ACEFA EPIDEMIC MODELLING & ANALYTICS SHORT COURSE

INTRODUCTION TO R: PRACTICAL

Background information

In this practical, we will be introducing the programming language R, using the interface R Studio. We will then use R to implement the SIR models explored in Practical 1.

To prepare for the practical, please install the R programming language and R Studio.

To install R, follow the instructions at:

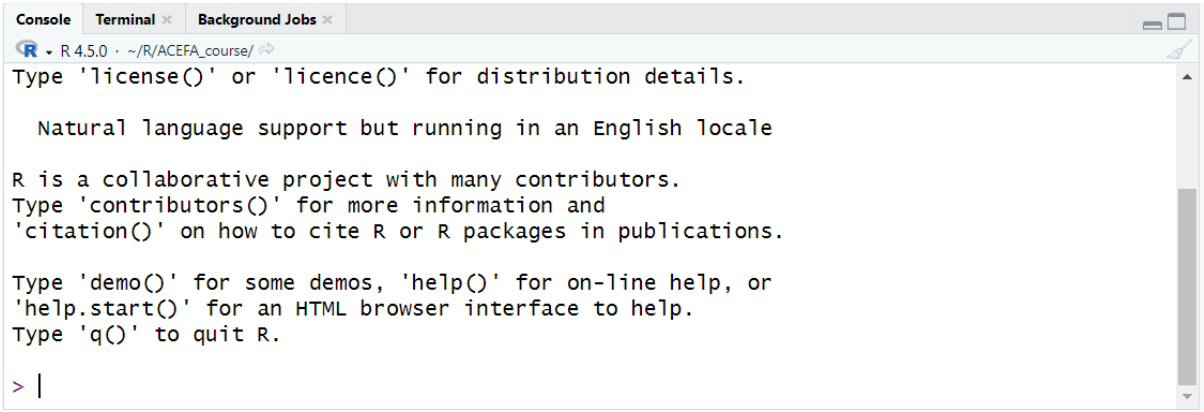
https://cran.r-project.org/bin/windows/base/

To install R Studio, follow the instructions at:

https://posit.co/download/rstudio-desktop/

Once these are installed, please open R Studio. If you have not used R before, you might like to explore the interface and try it out – there are many online guides to using R and R Studio. We will also have a section in this practical on using R, but any prior experience will be helpful.

To be ready for the course, please open R Studio and go to the console, usually on the bottom left:



To install the required packages, type in each of the following lines (hit Enter after each line):

```
install.packages("tidyverse")
install.packages("ggplot2")
install.packages("patchwork")
install.packages("EpiNow2")
install.packages("deSolve")
```

The practical

This practical will be comprised of three parts.

Part 1: part0_R_basics.R

In the first part, we will work through an introduction to using R in R Studio. This will be an interactive workshop where we will work through the commands in R as a group. We will look at basic operations and assignments, functions, working with dataframes, and reading in data.

Part 2: part1_R_plotting.R

In this part of the tutorial, we will work through how to create some plots using a package called ggplot2.

Part 3: part2_SIR_models.R

Finally, we will replicate the deterministic and stochastic SIR models that we explored in the first practical.