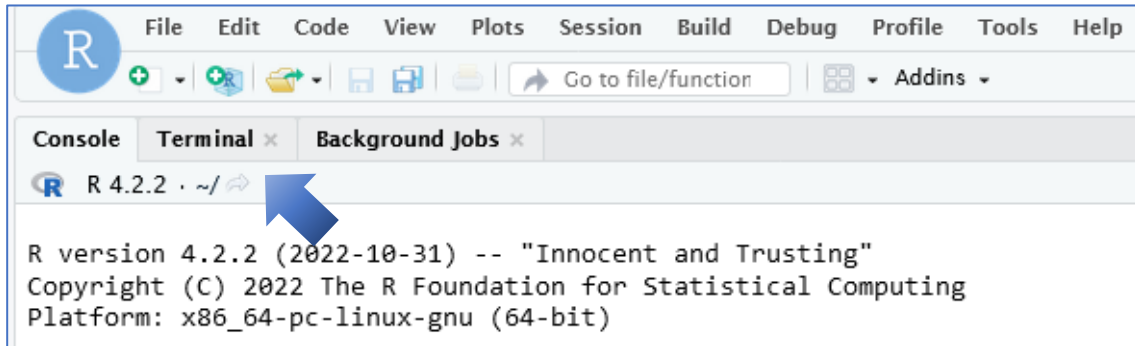


Mendelian randomization: Practical 1

Use your web browser to navigate to: <https://workshop.colorado.edu/rstudio/>

Login with your username and password

Click on the “terminal” tab. This will take you to a UNIX like environment where you can copy the files over for this session’s practical exercise

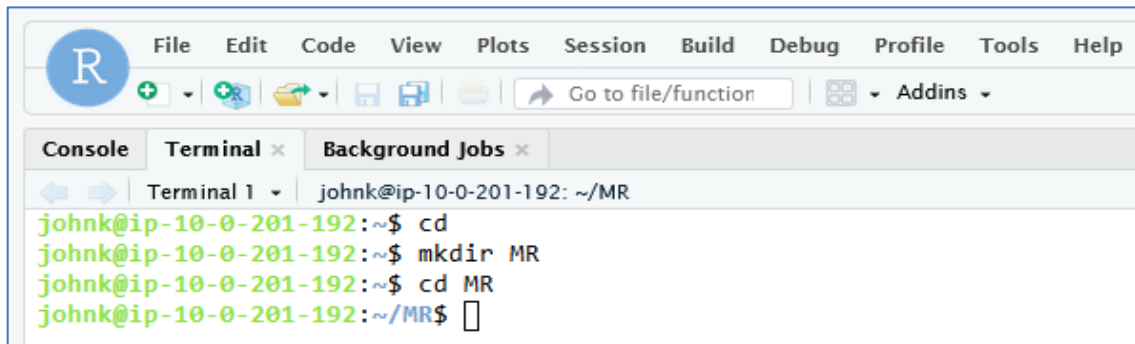


Now go to your home directory, create a new working directory called “MR”, and move to it

```
cd
```

```
mkdir MR
```

```
cd MR
```



Mendelian randomization: Practical 1

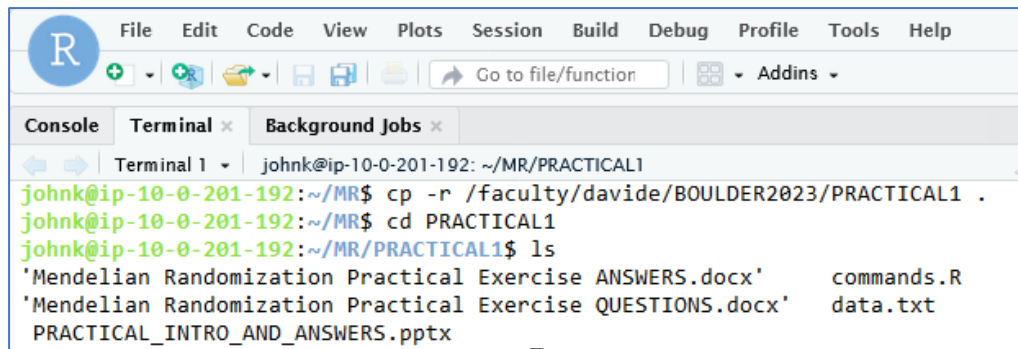
Copy the PRACTICAL1 directory from David Evans' Faculty drive into this directory

```
cp -r /faculty/davide/BOULDER2024/PRACTICAL1 .
```

#Move into your newly created PRACTICAL1 directory and print the working directory here

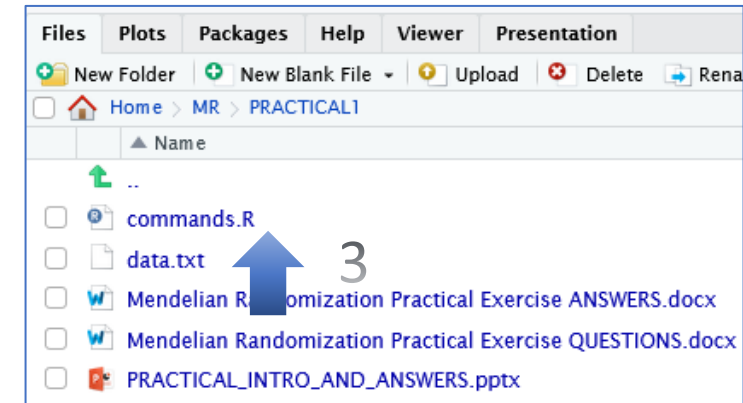
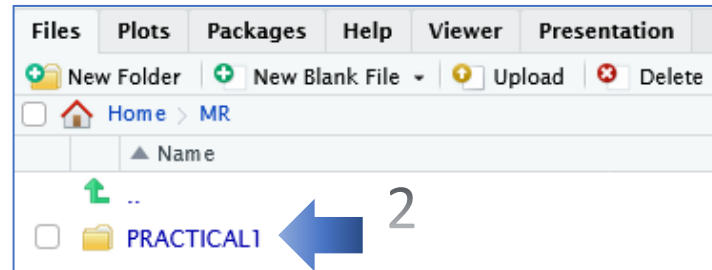
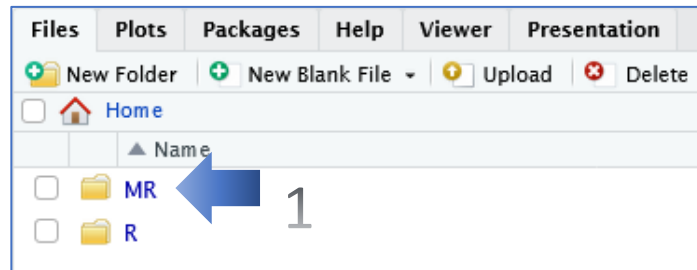
```
cd PRACTICAL1
```

```
ls
```



```
johnk@ip-10-0-201-192: ~/MR/PRACTICAL1
johnk@ip-10-0-201-192:~/MR$ cp -r /faculty/davide/BOULDER2023/PRACTICAL1 .
johnk@ip-10-0-201-192:~/MR$ cd PRACTICAL1
johnk@ip-10-0-201-192:~/MR/PRACTICAL1$ ls
'Mendelian Randomization Practical Exercise ANSWERS.docx'  commands.R
'Mendelian Randomization Practical Exercise QUESTIONS.docx' data.txt
PRACTICAL_INTRO_AND_ANSWERS.pptx
```

#You should be able to navigate to the PRACTICAL1 directory using the point and click windows style directory in the lower right-hand half of the R studio server (under the files tab). First click Home, then MR and then PRACTICAL1



#Now load the list of commands you will run for the practical.

Click on the “Commands.R” file and the file will load up in the R Console (Top left)

Mendelian randomization: Practical 1

#Change to the “Console” tab which will take you to R.

#Highlight code and Click Run to Clean up, Set your working directory to the PRACTICAL1, and load data

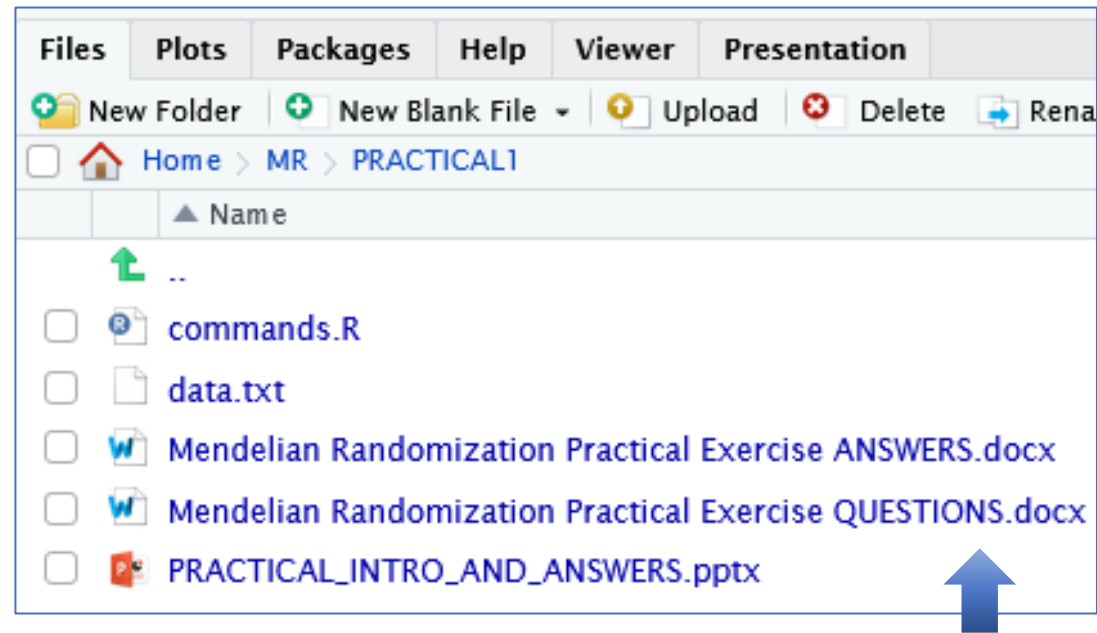
```
1 #Clean up
2 rm(list=ls())
3
4 # Set your working directory in R to this folder and read in the dataset
5 setwd("~/MR/PRACTICAL1/")
6 example <- read.table("data.txt", header=T)
7 attach(example)
8
9 # Q1. As you're running the commands below, fill in the graphical representation
10 # of the analyses in the word document figure with the appropriate variables and
11 #
12 # Look at the data
13 # Units: SNP (0,1,2), CRP mmol/L, SBP mmHg, Income per $10,000, HDL mmol/L
14 head(example)
15 summary(example)
16
17
```

Console

```
R 4.2.2 · ~/MR/PRACTICAL1/
>
> # Set your working directory in R to this folder and read in the dataset
> setwd("~/MR/PRACTICAL1/")
> example <- read.table("data.txt", header=T)
> attach(example)
```

Mendelian randomization: Practical 1

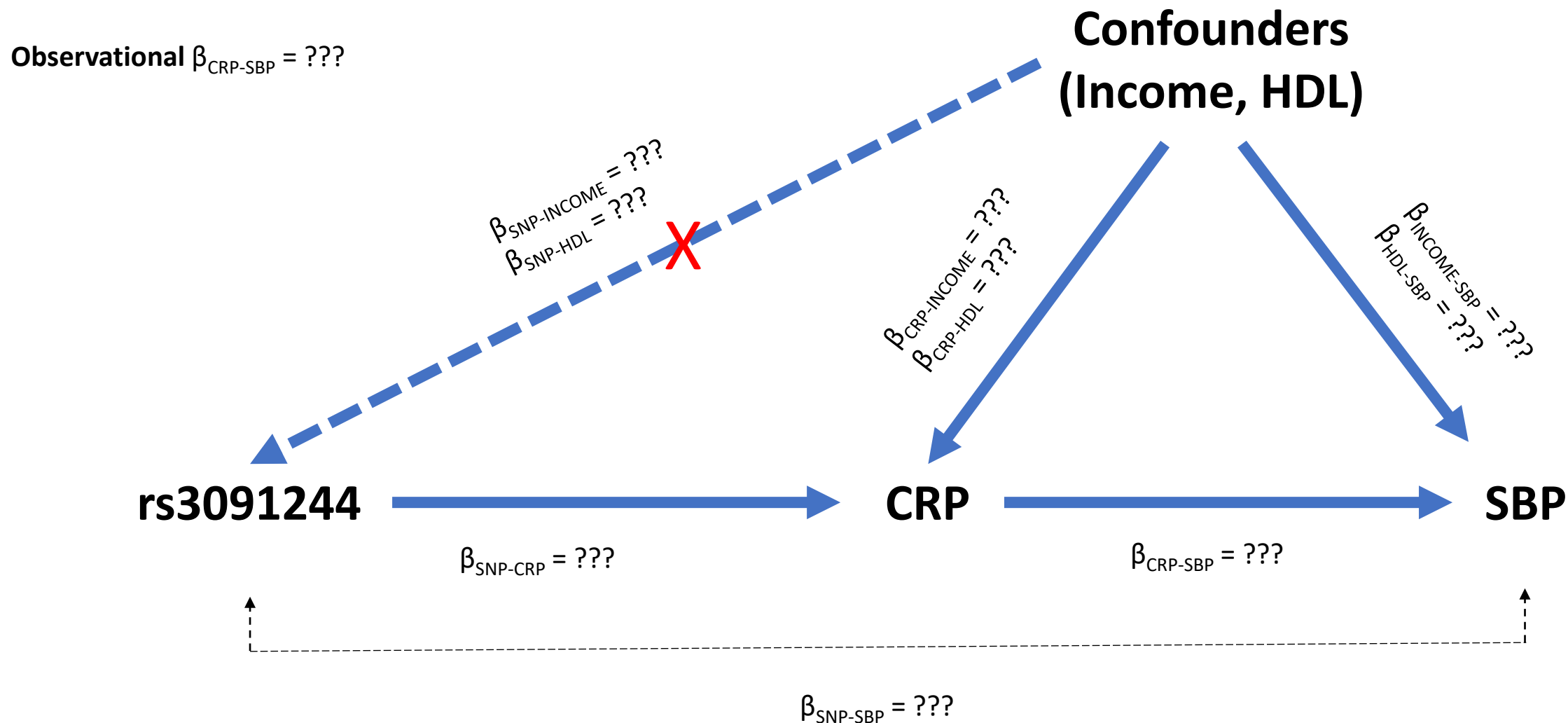
Go to bottom right-hand window, and download “Mendelian_Randomization_Practical_Exercise_QUESTIONS.doc” onto your local pc. Open the file and complete the practical.



#This file also contains R code, but it is recommended to work from the commands.R file that you loaded previously in R studio

Mendelian randomization: Practical 1

Does C-Reactive Protein causally affect Blood Pressure?



Observational $\beta_{\text{CRP-SBP}} = 19.1 \text{ mmHg/CRP Unit}; P < 2 \times 10^{-16}$

