The strategic role of higher education to deliver the Government's Industrial Strategy

January 2026

Foreword by the University of York

The UK's higher education sector stands at a critical juncture. It is being shaped by a confluence of powerful forces - demographic shifts, financial constraints, regulatory changes, and intense global competition for talent.

This environment presents not just challenges, but an urgent need for a strategic, coordinated response that places the long-term health of our nation's economy and society first.

That is why the University of York is proud to collaborate with QS and Public First on this vital piece of analysis. As a leading research-intensive institution, we were among the first to identify and act decisively on the financial challenges facing the sector.

Our commitment is to sustainable stability, driven by evidence, not expediency. This shared project is an extension of that belief.

The data presented here is clear. Projections show a sustained increase in demand for skilled graduate labour in the UK through 2035. In particular, there is an urgent need to deliver specific graduate skills necessary to deliver the Industrial Strategy. The report also suggests a huge economic gain from adoption of AI in these key industries – delivered by graduate labour.

At the same time, a concerning drop in international student numbers, exacerbated by policy changes, threatens the financial model of much of UK HE. Domestically, while the traditional 18-year-old student pipeline is forecast to decline, there is an escalating, often unmet, demand for retraining and upskilling older adults.

The core of our joint work is underpinned by an ambition to reframe current national engagement: moving beyond 'here and now' crises to address the fundamental question: What does the UK need from a future-fit HE sector that enables economic, social, and cultural advancement?

Joan Concannon
Chief Reputation and Stakeholder Relations Officer

University of York

Foreword by QS

I am delighted to introduce this timely and important report on Skills Demand in the UK, co-authored by the University of York, QS and Public First, and powered by QS data and labour-market analytics.

As the UK navigates rapid technological transformation – especially the accelerating impact of artificial intelligence – the ability to understand, anticipate and respond to changing skills needs has never been more essential.

Our analysis highlights both a challenge and an opportunity. Half of the UK workforce faces moderate to very high exposure to automation, while three-quarters have significant augmentation potential. At the same time, the country's ambitious Industrial Strategy requires a steady pipeline of highly skilled talent, particularly across advanced manufacturing, clean energy, digital and technology, life sciences, and professional services.

Meeting this demand will rely on universities and training providers not only to supply new graduates, but also to upskill and reskill millions already in work.

This report provides the evidence base needed to inform strategic decisions for government, employers and education leaders. It represents the first step in a two-part series. Next we will do a deep dive into the demand and supply of skills available in part of the North East UK, as a case study to highlight the gaps in workforce required to deliver the IS-8 in this region.

QS is proud to support this work, with our cutting-edge data which is tracking the changing global labour market – at the level of the occupation and also the requisite skills demanded by that occupation – on a daily basis.

Our goal is to ensure education and industry remain aligned and responsive to the changes required to build a resilient, innovative and globally competitive UK economy of the future.

Nunzio Quacquarelli
President and Founder

QS

Section 1: Executive Summary

Executive summary:

Unlocking UK Economic Growth through an Integrated Skills-First Strategy

The UK's ambition for economic growth through to 2030, particularly in the eight high-growth sectors of the modern Industrial Strategy (IS-8), is critically dependent not only on advanced technology innovation, but on strategic planned investment in human capital.

This new research projects that a concerted focus on expanding graduate skills in the key growth industries of the future, and the effective integration of Artificial Intelligence (AI) could triple annual GDP growth, unlocking a cumulative £490 billion for the UK economy by the end of the decade. This projected economic uplift is overwhelmingly driven by AI-augmented roles rather than automation, making the supply of a skilled - and in particular graduate skilled - workforce the decisive necessary condition to achieve the ambitions of the National Industrial Strategy.

The analysis frames the UK's potential growth on three layers: baseline organic growth, targeted expansion of Strategic Industries, and a decisive layer of AI-driven productivity. AI alone is forecast to contribute around 2.8% of additional GDP growth, equivalent to the £490 billion premium. However, a severe skills shortage threatens to become the binding limit on this growth. Our study finds that 80% of the over 1,400 occupations deemed critical to the Industrial Strategy 8 (IS 8) sectors require degree-level qualifications (Level 6 or above). Furthermore, the existence of over 630 high-importance 'transectoral' occupations - critical to two or more growth sectors - means a shortage in these roles could create immediate simultaneous bottlenecks across multiple high-growth industries.

To realise this economic opportunity, the UK's higher education sector has a crucial and unique role. The data confirms the importance of Level 6 qualifications for the vast majority - over 80% - of critical IS-8 occupations. Investment in human capital - and by extension higher education - is what will translate technological potential into economic output.

The findings highlight a critical inflection point for the UK - we must urgently recognise that the nation's economic ambitions hinge on a comprehensive skills pipeline, demanding a new era of integrated system-level partnership. But without urgent and sustained investment in higher education to deliver the necessary augmented skills, the UK risks missing its largest productivity opportunity in a generation and falling behind global competitors.

Government, employers, and higher education leaders must align their strategies to address critical future skills gaps. Policymakers must recognise the flexibility and critical nature of 'transectoral' occupations and support universities actively to achieve the financial resilience to be able to provide the necessary training. Without this alignment and collaborative approach, the UK cannot effectively harness the collective power of technology, education, and industrial collaboration, forfeiting the opportunity for economic renewal and exploiting the potential to build global dominance in key sectors necessary to tackle major social and environmental challenges.

Executive summary - key takeaways

We forecast a total of 1436 'fundamental' occupations which are of high/very high importance in just one IS-8 sector, but are **critical to the delivery of these IS-8 sectors**.

There is a big overlap of key 'Transectoral' occupations. These are occupations which are critical to the growth of more than one IS sector. A total of **635 of these 'transectoral' occupations are of 'high' or 'very high' importance** to two or more IS-8 sectors.

These are, from the perspective of policymakers and national and local politicians, the closest thing to a no-lose bet for growth in their supply. **A shortage of these roles will mean that multiple sectors are hampered in a push for growth.**

Perhaps as importantly, if policymakers and educational institutions don't recognise the flexibility of these occupations, there is a risk of undersupply – because, for example, the UK economy doesn't just need AI skills for one sector, but for multiple sectors.

We reconfirm analysis that shows the importance of high level skills to these crucial occupations, especially within the IS-8.

At present, **over 80% of occupations** within the QS taxonomy deemed as high importance to at least one IS sector **require a Level 6 qualification**.

If UK Higher Education equips graduates with the necessary AI and other emerging skills required by the labour market, job augmentation is going to be 50% greater than job automation in the UK.

Just within the IS-8, this could represent hundreds of thousands of new jobs.

We forecast an AI Augmentation premium of £490bn in UK GDP by 2030. This forecast reflects a layered growth model in which modest organic growth and targeted expansion of UK Strategic Industries are materially accelerated by AI-driven productivity gains.

The uplift is driven by higher output per augmented worker and the expansion of AI-augmented roles, made possible by the quality and adaptability of the UK's human capital.

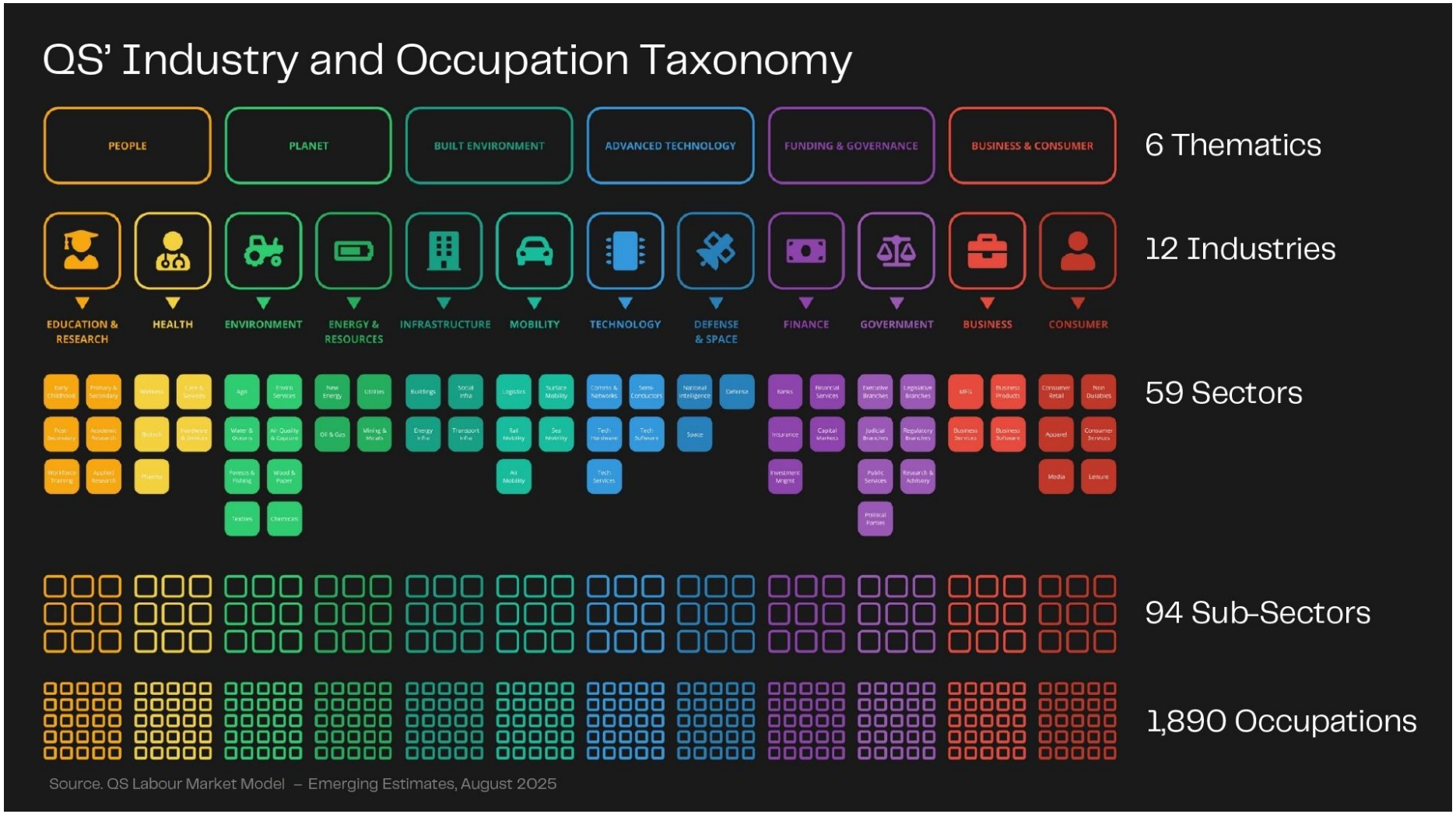
We recognise a crucial role for universities in delivering the skills needed for the Industrial Strategy to succeed.

Government has set a clear vision for a greater share of adults to be trained to a tertiary level. Universities need to work alongside Mayoral authorities, employers, and national government to identify their skills needs and provide the training necessary.

Yet at the same time, the sector and government will need to acknowledge and manage the counter pressures in the current system which lead to undersupply of some key courses, and the relationship between domestic demand (including that driven by demographics in the near future) and international student flow.

Section 2: The current UK labour market

The UK labour market today - a taxonomy



This proprietorial QS taxonomy maps the entire UK labour market across broad industry categories.

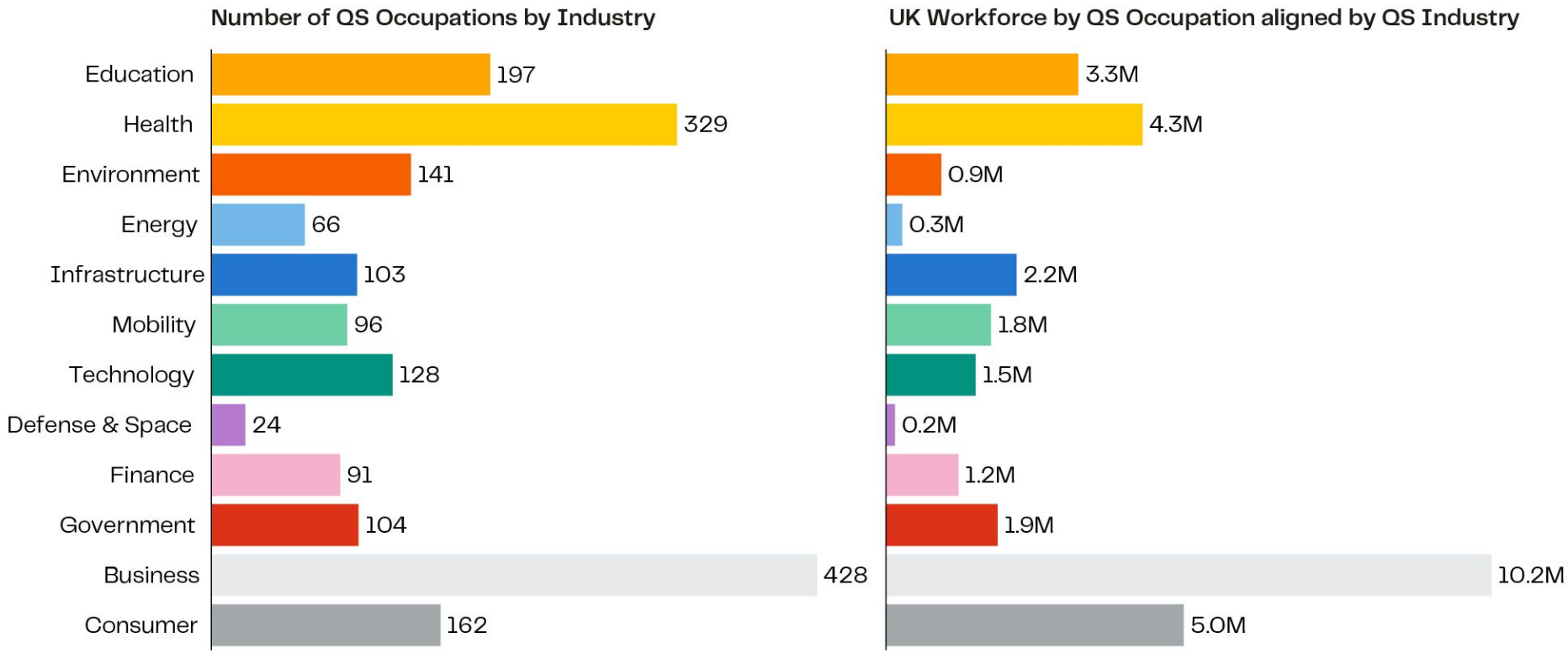
It shows a composition across six broad themes, 12 major industry groupings, then 59 sectors and 94 sub sectors that sit within them, and - most pertinently - every single role in the UK labour market categorised into one of 1,890 occupations.

The UK labour market today - a taxonomy (industry level)

Using the QS taxonomy, we can map the entire UK labour market.

The charts here show how the 1,890 specific occupations for the current UK labour market divide between the broad 12 industrial groups, and the number of workers in such roles currently.

33 million strong UK labour force by QS Industrial Occupation Taxonomy



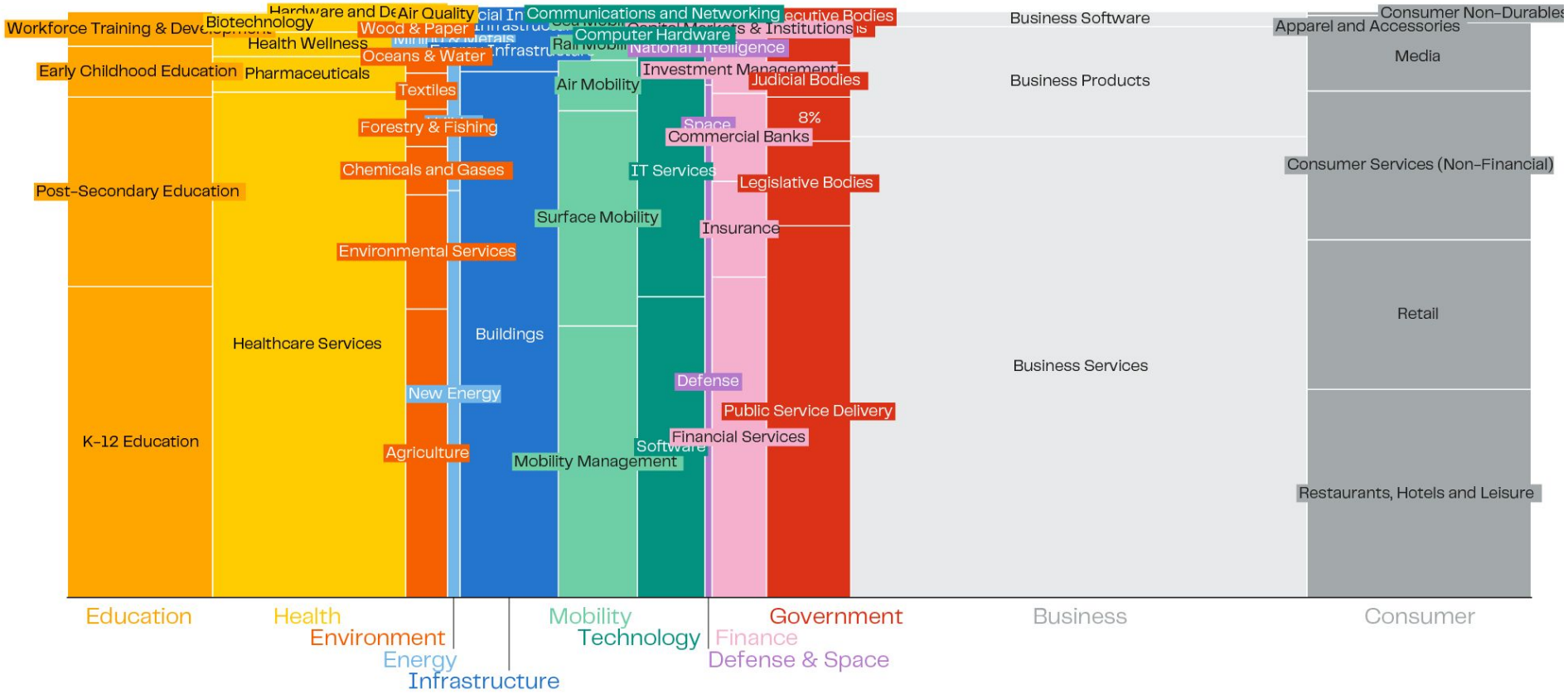
Source. QS Labour Market Model – Emerging Estimates, August 2025

The UK labour market today - a taxonomy (sector level)

This is an alternative way to look at the same data.

Here, each of the 12 industrial groups is shown in colour as a share of the total UK labour market, and the vertical decomposition shows the 59 sectors that make up the economy.

33 million strong UK labour force by QS Industry and Sector



Source. QS Labour Market Model – Emerging Estimates, August 2025

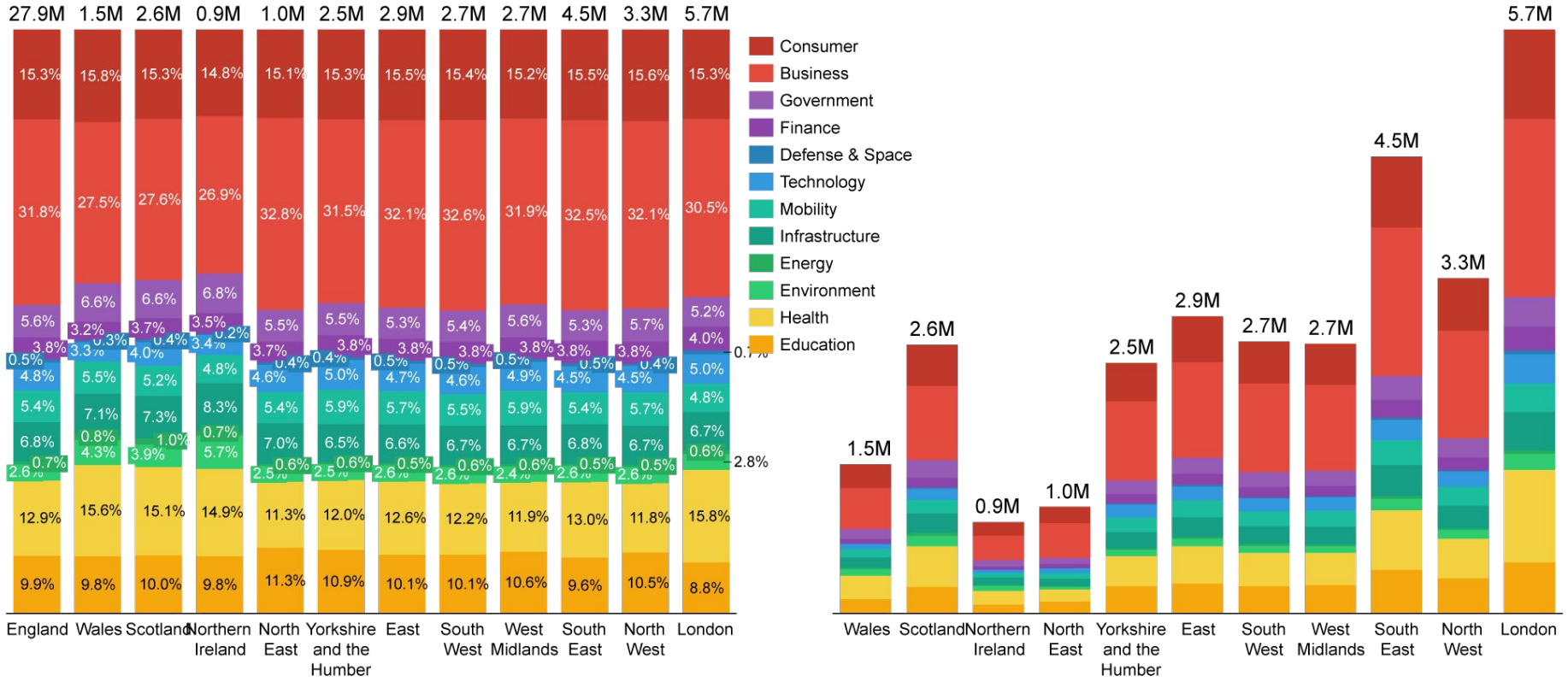
The UK labour market today - a taxonomy (regional)

This slide shows the overall and percentage allocation of sector employment within each region of the UK.

The maps look similar by region because the numbers include many common high employment industries like health, education, retail, small business and construction, which dominate employment volumes.

In our second report, we will break down the regional picture for graduate level occupations, to show the supply and demand at regional level - very pertinent for UK policymaking which considers the industrial strategy through both a sectoral and a spatial (Mayoral) lens

Regional Benchmarking for UK labour force



Source. QS Labour Market Model – Emerging Estimates, August 2025

Section 3: Overlaying the Industrial Strategy priority sectors (the IS-8) onto the composition of the current UK labour market

The UK Industrial Strategy - identifying priority sectors (the IS-8)

In the Industrial Strategy, the government pledged:

"The whole of government is backing eight sectors which represent 32% of the economy: Advanced Manufacturing, Clean Energy Industries, Creative Industries, Defence, Digital and Technologies, Financial Services, Life Sciences, and Professional and Business Services. [henceforth referred to as the IS-8]

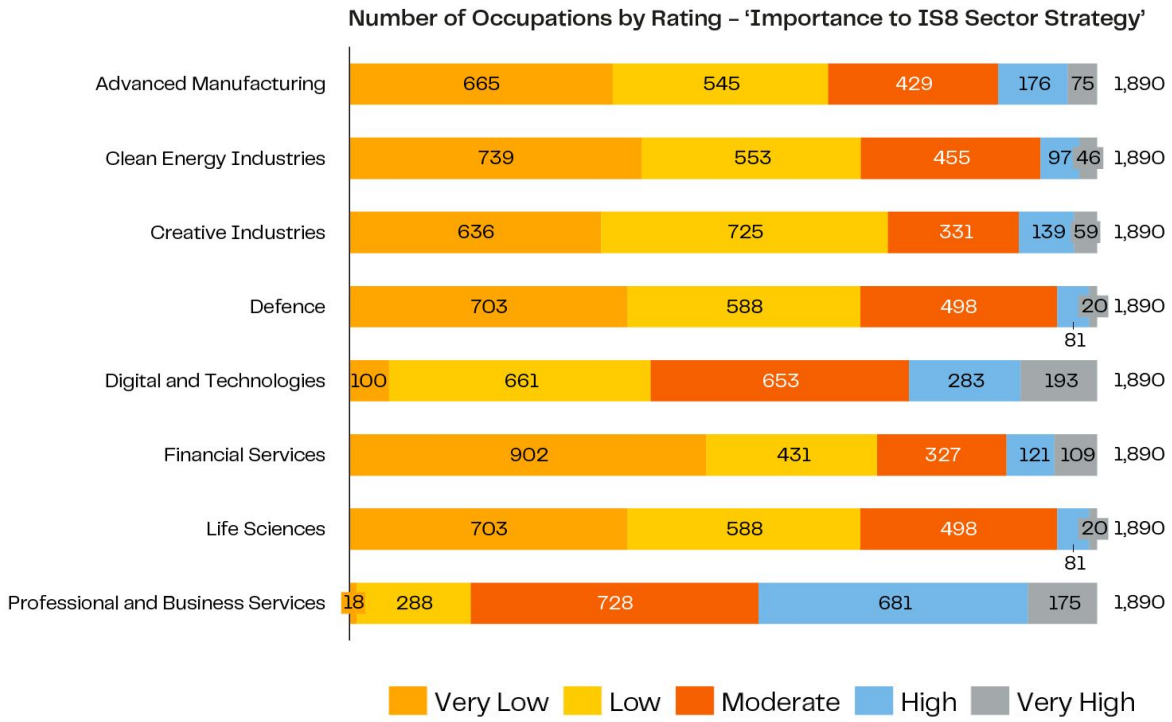
"Strategies involve making choices. We have chosen to focus on these sectors because they are the best positioned to drive inclusive, sustainable, and resilient growth, thanks to their potential to create well-paid jobs across the UK, seize the opportunities of the net zero transition, and build superstar firms so the UK can project global influence and deter our adversaries"

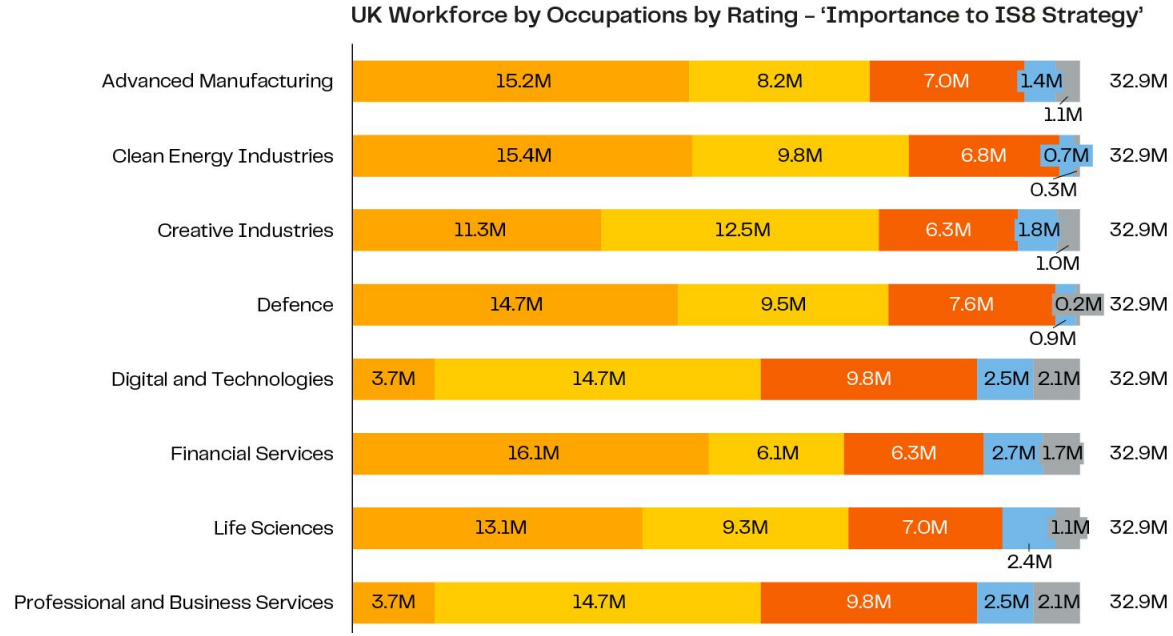
Our work maps our UK taxonomy onto these eight priority sectors, and looks at the skill levels that exist and that are required in the UK for the vision of the Industrial Strategy to succeed, and for the IS-8 to indeed "***create well-paid jobs across the UK, seize the opportunities of the net zero transition, and build superstar firms***".

Identifying the matching of UK occupations to each IS-8 sector

Here, we decompose the 1,890 occupations and assess their importance to each of the IS-8 sectors (on the left hand side), accounting for approximately 12 million jobs according to the Office of National Statistics.

This slide shows that, for example, 665 occupations are ranked as relatively low importance to the delivery of the Advanced Manufacturing Industrial Strategy ambition. Some 75 occupations are of very high importance. This is not saying that low importance roles for any sector are unimportant for the economy in general – but this decomposition allows policymakers and local and national civic leaders to identify particular occupations that will grow as the IS-8 reforms increase the size and impact of these sectors.



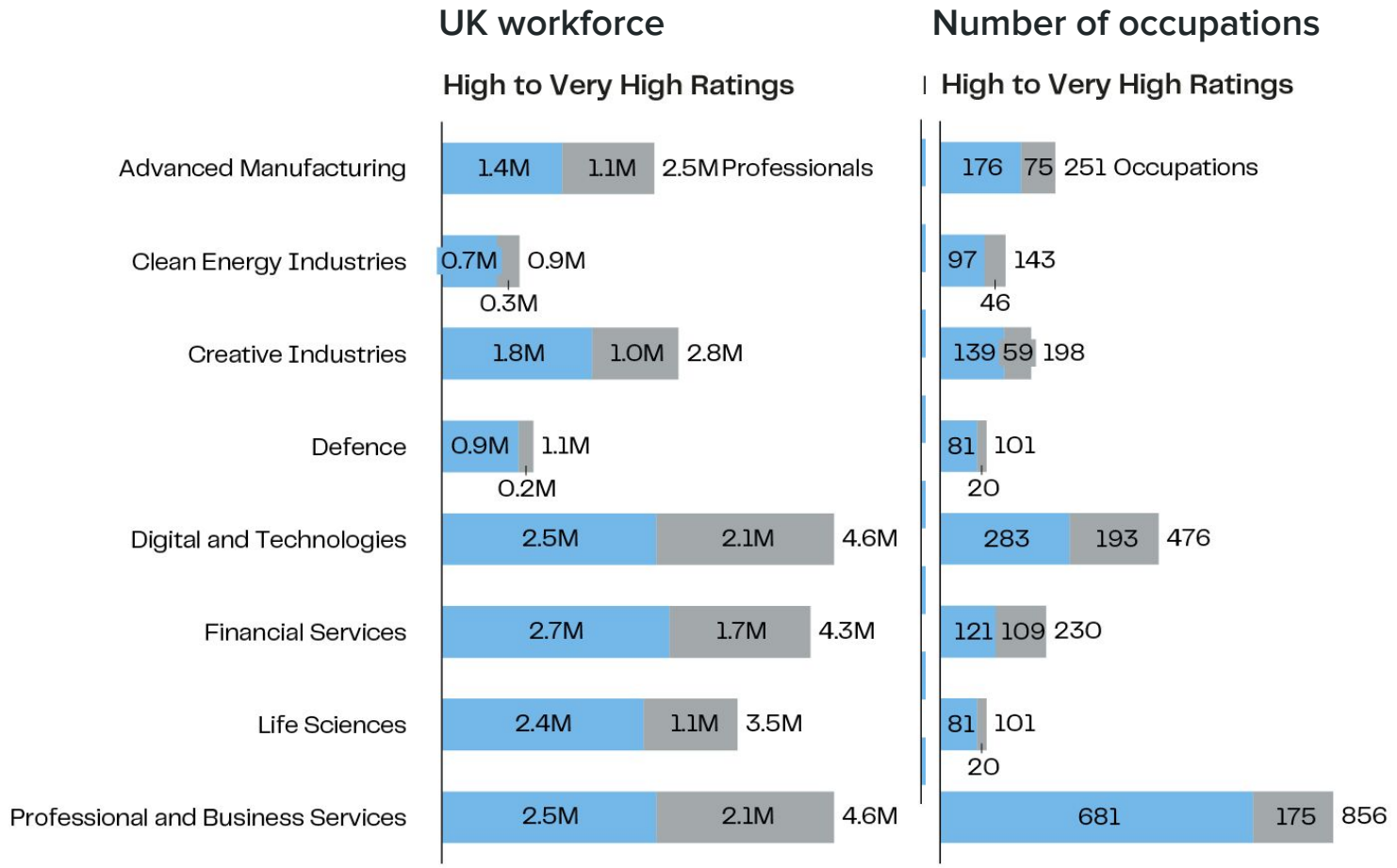


The most important occupations within each IS-8 sector

Of particular interest to policymakers and local and national civic leaders, when looking at the labour market through the lens of the IS-8, are those occupations that are forecast to grow.

These charts show, for each of the IS-8, the number of occupations and current size of the labour market **that are deemed important or very important to the growth of that sector. In other words, these are both occupations that are forecast to grow as the IS-8 sector grows – but also where policymakers need to ensure a sufficient supply of labour and crucially, a supply of training, to ensure that such roles can grow.**

Note that, as will be explored later, these occupations are not mutually exclusive to one IS-8 sector. In other words, some of the 251 high value occupations for the delivery of the advanced manufacturing strategy, may also be critical for the development of the life sciences strategy. This is important when one considers the most in demand occupations across the UK economy in future, and what could be deemed the highest value bets for policymakers in expanding supply opportunities in training to meet that forecast demand.



The most important occupations within each IS-8 sector

Here we show the top five specific occupations (from the list of 1,890 across the UK) that are forecast to be of most importance for each of the IS-8 sectors

From the QS taxonomy and dataset of skills and roles advertised, we can, with a high degree of accuracy, identify specific high demand occupations for each IS-8 sector, as shown here.

All of these occupations are going to demand significantly more people in the future than in the past, each equipped with most of the requisite skills.

Advanced Manufacturing

- Advanced Man Engineer
- Mechatronics Engineer
- Materials Engineer
- Robotics Engineer
- Manufacturing Eng Manager

Clean Energy

- Electrical Power Sys Engineer
- Hydrogen Systems Engineer
- Wind Power Systems Engineer
- Solar Energy Engineer
- Battery Storage Technician

Creative Industries

- Creative Director
- Digital Content Producer
- User Interface (UI) Designer
- Video Game Developer
- Motion Graphics Designer

Defense

- Cyber Security Architect
- Weapon Systems Engineer
- Cyber Intelligence Analyst
- Drone Operator
- Opto-Mechanical Engineer

Digital & Technology

- AI Research Scientist
- Machine Learning Engineer
- Quantum Computing Engineer
- Cloud Security Specialist
- Software Architect

Financial Services

- Digital Payments Specialist
- Digital Securities Specialist
- Algorithmic Trading Developer
- Catastrophe Risk Modeling
- Quantitative Finance Analyst

Life Sciences

- Computational Biologist
- Bioinformatician
- Molecular Biologist
- Clinical Trial Manager
- Drug Safety Scientist

Prof & Business Services

- Operations Research Analyst
- Business Analyst
- Data Analytics Manager
- Digital Transformation Manager
- Contract Lawyer

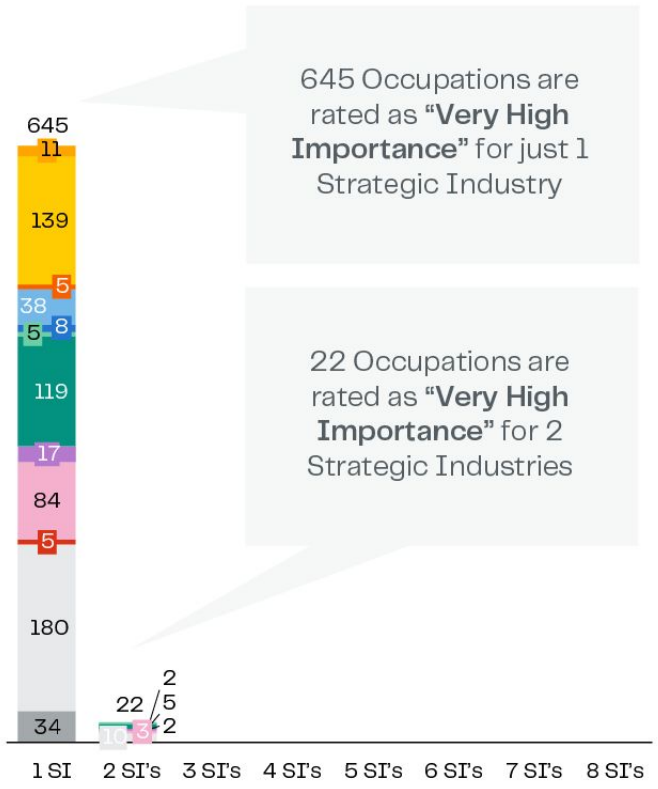
‘Transectoral’ occupations important for multiple IS-8 sectors

The graphs on the left shows 645 occupations are of very high importance, and 791 are of high importance to one IS-8 sector - we can call these ‘fundamental’ occupations. These are often highly specialised technical roles, requiring masters level or even PhD level higher education. But these are not the only critical occupations.

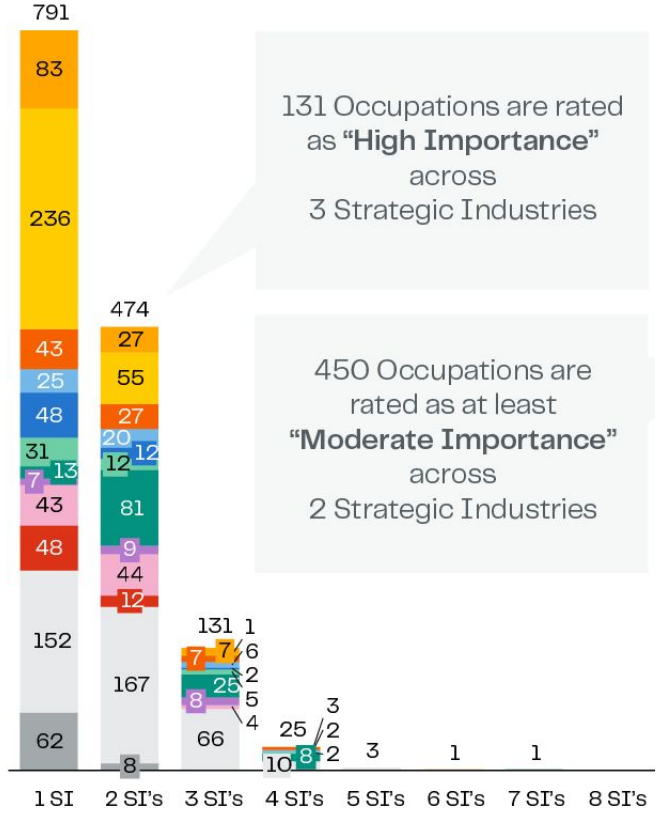
Some occupations are highly pertinent for more than one IS sector. These we can call ‘Transectoral’. The graphs show 31 occupations are rated as very high and 474 as high importance for two IS-8 sectors. In total there are 674 ‘transectoral’ occupations of high or very high importance in two or more of the IS-8, a shortage of which could undermine the industrial strategy completely.

Number of Occupations with ‘Cross-Strategic Industry’ Importance

Number of Occupations with **‘Very High Importance’** for 1–8 Strategic Industries.



Number of Occupations with at least **‘High Importance’** for 1–8 Strategic Industries.



Source. QS Labour Market Model – Emerging Estimates, August 2025

‘Transectoral’ occupations important for multiple IS-8 sectors

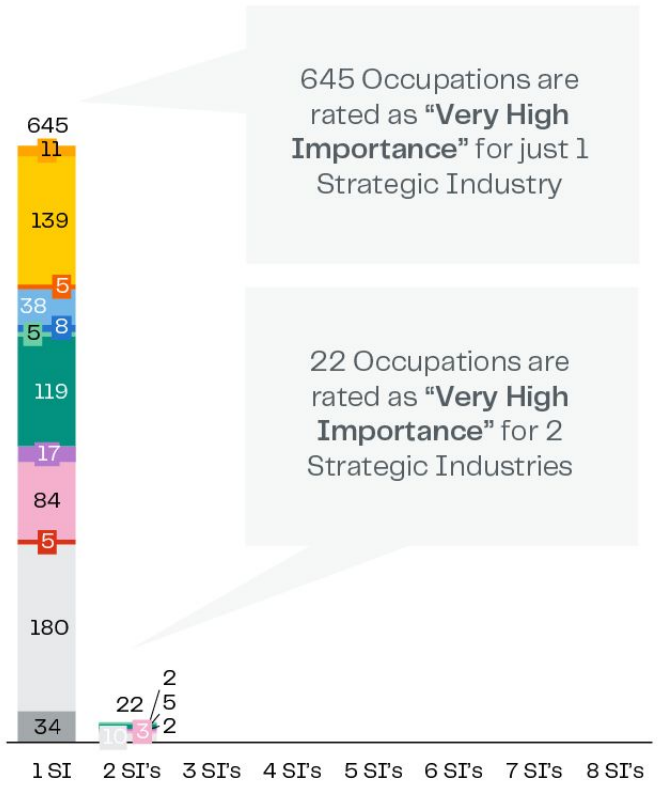
We can also see the interrelationship between the cross strategy occupations by primary sector.

For example, in business and services; 152 occupations are of high importance to one sector, with 167 of high importance to two sectors and 66 to three sectors.

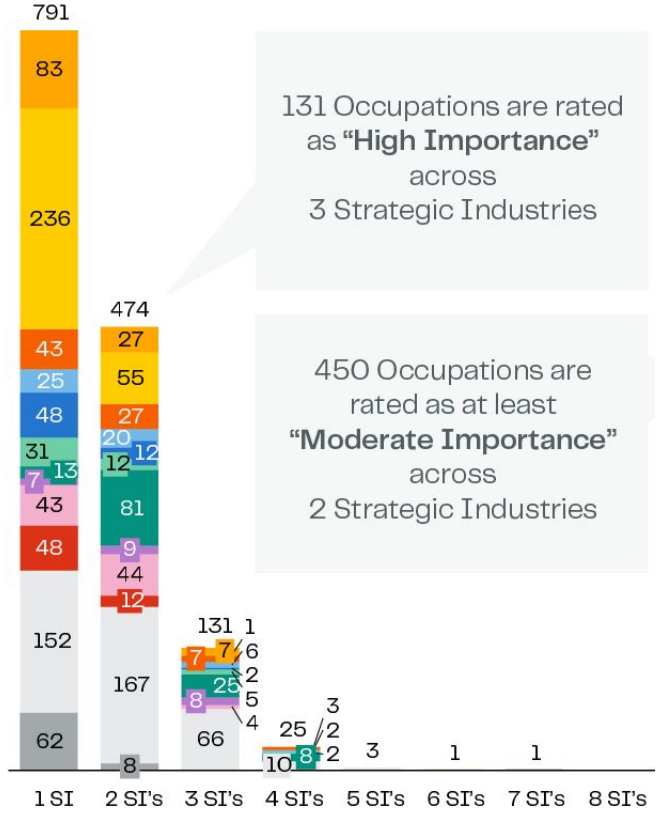
From a policymaker and civic and national political leadership perspective, we can consider these ‘fundamental’ and ‘transectoral’ occupations the most important in the labour market, and probably the “best bet” in terms of investing to secure sufficient supply and training positions for such occupations to grow.

Number of Occupations with ‘Cross-Strategic Industry’ Importance

Number of Occupations with **‘Very High Importance’** for 1–8 Strategic Industries.



Number of Occupations with at least **‘High Importance’** for 1–8 Strategic Industries.



Source. QS Labour Market Model – Emerging Estimates, August 2025

‘Transectoral’ occupations important for multiple IS-8 sectors

This table shows the ranking of the top 20 ‘transectoral’ occupations from the full taxonomy of 1890 occupations, by relevance to each IS-8 sector. The occupations are scored out of 5, and ranked by their average importance to the delivery of each IS-8 plan.

In other words, the occupation of “AI research scientist” is both critical to the deliver of the digital and technology IS strategy (rated 5 out of 5), but also deemed as very high importance (at least 4 out of 5) to creative industries, life sciences, and professional and business services.

This is, in short, the list of the most important jobs in the UK, if the IS-8 is to be delivered.

IS8 Sector Strategy – Top 20 Occupations

Occupation	Adv Man	Clean Engy	Creative Ind	Defence	Dig & Tech	Fin Svcs	Life Sc	Prof & Bus	Average
AI Research Scientist	3.7	3.7	4.0	3.7	5.0	3.3	4.0	4.0	3.9
Chief Innovation Officer	4.0	4.0	3.3	3.0	5.0	3.3	3.3	5.0	3.9
Chief Digital Transformation Officer	3.3	3.3	3.3	3.0	5.0	4.0	3.3	5.0	3.8
Physicist	4.0	4.0	3.0	4.0	4.7	2.0	4.3	4.0	3.8
Technical Manager	4.0	3.7	3.0	3.7	4.3	3.0	3.7	4.7	3.8
Mechatronics Engineer	5.0	4.0	3.0	4.0	5.0	2.0	3.0	3.7	3.7
Chief Sustainability Officer	3.7	4.7	3.0	3.0	3.7	3.0	3.7	5.0	3.7
Deep Learning Specialist	3.0	3.0	4.0	3.3	5.0	3.3	4.0	4.0	3.7
Software Architect	3.3	3.3	4.0	3.3	5.0	3.3	3.3	4.0	3.7
Computer and Information Research Scientist	3.3	3.3	3.3	3.3	5.0	3.3	3.7	4.0	3.7
Chief Revenue Officer	3.0	3.0	3.3	3.0	4.0	5.0	3.0	5.0	3.7
Innovation Manager	3.3	3.3	4.0	3.0	4.3	3.0	3.3	5.0	3.7
Product Manager	3.3	3.3	4.0	3.0	4.3	3.0	3.3	5.0	3.7
Managing Director	3.3	3.3	3.3	3.3	3.3	4.3	3.3	5.0	3.7
Software Development Manager	3.3	3.3	3.7	3.3	5.0	3.3	3.3	4.0	3.7
Information Security Analyst	3.0	3.0	3.0	4.0	5.0	4.0	3.0	4.3	3.7
Manufacturing Engineering Manager	5.0	4.0	2.7	4.0	4.0	2.3	3.3	4.0	3.7
Quality Assurance Manager	5.0	4.0	2.7	4.0	4.0	2.3	3.3	4.0	3.7
Firmware Engineer	4.0	3.0	3.0	4.0	5.0	2.7	3.7	3.7	3.6
Manufacturing Director	5.0	4.0	2.3	4.0	4.0	2.3	3.3	4.0	3.6

Source. QS Labour Market Model – Emerging Estimates, August 2025

This list is calculated on importance to the industry independent of seniority and includes junior, mid- and senior career occupations. The most important junior (graduate+) level occupations differ significantly.

Section 4: The educational demands for IS-8 occupations

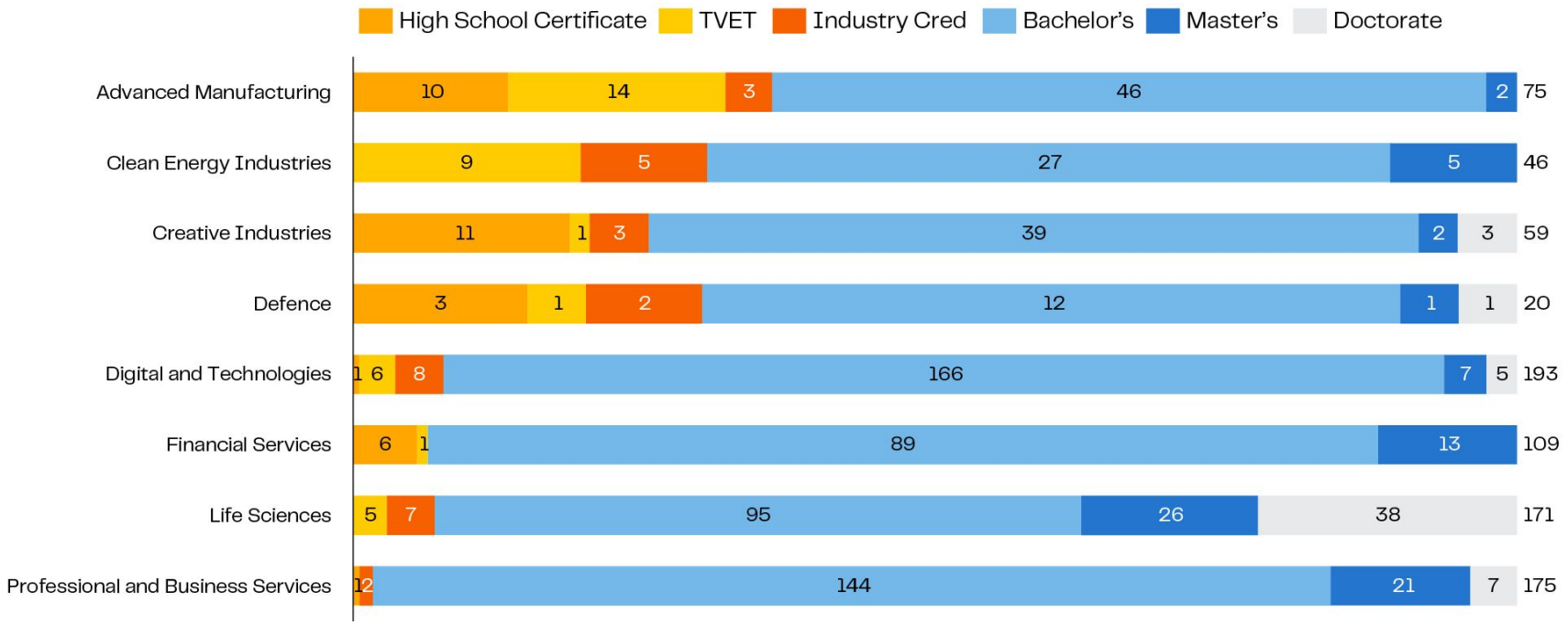
The education requirements of key IS-8 occupations

Crucial to an understanding of the role that education and training will play in the delivery of the Industrial Strategy is an assessment of the current education requirements for each occupation rated as very high importance for each of the IS-8 sectors.

As this slide shows, the overwhelming majority of roles in these critical IS occupations require at least a Level 6 qualification – 48 of the 75 occupations within advanced manufacturing, 32 of the 46 occupations within clean energy, and so on.

In total, we conclude that over 80% of the very high importance occupations require a Level 6 qualification or above.

IS8 Sector Strategy – Occupation Education Requirements for Occupations rated as "Very High Importance"



Source. QS Labour Market Model – Emerging Estimates, August 2025

The education requirements build upon other assessments made recently

Skills England forecast employment growth of 15% between 2025 and 2030 in priority occupations within the IS-8, against 9% for the IS-8 overall.

They forecast that around two thirds (66%) of the additional employment will require workers with a qualification at L4 or above.

The Skills England assessment is lower than the data presented in this report because of the inclusion of health, and construction to the IS-8, making 10 priority sectors in all. This lowers average skills requirements because of the increased jobs forecast in building and adult social care.

Skills England, Assessment of priority skills to 2030, 5 November 2025

Russell Group analysis, from the supply side, show progression from high tariff universities into the IS-8 sectors, with 87% of Russell Group graduates entering an IS-8 sector five years after graduation (ie high absorptive capacity).

The analysis also shows a clear link between a wide range of undergraduate disciplines and progression into the IS-8; for example, 40% of RG graduates entering the defence sector come from humanities and social sciences, not just STEM.

Russell Group, Skills for the UK's growth sectors, 3 November 2025

Universities UK analysis shows that at present, seven of the eight IS-8 sectors have a higher proportion of graduates within the workforce than the labour market overall.

Some 52% of the current workforce has a level 6 qualification, and for the IS this ranges from 75% (creative industries) to 54% (defence). Only advanced manufacturing (48%) is lower than the labour market overall.

Universities UK, How graduate skills power their future success and the UK's economic growth, May 2025

Analysis of the life sciences sector for the ABPI shows that 70% of the Life Sciences workforce holds a degree or equivalent qualification, compared to 41% of the UK workforce overall.

Life Sciences employers are also twice as likely (43%) to require degree-level qualifications in job postings compared to the broader UK labour market (22%)

ABPI, Life Sciences 2035: Developing the Skills for Future Growth, 12 March 2025

The Government has made a clear commitment to increasing tertiary skill levels, but more remains to be done in the HE sector

The Government has set a new commitment to two-thirds of young people participating in tertiary education - including a significant increase in those participating in Level 4 and 5 higher level technical qualifications (which may not be in universities).

This, when combined with the Post-16 Education and Skills White Paper's desire for greater specialisation and regionalisation of higher education provision, sets a clear direction of travel for universities and colleges to work alongside Mayoral authorities, employers, and national government to identify their skills needs and provide the training necessary - especially to meet the growth projections of the Industrial Strategy.

Yet at the same time, the sector and government will need to acknowledge and manage the counter pressures in the current system which lead to undersupply of some key courses, and the relationship between domestic demand (including that driven by demographics in the near future) and international student flows.

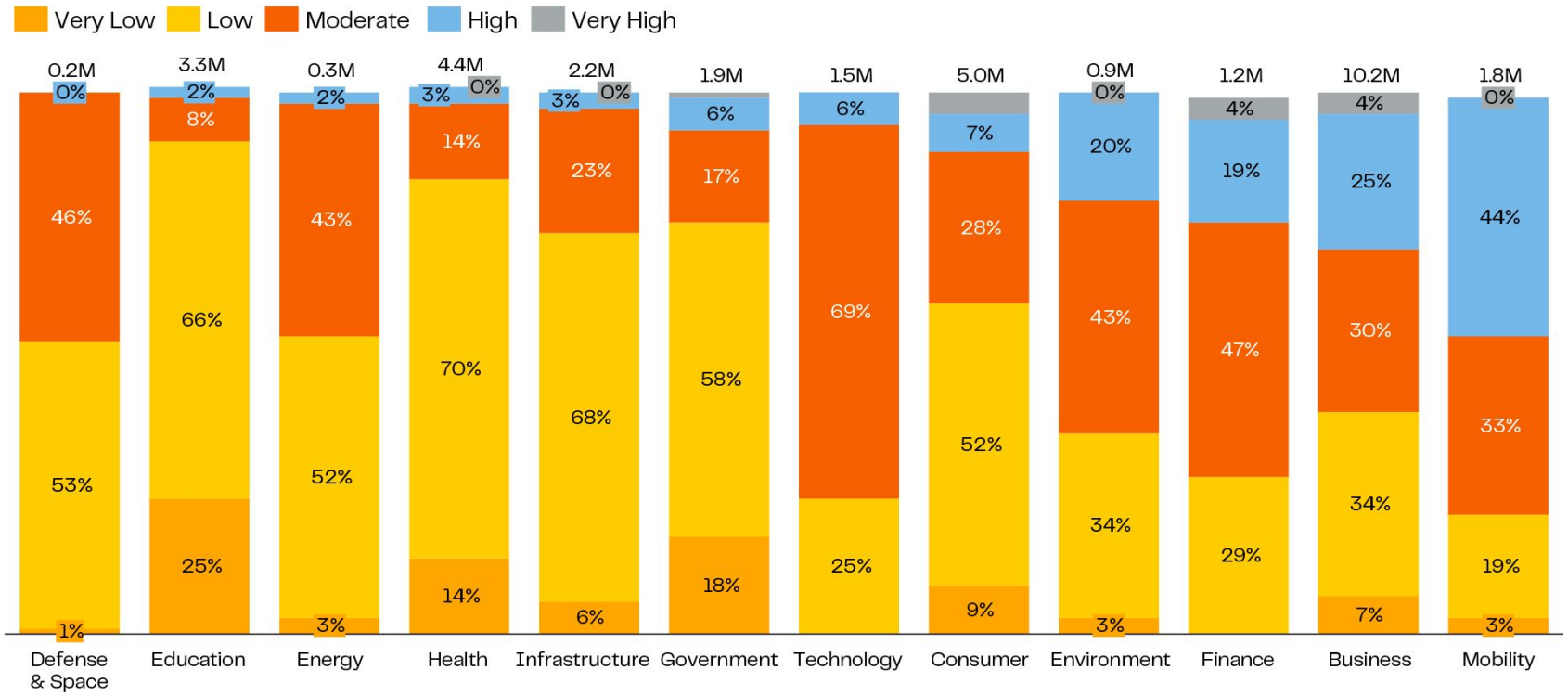
Section 5: The forecast AI impact on the UK labour market

The AI impact on the UK labour market (1)

Applying best in class data and skills council expert review, QS has triangulated growth forecast for each of the 1,890 occupations in our ontology.

High to very high automation impact would result in either negative growth in these occupations or much lower growth than in recent years.

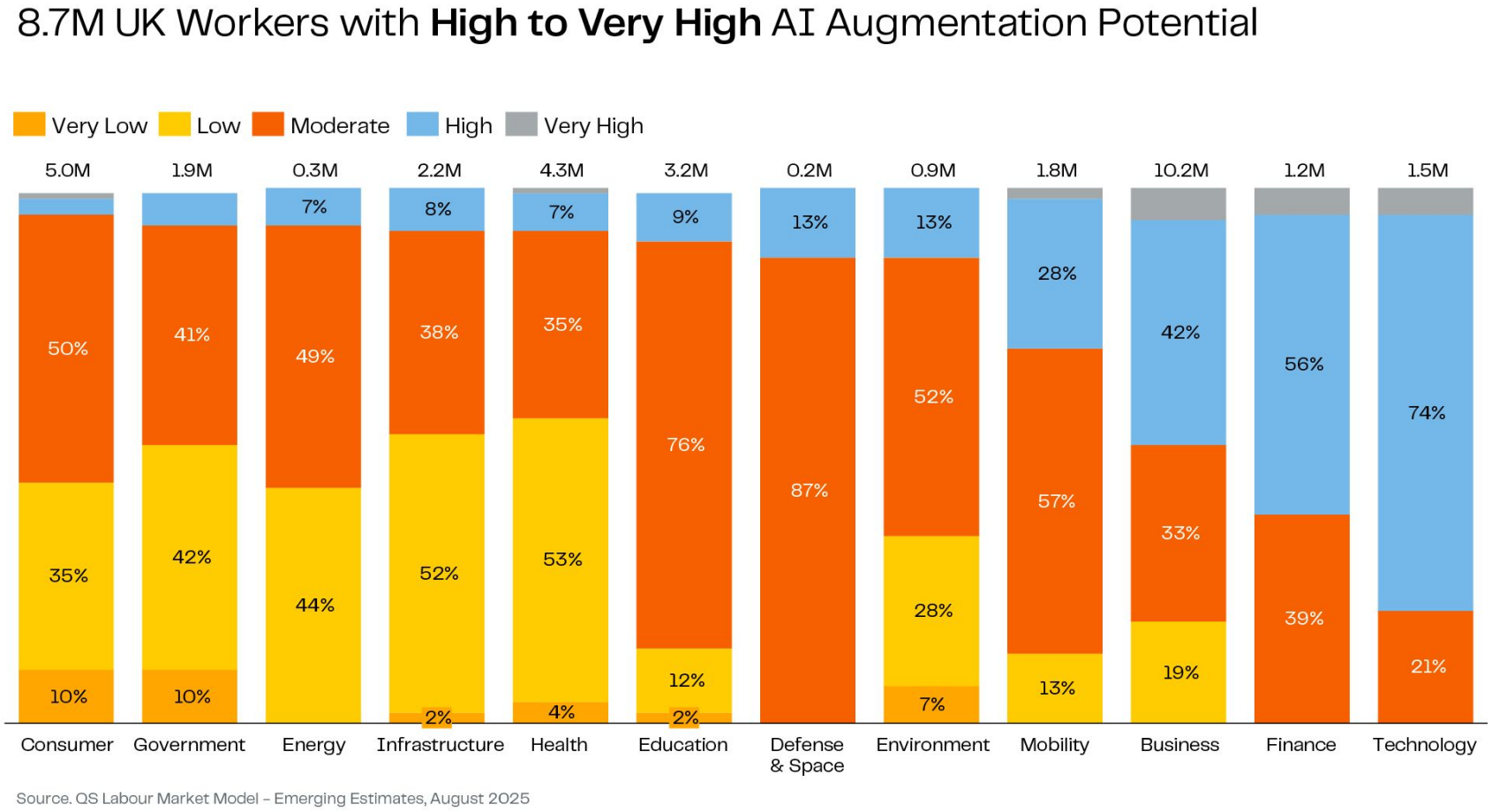
5.1M UK Workers with **High to Very High** AI Automation Impact



Source. QS Labour Market Model – Emerging Estimates, August 2025

The AI impact on the UK labour market (2)

From the same approach, every occupation with high or very high augmentation will be expected to deliver enhanced growth in occupation numbers compared to the preceding period.

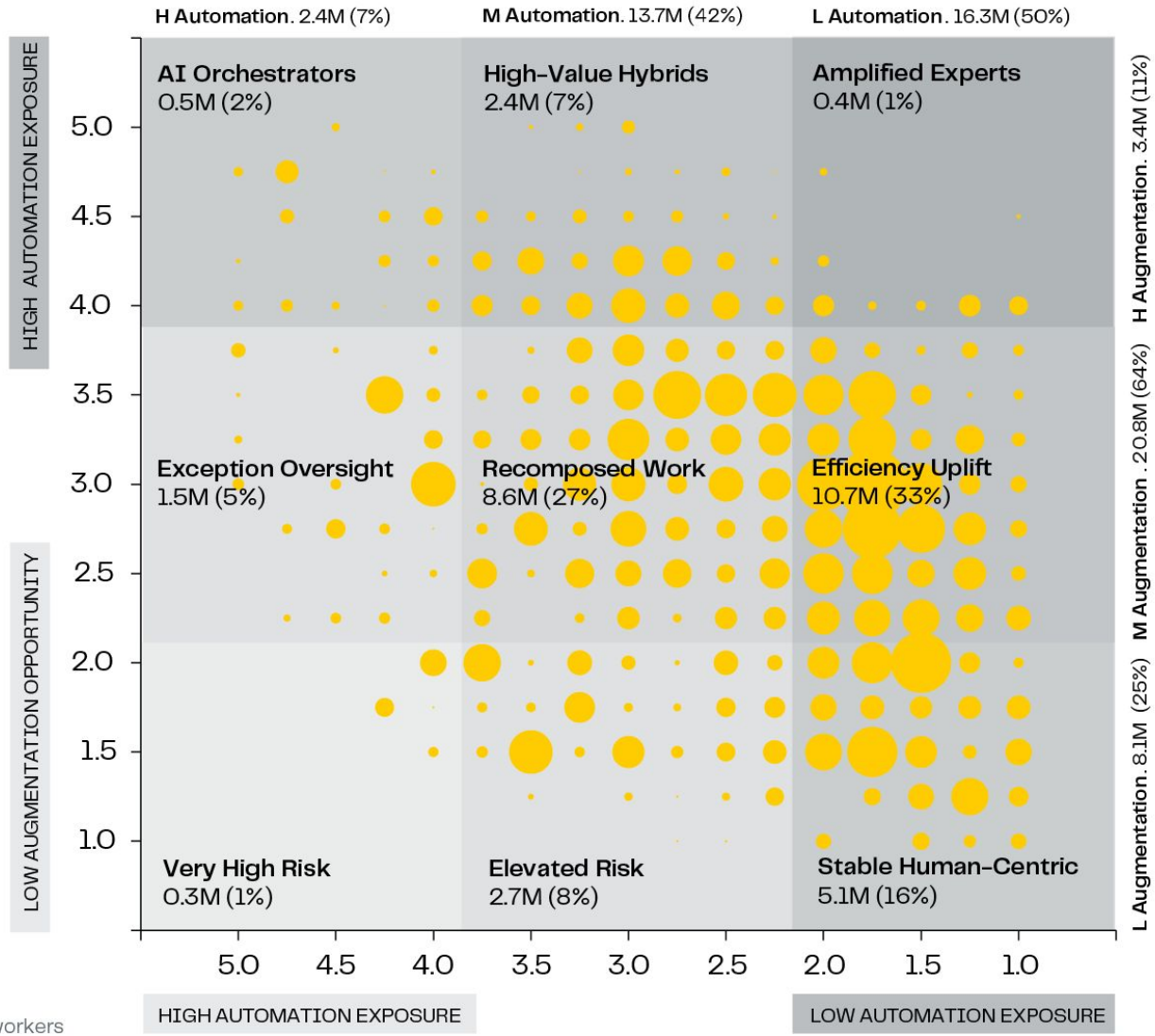


Source. QS Labour Market Model – Emerging Estimates, August 2025

The AI impact on the UK labour market (3)

50% UK Labour Force have Moderate to Very High Automation Exposure. 75% have Moderate to Very High Augmentation Opportunity.

- The impact of Artificial Intelligence on Labour Force Automation/Displacement and on the Augmentation/Productivity Opportunity is changing as we better understand both the technology and its relationship with complex nature of occupations.
- Based on QS' latest AI Impact assessments, half of the UK's Labour Force has a moderate to very high exposure to AI Automation and three quarters are in occupations with a moderate to very high augmentation opportunity.
- These assessments are critical in building a resilient and high impact industrial strategy for the U.K.



Source. QS Labour Market Model, August 2025. Bubble Size is number of workers

The AI impact on the UK labour market (4)

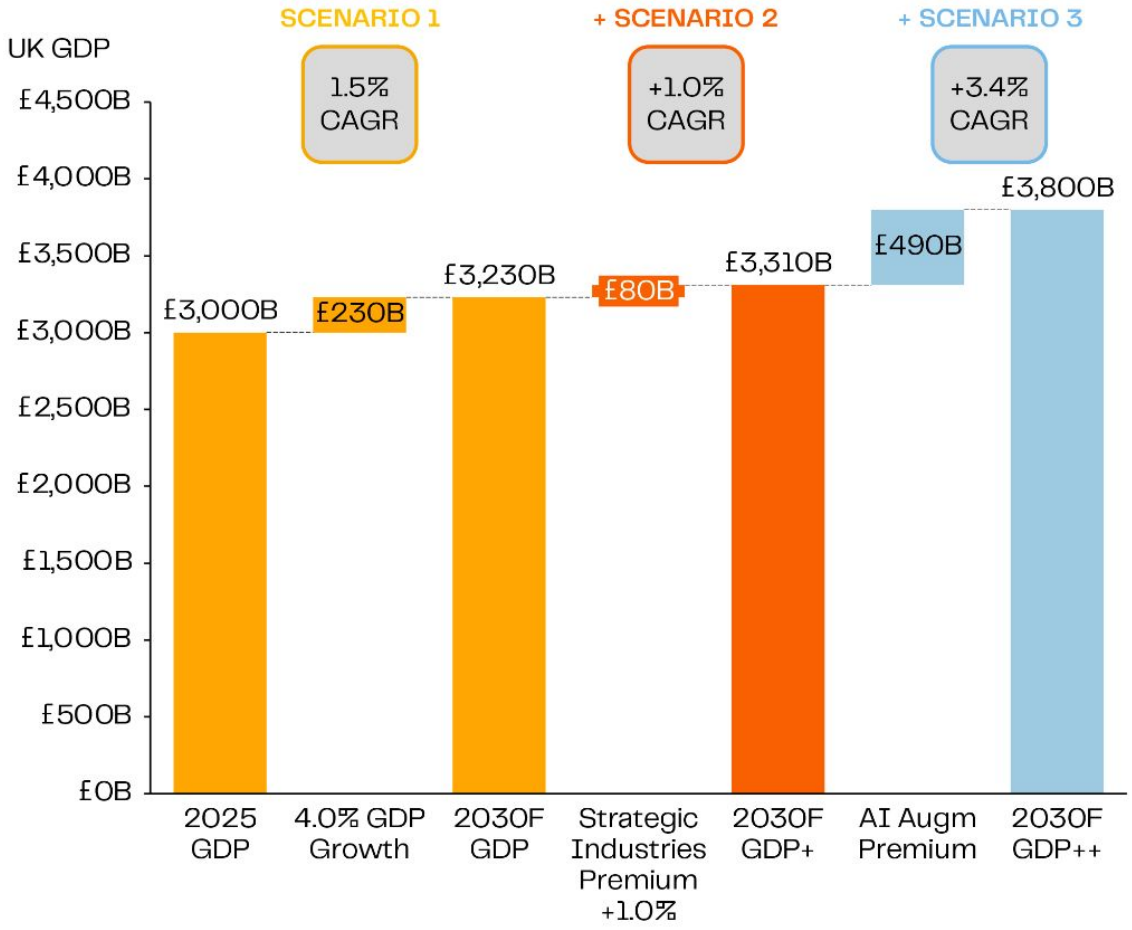
Artificial Intelligence could create up to £490 billion in economic value for the UK by 2030, accelerating productivity. Together with the economic impact of UK strategic industries, this could add roughly 3.4% to annual UK GDP growth.

1 1.5% consensus annual GDP growth to 2030. Modest organic growth, consensus estimates assume the UK will maintain approximately 1.5% year-on-year GDP growth through 2030.

2 UK 'Strategic Industries' adding additional 1.0% GDP growth. The UK is executing a focussed growth strategy through its Strategic Industries initiative. We assume an incremental 0.25% GDP contribution in 2027, scaling to an additional 1.0% annual GDP growth in 2030.

3 $490B of GDP Potential from AI Augmentation. UK has an Augmentation Potential Factor of 0.37X (Workforce Volume Weighted by Occupation by AI Augmentation Opportunity).

Max Augmentation is assumed at 2 days per week of incremental augmented productivity. Assume 40-hour week at Augmentation Factor 0.37X, delivers +5.9 hours of average incremental output. 45.9 hours of output at fixed 'GDP output per hour worked' delivers an additional 3.4% of GDP growth.



Source. QS Labour Market Intelligence and Estimates

The AI impact on the UK labour market (5)

We forecast an AI Augmentation premium of £490bn in UK GDP by 2030. This forecast is derived from a structured growth framework combining baseline organic GDP growth (1.5% per annum), incremental growth from UK Strategic Industries (scaling to +1.0% by 2030), and a dedicated AI productivity layer.

The AI component is driven by the estimated increase in productivity per augmented worker (5.9 hours per worker), together with the incremental growth in AI-augmented roles relative to AI-automated roles, using an Augmentation Potential Factor of 0.37x weighted by occupation and workforce volume.

Achieving this GDP uplift will require a sustained inflow of new graduates with AI-relevant skills and large-scale re-skilling of the existing workforce, to ensure the quality of UK human capital remains aligned with the demands of a fast-changing labour market.

The AI impact on the UK labour market (6)

This analysis shows that AI is not expected to drive widespread job decline across the UK labour market. Instead, it will accelerate a structural reallocation of employment towards occupations that are augmented by AI, while constraining growth in roles that are more exposed to automation.

In this context, employment growth is no longer primarily a function of sectoral demand, but of whether the workforce can perform the tasks that AI complements rather than replaces. Occupations with high augmentation potential show materially stronger growth prospects, while those with high automation exposure face stagnation or decline unless workers transition into adjacent roles.

This creates a clear policy implication: the UK's ability to convert its Industrial Strategy into sustained employment and productivity gains will be determined less by technology adoption itself, and more by the speed and scale at which skills supply can adjust to changing occupational requirements.

Higher education and lifelong learning therefore become system-critical infrastructure. The next step is to translate these occupation-level forecasts into skill-level requirements, enabling universities and reskilling providers to prioritise the capabilities that underpin augmented roles and support workforce transitions at scale.

Section 6: The implications for the HE sector - initial thinking from the University of York

The implication for Yorkshire and the Humber, and the role of the University of York (1)

There is a significant overlap between the IS-8 growth areas, and the immediate growth plans of the University of York's home Mayoral region of York and North Yorkshire.

In particular, a focus on clean energy, advanced manufacturing (especially in agritech) and engineering biology (within both life sciences and defence) are areas of specialism.

Across Yorkshire and the Humber more broadly, there are strong specialisms in defence, in financial services, and the creative industries.

Forthcoming work will look more deeply at labour market demand across Yorkshire and the Humber and the broader North East, and the extent of supply of such skills that will be needed to be delivered by universities across the region.

York and North Yorkshire Local Growth Plan, priority sectors, taken from https://yorknorthyorks-ca.gov.uk/wp-content/uploads/2025/10/York-and-North-Yorkshire-Local-Growth-Plan.pdf

The implication for Yorkshire and the Humber, and the role of the University of York (2)

The University of York, as a University for the Public Good, will leverage the key findings of the QS/University of York/Public First labour market analysis to proactively inform its education, research and innovation strategy to deliver for the UK economy and drive inclusive regional growth.

Areas of focus for the University will include:

- **Future Education Strategy and Curriculum Provision** - where the university will continue to evolve its curriculum and delivery formats to directly address the critical gaps identified in the labour market data
- **Driving Regional Economic Growth and Alliances** - where the University will use this foundational analysis to deepen its engagement with regional and national authorities to foster a knowledge-based ecosystem to deliver economic benefit for individuals and for our regional economy

A University for Public Good: A strategic vision for the University of York to 2030
https://features.york.ac.uk/vision-for-york/

The implication for Yorkshire and the Humber, and the role of the University of York (3)

The University of York, as a University for the Public Good, will leverage the key findings of the QS/University of York/Public First labour market analysis to proactively inform its education, research and innovation strategy to deliver for the UK economy and drive inclusive regional growth.

Areas of focus for the University will include:

- **National policy engagement** - where the University will bringing together public and private sector organisations and shape national discourse to promote systemic and agile responses to rapidly changing labour market demand
- **Widening Access** - where the University will continue to strengthen its efforts to bring the widest possible groups of students through its door, including by updating patterns of course delivery and engagement with older and mid-career learners

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https://features.york.ac.uk/vision-for-york/

Much of the analysis as to the implications for the HE sector of this work go beyond that of the University of York.

Under the theme of national engagement, the University will seek to lead a wider debate and discussion in the sector, and with national government, about the way in which all universities will need to adapt in light of the changing labour market assessment as set out here.

Next steps

This analysis is the first of two pieces of work looking at the future UK labour market through the lens of delivering the Industrial Strategy.

The focus of this work was demand for key skills and occupations in the UK across each of the IS-8 sectors, now and in the next five years.

A second project will drill down in to a single region, across Yorkshire and the Humber and the North East of the UK.

QS, working with University of York will examine the demand and supply capacity in the region and the key gaps forecast for 2030.

This work will be published in Spring 2026.

- We forecast an AI Augmentation premium of £490bn in UK GDP by 2030, representing the largest single contributor to incremental UK growth over the period.

  To realise this uplift, the UK will require both an inflow of new graduates with advanced digital and AI skills and the re-skilling of a significant share of the existing workforce affected by automation. Maintaining the quality and adaptability of human capital will be essential to ensure the labour market remains aligned with the needs of a rapidly evolving, AI-augmented economy.

- The IS-8 has significant regional differences and some strategic coordination of UK universities is needed to meet IS-8 demand locally and nationally.

- A further project is needed to **map skills from the supply side across the entire country**; ie the need for the supply of such skills from educational institutions across the UK.

  - This further detailed analysis can also act as supporting evidence to the work of Mayors, Combined Authorities, and local and civic policymakers and employers in delivering a skills base to meet the commitments of economic growth and labour markets in regions of the UK.

  - This will build on the commitments in the Post-16 Skills White Paper about the need for regionalisation and specialisation, and of a push for a more integrated tertiary system.

Appendix: Methodology

QS Labor Market Intelligence Methodology

QS Labor Market Intelligence (LMI) provides a globally integrated evidence base on how skills, jobs, and education interact across economies.

Built on decades of employer engagement and advanced data science, the methodology combines traditional labor statistics with real-time digital labor signals, survey insights, and education data.

The result is a continuously updated, validated, and scalable framework for understanding the dynamics of work and skills globally.

QS Big Data: Exploring the possibilities

Validation

Data quality and credibility are maintained through systematic **benchmarking, model validation, and partner review**.

QS regularly **benchmark outputs** against official government datasets to verify posting volumes, wage estimates, and workforce composition. All classification models undergo continuous **validation and retraining** as new occupations and skills emerge, ensuring alignment with evolving taxonomies and industry standards.

Sources

- The QS Labour Market Insights integrate a broad and representative set of global data sources that combine employer insight, education data, and real-time labor market activity.
- Central to this approach are the **QS Industry Skills Leadership Councils**, which convene leading global employers to provide direct insight into workforce needs, emerging occupations, and priority skills. These qualitative perspectives are reinforced by over **20 years of QS Employer Survey data**, representing more than **100,000 employers worldwide**, and **student feedback from the 1Mentor platform and Student Survey data representing more than 500,000 students over five year period**, which captures education-to-employment outcomes from learners and graduates.
- To quantify demand and supply trends, QS continuously ingests **job postings** from more than **100,000 employer and aggregator sources, in total representing more than 700 million job postings over the past 10 years**. Postings are fetched in near real time, normalised, and de-duplicated so that each unique vacancy is counted once. The dataset is enriched by more than **500 million worker profiles and résumés**, providing information on job titles, career pathways,skills, and compensation benchmarks.
- These proprietary sources are anchored to **official statistics** from over **100 governments and international organisations** – including OECD, World Bank, and United Nations – to ensure consistency, comparability, and empirical robustness.

Processing and matching of UK occupations to each IS8 sector

- QS employs advanced **machine learning, natural language processing (NLP), and taxonomy-driven modeling** to transform unstructured data into standardised, comparable intelligence.
- The processing pipeline begins with **entity extraction**, identifying employers, occupations, skills, and locations from job and profile text. Each record is then classified through the **QS Occupation Taxonomy**, a machine-learning classifier trained on job content, geography, and industry context, and mapped to national and international occupation systems.
- Unstructured job titles are harmonised via a **Job Titles Taxonomy**, while skills are mapped using the **QS Skills Taxonomy**, comprising more than **40,000 skills** organised into a four-tier hierarchy of domains, categories, and subcategories. Additional pipelines classify companies, industries, and geographies, linking postings to regional labor ecosystems through geocoding and sectoral analysis.
- The analytical layer integrates **occupation- and skill-level assessments**, evaluating automation and augmentation potential, skill acquisition time, skill decay rates, and complexity measures. This enables QS to model both current and future skill dynamics with greater granularity.