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***Data Science: Training and Capacity Building***

**Predictive Data Analytics**

The Industrial Strategy recognises that a major challenge facing UK businesses and industry is how best to utilise big data to improve economic performance and increase productivity. A substantial barrier to exploiting the potential offered by emerging forms of big data is the lack of a suitably trained workforce with appropriate analytical skills. Many statistical techniques used in the social sciences are also suitable for the analysis of big data in non-academic settings, however social science graduates often lack experience in applying their skills and knowledge in non-academic research domains.

This three-day workshop will provide a fast-track introduction for researchers wishing to learn how to undertake statistical modelling using data from non-academic research domains. The workshop will introduce participants to fundamental concepts and approaches in statistical modelling and multivariate data analysis. There will be an emphasis on understanding outputs and interpreting results. These skills are critical for the successful analysis of complex data.

The workshop will comprise both lectures and practical hands-on exercises in the programming language R. The final day of the workshop will be a group exercise in the form of a ‘hackathon’, where participants will be tasked with addressing an industry challenge using the techniques learned during the first two days.

As a result of attending this workshop, participants will be equipped with a range of skills relating to predictive analysis that are increasingly desirable in ‘data-intensive’ business and industrial settings.

Topics covered will include:

* Core concepts in statistics and data analysis (e.g. testing hypotheses, correlation, tests of association)
* Multivariate analyses for a range of measures (e.g. metrics, categories and counts)
* Longitudinal data analysis
* The analysis of durations (e.g. time-to-event analyses)
* Modelling trends (e.g. time-series analysis)
* Further approaches to predictive analytics
* Practical hands-on sessions introducing the methods and techniques outlined above.

The workshop is free to attend, and refreshments and lunch will be provided on each day.

The workshop is suitable for postgraduate social science students and early-career researchers with a good general knowledge of statistical methods and data analysis. Some experience of analysing large-scale and complex social surveys (e.g. the birth cohort studies or household panel surveys) or administrative datasets would be an advantage.

The workshop is also suitable for academic staff engaged in teaching data analysis and statistical methods in social science settings who are seeking to incorporate data science and big data analysis skills into their programmes.