# Professionals in IT and Engineering

**May 2025**

MAC

MIGRATION ADVISORY COMMITTEE

# Contents



**Please note this report was finalised and went to internal publishing on 19 May 2025.**

# Foreword

This report fulfils a commission from the Home Secretary to consider the usage of the immigration system by firms when recruiting Information Technology (IT) and Engineering professionals.

As was outlined in the commissioning letter, these sectors feature in the top 10 of those sectors using the immigration system to recruit foreign workers. However, to understand the extent to which they are *reliant* on international recruitment, one needs to consider their usage relative to the size of the sector. This is a separate consideration from their contribution to net migration which will depend on absolute volumes. When viewed through the lens of reliance, two facts emerge. First, engineering does not stand out in any way from other graduate-level roles. In contrast, IT does have a higher relative usage. Second, neither are in any real sense reliant on international recruitment – the vast majority of new hires are from the resident workforce. International recruitment does help both in addressing domestic skill shortages and in accessing top talent.

Migrant workers in both occupation groups make a significantly positive net fiscal contribution. This is driven both by their higher-than-average wages, and their reduced reliance and access to public services and benefits. Whilst our calculations are for their first year in the UK, it is highly likely that they will make a large net positive contribution over their lifetimes.

We make no formal recommendations in this report. This is the first of a series of planned reports on sectoral usage of the immigration system and it would be unwise to make system-wide changes on the basis of reviewing two groups of occupations. However, we do make some observations and suggestions that the government may wish to consider. These relate to both immigration and skills policy.

On immigration policy, we welcome the proposal in the Immigration White Paper for the MAC to review salary thresholds and associated discounts, and note the intention to abolish the Immigration Salary List (ISL) in the Skilled Worker route, which we support. Both the levels and method of calculation of salary thresholds were changed in April 2024, and occupation-specific thresholds were increased substantially. This changed the purpose of these thresholds and has potentially caused some regions to be increasingly priced out of the system. In addition, the new entrant discount is now discounting a much higher salary and may no longer be fit for purpose. We look forward to receiving a commission from the Home Secretary to commence this review.

The government have made clear that they wish to more closely link immigration and skills policy. It is helpful to think about the various ways in which such a linkage can generate a reduction in immigration for work reasons, and why it is unlikely to do so on a one-for-one basis. Nor should it be thought of as a zero-sum game. Being clear about this is also helpful in understanding the policy challenges. We can use the IT and Engineering sectors as examples. How would such a policy work?

First, it is important to remember that most jobs require formal training, education and experience. So, if there is a skill shortage at the present time, skills policy cannot fundamentally change that. If there are not enough electrical engineers today for the demand that employers have, the best we can do is to increase the number of electrical engineering degree places (and other potential pipelines) as soon as possible but recognise that this will take 3-4 years before an increased number of graduates are leaving university. It will then take time for them to acquire the experience needed in employment to be fully effective. This assumes that there are not a substantial number of unemployed or inactive workers with the relevant skills that could provide a more immediate supply response. In general, unemployment tends to be very low for high-skilled workers, so this is unlikely to be a substantial source of labour supply. Among the inactive, there are many who have chosen not to work and so there may be a limited supply here as well – but anything government can do to facilitate those who are inactive but would like to work to move more easily into the labour force is important.

Second, because of the time lags involved, what we actually want to know is how many new electrical engineers will be required in 5-10 years' time. This adds a further complexity. There is a risk that we train enough electrical engineers to address the current shortage, only to find that demand shifts have resulted in even higher demand for such skills in the future. In that case, supply is likely always to be trying to catch-up with demand, skill shortages will persist, and immigration is likely to be seen as the safety valve. The IT sector arguably provides a good example of this. It is not as if we did not realise 10 years ago that the IT sector would continue to expand and skills provision has increased, but arguably we (and many other countries) have failed to appreciate the pace of that expansion. This highlights an important point. In this scenario, immigration will still have an important role (and indeed visa numbers might be higher than previously), but the skills investment was exactly the right thing to do – because in the counterfactual there would have been a need for even more immigration.

Third, there are various leakages between a skills pipeline and employment in particular jobs. Some of this is desirable – young people will often embark on a degree or apprenticeship thinking that this is the right career path for them but realise over time that they were wrong. We do not want to get into a situation in which we somehow force bad matches to persist in the labour market. There are, however, potential levers that could be used to improve the link between the skills pipeline and employment. For example, degree apprenticeships and year-in-industry degree courses may well improve the conversion rate from education into particular careers, as they provide students with a deeper understanding of the career possibilities.

Finally, there is of course demand from foreign workers to work in the UK. When firms advertise jobs, they receive applications from both resident and foreign workers. Changes to the skills of the resident workforce will not directly change the interest from abroad, and depending on skills development in other countries, it is entirely possible that over time there could be a higher share of job applications from foreign workers even if there is a larger supply of resident workers with the right skills. In this scenario, sectors like IT and Engineering might simply expand faster, rather than reducing recruitment of overseas workers. This is not necessarily a bad thing, since these are high-productivity sectors where most workers are net fiscal contributors. But it would not help the government achieve its goal of reducing migration.

This then becomes a question of immigration policy. If the government are convinced that there is a sufficient, high-quality resident labour supply for a particular job or occupation and are willing to take the fiscal hit that comes with restricting migration into highly paid jobs, they could choose to prevent foreign workers from taking these jobs by removing their eligibility for a visa. Alternatively, they could use a pricing mechanism, such as visa fees and salary thresholds, to increase the incentive for firms to recruit domestically. This latter approach has the advantage of ensuring that the small number of firms that are truly in need of top talent can continue to recruit from the global workforce and focuses on the most fiscally positive migrants. If skills policy successfully delivers increases in the domestic supply of workers for industries like IT and Engineering, the impacts of immigration restrictions such as these on employers would be reduced.

In summary, even a very successful skills policy could not guarantee reductions in immigration if there is no change in immigration policy. However, skills policy may be able to help mitigate any negative impacts of restricting migration into highly paid, highly skilled jobs.

The above discussion is predicated on the view that there really are skill shortages that drive immigration. Often this is used as a justification, when in reality it is the pay and conditions of the work that drive the shortage. This tends to be less the case for the professional occupations that we are reviewing in this report, as they are generally paying well above the median salary. But in lower-paying sectors where jobs often have quite short-length training requirements, we must be cautious in believing that immigration is addressing some skills issue.

In this report we highlight a number of areas where skills policy may not be working as well as it could. It is not for us to make formal recommendations on such matters, but we discuss them because such problems will weaken the potential for skills policy to reduce migration through the links described above. Some key issues include:

1. Any expansion of numbers on Science Technology Engineering and Mathematics (STEM) courses in Higher Education (HE) and Further Education (FE) would have to address the funding models used in these sectors. Universities lose money on average teaching UK undergraduates, but they lose relatively more teaching high-cost STEM subjects. FE has been starved of money over the last few decades, and again the costs of providing courses outstrips the revenue they receive. Having training providers willing to put on courses at the going rates is a pre-requisite for most employers to invest in skills training. Many large firms we talked to have addressed the problem by creating their own training courses, but that is not a solution for the overall economy.
2. Regulation of training standards is important, but there must be an appropriate balance to ensure that firms can engage with the process and training providers are not overburdened. We heard a number of examples of regulatory requirements that did not seem related to risk. Degree apprenticeships for example have much higher regulatory burdens than standard degree courses and provide lower income to universities – how is that supposed to encourage supply? The simpler the skills system can be made, the more likely it is that firms, particularly small and medium enterprises (SMEs), will actively engage.
3. The Apprenticeship Levy is being reformed as the Growth and Skills Levy. This is likely to be beneficial to the IT sector in particular, where shorter courses and bootcamps are an important part of the training environment. The government should carefully consider whether some Level 7 STEM apprenticeship should continue to be eligible as they appear to be closely linked to the industrial strategy objectives. More work is also needed to encourage smaller firms to access apprenticeship funding, and more consideration should be given as to whether further incentives are required for SMEs to increase the number of apprenticeships offered.

4. Investment in skills is not cheap – it is after all an investment with future returns. Both the private sector and government are likely to need to increase investment if there is to be a fundamental shift in provision. As a starting point, it would be good if the money already being raised for skills provision, such as the Immigration Skills Charge (ISC) and Apprenticeship Levy, was fully spent on such activities.
5. The industrial strategy and government missions can provide a useful framework to prioritise skills provision. Given the budget constraints, priorities will need to be established. There is nothing wrong with the government and other partners taking a strategic approach and choosing to fund some courses and subjects more generously than others. There is currently a lack of strategic direction that makes it difficult to address current and future skills shortages that will impact on the ability to deliver the industrial strategy and missions.

We agreed with the Home Office to delay the publication of this report until after the publication of the Immigration White Paper, which was published on Monday 12th May. This has allowed us to reflect on the contents of the White Paper in our conclusions and recommendations. The Home Secretary agreed to the required extension to our commission deadline. Please note this report was finalised and went to internal publishing on Monday 19th May.

**Prof. Brian Bell (Chair)**

**Dr Madeleine Sumption MBE (Deputy Chair)**

**Prof. Dina Kiwan**

**Prof. Sergi Pardos-Prado**

**Prof. Jo Swaffield**

# Introduction

## Details of our commission

On 6 August 2024 the Home Secretary commissioned us to examine the use of international recruitment for Information Technology (IT) & Telecommunications professionals and Engineering professionals, to explore the reasons behind this and their potential future labour demands. Specifically, we were asked to consider:

- The types of roles in shortage;
- The drivers of these shortages including training, pay and conditions;
- How the sectors have sought to respond and adapt to these shortages, beyond seeking to recruit from overseas;
- The impact, if any, of being on the shortage occupation list (now known as the Immigration Salary List); and
- Potential policy levers within the immigration system that could be used more effectively to incentivise sectors to focus on recruiting from the domestic workforce.

The commissioning letter also suggested that these sectors have historically been amongst the heaviest users of international recruitment; however available data shows that compared to other sectors, their use of the immigration system is broadly proportionate to their size and is considerably lower when compared to, for example, a number of health care professions. This is true particularly of Engineering professionals, accounting for 3% of all Skilled Worker visas compared to 17% for Nursing professionals (see Chapter 1).

Throughout this review we have worked closely with the members of the Quad[1], a proposed new framework between the MAC, Skills England, the Industrial Strategy Advisory Council (ISAC) and the Department for Work and Pensions (DWP) to assess and address issues that have led to reliance from certain sectors on international recruitment. We have also engaged regularly with the Devolved Governments. This has been important in this review because, whilst migration is a matter reserved to the UK Government, education and skills are devolved powers. This makes the intersection between immigration policy and both education and skills complex. We have also considered the sectors' varied geographic significance. We have incorporated geographic data cuts in this review where data are available and of good quality and where the data demonstrate distinct geographic differences. We will continue to work with stakeholders, including the Devolved Governments, to improve the geographic migration data that we use, with a view to enabling greater improvements in the localised insights we provide in our work.

We expect that this will be the first of a series of reviews that will examine sectoral or occupational reliance on immigration and the extent to which the immigration system could be better designed to incentivise sectors to focus on recruiting from the domestic workforce. This is part of the broader agenda of the government to

[1] Throughout the report we refer to the members of this proposed new framework as the Quad. The Immigration White Paper proposes that going forward the Quad be referred to as the Labour Market Evidence Group (LMEG).

more closely link immigration policy with skills policy and the industrial strategy. The recently published Immigration White Paper provides further detail on how this agenda will be taken forward by the MAC.

## Defining our scope and sector engagement

Access to the main work visa routes is set at the occupation level, which is defined by Standard Occupational Classification (SOC) codes. Given that we were specifically asked to focus on IT, Telecommunications and Engineering professionals, we used the following definitions of occupations using minor SOC2010 codes 212 Engineering Professionals and 213 Information Technology Professionals.

**Table 0.1 Professional Engineering occupations in scope – minor group 212**

| SOC2010 | SOC2020 |
|---|---|
| 2121: Civil Engineers | 2121: Civil Engineers |
| 2122: Mechanical Engineers | 2122: Mechanical Engineers |
| 2123: Electrical Engineers | 2123: Electrical Engineers |
| 2124: Electronics Engineers | 2124: Electronics Engineers |
| 2126: Design and Development Engineers | 2125: Production and Process Engineers |
| 2127: Production and Process Engineers | 2126: Aerospace Engineers |
| 2129: Engineering professionals not elsewhere classified (n.e.c.) | 2127: Engineering Project Managers and Project Engineers |
| | 2129: Engineering professions n.e.c. |

**Table 0.2 Professional IT & Telecommunications occupations in scope – minor group 213**

| SOC2010 | SOC2020 |
|---|---|
| 2133: IT Specialist Managers | 2131: IT Project Managers |
| 2134: IT Project and Programme Managers | 2132: IT Managers |
| 2135: IT Business Analysts, Architects and Systems Designers | 2133: IT Business Analysts, Architects and Systems Designers |
| 2136: Programmers and Software Development Professionals | 2134: Programmers and Software Development Professionals |
| 2137: Web Design and Development Professionals | 2135: Cyber Security Professionals |
| 2139: Information Technology and Telecommunications Professionals n.e.c. | 2136: IT Quality and Testing Professionals |
| | 2137: IT Network Professionals |
| | 2139: Information Technology Professionals n.e.c. |

In terms of definitions, we have referred specifically to ‘occupations’ whenever discussing the above 4-digit SOC Codes in this report, and ‘professionals’ when referring to SOC minor groups 212 or 213. We use ‘sectors’ when discussing IT and Engineering more broadly when not referring to specific SOC Codes.

One of the challenges of this review is that much of the data available are not defined at the occupation level but rather at the sectoral level. Both IT and Engineering professionals work across a number of sectors, and many other occupations are included in sectoral data. The immigration system is currently designed explicitly at the occupation rather than sector level. Going forward, we will need to develop our work within the Quad in order to improve the data and enable a richer evidence base. Throughout the report we will refer to the IT and Engineering sectors – this should be understood to primarily refer to the explicit occupations under review, though often the data will reflect the wider sector.

The Skilled Worker (SW) Visa allows workers to come to the UK to do an eligible job with an approved employer. SW visa holders must be paid whichever is higher of either the general threshold of £38,700 per year or the occupation-specific threshold (currently defined as the median annual salary).

The SW route defines skills through the Regulated Qualifications Framework (RQF) level. Eligible jobs on the route must be at RQF 3 or above (A Level and equivalent) but other routes may have different requirements. The professions under consideration in this review are categorised as RQF 6 or above, which is graduate level roles.

Some of these occupations were previously on the Shortage Occupation List (SOL)[2], which had enabled employers to pay a discounted salary (up to a 20% discount on either the general threshold, or the occupation's going rate, whichever figure was higher), as well as a very small reduction in visa fees. In our review of the SOL in October 2023, we recommended the abolition of the discount on the occupation-specific threshold, which the then government accepted. In December 2023 the government announced the replacement of the SOL with the Immigration Salary List (ISL) from April 2024, which saw both the abolition of the discount on the occupation-specific threshold and an increase in salary thresholds (though a 20% discount on the general threshold remains). Occupations that have an occupation-specific threshold above the general threshold therefore receive no substantive benefit from being on the ISL and so are excluded from consideration – this includes all the occupations that are the subject of this review. However, the IT sector in particular has made use of other routes to bring workers to the UK such as the Global Business Mobility route (previously the Intra-Company Transfer (ICT) route), which we have also considered as part of this review.

To obtain evidence for this review, we held a number of focus groups with employers, sector skills bodies, employees, Trade Unions, and both UK and Devolved Government representatives, speaking directly to over 70 organisations. We met with some employers who are the heaviest users of the migration system within these sectors and undertook a site visit in Scotland. A list of engagements can be found in Annex 10. Participants for 7 focus groups with employers, training providers, worker representatives and workers themselves were chosen using a sampling framework which sought to provide diversity of experience by recruiting a spread of participants according to a series of key characteristics. These varied according to the requirements of different groups but included location, size of business, sponsorship status, membership profile and immigration status to ensure a diverse sample. We did not run a Call for Evidence (CfE) for this review, which took place at the same time as our review of the family visa financial requirements. We undertook statistical analysis using a variety of labour market, migration, and education and skills datasets.

[2] Some definitions of occupations changed slightly in the move from SOC2010 to SOC2020, so exact occupation titles may vary between different iterations of the SOL and ISL lists.

These included survey microdata, administrative records, published statistics and evidence from government departments.

## The IT and Engineering skills landscape

The UK and Devolved Governments have been aware of the challenges that skills shortages have presented for some time. However, the approach can differ across the UK: whilst there are many similarities in the Higher Education (HE) and skills systems across the UK, education providers are regulated and funded by different governments and public bodies in the Devolved Nations. This means that approaches to skills policy and HE differ across the UK, with different strategic ambitions and sector growth plans to consider and varying approaches to each. Further, there are distinct challenges and trends within and across each Devolved Nation, and across the regions and cities of England.

In recent years successive UK Governments have published various industrial strategies with the intention of scaling growth, productivity and earnings, as well as a push to widen digitalisation across all sectors. Most recently Invest 2035, announced by the UK Government last year, identified 'growth-driving sectors' including 'digital and technologies' and other fields incorporating elements of engineering, and committed to supporting the development of a skilled workforce via its 'people and skills' theme. The Devolved Governments have also devised their own strategies for stimulating growth in their specific contexts. The sectors themselves have also sought to identify skills gaps and needs and to encourage the visibility and development of science, technology, engineering and mathematics (STEM) careers and STEM teaching in schools.

The acceleration of digital transformation and the rise of emerging technologies such as Artificial Intelligence (AI) is an example of the evolving skills landscape in both IT and Engineering. The Department for Science, Innovation and Technology (DSIT) Artificial Intelligence (AI) Opportunities Action Plan, published earlier this year, suggests that more work needs to be done to accurately assess the size of the current skills gap whilst arguing that the government needs to invest in the foundations of AI, encourage cross-economy AI adoption, and position the UK to be an 'AI maker'. The Action Plan's recommendations, which include how to attract local and international talent, have been largely accepted by the government and include work to assess the skills gap, expansion of education pathways into AI and consideration to how the existing immigration system can be used to attract overseas graduates. Other research into the UK's IT sector suggests that the majority of employers have faced difficulties in sourcing domestic candidates with the right technical experience, with founders of UK startups and scaleups reporting that software engineering and development skills are amongst the hardest to recruit for. There have been similar predictions that demand for skilled engineers will outpace domestic supply unless there is greater planning and funding for training the future workforce.

This review gives consideration to shortages within the IT and Engineering sectors, and efforts to recruit both domestically and internationally as well as consideration of factors that fall outside the immediate control of the sectors. We are grateful to stakeholders and the members of the Quad for their insights and engagement during the course of this review. This review is a MAC report, which represents the views of the MAC alone.

## Structure of this review

This report is organised into the following chapters:

- **Chapter 1** gives a summary of the sectors and how they are utilising the immigration system.
- **Chapter 2** looks at the drivers of shortages in these sectors and why they are recruiting from overseas.
- **Chapter 3** explores the actions the sectors have taken to address shortages, and potential options within and outside the migration system.
- **Conclusions**.

# Chapter 1: How are the sectors using the immigration system?

## Summary


1. **Both IT and Engineering professionals, especially IT, have experienced stronger employment growth than the rest of the economy since 2011;**
2. **Both also have a distinct worker profile – more likely to be full time, male and employees than the rest of the UK. Geographically, employment in Engineering is notably *less* and IT notably *more* concentrated in London and the South-East than the UK average;**
3. **Whilst the IT profession is one of the top users of the migration system in terms of number of visas, relative to the size of its UK workforce its usage is more similar to comparator occupations. Use of the migration system in the Engineering profession is much more modest in both absolute and relative terms;**
4. **Compared to the wider migration system, both professions are not large contributors to net migration, whilst having a strong positive per-person fiscal impact on the UK (albeit a relatively small total fiscal impact);**
5. **For IT professionals, visa utilisation is driven by large (often Indian multinational) firms based in London. Large firms and London-based professions are less dominant for Engineering professionals on visas;**
6. **The professions tend to use the migration system to sponsor younger migrants (largely those aged 26 to 35). In comparison, whilst the most common age group for domestic new hires is under 26, the total domestic stock of workers in these occupations is much more evenly distributed across all ages; and**
7. **Pay for IT professionals on the Skilled Worker route is heavily skewed towards higher wages when compared to domestic IT workers, while pay for the two groups is broadly similar for Engineering professionals. On the Global Business Mobility (GBM) route, there is clear evidence of bunching around the pay threshold for IT professionals.**


## Introduction

This chapter breaks down the current migration landscape for IT and Engineering professionals, first by establishing their UK employment context before delving deeper into migrant characteristics at both the individual and firm level.

The IT and Engineering professions have been defined in this report as containing all occupations in SOC2010 codes 212 and 213 and are analysed in relation to broader professional occupations (SOC2010 code 2, including legal, health, and media professionals) as well as the wider economy to provide a reference point for analysis. In addition, all migration analysis has been conducted on migrant cohorts entering the UK from 2021-

2023. This does not represent the characteristics of the existing migration stock but more looks at the characteristics of the flow of migrants to the UK.

Throughout this report we have had to address the well-documented problems with the ONS Labour Force Survey (LFS) and the associated Annual Population Survey (APS). The response rates to these surveys fell heavily during the COVID-19 pandemic and have failed to recover substantially since then. The ONS have plans for a Transformed Labour Force Survey (TLFS) but have repeatedly delayed the likely date for implementation. As a result, we do not have confidence in the data from the LFS/APS from 2020 onwards and have generally avoided using these data. Where they are used, we emphasise the considerable uncertainty attached to such data.

## Sectoral context

Both Engineering and IT professions have seen strong employment growth relative to the overall economy since 2011. The IT profession in particular has exhibited much faster growth given rapid technological advancements and strong demand for IT services. Figure 1.1a shows that employment of IT professionals grew twice as fast as the wider professional occupations group and 4 times faster than overall employment between 2011 and 2019. In comparison, Engineering employment has grown more similarly to other professional occupations (including lawyers, finance and health professionals). In 2019, total employment of IT professionals was 1.1 million and Engineering professionals 0.5 million.

Across the UK, employment growth in the professions has been spread relatively unevenly between the nations. Whilst England has the largest workforce relative to other UK nations, Wales and Northern Ireland expanded their Engineering workforce much faster than England, with sizeable growth rates seen in Table 1.1b, whilst only Northern Ireland grew significantly faster than England in IT. Scotland on the other hand largely tracked England's trends in both IT and Engineering workforce expansion. In Wales, Engineering employment growth was faster than in their IT workforce between 2011 and 2019, in contrast to all other nations. The LFS and APS are no longer reliable since 2020 meaning that precise trends cannot be drawn from estimates beyond this period.

**Figure 1.1a: IT & Engineering employment growth**

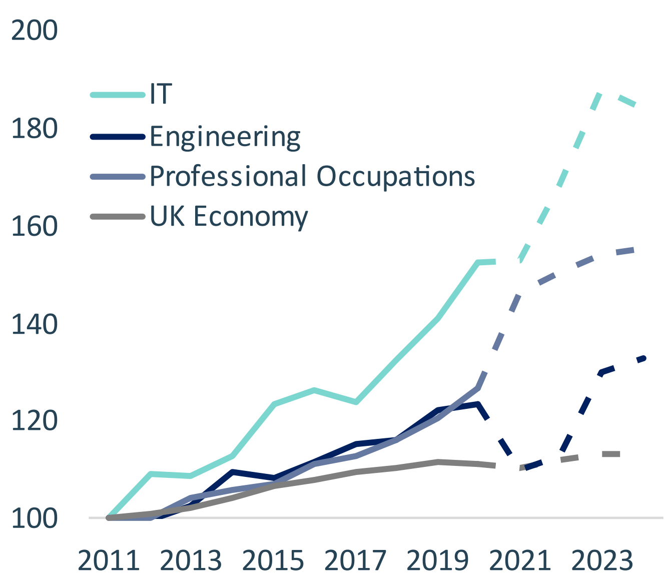



**Table 1.1b: IT & Engineering employment growth**

| | 2011-2019 | | 2021-2024* | |
|---|---|---|---|---|
| Nation | Eng. | IT | Eng. | IT |
| England | +20% | +42% | +22% | +22% |
| Wales | +61% | +18% | +38% | +56% |
| Scotland | +23% | +43% | +19% | -1% |
| Northern Ireland | +42% | +52% | -12% | +5% |
| UK | +23% | +41% | +21% | +21% |

Source: Annual Population Survey (APS) 2011-2024, published NOMIS tables.

Notes: *ONS has removed APS accreditation as a national statistic given key statistical issues with this publication meaning these figures may not be representative of sectoral trends. Professional Occupations category excludes IT and Engineering. Employment includes all UK workers that are in permanent/non-permanent, full/part-time, employed/self-employed work of all ages. Dotted line also reflects a change from SOC10 to SOC20 classifications, and thereby occupations may not directly be comparable for APS 2011-2020 vs APS 2021-2023. Total employment in 2019 for Engineering professionals is 420,000 (England), 23,000 (Wales), 51,000 (Scotland), 13,000 (Northern Ireland). Total employment in 2019 for IT professionals is 950,000 (England), 28,000 (Wales), 60,000 (Scotland), 22,000 (Northern Ireland). Fig 1.1a is indexed to 2011 (2011=100).

Within the workforce, IT and Engineering professionals are more likely to be male, work full-time and be employed by an organisation rather than self-employed (Table 1.2). There is a clear lack of gender diversity in both professions, with the share of male workers substantially higher than the UK average as well as other professional occupations (which have relatively high female shares in health and education professions in particular). Both professions have a lower share of disabled workers than the wider economy (although are broadly in line with the wider professionals group) and ethnic minorities are slightly overrepresented in IT and underrepresented in Engineering. These trends are also found for UK-born individuals, with 8% of all UK-born IT workers and 3% of UK-born engineers coming from an ethnic minority background in comparison to the UK average across all occupations of 5%. London is a much larger hub for IT professionals, reflecting the headquarters of major IT firms, whilst Engineering is more geographically spread across the UK.

**Table 1.2: Worker characteristics**

| Professions | Full time proportion | Male proportion | London / South-East proportion | Employees vs self-Employed | Disability proportion | Ethnic minority proportion |
|---|---|---|---|---|---|---|
| **Engineering professions** | 94% | 91% | 24% | 87% | 9% | 8% |
| **IT professions** | 94% | 82% | 44% | 88% | 10% | 19% |
| **Professional exc. IT & Engineering** | 76% | 40% | 34% | 88% | 11% | 14% |
| **UK economy** | 74% | 53% | 30% | 84% | 13% | 12% |

Source: Pooled Annual Population Survey (APS) 2017-2019.

Notes: Employment characteristics calculated from all UK workers. Disability is defined through the Equality Act 2010. Ethnic minority defined as those not identifying as White British.

The majority of IT and Engineering professionals are university graduates. Figure 1.3 shows how this share has increased from 2012 to 2019 (with this trend appearing to continue apace in the most recent data). These proportions vary slightly across firm sizes and workers at large firms are more likely to be graduates compared to micro, small and medium size firms.

Workers with a lower level of educational attainment may have entered the profession through lower-skilled feeder roles, particularly for Engineering professionals. These roles can act as stepping stones to develop transferable skills that can be used to enter the professional occupations. Approximately 8% of those aged 25 years and older in Engineering professional roles in 2021 were in skilled electrical trades, with another 5% being in Engineering technician roles in 2012. The same is true to a slightly lesser extent in the IT profession, with 8% in IT technician roles prior to entering the IT professional occupations. We cover education and skills in Chapter 2 of this report.

**Figure 1.3a: Engineering professionals by qualification**

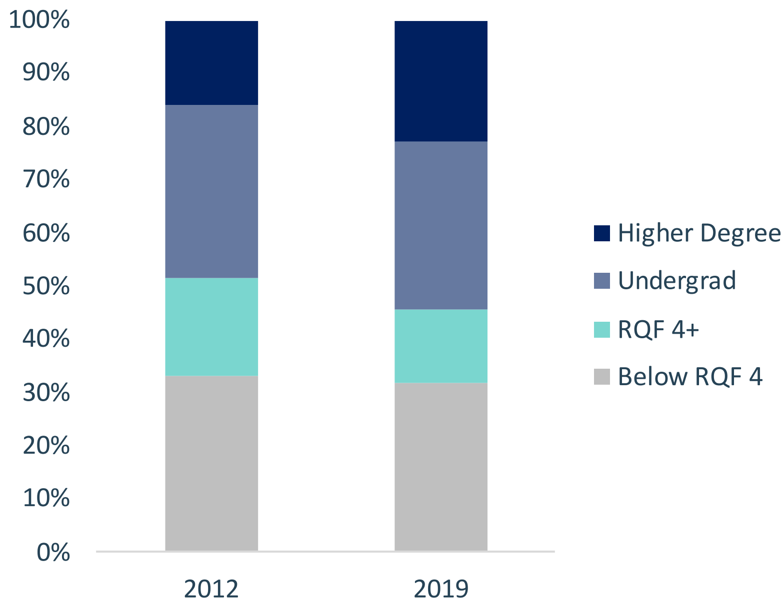
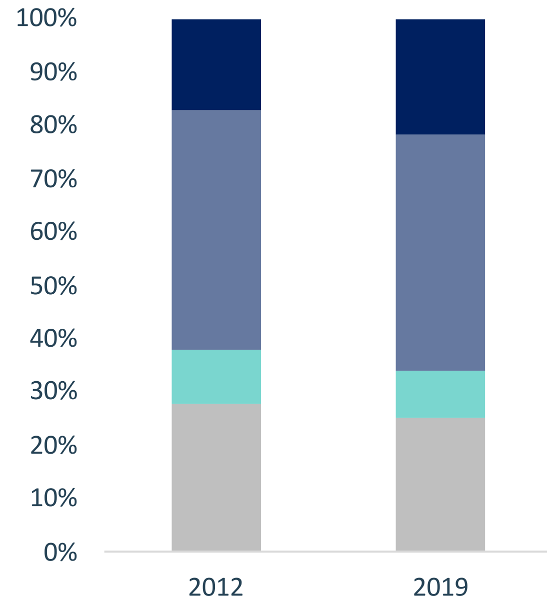



**Figure 1.3b: IT professionals by qualification**




Source: Annual Population Survey (APS) 2012, 2019.

Notes: UK-wide population for IT and Engineering professionals. The Regulated Qualifications Framework (RQF) is a system that classifies qualifications based on their complexity and learning outcomes (further detail provided in the Introduction). The 'below RQF level 4' grouping includes those with A-level or equivalent qualifications (RQF level 3) and below. RQF level 4 is equivalent to the first year of a bachelor's degree, representing a step up from secondary to higher education. An undergraduate degree is RQF level 6, a Master's RQF level 7 and a PhD is RQF level 8.

## Migration usage

In the commissioning letter, the government identified IT and Engineering as "sectors [which] feature in the top 10 of those sectors which have been reliant on international recruitment". Whilst this may be the case in absolute terms, this does not consider the differing sizes and levels of employment across professions. For example, the IT sector in the UK is much larger than the Engineering sector, and therefore it is natural for visa usage to be larger in IT compared to Engineering. As such, it is important to contextualise the migration picture relative to employment levels when seeking to understand migration usage within these sectors.

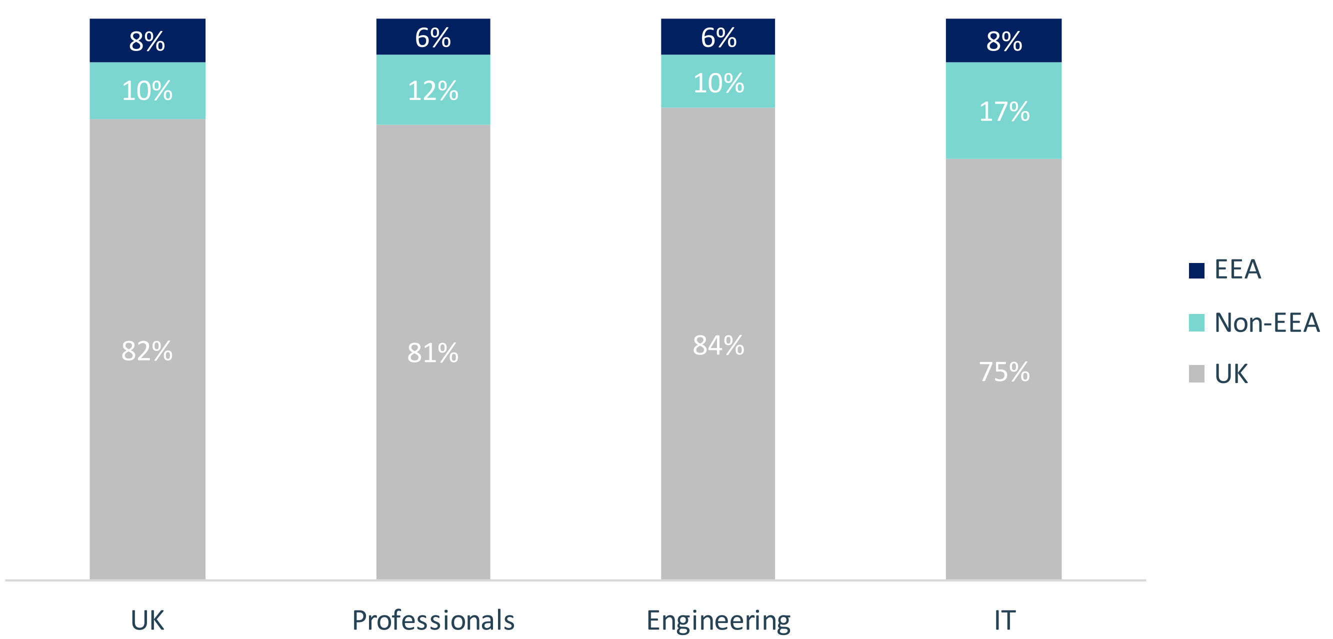
Table 1.5 shows that when ranking occupations by the number of visas, the IT profession is 3rd and Engineering is 8th, making up around 9% and 3% of all sponsored skilled work visas respectively. For IT especially, this is notably higher than other similar professional occupations. In relative terms however, the IT profession's usage of the migration system is closer to comparator occupations. Scaling SW visa volumes to total employment in each occupation, Table 1.5 shows that IT is not greatly different to the likes of Health, Business, Engineering or Science professionals. Further, due to issues with the APS, these proportions use 2017-19 employment levels. Given the IT sector's likely rapid employment growth since then (see Figure 1.1a), if dividing visa numbers by more up to date employment statistics this proportion would only be further reduced. For context, averaging across APS 2021-2023 reduces the proportion of visas to total employment from 1.2% (APS 2017-2019) to 1%, with Engineering largely unchanged at 0.8%. This places both occupations largely in line with other professional occupations, even when comparing all occupations using total employment levels derived from APS 2021-2023.

Another avenue to contextualise visa usage is to examine visas as a proportion of new hires, which provides a sense of the share of visas in filling vacancies. Similar trends to the total employment comparison detailed above are evident here[3]. IT and Engineering SW visa volumes as a proportion of UK-wide new hires were around 7% for the IT profession, and 6% for the Engineering profession. This is compared to other professional occupations including 6% for Business, Research and Admin professions, and 4% for Finance professionals. The vast majority of new hires therefore come from the resident labour force.

More broadly, whilst the Engineering profession's workforce has a similar proportion of foreign-born workers compared with professional occupations, the IT profession has a higher share of foreign-born workers relative to professional occupations in general. The proportion of foreign-born workers in the Engineering profession is approximately 10% lower, indicating a lower dependency on migrants relative to the IT profession.

In other words, whilst the IT profession does utilise the migration system to a higher degree than other professions, it is by no means an outlier among professional occupations, despite what absolute visa volumes may suggest. Further, the international recruitment of IT workers is a global phenomenon. In Australia for example, IT accounted for 9% of SW visas issued from 2020 to 2024 on average, with IT professionals having the 5th highest proportion of migrants of any occupation for all permanent migrants between 2000 and 2021.

**Figure 1.4: Foreign born proportion by profession**




Source: Annual Population Survey (APS) pooled 2017-2019.
Notes: 'Professionals' excludes IT and Engineering professionals.

[3] New hires defined as those in employment for less than a year.

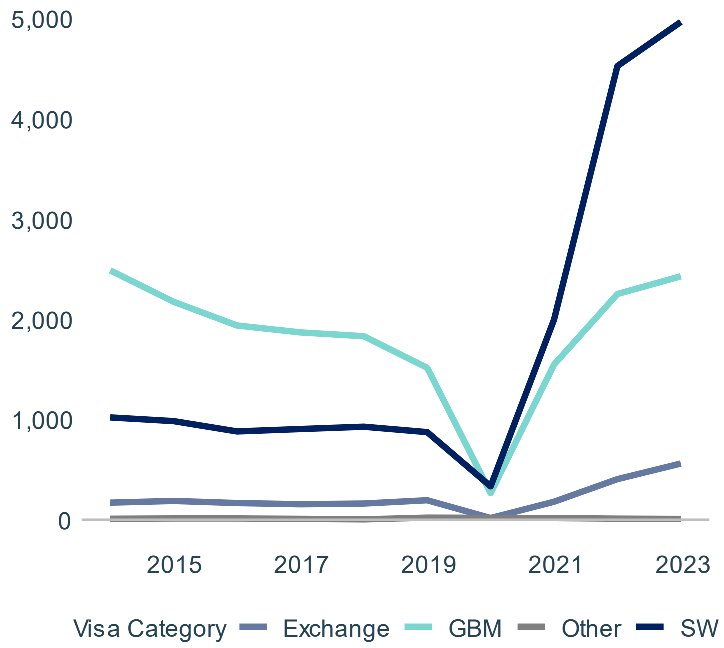
### Table 1.5: Top 10 occupations – Skilled Worker visas issued

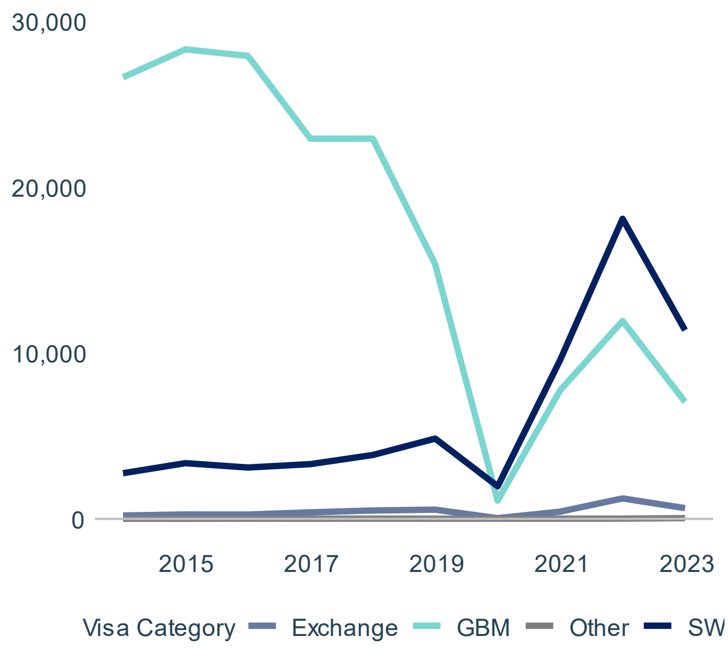
| Rank | Occupations | Average SW visas issued per year | % of all SW visas | Annual visa as a % of total occupational workforce | Annual visa as a % of new hires |
|---|---|---|---|---|---|
| 1 | Social Care Occ. | 49,500 | 35% | 3.9% | 18% |
| 2 | Nursing Prof. | 23,100 | 17% | 3.3% | 34% |
| 3 | IT Prof. | 11,900 | 9% | 1.2% | 7% |
| 4 | Health Prof. | 10,500 | 8% | 1.9% | 14% |
| 5 | Business, Research and Admin Prof. | 7,100 | 5% | 0.9% | 6% |
| 6 | Food Prep & Hospitality Occ. | 5,400 | 4% | 1.2% | 6% |
| 7 | Finance Prof | 3,600 | 3% | 0.5% | 4% |
| 8 | Engineering Prof. | 3,600 | 3% | 0.8% | 6% |
| 9 | Marketing Prof. | 3,300 | 2% | 0.3% | 2% |
| 10 | Science Prof. | 3,100 | 2% | 1.5% | 9% |
| - | Total SW Visas | 139,600 | 100% | 0.6% | 3% |

Source: Home Office immigration statistics 2021-2023, Annual Population Survey (APS) pooled 2017-2019.
Notes: Skilled Worker (SW) route only, Average 2021-2023. % of workforce on visas represents the annual average SW visas issued as a percentage of total profession employment (only considering occupations that are eligible for SW visas). Occupations identified by top 10 3-digit SOC10 codes within Home Office immigration statistics.

The GBM visa is the other main pathway for firms to sponsor skilled migrants, designed only for temporary work assignments meaning this route does not lead to settlement. Whilst there are 5 sub-routes within GBM, firms within IT and Engineering predominantly utilise the 'Senior or Specialist Worker' sub-route targeted at senior managers or specialist employees. There has been a discernible shift away from GBM work visas towards SW visas within the IT and Engineering professions following the introduction of the post-Brexit immigration system in the UK and since the pandemic. Despite this, there were around 8,700 GBM visas issued to the IT profession and 1,800 GBM visas issued to the engineering profession on average between 2021 and 2023. Both groups have seen increases in SW visas since 2020. GBM visas have been on a downward trend for the IT profession since 2016, while GBM visas for engineering professionals have remained relatively stable. The most recent quarterly data for 2024 (not plotted below) shows the plateau in engineering visa numbers in 2023 turning into a decline and IT visa numbers continuing to decline relative to a recent peak in 2022.

| Figure 1.6a: Visa route breakdown - Engineering | Figure 1.6b: Visa route breakdown – IT |
|---|---|




Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2014-2023.
Notes: European Economic Area (EEA) migrants will not be picked up pre-2020 due to Freedom of Movement. Exchange refers to Government Authorised Exchange. CoS visa data will not line up exactly with the Home Office immigration statistics detailed in Table 1.5, given the regular updating of administrative databases.

While SW and GBM visas are the main routes for Engineering and IT professionals to enter the UK, there are other routes for entry. For example, the Government Authorised Exchange route, which is mainly utilised in the IT and Engineering profession to hire temporary interns. This route makes up less than 5% of all sponsored visas in IT and Engineering, with less than 1,000 visas per year for both professions.

Another migration route that the IT and Engineering sector can potentially hire through is the Global Talent route. This is an unsponsored visa route that encourages leaders in their respective fields to migrate to the UK and is supported by 6 endorsing bodies. Visa numbers from Tech Nation and the Royal Academy of Engineering (the relevant bodies for the IT and Engineering sectors respectively) are small, both averaging less than 1,000 per year (between 2020-2023), which may reflect the intention of the route to focus on top talent. In a Global Talent evaluation published by the Home Office in 2024, around 87% of all Royal Academy of Engineering endorsements worked in academia, suggesting that this is primarily an alternative immigration route to SW rather than a substantive route to hire professional Engineers. In contrast, only 4% of those endorsed by Tech Nation worked in academia, so this is more likely to be a route for IT professionals. Indeed, in our discussions with global tech firms, the Global Talent route was identified as the main route of choice for their professional recruitment, rather than the SW route. However, the small numbers on this route relative to SW and GBM suggests that it is not a large source of labour supply for either of these sectors.

# Who is being recruited?

This section explores the demographic characteristics of migrant IT and Engineering professionals to understand who is being recruited in these areas. Indian nationals account for a sizeable proportion of the total migration cohort for both professions, reflecting the strong IT and Engineering base within India and specific pull factors for UK migration, for example cultural and historical ties (Figure 1.7). This is especially the case for IT professionals on the GBM route, which is almost exclusively used by large Indian multi-national firms to transfer their workforce from India: almost 94% of IT migrants on the GBM route come from India. Breakdowns of the firms that are sponsoring these workers are detailed in the next section.

**Figure 1.7a: Migrant nationality - Engineering**

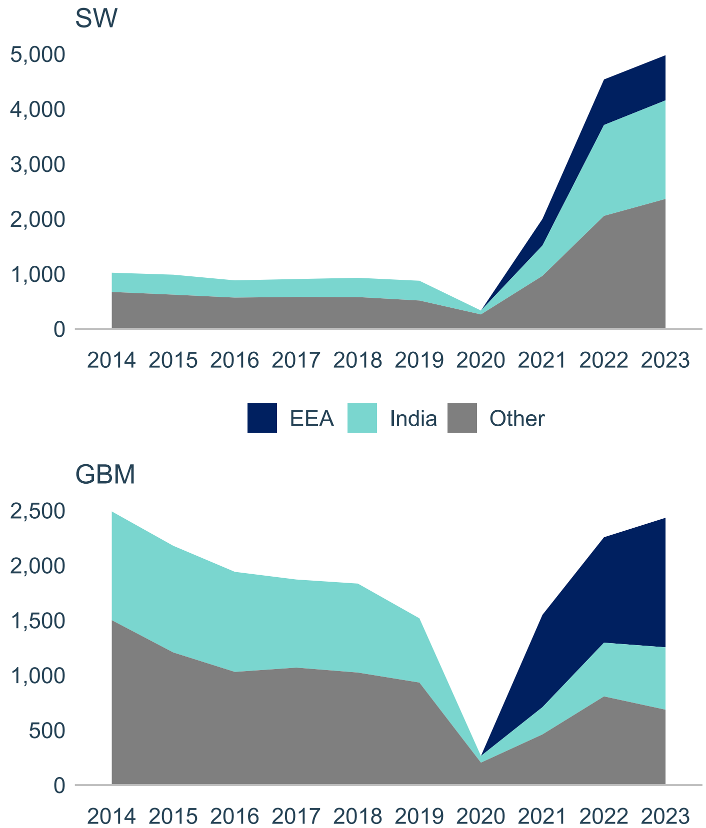
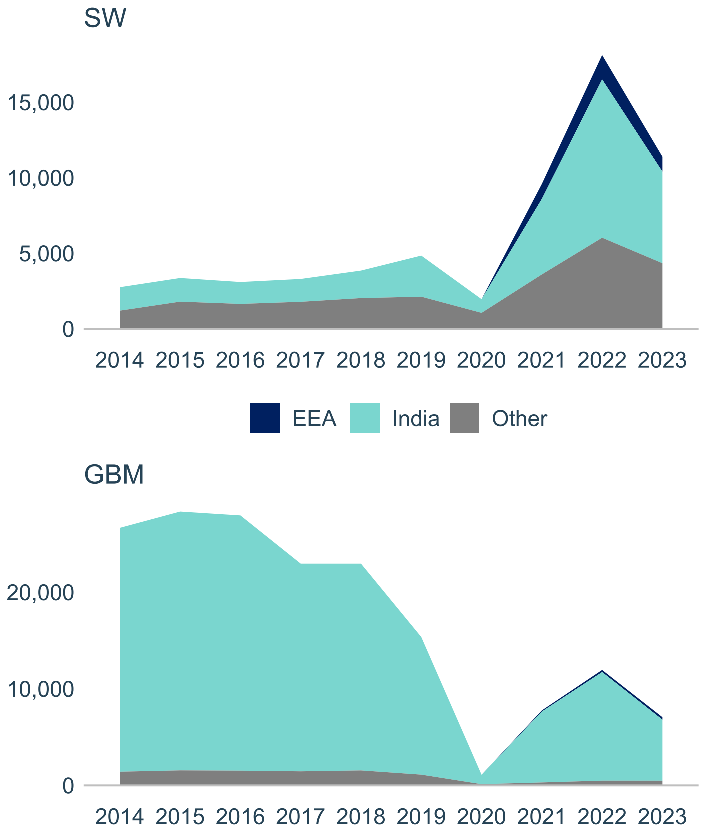



**Figure 1.7b: Migrant nationality – IT**




Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2014-2023.

Notes: SW refers to the Skilled Worker route and GBM to the Global Business Mobility route. Freedom of Movement pre-2020 means that European Economic Area (EEA) migrants are not picked up before this period. CoS visa data will not line up exactly with the Home Office immigration statistics detailed in Table 1.5, given the regular updating of administrative databases.

The recruitment of IT professional migrants is predominantly concentrated in a few occupations, whereas the Engineering profession's use of the migration system is spread out across many occupations. The top 2 IT occupations account for around 75% of all IT professional visas, with a significant proportion being 'Programmers and Software Development Professionals'. In comparison, Engineering professionals are recruited fairly evenly across the constituent occupations (Table 1.8).

As highlighted above, various occupations can act as feeder roles for individuals to develop skills and experience before they enter the IT and Engineering professions. However, these feeder roles are not significantly utilised by the migration system (Annex 6), with visas significantly lower than the corresponding professional occupations within the IT and Engineering professions.

**Table 1.8: IT and Engineering professional visa occupational breakdown**

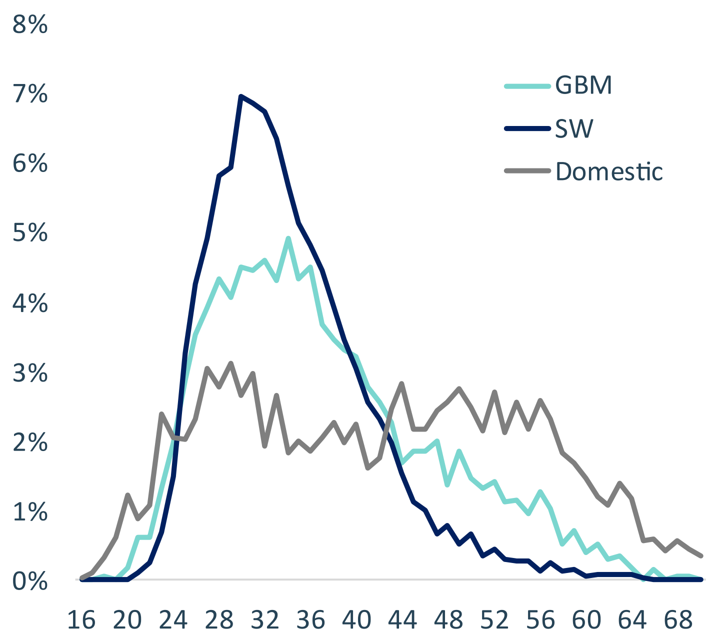
| Occupation | Average annual visas (SW & GBM) | % of profession specific visas | % of all SW and GBM visas |
|---|---|---|---|
| **Engineering** | | | |
| 2129 - Engineering professionals n.e.c. | 1,300 | 23% | 0.8% |
| 2126 - Design & development engineers | 1,200 | 22% | 0.8% |
| 2121 - Civil engineers | 800 | 14% | 0.5% |
| 2122 - Mechanical engineers | 700 | 14% | 0.5% |
| 2123 - Electrical engineers | 600 | 11% | 0.4% |
| 2127 - Production and process engineers | 500 | 10% | 0.3% |
| 2124 - Electronics engineers | 300 | 6% | 0.2% |
| **IT** | | | |
| 2136 - Programmers and software development professionals | 8,700 | 43% | 5.6% |
| 2135 - IT business analysts, architects and systems designers | 6,600 | 32% | 4.2% |
| 2139 - IT professionals n.e.c. | 2,100 | 10% | 1.3% |
| 2134 - IT project & programme managers | 1,800 | 9% | 1.1% |
| 2133 - IT specialist managers | 700 | 4% | 0.5% |
| 2137 - Web design & development professionals | 700 | 3% | 0.4% |

Source: Home Office immigration statistics 2021-2023.
Notes: Skilled Worker (SW) route and Global Mobility (GBM) visas only. Not elsewhere classified (n.e.c.) represents IT/Engineering occupations that do not fit into the other categories. Figures may not add up due to rounding.

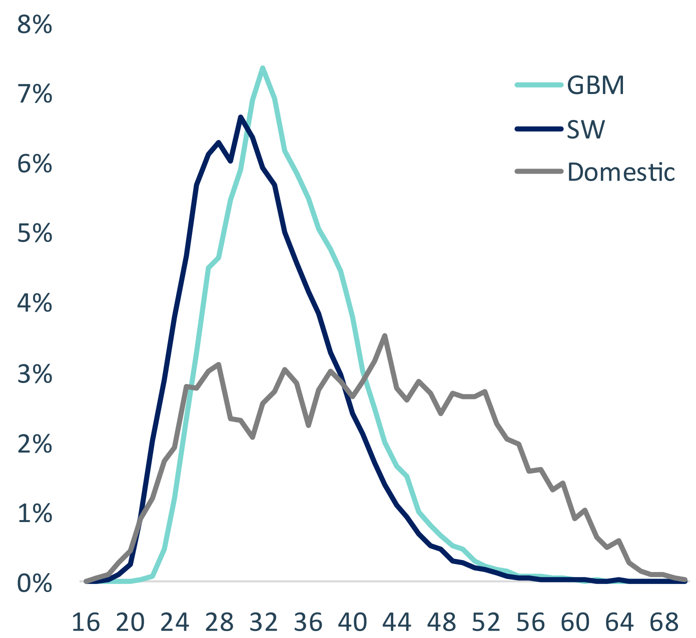
Migrant Engineering and IT professionals tend to be younger than the domestic workforce (Figure 1.9), peaking at around 26-35 years old, reflecting the higher likelihood of migration in this age range. The age distribution of the GBM route is slightly older than the SW distribution for both professions, which fits with the purpose of GBM as a route for senior or specialist workers to enter the country. By contrast, the corresponding domestic IT and Engineering workforces are relatively evenly spread across the working age distribution.

New hires (Figure 1.10) however, exhibit similar trends to migrant recruitment. The most common age group to recruit from is under 26 and diminishes with age, potentially reflecting the prevalence of graduate employment in the occupations, and the lower likelihood of job shifts within the older workforce.

## Figure 1.9a: Workforce age distribution – Engineering

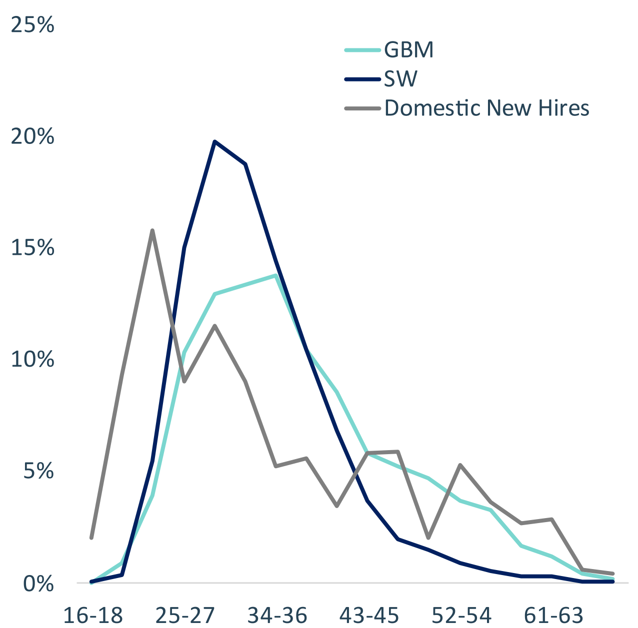



## Figure 1.9b: Workforce age distribution – IT

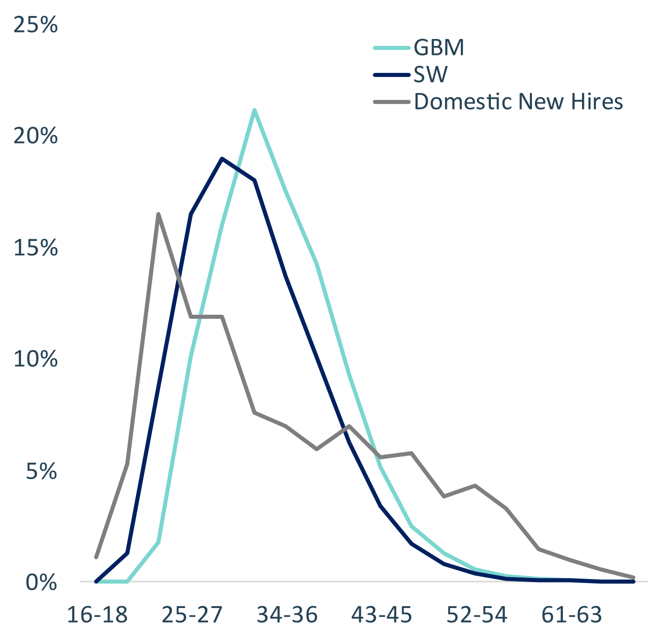



Source: Pooled Annual Population Survey (APS) 2017-2019 and Home Office Management Information: Certificate of Sponsorship (CoS) 2021-2023.
Notes: SW and GBM age distributions compared to the total UK-born Engineering and IT workforce.

## Figure 1.10a: New hire age distribution – Engineering




## Figure 1.10b: New hire age distribution – IT




Source: Pooled Annual Population Survey (APS) 2017-19 and Home Office Management Information: Certificate of Sponsorship (CoS) 2021-2023.
Notes: SW and GBM age distributions compared to the new-hire UK-born Engineering and IT workforce. Domestic new hires refer to employment that has lasted less than 12 months. Data has been grouped given low sample sizes.

The gender distribution for IT and Engineering professionals is heavily skewed towards males and largely follows the industry characteristics that were established at the start of the chapter. For both IT and Engineering professionals, the proportion of males within the migrant workforce is lower than within the domestic workforce (Table 1.11). This can partly be attributed to the gender balance being relatively more equal among younger workers (albeit still heavily skewed towards men). Given new migrant cohorts tend to be younger than domestic workers, this can partly explain the lower gender imbalance for migrants. For example, 88% of domestic engineers aged 25-29 are male,[4] compared to 96% of domestic engineers aged 55-59, with a similar pattern emerging for IT professionals. Table 1.11 shows that when comparing the male migrant proportion to new hires (instead of the total workforce), the proportion of migrant male workers is much more in line, reflecting the gender characteristics of younger, new hires (Figure 1.10).

**Table 1.11: Migrant gender breakdown**

| | Engineering (% male) | IT (% male) |
|---|---|---|
| **Migrants** | 84% | 76% |
| **UK Average (Total Workforce)** | 91% | 82% |
| **UK Average (New Hires)** | 86% | 78% |

Source: Annual Population Survey (APS) 2017-2019 and Home Office Management Information: Certificate of Sponsorship (CoS) 2021-2023.
Notes: Domestic new hires refer to employment that has lasted less than 12 months.

## Who is recruiting?

This section considers the firms behind migrant recruitment of IT and Engineering professionals.

For IT professionals, visa issuance on the GBM route is much more concentrated in the top 5 sponsoring organisations than it is on the SW route. As discussed previously, 3 of the top 5 sponsoring organisations are Indian multinational firms who dominate hiring, making up 54% of total visas in the IT profession on the GBM route. Major technology firms are top hirers of IT professional migrants on the SW route, however, they only make up around 21% of the total, with hiring on this route spread across a wider set of firms. For Engineering professionals, migrant sponsorship is much less concentrated in the top 5 firms, who account for 12% and 21% of visas on the SW and GBM respectively.

Looking at the top 50 migrant-sponsoring firms in the IT profession, most firms hire predominantly using either the SW route or the GBM route, with few firms opting for an even mix of both, as seen in Figure 1.12. In Engineering, employers are much more evenly distributed, suggesting that firms are more likely to use a mixture of GBM and SW visas to sponsor migrants.

[4] Using Pooled APS 2017-2019

**Figure 1.12a: SW visa preference for Top 50 firms – Engineering**

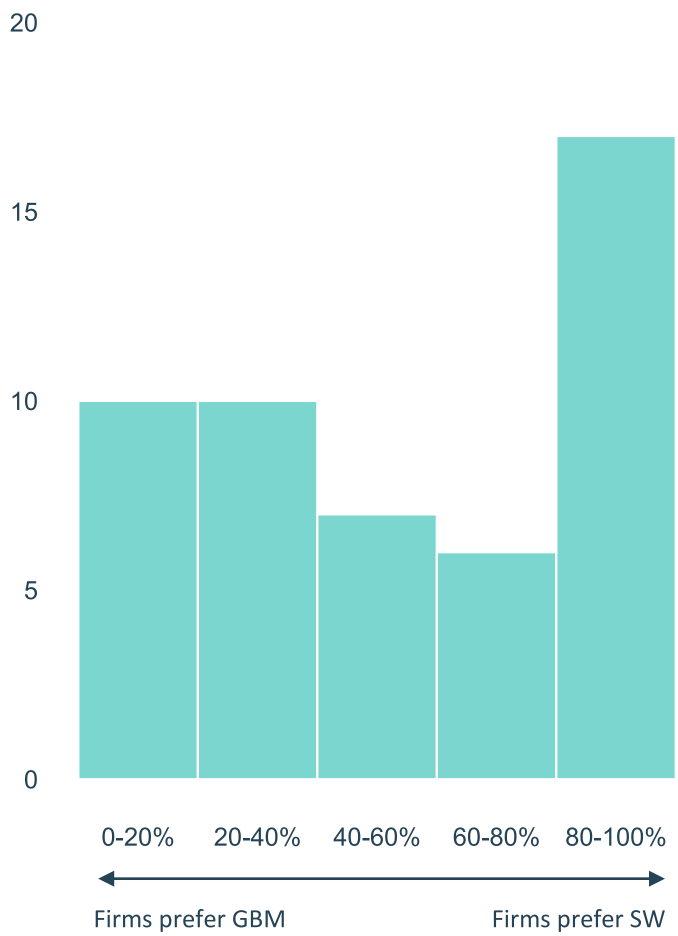
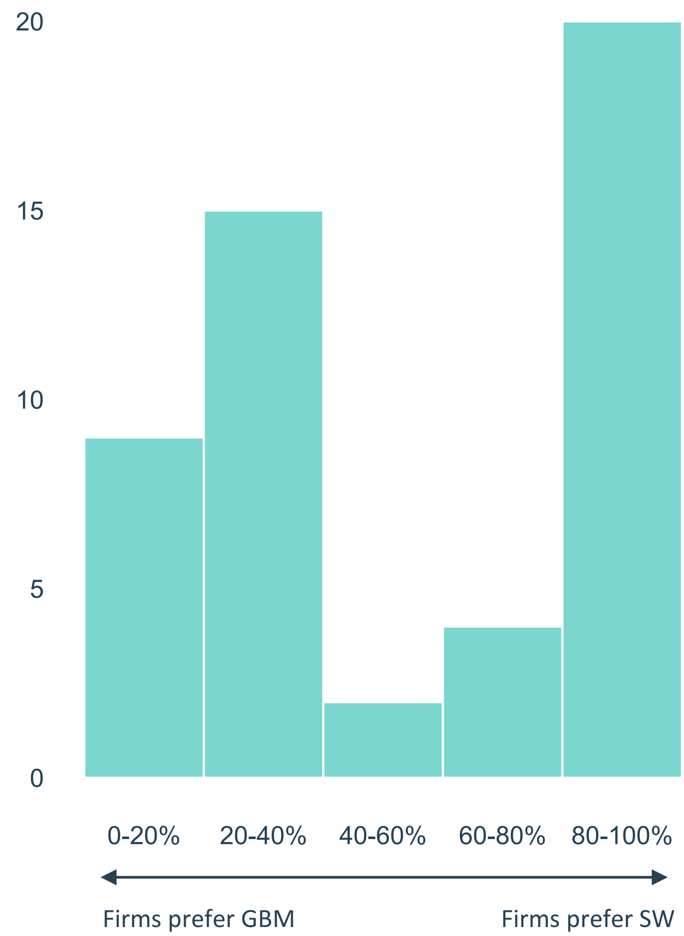



**Figure 1.12b: SW visa preference for Top 50 firms – IT**




Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2021-2023.

Notes: Plotted for the top 50 firms by total use of Engineering and IT profession visas, respectively. The % bands in the X-axis represent how many SW visas each company sponsored relative to GBM. The Y-axis represents number of firms from the top 50 within each bucket. For example, if a company sponsors 84% of their visas as SW, they are placed into the to the '80-100%' bar. The remaining share of visas that are not SW are GBM visas, if 84% are SW then 16% are GBM.

**Figure 1.13a: Top industries – Engineering**

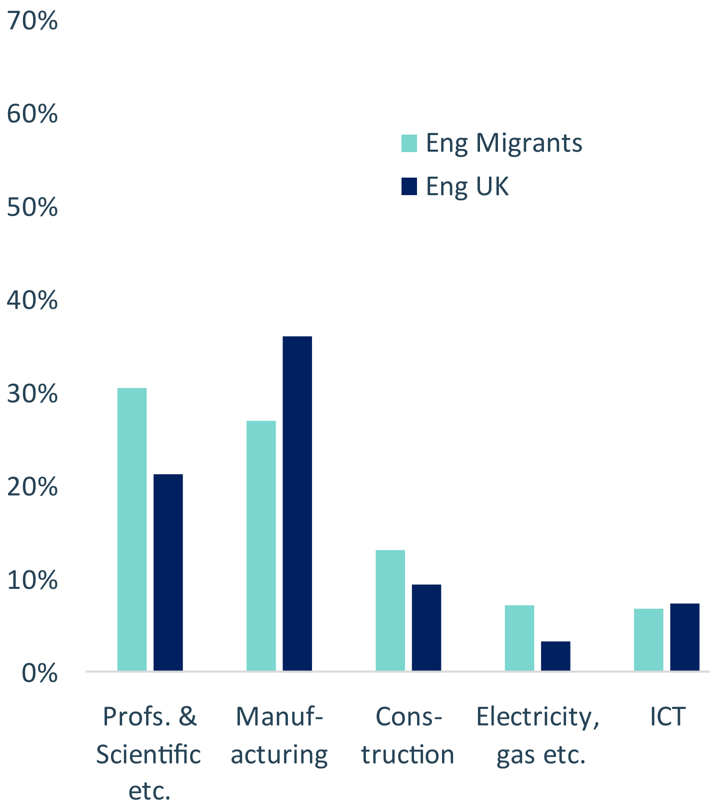
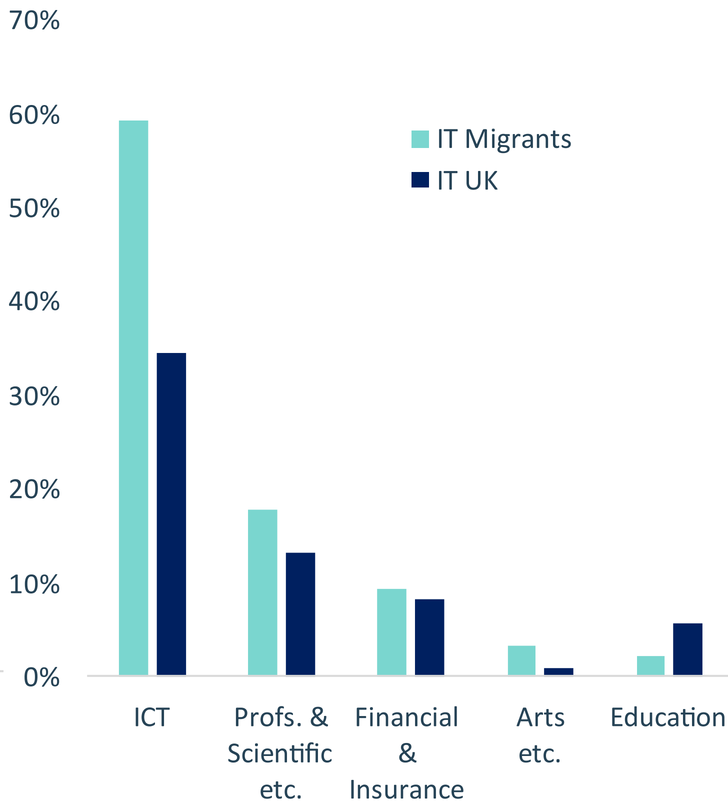



**Figure 1.13b: Top industries – IT**




Source: Home Office Management Information: Certificate of Sponsorship (CoS), Annual Survey of Hours and Earnings (ASHE) 2021-2023.
Notes: Percentage of IT/Engineering-profession migrants/UK workforce that work in each industry. UK-wide IT and Engineering distribution compared to migrant distribution. Top 5 Industries determined by total migrant hiring. ASHE 2021-2023 uses SOC20 occupation codes relative to migrant SOC10 occupations, so IT and Engineering professions may not be exactly comparable to the migrant distribution, however, will be indicative of broad industry trends.

Firms hire migrant Engineering professionals into a range of industries, including 'Professional, Scientific and Technical Activities', 'Manufacturing', 'Construction' and 'Information and Communications', roughly in line with industry trends of the domestic workforce. In comparison, the IT profession's use of the migration system is significantly skewed towards the Information and Communication (ICT) industry (Figure 1.13).

Large organisations employ the majority of IT and Engineering professional migrants coming into the UK, with the distribution broadly mirroring the employment shares of the total IT and Engineering profession as well as the UK workforce[5] (Figure 1.14). In general, the IT profession is more concentrated in larger firms than the Engineering profession, and both are marginally more concentrated than the UK national average.

[5] However it is worth noting that that data on migrants' employment by firm size and UK workers employment by firm size come from different data sources and therefore may not be directly comparable.

**Figure 1.14a: Engineering employment distribution by organisation size**

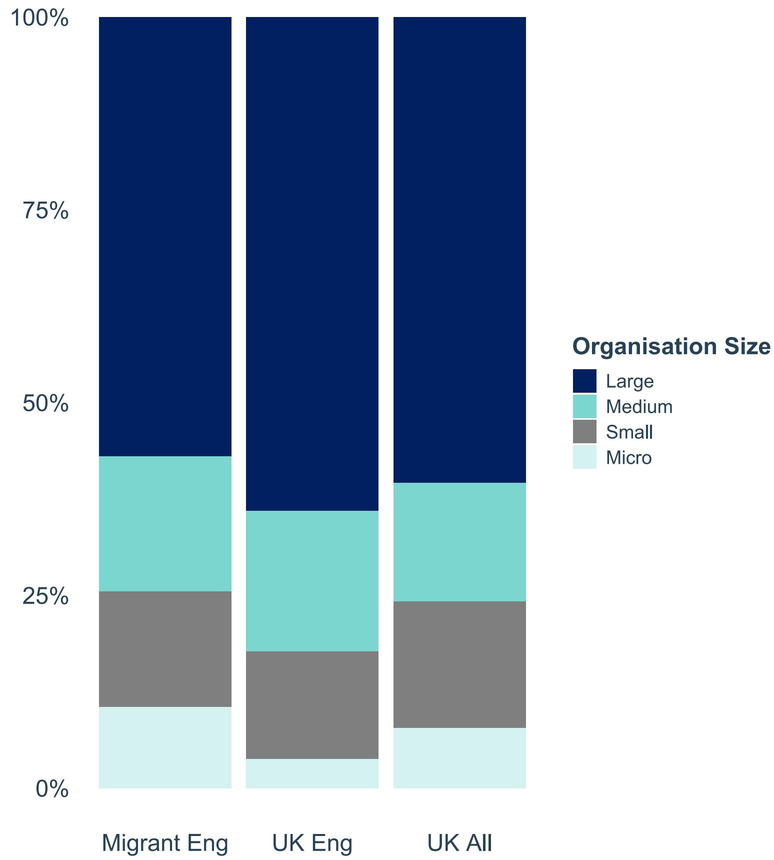
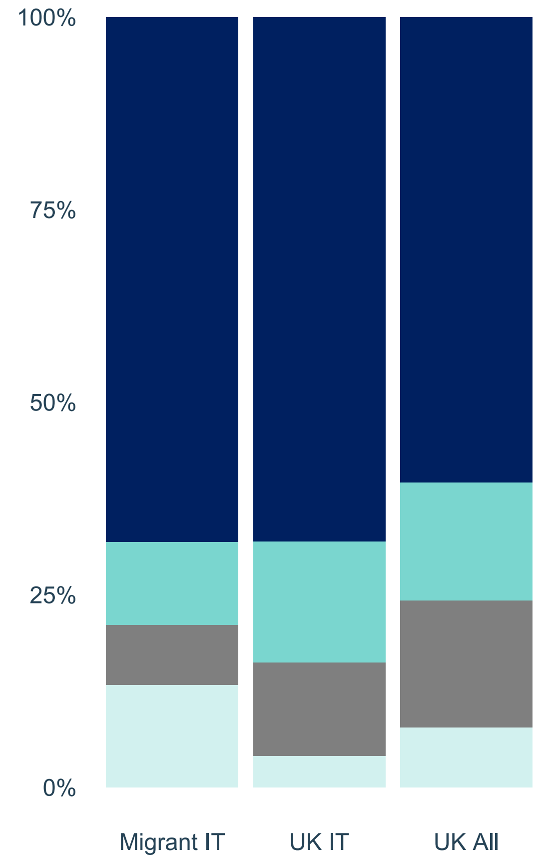



**Figure 1.14b: IT employment distribution by organisation size**




Source: Annual Survey of Hours and Earnings (ASHE) 2021-2023 and Home Office Management Information: Certificate of Sponsorship (CoS) 2021-2023.
Notes: Large (251+ employees), Medium (51-250 employees), Small (10-50 employees), Micro (0-9 employees) defined as per Home Office Management Information classification. ASHE data uses SOC20 codes meaning that IT/Engineering UK distributions may not be directly comparable to the SOC10 migration data.

## Geographical distribution

On an annual basis, migrant IT professionals make up the highest share of the profession's total employment in London (4.2% of London's working IT population in comparison to the UK average of 2.3%). Engineering is less London-centric with regions such as the West Midlands and the South-East having a relatively dense population of migrant workers (0.5 pp and 0.4pp above the UK average respectively), although London still provides a core hub, being 0.9pp above the UK average (2.2% in total). The IT sector's strong base in London is most likely due to the large number of headquarters which are located there. Engineering, however, has a larger geographical spread due to large projects such as power plants and major construction work, which are found across the UK.

**Figure 1.15a: Engineering visa density** 

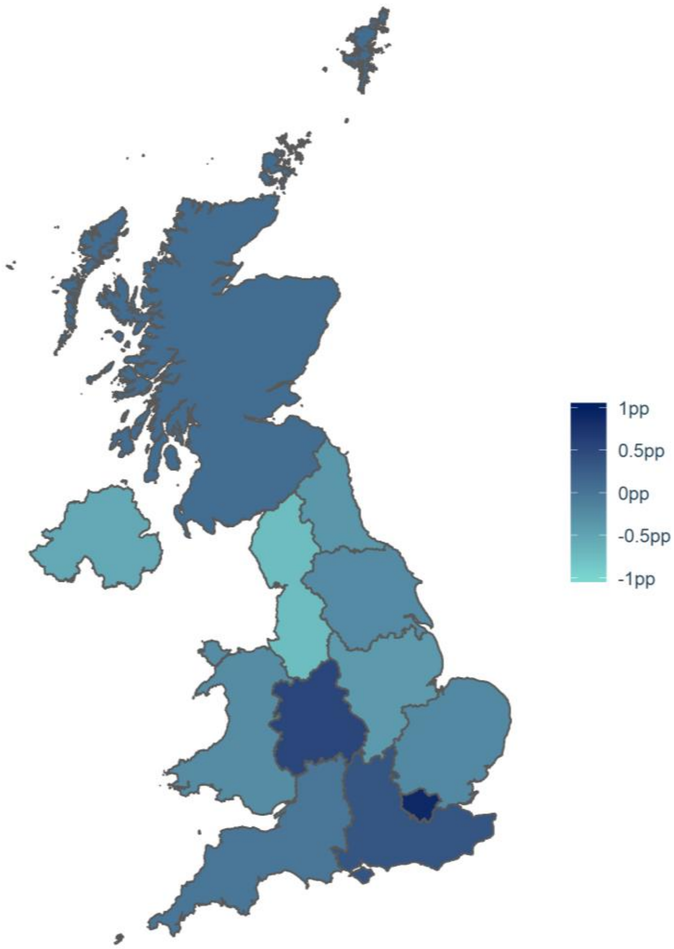
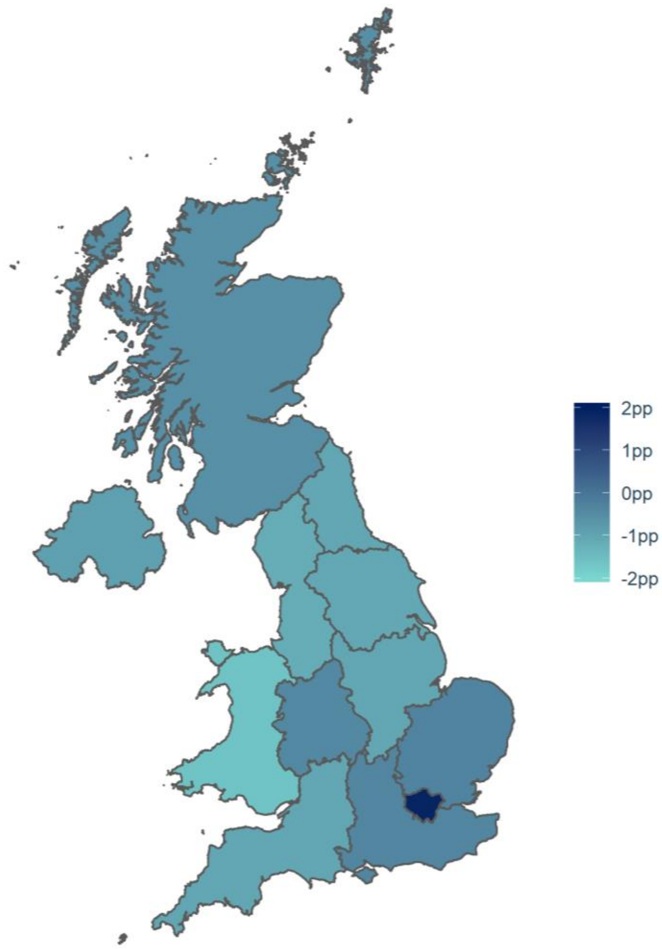



**Figure 1.15b: IT visa density**




Source: Annual Population Survey (APS) 2017-2019 and Home Office Management Information: Certificate of Sponsorship (CoS) 2021-2023.

Notes: Regional migrant shares of total regional IT/Engineering professional working population relative to the UK averages for the IT and Engineering profession. Positive (darker shaded regions) indicate that there is a higher density IT/Engineer migrants in the IT/Engineering regional working population than the UK-wide average, whereas negative (lighter shaded regions) indicate that there is a lower density of IT/Engineering migrants in the IT/Engineering regional working population than the UK-wide average. UK average for the annual migrant share of total IT professionals calculated as 2.3% for IT and 1.3% for engineering professionals. These percentages will not exactly align with the figures in Table 1.5 since due to different datasets being utilised to derive visa volumes for this analysis. Data on work postcode provided to the Home Office is utilised to determine the distribution of migrants across the UK. This approach may be limited if data on the firm's headquarter location is provided to the Home Office which is more likely to be in London, whereas migrants may be working across the country in regional offices. Scales are different for IT and Engineering. Visa holders divided by domestic employment in that region and profession according to the APS. Percentage points represent the difference between the regional percentage and the national average percentage.

## Sponsored work pay distributions

The salaries that migrants receive on both the SW and GBM visa routes must meet specific salary thresholds – although employers may need to pay more than the threshold to successfully recruit. The general salary threshold sets the floor for the minimum salary required to sponsor a migrant, whilst the occupation-specific salary threshold is defined by a percentile (either 25th or 50th) of earnings for each occupation. Employers must pay the visa holder at least the minimum of the general and occupation-specific threshold.

There is no clear evidence of pay bunching on the SW route around the 2023 occupation-specific thresholds[6] for either Engineering or IT professionals. Top technology firms can pay sizeable wages to skilled migrants, leading to higher wages far above the salary threshold, while pay for Engineering professionals on the SW route is broadly in line with the UK average. Salary threshold breakdowns in Annexes 2 and 3 indicate that only 'Web design and development professionals' (SOC10 code 2137) in IT exhibited pay bunching around the SW threshold in 2023.

In contrast, the GBM route shows clear evidence of pay bunching around the 2023 general thresholds[7], especially for the IT profession. For GBM visas in IT, roughly 50% of all migrants are paid around the general threshold rate, as shown by the sharp spike for GBM in Figure 1.16b, and bunching occurs to some extent in every occupation within the IT profession for GBM visas (Figure 1.17). To a lesser extent, pay bunching also exists on the GBM route in the Engineering profession, however this somewhat follows the UK-wide average pay for Engineers. The salary threshold breakdowns for GBM visas in the Engineering profession are found in Annex 1. As the GBM route is designed for senior and specialist workers within occupations, it would be expected that the pay distribution for GBM migrants would include higher earners compared to the UK distribution for the profession. This is true for Engineering but not for IT. It is unclear whether pay bunching around the salary threshold is a problem. Pay bunching might suggest that the salary thresholds are binding, forcing employers to increase pay in order to meet the threshold and hire migrant workers. On the other hand, it may also suggest that employers are paying migrants the lowest amount necessary to meet the rules. It is challenging to disentangle what is driving pay bunching.

More recently, in April 2024, the government increased the salary thresholds on the SW route to the 50th percentile. This has resulted in a lot more pay bunching around the occupation-specific threshold for certain occupations within both IT and Engineering (Annex 4 and 5). Moving the SW occupation-specific salary thresholds to the 50th percentile places SW at odds with GBM which remains at the 25th percentile. This means that the occupation-specific salary threshold for SW is now higher than the occupation-specific thresholds for GBM (see Annex 11). As a result, for the occupations we are looking at in this review, the general threshold (£48,500) is now binding for GBM, whilst occupation-specific thresholds are binding for SW. In occupations where the median SW salary threshold is now set above the GBM general threshold, it is cheaper to bring workers under the GBM visa than it would be under the SW visa. For example, firms who want to hire 'Programmers and software development professionals', would have to pay the occupation-specific threshold of £49,400 to sponsor a worker under the SW route, but would only need to pay the general threshold of £48,500 to bring that same worker under the GBM visa. Since the GBM route is designed for bringing in senior or specialist workers, this mismatch creates an incentive to use the GBM visa regardless of whether the employee is 'senior' or a 'specialist'. The government should, at a minimum, equalise the occupation-specific

[6] The occupation-specific thresholds for SW are binding for all occupations since they are higher than the general threshold in all cases.
[7] The general threshold for GBM (Senior or Specialist) in both the IT and Engineering professions are binding since they are above the occupation-specific threshold for each occupation.

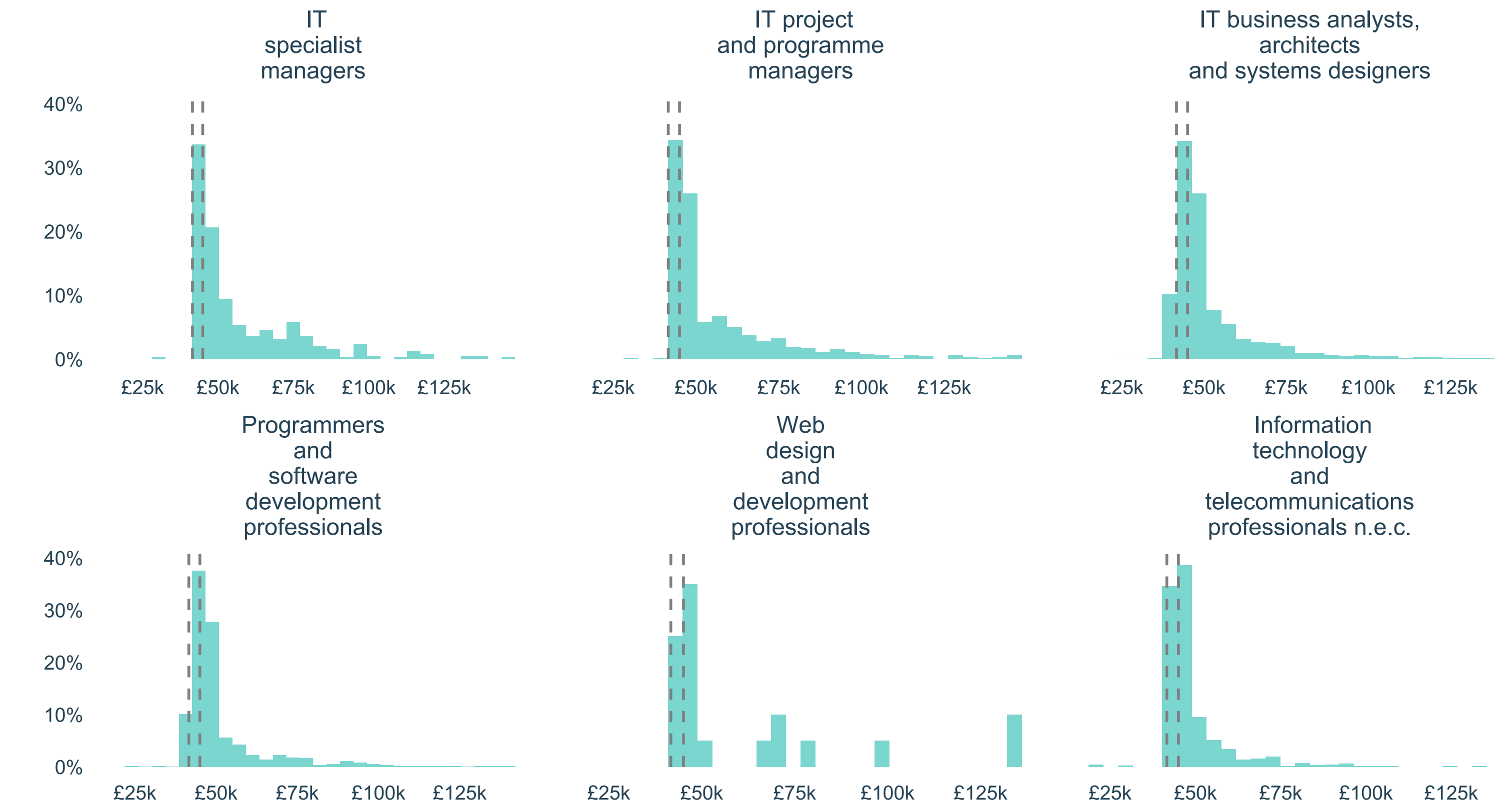
thresholds for both SW and GBM, to bring both in line with the 50th percentile level to eliminate such discrepancies that are currently within the system.

**Figure 1.16a: Engineering salary distributions (pre-2024 threshold increase)**


**Figure 1.16b: IT salary distributions (pre-2024 threshold increase)**


Source: Annual Survey of Hours and Earnings (ASHE) 2021 and Home Office Management Information: CoS 2021-2023 (2021 prices).
Notes: Graphs are in 2021 prices to ensure comparability of CoS data to ASHE data. These distributions are pre-2024 SW salary thresholds, before the increase to the 50th percentile and does not take into account bunching that has occurred as a result of this change. ASHE datasets are UK wide and cannot be broken down by nationality to identify the pay distribution for UK nationals. CoS salaries may not be representative of actual salaries paid since it captures the salary that the employer has provided to the Home Office and may not line up with the actual salary paid. Salaries greater than £150k have been excluded due to small sample sizes.

## Figure 1.17 IT pay on Global Business Mobility visa




Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2023.

Notes: General Salary Thresholds pre-April 2023 (left) and post-April 2023 (right). The general thresholds are binding since they are higher than the occupation-specific thresholds for each occupation. Salaries have been taken only for 2023, and thereby represent 2023 prices. Dotted lines represent pre- and post-April 2023 threshold levels. Some salaries may be below the threshold due to other GBM routes such as Graduate Trainee that have a lower threshold. This could also be due to administrative errors within the CoS microdata. Salaries greater than £150k have been excluded due to small sample sizes.

# Immigration Salary List

The Immigration Salary List (ISL) was introduced in April 2024 to replace the Shortage Occupation List (SOL) and was reviewed by the MAC in February 2024. It allows employers to sponsor migrants in the listed occupations with a 20% discount to the general threshold of £38,700 (subject to paying no less than the occupation-specific threshold defined as the median salary of the relevant occupation) and applies to the SW route. The current version of the ISL does not include any occupations within the IT and Engineering professions, because their occupation-specific thresholds are all above the general threshold, and so they would receive minimal benefit (i.e. slightly lower visa fees) from inclusion on the ISL. Whilst this is the case now, the majority of the professional occupations within the IT and Engineering profession have been on the SOL in the past, and we have therefore looked into what impact the SOL had on migration in this period. A full list of IT and Engineering occupations previously on the SOL is detailed in Annex 7.

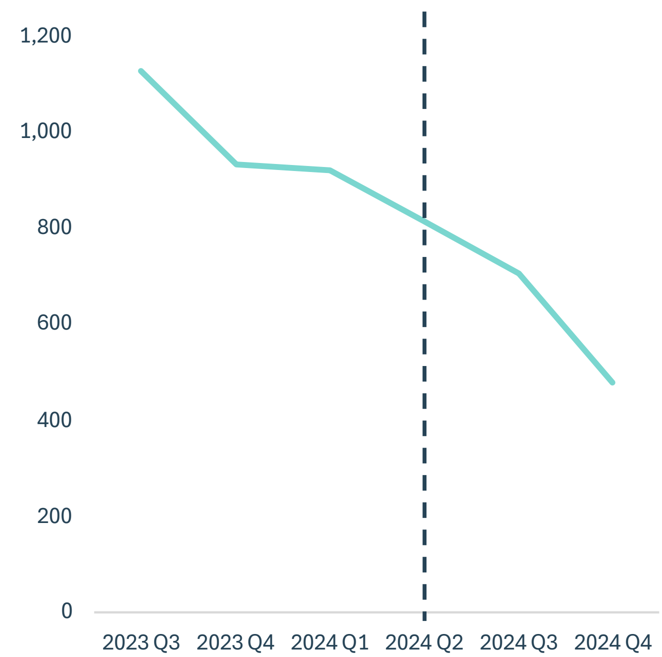
Employers in focus groups suggested that historically there were limited benefits to being on the SOL for IT and Engineering occupations. One reason was that successful recruitment often required paying above the salary thresholds, so discounting those thresholds would have no impact as they did not bind in such cases. This is supported by the pay threshold analysis (Annex 2 and 3) which shows that a significant proportion of occupations on the list were paid not only above the discounted general/occupation-specific threshold, but also the non-discounted general/occupation-specific SW threshold. Roughly 11% of visa holders working in SOL eligible IT and Engineering professional occupations between 2021 and 2023 were paid below the occupation-specific salary threshold (which was the primary benefit for employers at that time)[8]. The comparative figure for visa holders working across all SOL eligible occupations within the UK was around 12%, suggesting that in general the SOL discounts were not utilised by employers. This is consistent with previous analysis by the MAC on SOL discount utilisation rates in the Annual Report 2021.

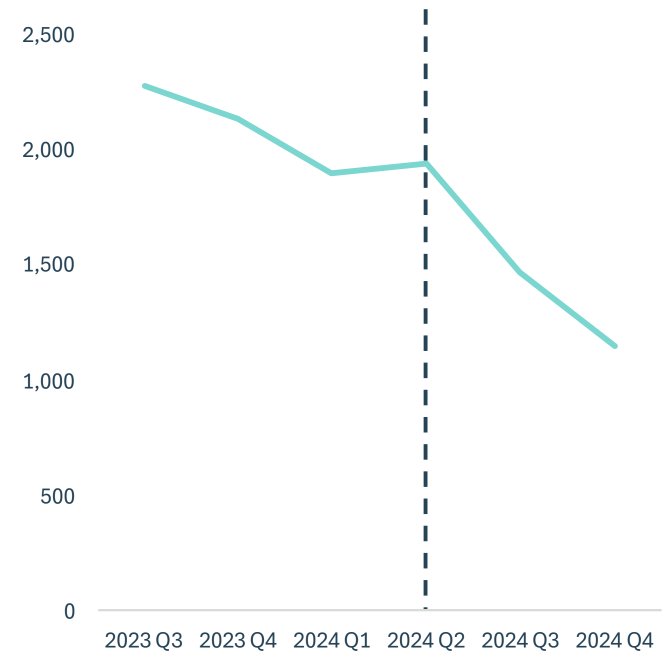
There is uncertainty whether there will be a greater incentive for firms to utilise the new entrant discount following the threshold changes, which allows employers to pay 70% of the occupation-specific thresholds for new entrants to the workforce as long as the new entrant salary is above the £30,960 general threshold. Previous MAC analysis in A Points-Based System and Salary Thresholds for Immigration 2020 pointed to the fact that new entrants in the UK earn between 64%-72% of the overall median earnings for all UK workers in RQF 3+ occupations. However, since the new entrant general threshold increased significantly from £20,960 to £30,960 alongside rule changes in April 2024, the value of the new entrant discount will be much lower than the 30% it is at currently for occupations where the general threshold is binding. With a general threshold of £38,700, the new entrant discount constitutes a 20% reduction. This means that it is likely that the salaries for UK new entrants may be lower than the salaries required to sponsor new entrant migrants for such occupations where the general threshold is binding, reducing the advantage of this discount.

Visa volumes were falling before the April 2024 salary threshold changes (Figure 1.18) and have continued on a similar trend, which makes it difficult to know how much of the decline since Q2 2024, if any, was a direct result of the threshold increase.

[8] This is calculated using Certificate of Sponsorship (CoS) data, by comparing migrant salaries against the salary thresholds they were subject to at the time. If migrants were on the SOL and their salary was lower than the occupation-specific threshold (without a SOL discount), then the employer has utilised the benefit of paying a lower salary to migrants as a result of that occupation being on the SOL. This analysis excludes new entrants.

| **Figure 1.18a: Engineering visas issued either side of salary threshold increase** | **Figure 1.18b: IT visas issued either side of salary threshold increase** |
|---|---|




Source: Home Office immigration statistics 2023-2024.
Notes: Salary threshold increased to median rate at the start of 2024 Q2.

## Net migration

There are a number of routes through which individuals can come to the UK and contribute to net migration (if they stay in the long term). The volume of people arriving in the UK on each route varies, and so too does their likelihood of staying here permanently (their stay rate). By combining these two pieces of information we can illustrate how many people on each route might stay in the UK permanently, and hence their impact on long run net migration (see Table 1.19 which groups the various routes into broad categories). These are not forecasts but represent a plausible long-run scenario. Further details on our methodology are available in our Net Migration report.

Visas in the work category are currently the major contributor to overall net migration. Immigration on these routes is relatively high and approximately half of all people who come to the UK on a work visa will stay permanently (higher than those on student routes but lower than those on humanitarian/asylum routes). Within the work route, both Engineering and IT professionals are in the top 10 occupations for number of visas issued (see Table 1.5). Including dependants, on average each year 6,000-8,000 visas are granted on the Skilled Worker route for Engineering professionals and 17,000-21,000 for IT professionals (between 2021-2023). Multiplying this value (a good estimate for how many people will come to the UK) by the stay rate for that route (an estimate for the proportion of SW migrants who stay in the UK in the long term, 75%[9]) gives an idea of how many engineering and IT professionals will remain in the UK in the long run and hence their contribution to net migration. This calculation suggests that Engineering professionals might contribute 5,000–6,000 a year to long run net migration and IT 13,000–15,000, representing a 1% and 3-4% share of modelled future annual non-EU net migration, respectively (see Table 1.19 below). These are not large proportions (and smaller than the largest work-related contributor to net migration outside social care, nursing, at 9% of future net migration), however, given the number of occupations it is inevitable that each one will only account for a small share. Given this, targeting these (or any), occupations specifically (with the exception of social care or nursing) will have a limited impact on net migration. Policies aimed at reducing net migration on the work route as a whole would have more impact. They would also be accompanied by economic and social costs.

**Table 1.19: Illustrative net migration scenario, non-EU citizens only**

| Category | 2023 immigration (LTIM) | Hypothetical long-run immigration | Assumed stay rate | Long-run non-EU net migration | % of non-EU future net migration |
|---|---|---|---|---|---|
| Work visas | 444,000 | 280,000 | 56% | 157,000 | 38% |
| Study visas | 418,000 | 270,000 | 26% | 70,000 | 17% |
| Family visas | 84,000 | 84,000 | 80% | 67,000 | 16% |
| Asylum and Humanitarian routes | 160,000 | 128,000 | 90-100% | 115,600 | 28% |
| Other visas | 17,000 | 17,000 | 31% | 5,000 | 1% |
| **Total** | 1,123,000 | 779,000 | 53% | 415,000 | 100% |

Source: 2023 immigration figures from Office for National Statistics, Migration Observatory-LSE.

Notes: Migration statistics (column 1) are taken from the Long-Term International Migration (LTIM) estimates produced by the Office for National Statistics (ONS). A hypothetical estimate of what long-run immigration would look like (column 2) is assumed (see our report on Net Migration for further detail). Stay rates (column 3) are calculated using Migrant Journey data and have been taken from a Migration Observatory-London School of Economics (LSE) study. The long-run net migration figure is simply the estimate of long-run immigration, multiplied by an estimated stay rate. For simplicity, EU citizens are excluded. In recent years, net migration of European Union (EU) citizens has been negative. Net migration of British citizens is also excluded (this is almost always negative too).

# Fiscal modelling

Professional IT and Engineering migrants are likely to have a large positive fiscal contribution relative to the average Skilled Worker migrant given their high earnings and age distribution skewed towards younger workers (which makes them less likely to need public healthcare etc.). However, given the comparatively small number of migrants, their overall fiscal impact is very small when compared to the UK's annual fiscal revenue and expenditure.

[9] This stay rate is higher than the 56% for all work routes included in Table 1.19 because the SW route is a route to settlement (increasing the chance people will stay in the UK long term), while other work routes are not. For example, in 2023, 13,000 IT and 4,000 engineering professionals came to the UK on the GBM route, but as only approximately 1% will stay in the long term, we have not included them in our net migration calculations.

Table 1.20 below outlines estimates of the net contribution of IT and Engineering occupations compared to the UK population and the SW route including those on the Health and Care visa for financial year 2022/23. These preliminary estimates are from our fiscal model which uses SW visas matched with HMRC data to estimate the fiscal contributions of SW migrants. SW migrants will exhibit substantial net contributions in this snapshot of 2022/23 as the route is designed to attract migrants who are in full-time employment with generally high earnings. IT and Engineering professionals had an average net contribution of £37,800 and £23,900 respectively in 2022/23. This is compared to UK resident adults (UK born and migrant adults already in the country) and UK resident working adults who had an average net contribution of £500 and £11,700 respectively. The significantly higher net contributions for these occupations compared to UK resident adults reflects both the combination of the higher incomes for this group, leading to higher tax revenues, and reduced expenditure in part due to the rules on no recourse to public funds.

As Table 1.20 and Figure 1.21 show, both Engineering and IT occupations have a higher net contribution compared to the SW (including the Health and Care visa) route as whole. This is due to them having a higher mean salary. Using HMRC data for 2022/23, we estimate that Engineering and IT professionals have mean salaries of £56,300 and £78,400 respectively compared to £49,300 for all those on the SW (including the Health and Care Visa) route.

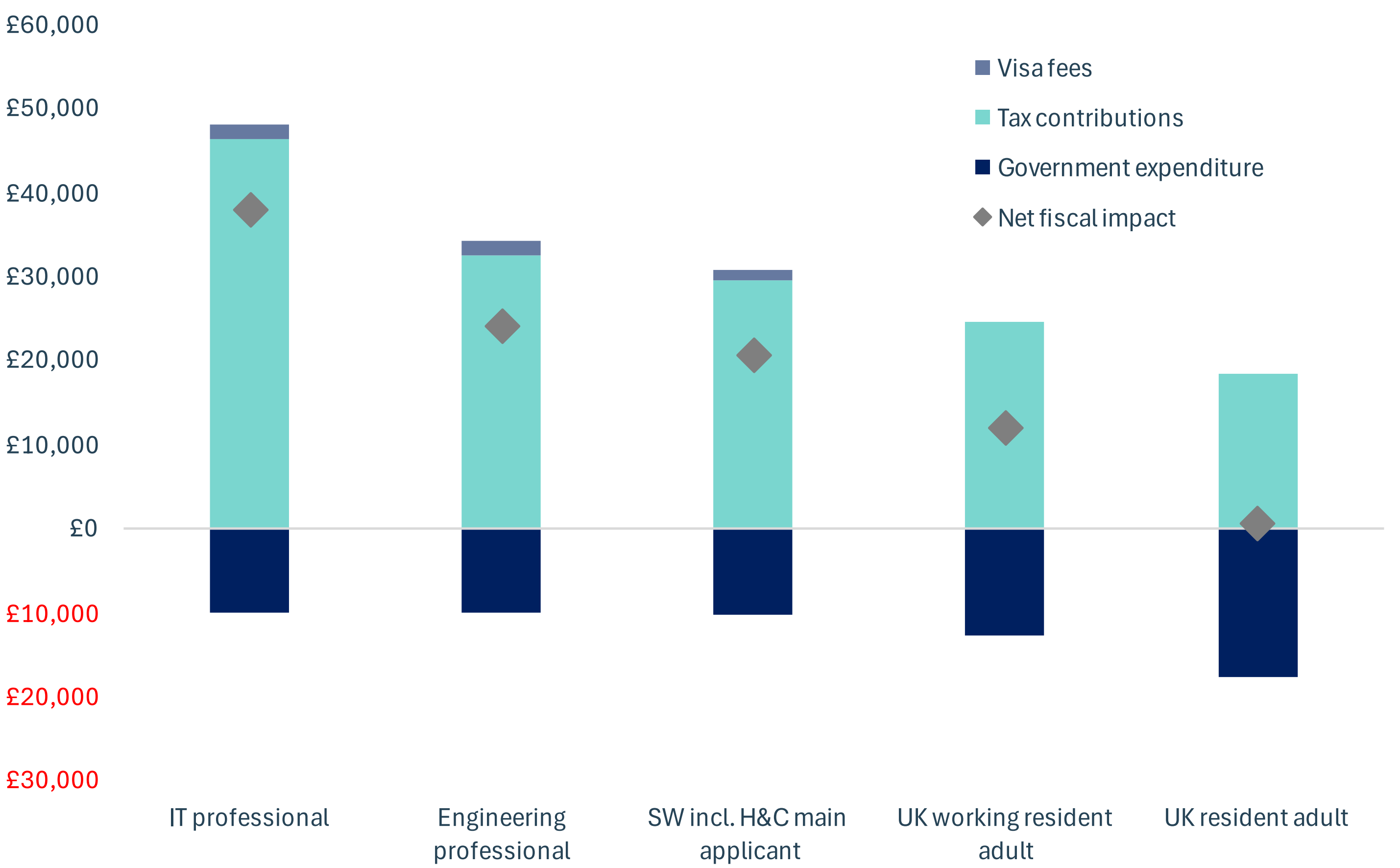
### Table 1.20: Estimated fiscal contribution for IT and Engineering migrants

| | **UK resident Adult** | **UK working resident Adult** | **Engineering SW professional migrants** | **IT SW professional migrants** | **SW incl. H&C main applicant** |
|---|---|---|---|---|---|
| Tax contributions | £18,400 | £24,600 | £32,400 | £46,300 | £29,600 |
| Government expenditure | £17,900 | £12,900 | £10,200 | £10,200 | £10,300 |
| **Net fiscal impact** | £500 | £11,700 | £22,200 | £36,000 | £19,200 |
| **Net fiscal impact including visa fees** | £500 | £11,700 | £23,900 | £37,800 | £20,500 |

Source: Migration Advisory Committee Fiscal Modelling.

Notes: All visa fees are converted into an annual figure, even if the fee paid up front covers a longer time period.

## Figure 1.21: Estimated fiscal contribution for IT and Engineering migrants




Source: Migration Advisory Committee Fiscal Modelling.

It is important to note that these figures are derived from a static model. As SW migrants may gain indefinite leave to remain (ILR), it is possible that their net contributions will fall as they would become eligible for benefits and may become unemployed or economically inactive. Office for Budget Responsibility (OBR) life-course analysis suggests that high-wage migrants will cumulatively be net contributors over their entire lifetime across all ages, which at its peak reaches +£1.25 million at age 67, and falls to around +£1.06 million at age 80. A steeper drop-off exists beyond 80, with the net contribution reaching +£252,000 by age 100.

Table 1.22 highlights the total fiscal contribution for engineering and IT main applicants given their SW visa numbers in financial year 2022/23. We estimate that Engineering main applicants contributed £115 million whilst IT main applicants contributed £607 million to the UK. This does not account for other visa routes such as the GBM route where individual contributions may be higher for Engineering occupations but lower for IT occupations given their respective salaries on this route, and IT workers potentially spending less time in the UK. Those on the GBM route may not contribute as much in income tax in practice relative to those on the SW route as they may not be in the UK for their whole visa period and therefore not liable for direct taxes the whole time. However, their government expenditure, particularly over their lifetime, is likely to be lower than those on the SW route as they cannot gain ILR and therefore would not have recourse to public funds and would not be able to accrue high fiscal costs from old age as per OBR's life-course analysis. This means that GBM migrants will likely have a positive fiscal contribution to the UK, especially on a pro-rata basis.

It is important to also account for the net contribution of the migrants' dependants when assessing the overall fiscal impact of migration to these professions. In 2022/23, again using the SW visas matched with HMRC data we estimate that adult dependants on the SW route had a net cost of £2,200 and child dependants had a net cost of £12,300. Assuming the dependant ratios and characteristics are same for these occupations as the Skilled Worker route as a whole, we estimate that Engineering main applicants and their dependants would have contributed £100 million whilst IT main applicants and their dependants contributed £556 million to the UK[10] in 2022/23.

**Table 1.22: Fiscal totals for 2022/23**

| | **Engineering professionals** | **IT professionals** |
|---|---|---|
| 2022/23 Skilled Worker visa volume | 4,820 | 16,082 |
| **Net fiscal impact of whole occupation** | **£115m** | **£607m** |
| Estimated adult dependant volumes | 1,831 | 6,110 |
| Estimated child dependant volumes | 1,567 | 5,230 |
| **Net fiscal impact including dependants** | **£100m** | **£556m** |

Source: Migration Advisory Committee Fiscal Modelling.

Notes: Adult dependency ratio assumed to be 0.380 (rounded to 3dp) and child dependency ratio assumed to be 0.325 (rounded to 3dp) as per the dependency ratios for the entire SW route.

[10] When including the net cost of dependents. These are static estimates which take a cross-sectional approach to derive the net fiscal impact, and estimates do not currently consider life-time impact of migrants.

# Chapter 2: Why are the sectors using the immigration system?

## Summary


1. **When considering the role immigration could play in meeting demand for these occupations, domestic skills and signs of shortage are only two of many factors that should be considered. It is important to consider the wider economic impacts, fiscal impacts and effects on net migration;**
2. **Broadly speaking, the sectors' use of the immigration system is not particularly high, given the size of these sectors in the UK economy, and has been responding to demand in the UK labour market;**
3. **While demand for IT and Engineering professionals overall is not exceptional relative to the wider economy, there are occupations with acute demand and job advert analysis signals rapidly changing skills needs for IT professionals. The vacancy rates for IT and Engineering technician roles, which are outside the scope of this review, are often higher than vacancy rates for professionals;**
4. **Where the migration system is being used, the sectors are often seeking to attract very highly paid workers with skills in global shortage or are not making a deliberate choice to recruit from overseas – except for GBM usage by IT firms where there is limited evidence that workers are being hired for their specialist skills;**
5. **While there is no definitive link between immigration and domestic skills supply, there are strategic reasons to focus on the development of skills in these sectors, including to support prospects of domestic workers and facilitate the government's industrial strategy and wider growth agenda;**
6. **While the supply of degrees and apprenticeships in both IT and Engineering have been increasing, the skills supply for both sectors face important challenges, such as training to keep pace with changing skills needs (particularly in IT), Higher Education (HE) and Further Education (FE) funding to cover the higher costs of course delivery relative to other subjects and sustained efforts to increase gender diversity; and**
7. **Employers have a key role to play in training the domestic workforce yet employer investment in training has been declining across most sectors of the economy.**


## Context

In the previous chapter we examined how the IT and Engineering sectors are using the immigration system to recruit professional workers from abroad, we now turn to why they are doing so. It is often the contention of employers that domestic skills shortages are the main reason that they use the immigration system, and the government has made clear its view that high levels of work-related immigration are linked to a lack of domestic investment in skills. In our 2024 Annual Report, we discussed the complexity of the interactions between skills supply and immigration and highlighted that use of the immigration system is not always driven by skills shortages in the domestic workforce. Use of the immigration system by specific sectors will be driven by a mix of demand- and supply-side factors, the relative importance of which will depend upon the sector and occupation in question and will also vary over time.

In this chapter we will explore these demand- and supply-side factors in the context of the IT and Engineering sectors. As we do so, it is important to keep in mind the picture of immigration usage laid out in Chapter 1. Although visas for IT professionals make up a substantial share of all sponsored visas, the number of visas issued for both occupations are broadly similar to other professionals once total employment in the occupations is considered. Workers in both occupation groups also tend to have a larger positive fiscal impact than the average UK resident working adult, given the higher salaries that are paid.

In these key respects, changes to the immigration system that target occupations in the IT and Engineering sectors specifically may not be as strategically beneficial as alternative approaches to reducing net migration. That being said, each sector is using the immigration system in distinct ways to meet its needs and the issues that influence their approaches to doing so are likely to be reflective of issues affecting other professions as well.

## Demand for IT and Engineering professionals

We begin by examining indicators of demand for professionals in both sectors. Figures 2.1a & 2.1b compare demand, as measured by online job adverts, with visa usage. Visa usage by both professions has broadly risen and fallen in line with demand since 2021. This is unsurprising for occupations on the SW route, as demand for SW visas is generally correlated with vacancies for eligible occupations. This is surely a strength of the current system as it allows the number of visas to flex up and down depending on the state of the domestic jobs market. It does, however, mean that caution should be taken when looking at any particular year of visa data as it will be influenced by economic conditions at the time and will not necessarily reflect the steady-state position.

Vacancy rates also demonstrate the degree of unmet demand and turnover in the labour market. Figure 2.2 shows Engineering professionals have consistently had higher vacancy rates than other professionals, including those in IT, although vacancy rates among professionals are usually lower than in the wider economy.

**Figure 2.1a: Visas and online job adverts for Engineering professionals**

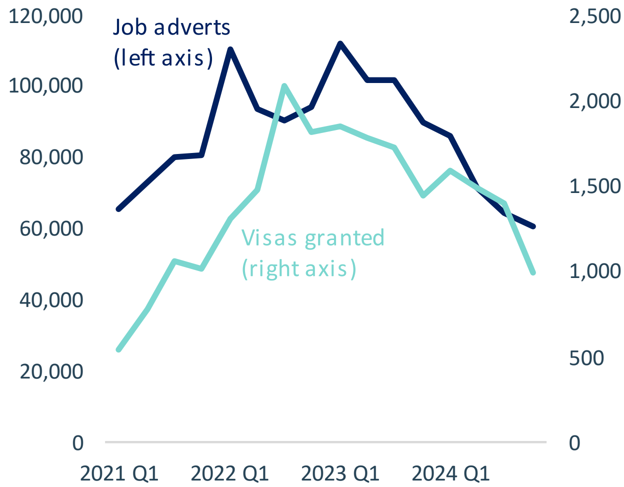
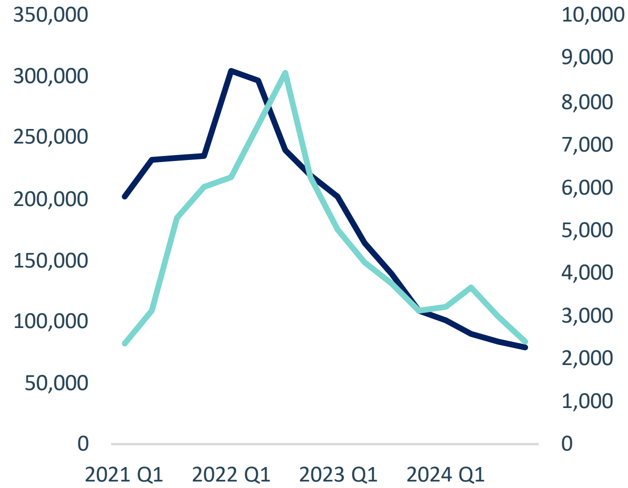


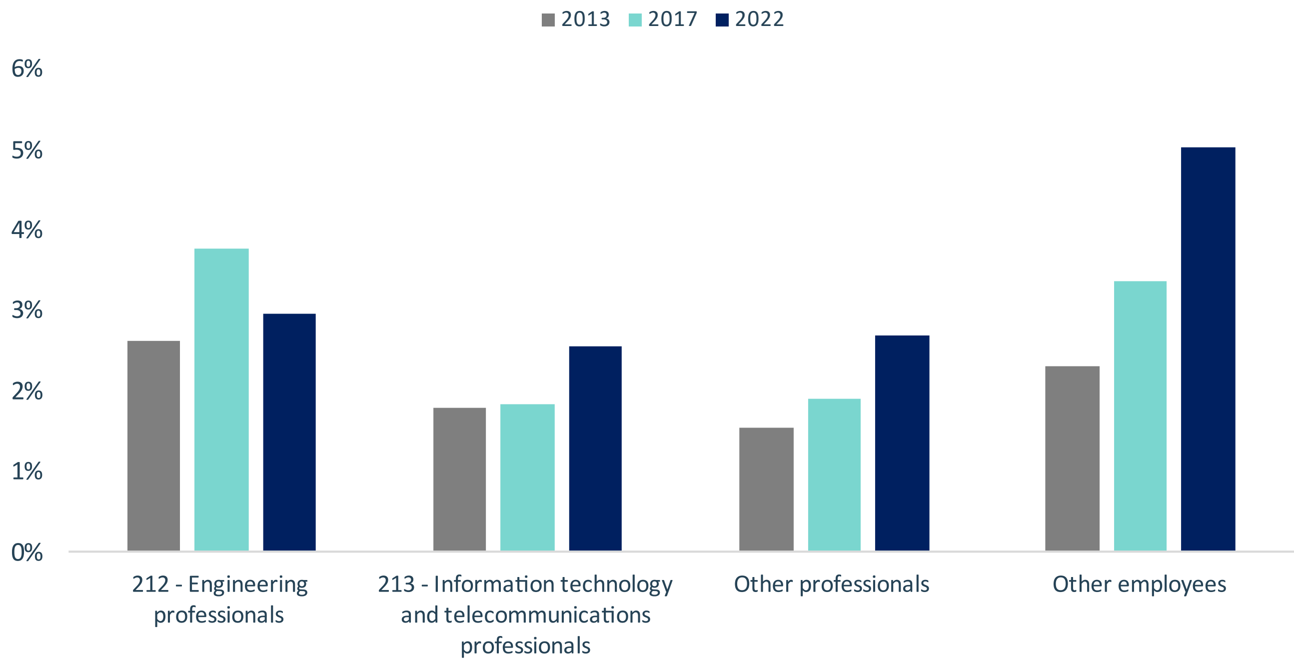

**Figure 2.1b: Visas and online job adverts for IT professionals**




Source: Visas - Home Office immigration statistics, Entry clearance visas granted outside the UK; Online job adverts – Lightcast, unique postings.

Notes: Job adverts are measured as the number of unique online job postings related to an occupation in a given quarter. Visas measured are entry clearance visas issued.

**Figure 2.2: Professionals vacancy rates**




Source: Employment - Annual Population Survey (2012-2019), Vacancies – Employer Skills Survey (2013-2022).

Notes: Due to sample size issues in the Annual Population Survey post-2020, the vacancy rate in 2022 is calculated by dividing Employer Skills Survey vacancies in 2022 by Annual Population Survey employment in 2019.

## Demand for occupations and skills within the IT and Engineering professional groups

Although current labour demand indicators for IT and Engineering professionals suggest they are not experiencing significantly more demand than other professional occupations, job title data and the views provided by stakeholders indicate areas of high demand for a range of specific skills across the IT and Engineering sectors.

Tables 2.3 and 2.4 show the top 10 job titles for IT and Engineering professionals that appeared in online job adverts between 2021 and 2024. The demand for specific roles in Engineering has been relatively stable with the top 20 job titles in 2021-24 all featuring in the top 20 in 2012-15. This is not the case in IT, where the significant increase in the frequencies of Full Stack developers and DevOps engineers are reflective of the more rapidly changing profile of roles required within the IT professional occupations. This pace of change is also reflected in the skills sought in these postings, as demonstrated by Tables 2.5 and 2.6, which show how the rise and fall of certain programming languages and emergence of cloud technologies have driven changes in demand within IT.

**Table 2.3: Top 10 online job titles for Engineering professionals**

| Job title | Average number of adverts per year (2021-2024) | Change in rank between 2012-15 and 2021-24 |
|---|---:|---:|
| Maintenance engineers | 25,000 | +2 |
| Gas engineers | 15,000 | +11 |
| Electrical engineers | 14,000 | +4 |
| Mechanical design engineers | 14,000 | -3 |
| Electrical maintenance engineers | 13,000 | +6 |
| Mechanical engineers | 12,000 | 0 |
| Design engineers | 12,000 | -5 |
| Multi-skilled maintenance engineers | 11,000 | +4 |
| Field service engineers | 11,000 | +11 |
| Project engineers | 10,000 | -6 |

Source: Lightcast (2012-2015, 2021-2024).

Notes: This table relies on administrative data that was extracted on 08/04/2025. As the source is updated frequently, the figures in the table above may not match the source platform exactly if re-extracted at a later date.

## Table 2.4: Top 10 online job titles for IT professionals

| Job title | Average number of adverts per year (2021-2024) | Change in rank between 2012-15 and 2021-24 |
|---|---|---|
| Software engineers | 29,000 | +6 |
| DevOps engineers | 19,000 | +42 |
| Software developers | 17,000 | +3 |
| Java developers | 15,000 | -3 |
| .NET developers | 13,000 | -1 |
| Solutions architects | 13,000 | +5 |
| Full Stack developers | 13,000 | + >100 |
| Infrastructure engineers | 12,000 | +6 |
| Front end developers | 12,000 | 0 |
| Systems engineers | 9,000 | +5 |

Source: Lightcast (2012-2015, 2021-2024).

Notes: This table relies on administrative data that was extracted on 08/04/2025. As the source is updated frequently, the figures in the table above may not match the source platform exactly if re-extracted at a later date.

## Table 2.5: Top 10 engineering skills sought

| Skill mentioned | Change in rank between 2012-2015 and 2021-2024 |
|---|---|
| Mechanical engineering | -1 |
| Electrical engineering | 0 |
| Maintenance engineering | +4 |
| Machinery | +6 |
| Continuous improvement process | +8 |
| AutoCAD | -2 |
| Engineering design process | +3 |
| Civil engineering | +9 |
| Project engineering | -9 |
| Mechanical design | -12 |

Source: Lightcast (2012-2015, 2021-2024).

Notes: Excludes soft skills. This table relies on administrative data that was extracted on 08/04/2025. As the source is updated frequently, the figures in the table above may not match the source platform exactly if re-extracted at a later date.

## Table 2.6: Top 10 IT skills sought

| Skill mentioned | Change in rank between 2012-2015 and 2021-2024 |
|---|---|
| Agile methodology | +3 |
| JavaScript (programming language) | -1 |
| Microsoft Azure | + >100 |
| Amazon Web Services | + >100 |
| SQL (programming language) | -5 |
| Software engineering | +9 |
| Python (programming language) | +34 |
| C# (programming language) | -7 |
| Java (programming language) | -5 |
| Software development | -1 |

Source: Lightcast (2012-2015, 2021-2024).

Notes: Excludes soft skills. This table relies on administrative data that was extracted on 08/04/2025. As the source is updated frequently, the figures in the table above may not match the source platform exactly if re-extracted at a later date.

Stakeholders also raised concerns that the pace of skills change in IT creates difficulties for the education system, which can struggle to keep up.

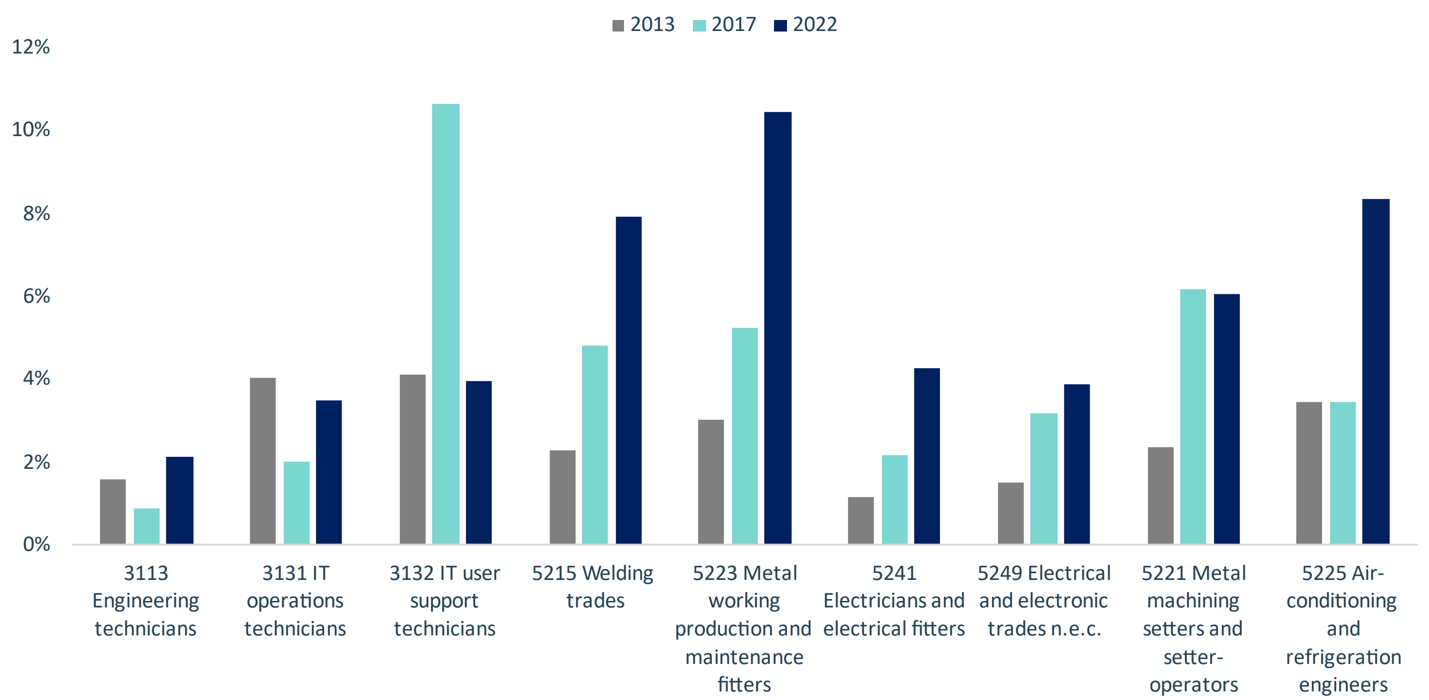
> *"The pace of technological change means that what is learnt in the classroom can expire faster than universities can update their curricula."*
>
> ***The Startup Coalition***

While the roles above are those most sought by employers looking for professionals in both sectors, stakeholders have also pointed out instances of shortages in technician roles and skilled trades (both of which are at a lower RQF level than 'professionals'). As we outlined in Chapter 1, although these occupations are not directly in scope for this review, progression from these roles into professional-level occupations is notable.

> "*the technical grades… welders, platers, pipe fitters are in really short supply…*[at an oil refinery] *there were around 30 welders from America that came over that were earning thousands of pounds a week...there's been such a shortage in training over the last sort of 10-15 years that there's just not enough people to go around for it.*"
>
> ***Union in Engineering sector, focus group***

The data also shows signs of shortages among skilled trades. Figure 2.7 displays the vacancy rates of technicians and skilled trade occupations within the IT and Engineering sectors. The vacancy rate is often much higher for these skilled trade and technician occupations relative to professionals. The data shows that the peak vacancy rate for professional occupations across 2013, 2017 and 2022 was less than 4% (from Figure 2.2) and most of the skilled trade and technician vacancy rates exceed this level, indicating greater difficulty filling vacancies at the skilled trade level compared to professionals.

**Figure 2.7: Technician and skilled trade vacancy rates**




Source: Employment - Annual Population Survey (2012-2019); Vacancies – Employer Skills Survey (2013-2022).

Notes: Due to sample size issues in the Annual Population Survey post-2020, the vacancy rate in 2022 is calculated by dividing Employer Skills Survey vacancies in 2022 by Annual Population Survey employment in 2019. Not all SOC2010 Technician and Skilled trade occupations are displayed due to Employer Skills Survey sample size issues. All occupations displayed have a sample size of at least 30 respondents in each year.

While not all areas of the IT and Engineering sectors display signs of shortage, there are specific roles and skills within the sectors that are increasingly in demand. The profile of skills demanded in each sector are determined by the nature of the work required, as is reflected by the greater pace of change in IT skills sought by employers, and the proper functioning of the sectors depends not only on access to appropriately skilled labour for professional occupations, but also for the technicians and skilled trades they work alongside.

## Global competition for skilled workers

We have also heard from stakeholders about the global competition they face when recruiting for the specific skills needed by their businesses. Although access to the global labour market gives firms the opportunity to recruit from abroad, they must also compete with firms around the world to attract talent. Where the specific skills required by the IT and Engineering sectors, such as design engineering and programming, are known to be in short supply globally, the degree of competition is heightened and requires firms to improve their offer to workers. Table 2.8 shows that 21% of IT professionals on the SW route are paid above the $90^{th}$ percentile of the UK's wage distribution for the respective professions. This clearly suggests that some employers are using the route to recruit global top performers. It is however noticeable how few GBM workers in the IT sector are being paid toward the top of the wage distribution, which is surprising if they are truly specialist and senior manager positions – this is in marked contrast to engineering GBM roles.

*“software engineers, data scientists, product managers and designers, I think they remain highly sought after by companies across the globe…we're also up against other large global companies in these markets.”*

***Employer in the IT sector, focus group***

*“you have a very mobile workforce in some of these areas, some of these sectors, workers who are prepared to travel both across the UK and of course globally, and we know globally there are labour shortages in many of these trades too…there is going to be no single solution that can solve all of these problems. I think it's going to need a mixture of heavy lifting on multiple fronts including through the immigration system.”*

***Representative body in the Engineering sector, focus group***

*“We go 100% for skill and talent. Again, we're looking for those kind of top 1 to 2% of performers…We want the best in the room.”*

***Employer in the IT sector, focus group***

**Table 2.8: Visa salary distributions**

| Sector | Visa Route | Above 75th Percentile | Above 90th Percentile |
|---|---|---|---|
| Engineering | Skilled Worker | 16% | 8% |
| | Global Business Mobility | 52% | 35% |
| IT | Skilled Worker | 40% | 21% |
| | Global Business Mobility | 12% | 4% |

Source: Home Office Management Information (2021-2023; inflation adjusted); Annual Survey of Hours and Earnings (ASHE) (2023).

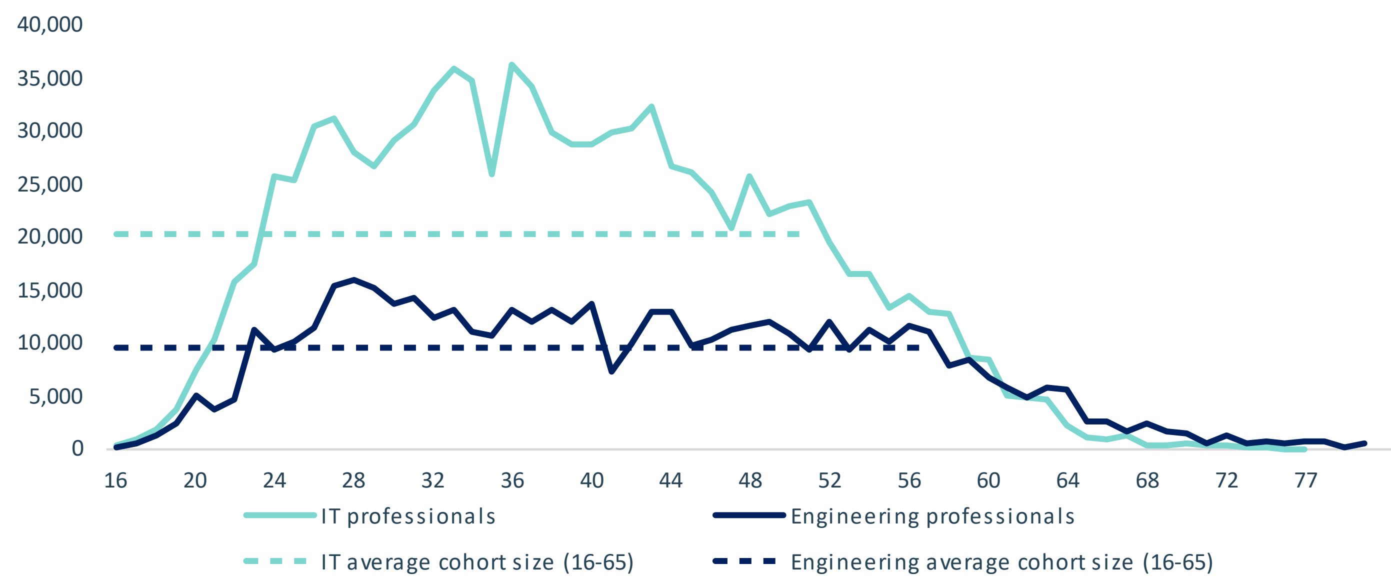
When seeking the most productive match for vacancies, employers in these sectors often do not necessarily make a deliberate decision to recruit from abroad. Instead, they simply post vacancies and assess those in the applicant pool – including any domestic and migrant workers who offer their labour. Given this common approach, it is understandable that IT and Engineering employers seeking capable employees with specific skills are making use of the immigration system to recruit.

## Meeting growing skills demand

The government’s industrial strategy has identified sectors that it hopes will drive growth in the economy, including ‘Digital and tech’, and engineering related sectors such as ‘Advanced manufacturing’ and ‘Clean energy industries’. The professions under review in this report are likely to play a key part in a number of these sectors. Maintaining, and even growing, current levels of employment in these occupations may therefore be strategically beneficial to the government’s growth mission.

Maintaining employment in both sectors would mean at least meeting replacement level demand. At a mechanical level, unless those leaving the sector are replaced by new entrants, employment in the sector will fall. Figure 2.9 shows the distribution of IT and Engineering professionals by age, with the average number of workers of each age between 16 and 65 giving a rough indication of the number of people (cohort) who will need to be replaced each year. Table 2.10 also contains The Skills Imperative 2035's more sophisticated estimates of replacement level demand for both occupations. These estimates are broadly similar to the average cohort size for Engineering but are around 50% greater than the IT professional cohort. This is likely to be due to the fast-growing nature of IT, which will have seen employment expand since 2019 (see Figure 1.1a), something accounted for in the Skills Imperative estimates but not in Figure 2.9 which relies on APS data from 2017 to 2019.

## Figure 2.9: Average cohort size




Source: Employment – Pooled Annual Population Survey 2017-2019.

## Table 2.10: Skills Imperative 2035 replacement level demand estimates (1,000s)

| Sector | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Engineering | 11.2 | 11.4 | 11.5 | 11.7 | 11.8 | 12.0 | 12.1 | 12.3 | 12.4 | 12.6 | 11.9 |
| IT | 29.3 | 29.6 | 30.0 | 30.4 | 30.8 | 31.2 | 31.6 | 32.0 | 32.4 | 32.8 | 31.0 |

Source: The Skills Imperative 2035.

However, simply maintaining employment in these sectors will not be sufficient to facilitate the government's growth ambitions in line with the industrial strategy. Instead, it is likely that employment will need to continue growing in the IT and Engineering professional occupations.

Existing projections indicate both sectors are expected to grow substantially between now and 2035. The Skills Imperative's baseline estimates suggest that both the IT and Engineering professional occupations could grow by almost 11% over this period. This is the same as the growth projected for professional occupations as a whole but is almost 7 percentage points greater than the growth in employment expected across the UK economy. Alternative modelling scenarios also suggest growth in both sectors could be substantially higher than this at around 22% between 2025 and 2035. However, recent employment growth in IT has been slower than was expected by the Skills Imperative when its estimates were produced in 2021, with employment even seeming to fall in 2024 as noted in Figure 1.1a. This demonstrates the inherent and significant uncertainty of these projections and reminds us that while the expectation that the sectors would continue to grow was consistent across models and shared by stakeholders, the exact magnitude and timing of changes in labour demand are extremely difficult to predict.

> *"The Engineering and Technology sector is expected to change rapidly, influenced in part by Government policies such as net zero ambitions and infrastructure commitments such as HS2 or house building commitments, as well as technological developments such as digitisation, automation and AI."*
>
> ***EngineeringUK***

## Link between domestic skills supply and migration

As we have mentioned above, the role immigration will play in meeting growing demand will also be determined by a combination of supply-side factors, including, but not limited to, the domestic supply of skills. In our 2024 Annual report, the MAC highlighted the complexity of the interactions between the domestic supply of skills and immigration. While a simple model of the labour market would suggest policy interventions to increase the supply of skills in the domestic workforce will increase employment of UK-born skilled workers and could reduce demand for overseas recruitment, in practice several factors limit the impact changes to the domestic skills supply have on immigration.

> *"Increasing the level of skills in the domestic labour pool does not guarantee a reduction in the reliance on the immigration system as migrant and domestic workers are not perfect substitutes and employers will often still seek the best possible match for their vacancy, which may be an international recruit."*
>
> ***MAC Annual Report 2024, Chapter 1***

This certainly does not mean that the domestic supply of skills will never have an impact on immigration. There are circumstances, such as in the Health sector, where a combination of constraints on the domestic labour supply and access to the immigration system can result in high levels of international recruitment. There are also good reasons to focus on improving the skills of the domestic workforce, including in occupations that have relied heavily on immigration. If the skills system can be improved, this will benefit domestic workers directly, improving their employment and earnings prospects. As a result, it is important to understand whether the domestic skills pipeline is functioning effectively.

## Trends in training and entry into IT and Engineering

There are various ways workers can gain and demonstrate the skills required by employers. Figures 1.3a and 1.3b in Chapter 1 show that the IT and Engineering professional occupations are no exception. Although most of the workforce are graduates, at least 35% of both workforces have an educational background at lower than an RQF6 (degree or equivalent) level. However, given the significant role that graduates play in the labour supply for both sectors, we first examine the supply of skills via the higher education sector.

Figures 2.11a and 2.11b show that the number of UK-domiciled engineering undergraduates starting university each year has remained steady at around 30,000 a year since the 2014/15 academic year. In contrast, the annual number of UK-domiciled computing undergraduates has risen substantially, reaching over 40,000 in the 2023/24 academic year. The proportion of these enrolments that are on courses which include a placement year is relatively high (23% in engineering; 21% in computing in 2023/24) compared to all subject areas (13%).

**Figure 2.11a: Undergraduate engineering enrolments**

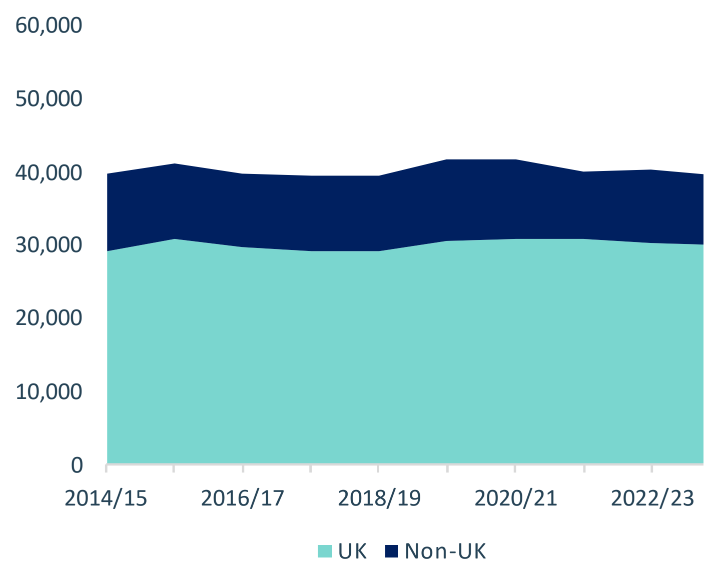
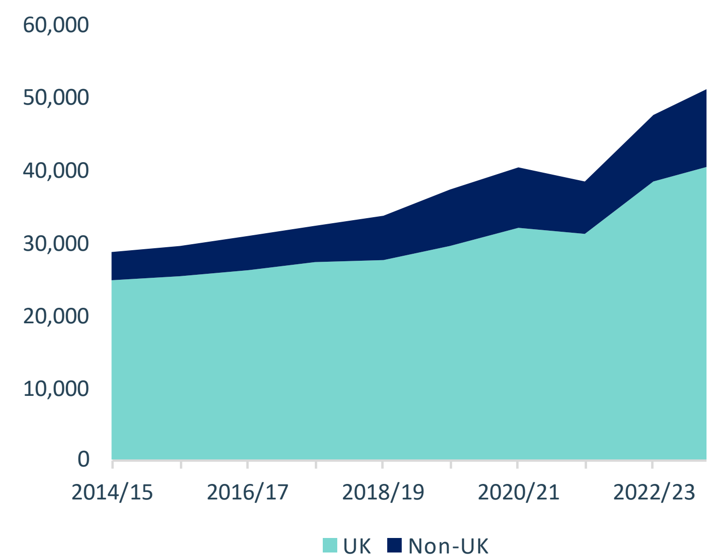



**Figure 2.11b: Undergraduate computing enrolments**




Source: HESA Detailed Tables (Student).

However, not all university students in these areas go on to work in the relevant professional occupation. Table 2.12 shows that for the cohort that graduated in 2020/21, 45% of engineering students entering work after graduation started in a professional level Engineering role, with significant leakage into other occupations and some downgrading to lower RQF level technician occupations. The degree of leakage into other occupations is also very similar among graduates from top-ranked universities compared to those from universities outside of the top 25 in the Times' 2025 Higher Education Rankings (see Table 2.13).

While the number of computing graduates has exceeded those in engineering and a computing graduate appears more likely to join the workforce in a professional occupation that is relevant to their degree, particularly if they attended a top 25 university (see Tables 2.12 and 2.13), the IT professional workforce is over twice as large as the Engineering professional workforce. This implies that the number of computing graduates joining the professional IT workforce relative to the size of the occupation is lower than the equivalent in Engineering. However, as Table 2.14 indicates, students joining IT professional occupations upon graduation do so from a broader range of subject backgrounds than in Engineering.

Despite differences in leakage into other professional occupations, when the occupations that computing and engineering graduates enter are grouped by RQF level and whether they are in STEM, the outcomes for both sets of graduates are similar. As Figure 2.15 shows, just over 60% of graduates that entered work having studied either subject found work in RQF6+ STEM occupations. As such, undergraduate courses appear to be reasonably successful in feeding graduate level STEM occupations, even if not all graduates go on to work in the most relevant occupation given the subject area of their studies. It is worth noting that alternative sources that could be used to replicate this analysis, such as the combined ASHE-Longitudinal Education Outcomes (LEO) dataset to which we do not have access, may produce different results to the Graduate Outcome Survey.

### Table 2.12: Top 5 occupations entered by recent engineering and computing graduates

| Subject studied | Occupation entered | Percentage of subject's graduates entering employment in the occupation |
|---|---|---|
| Engineering | Engineering professionals | 45% |
| | Information technology professionals | 9% |
| | Science, engineering and production technicians | 4% |
| | Business, research and administrative professionals | 3% |
| | Business associate professionals | 2% |
| | Other | 37% |
| | Total | 100% |
| Computing | Information technology professionals | 55% |
| | Information technology technicians | 8% |
| | Web and multimedia design professionals | 4% |
| | Business, research and administrative professionals | 3% |
| | Sales assistants and retail cashiers | 3% |
| | Other | 28% |
| | Total | 100% |

Source: Higher Education Statistics Agency Graduate Outcome Survey, Academic Year 2020/2021.

Notes: The graduate outcome survey collects information about the activities and perspectives of graduates approximately 15 months after they complete their studies. The base for these percentages only includes Engineering and Computing graduates that had entered work at the time of the survey. 82% of engineering graduates and 81% of computing graduates reported being in work.

**Table 2.13: Top 5 occupations entered by recent engineering and computing graduates by university ranking**

| Subject Studied | University Ranking | Occupation | Percentage of subject's graduates entering employment in the occupation |
|---|---|---|---|
| Engineering | Top 25 | Engineering Professionals | 45% |
| | | Information Technology Professionals | 15% |
| | | Business, Research and Administrative Professionals | 5% |
| | | Natural and Social Science Professionals | 3% |
| | | Finance Professionals | 3% |
| | | Other | 30% |
| | | Total | 100% |
| Engineering | Outside Top 25 | Engineering Professionals | 45% |
| | | Information Technology Professionals | 7% |
| | | Science, Engineering and Production Technicians | 6% |
| | | Metal Machining, Fitting and Instrument Making Trades | 2% |
| | | Sales, Marketing and Related Associate Professionals | 2% |
| | | Other | 39% |
| | | Total | 100% |
| Computing | Top 25 | Information Technology Professionals | 73% |
| | | Business, Research and Administrative Professionals | 5% |
| | | Natural and Social Science Professionals | 2% |
| | | Business Associate Professionals | 2% |
| | | Information Technology Technicians | 2% |
| | | Other | 15% |
| | | Total | 100% |
| Computing | Outside Top 25 | Information Technology Professionals | 51% |
| | | Information Technology Technicians | 9% |
| | | Web and Multimedia Design Professionals | 5% |
| | | Sales Assistants and Retail Cashiers | 3% |
| | | Business, Research and Administrative Professionals | 3% |
| | | Other | 30% |
| | | Total | 100% |

Source: Higher Education Statistics Agency Graduate Outcome Survey, Academic Year 2020/2021.

Notes: The graduate outcome survey collects information about the activities and perspectives of graduates approximately 15 months after they complete their studies. The base for these percentages only includes Engineering and Computing graduates that had entered work at the time of the survey.

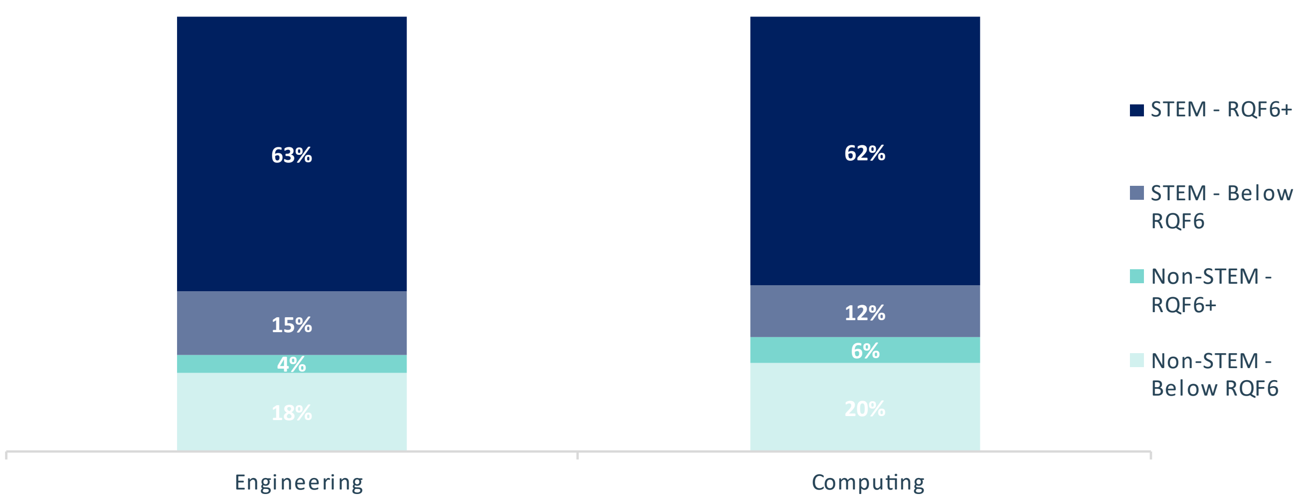
## Table 2.14: Top 5 subject areas of recent graduates entering IT and Engineering professional occupations

| Occupation | Top 5 subject areas (CAH2) | Percentage of occupations' graduate entrants |
|---|---|---|
| Engineering Professionals | Engineering | 79% |
| | Business and management | 3% |
| | Physics and astronomy | 3% |
| | Geography, earth and environmental studies | 2% |
| | Architecture, building and planning | 2% |
| | Other | 11% |
| | Total | 100% |
| IT Professionals | Computing | 55% |
| | Engineering | 11% |
| | Mathematical sciences | 7% |
| | Business and management | 7% |
| | Physics and astronomy | 5% |
| | Other | 15% |
| | Total | 100% |

Source: Higher Education Statistics Agency Graduate Outcome Survey, Academic Year 2020/2021.

Notes: The graduate outcome survey collects information about the activities and perspectives of graduates approximately 15 months after they complete their studies. The base for these percentages only includes graduates that had entered work in the given occupation at the time of the survey.

## Figure 2.15: Recent graduate occupation outcomes




Source: Higher Education Statistics Agency Graduate Outcome Survey, Academic Year 2020/2021.

Notes: The graduate outcome survey collects information about the activities and perspectives of graduates approximately 15 months after they complete their studies. The base for these percentages only includes graduates that had entered work at the time of the survey. STEM occupations are defined using the SOC10 occupations identified by the Unit for Future Skills.

The findings above become even more pronounced over longer time horizons. While the above analysis focuses on recent graduates, Table 2.16 shows that while Computing is the most common subject area studied among all graduate IT professionals in the current workforce, only 38% of the workforce studied in this area.

However, the table also shows the percentage of all graduate Engineering professionals that studied engineering is much higher at 69%. As may be expected, leakage out of the IT and Engineering professional occupations among all engineering and computing graduates is greater than among recent graduates. Table 2.17 shows that only 26% of engineering graduates appear to remain in Engineering professional occupations. This figure is substantially higher for IT professionals, with 47% of computing graduates working in the profession. However, as Figure 2.18 shows, once again graduates from both degree subjects are found to be working in RQF6+ STEM occupations at similar rates. It is also worth noting that graduates with degrees in computing and engineering also have slightly higher employment rates than other graduates (Table 2.19).

### Table 2.16: Top degree subjects among all Engineering and IT Professionals

| Occupation | Subject area | Percentage of occupation's graduate workers |
|---|---|---|
| Engineering Professionals | Engineering | 71% |
| | Physical/Environmental sciences | 7% |
| | Business and financial studies | 5% |
| | Creative arts | 3% |
| | Biological sciences | 3% |
| | Other | 11% |
| | Total | 100% |
| IT Professionals | Computing | 39% |
| | Business and financial studies | 12% |
| | Engineering | 10% |
| | Physical/Environmental sciences | 7% |
| | Mathematical sciences | 6% |
| | Other | 25% |
| | Total | 100% |

Source: Pooled Annual Population Survey 2017-2019.

Notes: This analysis uses the subject area of the highest degree subject studied and the main subject area of those who studied a combined degree to identify the degree subject of each graduate.

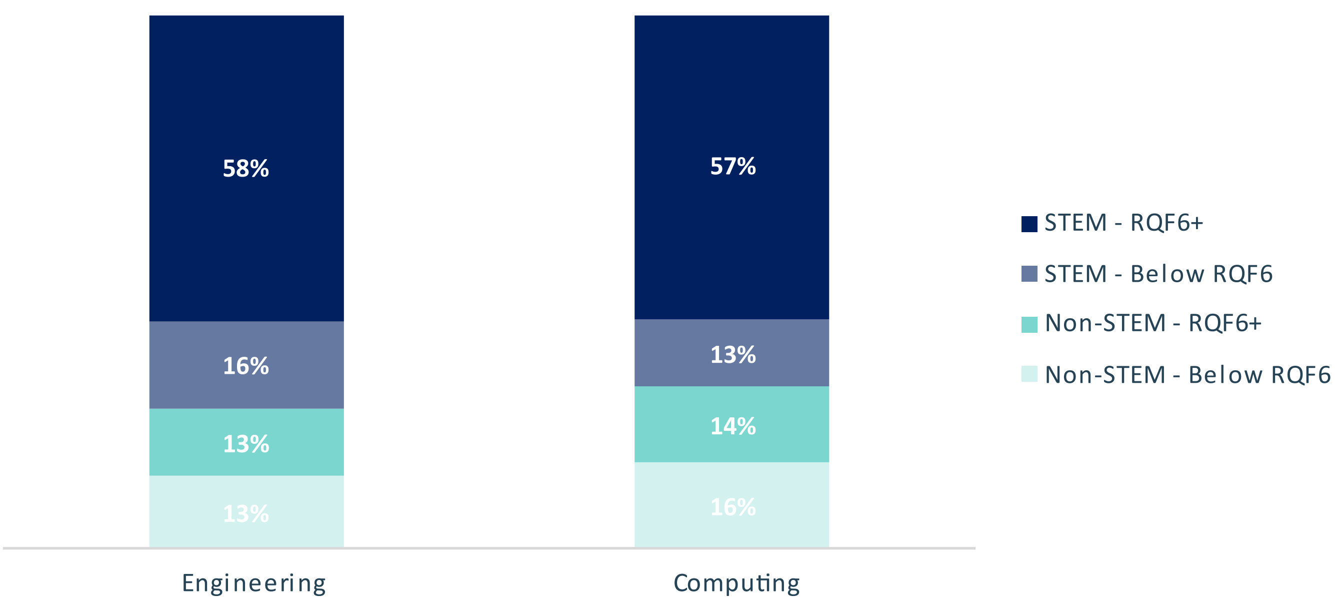
## Table 2.17: Top occupations for all engineering and computing graduates

| Subject | Occupation | Percentage of subject's graduates |
|---|---|---|
| Engineering | Engineering professionals | 26% |
| | IT professionals | 9% |
| | Production managers & directors | 8% |
| | Functional managers & directors | 5% |
| | Business, research and administrative professionals | 5% |
| | Other | 47% |
| | Total | 100% |
| Computing | IT professionals | 48% |
| | Production managers & directors | 6% |
| | IT technicians | 6% |
| | Teaching & educational professionals | 4% |
| | Business, research and administrative professionals | 4% |
| | Other | 32% |
| | Total | 100% |

Source: Pooled Annual Population Survey 2017-2019.

Notes: This analysis uses the subject area of the highest degree subject studied and the main subject area of those who studied a combined degree to identify the degree subject of each graduate.

## Figure 2.18: Workforce graduate occupation outcomes




Source: Pooled Annual Population Survey 2017-2019.

Notes: This analysis uses the subject area of the highest degree subject studied and the main subject area of those who studied a combined degree to identify the degree subject of each graduate. STEM occupations are defined using the SOC10 occupations identified by the Unit for Future Skills.

**Table 2.19: Graduate employment rates by subject**

| Subject | % of graduates employed | % of graduates unemployed | % of graduates inactive |
|---|---|---|---|
| Computing | 88% | 2% | 10% |
| Engineering | 85% | 2% | 13% |
| All other subjects | 84% | 2% | 14% |

Source: Pooled Annual Population Survey 2017-2019.

Notes: Base used for each percentage is the total number of people in the UK whose highest degree was in the given subject area.

Our focus group with workers in these sectors outlined the alternative approach to graduate recruitment in IT, suggesting that employers see degrees as means of signalling an ability to learn with the intention of teaching workers the skills they need on the job. This approach may be preferable for employers in the sector because the pace of technological progress and the specific nature of technical skills, such as programming languages, make it difficult for the traditional education system to respond in a timely manner.

*"I am a self-taught software engineer with a humanities degree…I knew how to build websites on the side and I turned that into a career. And now I'm a principal software engineer. So you can learn with experience."*

***Principal software engineer, focus group***

*"They were never particular about which degree you'd done. The guy that ran the place had a history degree. Other people had all sorts, but it was like, can you go to uni? Can you listen for 3 years and apply that knowledge that you had? They're not really fussed because they'll teach what you need to know, especially there."*

***IT solution engineer, focus group***

*"Career paths are very much linked up with the professional institutions…and so to get professional chartership…you kind of have to go for a very structured learning process…if you want to work as one of these engineering disciplines, I think the expectation is you follow this very structured routes."*

***Employee in the Engineering sector, focus group***

# Scope to increase the supply of training

There may be constraints that are limiting the supply of graduates from expanding further. As Figure 2.20 shows, engineering and, to a lesser extent, IT courses are expensive for universities to run compared to those in social sciences. While universities in England do receive some subsidies to support the provision of engineering (and to a lesser extent IT) courses, this is not enough to cover costs. In 2024/25, English universities received additional funding from the Office for Students (OfS) for students studying lab-based engineering courses of £1,737 per student, while those delivering computing and information technology courses received an additional £289.50. This contrasts to the £11,580 of additional funding assigned to students on medical courses. The freezing of fees in England and high levels of inflation in recent years have compounded this tough operating environment for universities, creating difficulties expanding provision of these courses. With current domestic fees of £9,250 per student, universities receive £10,987 per domestic engineering student and £9,539.50 per computing student[11]. Given the estimates in Figure 2.20, this means they are being asked to lose over £3,000 per student per year in both subject areas. It is worth noting that the uprated costs in Figure 2.20 are based on estimates produced in 2016/17 and it is likely that actual changes in the costs of course provision since then will have differed by subject area.

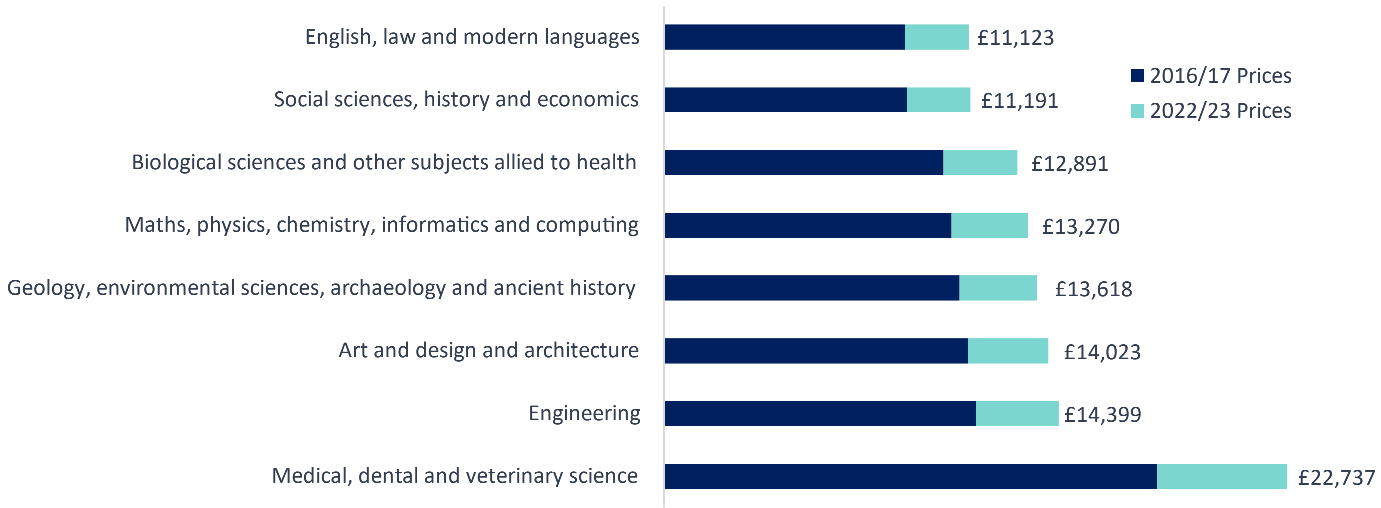
The system is similar in Wales where additional funds are allocated by Medr to subjects where the costs of delivery exceed the tuition fees for full-time undergraduate provision. This means in 2024/25 universities received an extra £788.40 per student for those studying an undergraduate engineering course and £368.40 per student for those studying an undergraduate computing degree.

In Scotland, courses are separated into six subject price groups and the Scottish Funding Council (SFC) allocates funds, via its Main Teaching Grant, based largely on the historical number of places provided by the university in subjects from each price group. Engineering and computing courses sit in the 2nd and 3rd of these groups depending on the specific course, so universities receive between £8,931 and £10,077 (AY 2024/25 prices) in funding per student place - including assumed tuition fees - to provide these courses, which is more than is received for other, less expensive subjects (£5,601 per student place for price group 6 places). The funding rates are changed to ensure that the funding allocated is covered by the available budget and therefore the rates are not necessarily uprated in line with inflation. Universities can request to move funded places between subject groups on a cost neutral basis to follow their pattern of provision so, overall, they have the flexibility to decide which courses and the number of places they offer using the total funding received. This is with the exception of controlled subjects, such as Medicine, where the number of places to be provided is prescribed to universities by SFC, in line with guidance from the Scottish Government. As Engineering and Computing are non-controlled subjects, universities can use funding that is nominally allocated for these subjects, via funded places, to provide courses in other subject areas.

Similarly, the Department of Economy (DfE) in Northern Ireland provides a block grant to universities each year and there is a cap on the number of Northern Irish students who can enter higher education in Northern Ireland. DfE funds per head and the universities resource courses accordingly. International and UK students who are outside of this cap can bring more funding to the universities that can subsidise the courses.

[11] Having been frozen since 2017, undergraduate fees for full-time courses are due to rise to £9,535 in the 2025/26 Academic Year.

**Figure 2.20: Weighted average unit cost for full-time degree provision in England by subject group**




Source: Department for Education 2016/17 (Chart 1), uprated using the GDP deflator.

> *"Some courses are vastly more expensive to put on than others. Putting together a course on aircraft maintenance is going to cost a whole lot more than probably a literature-based course, and that is inherent to the nature of what we do."*
>
> ***University, focus group***

While the cost of providing university courses is increasing, demand for them is also on the rise. Table 2.21 demonstrates how the number of applications to both engineering and computing courses have risen considerably since 2019. While the significant increase in applications to computing courses has been mirrored by an increase in enrolments, the lack of change in the number of Engineering undergraduates despite the increase in applications suggests there is potential to increase enrolments in the subject that produces the most graduates that go on to become Engineering professionals.

**Table 2.21: Change in university applications from 2019 to 2024**

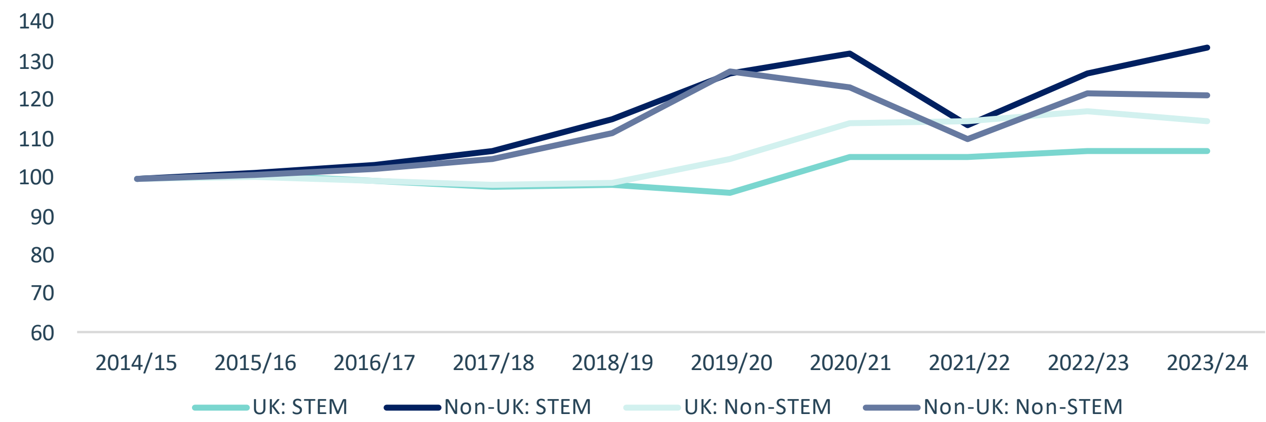
| Subject area | Change in applications | % Change in applications |
|---|---|---|
| Computing | 55,700 | 37% |
| Engineering and technology | 33,600 | 20% |
| Medicine and dentistry | 19,400 | 20% |
| Law | 25,700 | 19% |
| Mathematical sciences | 8,700 | 16% |
| Subjects allied to medicine | 48,300 | 14% |
| Media, journalism and communications | 7,400 | 14% |
| Architecture, building and planning | 5,400 | 11% |
| Business and management | 28,200 | 8% |
| Geography, earth and environmental studies | 3,600 | 7% |
| Combined and general studies | 800 | 7% |
| Agriculture, food and related studies | 1,100 | 7% |
| Physical sciences | 3,600 | 4% |
| Biological and sport sciences | 7,200 | 4% |
| Psychology | 3,300 | 2% |
| Veterinary sciences | 300 | 2% |
| Design, and creative and performing arts | 4,100 | 2% |
| Social sciences | -1,300 | 0% |
| Historical, philosophical and religious studies | -4,700 | -5% |
| Education and teaching | -9,800 | -13% |
| Language and area studies | -18,600 | -18% |
| All | 222,200 | 8% |

Source: UCAS Undergraduate Data Release, End of Cycle 2024.

Notes: The change in applications is calculated between 2019 and 2024.

The issue of expanding enrolment in engineering courses is reflective of a wider problem of participation in STEM subjects by UK students. Figure 2.22 shows that not only have enrolments in UK universities grown fastest among international students, but UK student enrolment in STEM subjects has also grown more slowly than their enrolment in non-STEM subjects.

**Figure 2.22: Indexed undergraduate enrolments by subject and domicile**




Source: Higher Education Statistics Agency, Detailed Tables 22 and 52.

## Training via apprenticeships

While enrolment in STEM subjects at universities has been slow to increase among UK students, the development of degree apprenticeships since the launch of the apprenticeship levy has led to an increase in higher levels of apprenticeship qualifications. The levy requires UK employers with an annual pay bill over £3 million to pay 0.5% of their total pay bill as the apprenticeship levy. The Governments of Scotland, Wales and Northern Ireland receive a share of UK-wide levy receipts, determined by the Barnett formula and which are allocated to them via un-ringfenced, overall allocations to the Devolved Nations. These funds can then be made available by the national governments to fund the apprenticeship offers in each nation.

Apprenticeships in England were reformed when the levy was introduced in 2017/18. English employers that pay the levy see their contributions in a private online levy account and can use the funds to pay for apprenticeship training and assessment, with the unspent funds of levy-payers used to fund apprenticeships in smaller businesses, although not all the money raised via the levy is reinvested in apprenticeships, a point we pick up in Chapter 3.

As Figures 2.23 and 2.24 demonstrate, in England the number of RQF6+ apprenticeships in Digital Technology have increased substantially since 2017/18, although the effect has been minimal in Engineering. In September 2024 the government announced plans to 'overhaul' apprenticeships, including replacing the existing levy with a Growth and Skills Levy that will fund a wider range of training, and cutting levy funding for Level 7 apprenticeships**.**

In terms of degree apprenticeship outcomes and employee retention, it might be expected that individuals undertaking a degree apprenticeship, or a university course sponsored by an employer, or with a year in industry, would see higher rates of conversion into employment in the sector, and longer employee retention, compared to individuals undertaking an equivalent standard undergraduate degree. This could be a result of a stronger employer/employee bond and a more detailed understanding of the organisation's ways or working and expectations on both sides. This was also reflected in stakeholder discussions, for example when we visited the National Manufacturing Institute Scotland, see case study in Chapter 3.

Figures 2.23 and 2.24 also show the significant volume of RQF2-3 apprenticeships in both sectors. These apprentices are most likely working in technician-level occupations and skilled trades, which are beyond the scope of this review. Although apprentices undertaking qualifications at this level are unlikely to progress straight into professional level roles, as we have seen in the sectoral context section of Chapter 1, working in these occupations does offer some opportunities to progress into the RQF6+ occupations later in one's career. Comparing Figures 2.23 and 2.24, which show apprenticeship starts and achievements respectively, also indicates that a much larger proportion of apprenticeship starters do not go on to finish the qualification, compared to traditional university undergraduates. While apprenticeship achievement rates are not easily calculated by comparing yearly volumes of starts and achievements, in 2023/24 the published achievement rates in Digital Technology and Engineering were 63% and 66% respectively, a little above the overall rate of 61%.

**Figure 2.23a: Engineering apprenticeship starts in England by RQF level of qualification**

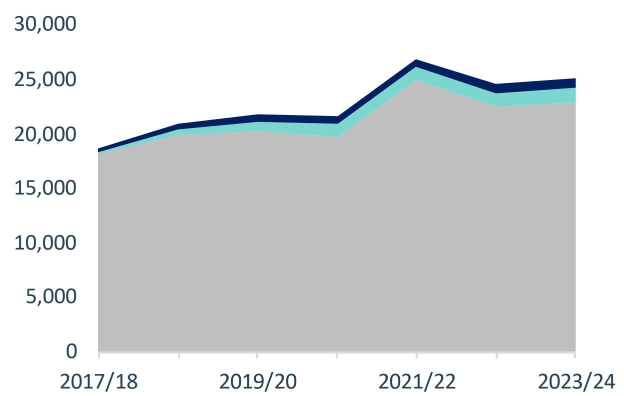
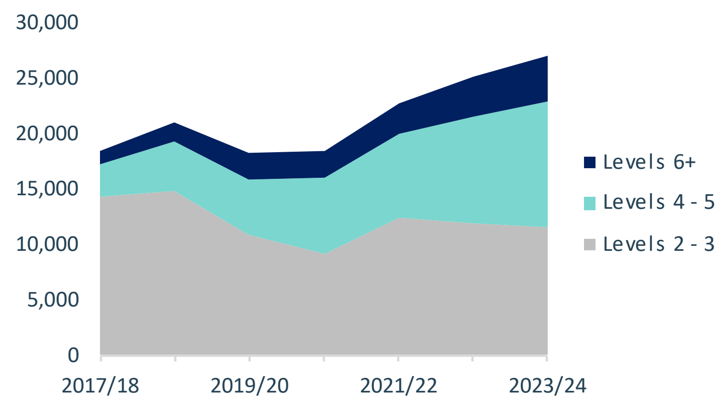



**Figure 2.23b: Digital Technology apprenticeship starts in England by RQF level of qualification**




Source: Department for Education Apprenticeships Published Stats, 2017/18-2023/24 academic year.

Notes: The Regulated Qualifications Framework (RQF) is a system that classifies qualifications based on their complexity and learning outcomes (further detail provided in the Introduction). RQF level 2 is equivalent to a GCSE qualification. RQF level 3 includes those with A-level or equivalent qualifications. RQF level 4 is equivalent to the first year of a bachelor's degree, representing a step up from secondary to higher education. An undergraduate degree is RQF level 6, a Master's RQF level 7 and a PhD is RQF level 8.

**Figure 2.24a: Engineering apprenticeship achievements in England by RQF level of qualification**

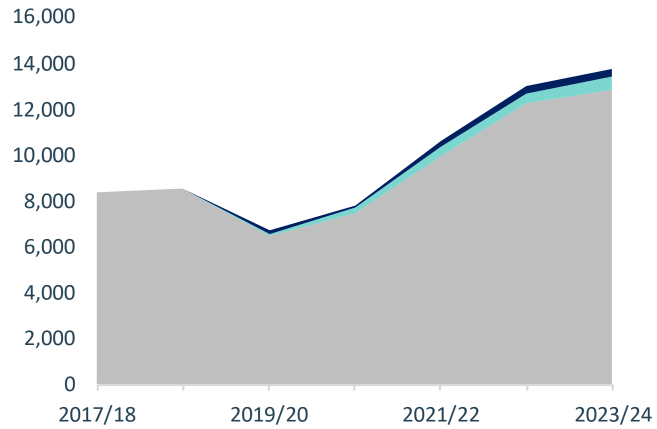
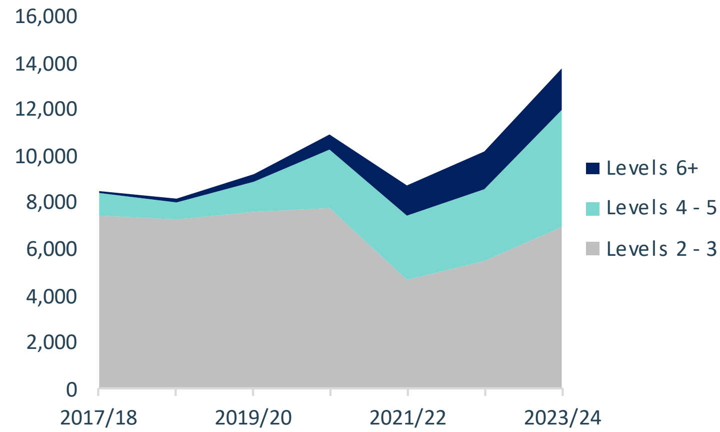



**Figure 2.24b: Digital technology apprenticeship achievements in England by RQF level of qualification**




Source: Department for Education Apprenticeships Published Stats, 2017/18-2023/24 academic year.

As skills policy is a devolved matter, each of the Devolved Nations have their own approach to delivering apprenticeships. As Table 2.25 shows, since the 2017/18 academic year, Engineering and IT apprenticeships in Wales have declined significantly, while Northern Ireland has seen substantial growth in Engineering apprenticeships but starts in IT have remained stagnant. Modern apprenticeships in Engineering in Scotland grew slightly between 2017/18 and 2021/22, while those in IT have seen a small decline.

**Table 2.25: Apprenticeship starts for each Devolved Nation by RQF level**

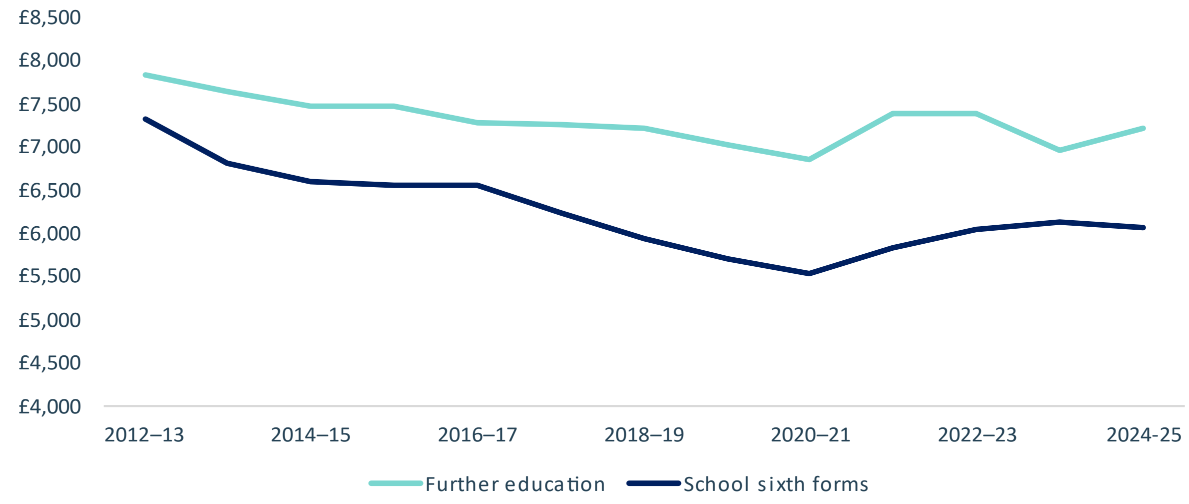
| Sector | RQF level | England | | Scotland | | Wales | | Northern Ireland | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2017/18 | 2023/24 | 2017/18 | 2021/22 | 2017/18 | 2023/24 | 2017/18 | 2023/24 |
| Engineering | Level 1-3 | 18,140 | 22,890 | 2,780 | 3,020 | 2,570 | 2,170 | 890 | 1,280 |
| | Level 4+ | 480 | 2,290 | 110 | 260 | 40 | 50 | 120 | 320 |
| IT | Level 1-3 | 14,330 | 11,530 | 2,040 | 1,870 | 800 | 50 | 100 | 60 |
| | Level 4+ | 4,170 | 15,550 | 170 | 270 | 20 | 0 | 20 | 110 |

Sources: Skills Development Scotland; Statistics Wales; Department for Education Apprenticeships Published Stats; NI Department for Economy.
Notes: Scotland includes foundation, graduate and modern apprenticeships; Northern Ireland includes Level 2/3 and higher-level apprenticeships; Wales includes foundation, Level 3, higher and degree apprenticeships; England includes intermediate (Level 2), advanced (Level 3), higher (Level 4 and 5) and degree (Level 6 and 7) apprenticeships. Scotland's reported apprenticeship starts cover up to 2021/22 because data on apprenticeship starts for Scotland's foundation and graduate apprenticeships for 2022/23 and 2023/24 are yet to be released.

Although Engineering and Digital Technology apprenticeships in England have bucked the overall trend of declining apprenticeship numbers since 2017/18, there are challenges in expanding provision of further education. As Figure 2.26 shows, the Institute for Fiscal Studies (IFS) estimates that real further education funding per student in England has fallen by 8% since 2012/13, even after the additional £300 million investment announced in the Autumn Budget 2024. Given that funding rates for each apprenticeship are not automatically linked to inflation, the Institute for Apprenticeships and Technical Education and, in future, Skills England, need to make sure that funding keeps pace with rising costs, and it does not become increasingly unattractive for providers to deliver in-demand apprenticeships.

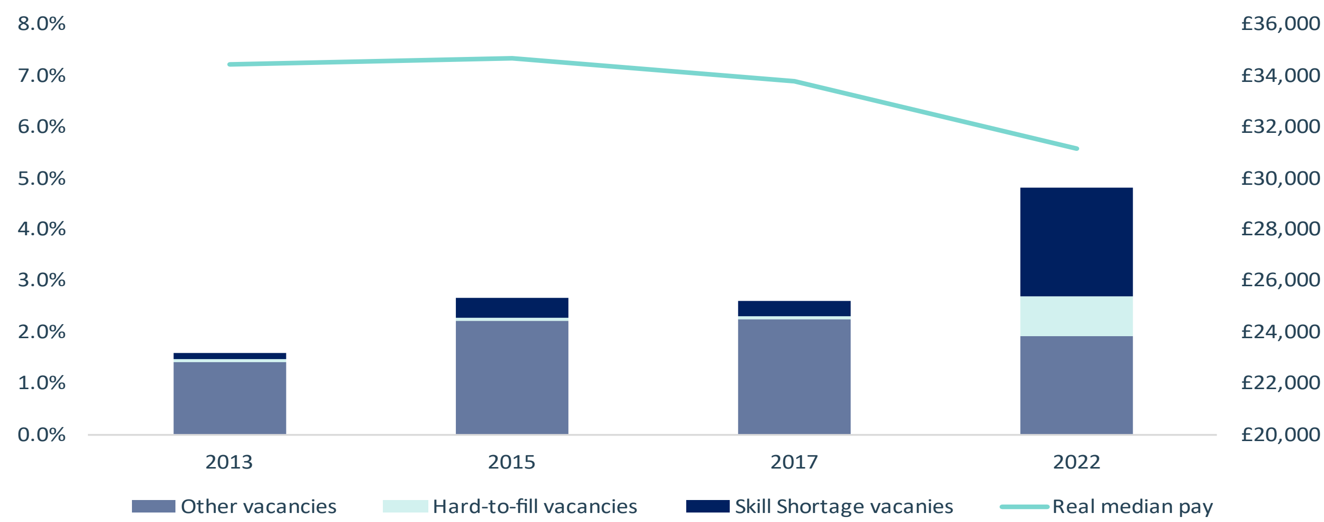
Since 2013, FE teaching professionals have also seen a fall in real median pay (see Figure 2.27) and Department for Education surveys of English FE providers suggest above average unfilled teacher vacancy rates in "Design, Engineering and Manufacturing" and "Digital/ICT" subjects. FE teaching professionals as a whole have also seen a substantial increase in skill shortage vacancies (Figure 2.27). Stakeholders noted that it is challenging to attract high quality teachers to FE institutions, given they would likely be paid significantly more if they were to work in a role they are training others to do.

## Figure 2.26: Further education funding per student in England




Source: Institute for Fiscal Studies Annual report on education spending in England 2024-25 (2024/25 prices).

## Figure 2.27: Real median pay and vacancies for further education teaching professionals




Source: Pay – Annual Survey of Hours and Earnings (ASHE), Vacancies – Employer Skills Survey (2013, 2015, 2017, 2022).

## Gender diversity

While funding issues threaten to limit the development of relevant skills via higher and further education, as discussed in Chapter 1 there is also a clear lack of gender diversity in the sectors, and this appears set to continue as the gender split of those entering the Engineering workforce largely mirrors that of those already working in the sectors.

While Engineering apprentices in England continue to be overwhelmingly male, as Figure 2.28a shows the proportion of Digital Technology apprentices that are female has grown steadily since 2017/18, although the majority still continue to be male.

**Figure 2.28a: Female proportion of RQF level 4+ apprenticeship achievements in England by sector**

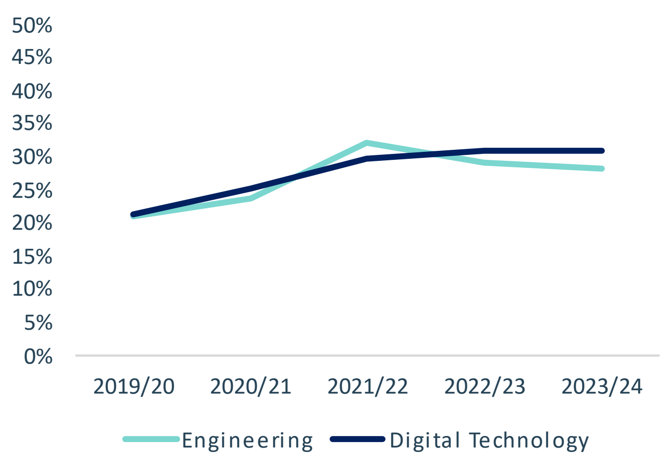
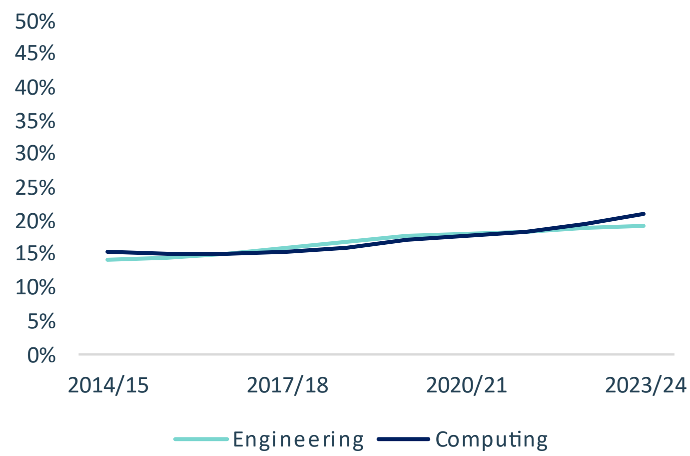



**Figure 2.28b: Female proportion of undergraduate enrolments by subject area**




Source: Department for Education Apprenticeships Published Stats, 2017/18–2023/24, HESA Published Stats (Table 46).

There also appears to have been little improvement in this regard at universities. Figure 2.28b shows the percentage of undergraduate enrolments by women in engineering and computing courses since 2014/15. While there have been small increases in female representation among undergraduates in both subject areas, the size of the changes are insufficient to significantly alter the future makeup of either sector.

Stakeholders also suggested that gender diversity is a particular issue in the Engineering sector, with women often put off a career in the sector from an early age. IT and Engineering profession roles typically require a degree, and often the entry requirements of those degrees are STEM subject A-levels. Therefore, to boost diversity within these sectors, the pipeline of females taking STEM subjects at school needs to increase.

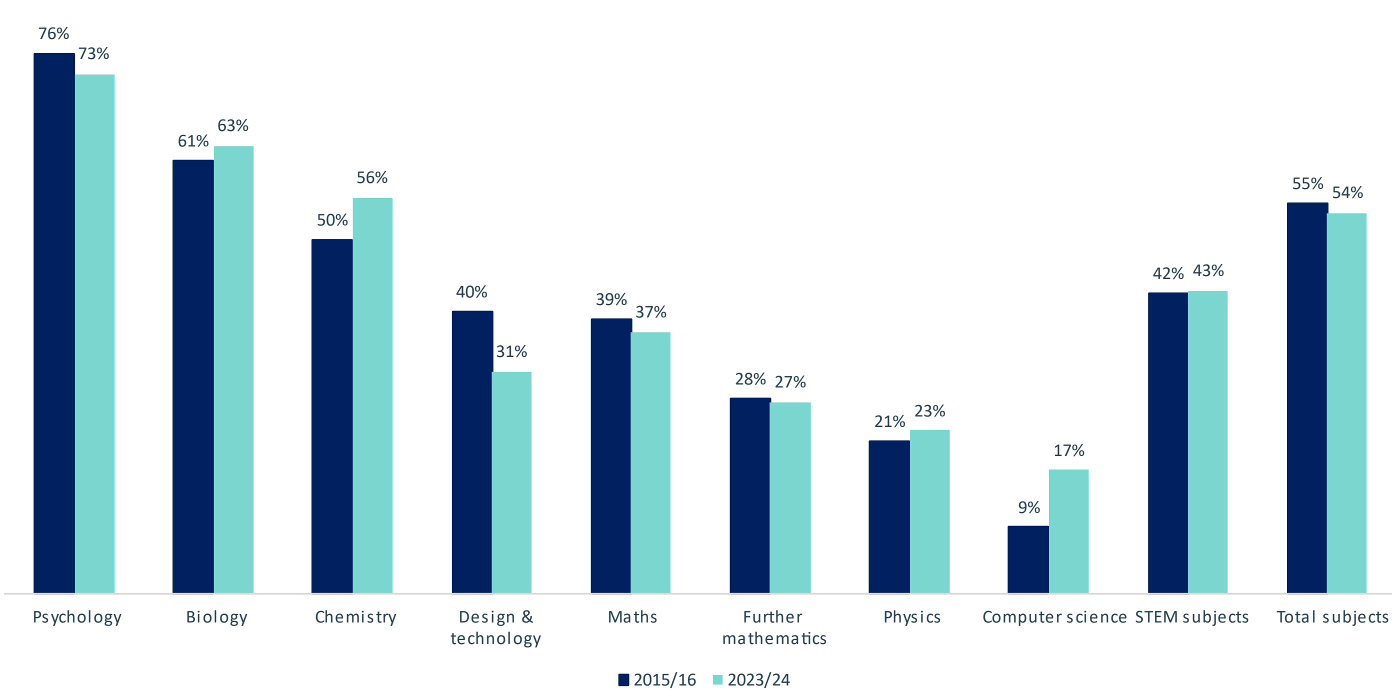
> *"I don't accept that they've done as much as what they maybe say they have…in some workplaces…you can't even get female size sort of PPE and basic stuff like that."*
>
> ***Union in Engineering sector, focus group***

*“This* [gender gap] *starts at primary age and goes on from there. You've got a girl aged four or five trying to play with something that a teacher thinks is inappropriate for her to play with, or parents saying no. Don't do that. Here's a pram, and then she gets knocked back and she keeps on. And then the next level she gets knocked back for something else and she keeps going and every time you're knocking the number of girls off at each level. Being told not to do that. Why did you want to do that? And then eventually you get to the point where they might actually have done some education, actually done a degree or whatever it is they need to do. And then she walks into an employer and she gets paid less because of the gender pay gap. But before she even gets to that point, it's humongous, it’s a battle and a half.”*

***Representative body, Engineering, focus group***

Further issues with the education system were raised by stakeholders, suggesting the quality of maths and science teaching from an early age is reducing the pipeline of qualified and interested recruits for both sectors. Gender diversity also continues to be an issue at A-level. While the number of A-level exam entries that are in STEM subjects rose from 230,000 (31% of all exam entries) in 2015/16 to 300,000 (37%) in 2023/24, the percentage of A-level exam entries by women that are in STEM subjects (29%) remains substantially below that for men (46%). As Figure 2.29 shows, the percentage of A-level entries by women in many STEM subjects has hardly changed, with the proportion actually falling in maths – the most common compulsory subject for engineering and computing degrees.

## Figure 2.29: Female proportion of STEM A-level entries



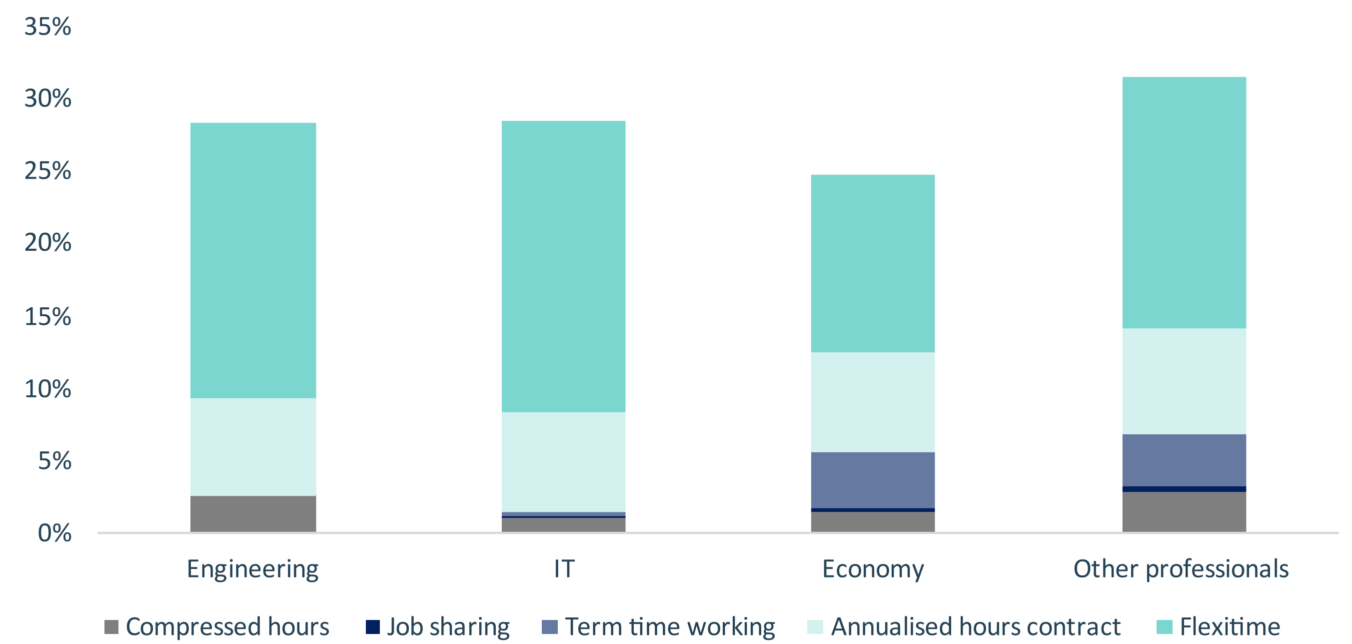

Source: Department for Education Published Stats, 2015/16-2023/24.

*"We don't even have physics teachers in 1/3 of schools in England…we might go in and do an activity on a day and, you know, try and engage and encourage young people…then they go back to their science class and there's no physics teacher...The P/E teacher comes in and says 'right turn to page 27 and just copy out the next five pages'. And that's your physics lesson...there's no engagement. There's no inspiration."*

***Representative body, Engineering, focus group***

The lack of gender diversity in the workforce may be compounded by a lack of flexible working arrangements. As noted in Chapter 1, almost all IT and Engineering professionals work full time (94%) compared to less than 75% in the wider economy. However, the sectors do seem to offer a level of work-based flexibility which is comparable to other occupations. The take up of non-standard working patterns (see Figure 2.30, subject to concerns over the reliability of APS data for this time period) is in line with other professional occupations and greater than in the UK more widely. IT professionals have the highest proportion of any occupation reporting that they had worked from home at least one day that week (59%) while Engineering professionals (despite the necessity of site-based work) are also comfortably above the average occupation in the UK. Given this, it may be more likely that women are put off/restricted from joining the occupation at an earlier stage, such as A-level choices.

**Figure 2.30: Use of flexible working patterns by occupation**




Source: Annual Population Survey (APS) 2024.

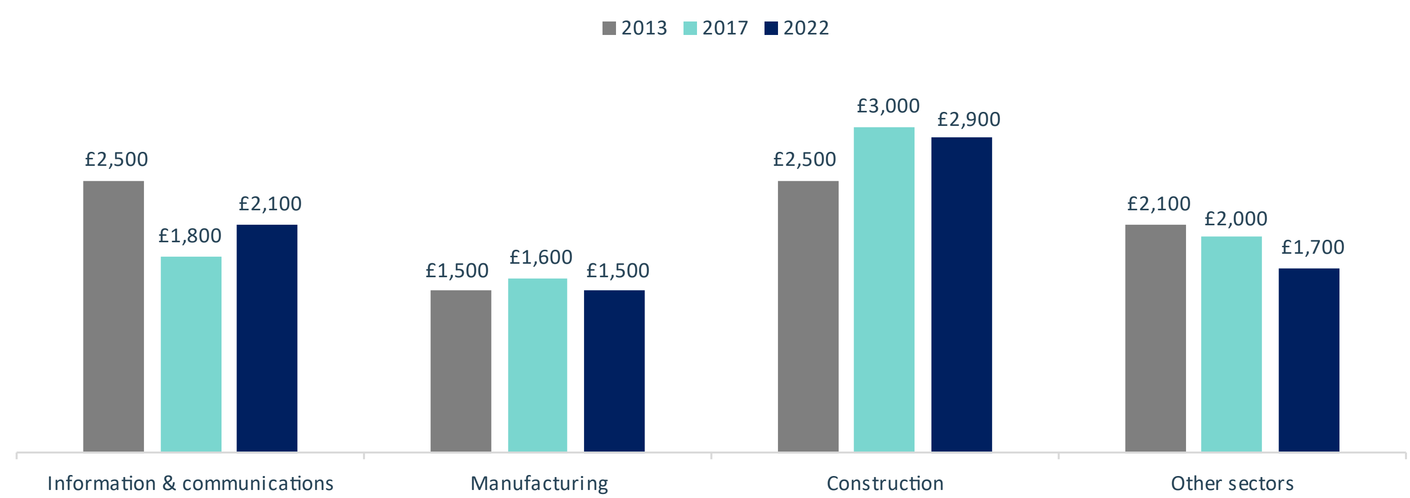
Notes: Teaching and educational professionals are included in the 'other professionals' grouping which boosts the proportion of term working.

## Employer investment and involvement in training

While stakeholders have raised the above issues with the education system, responsibility for ensuring IT workers and engineers continue to have the necessary skills is also shared by employers. There are currently no data on employee training by occupation, but the Employer Skills Survey does provide sectoral information on investment in training. Using this, Figure 2.31 shows that from 2013 to 2022 investment in training in the Information and Communication and Manufacturing sectors has either stagnated or declined. We explore a number of potential causes for this stagnation in Chapter 3.

Employers in Engineering also report issues finding the specific skills they need among graduates, but there are some instances of larger employers working with providers to develop courses that meet their needs. For instance, Dyson has set up its own Institute of Engineering and Technology as a means of training engineers with a product design focus that meets their needs as a business. However, during focus groups with engineering employers, participants pointed out potential difficulties with replicating this setup at scale. They suggested that schemes like Dyson's involve significant, long-term investment, which may be easier for privately held firms that do not have the same immediate pressures to provide returns for shareholders. There are other approaches, such as National Manufacturing Institute Scotland (NMIS) (see case study, Chapter 3) and University of Sheffield Advanced Manufacturing Research Centre (AMRC) which rely on a combination of funding sources, but which can subsequently benefit a broad range of stakeholders in the industry. Similarly, Balfour Beatty aims to be an 'enabler' on the supply side by developing in-house talent and deploying it to projects. The group CEO started the '5% Club' for those in the sector to aspire to having at least 5% of the workforce earning and learning.

## Figure 2.31: Real spending on training per employee




Source: Spending on training per employee adjusted for 2022 prices – Employer Skills Survey (2013-2022).

Notes: The figure for other sectors in 2013 is derived from estimates of employment by sector from the 2017 ESS report. Values are given in 2022 prices.

# Chapter 3: What are the options for the sectors going forward?

## Summary


- **Investing in training the domestic workforce is not guaranteed to reduce recruitment of skilled migrants. This is because of the time it will take for people to obtain the required training and experience, imperfect forecasting of future skills needs, and leakages between training for and entering a given job. For some jobs requiring specialised skills including in the IT and Engineering professions we have reviewed, businesses will seek the best person for a given role, which may be someone outside of the UK;**
- **Initiatives to increase diversity in the IT sector, e.g. through Science, Technology, Engineering, and Mathematics (STEM) pathways and industry placement schemes, have a role and will require ongoing funding;**
- **There should be a re-evaluation of the funding models in Higher Education (HE) and Further Education (FE) – if providers are asked to make a loss on providing courses it is perhaps unsurprising that they choose not to expand provision in such courses;**
- **On immigration policy, we welcome the review of salary thresholds and associated discounts announced in the Immigration White Paper;**
- **We support greater transparency over government spending on post-16 skills training and we are sceptical that all the proceeds of the Immigration Skills Charge (ISC) and the Growth and Skills Levy are invested in training; and**
- **The MAC does not recommend the use of the Resident Labour Market Test (RLMT) in these two sectors or a differentiated approach to migration applied to certain occupations/regions across the UK.**


The previous chapter explored why employers of IT and Engineering professionals have been hiring migrants as part of their recruitment strategies. This chapter turns to look at the alternative options available, and what might be done in the future to meet demand for skills. The MAC has not traditionally made suggestions relating to the domestic skills system in its reports to any large extent, and we consider that this should be the role of Skills England and the Industrial Strategy Advisory Council (ISAC) under the new Quad framework. However, in this report, whilst the Quad structures are still being set up, it has been necessary for us to comment on elements of the skills system as far as they relate to the specific questions given to us by the Home Secretary in her commissioning letter. Whilst we have engaged with both Skills England and ISAC during the development of this report, as well as the Department for Work and Pensions (DWP) and the Devolved Governments, we are expressing the views of the MAC in this report.

This chapter first considers changes to the skills system that would support these sectors and the economy more widely, we then move onto looking at changes to the immigration system before looking at some of the issues with linking the immigration system and the skills system. This is not a comprehensive analysis and should be viewed as the starting point for further consideration by other members of the Quad and the government more broadly. Inevitably, it is not feasible to make wide-ranging system-wide recommendations on the basis of the analysis of two sectors alone. We anticipate that the observations made here will be built upon in future sector reviews as we consider other parts of the economy.

## Changes to the skills system

**Employers will continue to hire skilled migrants in IT and Engineering occupations**

Whilst there are a number of options available to the government, training providers and employers to address demand for skills amongst IT and Engineering professionals, it is important to acknowledge that skilled migration will continue to play an important role in recruitment in these sectors. As has been discussed earlier in the report, training domestic workers will not necessarily result in a reduction in skilled migration, especially for expert roles, and some businesses will continue to seek the best person they can in a global market, which may be someone outside of the UK. Training bodies in the two sectors also highlighted in focus groups the benefits of hiring migrants to foster innovation and the upskilling of the domestic workforce.

> *"*[international recruitment is important] *for the IT and Engineering sectors to grow and to be as diverse as they are just for innovation's sake. International talent recruitment will never stop- it might…ebb and flow, but they will always be a crucial part of the IT sectors."*
>
> ***Representative body in the IT sector, focus group***

More generally, it will take time to develop the talent pipeline required in the UK to reduce reliance on migration. We heard concerns from the sector about the quality of STEM teaching in schools, the costs of providing university and FE courses in engineering, and as noted in Chapter 2, increased investment in training is required, which will not happen overnight.

> *"I think we'll always need good people and we continue to need good people from abroad. I think the challenge we have, given the demographics both in the existing workforce across engineering and the labour market demographics across all the OECDS,* [the challenge] *we have is to actually manage that in a systems type approach and not, 5-10 years down the road still be having these kind of conversations where we're talking about how do we fix the problem 1 or 2 years down the road."*
>
> ***Representative body in the Engineering sector, focus group***

> "*The length of time it takes somebody to become professionally qualified is typically 4 years after graduation, and we're seeing now employers not taking on students, including some we've sponsored via graduate visa because two years on a graduate visa, the extra years to get them professionally qualified- the salary threshold is too high for civil engineers. A graduate civil engineer, probably for the first four 4 years, is on about £34-35,000. 2 years as a skilled worker, then the rest to get them up to chartered status."*
>
> ***Engineering sector skills body, focus group***

**Addressing the gender imbalance in STEM has proven difficult**

Attempts by government and training providers to address the gender imbalance in STEM roles have also had a limited impact. Career choices start to narrow at GCSE and A-level and so there needs to be further action to fix the early stages of skills pipelines. There are several government-backed initiatives to support women into the IT and Engineering sectors, such as 'Next Tech Girls', which works with girls from lower income and minority backgrounds to help them find work placements and career opportunities in STEM. The previous government, just before the election, had also announced plans to support women back into STEM jobs through government-backed training. In addition, the vast majority of universities run their own programmes to encourage women into STEM, which was raised in our focus groups.

> "*I can't think of a single university in higher education that hasn't got, for example, a women in STEM initiative and this kind of thing…and what I'm trying to say here is not necessarily that we're doing a bad job with zero impact here, but it's a very, very long pipeline…*[change] *requires a really long and sustained effort to bring people who would have those abilities but are actually not necessarily looking at it and probably more because of societal aspects of it, rather than preconceptions*."
>
> ***University, focus group***

Despite these initiatives, however, the needle has hardly budged when it comes to women studying STEM courses.

**More sustainable and responsive funding models are required for the HE and FE sectors**

Chapter 2 highlighted the funding challenges in Further and Higher Education. Prolonged domestic fee freezes in HE and real-terms funding cuts per pupil in FE over the last decade seem to be particularly affecting IT and engineering courses, likely due to the higher cost of delivering some of these courses and the shortages of these workers in the labour market feeding through into shortages of suitable teachers. Unless funding is improved, the capacity of providers is likely to pose a major barrier to increasing training supply in these subjects.

In Chapter 2, we highlighted that IT and engineering courses are expensive for universities to run in comparison to those in social sciences and humanities. Even with high-cost subject grants from Office for Students (OfS), universities lose relatively more on domestic students who enrol on these courses. This situation has been exacerbated with the freeze in tuition fees in England and the high level of inflation in recent years. Given this, universities are not significantly increasing the provision of STEM courses, despite growing demand for these courses. This is an issue that needs to be addressed so that the skills pipeline is improved.

We can look to Australia as an example of how this can be addressed (see box below). This is only one example of a different fee model to that used in the UK, and whilst we are not recommending that this is what is implemented in the UK, it is a useful starting point to understand how the UK tuition fee model could potentially be reformed to be more dynamic in supporting growth. Any change needs to reflect the actual differential cost of course provision – it is perhaps indicative of the problem we face that we are using

2016/17 data in Chapter 2 to estimate costs per subject because there appear to be no more recent, reliable estimates.

**Australian Case Study**

In Australia, tuition fees vary significantly according to the course being studied. International students contribute higher tuition fees than domestic students (as in the UK). Domestic students have access to a student loan system (Higher Education Loan Program) that pays the fees upfront and is recovered through the tax system once they meet a specified salary threshold. Prior to 2021, the fees charged to domestic students for different courses were set to broadly reflect estimates of future earnings, so that those courses delivering higher average private benefit to students were more costly to the student to study. Since then, there have been substantial reforms to the system.

**Jobs-ready Graduate reforms**

In 2021, the Australian Government introduced the Job-ready Graduates package. The reforms were aimed at influencing student choices and directing students into areas of expected future employment demand. It did this by altering the relative contributions of students and the government (the Commonwealth) towards different subjects. The table below illustrates the 2025 funding arrangements. The aim was to incentivise students to choose subjects that were viewed as a priority, either because of skill demand (e.g., engineering, computing) or because of public-value (e.g., education, nursing). At the same time, the student fees also had a deterrence effect in aiming to direct students away from courses that were not seen as a priority (e.g., history). The overall contribution seeks to cover the average cost of delivery of the different courses, though at introduction there was a reduction in total funding for many STEM courses. It is notable that the variation in total contribution is more substantial than in the UK even when the high-cost OfS grants are accounted for, suggesting that this funding model is more attuned to actual delivery costs.

**Table: Funding Clusters for 2025**

| Subject (unit) | Maximum Student Contribution | Commonwealth Contribution | Total Contribution |
|---|---|---|---|
| Computer Science | $9,314 | $15,526 | $24,840 |
| Engineering | $9,314 | $19,041 | $28,355 |
| | | | |
| Medical Studies | $13,241 | $31,641 | $44,882 |
| Nursing | $4,627 | $19,041 | $23,668 |
| Teacher Education | $4,627 | $15,526 | $20,153 |
| Business | $16,992 | $1,286 | $18,278 |
| History | $16,992 | $1,286 | $18,278 |
| Literature | $4,627 | $15,526 | $20,153 |
| Performing Arts | $9,314 | $15,526 | $24,840 |

Source: 2025 Allocation of units of study to funding clusters - Department of Education, Australian Government.
Notes: The average exchange rate over the 12 months to March 2025 was AUD $1.95: GBP £1.

**Future reform**

The Australian Universities Accord Final Report published in 2024 recommends major changes to the funding model. It argues that the differential student contributions have had little effect on subject choice – evidence suggests that only 1.5% of students were enrolled in courses that they would not have chosen under the pre-2021 funding system. They suggest that as an alternative, student contributions should be related to potential lifetime earnings, with adjustments to reflect the public value of courses such as teaching and nursing. On the overall funding of different courses, the report recommends that:

"The new funding model would appropriately price the cost of teaching in different disciplines including increasing government contributions for disciplines in science, technology, engineering and mathematics, and, when student contributions are included, fully fund the cost of teaching".

Importantly, the proposals maintain the principles that the level of funding should differ by field of study and be adjusted to better reflect the costs of delivery. They propose an independent approach to estimating the full economic costs of courses and to regularly review the funding amounts per course. The review recommended that the Australian Government prioritise STEM disciplines to correct their current under-funding.

**Training needs to be relevant and flexible, without creating too much of an administrative burden on employers**

Employer investment in training is in decline. Figure 3.1 below illustrates the decline in employer spending over the last decade.

## Figure 3.1: Investment in training since 2011


Source: Employers Skills Survey (ESS) 2022, adjusted for 2022 prices using Consumer Prices Index.
Notes: In the ESS, a trainee is defined as any employee who has undertaken any type of training, whether it be on-the-job, off-the-job or both.

The reasons for the decline in employer investment in training over time are not well understood but likely include economic uncertainty, which was exacerbated by Brexit and the COVID-19 pandemic, and an increased focus on the bottom line due to profit pressures, as economy-wide profitability has fallen over the last decade.

Attitudinal factors may have also played a part, such as concerns around the poaching of trained staff, potentially heightened by unprecedented labour market tightness since the pandemic, and increased reliance on higher education as a substitute for training staff in work[12]. Lastly, the complexity of government policy should not be underestimated, with employers finding the constantly evolving skills system hard to navigate, apprenticeship reforms in the mid-2010s significantly reducing the number of apprenticeships among smaller businesses, and the lack of a coherent government strategy to incentivise training investment. All these drivers are underpinned by market failures such as the delayed and hard-to-quantify returns to investment in training and deadweight loss of subsidies for private training.

As the Department for Education (DfE) have set out, Skills England need to help reduce the complexity of the skills and qualifications landscape and reduce administrative burdens for employers when investing in skills (for example, when taking on an apprentice). Similar work may be needed in Devolved Nations.

Work is also needed to ensure qualifications and recent graduates are keeping pace with changing industry needs. Sectors, especially those with rapid technological advancement, require clearer pathways for people to upskill and top-up their skills, for instance, to be able to code in different programming languages, as seen in Table 2.6. This requirement for continual learning to top up skills in the face of evolving technology came out strongly in our focus group with employees, especially those in IT.

*"because the technology is so new, it's easy to say 'We can't find enough people who can do that', but a lot of it is going to be learned on the job eventually. When we hire local, we look for data scientists or machine learning engineers…it is a bonus if you can do it, but you must be willing to also learn on the job…it's because this thing is such a new discipline in this part of the world."*

***Employee in the IT sector, focus group***

*"you're extinct very soon…I personally am trying to diversify myself…it is a constant cat and mouse game of trying to diversify, because if you don't, then, yeah, it's difficult to get anything else."*

***Employee in the IT sector, focus group***

We see a greater role for increased use of shorter, flexible training programmes such as Skills Bootcamps. Recently announced reforms to reduce the minimum duration of an apprenticeship from 12 to 8 months from August 2025 are responding to employer feedback about the suitability of apprenticeships for shorter periods of training. This will apply only to England, and it is important for the Devolved Nations to consider how they ensure apprenticeships are suitably flexible and keeping pace with employer needs.

[12] Green, F., Felstead, A., Gallie, D., Inanc, H. and Jewson, N. (2016) The declining volume of workers' training in Britain. British Journal of Industrial Relations. Vol 54, No 2. pp422–48.

*"For those coming out of university, founders have told us that they found some of their best staff from programmes like Jumpstart, where founders pitch roles to prospective employees, or M-SParc's Skills Academy, a paid five-month placement into a tech startup for students and graduates in North Wales."*

***The Startup Coalition***

**Apprenticeship levy reform and the Growth and Skills levy**

Beyond new shorter and foundational apprenticeships, the government has announced plans to 'overhaul' apprenticeships, including replacing the existing levy with a Growth and Skills Levy and cutting funding for Level 7 apprenticeships. Whilst the decision will be driven by budget pressure, a nuanced approach to removing Level 7 funding may be more appropriate.

This is particularly true in key government areas such as the 'growth-driving sectors' or STEM, as illustrated by the case study below. The government should seek an approach that does not lead to a reduction in graduate-level training in STEM subjects, as this would directly conflict with the objectives of the industrial strategy.

**Sumo Digital Academy**

Sumo Digital Academy is a talent development program within the UK games industry, designed to create new pathways in game development, and was launched in 2020.

It is part of Sumo Digital, an independent family of game development studios. The Academy provides a Level 7 Game Programmer Apprenticeship lasting 18-24 months. They also run a shorter Diversity Internship Training Programme for individuals in under-represented groups to receive training and mentoring in game programming, and to potentially apply for the Game Programmer Apprenticeship. The Academy is led by a former game programming lecturer and was rated 'outstanding' by Ofsted. With game development requiring a high-level of technical proficiency, a Level 7 qualification is required. Full removal of Level 7 funding would therefore effectively remove their access to levy funding.

**Partnerships between employers and training providers are an important way forward**

The disconnect between the education sector and industry has long been cited as a barrier to investment in training, for example this was mentioned in the Campaign for Science and Engineering's 'The Skills Opportunity' report. This also came out in some of our focus groups.

*"I think there's a disconnect between the education and college sector and industry with those sort of white collar or blue collar roles. I think that gap has kind of got wider over time."*

***Engineering Employee Representative, focus group***

DfE has recently partnered with Edge Hill University and the Gatsby Charitable Foundation to pave a way for a different approach to FE workforce development with a particular focus on recruiting and retaining skilled professionals. This is an example of a private/public partnership aimed at improving the mobility of workers across industry and academia, which could help address shortages across sectors more effectively. This can also require localised and unique strategies. For example DfE previously set up the UK Shipbuilding Skills taskforce (UKSST) which worked across government and industry to developed a skills strategy for the shipbuilding industry, based on an analysis of skills shortage, and drawing on international best practice. More recently, the government announced funding to increase training in the construction sector, including £20 million for partnerships between colleges and construction companies.

In DfE's September 2024 report, they have clarified their intention for Skills England to engage with employers and other key organisations to understand which training courses will be high value, which will in turn be a useful opportunity for employers to identify the shortages they face and work with the government to address these. When employers and providers work together, they can ensure that training is industry-relevant and leads directly to a job.

Having industry partnerships where training is in the form of a job (i.e., an apprenticeship with a guaranteed job at the end), or otherwise directly leads to a job in the sector, will increase employer returns in their investment of training and reduce flows into adjacent roles that may not have such acute shortage. Surprisingly, there appears to be no substantive evidence as to whether year in industry options in degree courses lead to a higher rate of conversion into employment in the sector compared to individuals undertaking an equivalent standard undergraduate degree. Through stakeholder discussion we heard that there is a value to such 'sandwich courses', with students having a detailed understanding of what would be expected of them from potential future employers, which could prove an attractive proposal if evidence bears this out. There is some research from the US for engineering undergraduates that suggests that earlier exposure to work environments during the degree leads to greater engagement and retention in engineering, and to taking a higher proportion of elective courses in engineering. The effects are particularly pronounced for lower-income students.

Scaling effective models of workforce partnerships between employers and training providers, where experienced staff spend time teaching, may reduce the extent that workforce shortages in training providers limit domestic training.

**National Manufacturing Institute Scotland (NMIS) and University of Sheffield Advanced Manufacturing Research Centre (AMRC)**

NMIS is a manufacturing centre located in the Advanced Manufacturing Innovation District Scotland, operated by the University of Strathclyde and is part of the UK'S High Value Manufacturing Catapult network. It is supported by Scottish Government, Scottish Enterprise, the regional enterprise agencies around Scotland, Skills Development Scotland (SDS) and Renfrewshire Council. It aims to make Scotland a world leader in manufacturing through skill, productivity, and innovation transformation. NMIS's research and development facilities assist businesses in finding technology solutions and help reskill/upskill workers.

Employers can apply for membership with NMIS which enables access to NMIS's resources and assistance with their commercial projects, access funding sources for small and medium enterprises (SMEs), collaborations with other members, and training and upskilling firms' workforce. Individuals can also access training and development opportunities through NMIS's Manufacturing Skills Academy, where training can be tailored to specific needs or levels.

NMIS is working with SDS on a 'Pre-Approved Talent Scheme' (PATS), which aims to streamline the recruiting process. Large firms typically receive many applications from candidates who succeed at assessment stage but who are excess to business requirements. Smaller firms can find it difficult to locate suitable applicants because of limited resources to advertise available roles. The aim of PATS is to link these candidates and SMEs. NMIS can also help in upskilling these candidates, if required.

The University of Sheffield AMRC, funded by industry and the UK Government, is a similar venture to NMIS. The AMRC specialises in research, training and innovation, working with industries around the world. Firms do not need to apply for membership, but if they do, they can have a wider access to AMRC's research and development programmes, and if a firm is a Tier 1 member, they can have a say on the AMRC's research roadmap. Collaborative research is also encouraged between firms to support technology development, with the aim of bringing enhanced productivity, competitiveness and sustainability of participants.

The AMRC Training Centre is a training provider for a number of apprenticeship programmes and delivers Continuing Professional Development (CPD) for organisations looking to upskills, re-skill or multi-skill their employees.

The AMRC has locations in South Yorkshire, Preston and North Wales.

There are also examples of larger businesses who are able to meet their workforce supply and demands requirements through the funding of their own apprenticeships and graduate programmes to create their own future workforce. BAE Systems is one such organisation that has been able to do so.

**BAE Systems**

BAE Systems has many roles that are subject to both security and export control restrictions. These restrictions mean that factors such as an individual's nationality, any nationalities they may have previously held, and their place of birth can restrict the roles they are eligible to perform within the organisation. Therefore, the company is limited as to whom it can recruit internationally and additionally how easily it can move employees around the business, especially when compared to other traditional engineering firms who do not have security restrictions. Security requirements and the nature of the highly skilled work BAE Systems staff undertake also means that rapid access to suitably qualified staff to work on large projects can be extremely challenging, partly due to national shortages of qualified engineers. Hence, BAE Systems does all it can to 'grow its own talent' and ensure it has adequate skilled resources in place.

To support this strategy, BAE Systems is investing in training 6,500 apprentices and graduates in the UK, comprising approximately 15% of its current workforce, with the aim of meeting current and future skills needs. BAE Systems estimates that it spent £230 million on training and development in the UK last year.

Dyson is another example of an organisation who have been able to meet their workforce supply requirements, having taken a different approach by creating their own university to produce their talent with the specific engineering-product design skills they require.

**Dyson**

Citing a shortage in the projected number of engineers being trained in the UK and the lack of a skills pipeline, Dyson decided that they would try to develop and grow talent internally. In 2017 Dyson launched the Dyson Institute of Engineering and Technology offering approximately 40 undergraduates per year the opportunity to study for a degree delivered and awarded by the University of Warwick, while also being employed within Dyson's global engineering team. Subsequently the Institute was awarded New Degree Awarding Powers, enabling it to deliver and award degrees with the first independent cohort joining in September 2021. Current programmes include a four-year integrated MEng Engineering degree which offers the opportunity to study (without tuition fees) whilst working and earning a salary. An MSc conversion programme in software engineering has since been launched and they have helped to set up a department at Imperial School of Design and Engineering.

Partnership models tend to be less suitable for smaller employers, however, who have less resources to engage with providers.

*"I've certainly seen some people from the university sector say that they do that outreach work to companies and try and work with them in terms of getting that* [course] *design. Some of that is going on. I don't know. In terms of the resources put in, probably there are a small number of companies that have the resources to do the kind of thing you're talking about. So it's like the SMEs who work in the wider supply chain who are being missed. And there's real disincentives for them as well, because if they do start to train good people, they get hoovered up by the same big companies. So there does need to be a conversation had about the right structures and how you incentivise that? So* [the] *government almost certainly has a role here in terms of what we need from the universities*."

***IT and Engineering Employee Representative, focus group***

**Government policy relating to skills requires strategic direction**

It is clear that the government should have a more joined up approach to building the domestic workforce in high-priority sectors as there are currently inconsistencies in its messaging on upskilling the domestic population in STEM skills. For example, in the same week, it announced both the reduction of funding to the Advanced Mathematics Support Programme (AMSP), which aims to increase participation in Core Maths, AS/A level Mathematics and Further Mathematics and supports improvement in the teaching of these Level 3 maths qualifications in state schools in England, and published an AI Opportunities Action Plan which provided recommendations on how to train the next generation of AI scientists. There has been pushback from the sector on the reduction of funding on AMSP.

Better coordination and strategic use of funding would be needed to support significant increases of domestic workers into IT and Engineering. A lack of coordination, particularly in relation to Level 7 apprenticeships, will threaten delivery of the industrial strategy and missions.

# Changes to the Immigration system

We turn now from the current skills picture, to explore changes that could be made to the immigration system to support future domestic skills acquisition.

The government asked us to consider in this review what policy levers within the immigration system could be used more effectively to incentivise sectors to focus on recruiting from the domestic workforce. As noted previously in this report, there is not necessarily a direct link between investment in the domestic workforce and a resultant reduction in the demand for immigration because the incentives driving the use of each are complex. Despite this, during this review, evidence of several potentially sensible changes to the current immigration system have become apparent and we explore these below, along with several other aspects which we feel should not be changed.

## Immigration Policy

### Occupation-specific salary thresholds

As highlighted in Chapter 1, there have been recent changes to the occupation salary thresholds, and we would recommend that these be reviewed as part of an overall review of all salary thresholds and discounts announced in the White Paper. Occupation-specific salary thresholds increased in April 2024 from the 25$^{th}$ percentile to the 50$^{th}$ percentile (median) for full-time workers in eligible occupations, while the general salary threshold for the route increased from £26,200 to £38,700. Previously, the 25$^{th}$ percentile was used as a threshold for occupations with the intention of mitigating undercutting of domestic workers and the exploitation of migrant workers. However, the new occupation salary thresholds are based on the median salary in these occupations. This suggests the salary threshold's main objective is no longer about preventing undercutting domestic workers because substantial numbers of potential migrant workers – who tend to be younger than the UK average – will face a salary threshold above the market rate for their skills and experience. The MAC had also previously explained that setting occupation-specific salary thresholds at the 25$^{th}$ percentile helps to recognise the geographical variation in pay within occupations, and ensures that lower-wage areas can still access the immigration system.

The higher occupation-specific salary thresholds may also make it difficult to hire recent graduates from abroad as these salaries will often be too high for workers with little experience in the workforce – even with the 30% new entrant discount they are entitled to. It also impacts on the transition from the Graduate visa to professional, specialised, highly paid employment. This is borne out by evidence from our focus groups.

*"We can't justify to bring up the minimum salary threshold for the graduates because they are entrants and we've got people who have…5-10 years work experience and there are UK nationals and they are on a lower salary than the graduates. Because how we calculate our salary is that we give them base salary…*[and] *a daily bonus allowance when they work, let's say at the field or anywhere, and obviously we cannot add those daily bonuses payments into the Skilled Worker salary…that's where business is at the moment, very much struggling to justify that."*

***Employer in the engineering sector, focus group***

Salaries make up one component of total costs for employers and so these, in combination with visa fees and any other administrative costs associated with hiring migrants, may be too high for employers to pay to hire graduate workers.

It is possible that the 50th percentile is too high for some professional jobs where there is significant pay growth in the early years of a worker's career, because of difficulties it creates for certain younger people (once they have timed out of the 4-year discount period), or employers in some regions of the UK. However, there are also benefits to higher salary thresholds — it is possible they might help incentivise domestic recruitment and increase the average net fiscal contribution of migrant workers. A higher threshold is also likely to have some impact on the government's goal of reducing immigration (when applied across all sectors).

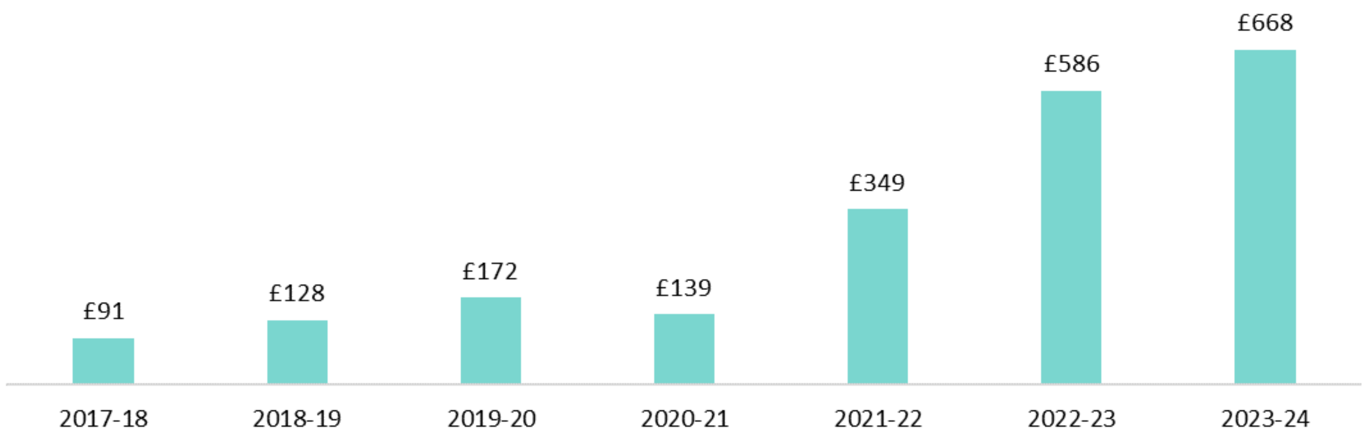
**There should be greater transparency over revenues from levies and the government should increase the amount being spent directly on skills**

The Immigration Skills Charge (ISC) is paid by employers when recruiting workers on the Skilled Worker (SW) and Global Business Mobility (GBM) routes. A small number of occupations are excluded (though none of the IT and Engineering professional occupations) and European Union (EU) workers on GBM are excluded from 1 January 2023 as part of the UK-EU Trade and Cooperation Agreement. Medium and large firms pay £1,000 per worker per year, whilst small or charitable organisations pay £364.

The revenue from the ISC currently goes into the 'Consolidated Fund'. His Majesty's Treasury (HMT) argues that the money does support skills budgets indirectly because they would otherwise make DfE's budget smaller. To put it mildly, we are somewhat sceptical that this is the case. Amounts raised by ISC are considerable and have risen by over £0.5 billion since 2021 (Figure 3.2). It is not clear to us where this significant increase in revenue shows up in the skills budget and we think this needs to change.[13]. It also does not flow to the particular occupations and sectors that are paying it, which seems to contradict the initial point of the charge.

[13] The skills budget here refers to several government funds which are spent on upskilling adults and young adults in core skills required for the UK labour market.

**Figure 3.2: Immigration Skills Charge revenue, £ millions**




Source: Home Office annual reports and accounts. Year ending 31 March.

When the ISC was introduced, it was explained that *"Through the introduction of an immigration skills charge, the government wants to incentivise employers to invest in training and upskilling the resident workforce, thus reducing reliance on migrant workers"* and that *"The income raised by the charge will be put towards addressing skills gaps in the UK workforce (less an amount to cover Home Office collection and administration costs)."* Unless the government no longer views this as the objective of the ISC, there should be a renewed commitment to spend the money on skills training. We note that the Immigration White Paper envisages increases to the level of the ISC which makes this issue even more pertinent.

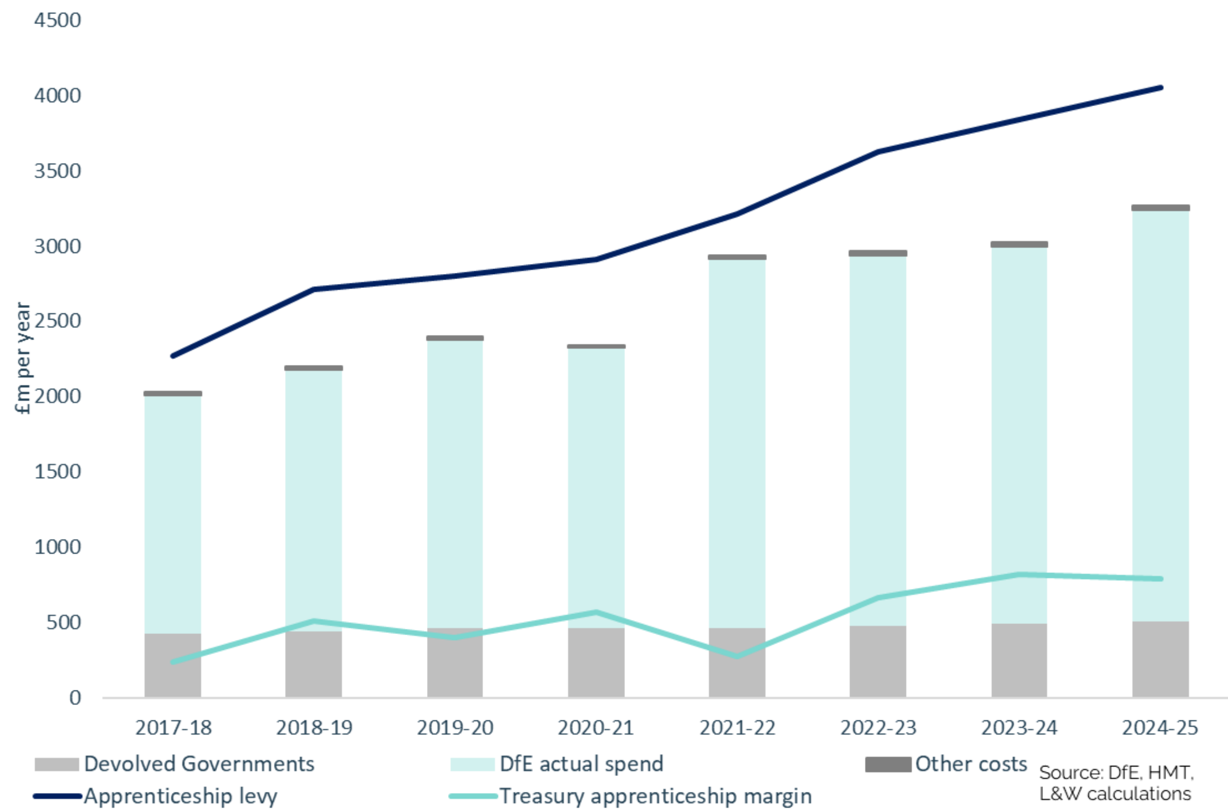
Employers also want more clarity on the ISC and how this money is used to invest in training the domestic workforce. In focus groups carried out as part of this review, multiple stakeholders echoed calls for greater transparency over where funds were going.

> *"We pay £1,000 as an employer* [for the] *immigration skills charge…where is that money going…to be honest, I don't see that upskilling people or where that money is going to help out to build the next generation who can actually work."*
>
> ***Employer in the engineering sector, focus group***

> *"Where is the immigration skills charge going? Would love to see some kind of transparency data on that."*
>
> ***Representative body in the IT sector, focus group***

Separate to the ISC, The Learning and Work Institute estimate that the amount raised by the apprenticeship levy has increasingly exceeded the amount allocated to DfE and to other UK nations (Figure 3.3).

**Figure 3.3: The Apprenticeship Levy and its allocation between UK Nations**




Source: Learning and Work Institute, 2024.
Notes: Based on Department for Education, His Majesty's Treasury and Learning and Work Institute Calculations.

Investment into the domestic workforce is vital for the growth agenda and it is hard to understand why the full levy is not being used for such purposes. We support the view of many employers and sector bodies calling for these taxes to be fully reinvested in skills, as that aligns with the spirit and policy aims for which they are levied. This does not necessarily mean ringfencing funding, given the inefficiency and accounting bureaucracy that might create, but there should be greater transparency over receipts and spending and proportionate increases in spending on skills. How this is achieved is for the government to determine.

**Occupational and geographical policy differentiation**

The government asked us to consider whether differentiated occupational or geographical approaches to using the immigration system were merited. On occupational differentiation, we do not consider it possible to make such recommendations based on only reviewing two occupational groups and have also previously been opposed to making any changes to the immigration system that makes the system more complicated, unless there is an important justification for doing so. There already are occupational differences within the system, as higher-paying occupations face higher occupation-specific thresholds, and this remains appropriate. It is also worth considering the practicalities of any occupation or geography-specific changes to the immigration system – this is a point we will come back to in our conclusions.

The MAC has also previously stated its scepticism over the benefit of regional salary thresholds. This is due to the difficulties associated with their enforcement and the greater variation in pay *within* regions and nations than between them. However, under the current thresholds there is the potential for parts of the UK to be priced out of access to the immigration system, particularly in IT. When the salary thresholds were set at the 25th percentile for the occupation, this gave more flexibility for regions with lower pay to use the immigration system. With thresholds now set at the median this becomes more difficult.

Engineering professionals' pay is fairly consistent across most of the UK (Table 3.4). While the pay differential between the lowest and highest paying regions (Wales and London) is approximately £10,000 (or 25%), pay in most regions is between £45,000 and £50,000, with the UK average at £48,246. By contrast, pay is more varied for IT professionals and comfortably higher in London (and to a lesser extent the South East) than any other region. Annual pay in London is £20,000 (and almost 50%) higher than Wales, and all regions except London and the South East have a lower median pay than the UK average.

This may lead to a salary threshold effect. As occupation-specific thresholds are now set at the occupation's median wage, the below data suggests that IT employers outside London and the South East may struggle to pay the UK-wide median wage and hence be effectively precluded from using the immigration system. By contrast, pay for engineers across the UK tends to sit close to the UK median. While there is little evidence due to the recency of the threshold change, it can been be seen in Figure 3.5 that there was already a decline in visas issued across regions before the changes in salary thresholds came into place and this pattern continues once these policy changes are introduced.

**Table 3.4: Median pay by region**

| Region | Engineering professionals | IT professionals |
|---|---|---|
| UK | £48,246 | £52,667 |
| North East | £42,179 | £47,757 |
| North West | £48,927 | £47,993 |
| Yorkshire & Humber | £45,480 | £47,949 |
| East Midlands | £49,574 | £49,080 |
| West Midlands | £46,894 | £48,127 |
| East | £51,964 | £51,986 |
| London | £52,408 | £63,134 |
| South East | £47,499 | £55,950 |
| South West | £45,899 | £48,520 |
| Wales | £41,924 | £42,854 |
| Scotland | £49,575 | £46,747 |
| Northern Ireland | £41,946 | £46,668 |

Source: Annual Survey of Hours and Earnings 2023, 2024.
Notes: The pay shown is median annual pay for Engineering professionals and IT professionals in 2024. 2024 pay for IT professionals in Northern Ireland was not available so 2023 has been used instead.

**Figure 3.5a: Total visas issued in London and South East against the rest of the UK - Engineering**

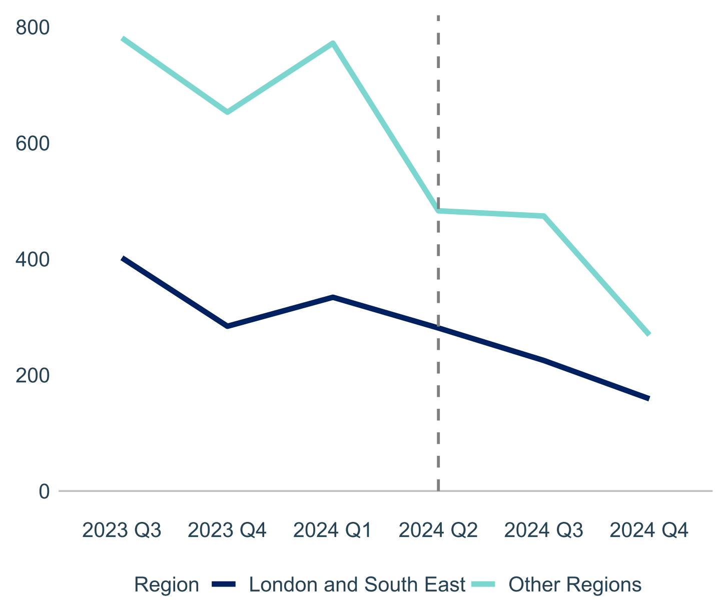
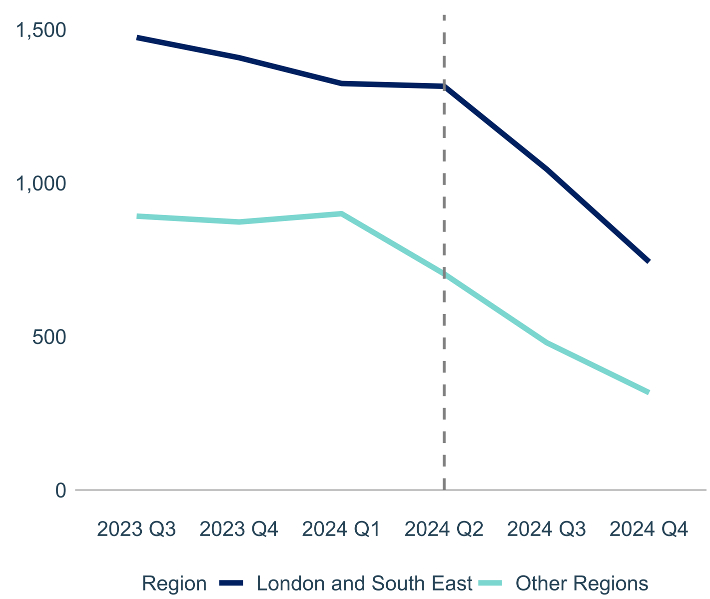



**Figure 3.5b: Total visas issued in London and South East against the rest of the UK - IT**




Source: Home Office Management Information: Certificate of Sponsorship 2021-2024.

Notes: Figure 3.5 may not exactly align with Figure 1.18 given that Figure 1.18 uses published Home Office immigration statistics whereas Figure 3.5 uses Home Office Management Information due to the regional breakdowns. However, the trends are broadly similar between the two datasets.

It does not seem sensible to make any formal recommendation on regional variation in thresholds on the basis of a review of two occupation groups as any changes would likely apply across the SW route. If the government are minded for us to conduct a further review of such variation, it may be sensible to combine that with the broader review of salary thresholds.

### Global Business Mobility

As noted in Chapter 1, following the introduction of the post-Brexit immigration system in the UK and since the pandemic, there has been a discernible shift away from GBM work visas towards SW visas for IT and Engineering Professionals. However, for certain employers, especially in IT, continuing to use GBM rather than the SW route is a strategic choice. This was highlighted in our focus group with IT employers.

*"Many of the people that we bring in are on global mobility and basically transfer visas, for set periods of time for specific projects…we have some of the best skills in the world. We don't have them in sufficient volume, which makes them too expensive and it makes it very hard to retain them and it makes it very difficult for us to do the kind of projects that our customers require of us…so naturally, we use the transfer visa system as part of our business model as we do in every country in the world in which we operate."*

***Employer in IT sector, focus group***

As we covered in our 2021 review of the Intra-Company Transfer route, the UK has relatively generous eligibility rules for GBM, with anyone working in an RQF level 6+ role being eligible, rather than the more restrictive requirement to be in a senior or specialist role, which is used in some other countries, such as South Korea and the United States. As we did in our ICT report, we suggest that the government could consider tightening the eligibility criteria for this route. However, it is important to highlight that many IT employers using GBM from choice would probably switch their employees onto the SW route, which would likely mean there was negligible impact on net migration as a result of any changes in eligibility. It is also worth noting that pushing more IT workers onto the SW route, accelerating the trend already observed, would provide more employees with a route to settlement and an increased ability to switch onto other visa routes.

**The Immigration Salary List and Shortage Occupation List**

As outlined in Chapter 1, the current Immigration Salary List (ISL), the successor to the Shortage Occupation List (SOL), does not apply to any of the occupations in scope for this review, and there is no applicable discount on salaries. Therefore, we are unable to comment on the effectiveness of the ISL for these occupations. Several of the occupations we explored were, however, previously on the SOL, and the Home Secretary asked us to comment on whether there was a role for the SOL in supporting domestic upskilling. Our evidence suggests that the SOL was not particularly useful for the occupations in question when they were on the list.

In Chapter 1, we showed that when occupations in the IT and Engineering sectors were on the SOL, the discount utilisation rate for these occupations was roughly 11%. This shows that most employers in these sectors were not making use of this discount. When the SOL was abolished and replaced with the ISL, we did not recommend the addition of any occupations in the IT and Engineering sectors to the list. We note that the Immigration White Paper proposes the abolition of the ISL, which we support.

**Resident Labour Market Test**

In the 2018 MAC report 'EEA migration in the UK', we recommended the abolition of the Resident Labour Market Test (RLMT).

"*A robust approach to the salary thresholds and the Immigration Skill Charge are a better way* [than the RLMT] *to protect UK workers against the dangers of employers using migrant workers to under-cut UK-born*"

**MAC '*EEA migration in the UK*', 2018**

We continue to believe that the RLMT does not provide significant protection to UK workers for professional occupations, including those within the scope of this review. It does, however, add to the administrative burden for firms. Research from Finland suggests that lifting labour market testing requirements for non-EU workers in Finland increased the inflow of non-EU workers and reduced native wages by between 2% and 4%. The observed wage falls occur primarily in low-wage and service-oriented occupations. This suggests that there may be some benefit to a RLMT as a mechanism to prevent under-cutting and exploitation for those in lower skilled occupations.

## Feasibility of linking skills and immigration

It is tempting to think of businesses making a binary choice of whether to train domestic workers or to recruit internationally. In practice, employers have a range of approaches to increase their output, for example increasing hours of existing workers, using contractors or agency workers or investing in new technology, and when hiring may simply seek the best applicant for the job, whether UK-born or not. If the required skills are not available in the domestic workforce, the decision to train a UK-born worker or hire someone who already has the required skills from abroad will be influenced by a wide range of factors, such as the urgency of filling the vacancy, whether the role is permanent or temporary, the real or perceived risk of skilled employees being poached, and the costs and admin involved in training or bringing in skilled workers from abroad. That said, the government can influence employer decision-making by changing the relative attractiveness of training domestic workers relative to accessing skilled workers from abroad.

As set out above, there is not a straightforward relationship between training domestic workers and hiring internationally.

We believe that the government should invest in skills and that skills investment is important for enhancing the employability and earnings of resident workers. If such investment then leads to a reduction in the reliance on migration, then this will align with the government's stated objective of reducing net migration. However, this should not be the driving policy objective of skills investment because there is no guarantee it will have the desired effect on migration. If the government wants to reduce work-related immigration, it should not necessarily aim to do so across all occupations to the same degree. For example, UK public finances benefit from the expansion of high-paying sectors such as Engineering and IT, regardless of where the workers come from.

Addressing known challenges of the UK's skills system would increase the willingness of employers and the capacity of the skills system to increase domestic skills supply. For example, ensuring sufficient funding in FE particularly in subjects that are more expensive to deliver such as engineering. This will be a challenge given that in 2023/24 public spending on adult education and skills has fallen by a third compared to its inflation-adjusted high of £6.3 billion in 2003/04. International and historic comparisons suggest employers must increase spending on training and that is unlikely to happen without government intervention. This is a crucial area for the government to take action.

In theory, access to skilled migration could be made conditional on employers investing in the skills of UK-resident workers. In practise, this would come with challenges and risks. First, creating conditionality at the employer level, where an employer demonstrates a certain type or level of investment, risks creating complexity, bureaucracy, delays and unresponsiveness, enforcement challenges and gaming (e.g., tokenistic investment in cheap or low-quality training). Second, there is a risk that employers find the conditions too onerous and hold back from hiring overseas skilled workers, without investing more in skills - choosing instead to curb growth plans. Thirdly, there might be unequal effects depending on firm size. Smaller firms may have more difficulties providing training for employees. This would in turn limit their access to foreign talent, further limiting innovation and business creation. The conditionality could be proportional to revenue or firm size, but this could introduce unreasonable levels of administrative complexity for unclear gains. It is also unclear whether we have the administrative data (and the linkages required) to operationalise any firm-level conditionality in the near future. If the government are keen to pursue such a micro-level approach, we suggest that they may wish to establish a team within the civil service (across relevant Departments) to consider the practicalities of any such model – it will not be a fast process.

An alternative is to pursue a sector-level approach and this is the approach favoured in the Immigration White Paper. For example, a sector that is key to the delivery of the industrial strategy or one of the government's five missions could be required to develop a credible plan to the government showing how they will build domestic skills pipelines before having access to the immigration system (or at least some part of it). Under the sector-by-sector approach, access to skilled workers from abroad may be granted on a time-limited basis, notionally until sufficient UK-resident workers can be trained. There are risks here as well. To fully assess credibility of a plan and the need for additional workforce support, the Quad would need plans to specify quantified workforce requirements at occupation level over time, alongside specific industry actions with estimates of the impact that those actions will have. However, this is not straightforward. The size of a given occupation is not fixed and can fluctuate rapidly in response to shifts in supply or demand. Furthermore, employers in a given sector are not always a cohesive body that can agree and commit to a definitive sector workforce plan. Some sectors have well-organised and influential sector representative bodies, but even in these cases those bodies may speak for a small minority of employers. As a result, there is a risk that even if the sector bodies mean what they say, they will not be able to commit to fundamentally changing their sector's approach. So, what happens if a sector commits to a plan for building the domestic pipeline but does not deliver? One option is that the agreement to access overseas workers is allowed to expire. Then 'responsible' employers who invested heavily in training are punished for other employers' failures. Another option is to extend access—and if training plans have proven insufficient in the year that access to skilled migration is due to expire, there may be strong pressure to do so. Employers would know this at the outset and may therefore not be incentivised to take the domestic training plan seriously—or may be tempted to free-ride on other employers' efforts.

All in all, we see several challenges with directly linking skills investment and access to skilled migration. There is not a straightforward link between training domestic workers and hiring internationally and the implementation of any approach comes with potential risks alongside benefits therefore further policy development needs careful consideration.

# Conclusions

## Overview

We support the idea of regularly reviewing occupations or sectors, especially where it seems they may have an overreliance on the immigration system. However, within this review this overreliance is not apparent, and at least from an immigration perspective, we have not found major problems to be fixed. Usage of the immigration system is broadly proportionate to the size of the IT and Engineering sectors, within the rules and clearly responding to demand in the UK labour market. Migrants in these occupations have a positive fiscal impact on the UK. Regardless of whether there are domestic skills shortages, the UK benefits from healthy growth in IT and Engineering, which contribute to productivity across other sectors and the development of high-skilled, high-wage economy. They are likely to be key sectors for the industrial strategy.

In part, the relatively positive picture we have painted results from the fact that this review has focused on the higher-level 'Professional' roles within IT and Engineering. Furthermore, whilst this review has examined the two sectors together, there are inherent differences between them. IT has substantially higher visa usage than Engineering (around 9% and 3% of all Skilled Worker visas respectively), yet both are substantially below other (often largely publicly funded) groups such as nursing and other health professionals.

This is not to say that there are not challenges with these sectors, but that migration is only part of a broader story. Finding the skills to develop our Artificial Intelligence (AI) capabilities, achieve the government's new housebuilding targets or deliver on our Net Zero targets, for example, will require concerted effort.

The new government have made clear their intention to more closely link migration and skills policy. As we set out in our 2024 Annual Report this relationship is complex, and increasing the level of skills in the domestic labour pool does not guarantee reducing migration, as migrant and domestic workers are not perfect substitutes.

> "[our analysis suggests] *there is no guarantee that improving domestic skills would automatically result in lower demand for visas, absent other changes in the immigration system"*
>
> ***MAC annual report 2024***

Expanding the skills provision to help deliver skills is a worthwhile aim in and of itself. During the course of this review, stakeholders have laid out many of the challenges they face simply to maintain the status quo. In Higher Education, the freezing of tuition fees in England, and high levels of inflation in recent years has created a demanding environment, with these issues exacerbated in IT and Engineering by the higher operating cost of these courses. In Further Education, providers struggle to recruit and retain teachers who could earn substantially more utilising the skills they are teaching. Issues with diversity, in particular the male dominated nature of both sectors, are well known, but despite many initiatives they are yet to make a substantial difference and action is required from school age to make change in the long term. Many of these are long running issues and action should be prioritised to help the long-term future of the sectors.

## Comparing the two sectors

As outlined above, whilst this review has examined both IT and Engineering professionals together, there are differences between the two. Partly this is an issue of scale, with IT professionals accounting for more than three times the number of visas as Engineering Professionals, but there are also more fundamental differences.

As a sector, engineering is older and more established than IT, and so, relatively, has more settled pathways and support networks for workers. Whilst the Engineering sector faces challenges in areas such as the continued lack of female participation, and the high cost of running courses, from an immigration perspective at least, the system is broadly working as intended.

For IT, the challenges are somewhat different and reflect the nature of the sector. Whilst both groups rely on innovation, the pace of change within the IT sector brings about additional challenges. Programming languages and technology constantly evolve, and both workers and employers have to adapt to keep pace. IT is a fast-growing industry, operating in a global marketplace and subject to many of the same challenges as their international competitors. There is sense in trying to train more domestic workers given this. Specifically, from an immigration perspective, there was evidence of bunching around the threshold on the Global Business Mobility route. This route appears not to be being used in the way that the policy originally intended and is not for specialists at the top of the wage distribution. Careful consideration would, however, need to be given to a move to more restrictive approach to this, with workers likely to then move to the Skilled Worker route, which provides a pathway to settlement.

## The commissioning questions

Taking in order each question posed to us by the Home Secretary, a summary of our answers is as follows:

1. **What types of roles are in shortage?**

This review examined the SOC minor groupings 212 (Engineering Professionals) and 213 (Information Technology Professionals), and the associated (4-digit) occupations within these.

IT has higher visa usage than Engineering, but both are using the immigration system in a proportionate way to the size of their sectors. Shortages do not appear to be as acute as in some other areas of the economy. There are some specific roles/skills in high demand (e.g., design and development engineers, IT specialist managers), although shortages are often in technical level roles (e.g., welders) that are not in scope for our review.

Further detail is available in Chapter 1 and Chapter 2.

2. **What are the different drivers of these shortages including training, pay and conditions?**

As above, shortage did not appear to be as acute for the occupations examined, compared to some other areas of the economy, with fewer vacancies per job than the rest of the economy, and the professional services average. In IT, the fast pace of change means that there are shortages in specific skills (e.g., specific programming languages) which are in shortage globally.

On the training side however, despite strong demand from applicants, increasing capacity for more places is limited in Higher Education by the high cost of running courses, and the legacy of tuition fee freezes in England. Similarly in Further Education, colleges struggled to recruit and retain teachers who could earn significantly more working in the respective sector.

Pay did not appear to be a major driver of shortage, with the occupations paying relatively well, though stakeholders did highlight some instance of leakages from the sector into better paying roles.

Both sectors do have issues which mean they are not accessing the entire pool of potential domestic labour. Both are male dominated and have relatively inflexible working arrangements with higher-than-average proportions of full-time workers.

Further detail is available in Chapter 2.

3. **How have the sectors sought to respond and adapt to these shortages, beyond seeking to recruit from overseas?**

Shortages do not appear to be as acute as in some other areas of the economy. There is some evidence of efforts to address some of the issues outlined above. For example, there have been many initiatives to increase the proportion of women studying Science, Technology, Engineering and Maths (STEM) subjects, but to date this has had limited impact in the proportion of women working in Engineering and IT.

Notably however, employer investment in training has declined over time. This is an economy wide trend, but IT and Engineering have also experienced this. Some examples of innovative responses to these shortages were apparent, such as BAE Systems funding their own apprenticeships and graduate programmes, or Dyson creating their own Engineering and Technology institute, though resourcing constraints means these would not be possible for all businesses to emulate.

Further detail is available in Chapter 3.

4. **Where relevant, what, if any, impact has being on the shortage occupation list (SOL) had on these sectors/occupations?**

These occupations are not eligible for the Immigration Salary List (ISL), which was previously known as the SOL. Some of these roles were previously on the SOL.

In our research with employers, previous SOL access appeared to have had a limited impact. This was reflected in historical visa data, which showed that approximately 11% of migrants working in IT and Engineering occupations on the SOL were paid below the occupation-specific salary threshold (i.e., employers made use of the SOL discount), marginally lower than the figure for all SOL occupations. For most Skilled Worker visa holders, employers were therefore not making use of the SOL discount. Whilst we cannot observe the actual impact, if the SOL discount still existed following the move from the 25$^{th}$ to the 50$^{th}$ percentile occupation-specific salary threshold, it is likely the proportion of employers using the discount might increase.

Further detail is available in Chapter 1.

5. **What policy levers within the immigration system could be used more effectively to incentivise sectors to focus on recruiting from the domestic workforce? This could include whether the Immigration Salary List should remain in its current form.**

Migrant and domestic workers are not perfect substitutes, so a policy intervention focused on one group will not necessarily lead to a direct result on the other. Government should also consider the impacts of policy in the round. Whilst reducing migration in these roles may lead to a small reduction in net migration, it may also have negative economic and fiscal impacts given the relatively high pay of the professional roles under review.

With the above caveats in mind, options do exist to discourage use of the migration system, though we would caution against their use. The MAC has previously argued against other levers like the Resident Labour Market Test (RLMT) for high-skilled roles as it did not appear to be effective in protecting UK workers and increased bureaucracy. We are also cautious about the idea of directly linking immigration access to skills investment. At either firm or sector level, this would not be a simple task. At firm-level, it risks creating complexity, enforcement challenges and gaming. At a sector-level it may not create a sufficient incentive for employers to increase their investment in domestic training.

The occupations we examined are not currently eligible for the ISL, and when they were previously on the SOL, the impact appeared relatively limited. The MAC has previously commented on the lack of clarity on the purpose of the Immigration Salary List including in our Rapid Review of the ISL in February 2024. The government have now confirmed that they intend to abolish the ISL.

Further detail is available in Chapter 3.

**Other commissioning questions**

The commission also asked us to consider the potential future demand on these sectors, as well as the "*merits or otherwise of a differentiated approach, based on region, occupation and/or other factors.*"

Future demand is covered in more detail in Chapter 2, noting the technical difficulties of such predictions, as well as the inherent contradiction of models that aim to predict demand as well as informing plans to support such numbers. Existing IT and Engineering projections indicate both sectors are expected to grow substantially between now and 2035.

Taking each part of the latter question in turn;

**A differentiated approach based on region**

In practice, other than salary thresholds, there are few features of the immigration system that would be reasonable to differentiate at a regional level. For example, we do not consider that it is practical to have different RLMT rules by region.

We have, however, previously stated our scepticism as to the benefits of regional salary thresholds, notably in our 2022 Annual Report. This is due to the difficulties associated with their enforcement and the greater variation *within* regions and nations than between them. We have not found overwhelming evidence within this review to make us significantly change this view. We would also caution against drawing broad conclusions on the basis of only two occupational groups.

We do, however, note that within IT particularly, there was some evidence of regional pay differences, and that the 50th percentile threshold might be causing slightly more regional imbalances in some occupations than before. This requires further analysis and we agree that the entire set of salary thresholds and discounts warrants a review.

**A differentiated approach based on occupation**

We do not consider that IT and Engineering require a differentiated approach, particularly when balanced against the need to not overcomplicate the system. It is possible that we would come to a different conclusion if we reviewed other sectors—although the potential benefits of different rules for different occupations would need to be balanced against potential negative consequences, such as reducing the ability of migrants to move between employers once in the country, presenting safeguarding concerns and reducing economic integration.

## Going forward

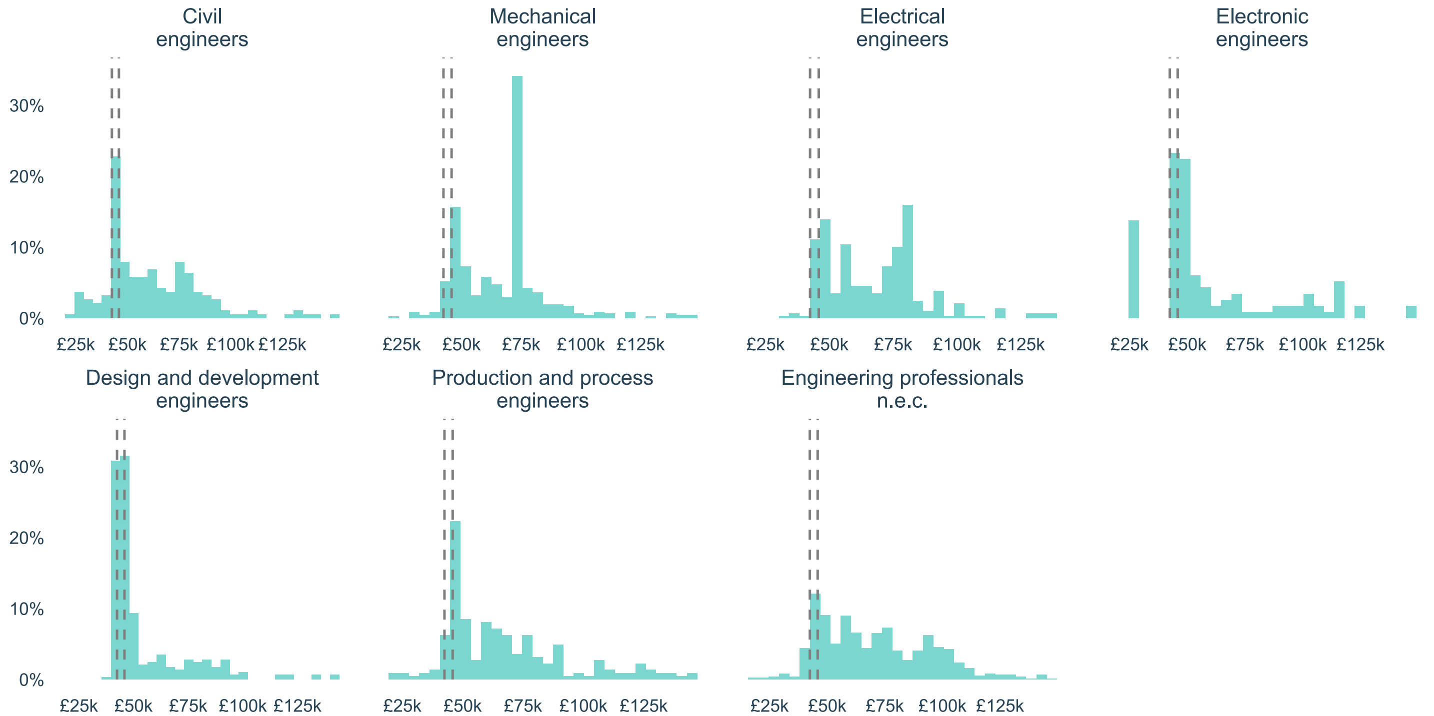
This commission is envisaged as "*being the first of such reviews*". It is therefore prudent to reflect on the lessons learnt from this review. Members of the Quad will need to work together to improve the quality of detailed occupational data on skill shortages and training, to supplement that already available at the sector level in the Employer Skills Survey. This is a vital tool to carry out occupational assessments of other sectors in the future and we ask that the government helps facilitate improvements in this labour market data. In addition, the ongoing problems with the Labour Force Survey (LFS)/Annual Population Survey (APS) are a clear source of difficulty in trying to assess employment changes across occupations.

This review has also highlighted that some of the most acute shortages lie in technical occupations below graduate level, and therefore we think that that the government should consider widening the range of occupational levels they ask us to review in the future, if they are concerned with identifying the most severe pockets of skill shortage in the economy. We know that technical roles are both complementary to professional roles and can also serve as a pipeline into such roles and as such they have a bearing on the skills strategies and associated immigration rules required for sectors at a professional level.

In future, we will continue to work collaboratively with other members of the Quad and colleagues in the Devolved Nations to improve the quality and consistency of relevant data and establish an approach to future reviews that utilises the specialisms of each Quad member. Direction from the government may be required to prioritise the extent that the Quad initially focuses on occupations that have high numbers of visas, critical importance for Missons or the industrial strategy, the most acute skills shortages, and potential to support wider labour market objectives.

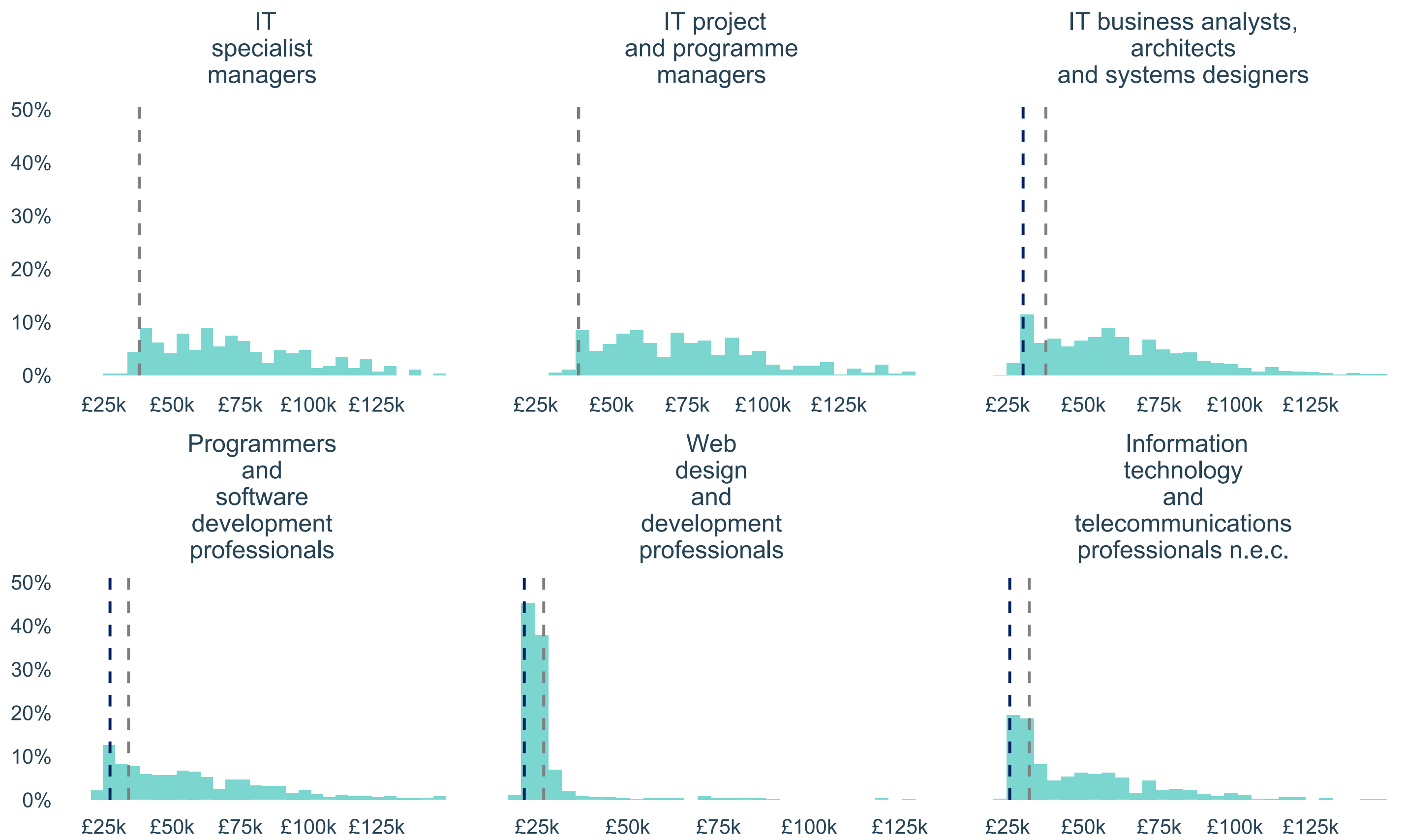
# Annexes

## Annex 1: Migrant pay by 2023 general salary threshold – Global Business Mobility Engineering



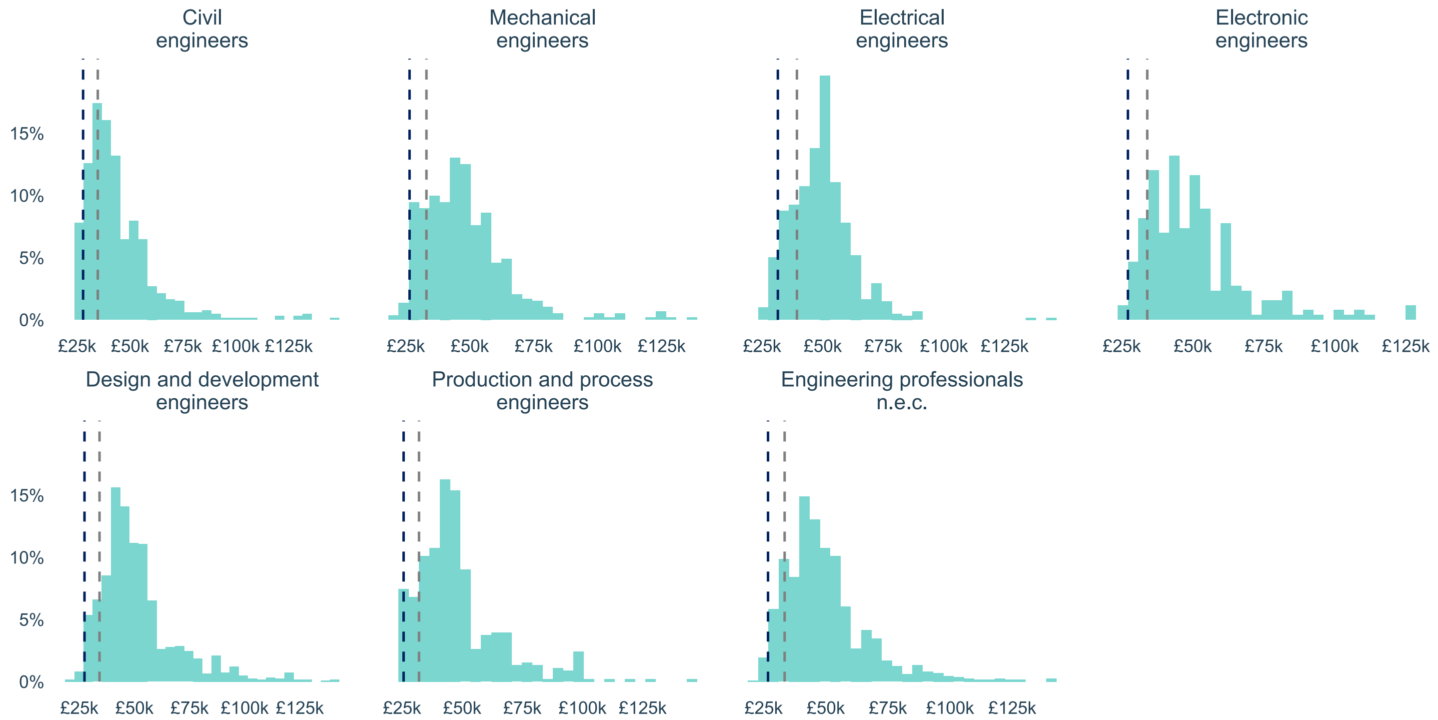

Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2023.
Notes: Vertical dashed lines represent salary thresholds pre- (left) and post- (right) April 2023. SOC10 occupations. Salaries have been taken only for 2023, and thereby represent 2023 prices. GBM IT is included as Figure 1.16. Salaries greater than £150k have been excluded due to small sample sizes.

# Annex 2: Migrant pay by 2023 occupation-specific salary threshold – Skilled Worker IT




Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2023.
Notes: Vertical dashed lines represent 2023 SOL Discounted Salary where applicable (left - blue) and 2023 binding salary threshold (right - grey). SOC10 occupations Salaries have been taken only for 2023, and thereby represent 2023 prices. Salaries greater than £150k have been excluded due to small sample sizes.

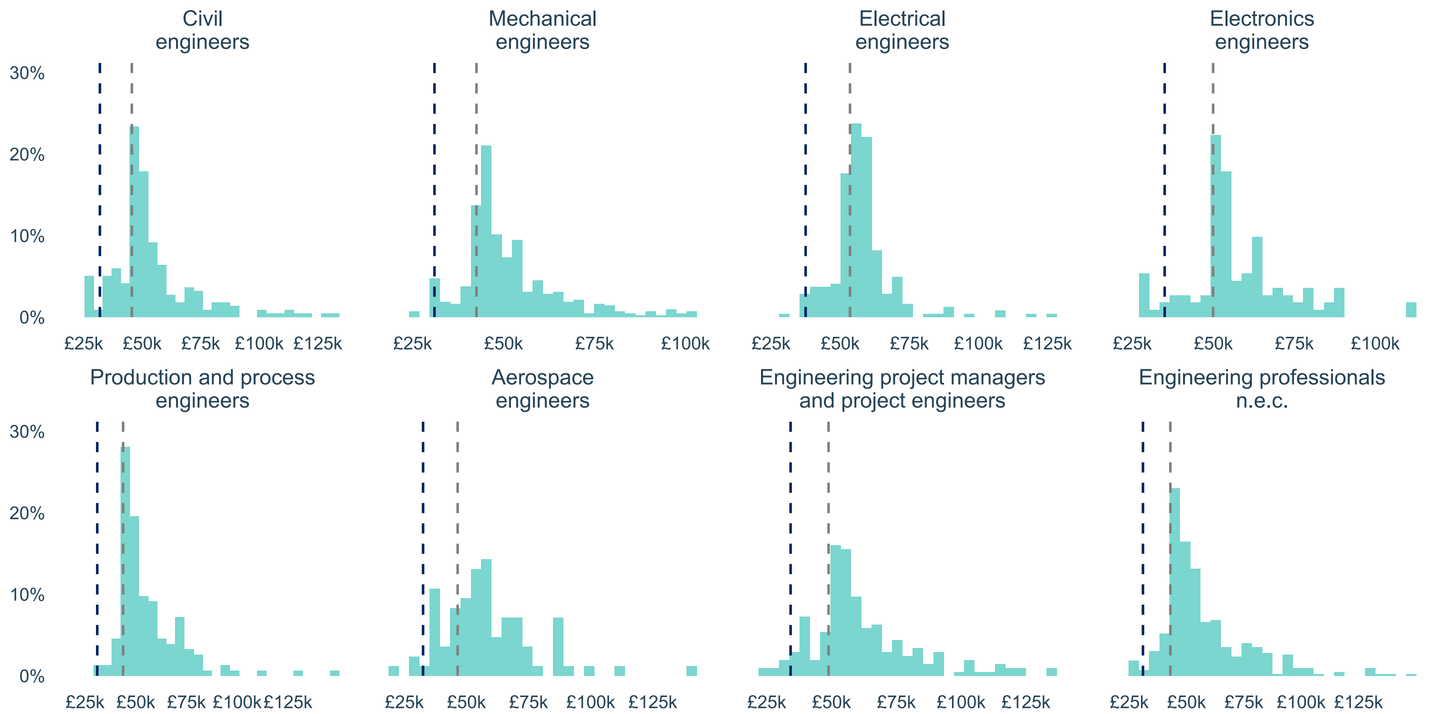
# Annex 3: Migrant pay by 2023 occupation-specific salary threshold – Skilled Worker Engineering




Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2023.

Notes: Vertical dashed lines represent 2023 SOL Discounted Salary (left - blue) and 2023 binding salary threshold (right - grey). SOC10 occupations. Salaries have been taken only for 2023, and thereby represent 2023 prices. Salaries greater than £150k have been excluded due to small sample sizes.

# Annex 4: Migrant pay by updated 2024 salary threshold and SOC20 – Skilled Worker Engineering




Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2024.
Notes: Vertical dashed lines represent New Entrant Threshold (70%) (left – dark blue) and Occupation-Specific Threshold (right - grey). SOC20 occupations, occupations will not directly be comparable to SOC10 occupations due to changes in the classifications. Certain eligibility criteria can potentially result in lower thresholds being applied. Salaries greater than £150k have been excluded due to small sample sizes.

# Annex 5: Migrant Pay by updated 2024 salary threshold and SOC20 – Skilled Worker IT


Source: Home Office Management Information: Certificate of Sponsorship (CoS) 2024.

Notes: Vertical dashed lines represent New Entrant Threshold (70%) (left - dark blue) and Occupation-Specific Threshold (right - grey). SOC20 occupations, occupations will not directly be comparable to SOC10 occupations due to changes in the classifications. Certain eligibility criteria can potentially result in lower thresholds being applied. Salaries greater than £150k have been excluded due to small sample sizes.

## Annex 6: RQF 3-5 select occupational breakdown

| Major Group Profession | SOC Code | Description | Average Annual Visas | % of Total SW Visas |
|---|---|---|---|---|
| Associate Professional and Technical Occupations | 3113 | Engineering Technicians | 250 | 0.18% |
| | 3114 | Building and civil engineering technicians | 20 | 0.01% |
| | 3131 | IT operations technicians | 120 | 0.09% |
| | 3132 | IT user support technicians | 170 | 0.12% |
| | | | | |
| Skilled Trades Occupations | 5215 | Welding trades | 250 | 0.18% |
| | 5223 | Metal working production and maintenance fitters | 160 | 0.11% |
| | 5214 | Metal plate workers, and riveters | 90 | 0.06% |
| | 5242 | Telecommunications engineers | 180 | 0.13% |
| | 5241 | Electricians and electrical fitters | 70 | 0.05% |
| | 5249 | Electrical and electronic trades n.e.c. | 80 | 0.06% |
| | 5213 | Sheet metal workers | 40 | 0.03% |
| | 5221 | Metal machining setters and setter-operators | 40 | 0.03% |
| | 5216 | Pipe fitters | 30 | 0.02% |
| | 5245 | IT engineers | 30 | 0.02% |
| | 5244 | TV, video and audio engineers | <10 | 0.00% |
| | 5224 | Precision instrument makers and repairers | 10 | 0.01% |
| | 5225 | Air-conditioning and refrigeration engineers | 10 | 0.01% |
| | 5222 | Tool makers, tool fitters and markers-out | <10 | 0.00% |
| | 5211 | Smiths and forge workers | <10 | 0.00% |

Source: Home Office immigration statistics 2021-2023.

Notes: Skilled Worker (SW) visas only. These occupations are not eligible for GBM visas since they do not meet the required qualification level. Occupations have been selected due to their relevance to the IT and Engineering sectors however were not in scope for the review. This list is not exhaustive for all IT and Engineering sectoral occupations.

## Annex 7: Historical Immigration Salary List (previously Shortage Occupation List) IT/Engineering occupations

| SOL | Engineering occupations (212) | IT Professionals occupations (213) |
|---|---|---|
| **Valid from 6 April 2014 to 5 April 2015** | -2121 Civil Engineers<br>- 2122 Mechanical Engineers<br>- 2123 Electrical Engineers<br>- 2124 Electronics Engineers<br>- 2126 Design and development engineers<br>- 2127 Production and process engineers<br>- 2129 Engineering professional not elsewhere classified | - 2135 IT Business analysts, architects and systems designers<br>- 2136 Programmers and software development professionals |
| **Valid from 6 April 2015 to 18 November 2015** | -2121 Civil Engineers<br>- 2122 Mechanical Engineers<br>- 2123 Electrical Engineers<br>- 2124 Electronics Engineers<br>- 2126 Design and development engineers<br>- 2127 Production and process engineers<br>- 2129 Engineering professional not elsewhere classified | - 2135 IT Business analysts, architects and systems designers<br>- 2136 Programmers and software development professionals |
| **Valid from 19 November 2015** | -2121 Civil Engineers<br>- 2122 Mechanical Engineers<br>- 2123 Electrical Engineers<br>- 2124 Electronics Engineers<br>- 2126 Design and development engineers<br>- 2127 Production and process engineers<br>- 2129 Engineering professional not elsewhere classified | - 2133 IT specialist managers<br>- 2135 IT Business analysts, architects and systems designers<br>- 2136 Programmers and software development professionals<br>- 2139 Information technology and communications professionals not elsewhere classified |
| **Valid from 5 October 2019** | -2121 Civil Engineers<br>- 2122 Mechanical Engineers<br>- 2123 Electrical Engineers<br>- 2124 Electronics Engineers<br>- 2126 Design and development engineers<br>- 2127 Production and process engineers<br>- 2129 Engineering professional not elsewhere classified | - 2135 IT Business analysts, architects and systems designers<br>- 2136 Programmers and software development professionals<br>- 2137 Web design and development professionals<br>- 2139 Information technology and communications professionals not elsewhere classified |
| **Valid from 6 April 2021** | -2121 Civil Engineers<br>- 2122 Mechanical Engineers<br>- 2123 Electrical Engineers | - 2135 IT Business analysts, architects and systems designers |

| | | |
|---|---|---|
| | - 2124 Electronics Engineers<br>- 2126 Design and development engineers<br>- 2127 Production and process engineers<br>- 2129 Engineering professional not elsewhere classified | - 2136 Programmers and software development professionals<br>- 2137 Web design and development professionals<br>- 2139 Information technology and communications professionals not elsewhere classified |
| **Valid from 6 April 2024** | None | None |

Source: National Archives.

Note: This table reflects SOC10 codes up until April 2024. If occupations were ISL eligible from April 2024, they would be in SOC20 codes.

# Annex 8: IT/Engineering income tax distribution


Source: MAC Fiscal Modelling.

# Annex 9: Glossary

**Annual Population Survey (APS)**

An annual household survey covering the UK. It covers various social and socio-economic characteristics such as labour market status, qualifications, health and age.

**Annual Survey of Hours and Earnings (ASHE)**

An annual survey of earnings and paid hours worked for employees across the UK broken down by specific characteristics, such as industry, occupation, gender, etc.

**Certificate of Sponsorship (CoS)**

A Certificate of Sponsorship is a self-certifying electronic document issued by the sponsoring employer to the worker to enable them to apply for a visa.

**Employer Skills Survey (ESS)**

A survey on employers across the UK regarding skills challenges they face whilst recruiting and within their existing workforce, as well as how they are overcoming such skills challenges.

**Further education (FE)**

Post-secondary education, that is not part of higher education.

**Global Business Mobility (GBM)**

A group of five work visa routes. Specifically, within this, the Senior or Specialist Worker route replaced the Intra-Company Transfer route.

**Higher education (HE)**

Post-secondary education, that normally includes undergraduate and postgraduate study.

**UK Visas and Immigration (UKVI)**

UK Visas and Immigration, part of the Home Office, is responsible for making decisions on who has the right to visit or stay in the UK.

**Immigration Salary List (ISL)**

The successor to the Shortage Occupation List (SOL). This is a list of occupations that are subject to a reduced salary threshold on the Skilled Worker route.

**Quad**

A new framework between the MAC, Skills England, the Industrial Strategy Advisory Council (ISAC) and Department for Work and Pensions (DWP) to address systemic long-term issues that have led to reliance from certain sectors on international recruitment, and where appropriate, to reduce that reliance.

**Regulated Qualifications Framework**

The Regulated Qualifications Framework (RQF) accredits qualifications in England and Northern Ireland.

**SIC**

Standard Industrial Classification of economic activities, a common classification of industries for the UK.

**SOC**

Standard Occupation Classification , a common classification of occupational information for the UK.

**Skilled Worker (SW) Visa**

The visa for the Skilled Worker route. This is the main work route for the UK and allows migrants to work in the UK in eligible skilled occupations.

**STEM**

The group of subjects covering Science, Technology, Engineering, and Mathematics.

# Annex 10: List of engagements

We undertook the following engagements in the course of this review:

| List of Engagements |
|---|
| 09.09.2024 – Meeting with IT/Engineering representative organisations |
| 04.11.2024 – Focus group: engineering sector skills bodies |
| 11.11.2024 – Focus group: IT employers |
| 11.11.2024 – Focus group: engineering employers |
| 19.11.2024 – Focus group: IT/engineering worker representatives |
| 20.11.2024 – Welsh Government ministerial meeting |
| 26.11.2024 – Focus group: IT sector skills bodies |
| 27.11.2024 – Scottish Government ministerial meeting |
| 28.11.2024 – Focus group: UK Government departments/agencies |
| 29.11.2024 – Meeting with Association of Colleges |
| 18.12.2024 – Meeting with Meta |
| 20.12.2024 – Meeting with Siemens |
| 14.01.2025 – Meeting with Royal Academy of Engineering |
| 15.01.2025 – Meeting with Alison Wolf, Baroness Wolf of Dulwich |
| 16.01.2025 – Meeting with Jaguar Land Rover |
| 20.01.2025 – Meeting with Tech Nation |
| 29.01.2025 – External stakeholder forum |
| 30.01.2025 – Cross-government stakeholder forum |
| 31.01.2025 – Meeting with Tata Consultancy Services |
| 03.02.2025 – Meeting with IT and Engineering employees |
| 10.02.2025 – Meeting with Stephen Evans |
| 12.02.2025 – Meeting with Balfour Beatty |
| 13.02.2025 – Meeting with Greater Manchester Authority |
| 14.02.2025 – Site visit to National Manufacturing Institute Scotland and AAC Clyde Space |
| 18.03.2025 – Meeting with Rolls Royce |
| 19.03.2025 – Meeting with Glasgow Caledonian University, University of Greenwich and University of Strathclyde |
| 27.03.2025 – Roundtable with video games studios |

# Annex 11: Skilled Worker and Global Business Mobility thresholds for professions under review

For the Skilled Worker (SW) visa, workers must be paid at least £38,700 per year, or the occupation-specific rates for the role, whichever is higher. The occupation-specific rates for the SW visa are based on the 50th percentile of earnings.

For the Senior or Specialist Worker visa (part of the Global Business Mobility (GBM) route), workers must be paid at least £48,500 or the occupation-specific rates for the role, whichever is higher. The occupation-specific rates for GBM are based on the 25th percentile of earnings.

**The occupation-specific rate for every Skilled Worker occupation in this review is above the general skilled Worker threshold. The opposite is true for GBM Senior or Specialist worker, where each occupation-specific rate is below the general GBM threshold.**

| SOC2020 code | Occupation title | Skilled Worker: Standard occupation-specific rates | GBM: Senior or Specialist Worker visa: occupation-specific rates |
|---|---|---|---|
| 2121 | Civil engineers | £45,500 | £35,300 |
| 2122 | Mechanical engineers | £42,500 | £35,600 |
| 2123 | Electrical engineers | £53,500 | £43,900 |
| 2124 | Electronics engineers | £49,900 | £41,900 |
| 2125 | Production and process engineers | £43,700 | £35,700 |
| 2126 | Aerospace engineers | £46,400 | £38,400 |
| 2127 | Engineering project managers and project engineers | £48,800 | £39,400 |
| 2129 | Engineering professionals not elsewhere classified (n.e.c.) | £42,900 | £34,400 |
| 2131 | IT project managers | £51,900 | £41,300 |
| 2132 | IT managers | £50,900 | £40,900 |
| 2133 | IT business analysts, architects and systems designers | £51,700 | £39,300 |
| 2134 | Programmers and software development professionals | £49,400 | £36,300 |
| 2135 | Cyber security professionals | £45,300 | £35,100 |
| 2136 | IT quality and testing professionals | £39,900 | £31,100 |
| 2137 | IT network professionals | £42,800 | £36,000 |
| 2139 | Information technology professionals n.e.c. | £44,200 | £31,600 |

Source: Skilled Worker visa: going rates for eligible occupation codes and Global Business Mobility: going rates for eligible occupations.