

CAREERS THROUGH MATHS: JOURNALIST



JOB DESCRIPTION

A journalist in the UK is a professional who researches, verifies, and compiles information into a coherent and engaging narrative for publication or broadcast. Their daily responsibilities are diverse, ranging from attending press conferences and conducting interviews to digging through public records and analysing complex datasets. The work environment is typically fast-paced, whether in a busy newsroom like those at the BBC in London or The Guardian, or as a freelancer working remotely. Key duties include identifying newsworthy angles, fact-checking claims to the highest standard of accuracy, adhering to ethical codes like the Editors' Code of Practice enforced by IPSO (Independent Press Standards Organisation), and crafting stories under tight deadlines.

While the romanticised image of a journalist might focus on notepad and pen, the modern role is deeply intertwined with data and numerical reasoning. A significant portion of investigative journalism, in particular, involves scrutinising numerical evidence to hold power to account. This could mean analysing government spending data from HM Treasury, interpreting crime statistics from the Office for National Statistics (ONS), or investigating healthcare outcomes from NHS England reports. The ability to work with numbers is no longer a niche skill but a core component of the job.

Mathematics is central to the role as it provides the tools for objectivity and precision. A journalist uses mathematical concepts to move beyond anecdotal evidence and build stories on a foundation of verifiable data. For instance, rather than simply

stating "crime has risen," a data-literate journalist would calculate the percentage change in crime rates per 100,000 people over a specific period, compare it to police funding cuts, and present this analysis in clear charts or infographics. This rigorous, numbers-driven approach is essential for producing journalism that is credible, impactful, and in the public interest.

HOW MATHEMATICS IS USED

- **Statistics and Probability:** This is the cornerstone of data-driven journalism. Journalists use descriptive statistics (mean, median, mode) to summarise data sets, such as calculating the average wait time for elective surgery across different NHS Trusts. Inferential statistics are used to identify significant trends and correlations; for example, a reporter might use regression analysis to determine if there is a statistically significant link between deprivation indices and school funding allocations in England. Probability is key to assessing risk and likelihood in stories, from predicting election outcomes based on opinion polls to understanding the statistical significance of a new drug's trial results reported by a UK pharmaceutical company.
- **Data Analysis and Interpretation:** Journalists are required to process, clean, and make sense of large, often messy, datasets released by UK public bodies. This involves sorting, filtering, and aggregating data to find the story within. An investigation into UK housing might involve analysing a CSV file of all property sales from the Land Registry to identify postcodes with the highest year-on-year price increases or the prevalence of foreign ownership. Interpreting this data correctly prevents misrepresentation—understanding the difference between a raw number and a per-capita rate is crucial to avoid misleading conclusions.
- **Financial Numeracy and Budgeting:** Understanding public and corporate finance is essential. Journalists routinely analyse budgets from local councils, devolved governments in Scotland and Wales, and Whitehall departments. This involves calculating percentage changes in funding, comparing projected versus actual spending, and understanding fiscal concepts like deficit and debt. A business correspondent covering a FTSE 100 company like BP or GlaxoSmithKline must be able to interpret profit margins, revenue growth, and balance sheets to report accurately on their financial health.

- **Percentages, Ratios, and Rates:** These are the fundamental tools for contextualising numbers and making comparisons. A journalist will almost always convert a large figure into a percentage change to show its significance (e.g., "the budget for the Department for Transport has been cut by 12% in real terms"). They use ratios to compare figures, such as the student-to-teacher ratio in academy schools versus local authority schools. Rates, such as crimes per 1,000 people or mortality rates per 100,000, are used to allow for fair comparison between areas with different population sizes.
- **Statistical and Analytical Methods:** Beyond basic maths, many journalists, especially in specialised units like the BBC's Visual Journalism team or The Financial Times' data desk, use more advanced methods. This includes mathematical modelling to forecast scenarios, such as the potential impact of different Brexit trade deals on GDP. Data visualisation principles, which rely on an understanding of scale and proportion, are used to create accurate and non-distorting charts and maps for online publications. Techniques like network analysis are also employed to map relationships between individuals in major stories, such as the Pandora Papers investigation.

KEY SKILLS & TOOLS

Skill/Tool	Application
Spreadsheet Software (Microsoft Excel/ Google Sheets)	The primary tool for organising, cleaning, and analysing datasets. Used to perform functions like `VLOOKUP` to merge datasets (e.g., matching postcodes to local authorities), `PivotTables` to summarise thousands of rows of data (e.g., summing total government grants by region), and creating charts for initial analysis.
Data Visualisation Tools (Flourish, Datawrapper, Tableau)	Online platforms used to create interactive and static graphics for publication. Journalists use these to translate complex statistical findings into accessible charts, maps, and graphs. For instance, The Economist uses these to create elegant graphics that explain economic trends.
	Used to query large databases that are too big for spreadsheets, such as the UK's Companies House database or NHS digital

SQL (Structured Query Language)	records. A journalist can write a query to select all companies registered in a specific London postcode or to find all GPs with a certain specialisation.
R or Python Programming	Used for advanced statistical analysis, data scraping, and automation. An investigative journalist might write a Python script to scrape MP's expenses from the parliamentary website or use R to perform a sophisticated regression analysis on environmental data from the Met Office.
Freedom of Information (FOI) Requests	A key legal tool to obtain data from public authorities. Crafting a precise, legally sound FOI request requires clarity to ensure the returned data is usable and numerically specific (e.g., "Please provide the total expenditure on agency staff for the years 2019-2023, broken down by financial year and department").
Communication and Simplification	The crucial skill of distilling complex numerical findings into a clear, accurate, and engaging narrative for a non-specialist audience. This involves writing clear explanations, choosing the right visualisations, and avoiding technical jargon without sacrificing accuracy.
Fact-Checking and Verification	Applying a rigorous, sceptical lens to all numbers encountered. This involves checking calculations, verifying the original source of data, understanding the methodology behind statistics, and identifying potential biases or manipulations in how data is presented.

Typical Pathway: The most common entry route is through an undergraduate degree, often in Journalism itself (e.g., at City, University of London or Cardiff University) or a related subject like Politics, History, or Economics. Strong GCSEs and A-levels are important, with English and Maths being particularly valued. Increasingly, postgraduate diplomas or Master's degrees (e.g., MA in Journalism) are becoming a standard route, especially for career-changers. Entry-level positions include roles as a junior reporter on a local news publication like the *Yorkshire Post* or a production junior at a broadcaster like ITV News. Career progression involves moving to larger regional titles, then national newspapers (e.g., *The Times*, *Daily Mirror*), broadcasters, or specialist magazines. Key professional qualifications include the NCTJ (National Council for the Training of Journalists) Diploma, which is highly regarded across the industry.

Industry Demand: The UK journalism job market is highly competitive, with a shift away from traditional print roles towards digital, multimedia, and data-focused positions. Demand is strongest for journalists with a specialism—such as in technology, finance, health, or data analysis—and the ability to work across platforms. According to the Office for National Statistics, while overall employment in journalism is projected to remain steady, the skillset required is evolving rapidly, with data literacy becoming a key differentiator for securing roles at major news organisations.

Real-World Impact: Data journalists in the UK have been instrumental in some of the most important public interest stories of recent years. The Guardian's ongoing analysis of the UK's Covid-19 death toll, using ONS data, provided a vital public service. The BBC's Shared Data Unit works with local news outlets to uncover stories on issues like social care provision and pollution levels. By using mathematics to uncover truths, journalists play a critical role in a healthy democracy, holding those in power accountable and providing the public with the accurate information they need to make informed decisions.