1.10 Exercise: Install and start using R

Using R for *Data to Insight*

This is a late breaking initiative to make analyses in **R** available in this run of *Data to Insight*. The intended audience is people who already have had some experience with installing software and some experience of coding, or at least of using some command- driven system.

R is made up of a base system and many thousands of additional packages which give it enormous capability. Almost all of our analyses will use functions from Tom Elliot's **R** package **iNZightPlots** which in turn draw on many other packages.

Warning: Coding is entirely unforgiving. If you get anything wrong, however small (e.g. missing a bracket, misspelling a name, using a lower-case letter when the name has an upper-case letter or vice versa as *R is case sensitive*), you will just get error messages. So be very careful, and even then expect to make mistakes.

1. **Install R:** Go to https://cran.r-project.org/mirrors.html and click on a CRAN mirror site near you. Download and install R (download versions available for Windows, Mac and Linux).
   Warning: ***If you are a Mac user*** and ***may also*** **want *to use iNZight*** just use the version of R installed while installing iNZight. Installing a second version is likely to create problems for you. The iNZight installation will already have installed the packages in number **3.** below.
2. **Start up R.**
3. [***If you are using iNZight's R-Console or using the version of R installed by iNZight on Mac do not do Step 3 and skip to Step 4*** *because the packages referred to are already there*]
   Install the R packages we will be using in the course by copying the following 2 lines of code and pasting them into the **R Console** window (not in R Studio).

```
install.packages(c('iNZightPlots', 'FutureLearnData'), dependencies = TRUE,
                 repos = c('https://r.docker.stat.auckland.ac.nz', 'https://cran.rstudio.com'))
```

If it asks you, **"*Would you like to create a personal library*** *to install packages into*? ", **say, "Yes"**.

[***NOTE:*** *If your copy-and-paste from the two lines in red doesn't work* ***get them from here***]

4. When that has completed, **paste the following 2 lines into the *R Console* window**

   library(iNZightPlots)

   library(FutureLearnData)

You will get error messages if these packages have not installed.

5. **Now try the following:** (Paste lines of code, or even several lines of code at a time, into the **R Console** window. See what they do.

# R CODE	**COMMENTARY**
	These first 2 lines have to be run every time you start up R** and want to use the functionality in **iNZightPlots,** or the data in **FutureLearnData.
library(iNZightPlots) **library(FutureLearnData)**	***Load** the **iNZightPlots** package* ***Load** the **FutureLearnData** package (contains all the data sets for the course)*
data(package="FutureLearnData")	*Tell me about all **the data sets** in **FutureLearnData***
data(nhanes_1000)	***Make** the data set **nhanes_1000** in FutureLearnData **available** for analysis*
nhanes_1000[1:10, 1:8]	*Show me the **first 10 rows** and **8 columns** of **nhanes_1000***
head(nhanes_1000) **tail(nhanes_1000)**	*Show me the **top rows** of **nhanes_1000*** *Show me the **bottom rows** of **nhanes_1000***
names(nhanes_1000)	*Give me the **names** of all of the variables in **nhanes_1000***
iNZightPlot(Race3, data=nhanes_1000)	***Plot** the variable named **Race3** in **nhanes_1000***
iNZightPlot(Height, data=nhanes_1000) **getPlotSummary(Height, data=nhanes_1000)**	***Plot** the variable named **Height** in **nhanes_1000*** ***Get** me a **Summary** of the variable named **Height** in **nhanes_1000***

4. **Ask** for plots and summaries of other variables whose names you can see in the names list.

5. **When you have finished, close R**. When it asks "***Save Workspace image?*** ", click, "**No**".

To discuss issues related to this Exercise,

go to **https://gitter.im/iNZightVIT/d2i-R-discussion**

To be able to post to the list you will have to set up a (free) account on ***Github***
https://github.com/login

If your question relates to an Exercise, say which one you are talking about!