

“The era of big data has come beyond all doubt”

Why pursue a career in big data and analytics?

Big data has been described as the “new oil” that will fuel our economy in the years ahead with information over-taking technology as a key driver of business and organisational success. As such, people with skills in “big data” and “analytics” will become increasingly sought after. But what is big data and what do analysts do? Rather confusingly, while analytics and big data are often frequently mentioned together not all analysts work with “big data” and not all people working with big data are analysts.

What is big data?

Companies and organisations have been collecting data to increase sales or gain production efficiencies for some time. For example, Tesco, trialled the first supermarket loyalty card in 1994¹. Since then, however, an explosion in the volume of “exhaust data” created as a by-product of our digital interactions has created rich new sources of business intelligence. These new sources of data include streaming data – also known as the “Internet of Things” which is created through connected digital devices and open-source intelligence collected from publicly available sources such as the media, web-based communities, government publications and statistics and geo-spatial data such as maps and environmental data. Because “big data” is too voluminous for a single server, too unstructured for relational databases, and too fast-moving to fit in data warehouses, new technologies have emerged to manage this information².

What types of jobs are available?

The opportunities created by big data have stimulated demand for people with four broad kinds of skills³:

- Technical specialists who help manage the hardware and software solutions needed to collect, clean and process BI using data solutions such as Teradata, Hadoop, Oracle, SQL, R and Python. These roles are often advertised as ‘developers’ or ‘architects’ and generally require computing qualifications and/or experience in data structure, informational management, data architecture or other engineering.
- Data analysts who process BI with the purpose of generating insights to drive decisions, actions and eventually, revenue or other impacts using tools such as SAS, R, Tableau, Qlikview, Alteryx and Spotfire.. Where data analysts who work with specific BI sources may be described as such, for example: CRM analysts, database analyst, SQL analysts, web analysts.

¹ https://en.wikipedia.org/wiki/Tesco_Clubcard

² <https://hbr.org/product/big-data-at-work-dispelling-the-myths-uncovering-the-opportunities/16574E-KND-ENG>

³ <http://www.forbes.com/sites/piyankajain/2015/01/05/5-steps-to-transition-your-career-to-analytics-step-1-identify-your-ideal-job/#5042b6822d62>

- Data scientists, who provide expertise in statistics, correlations and quality to identify or predict patterns in the data. Data scientists often need qualifications and/or experience in statistics, operations research, computer science or algorithms.
- Business analysts, who identify and prioritise the problems worth solving and the business relevance of the anomalies and patterns identified by the data scientists. Business analysts often have a business background (e.g. in Product Management or have a MBA). These roles include product analyst, pricing analyst or financial analyst, depending on the part of the business they are working in.

The distinction between these roles however is not 'hard and fast'. Some job descriptions combine functions within a single post and there is a lack of uniformity in how similar positions are described (for example, the job titles of data analysts and data scientists are sometimes used to describe similar roles). There is evidence that data scientists (or analysts) with computing skills have been described as "unicorns" commanding significantly higher wages to reflect their scarcity in the USA⁴. Similarly, evidence from the UK reveals that data scientists (or analysts) with computing skills are being sought with Python and SQL topping the list of most commonly required skills⁵. Technical specialists and analysts of all types – not just business analysts – are often expected to have an understand of the commercial context they are operating in and all need good communication and presentation skills in order to communicate their findings to others. A degree of creativity is also needed to spot not so obvious patterns in the data.

While technical specialists and analysts are responsible for the operational aspects of exploiting big data, analytics is far from a 'back room' enterprise. Given the significant investment required, Board Members and Directors need to understand the value and limitations of big data in order to develop a corporate strategy underpinning its utilisation. Furthermore, it is likely that user-interfaces will be developed in future that allow professionals without advanced computing skills to access and manipulate data.

Analysis of job big data job vacancies⁶ advertised across the UK in 2013 shows that "developers" accounted for the largest share:

- Developers, 41%
- Architects, 10%
- Consultants, 10%
- Analysts, 7%
- Administrators, 5%
- Data Scientists, 2%

⁴ <http://www.forbes.com/sites/gilpress/2015/10/09/the-hunt-for-unicorn-data-scientists-lifts-salaries-for-all-data-analytics-professionals/#49e53af77a64>

⁵ <http://www.activeinformatics.com/right-skills-for-data-scientist/>

⁶ https://www.thetechpartnership.com/globalassets/pdfs/research-2014/bigdata_report_nov14.pdf

- Project Managers, 1%
- Designers, 1%

The skills most commonly cited in job advertisements as a requirement for big data positions were: big data (28%), business intelligence (24%), data warehouse (16%), ETL (13%), analytics (13%), relational databases (8%), data modelling (8%), data management (4%), data mining (4%) and data analysis (3%).

For real time information about big data job vacancies search the IT Jobswatch website at <http://www.itjobswatch.co.uk/>

Where are the big data jobs?

These vacancies are heavily concentrated in London with the capital accounting for almost two-thirds of big data vacancies advertised in 2013. By comparison 42% of data warehousing/business intelligence and 44% of IT vacancies were located in the Capital. The South West of England, accounted for 4% of big data vacancies in 2013 and 5% of data warehousing/business intelligence and 5% of IT vacancies.

The ability to capture and analyse data is a skills that is needed across a wide range of industries and occupations. As a result, is it difficult to analyse how many companies employ big data personnel or analysts. However, Census data suggests that 2,400 people in Exeter were employed as Information Technology Technicians and Professionals in 2011, equivalent to 2.9% of the workday population. This is broadly comparable to that as the Country as a whole.

Industrial analysis conducted by NIESR identifies the Exeter travel-to-work area as being host to the largest number of companies in the 'digital economy' south west of Bristol, using both Standard Industrial Classifications and 'big data' generated by Growth Intelligence⁷.

Almost 14,000 people were employed in technology companies across the Heart of the South West Local Enterprise Partnership (LEP) area⁸ in 2014 according to the Business Register and Employment Survey.

Are the prospects for employment good?

The average number of permanent vacancies for big data specialists across the UK rose from 1,200 in 2008 to 16,000 in 2013. Employment prospects for big data specialists are very good. Forecasts suggest that demand for these roles will increase by 160% in the UK between 2013 and 2020 with 56,000 job openings created annually over the period.

⁷ <http://www.niesr.ac.uk/publications/measuring-uk%e2%80%99s-digital-economy-big-data#.V0Ido032ZaQ>

⁸ Comprising Cornwall, Plymouth, Torbay, Devon and Somerset.

What could I expect to earn?

Government statistics put median full time earnings of IT business analysts, architects and systems designers was £42,000 in 2014, slightly higher than median salaries across all professional occupations (£40,900) and across all technology specialists (£36,600)⁹. The median salary for technology specialists aged 16 to 24 was £20,500. The median UK salary across all occupations was £27,200 in 2014. Slightly older data, for 2013, but from the same source, puts the median salary of big data staff, at £51,000.

Real time analysis of job vacancies suggests that 'data scientists' can command a salary of around £56,400, with additional premiums for those with Hadoop and data visualisation skills¹⁰. More detailed but older estimates reveal the following average pay rates being advertised for selected big data positions during 2012-2013¹¹.

- Project Manager £70,000
- Developer £50,000
- Designer £55,000
- Consultant £62,500
- Architect £70,000
- Analyst £47,500
- Administrator £50,000

Technology specialists working in technology businesses tend to earn slightly more than those working in other businesses¹².

Further resources

The Tech Partnership is the government-recognised Industrial Partnership for the digital economy. It has published labour market intelligence on the sector including analysis of vacancy data and projections of labour demand in "Big Data Analytics: Assessment of Demand for Labour and Skills 2013-2020" published in October 2014.

https://www.thetechpartnership.com/globalassets/pdfs/research-2014/bigdata_report_nov14.pdf

SAS, a analytics software company, publishes information about analytics

http://www.sas.com/en_gb/insights/analytics.html and big data

http://www.sas.com/en_gb/insights/big-data.html as part of its insights portfolio.

For real time information about big data and analytics job vacancies see IT Jobswatch at

<http://www.itjobswatch.co.uk/>

⁹ https://www.thetechpartnership.com/globalassets/pdfs/research-2015/tpdatasheet_techspecialistearnings_oct15.pdf

¹⁰ <http://www.activeinformatics.com/right-skills-for-data-scientist/>

¹¹ https://www.thetechpartnership.com/globalassets/pdfs/research-2014/bigdata_report_nov14.pdf

¹² https://www.thetechpartnership.com/globalassets/pdfs/research-2015/tpdatasheet_techspecialistearnings_oct15.pdf