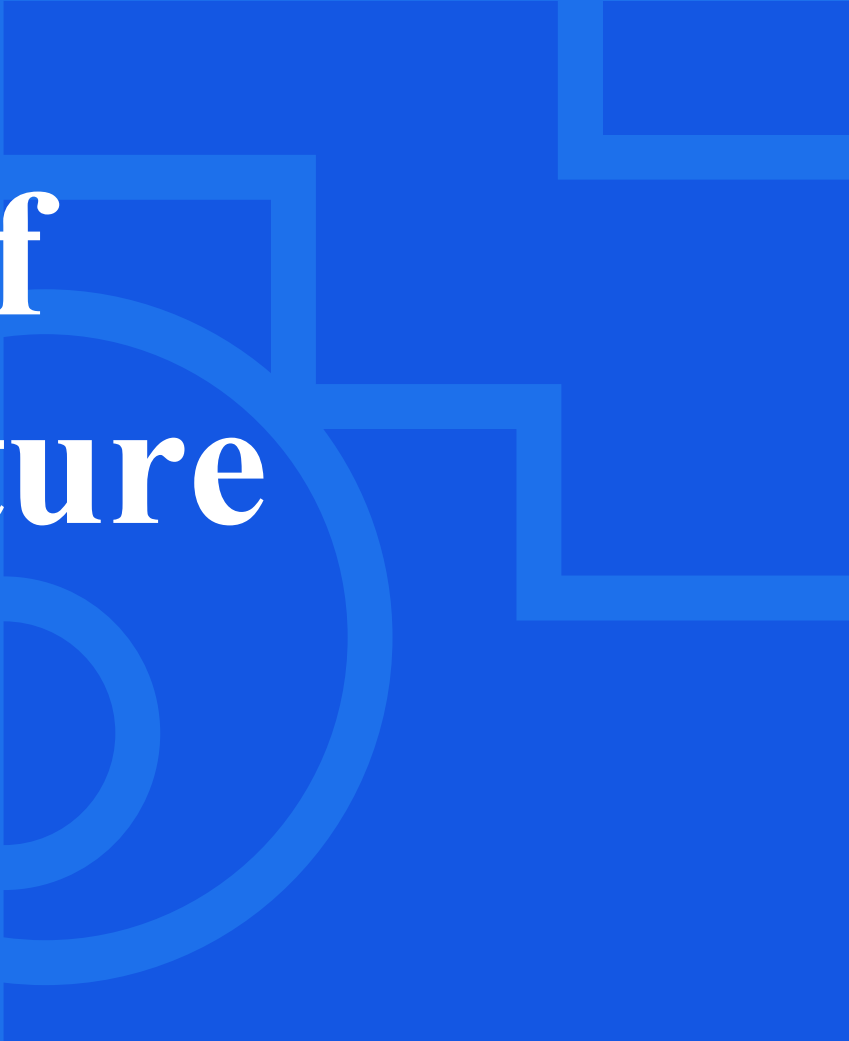


Jobs of the future



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Foreword

The world around us is rapidly evolving. Amid economic and global instability, and technology such as artificial intelligence (AI) now becoming part of our everyday lives, the future is uncertain.

Based on analysis by [Jisc](#)'s graduate labour market specialist, Charlie Ball, this report sheds light on what the future of work may look like, areas of high employment growth, and the skills likely to be needed by employers over the next decade or so.

We hope this information will help educators and policymakers provide the pipeline of talent that employers will need to thrive in future, stimulate economic growth and create better futures for all of us.

While it's difficult to model what a future jobs market will exactly look like, this report draws together the existing evidence, and the record of graduate employment in the recent past, to assess the future of jobs in the UK.

It finds that, by 2035, more than 11 million extra graduates, in addition to the 15.3 million graduates currently in the UK workforce, will be needed to fill jobs in the UK by 2035 in industries such as computing and engineering, teaching and education, and health.

Facing uncertainty, universities will continue to unlock economic growth across the UK, creating thriving places and prosperity by meeting the UK's skills gap. Graduate skills will continue to be in demand, filling roles in fields such as tech, health, education, digital and creative.

The country benefits from its graduates, with [Department for Education research](#) showing that skills and labour – driven by an increasing share of graduates in the market – have been the only factor making a consistent contribution to productivity growth in the UK in recent years. The findings in this report show that the UK needs graduates more than ever before.

Summary

By 2035, more than **11 million extra graduates**, in addition to the **15.3 million graduates currently in the UK workforce**, will be needed to fill jobs in the UK by 2035 in industries such as computing and engineering, teaching and education, and health. **88% of new jobs** by 2035 will be at graduate level.

Our survey of FTSE350 leaders

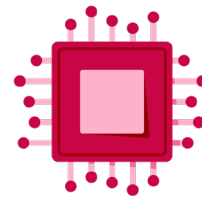
In addition to this report, we carried out a survey of 100 senior figures and talent acquisition specialists at the UK's FTSE350 listed companies.

[FIND OUT MORE](#)

Five areas in need of graduates

Technology

- **The UK will need over 1.9 million STEM professionals**, including in areas such as computing and engineering, by 2035.
- Computer programming is the occupation that is **expected to grow the most by 2035 in the UK**.



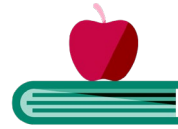
Health

- **The UK will need over 1.2 million health and social care associate professionals**, including opticians, medical technicians, housing officers and youth and community workers, by 2035.
- **The UK will need over 1 million health professionals** (such as doctors and nurses) by 2035.



Education

- **The UK will need 1 million teaching and educational professionals**, such as university and higher education teachers, by 2035.
- Globally, there will be **3 million more jobs for teachers, including university and higher education teachers, by 2027**.



Digital

- In the UK, due to AI, there will be a **10% net increase in jobs that require a degree over the next 20 years**.
- Globally, there will be **4 million more digitally-enabled roles by 2027**.



Creative skills

- A university degree teaches transferable skills, such as the creative and critical thinking needed for problem-solving.
- **The UK will need over 1.2 million business services associate professionals**, including professionals in advertising and marketing, by 2035.



Is there a skills mismatch between graduates and employer needs?

There is a problem of underqualification in the UK. The gap can be filled in the future with more graduates with the skills that are valuable to employers.

- At the end of 2021, there were over **15.3 million people in the UK workforce with degree or equivalent qualifications**, or 49.7% of the workforce.
- At the same time, over **16.2 million people were employed in professional level jobs**, or 50.5% of all UK jobs.
- **26% of UK workers are underqualified for the job they're in**. The UK currently has a particular shortage of teachers, healthcare workers and STEM professionals.

What are the current career opportunities for graduates?

Graduates earn more, have more career options, and are less likely to experience setbacks at work compared to non-graduates.

- At the end of 2021, **86.7% of graduates were employed**, compared to 70.2% of non-graduates.
- Of graduates who graduated in 2021, **78% were employed in high-skilled jobs 15 months after graduating**.
- **3.2% of graduates were unemployed**, compared to 5.5% of non-graduates.
- **The median salary for a graduate in England was £36,000**, compared to £26,000 for non-graduates.

Will graduates still be more employable than non-graduates in 10 years?

Graduates are and continue to be employable.

- In 2022, **the number of people working in graduate level employment in the UK rose by 469,800**. Jobs below degree level fell by 165,400.
- Between 2004 and 2021, **the number of people in the UK working in graduate level jobs increased by 4.75 million**, whilst the number of people working in jobs below degree level fell by 865,000.

What are the jobs of the future?

Demand for higher level skills has driven consistently high demand for graduate jobs, and this trend will continue, with a need for more than 11 million more graduates to fill roles in the UK by 2035.

Data at a glance

- **More than 11 million graduates** will be needed to fill graduate jobs in the UK by 2035 in industries such as computer and engineering, teaching and education, and health.
- **88% of new jobs** by 2035 will be graduate level jobs.
- **16 out of 20 occupations with the highest projected growth in numbers to 2035** are graduate-level jobs.
- The largest increase in jobs due to AI by education level will be at degree level. **Due to AI, there will be around a 10% net increase in roles that require a degree over the next 20 years.**



How many graduates will the UK need by 2035?

The UK has experienced many years of steady unbroken growth in demand for graduates. Evidence shows this will continue.

The Unit for Future Skills published employment demand projections to 2035 in March 2023, which found:

- There will be more than 2.5 million jobs created in the UK by 2035.
- There will be an additional 8.6 million roles that will need to be filled – this is the replacement demand caused by workers retiring.
- In total, **more than 11.1 million graduates will be needed to fill graduate jobs in the UK by 2025.**

The employment areas where the UK will need more than 1 million graduates by 2025 are:

- Senior managers: **1.2 million**
- STEM professionals (such as computing and engineering): **1.9 million**
- Teaching and education professionals (such as university and higher education teachers): **1 million**
- Business services professionals (such as lawyers, accountants, actuaries, architects and surveyors): **1.7 million**
- Business services associate professionals (including data analysts, professionals in HR, advertising, marketing and sales): **1.2 million**
- Health and social care associate professionals (such as opticians, medical technicians, housing officers and youth and community workers): **1.2 million**
- Health professionals (such as doctors and nurses): **1 million**

What's the demand for graduates by region and nation?

The Unit for Future Skills' employment demand projections to 2035 shows that demand for graduate jobs by region and nation quite closely follows current employment distribution. All regions expect to see jobs growth by 2035.

Around 21% of increased demand for jobs in that time period is expected in London, and the East of England, North West, South East and South West all expect to take over 10% each of increased job share.

	Graduates needed to fill roles by 2035	Percentage of new jobs that will be at graduate level
Scotland	899,207	86%
Wales	402,825	95%
Northern Ireland	279,616	83%
North East of England	337,286	91%
North West of England	1,072,889	79%
Yorkshire and the Humber	754,608	90%
East Midlands	657,386	88%
West Midlands	841,275	82%
East of England	1,008,658	81%
London	2,360,542	84%
South East of England	1,561,255	87%

South West of England	976,867	80%
Total	11,152,421	88%

Source: Unit for Future Skills, [Labour market and skills projections: 2020 to 2035](#) (2023)

Which graduate jobs will see the highest growth in numbers?

National Foundation for Educational Research (NFER) estimates that, in the UK, **16 of the 20 occupations with the highest projected growth in numbers to 2035 are graduate-level jobs** (and all of the top 20 fastest growing roles in percentage terms).

The top 5 occupations by growth at graduate level are:

1. computer programmers
2. higher level teaching and classroom assistants
3. financial managers
4. IT managers
5. IT business analysts and systems designers

None of the 20 occupations with the largest projected falls in employment demand are at graduate level.

Overall, by 2035, demand for new workers will increase – even though in some roles, mostly below degree level, the number of jobs will fall.

Over the next 12 years, demand for graduates (including postgraduates) and for college and further education graduates will increase, and demand for non-graduates will fall.



Are graduate skills in demand?

Graduates are ready to step into graduate roles due to the valuable skills they gain through their degrees.

The Institute for Student Employers' Student development survey 2023 looked at the attitudes and behaviours, workplace skills and technical skills that employers expect early career hires to have when they start work.

Against these areas, graduates met the expectations of the majority of employers.

Over 70% of employers felt graduates met or exceeded their expectations for the following skills:

- self-motivation (73%)
- adaptability (80%)
- confidence (90%)
- presentation skills (79%)
- remote working skills (73%)
- interpersonal skills (88%)
- work-appropriate written skills (81%) and verbal skills (87%)
- teamwork skills (92%)
- problem-solving (90%)
- basic IT and digital skills (90%)
- numeracy skills (86%)
- political and economic awareness (76%)
- diversity and inclusion awareness (91%)

The World Economic Forum's Future of jobs report 2023 is a report based on a survey-based data set covering the expectations of a wide cross-section of the world's largest employers related to job trends in the period 2023–27.

It identifies that **analytical thinking and creative thinking** are the most important skills needed by employers globally. These were followed by 'self-efficacy skills', including resilience, flexibility and agility; motivation and self-awareness; and curiosity and lifelong learning.

In times of economic change, graduates have tended to be able to adapt more rapidly than other sections of the workforce, because the UK higher education system has developed so that the transferrable skills students learn through their degrees allows them to be uniquely flexible and adaptable in an inherently unpredictable jobs market.

What impact will AI, automation and digitalisation have?

Impact on the UK jobs market

The new generation of AI chatbots that have recently emerged have been in development for some time. In 2021, PwC, working for the then- Department for Business, Energy & Industrial Strategy (BEIS), issued [a report on the impact of AI and automation on UK jobs](#).

This report found that around **7% of existing UK jobs could face a high (over 70%) probability of automation in the years to 2026**. This could rise to around 18% to 2031 and just under 30% to 2041.

The largest increase in jobs due to AI by education level is seen at degree level. Due to AI, there will be around a **10% net increase in roles that require a degree over the next 20 years**. This will include **almost 500,000 more professional and scientific jobs**. While some graduate jobs, notably in parts of financial and business services (but not all), may see significant negative impacts, the only groups that will see an estimated rise in net employment will be those educated in higher education or to a degree level.

Impact on the global jobs market

These findings were echoed by the World Economic Forum's [Future of jobs report 2023](#), which looks at trends in the global workforce between 2023 and 2027.

It finds that **the majority of the fastest growing roles globally over the next 5 years are technology-related roles**. AI and machine learning specialists, sustainability specialists, business intelligence analysts and information security analysts are the five fastest-growing roles. Renewable energy engineers, and solar energy installation and system engineers are other relatively fast-growing roles, as economies shift towards renewable energy. These are mainly graduate level roles.

The fastest-declining roles relative to their size today are driven by technology and digitalisation. The largest losses are expected in administrative roles and in traditional security, factory and commerce roles. [Surveyed organisations predict 26 million fewer jobs across the world by 2027](#) in record-keeping and administrative roles, including cashiers and ticket clerks; data entry, accounting, bookkeeping and payroll clerks; and administrative and executive secretaries, driven mainly by digitalisation and automation.

How many graduates are needed globally?

The World Economic Forum's [Future of jobs report 2023](#) identifies that large-scale job growth is expected in education, digital commerce and trade.

Jobs in the education industry are expected to grow by about 10%, leading to **3 million additional jobs, including for university and higher education teachers.**

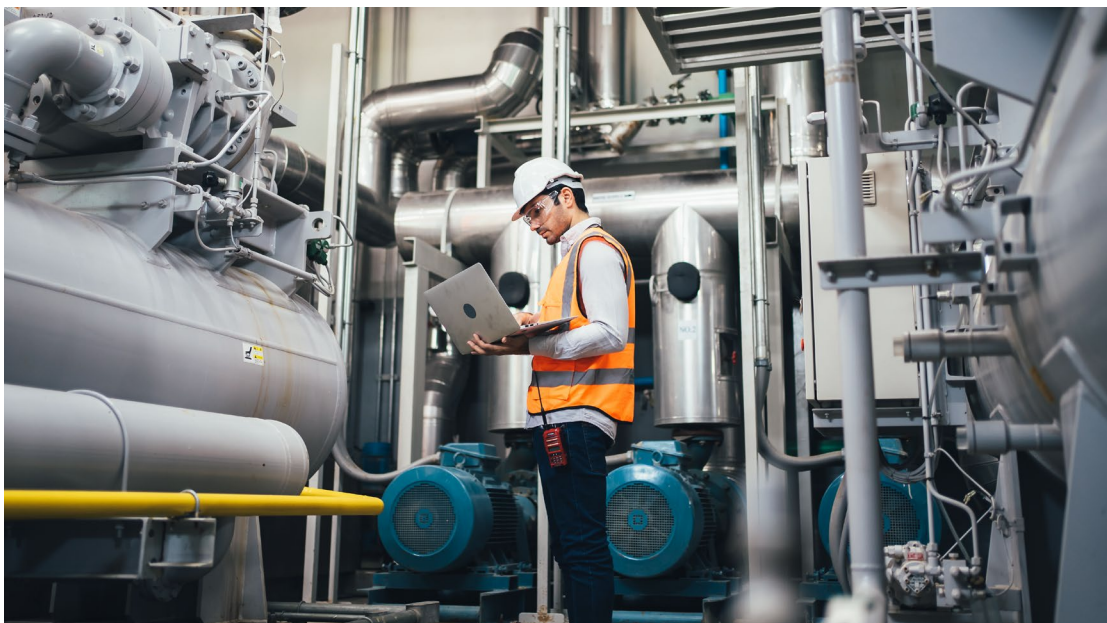
Growth is also forecast in approximately **4 million digitally-enabled roles**, such as e-commerce specialists, digital transformation specialists, and digital marketing and strategy specialists – this is an area of relative strength for the UK.

Is there a skills mismatch between graduates and employer needs?

There are more people doing graduate-level jobs than there are graduates. This may be because of the fact there can be different routes into graduate-level jobs, but there is also a problem of underqualification in the UK. Graduate skills will be valuable to employers, for example in green jobs of the future.

Data at a glance

- At the end of 2021, there were over **15.3 million people in the UK workforce with degree or equivalent qualifications**, or 49.7% of the workforce.
- At the same time, over **16.2 million people were employed in professional level jobs**, or 50.5% of all UK jobs.
- **26% of UK workers are underqualified for the job they're in**. The UK currently has a particular shortage of teachers, healthcare workers and STEM professionals.



Are there enough graduates compared to graduate jobs?

In the Office of National Statistics Standard Occupational Classification 2020 (SOC 2020), the UK's official classification of jobs, the main occupational classification groups 1 to 3, (managers, professionals and associate professionals) are those jobs deemed to be degree level. SOC 2020 was designed in part with this purpose in mind, to make it much easier to understand what a 'graduate job' is.

Using Annual Population Survey data, we can see that at the end of 2021, there were **over 15.3 million people** in the UK workforce with degree or equivalent qualifications, or 49.7% of the workforce.

At the same time, **over 16.2 million people** were employed in professional level jobs, or 50.5% of all UK jobs.

This is the first time on record that the majority of UK jobs were at professional level, and it is likely that we have already reached the point at which half of all UK workers have degrees. But there are more graduate level jobs than graduates.

Why are there more graduate jobs than graduates?

Some of this disparity can be attributed to alternative routes into careers, particularly at associate professional level.

A job may be one for which a degree is appropriate training, and often by far the most common method to qualify for a role, but that does not mean that there are not other appropriate methods to become proficient, particularly for people with substantial practical experience.

But we must also remember that the Organisation for Economic Co-operation and Development (OECD) finds that **26% of UK workers are underqualified for the role they are in** (as opposed to 14.5% who are overqualified), the third highest in the OECD behind Ireland and New Zealand. Underqualification can lead to underperformance in job roles, lower productivity and lower job satisfaction, and is a signal of a malfunctioning skills and training system.

The OECD also shows that the UK currently has a particular shortage of teachers, healthcare workers and STEM professionals (mainly engineering).

The issue in the UK workforce is less that we have too many graduates, and more that graduates with useful skills who are looking for work aren't always matched with employers who need those skills.

Do we need graduates to do green jobs?

Some aspects of employer demands are quite difficult to address. It is not always easy to anticipate the skills demand of rapidly growing or new technological areas.

A current example is the green and sustainability industry. As technology develops and new tech is introduced, demands for skills can suddenly change very rapidly.

But with the green industry of the future, we know we will need engineers and technology experts, some in fields that are not yet fully developed. We also know we will need substantial numbers of business support professionals, mainly graduates, of the kind required by any industry, including data analysts, professionals in HR, advertising, marketing and sales. This means that some training needs, even in highly technological industries, can be anticipated.

What are the current career opportunities for graduates?

On average, graduates earn more, have more career options, and are less likely to experience setbacks at work compared to non-graduates.

Data at a glance

- At the end of 2021, **86.7% of graduates were employed**, compared to 70.2% of non-graduates.
- Of graduates who graduated in 2021, **78% were employed in high-skilled jobs 15 months after graduating**.
- **3.2% of graduates were unemployed**, compared to 5.5% of non-graduates.
- **The median salary for a graduate in England was £36,000**, compared to £26,000 for non-graduates.
- In March 2023, **29.2% of the UK workforce was working in a hybrid way or completely from home**, compared to 12% before the Covid-19 pandemic.



Are graduates better-off than non-graduates?

On average, graduates earn more, have more career options, are less likely to experience setbacks such as unemployment or reduction in working hours and, post-Covid, are more likely to be able to take advantage of new arrangements such as flexible working (having more control over when and how you work your contracted hours) and hybrid working (having more control over where you work) than non-graduates.

The Office of National Statistics' [Graduate labour market statistics](#) publication and [associated datasets](#), allows us to examine some of the data.

At the end of 2021, graduates were more likely to be employed than non-graduates (86.7% employment rate against 70.2%), less likely to be unemployed (3.2% compared to 5.5%) and earned more, on average.

The median salary for a graduate in England was £36,000, against £26,000 for non-graduates, but graduate salaries varied from £30,000 in the North East ([where the median salary for all workers in 2021 was £23,273](#)) to £42,500 in London ([against a median salary for all workers of £34,583](#)).

How much more do graduates earn in regions in England?

	Gross median salary for all workers in 2021 (to the nearest £500)	Gross median salary for all graduates in 2021 (to the nearest £500)	Difference (to the nearest £500)
North East	£23,500	£33,000	£9,500
North West	£24,500	£32,000	£7,500
Yorkshire and the Humber	£24,000	£31,000	£7,000
East Midlands	£24,000	£33,000	£9,000
West Midlands	£25,000	£33,000	£8,000

East of England	£25,500	£36,500	£11,000
London	£34,500	£42,500	£8,000
South East	£27,500	£39,000	£11,500
South West	£24,000	£33,000	£9,000

Source: Office for National Statistics, [Annual Survey of Hours and Earnings \(ASHE\)](#). Note we do not have definitive ASHE data for graduates in the devolved nations.

Are graduates still better-off outside of London?

There is a disparity between salaries in London and the rest of the country. Data from the Office of National Statistics' [Annual population survey](#) shows that at the end of 2021, 67.8% of the workforce in London had a degree or equivalent qualification, and 40.4% of the North East workforce.

While graduates working in the North East did earn less than workers in London overall, almost two thirds of those London workers were themselves graduates, and the graduate premium in the North East was higher than in London, at £9,500 compared to £8,000.

Cost of living is also a very significant factor. [Analysis of cost of living data by the Higher Education Careers Services Unit](#) (now part of Jisc) suggests new graduates would, on average, have more disposable income in a number of other major graduate employment centres than they would in London despite earning, on paper, less.

Do graduates benefit more from hybrid working?

There are also other ways for a job to be desirable. At the end of March 2023, [figures from the ONS Business Insights and Conditions Survey \(BICS\)](#) showed that **29.2% of the UK workforce was working in a hybrid work model or completely from home**, and this figure had remained relatively stable since the Covid-19 pandemic. The National Foundation for Economic Research estimated that [44% of graduates were hybrid working in 2022](#).

In the IT industry, this rose to 78% of workers, and 64% in the business services sector. Both these industries are overwhelmingly staffed by graduates.

Prior to the Covid-19 pandemic, around 12% of the workforce was estimated as working in a hybrid work model.

Increasingly, those working in a graduate job are more likely to benefit from hybrid working.

Will graduates still be more employable than non-graduates in 10 years?

Graduates will continue to be employable. In 2022, the numbers of people working in graduate level jobs rose and numbers of people working in below graduate-level jobs fell. Over the next decade, trends in graduate employment are likely to continue.

Data at a glance

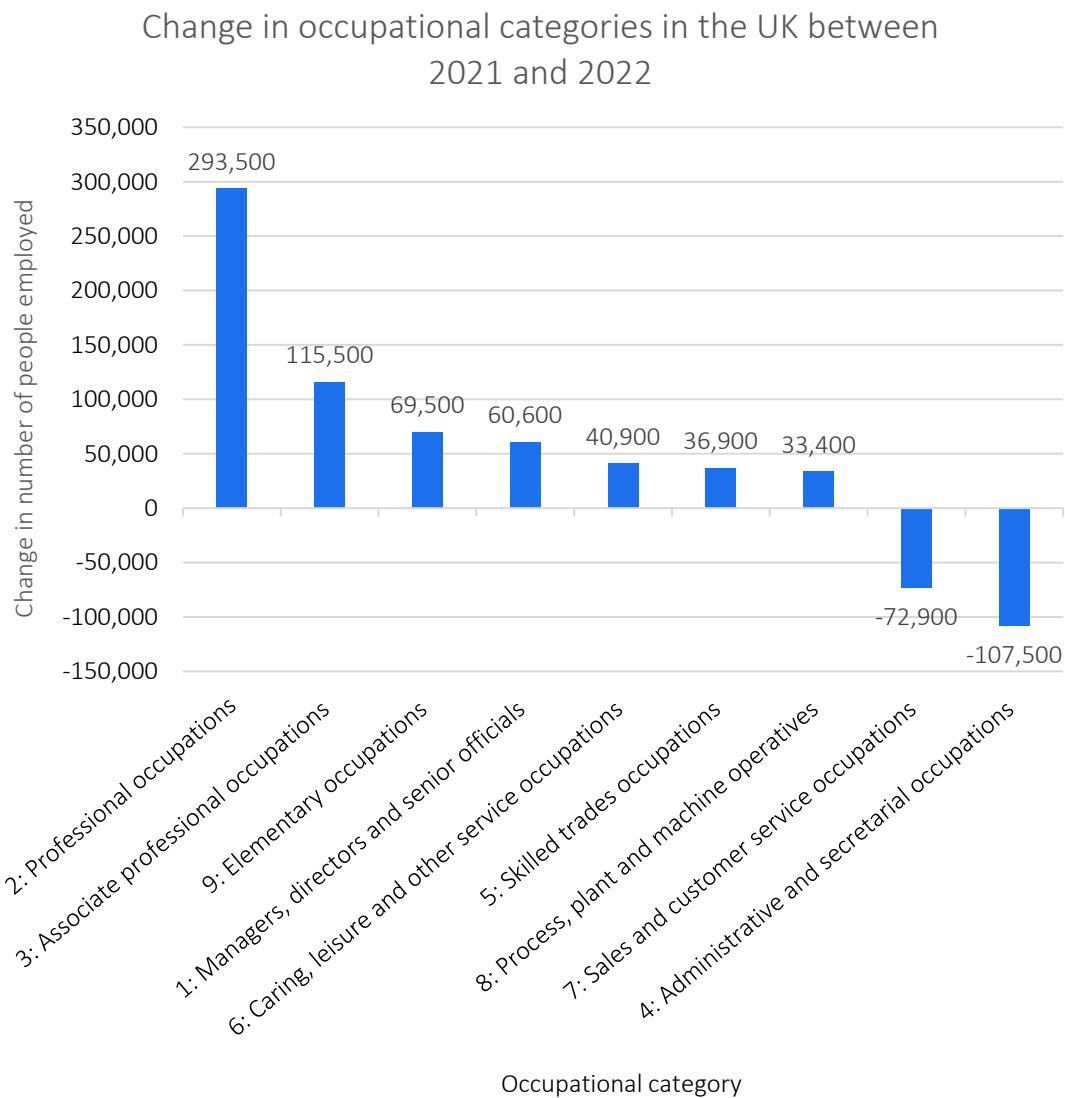
- In 2022, **the number of people working in graduate level employment in the UK rose by 469,800**. Jobs below degree level fell by 165,400.
- Between 2004 and 2021, **the number of people in the UK working in graduate level jobs increased by 4.75 million**, whilst the number of people working in jobs below degree level fell by 865,000.



How did jobs change in 2022?

Figure 1 shows the change in the broad occupational categories in the UK over 2022, using [Annual Population Survey](#) data.

FIGURE 1



Source: Office for National Statistics, [Annual Population Survey](#)

Occupational groups 1 to 3 are considered graduate-level jobs. The two fastest growing areas of employment in the UK, and three of the four fastest growing areas, are at graduate level.

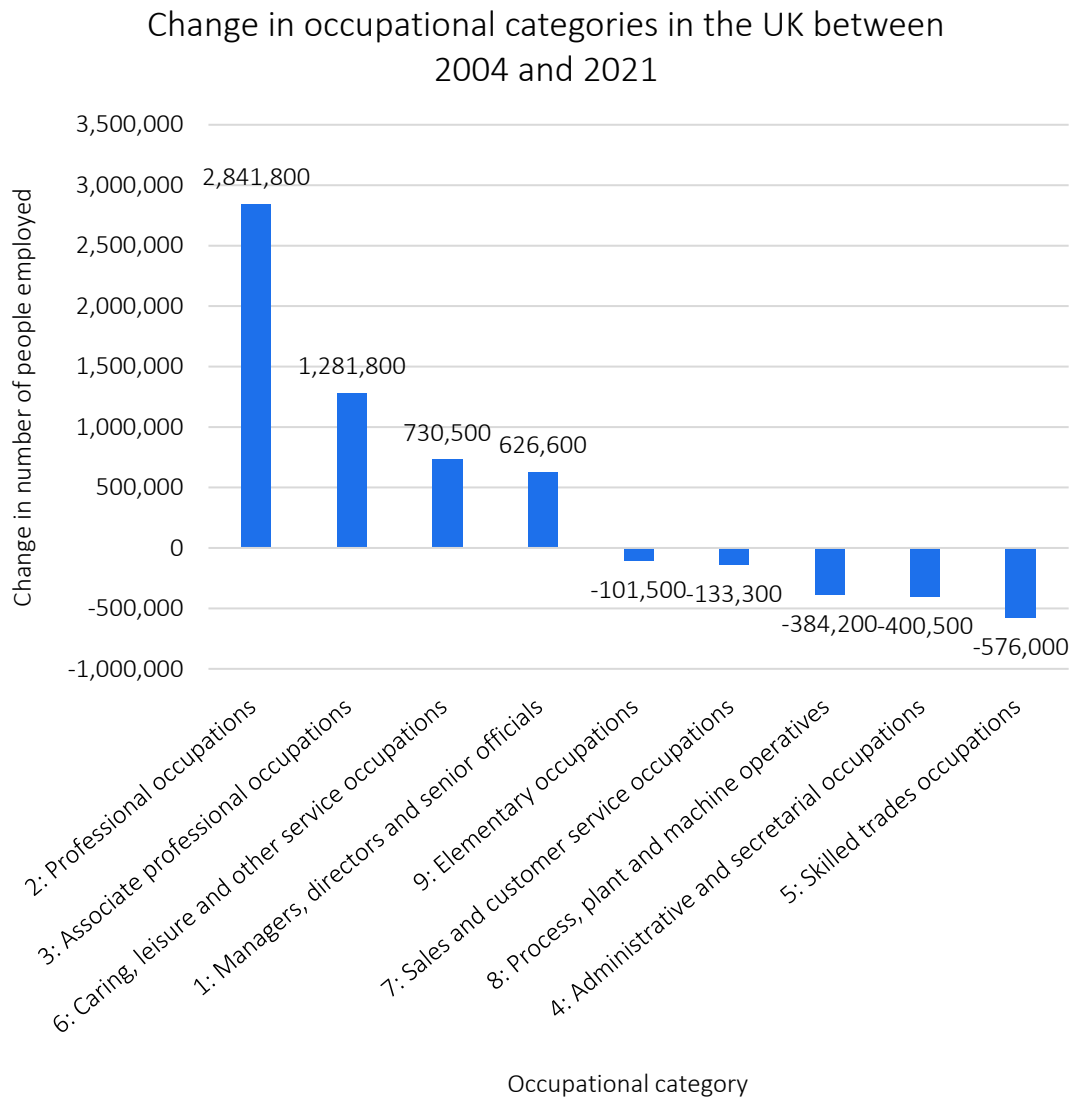
Meanwhile, in 2022, sales and customer service occupations (such as call centre workers and retail workers) fell. Administrative and secretarial occupations – some of the better-paid non-graduate jobs with, usually, some of the better career prospects – fell substantially.

Overall, in 2022, the number of people working in graduate level employment in the UK rose by 469,800. Jobs below degree level fell by 165,400.

How have jobs changed over the last decade?

Because the occupational classification system changed in 2021, it's not easy to compare years prior to 2022, but we do have data back to 2004 to examine how jobs have changed.

FIGURE 2



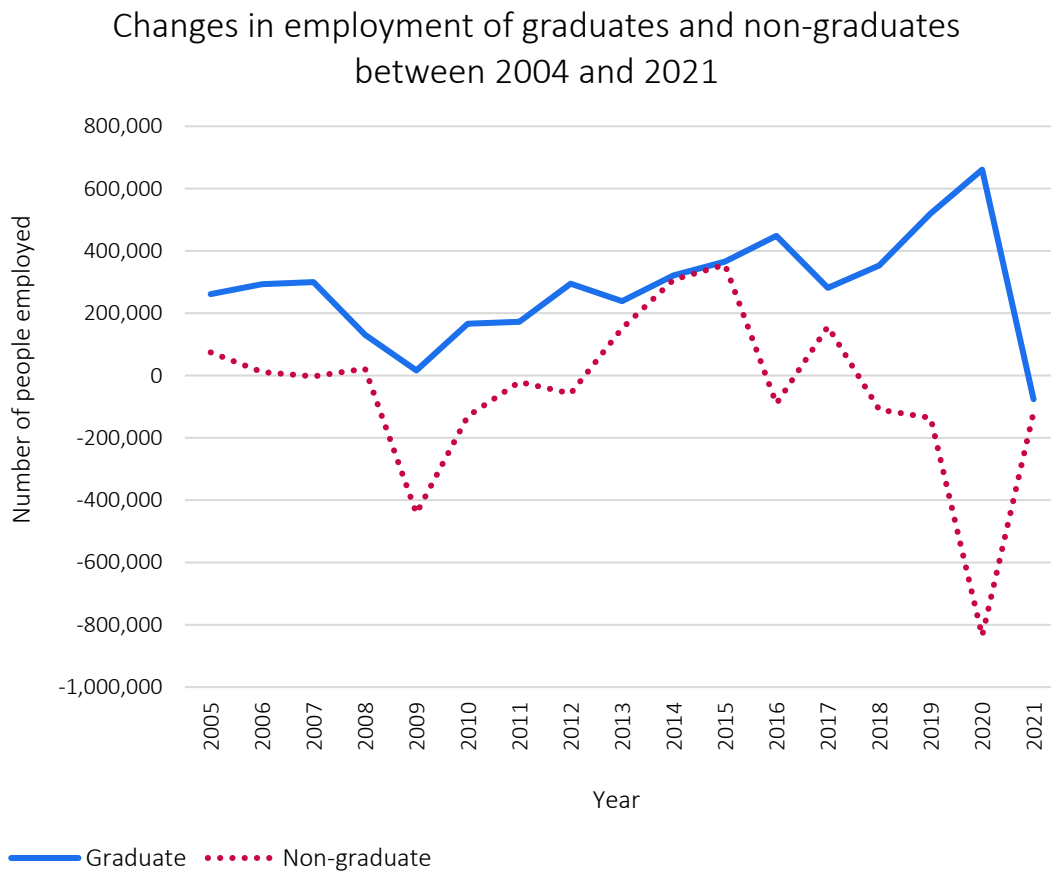
Source: Office for National Statistics, [Annual Population Survey](#)

Between 2004 and 2021, the number of people in the UK working in graduate level jobs increased by 4.75 million, while the number of people working in jobs below degree level fell by 865,000. This is not a case of supply driving demand – meaning we’re not seeing more people in graduate jobs because there are more graduates. Instead, it’s driven by business needs and technological change.

All sub-groups of graduate employment increased between 2004 and 2021, with the exception of protective services occupations – graduate roles in the Armed Forces and emergency services.

Most job groups below graduate level saw reduced employment, the main exceptions being care workers, elementary trades (skilled trades fell substantially) and customer service roles, which all rose significantly in number. Customer services roles, however, fell again in 2022.

FIGURE 3



Source: Office for National Statistics, [Annual Population Survey](#)

The number of people in graduate employment in the UK rose year-on-year (except in 2020, due to the Covid-19 pandemic), while non-graduate employment has fallen in several of the years in the time period and only rose substantially the recovery period following the last recession – and even then it only kept pace with the rise in graduate level employment.

What could happen to jobs in the next decade?

Over the next decade or so, we would expect these trends to continue, with graduate employment growing in most, if not all, categories of work.

In particular, we believe the areas to watch will be tech, health, education, digital and creative.

In contrast, non-graduate employment will vary in prospects, with some roles – particularly care work and other essential worker roles that are vital to the effective functioning of the country – continuing to rise, but many others, including some of the better paid jobs in office work or skilled trades, likely to continue to fall in numbers.

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About Charlie Ball



Charlie Ball is Jisc's in-house specialist on the graduate labour market. He researches and analyses all things to do with post-18 employment, including regional economies, skills supply and demand and postgraduate issues, usually with a careers and employability perspective.

Charlie sits on the Graduate Outcomes steering group and advisory bodies for AGCAS and the Institute of Student Employers. He is a Fellow of the National Institute of Careers Education and Counselling (NICEC) and a Visiting Fellow at Manchester Metropolitan University.

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