The Future of Work: AI in the Black Country

September 2024

The Economic Intelligence Unit

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Artificial Intelligence (AI): The Future of Work?

What is AI?

Artificial Intelligence or AI is a broad term used to define the use of computer systems and machines that emulate human intelligence or processes to solve problems. Businesses, regardless of industries or size, are adding AI and LLMs (large language models) to their blueprint.

When we refer to AI as a field, in most cases we mean the practical application of perceived intelligence or the ability to undertake certain tasks that might normally be undertaken by intelligent beings. AI subfields such machine learning and deep learning (including neural networks) are being used commercially by companies working in areas such as data analysis, image processing, blockchain, automation and natural language processing.

The rise of AI

AI is rapidly growing across a broad range of industries and encompasses various subfields such as machine learning, deep learning, data analysis, automation, and more, which are applied commercially in industries including healthcare, manufacturing, logistics, and financial services. AI's practical applications, ranging from natural language processing to signal processing and automation, demonstrate its capacity to transform how businesses operate and solve problems.

This has led to a rising demand for skilled workers in high-tech roles such as Java developers, data engineers and software developers. AI holds great potential for driving innovation and growth, especially as investments continue to rise in fields such as digital health and automation systems.

The most recent data for companies adopting AI show significant strength and growth:

The robust expansion of AI-driven enterprises however signals a broader economic shift, with AI becoming a key driver of productivity, innovation, and long-term sustainability for businesses across all sectors.

However, the automation of occupations will have an impact on the labour market in future.

Impact of AI on UK jobs

Advances in AI are likely to have a profound and widespread effect on the UK economy and society, though the precise nature and speed of this effect is uncertain. It has been estimated that 10-30% of jobs are automatable with AI having the potential to increase productivity and create new high value jobs in the UK economy[1]. The UK education system and employers will need to adapt to ensure that individuals in the workforce have the skills they need to make the most of the potential benefits advances in AI will bring.

Which jobs are most at risk, and what do we know about the people who do these jobs?

Automation involves replacing tasks currently done by workers with technology, which could include computer programs, algorithms, or even robots.

Around 1.5 million jobs in England are at high risk of some of their duties and tasks being automated in the future[2]. The Office for National Statistics (ONS) analysed the jobs of 20 million people in England in 2017 and found that 7.4% are at high risk of automation. Women, young people, and those who work part-time are most likely to work in roles that are at high risk of automation.

In the report 'Will robots really steal our jobs?' it is estimated that 7% of existing UK jobs could face a high (over 70%) probability of automation over the next 5 years, rising to around 18% after 10 years and just under 30% after 20 years. This is within the range of estimates from previous studies and draws on views from an expert workshop on the automatability of occupations and detailed analysis of OECD and ONS data on how this is related to the task composition and skills required for different occupations. But AI will also create many jobs through increased productivity and economic growth.

Whilst some of these extra jobs will be in areas linked directly to AI and related technologies (e.g., data scientists, robotic engineers or people involved in the design and manufacture of sensors for driverless vehicles and drones), most of the additional employment will not be in high tech areas. Instead, these additional jobs created will mostly be in providing relatively hard-to-automate services (e.g., health and personal care) that are in greater demand due to the additional real incomes and spending arising from higher productivity generated by AI.

Analysis by occupation

When considering the overall risk of automation, the three occupations with the highest probability of automation are waiters and waitresses, shelf fillers and elementary sales occupations, all of which are low skilled or routine.

The three occupations at the lowest risk of automation are medical practitioners, higher education teaching professionals, and senior professionals of educational establishments. These occupations are all considered high skilled.

The following table presents the SOC2020 major occupational groups and the estimated percentage of jobs at risk of automation.

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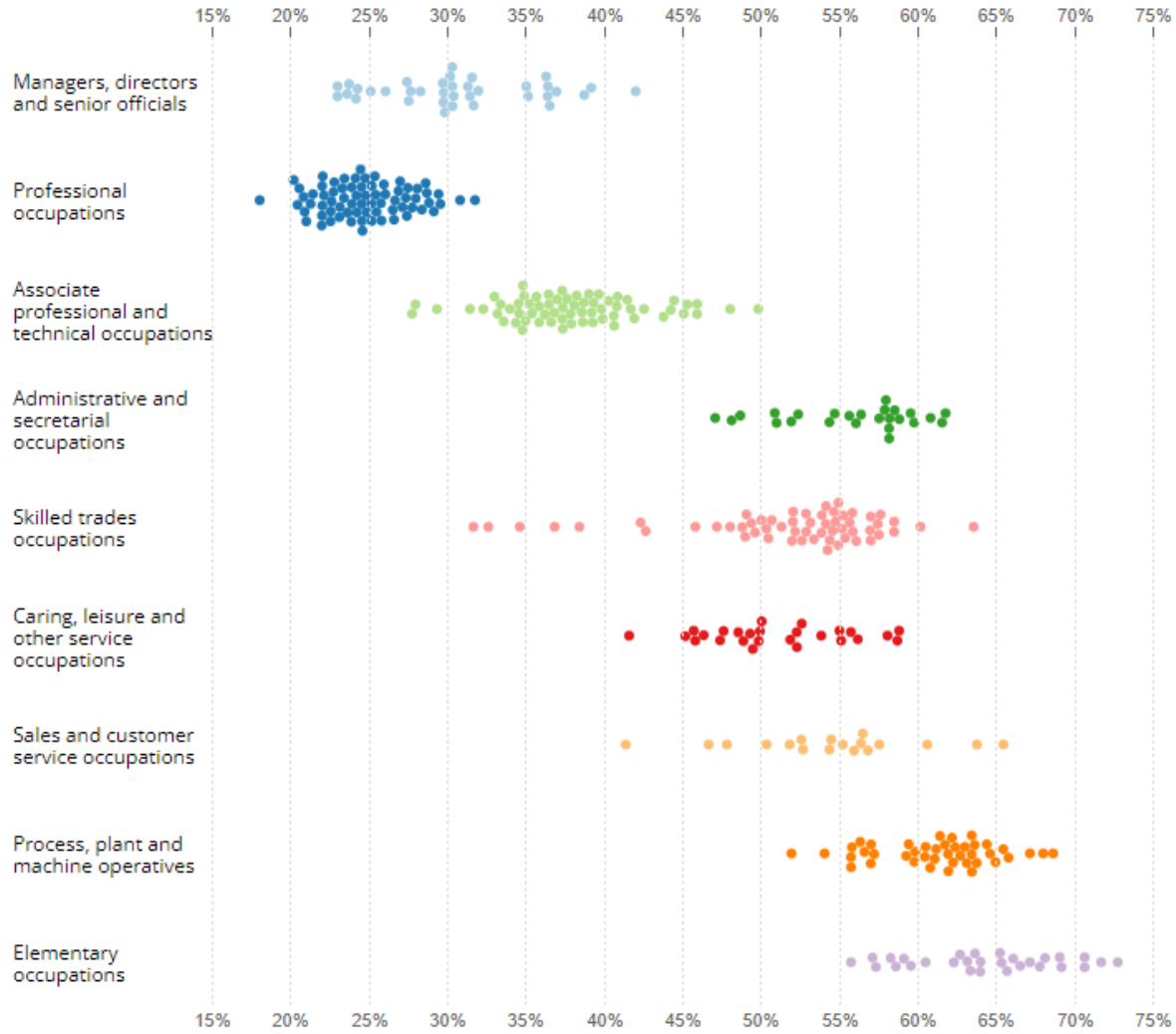
[1] Will robots really steal our jobs? (pwc.co.uk)
[2] Office for National Statistics (ONS)

Percentage of jobs at risk of automation by occupation:



Source: The probability of automation in England: 2011 and 2017

Managerial and professional occupations with higher median earnings levels also tend to see significantly positive estimated net employment effects.

Less well-paid clerical and process-oriented roles will experience negative estimated employment effects, although only in the longer term for manual workers such as truck or taxi drivers. This suggests that AI will drive a continuation of skill-biased technological change with the potential to widen existing earnings differentials.

Estimated net employment effect of AI vs median earnings of occupations:

Source: The probability of automation in England: 2011 and 2017

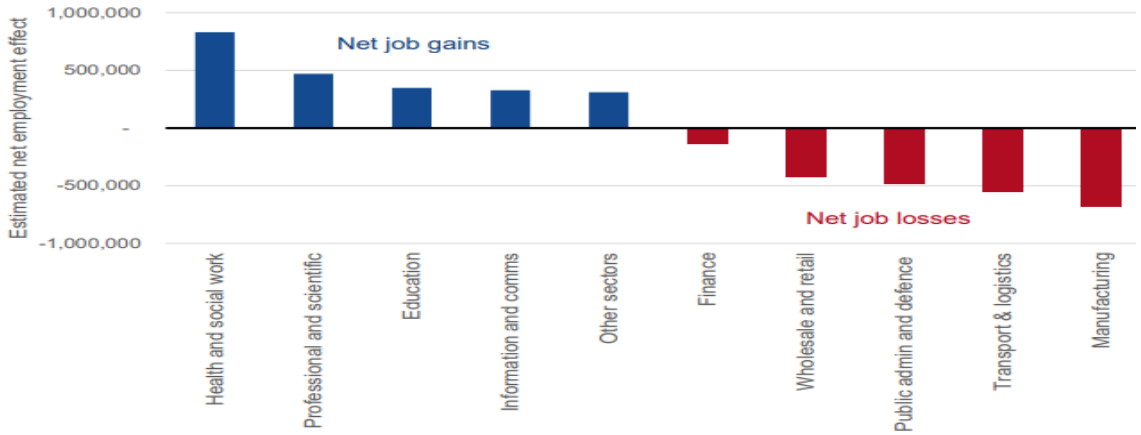
Analysis by industry sector

The health and social care sector had the largest estimated net employment increases from AI over the next 20 years. This is projected to be an area of high demand due to an ageing population and rising income levels, and one where AI and robotics are likely to be complementary to human labour in most cases rather than substitutes.

Information and communications and other professional, scientific and technical services are also projected to see significant net gains - which will include many highly skilled jobs linked closely to AI and other emerging technologies.

By contrast, significant net employment reductions are projected in wholesale and retail, finance and public administration areas in the short to medium term, all of which are relatively automatable sectors, and in transport in the longer term.

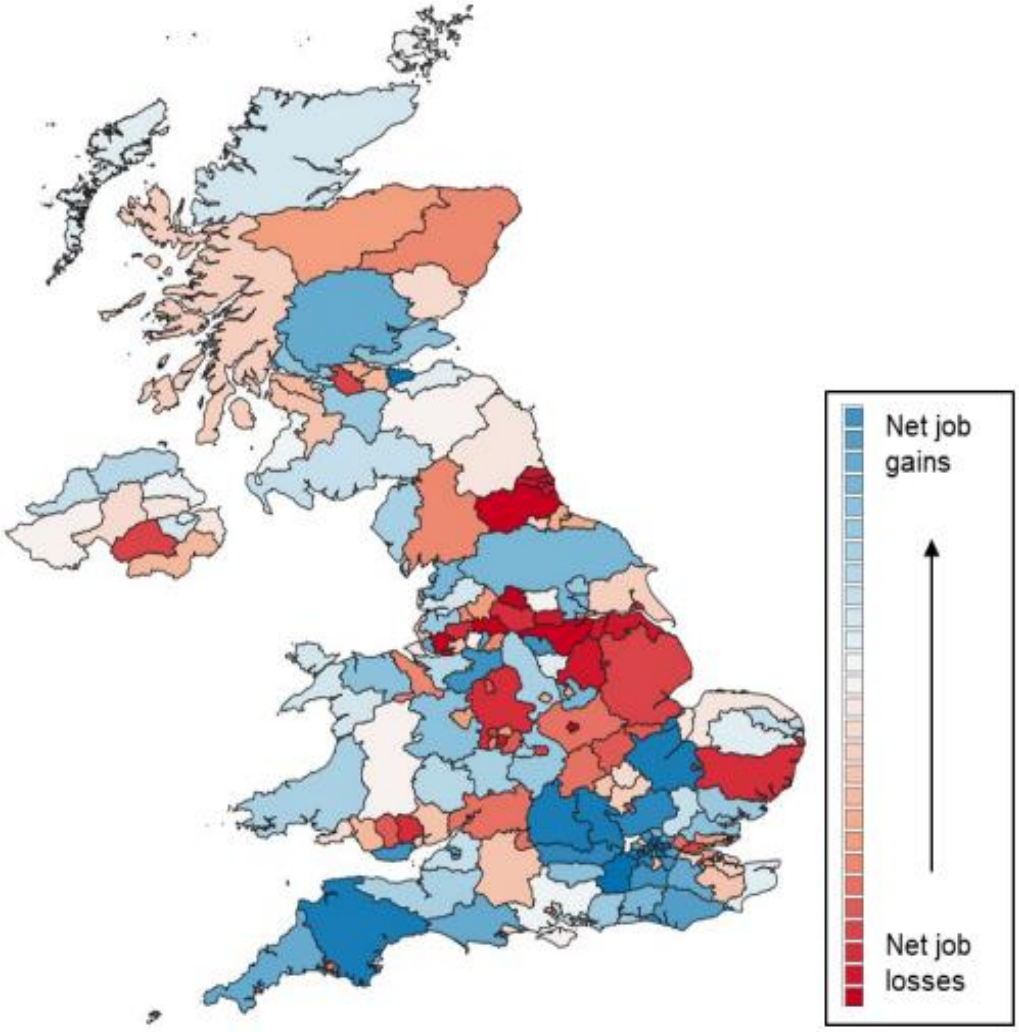
Distributional employment impacts of AI:



Analysis by location

The risk of automation changes depending on where people work. This is driven by the types of jobs available in a particular area. Generally, the more jobs that require high-skilled workers in an area, the lower the risk of automation overall.

Percentage of jobs at risk of automation by location:

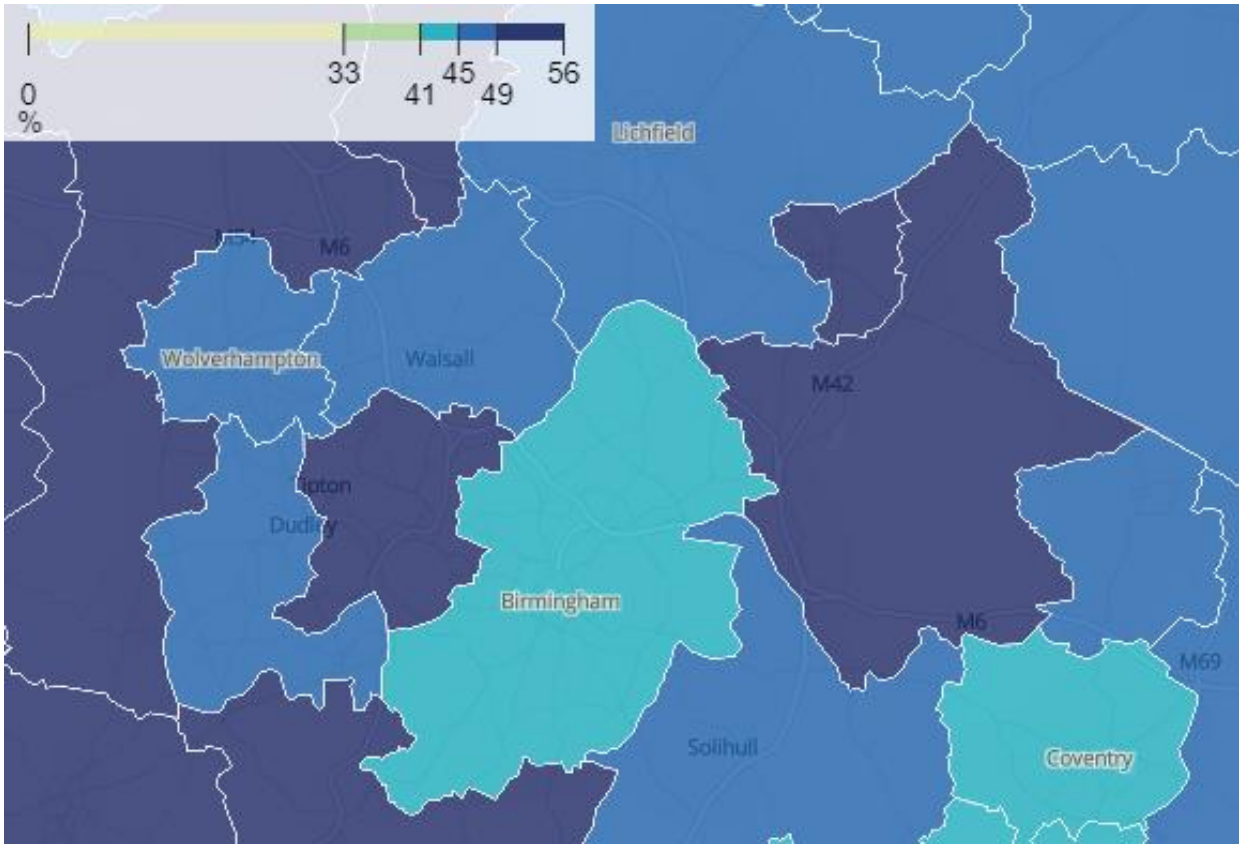


Source: PwC

The Impact of AI in the Black Country: Challenges and Opportunities

At a more detailed level, PwC's analysis indicates that AI could have a more negative net impact on jobs in certain cities in Northern England, the West Midlands, and the Black Country, with 45% to 56% of jobs potentially affected.

Percentage of jobs at risk of automation in the Black Country:



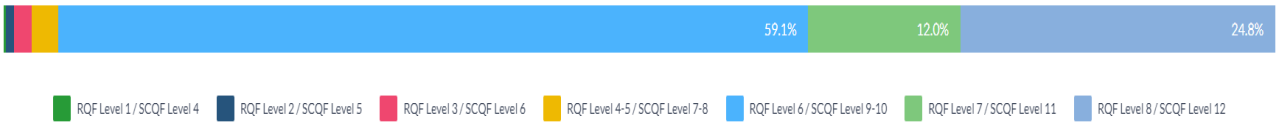
Source: PwC

This is likely to be the case because the Black Country is characterised by small and medium-sized enterprises (SMEs) across sectors like manufacturing, logistics, and retail, which are more likely to see a rise in job automation. Many roles in these industries - such as routine or manual jobs - are at high risk of being automated. This has the potential to affect a large portion of the workforce, particularly in low-skilled positions such as warehouse operations, clerical roles, and retail jobs.

The perceived lower skill levels in the area may also pose a challenge to wider AI adoption in the Black Country which requires a workforce equipped with higher-level technical and digital skills. Many new AI-driven roles, require advanced qualifications and training. It was found that 97.8% of all current AI-related job postings requested RQF Level 4 or above, so there will be a pressing need for workforce development and reskilling initiatives to prepare workers for these high-tech positions.

Minimum requested education

Analysis of the minimum requested education level for roles in the AI sector shows that 97.8% of advertised jobs require higher level qualifications, specifically RQF Level 4 and above[3].



Source: Adzuna

Moreover, over half of roles (59.1%) specifically request a bachelor's degree, 12.0% a master's degree or Postgraduate Certificate and 24.8% a Doctorate.

Only 1.8% of roles are open to people with lower-level skills.

However, while some low-skill jobs may be at risk of automation, AI can also lead to job creation in sectors that are complementary to AI, such as healthcare, digital health, and professional services. These fields, which require human interaction and oversight, are expected to experience growth, particularly with an aging population and increasing demand for digital innovation.

Potential impact on the Black Country workforce

As identified previously in this report, AI is expected to impact many sectors and occupations in the UK, leading to potential job displacement as well as job creation in new areas. While the exact estimates[4] of job losses vary, several broad sectors and occupations in the Black Country are expected to be affected:

Manufacturing

- **Automation of routine tasks**: AI and robotics are highly suited to automating repetitive tasks in factories, such as assembly line work, quality control, and even some aspects of supply chain management. Jobs like machine operators and laborers may be at risk.
- **Job loss estimate**: It is estimated that up to 25-30% of jobs in manufacturing could be replaced by automation.

[3] A RQF Level 4 qualification includes Certificate of Higher Education (CertHE), a Higher-level Apprenticeship or Higher National Certificate (HNC).

[4] The information provided is based on a synthesis of various reports, studies, and expert analyses regarding the impact of AI and automation on the labour market in the UK. Some of the key sources that have explored these trends include PwC (PricewaterhouseCoopers), Office for National Statistics, McKinsey Global Institute**:** *"Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation"* and Nesta.

Retail and Customer Service

- **Retail cashiers, sales assistants, and customer support roles**: With the rise of AI-driven checkout systems, chatbots, and virtual assistants, many customer-facing roles may be automated.
- **Job loss estimate**: Retail and customer service jobs, particularly in large retail chains and e-commerce, could see a significant reduction, with estimates suggesting around 20-25% of roles are vulnerable.

Transportation and Logistics

- **Drivers (taxis, trucks, delivery)**: Self-driving vehicles and drones may reduce the demand for human drivers. Warehousing and distribution systems are also becoming more automated.
- **Job loss estimate**: Reports suggest that around 30% of logistics jobs, including truck drivers and couriers, could be replaced by automation over time.

Financial Services

- **Administrative roles, customer-facing roles, and some decision-making tasks**: AI is already being used in banking and finance to automate processes like risk assessments, fraud detection, compliance checks, and customer service (chatbots).
- **Job loss estimate**: As much as 20% of jobs in administrative and clerical roles in financial services could be at risk.

Administrative and Clerical Roles

- **Office assistants, data entry, HR, legal assistants**: AI can perform tasks like data processing, scheduling, and basic legal research. RPA (Robotic Process Automation) has the potential to automate many back-office operations.
- **Job loss estimate**: Administrative roles across many sectors could see a 30-40% reduction.

Healthcare (Routine and Diagnostic Tasks)

- **Radiologists, medical transcriptionists, diagnostic lab work**: AI is increasingly being used to analyse medical images and provide diagnostic support. It may reduce the need for certain human medical analysts and support staff.
- **Job loss estimate**: Around 10-15% of jobs in diagnostics and routine healthcare tasks could be automated.

Professional and Legal Services

- **Paralegals, legal researchers, and document review**: AI can process and analyse legal documents at much faster speeds than humans, reducing the need for legal assistants and paralegals to do routine research.
- **Job loss estimate**: Studies suggest that up to 30% of lower-level professional and legal service jobs could be automated.

Agriculture

- **Farm laborers and agricultural machinery operators**: AI, combined with robotics and precision farming technologies, can automate many aspects of food production, reducing the need for manual labour in agriculture.
- **Job loss estimate**: Around 10-15% of jobs in agriculture could be affected by AI and automation.

Hospitality and Food Services

- **Food preparation, waitstaff, and cleaning**: Automation in kitchens (robotic chefs), and AI-driven service platforms (ordering systems) could reduce the need for staff in fast food, hotels, and restaurants.
- **Job loss estimate**: Roughly 20-25% of hospitality jobs could be at risk due to automation.

Where estimates are available, and combining with the latest available job data[5] the table below explores the potential number of jobs at risk in selected industries across the Black Country:

Selected Black Country Industries	Current Black Country Jobs	%	Potential Impact	Estimated number of Jobs*
Manufacturing	66,000	14.8	25% to 30%	19,800
Retail and Customer Service	79,000	17.7	20% to 25%	19,750
Administration and Clerical Services	28,000	6.3	30% to 40%	11,200
Healthcare	73,000	16.4	10% to 15%	10,950
Transport and Logistics	32,000	7.2	30%	9,600
Professional and Legal Services	20,000	4.5	30%	6,000
Hospitality and Food Services	21,000	4.7	20% to 25%	5,250
Financial Services	8,000	1.8	20%	1,600
Agriculture	150	0.0	10% to 15%	23
Total:	***327,150***	***73.4%***	***26%***	***84,173***

** Derived using upper impact limit*

In summary, the sectors most vulnerable to disruption from AI and automation include manufacturing, retail, transportation, and administrative roles. Roles in these sectors face the greatest risk due to the routine and repetitive nature of many jobs. On the other hand, industries like financial services, healthcare diagnostics, transport and logistics and professional and legal services are at moderate risk as while automation can streamline many tasks, these fields still rely on human oversight and decision-making. Lower-risk sectors such as agriculture and hospitality may see automation in specific areas, such as fast-food preparation, but are less likely to experience widespread job displacement due to the hands-on nature of much of the work.

However, these risks are not uniform across industries, as several factors influence job loss estimates.

[5] ONS, BRES Broad Sectors 2023

One of the primary factors is technological adoption: the speed and extent to which industries embrace AI will determine how many jobs are affected. Additionally, while some jobs may be automated, job transformation plays a significant role. Many roles will evolve, requiring workers to adapt and take on more creative or complex tasks that AI cannot easily replicate. Moreover, government intervention and reskilling programs will be critical in helping workers transition into new roles, softening the potential impact of job losses by providing opportunities for upskilling and retraining.

AI Jobs in the Black Country

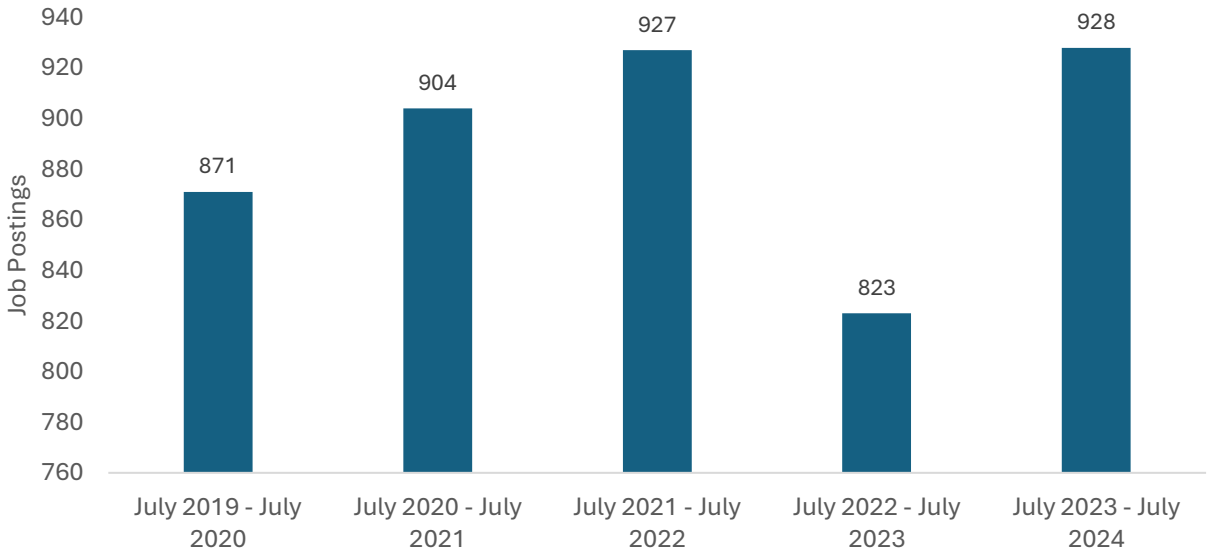
As evidenced in this report, the rise of AI is reshaping industries across the globe, driving innovation, productivity, and economic growth. As highlighted in the previous section, this rapid technological advancement is also sparking concerns about the future of work, with automation poised to displace certain jobs. In areas like the Black Country, where many jobs are routine and manual, the impact could be significant (over one-in-four-jobs). Yet, alongside these disruptions, AI is creating demand for new, high-tech roles, such as data engineers, software developers, and AI specialists.

Understanding this balance between job displacement and the creation of new roles is critical, so the Black Country can prepare to adapt to the growing demand for AI-driven innovation. The following sections explore in more detail the current demand for AI jobs in the Black Country, the sectors most affected, and the skills required to thrive in this rapidly evolving landscape.

Current profile of AI jobs

In the five years from July 2019 – July 2020 until July 2023 – July 2024, job posting demand for AI roles in the Black Country have increased by 6.5% from 871 postings to 928. Over the same timeframe demand for AI roles nationally increased by 9.9%.

Yearly Total AI Job Postings[6]:



Source: Adzuna

[6] Adzuna Labour Market Data (August 2024)

Sectors and industries

In the Black Country, just under half (47%) of all job postings for roles associated with AI are for positions linked to roles within financial and insurance activities, public administration and defence; compulsory social security, and transportation and storage (SIC 2007 Major Section)[7].

Other industries that have high demand for AI roles are professional, scientific and technical activities and administrative and support service activities.

Source: Adzuna

In demand AI occupations in the Black Country

Examining job postings at SOC2010[8] 4-digit level provides more detailed information about the types of occupations within the AI sector.

Top 5 in-demand AI occupations in the Black Country (by number of postings):

1. **Java Developer**

    - **Role:** A programmer who designs, develops, and manages Java-based applications and software.

    - **Demand:** With most large organisations using Java to implement software systems and backend services, a Java developer is one of the most sought-after jobs.

[7] UK SIC 2007 - Office for National Statistics (ons.gov.uk)
[8] SOC 2010 - Office for National Statistics (ons.gov.uk)

2. **Data Engineer**

   - **Role:** Data engineers prepare and organise the data that companies have in databases and other formats.

   - **Demand:** As companies increasingly rely on AI to drive business decisions, skilled data engineers are in high demand across industries.

3. **Software Developer**

   - **Role:** Software developers design, program, build, deploy and maintain software using many different skills and tools. They also help build software systems that power networks and devices and ensure that those systems remain functional.

   - **Demand:** Software developers are one of the top 5 most in demand positions globally.

4. **Data Scientist**

   - **Role:** Data scientists design, program, build, deploy and maintain software using many different skills and tools including AI. They also help build software systems that power networks and devices and ensure that those systems remain functional.

   - **Demand:** Demand for experienced data scientists is high, but the role is dependent on data engineers and software developers.

5. **Database Developer**

   - **Role:** Responsible for the design, programming, construction, and implementation of new databases, as well as modifying existing databases for platform updates and changes in user needs.

   - **Demand:** High demand due to the need for troubleshooting systems and resolving technical issues.

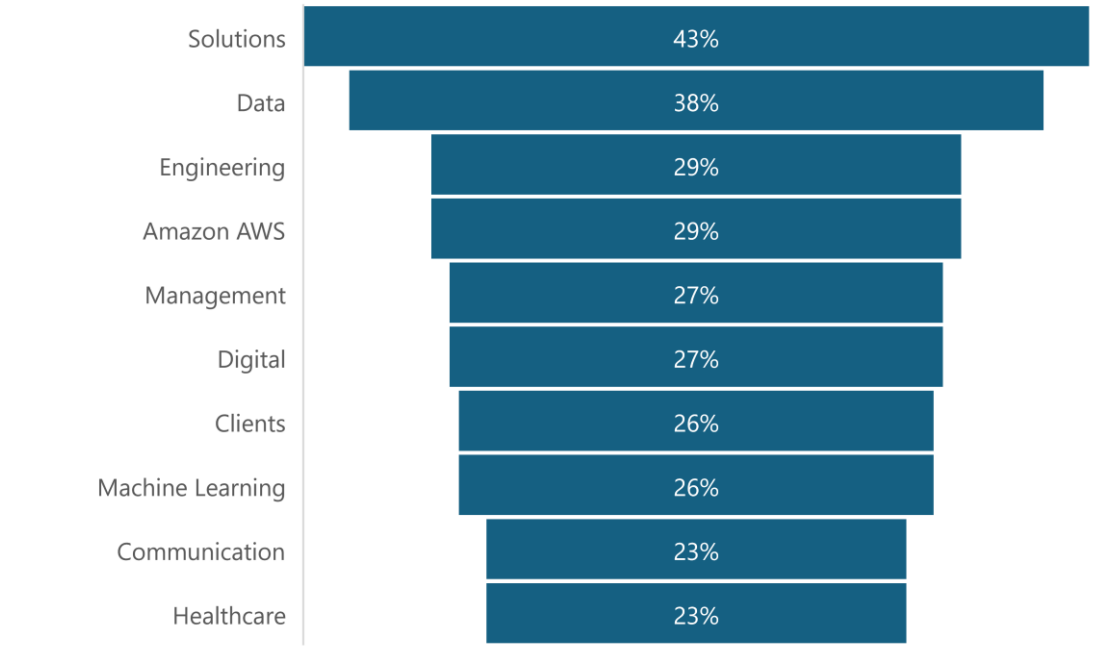
Sector specific skills

The following skills are crucial for professionals seeking to enter or advance in the AI sector in the Black Country:

- **Technical Skills:** Expertise in data science, software development, and data analysis.
- **Regulatory Knowledge:** Understanding of UK and international AI regulations and compliance requirements.
- **Project Management:** Competence in managing AI-related projects using Agile or other iterative development frameworks and experience working with diverse teams, including data engineers, developers, and business stakeholders.
- **Communication and Collaboration:** Strong communication skills to explain complex AI concepts to non-technical stakeholders.

Co-occurring skills:

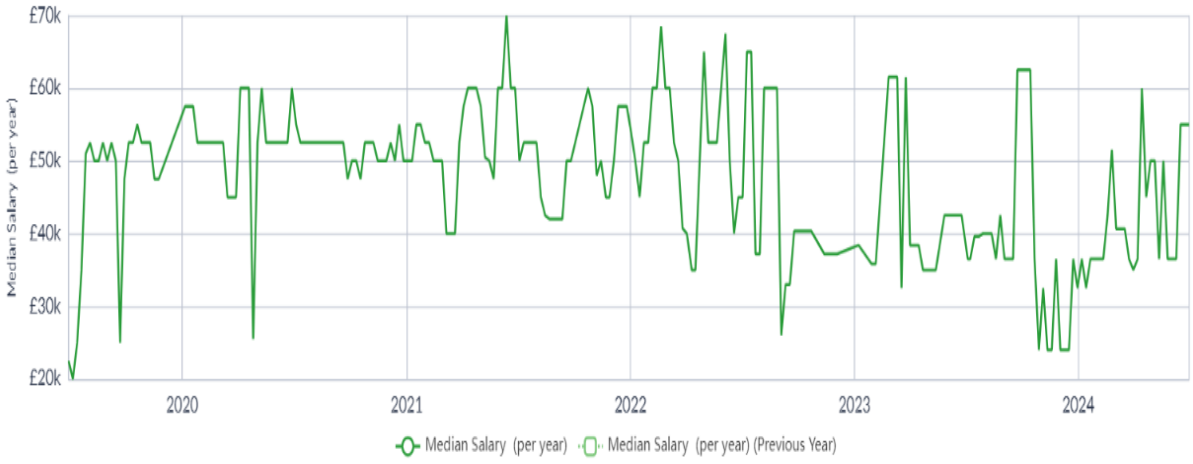
Skills that are most often seen in AI postings:



Source: Adzuna

Salary Trends

Reflective of the higher-level skills required for roles in the AI sector, the average salary is £51,273. This is 72% higher than the overall advertised average salary for all other job roles in the UK.



Source: Adzuna

Challenges and opportunities

Challenges:

- **Regulatory Changes:** Adapting to the evolving regulatory landscape as countries and companies scramble to get to grips with the ever-evolving technology.
- **Skills Shortages:** Addressing gaps in specialised skills identified above.

Opportunities:

- **Innovation and Growth:** Leveraging the region's digital innovation ecosystem to drive growth (WM5G)[9]
- **Investment in Digital Health:** Capitalising on increased investment in digital health technologies to create new career opportunities.

Conclusion

The rapid rise of AI presents both challenges and opportunities for the Black Country. On one hand, the automation of routine and manual jobs in sectors like manufacturing, logistics, retail, and administrative roles poses a significant risk to the region's workforce, with up to 26% of jobs potentially impacted. Low-skilled occupations are particularly vulnerable, raising concerns about widespread job displacement without proper intervention.

However, the report highlights the substantial opportunities AI offers. Growing demand for highly skilled roles in AI-related fields—such as software development, data engineering, and machine learning—presents new career pathways. These roles, which often require advanced qualifications, are vital for driving innovation and productivity. Furthermore, sectors such as healthcare, financial services, and professional services will benefit from AI's complementary nature, where human oversight and interaction remain crucial.

The West Midlands region, including the Black Country, has already demonstrated a strong capability to adopt digital technologies. Initiatives like WM5G Connected Communities and the 5G Innovative Regions project showcase the region's commitment to building robust digital connectivity. This, combined with ongoing investments and a focus on technological innovation, positions the Black Country to attract top talent and capitalise on AI-driven growth. Despite the challenges of skills shortages, these initiatives, alongside the opportunities for growth and development in AI, highlight the region's potential to thrive in a rapidly changing technological landscape.

To fully realise the benefits of AI while mitigating its risks, there is a pressing need for workforce reskilling and education. By focusing on equipping workers with the technical and digital skills required for the AI-driven economy, and continuing to leverage its strong digital infrastructure, the Black Country can remain competitive. With collaboration between businesses, government, and educational institutions, the region is well-positioned to navigate the AI transformation, turning challenges into long-term opportunities for growth and innovation.

[9] West Midlands 5G : Accelerating the benefits of 5G (wm5g.org.uk)