Getting started with R and RStudio







The dashboard

The engine

A tour of RStudio

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R is awaiting your instructions

Type code here, press enter, and R will run it

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Type 2 + 2 in the console

Press enter

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This is ephemeral though. If you want to run this again, you'll have to type it again.

Store R code in a document instead

Files pane

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Find 01_gettingstarted.Rmd

Click on its name to open the file

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Documents open here

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Document format that combines text and code

Acts like a notebook for your analysis

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Text

Code



Text

Code

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Read the instructions

Run the code chunk by clicking the play button

Add a new chunk

Put 2 + 2 in the chunk and run it

Knitting

"Knit" an R Markdown document into a standalone sharable file



The best way to combine R code and narrative

We'll use it throughout the workshop:

I'll provide starter code

You'll complete "Your turns"

In the end, you'll have an annotated record for yourself

Spot the difference:

four_cyls <- filter(mtcars, cyl == 4)</pre>

Find these chunks in the notebook and run them. What's different about what happens?



<- assigns the output from the righthand side to a variable with the name on the lefthand side

four_cyls <- filter(mtcars, cyl == 4)</pre>

Environment pane

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Data											
four_cyls	1	1 obs. of 11	variables								

List of all the variables you've created

Find four_cyls in the environment pane. Click on the name four_cyls

What happens?

Viewer

		Filter							(2	
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2	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	
3	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	
4	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	
5	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	
6	33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	
7	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	
8	27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	
9	26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	
10	30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	
11	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	

Clicking on an object in the environment panel opens it an interactive viewer tab

Functions

four_cyls <- filter(mtcars, cyl == 4)</pre>

Functions do things

Functions take arguments, output results

If you want to keep the output, assign it to a variable



To look up the help page for an R function, type this in the console:

?function_name



Help pane

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filter {dplyr}

R Documentation

```
Return rows with matching conditions
```

Description

Use filter() to choose rows/cases where conditions are true. Unlike base subsetting with [, rows where the condition evaluates to NA are dropped.

Usage

```
filter(.data, ..., .preserve = FALSE)
```

Arguments

. dat.a A tbl. All main verbs are S3 generics and provide methods

These help pages prove details about the arguments you can supply a function

> Often full of examples at the bottom

Look at the help page for seq

Add a chunk that uses seq() to create a list of numbers from 5 to 100, spaced by 5 (so 5, 10, 15, 20, ...)



seq(from = 5, to = 100, by = 5)

[1] 5 10 15 20 25 30 35 40 45 50 55 60 65 70 ## [20] 100

Common syntax problem #1

Missing closing parentheses or quotes

mean(mtcars

"Oops this is wrong

Common syntax problem #2

Surrounding somehting in quotes when it should be (or vice versa)

mean("mtcars")

- ## Warning in mean.default("mtcars"): argument is not numeric or ## NA
- ## [1] NA

There are three chunks under "Syntax gone wrong"

Run each, read the error message, and try to fix the syntax

Cheatsheets

Go to Help > Cheatsheets to find quick reference guides to different packages

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-	Launch debugger Open traceback to examine	Turn on at Tools > Project Options > Git/SVN	RStudio opens documentation in a dedicated Help par
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Data basics