

Statistics and methods

Are unusual weather patterns due to long-term climate change? Is a new drug more effective than one it is replacing? Is crime rising or falling?

Statistics is a discipline that involves interpreting and making sense of numerical data.

Why study statistics and methods?

Like words, numbers don't just speak for themselves – they need to be interpreted. Statisticians interpret data so organisations and individuals have the information they need to make decisions. How these data are gathered in the first place involves carefully thinking about the best methods to use so that the data that are captured can yield useful information.

Statistics touches all our lives in many ways, from weather forecasts to the cost of car insurance. Statistics is distinct from mathematics because it is much more directed towards solving real-life problems. Wherever there are data – and that is pretty much everywhere – there are statisticians.

What will I study at university?

More than 50 universities in the UK offer degree courses in statistics. These can be as a single subject or combined with other subjects such as mathematics, biology, economics or geography. For some courses, students can spend a year working in industry, giving the student a chance to see how statistics is used in real-life situations.



“What is the best way to capture information to answer the question in which we are interested? Different methods have different strengths and weaknesses, and we must think carefully about what methods in our toolbox are best suited to a particular problem.”

Graham Crow, Deputy Director,
ESRC National Centre
for Research Methods

Courses differ in their content, but there are a number of themes that are likely to be common to most statistics degrees. These include:

- Probability
- Statistical modelling
- Real-world data
- Financial applications
- Medical statistics
- Experiment design
- Regression analysis – a technique for estimating the relationships among variables
- Time series analysis – analysing sequences of data points measured at over time
- Multivariate statistics – the simultaneous observation of more than one outcome variable.



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After my degree... what next?

There are many opportunities for statistics graduates. For those with a particular interest in the development of research methodologies, there are masters courses in methods, and the possibility to do PhD research projects.

Those looking for work will find statisticians working throughout industry, business and commerce in both the private and public sectors.

Jobs for statisticians include:

- Government statistician, working across a wide range of government departments
- Medical statistician, designing, analysing and interpreting health research
- Market research statistician, using statistics to interpret market research data
- Manufacturing/engineering statistician, working on product design and/or the efficiency of a production line
- Actuary, a specialist in risk management
- Forensic statistician, analysing data in forensic science units
- Sports statistician, modelling sporting events for clients such as the betting industry.

What do students say?

“If you enjoy finding out new things, like looking for the information in numbers and exploring a way forward in any situation, statistics is a great subject. It allows you to get inside a lot of different issues and helps you see your way through problems and challenges.”

Statistics student

Top tips from employers

- Wherever possible, bring statistics to life
- Learn to be a good communicator by talking about your work and presenting your findings to non-statisticians
- Work with and familiarise yourself with as many statistical computer software packages as you are able to and keep up-to-date with what is new in statistical software
- Get work experience during the holidays e.g. as part of a formal internship or placement programme. Perhaps consider volunteering to analyse project data or run a survey to help a local charity to measure its impact
- Take opportunities to work with other students on other social science and science courses as part of a cross-disciplinary team.

What skills will I gain?

A degree in statistics will enable you to:

- Use maths and statistics to solve practical problems
- Interpret results
- Find, extract and analyse data from a range of different sources
- Communicate statistical information
- Work effectively as part of a team
- Design experiments and project
- Give advice to decision-makers.



SOCIAL SCIENCE FOR SCHOOLS

Further resources

- **The Royal Statistical Society** is the UK's learned society for statistics as well as a professional body for statisticians. The society exists to foster and encourage the growth, development and application of statistics in all areas of activity which can benefit from it, and promote the public understanding of statistics and the competent use and interpretation of statistics. It has an active student section.
www.rss.org.uk
- **Careers in Statistics** is the Royal Statistical Society's website that provides comprehensive information about the careers that are available in the field of statistics. It has detailed descriptions of the types of job that statisticians do, together with case studies and interviews.
www.careersinstatistics.co.uk
- **getstats** is a ten-year campaign that has been run by the Royal Statistical Society since 2010. Its aim is to build statistical literacy by improving how we handle the practical numbers of daily life, business and policy.
www.getstats.org.uk
- **The Office for National Statistics** is a publicly-funded body that collects and publishes statistics related to the economy, population and society of England and Wales at national, regional and local levels. This information can be used to help government ministers make decisions about social and economic policy. It also provides a picture of how society changes and evolves over time.
www.statistics.gov.uk
- **The National Centre for Research Methods (NCRM)** exists to improve the standards of research methods across the UK social science community. NCRM aims to advance methodological understanding and practice, enable social science researchers to learn about best practice in research methods; play a key role in promoting high quality research methodology; and ensure that the UK is at the forefront of international developments in social research methodology.
www.ncrm.ac.uk

