

# Getting up and running with R Markdown

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2022-01-20

For your assignments, copy and paste the YAML header from Ed Discussion exactly at the top of your R Markdown document.

Remember to also include the setup chunk right below the YAML header, and load your libraries right after that.

```
#Load libraries
library(tidyverse)
library(gapminder) #only for this example
```

We can write normal text here.

We can also make **bold** and *italic* script.

```
#I can also write text as comments within a code chunk.
#The shortcut is cmd+alt+i (or ctrl+alt+i in windows).
```

Here is how numbering works.

## 1 Heading

### 1.1 Subheading

#### 1.1.1 Sub-subheading

I can suppress default numbering, by adding “{-}”

**Suppressed numbering here.**

We can execute code in a code chunk, like this:

```
2+2
```

```
## [1] 4
```

We can do the same thing using inline code: two plus two equals 4.

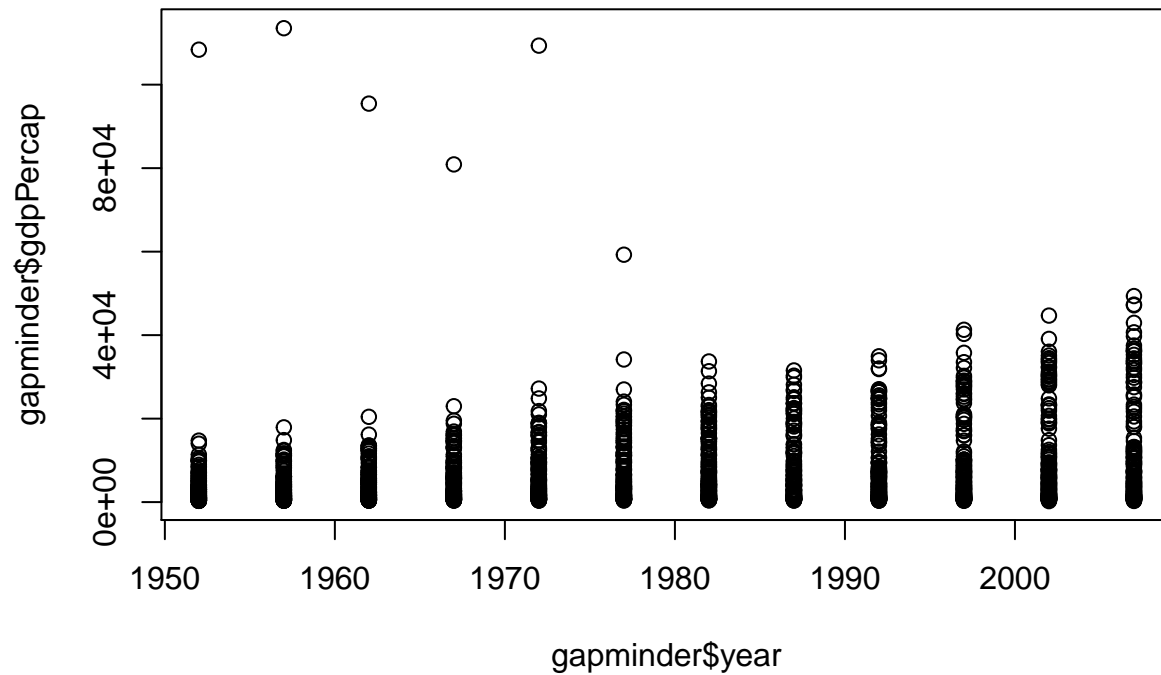
Here is a code chunk, displaying a table and the code used to generate it.

```
gapminder %>%  
  head(5)
```

```
## # A tibble: 5 x 6  
##   country      continent  year lifeExp      pop gdpPercap  
##   <fct>        <fct>    <int>  <dbl>    <int>    <dbl>  
## 1 Afghanistan Asia      1952   28.8  8425333    779.  
## 2 Afghanistan Asia      1957   30.3  9240934    821.  
## 3 Afghanistan Asia      1962   32.0 10267083    853.  
## 4 Afghanistan Asia      1967   34.0 11537966    836.  
## 5 Afghanistan Asia      1972   36.1 13079460    740.
```

Here is another code chunk, displaying a plot and the code used to generate it.

```
plot(gapminder$year, gapminder$gdpPercap)
```



## Code chunk display options

In the setup chunk we set the global knit options to display **both code and results**, and suppress warnings and messages in our pdf output.

Usually, you will **not** have to change these settings when answering assignment questions.

For example, suppose I want to display the structure of the gapminder dataset.

- Use `{r}` for the default options

```
table(gapminder$continent)
```

```
##  
##   Africa Americas      Asia  Europe Oceania  
##     624      300     396     360      24  
#default display, inherited from the setup chunk.  
#this is how to display answers for most assignment questions.
```

In very rare cases, we *can* change the display options within the code chunk. Suppose I only want to display results, and not code.

- Use “`{r echo = FALSE}`” in the chunk header to do this.

```
##  
##   Africa Americas      Asia  Europe Oceania  
##     624      300     396     360      24
```

I can also display code, without results.

- Use “`{r results = 'hide'}`” in the chunk header to do this.

```
table(gapminder$continent)
```

## Additional tips

Don't include "clunky" output that is not integral to answering the question.

As an example, consider the following question: *what is the mean GDP per capita of the gapminder dataset?*

The following is not a very good approach, since the output is clunky.

```
summary(gapminder)

##           country      continent      year      lifeExp
## Afghanistan: 12 Africa :624 Min. :1952 Min. :23.60
## Albania : 12 Americas:300 1st Qu.:1966 1st Qu.:48.20
## Algeria : 12 Asia :396 Median :1980 Median :60.71
## Angola : 12 Europe :360 Mean :1980 Mean :59.47
## Argentina : 12 Oceania : 24 3rd Qu.:1993 3rd Qu.:70.85
## Australia : 12 Max. :2007 Max. :82.60
## (Other) :1632
##      pop      gdpPercap
## Min. :6.001e+04 Min. : 241.2
## 1st Qu.:2.794e+06 1st Qu.: 1202.1
## Median :7.024e+06 Median : 3531.8
## Mean :2.960e+07 Mean : 7215.3
## 3rd Qu.:1.959e+07 3rd Qu.: 9325.5
## Max. :1.319e+09 Max. :113523.1
##
#by inspection, 7215.3
```

The following is neater, but also not very good, since it still displays unnecessary information, and the answer is "hard coded" - i.e. numbers are typed in - this is bad practice.

```
summary(gapminder$gdpPercap)

##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##    241.2 1202.1  3531.8   7215.3  9325.5 113523.1
##
#by inspection, 7215.3
```

The best way is to use inline code, as per below:

**The mean GDP in the gapminder dataset is 7215.3.** (Note here that the number is generated using code, not typed out)

## Some final remarks

- Do not hard code (i.e. do not type numeric values directly), instead, use inline code for simple calculations and code chunks for more complicated operations
- **Fill in code in your .R script first, and make sure everything works as intended. Only transfer your code to R Markdown when you are happy with your .R script.**

For more detail on R Markdown visit [Yihui Xie's website](#).