

R programming training plan for BRiCs MEAL members and CMU MEAL colleagues

Time: 1 and half hour per session

Date	Topic	User requirements	R packages to be used
10/06/2021	Introduction to R – part 1 <ul style="list-style-type: none"> • What is R? • Why R? • Installing R and R studio • Basic rules in R • Setting a working directory • Creating projects • R packages • Installing and loading R packages Objectives <ul style="list-style-type: none"> • Understand what R programming is and how it operates • Be able to install R and Rstudio on own laptops • Be able to understand basic R syntax 	<ul style="list-style-type: none"> ✓ Laptop ✓ Internet connection 	Base R packages
24/06/2021	Introduction to R – part 2 <ul style="list-style-type: none"> • R prompt • Commands, objects and functions • Data types in R • Creating vectors (Variables) • Creating a data frame • Removing Objects • Getting Help Objectives <ul style="list-style-type: none"> • Create objects in R • Understand data types in R • Know how to get help about R functions • Be able to create a data frame in R 	<ul style="list-style-type: none"> ✓ Laptop ✓ Internet connection 	Base R packages
08/07/2021	Reading data into R <ul style="list-style-type: none"> • Reading data into R (different types) • Writing data from R (different types) Objectives <ul style="list-style-type: none"> • Be able to read .csv, .xlsx and stata files into R • Be able to write .csv, .xlsx and stata files from R 	<ul style="list-style-type: none"> ✓ Laptop ✓ Internet connection ✓ Installation packages readr, haven and readxl 	Readr Haven readxl

22/07/2021	Data manipulation in R – part 1 <ul style="list-style-type: none"> • Exploring properties of a data frame • Adding new variable to a data frame • Renaming variables • Selecting variables Objectives <ul style="list-style-type: none"> • Be able to explore the properties of a data frame • Be able to rename variables • Be able to select only variables of interest from a data frame 	✓ Laptop ✓ Internet connection ✓ Installation of packages tidyverse, foreign, readxl and writexl	tidyverse foreign readxl writexl
28/07/2021	Data manipulation in R – part 2 <ul style="list-style-type: none"> • Piping operator • Sorting variables • Handling duplicates in a data frame Objective <ul style="list-style-type: none"> • Understand how the pipe operator works and its value • Be able to sort data • Be able to remove duplicates from a dataframe 	✓ Laptop ✓ Internet connection ✓ Installation of package tidyverse	tidyverse
05/08/2021	Data manipulation in R – part 3 <ul style="list-style-type: none"> • Filtering observations • Summarizing data by groups Objectives <ul style="list-style-type: none"> • Be able to filter out data • Be able to summarise data by grouping 	✓ Laptop ✓ Internet connection	tidyverse
19/08/2021	Data manipulation in R – part 4 <ul style="list-style-type: none"> • date manipulation • string manipulation Objectives <ul style="list-style-type: none"> • Be able to manipulate dates and strings 	✓ Laptop ✓ Internet connection ✓ Installation of packages stringi, stringr and lubridate	tidyverse lubridate stringi stringr
02/09/2021	Data manipulation in R – part 5 <ul style="list-style-type: none"> • Appending data • Merging data • Reshaping data Objectives <ul style="list-style-type: none"> • Be able to append, merge and reshape data 	✓ Laptop ✓ Internet connection	tidyverse

13/09/2021	Test the participants on data manipulation tasks <u>Objectives</u> <ul style="list-style-type: none"> For participants to be able to manipulate data 	✓ Laptop ✓ Internet connection	tidyverse lubridate stringr readxl readr stringi
27/09/2021	Data visualization in R – part 1 <ul style="list-style-type: none"> ✓ Bar graphs (dodged, stacked and identity) ✓ Faceting ✓ Line graphs ✓ Boxplots <u>Objectives</u> <ul style="list-style-type: none"> Be able to create some visualizations 	✓ Laptop ✓ Internet connection ✓ Installation of package tidyverse	tidyverse
11/10/2021	Data visualization in R – part 2 <ul style="list-style-type: none"> ✓ Themes ✓ Labs() ✓ Adding text to a plot ✓ Package patchwork ✓ Exporting plots from R <u>Objectives</u> <ul style="list-style-type: none"> Be able to style plots Be able to export plots from R 	✓ Laptop ✓ Internet connection ✓ Installation of package patchwork	tidyverse patchwork
25/10/2021	Test the participants on data manipulation and visualization in R <u>Objectives</u> <ul style="list-style-type: none"> For participants to be able to read, manipulate data and create some visualization 	✓	