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## **INTRODUCTION**

- Workshop Schedule/Lessons: <https://tufts-carpentries.github.io/2021-10-19-tuftsHirsh-online/>
- Code of Conduct: [https://docs.carpentries.org/topic\\_folders/policies/code-of-conduct.html](https://docs.carpentries.org/topic_folders/policies/code-of-conduct.html)

## **SPREADSHEETS LESSON**

Data and Software downloads required for this workshop: <https://tufts-carpentries.github.io/2021-10-19-tuftsHirsh-online/> (scroll down to Setup)

**Head First Excel**- a good book for statistics, plotting, coding in spreadsheets is available online at HHSL here:

[https://tufts-primo.hosted.exlibrisgroup.com/permalink/f/18fc9o8/01TUN\\_ALMA51209936600003851](https://tufts-primo.hosted.exlibrisgroup.com/permalink/f/18fc9o8/01TUN_ALMA51209936600003851).

Please follow the direction at the above URL for access

**Nine simple ways to make it easier to (re)use your data** - this article has the breakdown of how to work with empty cells/0s/Null values: <https://ojs.library.queensu.ca/index.php/IEE/article/view/4608>

### **Changing UK date format to US:**

- Example to convert dates currently in UK d/m/y format to US m/d/y
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- Select the column of dates
- Under DATA, select “Text to Columns”
- Select Delimited – Next
- Untick ALL delimiters – Next
- Select column format “Date: DMY” – Finish
- 
- You may note that DMY is NOT the format you want the data in, but selecting that allows Excel’s geographic formatting to “see” the dates and will convert them to US-style MDY format

## **OPENREFINE LESSON**

GREL in OpenRefine: <https://docs.openrefine.org/manual/grel>

## INTRO TO R LESSON

Where to find R Packages

- Official Site - <https://cran.r-project.org/web/packages/>
- More user-friendly user contributed site: <https://www.r-pkg.org>

KEYBOARD SHORTCUTS ([https://www.rstudio.org/links/ide\\_cheat\\_sheet](https://www.rstudio.org/links/ide_cheat_sheet))

- Execute/Run command from a script: Ctrl + Enter OR Cmd + Return (mac)
- Clear Console: Ctrl + L
- <- Assignment operator :Alt + - OR Option + - (mac)
- Comment code: Ctrl + Shift + C

RESERVED WORDS (don't use reserved words for objects)

- <https://stat.ethz.ch/R-manual/R-devel/library/base/html/Reserved.html>

DATA TYPES

- atomic data types: "character", "numeric" (or "double"), "logical", "integer", "complex", "raw":
  - character - string, example: "a", "tufts"
  - numeric - numbers you can do math with
  - logical - TRUE and FALSE
  - Integers - 2L (L indicates it's an integer); stored as 32-bit, takes less storage space; can't do math with it
  - complex - real and imaginary numbers, example 1 + 4i
  - raw - raw bytes/bitstream, represents the smallest unit of memory in a computer - e.g. 01101010
- data structures: vectors, lists, matrices, data frames, factors, and arrays

FUNCTIONS

- class - indicates the type of element for an object
- typeof() - data type of an object (how it's stored in memory)

BOOLEAN OPERATORS

- & (AND)
- | (OR)
- ! (NOT)

ASSIGNMENT OPERATORS

- == is "equal"
- = OR <- is "assign"

- %in% binary match operator that matches if elements on the search vector on left side are found in the target vector on the right side; returns true, false values

## **\*\*FURTHER LEARNING in R**

### Upcoming R Workshops @ Tufts

- A Gentle Introduction to R - <https://tufts.libcal.com/event/8402474>
- R for Data Manipulation and Visualization - <https://tufts.libcal.com/event/8402483>
- Survey Analysis and Statistical Models using R - <https://tufts.libcal.com/event/8402484>
- A List of All Upcoming Data Lab Workshops: <https://tufts.libcal.com/calendar?cid=12812&t=d&d=0000-00-00&cal=12812&inc=0>

### Learn through a Book [Free]:

- [eBook] R for Data Science: Visualize, transform, tidy, and import data (1st ed.) by Wickham, Hadley, Grolemund, Garrett, & Safari, an O'Reilly Media Company. (2016)

### Learn through an Online Course [Free]:

- [Website] Coursera - <https://www.coursera.org/search?query=r%20programming>
- [Website] EdX - <https://www.edx.org/learn/r-programming>
- [Website] Udacity - <https://www.udacity.com/course/data-analysis-with-r--ud651>
- [Tufts-subscribed Website] - <https://tufts.udemy.com/organization/search/?src=ukw&q=R>

### Learn through an Online Tutorial [Free]:

- [Website] Code Academy - <https://www.codecademy.com/learn/learn-r/modules/learn-r-introduction>
- [Website] Data Camp - <https://www.datacamp.com/courses/free-introduction-to-r>
- [Website] LinkedIn Learning - <https://www.linkedin.com/learning-login/go/bostonpubliclibrary>  
Access: (must register for library card through Boston Public Library)
- [Website] RStudio Tutorial <https://web.cs.ucla.edu/~gulzar/rstudio/basic/tutorial.html>
- [Website] QuickR – R Tutorial <https://www.statmethods.net/r-tutorial/index.html>

### Learn by Example:

- [Website] R Graph Gallery - <https://www.r-graph-gallery.com/all-graphs/>
- [Website] StackOverflow (R) - <https://stackoverflow.com/questions/tagged/r>

### Learn through Community [Free]:

- [Meetup] Greater Boston useR Group - <https://www.meetup.com/Boston-useR/>
- [Meetup] R-Ladies Boston - <https://www.meetup.com/rladies-boston/>