Functional Programming with \{purrr\}

This is a one-day course on the \{tidyverse\} package, \{purrr\}. \{purrr\} is a very powerful package that gives great flexibility to analysts, by enhancing R’s functional programming toolkit. We will demonstrate how to use functions such as \texttt{map()}, \texttt{map2()} and \texttt{pmap()}, to iteratively map functions over multi-element objects like vectors and lists. Emphasis will also be placed on how we can manipulate list outputs and how this can be applied to our data.

Course Outline

- **Introduction to \{purrr\} and Lists**: Introduction to lists in R and using \{purrr\} to map a function across a list.
- **List-Columns and Nesting**: Exploring nested data in list columns and using the mapping functions to manipulate them.
- **Parallel Mapping**: Using \{purrr\} functions to map over multiple lists in parallel.
- **Manipulating \{purrr\} Output**: Using \{purrr\} to efficiently extract elements from lists into vector and dataframe format, and change the hierarchy within nested lists.
- **Best Practices in \{purrr\}**: Showcase of functions from \{purrr\} which aid in the debugging process.

Learning Outcomes

Session 1:

*By the end of session 1, participants will be able to...*

- understand lists in R and know how to use \{purrr\} to map functions.
- know what nested loops are and use \{magrittr\} to extract elements from them.
- be able to create list columns and know how to access the data in them.

Session 2:

*By the end of session 2, participants will be able to...*

- iteratively loop two or more objects to a function of choice using functions such as \texttt{map2()}, \texttt{pmap()} and \texttt{imap()}.
- recognize the advantages of using \{purrr\}.
- understand how to extract elements from nested lists to achieve a desired output object class.
- be able to effectively debug their code using multiple \{purrr\} functions for the debugging process.
- save precious debugging time using e.g. \texttt{safely()}.

This course does not include:

- The \{stringr\} package, also from the \{tidyverse\} which helps with splitting and combining strings, manipulating text data and working with regular expressions. Jumping Rivers run a Text Mining in R course which covers \{stringr\} in detail.

**Level**: Foundation  
**Duration**: 6 hours
No in-depth coverage of the tidyverse data visualisation package \{ggplot2\}, see our course on this for more information.

Attendee Feedback

- “Dealing with lists is something I’ve always struggled with, but this course has given me so much more confidence in handling and manipulating them!”