THE UNIVERSITY of EDINBURGH

For more information on working with the University of Edinburgh Centre for Statistics

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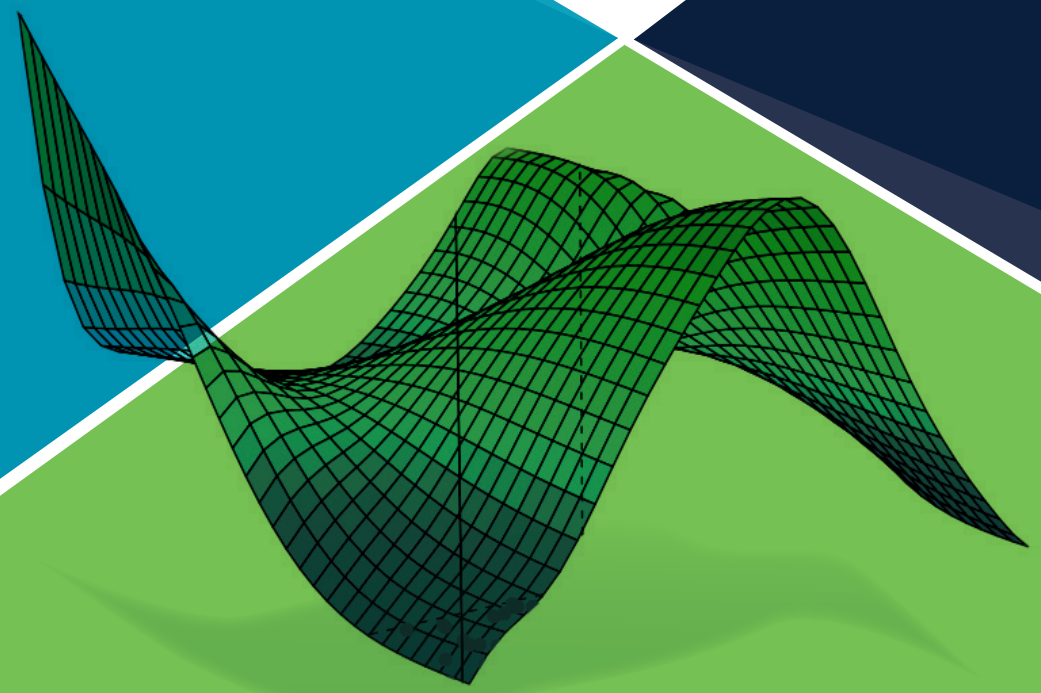
Centre for Statistics



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EDINBURGH INNOVATIONS

Edinburgh's New Centre for Statistics

The University of Edinburgh has a powerful track record in statistical research, and in the application of statistical methodology in a wide range of fields. The new Centre for Statistics will unite multi-disciplinary researchers with the expertise to bring fresh thinking to today's commercial challenges.

With over 13,000 staff at the University overseeing 35,000 students, spread across 1600 undergraduate and 600 postgraduate programmes, it's very likely that we have researchers with knowledge of your area of interest.

We have expertise in the effective use of statistics applied to many commercial sectors:

- **Health** – Statistical analysis of health data is delivering real improvements in individual healthcare, and cost savings for providers.
- **Society** – Greater understanding of societal and environmental factors influencing health and wellbeing means better decisions and planning.
- **Finance** – Statistical methods are leading to a more accurate quantification of financial risk, and allowing for a more thorough analysis of the frequency and factors leading to stock market crashes
- **Energy** – Decisions on future energy supply and demand planning are informed by statistical modelling of the system, and this is becoming crucial as the grid becomes more diversified.
- **Manufacturing and product testing** – Improvement of products and processes through experimental design and data modelling, leading to cost and time savings.
- **Image analysis** – Statistical methods are unlocking the power to automatically and quickly assess large numbers of images, leading to improved decision making in a huge range of disciplines.
- **Natural sciences** – Statistical modelling of a diverse range of data underpins our understanding of everything from genetics, spread of disease, and climate change, to earthquakes and gravitational waves.

MODELLING NATIONAL ENERGY CAPACITY

Statisticians within the School of Mathematics have worked with National Grid for several years on the UK's annual Electricity Capacity Report. The study assesses the balance of electrical power demand and available supply over the peak winter months in the UK, under a range of detailed scenarios and sensitivities. This is used by the UK Government to decide how much extra capacity to procure, by balancing an appropriate level of risk of shortfalls with the cost to customers.
Recent topics have included statistical modelling of demand and wind generation resource, inclusion of energy storage in the calculations, and decision analysis methods for the volume of resource to procure. Academic research activities led by the University of Edinburgh support these applied studies by developing the underpinning science.

The Foundations of Data Science

The University of Edinburgh has a long and proud history of ground breaking statistical discovery and research. Thomas Bayes, described as the father of modern statistics, studied at Edinburgh in 1719–22. The ideas behind Bayesian statistics – dynamically updating our understanding of probability within a system, given current knowledge and beliefs – have become widely used since the 1950's, as computers and data science have become fundamental to all aspects of life.

The new University of Edinburgh Bayes Centre, due to open in 2018, represents the next chapter for the University and the City of Edinburgh as a world leader in applications of statistics and data science.

Transferring knowledge through training

The Centre for Statistics will offer statistical training to a wide audience, both online and face to face. In addition to the free *Statistics: Unlocking the World of Data* online course developed by the School of Mathematics, more advanced online courses are also in the pipeline. We are also developing the capacity to deliver bespoke statistical training to individuals or groups.

www.edx.org/school/edinburghx

Positive changes to patient healthcare

Medical statisticians at Edinburgh were members of the team that studied healthcare practises for bronchiolitis, an acute respiratory infection in infants. The equivalence study used innovative nonparametric analysis with methods to deal with missing data.
The pioneering trial examined and provided recommendations for blood oxygen levels at which infants with bronchiolitis could be safely released from hospital, which lead to a change in recommended practice allowing some infants to be released earlier. The research won the prestigious BMJ 'clinical research paper of the year' prize in 2016.