objectives

- Advocate for the use of R as a means of improving reproducibility in clinical data analysis
- Demonstrate how R is used to perform analyses of laboratory operational data
- Establish a basis of understanding in the 'tidy' approach to data analysis within the framework of R

Session	Instructor
Instructor Introductions, Introduction to technology	Amrom Obstfeld
Introduction to R and RStudio	Joe Rudolf
Reproducible Reporting	Joe Rudolf
Data Visualization	Stephan Kadauke
Data Transformation	Amrom Obstfeld
Group and Summarize	Patrick Mathias
Advanced Reporting	Patrick Mathias



Who are we?

Joseph Rudolf

Assistant Professor, Department of Pathology,
University of Utah Medical School

Medical Director, Automated Core Laboratory, ARUP
Laboratories



Patrick Mathias

Assistant Professor, Department of
Laboratory Medicine and Pathology

University of Washington School of
Medicine

Associate Medical Director, Laboratory
Medicine and Pathology Informatics



Stephan Kadauke

Assistant Professor of Clinical Pathology and
Laboratory Medicine

University of Pennsylvania Perelman School
of Medicine

Assistant Director of the Cell and Gene
Therapy Laboratory

Children's Hospital of Philadelphia



Amrom Obstfeld

Assistant Professor of Clinical Pathology
and Laboratory Medicine

University of Pennsylvania Perelman
School of Medicine

Director of Pathology Informatics

Children's Hospital of Philadelphia





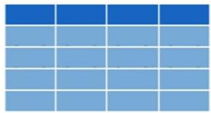
Workshop Workflow



Sessions

Loading Data to Create a Dataframe

```
data_frame <- read_csv("file_name")
```

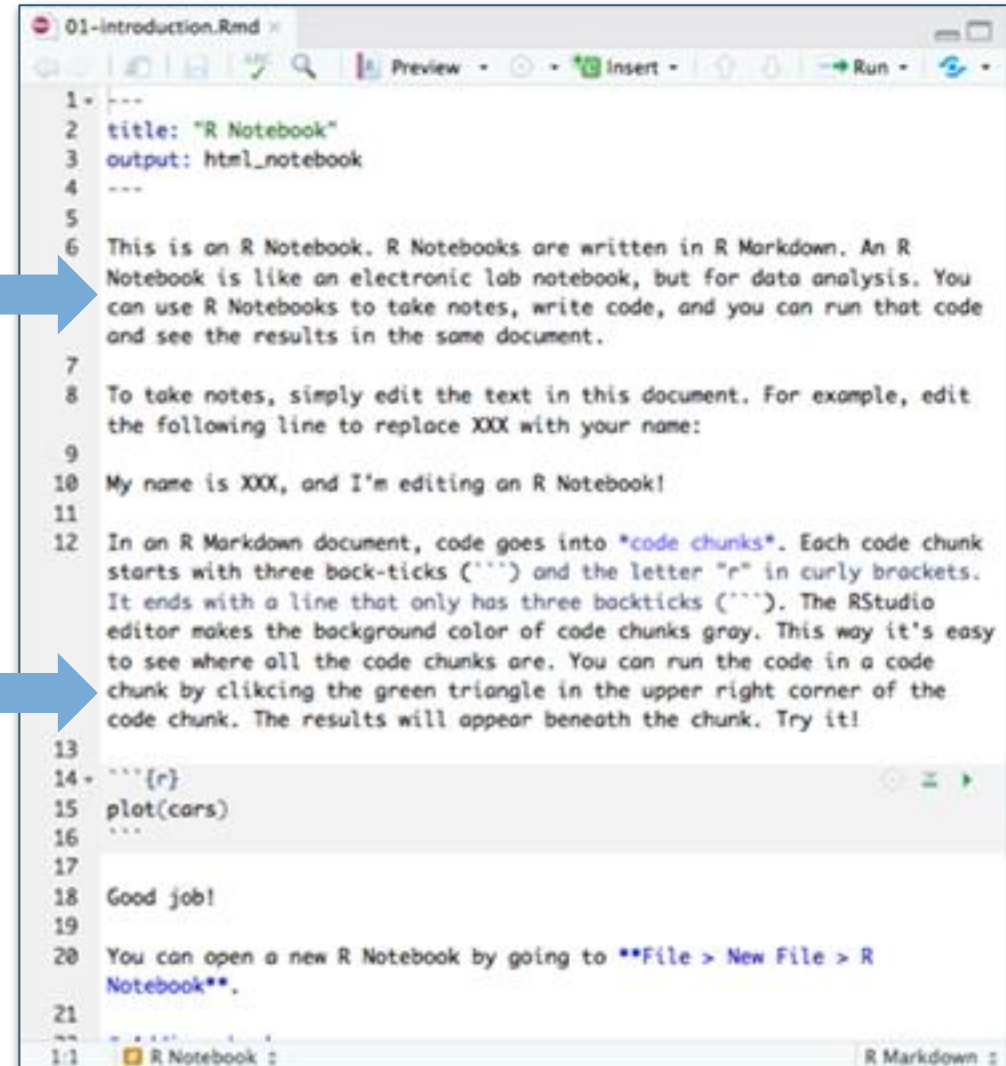


Your Turn

Introduce yourself to your neighbors

- Who are you?
- Where are you from?
- What do you do with data?
- Have you ever used R?

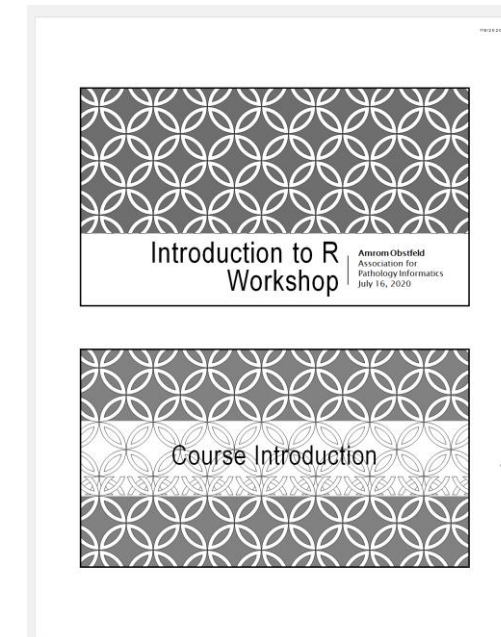
3:00



```
1 ---
2 title: "R Notebook"
3 output: html_notebook
4 ---
5
6 This is an R Notebook. R Notebooks are written in R Markdown. An R
7 Notebook is like an electronic lab notebook, but for data analysis. You
8 can use R Notebooks to take notes, write code, and you can run that code
9 and see the results in the same document.
10
11 To take notes, simply edit the text in this document. For example, edit
12 the following line to replace XXX with your name:
13
14 My name is XXX, and I'm editing an R Notebook!
15
16 In an R Markdown document, code goes into code chunks. Each code chunk
17 starts with three back-ticks (```) and the letter "r" in curly brackets.
18 It ends with a line that only has three backticks (```). The RStudio
19 editor makes the background color of code chunks gray. This way it's easy
20 to see where all the code chunks are. You can run the code in a code
21 chunk by clicking the green triangle in the upper right corner of the
22 code chunk. The results will appear beneath the chunk. Try it!
23
24 ```{r}
25 plot(cars)
26 ```
27
28 Good job!
29
30 You can open a new R Notebook by going to File > New File > R
31 Notebook.
```

Workshop Coursebook

- Print out of all slides
- Appendix
 - Cheat sheets
 - Useful resources





Who are you?

Your Turn

Introduce yourself to your breakout roommates

Who are you?

Where are you from?

Why are you here?

Have you ever used R?

Final Tips

- The best way to learn to code is by doing
- Practice is key!