Intro to Social Science Data Analysis

Seminar 1: Introduction to R and RStudio

Christopher Gandrud

August 24, 2012

1. What is the seminar for?

2. Getting Started with RStudio

3. Getting Started with R

Seminar Purpose (1)

- This course is about learning skills that will help you **gather**, **analyse**, and **present** social science data.
- The best way to develop these skills is by **using** them.
- The seminar is an opportunity for you to **practice** using these tools where you can:
    - Ask me questions,
    - Collaborate with your fellow students.

Seminar Purpose (1)

- This course is about learning skills that will help you **gather**, **analyse**, and **present** social science data.
- The best way to develop these skills is by **using** them.
- The seminar is an opportunity for you to **practice** using these tools where you can:
  - Ask me questions,
  - Collaborate with your fellow students.

Seminar Purpose (1)

- This course is about learning skills that will help you **gather**, **analyse**, and **present** social science data.
- The best way to develop these skills is by **using** them.
- The seminar is an opportunity for you to **practice** using these tools where you can:
  - Ask me questions,
  - Collaborate with your fellow students.

Seminar Purpose (1)

- This course is about learning skills that will help you **gather**, **analyse**, and **present** social science data.
- The best way to develop these skills is by **using** them.
- The seminar is an opportunity for you to **practice** using these tools where you can:
  - Ask me questions,
  - Collaborate with your fellow students.

Seminar Purpose (1)

- This course is about learning skills that will help you **gather**, **analyse**, and **present** social science data.
- The best way to develop these skills is by **using** them.
- The seminar is an opportunity for you to **practice** using these tools where you can:
  - Ask me questions,
  - Collaborate with your fellow students.

Format (1)

- In the lecture & seminar I will give you **general tools**.
- In the seminar I will give you a **goal** to complete with these tools (and others).

Format (1)

- In the lecture & seminar I will give you **general tools**.
- In the seminar I will give you a **goal** to complete with these tools (and others).

Format (2)

Note: There is **rarely only one correct answer**.

I want you to **creatively** use the tools and resources available to you.

I do not want you to just copy a list of instructions.

Getting Started with RStudio

Open Rstudio

Looking Around

Look around the main Panel.

- **Console**: Where you can enter R code.
- **Workspace/History**: Where you can see your objects and the history of commands.
- **Files/Plots/Packages/Help**: Navigate files, see the graphs you make and your packages, read help files.

Looking Around

Look around the main Panel.

- **Console**: Where you can enter R code.
- **Workspace/History**: Where you can see your objects and the history of commands.
- **Files/Plots/Packages/Help**: Navigate files, see the graphs you make and your packages, read help files.

Looking Around

Look around the main Panel.

- **Console**: Where you can enter R code.
- **Workspace/History**: Where you can see your objects and the history of commands.
- **Files/Plots/Packages/Help**: Navigate files, see the graphs you make and your packages, read help files.

Source Files

Create a new **source code** file:

- Click: `File` → `New` → `RScript`
- Usually write your R code here and **save your source files**.
- This will make your life a **lot easier**.

Source Files

Create a new **source code** file:

- Click: `File` → `New` → `RScript`
- Usually write your R code here and **save your source files**.
- This will make your life a **lot easier**.

Source Files

Create a new **source code** file:

- Click: `File` → `New` → `RScript`
- Usually write your R code here and **save your source files**.
- This will make your life a **lot easier**.

Source Files

Create a new **notebook**:

- Notebooks allow you to record **what** you do and **how** you do it.
- When you have you source code file open, click: `File` → `CompileNotebook...`
- Compile a notebook when you are finished.
- We will do more of this in Week 4.

Create a new **notebook**:

- Notebooks allow you to record **what** you do and **how** you do it.
- When you have you source code file open, click: `File` → `CompileNotebook...`
- Compile a notebook when you are finished.
- We will do more of this in Week 4.

Create a new **notebook**:

- Notebooks allow you to record **what** you do and **how** you do it.
- When you have you source code file open, click: `File` → `CompileNotebook...`
- Compile a notebook when you are finished.
- We will do more of this in Week 4.

Create a new **notebook**:

- Notebooks allow you to record **what** you do and **how** you do it.
- When you have you source code file open, click: `File` → `CompileNotebook...`
- Compile a notebook when you are finished.
- We will do more of this in Week 4.

Commenting

Hint: You can make your code easier to read by **regularly commenting** on it.

Use the # (hash). For example,

```
 This is a comment
```

The Basics: Objects (1)

Objects

- R is an *object-oriented language*.
- **Objects** are like R's nouns: they are **things**.

The Basics: Objects (1)

Objects

- R is an *object-oriented language*.
- **Objects** are like R's nouns: they are **things**.

The Basics: Objects (2)

For example:

```
 Add 2 + 2
2 + 2
```

```
[1] 4
```

```
 Put the answer of 2 + 2 in an object called Answer
Answer <- 2 + 2
```

Assignemt

The <- is the **assignment operator** it assigns something to an object.

Tasks 1

Create **5** different objects. Explore their properties.

What can you put into an object?

What could you not put into an object?

Commands, Functions, Arguments (1)

Commands & Functions

Commands and Functionstell R to **do something**.
Usually they do something to an object.

Commands, Functions, Arguments (2)

For example:

Lets create a set of 5 numbers: 1, 2, 3, 4, 5, 6:

```
Numbers <- c(1, 2, 3, 4, 5, 5)
```

Now lets take the mean (average) of these 5 numbers with the `mean` command

```
mean(Numbers)
```

```
[1] 3.333
```

Commands, Functions, Arguments (1)

Arguments

Arguments modify the command.

For example:

Find what arguments the mean command can take by typing a ? before mean.
This gives us the **help file** for the mean command.

We can see that one argument is trim which rounds the answer.

To add the trim argument just use the = like this:

```
mean(Numbers, trim = 1)
```

```
[1] 3.5
```

Tasks 1

Find and use **2** other commands. Explore their properties.

Assign the output of these commands to new objects?