A report produced by Lightcast for the Futures Group

Lightcast

Life Sciences 2035: Developing the Skills for Future Growth

Main Report

In partnership with:

ABHI abpi BIA UK BioIndustry Association SIP POWERED BY Cogent Skills

Contents

Forewords

Lord Vallance

Minister for State for Science, Research and Innovation

Science should enhance everyday life and Life Sciences is an excellent example of an industry applying scientific advances for citizen benefit. The sector is crucial to this Government's Plan for Change: our Missions to grow the economy and build an NHS fit for the future.

The UK is home to some of the most exciting and innovative Life Sciences companies in the world – from embracing AI, to bringing new treatments from the lab to patients, to improving our ability to detect and diagnose disease earlier. But to drive this we need a talented and multi-disciplinary workforce which invests in its skills and training to adopt new approaches and technologies to build successful companies.

I am pleased that the Futures Group has drafted this report on skills needs within the Life Sciences sector, with the support of the Office for Life Sciences. The final report demonstrates the sector's potential – projecting growth of 70,000 additional jobs by 2035, as well as highlighting the unprecedented pace of innovation that will ensure the healthcare system is ready for the future.

I also welcome the report's insights on the growing importance of digital and data skills, research talent, and business skills in driving the continued success of the sector. However, the report also highlights the challenges ahead, from people leaving the sector through retirement to the impact of new technologies.

Developing the necessary skills requires time, resources, and dedication. The government is committed to working with the sector to meet these needs. We are targeting key Life Sciences skills gaps through initiatives like the Medicines Manufacturing Skills Centre of Excellence – RESILIENCE and the Industry Skills Accelerator. These programmes are enhancing our talent pipeline through education, mentoring, outreach, and innovative training methods like virtual reality.

We are embedding skills within the Industrial Strategy and transforming how we deliver skills training through Skills England, which will collaborate with employers, training providers, unions, and other partners to identify priority skills gaps. This ensures that levy-funded training is effective, meets business needs, and supports economic growth.

Collaboration will be essential, and I am grateful to the Futures Group for bringing the sector together to complete this important report. By fostering strong partnerships across the UK, we can attract top talent and support their growth. Let's seize this opportunity to make a lasting impact on growing our sector, enabling innovation to deliver novel treatments and services to improve the health of our nation.

Jacqui Hall

Head of Early Careers, BioPharma R&D at AstraZeneca and Chair of the Futures Group

The UK Life Sciences sector is a powerhouse of innovation, leading groundbreaking research that not only improves global health and well-being, but also serves as a critical part of the UK economy, contributing £36.9 billion in Gross Value Added (GVA) annually.

Currently, the sector is upheld by over 250,000 dedicated professionals, whose collective contribution is indispensable. The stability of the workforce for Life Sciences is vital – not only for the growth of the sector but for the national economy. We must ensure that the UK remains equipped to fulfil the skill requirements of the sector, both by cultivating a strong domestic talent pipeline and by remaining competitive in attracting global talent.

A collaboration between the Science Industry Partnership, the Office for Life Sciences, the Association of British HealthTech Industries, the BioIndustry Association, and the Association of the British Pharmaceutical Industry, this report provides an in-depth analysis of the growth potential in Life Sciences.

Building on the previous 2030 Skills Strategy, this report goes further by incorporating advanced analytics and real-time data to discern workforce needs and identify skill gaps, mapping out the challenges we face and the opportunities we must grasp for our sector to thrive.

The report reveals that, if the sector continues to grow at its current pace, employment could increase by an additional 70,000 jobs by 2035, with a further 75,000 workers needed to replace those leaving the workforce. The report further highlights the need to ensure that the Life Sciences sector in the UK invests in education and training pathways, promotes lifelong learning, and fosters an inclusive work environment that attracts and retains diverse talent.

One of the remarkable – but perhaps underappreciated – aspects of Life Sciences is the diverse range of careers available across the sector. Whether in research and development, medical technologies, manufacturing, commercial or critical enabling roles, there is no one way to enter a career in Life Sciences. From traditional academic routes to apprenticeship programmes, there are a myriad of opportunities to work for organisations ranging from some of the world's largest companies to dynamic start-ups and scale-ups. This variety calls for a blend of highly specialised scientific roles and a growing emphasis on skills in areas like digital technology, data science, and engineering, especially as we move into the next phase of personalised medicines and therapies.

Harnessing the potential of the next generation of skilled professionals is no small task, and this effort begins with understanding our current workforce and shaping the future talent pipeline to support its growth.

We have an opportunity to take action now, and drive change that will ensure we can deliver an effective, forward-thinking strategy that fosters an environment prepared for the workforce of tomorrow. Working together, we can help ensure that the Life Sciences sector of the future continues to be dynamic, innovative, and vital to the UK's prosperity.

Supporting Statements

From medical devices to diagnostic tools and digital health technologies, the HealthTech sector has a long and proud history of advancing innovations that improve healthcare outcomes. Ensuring a robust pipeline of skilled professionals is essential to this, not only to meet current healthcare demands, but to drive the cutting-edge solutions that will shape the future of global health.

This report highlights the urgency of equipping the workforce with the advanced skills required to tackle emerging healthcare challenges, to foster continuous innovation, and to maintain the UK's leadership in the global HealthTech arena. A strong talent pipeline is critical for sustaining the sector's growth, enhancing patient outcomes, and securing long-term competitiveness on the world stage. By strategically investing in the development of this workforce, we are not just supporting the sector's success, we are laying the foundation for a healthier, more innovative future for generations to come.

Association of British HealthTech Industries

ABHI

As the UK's largest investor in research and development (R&D), the pharmaceutical industry is an integral part of the UK economy, developing medicines and vaccines that improve patient care while driving high-productivity growth.

Access to a highly skilled workforce is vital to attracting and retaining global investment. This report demonstrates the life sciences sector's huge potential to create tens of thousands of new high-quality and well-paid jobs in every part of the UK, provided the right building blocks for growth are in place. An effective and responsive skills ecosystem is critical if we are to compete effectively for global investment.

To unlock this potential, the UK should invest strategically in its skills offer. This means ensuring people across all four nations of the UK have access to both academic and vocational routes into the sector, alongside opportunities for upskilling and retraining throughout their careers. With technological developments transforming the way the industry operates and necessitating new combinations of skillsets, it is vital now more than ever that industry, the education system, and governments across the UK work hand in hand to meet our shared ambitions.

Association of the British Pharmaceutical Industry

abpi

The UK's life sciences and biotech industries are at the heart of global innovation, addressing critical health and economic challenges. Life sciences has rightly been identified as one of the eight growth-driving sectors in the UK government's Invest 2035: The UK's Modern Industrial Strategy. Our ability to advance our sector depends on how we address emerging challenges around workforce readiness.

This report shines a light on the critical skills and support systems needed to secure the UK's position as a global leader in innovative life sciences, particularly as we expand into areas of data-driven discovery and applications of AI. However, the sector faces a skills shortage that could limit our competitive edge. The work of the Futures Group outlines the urgent need to develop and attract a highly skilled workforce capable of working across both technological and biological domains, creating a robust talent pipeline that will support the UK's long-term global leadership.

BioIndustry Association

Life science employers are among the most innovative and dynamic in our economy. Collectively the sector makes a significant contribution to the UK, both in terms of economic value and wide-ranging innovation and developments which positively impact people's lives.

The sector has a vital role to play in our future prosperity and at the heart of this lies a workforce which has the right skills, in the right places, to meet a number of challenges. A world-class workforce requires planning and investment – and this report makes the case for doing so in key areas, in anticipation of a significant demand for new roles.

We see this report as a catalyst for bold, long-term commitments from both industry and government. Together, we can build a thriving life sciences sector that strengthens the UK's global leadership, fuels innovation, delivers confidence to industry and lasting benefits to society.

Science Industry Partnership

Executive Summary

Introduction

The UK Life Sciences sector is on the brink of a transformative era, driven by rapid advancements in biology, artificial intelligence, and cutting-edge innovations in treatment, diagnosis, and prevention. The coming wave of innovation holds the potential to revolutionise patient outcomes, offering earlier and more accurate diagnostic capabilities, personalised treatments, and major leaps forward in both primary and secondary prevention.

The government's ambition to achieve the highest economic growth in the G7 and build an NHS fit for the future places Life Sciences at the heart of its growth and health missions. The sector's ability to deliver cutting-edge treatments and improve patient outcomes will be critical to achieving these national objectives. A new Industrial Strategy presents an opportunity to enhance the UK's standing as a global hub for Life Sciences, driving inward investment, supporting innovation, and ensuring sustainable growth.

To seize these opportunities, the sector will need a workforce equipped with a deeper and more varied range of skills than ever before. From advanced scientific expertise to digital proficiency and AI-driven problem-solving, the demands on the Life Sciences workforce are increasingly complex. This transformation will require strategic collaboration between industry, government, and educational institutions to ensure the UK has the infrastructure, policies, and workforce needed to remain at the forefront of global innovation.

Aims and objectives

This report, commissioned by the Futures Group, offers a comprehensive analysis of the workforce and skills landscape within the UK Life Sciences sector. Alongside updating findings from the previous 2030 Skills Strategy, this research introduces new insights derived from both official statistics published by government departments and an innovative data source – big data from online job postings – to enhance understanding of business needs, recruitment priorities, and skills requirements over the next decade.

The research has four objectives:

1. Project sector growth potential over the next decade by analysing past trends.
2. Identify specific skill requirements needed to realise the sector's potential.
3. Outline current skill gaps by job type.
4. Assess the talent pipeline required to achieve the sector's potential.

Grounded in the latest data, the findings provide strategic insights for industry leaders and policymakers to ensure the UK maintains its position as a global leader in Life Sciences.

The Futures Group

The Futures Group is a consortium comprising representatives from the following organisations:

- The Association of British HealthTech Industries (ABHI)
- The Association of the British Pharmaceutical Industry (ABPI)
- The BioIndustry Association (BIA)
- Cogent Skills' Science Industry Partnership (SIP)
- The Office for Life Sciences (OLS)

Originally established to develop and implement the Life Sciences 2030 Skills Strategy – a key deliverable of the 2017 Life Sciences Industrial Strategy – the group works collaboratively to ensure that UK Life Sciences companies can access the skills needed to support the government's ambitions for sector growth.

To support this goal, the Futures Group has partnered with Lightcast, a labour market analytics company specialising in jobs and skills dynamics, to update and expand the strategy.

Call to Action

The UK Life Sciences sector stands at a pivotal moment, with extraordinary potential for growth and innovation. Realising this potential requires a unified, collaborative approach, with success relying on shared responsibility and coordinated efforts between government, industry, and the wider Life Sciences community.

We must work together to achieve the goals outlined in this report through a shared commitment to nurturing talent, advancing technological innovation, and developing the infrastructure critical for sustained growth. Now is the time to invest in the future of UK Life Sciences, ensuring long-term success and delivering transformative outcomes for both the economy and society.

Meeting Skills Demand to Support Sector Growth

Shared goals for industry, government, and education and skills ecosystem partners.

Innovation and Technological Integration

Foster a workforce that integrates diverse disciplines and leverages advanced technologies to drive innovation and commercial success.

- **Ensure industry skills keep pace with innovative technologies** such as advanced therapies, digital health, AI, and robotics, supporting sector growth and positioning the UK as a leading choice for investment.
- **Drive innovation through industry-academia collaboration** by leveraging UKRI funding and establishing partnerships, internships, apprenticeships, innovation hubs, and Knowledge Transfer Partnerships (KTPs).
- **Promote interdisciplinary learning and collaboration** within the UK research environment to support innovation and translate research into commercially viable products.
- **Enhance entrepreneurial skills and support for SMEs and start-ups** through mentorship, funding, access to advanced technologies, partnerships, and shared resources to lower barriers to scaling up and cultivate a thriving ecosystem for research.

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Enhanced Academic and Career Pathways

Strengthen education and training pathways to build a thriving and sustainable Life Sciences workforce.

- **Invest in technical education, vocational pathways, and higher education**, working with training providers to ensure training evolves alongside breakthroughs and innovations.
- **Bridge the gap between academic learning and practical experience** by expanding industry placements, internships, and work-based learning opportunities, ensuring graduates are equipped with the skills needed by an evolving industry.
- **Continue to promote apprenticeships, including degree and masters level options**, to provide clear entry routes and career progression while expanding geographic coverage and increasing SME participation.
- **Collaborate with Skills England, the devolved nations, and other relevant bodies** to optimise the use of government funding mechanisms such as the Growth and Skills Levy to support sector-wide upskilling initiatives.

Shared goals for industry, government, and education and skills ecosystem partners.

Global Leadership and International Talent

Maintain the UK's global leadership in Life Sciences by growing the domestic talent pool, supporting UK companies, and attracting top international talent.

- **Promote the UK as a global Life Sciences hub** by ensuring regulatory frameworks, government support, and industry partnerships encourage both domestic and international engagement, fostering long-term investment and talent development.
- **Strengthen the retention of graduates and researchers trained in the UK** by expanding access to early-career funding, PhD, and postdoctoral opportunities, ensuring that researchers remain in the UK and contribute to the sector's long-term competitiveness and growth prospects.
- **Ensure the UK visa system is competitive for attracting specialist international talent**, particularly for science and technology roles, and provide targeted support for businesses navigating immigration pathways.
- **Facilitate international staff exchanges and knowledge transfer** through policies and partnerships that support long-term growth and global competitiveness..

Sector Attractiveness and Talent Retention

Enhance the appeal of Life Sciences careers by fostering a diverse, inclusive, and supportive work environment that promotes well-being, continuous development, and long-term career satisfaction.

- **Attract and retain diverse talent** by embedding Equality, Diversity & Inclusion (ED&I) practices and supporting social mobility. Position the sector as a leader in providing equal career opportunities and valuing diverse perspectives.
- **Build on STEM careers outreach initiatives** to engage and inspire young people and their career influencers. Target outreach efforts that clearly communicate the dynamic career opportunities in the sector, fostering early interest and growing the talent pipeline.
- **Promote lifelong learning** through flexible, accredited Continuing Professional Development (CPD) programmes. Enable existing employees to upskill and adapt to technological advancements, promoting long-term career satisfaction and enhancing the sector's resilience to future challenges.
- **Cultivate a collaborative and innovative work culture** that prioritises employee wellbeing, community building, and engagement. Strengthen workplace connections and provide opportunities for networking to improve retention and long-term satisfaction.

Key Findings at a Glance

70,000
additional jobs generated by 2035:

+33,000
in **BioPharma**

+37,000
in **MedTech**

Employment in the sector grew by 16% between 2016/17 and 2021/22, far exceeding the national average of 2.4%

Depending on market conditions and other factors, cumulative job growth by 2035 ranges from **13%** to **44%**

Approximately **1,500** apprenticeships starts per year in England over the past five years

The sector has an above-average and fast-growing demand for skills related to AI

70%
of the Life Sciences workforce holds a degree or equivalent qualification, nearly twice the UK average

A wide range of key occupations are needed in the sector, from research to regulation, to data science and digital jobs

3,935

graduates secured employment in the sector within 15 months of qualifying in 2020/21

The sector recorded **65,000** online job postings between April 2023 and March 2024

The most recruited-for area in the sector is IT and computer science, representing **13%** of job postings

Approximately

16%

of the sector's workforce is expected to retire over the next decade

50%+

of the sector workforce is in highly technical roles requiring advanced qualifications

25%

of the sector workforce is born outside the UK

Sector Growth Potential

The future growth of the UK Life Sciences sector will be shaped by a complex interplay of factors, including global competition, rapid technological advancements, and domestic industrial strategy. Emerging trends – such as automation, artificial intelligence, innovative therapeutic modalities, and the shift towards personalised and preventative care – are redefining the sector's workforce needs. These trends will influence not only the scale and variety of roles required but also the skills necessary to maintain the UK's competitiveness on the global stage.

Skills are a cornerstone of growth and a vital element of the UK's appeal for inward investment. Ensuring the sector's skill base evolves in tandem with these advancements will be critical to sustaining its future success.

- The UK Life Sciences sector directly employs 270,900 people across 5,800 businesses focused on core technical activities. [1]
- At the current pace of growth, sector employment could increase by an additional 70,000 jobs by 2035, with a further 75,000 workers needed to replace those leaving the workforce.
- Between 2016/17 and 2021/22, employment in the sector grew by 16%, significantly outpacing the national average employment growth rate of 2.4% over the same period.[2] This highlights the sector's strength in driving job creation and positions it as a key contributor to the UK's overall employment landscape.
- The Greater South East of England remains the primary hub for Life Sciences employment, accounting for 49% of the sector's workforce. The sector is a crucial economic driver for this region, supporting innovation, investment, and a high concentration of highly skilled jobs.
- Regions such as the North West and the devolved nations, while smaller in absolute terms, have seen impressive growth. Northern Ireland, for example, experienced a 40% rise in Life Sciences employment between 2016/17 and 2021/22, underscoring the sector's role in accelerating high-productivity and regional economic development.
- Employment growth in the UK's Life Sciences sector has been outpaced by key competitor nations, such as the United States and Singapore, over the past decade. This trend is mirrored in R&D investment, where the UK's year-on-year growth in biopharmaceutical R&D investment has lagged behind global growth.[3] This highlights the potential to further accelerate domestic job creation if improvements are made to the UK's international competitiveness and its offer to investors.

16%
employment growth between 2016/17 and 2021/22

70,000
additional jobs by 2035

[1] An additional 33,000 are employed in 'service and supply' segments, such as patent and legal services, recruitment, and training, which are excluded from this analysis.
[2] Office for National Statistics: UK labour market: June 2017 and Employment in the UK: June 2022
[3] Association of the British Pharmaceutical Industry: Life Sciences Superpower Report, 2022

Skills Requirements

As a major employer with a diverse footprint of companies, ranging from small spinouts to large multinational organisations, the sector requires a wide range of talent spanning various business functions.

In roles associated with R&D and manufacturing, there is often a need for skill sets covering core and established scientific disciplines, alongside a growing need for emerging specialisations aligned with recent advancements in science and technology — and, in many cases, a blend of the two.

With skills forming a foundational requirement for inward investment and growth, the sector must prioritise three key categories of skills to fully realise its potential, while also recognising the increasing interdependencies between them. This report categorises these skills as follows:

- Core Scientific Expertise
- Broader Operational Skills
- Emerging Tech Skills

Core Scientific Expertise

The first category is particularly relevant to highly specialised roles that are central to science and research. This includes positions such as biomedical scientists, chemical scientists, and process engineers. These roles typically require advanced qualifications and sector-specific expertise, which are critical for driving scientific discovery and innovation. They are highly concentrated within the sector, accounting for at least 10% of such roles across the UK economy.

Ensuring a steady pipeline of skilled professionals in these areas will require active collaboration with the UK skills system, targeted careers outreach, and long-term workforce planning.

Broader Operational Skills

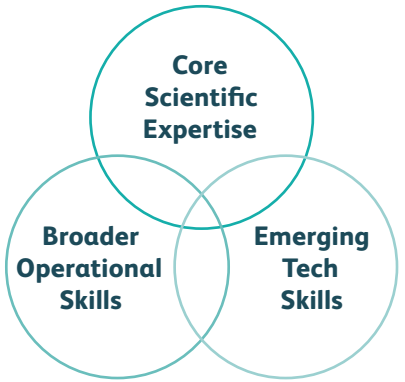
The second category is particularly relevant to operational roles that are essential for the sector but face high competition from other industries. These include production managers, software developers, quality assurance and regulatory professionals, whose skills are transferable across various sectors.

To succeed, the sector must develop recruitment and retention strategies that set it apart, emphasising unique benefits such as the opportunity to work on innovative projects impacting global health, an inclusive and collaborative workplace culture, and opportunities for continuous professional development.

Emerging Tech Skills

The third category reflects the growing need for skills in areas such as artificial intelligence, data modelling, and digital innovation. These new capabilities are increasingly crucial to how Life Sciences companies research, develop, and manufacture. They will also play a significant role in meeting net-zero and sustainability targets, driving efficiency across the sector.

Developing these skills will be critical for the sector to remain at the forefront of technological advancement, ensuring it continues to innovate and respond to future challenges.



Recruitment Trends

To ensure this research reflects the sector's latest recruitment trends and requirements, a detailed analysis of 65,000 job postings has been undertaken to identify the most in-demand skills. The diversity of roles being advertised reflects the broad range of skills needed to drive research, development, and production in a sector that is constantly evolving with new technologies, modalities, and ways of working.

- Job postings in the sector show high demand for IT and computer science roles, with these positions including software developers, data scientists, and biostatisticians, making up 13% of the total.
- Other key recruitment areas include business management (12%), healthcare (12%), engineering (7%), and science (7%), reflecting the sector's diverse and evolving occupational needs.
- 15% of job postings were linked to 'Core Life Sciences Roles', a subset of around 100 specialised roles focused on science, research, regulation, and compliance, requiring specific sector knowledge and skills.
- The sector has a higher-than-average and fast-growing demand for digital skills, including both basic and advanced capabilities, particularly in AI. Approximately 2% of Life Sciences job postings specifically mention AI skills, compared to the UK average of 1%, with this figure rising to 3% in BioPharma job postings.
- Over the past three years, there has been a 7% increase in job postings that mention law, regulation, and compliance skills, reflecting growing demand in these areas.
- Skills factsheets have been developed for 'Core Life Sciences Roles', showing the top 10 common, specialised, and software skills listed in job postings for these roles.
- 70% of the Life Sciences workforce holds a degree or equivalent qualification, compared to 41% of the UK workforce overall. Life Sciences employers are also twice as likely (43%) to require degree-level qualifications in job postings compared to the broader UK labour market (22%).

Future Talent Pipeline

To meet its evolving needs, the sector must draw on talent from a wide range of educational and training pathways, creating opportunities for individuals at all stages of their careers. From traditional academic routes to vocational training and apprenticeships, the sector benefits from a diverse spectrum of skills and expertise that drive innovation and resilience.

Addressing skills gaps and maintaining global competitiveness will depend on ensuring accessible entry points, clear progression pathways, and effective retention strategies. This requires an inclusive and adaptable skills system that not only attracts and nurtures diverse talent but also ensures equitable opportunities are available across all regions of the UK.

- Approximately 3,935 graduates from the 2020/21 academic year secured employment in the UK Life Sciences sector within 15 months of qualifying, with 39% holding postgraduate qualifications. This highlights the sector's strong demand for advanced skills, particularly in R&D roles that require specialised expertise.
- Apprenticeship starts (in England) have remained relatively stable, ranging between 1,450 and 1,520 annually since 2017/18. There has been a significant shift towards higher-level and degree-level apprenticeships, giving employers an alternative route to meeting their advanced educational and technical skill needs.
- Approximately 16% of the sector's workforce is expected to retire over the next decade.
- Only 4% of the sector workforce is under the age of 25, reflecting the extended educational requirements for many roles and reinforcing the need for strategic, long-term workforce planning.
- The Life Sciences sector draws on a wide range of international talent, with 25% of its workforce born outside the UK, compared to an average of 19% across the UK labour market.
- Career pathway data shows that many 'Core Life Sciences Roles' share overlapping skill sets, often serving as feeder and next-step jobs for one another. This provides workers with multiple options to advance their careers while remaining within the sector.
- Feeder occupations, such as laboratory managers and biomedical engineers, provide potential sources of talent for many 'Core Life Sciences Roles', helping to address skill shortages by drawing talent from related fields.
- Occupations such as Environmental Planners and Compliance Officers share similar skill profiles with several 'Core Life Sciences Roles'. These occupations could serve as valuable sources of talent for the sector by drawing skilled professionals from related fields.

Approximately **1,500** apprenticeship starts per year in England over the past five years

3,935 graduates employed within 15 months of qualifying in 2020/21

Main Report

1. Sector Definitions and Data Sources

The Office for Life Sciences (OLS) Bioscience and Health Technology Sector Statistics dataset provides a comprehensive overview of the UK Life Sciences sector, focusing on its two main subsectors: biopharmaceuticals and medical technology. Within these subsectors, businesses – and therefore employees – are categorised into 'core' and 'service and supply' elements, each of which can be further divided into specific market segments. The OLS identifies a total of 304,190 people working in the sector across the UK.

This report focuses on businesses involved in the core technical elements of the Life Sciences sector, with several service and supply segments – such as training, recruitment, and investment companies – excluded from the analysis. According to the OLS dataset, the excluded segments represent approximately 11% (33,000) of total employment in the UK Life Sciences sector.

By focusing on core technical businesses, the report provides a clearer and more precise analysis of the sector's essential innovation and production capabilities. These businesses are directly responsible for scientific research, clinical trials, product development, and manufacturing, all of which are critical to understanding the sector's growth and challenges. Including non-technical sectors could dilute the findings, making it harder to address the unique skills challenges faced by scientific and technical businesses.

The OLS dataset serves as the most comprehensive source for estimating the overall size of the Life Sciences workforce. However, it does not provide detailed insights into workforce characteristics, such as occupation or demographics. For this information, we rely on microdata from the Office for National Statistics (ONS) Labour Force Survey, which, despite being survey-based, is considered the most reliable source of national workforce data.

Since the ONS and other national sources, including the Department for Education (DfE) and the Higher Education Statistics Agency (HESA), use Standard Industrial Classification (SIC) codes, different sections of this report apply different sector definitions. OLS data underpins workforce projections and job postings analysis, while ONS, HESA, and DfE data offer insights into workforce characteristics and the future talent pipeline. This approach ensures that each section of the report uses the most accurate and relevant data available.

Figure 1: Life Sciences employment with and without excluded supply chain segments

	Total employment	Excluded from the study	In scope
BioPharma – Core	70,032	–	70,032
BioPharma – Service and Supply	79,920	16,983	62,937
MedTech – Core	117,212	–	117,212
MedTech – Service and Supply	36,714	15,975	20,739
Total	**303,878**	**32,958**	**270,920**
As a % of total		**11%**	**89%**

Source: Office for Life Sciences: Bioscience and Health Technology Sector Statistics 2021/22

A best-fit sector definition was applied within the SIC code library to capture the Life Sciences sector, following the methodology outlined in the previous Life Sciences 2030 Skills Strategy report. This approach utilises a specific set of SIC codes, as shown in the table below. While this approach allows for more granular insights into workforce characteristics, it also introduces certain limitations. SIC codes classify industries in ways that separate manufacturing from R&D and consolidate various R&D activities – some of which extend beyond Life Sciences – into a single category. Consequently, sections of this report that use the SIC-based definition will refer to it as the Life Sciences sector (SIC definition) to acknowledge these nuances in classification. The following table provides an estimate of the size of the workforce captured within this definition for 2023, to enable a comparison with the OLS data for 2021-22.

Figure 2: Employment in relevant SIC codes

Life Sciences sector (SIC definition)		Employment
21.10	Manufacture of basic pharmaceutical products	9,740
21.20	Manufacture of pharmaceutical preparations	37,100
26.60	Manufacture irradiation & electromedical equipment	6,260
32.50	Manufacture of medical & dental instruments & supplies	37,870
72.11	Research & experimental development on biotech	25,120
72.19	Other R&D on natural sciences & engineering	154,100
Total		**270,190**

Source: Lightcast, CoreLMI dataset 2024

The following summary outlines the sector definition and approach used in each chapter, drawing on the most relevant datasets to ensure an accurate representation of workforce size, characteristics, and skills needs across the Life Sciences sector.

- **Chapter 2: UK Life Sciences Sector:** Uses OLS data to define sector size and ONS data for a breakdown of employment by major occupational groups.
- **Chapter 3: Occupational Profile:** Uses ONS Labour Force Survey data to analyse industry and occupational breakdowns based on SIC and SOC classifications.
- **Chapter 4: Job Postings Analysis:** Uses OLS data to define companies included in an analysis of job postings within Lightcast's proprietary library, focusing on occupations and roles.
- **Chapter 5: Skills for the Life Sciences:** Uses OLS data to define companies included in an analysis of job postings within Lightcast's proprietary library, focusing on essential skills and educational requirements.
- **Chapter 6: Workforce Projections:** Uses OLS data as the basis for workforce projections, with ONS data providing occupational insights.
- **Chapter 7: Talent Pipeline:** Uses SIC code definitions for insights into the talent pipeline, with Lightcast's career pathways tool to explore feeder and next-step jobs.
- **Chapter 8: Workforce Demographics:** Uses SIC code definitions to analyse workforce demographics, including sex, age, and ethnicity.
- **Chapter 9: International Data:** Uses UK Life Sciences data from the Labour Force Survey with equivalent labour market data in other countries, supplemented by Lightcast job postings data.

2. The UK Life Sciences Sector

Unless otherwise stated, the insights in this chapter focus on the core technical elements of the Life Sciences sector, as defined by the exclusion of non-technical service and supply elements in the Office for Life Sciences: Bioscience and Health Technology Sector Statistics dataset.

2.1 Sector Overview

- Approximately 5,800 businesses (across 6,400 sites) are engaged in the core technical elements of the Life Sciences sector, directly employing over 270,900 individuals and generating over £100 billion in annual turnover.
- An additional 33,000 are employed in 'service and supply' segments – such as training, recruitment, and investment companies – which are excluded from this analysis.
- Approximately 25% of the 6,400 sites are associated with large companies, while 75% are linked to small and medium-sized enterprises (SMEs). In contrast, 77% of all employment in the Life Sciences sector is concentrated in large companies, compared to 23% in SMEs.
- Between 2016/17 and 2021/22, employment in the Life Sciences sector related to businesses engaging in core technical activities grew by 16%, and turnover increased by 34%.
- The market segment with the highest employment growth rate during this period was Advanced Therapy Medicinal Products (ATMPs), which grew at approximately 24% per year, followed by Formulation/Drug Delivery Specialists (12%) and Digital Health (10%).
- In 2023, the value of UK Life Sciences exports totalled approximately £35.7 billion, with £25.6 billion coming from pharmaceutical products and £10.1 billion from medical technology products.[4]
- The UK has the second highest budget allocation for health R&D as a percentage of gross domestic product (GDP) among comparator countries, behind only the USA.[4]
- The UK is home to three of the world's top ten universities and four of the top ten universities for 'clinical and health' subjects.[5]
- The UK continues to account for a substantial share of global medical sciences citations, at 11.5% in 2023, behind only the USA and China.[4]
- In 2021, 8.7% of UK graduates from a tertiary education graduated from natural sciences, mathematics and statistics programmes; this placed the UK second among comparators, behind only India.[4]
- The estimated value of inward Life Sciences foreign direct investment (FDI) fell to £0.8 billion in 2023, marking the second consecutive year of decline and ranking the UK eighth among comparator countries.[4]

[4] Office for Life Sciences: Life Sciences Competitiveness Indicators 2024
[5] Times Higher Education: World University Rankings 2024

2.2 Biopharmaceuticals and Medical Technology

The UK Life Sciences sector comprises two primary subsectors: Biopharmaceuticals (BioPharma) and Medical Technology (MedTech).

- BioPharma, covering all activities related to the development and production of pharmaceutical products, accounts for 34% of Life Sciences businesses and sites, 49% of sector employment, and 68% of sector turnover.
- MedTech, encompassing all activities related to the development and production of medical technology products – from single-use consumables like syringes to complex hospital equipment and digital health solutions – accounts for 66% of businesses and sites but only 32% of sector turnover.

Figure 3: Overview of the Life Sciences sector split by subsector

	Businesses	Sites	Employment	Turnover (£ billions)
Biopharmaceuticals	2,002	2,293	132,969	£70
Medical Technology	3,821	4,103	137,951	£31
Total	**5,823**	**6,396**	**270,920**	**£102**

Source: Lightcast aggregation of data from Office for Life Sciences: Bioscience and Health Technology Sector Statistics 2021/22

2.3 Regional distribution

This section focuses on the entire Life Sciences sector, including non-technical service and supply elements, as defined in the Office for Life Sciences: Bioscience and Health Technology Sector Statistics 2021/22.

The Greater South East of England, comprising London, the South East, and the East of England) is a major driver of Life Sciences activities in the UK, accounting for 49% of all Life Sciences employment. Another significant hub for Life Sciences activities is the North West of England, which accounts for 10% of Life Sciences employment in the UK.

Scotland accounts for the largest share of sector employment among the devolved nations (6%). However, when adjusted for population size, the sector plays a larger role in the economies of Wales and Northern Ireland, accounting for 42 and 36 jobs per 10,000 population, respectively, compared to 34 in Scotland.

To varying degrees, every region of England and all devolved nations experienced growth in Life Sciences employment over the five years between 2016/17 and 2021/22. In absolute terms, the South East of England and London saw the largest increases in employment numbers. In percentage terms, Northern Ireland saw the largest increase in employment (40%), followed by London (34%) and the South West (32%).

The majority of BioPharma employment (57%) is concentrated in the South East of England, the East of England and London. This reflects the concentration of the Golden Triangle – Oxford, Cambridge, and London – the largest Life Sciences research cluster in the UK. Beyond the Golden Triangle, the North West accounts for 11% of sector employment.

Figure 4: Distribution of the Life Sciences sector across the UK by region

Scotland
Life Sciences Employment, 2021/22 **18,660**
Share of Sector Employment **6%**
Life Sciences Employment per 10,000 Population **34**

North West
Life Sciences Employment, 2021/22 **31,870**
Share of Sector Employment **10%**
Life Sciences Employment per 10,000 Population **43**

Northern Ireland
Life Sciences Employment, 2021/22 **6,910**
Share of Sector Employment **2%**
Life Sciences Employment per 10,000 Population **36**

West Midlands
Life Sciences Employment, 2021/22 **19,910**
Share of Sector Employment **7%**
Life Sciences Employment per 10,000 Population **33**

Wales
Life Sciences Employment, 2021/22 **13,390**
Share of Sector Employment **4%**
Life Sciences Employment per 10,000 Population **42**

South West
Life Sciences Employment, 2021/22 **14,370**
Share of Sector Employment **5%**
Life Sciences Employment per 10,000 Population **25**

North East
Life Sciences Employment, 2021/22 **9,310**
Share of Sector Employment **3%**
Life Sciences Employment per 10,000 Population **35**

Yorkshire and The Humber
Life Sciences Employment, 2021/22 **21,930**
Share of Sector Employment **7%**
Life Sciences Employment per 10,000 Population **39**

East Midlands
Life Sciences Employment, 2021/22 **17,850**
Share of Sector Employment **6%**
Life Sciences Employment per 10,000 Population **36**

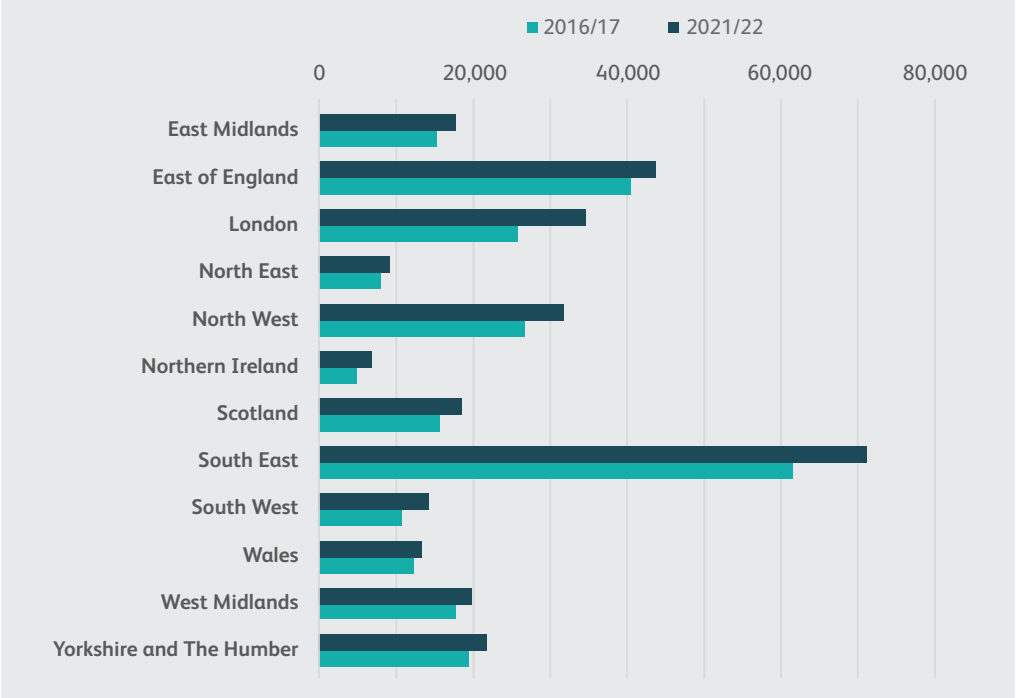
East of England
Life Sciences Employment, 2021/22 **43,850**
Share of Sector Employment **14%**
Life Sciences Employment per 10,000 Population **69**

London
Life Sciences Employment, 2021/22 **34,820**
Share of Sector Employment **11%**
Life Sciences Employment per 10,000 Population **38**

South East
Life Sciences Employment, 2021/22 **71,310**
Share of Sector Employment **23%**
Life Sciences Employment per 10,000 Population **76**

Source: Lightcast aggregation of data from Office for Life Sciences: Bioscience and Health Technology Sector Statistics 2021/22

Figure 5: Changes in Life Sciences employment across the UK by region

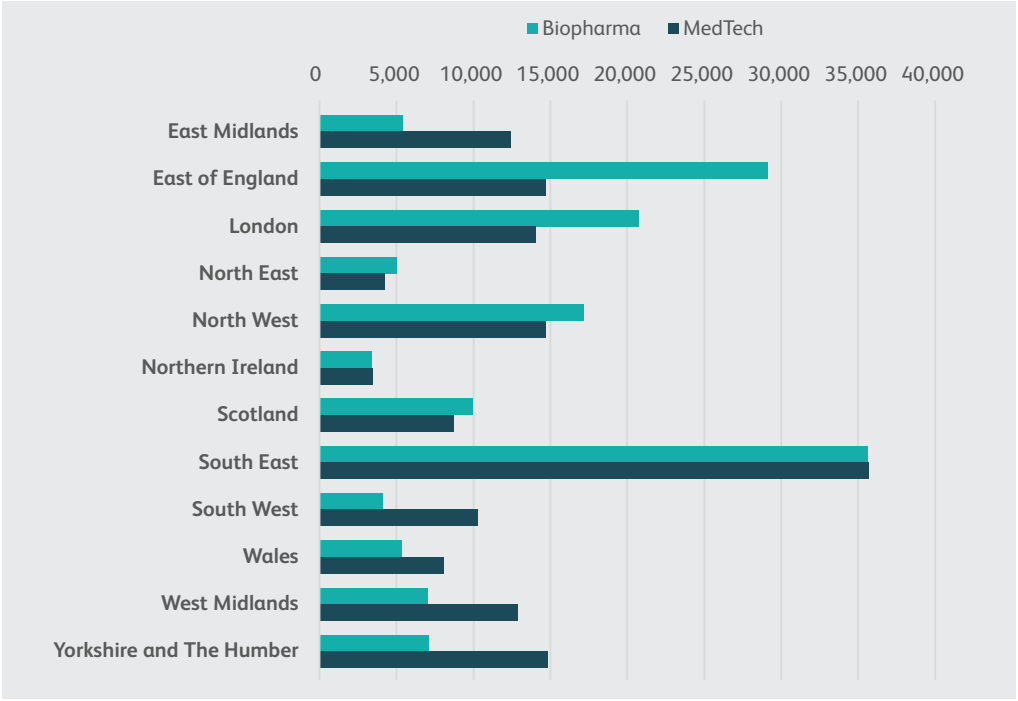


Source: Lightcast aggregation of data from Office for Life Sciences: Bioscience and Health Technology Sector Statistics 2021/22

Employment in MedTech is more geographically dispersed. The South East accounts for 23% of sector employment, while several regions – namely the East of England, the North West, Yorkshire and the Humber, London, and the West Midlands – each account for approximately 10% of employment.

Among the devolved nations, Scotland accounts for 7% of BioPharma employment in the UK and for 6% of MedTech employment, Wales for 4% of BioPharma employment and 5% of MedTech employment, and Northern Ireland accounts for 2% of employment in each of the two sectors.

Figure 6: Life Sciences employment across the UK by region, split by subsector



Source: Lightcast aggregation of data from Office for Life Sciences: Bioscience and Health Technology Sector Statistics 2021/22

3. Occupational Profile

This chapter uses a different dataset – the Office for National Statistics (ONS) Labour Force Survey (LFS) – which provides a breakdown of industry by Standard Industrial Classification (SIC) codes and occupation by Standard Occupational Classification (SOC) codes. As a result, the workforce in this analysis reflects the SIC code definition of the sector, where R&D is considered a separate subsector from BioPharma and MedTech and includes certain non-Life Sciences activities that cannot be separated out. Occupations are examined using 1-digit SOC codes for broad insights and 4-digit SOC codes for more granular analysis.

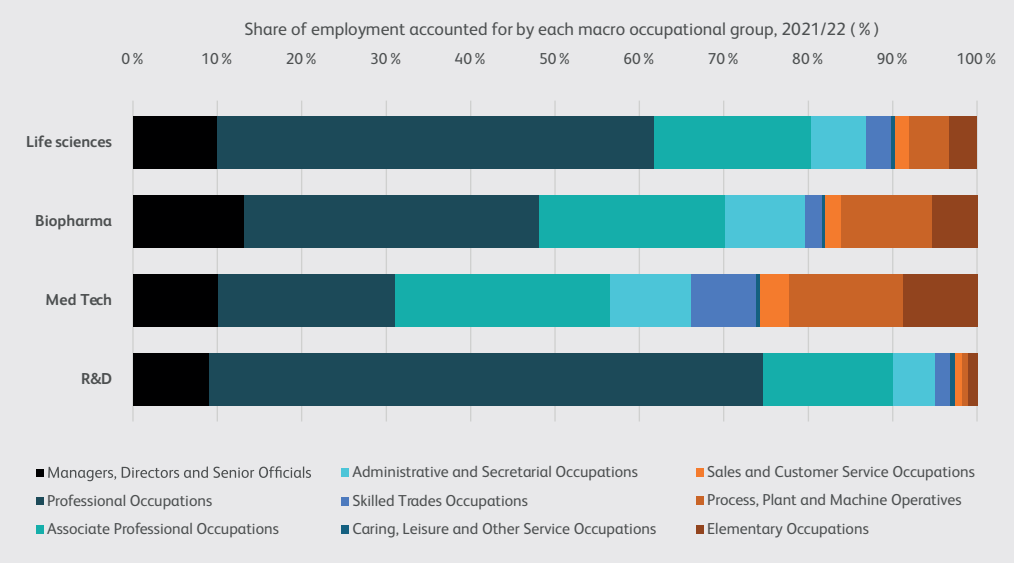
3.1 Major groups (1-digit SOC)

Just over 50% of the Life Sciences workforce is employed in **Professional Occupations** which include highly specialised roles such as biological scientists, R&D professionals, and software developers.[6] These roles typically require advanced qualifications, including degrees and often postgraduate training, due to the complex nature of their tasks, which involve applying extensive theoretical knowledge and advancing research.[7] **Associate Professional Occupations** also play an important role in the sector. This group comprises roles "whose main tasks require experience and knowledge of principles and practices necessary to assume operational responsibility and provide technical support." Key examples that account for a large number of jobs in the Life Sciences sector include laboratory technicians and quality assurance technicians.

A closer look at the individual subsectors reveals some key differences in occupational structure. For example, two-thirds of employment in R&D is linked to Professional Occupations. In contrast, MedTech has a much lower proportion of Professional Occupations, with a higher share of employment in **Process, Plant and Machine Operative** roles (e.g. Chemical and Related Process Operatives), as well as **Skilled Trades** (e.g. Precision Instrument Makers and Repairers).[8]

Figure 7 provides a breakdown of Life Sciences employment by major occupational groups, offering an overview of the sector's occupational structure.

Figure 7: Life Sciences employment split by subsector and 1-digit SOC code



Source: Lightcast aggregation of data from Office for Life Sciences: Bioscience and Health Technology Sector Statistics 2021/22, combined with Lightcast staffing pattern matrix.

[6] A full breakdown of jobs in the Life Sciences sector by specific SOC4 occupations is available in **Section C** of the technical annex.
[7] More info on the definitions of each occupational group can be found in the ONS official guidance: **https://www.ons.gov.uk/methodology/classificationsandstandards/standardoccupationalclassificationsoc/soc2020/soc2020volume1structureanddescriptionsofunitgroups**
[8] Process, plants and machine operatives occupations encompass occupations 'whose main tasks require the knowledge and experience to monitor and operate industrial plants, equipments and products'. Skilled trades occupations are occupations 'whose tasks involve the performance of complex physical duties that normally require a degree of initiative, manual dexterity and other practical skills'.

3.2 Unit groups (4-digit SOC)

A more granular analysis using 4-digit SOC codes allows us to map the specific occupations that define the Life Sciences workforce. This analysis highlights the wide range of roles and skills required by the sector – not only in science and research, but also in fields such as IT, data science, finance, business development, and marketing. It underscores where the sector should focus its efforts to attract, train, and retain the talent needed to support continued growth.

Figure 8 plots every occupation in the sector against two metrics: the x-axis shows current employment levels within the sector for each occupational group, while the y-axis indicates the percentage of each occupation's total UK workforce currently employed within Life Sciences. The quadrants are determined by calculating sector averages across all occupations. This provides an 'at-a-glance' view of the occupations most prevalent in the sector and those facing the highest cross-economy competition for talent. This approach reveals three broad categories of occupation based on their roles in the sector.

Firstly, there are the occupations in the top-right quadrant of the chart: these are occupations with a large number of jobs in the Life Sciences sector and an above-average concentration within it. For example, biological scientists include roles such as clinical and medical technologists. The data suggests they account for almost 12,000 Life Sciences jobs, approximately 5% of all sector jobs, and that the sector employs just over 25% of all UK jobs related to this occupation.

These occupations are essential to the Life Sciences sector and require high levels of sector-specific technical skills, knowledge, and abilities. Given their significant role and high concentration within Life Sciences, these occupations tend to experience lower cross-sector demand. Ensuring a steady pipeline of skilled professionals in fields such as biological sciences, chemical sciences, and laboratory technology will require active collaboration between industry, policymakers, and education providers. This includes targeted career outreach to inspire and attract talent to these areas, as well as long-term workforce planning to ensure educational pathways keep pace with sector needs.

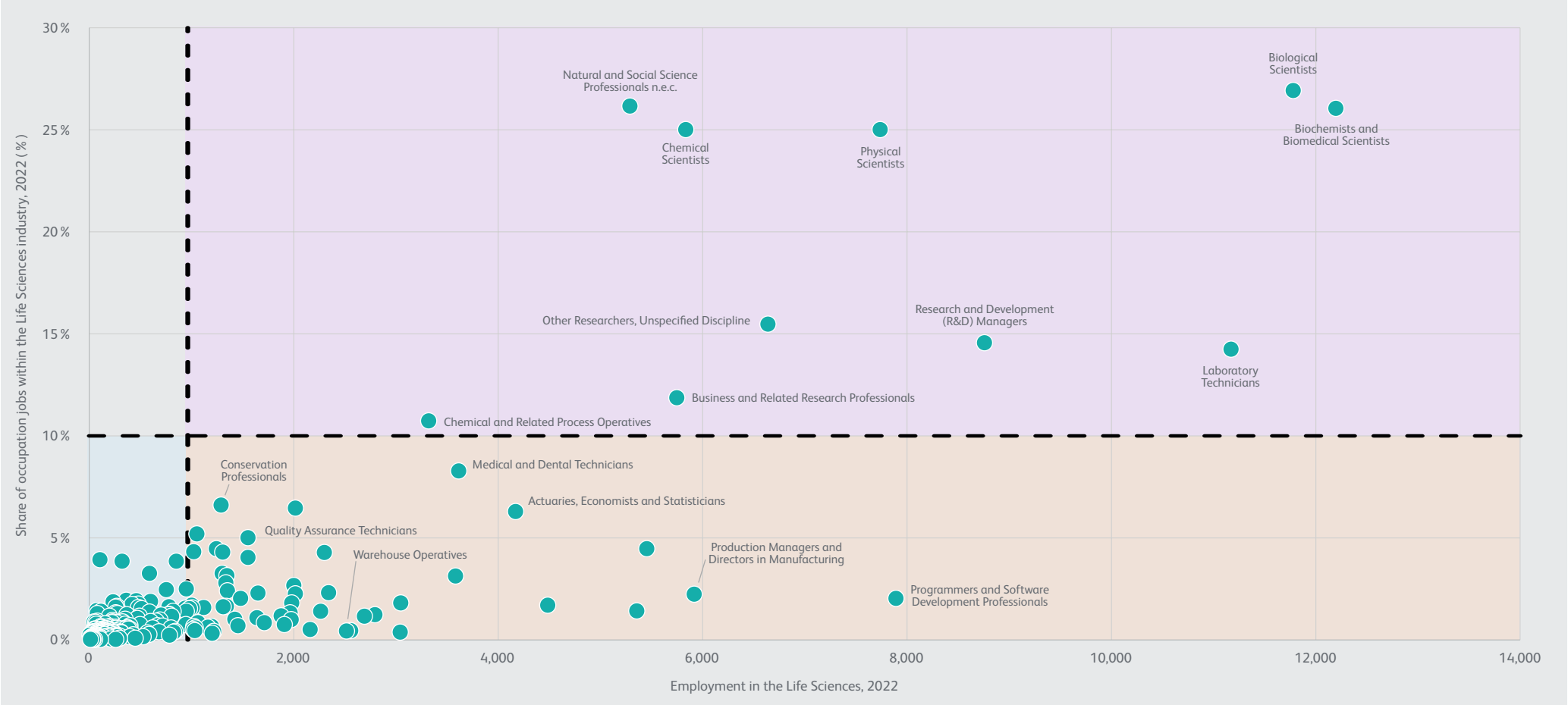
Occupations in the bottom-right quadrant also account for a large number of jobs in the sector but are not highly concentrated within Life Sciences, suggesting they face high cross-sectoral demand. An example of this category is programmers and software development professionals: this occupation accounts for approximately 8,000 Life Sciences jobs, but the sector represents only a small proportion (2%) of all programmers and software development professionals currently employed in the UK. Another example is quality assurance technicians – this occupation, with approximately 2,000 sector jobs, plays a vital role in ensuring the safety and efficacy of Life Sciences products. However, the sector accounts for just 3% of all UK jobs related to this occupation.

These occupations are integral to the sector, and failure to compete effectively could lead to skill shortages, hindering growth and innovation. The sector must implement targeted recruitment and retention strategies to distinguish itself, highlighting unique benefits such as contributing to innovative projects that impact global health, fostering an inclusive and collaborative workplace culture, and providing opportunities for continuous professional development.

The third group, in the bottom-left quadrant, consists of occupations with fewer jobs and no significant concentration within the Life Sciences sector. This suggests that these occupations also face high cross-sectoral demand; however, given the smaller volume of jobs, challenges in talent attraction and retention in these areas are less critical to the sector's long-term success.

It should also be noted that, while occupational codes provide a useful framework, they often overlook the growing need for interdisciplinary skills that are difficult to capture within these classifications. For example, roles classified as biological scientists may also require integrated data science or computational modelling skills. The integration of data, analytical, computational, and AI skills across various occupations is increasingly common, both within Life Sciences and other sectors, intensifying competition for talent. **Figure 9** provides some examples of sector specific roles that fall within these broad occupational classifications.

Figure 8: Occupational breakdown of the Life Sciences workforce by job count and sector concentration



Source: Lightcast CoreLMI dataset (aggregation of data from official statistics), combined with the Lightcast staffing pattern matrix.

Figure 9: Top 20 occupations in the Life Sciences sector by job count

Occupation (SOC4 2020)	Example of relevant roles within the occupation code	Jobs in the Life Sciences sector	Share of all Life Sciences sector jobs	Share of all UK jobs within Life Sciences sector
Biochemists and Biomedical Scientists	Clinical technologists, medical technologists etc..	12,200	4.90 %	26.04 %
Biological Scientists	Microbiologists, pathologists etc…	11,780	4.73 %	26.91 %
Laboratory Technicians	Assistant scientists, scientific technicians etc..	11,189	4.48 %	14.24 %
Research and Development (R&D) Managers	Clinical trials managers, market research managers etc..	8,760	3.52 %	14.55 %
Programmers and Software Development Professionals	Software developers, computer programmers etc..	7,900	3.17 %	2.03 %
Physical Scientists	Medical physicists, physicists etc..	7,740	3.11 %	25.00 %
Other Researchers, Unspecified Discipline	Researchers, research assistants etc..	6,640	2.67 %	15.46 %
Production Managers and Directors in Manufacturing	BioPharma manufacturing director, MedTech manufacturing manager, etc..	5,920	2.38 %	2.23 %
Chemical Scientists	Analytical chemists, research scientists etc..	5,840	2.34 %	25.00 %
Business and Related Research Professionals	Fellow researchers, inventors etc..	5,750	2.31 %	11.86 %
Engineering Professionals n.e.c.	Scientific consultant, technical engineer etc..	5,460	2.19 %	4.46 %
Sales Accounts and Business Development Managers	Account manager, sales manager etc..	5,360	2.15 %	1.41 %
Natural and Social Science Professionals n.e.c.	Research scientists, technical officers etc..	5,290	2.12 %	26.15 %
Business and Financial Project Management Professionals	Project managers, project delivery officers etc..	4,490	1.80 %	1.68 %
Actuaries, Economists and Statisticians	Statistician, biostatistician, actuary etc..	4,170	1.68 %	6.28 %
Medical and Dental Technicians	Medical technical officers, medical technicians etc..	3,620	1.45 %	8.27 %
Quality Assurance and Regulatory Professionals	Compliance managers, QA managers, QA assistants etc..	3,580	1.44 %	3.12 %
Chemical and Related Process Operatives	Chemical process operatives, process technicians etc…	3,320	1.33 %	10.72 %
IT Business Analysts, Architects and Systems Designers	Business analysts, technical consultants etc..	3,050	1.22 %	1.80 %
Other Administrative Occupations n.e.c.	Administrators, facility coordinators etc..	3,040	1.22 %	0.37 %

Source: Lightcast CoreLMI dataset (aggregation of data from official statistics), combined with the Lightcast staffing pattern matrix.

4. Job Postings Analysis

To gain a deeper understanding of the Life Sciences sector's workforce needs, this report supplements official statistics with insights from Lightcast's proprietary job postings dataset, which encompasses over 80 million postings collected in the UK since 2012.

Online job postings data provide an almost real-time view of business needs, offering insights into specific roles and skill requirements directly from employers. Using data up to the end of March 2024, this chapter focuses on the types of roles advertised by Life Sciences companies. **Chapter 5** examines skill requirements, and **Section 7.3, Chapter 7** explores potential career pathways.

The analysis draws from a list of approximately 5,800 Life Sciences businesses within the OLS Bioscience and Health Technology Sector Statistics 2021/22, supplemented by an additional 400 companies contributed by Futures Group members. Around 75% of these companies were matched in the Lightcast dataset, with postings categorised by subsector (BioPharma and MedTech) and company size. While this approach captures all online postings from companies recognised as Life Sciences, it may also include some activity outside the sector from companies operating across multiple industries.

While online job postings data offer detailed, role-specific insights, it's important to note that this data only provides a partial view of a sector's employment needs. Job postings reflect roles that companies are actively advertising but do not necessarily correspond to positions that are filled. At the same time, not all businesses recruit directly online – approximately 35% of job postings in the Lightcast online job postings library are advertised by staffing agencies, and these jobs cannot be directly linked to the businesses that required them. Senior positions are often filled via headhunting, and some companies, particularly smaller ones, may not recruit online at all. Therefore, while every job posting represents an available position, not every position is advertised online, and job postings differ from actual vacancies filled.

Recruitment activity can also be driven by factors beyond actual job growth. For instance, high recruitment activity can reflect challenges in filling certain roles, high turnover within a sector, or repeated advertising for positions that remain unfilled. To account for this, duplicate postings within a 90-day period are removed, with only the initial listing counted. However, if the same posting appears again after a longer period, such as six months, it is counted as a new posting. At the same time, companies might advertise roles to gauge market interest or test the attractiveness of a position, without immediate intent to hire.[9]

Full details on the methodology used to collect the job postings data, as well as guidance on how to use and interpret the data, are set out in **Section A** of the technical annex and referenced throughout the report where relevant.

4.1 Overview

Between April 2023 and March 2024, approximately 65,000 online job postings were identified for roles within Life Sciences companies. Roughly half of these postings were linked to BioPharma companies, with the other half related to MedTech. This marks a shift from three years earlier, when BioPharma accounted for 60% of Life Sciences job postings, likely due to increased recruitment needs during the pandemic. Since then, BioPharma postings have increased by 5%, whereas MedTech postings have grown by over 50%.

The substantial growth in MedTech job postings over the past three years may reflect multiple factors. The increased use of online recruitment by small and medium-sized enterprises (SMEs), which are prevalent in the MedTech subsector, is likely a contributing factor.[10] It is also possible that certain roles have become more challenging to fill or experience higher turnover, leading to repeated postings for the same position.

[9] Tsvetkova, A. *et al.* (2024), 'How well do online job postings match national sources in large English speaking countries?: Benchmarking Lightcast data against statistical sources across regions, sectors and occupations', *OECD Local Economic and Employment Development (LEED) Papers*, No. 2024/01, OECD Publishing, Paris, **https://doi.org/10.1787/c17cae09-en**

[10] Carnevale, A. P., Jayasundera, T., and Repnikov, D. *Understanding online job ads data. A technical report*. MS o. PP Center on Education and the Workforce. **https://cew. georgetown.edu/wp-content/uploads/2014/11/OCLM.Tech_.Web_.pdf**

From a company size perspective, the majority of job postings in the sample are linked to medium-sized (50–249 employees) or large (250+ employees) companies. For BioPharma, 38% of job postings during this period were linked to large companies, 36% to medium-sized companies, and 26% to small companies. In the MedTech sector, medium-sized companies accounted for roughly half of all job postings, small companies for 27%, and the remaining 24% were linked to large companies. This distribution broadly reflects the overall employment composition of the two subsectors.

4.2 Most advertised roles

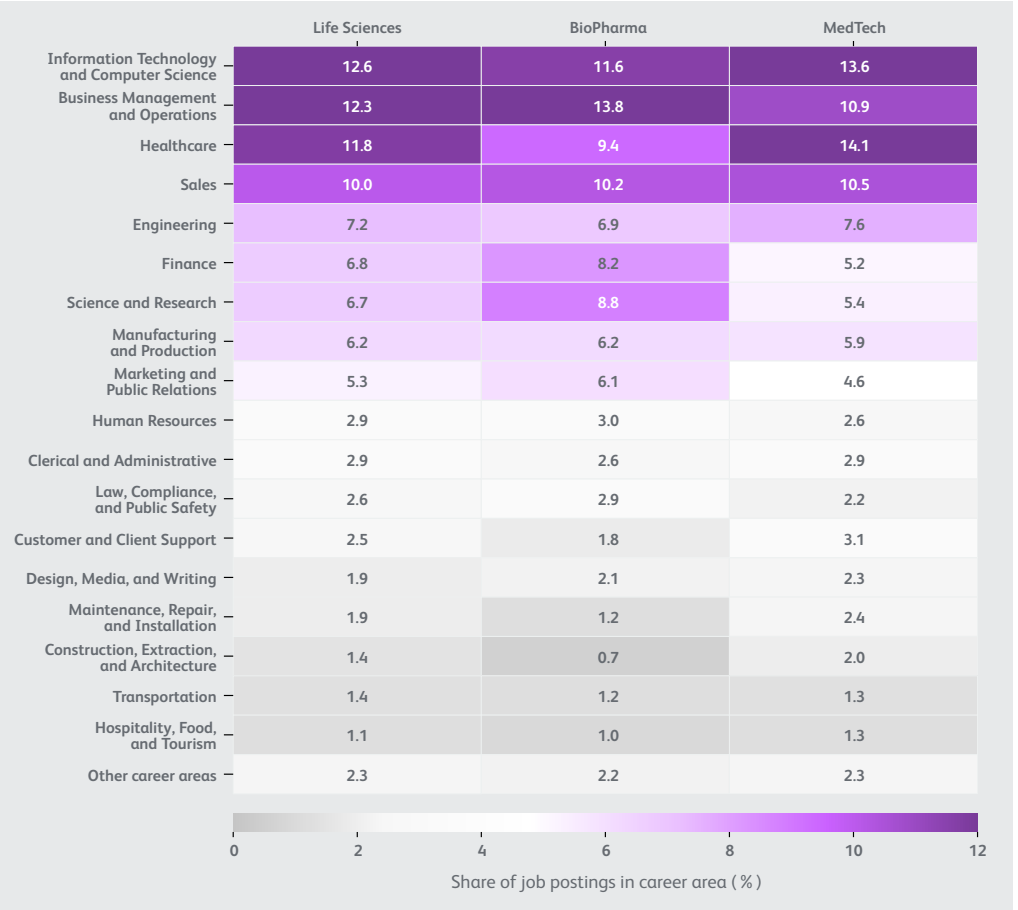
This section uses the Lightcast Occupation Taxonomy, which organises over 1,900 specific occupations into 700 groups across 32 broad career areas. This approach enables a more detailed analysis of the roles Life Sciences companies advertise, avoiding inconsistencies that arise from individual job titles, which can vary significantly between companies.

Recruitment activity within Life Sciences companies spans a wide range of career areas, including IT, computer science, business operations, management, science, research, sales, marketing, and finance.

Figure 10 provides a breakdown of the 65,000 Life Sciences job postings by subsector between April 2023 and March 2024. Approximately 13% of these postings fell within the career area of Information Technology and Computer Science, including roles such as software developers, engineers, computer support specialists, and data scientists.

Beyond IT and computer science, 12% of job postings were in business management and operations, with another 12% in healthcare-related roles. Engineering accounted for 7% of postings, as did science and research, while law, compliance, and public safety roles made up 3%. This distribution underscores the diversity of career areas in which Life Sciences companies are actively recruiting.

Figure 10: Life Sciences recruitment activity by career area, April 2023 – March 2024



Source: Lightcast, Job Postings Analytics

While the overall distribution of postings across career areas is broadly similar between BioPharma and MedTech, there are some key differences. BioPharma has a higher concentration of recruitment in science and research roles, whereas MedTech focuses more heavily on healthcare-related postings, reflecting the distinct needs of each subsector.

Life Sciences job postings between April 2023 and March 2024 covered over 1,000 distinct occupations, indicating a broad spectrum of recruitment needs. **Figure 11** shows the top 10 most advertised occupations in BioPharma and MedTech during this period, spanning career areas such as business development, account management, marketing, software development, and chemistry.

The top 10 occupations in both BioPharma and MedTech represent only 20% of all job postings, suggesting that recruitment is widely spread across many roles rather than concentrated on a narrow set of positions. This distribution highlights the sector's diverse hiring requirements, as Life Sciences companies seek talent across multiple functions and specialisations to support complex and evolving business needs. To meet these demands, the sector must draw on talent from a wide range of educational and training pathways, providing opportunities for individuals at all stages of their careers and ensuring access to a variety of entry points for those with differing skills and experiences.

It is also important to note that the number of job postings for certain roles may be influenced by factors beyond direct demand. For instance, roles that are more challenging to fill might be advertised more frequently or for extended periods, leading to a higher count of postings. Conversely, roles that are filled quickly may have fewer postings. Therefore, while job postings provide valuable insights into recruitment activities, they may not fully capture the actual hiring levels or underlying demand for specific occupations.

Figure 11: Top 10 most advertised occupations in BioPharma and MedTech, April 2023 – March 2024

Occupation	BioPharma job postings	Occupation	MedTech job postings
Business Development/ Sales Manager	1,450	Software Developer/Engineer	1,570
Healthcare Administrator	1,380	Sales Representative	1,180
Account Manager/ Representative	1,330	Healthcare Administrator	1,110
Marketing Manager	1,300	Business Development/ Sales Manager	1,070
Chemist	1,280	Customer Service Representative	820
Project Manager	1,180	Account Manager/ Representative	790
Natural Science Research Manager	940	Marketing Manager	730
Sales Representative	920	Office/Administrative Assistant	690
Laboratory Technician	900	Project Manager	610
Medical Director	870	Medical Scientist	570

Source: Lightcast, Job Postings Analytics

Digital roles in the Life Sciences sector

Job postings related to the career area 'Information Technology and Computer Science' were the most advertised for by Life Sciences companies between April 2023 and March 2024, accounting for approximately 13% of all online recruitment activity in the sector.

Life Sciences companies were particularly recruiting for software developers and engineers – which accounted for approximately one in five sector job postings related to the IT category – over 2,000 postings. The second most demanded IT role was Computer Support Specialists with over 800 postings, followed by IT managers and directors (520 postings). Biostatisticians and Data Scientists were also among the IT roles most advertised for by Life Sciences companies.

Figure 12: Digital roles most advertised for in the Life Sciences sector

Occupation	Job postings
Software Developer/Engineer	2060
Computer Support Specialist	810
IT Manager/Director	550
Computer Systems Engineer/Architect	520
Database Architect	430
Data / Data Mining Analyst	360
Technology Consultant	360
Biostatistician	360
IT Project Manager	340
Data Scientist	300

Source: Lightcast, Job Postings Analytics

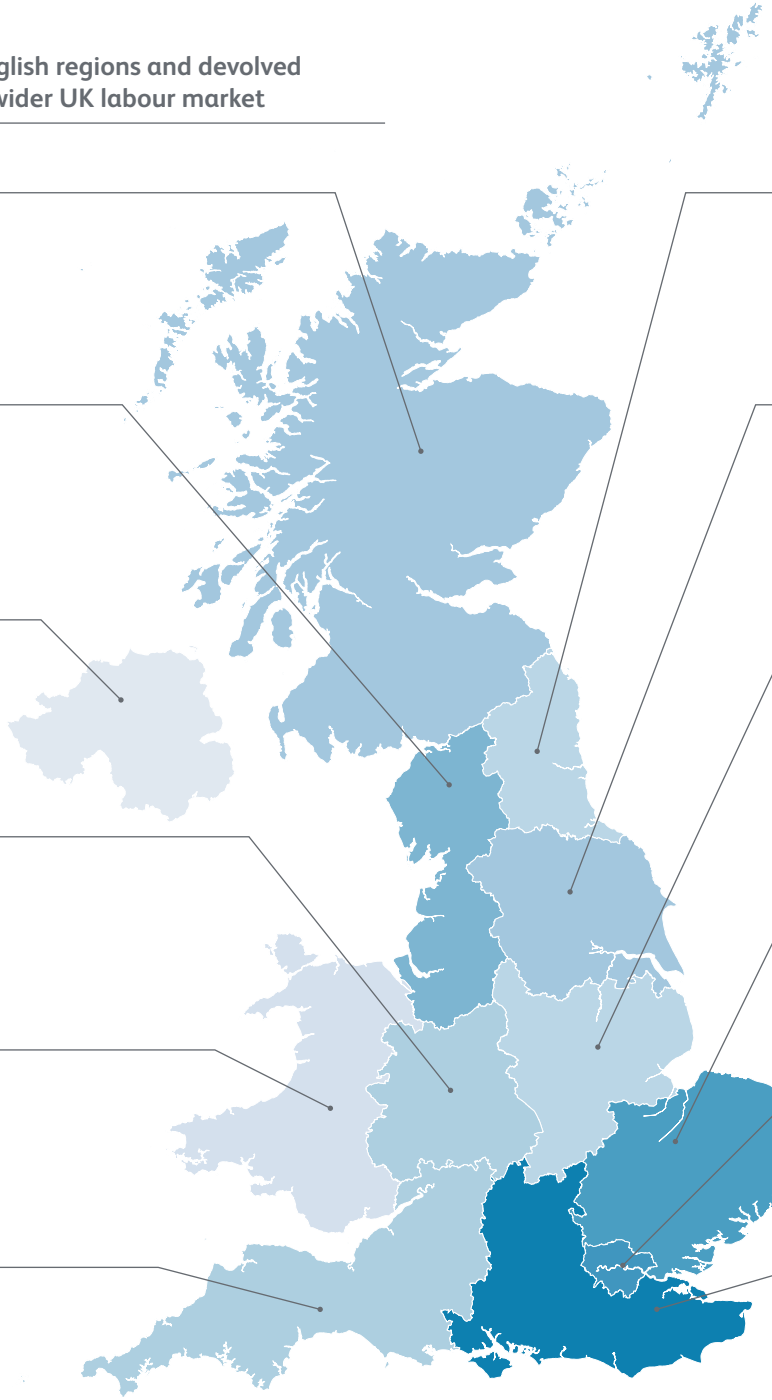
4.3 Regional distribution

Consistent with overall employment and business distribution patterns, job postings activity for Life Sciences is concentrated in the Greater South East of England, comprising the South East, London, and the East of England. This region accounted for 48% of all online job postings by Life Sciences companies between April 2023 and March 2024. By comparison, approximately 41% of job postings across all sectors of the economy were within this region during the same period.

In contrast, the South West and West Midlands regions had below-average Life Sciences recruitment activity, each accounting for 6% of Life Sciences job postings, compared to 9% of postings across all occupations.

Among the devolved nations, there was an above-average concentration of recruitment activity from Life Sciences companies in Northern Ireland and Scotland, while the share of Life Sciences job postings in Wales was in line with the average across all occupations.

Figure 13: Life Sciences recruitment activity across English regions and devolved nations, split by subsector and benchmarked against wider UK labour market



Scotland
BioPharma **5%**
MedTech **7%**
All Life Sciences **7%**
All UK Occupations **7%**

North West
BioPharma **8%**
MedTech **10%**
All Life Sciences **10%**
All UK Occupations **11%**

Northern Ireland
BioPharma **1%**
MedTech **3%**
All Life Sciences **2%**
All UK Occupations **2%**

West Midlands
BioPharma **2%**
MedTech **6%**
All Life Sciences **6%**
All UK Occupations **9%**

Wales
BioPharma **2%**
MedTech **3%**
All Life Sciences **3%**
All UK Occupations **3%**

South West
BioPharma **4%**
MedTech **3%**
All Life Sciences **6%**
All UK Occupations **9%**

North East
BioPharma **4%**
MedTech **4%**
All Life Sciences **5%**
All UK Occupations **3%**

Yorkshire and The Humber
BioPharma **3%**
MedTech **4%**
All Life Sciences **7%**
All UK Occupations **8%**

East Midlands
BioPharma **3%**
MedTech **5%**
All Life Sciences **5%**
All UK Occupations **6%**

East of England
BioPharma **31%**
MedTech **13%**
All Life Sciences **14%**
All UK Occupations **9%**

London
BioPharma **15%**
MedTech **18%**
All Life Sciences **15%**
All UK Occupations **15%**

South East
BioPharma **21%**
MedTech **23%**
All Life Sciences **19%**
All UK Occupations **16%**

4.4 Core Life Sciences Roles

To better understand the sector's core skills and education requirements, this section examines a subset of roles directly tied to Life Sciences – referred to throughout the report as **Core Life Sciences Roles**. This subset, comprising approximately 100 positions, includes roles that require specialised skills, knowledge, and abilities closely linked to the sector. These roles, listed in **Section D** of the technical annex, are predominantly associated with science and research, as well as regulatory and compliance career areas. They were identified through a combination of literature review insights, stakeholder input, and a skills analysis of job postings data.

Between April 2023 and March 2024, Life Sciences companies advertised approximately 10,000 job postings for these core roles, representing about 15% of all sector postings during this period. Approximately 68% of these postings were advertised by BioPharma companies. Compared to the same period in 2020-2021, BioPharma postings for Core Life Sciences Roles decreased by 20%, while MedTech postings for these roles increased by 15%. This shift suggests a changing recruitment focus, with MedTech companies showing increased demand for core sector roles relative to BioPharma.

Figure 14 provides an overview of the top 10 most-advertised Core Life Sciences Roles in BioPharma and MedTech. Recruitment activity for these core roles is heavily concentrated in these top 10 occupations; in both subsectors, they account for over 80% of job postings related to core roles.

Most of these occupations are common across both BioPharma and MedTech, including roles such as chemists, medical scientists, researchers, and regulatory managers. The exceptions are microbiologists, who appear among the top 10 occupations recruited by BioPharma companies but not MedTech, and chemical technicians, who feature in the top 10 occupations recruited by MedTech companies but not BioPharma.

Figure 14: Life Sciences job postings for Core Life Sciences Roles by subsector

Occupation	BioPharma job postings
Chemist	1,280
Natural Science Research Manager	940
Medical Scientist	840
Researcher/Research Associate	860
Clinical Research Coordinator/ Manager	720
Regulatory Affairs Manager	350
Safety Manager	330
Biologist	310
Safety Specialist/Coordinator	230
Microbiologist	140

Occupation	MedTech job postings
Medical Scientist	570
Chemist	430
Researcher/Research Associate	400
Clinical Research Coordinator/ Manager	330
Natural Science Research Manager	270
Safety Manager	180
Regulatory Affairs Manager	170
Safety Specialist/Coordinator	160
Biologist	90
Chemical Technician	60

Source: Lightcast, Job Postings Analytics

Recruitment for Core Life Sciences Roles in BioPharma was particularly concentrated in the East of England, highlighting the critical role Cambridge plays in this subsector. The region accounted for 30% of all BioPharma job postings between April 2023 and March 2024 – double its share of overall Life Sciences recruitment and triple its share of UK recruitment activity across all sectors. This represents twice the share of BioPharma employment in the region (16%) and is especially linked to recruitment for biologists, safety managers, and natural science research managers.

Several other regions and devolved nations also exhibited above-average recruitment activity for specific Core Life Sciences Roles in BioPharma. For example, London accounted for 30% of all BioPharma postings for regulatory affairs managers, while Wales accounted for 18% of BioPharma postings related to microbiologists. This suggests distinct pockets of BioPharma recruitment activity in various regions and devolved nations, possibly reflecting regional specialisations or clusters within the sector.

During the same period, MedTech companies' recruitment for Core Life Sciences Roles was concentrated in the South East of England (23% of all job postings) and London (17%), particularly for managerial and research roles.

The North East of England and Northern Ireland also had a notable share of MedTech recruitment activity for Core Life Sciences Roles. Specifically, the North East, which represents only 3% of the UK's overall recruitment activity, accounted for 11% of chemist postings by MedTech companies. Similarly, Northern Ireland accounted for 10% of safety manager postings and 9% of chemical technician postings by MedTech companies, despite representing just 2% of all job postings during this period.

Further details of the breakdown of online job postings by sector and region can be found in **Section E** of the technical annex.

5. Skills for the Life Sciences

5.1 Overview

This section focuses on the specific skills and educational requirements mentioned by Life Sciences companies in online job postings, with related implications for policymakers and educators. Drawing directly from the skills listed in these postings, the insights help translate business needs into terms that policymakers and educators can use for investment and curriculum planning decisions.

To identify specific skill needs, the analysis used the Lightcast Open Skills Taxonomy, which contains over 32,000 skills, knowledge, and abilities, referred to simply as 'skills' throughout the report. These are organised into 32 thematic categories and 400 subcategories.

These skills are grouped into three broad categories, depending on their role:

- **Common skills:** Widely applicable across many sectors, these include personal attributes, behaviours, competencies, and basic skills such as computer literacy. Often referred to as human or soft skills, examples include qualities like leadership and communication.
- **Specialised skills:** Unique to specific tasks or subsets of occupations, these encompass professional and occupation-specific expertise required in job postings, such as chemistry, clinical research, and data analysis.
- **Software skills:** This category includes specific computer programmes and programming skills frequently mentioned in job postings, such as Microsoft Excel, Python, or Adobe Photoshop.

The taxonomy is regularly updated to include new, emerging requirements from employers.

When interpreting the findings from this chapter, it is important to consider that employers often emphasise skills in job postings that are harder to find or seen as most essential to a role. While 91% of all UK job postings mention at least one skill, knowledge, or ability, employers may omit skills they view as implicit to the role. Take chemists, for example: as shown in the accompanying occupational factsheets, chemistry is the most frequently cited skill in chemist job postings, yet it appears in only 44% of postings, despite being essential for these roles.

This section provides insights into the overall Life Sciences sector, with breakdowns for BioPharma and MedTech, and, where relevant, individual Core Life Sciences Roles.

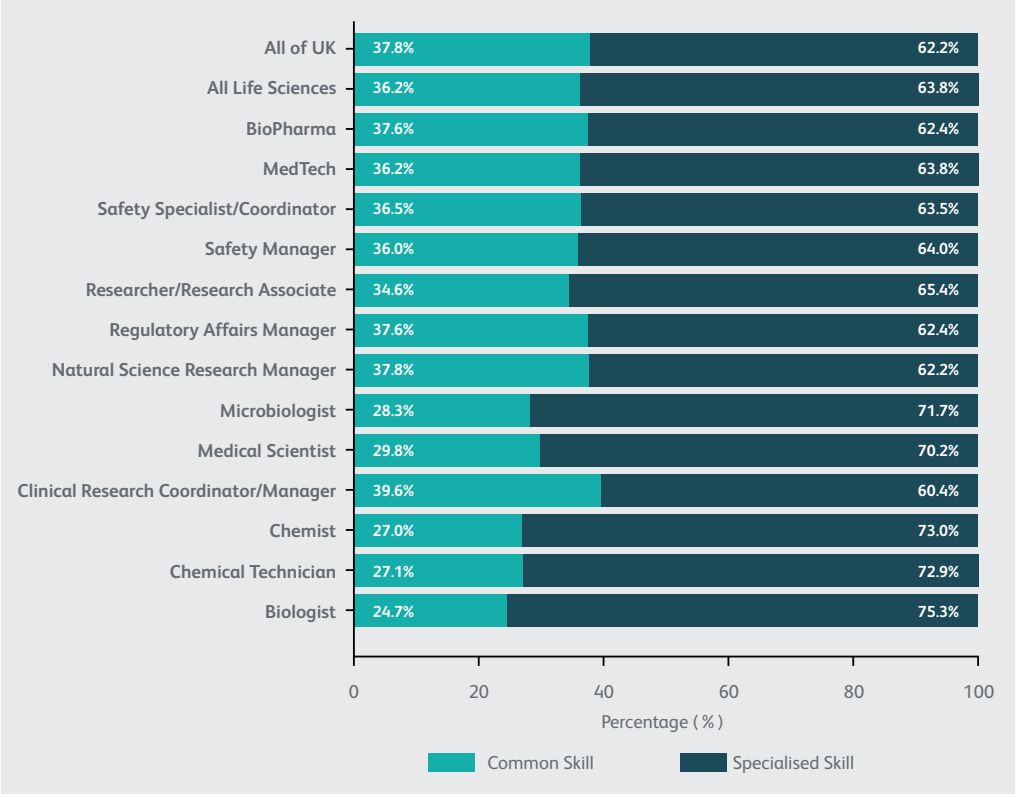
Individual factsheets with further information on skill requirements for Core Life Sciences Roles are available in the technical annex.

5.2 Skills insights

The analysis begins by offering an overview of the types of skills explicitly mentioned by Life Sciences companies in job postings, followed by the thematic categories these skills relate to, and the specific skills, knowledge, and abilities associated with them.

Of all the skills mentioned in Life Sciences job postings, approximately 64% are specialised (technical) skills, while 36% are common skills. Specialised skills are particularly prominent in STEM-related roles, such as biologists, chemical technicians, chemists, microbiologists, and medical scientists, where they account for more than 70% of the skills mentioned. In contrast, common or transferable skills play a larger role in managerial positions within the sector. For instance, in roles like clinical research coordinators/managers, 40% of the skills mentioned are common/transferable, while for science research managers and regulatory affairs managers, 38% of the skills are common.

Figure 15: Core Life Sciences Roles job postings by skill type: common vs technical



Source: Lightcast, Job Postings Analytics

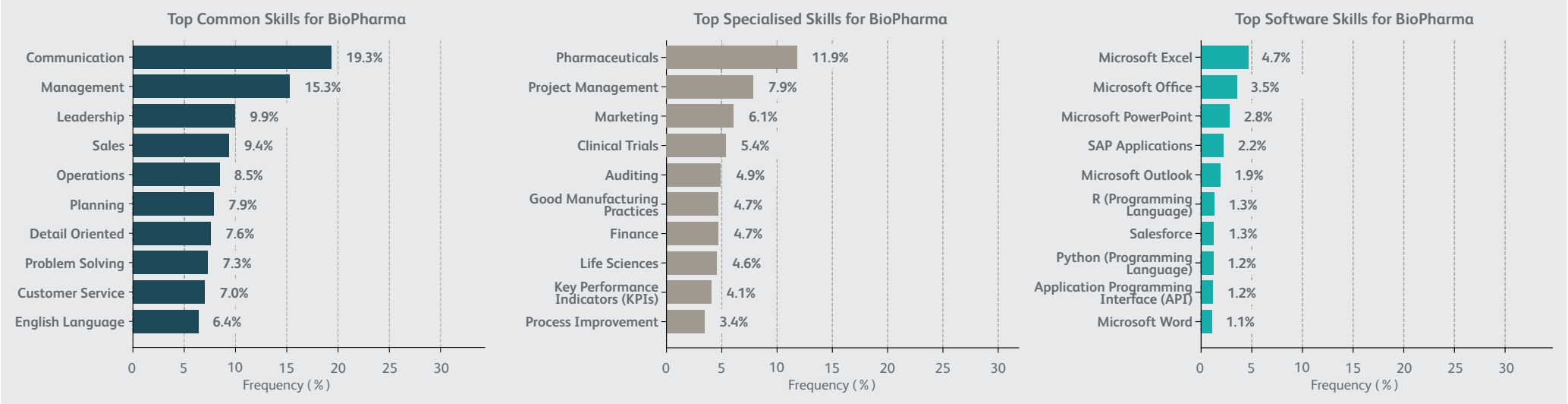
While the majority of skills mentioned by Life Sciences companies – both BioPharma and MedTech – are specialised, many of the most frequently mentioned skills are actually common, transferable skills. This underscores the critical importance of transferable skill sets in building a flexible, adaptable workforce capable of meeting the sector's evolving demands. Employers increasingly rely on these versatile skills to bridge gaps between specialised functions, ensuring the workforce can effectively support growth and innovation across a wide range of occupations.

Figure 16 plots the top 10 common, specialised, and software skills most frequently mentioned in job postings by BioPharma companies, further illustrating this point. The two most frequently cited skills by BioPharma companies between April 2023 and March 2024 were management, appearing in 19% of postings, and communication, which appeared in 15%. In total, eight of the ten most frequently cited skills were common, transferable skills.

Alongside these, several specialised skills were also frequently mentioned. In particular, knowledge of pharmaceuticals was the most frequently mentioned specialised skill by BioPharma companies, followed by project management. Specialised skills are often unique to specific occupations and sectors, so their lower overall frequency may reflect the concentrated demand for specific technical roles.

Although less frequent, several software skills were also mentioned by BioPharma companies. These include a mix of general digital literacy skills, such as Microsoft Office proficiency, and more advanced skills like programming languages and SAP applications.

Figure 16: Top 10 common, specialised, and software skills, knowledge and abilities mentioned in BioPharma job postings



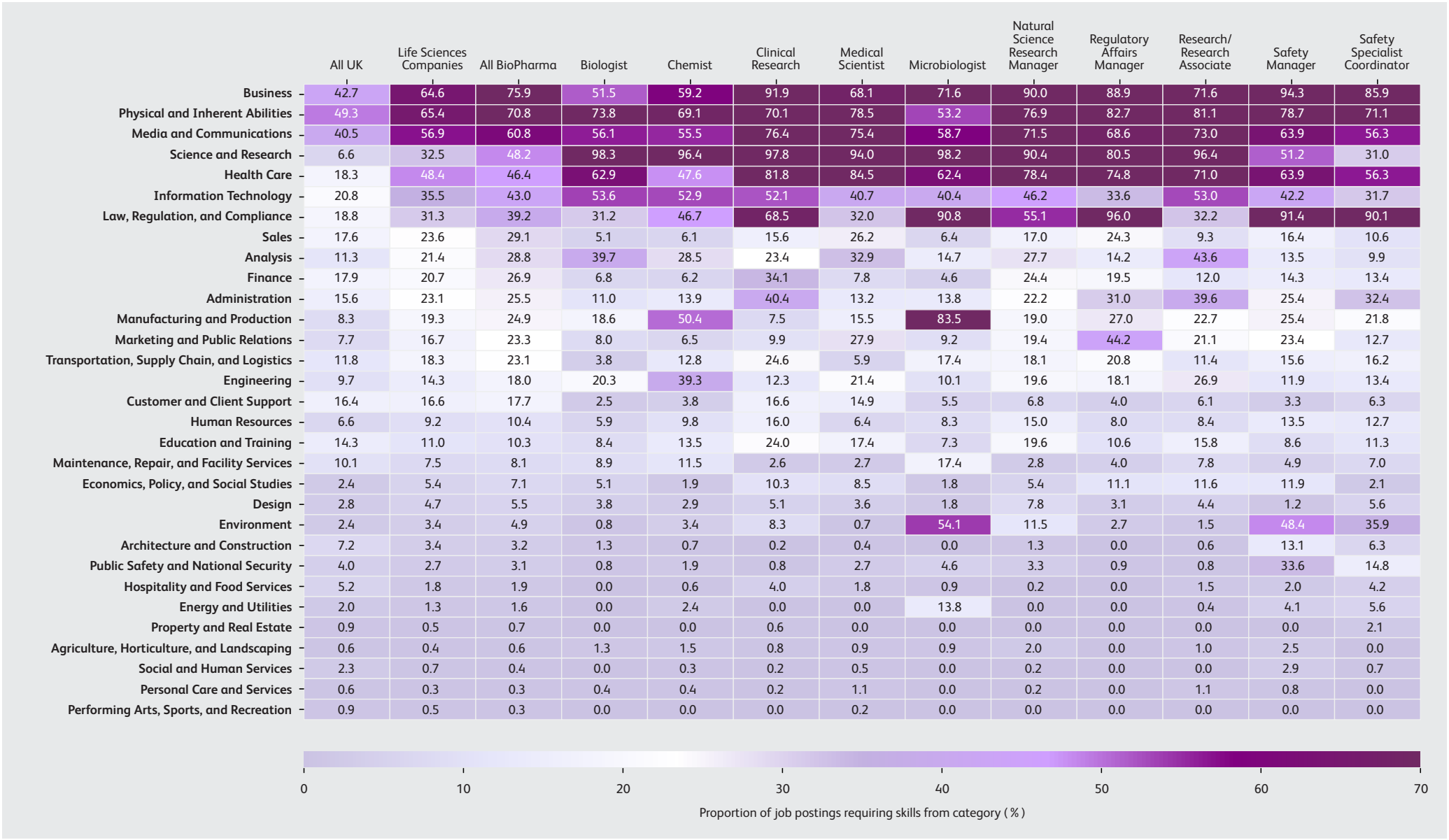
Source: Lightcast, Job Postings Analytics

Beyond the top 10 common, specialised, and software skills most frequently mentioned in BioPharma job postings, there are a number of other skills specific to certain occupations. These skills vary by occupation and span multiple skill clusters, so their overall frequency in the sector may seem low, even though they are crucial for key roles within the sector.

Figure 17 provides an overview of the variation in skill clusters mentioned in job postings by BioPharma companies for the top 10 Core Life Sciences Roles. The rows display the 32 skill clusters from the Lightcast Skills Taxonomy, while the columns correspond to occupation groups. The percentages represent the frequency with which each skill cluster is mentioned in a given occupation group. Individual factsheets listing the top 10 common, specialised, and software skills for each occupation are available in the technical annex.

Overall, 65% of BioPharma job postings mention business-related skills, 64% mention physical and inherent abilities (a skill cluster that encompasses soft skills such as leadership and problem-solving), and 57% mention media and communication skills. The frequency of these types of skills being mentioned is even higher among managerial roles within BioPharma. However, there are also notable differences across occupations: for example, skills related to manufacturing and production are mentioned in 20% of BioPharma job postings, but in 50% of job postings for chemists and over 80% of job postings for microbiologists. Similarly, only 30% of BioPharma job postings mention science and research skills, yet these are found in over 90% of postings for Core Life Sciences Roles.

Figure 17: Skill requirements for Core Life Sciences Roles by skill category in BioPharma job postings



Source: Lightcast, Job Postings Analytics

Please note: The high score for 'Environment' in some roles may reflect references to a laboratory or controlled environment, rather than environmental skills.

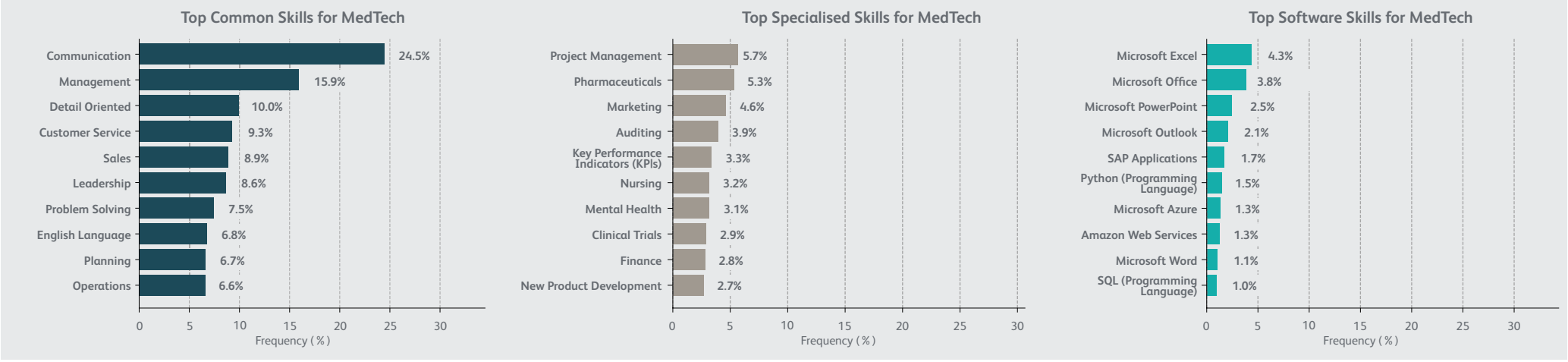
The importance of transferable skills is also evident in MedTech job postings. All of the top 10 most frequently mentioned skills by MedTech companies between April 2023 and March 2024 were common, transferable skills, with communication cited in 25% of postings, followed by management (16%) and attention to detail (10%). Project management and knowledge of pharmaceuticals were among the most frequently mentioned specialised skills. Companies also cited a mix of basic digital skills, such as proficiency in Microsoft Office, and more advanced skills related to programming and SAP applications.

Beyond these top skills, a wider range of skills, knowledge, and abilities were also mentioned in MedTech job postings, with each occupation having unique skill requirements. Similar to **Figure 17**, **Figure 19** illustrates the variation in the frequency with which different skill clusters appear in Core Life Sciences Roles recruited by MedTech companies. The factsheets in the technical annex provide further details on the specific skill needs of each occupation.

As with BioPharma, the most frequently mentioned skill clusters across most MedTech occupations are physical and inherent abilities (65%), business (64%), and media and communication (57%). Healthcare-related skills are also frequently mentioned in sector job postings, spanning across most Core Life Sciences Roles (45%).

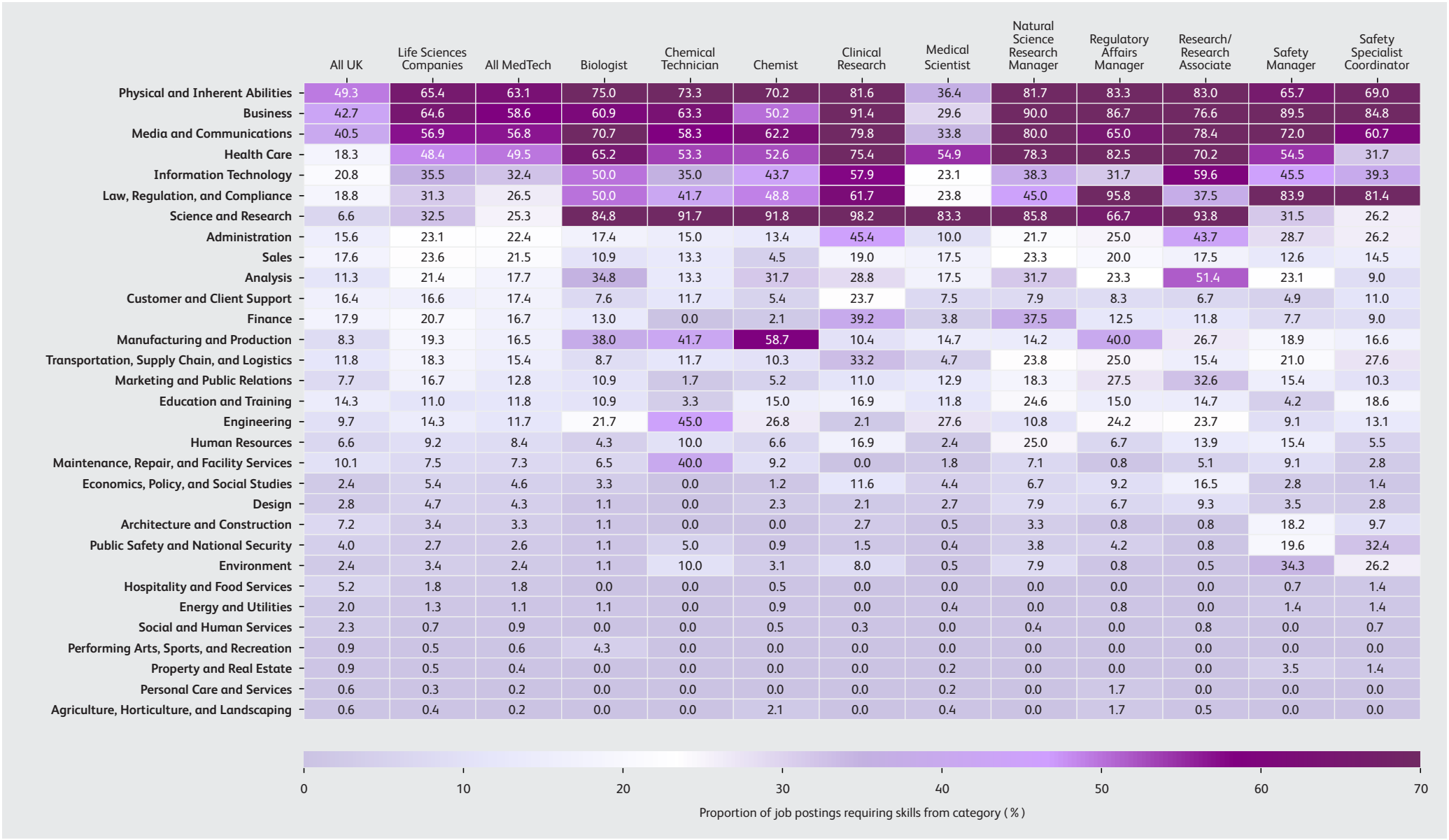
Beyond these similarities, differences in skill needs emerge across various occupations. For instance, 36% of MedTech job postings mention information technology skills, but this rises to 60% in postings for researchers or research associates and 58% for clinical researchers. Similarly, while 16% of MedTech job postings mention manufacturing and production-related skills, this figure increases to 59% for chemist postings and 42% for chemical technician postings. This again highlights that, beyond a core set of competencies, each occupation has its own specific skill requirements.

Figure 18: Top 10 common, specialised, and software skills, knowledge and abilities mentioned in MedTech job postings



Source: Lightcast, Job Postings Analytics

Figure 19: Skill requirements for Core Life Sciences Roles by skill category in MedTech job postings



Source: Lightcast, Job Postings Analytics

5.3 Changing skill needs

To better understand how the Life Sciences sector is evolving, this section compares the frequency of skills mentioned in sector job postings between April 2023 and March 2024 with the same period from 2020 to 2021.

Changes within job postings are influenced by various factors, including genuine shifts in the roles being advertised, as well as changes in the emphasis employers place on specific skills. These shifts, particularly evident at the individual occupation level, demonstrate how the skills prioritised by employers have evolved over time. It is also important to recognise that changes can be driven by other factors. For example, challenges in filling certain roles or high turnover within a particular occupation may lead to repeated advertising for unfilled positions, potentially introducing bias into the findings.

The findings provide an overview of changes across broad skill categories for the sector overall, with a specific focus on MedTech and BioPharma. Four overarching insights emerged from this analysis, offering valuable perspective on the changing priorities and needs within the sector.

1. Increased emphasis on common skills: The share of Life Sciences job postings mentioning skills within the physical and inherent abilities cluster (e.g., problem solving, collaboration) has risen by 18%. Similarly, the share of postings mentioning business skills (e.g., process improvement, commercial development) has increased by 17%, and those mentioning media and communication skills (e.g., report writing, digital communication) have risen by 15%. Most of the skills within these categories are typically common or transferable, suggesting an increased emphasis by employers on foundational skills. This shift is primarily driven by changes in the types of roles being advertised within the sector, though it also reflects specific skill requirements mentioned by BioPharma companies, particularly for roles like microbiologists and research associates.

2. Increased emphasis on law, regulation and compliance skills: Skills within the law, regulation, and compliance cluster are increasingly mentioned in job postings across the UK, with this trend being even more pronounced among Life Sciences companies. The share of Life Sciences job postings mentioning skills related to law, regulation, and compliance (e.g., quality assurance, environmental reporting) has risen by 7% over the past three years, compared to just 2% in the broader UK labour market. This trend is driven by shifts in the roles being recruited by Life Sciences companies and applies specifically to BioPharma job postings, including roles such as microbiologists, clinical researchers, and safety managers.

3. Increased emphasis on information technology skills: The share of Life Sciences job postings mentioning IT-related skills (e.g., machine learning, Python) increased by 7% between 2020/21 and 2023/24. This trend is driven by both an increase in IT-related roles being recruited by Life Sciences companies and a greater emphasis on IT skills within sector jobs. The share of postings mentioning IT-related skills has grown among both BioPharma and MedTech companies, particularly in several MedTech Core Life Sciences roles, such as chemical technicians, safety managers, and researchers/research associates. This trend is visible across many sectors of the UK economy, even though the number of postings mentioning digital skills has decreased overall due to a slowdown in recruitment within the tech industry.[11]

4. Increased emphasis on science, research and healthcare skills: The demand for skills related to science and research (e.g., bioinformatics, drug discovery) and healthcare (e.g., health data management) has grown significantly in both BioPharma and MedTech companies. Compared to 2020/21, the number of BioPharma job postings mentioning science and research skills has increased by 10%, while healthcare-related skills have grown by 7%. A similar trend is observed in MedTech, with a 12% increase in healthcare-related skills and an 11% rise in science and research skills. Furthermore, many of the fastest-growing and emerging skills in these two subsectors – such as flow chemistry and protein engineering – belong to the science, research, or healthcare skill clusters.

[11] **https://lightcast.io/resources/research/the-lightcast-digital-skills-outlook-2024**

Digital skills and the rise of Artificial Intelligence

Over half of all job postings from Life Sciences companies between April 2023 and March 2024 mentioned at least one digital skill, defined as any skill, knowledge, or ability within the Lightcast Skills Taxonomy related to digital tools, digital expertise, or tasks requiring digital proficiency, such as data analysis. This compares to 33% of all job postings across the UK labour market during the same period. Within Life Sciences, 47% of job postings in the BioPharma subsector and 64% in MedTech referenced at least one digital skill.

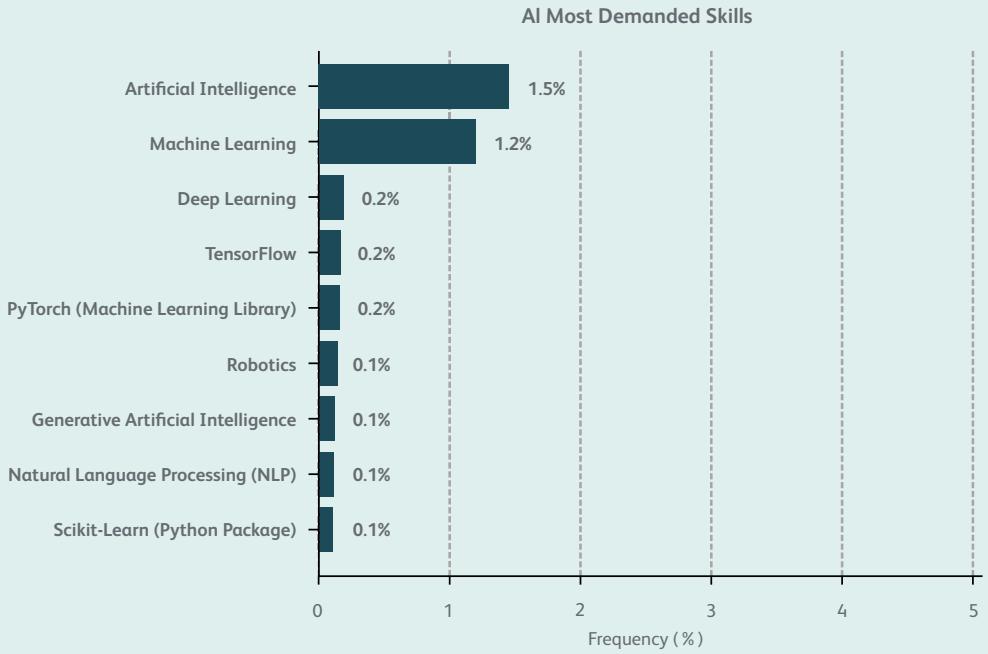
Different roles within the sector require distinct digital skills. For example, research by the Association of the British Pharmaceutical Industry found that BioPharma roles often demand digital expertise in areas such as biomedical imaging and bioinformatics.[12]

Focusing on specific Artificial Intelligence (AI) skills – a group of approximately 200 skills, knowledge, and abilities related to clusters such as Machine Learning, Robotics, and Natural Language Processing – reveals a similar, albeit smaller, trend. Just over 2% of Life Sciences job postings mentioned AI-related skills, compared to less than 1% across the broader UK labour market. Demand for AI skills is particularly strong among BioPharma companies, where around 3% of job postings referenced AI capabilities.

The most frequently mentioned AI skills in Life Sciences job postings include general terms like Artificial Intelligence and Machine Learning. Other skills, such as Deep Learning and TensorFlow, are also mentioned, though less frequently.

[12] Association of the British Pharmaceutical Industry (2023) 'How skills requirements are changing' **https://www.abpi.org.uk/publications/how-skill-requirements-are-changing/**

Figure 20: AI skills, knowledge and abilities most frequently mentioned in Life Sciences job postings



Source: Lightcast, Job Postings Analytics

5.4 Educational requirements

Alongside analysing the specific skills companies mention in their job postings, it is also possible to examine whether employers specify any educational qualification requirements and, if so, the types of qualifications cited.

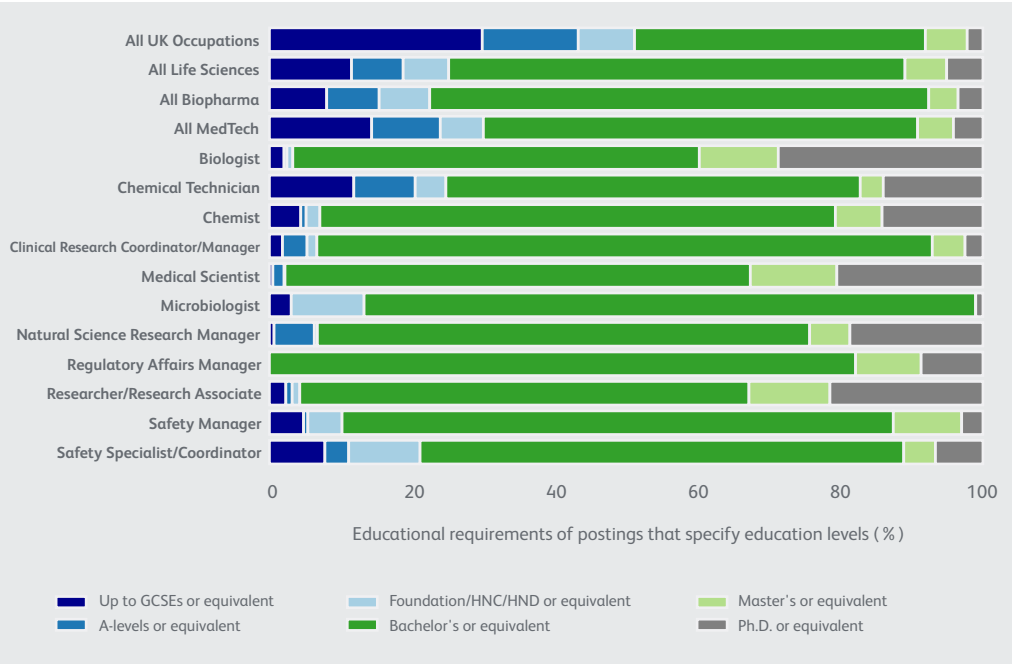
In this regard, the share of Life Sciences job postings that mention educational requirements is twice the UK average, suggesting that educational qualifications still play a central role for Life Sciences companies. Overall, 43% of Life Sciences job postings cite specific educational requirements, compared to 22% in the UK-wide labour market. While employers are increasingly moving towards skills-based hiring practices, the highly technical nature of many Life Sciences jobs means companies still tend to require specific qualifications.[13]

Looking at these specific requirements, the vast majority of Life Sciences job postings – almost 80% – state that candidates must hold at least a bachelor's degree or equivalent qualification, with approximately 10% of postings requiring either a master's degree or a PhD. This is significantly higher than the UK average, where only about half of job postings mention a degree or equivalent qualification. For some Core Life Sciences Roles, such as regulatory affairs managers, biologists, and medical scientists, the figure increases to over 90%. Furthermore, around 20% of postings with specific educational requirements for biologists, medical scientists, natural science research managers, and researchers/research associates explicitly require a PhD, underscoring the crucial role higher-level education, including both university degrees and technical qualifications, plays in the Life Sciences sector.

By using online job postings, it is also possible to identify any job postings specifically advertising for apprenticeship positions. Doing so reveals that fewer than 1,000 apprenticeship job postings were advertised by Life Sciences companies between April 2023 and March 2024, accounting for around 1% of sector job postings. While this represents a small fraction of sector recruitment, it aligns with the UK-wide labour market average.

Among the Core Life Sciences Roles, chemical technicians and microbiologists were the two occupations with the highest share of apprenticeship job postings, though in both cases, these still account for just over 1% of all job postings advertised by Life Sciences companies for these roles.

Figure 21: Minimum education requirements mentioned in Life Sciences job postings



Source: Lightcast, Job Postings Analytics

[13] Boston Consulting Group (2023) 'Competencies over credentials: the rise of skill-based hiring' **https://www.bcg.com/publications/2023/rise-of-skills-based-hiring**

6. Workforce Projections

The research has so far focused on the current state of the UK Life Sciences sector, highlighting the prevalence of different occupations and the demand for specific skills. This chapter explores how employment in the sector may evolve through to 2035. The findings are based on historical employment trends, projected forward using three scenarios to estimate growth potential and the demand needed to replace workers leaving the sector.

It is important to note that these projections are based solely on historical employment patterns and do not consider future policy changes, broader economic dynamics, or unforeseen events like the Covid-19 pandemic. Such factors will inevitably influence the sector's growth trajectory, so these projections should be viewed as starting points for discussion rather than definitive predictions.

Three growth scenarios were developed based on employment data between 2011/12 and 2021/22 from the Office for Life Sciences Bioscience and Health Technology Sector Statistics dataset. The projections use the same sector definition applied throughout the report, focusing on the core technical elements of the sector while excluding several service and supply segments.

- **Continuation scenario:** Calculated based on the average five-year trend rate of employment growth observed between 2011/12 and 2021/22.
- **High-growth scenario:** The highest average employment growth rate observed over any five consecutive years within this period. For BioPharma, this was from 2017/18 to 2021/22, and for MedTech, from 2012/13 to 2016/17.
- **Low-growth scenario:** The lowest average employment growth rate observed over any five consecutive years within this period. For BioPharma, this was from 2011/12 to 2015/16, and for MedTech, from 2017/18 to 2021/22.

Further details on the methodology can be found in **Section A** of the technical annex.

Figure 22: Average annual employment growth rate and cumulative growth potential (to 2035) across three scenarios for the life sciences sector and subsectors

Scenario		Life Sciences	BioPharma	MedTech
Continuation	Annual growth rate	2.19 %	2.12 %	2.29 %
	Cumulative growth to 2035	24.38 %	23.36 %	25.35 %
High growth	Annual growth rate	3.10 %	4.40 %	2.98 %
	Cumulative growth to 2035	43.98 %	53.79 %	34.13 %
Low growth	Annual growth rate	1.26 %	0.23 %	2.07 %
	Cumulative growth to 2035	13.01 %	2.31 %	22.78 %

Source: Lightcast calculations based on Office for Life Sciences Bioscience and Health Technology Sector historical statistics

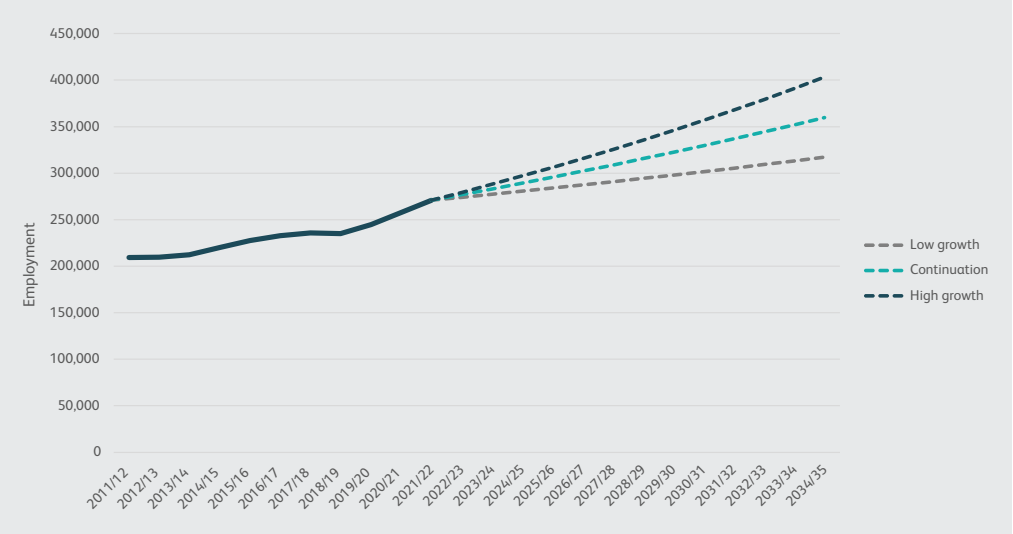
6.1 Sector growth potential

In the continuation scenario, with an annual growth rate of 2.19%, cumulative employment growth would reach 24% by 2035, resulting in a net increase of 70,000 jobs. This would take the workforce from its current size of 270,900 (for core technical businesses only) to a projected total of approximately 360,000.

In the high-growth scenario, with an annual employment growth rate of 3.1%, cumulative employment growth would rise to 44% by 2035, resulting in a net increase of 106,000 jobs. Under this scenario, the workforce would grow to approximately 403,000.

In the low-growth scenario, with an annual employment growth rate of 1.26%, cumulative employment growth would reach 13% by 2035, resulting in a net increase of 36,000 jobs. Under this scenario, the workforce would grow to approximately 317,000.

Figure 23: Total employment in the Life Sciences over time and future projections



Source: Lightcast calculations based on Office for Life Sciences Bioscience and Health Technology Sector historical statistics

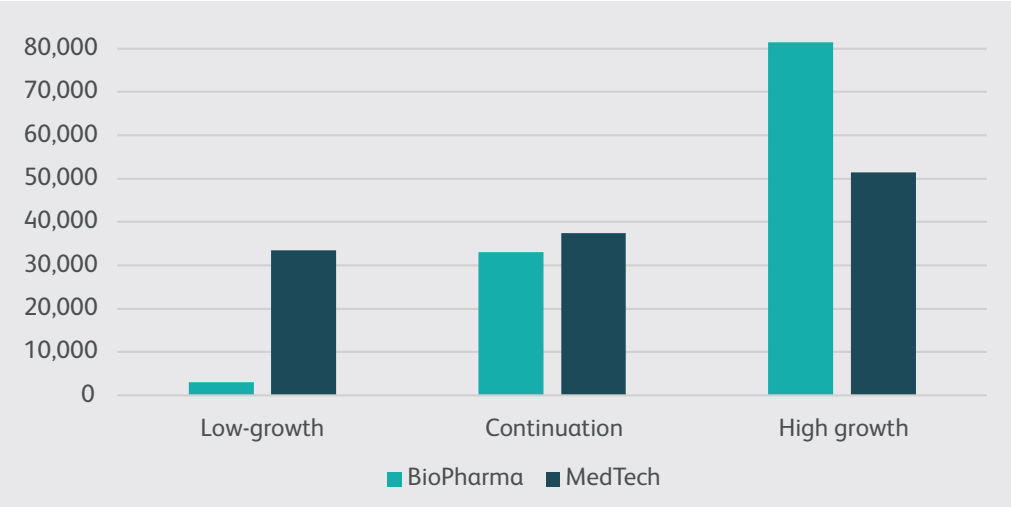
Across all three scenarios, the sector will also need to replace around 75,000 workers leaving their roles due to retirement, career changes, or other factors. These estimates are based on likely replacement ratios drawn from the *Working Futures* publication and rely solely on past trends.[14]

[14] **https://kb.lightcast.io/en/articles/7124860-how-does-lightcast-calculate-job-openings**

In the continuation scenario, approximately 33,000 of the additional 70,000 jobs will be generated in the BioPharma subsector, although this could range from 3,100 in a low-growth scenario to 81,300 in a high-growth scenario. BioPharma companies will also need to replace around 27,200 workers leaving their roles due to retirement, career changes, or other factors.

For MedTech, approximately 37,500 additional jobs will be generated in the continuation scenario, with a range from 33,500 in a low-growth scenario to 51,500 in a high-growth scenario. This narrower range reflects the MedTech sector's historically less volatile and more predictable growth patterns, suggesting that even in a low-growth scenario, the sector is still expected to grow substantially. MedTech companies will also need to replace around 47,500 workers leaving their roles due to retirement, career changes, or other factors.

Figure 24: Projected additional jobs for BioPharma and MedTech by 2035 across three scenarios



Source: Lightcast calculations based on Office for Life Sciences Bioscience and Health Technology Sector historical statistics

Sector growth between 2019 and 2022

The UK Life Sciences sector experienced significant growth during the years coinciding with the Covid-19 pandemic, far exceeding its historical average. While the average yearly growth rate for the sector between 2011/12 and 2021/22 was 2.2%, employment surged at an annual rate of 4.9% between 2019 and 2022, resulting in the addition of over 35,000 jobs. While it is likely that some of this growth was driven by the sector's response to the pandemic, companies also continued their regular life sciences activities during this period, making it difficult to determine exactly how much of the growth was directly related to pandemic-related activities.

BioPharma, in particular, saw exceptional growth during this period. Employment in the subsector grew by 4.8% between 2018/19 and 2019/20, followed by an impressive 7.4% increase between 2019/20 and 2020/21, and a further 6.8% growth between 2020/21 and 2021/22. This compares to an average annual growth rate of just 2.1% over the preceding decade.

The MedTech subsector also experienced high growth during this period. While the sector's average yearly growth rate was 2.3% between 2011/12 and 2021/22, it recorded an annual growth rate of approximately 3.5% in each of the years following the onset of the pandemic.

6.2 Occupations

The data suggests that the share of jobs within the sector that fall into the Professional Occupations major grouping has been increasing slightly over recent years, while the share of jobs in 'Process, Plant and Machine Operatives' and 'Elementary Occupations' has decreased. This shift likely reflects the sector's growing focus on R&D, which requires more scientists, researchers, and other highly skilled professionals. At the same time, the use of AI and automation to enhance manufacturing efficiencies may be contributing to a reduction in more manual roles, such as those related to laboratory quality control and operations.[15]

If these trends continue, Professional Occupations are projected to account for around 54% of the total demand in the sector by 2035. The specific occupations expected to have the largest recruitment need are mainly in science and research-related fields, such as biological scientists, biochemists, and laboratory technicians. However, growth is not limited to these areas; roles such as programmers, software developers, and sales and business development managers are also among the top 10 occupations expected to be in high demand by 2035 (see **Figure 25**).

It is important to clarify that the projected demand for specific occupations is primarily an extension of recent workforce changes, reflecting the roles that have been prevalent in the industry and historical growth trends over recent years. These projections are an extrapolation of historical growth patterns and do not account for potential emerging occupations or significant shifts in demand.

Figure 25: Top 10 occupations with the highest number of additional jobs and workers leaving their roles, continuation scenario 2025–2035

Broad occupation (SOC4-digit)	Additional jobs	Workers leaving
Biochemists and Biomedical Scientists	3,450	3,550
Biological Scientists	3,370	3,460
Laboratory Technicians	3,130	2,740
Research and Development (R&D) Managers	2,470	2,540
Programmers and Software Development Professionals	2,240	2,300
Physical Scientists	2,210	2,270
Other Researchers, Unspecified Discipline	1,900	1,950
Production Managers and Directors in Manufacturing	1,630	1,740
Business and Related Research Professionals	1,650	1,700
Chemical Scientists	1,630	1,680

Source: Lightcast calculations based on Office for Life Sciences Bioscience and Health Technology Sector historical statistics

6.3 Demand and supply drivers

This section complements the quantitative findings with insights from a comprehensive literature review to help contextualise the projections. This is done to acknowledge the limitations of a purely quantitative exercise looking at historical trends and take into account a number of factors likely to influence the sector's growth over the next decade. These insights are drawn from a list of sector research and policy papers set out in **Section H** of the technical annex.

[15] British Science Association (2023) 'TechBio 2023 – UK driving the AI revolution' **https://techbio.org.uk/wp-content/uploads/2023/10/TechBio-2023-UK-driving-the-AI-revolution-2.pdf**

Trends are divided into two categories – demand-side and supply-side – depending on whether they are likely to affect jobs growth in the sector or the provision of talent.

On the demand side, five major trends have been identified:

1. Macro-economic shifts: The UK economy is increasingly shifting towards high-value, knowledge-based industries, positioning sectors like Life Sciences as critical drivers of growth. However, broader macroeconomic factors are likely to shape the sector's trajectory over the coming decade. Inflationary pressures, fluctuating energy costs, and geopolitical instability are creating uncertainties that could affect both operational costs and global competitiveness.

In addition, shifts in global trade dynamics, including new free trade agreements and the realignment of supply chains, present both opportunities and challenges. Access to critical materials and components used in manufacturing and R&D may face constraints, prompting companies to adopt more resilient and diversified supply chain strategies.

2. Changing financial landscape for R&D and innovation: The sector is currently facing a challenging investment environment. Rising R&D costs, combined with declining returns on new drug development, are putting pressure on companies to find innovative ways to sustain growth. At the same time, changes in market conditions – such as higher interest rates and shifts in venture capital priorities – are influencing the sector's growth potential.

Adding to this complexity, the highly mobile nature of the Life Sciences industry means companies operate on a global scale, making it essential for countries to work hard to retain existing investments and attract new ones. With growth a key priority for the Government, it is crucial that Life Sciences and R&D remain high on the agenda, particularly as the sector is recognised as one of the eight priority areas within the industrial strategy.

3. Changing regulatory environment: The UK's departure from the European Union, along with new international trade agreements and ongoing innovation, is reshaping the regulatory landscape in which Life Sciences businesses operate. These changes are impacting the speed at which UK companies can conduct clinical research, making it more difficult for them to remain competitive on the international stage.

4. The digital revolution and the rise of Artificial Intelligence: The digital revolution, characterised by the rise of big data, AI, and automation, is reshaping the world of work. Many tasks and jobs, including in the Life Sciences sector, will be automated due to these technologies. However, this shift also has the potential to create new jobs at the forefront of innovation. Demand is expected to grow in areas such as bioinformatics, computational biology, AI-driven drug discovery, and digital health technologies. This will require a workforce equipped with both technical expertise and the ability to integrate new technologies into existing workflows.

5. Sustainable development and the green transition: In line with the UK's commitment to reducing its carbon footprint, the Life Sciences sector has already made significant progress in rethinking its operations to promote sustainability. For example, initiatives such as AstraZeneca's Ambition Zero Carbon programme demonstrate the sector's proactive approach, with plans to reduce greenhouse gas emissions by 98% by 2026. Many companies have set ambitious sustainability targets and are actively investing in new technologies, renewable energy, and sustainable supply chains to achieve these goals.

This momentum aligns with global trends, such as the adoption of circular economy principles, which aim to minimise waste and promote the reuse of materials. For the Life Sciences sector, these efforts include redesigning packaging, sourcing renewable raw materials, and implementing eco-friendly manufacturing processes. Continued innovation and investment will be essential to further enhancing the sector's environmental performance.

In addition to trends affecting job growth in the Life Sciences sector, there are a number of supply-related trends that also are likely to affect the sector in coming years. These are trends related to the ease with which businesses can access the talent and skills they need to continue to grow and innovate. Broadly speaking, five major trends have been identified here:

1. Ageing workforce and lifelong learning: With 80% of the UK's 2030 workforce already in employment today, there is a growing need to focus on lifelong learning and continuous professional development (CPD) to ensure that the Life Sciences sector has the skills necessary for future growth. The rapid pace of technological and scientific advancements requires ongoing upskilling and reskilling of the workforce. Lifelong learning initiatives, including CPD programmes, will be essential for maintaining competitiveness as demand for new skills and knowledge grows.

2. Global competition and talent attraction: As discussed in **Chapter 8**, the UK Life Sciences sector benefits from international workers, particularly in highly skilled professional occupations. With increasing competition from other countries with growing Life Sciences sectors, the UK must both strengthen its domestic talent pipeline and remain an attractive destination for highly skilled global talent. Access to a skilled and diverse workforce – developed both domestically and internationally – is essential for driving innovation and ensuring the sector's continued success.

3. Changing attitudes towards work: The increasing emphasis on work-life balance and flexible working is prompting businesses to rethink how they engage and retain talent. In fields like R&D, in-lab and in-person work remains essential, but non-lab roles are increasingly adopting hybrid and flexible models.

Research by Deloitte reveals that nearly 90% of Gen Zs and millennials consider a sense of purpose crucial to job satisfaction and well-being.[16] Moreover, 44% of Gen Zs and 40% of millennials have turned down an employer due to personal ethics or beliefs, citing key concerns such as environmental impact, inclusivity, mental well-being, and work-life balance. With its focus on health, science, and innovation – an emphasis only heightened in the wake of the pandemic – the Life Sciences sector is well-positioned to attract this demographic if companies continue to adapt to evolving expectations around flexibility and workplace culture.

4. Equality, Diversity and Inclusion: Equality, Diversity, and Inclusion (EDI) is increasingly recognised as a strategic priority in the Life Sciences sector, essential for driving innovation, attracting talent, and maintaining competitiveness. A diverse and inclusive workforce brings a broader range of skills, perspectives, and experiences, enhancing organisations' ability to address complex global challenges effectively. Life Sciences companies must continue adopting inclusive practices that actively welcome and support diverse talent, ensuring they tap into the full potential of a wider talent pool.

5. Education and skills alignment: As discussed in **Chapter 7**, the strength of the UK's Life Sciences sector depends on the continued development of a robust pipeline of graduates and apprentices. Rapid technological advances and the green transition are creating exciting new opportunities, reshaping the skills that businesses need to thrive. Education and training providers must adapt quickly to these changes to keep pace with the demand for new skills. Aligning education programmes with emerging areas such as data science, artificial intelligence, and biotechnology will be essential for addressing skills gaps and enabling the sector to innovate and grow.

[16] Deloitte: Gen Z and Millennial Survey, 2024

7. Talent Pipeline

This section focuses on the talent pipeline of the Life Sciences sector. By combining data from official statistics produced by the Department for Education[17] and the Higher Education Statistics Agency (HESA),[18] with the Lightcast career pathways tool, the analysis complements findings from previous chapters by providing insights on the supply side – where talent comes from or is expected to come from in the future. As this section uses Standard Industrial Classification (SIC) codes to categorise industries, the analysis relates to the Life Sciences sector (SIC definition). Further details on the methodology used in this section can be found in **Section A** of the technical annex.

7.1 Graduate pipeline

HESA Graduate Outcomes data reveals that approximately 5,000 graduates from the academic year 2020/21 secured employment in the Life Sciences sector within 15 months of graduating. Of these, 1,070 had selected their location of employment as somewhere outside the UK, leaving 3,935 graduates in the UK Life Sciences sector. The majority of those who left the UK were non-domiciled students returning to their home countries or seeking opportunities elsewhere, rather than a significant departure of domestic students.

Graduates from the 2020/21 academic year were distributed across the three subsectors of the Life Sciences sector (SIC definition):

- Scientific R&D employed the largest share, with 2,395 graduates (61%). This subsector also demonstrated a high demand for advanced qualifications, as 43% (1,035) of these graduates held postgraduate degrees.
- Pharmaceuticals employed 955 graduates (24%), with 36% holding postgraduate qualifications.
- Medical Technology employed 585 graduates (15%), with 29% holding postgraduate qualifications.

[17] Department for Education, Apprenticeships in England by Industry Characteristics, Academic Year 2021/22.
[18] Higher Education Statistical Agency: Graduate Outcomes Survey Results Record, 2020/21.

Figure 26: Distribution of graduates entering the Life Sciences sector (SIC definition) by subsector

Life Sciences subsector	Undergraduate	Postgraduate	Total
Pharmaceuticals	615	340	955
Medical Technology	415	170	585
Scientific R&D	1,355	1,035	2,395
Total	**2,385**	**1,550**	**3,935**

Source: Higher Education Statistical Agency: Graduate Outcomes Survey Results Record, 2020/21.

Across the sector, 61% (2,385) of the graduates entering the Life Sciences industry held undergraduate degrees, while 39% (1,550) had postgraduate qualifications.

Figure 27: Level of HE qualification held by graduates entering the Life Sciences sector (SIC definition)

Life Sciences subsector	Undergraduate	Postgraduate
Pharmaceuticals	64%	36%
Medical Technology	71%	29%
Scientific R&D	57%	43%
Total	**61%**	**39%**

Source: Higher Education Statistical Agency: Graduate Outcomes Survey Results Record, 2020/21.

Figure 28: Domicile status of graduates from UK universities entering the Life Sciences sector (SIC definition), UK vs Rest of World

Life Sciences sector (UK)			
Domicile status			
European Union	Non-European Union	UK	Total
295	145	3,495	3,935
7%	4%	89%	

Life Sciences sector (Rest of World)			
Domicile status			
European Union	Non-European Union	UK	Total
365	470	235	1,070
34%	44%	22%	

Source: Higher Education Statistical Agency: Graduate Outcomes Survey Results Record, 2020/21.

- Of the 3,935 graduates employed by UK Life Sciences companies, 89% (3,495) were domiciled in the UK, while 11% (440) were non-domiciled.
- 94% of UK-domiciled graduates remained in the UK post-graduation, compared to just 35% of non-domiciled graduates. Among the 1,070 graduates who left the UK to work abroad in Life Sciences, 235 (22%) were UK-domiciled.

The movement of graduates and postgraduates trained in UK universities abroad may reflect the global nature of the Life Sciences sector, where international collaboration and career opportunities are abundant. However, it also raises concerns about a potential "brain drain" and the need to ensure competitive opportunities within the UK to retain top talent. The low retention of non-domiciled graduates suggests challenges in attracting and retaining international talent. Factors such as career prospects and socio-economic considerations may contribute to this issue. Acknowledging trends in the Life Sciences sector within the UK's approach to visas and migration, along with supporting employers to effectively navigate immigration pathways, will be important for attracting and retaining specialist international talent.

Occupational destination

The 3,935 graduates found employment in a wide range of occupations. The top 20 most common occupations accounted for 72% (2,840) of these graduates. The top occupational destinations included:

- Biochemists and Biomedical Scientists: 495 graduates (12.6% of the total)
- Biological Scientists: 345 (8.8%)
- Chemical Scientists: 280 (7.1%)
- Laboratory Technicians: 280 (7.1%)
- Programmers and Software Development Professionals: 160 (4.1%)

These figures highlight a strong demand for roles in biochemistry, biology, and chemistry, reflecting the foundational importance of these disciplines in the Life Sciences sector. The presence of programmers and software developers underscores the growing integration of technology and computational methods in Life Sciences, necessitating interdisciplinary expertise. A significant proportion of the roles for Biochemists, Biomedical Scientists, and Biological Scientists were filled by graduates with postgraduate qualifications, showing that advanced study enhances employability and opportunities in these specialised fields.

It is significant that eight of the top ten occupations with the highest projected demand by 2035 are included in this list, with the top three occupations occupying three of the top four positions in the graduate pipeline.

Figure 29: Occupational destinations of graduates entering the Life Sciences sector (SIC definition)

Occupational destination by 4-digit SOC code	Undergraduate	Postgraduate	Total
(2113) Biochemists and biomedical scientists	290	205	495
(2112) Biological scientists	170	180	345
(2111) Chemical scientists	185	95	280
(3111) Laboratory technicians	215	60	280
(2119) Natural and social science professionals n.e.c.	70	115	185
(2129) Engineering professionals n.e.c.	105	65	170
(2134) Programmers and software development professionals	105	50	160
(2433) Actuaries, economists and statisticians	25	70	95
(2161) Research and development (R&D) managers	25	65	90
(3549) Business associate professionals n.e.c.	55	30	85
(3552) Business sales executives	65	15	80
(2481) Quality control and planning engineers	60	20	80
(3554) Advertising and marketing associate professionals	55	25	80
(2125) Production and process engineers	55	15	70
(2122) Mechanical engineers	55	10	65
(2482) Quality assurance and regulatory professionals	40	25	65
(3115) Quality assurance technicians	45	15	60
(2434) Business and related research professionals	30	25	55
(2114) Physical scientists	30	25	55
(3556) Sales accounts and business development managers	20	25	45

Source: Higher Education Statistical Agency: Graduate Outcomes Survey Results Record, 2020/21.

Region of employment

The majority of graduates (83%) found employment in England, particularly within the "Golden Triangle" of South East England (845), East of England (645), and London (590). The concentration of graduates in these regions aligns with the presence of major Life Sciences companies, research institutions, and universities in the Golden Triangle. This area is known for its high concentration of pharmaceutical, biotechnology, and research organisations, offering significant employment opportunities for Life Sciences graduates. Further insights on the geographic breakdown of graduates can be found in **Section I** of the technical annex.

Provider

The 3,935 graduates came from 136 different higher education providers. The top 20 institutions, in terms of the number of UK Life Sciences graduates, are spread across various regions of the UK, indicating that high-quality Life Sciences education is not confined to a single geographic area. This distribution supports a diverse national talent pool for the Life Sciences sector.

Subject area

The 3,935 Life Sciences graduates studied 412 different subject areas. The top 20 subject areas account for 2,175 of the total cohort. Subjects such as Chemistry, Biomedical Sciences, Biochemistry, Biological Sciences, and Biology dominate the list, reflecting their fundamental importance to the Life Sciences sector. These disciplines provide essential knowledge and skills that are directly applicable to various Life Sciences roles.

The prevalence of graduates from Mechanical Engineering and Computer Science underscores the interdisciplinary nature of modern Life Sciences. The integration of engineering and computational skills is crucial for advancements in medical technology, bioinformatics, and AI-driven research. Recruitment of graduates in Business and Management is driven by the need for managerial and operational expertise within Life Sciences companies, highlighting the sector's complexity and the importance of leadership and strategic planning.

Figure 30: Top 20 subject areas by number of graduates entering the Life Sciences sector (SIC definition)

Subject of study (HECoS)	Undergraduate	Postgraduate	Total
(100417) Chemistry	225	95	315
(100265) Biomedical sciences	225	55	280
(100344) Biochemistry	150	20	170
(100345) Biological sciences	100	60	165
(100346) Biology	100	50	145
(100251) Pharmacy	65	55	125
(100250) Pharmacology	65	50	115
(100190) Mechanical engineering	90	15	110
(100366) Computer science	55	40	95
(100143) Chemical engineering	60	25	85
(100425) Physics	55	25	80
(100267) Clinical medicine	5	70	75
(100127) Biomedical engineering	40	20	60
(100079) Business studies	25	30	55
(100403) Mathematics	45	5	50
(100497) Psychology	35	15	50
(100089) Management studies	20	30	50
(100078) Business and management	30	20	50
(100272) Neuroscience	30	20	50
(100388) Forensic science	40	10	50

Source: Higher Education Statistical Agency: Graduate Outcomes Survey Results Record, 2020/21.

Case Study - John Arceno, Pfizer

John Arceno did a placement year with Pfizer in 2018–19 while studying at the University of Kent. He then rejoined the company as a graduate in 2020.

John had a passion for science growing up – both his parents worked as healthcare professionals in the NHS – and he has long understood the impact healthcare has on people's lives. Following his second year at university, John secured a placement year at Pfizer, which he describes as the most consequential year of his life.

After graduation, John was offered a place on the Pfizer Future Leaders Graduate Scheme, which immersed him in a range of roles across the company and gave him broader experience than he might otherwise have had. This included working in sales, a new discipline that allowed him to gain the full benefit of his employer's culture of learning and development.

He credits being able to see the practical application of his learning as underpinning his success both in the workplace and in his studies – such as learning about drugs and cellular processes before then being able to understand the impact of this content and the future benefits it could bring to patients.

John finished the graduate scheme two years ago and now has a full-time role with Pfizer, where he continues to apply the skills he learned earlier in his journey.

John said: "Throughout your formal education, you're taught theory, but my placement with Pfizer was all about application. This gave me insight into the industry, and I could see first-hand the impact my work could have on patients. It was extremely rewarding, and I left the year with a new skill set and a renewed passion for my studies.

"I want to continue to build my career in this industry, where we have the opportunity to impact the lives of patients. I'd recommend a placement year to any university student."

Figure 31: Percentage of HE graduates entering the Life Sciences sector (SIC definition)

Subject of study (HECoS)	Total UK HE graduates 2020/21		% joining life sciences	
	Undergraduate	Postgraduate	Undergraduate	Postgraduate
Chemistry	2,330	635	9.6 %	14.9 %
Biomedical sciences	3,845	650	5.9 %	8.5 %
Biochemistry	1,230	125	12.2 %	15.9 %
Biological sciences	1,345	410	7.4 %	14.7 %
Biology	1,855	460	5.4 %	10.9 %
Pharmacy	1,620	1,115	4.0 %	4.9 %
Pharmacology	525	315	12.4 %	15.9 %
Mechanical engineering	4,075	725	2.2 %	2.1 %
Computer science	6,165	2,070	0.9 %	1.9 %
Chemical engineering	1,475	415	4.1 %	6.0 %
Physics	2,140	515	2.6 %	4.8 %
Clinical medicine	2,530	1,565	0.2 %	4.5 %
Biomedical engineering	315	135	12.7 %	14.8 %
Business studies	5,370	2,635	0.5 %	1.1 %
Mathematics	4,515	535	1.0 %	0.9 %
Psychology	9,805	2,780	0.4 %	0.5 %
Management studies	4,260	3,640	0.5 %	0.8 %
Business and management	4,775	1,895	0.6 %	1.1 %
Neuroscience	450	375	6.6 %	5.3 %
Forensic science	885	175	4.5 %	5.7 %

Source: Higher Education Statistical Agency: Graduate Outcomes Survey Results Record, 2020/21.

Figure 31 shows the total number of higher education graduates from the academic year 2020/21 in each relevant subject area, with the approximate percentage who went to work within the UK Life Sciences sector (SIC definition) within 15 months of graduating. Subjects such as Biochemistry, Pharmacology, and Biomedical Engineering have a proportion of their graduates entering the Life Sciences sector. This highlights a strong alignment between these disciplines and Life Sciences careers, showing these graduates have skills that are in demand in the sector. Conversely, subjects like Psychology, Business Studies, and Mathematics see a lower proportion of their graduates entering the sector. This likely reflects a broader range of career options available to graduates in these fields, as well as the larger overall number of graduates.

Figure 32 illustrates the most common occupational and industrial destinations for graduates from the top 20 subject areas that contribute to the Life Sciences. This analysis provides insights into the career trajectories of potential Life Sciences graduates and the competitive landscape for talent in the sector. Understanding common career paths can help Life Sciences companies refine their recruitment strategies. Emphasising the unique opportunities within the sector compared to competing industries can strengthen efforts to attract top talent.

Tertiary education, hospital activities, and technical consultancy are key competitors, reflecting the diverse opportunities available to these graduates. Education is the leading industry destination for graduates in Chemistry, Biological Sciences, Biology, Mathematics, and Neuroscience. Hospital activities are the primary destination for graduates in Biomedical Sciences, Pharmacology, and Clinical Medicine. Meanwhile, computer programming is the top destination for graduates in Computer Science and Physics.

In terms of occupations, students across a range of these disciplines are hired into roles such as Chemical Scientists, Biochemists and Biomedical Scientists, Biological Scientists, and Laboratory Technicians. It is important to note that these data points are separate, meaning the top occupational destination does not necessarily align with the top industry destination. For instance, 475 chemistry graduates became Chemical Scientists. Some of these positions were within Tertiary Education, but the majority were spread across a range of other industries.

Figure 32: Occupational and industry destinations of graduates from key subject areas feeding into the life sciences sector

Subject of study (HECoS)	Number 1 occupational destination by 4-digit SOC code	Total	Number 1 Industry destination by 4- lisit SIC code	Total
Chemisty	(2111) Chemical scientists	475	(8542) Tertiary education	160
Biomedical sciences	(2113) Biochemists and biomedical scientists	635	(8610) Hospital activities	570
Biochemistry	(2113) Biochemists and biomedical scientists	135	(7211) Research and experimental development on biotechnology	65
Biological sciences	(2112) Biological scientists	110	(8542) Tertiary education	110
Biology	(2112) Biological scientists	125	(8542) Tertiary education	140
Pharmacy	(2251) Pharmacists	1,675	(4773) Dispensing chemist in specialised stores	710
Pharmacology	(2112) Biological scientists	60	(8610) Hospital activities	5D
Mechanical engineering	(2122) Mechanical engineers	945	(7112) Engineering activities and related technical consultancy	430
Computer science	(2134) Programmers and software development professionals	3,230	(6201) Computer programming activities	1,425
Chemical engineering	(2125) Production and process engineers	315	(7112) Engineering activities and related technical consultancy	125
Physics	(2134) Programmers and software development professionals	230	(6201) Computer programming activities	155
Clinical medicine	(2211) Generalist medical practitioners	2,525	(8610) Hospital activities	2,195
Biomedical engineering	(2129) Engineering professionals n.e.c.	60	(3250) Manufacture of medical and dental instruments and supplies	40
Business studies	(3554) Advertising and marketing associate professionals	335	(6920) Accounting, bookkeeping and auditing activities; tax consultancy	240
Mathomatics	(2134) Programmers and software development professionals	380	(8531) General secondary education	325
Psychology	(2226) Other psychologists	570	(8690) Other human health activities	1,190
Management studies	(2431) Management consultants and business analysts	345	(6920) Accounting, bookkeeping and auditing activities; tax consultancy	280
Business and management	(3554) Advertising and marketing associate professionals	275	(6920) Accounting, bookkeeping and auditing activities; tax consultancy	205
Neuroscience	(2112) Biological scientists	45	(8542) Tertiary education	9D
Forensic science	(3111) Laboratory technicians	85	(8424) Public order and safety activities	85

Source: Higher Education Statistical Agency: Graduate Outcomes Survey Results Record, 2020/21

7.2 Apprenticeships

The UK-wide Apprenticeship Levy, introduced in April 2017, requires all UK employers with an annual pay bill exceeding £3 million to contribute 0.5% of their total pay bill to the levy. Employers can then reclaim this funding to invest in apprenticeship training. Since the introduction of the Apprenticeship Levy and the transition to apprenticeship standards, the number and nature of apprenticeship starts have changed significantly. Consequently, this analysis focuses on the years following these changes to provide an accurate reflection of the current state of apprenticeship starts in the Life Sciences sector. **The data in this section relates to England only**.

The overall number of apprenticeship starts in the Life Sciences sector has grown since 2017/18 and has remained fairly consistent over the past three years, ranging between 1,450 and 1,520 annually. However, different subsectors within Life Sciences have experienced varied outcomes. The BioPharma subsector has seen a growth of approximately 31%, and R&D has grown by around 38%. In contrast, the Medical Technology subsector has experienced a significant decline, with apprenticeship starts dropping by 40%.

Figure 33: Apprenticeship starts at Life Sciences companies (SIC definition) by subsector, England only

Subsector	2017/18	2018/19	2019/20	2020/21	2021/22
BioPharma	350	360	430	450	460
MedTech	420	450	320	270	250
Scientific R&D	580	780	770	730	800
Total	**1,350**	**1,590**	**1,520**	**1,450**	**1,510**

Source: Department for Education, Apprenticeships in England by Industry Characteristics, Academic Year 2021/22.

Data from the Office for Life Sciences shows that the Medical Technology sector has grown significantly in terms of employment and revenue during this period. The contrasting fortunes in apprenticeship starts may be attributed to the size and profile of the companies hiring apprentices in each subsector. In 2017/18, 86% of apprenticeship starts at BioPharma companies were at large organisations, along with 85% at R&D companies, but only 41% in Medical Technology. The overall decline in Medical Technology starts has been primarily driven by a 57% fall in starts at SMEs.

Figure 34: Apprenticeship starts at Life Sciences companies (SIC definition) by company size, England only

Enterprise size	2017/18	2018/19	2019/20	2020/21	2021/22
Small (0-49 employees)	7.2%	5.5%	6.2%	8.1%	8.2%
Medium (50-249 employees)	17.6%	21.2%	14.5%	12.5%	14.3%
Large (250+ employees)	75.2%	73.3%	79.3%	79.4%	77.6%

Source: Department for Education, Apprenticeships in England by Industry Characteristics, Academic Year 2021/22.

Qualification level

While the overall number of starts in the sector has remained relatively stable over the past five years, there has been a significant transformation in the qualification levels of these apprenticeships. Notably, there has been a sharp decline in the number of Level 2 apprenticeship starts taking place, alongside substantial growth in starts at degree level (Level 6+). Specifically, the number of Level 2 apprenticeship starts fell from 310 in 2017/18 to just 80 in 2021/22, a drop from 23% to only 5% of total sector starts. This shift highlights the sector's changing priorities, with a reduced emphasis on entry-level qualifications as the need for more advanced skills continues to grow.

In contrast, the number of Level 6+ apprenticeship starts has increased significantly, reflecting the sector's growing demand for highly specialised training. Level 6+ starts rose from 80 in 2017/18 to 440 in 2021/22, increasing from 6% to 30% of total sector starts. These higher-level apprenticeships offer pathways that are increasingly aligned with sector needs, providing alternative routes for individuals to gain relevant qualifications without following traditional academic pathways. This is crucial not only for new talent entering the sector but also for current employees looking to enhance their skills and advance their careers.

Figure 35: Apprenticeship starts at Life Sciences companies (SIC definition) by qualification level, England only

Qualification level	2017/18	2018/19	2019/20	2020/21	2021/22
Level 2	23%	20%	13%	6%	5%
Level 3	52%	46%	43%	39%	39%
Level 4	9%	8%	14%	18%	18%
Level 5	10%	15%	8%	11%	8%
Level 6+	6%	11%	22%	26%	30%

Source: Department for Education, Apprenticeships in England by Industry Characteristics, Academic Year 2021/22.

Key standards

In 2021/22, the 1,510 apprenticeship starts in the Life Sciences sector were distributed across a broad range of apprenticeship standards. Estimates for standards with low numbers of starts are not included due to the rounding methodology applied to the data by the Department for Education in its publication. However, the top ten standards, which account for nearly half of all sector

Figure 36: Apprenticeship starts at Life Sciences companies (SIC definition) by aim title, 2021/22, England only

Aim Title	Starts
Level 3: Team Leader or Supervisor	160
Level 4: Data Analyst	100
Level 3: Engineering Technician	100
Level 6: Laboratory Scientist (degree)	100
Level 5: Operations or Departmental Manager	80
Level 6: Product Design and Development Engineer (degree)	50
Level 3: Business Administrator	30
Level 6: Digital and Technology Solutions Professional (integrated degree)	30
Level 4: Improvement Practitioner	30
Level 3: Laboratory Technician	30

Source: Department for Education, Apprenticeships in England by Industry Characteristics, Academic Year 2021/22.

The prevalence of these apprenticeship standards highlights the Life Sciences sector's strategic focus on both leadership and technical expertise. The significant number of starts in standards such as Team Leader or Supervisor and Operations or Departmental Manager suggests a demand for management and operational skills, potentially aimed at enhancing organisational efficiency and leadership capacity within the sector. Similarly, starts in standards such as Data Analysis and Laboratory Science reflect a focus on building technical expertise in data handling and laboratory-based research, which are critical for innovation and informed decision-making in Life Sciences companies.

The availability of appropriate apprenticeship standards is an important factor influencing the number of starts within the sector. For example, growth in the number of apprenticeships in the pharmaceutical sector is supported by the availability of degree-level apprenticeship standards, such as the Level 6 Clinical Trials Specialist and Level 7 Bioinformatics Scientist. These standards ensure that the training provided is directly relevant to the specific needs of the sector, making apprenticeships a more attractive and viable option for both employers and prospective apprentices.

Conversely, a lack of suitable apprenticeship standards can have far-reaching consequences, leading to a decline in apprenticeship starts in key areas of the sector and exacerbating existing skills shortages. When employers find that available standards fail to reflect the specific needs of their industries, they are less likely to engage with the apprenticeship system, weakening a critical pipeline for talent development. To address this, it is essential that employers take an active and sustained role in designing, refining, and updating apprenticeship standards. This collaborative approach ensures that programmes remain relevant, responsive, and tailored to the evolving demands of the sector, while also strengthening workforce capability, driving innovation, and safeguarding the sector's long-term competitiveness and sustainability.

Employer engagement

Beyond apprenticeship starts, it's important to consider the number of individual companies training apprentices. Between academic years 2017/18 and 2021/22, the number of Life Sciences companies taking on apprentices grew by 16%, from 250 to 290. However, this overall growth masks notable variations across subsectors.

The Scientific R&D subsector saw a 50% increase in companies registering apprentices, while BioPharma doubled. In contrast, Medical Technology experienced a 33% decline, largely due to a 50% drop in the number of small companies (0–49 employees) participating, falling from 60 to 30.

Conversely, in Scientific R&D, the number of small companies engaging with apprenticeships doubled from 30 to 60, with biotechnology seeing the sharpest rise—small employers increased from a reported 0 (rounded down to the nearest 10) to 20. This growth drove apprenticeship starts in biotechnology from 10 in 2017/18 to 80 in 2021/22. This trend starkly contrasts with Medical Technology and the broader economy, where both company participation and apprenticeship starts have generally declined.

Figure 37: Life Sciences companies (SIC definition) registering apprenticeship starts by subsector, England only

Subsector	2017/18	2018/19	2019/20	2020/21	2021/22
BioPharma	30	40	60	50	60
MedTech	120	90	90	100	80
Scientific R&D	100	110	130	140	150
Total	**250**	**240**	**280**	**290**	**290**

Source: Department for Education, Apprenticeships in England by Industry Characteristics, Academic Year 2021/22.

The result of these changes is that 88% of apprenticeship starts in the Life Sciences sector in 2021/22 were at companies that pay the Apprenticeship Levy. The data suggests that the current apprenticeship system disproportionately impacts SMEs, and action is needed to reverse the decline and support renewed engagement. While large organisations contribute significantly to sector employment, SMEs account for 75% of sites and play a crucial role in driving innovation and growth. A decline in the number of apprentices trained at SMEs not only weakens the talent pipeline for the entire sector but also deprives SMEs of the benefits apprenticeships offer in developing talent and addressing skills gaps. This results in fewer people with the necessary training and experience, while many companies continue to face skills shortages.

The UK skills system must be flexible enough to support the diverse needs of businesses, catering to the varying skill sets and operational requirements of both large and small companies. It is, therefore, essential that companies not paying into the Levy continue to engage with the apprenticeship system and access the benefits it provides.

The Growth and Skills Levy

The Government has recently confirmed its intention to transform the Apprenticeship Levy into a 'Growth and Skills' Levy, expanding its use to support a wider range of training courses beyond traditional apprenticeships. This proposed change is part of broader skills reforms, including the establishment of Skills England, a body set to replace the Institute for Apprenticeships and Technical Education (IfATE). Skills England is expected to take on an expanded remit, including maintaining a list of levy-eligible training to ensure that courses align with identified skills needs.

By working closely with Skills England, employers and sector bodies can ensure that high-value training aligned with sector-specific skills needs is accessible through the new levy. This strategic approach will not only maximise the use of available funding but also help build a highly skilled workforce capable of driving innovation and growth within Life Sciences.

Case Study - Ryan Holden, AstraZeneca

Leading biopharmaceutical company AstraZeneca has approximately 300 apprentices based at its sites around the UK, from a variety of backgrounds and in different areas of the business.

Currently, around a third of the company's apprentices are existing staff undertaking an apprenticeship to gain new skills. Many of these are pursuing a degree or master's level apprenticeship.

Ryan Holden was the company's first Laboratory Scientist graduate from one of AstraZeneca's apprenticeship programmes to be offered an AZ-sponsored PhD based on skills and experience he gained with the company, in partnership with the University of Sheffield.

He said: "I'm a bit surprised I'm the first to get an AstraZeneca-funded PhD position because I feel like it's quite a natural progression."

Ryan joined AstraZeneca as an apprentice in 2019, and after five years, he had completed a Level 6 Apprenticeship, which is the equivalent of a university undergraduate degree. Over this time, he developed a love of research and project work.

Dr Adam Brown of the University of Sheffield said: "The apprenticeship scheme has equipped Ryan with the required academic skills, but also, critically, with extensive technical expertise that most candidates lack. Having worked for multiple years in a world-class research institution, Ryan could demonstrate several key skills that most applicants struggle with, including problem-solving, time management, teamwork, and independence."

Ryan's work involves studying the transfection efficiency of DNA elements called plasmids—put simply, how easily our bodies get plasmids from outside cells to inside the cell and then inside the nucleus. The hope is that this could support work such as the synthesis of biologics and the implementation of gene therapy platforms that could lead to powerful future therapies.

Ryan is excited about this career move and would encourage more people to progress from degree apprenticeships to PhDs and to pursue their passion for research.

7.3 Career pathways

Education data provides useful insights on where new talent may come from. However, with 80% of the UK's 2030 workforce already in work today,[19] it is equally important to understand how current workers can potentially move in and out of different occupations. This helps businesses improve their recruitment strategies by identifying similar occupations they can draw talent from, either within Life Sciences or from other sectors.

Using data from online job postings, this section looks at skill similarities across occupations to identify possible career pathways that feed into Life Sciences jobs – as well as next-step jobs for occupations typically linked to the Life Sciences. For each of the Core Life Sciences Roles identified in this report, a skill profile was created by mapping the frequency with which each skill is mentioned by employers in job postings for a given occupation, along with any education and experience requirements related to each role. From there, a similarity score between different occupations was calculated by comparing these skill profiles. The similarity score can have a value between 0% and 100%. The higher the score, the greater the similarity between two occupations, with a score of 100% indicating a transition between like-for-like occupations (e.g., medical scientist to medical scientist).

Take medical scientists, for example: people currently working as medical scientists in other Life Sciences companies or in other sectors would be the most obvious feeder occupation for this role, as they share 100% of the same skills profile. The analysis shows that laboratory managers and laboratory technologists are also similar occupations based on their skills, education, and experience requirements, meaning they could also serve as ideal candidates for filling any talent shortages in medical scientists. Again, laboratory managers and laboratory technologists could already be working in Life Sciences or be drawn from other sectors.

Many of the Core Life Sciences Roles analysed throughout this report are closely related to one another, meaning they often serve as feeder and next-step jobs for one another. However, beyond these connections, a number of other occupations were also identified as having the highest potential to feed into a Core Life Sciences Role. These include zoologists/wildlife biologists, soil/plant scientists, laboratory managers, biomedical engineers, and environmental planners and scientists. In practice, this means workers currently in these occupations could be seen as a potential talent pool for sector companies facing skills and talent shortages. Further details on the potential feeder jobs for Core Life Sciences Roles are set out in **Section J** of the technical annex.

Common next-step roles for the most recruited Core Life Sciences Roles can be broadly grouped into three categories. As with feeder jobs, many of the Core Life Sciences Roles serve as next-step jobs for one another, meaning workers in the sector have a number of opportunities to progress in their careers while staying within the sector. Beyond that, common next-step roles include highly specialist roles such as biostatisticians and managerial roles such as compliance managers and laboratory managers, which can be found within Life Sciences but also in other sectors. There are, however, also a number of next-step occupations that could clearly transition workers out of the Life Sciences sector, such as computer scientists, media and talent directors, and compensation and benefits managers. This underscores the importance of retention efforts as well as hiring and recruiting efforts.

[19] **https://industrialstrategycouncil.org/uk-skills-mismatch-2030-research-paper**

8. Workforce Demographics

This chapter provides an overview of the demographic composition of the Life Sciences workforce. These insights support an assessment of the sector's diversity and its ability to recruit and retain a diverse and inclusive workforce. Drawing from 12 quarters of the ONS Labour Force Survey (LFS) and sector literature, this chapter presents data on sex, age, disability, education, country of origin, and ethnicity within the Life Sciences workforce. As the analysis is based on data from the ONS LFS, this chapter pertains to the Life Sciences sector (SIC definition). Further details on the methodology can be found in **Section A** of the technical annex.

The key findings presented in this chapter look at the Life Sciences sector as a whole, benchmarked against the UK-wide labour market. Where relevant, commentary on key findings by major occupational groups is also included, while the complete breakdown of the findings by major occupational groups within the sector is available in **Section K** of the technical annex.

8.1 Sex

Approximately 59% of workers in the Life Sciences sector are male. This is higher than the UK-wide labour market, where males account for 52% of the workforce.

Within the Life Sciences sector, however, there are some key differences. Looking at major occupational groups, the share of male workers is even higher in Skilled Trades Occupations, Elementary Occupations, and among Managers, Directors and Senior Officials (92%, 68%, and 66% respectively). In contrast, Sales and Customer Service Occupations within the Life Sciences sector, as well as Administrative and Secretarial Occupations, are predominantly female (73% and 72% of the Life Sciences workforce in these occupations are female).

Similarly, the gender distribution varies from one company to another. For example, the gender split of workers at AstraZeneca is much more aligned with the UK-wide workforce (48% of workers are female and 52% are male). A more balanced gender distribution is also visible in senior managerial positions, with 50% of AstraZeneca's global leaders being women.[20]

8.2 Age

Approximately 16% of workers in the Life Sciences sector are aged 55 or over, meaning they are likely to retire within the next decade. This compares to 21% in the UK-wide labour force. However, within major occupational groups, there are significant differences, with more than 25% of workers in Elementary Occupations and Process, Plant and Machine Operatives aged 55 or over.

In contrast, only 4% of the sector's workforce is younger than 25 years old, compared to 11% in the UK-wide labour market. There are fewer workers aged between 16 and 24 years old than the national average across all major occupational groups within the sector, particularly for Managers, Directors and Senior Officials. This reflects the longer educational and training requirements of the sector.

8.3 Disability

The Life Sciences sector has a lower share of workers (just over 10%) who self-report a disability – either physical or mental. This is 31% lower than the UK-wide labour market (16%).

This varies across roles, with workers in Sales and Customer Service Occupations, Process, Plant and Machine Operatives, and Associate Professional Occupations more likely to self-report a disability than the sector overall and the UK-wide average.

This is significantly lower than the share of workers who reported having a physical disability, cognitive learning, or mental health condition in research carried out by the UK BioIndustry Association (33%).[21] This discrepancy, however, is likely at least partially due to differences in definitions of disability. The definition used in the LFS data requires individuals to answer based on physical and mental disabilities over the past 12 months.

[20] **https://www.astrazeneca.co.uk/content/dam/intelligentcontent/unbranded/astrazeneca/uk/en/pdf/uk-corporate-careers/2023/AstraZeneca_GPGR_2023.pdf**

[21] **https://diversityinbiotech.org/**

8.4 Educational qualifications

Life Sciences workers are almost twice as likely to hold a degree or equivalent qualification compared to the UK-wide workforce (70% compared to 41%). This increases to 73% in managerial and director-level positions, and to 86% in Professional Occupations. In contrast, only 26% of Life Sciences workers in Skilled Trades Occupations, and 13% of workers in Elementary Occupations hold a degree or equivalent qualification.

The high proportion of Life Sciences workers with degrees or equivalent qualifications compared to the broader UK workforce highlights the complex and specialised nature of roles within the sector. These positions often require in-depth scientific, technical, and analytical skills, which are typically acquired through higher education. Professionals in the Life Sciences sector often need advanced understanding in fields such as biology, chemistry, and biotechnology. The ability to integrate knowledge from various disciplines is increasingly common, underscoring the necessity for educational programmes that align with the evolving needs of the sector.

In contrast, the lower percentages of degree holders in Skilled Trades Occupations and Elementary Occupations indicate that these roles depend more on practical skills and on-the-job training rather than formal academic qualifications. These positions may require specific technical skills, manual dexterity, and vocational training.

8.5 Ethnicity

On average, the Life Sciences sector appears to have a similar split of workers between White ethnicity and other ethnicities as the UK-wide labour market. Approximately 14% of sector workers are from a racial or ethnic minority; however, this hides significant variations. Indeed, the sector has a below-average representation of Black, Black British, Caribbean or African workers, but an above-average representation of Asian and Asian British workers.

Within the sector, Life Sciences workers in Professional Occupations are more likely to be from an ethnic minority than the UK average. In particular, 10% of Life Sciences workers in Professional Occupations are of Asian and Asian British ethnicity – which is 25% higher than in the UK-wide workforce (8%).

These findings are broadly consistent with research carried out by the UK BioIndustry Association.[22] The research on the biotech industry found a higher proportion of survey respondents identifying with a racial and ethnic minority background (20%); however, it also highlighted similar challenges in terms of the below-average representation of Black, Black British, Caribbean or African workers.

8.6 Country of origin

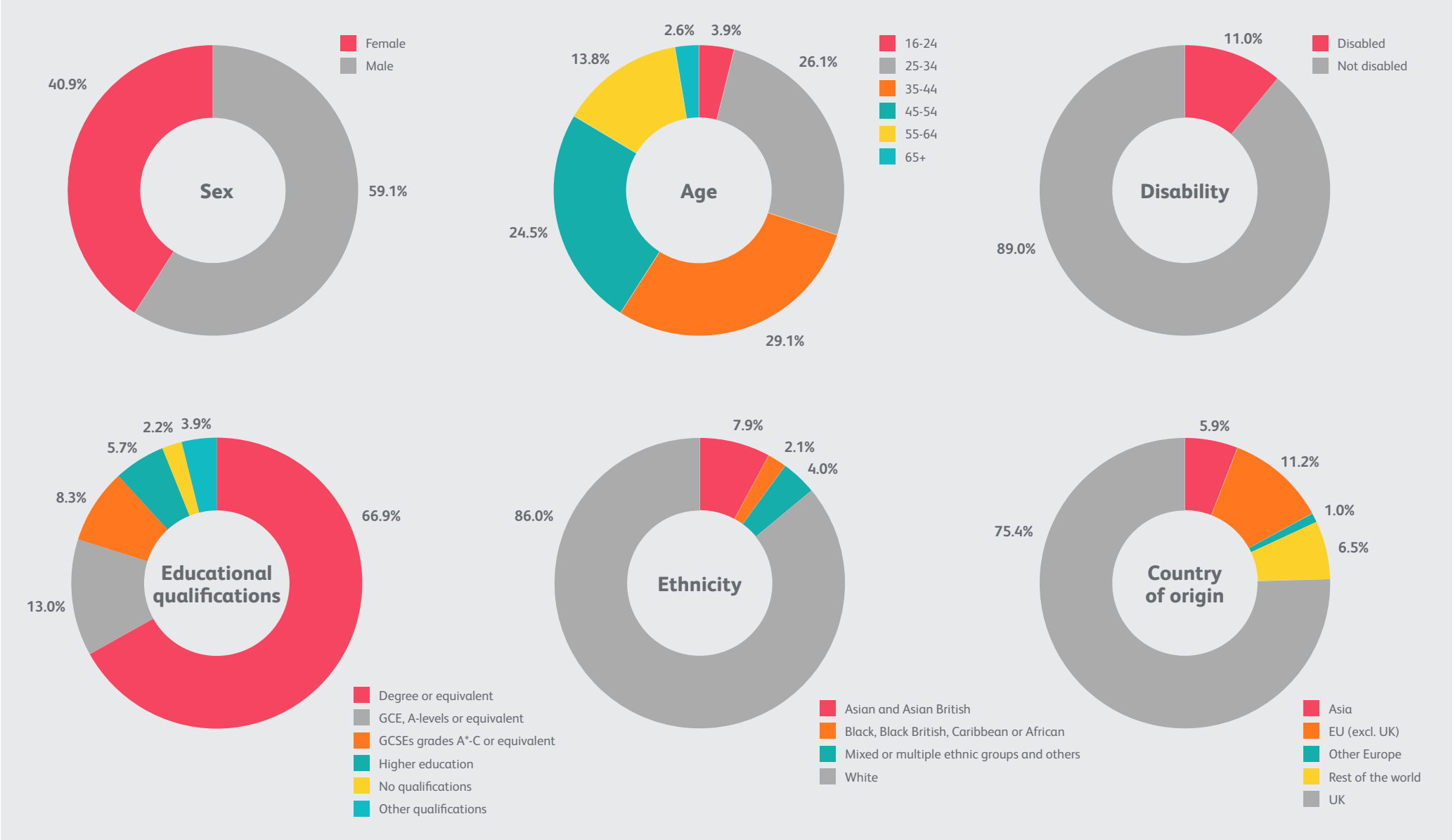
The Life Sciences sector employs a higher proportion of overseas workers – i.e., individuals born outside the UK – than the UK average. While 75% of workers in the Life Sciences sector were born in the UK, this proportion is significantly lower than the UK-wide labour market average of 81%. It is important to note that the data refers only to country of origin and does not distinguish between UK citizens and non-UK citizens, nor does it indicate whether those born outside the UK have gone through the UK education system.

Overseas workers are particularly prevalent in Professional Occupations, where 31% were born outside the UK, with Europe accounting for 14% of all Life Sciences workers in these roles.

The prevalence of overseas workers highlights the global nature of the Life Sciences workforce, which brings significant benefits such as diversity of thought and innovation. However, it also means that the sector is vulnerable to changes in immigration policy and international mobility. To maintain its competitive edge and support continued growth, it is crucial for the sector to attract and retain global talent across a range of skill and salary levels. Understanding how the sector engages with the immigration system will be essential to ensuring it can meet workforce needs and remain a world leader.

[22] **https://diversityinbiotech.org/**

Figure 38: Demographics overview of the Life Sciences workforce



Source: Office for National Statistics: Labour Force Survey microdata, Q1 2021 to Q4 2023

9. International Data

The changes in the UK's Life Sciences workforce are not happening in isolation but are part of broader labour market trends occurring both nationally and internationally. This section provides an overview of the Life Sciences sectors in four countries: the United States, Switzerland, Singapore, and Ireland. As global leaders in Life Sciences, these countries offer an opportunity to explore similarities and differences with the UK's Life Sciences sector, providing valuable insights into workforce dynamics, skills, and education needs.

Official statistics

To assess the size and contribution of the Life Sciences sector in each country, official statistics were analysed, aligning the UK Standard Industry Classification (SIC) codes for Life Sciences with the most comparable codes in each country's classification system. However, differences in how each country defines and categorises Life Sciences activities limit the extent to which direct comparisons can be made. Where possible, we have sought to standardise methodologies and data sources across the different labour markets; however, the availability and granularity of data vary by country, and methodological differences may influence the reported figures. The intention here is to provide important context and facilitate discussions rather than draw absolute conclusions.

Job postings

The Lightcast job postings library contains over a billion job postings collected from thousands of job boards, staffing agencies, and employers' websites worldwide. This data is collected, cleaned, deduplicated, and categorised using a process similar to that outlined for the UK dataset. However, it is important to note that the quality of insights derived from job postings depends on the accuracy of the information provided by employers. This quality may be influenced by cultural norms and the maturity of online labour markets, which vary between countries.

The UK job postings analysis draws on a comprehensive list of UK Life Sciences businesses (outlined in **Chapter 4**). This list was used to identify occupations within the sector specifically linked to science, research, regulation, and compliance. These occupations – referred to as 'Core Life Sciences Roles' throughout the report and detailed in **Section D** of the technical annex – were identified as those most likely to require Life Sciences-specific skills, knowledge, and abilities.

As an equivalent list of Life Sciences companies was unavailable for the international countries, this section instead adopts an occupational approach to define the Life Sciences sector. The analysis focuses on job postings related to Core Life Sciences Roles, which were required to mention at least one skill identified as distinctive to the Life Sciences sector.

Further details on the methodology can be found in **Section A** of the technical annex.

9.1 United States

US data comes from the Bureau of Labour Statistics, the US equivalent of the UK's Office for National Statistics. **Figure 39** lists the equivalent Life Sciences industry codes used in the analysis of US data.

Figure 39: US Life Sciences sector definition

US NAICS code	Industry name
325411	Medicinal and Botanical Manufacturing
325412	Pharmaceutical Preparation Manufacturing
339113	Surgical and Medical Instrument Manufacturing
339112	Surgical Appliance and Supplies Manufacturing
339114	Dental Equipment and Supplies Manufacturing
541714	Research and Development in Biotechnology (Except Nanobiotechnology)
541715	Research and Development in the Physical, Engineering and Life Sciences (Except Nanotechnology and Biotechnology)

Source: Office for National Statistics: Labour Force Survey microdata, Q1 2021 to Q4 2023

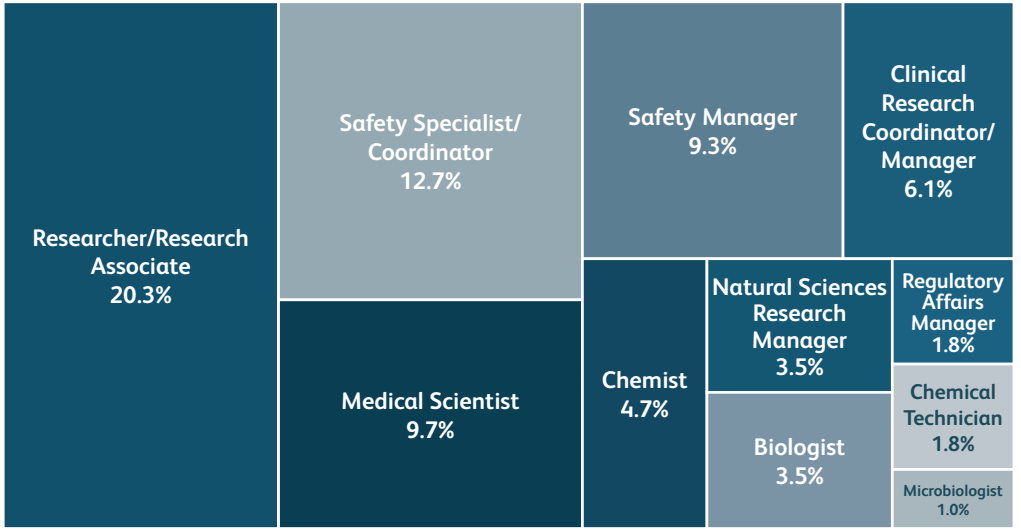
Size and Contribution:

- In 2023, approximately **1,618,384 people** were employed in the Life Sciences sector.
- Life Sciences jobs in 2013: **1,215,996**.
- Employment growth rate (2013–2023): **33%**.
- Share of jobs within the economy accounted for by the Life Sciences sector: **0.74%**.

Job Postings:

- Life Sciences job postings for Core Life Sciences Roles (April 2023–March 2024): **964,870**.

Figure 40: Distribution of job postings for Core Life Science Roles, April 2023 – March 2024 United State



9.2 Switzerland

Swiss data was obtained by combining insights from the Swiss BioTech Association and the Federal Statistics Office. The insights cover all activities related to Biotechnology and the Pharmaceuticals industry and show a marked increase in Life Sciences employment in the Swiss public sector since 2016, while private sector employment has remained relatively stable.

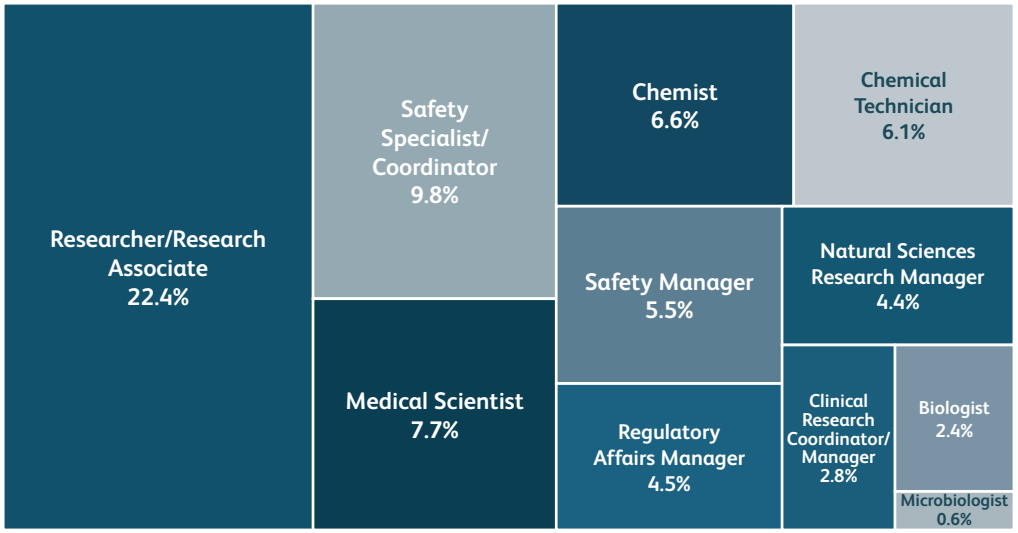
Size and Contribution:

- In 2023, approximately **64,375 people** were employed in the Life Sciences sector.
- Life Sciences jobs in 2013: **53,948**.
- Employment growth rate (2013–2023): **19%**.
- Share of jobs within the economy accounted for by the Life Sciences sector: **1.51%**.
- According to the Switzerland Federal Council, Switzerland is home to **20% of Europe's Life Sciences companies**.

Job Postings:

- Life Sciences job postings for Core Life Sciences Roles (April 2023–March 2024): **22,780**.

Figure 41: Distribution of job postings for Core Life Science Roles, April 2023 – March 2024 Switzerland



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9.3 Singapore

Data for Singapore was derived from the Department of Statistics Singapore's official website, focusing on employment in three Life Sciences-related manufacturing groups: Biomedical Manufacturing, Pharmaceuticals, and Medical Technology. Notably, Singapore does not report employment data specifically related to R&D, resulting in a likely underestimation of the total number of Life Sciences jobs in the country.

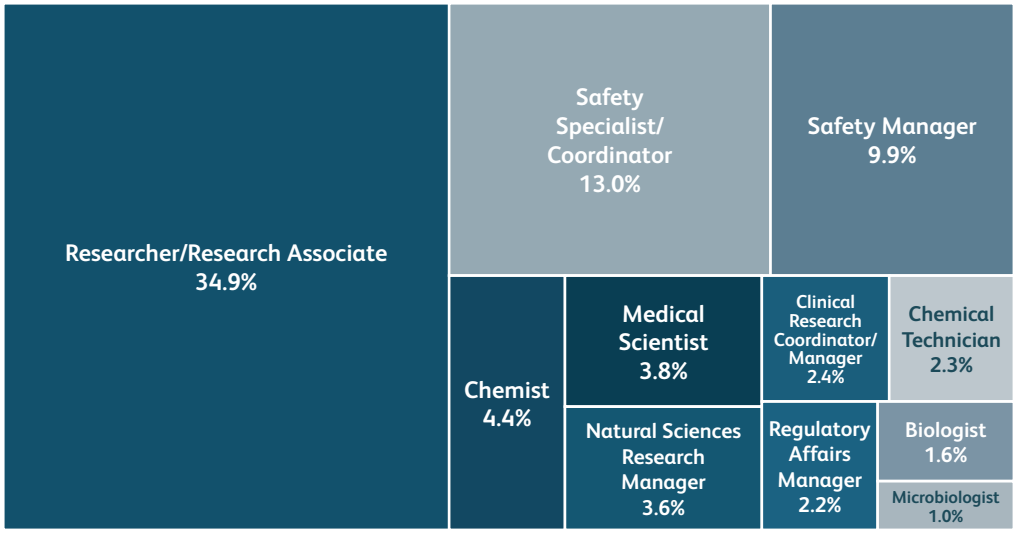
Size and Contribution:

- In 2023, approximately **26,294 people** were employed in the Life Sciences sector.
- Life Sciences jobs in 2013: **16,743**.
- Employment growth rate (2013–2023): **57%**.
- Share of jobs within the economy accounted for by the Life Sciences sector: **0.66%**.

Job Postings:

- Life Sciences job postings for Core Life Sciences Roles (April 2023–March 2024): **48,400**.

Figure 42: Distribution of job postings for Core Life Science Roles, April 2023 – March 2024 Singapore



9.4 Ireland

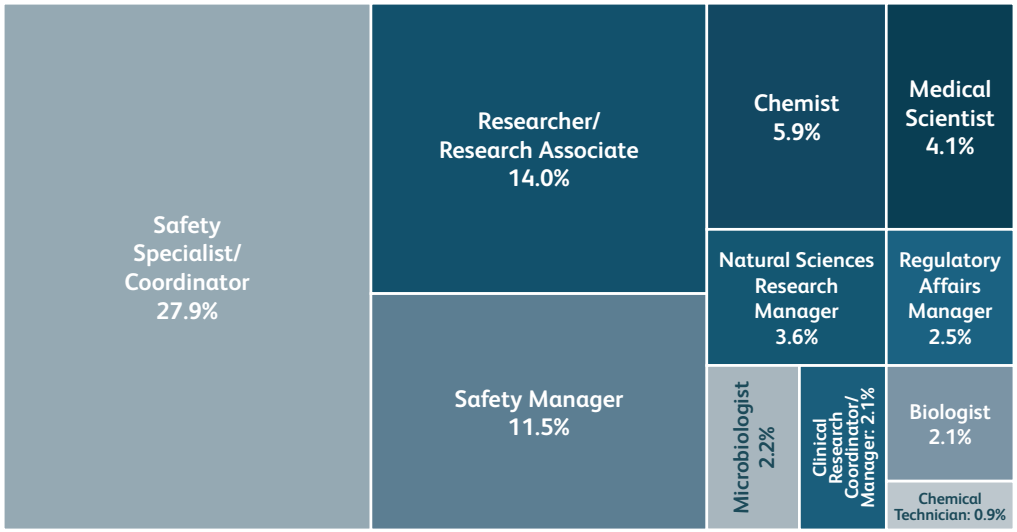
Size and Contribution:

Ireland was excluded from this part of the analysis due to the unavailability of detailed data. The country's Labour Force Survey only reports data at a macro-industry level (equivalent of SIC2 digits in the UK), meaning it is not possible to isolate employment specifically related to Life Sciences.

Job Postings:

- Life Sciences job postings for Core Life Sciences Roles (April 2023–March 2024): **20,930**.

Figure 43: Distribution of job postings for Core Life Science Roles, April 2023 – March 2024 Ireland



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