

## Data Visualisation with Python

Python has a number of packages for the effective creation of graphics to communicate your data insights. This course will examine two popular libraries for creating static 2D plots: Matplotlib and Seaborn. During the training session, we'll cover plotting basics and customisation of figures with Matplotlib, before moving onto complex statistical visualisations with Seaborn.



### Course Outline

- **Matplotlib:** Introduction to the most widely used visualisation library for Python, covering basic plotting and formatting.
- **Plot building:** Using Matplotlib's object-oriented interface to build more complex plots made up of multiple plot panels.
- **Customisation:** Creating visually-appealing figures by customising fonts, axes and colours, and defining custom style sheets.
- **Seaborn:** Introduction to Seaborn, a very useful graphics package built on top of Matplotlib to aid in easy creation of beautiful statistical graphs.
- **Statistical visualisation:** Exploring your data using Seaborn's statistical functions, including regression models, kernel density estimation, bivariate distributions and pairwise plots.

### Learning Outcomes

#### Session 1:

*By the end of session 1, participants will...*

- be familiar with the graphics landscape in Python:
  - Matplotlib related packages
  - Alternatives to Matplotlib
- understand Matplotlib's object oriented plotting interface.
- have explored different types of plots:
  - Line
  - Scatter
  - Histograms
  - Bar charts
  - Sub plots
- be comfortable constructing complex plot layouts with `GridSpec`.
- be able to customise Matplotlib figures:
  - Legends
  - Axes
  - Fonts
  - Colourmaps

- Using predefined and custom style sheets

**Session 2:**

*By the end of session 2, participants will...*

- be introduced to basic plotting with Seaborn.
- be able to customise Seaborn figures using Matplotlib.
- be able to apply advanced statistical visualisations with Seaborn:
  - Bivariate relationships
  - Optimisation functions
  - Univariate and bivariate distributions
  - Kernel density estimation
  - Box plots
- understand how to create and customise multi-panel plots:
  - Facet grids
  - Pair grids

*This course does not include:*

- Animations and interactive plots.
- Data manipulation and data cleaning.
- Advanced data modelling techniques, see our website for courses on machine and deep learning.

**Attendee Feedback**

- “The presenter really did an excellent job on explaining the content in the course and I believe that the actual content is very useful to know. I will definitely be using it”
- “It was well structured, the materials were clear and professionally produced, good enough to be followed on their own”