



FIT FOR THE FUTURE:

**GROWING AND SUSTAINING ENGINEERING
AND TECHNOLOGY APPRENTICESHIPS FOR
YOUNG PEOPLE**

**Inquiry led by Lord Knight and Lord Willetts
Call for evidence**

In partnership with
EngineeringUK

CONTEXT

This inquiry is held at a time of unparalleled change for the UK economy and the labour market. The pandemic, Brexit and the urgent need to decarbonise and reach net zero by 2050 have all highlighted the UK's skills and workforce shortages and as a result have shone a spotlight on our education and skills system, raising questions whether it is fit for purpose. It has become clear that a thriving engineering and technology workforce of the future and our success in areas, such as net zero, life science, transport, food sustainability and digital relies upon young people having access to and participating in technical routes like apprenticeships. Put simply, we urgently need to increase the number and diversity of young people taking technical routes into engineering, manufacturing and technology, such as apprenticeships, to ensure that we have the workforce to succeed as a country now and into the future.

Like many other organisations working to inspire young people into engineering, manufacturing and technology careers, EngineeringUK is concerned by the pattern of overall decline in apprenticeship starts over time. Since 2014/15 engineering related apprenticeship starts in England have declined by 9%. The change over time varies considerably by individual subject. For example, there has been a worrying drop of 34% for engineering and manufacturing technologies, whilst other subjects such as ICT and construction, planning and the built environment have seen an increase - suggesting it is a more complex picture than it might first appear.

Whilst the latest apprenticeship data suggest a move in the right direction, with a positive uptick in apprenticeships starts as we emerge from the pandemic, there is still a long way to go. Given the acute skills shortage and the pressing need for more engineers and technicians to support the UK's ambitions in areas like net zero, digital and innovation, we need significant and sustained growth in apprenticeship starts and completions. If we want to see effective policy making in apprenticeships, we need to first unpack the pattern of decline over time in apprenticeship starts and understand the different factors at play.

By doing so, we hope this inquiry can help to open up a conversation about how to break down the barriers that exist and widen opportunities for young people in engineering and technology careers.

WE WANT TO HEAR

FROM YOU...



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AIMS AND APPROACH

The aims of the inquiry are:

- To examine the reasons behind the decline in engineering, manufacturing and technology apprenticeships over time
- To better understand the barriers facing young people¹ in pursuing apprenticeships in engineering, manufacturing and technology
- To identify solutions and good practice which could help to increase the number and diversity of young people starting and completing engineering, manufacturing and technology apprenticeships
- To contribute to the wider debate about skills reforms, including, for example, Sir Michael Barber's review

Through this inquiry we want to help stimulate a conversation amongst employers, sector bodies, youth organisations and policymakers about the importance of apprenticeship pathways in meeting future engineering and technology skills needs. Moreover, we want to find out what can be done not only to reverse the trend over the past few years but to achieve sustained growth in engineering, manufacturing and technology apprenticeships particularly for young people to meet demand for skills in this area.

We want to hear from a range of stakeholders across the UK including engineering and tech employers, young people, STEM outreach organisations, sector bodies, youth organisations, education and training providers, think tanks, policy makers and others. Written evidence, oral evidence and desk research will form the basis of our inquiry report. By taking part and submitting evidence, you have the opportunity to inform our policy recommendations to government and the engineering community.

HOW TO RESPOND

Outlined in this document you will find the inquiry questions. Please send your evidence and ideas in relation to those questions to policy@engineeringuk.com by 5pm on **27 February 2023**.

Your submission should be no more than 3,000 words. We appreciate that you may not have information or insights relating to every aspect of this inquiry so do not feel you have to respond to every question. We welcome the inclusion of links to further reports, data and case studies in your response. This inquiry aims to understand the challenges and also find solutions, so do please share your ideas, examples of what has worked for you and policy proposals.

We will list the names of organisations who have responded to this call for evidence within the final report, unless you ask us not to. Therefore, please clearly state on your response the name of your organisation or if you are replying as an individual and whether you allow us to list those in our final report.

Please also provide us with:

- Your name and contact details
- If you are a business, the size of your business, sector and your location of the business

We will only use size, sector and location details of your business for analysis purposes.



¹With young people we mean those aged 16 to 25. However, we are keen to understand the differences between young people who are 16 to 18 and those aged 19 to 25 as they will have different experiences.

QUESTIONS



OPPORTUNITIES

1. For all respondents - What part do apprenticeships play in helping to meet the UK's skills needs in engineering and technology?

o If you are a **business** offering apprenticeships, please also tell us about your objectives in taking on apprentices? What role do they play in your business?

STATE OF PLAY

2. For all respondents - What do you think are the reasons behind the overall decline in engineering apprenticeship starts in recent years? We are particularly interested in understanding more about supply and demand.

o If you are a **business**, please also tell us about apprenticeships openings and starts in your business. Are you offering more or fewer apprenticeships than you used to? Why is this? How has your offer to young people changed? How easy or difficult do you find filling your apprenticeship positions? Why do you think that is?

o If you are a **training provider**, please also refer to your experience of offering apprenticeships over the past few years. What factors influence what apprenticeships you offer (including consideration about subjects and levels)?

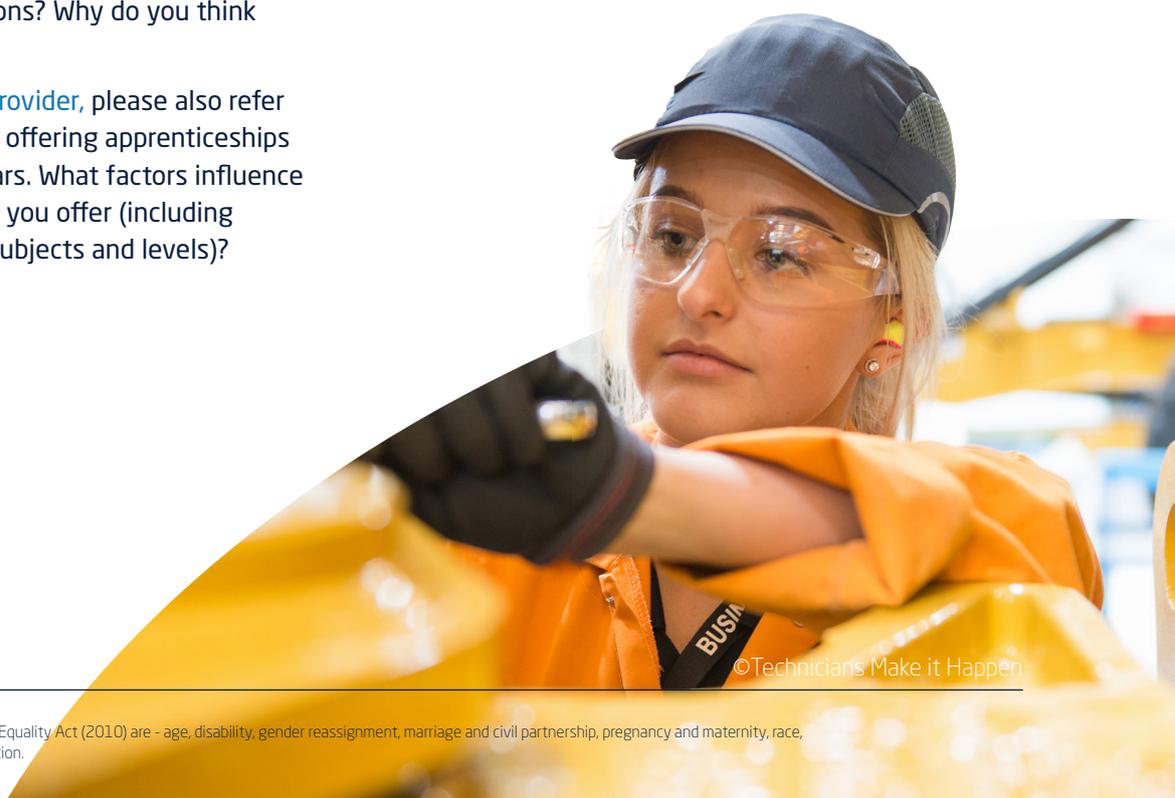
BARRIERS

3. For all respondents - What are the barriers for businesses taking on young people as apprentices and what are the barriers for young people in accessing them?

o If you are a **business** you may wish to consider issues including capacity, health and safety, financial constraints or apprenticeship standards.

o If you are a **young person** or **someone working with young people** you may wish to consider issues including awareness, careers provision, pre-application support, finding an apprenticeship locally or completing the qualification.

We are also interested in any evidence or insights you can share on the different barriers experienced by young people with different protected characteristics², in particular barriers experienced by young women, disabled young people and/or young people with special educational needs and young people from minority ethnic backgrounds (because these groups are underrepresented in the engineering profession) and young people of a particular age.



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²The protected characteristics under the Equality Act (2010) are - age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation.

SOLUTIONS

4. **For all respondents** - What do you think needs to change to help increase the number and diversity of young people taking up and completing engineering and technology apprenticeships?

o If you are a **business**, what would help you to offer more apprenticeships and/or take on more apprentices, particularly younger apprentices?

o If you are a **training provider**, what needs to change to enable you to upscale your training offer for young people?

o If you are a **young person** or **someone working with young people**, what do you think needs to happen to encourage and enable more young people to take up and complete an engineering or technology apprenticeship?

OTHER

5. **Open question for all respondents** - Do you have any other final insights or evidence not already covered in the previous questions?

CASE STUDIES

AND EXAMPLES

As part of your submission, we would be keen to hear from you about any approaches which have shown promising results in widening apprenticeship opportunities for young people from all backgrounds.



THE OVERALL PICTURE

Before we turn to apprenticeships in more detail, it is worth pausing to consider the scale of the overall engineering workforce in the UK. Latest data shows that around 5.7 million employees (19% of the overall UK workforce) were working in engineering occupations across the UK in 2021³.

This figure includes those working in engineering across a wide range of sectors from construction to media, water supply to ICT. The (mean) average age of people working in engineering occupations in 2021 was 42 years, comparable to non-engineering occupations.

However, we also observe that there is a lower proportion of workers in the youngest age group (16 to 24 years) in engineering (8.1%) compared to non-engineering roles (11.4%) and that this proportion has declined since 2010 (from 8.6% to 8.1%).

Research has also shown that engineering generates up to an estimated £645bn gross value added (GVA) to the UK's economy annually – equivalent to 32% of the country's economic output⁴. The UK has 729,000 engineering businesses – equivalent to more than one in 10 (13%) of all UK businesses⁵. This bigger picture underlines the importance of growing and sustaining technical routes into engineering careers for the future.

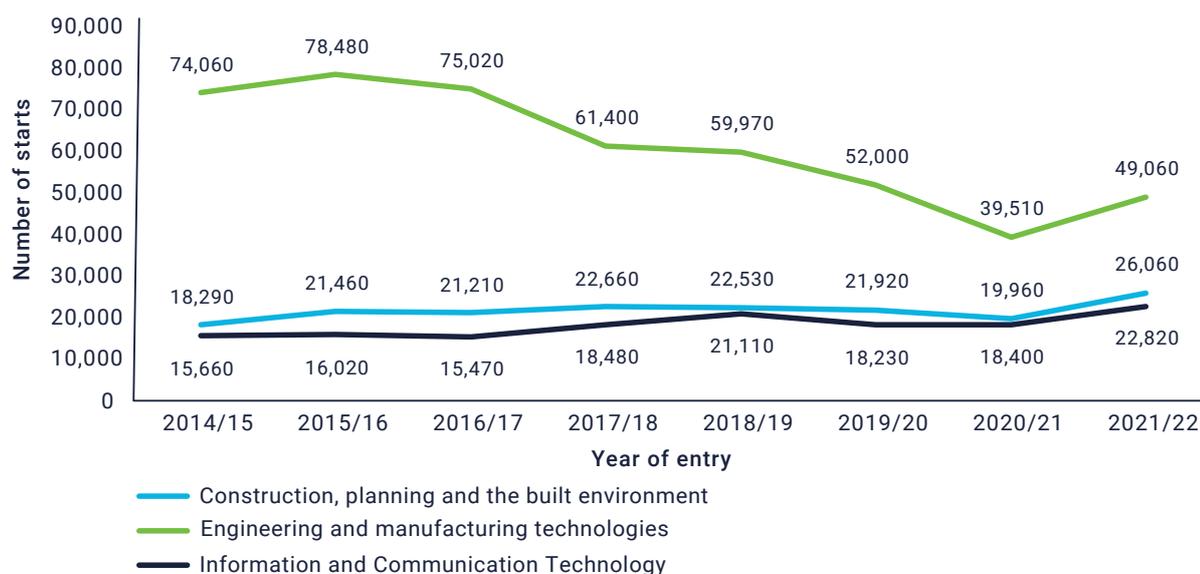
TRENDS IN ENGINEERING-RELATED APPRENTICESHIPS

There has been a concerning decline in the number of apprenticeships starts in England over recent years across all subject areas, including engineering and technology⁶. And while there is a clear uptick of apprenticeship starts in the engineering and technology sector over the last year, numbers remain lower than in 2018/19, just before the pandemic.

Overall, data confirms that since 2014/15 apprenticeship starts have dropped by 30% for all subject areas, and 9% across engineering-related subjects.

In the engineering sector, this decline is particularly pronounced in 'Engineering and Manufacturing Technologies', where we have seen a 34% fall in apprenticeships starts since 2014/15. However, 2 areas bucking the trend are 'Information and Communication Technology' and 'Construction, Planning and the Built Environment' where apprenticeship starts have increased 46% and 42% respectively since 2014/15. It is worth noting, however, that these are slightly smaller cohorts in absolute terms.

Figure 1: Trend in the number of engineering-related apprenticeship starts by sector, 2016/17 to 2020/21, England



Source: DfE, 'Apprenticeships subject and levels - learner demographics 2021/22', 2022.

³EngineeringUK, 'Trends in the engineering workforce between 2010 and 2021', 2022.

⁴Royal Academy of Engineering, 'Hotbed of innovation: New research reveals engineering adds up to an estimated £645bn to the UK's economy annually', 2022. This report uses a slightly different footprint for engineering than EngineeringUK's research.

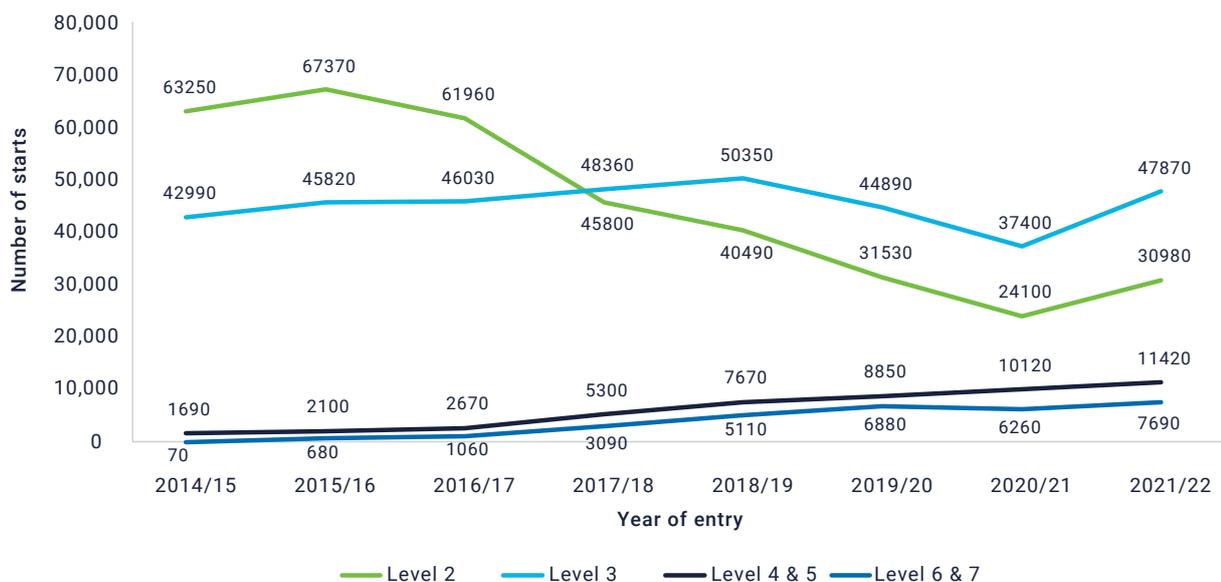
⁵ibid

⁶Engineering and technology apprenticeships are defined here as any apprenticeship sitting under the broad heading of 'Engineering and manufacturing technologies', 'Construction, planning and the built environment', or 'Information and Communication Technology'

THE PICTURE BY LEVEL

Across the board the decline in the number of apprenticeship starts is being driven by a marked decline in the number of starts in lower-level apprenticeships, particularly intermediate apprenticeships (Level 2). This is also true for engineering-related apprenticeships, and for each of the individual sector subject areas. While all levels have picked up or remained consistent from 2020/21 to 2021/22, the longer-term trend remains.

Figure 2: Trend in the number of engineering-related apprenticeship starts by level, 2016/17 to 2020/21, England



Source: DfE, 'Apprenticeships subject and levels - learner demographics 2021/22' 2022.

THE DIVERSITY PICTURE

It is important that all routes into engineering attract and engage with a diverse range of individuals to ensure that the future workforce continues to diversify and meet the UK's future engineering needs. Below we highlight the current picture for engineering-related apprenticeships in terms of gender, ethnicity and socioeconomic background and age.

GENDER

The proportion of female starts in engineering-related apprenticeships has increased 6.6 percentage points since 2014/15. However, it remains below the proportion across all apprenticeship subject areas with only 14.2% of those starting engineering-related apprenticeship being female, compared to 50.8% across all subject areas.

The increase in female participation in engineering-related apprenticeships is mostly being driven by 'Information and Communication Technology'. 32.1% of apprenticeship starts in this sector subject area were by female apprentices, up from 17.5% in 2014/15. It is also driven by the increase in higher level apprenticeships, with the highest percentage point increase of female participation at Levels 4 and 5 (16% increase in the percentage of female apprentices) over the 7-year period since 2014/15, followed by degree or higher (11.8% increase in the percentage of female apprentices).

Figure 3: Trend in the proportion of engineering-related apprenticeship starts by females, 2016/17 to 2020/21, England

	2014/15 (%)	2015/16 (%)	2016/17 (%)	2017/18 (%)	2018/19 (%)	2019/20 (%)	2020/21 (%)	2021/22 (%)	Percentage change over 7 years (%p)
Intermediate	8.5	9.2	8.6	6.7	6.8	7.6	7.8	7.2	-1.3
Advanced	6.1	6.4	6.8	8.8	9.8	9.7	13.1	13.6	7.5
L. 4 & 5	11.8	10.5	13.9	17.4	21.8	24.2	29.5	27.8	16.0
Degree or higher	14.3	16.2	20.8	21.4	20.2	22.7	24.8	26.1	11.8
All levels	7.6	8.1	8.1	8.7	10.0	11.4	14.5	14.2	6.6

Source: DfE, 'Apprenticeships subject and levels - learner demographics 2021/22', 2022.

ETHNICITY

There has been a similar long-term trend of an increase in the percentage of apprenticeship starts by people from minority ethnic groups. For engineering-related apprenticeships, in 2021/22, 12.5% of starts were by people from a minority ethnic group, up from 7.4% in 2014/15. This compares to 14.4% in all sector subject areas, up from 10.5% in 2014/15.

As with the changes observed in participation by gender, this increase in the proportion of minority ethnic engineering-related apprenticeship starts is mostly driven by 'Information and Communication Technology' with 24% of starts being from minority ethnic groups in 2021/22, up from 14.8% in 2014/15.

DEPRIVATION⁷

The proportion of apprenticeship starts by people from the most deprived backgrounds has declined slightly in recent years. 20.6% of apprenticeship starts in all sector subject areas were by those in the most deprived group, down from 25.8% in 2016/17.

A similar trend has been seen for engineering-related apprenticeships. 18.6% of apprenticeship starts were from the most deprived group in 2021/2022, down from 21.2% in 2016/17. This decline is similar across all 3 engineering-related subject areas.

DISABILITY

The proportion of apprenticeship students classed as disabled and/or having a learning difficulty has risen slightly over recent years. In 2021/22, 13.3% of starts in engineering-related apprenticeships and 13.6% of starts in all sector subject areas were from disabled people and/or those with a learning difficulty, up from 10.1% and 10.3% respectively in 2016/17.

Disabled people and/or those with learning difficulties are more likely to be participating in level 2 or 3 apprenticeships. In 2021/22 15.6% of level 2 starts in engineering-related apprenticeships were from disabled students and/or those with a learning difficulty, compared to 11.1% of level 6 or 7 starts.

Much of the increase in disabled people and/or those with learning difficulties starting engineering-related apprenticeships is driven by 'construction, planning and the built environment', with 15.9% of starts, up from 12.4% in 2016/17.

⁷For this data the index of multiple deprivation (IMD) is used. This separates England into quintiles of deprivation. For this data, we have used the highest deprivation quintile to define the students from most deprived backgrounds. For more information, please see www.gov.uk/government/statistics/english-indices-of-deprivation-2019

THE PICTURE BY AGE

The age profile of engineering-related apprenticeships is much more evenly spread than across apprenticeships in all sector subject areas. Roughly a third of apprenticeship starts in engineering-related subjects are 16 to 18, a third are 19 to 25, and a third are 25+⁸. Apprenticeship starts across all sector subject areas skew older, with 47.4% of starts being aged 25 or over.

However, while the age profile of apprenticeship starts across all subject areas has remained broadly consistent, starts in engineering-related apprenticeships have started to shift. In 2016/17, 39.2% of starts in engineering-related courses were aged 16 to 18, which had dropped to 34.7% in 2021/22. This is likely due in part to the increase in the numbers of degree apprenticeships, and the increase in number of apprenticeships starts in 'Information and Communication Technology', which has a higher age profile. 46.1% of starts in 'Information and Communication Technology' in 2021/22 were 25+, and 14.7% were 16 to 18.

THE GEOGRAPHICAL PICTURE

APPRENTICESHIP NUMBERS

The picture of apprenticeships is not consistent across the nations of the UK, or the regions of England.

While in England, all apprenticeship starts have declined 30%, and engineering-related apprenticeship starts have declined 9%, apprenticeship starts in Scotland have only declined 6% and engineering-related apprenticeships have bucked the trend and increased 10%. Wales has also seen a decline in apprenticeship starts in all subjects (14%) and engineering-related subjects (15%), but not to the same extent as England. Northern Ireland is measured

differently,⁹ so not directly comparable, but participation across all apprenticeships (16%) and engineering-related apprenticeships (31%) increased from 2019 to 2021.

Engineering-related apprenticeship starts now make up 46% of all apprenticeship starts in Scotland. This compares to 28% in England and 19% in Wales. 70% of apprenticeship participation in Northern Ireland is engineering related.

Total apprenticeship numbers have gone down in every region in England since 2016/17, and engineering-related apprenticeships have declined in every region except for London and the South East, which have seen small increases.

Figure 4: Number of engineering-related apprenticeships in each England region, 2016/17 to 2021/22

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
North East	8,660	6,490	6,470	5,870	4,680	6,520
North West	16,270	14,210	14,660	13,180	11,440	14,300
Yorkshire and The Humber	13,220	11,710	12,190	10,650	9,420	11,520
East Midlands	10,250	8,690	9,300	7,930	6,560	8,450
West Midlands	14,410	12,270	12,350	10,390	8,320	10,520
East of England	9,210	8,820	9,180	8,450	6,400	8,610
London	7,920	7,400	8,960	8,020	8,240	11,570

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
South East	14,890	14,460	15,300	13,780	12,250	15,070
South West	15,180	14,570	14,220	12,830	9,730	10,400
Other / Unknown	1,690	3,920	980	1,050	830	1,020
Total	111,700	102,540	103,610	92,150	77,870	97,940

Source: DfE, 'Apprenticeships geographical breakdowns - details', 2022.

YOUNG PEOPLE'S KNOWLEDGE

In EngineeringUK's Engineering Brand Monitor, we asked young people about their knowledge of their apprenticeship options. Those in London, the North West, and Northern Ireland were the most knowledgeable, with those in Wales, Yorkshire and the Humber, and the South West being the least knowledgeable.

Figure 5: How knowledgeable young people are about the different apprenticeship options available to them

Region	Not Knowledgeable	Somewhat Knowledgeable	Knowledgeable	Very knowledgeable	Sum of knowledgeable and very knowledgeable
North East	25%	30%	25%	20%	45%
North West	20%	30%	29%	21%	50%
Yorkshire & Humber	27%	39%	24%	10%	34%
East Midlands	32%	31%	26%	11%	37%
West Midlands	28%	36%	25%	11%	36%
East of England	28%	32%	28%	12%	40%
South East	32%	31%	23%	14%	37%
London	18%	19%	30%	33%	63%
South West	29%	35%	29%	6%	35%
Northern Ireland	31%	20%	28%	22%	50%
Wales	37%	30%	25%	7%	33%
Scotland	34%	28%	26%	11%	38%
Total	27%	30%	27%	16%	42%

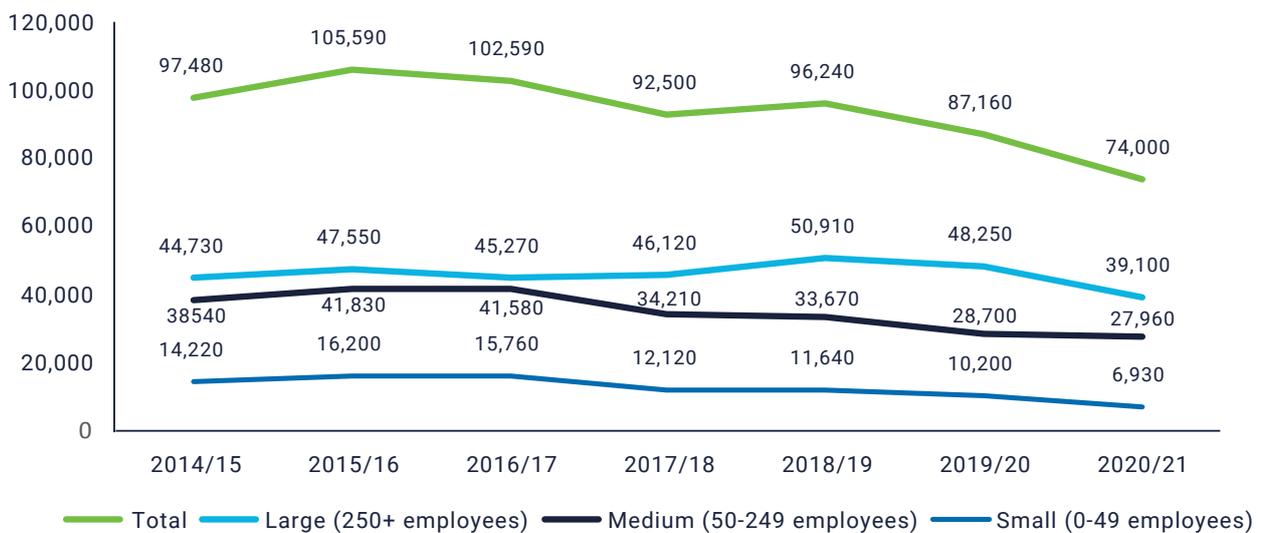
⁸Apprenticeship starts in the older age bracket decline with the age of the applicant. 25 to 34 is the largest proportion in this age bracket with those aged 45+ only making up a small proportion of the numbers.

⁹Northern Ireland data reports on 'participation' rather than 'starts' as the rest of the UK. Northern Ireland's Department for the Economy defines a participant as an individual on ApprenticeshipsNI (type of contract). An individual can participate on ApprenticeshipsNI more than once.

THE PICTURE BY EMPLOYER SIZE

Looking at the number of apprenticeship starts in the engineering and technology sector by employer size, we see declines across the board in the period between 2014/15 and 2020/21, but less so among large businesses. In 2014/15, 46% of engineering-related apprenticeship starts were in large businesses, which has risen to 53% in 2020/21.

Figure 6: Trend in the number of engineering-related apprenticeship starts by business size, 2016/17 to 2020/21, England



Source: DfE, 'Apprenticeships starts by enterprise characteristics, SSA and apprenticeship level 2021/22', 2022.



ABOUT ENGINEERINGUK

Established in 2001, EngineeringUK is a not-for-profit organisation, funded predominantly via a share of the professional registration fees of professionally registered engineers and technicians, as well as the support of a range of businesses, trusts and foundations, and a corporate membership scheme. Our ambition is to inform and inspire young people and grow the number and diversity of tomorrow's engineers.

We work locally, regionally and nationally with a wide range of organisations across business and industry, education, professional institutions and the third sector to understand the engineering skills required by engineering companies and in the wider economy, and work in partnership to develop and promote effective initiatives to inspire young people to consider a career in engineering.

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