Job profile

Data scientist

Data scientists turn raw data into meaningful information that organisations can use to improve their businesses

Organisations are increasingly using and collecting larger amounts of data during their everyday operations. From predicting what people will buy to tackling plastic pollution, your job is to use data to find patterns and help solve the problems faced by businesses in innovative and imaginative ways.

You'll extract, analyse and interpret large amounts of data from a range of sources, using algorithmic, data mining, artificial intelligence, machine learning and statistical tools, in order to make it accessible to businesses. You will then present your results using clear and engaging language.

Data scientists are in high demand across a number of sectors, as businesses require people with the right combination of technical, analytical and communication skills.

Types of data scientist

You can work across a broad range of areas, including:

- finance
- academia
- scientific research
- health
- retail
- information technology
- government
- ecommerce.

Responsibilities

As a data scientist, you'll need to:

- work closely with your business to identify issues and use data to propose solutions for effective decision making
- build algorithms and design experiments to merge, manage, interrogate and extract data to supply tailored reports to colleagues, customers or the wider organisation
- use machine learning tools and statistical techniques to produce solutions to problems
- test data mining models to select the most appropriate ones for use on a project
- maintain clear and coherent communication, both verbal and written, to understand data needs and report results
- create clear reports that tell compelling stories about how customers or clients work with the business

- assess the effectiveness of data sources and data-gathering techniques and improve data collection methods
- horizon scan to stay up to date with the latest technology, techniques and methods
- conduct research from which you'll develop prototypes and proof of concepts
- look for opportunities to use insights/datasets/code/models across other functions in the organisation (for example in the HR and marketing departments)
- stay curious and enthusiastic about using algorithms to solve problems and enthuse others to see the benefit of your work.

In senior roles you'll also need to:

- recruit, train and lead a team of data scientists
- have responsibility for the organisation's data science strategy
- establish new systems and processes and look for opportunities to improve the flow of data
- evaluate new and emerging technologies
- represent the company at external events and conferences
- build and develop relationships with clients.

Salary

- Salaries for junior data scientists tend to start at around £25,000 to £30,000, rising to £40,000 depending on your experience.
- With a few years' experience you can expect to earn between £40,000 and £60,000.
- Lead and chief data scientists can earn upwards of £60,000, in some cases reaching more than £100,000.

Salaries vary depending on a range of factors including your experience, qualifications, location and the sector you work in.

Benefits vary depending on the organisation but are likely to include a company pension scheme, flexible or remote working, performance bonuses and private medical insurance.

Figures are intended as a guide only.

Working hours

Depending on the type of company you work for, you can expect a good work/life balance. Core office hours are typically between 8am to 6pm, Monday to Friday. There may be times, particularly on short-term projects, where working outside of core office hours or at weekends is necessary.

In some organisations you may have the opportunity to work remotely or on a flexible schedule.

What to expect

- Data science is a collaborative area, with many people sharing their methodologies and insights, so you should be prepared to share your ideas and solutions with your wider team.
- Jobs are available in towns and cities throughout the UK with companies in a large range of sectors. There are also opportunities to work overseas.
- Roles are usually office based, and a large proportion of your time will be spent at your desk. You'll be encouraged to learn as much about the business as you can to help identify solutions to problems.
- Women are currently underrepresented in data science, although initiatives such as tech UK - Women in Tech (https://www.techuk.org/women-in-tech) are working to redress the imbalance.

Qualifications

You'll typically need a degree in a computer science, mathematical or science-based subject to work as a data scientist. The following degree subjects may be particularly useful:

- computer science
- data science/computer and data science
- engineering
- mathematics
- mathematics and operational research
- physics
- statistics.

You'll be expected to know some programming languages such as R, Python, C or Java and have strong database design and coding skills.

Some large employers offer data science graduate training schemes, which tend to take around two years to complete. Some schemes will accept graduates from any discipline. Others will specify the degree subjects they will accept.

A postgraduate qualification, such as a Masters or PhD, can be useful, especially if you're considering a change of career or are interested in learning analysis skills. For some jobs, employers will ask for a relevant Masters or PhD. Subjects include:

- big data
- business analytics
- data analytics
- data science.

You'll typically need a mathematical, engineering, computer science or scientific-related degree to get a place on a course, although subjects such as business, economics, psychology or health may also be relevant if you have mathematical aptitude and basic programming experience.

Search postgraduate courses in data science (https://www.prospects.ac.uk/postgraduate-courses-results?keyword=data%20science&featuredCourses=117833,123883&size=20&page=0#results).

Other relevant subjects at postgraduate level include machine learning, mathematics, physics and computer science.

Skills

You'll need to have:

- excellent analytical and problem-solving skills
- experience in database interrogation and analysis tools, such as Hadoop, SQL and SAS
- exceptional communication and presentation skills in order to explain your work to people who don't understand the mechanics behind data analysis
- effective listening skills in order to understand the requirements of the business
- drive and the resilience to try new ideas if the first one doesn't work - you'll be expected to work with minimal supervision, so it's important that you're able to motivate yourself
- planning, time management and organisational skills
- the ability to deliver under pressure and to tight deadlines
- great attention to detail

- teamworking skills and a collaborative approach to sharing ideas and finding solutions.

Work experience

Internships are available in data science at a number of the bigger employers, particularly in finance, retail and travel. You could also approach small to medium-sized enterprises for internship or shadowing opportunities. Most internships or placements are advertised in the autumn. However, with smaller organisations you may need to make targeted speculative applications to find out about opportunities.

Most organisations like their entry-level data scientists to have gained some work experience prior to applying for a job, but undertaking self-directed learning in programming or analysis during your course will also demonstrate your enthusiasm for the role.

Online data science competitions are also used by employers to spot new and emerging talent. Competitions are hosted by organisations such as Kaggle (https://www.kaggle.com/) and Topcoder (https://www.topcoder.com/). The Defence Science and Technology Laboratory (Dstl) sponsors the new Data Science Challenge (https://www.datasciencechallenge.org/), aimed at helping the government meet a range of challenges.

Talk with your university careers service for advice on where to search for internships and placements locally.

Employers

The leading employers for data scientists tend to be in the finance, retail and ecommerce sectors. Businesses in these sectors are keen to better understand their audience groups in order to target their focus on relevant products and offerings.

Sectors such as telecoms, oil and gas, and transport are increasingly using big data to make decisions that could positively impact their workforce, operations or sales.

Jobs are also available with:

- government departments
- NHS
- universities and research institutes.

With experience, you can work for a consultancy in a client-facing role, working on projects for a range of companies.

Search for job vacancies at:

- Data Elixir (https://jobs.dataelixir.com/)
- DataScientistJobs (https://datascientistjobs.co.uk/)
- Kaggle Jobs (https://www.kaggle.com/jobs)

Jobs are also available on more general technology job websites, such as:

- CWJobs (https://www.cwjobs.co.uk/jobs/data-scientist)
- technojobs (https://www.technojobs.co.uk/)

Vacancies are also advertised via LinkedIn.

Data scientist jobs

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Professional development

While there's no official accreditation for working in data science, you'll build on your analytical and technical skills once you start to gain experience. You'll be expected to learn how the wider company operates to ensure you're identifying business problems that need to be solved.

Some of the large employers have data science graduate training schemes, which typically last around two years. You'll follow a structured training programme, learning about the business and undertaking work placements to build your technical and business skills and industry knowledge.

In most companies, training is done on the job and you'll often have the opportunity to learn from experienced colleagues. You'll be expected to learn and develop new skills yourself by staying up to date with new and emerging technologies and techniques. Work is often collaborative in nature, so you'll be able to develop your knowledge by sharing ideas and solutions to problems with other team members.

Some companies may offer additional training in their operating procedures or encourage you to attend sector specific events to help your understanding of potential issues, new developments or emerging trends. This knowledge can then be used to better apply your problem-solving skills to relevant projects.

It's also possible to take a postgraduate qualification in an area related to data science if you don't already have one.

Career prospects

Progress will depend on your ability to quickly learn the relevant skills needed to analyse large data sets, as well as your commitment to the organisation you're working for. You can be promoted to more senior data science roles within your company, which may involve line management of junior data scientists.

Promotion from junior to senior data scientist can take between two to five years. After five years you'll be expected to take on more people management responsibility.

The skills you acquire are transferable across a range of sectors so it can be relatively easy to move into different companies.

An alternative pathway is to join a start-up company and work on projects outsourced by larger organisations.

You'll also find opportunities to move into a research career.

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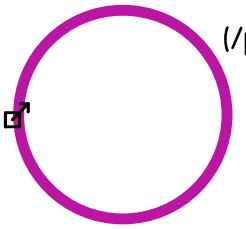

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