Week 1: Welcome to R Statistical Programming
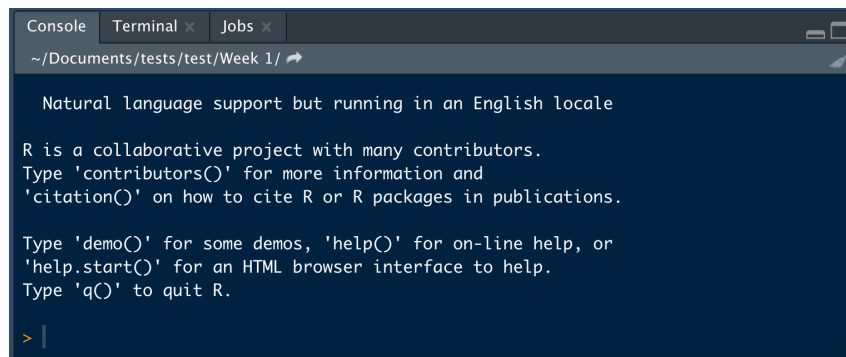## 01/13/2020

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Why R?

- It's open source
  - Why pay for licenses for other tools?
- There is lots of good documentation
  - Over 20 years worth!
- Extremely large and helpful community
  - Stack overflow is your friend

Rstudio

- R is the language, but it can be pretty ugly to use

    - Similar to working in the CLI

- Rstudio is a IDE for R that will make your life easier

    - You can live without it, but why would you?

Rstudio: The Console

· The console is where we'll push code and see output

· We can type code directly into it

· The code we type in isn't saved!

- We can go back in history, but it's not unlimited

Rstudio: The Text Editor

· Here we can load scripts directly into R

 - A script is a text file with code in it

 - Doesn't necessarily need to be R scripts

· We can push code to the console using that run button

 - Always easier to have that as a keyboard shortcut
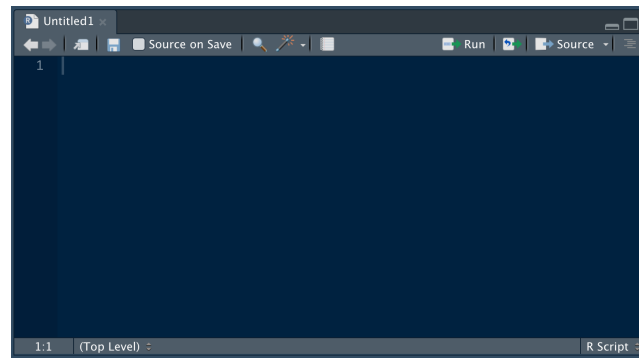
Rstudio: The Environment

· This is where we can see what is stored in our environment

  - Could be data, functions, models, etc.

· Essentially where what we save is stored

· Also includes a history tab for past code as well as a git staging area
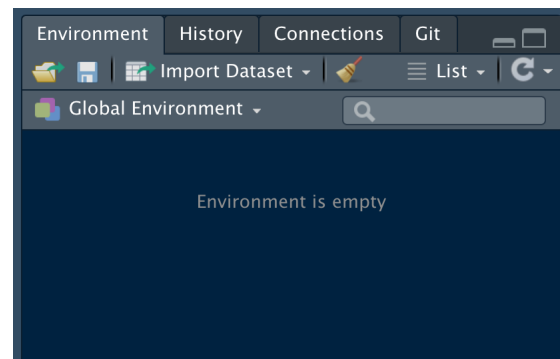
Rstudio: The Viewer Pane

· The viewer pane has a lot of different functions

    - We can use it as a file viewer

    - This is where plots we create will show

    - This is where the help screen is
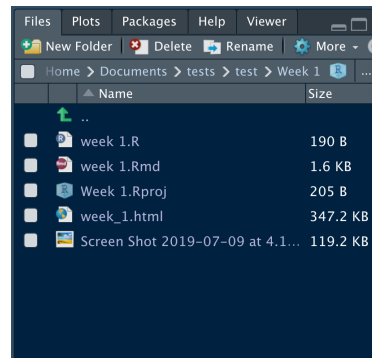
Bare Bones R

- R can be used as a calculator

```
1 + 1
```

```
## [1] 2
```

```
25 / 5
```

```
## [1] 5
```

```
4 * 3
```

```
## [1] 12
```

Assigning to Objects

· We can store different aspects of our work in objects

     - Data, output, functions, etc.

· Store what you want to keep, or else it's gone!

Assigning to Objects

· We can use the assignment operator `<-` to store objects

```
test_output <- 1 + 1
```

· Might be more intuitive to use `=`, but that will cause confusion with function arguments (more on that later)

Assigning to Objects

- `test_output` is now stored in our environment

- When we call `test_output`, it will show what we stored in it

```
test_output
```

```
## [1] 2
```

-We can also perform operations on this object

```
test_output + 3
```

```
## [1] 5
```

Object Names

- We should be descriptive, but not overly-complicated with our object names

  - `foo` isn't descriptive and wouldn't mean anything to us

  - `test_output_from_model_1_set_b_where_i_added_a_variable` is way too complicated for a name

- Just be straightforward and succinct

  - `model_gbm` is probably holding a `gbm` model in it

  - Quick and to the point