Education and Training at Levels 4 and 5 in London

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GLA Research Project

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The views expressed in the report are those of the authors. They do not necessarily reflect those of the Greater London Authority.

SYNOPSIS

This research was commissioned by the GLA to establish a stronger evidence base regarding the place and value of higher level skills in London. These are courses, apprenticeships and qualifications at Levels 4 and 5. The provision is commonly styled higher technical education.

The bulk of the study was completed before the first lockdown in March 2020. A data team analysed trends and patterns in participation. A fieldwork team interviewed providers, employers and awarding organisations. The representation of Levels 4 and 5 in selected priority areas was mapped: tech and digital; culture and creative; health and social care; low carbon and environmental; and advanced urban.

The research highlighted the small, uneven and unstable nature of provision at Levels 4 and 5. Across the capital, there are few examples of centres with large numbers or dedicated specialisms at these levels. Overall participation by London residents in courses has decreased in recent years. The volume joining apprenticeships has increased, albeit from a low base.

The main conclusions drawn are:

- *Present-day provision is largely uncoordinated*.
  As in other English regions, there has been a marked decline in the share of higher education taken by Levels 4 and 5. Efforts to extend provision at these levels have coincided with highly competitive and unstable conditions, especially in London. Market-led reforms and popular demand for full-time bachelor degrees have reduced the scope for collaboration and coordination. The entry of private providers has split rather than increased the market for sub-bachelor higher education.
- *Institutes of technology are vehicles for collaboration and specialisation*.
  Partnership between universities, colleges and employers, together with vertical integration of specialist provision at Levels 4, 5 and 6, are among the design principles of new institutes of technology. Three have been approved and funded in the capital. The institutes are a policy experiment. They have attracted broad support.
- *Smaller qualifications and shorter programmes are anticipated*.
  Flexibilities in the structure, content and approval of qualifications at Levels 4 and 5 are sought by employers and providers. There is frequently an under-appreciation of the modular structures and occupational specialisms in existing curriculum pathways. Full qualifications and long programmes are less suited to some training needs. In some sectors, the award of microqualifications is attractive. Graduates in the labour market are a potential new source of demand at Levels 4 and 5, especially where change in the knowledge and skills base is rapid.
- *Planned reforms call for enhanced policy intelligence*.
  Incentives for providers and students to undertake approved higher technical qualifications are part of a government plan to reform technical education. The impact of changes will need to be closely monitored, especially their bearing on the choice-making of students, workers and employers. At Levels 4 and 5, there are complexities attached to appraisal and analysis.

Recommendations are made for additional organisational hubs; for the safeguarding of provision in light of mergers, closures and restructuring; for a catalogue of courses and apprenticeships; for a needs analysis of the graduate workforce; and for the piloting of credit-based microqualifications.

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EXECUTIVE SUMMARY

ABOUT THE STUDY

These are the summary findings of a research report on education and training at Levels 4 and 5 in London. The study was commissioned by the GLA. It was undertaken by a team brought together by Richard Boniface (RCU) and Gareth Parry (University of Sheffield).

The authors are Jennifer Allen, Richard Boniface, Lynsi Hayward-Smith, Gareth Parry, Arti Saraswat, Anne Thompson and Graham Whalley.

The research was carried out between September 2019 and July 2020. Some of the data collection was curtailed or delayed by the lockdown from March 2020.

OUR REMIT

We were asked to address five main questions:

1. What is the participation of Londoners at Levels 4 and 5?
2. How is Level 4 and 5 represented in five priority sectors: tech and digital; culture and creative; health and social care; low carbon and environmental; and advanced urban?
3. What factors bear on supply and demand?
4. Are qualifications important?
5. What features are distinctive to London?

OUR APPROACH

A mixed method design was based on:

(a) Analysis of administrative data to identify trends and patterns in the participation of Londoners.
(b) Fieldwork and interviews with 35 education providers, employer organisations and awarding bodies.
(c) Analysis of quantitative and qualitative data to map the features of five priority sectors.
(d) Review of published and unpublished sources.

The quantitative data is for the most recent available year (2018/19) and for the most recent period (2015/16-2018/19). The qualitative data is based on fieldwork undertaken in 2019/20. The fieldwork findings are illuminative, not representative.

MAIN FINDINGS

We present our main findings under each of the five research questions. Our recommendations then follow.

WHAT IS THE PARTICIPATION OF LONDONERS?

Participation by London residents in courses and apprenticeships at Levels 4 and 5 is small.

Among the resident population of London, around 30,000 students and apprentices are engaged in education and training programmes at Levels 4 and 5. Some 18,000 (59%) are enrolled on courses. Another 12,000 are undertaking apprenticeships (41%).

Overall participation is slightly larger at Level 5 than at Level 4.

Approaching 17,000 (55%) are pursuing course and apprenticeship programmes at Level 5. Over 13,000 (45%) are doing so at Level 4. Course enrolments are larger at Level 5 than at Level 4 but apprenticeship numbers are bigger at Level 4 than at Level 5. For course provision, the ratio of Level 5 to 4 is 62:38. For apprenticeship training, the ratio is 45:55.

A number of London residents are studying for credits.

Over 2,000 are studying for credits rather than qualifications. Most are engaged in studies related to nursing. The rest are pursuing combined studies. Separate again are those described as undertaking non-regulated provision. Their reported numbers are in the region of 600.

Overall participation by Londoners at Levels 4 and 5 has increased in the recent period.

The combined total for courses and apprenticeships has increased by 18% in recent years. However, those joining apprenticeships accounted for all this growth. Taken together, the growth for courses and apprenticeships is highest at Level 4, at 40%. For Level 5, the increase is 5%.

Most London residents undertake their studies at institutions based in the capital.

Over one-third (38%) are registered at providers outside London. Of these, 18% are registered at institutions located in adjoining regions. Where partnership or sub-contractual arrangements are involved, the actual teaching might take place at a location in London. Again, where students are registered at institutions outside the capital, the teaching might be undertaken at their London campus.

Course enrolments at Level 5 are greater than those at Level 4.

Some 18,000 London residents study for courses leading to qualifications at Levels 4 and 5. Around 11,000 enrolments are at Level 5. Another 7,000 are at Level 4.

Most London residents studying at Levels 4 and 5 are older adults.

More than two-thirds (68%) are over the age of 25. Except for the most recent year, this proportion has been increasing. White students comprise one-half of the course population, followed by Black/Black British students (23%), Asian/Asian British students (16%) and other ethnic groups (11%). The majority are qualified to Level 3 but just over one-quarter (27%) of those enrolled at higher education institutions (particularly at Level 5) already hold a qualification at Level 6 or above. The equivalent figure for further education colleges is 6%.

Overall participation by Londoners in course provision at Levels 4 and 5 has decreased in recent years.

Course enrolments dropped by about 15%. At Level 5, they fell by 22%. At Level 4, they decreased by 1%. Over this period, the share of course numbers taken by higher education institutions decreased by 34%. For colleges, it increased by 3%. This took the college share to 58% compared to 36% for higher education establishments and 6% for other providers.

Subjects related to business, administration and law and subjects related to health, public services and care are the largest areas of study.

They account for just over one-half of course enrolments by London residents. The other subject categories with significant numbers at Levels 4 and 5 are education and training and, secondly, arts, media and publishing. In all four subject areas, more are studying at Level 5 than at Level 4. In the business category, the majority attend colleges. In the health category, most are taught at higher education institutions.

Undergraduate awards are generally the main qualification types at Levels 4 and 5.

Several providers, especially colleges, provide undergraduate and non-undergraduate qualifications. Undergraduate qualifications at Levels 4 and 5 include the HNC, CertHE, HND, DipHE and Foundation Degree (previously often described as 'prescribed'). Non-undergraduate qualifications encompass a range of professional and occupational qualifications (previously sometimes described as 'non-prescribed). At Level 4, the main awards are the HNC and CertHE, along with non-undergraduate 'diplomas'. Over the recent period, the numbers taking HNCs have increased whilst those on other Level 4 programmes have declined. At Level 5, the Foundation Degree and HND are the dominant qualification types. The two awards account for around two-thirds of the total enrolments recorded at this level. Except for the most recent year, HND numbers have been increasing. Foundation Degree numbers have been falling over this period.

Only a small number of students hold advanced learner loans for courses at Levels 4 and 5

Around 1,500 students are in receipt of advanced learner loans for non-undergraduate courses at these levels. The subject category with the largest number is health, public services and care.

The number of London residents joining higher apprenticeships at Levels 4 and 5 has increased significantly.

Of the 12,000 Londoners pursuing apprenticeships, close to 7,000 are at Level 4 and over 5,000 are at Level 5. Apprenticeship numbers at Levels 4 and 5 have grown by 168% in recent years, albeit from a relatively low base. The increase is fastest at Level 5 (214%). At Level 4, the rise is 140%. Private providers are predominant and they have increased their share of apprenticeship starts. At further education colleges, the numbers have fallen.

Apprenticeship starts are most popular in the fields of business, administration and law followed by health, public services and care.

These two largest subject categories are the same as for course provision. The most popular apprenticeship frameworks and standards are for operations/departmental manager (nearly 1,500 starts), nursing associate

(close to 700 starts), care leadership and management (over 600 starts), associate project manager (over 600 starts) and data analyst (close to 600 starts).

There is significant variation in the uptake of courses and apprenticeships at Levels 4 and 5 by residents of different boroughs.

For courses, the highest concentrations at Level 4 are in North East London. A different profile is evident at Level 5, with high concentrations in West London. Level 4 and Level 5 apprentices are more likely to live in outer London than central London. The highest concentrations are in boroughs in East and South London.

HOW IS LEVEL 4 AND 5 REPRESENTED IN THE FIVE GLA PRIORITY SECTORS?

The five priority sectors are a mix of established undertakings, new spheres and emerging areas.

The five sectors are selected from a larger number of priority sectors identified by the GLA. On the one side are regulated occupations with mandated qualifications in specialist fields. In many, professional or expert practice is associated with graduate status. On the other are commercial and financial enterprises, ranging from global corporations and international businesses (often with large and complex supply chains) through to small and medium size ventures (numerous in London). Some operate their own education and training systems, including industry certification. Others rate experience and self-teaching above academic qualifications. The operating environments for tech and digital are general to all work situations as well as innovation centres and clusters in their own right. These diversities, fluidities and overlaps are not well captured by the term ‘sector’.

Coding systems for courses and subjects do not map directly to those for occupations and industries.

The use of administrative data to map between courses, occupations and sectors has limitations. Many courses, particularly at Levels 4 and 5, are not specific to an occupation. Rather, they develop general skills appropriate to a wide range of different occupations and, increasingly, they support progression to education and training at the higher levels. Courses leading to professional qualifications frequently serve the needs of individuals already working in a particular occupation. In some fields, they attract those looking to begin or change a career. Currently under development are new education programmes that address a range of skills from different disciplines. Hence, the feasibility of mapping is firmer in some sectors than others.

Alignments between the content of courses and the skillsets required by sectors are not necessarily signalled in the titles of qualifications.

Occupational and sector specialisms might be embedded in the pathways, modules and options within a programme. Low carbon technologies, sustainable resources or future-proof designs might be core or cross-cutting themes in programmes which otherwise have engineering or building or construction in their titles. These features have implications for student and employer understanding as well as for mapping exercises.

There is significant variation between sectors in the profile of Level 4 and 5.

The priority sectors differ in the volume of activity at these levels, the popularity of qualification types and the locations of study. For courses, the trend lines for recent years are flat or otherwise indicate a slight or significant fall. For apprenticeships, the numbers are smaller. They are only described for sectors with sizeable volumes.

In tech and digital at Levels 4 and 5, a sharp fall in the number of London residents enrolled on courses is accompanied by a significant increase in apprenticeship starts.

In this sector, around three-quarters of course enrolments are at Level 5. Overall numbers have decreased by 43%, with the drop steepest at Level 4. There are similar numbers under and over the age of 25. A small majority are studying at colleges. Two out of five are enrolled at higher education institutions. The rest are registered with private providers. At Level 4, over one-half are taking an HNC. The remainder are enrolled for a CertHE or relevant diplomas. At Level 5, nearly all study for a Foundation Degree or HND. In this sector, vendor qualifications are available, often provided through private training organisations and charged at commercial rates. The largest concentrations by residence are in West and North East London. Apprenticeship numbers have increased five-fold in recent years, mostly at private training providers.

In culture and creative, there is a large increase at Level 4 and a big decline at Level 5.

Overall course numbers show a small decline (10%). Numbers at Level 4 have expanded by 41%. At Level 5, the decrease is by nearly one-half. Three-quarters are enrolled at colleges. Those under the age of 25 are a small majority but their numbers have reduced. By contrast, enrolments by older adults have increased by one-quarter. The HNC is the most popular qualification at Level 4, along with diplomas in the various fields of art and design. At Level 5, the great majority are studying a Foundation Degree or HND. The residence of students by borough is more dispersed than for other sectors. The number of apprenticeship starts is very low.

In health and social care, there is a fall in course numbers but apprenticeship starts are increased.

Course and apprenticeship numbers are by far the largest in this sector. Efforts to tackle skills shortages and gaps are a priority. Over the recent period, course enrolments have declined by 14%. Apprenticeship starts have increased overall by 55% despite a large fall in a single year. Most course student numbers are at Level 5. Three out of five are registered at higher education institutions. Just over one-third are studying at colleges. The rest are taught at private providers. The great majority are aged over 25. Unlike in some sectors, a wide range of qualification types are taken at Level 4 and at Level 5. Specialist diplomas are the largest set of qualifications at Level 4. The Foundation Degree, HND and the ordinary degree are the largest at Level 5. The residences of students are concentrated in outer London. The vast majority of apprenticeships are at Level 5. Up to recently, private providers accounted for most apprenticeship numbers. They have been replaced by public providers, especially higher education institutions.

In low carbon and environmental, there is a fall in course enrolments at Levels 4 and 5.

In administrative datasets, there are very few programmes at Levels 4 and 5 with a specific focus on skills formation for this sector. Broad subject groupings have to be used to generate a list of relevant courses undertaken by London residents. All of these are in the area of construction. Over three-quarters of students

are studying at Level 4. Overall numbers have decreased in recent years, regularly at further education colleges (which account for most enrolments) and sharply at higher education institutions. There are equal proportions of young and older adults. Relatively high concentrations are resident in boroughs bordering the Thames estuary.

In advanced urban, no single agreed definition is available to inform an analysis.

Outlines of this sector refer to the application of new technologies to disciplines such as architecture, urban design, planning, engineering, property development, energy and transport. Apart from the high degree of overlap with tech and digital and with low carbon, an important distinction must be made between industries that could be transformed through the introduction of advanced urban services and the sets of skills (and courses) to make this happen.

WHAT FACTORS BEAR ON SUPPLY AND DEMAND?

A long-term upward drift in higher education has left London with few centres with large numbers at Levels 4 and 5.

Popular demand for the bachelor degree, funding policies which favour full-time study and, over the past decade, efforts to create a market in higher education have contributed to a contraction of provision at these levels. In general, providers have followed student demand for undergraduate education. There are examples where employer demand has figured prominently in specific fields, such as construction and building services engineering. In these areas, employer support and sponsorship for employees is often long-standing. In London, the training policies, facilities and programmes put in place for major infrastructure projects have not been an impetus for dedicated centres that build on these legacies.

A pattern has taken shape in London where the small amount of provision at Levels 4 and 5 is both highly concentrated and highly dispersed.

Of the 100 or so higher education providers in London accepted by the Office for Students onto its register, around 60 are reported by this body to have full-time equivalent student numbers at Levels 4 and 5. Ten of these account for around one-half of the full-time equivalent numbers at these levels. In this cluster, only two providers have numbers over 1,000 and another ten have numbers over 500. Outside this cluster, the remaining one-half of student numbers at Levels 4 and 5 are distributed among 50 or so institutions.

Demand for Level 4 and Level 5 courses is variously described by providers as stable, flat, soft or downward.

The yardstick at these levels is different to that applied to university bachelor degrees. For individual courses, especially in colleges, an enrolment level of more than 15 is generally regarded as solid. In not a few cases, weak demand for some courses coincided with strong recruitment to other programmes. However, the picture is complicated by mergers and whether or not apprenticeships are included by providers in their descriptions of demand. Qualifications listed on the Ofqual register at Levels 4 and 5 are nearly always a minority of the provision. Some are designated for advanced learner loans.

The extent to which employer demand for higher level skills is met by graduate and non-graduate recruitment or by workforce development is different between sectors and organisations.

There are sometimes separate lines of graduate (Level 6) and non-graduate (Level 4 or 5) recruitment. Higher apprenticeships are used for entry to the workplace and for workforce development. Not all organisations recruit or operate on the assumption of a graduate job. In some organisations, demand for technical or technician-level skills is an overriding concern, especially where the knowledge and skills base of the enterprise is changing. Employer partners to the institutes of technology are among the strongest in their search for, and advocacy of, skills-led provision at Levels 4 and 5. In some cases, this is about creating a pipeline for future recruitment. In other circumstances, the imperative is to develop the skills of the existing workforce. In some situations, it is both.

The apprenticeship levy is a spur to investment and involvement in higher apprenticeships in large organisations.

For some levy-paying employers, the single or dominant frame of reference is apprenticeships. While the levy brought employers into relationship with approved training providers, it has probably turned attention away from other education and training options. Among start-ups, the prospect of employing and training higher apprentices is not widely entertained. In the tech and digital sector, some small and medium size enterprises saw little need for relationships with universities or colleges. If they considered taking an apprentice, it would most likely be on the sales and marketing side.

The influence of national colleges with a footprint in London is slim.

National colleges are charged to support skills formation at Levels 4 and 5, especially in respect of major infrastructure projects. One national college (digital skills) is based in London. A second (creative industries) is located in the Thames estuary corridor, a development zone for cultural production supported by the GLA. A third (advanced transport and infrastructure) is in partnership with a London further education college. Although their specialisms align with the priority sectors in London, they are not seen as a significant influence on developments in the capital.

The three institutes of technology in London have growth targets at Levels 4 and 5.

The institutes of technology start with prior investment, involvement or encouragement from the GLA, the London boroughs and interested employers. Each has a modest base of student numbers at Levels 4 and 5. In two, their university partners bring new players into higher education at Levels 4 and 5. At the third, the university partner is located outside London and the relationship is managed through one of its London campuses. In all three institutes of technology, there is no history of formal or regular collaboration between the university and college partners. Key performance indicators are set and monitored by central government. Their licence agreement is for five years. There is variation in their legal forms.

Merged colleges and college groups in London are recent formations which bring together previously separate provision at Levels 4 and 5.

As a result of area based reviews, further education colleges in London have been subject to two-way and three-way mergers. Some pre-merger colleges were themselves a product of earlier mergers. These rationalisations and reconfigurations are consequential for the size, scope and reach of their higher

education. In some mergers, member colleges retained their profiles and specialisms at Levels 4 and 5. In other examples, this provision is managed, reviewed and reshaped from the centre.

Regulatory decisions have impacted adversely on provision at Levels 4 and 5 in London.

The Office for Students has refused registration to 20 providers of higher education. All but four concern institutions based in London. The majority are private providers. Three are further education colleges with provision at Levels 4 and 5. Two of the colleges are partners to institutes of technology. In one case, it is the lead institution. Providers which are refused registration cannot access direct (teaching grant) or indirect (fee loan) public funding for undergraduate courses. However, such courses can be taught under sub-contractual arrangements. Qualifications regulated by Ofqual, including courses designated for advanced learner loans, are not affected by a refused registration. A major consequence of regulatory decisions has been a reduction of provision at Levels 4 and 5 in North East London.

There is a measure of price competition at Levels 4 and 5.

Universities mostly charge the maximum regulated fee for courses at all levels of undergraduate education. At further education colleges and private providers, the prices for HNCs, HNDs and Foundation Degrees are usually lower. In some, there is variation by subject. Charges for sub-contracted programmes are frequently lower than at the partner universities. There is a market of sorts for validation services, with providers choosing and changing their university partners and awarding organisations on the basis of price, quality and competitive advantage. A variety of prices are charged for non-undergraduate courses, including those designated for advanced learner loans.

ARE QUALIFICATIONS IMPORTANT?

The dual role of undergraduate qualifications at Levels 4 and 5 – as exit awards and transfer qualifications – is seen as normal and necessary.

For providers, this meant relevant progression pathways within and between institutions coupled with close working relationships with employers. Arguments for employability and work-readiness are combined with commitments to widening participation and student mobility. Patterns of progression are not necessarily linear or regular. Some students at Levels 4 and 5 already possess qualifications at Level 6 and above. Rates and directions of progression are not systematically reported. As sponsors of students at Levels 4 and 5, some employer organisations are willing to bear the additional cost of employees continuing to Level 6.

No colleges or college groups based in London have the power to award their own degrees.

Nationally, a small number of further education colleges hold foundation degree awarding powers. One college group based outside London has taught degree awarding powers. Two member colleges of this group are in London. For the CertHE, DipHE and Foundation Degree, colleges in London depend on universities for the award of these qualification titles. For the HNC and HND, Pearson is the awarding organisation, except where a higher education institution is able to award these qualifications under licence from Pearson. Three universities in London have such a licence. A fourth is based outside London and its licence is operated through one of its London campuses.

The addition of a foundation year to a standard bachelor degree is commonplace in London.

The foundation year is frequently described as an entry route or preparatory stage. Formally, no level is attributed to the foundation year. It is deemed part of the undergraduate degree. There is evidence to suggest that the foundation year in extended bachelor degree programmes has drawn students away from Level 3 Access to HE Diploma programmes. As with degree apprenticeships, the effect of foundation years on recruitment to Level 4 and 5 programmes is less clear.

Industry certifications are an addition to mainstream qualifications at Levels 4 and 5.

Various efforts have been made to bring vendor qualifications alongside or into mainstream programmes. In recent years, academies have been set up by rival telecommunications corporations to help meet a growing demand for industry certified professionals. At least three such academies are attached to the partner colleges or universities to institutes of technology. Their purpose is to educate students in their systems but also to train tutors in the use of these technologies. In the digital domain, there is the claim that mainstream qualifications are frequently found wanting because they cannot respond to the pace of change. For the leaders of some tech start-ups, the path to expertise is not certification but self-learning through the open source community.

Apprenticeships and qualifications are coupled and decoupled at Levels 4 and 5.

There are competing views about the place of qualifications in higher apprenticeships. For some, the move away from qualifications being included in apprenticeship standards made sense. The policy to allow a qualification only where a licence to practice is required, or where employers could not otherwise recruit to a particular job role, is seen as sufficiently permissive. For others, including some who are members of trailblazer groups, the absence of a qualification undermined the credibility of the higher apprenticeship. To exclude qualifications from all but some apprenticeships at Levels 4 and 5 is in contrast to the model of degree apprenticeships at Levels 6 and 7. For some organisations, the all or nothing character of higher and degree apprenticeships is a problem. The need for stepping-off and stepping-on points, with credits awarded at each stage, is emphasised.

A wide range of organisations award qualifications at Levels 4 and 5 in London.

The large number of qualifications at Levels 4 and 5 is accompanied by a wide range of awarding authorities. In undergraduate education, institutions with degree or foundation degree awarding powers, along with Pearson, account for most awards. Undergraduate qualifications often carry professional recognition or meet the requirements of different levels of registration. Non-undergraduate qualifications are awarded by a wide variety of professional and occupational bodies as well as by recognised awarding organisations. Mandated qualifications in higher apprenticeships are often university awards or professional qualifications. Awarding bodies serving the cultural industries and the accounting professions are especially prominent in London. Some qualifications incorporate modules at both Level 3 and Level 4.

Short course provision is most evident where there are requirements for continuing professional development.

This type of provision is extensive in sectors with regulated occupations and services. In the health sector, only a small fraction is at Levels 4 and 5. Universities rather than colleges are the main providers. Some

courses are not assigned a level. Largely unreported is the short course provision offered in-house by employer organisations. Some is specialist and technical but unlikely to be accredited. The full extent of this provision is not known. In some sectors, short courses are a market for industry certifications and, potentially, for microqualifications.

WHAT FEATURES ARE DISTINCTIVE TO LONDON?

The proportion of the resident population taking courses and apprenticeships at Levels 4 and 5 is lower in London than in England as a whole.

For the 18-64 year old population, the proportion pursuing courses (excluding apprenticeships) at publicly funded institutions in London is 0.35% compared to 0.41% in England. For the same population, the proportion undertaking apprenticeships in the capital is 0.08% compared to 0.11% in the rest of the country.

The share of Levels 4 and 5 taken by higher education institutions and further education colleges is different in London than in England.

For the resident population in London, the proportion enrolled on courses at further education colleges is 55%. For England, it is 61%. The proportion attending courses at higher education institutions is 39% in London and 32% in England.

The proportion of the resident population taking courses and apprenticeships in engineering and construction at Levels 4 and 5 is smaller in London than in England.

For the resident population in London, the proportion pursuing courses in subjects related to engineering and construction is 6% (2018/19) compared to 18% in England (2017/18). For apprenticeships in the same subjects, the figure is 3% for London and 6% for England (2018/19).

RECOMMENDATIONS

Our recommendations are strategic, operational and curricular. They look to the medium term.

The recommendations are addressed to the GLA as the project commissioner. However, they have implications for providers and employers and for GLA led collaborations. In order for the GLA to take forward the recommendations there are considerations with regard to policy and funding at regional and national level.

STRATEGIC

Recommendation 1: Measures should be taken to monitor the effects of national policy reform at Levels 4 and 5 in London.

The ambition of the *Skills and Adult Education Strategy for London* is to create a more strategic, whole-system approach to skills formation.

The UK government post-16 reform programme is premised on a two-type system of academic and technical education, with proposals to recognise higher technical qualifications that are matched to occupational standards. The effects of such policies will need to be monitored on a systematic basis.

Recommendation 2: The GLA should consider actions that should be taken to increase the scope for collaboration and coordination between education providers and employer partners at Levels 4 and 5 in London, particularly where it has a role in supporting economic priorities.

There are few examples in London of centres with large numbers or dedicated specialisms at Levels 4 and 5.

A deregulated and reregulated market in higher education has reduced the scope for collaboration and coordination. Nor have large infrastructure projects been a catalyst for investment in strong and durable training centres.

Recommendation 3: The need for additional organisational hubs at Levels 4, 5 and 6 should be explored by the GLA with providers and employers.

London is ineligible to apply for additional institutes of technology in the next round when other specialist disciplines are expected to feature.

Institutes of technology can augment their membership and adjust their focus, subject to approval. The larger colleges and college groups, some with training arms or wholly owned subsidiaries, are candidates for analogous centres and networks.

Recommendation 4: Action should be taken to safeguard and extend opportunities at Level 4 and 5, where they might be at risk due to mergers, closures, restructuring and regulatory decisions.

Changes of this order are likely to be a continuing feature of education and training at Levels 4 and 5.

Decisions by institutions on whether to renew or retreat from provision at these levels will be influenced by a host of factors. If implemented as planned, the reform of Level 4 and Level 5 technical qualifications will bring funding incentives on the one side and regulatory requirements on the other.

OPERATIONAL

Recommendation 5: The GLA should explore the options for a London-wide catalogue of courses and apprenticeships at Levels 4 and 5 to be published to support the choice-making of individuals and the understanding of employers.

It is not common for education and training at these levels to be brought together, clearly described and suitably explained to public audiences.

Courses and apprenticeships at Levels 4 and 5 are parallel and intersecting sets of provision, sometimes with qualifications in common. The opportunity to compare programmes and pathways at these levels is a basis for extended participation as well as an aid to economic analysis.

Recommendation 6: Labour market intelligence should be used to identify new audiences for education and training at Levels 4 and 5 among the graduate workforce.

Career mobility and the changing nature of work require graduate and non-graduate workers to acquire new skillsets and capabilities. The GLA and providers should engage with employers to understand emerging needs.

Specialist courses leading to professional qualifications at Levels 4 and 5 already attract graduate students. In some sectors, the job retention strategies of employer organisations are expected to drive this demand.

CURRICULAR

Recommendation 7: The GLA should convene providers, employers and awarding bodies to explore the options for industry-focused microqualifications which align with national and international frameworks at Levels 4 and 5. London providers should be used as a testbed for credit-based microcredentials.

Short courses with academic accreditation, industry endorsement and employer sponsorship are under-developed at these levels.

Institutes of technology are a potential vehicle for short course development and accreditation in sectors with leading-edge technologies. Those in tech and digital, low carbon and renewables, and advanced urban services are among the markets to be stimulated for microqualifications.

Several awarding organisations with a significant footprint in London have expertise in curriculum design and modular-credit certification, at intermediate and higher levels.

A number of London universities have online platforms which offer open or paid access to taster modules, short courses and long programmes, many with academic and professional accreditation. For buyers and users, customisation, blended learning and a swift turnaround in course approval are likely requirements.

Recommendation 8: The potential for developing and funding interleaved provision at Levels 3 and 4 should be investigated.

The devolution of the adult education budget is an opportunity to pilot innovative part-time programmes for adults that span Levels 3 and 4, which carry credit and which can be balanced with work and other commitments supported by changes to access to loans as proposed in the report to the Review of Post-18 Education and Funding.

PART ONE: INTRODUCTION

This is the report of a research study on education and training at Levels 4 and 5 in London. These are the levels between upper secondary education and the bachelor degree (with honours) in England. The qualifications, courses and apprenticeships at these levels are also styled sub-bachelor, other undergraduate or higher vocational. Other variants are intermediate and higher-level. The term higher technical is used by the UK government for its proposed reform of qualifications at Levels 4 and 5 in England. While there have been nationwide reviews of education and training at these levels, no systematic study has been made of its scale, shape and scope in London.

1.1 REQUIREMENTS OF THE RESEARCH

The research was commissioned by the Greater London Authority (GLA) following an invitation to tender in 2019. The GLA sought to understand what is distinctive about provision and participation at Levels 4 and 5 in London. In particular, it sought quantitative and qualitative evidence on the participation of the normal resident population (Londoners) and, secondly, a mapping of education, training and employer engagement within five mayoral priority sectors. The sectors were tech and digital; culture and creative industries; health and social care; low carbon and environmental goods and services; and advanced urban services.

A mixed-method approach was specified. An analysis of administrative datasets was requested on the participation by Londoners between 2015/16 and 2018/19. A quantitative and qualitative analysis of priority sectors was expected to identify the factors bearing on demand among students, providers and employers. The goal was an evidence base to inform GLA policy and strategy on higher-level skills.

Coverage of all forms of education and training at Levels 4 and 5 was anticipated. At Level 4, the main qualification types are the Higher National Certificate (HNC) and Certificate of Higher Education (CertHE). At Level 5, they are the Foundation Degree (FD), the Higher National Diploma (HND) and the Diploma of Higher Education (DipHE). These are undergraduate qualifications. At each level, there is also an assortment of professional and occupational qualifications. These are non-undergraduate qualifications. Most are regulated. Several are eligible for public funding. Apprenticeships are undertaken at both levels. Some include a recognised qualification. Some do not.

Outside the regulated parts of the education and skills system are industry or vendor qualifications at the higher levels. These attract commercial fees. Short courses of continuing professional development are undertaken by employees in the workplace or at an education and training provider. Some provision is at the higher levels. If no public funding or accreditation is involved, the activity is not usually reported.

Of interest as well to the GLA were parallel and cross-cutting developments. One was the rise of extended bachelor degree programmes and their impact on demand on free-standing courses at Levels 4 and 5. A second was the growth of degree apprenticeships. Another was the contribution made by provision at these levels to widening participation, whether by way of career advancement or academic progression to Level 6 and beyond.

1.2 CONDUCT OF THE STUDY

The study was carried out between September 2019 and July 2020. An interim report was submitted to the GLA in November 2019. Presentations were made to the Higher Level Skills Advisory Group in December 2019 and July 2020.

The outbreak of the coronavirus epidemic and the introduction of lockdown measures curtailed some elements of the study. Nevertheless, all the quantitative research and most of the fieldwork were completed. The quantitative mapping of participation, provision and the priority sectors was based on analyses of two datasets: the student record collected by Higher Education Statistics Agency (HESA) and the individualised learner record (ILR) collected on behalf of the Education and Skills Funding Agency (ESFA). The methodology is described in Part Three and at Annex A.

The fieldwork was based on interviews with 35 education providers, employer organisations and awarding organisations. The interviews sought their perspectives on provision of, and demand for, courses and apprenticeships at these levels, including those relating to the five priority areas. For education providers, the fieldwork included the completion of templates on current student numbers together with a content analysis of websites. The literature review was based on published sources, including statistical, research and policy texts. The design and conduct of the fieldwork is described at Annex A. The organisations that participated in the fieldwork are listed at Annex B. The positions are given of the individuals interviewed.

1.3 CONTEXT OF THE RESEARCH

At the time the study was commissioned, a series of policy, economic, social and technological changes was identified, each with a likely major impact on the London labour market and skills system. Exit from the European Union was an abiding concern. Alongside the pressures and opportunities created by new technologies and a growing London population were continuing disparities among groups in the acquisition of basic skills. London, like England, had seen a decline in provision at Levels 4 and 5 as well as a sharp fall in adult and part-time participation in undergraduate education.

A large number of higher education providers are concentrated in the capital. There are now more universities and university campuses in London than before. As a result of mergers, there are fewer (but considerably larger) further education colleges. Private providers account for a significant share of education and training at Levels 4 and 5. These institutions compete for students in a demand-led market-driven system. All providers need to be registered with a regulator to access public funds. Apprenticeships are under new standards. An apprenticeship levy is payable by large employers.

Along with reform of apprenticeships, government efforts to strengthen technical education have focused on the creation of national colleges, the establishment of institutes of technology and the introduction of T Level qualifications at Level 3. Three of the national colleges in England have a footprint in London. Three institutes of technology have been established in the capital, two led by further education colleges and the other by a university.

Four institutions in London will offer the first T Level qualifications in 2020/21. Another eight will do so in the following year. T Levels are intended to support progression into skilled employment or into higher technical education and training, or both. Following a new national approval process, some existing qualifications at Levels 4 and 5 will be assigned a quality mark. Others will not. Approved and non-approved qualifications will be treated differently, with funding incentives expected to be brought behind those with a quality mark.

In the early years, T Level subjects will be offered in digital, construction, education and childcare, and health and science. These complement the specialisms of national colleges, the specialist fields of institutes of technology and the knowledge and skills base of their partner employers. The coverage of science, technology, engineering and mathematics (STEM) subjects will include specialisations in robotics, cyber

security and professional and business services. These, in turn, align with the orders and levels of expertise associated with the five priority sectors mapped by the research.

One of the strategic priorities of the GLA is to create a more collaborative and effective post-16 skills system in the capital. Since 2019, a key element in this strategy has been devolution of the adult education budget, with funding allocations to support the needs of residents and local economic priorities.

1.4 STRUCTURE OF THE REPORT

The report is organised in six parts. Part One is a brief introduction to the project. Part Two is an outline of the regulatory, funding, quality and policy frameworks that shape education and training at Levels 4 and 5. Relevant literatures and official statistics are reviewed.

In Part Three, we report on the participation of students and apprentices who are resident in London. Quantitative pictures, trend lines and geographical maps are drawn. In Part Four, we analyse the same datasets to investigate the profile of students, courses, qualifications and apprenticeships within the five priority sectors. In the qualitative commentaries in Part Four, we draw on the findings of the literature review and fieldwork evidence. In Part Five, we examine the perspectives and understandings of education providers, employer organisations and awarding organisations. These are the three main parties to education and training at Levels 4 and 5. At the end of each part, we highlight the main findings and we signal themes in the conclusions and recommendations. In Part Six, the overall findings are summarised and conclusions are drawn. Recommendations are made to the GLA.

Throughout the report we make every effort to define and explain terms. Education and training at Levels 4 and 5 is replete with old and new languages. They are frequently a source of confusion and misunderstanding. Unless indicated otherwise, we make a distinction between course provision and apprenticeship provision. Those who pursue courses are styled students. Those who undertake apprenticeships are termed apprentices.

We distinguish between three main types of education and training provider. Higher education institutions (HEIs) include universities, university colleges and conservatoires of music, drama and dance. Further education colleges (FECs) include sixth form colleges. Private providers are for-profit or not-for-profit organisations. Within this category are independent training organisations (ITOs) which support primarily apprenticeships and alternative providers (APS) which mostly offer undergraduate and postgraduate courses. APs have courses designated for student finance through government-backed fee-loans. Private providers that are universities are included in the category of higher education institutions.

PART TWO: BACKGROUND TO EDUCATION AND TRAINING AT LEVELS 4 AND 5

Education and training at Levels 4 and 5 is the smallest segment of higher education in England and London. It is also the most heterogeneous. There are more qualification types and more awarding bodies than at other levels of higher education. Courses are offered by wide variety of providers, especially in London. The modes of study are varied. The qualification titles and subject fields are many. Its students are wide-ranging in age and background. A good number are in employment, some as apprentices.

In this part of the report, the regulation, funding and quality assurance of education and training at these levels is explained. The government reform programme for post-16 and higher technical education in England is described. The skills and adult education strategy for London is outlined. The literatures and other sources relevant to Levels 4 and 5 are summarised. We begin with an overview of the national frameworks which position qualifications, courses and apprenticeships at Levels 4 and 5.

2.1 LEVEL 4 AND LEVEL 5 IN NATIONAL QUALIFICATIONS FRAMEWORKS

Descriptions of education and training in terms of numbered levels derive from national qualifications frameworks. In England, higher education qualifications below the bachelor degree are positioned at two levels. Within the five-level framework for higher education qualifications (FHEQ), Level 4 and Level 5 are the lower levels of undergraduate education. The upper level is the bachelor degree at Level 6. In the nine-level regulated qualifications framework (RQF), the same numbering is used for higher education, with qualifications at Level 3 regarded as the normal qualifying level for entry to undergraduate education by young people. The terms Level 4 and Level 5 are increasingly used as shorthand descriptors. This is mainly because there is no single qualification type to mark each level, unlike at Level 6 where the bachelor degree is the defining qualification.

The predecessor of the RQF was the Qualifications and Credit Framework (QCF). The predecessor of the QCF was the National Qualifications Framework (NQF) which, in turn, had its origins in the framework devised for national vocational qualifications (NVQs). Mention is made of these earlier frameworks because NVQs and QCF units are still reported in some contemporary datasets.

Qualification types and framework levels

The FHEQ is referenced to the qualifications of degree-awarding institutions, typically universities. However, two of these qualifications – the HNC and HND – are awarded under licence from an external awarding organisation (Pearson). At Level 4, the typical qualifications awarded are the HNC and the CertHE. At Level 5, the typical qualifications are the HND, the FD and the DipHE. The FHEQ is overseen by the Quality Assurance Agency for Higher Education (QAA).

At Levels 4 and 5 on the RQF, the typical qualifications are styled vocational, professional and occupational awards. They carry a variety of titles. They are awarded by a large number of organisations. As the awarding organisation for the HNC and HND, Pearson is a major presence on the RQF at Levels 4 and 5. The HNC and HND are the only qualifications referenced on both frameworks. The RQF is overseen by the Office for Qualifications and Examinations Regulation (Ofqual).

In short, all qualifications at Levels 4 and 5 on the FHEQ are styled undergraduate awards. Except for the HNC and HND, all qualifications at these levels on the RQF are regarded as non-undergraduate awards.

Prescribed and non-prescribed courses

Until recently, courses leading to qualifications on the FHEQ were denoted as 'prescribed'. This recognised their eligibility for direct public funding by way of a teaching grant allocated to the higher education provider. Following the shift to student-led funding, undergraduate education is now mostly funded indirectly, through government-backed fee loans payable by students.

Non-undergraduate courses and qualifications at Levels 4 and 5 were frequently dubbed 'non-prescribed'. Their funding from the public purse was discretionary and only a small amount of provision ever received support. Today, many such courses lead to regulated qualifications on the RQF. Some are funded indirectly through government-supported advanced learner loans. As undergraduate qualifications on the RQF and FHEQ, the HNC and HND are funded indirectly through government-backed tuition fee loans.

Labour market and transfer functions

One of the original purposes of the qualifications frameworks was to assist in the identification of progression routes. For long, the HNC and HND had functioned mainly as exit qualifications, for those already employed and for those looking to join the labour market. By the 1990s, they also routinely served as transfer qualifications, enabling students to complete their studies at a higher level. A decade later, the new Foundation Degree was deliberately designed to support workplace proficiency on the one side and academic progression of the other.

The mobility of students within and between institutions, especially between levels, was facilitated by the modular-credit structures adopted by many of the fastest-expanding universities. As a result, students have been able to join, move or leave at Levels 4, 5 and 6. Present-day providers differ in the extent to which they mark the undergraduate levels or stages of the bachelor degree. Some do not offer free-standing qualifications below the bachelor level. Some are less disposed than others to admit students with advanced standing to the later years of their bachelor programmes.

Given their occupational specificity, several of the qualifications regulated by Ofqual are usually studied less for their transferability or portability and more for the opportunities they offer for career development and advancement within a specific area of employment. The titles of individual qualifications indicate not just their occupational sectors. Many are identified with particular work roles and responsibilities.

Among both sets of Level 4 and Level 5 qualifications – undergraduate and non-undergraduate – are programmes that meet the requirements of professional, occupational and trade bodies. Their accreditation, recognition or endorsement is at different levels and of different types. Some offer exemption from professional examinations. Some meet the knowledge base for professional status. Some meet the requirements (in part or full) of professional registration. Some serve as a licence to practice.

Extended degrees with foundation years and higher apprenticeships

The qualifications frameworks have had to reckon with the addition of a 'foundation year' to the standard full-time three-year bachelor degree. When a conversion year was added to selected science and technology degrees in the 1990s it was funded as higher education, even though the purpose of the new first year was to educate students to the standard for entry to a conventional three-year degree. The device employed by the then funding council was to call the additional year 'year 0'. Today, institutions apply their own

nomenclatures. Extended degrees with a foundation year are now commonplace in London and the rest of England.

The FHEQ is used to position the level of higher and degree apprenticeships as well as the level of qualifications and credits. There are two categories of apprenticeship at the higher levels. Degree apprenticeships are at Levels 6 and 7, with apprenticeship training leading to the award of a bachelor or postgraduate degree. Higher apprenticeships are at Levels 4 and 5 (with or without an embedded qualification) but they also include apprenticeships at Levels 6 and 7 where no degree is awarded.

Outside the mainstream zones of higher education, some provision is not ascribed a level. Non-accredited short courses and bespoke programmes of continuing professional development fall into this category. When offered by universities, colleges and private providers there is usually a record of such activity. By contrast, very little is known about the in-house programmes devised and funded by employer organisations. Some of this education and training is specialist and at a higher education level.

2.2 REGULATORY REGIMES AT LEVELS 4 AND 5

Education and training at Levels 4 and 5 is the responsibility of more than one regulatory authority. For providers of higher education in England, the Office for Students (OfS) is the principal regulatory body. For providers of higher level professional and occupational education, the relevant authorities are Ofqual, the Education and Skills Funding Agency (ESFA) and the OfS. For apprenticeship provision at Levels 4 and 5, the oversight bodies include the Institute for Apprenticeships and Technical Education (IfATE), the ESFA, the OfS and the Office for Standards in Education, Children's Services and Skills (Ofsted).

Regulation by the Office of Students

The chief instrument of OfS regulation is the register of higher education providers. Registration is voluntary. Once accepted onto the register, the OfS is responsible for regulating all the higher education at the registered provider. The definition of higher education for this purpose is inclusive. At Levels 4 and 5, the provision within scope of OfS regulation will include undergraduate (prescribed) education, non-undergraduate (non-prescribed) education and higher apprenticeship provision.

An organisation registered with the OfS is officially recognised as a provider of higher education in England. There are two categories of registration: 'approved' and 'approved (fee cap)'. In both, a provider can access student support funding, apply for a Tier 4 licence to recruit international students and apply for degree awarding powers and the university title.

In England, 20 providers have been refused registration. Sixteen of these are based in the capital: 13 are private providers and three are further education colleges. One of the London-based private providers was accepted onto the register following a second application. In the case of another private organisation in the capital, a judgement against the provider at judicial review was reversed at the court of appeal.

Regulation by Ofqual and the Education and Skills Funding Agency

Regulation of non-undergraduate education at these levels is performed by three main bodies. Ofqual is responsible for recognising and regulating awarding organisations (bodies without degree-awarding powers) and maintaining a register of their regulated qualifications. On the RQF, there are over 1,100 qualification titles at Level 4 and nearly 500 titles at Level 5. Pearson and the City & Guilds of London Institute are among

the largest of the many awarding organisations at these levels. Level 4 and Level 5 qualifications on the RQF are disparate in their size and guided learning hours. Their fees are at a variety of levels.

The ESFA is responsible for deciding which qualifications on the RQF are designated for advanced learner loans. The same agency is responsible for a register of approved training providers. Those accepted onto the register are eligible to teach courses designated for loans and, secondly, receive government and employer funding to train apprentices.

Regulation and oversight of apprenticeships

Some of the same bodies are involved in the regulation of apprenticeship provision at Levels 4 and 5. The Institute for Apprenticeships and Technical Education is responsible for the design and approval of apprenticeship standards. These will replace the old apprenticeship frameworks. Currently, there are around 160 apprenticeship standards at Levels 4 and 5. Over 110 are at Level 4. Another 50 or so are at Level 5. Within each standard, at least 20% of normal working hours must be devoted to off-the-job training (provided at the workplace or at an external location).

Funding bands are set by the government, through the IfATE and ESFA, to determine the maximum spent on apprenticeship training. The bands vary by occupation and level. Employers choose an approved training provider from the ESFA register. Presently, there are over 2,000 training providers on the register. Private training organisations are the main providers in London. Most general further education colleges in the capital are approved training organisations, along with 20 or so universities in the city region.

Assessment of the quality of apprenticeship training at Levels 4 and 5 is a shared responsibility. Currently, the OfS is responsible for regulating all training provision at its registered providers, whether or not a qualification is included in the apprenticeship. Ofsted is responsible for inspecting the quality of apprenticeship training at other providers. The QAA is the designated body to carry out quality assessment on behalf of the OfS.

2.3 FUNDING AND STUDENT FINANCE AT LEVELS 4 AND 5

The funding of undergraduate education is largely by way of government-subsidised tuition fee loans. The loans cover the full cost of undergraduate courses at Levels 4, 5 and 6. Students may also be eligible for maintenance loans in addition to tuition fee loans. The costs of selected non-undergraduate courses at these levels are supported by government-backed advanced learner loans. The amount of loan will depend on the type of course, the course fees and the maximum loan available for the course. Courses not designated for loans are funded through tuition fees paid up-front by students, sometimes with sponsorship from employers. The funding of apprenticeships at these levels is met by the employer and the government. The employer is responsible for paying the apprentice a wage, at or above the minimum wage rate. This will include the time spent training or studying for the apprenticeship. No tuition fees are paid by the apprentice.

Tuition fee loans and maintenance loans

Students studying for the HNC, CertHE, FD, HND and DipHE at OfS registered providers can receive tuition fee loans up to £9,250 to meet the regulated fees charged for full-time undergraduate education. Tuition fee loans for part-time undergraduate education at OfS registered providers are available up to £6,935. The size of the loan will depend on the intensity of the course. To be eligible for a loan, a part-time course must have

an intensity of 25% or more. The tuition fee is paid directly to the provider by the Student Loans Company (SLC), through Student Finance England.

Means-tested maintenance loans are available for day-to-day expenses for full-time study and for eligible part-time courses at Levels 4 and 5. A maximum loan is £11,354. The maintenance loan is paid directly to the student by the SLC, again through Student Finance England.

Advanced learner loans

Students eligible for advanced learner loans have access to financial support for tuition costs on a similar basis to undergraduate students. For a Level 4 qualification, the maximum loan ranged from £600 to £8,583. For a Level 5 qualification, the lowest is £336 and the highest is £8,583. Advanced learner loans are paid by the SLC directly to the provider. They are not means-tested.

If approved for an advanced learner loan, an application can be made to individual course providers for money from the loan bursary fund. Each provider has its own application process and each will decide how the money is paid. This is normally direct to the student. In some situations, the money might not need to be repaid.

Levy and non-levy support for apprenticeship training

Large employers with an annual pay bill of more than £3million pay an apprenticeship levy at a rate of 0.5% of their total wage bill. With the addition of a 10% top-up from the government, levy-paying employers can draw down this funding to pay for apprenticeship training and end-point assessment. Smaller employers who do not pay the levy can receive 95% of the costs of apprenticeship training from the government.

The funding bands for apprenticeship training range from £1,500 to £27,000. For each approved apprenticeship standard, there is an upper limit on the amount of funds that a levy-paying employer can use for off-the-job training. In the case of employers who do not pay the levy, this is the maximum price to which the government will contribute to the costs of apprenticeship training. Employers negotiate a price for the training with a provider selected from the ESFA register.

In 2018/19, the number of funded apprentices in England totalled 742,000. Of these, 370,000 were on apprenticeship standards rather than frameworks. Around 124,000 were on higher apprenticeships.

At Level 4, the duration of the longest apprenticeship was 48 months and the shortest was 12 months. The highest maximum funding was £27,000. The lowest was £5,000. At Level 5, the longest apprenticeship was 36 months and the shortest was 14 months. The maximum funding ranged from £6,000 to £27,000.

2.4 POLICIES FOR POST-16 AND HIGHER TECHNICAL EDUCATION

Since 2016, government reforms aimed at Levels 4 and 5 have been key parts of a *Post-16 Skills Plan* (HM Government 2016). Central to the reform is a distinction between 'technical' and 'academic' education, the former drawing its purpose 'from the workplace rather than an academic discipline'. The two-type structure based on this conception will move upper secondary and tertiary education in the direction of a more tracked system of programmes and qualifications, albeit with opportunities for individuals to transfer between the two tracks.

Technical education will comprise: employment-based apprenticeships; dedicated courses at public and private providers; and approved technical qualifications. All provision will meet national standards set by employers. These will be aligned to 15 technical routes, each with a focus on progression to 'skilled occupations' (described as those requiring a substantial body of technical knowledge and a set of practical skills valued by industry).

T Levels, national colleges and institutes of technology

The aim is to establish technical education as a credible, coherent and high-quality alternative to the academic pathway leading to A Level qualifications and the bachelor degree. T Level qualifications at Level 3 are designed to support progression into skilled employment (or higher levels of education and training) and they will offer a substantial industry placement with an employer.

In 2020/21, T Levels will be offered in three technical education routes: digital; construction; and education and childcare. Of the 50 providers selected to teach them, four are in London. In 2021/22, when health and science will also be available as a T Level subject, another eight providers in London have been selected. In 2022/23, T Levels in three new subjects are planned: legal, finance and accounting; business and administration; and engineering and manufacturing.

Prior to publication of the first *T Level Action Plan* (DfE 2017), the creation of five national colleges was announced. Each was to be a specialist centre of high skill training in industries keyed to economic growth: high speed rail; nuclear; onshore oil and gas; digital skills; and the creative industries. One of these – Ada, the National College for Digital Skills – is based in London and opened in 2016. Another – the National College for High Speed Rail (now the National College for Advanced Transport and Infrastructure) – entered into a partnership with a London further education college in 2019. A third – the National College for the Creative and Cultural Industries – was based in the Thames estuary corridor.

Based on a different model but also with a focus on skills formation at the higher levels, twelve institutes of technology (IoTs) were announced in 2019. These are described as 'unique collaborations' between higher education establishments, further education institutions and leading employers. Each with their own specialisms, they will offer higher level technical training at Levels 4 and 5 in STEM subjects. Three are based in London: Barking and Dagenham College, with Coventry University; Harrow College and Uxbridge College (HCUC), with Brunel University; and Queen Mary University of London, with Newham College.

A competition for a second wave of institutes of technology was announced in 2020 (DfE 2020a). It will select eight new IoTs. The competition is only open to proposals that cover Local Enterprise Partnership (LEP) areas that currently do not have an IoT. London will not therefore gain any additional IoTs in this round.

Review of education at Levels 4 and 5

In the *Post-16 Skills Plan*, the (then) Institute for Apprenticeships was charged to maintain a register of the technical qualifications at Levels 4 and 5 which would be eligible for public subsidy through government-backed loans. At least initially, they would be drawn from those existing technical qualifications which 'do the best job of meeting national standards'. They were not expected to exist for all 15 technical routes or all parts of each route.

Since 2017, an internal review of education at Levels 4 and 5 has been undertaken by the Department of Education (DfE). An interim evidence overview was published in the following year (DfE 2018). In 2019, a government consultation was launched on proposals to approve and regulate 'higher technical qualifications'. The review also invited ideas on how demand from students and employers might best be increased (DfE 2019). The government response to the consultation was published in 2020 (DfE 2020b). This set out a staged timetable for the approval and teaching of higher technical qualifications, beginning with subjects in the digital route (which would be offered from 2022).

Review of post-18 education and funding

Shortly after setting-up its investigation into education at Levels 4 and 5, the government launched a major review of post-18 education and funding. The findings of the earlier review would feed into the larger review. The political driver for the post-18 review was a need for the government, following the 2017 general election, to readdress its policies on tuition fees and student finance. Folded into the review was the need for a 'joined-up' tertiary system to underpin the reform of technical education. In this, it endorsed a common framework for education and training at Levels 2 to 5 and beyond, as set down in the Post-16 Plan.

The report to the post-18 review recommended a single lifelong loan allowance for modules of credit-based qualifications at Levels 4, 5 and 6. The same report proposed changes to the funding arrangements for adults to study at Level 3. These measures were intended to help tackle 'a huge divide' between those who carried on into higher education from Level 3, usually at 18 or 19, and those who did not (Review 2019).

Several of the review recommendations were addressed directly to education at Levels 4 and 5 (Review 2019). The headline proposals included a reduction of the fee chargeable to undergraduate students, from £9,250 to £7,500. Maintenance grants were to be restored. Core and capital investment in further education colleges was to reverse the decline in their funding over the previous decade. A single lifelong loan allowance for tuition loans would be available at Levels 4, 5 and 6, set as a financial amount equivalent to four years of full-time undergraduate funding. All students taking qualifications at Levels 4 to 6 would be entitled to maintenance support.

To help raise the profile of qualifications at Level 4 and 5 was the recommendation that institutions should award at least one interim qualification to all students successfully following a Level 6 programme. Equally controversial was the proposal that financial support be withdrawn for foundation years attached to bachelor degree courses.

In a recommendation with particular relevance for London, procedures would be developed to ensure an efficient distribution of provision at Levels 3, 4 and 5. This would enable strategic investment and avoid counterproductive competition between providers. Indeed, further education colleges were to be more clearly distinguished from other types of training provider, with a protected title similar to that conferred on universities.

The government response to the Post-18 Review is expected in the final quarter of 2020. A White Paper on further education is planned to be published at around the same time.

2.5 STRATEGY FOR POST-16 SKILLS AND ADULT EDUCATION IN LONDON

Acute shortages of skilled workers in key sectors and the changes resulting from new technology and automation were among the pressing reasons for a strategy to increase the supply and quality of skills in

London. In addition, there were issues in aligning skills provision with the needs of the London economy. These matters and the measures to help tackle them were examined in the *Skills for Londoners* strategy:

> *Skills challenges for employers include a need for higher-level skills; a historic low level of employer investment in workforce training and apprenticeship places; and increased skills shortage vacancies. Skills requirements are also changing due to technological advancements, including automation, and Brexit is threatening availability of talent. To better meet the needs of Londoners and employers, London must have an agile skills system that can effectively respond to the London economy and enable its businesses to succeed in competitive global markets*. (GLA 2018c)

Three priorities were set for the strategy. First was an increase in the number and diversity of Londoners who gain the skills to participate in society and progress into further and higher education, into work and into apprenticeships. Second was support for employers to increase productivity through the apprenticeship levy, workforce development and the steering of skills provision to improve the relevance and quality of training in key sectors and occupations. Third was the creation of a more collaborative and strategic skills system that would increase participation and strengthen progression pathways into intermediate and higher level education and training. Sub-regional partnerships and the establishment of IoTs were central to this aim.

The strategy called attention to the 'highly polarised' nature of the London labour market, with relatively few 'mid-skill jobs' compared to elsewhere in the UK. Over half of employees in London were managers, professionals and associate professionals compared to 44% for the UK as a whole. Growth in high skilled jobs was expected to be faster in London than in any other UK region. However, one-third of employers had not provided any training in the previous twelve months in London, although this masked significant differences by employer size. There was relatively low employer demand for apprenticeships in the capital, with London having the second lowest number of apprenticeship starts out of the nine English regions.

The funding streams to immediately address these priorities were the delegated adult education budget, the European Social Fund, the Skills for London Capital Fund and other GLA skills and employment programmes. Beyond that, further education in London needed to become 'routes ready' for the introduction of T Levels and higher technical qualifications. On their side, employers were calling for more flexible, shorter training programmes tailored to meet their needs.

> *Clearer information on employer demand for skills is needed to help address some of the information and coordination failures of the skills system in London. Usable and timely data on technical and, where possible, core skills requirements is needed to shape London's technical and vocational skills offer and inform progression routes. These needs will vary by employer size and sector*. (GLA 2018c)

Seven particular sectors had a key role to play in the future London economy:

- tech and digital
- life sciences
- low carbon and environmental goods and services
- creative and cultural industries
- advanced urban services
- financial and business services
- tourism

The *Skills for Londoners* strategy would go some way to creating 'a more dynamic, responsive system' but there were long-term structural issues that needed radical overhaul. Addressing these required a greater commitment from central government to 'relinquish its powers to enable local control'.

2.6 LEVELS 4 AND 5 IN PUBLISHED SOURCES

There is a growing literature on education and training at Levels 4 and 5 in England. Interest in the sub-bachelor levels of higher education grew with the mass expansion of higher education and the creation of national qualifications frameworks. Recent studies have focused on the scale and scope of sub-bachelor higher education (Parry, Saraswat and Thompson 2017), the role of further education colleges (Saraswat, Hudson and Thompson 2015), the economic returns to Level 4 and 5 (Conlon and Halterbeck 2017, Espinoza and Speckesser 2019) and country studies and comparisons (OECD 2014).

Before its closure in 2018, the Higher Education Funding Council for England (HEFCE) sponsored its own research into what it termed intermediate technical education, including a study of employer demand (Pye Tait Consulting 2016). Over a long period, HEFCE reported on provision, participation and progression at the sub-bachelor levels (HEFCE 2014). The design, development and monitoring of Foundation Degrees was led by the funding council. A review of the research literature on FDs was published by Foundation Degree Forward (Harvey 2009), the national organisation established to promote the qualification.

A number of studies were commissioned by, and for, the DfE review of education at Levels 4 and 5, including an investigation of costs (Aldaba 2017), provider perspectives (Allan, Dodd and Elliott 2018), good practice (CooperGibson Research 2018) and the qualification and provider market (Zaidi, Beadle and Hannah 2019). In addition, the Gatsby Charitable Foundation has supported an extensive programme of work on higher technical education (Boniface, Whalley and Goodwin 2018, Field 2018), the role of technicians in the economy (Mason 2012) and intermediate roles in occupational sectors (Fuller et al 2013).

Much of the current literature is cited in the report to the *Review of Post-18 Education and Funding* (Review 2019). Both the analytical work undertaken by the review and its commentary on tertiary education are important contributions to the literature.

Studies of Level 4 and 5 in London are few. The evidence base produced by GLA Economics (2018b) for the skills strategy for London is an analysis of trends in the demand and supply of skills, including data on participation and attainment in education. In much of the secondary data used for this analysis, the measure of level in education and training is that taken from the (now defunct) national framework of vocational qualifications. In the same document, higher education is defined as 'education in universities' and further education as 'not higher education'. For these reasons, participation and provision at Levels 4 and 5 are unable to be identified.

Up to 2012, the annual regional profiles published by HEFCE provided a digest of statistical and other information on higher education in London (HEFCE 2012). This included data on participation in higher education by level and mode of study for each HEI and each further education college in the capital. For all the regions, it also provided data on students registered at one institution but taught by another (under 'franchise' arrangements). Information on franchise and sub-contractual arrangements is not usually available in published official datasets.

The regional profiles and other HEFCE sources show the small and declining share of higher education taken by sub-bachelor enrolments in London and England. In addition, they highlight a fall in part-time undergraduate education, at all levels. Since 2010, there is recognition that funding policies have accelerated these trends.

Published official statistics on higher education and higher apprenticeships generally do not differentiate between Levels 4 and 5. Published statistics on course enrolments combine and collapse these levels as 'other undergraduate education'. Published statistics on apprenticeships at Level 4 and above are single category.

One recent exception is the data published by the Office for Students on full-time equivalent (FTE) numbers at the higher education providers accepted onto its register (OfS 2020). Although it will not include providers who did not apply for registration or who were refused entry onto the register, the numbers against each institution include course and apprenticeship provision. As with other official statistics, there is no allocation of students to the institutions where they are taught, rather than where they are registered.

Notwithstanding these limitations, they do enable a picture to be drawn of the distribution of education and training at Levels 4 and 5 in London. Around 60 registered institutions based in London are providers at Levels 4 and 5. The pattern of provision is highly dispersed on the one hand and highly concentrated on the other. Ten providers account for almost one-half of the total numbers. Only two institutions have more than 1000 FTEs and another ten have numbers over 500. Outside this cluster, the remaining one-half of student numbers are distributed across the other 50 or so providers. Twenty of these have 100 or less FTE students at these levels.

For providers that were not higher education institutions, the former Higher Education Funding Council for England considered 100 FTEs to be a marker of critical mass. Where higher education numbers were below this figure, the funding council encouraged sub-contractual partnerships with a higher education institution (Parry, Thompson and Blackie 2006). Among further education colleges, there is another marker of scale in higher education. A threshold of 500 FTEs is the normal requirement for membership of the 'mixed economy' group of colleges in England. Not all the colleges that meet this threshold are in membership. Both the 100 FTE and 500 FTE markers are essentially arbitrary (with no sound basis in research or other evidence) but they do pose important questions about relationships between volume, quality and the nature of the student experience.

The scale and pattern of provision and participation at Levels 4 and 5 is the result of a long-term upward drift in English higher education, coupled with effects of the London economy and labour market. Efforts to renew growth at the sub-bachelor levels have been eclipsed by popular demand for the bachelor degree (Parry 2015). As a result of these trends, London has few centres with large numbers at Levels 4 and 5.

The one external study to address skills provision in the capital is the report of the King's Commission on London, *London 2030 and beyond* (Policy Institute at King's 2018). The scope of this investigation is wider than Level 4 and 5. However, one of its central arguments is that current and emerging skills shortages in London are 'largely the result of financial incentives which encourage provision of, and enrolment in, full degrees rather than tertiary (level 4+) provision'. The same argument is made in the report to the Post-18 Review published in the same year.

2.7 SUMMARY

- London has a highly polarised labour market. More people occupy professional and associate professional positions than elsewhere. There are relatively few mid-skill occupations. There are acute shortages in key sectors. Growth in high skilled jobs is forecast to grow.

- The GLA skills strategy is geared in part to improving progression pathways into education, training and employment at the higher levels. Ahead of government reform of higher technical education, institutes of technology and sub-regional partnerships are central to this aim. Strengthening the evidence base on education and training at Levels 4 and 5 in London is a parallel objective.

- Provision at these levels is a small segment of higher education and training in London. Over a long period, and especially since 2010, its share of undergraduate education has been in decline. At the same time, the qualifications at Levels 4 and 5 are many. Most students study for undergraduate qualifications at these levels. They are used to enter the labour market, progress to the bachelor degree or enhance their career, including by changing employment. A minority of students study for non-undergraduate professional and occupational qualifications. Apprenticeships under standards at Levels 4 and 5 are a recent development.

- Government policies, review reports and GLA strategies emphasise the importance of more flexible qualifications and shorter training programmes at these levels, especially when tailored to the needs of employers and sectors. Course and apprenticeship provision is regulated by several bodies. At present, around 60 course providers at Levels 4 and 5 in London are accepted onto the higher education register. A small number of providers account for most of the numbers. The rest are highly dispersed.

- A joined-up system of post-16 and post-18 education and training is planned for England, based on an academic route and a technical route. A single lifelong loan allowance is recommended for modules of credit-based qualifications at Levels 4, 5 and 6. Changes are proposed to the funding arrangements for adults to study at Level 3. These measures are intended to reduce the divide between those who carry on into higher education from Level 3 and those who do not.

- Regulation, competition and the distribution of provision in London are among the themes discussed in the conclusions to the report in Part Six.

PART THREE: PATTERNS AND TRENDS AT LEVELS 4 AND 5 IN LONDON

3.1 INTRODUCTION

In this part of the report, the participation of Londoners in courses and apprenticeships at Levels 4 and 5 is outlined. Trends and patterns in the participation of students and apprentices are traced between 2015/16 and 2018/19. Their age and ethnicity, their subjects of study and qualifications, and their types of providers are described. The uptake of courses and apprenticeships by residents in different boroughs is shown. The use of advanced learner loans is enumerated.

3.2 METHODOLOGY

The data in this section focuses on learners who have a normal permanent residency within Greater London. This means that Greater London students and apprentices who travel out of London to study are included in the data whereas non-London resident students and apprentices who study at a London based institution are excluded (even if they have temporary term-time accommodation in London, such as at a student hall of residence).

ILR and HESA datasets

In order to obtain a complete picture of Level 4 and 5 education and skills access to two key learner datasets was required. The individualised learner record (ILR) provides information on students, apprentices, courses and providers primarily funded through further education and skills funding streams (including FE colleges and private training providers). The ILR includes information on prescribed Level 4 and 5 courses (Foundation Degrees, HNDs and HNCs) taught at FE Colleges where the college is in direct receipt of higher education funding. The ILR also includes information on 'non-prescribed' Level 4 and 5 courses such as professional qualifications, as well as higher level apprenticeships.

The HESA student record provides information on students and courses at higher education institutions. In some cases HEIs will franchise courses (and funding) to one or more FE Colleges. Whilst courses funded via HEIs appear on the HESA dataset we have attributed the course and learners to the actual institution carrying out the teaching.

Specifically, the report is based on the following data sources:

- Aggregate data based on the individualised learner record (ILR R14) 2015/16, 2016/17, 2017/18 and 2018/19 supplied by the GLA from the Data Cube (which is a subset of the ILR).
- HESA data 2015/16, 2016/17, 2017/18 and 2018/19. This is for the main student record and does not include alternative providers. Alternative providers do not receive recurrent public funding.

The ILR data has been filtered to include the following:

- Individuals with home postcode in Greater London.
- Individuals identified on Level 4 or 5 provision.
- Individuals are only included if they have remained on the course for more than the funding qualifying period and any learning aim which is transferred is excluded. The funding qualifying period is six weeks for full time FE funded or FE loan funded courses.
- Individuals attending any provider recorded on the ILR.

- Excludes individuals on Offenders' Learning and Skills Service (OLASS) provision.
- Volumes are based on those active within the academic year unless stated otherwise.

The HESA data has been filtered to include the following:

- Individuals identified on Level 4 or 5 provision.
- Individuals with home domicile in Greater London.
- Individuals are counted as full-person equivalent.
- Individuals attending publicly funded HE providers in England (excludes alterative providers who do not receive recurrent public funding).
- Where HE provision is franchised from a higher education institution to an FE College, students are attributed to the FE College.

The data from the HESA and ILR data cube has been combined to ensure that in general there is no possibility of duplication (i.e. counting the same learners twice). The only possible exception to this is with apprenticeship frameworks delivered by a university that include an embedded qualification such as an HND or an HNC. The apprenticeship framework will be recorded on the ILR but the HE qualification on the HESA dataset. This duplication is only a small proportion of the total learners. This potential duplication could be removed by having access to individual learner details which was not possible within this project due to data protection restrictions.

Unless stated otherwise all outputs count the number of individuals engaged in education and training within the academic year. In line with DfE guidelines on data protection, all outputs are rounded to the nearest 10. Where the number of learners is less than five (but not zero), this is identified by the symbol '<5'. The use of rounding and suppression rules means that numbers within a category may not add up exactly to the totals shown.

In Part Four, the same HESA and ILR datasets are used to map participation and provision in the five priority sectors selected for study. A description of the quantitative and qualitative parts of the research is given at Annex A.

Estimates of numbers at Levels 4 and 5

Figure 3.1 shows that, in 2018/19, the total number of Level 4 and 5 students and apprentices who were residents of Greater London was 33,220. More than a third of these (36.7%) were taking higher level apprenticeships.

Figure 3.1: Total student and apprentice numbers for Greater London residents 2018/19

2018/19	Course Provision	Apprenticeships	Total
Level 4	9,630	6,660	16,290
Level 5	11,410	5,520	16,930
Total	21,040	12,180	33,220

In addition to the 33,220 students listed in Figure 3.1 a further 6,830 FTE students attended London based alternative provides, although some of these will have resided outside of Greater London (source: OfS student numbers 2018/19). The largest providers were ICON College of Technology and Management Ltd. RTC Education Ltd and Mount Rose College of Management and Science Ltd. Alternative providers are not in

the course provision data analysis that follows (which focuses on institutions that receive recurrent public funding) the contribution of alternative providers is discussed in Part Five.
The ILR and HESA datasets record a large number of different qualification types at Levels 4 and 5. This includes prescribed higher education courses such as Foundation Degrees, Higher National Diplomas and Higher National Certificates as well as a range of 'non-prescribed' qualification types with titles such as certificates, diplomas and awards.

However, the datasets also include other qualification types, listed below, which could potentially distort any quantitative analysis of Level 4 and 5 education and training in London.

Figure 3.2: Numbers at selected qualification types[1]

QCF units	110
Non-regulated provision	580
Level C credits	2,410
Level I credits	70
Total	3,170

The largest of these qualification types is Level C credits. Further investigation found that these are credits (at Level 4) towards a bachelor degree and are particularly high in Greater London. Over 70% of these credits are in nursing at three specific higher education institutions. Most of the remainder are in combined studies. It should be noted that Level I credits are similar but at Level 5.
Non-regulated provision is recorded on the ILR where locally specific training has been developed for employers or individuals to meet a particular need. It is often full cost provision and details of the training are not recorded within the datasets.

QCF units are individual units within the Qualification and Curriculum Framework which has now been phased out. They appear within historical ILR datasets but are not full qualifications.

In all subsequent analysis, the qualification types listed in Figure 3.2 have been removed. This provides a more realistic estimate of true student and apprentice volumes and a more valid comparison between Greater London and other parts of the country.

Figure 3.3 shows the total number of Level 4 and 5 students and apprentices who were residents of Greater London after removing the qualification types listed above. The total number at these levels was 30,050, of which 17,870 were enrolled on courses and 12,180 were undertaking apprenticeships.

Figure 3.3: Total student and apprentice numbers for Greater London residents - Revised

2018/19	Courses	Apprenticeships	Total
Level 4	6,750	6,660	13,410
Level 5	11,120	5,520	16,640
Total	17,870	12,180	30,050

The analysis separates students pursuing courses and those undertaking apprenticeships. The trends and recruitment patterns for these types of education and training are very different and it is sensible therefore to look at these independently.

[1] Unless otherwise stated tables and charts show student and apprentice numbers for 2018/19

3.3 COURSE PROVISION (EXCLUDING APPRENTICESHIPS)

Overall volumes and trends

It is important to note at the outset that education and training at Levels 4 and 5 in London is a small proportion of higher education undertaken by London residents. Figure 3.4 suggests that for every one Level 4/5 student there are more than ten studying at Level 6.

Figure 3.4: Students per 1,000 of the 18-64 year old population

Level	Students per 1,000 of the 18-64 year old population	
	2017/18	2018/19
4 and 5	3.5	3.1
6	37.3	36.4

Source: ILR (R14) 2017/18,2018/19 and HESA data 2017/18,2018/19

The proportion of the 18-64 population in 2017/18 taking Level 4/5 courses is lower in London than in England as a whole (0.35% compared to 0.41%).

Figure 3.5: Students per 1,000 of the 18-64 year old population (2017/18[2])

Level	Students per 1,000 of the 18-64 year old population
Greater London	3.5
England	4.1

Source: ILR (R14) 2018/19 and HESA data 2018/19

The majority of London residents studying for a qualification at Level 4 or 5 do so at a provider based in the capital (62%). Of the remainder, 18% are studying at institutions based in regions neighbouring London (South East and East of England) and 20% in institutions based in other regions. It should be noted that, whilst the institution may be based outside London, partnership or sub-contractual arrangements might mean that the actual location of teaching is within London.

Figure 3.6: Percentage of London residents taking Level 4/5 qualifications by region of provider

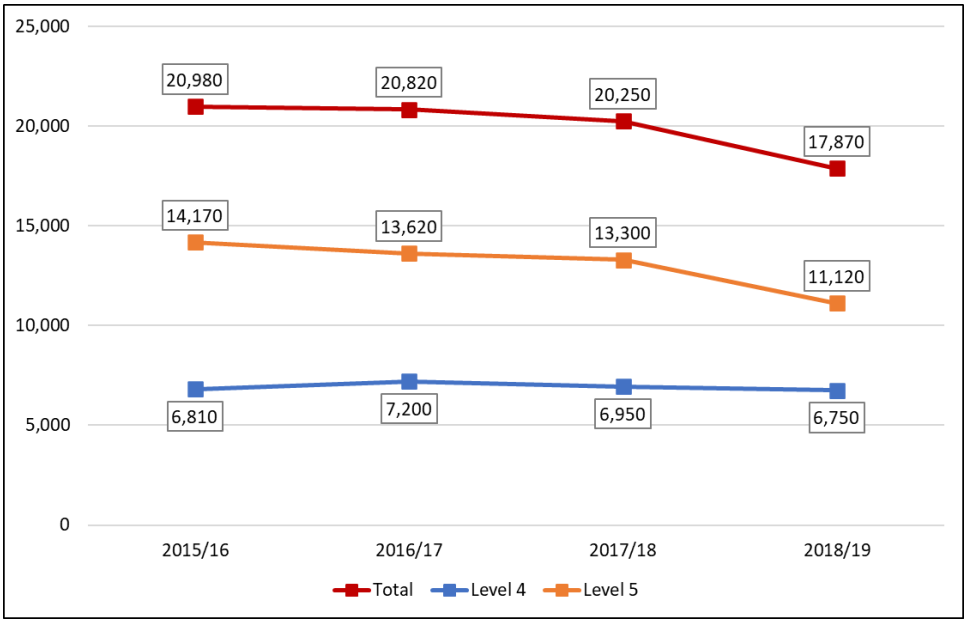
Region of provider	Percentage of London residents taking 4/5 qualifications
Greater London	62%
South East	12%
East of England	5%
West Midlands	9%
South West	5%
East Midlands	3%
North East	1%
North West	2%
Total	100%

Source: ILR (R14) 2018/19 and HESA data 2018/19

[2] 2018/19 data for England as a whole is not available in the Greater London Data Cube.

The number of Level 4/5 students declined overall by about 15% (from 20,980 to 17,870) over the four-year period between 2015/16 and 2018/19. However, much of this decline was between 2017/18 and 2018/19. Level 4 students numbers decreased slightly by 0.9% (from 6,810 to 6,750) whilst Level 5 numbers decreased by 21.5% (from 14,170 to 11,120).

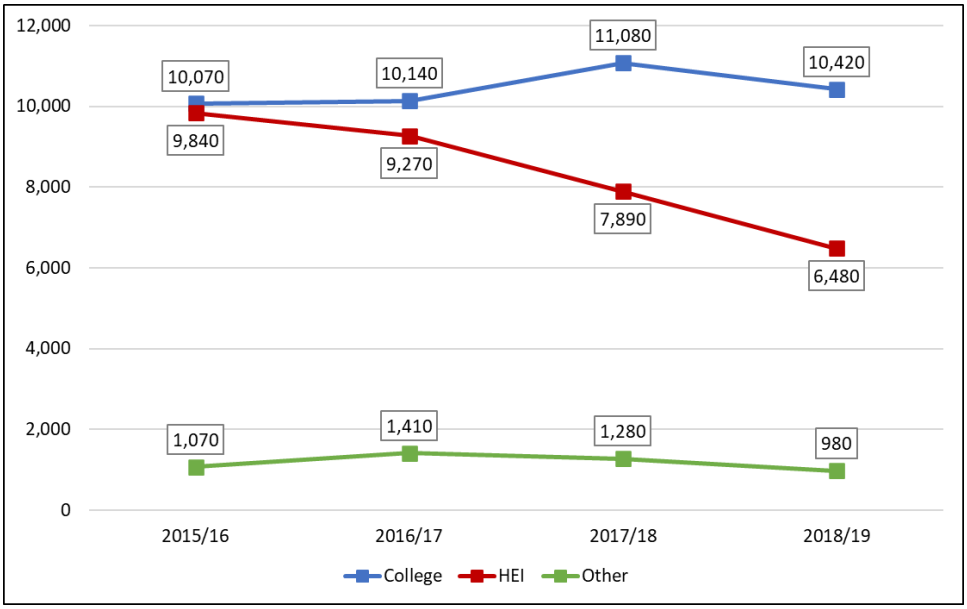
Figure 3.7: Trends in student numbers by level of study for Greater London residents



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

Over this four-year period, Level 4/5 students at FECs increased by 3.5% (from 10,070 to 11,080), although this peaked in 2017/18 at 11,080 whilst Level 4/5 students at HEIs decreased by 34%.

Figure 3.8: Trends in student numbers by provider type[3] for Greater London residents



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

[3] 'Other' refers to any other organisation that receives public funding from the government (or Student Loan Company). This includes local authorities, employer providers, charitable/voluntary organisations, and public sector organisations.

However, HEIs still have a much higher share of Level 4/5 provision for London residents in 2017/18 compared to the HEI share of Level 4/5 in the rest of the country (39% compared to 32%).

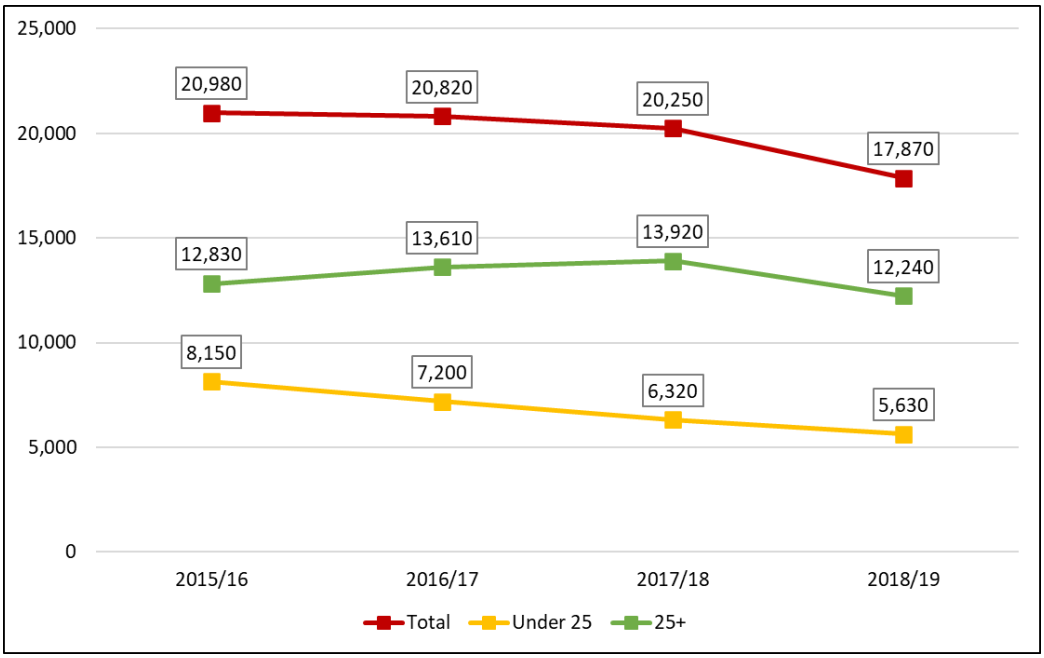
Figure 3.9: Percentage of Level 4/5 students by provider type – national comparison – 2017/18

Provider Type	Greater London	England
FEC	55%	61%
HEI	39%	32%
Other	6%	7%
Total	100%	100%

Source: ILR (R14) 2017/18 and HESA data 2017/18

The number of older adults (25+) taking Level 4/5 courses increased by 8.5% between 2015/16 and 2017/18. However, this decreased from 13,920 in 2017/18 to 12,240 in 2018/19. The number of younger adults (18-25 years of age) declined by 31%. In 2018/19, 68% of Greater London residents taking Level 4/5 courses were over the age of 25.

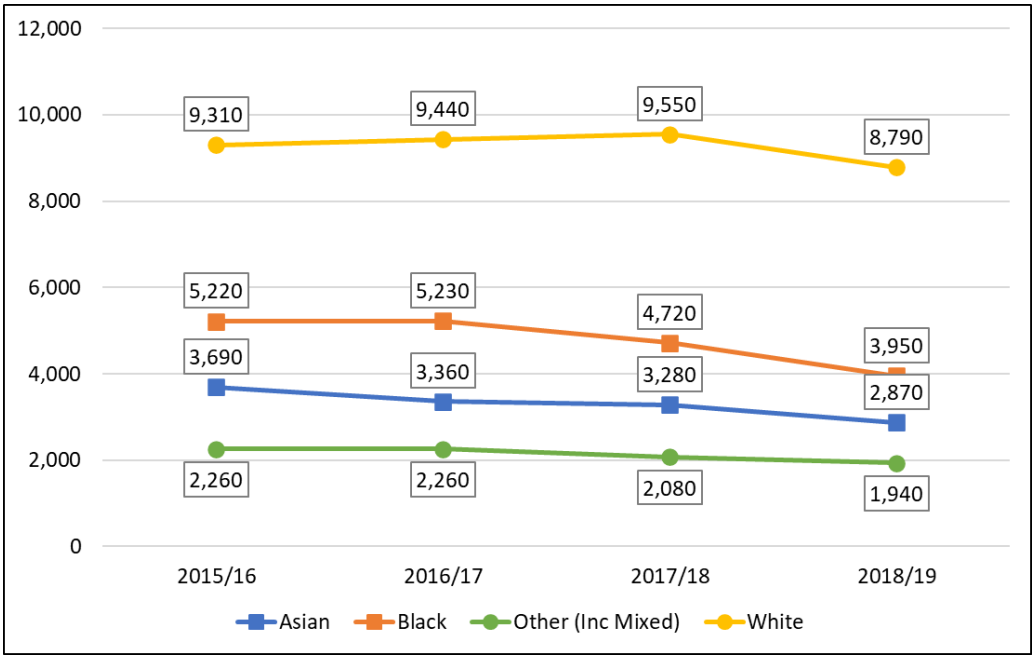
Figure 3.10: Trends in student numbers by age band for Greater London residents



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

The number of students who are Asian or Black has decreased by over 20% between 2015/16 and 2018/19, whereas students within the White ethnic group has only seen a 6% decrease.

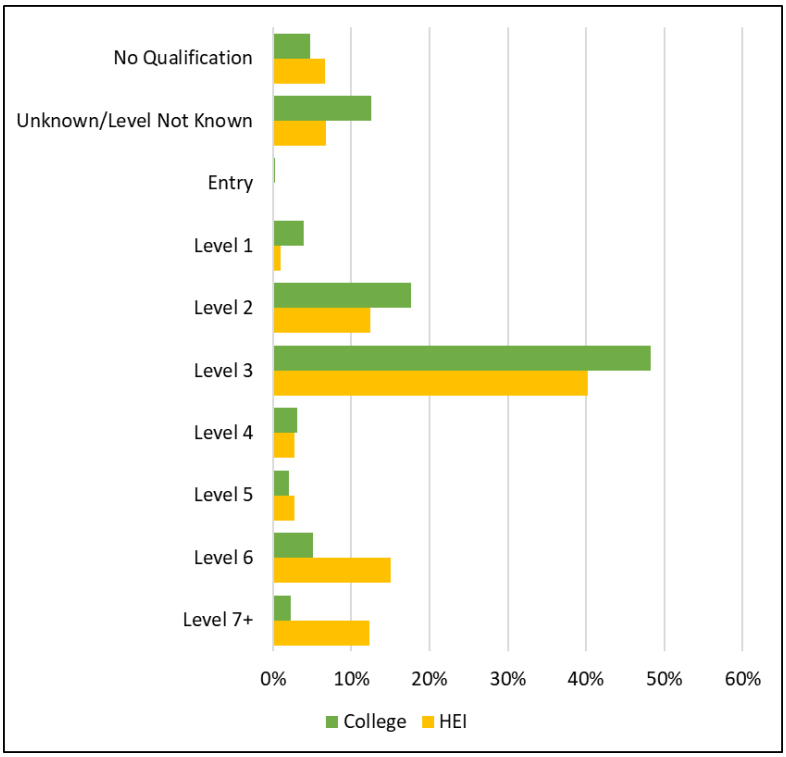
Figure 3.11: Trends in student numbers by ethnic group for Greater London residents



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

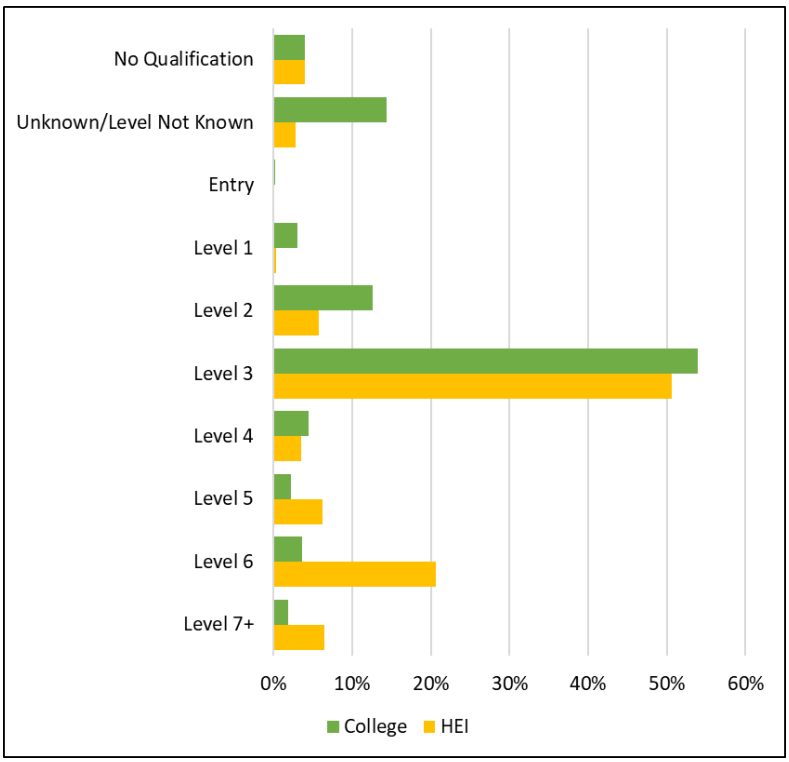
Figures 3.12 and 3.13 indicate the prior attainment of students studying at Level 4 and Level 5 by provider type. The majority are qualified to Level 3 but around one-quarter (27%) of students taking a Level 4/5 course at an HEI already had a qualification at Level 6 or 7. The equivalent figure for FECs is 6%.

Figure 3.12: Prior attainment by provider type – students enrolling on Level 4 courses



Source: ILR (R14) 2018/19 and HESA data 2018/19

Figure 3.13: Prior attainment by provider type – students enrolling on Level 5 courses



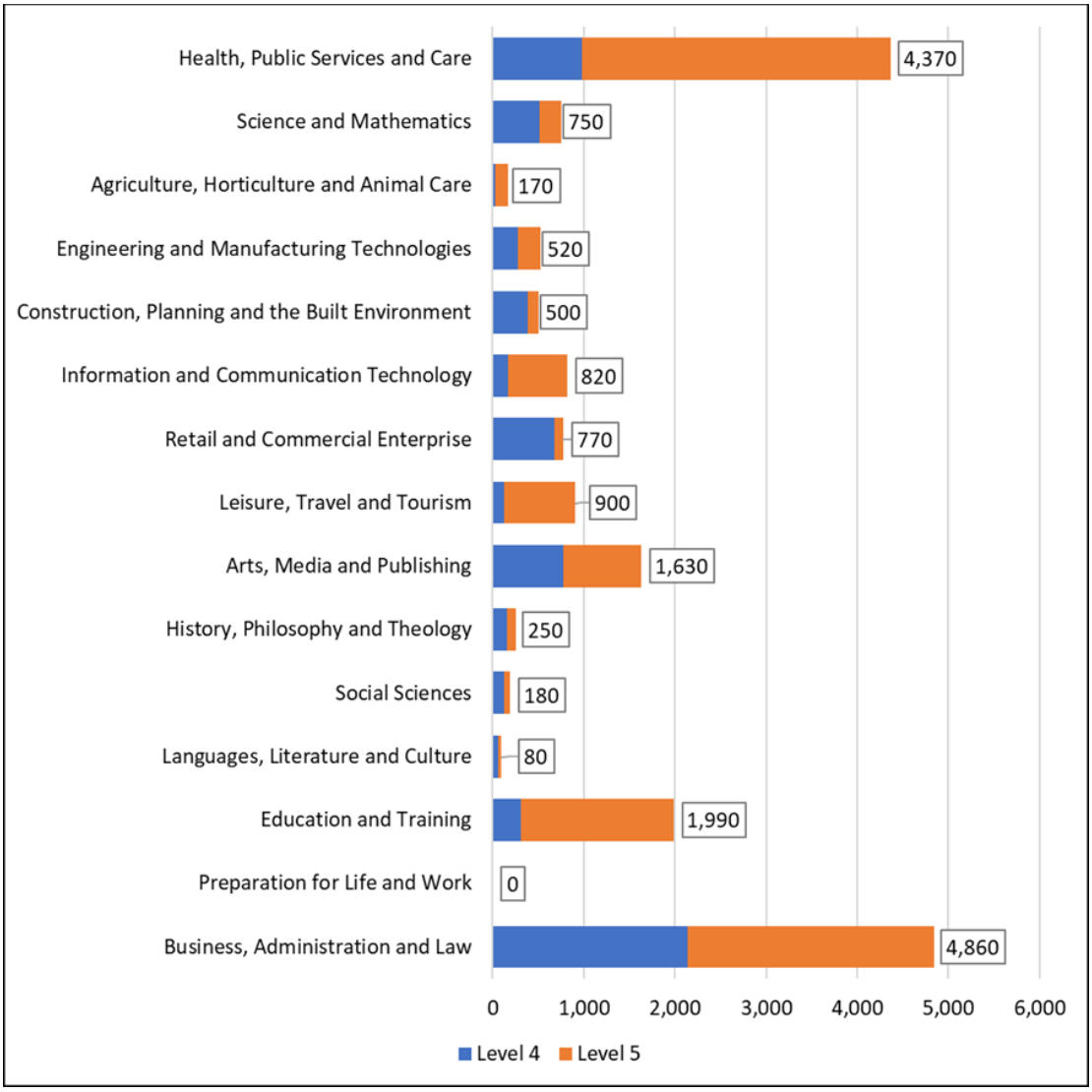
Source: ILR (R14) 2018/19 and HESA data 2018/19

Subject areas

The subject areas[4] in 2018/19 with the highest number of Level 4 and 5 students were Business, Administration & Law and Health, Public Services & Care. These two subject areas accounted for over half (52%) of all Level 4/5 students. Other subject areas with significant numbers of students are Education & Training and Arts, Media & Publishing.

The proportion of individuals studying at Level 4 compared to Level 5 varied significantly between subject areas. For example, in Leisure, Travel & Tourism almost all students are studying at Level 5, whereas in Construction, Planning & the Built Environment the vast majority of students are studying at Level 4. This suggests that the nature of provision at Levels 4 and 5 is influenced heavily by the context of the subject area, including the needs of industries and employment opportunities within that subject area.

Figure 3.14: Student volumes at Levels 4 and 5 by sector subject area for Greater London residents

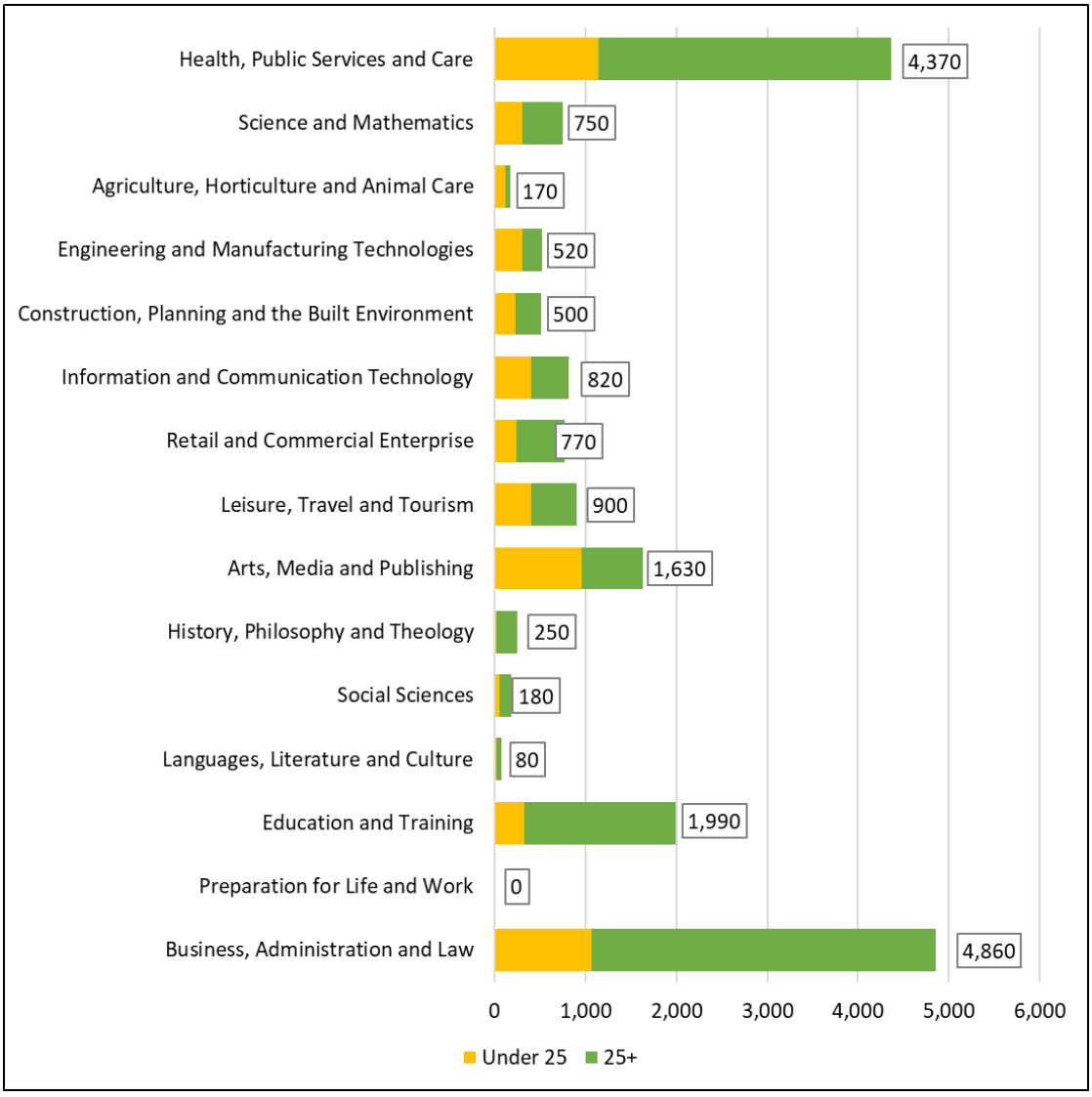


Source: ILR (R14) 2018/19 and HESA data 2018/19

[4] Subject areas are based on FE sector subject areas (SSA). Courses +on the HESA dataset were mapped across to FE sector subject areas using a lookup between JACS codes and SSA.

The proportion of students aged under and over 25 also varied by subject area. For example, Arts, Media & Publishing had a relatively high proportion of individuals under the age of 25 compared to most other subject areas.

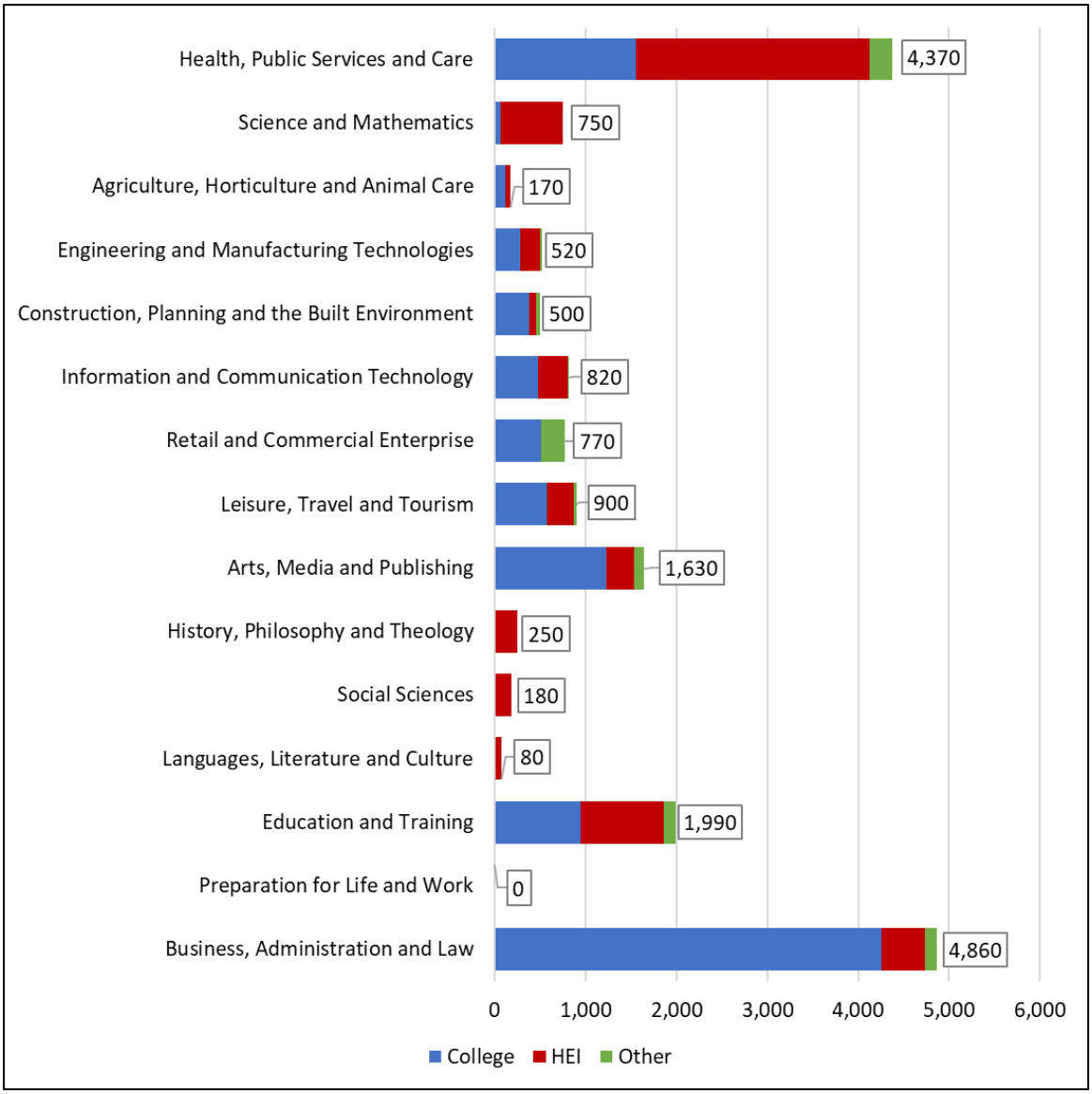
Figure 3.15: Student volumes at Levels 4 and 5 by sector subject area and age band for Greater London residents



Source: ILR (R14) 2018/19 and HESA data 2018/19

Over 80% of the students taking Business, Administration & Law subjects were studying at a further education college, compared to only 36% taking Health, Public Services & Care courses where HEIs are the largest provider type. In general, HEIs were the largest provider type in academic subject areas such as History, Philosophy & Theology and Social Sciences. However, they also recruited a significant proportion of students in some vocational areas such as Engineering & Manufacturing Technologies.

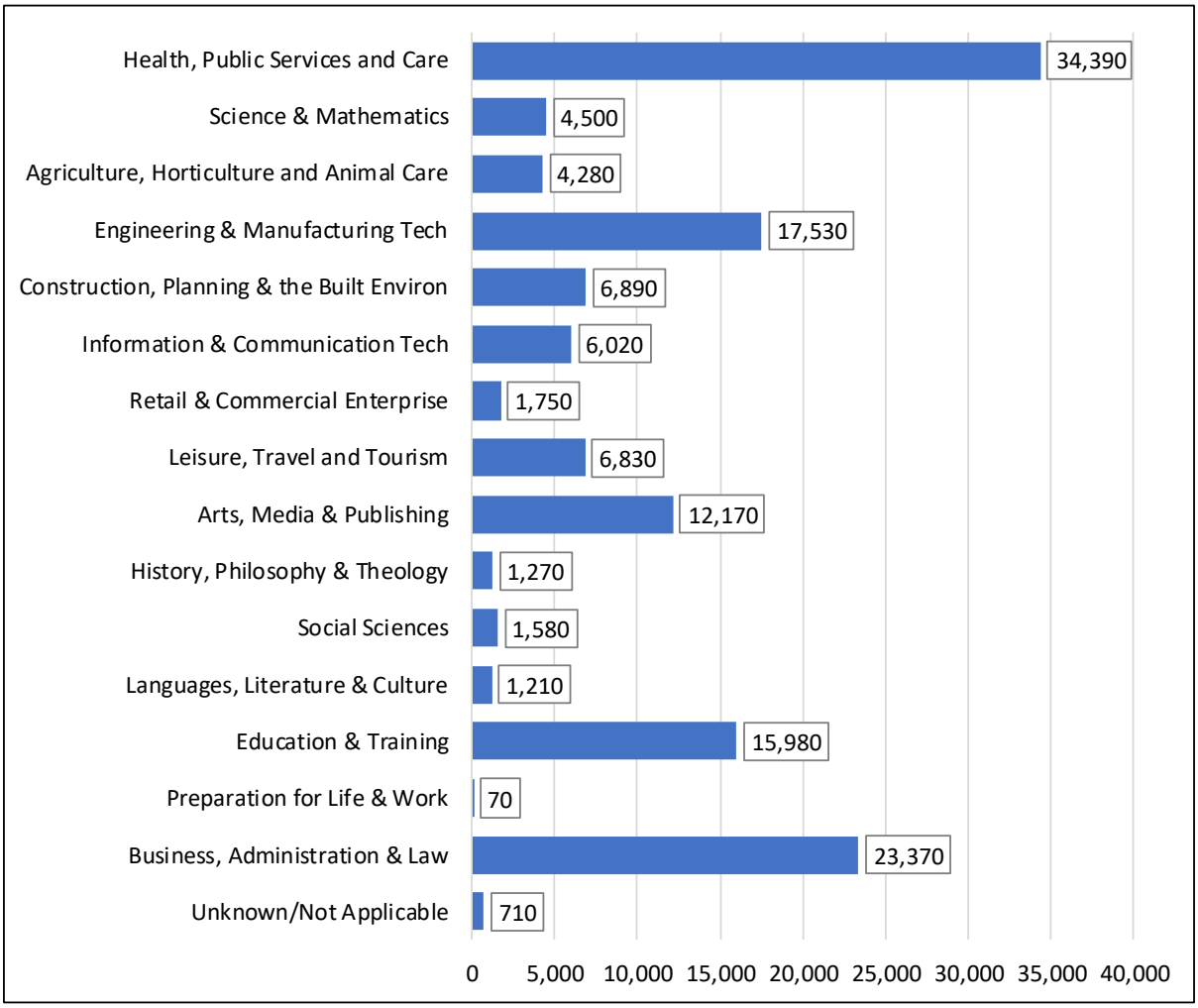
Figure 3.16: Student volumes at Level 4 and 5 by sector subject area and provider type for Greater London residents



Source: ILR (R14) 2018/19 and HESA data 2018/19

Compared to England as a whole, Greater London has a very small percentage of students taking Engineering & Manufacturing Technologies subjects (Figures 3.16 and 3.17). However, London has a higher proportion of students taking subjects in Information & Communications Technology.

Figure 3.17: England: subject profile (2017/18 data)

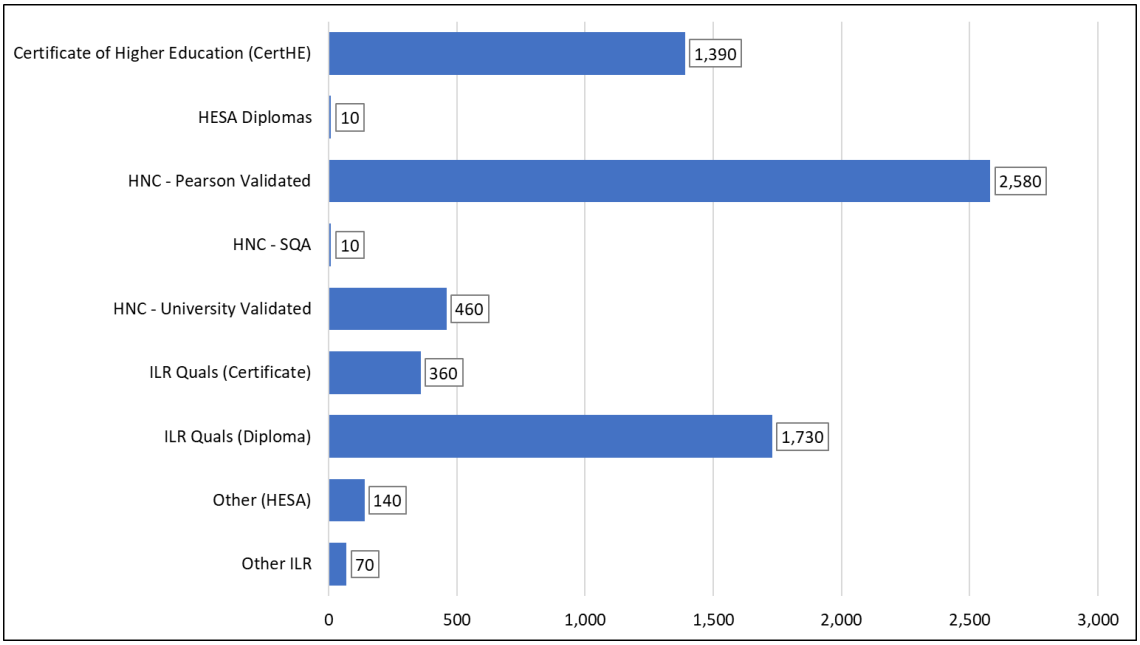


Source: ILR (R14) 2017/18 and HESA data 2017/18

Level 4

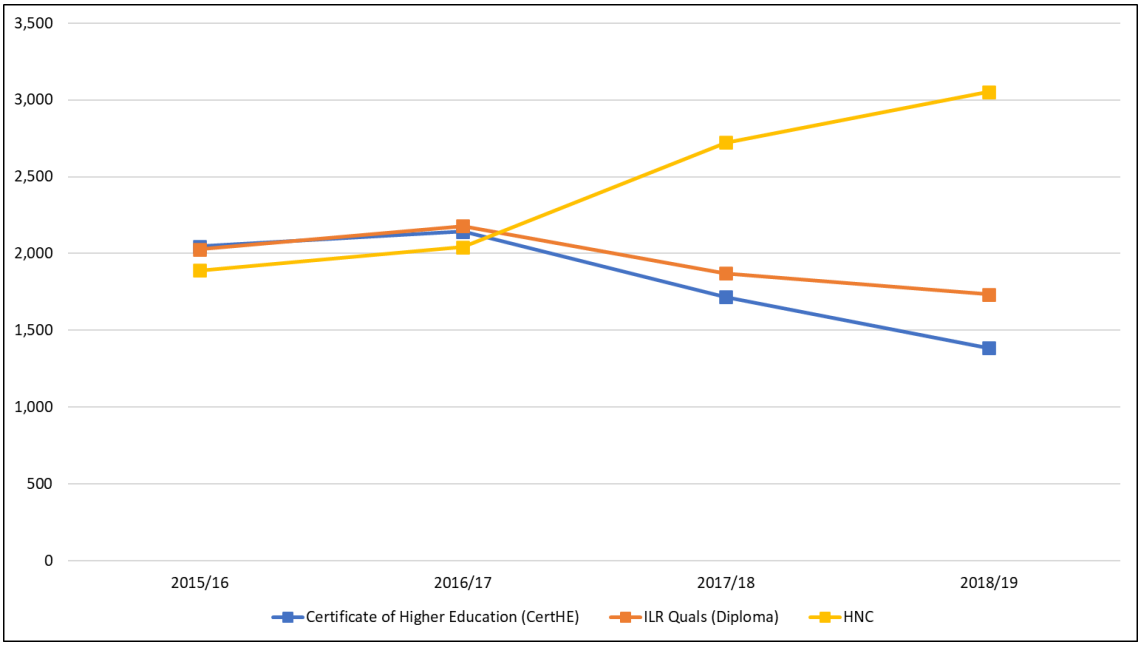
Level 4 courses taken by students resident in London include a wide range of different qualification types. The largest qualification types are the HNC, the CertHE and a range of different diplomas that appear on the ILR (often vocationally focused professional qualifications). HNCs are either awarded directly by Pearson or by a HEI (or FEC with degree awarding powers) under licence from Pearson. Over the four year period between 2015/16 and 2018/19, the number taking HNCs increased from 1,890 to over 3,000, whilst numbers on other Level 4 programmes declined.

Figure 3.18: Student volumes at Level 4 by qualification type



Source: ILR (R14) 2018/19 and HESA data 2018/19

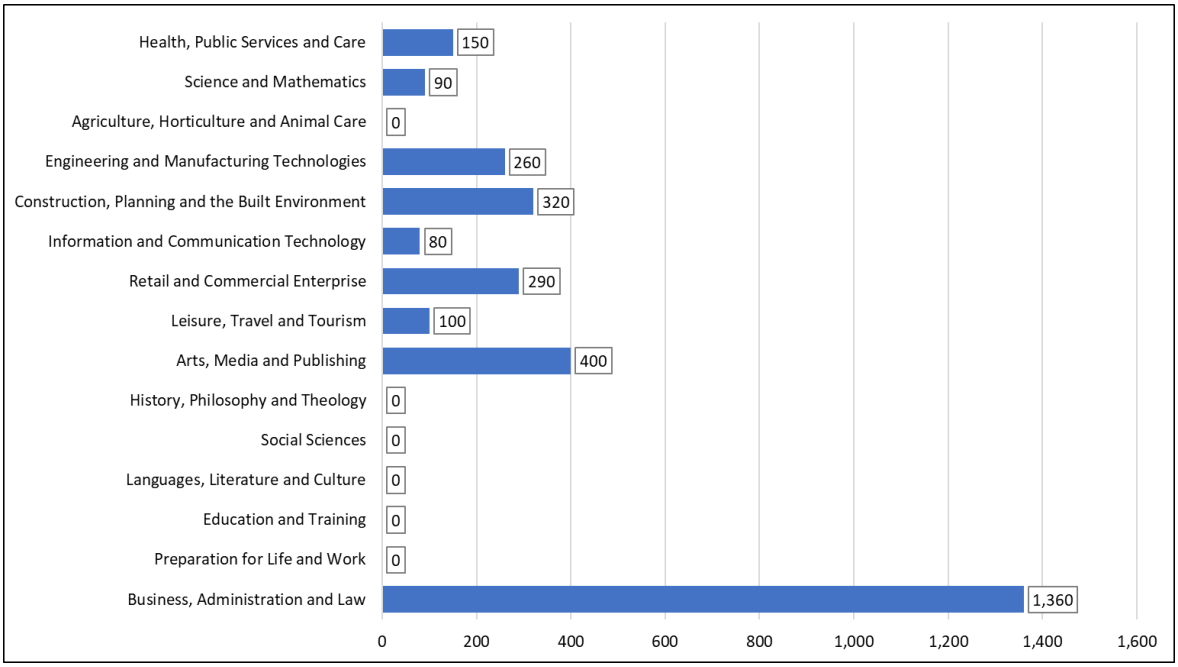
Figure 3.19: Trends in student volumes for selected Level 4 qualification types



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

The largest HNC subject area taken by London residents in 2017/18 was Business, Administration & Law. HNCs were predominately taught at FECs.

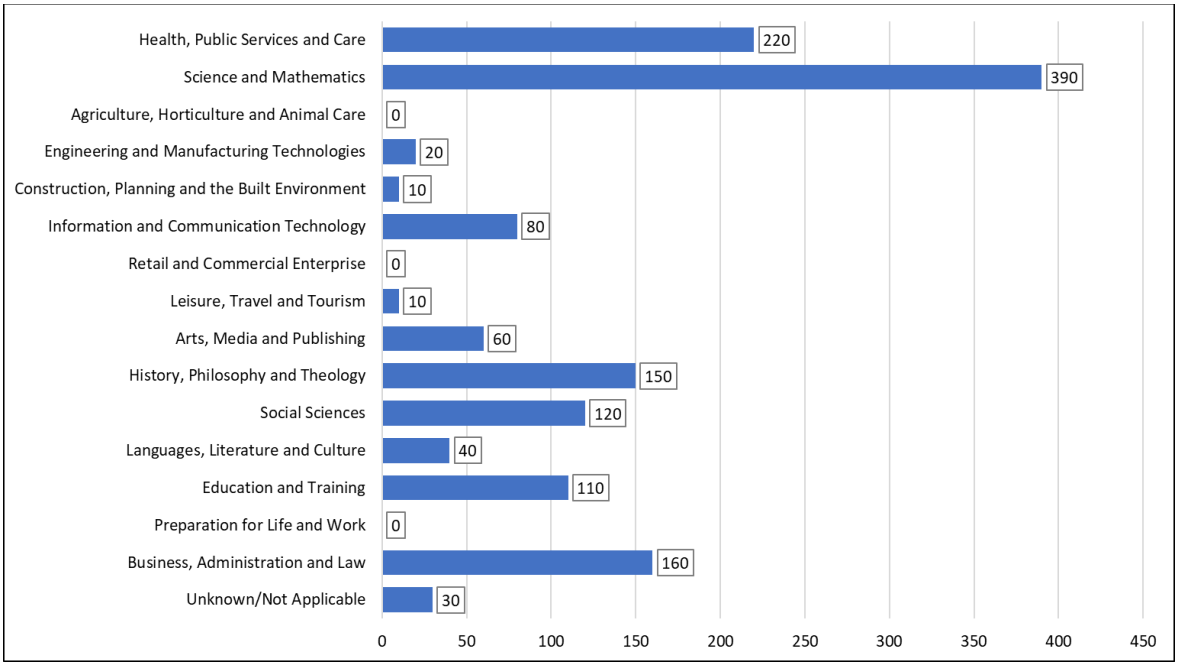
Figure 3.20: Student volumes by sector subject areas for HNCs



Source: ILR (R14) 2018/19 and HESA data 2018/19

The CertHE, by contrast, was taught almost exclusively by HEIs and covered a much wider range of different subject areas, with the largest subject area being Science & Mathematics.

Figure 3.21: Student volumes by sector subject areas for CertHE



Source: ILR (R14) 2018/19 and HESA data 2018/19

Figure 3.22 shows the Level 4 courses taken by London residents with 50 or more students. This illustrates the wide variety of different types of Level 4 course provision, including professional certificates and diplomas alongside HNCs and CertHEs.

Figure 3.22: Top Level 4 courses taken by Greater London residents (50 or more students)

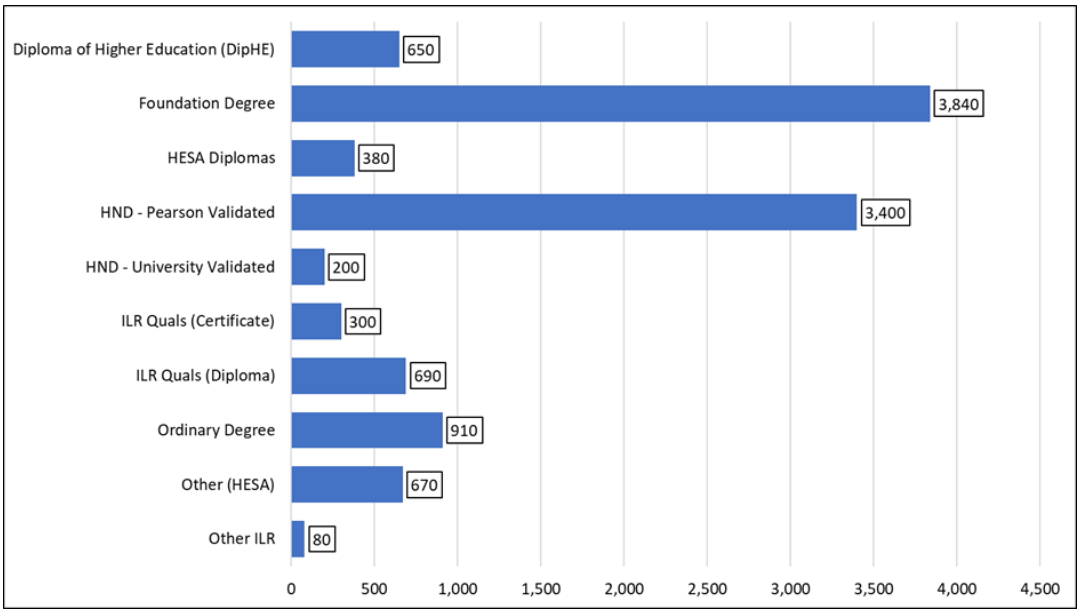
Qualification Title	Volume	% Under 25	% FEC
BTEC Higher National Certificate in Business	1,230	17%	100%
Professional Diploma in Accounting - Level 4	510	26%	91%
Diploma in Therapeutic Counselling (RQF)	380	3%	84%
BTEC Higher National Certificate in Hospitality Management	240	23%	100%
BTEC Higher National Certificate in Art and Design	240	36%	100%
BTEC Higher National Certificate in Construction and the Built Environment	190	50%	100%
Diploma in Art & Design - Foundation Studies	180	68%	77%
Certificate of Higher Education (CertHE) in Psychology	140	17%	0%
Certificate of Higher Education (CertHE) in Counselling	140	2%	0%
BTEC Higher National Certificate in Engineering	120	59%	100%
Certificate of Higher Education (CertHE) in Biology	110	33%	0%
Certificate in Laser and Intense Pulsed Laser (IPL) Treatments	100	25%	75%
Diploma in Therapeutic Counselling	90	2%	100%
Extended Diploma for Creative Practitioners	80	62%	100%
BTEC Higher National Certificate in Healthcare Practice for England	80	15%	100%
Higher National Certificate (HNC) in Management studies	70	54%	0%
BTEC Higher National Certificate in Computing	70	65%	100%
Certificate of Higher Education (CertHE) in Others in education	70	12%	0%
Certificate of Higher Education (CertHE) in Business studies	60	19%	0%
Certificate of Higher Education (CertHE) in History of art	60	5%	0%
BTEC Higher National Certificate in International Travel and Tourism Manag	60	34%	100%
Higher National Certificate (HNC) in Production & manufacturing engineeri	60	95%	0%
Diploma in Buying and Range Planning for Fashion Retail	60	56%	0%
Higher National Certificate (HNC) in Applied molecular biology, biophysics	60	96%	0%
Certificate of Higher Education (CertHE) in History by period	50	17%	0%
Certificate of Higher Education (CertHE) in Criminal law	50	32%	0%

Source: ILR (R14) 2018/19 and HESA data 2018/19

Level 5

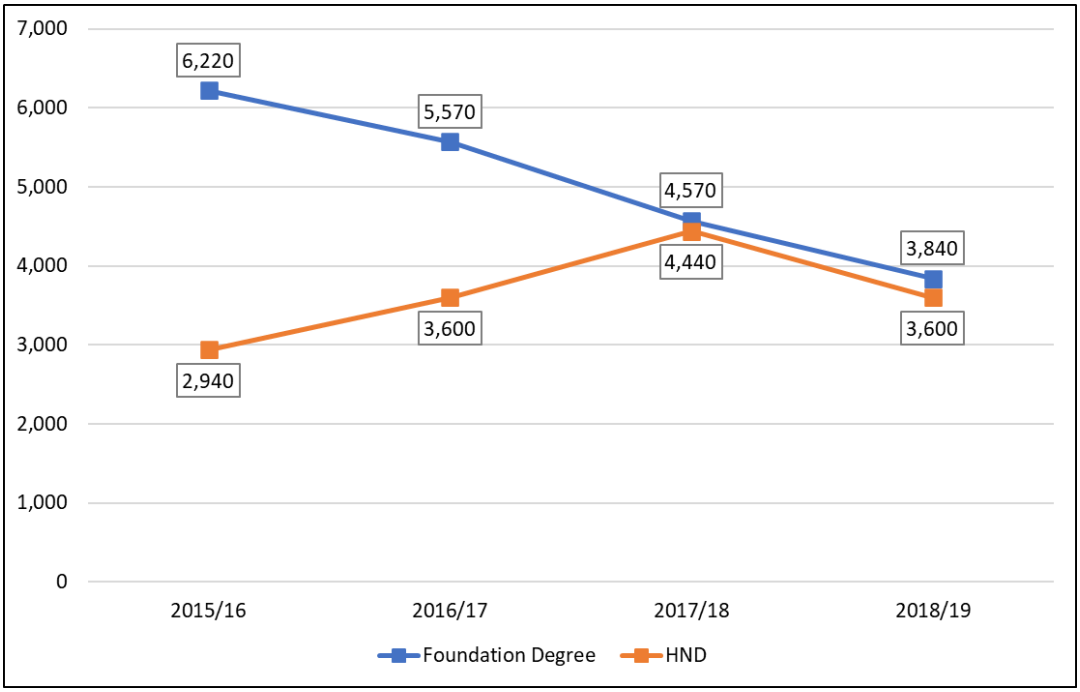
Level 5 is dominated by Foundation Degrees and HNDs, with 67% of Level 5 students taking one or other of these qualifications. HNDs, like HNCs, are either awarded directly by Pearson or are awarded by a HEI (or FEC with degree awarding powers) under licence from Pearson. Over the three year period between 2015/16 and 2017/18, HND numbers have been increasing. However, numbers dropped in 2018/19 to 3,600. Foundation Degree numbers have been declining over the four year period.

Figure 3.23: Student volumes at Level 5 by qualification type



Source: ILR (R14) 2018/19 and HESA data 2018/19

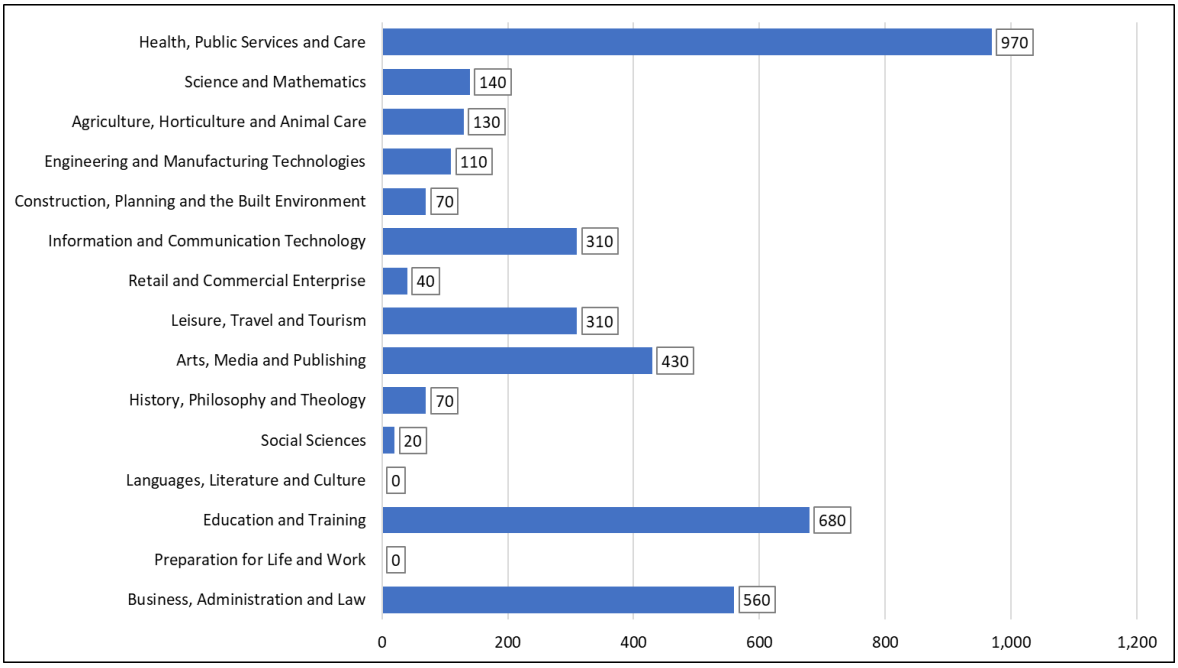
Figure 3.24: Trends in student volumes for HNDs and Foundation Degrees



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

The four largest volumes by sector subject areas for Foundation Degrees taken by London residents in 2018/19 were in Health, Public Services & Care, Education & Training, Business, Administration & Law, and Arts, Media & Publishing. Foundation Degrees were available in a wide range of different subject areas.

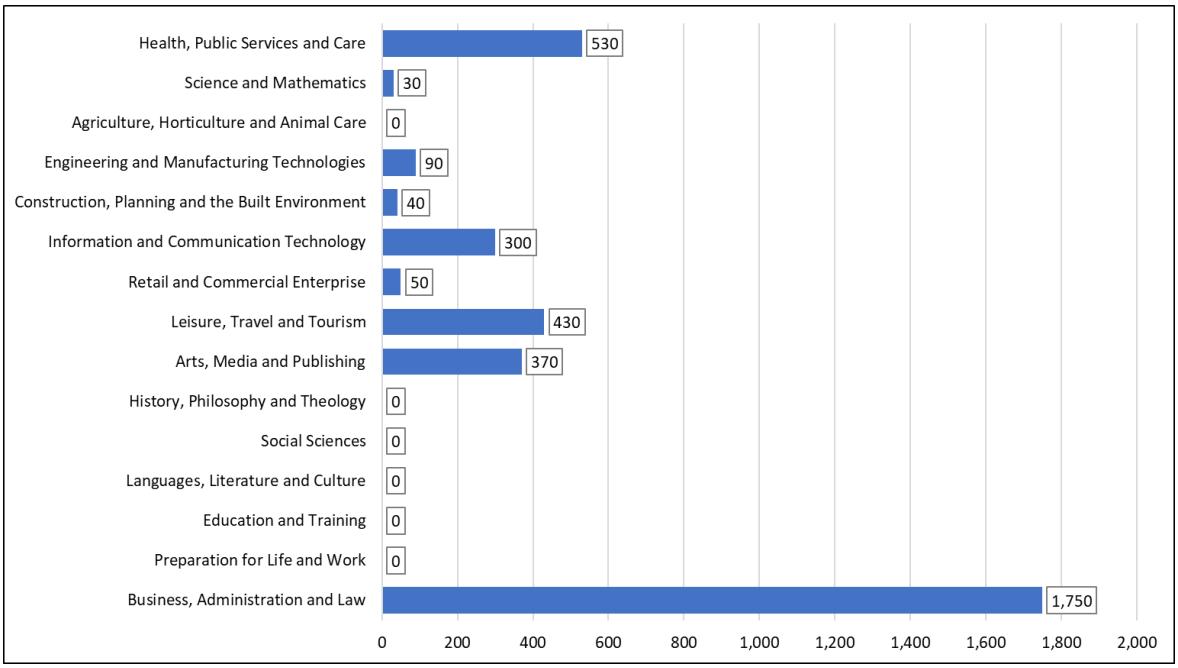
Figure 3.25: Student volumes by sector subject areas for Foundation Degrees



Source: ILR (R14) 2018/19 and HESA data 2018/19

HNDs, by contrast, were taken in a narrower range of subject areas with almost half of all HNDs being in the Business, Administration & Law sector subject area.

Figure 3.26: Student volumes by sector subject areas for HNDs



Source: ILR (R14) 2018/19 and HESA data 2018/19

Figure 3.27 shows the Level 5 courses taken by London residents with 80 or more learners. The vast majority of HNDs were taught at further education colleges whereas Foundation Degrees were taught by both colleges and HEIs.

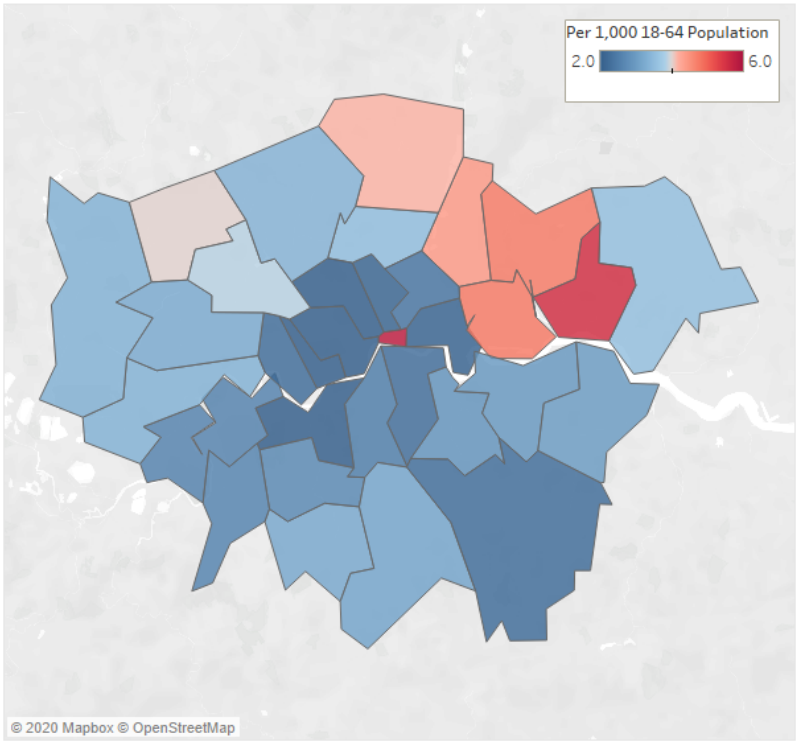
Figure 3.27: Level 5 courses with 80 or more students taken by Greater London residents

Qualification Title	Volume	% Under 25	% FEC
BTEC Higher National Diploma in Business	1,680	16%	100%
BTEC HND Diploma in Travel and Tourism Management	370	11%	100%
Diploma at level J in Training teachers - further education	350	7%	5%
Foundation degree in Nursing	340	9%	0%
Pre-registration ordinary (non-honours) first degree leading towards obtair	310	84%	0%
Pre-registration ordinary (non-honours) first degree leading towards obtair	290	70%	0%
BTEC HND Diploma in Health and Social Care	280	8%	100%
Certificate in Teaching English to Speakers of Other Languages (CELTA)	250	11%	100%
BTEC Higher National Diploma in Computing	220	64%	100%
Diploma in Human Resource Management	200	20%	100%
Diploma of Higher Education (DipHE) in Nursing not elsewhere classified	200	8%	0%
Foundation degree in Academic studies in primary education	170	29%	73%
BTEC Higher National Diploma in Art and Design	160	30%	100%
Qualified Teacher Status (QTS)/registration with a General Teaching Counci	160	18%	0%
Foundation Degree in Payroll Management	140	5%	100%
Pre-registration ordinary (non-honours) first degree leading towards obtair	140	91%	0%
Post-registration health and social care qualification at level J in Nursing no	140	7%	0%
Foundation Degree in Business - (Barnet and Southgate College)	140	21%	100%
Post-registration health and social care qualification at level I other than an	120	4%	0%
Post-registration health and social care qualification at level I other than an	120	4%	0%
Foundation degree in Computational science foundations	100	17%	0%
Foundation degree in Business studies	100	93%	86%
Foundation degree in Computer science	90	77%	77%
Foundation degree in Others in education	90	33%	0%
BTEC Diploma in Therapeutic Counselling	90	1%	100%
BTEC Higher National Diploma in Healthcare Practice for England	80	6%	100%
Foundation Degree in Public Health and Social Care	80	12%	100%
Foundation degree in Health & welfare	80	38%	0%

Source: ILR (R14) 2018/19 and HESA data 2018/19

Participation by London borough

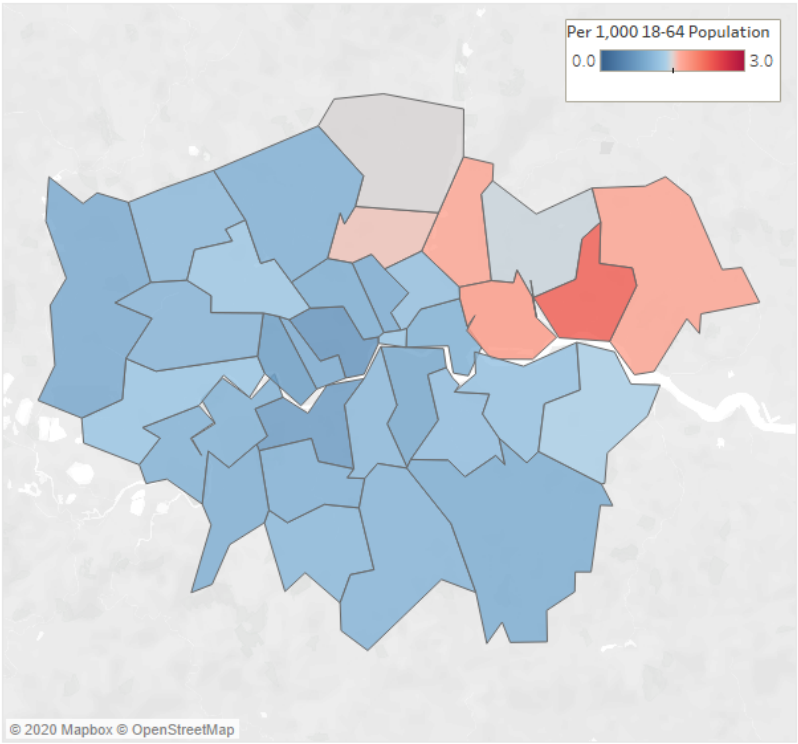
Figure 3.28: Total number of Level 4/5 students per 1,000 of the 18-64 population



There was a significant variation in the uptake of Level 4 and 5 courses by residents of different boroughs. The highest concentrations (students per 1,000 of the resident 18-64 population) were in Barking & Dagenham, Newham and Redbridge. In general, the suburbs of north London had higher concentrations than south London. The lowest concentrations were in central London in areas such as Westminster

Source: ILR (R14) 2018/19 and HESA data 2018/19

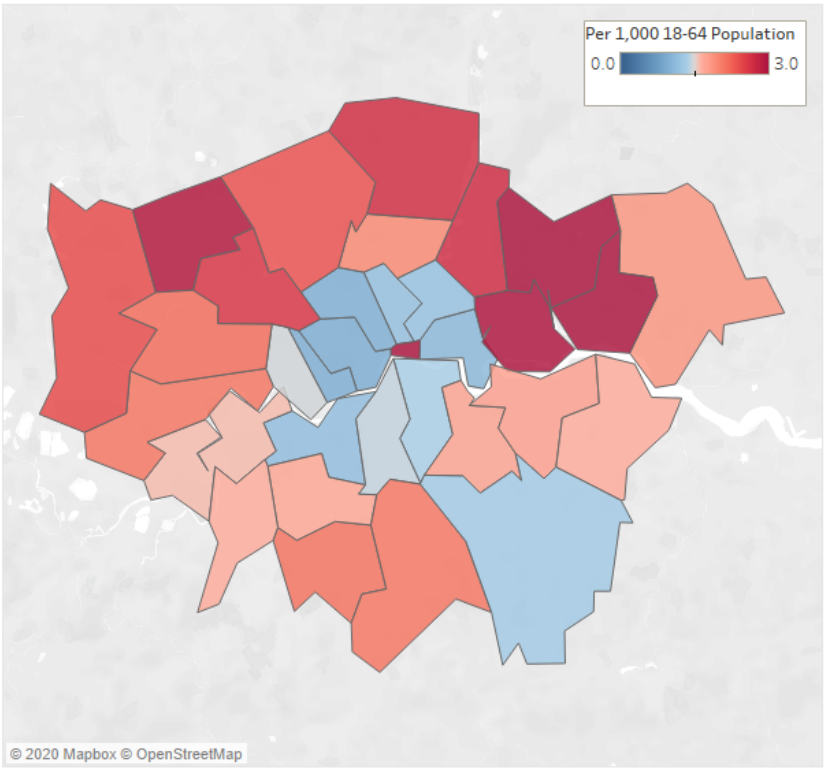
Figure 3.29: Total number of Level 4 students per 1,000 of the 18-64 population



The highest concentrations of Level 4 students in 2018/19 were in North East London, in the boroughs of Barking & Dagenham and Newham. The lowest concentrations were in Westminster and Wandsworth.

Source: ILR (R14) 2018/19 and HESA data 2018/19

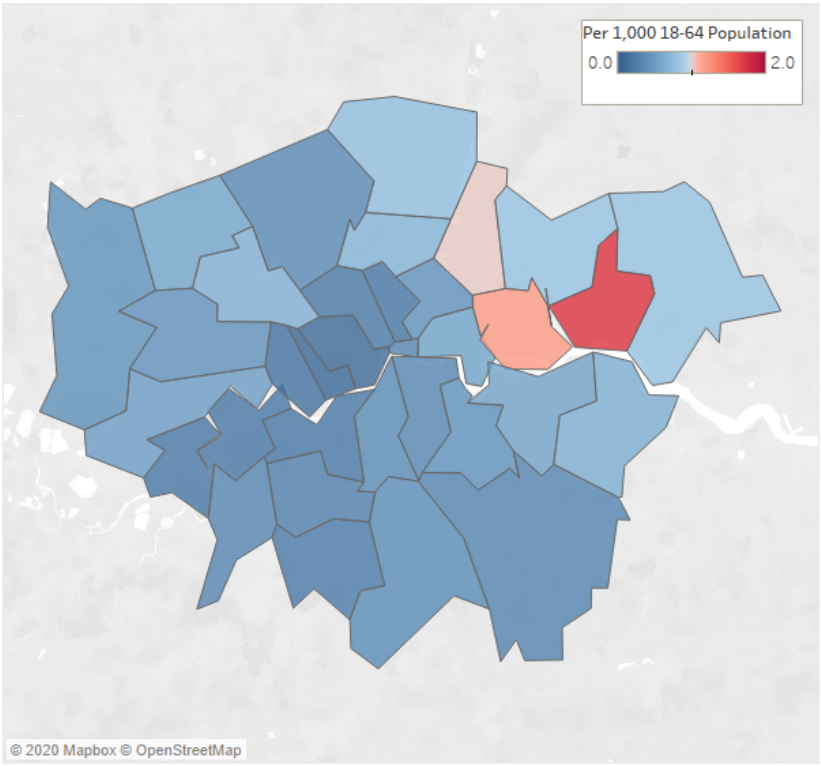
Figure 3.30: Total number of Level 5 students per 1,000 of the 18-64 population



Level 5 had a rather different geographical profile to Level 4 with a relatively high concentration of students in West London, particularly in the boroughs of Harrow, Brent, Ealing and Hillingdon. Concentrations remained high in Barking & Dagenham and Redbridge.

Source: ILR (R14) 2018/19 and HESA data 2018/19

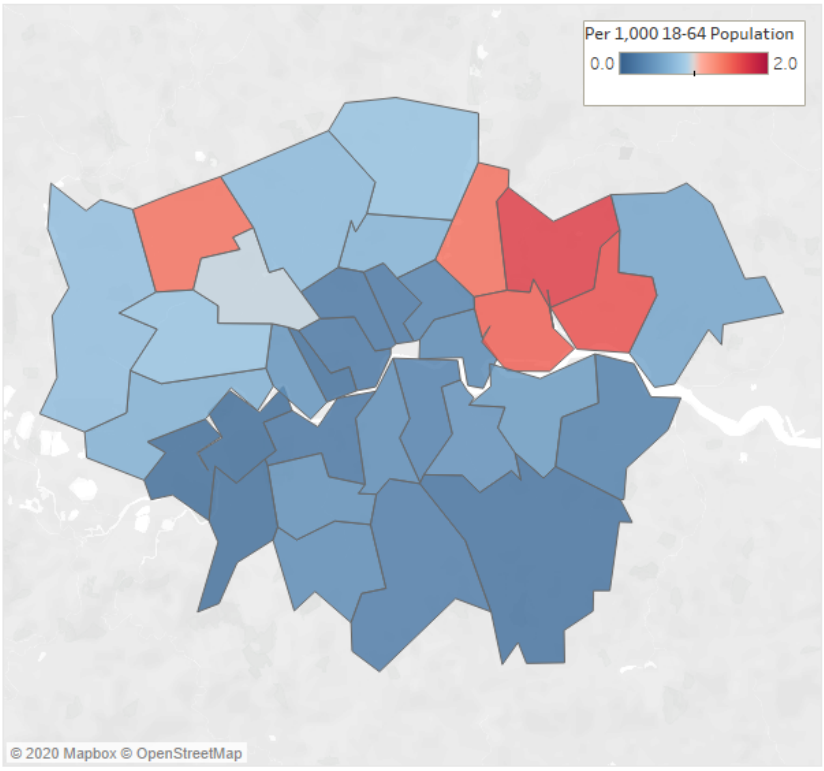
Figure 3.31: Total number of HNC students per 1,000 of the 18-64 Population



Barking & Dagenham had a relatively high concentration of HNC learners (1.7 learners per 1,000 adult residents) compared to other London boroughs. In 18 of the 33 London boroughs there were less than 0.5 learners per 1,000 adults taking an HND.

Source: ILR (R14) 2018/19 and HESA data 2018/19

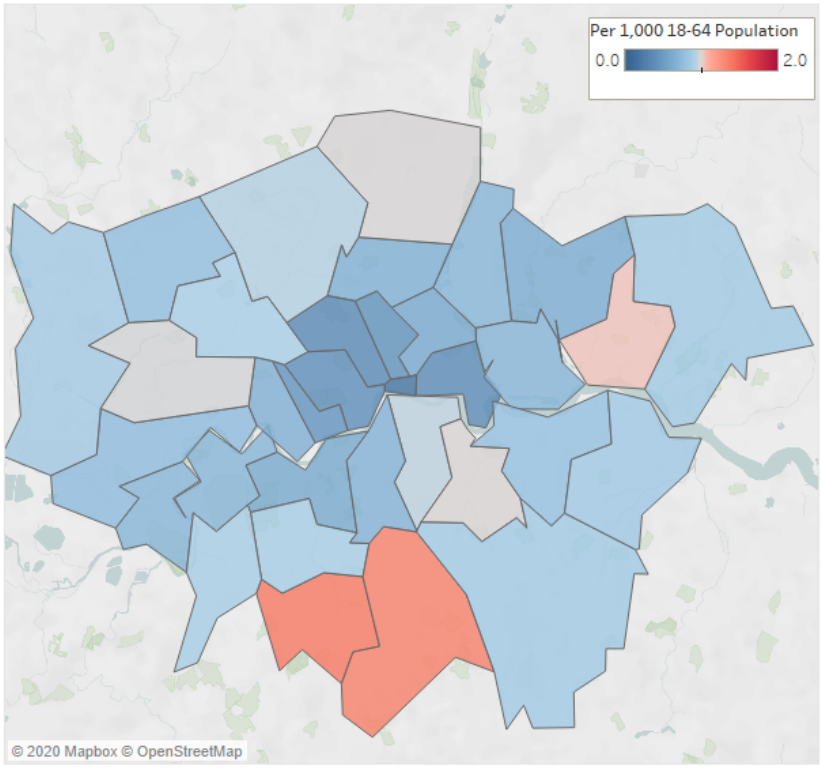
Figure 3.32: Total number of HND students per 1,000 of the 18-64 population



HND hotspots included Harrow, Barking & Dagenham, Redbridge Newham and Waltham Forest. South London had much lower concentrations of HND students than North London.

Source: ILR (R14) 2018/19 and HESA data 2018/19

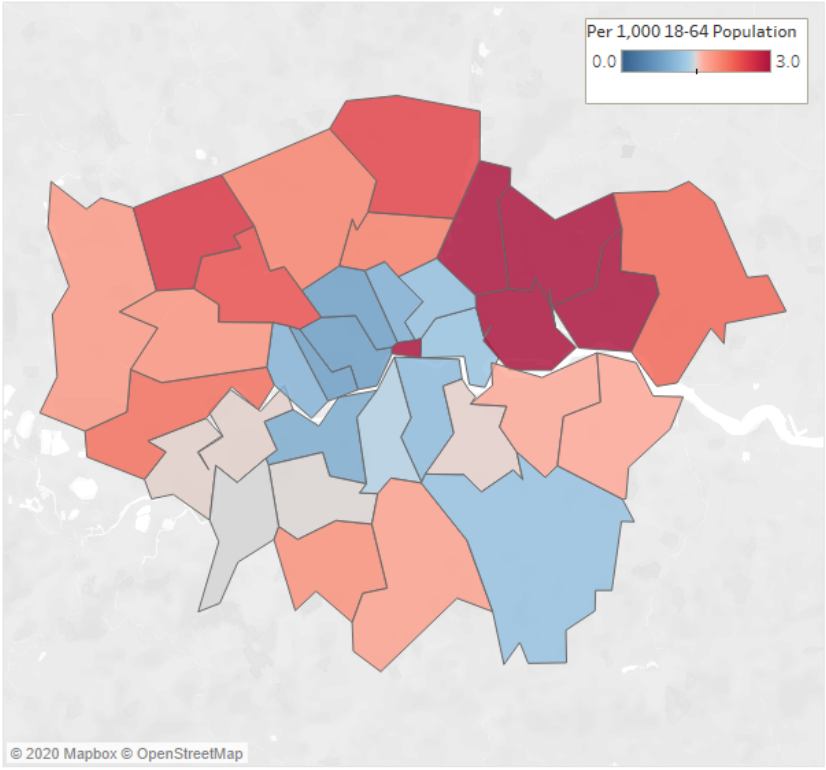
Figure 3.33: Total number of Foundation Degree students per 1,000 of the 18-64 population



Foundation Degree concentrations across London show less variation than HNDs and HNCs. There are particular hotspots in Croydon and Sutton.

Source: ILR (R14) 2018/19 and HESA data 2018/19

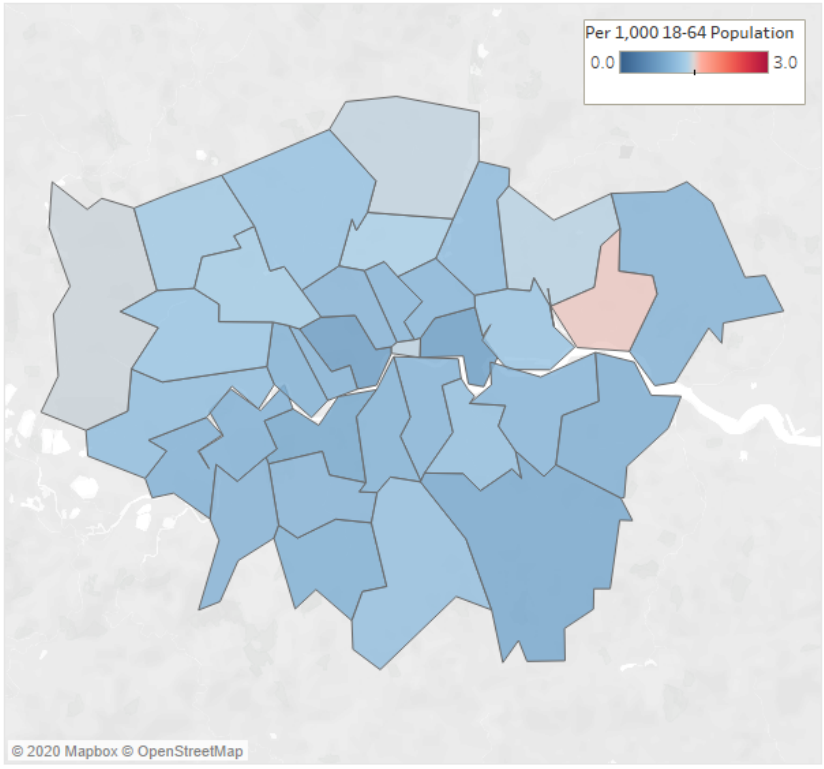
Figure 3.34: Total number of Level 4/5 students in FECs per 1,000 of the 18-64 population



Level 4/5 students attending further education colleges were more likely to be living in outer London than central London (although concentrations are also relatively low in South East London). There were particularly high concentrations in Barking & Dagenham, Redbridge and Newham.

Source: ILR (R14) 2018/19 and HESA data 2018/19

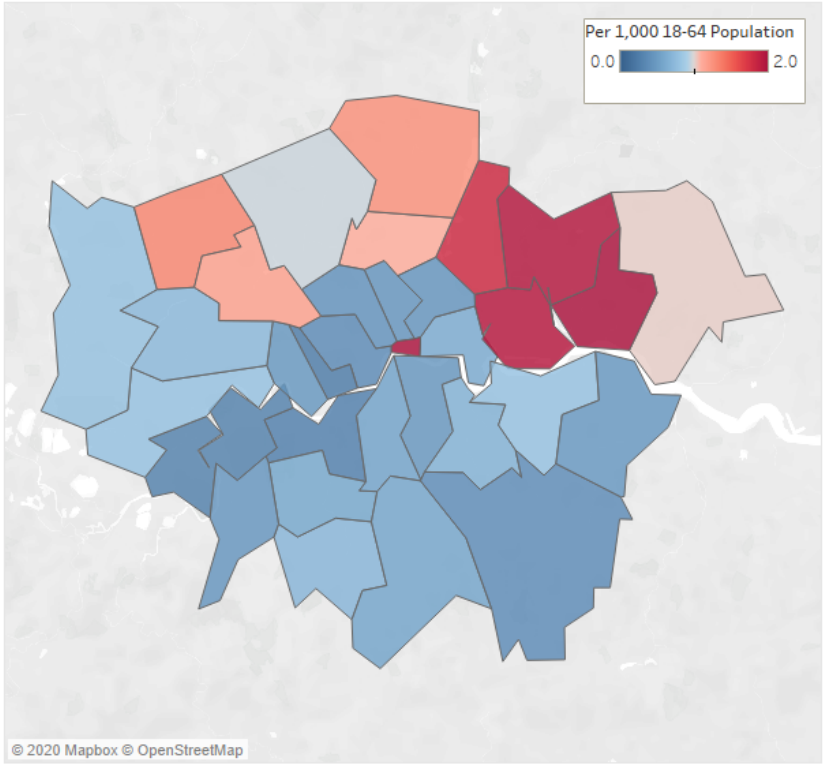
Figure 3.35: Total number of Level 4/5 students in HEIs per 1,000 of the 18-64 population



The concentration of level 4/5 students attending HEIs tended to be highest in North London boroughs, but overall there was much less variation by borough compared to students at FECs.

Source: ILR (R14) 2018/19 and HESA data 2018/19

Figure 3.36: Total number of Level 4/5 students pursuing business subjects per 1,000 of the 18-64 population



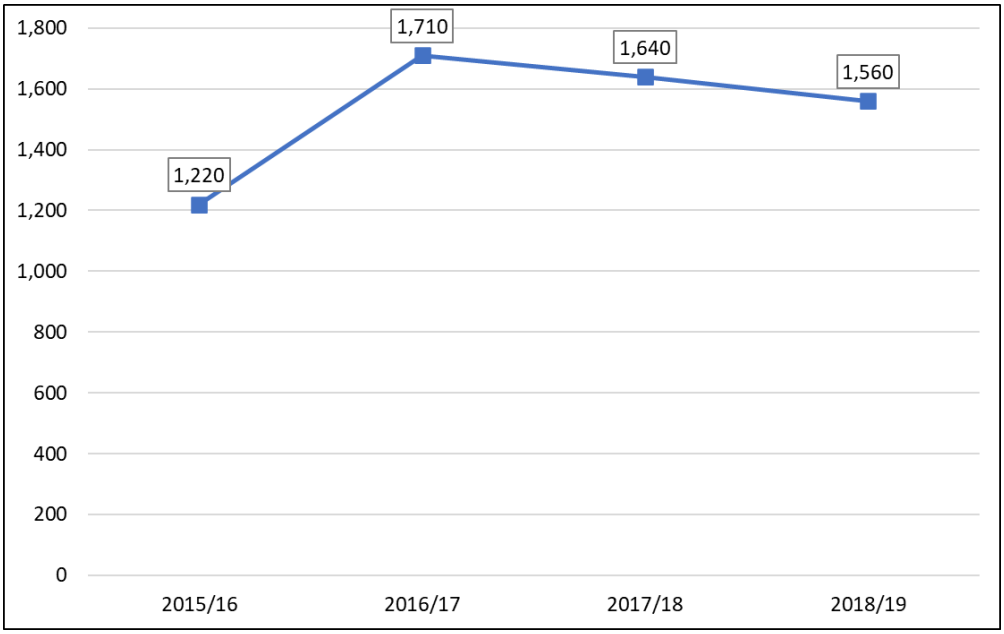
Part Four of the report focuses on the five mayoral priority sectors and will include geographical maps for these sectors. Business and finance is not one of the named sectors but does recruit a large number of Level 4/5 students and is a vital part of the London economy. We have therefore included a geographical map for this sector within this section. There appears to be significant variation in concentrations by borough and this seems to be related to curriculum specialisms of individual providers rather than variation in economic skills needs across London.

Source: ILR (R14) 2018/19 and HESA data 2018/19

Advanced learner loans

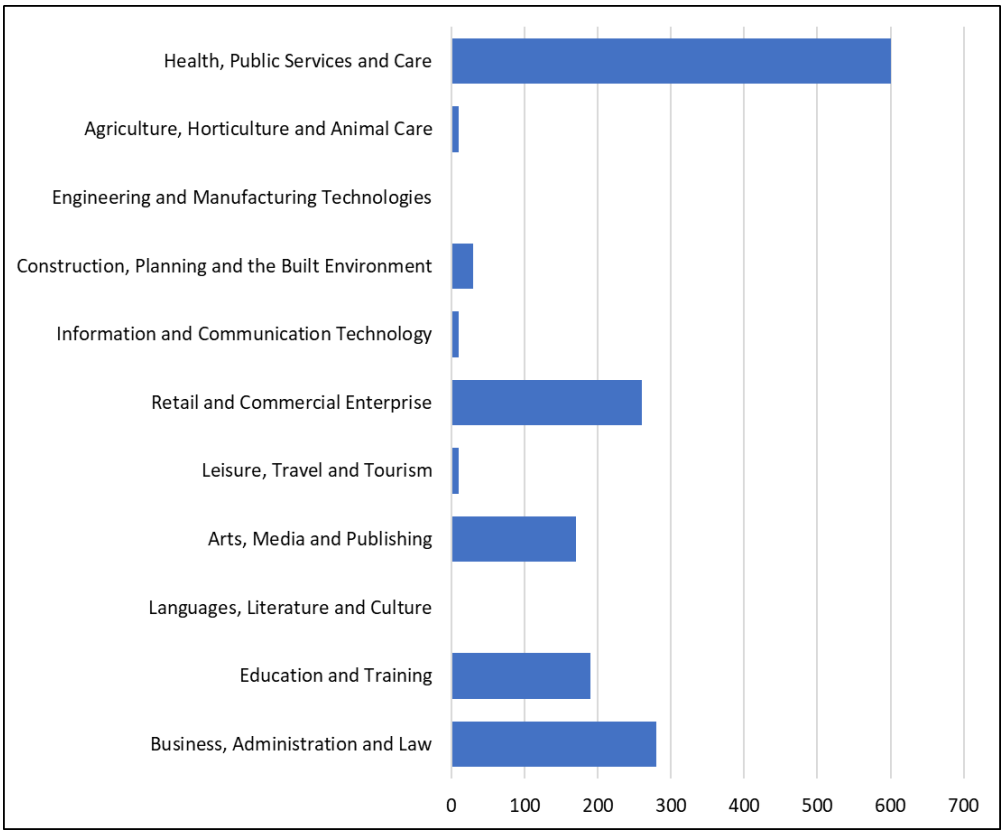
The number of students holding an advanced learner loan peaked in 2016/17, at 1,710. However, from this peak there has been a year-on-year decrease, dropping to 1,560 in 2018/19.

Figure 3.37: Number of students holding advanced learner loans



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

Figure 3.38: Number of students holding advanced learner loans by subject area



Source: ILR (R14) 2018/19

The subject area with the largest number of students is Health, Public Services and Care with around 600 students. Around half of these students were studying the Diploma in Therapeutic Counselling.

Figure 3.39: Top Level 5 courses taken by Greater London residents

Qualification Title	Learners
Diploma in Therapeutic Counselling (RQF)	290
Professional Diploma in Accounting - Level 4	210
Certificate in Teaching English to Speakers of Other Languages (CELTA)	130
Certificate in Laser and Intense Pulsed Laser (IPL) Treatments	70
Extended Diploma for Creative Practitioners	70
Diploma in Art & Design - Foundation Studies	70
Diploma in Therapeutic Counselling	50
Diploma in Buying and Range Planning for Fashion Retail	50
Diploma in Leadership for Health and Social Care and Children and Young People's Services (	50
Diploma in Leadership for Health and Social Care and Children and Young People's Services (	40
Certificate for the Early Years Advanced Practitioner	30
NVQ Diploma in Construction Site Supervision (Construction)	30
Diploma in Leadership for Health and Social Care and Children and Young People's Services (	30
Diploma in Advanced Beauty Therapy	30
Diploma in Human Resource Management	20
Certificate in Micropigmentation	20
BTEC Diploma in Therapeutic Counselling	20
Certificate in Education and Training	20
Diploma in Leadership for Health and Social Care and Children's and Young People's Services	20
Diploma in Visual Display and Branding for Fashion Retail	10
Diploma in Conveyancing Law and Practice (Regulated)	10
Certificate for the Advanced Practitioner in Schools and Colleges	10
Diploma for ICT Professionals (Systems and Principles)	10
Diploma in Salon Management	10
Diploma in Intelligence Operations	10
Certificate in Enhancing Eyebrows with Microblading Techniques	10

Source: ILR (R14) 2018/19 and HESA data 2018/19

3.4 APPRENTICESHIP PROVISION

Overall volumes and trends

The total number of apprentices taking Level 4 or Level 5 apprenticeships in 2018/19 was 12,180. Some 6,660 were pursuing a Level 4 apprenticeship and another 5,520 were undertaking a Level 5 apprenticeship. Of these, 3,830 Level 4 apprentices and 3,300 Level 5 apprentices were new starts[5].

Figure 3.40 Apprenticeship volumes 2018/19

2018/19	Starts	Total On-Programme
Level 4	3,830	6,660
Level 5	3,300	5,520
Total	7,130	12,180

Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

The proportion of the 18-64 population taking Level 4/5 apprenticeships was lower in Greater London than in England (1.2 apprenticeships in Greater London compared to 1.6 in England, per 1,000 of the 18-64 year old population).

Figure 3.41: Apprenticeships per 1,000 of the 18-64 year old population

Level	Apprenticeships per 1,000 of the 18-64 year old population
Greater London	1.2
England	1.6

Source: 2018/19 and Mid-Year Population Estimates 2018

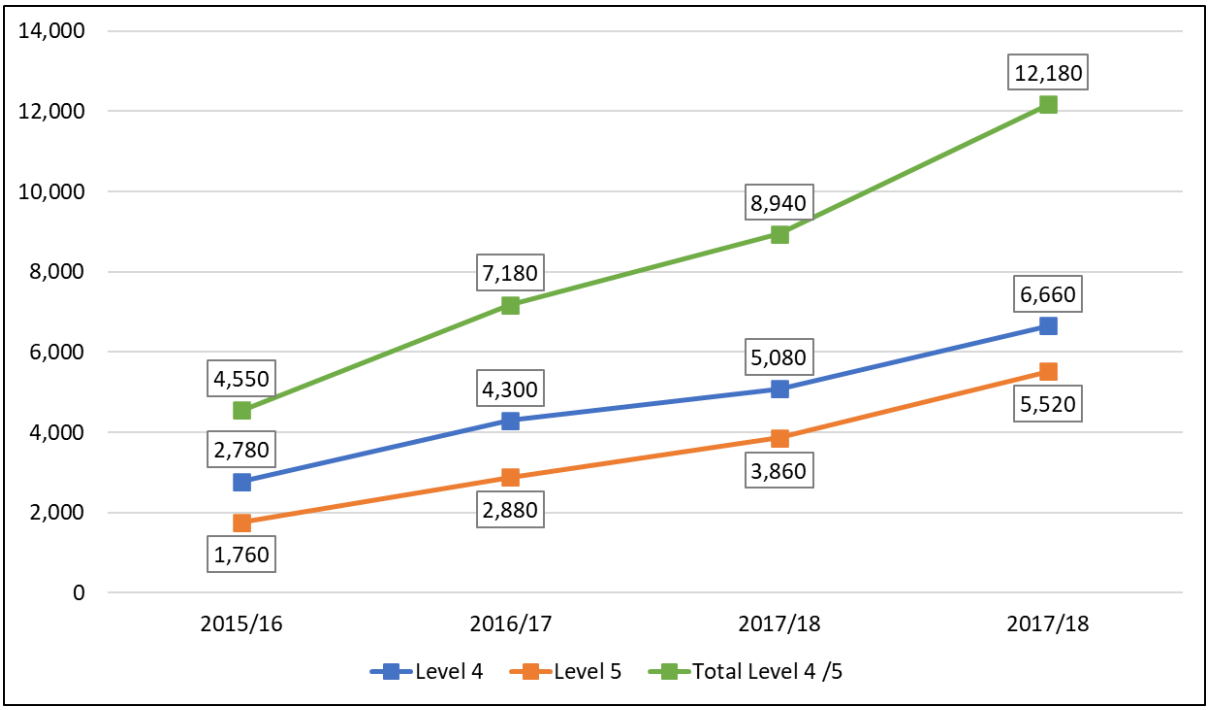
The number of Level 4/5 apprentices increased by 168% between 2015/16 and 2018/19 (from 4,550 to 12,180).

Level 4/5 apprenticeship starts at private training providers increased significantly over the four-year period (up by 3,820) whilst, over the same period, apprenticeship starts at FECs fell by 400. Higher education institutions undertook virtually no Level 4/5 apprenticeship training in 2015/16 but in 2018/19 had more apprenticeship starts (1,030) than in FECs.

Covid-19 is likely to have a major impact on apprenticeship starts and completions in 2019/20 but this data is not currently available.

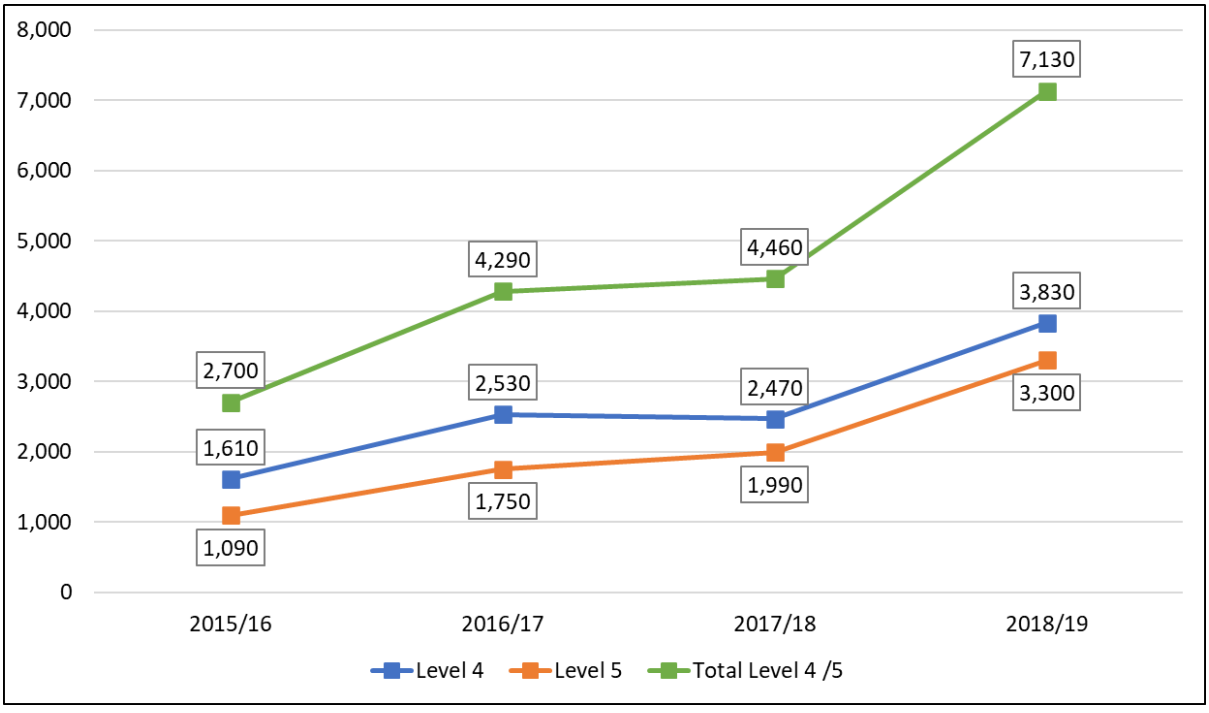
[5] Published apprenticeship data from ESFA predominately uses 'starts' rather than total numbers to measure apprenticeship volumes.

Figure 3.42: Trends in apprenticeship numbers (total on programme) by level of study



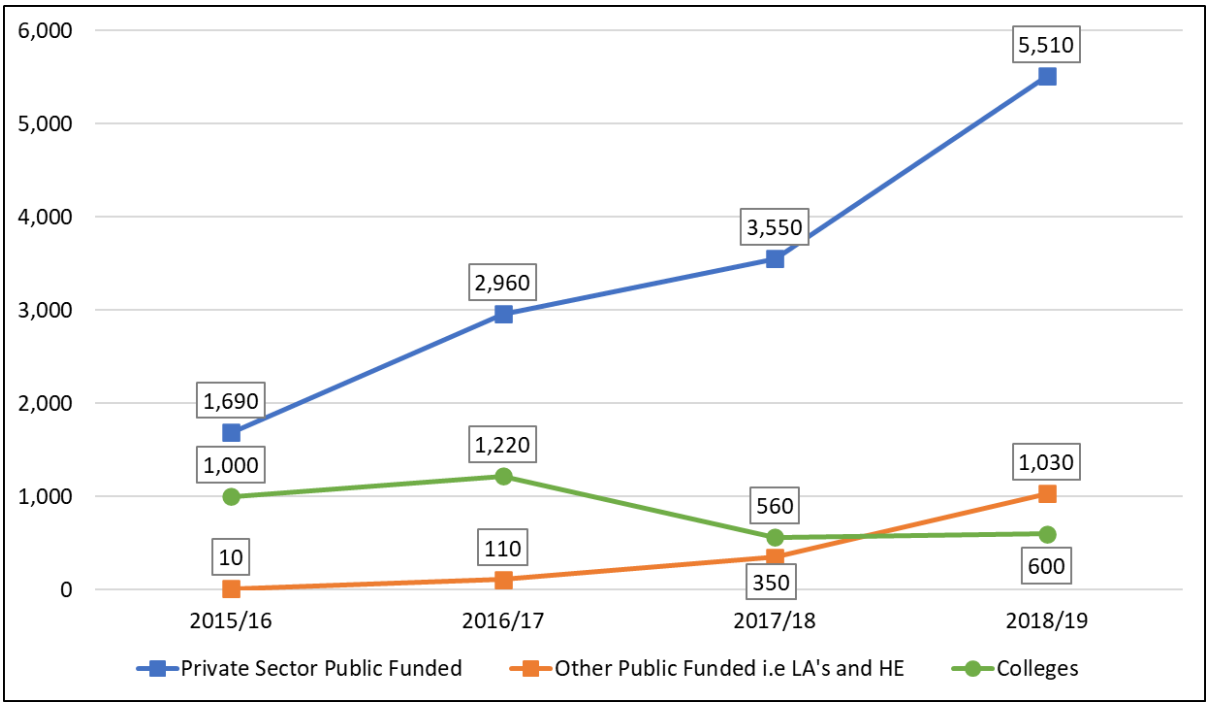
Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

Figure 3.43: Trends in apprenticeship numbers (starts) by level of study



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

Figure 3.44: Trends in apprenticeship volumes (starts) by provider type



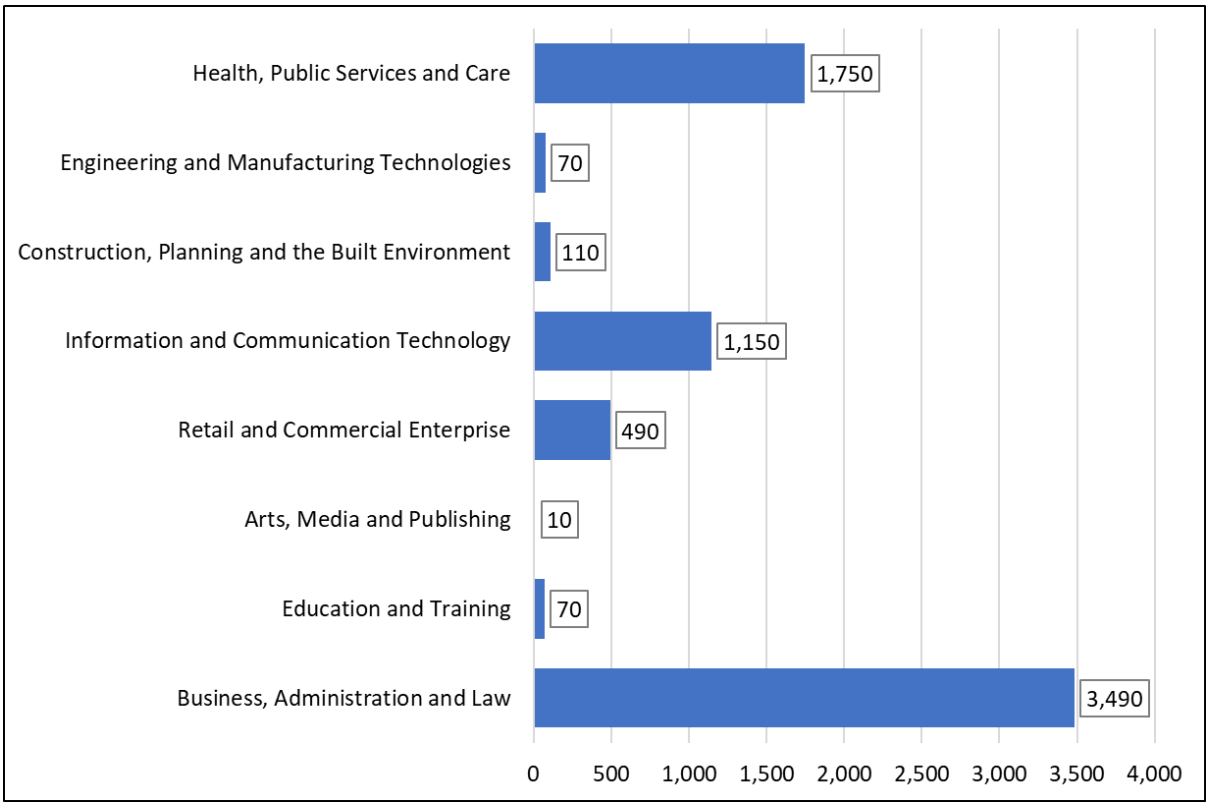
Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

Subject areas

Figures 3.45 and 3.46 compare the profile of Level 4 and 5 apprenticeship subject areas taken by London residents with England as a whole. In general, the pattern of provision is similar with Business, Administration & Law and Health, Public Services & Care being the most popular subject areas. In London, however, there was a higher proportion of apprenticeships in Information & Communications Technology and a much lower proportion in Engineering & Manufacturing Technologies (in 2018/19 only 70 residents of Greater London started an apprenticeship in this subject area).

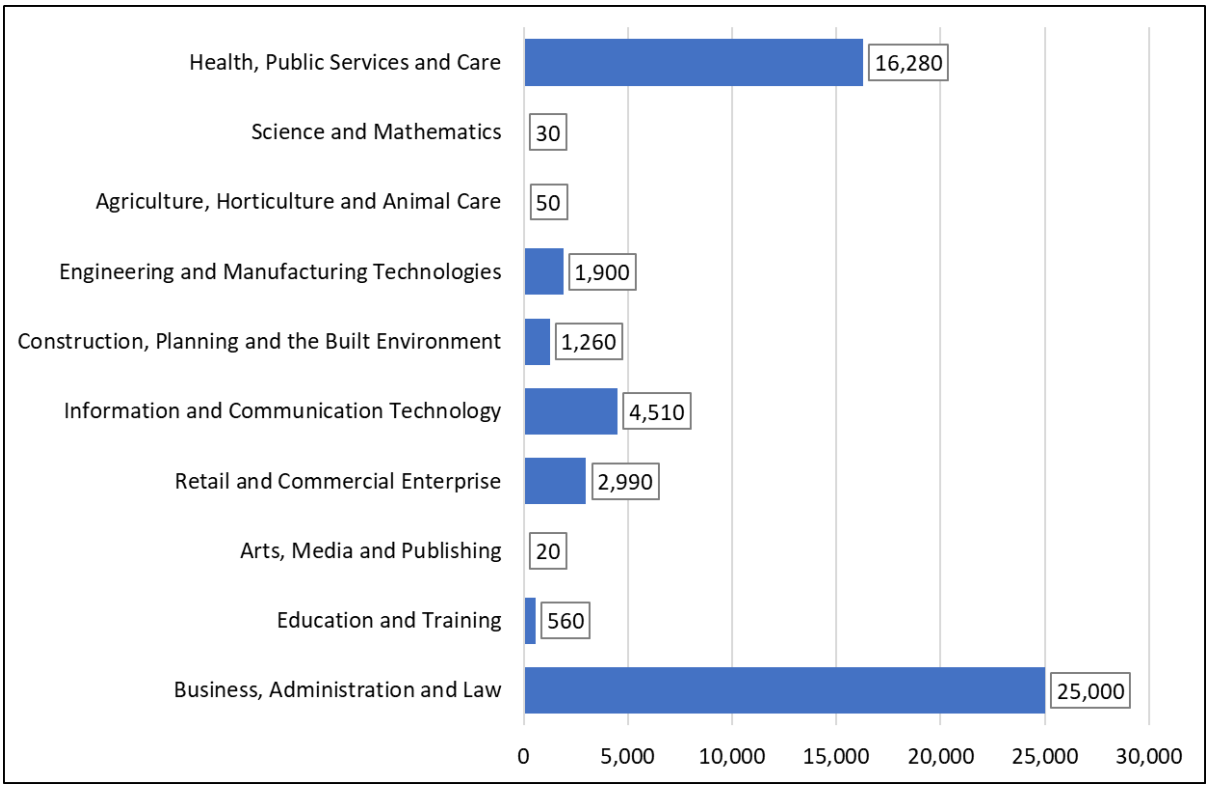
Figure 3.47 lists the top Level 4/5 frameworks and standards taken by Greater London residents in 2018/19. The most popular Level 4/5 apprenticeships were in Operations/Departmental Manager, Nursing Associate, Care Leadership & Management and Project Management.

Figure 3.45: Level 4/5 apprenticeship starts by sector subject area (Greater London)



Source: ILR (R14) 2018/19

Figure 3.46: Level 4/5 apprenticeship starts by subject area (England)



Source: ILR (R14) 2018/19

Figure 3.47: Level 4/5 apprenticeship starts by framework/standard[6] (40 or more starts)

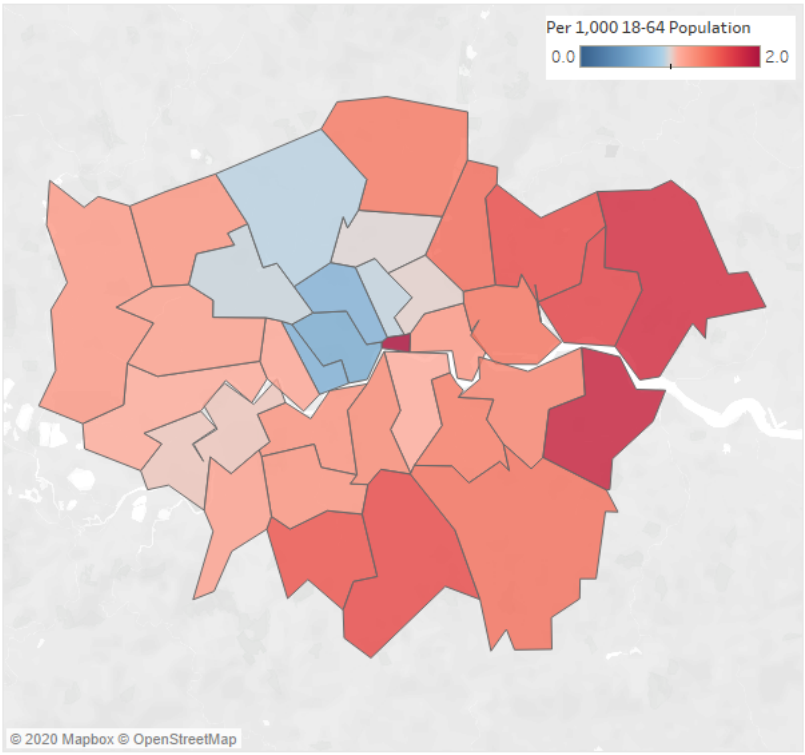
Frameworks/Standards	Number of Apprenticeships
Operations / Departmental Manager (F)	1490
Nursing Associate (F)	670
Care Leadership and Management (S)	620
Associate Project Manager (S)	610
Data Analyst (S)	560
Retail Manager (S)	290
Professional Accounting / Taxation Technician (S)	290
HR Consultant / Partner (S)	270
Business Administration (S)	260
Software Developer (F)	250
Associate Ambulance Practitioner (S)	160
Hospitality Manager (F)	160
Management (S)	140
Healthcare Assistant Practitioner (S)	130
Network Engineer (S)	120
IS Business Analyst (F)	100
Commercial Procurement and Supply (F)	90
Construction Management (S)	80
Investment Operations Specialist (F)	70
Cyber Security Technologist (F)	60
Insurance Professional (F)	50
Children,Young People and Families Manager (F)	50
Sales Executive (F)	40
Policy Officer (S)	40

Source: ILR (R14) 2018/19

[6] F= Framework, S = Standard

Participation by London borough

Figure 3.48: Level 4/5 apprenticeship starts by London Borough

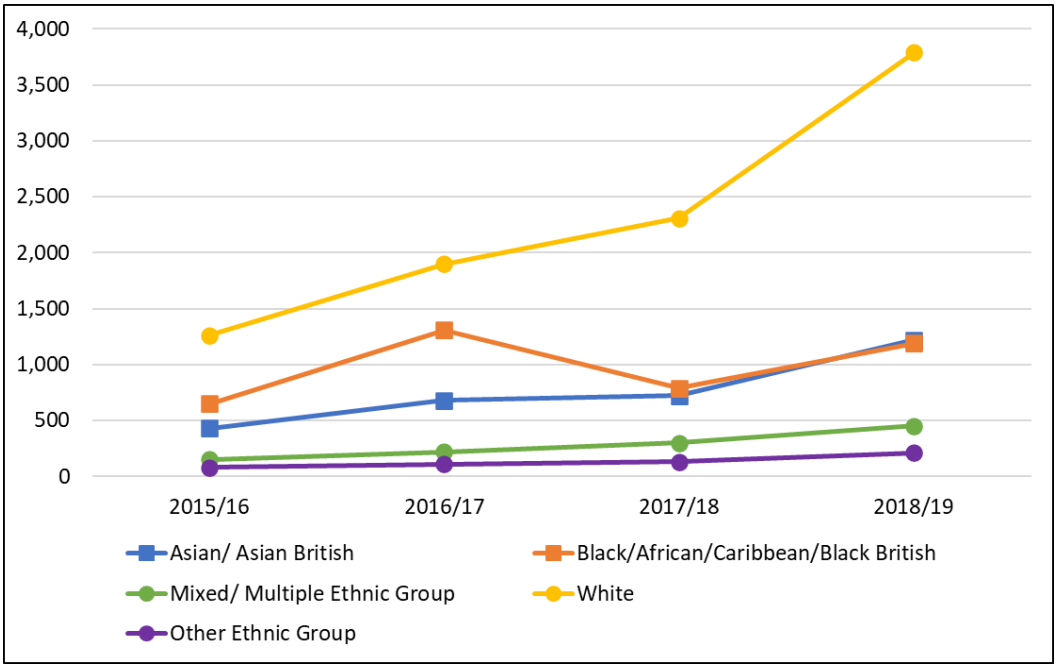


Level 4/5 apprentices were more likely to live in outer London rather than central London with the highest concentrations being in Bexley, Havering, Barking & Dagenham and Croydon.

Source: ILR (R14) 2018/19

The number of apprentices who are White has doubled between 2015/16 and 2018/19. The number of Black/African/Caribbean/Black British apprentices increased by 84%.

Figure 3.49: Level 4/5 apprenticeship starts by ethnic group



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

3.5 SUMMARY

- Participation by Londoners at Levels 4 and 5 is small (30,000 in total). Three out of five are enrolled on courses. The great majority are studying for qualifications. The rest are studying for credits. Two out of five are pursing apprenticeships. Total participation is slightly larger at Level 5 than at Level 4.

- Overall participation by Londoners at these levels has increased by 18% in the recent period (2015/16-2018/19). Those joining apprenticeships accounted for all this growth. Course enrolments dropped by about 15%. The increase is highest at Level 4. Private providers are predominant in the expansion of apprenticeships.

- Over one-third of Londoners are registered at providers outside the capital. However, some of these students will be taught at a location in London, under sub-contractual arrangements with another provider or at the London campus of the registering institution.

- Course enrolments are largest at Level 5. Most students are older adults. There are roughly equal numbers of White and non-White students. Most of the course population is qualified to Level 3. Over one-quarter of those enrolled at higher education institutions already hold a qualification at Level 6 or above. Only a small number of students hold advanced learner loans.

- Apprenticeship starts are most popular in the same fields as for course enrolments: business, administration and law followed by health, public services and care. There is significant variation in the uptake of courses and apprenticeships by residents of different boroughs.

- Our conclusions and recommendations take account of participation trends and patterns in London, the geographical reach of institutes of technology and the potential need for additional centres and hubs.

PART FOUR: PRIORITY SECTORS AND HIGHER LEVEL SKILLS IN LONDON

4.1 INTRODUCTION

This part of the report is addressed to features of the five priority sectors identified in the remit for the research. The sectors selected for study are:

- Tech and digital
- Culture and creative industries
- Health and social care
- Low carbon and environmental goods and services
- Advanced urban services

These five areas are drawn from a larger group of sectors which, for the GLA, have a key role to play in the future London economy. In *Skills for Londoners* (GLA 2018c), seven sectors are singled out for growth. Four of the five priority areas are contained in this listing. Health and social care is not included in the seven but there is a connection with life sciences, one of three additional sectors along with financial and business services and tourism. The seven sectors feature in *The Mayor's Economic Development Strategy for London* (GLA 2018b) and *The London Plan* (2019c).

The reference to 'industries', 'services' and 'goods' in the titles of the five priority areas is evidence of different orders of activity. Conceptually, they signal a range of purposes, processes, movements and directions. Empirically, they encompass a variety of organisational settings and knowledge-innovation systems. On the ground, they represent a mix of established undertakings, new spheres and emerging areas.

As illustrated in the composition of our fieldwork sample (Annex B), the span of sector-related organisations and occupations is wide. On the one side are knowledge-intensive organisations, many with regulated occupations requiring mandated qualifications in specialist fields. Professional or expert practice is associated with graduate status but new and changing roles demand high-level capabilities in the wider workforce. On the other are commercial enterprises, ranging from global corporations and international businesses (often with complex supply chains) through to small and medium-sized enterprises. Some recruit at a variety of levels. Some operate their own training systems, including industry certification. Some look to external organisations for the education and professional development of their workforce. Others rate experience and self-teaching above academic qualifications.

All would regard themselves as learning organisations, although their education and training activities and their relationships with universities and colleges differ considerably. Their operating environments are dynamic, each with their own diversities, fluidities and overlaps. The terms 'ecosystem', 'skills ecosystem' and 'high-skills ecosystem' are sometimes used to capture the interdependencies between education, training and innovation in actual or potential well-functioning zones of economic activity (Hodgson and Spours 2016, 2017).

These features pose definitional and methodological questions for our quantitative mapping and qualitative understanding. These are discussed in the next section. Following that, we report the quantitative and qualitative findings that bear on the priority sectors. In the case of advanced urban services, no single agreed definition is available to inform a full analysis.

4.2 METHODOLOGICAL MATTERS

In this part of the report, quantitative data and qualitative data is brought together to map and illustrate how Levels 4 and 5 are represented in the priority areas. The quantitative and qualitative components of the research design and methodology are described in Annex A.

Analysis of quantitative data

Learner datasets such as the ILR and HESA datasets classify courses within academic disciplines using coding structures such as Sector Subject Areas (SSA) or the Joint Academic Coding System (JACS). These course coding systems do not map directly to occupations or industrial sectors which have their own coding systems. Occupations are traditionally defined using Standard Occupation Classification codes (SOC codes) and industries using Standard Industry Classification codes (SIC codes).

A direct mapping between course, occupation and industrial sector would, on the face of it, seem to be very valuable as it would allow detailed quantitative comparisons between skills supply and skills demand. However, a high degree of caution is required about the feasibility of such a 'mapping process' for the following reasons:

- Many courses, particularly at Level 4 and 5, are not specific to a particular occupation or industry but provide more general skills appropriate to a wide range of different occupations (such as the HNC in Business) or provide progression to higher levels of study.
- Occupational specialisms may be embedded in pathways or modules within an overarching course. These specialisms may not be apparent in public student datasets.
- In some instances, a student may need to take several 'courses' to become qualified for a particular occupation.
- Many 'non-prescribed' courses within the ILR provide continued professional development for individuals who are already working in a particular occupation. The title of the course may or may not be specific to their main occupational specialism (as in some management or information technology courses). Many Level 4/5 students are older adults who are studying part time.

Whilst some programmes have a primary purpose of providing entry to a specific occupation (such as apprenticeship standards) many courses have a wider range of aims and objectives. Mapping between course and occupation is likely to be extremely inaccurate with the risk of either under or over counting (irrespective of any mapping methodology that is used).

Particular issues exist with priority sectors that are new or developing (such as advanced urban services). In these sectors, a range of skills from different disciplines will be required and as yet few courses exist that are specifically targeted at these areas.

In the analysis below we have taken a pragmatic approach and one that is specific to each priority sector. The aim has been to provide useful information and insight to stakeholders and policymakers based on information that we feel is credible (but may not be complete) recognising the challenges and methodological issues discussed above.

Use of documentary and fieldwork data

The qualitative data on each of the priority sectors is drawn from documentary sources on the one side and fieldwork and interview studies on the other. Documentary sources are reviewed to comprehend the nature

and scope of the sectors themselves as well as their specific features. Documents published by the GLA are examined for policy statements and strategic positions on key sectors. Relationships between the GLA priority sectors and the occupational maps, pathways, clusters and standards set out by the IfATE are described. For each sector, the relevant apprenticeship titles at Levels 4 and 5 are identified.

Our fieldwork with providers and employers was designed to engage with the five priority sectors. Our starting point for identifying providers and employers was the three institutes of technology in London. Their proposed sector specialisms each find a place in one or more of the five priority areas. Five interviews were carried out with representatives of the higher education institutions and further education colleges that were partners to an IoT. Six interviews were conducted with representatives of employer organisations that were named partners to an IoT (or which worked closely with the education providers in the IoT).

Representatives of another nine employer organisations were interviewed. These were selected for their sector affiliations, their size and their relationships with education providers (including some with an employer-led skills organisation. Outside the IoTs, an additional seven interviews were conducted with education providers which offered courses and apprenticeships at Levels 4 and 5 in one or more of the priority sectors. Two of these were private training organisations and one was a national college based in London. Our final five interviews were with representatives of awarding bodies.

Although the selection of fieldwork sites was guided by a sampling frame, there is no claim to representativeness. The main purpose of the fieldwork was to understand the conditions under which providers, employers and awarding bodies contributed to education and training at Levels 4 and 5. Their perspectives are reported here and, more fully, in Part Five. The design and methodology of the fieldwork, interview and documentary studies are given at Annex A.

4.3 TECH AND DIGITAL

Quantitative mapping

London has a thriving tech community which is growing rapidly and driving much of the innovation in Europe. More than a third of all the tech giants in Europe are based in London and in 2017, digital tech turnover reached £64bn, up from £56bn in 2016 (GLA 2018b). London is the digital capital of Europe, and the impact of constantly changing digital technology touches all sectors of the London economy.

The GLA *Economic Development Strategy for London* (2018b) states however:

> *For all London's strengths, the technology sector still faces barriers to growth. Some technology firms report challenges in accessing the finance and the talent they need to grow…. The Mayor will work through his Skills for Londoners Business Partnership to shape skills provision funded by the devolved AEB, through the delivery of his 'Digital Talent' programme, and through supporting the establishment of Institutes of Technology in digital skills*.

A GLA Economics Working Paper on *The science and technology category in London* (GLA Economics 2015) defines digital technologies as a subcategory of science and technology, covering computer services and computer & electronic manufacturing including: software development, internet services, computer consultancy, and design and publishing of computer games and other software. The *Mayor's Economic Development Strategy for London* (GLA 2018b) highlights the increasing importance of cutting-

edge technologies such as artificial intelligence, robotics, and virtual and augmented reality within this category.

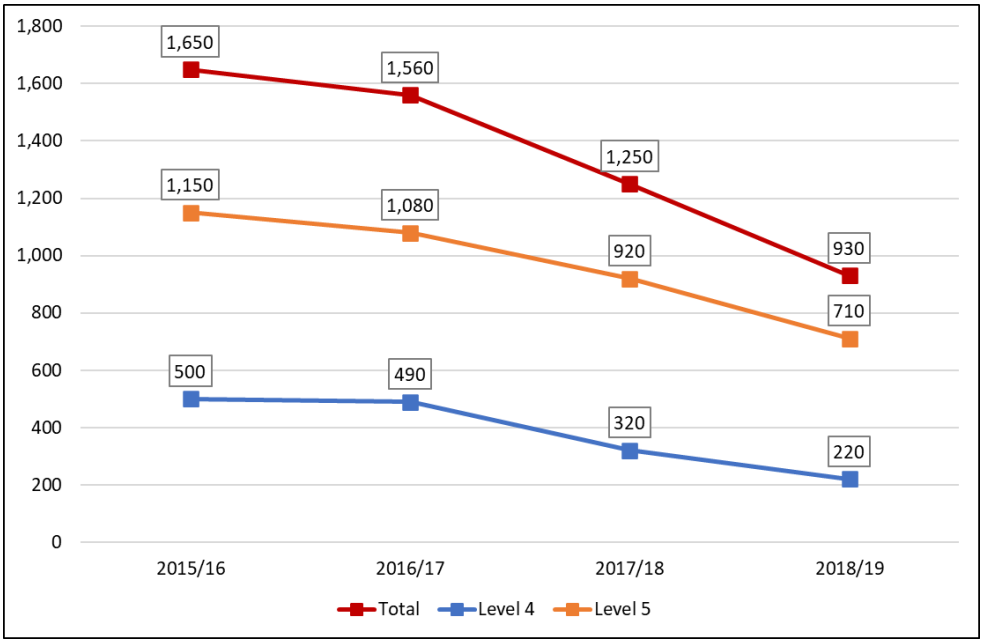
Some level of digital skills is likely to be included in a very wide range of different courses. Our analysis, however, focuses specifically on Level 4 and 5 provision that aims to provide specialist knowledge and skills in this area. The definition of technology and digital courses used within the analysis, which is consistent with the key areas outlined in the strategy documents, is:

- ILR Sector Subject Area 6.1: Information and Communications Technology Practitioners.
- ILR Sector Subject Area 4.1: Engineering – specifically those courses covering telecommunications, electronic engineering, robotics, computer engineering or other courses relevant to the tech and digital sector.
- Courses on the HESA dataset mapped to these sector subject areas using JACS codes.

Course provision (excluding apprenticeships)

The total number of London residents taking Level 4/5 technology and digital courses fell by 43% between 2015/16 and 2018/19. The fall was greatest at Level 4 and, by 2017/18, 76% of technology and digital students were taking Level 5 courses.

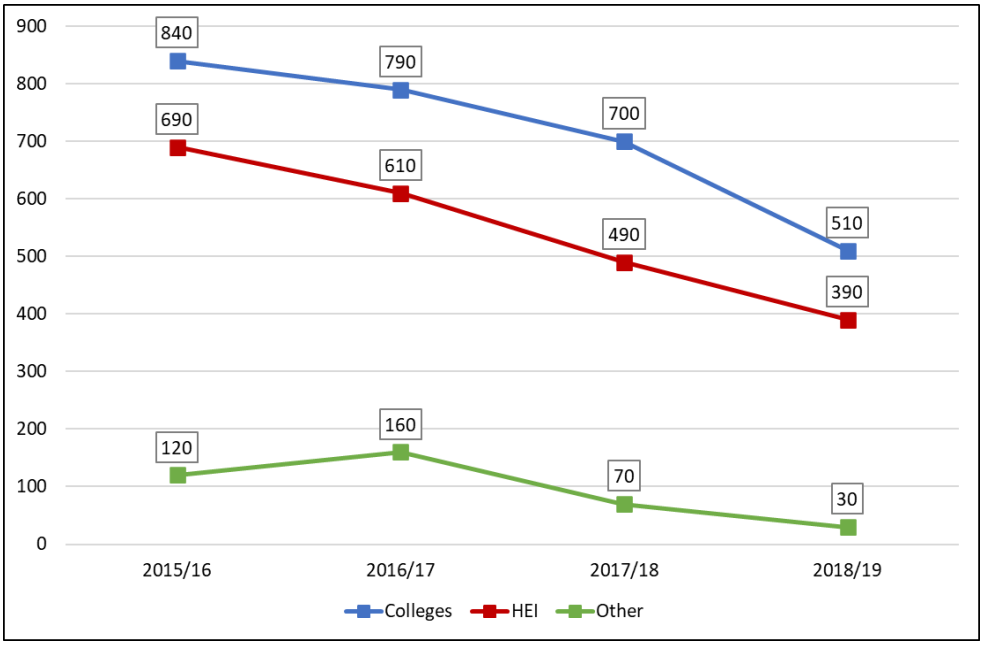
Figure 4.1: Tech and digital: trends in student numbers by level of study



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

Student numbers fell at all provider types, but the decline was greatest at HEIs. In 2018/19 55% of technology and digital students were studying at a further education college, 42% at an HEI and 3% at a private provider.

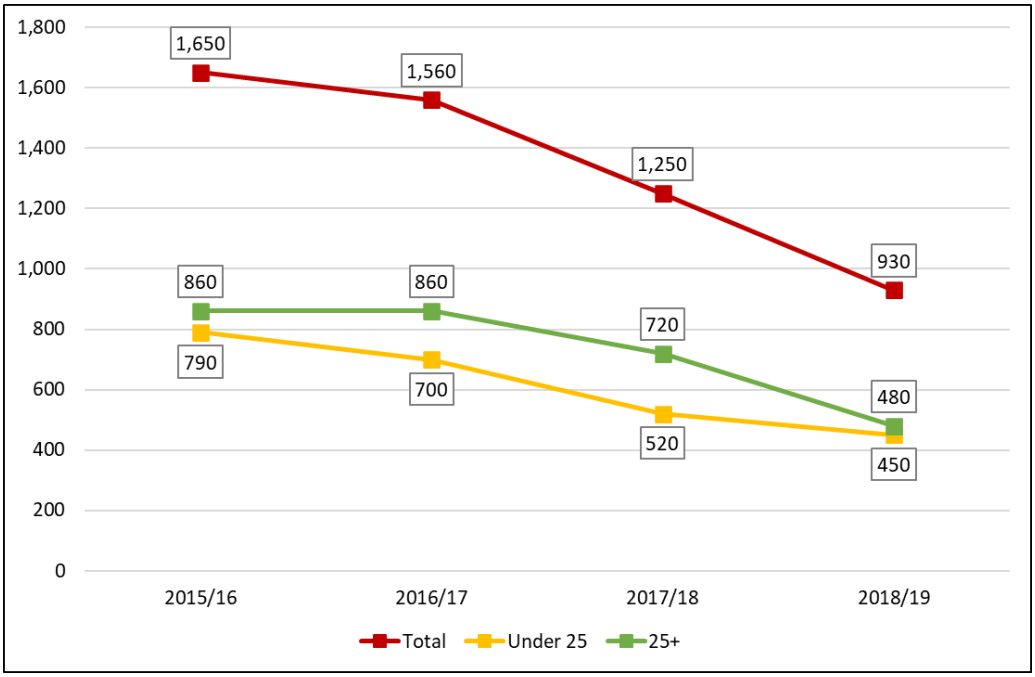
Figure 4.2: Technology and digital: trends in student numbers by provider type



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

The decline in technology and digital Level 4/5 student numbers can be seen in both age groups, with those aged under 25 decreasing by 43% and those aged 25+ decreasing by 44% over the four-year period.

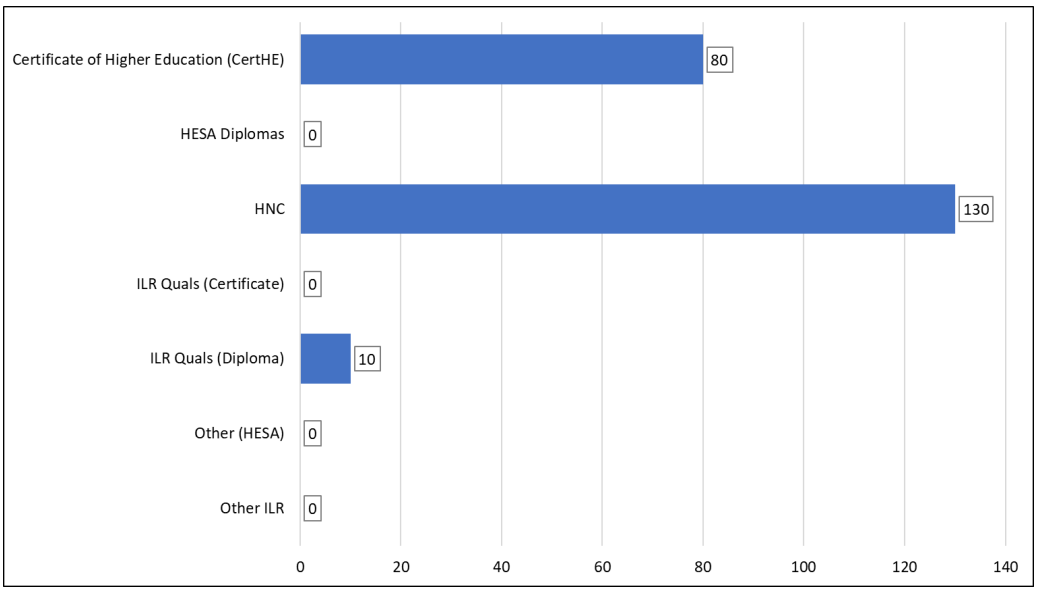
Figure 4.3: Tech and digital: trends in student numbers by age band



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

Over half of Level 4 technology and digital students were taking an HNC. The remainder were either enrolled on a CertHE or were taking a qualification classified as a 'diploma' on the ILR.

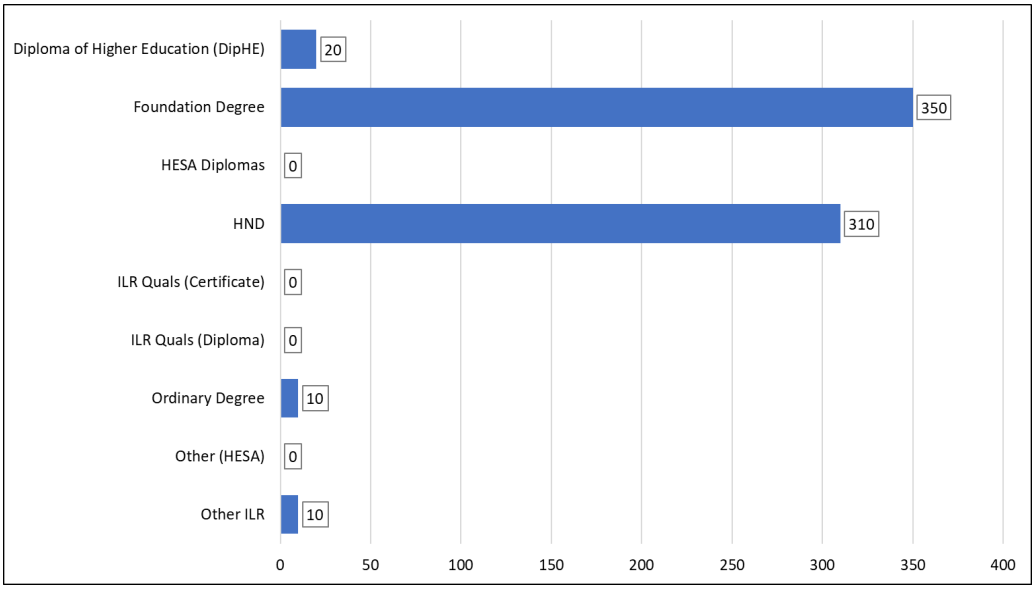
Figure 4.4: Tech and digital: Level 4 students by qualification type



Source: ILR (R14) 2018/19 and HESA data 2018/19

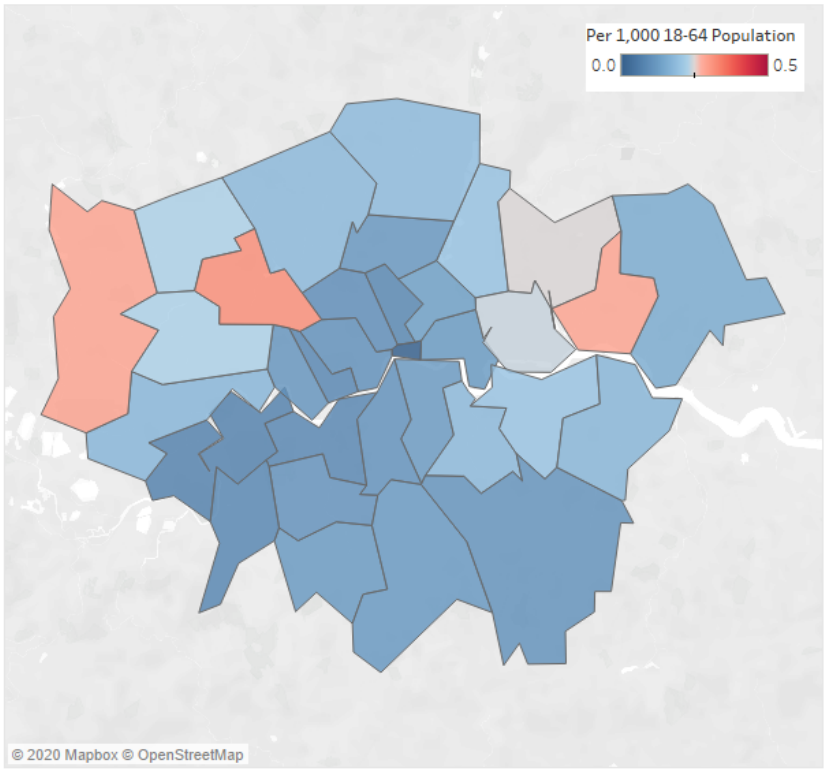
Almost all (95%) Level 5 technology and digital students were taking either a Foundation Degree or a HND. The HNDs included those awarded directly by Pearson and those awarded by a HEI under licence from Pearson.

Figure 4.5: Tech and digital: Level 5 students by qualification type



Source: ILR (R14) 2018/19 and HESA data 2018/19

Figure 4.6: Total number of tech and digital students per 1,000 of the 18-64 Population



The largest concentrations of Level 4/5 technology and digital students were in the boroughs of Brent, Barking and Dagenham and Hillingdon. Numbers in central and south London were relatively low.

Source: ILR (R14) 2018/19 and HESA data 2018/19

In 2018/19 there were 11 courses with 20 or more enrolments in this priority area, nine of which were HNCs, HNDs or Foundation Degrees. The course with the largest number of technology and digital students in 2017/18 was the BTEC HND in Computing with 220 learners.

Figure 4.7: Tech and digital: top courses

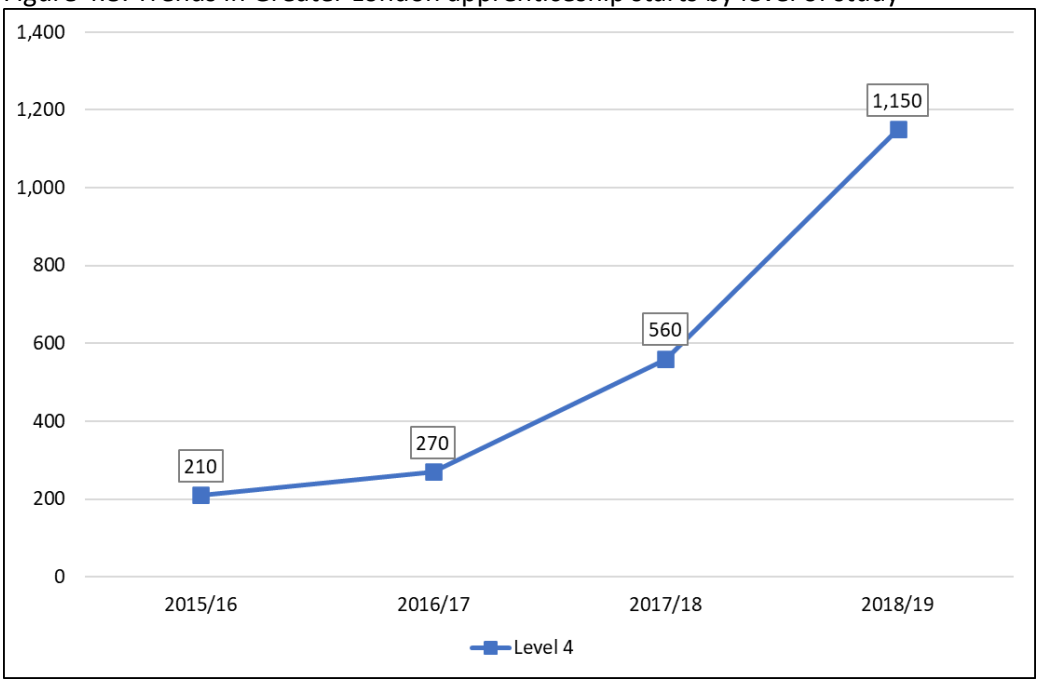
Top Courses	Volume
BTEC Higher National Diploma in Computing	220
Foundation degree in Computational science foundations	100
Foundation degree in Computer science	90
BTEC HND Diploma in Computing and Systems Development (QCF)	70
BTEC Higher National Certificate in Computing	70
Certificate of Higher Education (CertHE) in Others in Computer sciences	30
Foundation degree in Information systems	30
Certificate of Higher Education (CertHE) in Computer science	30
Higher National Certificate (HNC) in Electronic & electrical engineering	30
Foundation degree in General engineering	20
Foundation Degree in Computing Software Engineering	20

Source: ILR (R14) 2018/19 and HESA data 2018/19

Apprenticeship provision

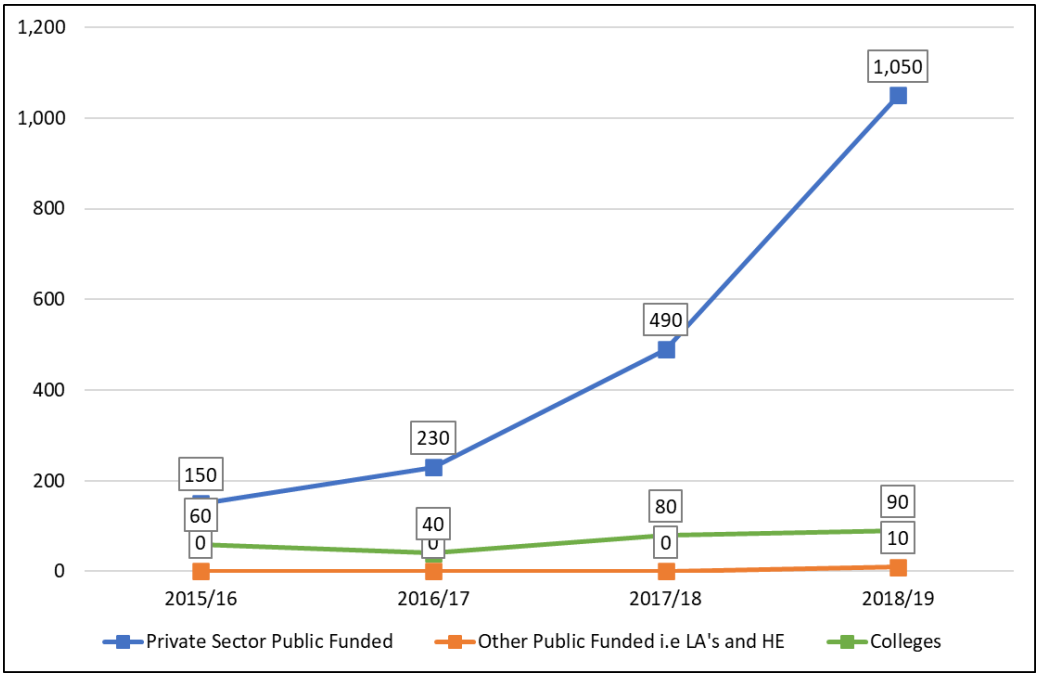
The number of technology and digital apprenticeships significantly increased between 2016/17 and 2018/19 (increasing from 210 to 1,150). Most of this growth was via private training organisations.

Figure 4.8: Trends in Greater London apprenticeship starts by level of study



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

Figure 4.9: Trends in Greater London apprenticeship starts by provider type



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

The numbers of apprenticeship starts in 2018/19 by London Borough (rounded to nearest 10), based on the learners home domicile postcode, are shown in Figure 4.10.

Figure 4.10: Number of apprenticeship starts by London borough

Number of Starts 2018/19, Final	Number of Apprenticeships
City of London	<5
Barking and Dagenham	40
Barnet	40
Bexley	40
Brent	30
Bromley	30
Camden	30
Croydon	50
Ealing	50
Enfield	30
Greenwich	30
Hackney	50
Hammersmith and Fulham	20
Haringey	40
Harrow	30
Havering	30
Hillingdon	30
Hounslow	30
Islington	40
Kensington and Chelsea	10
Kingston upon Thames	20
Lambeth	60
Lewisham	40
Merton	30
Newham	60
Redbridge	60
Richmond upon Thames	10
Southwark	50
Sutton	20
Tower Hamlets	70
Waltham Forest	50
Wandsworth	40
Westminster	20

Source: ILR (R14) 2018/19

The most popular apprenticeships in terms of new starts in 2017/18 were the Data Analyst standard and the Software Developer standard.

Figure 4.11: Number of apprenticeship starts by framework/standard

Frameworks/Standards 2018/19	Number of Apprenticeships
Data Analyst (S)	560
Software Developer (S)	250
Network Engineer (S)	120
IS Business Analyst (S)	100
Cyber Security Technologist (S)	60
Software Tester (S)	30
IT and Telecoms Professionals (F)	30
Unified Communications Trouble Shooter (S)	10

Source: ILR (R14) 2018/19

Qualitative commentary

The definition of digital sector used by the UK Government in its *UK Digital Strategy* is that developed by the OECD: the production of goods and services 'primarily intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display' (HM Government 2017). Given that there are many people working in digital occupations which are not within digital sectors and many more making use of digital technology to do their work, the term 'digital economy' is used in official documents to encompass this larger and wider territory. There is no internationally accepted definition of the digital economy.

Employer demand for digital skills is the subject of a recent analysis commissioned for the Department for Digital, Culture, Media and Sport (Burning Glass 2019). Here, a distinction is made between baseline digital skills (basic spreadsheet and word processing skills required for the vast majority of jobs in all sectors) and specific digital skills. The former are generally addressed by qualifications at Level 2 and below. The latter describe the requirements for more technically oriented jobs in areas which use specific software tools, such as customer relationship management software, computer networking, digital media and design software, social media tools, and search engine analysis.

The study looked at the importance of digital skills at various levels of the market. It found that digital skills are essential entry requirements for two-thirds of occupations. They carry with them a wage differential over non-digital roles. Movement up the career ladder from low-skill to high-skill jobs is accompanied by increased demand for specific digital skills. In certain fields, there is a need to develop digital skills related to specific technical tools. In some roles, it is argued, the risk of automation is reduced where specific digital skills complement 'uniquely human skills'. In short, digital skills are in demand 'everywhere' but success in the digital economy is dependent on the acquisition and application of specialist skills.

According to the same study, London has the greatest demand for digital skills. This is spread across almost all sectors. Data and design skills are particularly important in the capital to meet the needs of the finance and creative industries. *Skills for Londoners* (2018c) reported a 90% growth in the number of digital businesses between 2006 and 2016. Employment in the digital technology sector was predicted to expand by almost one-fifth over the following ten years.

In the White Paper on *Industrial Strategy* (UK Government 2017a), each of the ten pillars to build the economy has a strong digital component. Through their local industrial strategies, the local enterprise partnerships were asked to play an increasingly active role in the improvement of skills and infrastructures, especially the use of digital technologies. The digital economy in London has benefited from the strength of science, research and innovation in the capital as well as from its conditions for businesses to start and grow. Its environmental, energy and transport infrastructures are targeted for smart technologies, although parts of London have poor digital connectivity.

In education, London is the location for the National College for Digital Skills, established with support from the GLA and the local enterprise partnership for London. Digital technologies and specialisms are among the subjects to be offered at the three institutes of technology in the capital. Digital (digital production, design and development) is one of the three T Level qualifications expected to be offered at four London institutions from 2020. They will be joined by another four providers in the capital from 2021. Approved higher technical qualifications in digital subjects will be taught from 2022.

Digital is one of the 15 routes referenced to apprenticeship and occupational standards. In this route, technical, higher technical and professional occupations are grouped into three pathways: digital business services; digital production, design and development; and digital support and services. The approved apprenticeship standards are all at Level 4. They include Software Developer, Software Tester, Network Engineer, Data Analyst, Digital Content Manager, Cyber Intrusion Analyst, Cyber Security Technologist and Unified Communications Trouble Shooter.

These and related apprenticeship titles are reported in our templates. Courses at Levels 4 and 5 which have digital subjects or specialisms in their curricula do not necessarily have digital in their titles, although this is changing. Course titles in computing or information and communications technology or electrical, electronic and software engineering are common. However, digital is prominent in the titles of courses in the areas of media, film and audio production as well as games animation and programming. We report these in relation to the cultural and creative sector. Across a variety of courses, digital might be a core element in the curriculum or the focus of specialist or elective modules.

At the four HEIs in our interview sample, there are only Level 6 courses and apprenticeships in these and related areas. The exception is an HND in Electronic and Electrical Engineering at one of these institutions. At another, the university is the validating and awarding institution for CertHE and DipHE courses in digital subjects related to music, film and animation at two specialist private providers in London. Included at one of the two providers are a CertHE and DipHE in Web Development. The same university is the validating institution for a FD in Computing (Software Engineering) at a college group in the capital.

At three of the seven FECs in our sample, there are a range of computing courses at Levels 4 and 5. Apprenticeships in tech and digital are less in evidence but are seen as a growth area. At the largest of the college groups, there are full-time HNDs in Computing (Network Engineering) and Computing (Software Engineering) together with a franchised FD in Computing. In each case, they offer progression to relevant bachelor degrees at partner universities. At another merged college, there are both full-time and part-time courses leading to HNCs and HNDs in Computing as well as FDs in Computing (Software Engineering). Three Level 4 apprenticeship standards are aimed at professionals in information technology, telecommunications and software development. At a third merged college, there are HNC and HND courses in Electrical and Electronic Engineering as well as in Computing and Computing Plus. All are studied on a full-time basis at this college.

At another two colleges, where provision was reduced as a result of refused registration by the OfS, there is currently no recruitment to HNCs and HNDs in computing or related subjects. At one of the colleges, a single apprenticeship is the only activity at Levels 4 and 5 in computing and digital. Both colleges are in membership of institutes of technology where digital is among the declared specialisms.

One of the private training organisations in our interview sample is a specialist provider in digital skills. This organisation is a wholly owned subsidiary of one of the colleges in our sample. It is a contributor to the GLA Digital Talent Programme. There are Level 4 apprenticeships designed for the Information Systems Business Analyst, Software Developer, Cyber Security Technologist, Cyber Intrusion Analyst, Software Tester and Network Engineer. At present, apprenticeships are its primary area of work. There was an HNC in Computing (Application Development) and an HNC in Computing (Network Engineering) but these are currently unable to be offered due to the college being refused registration by the OfS.

The apprenticeships in these digital specialisms carry professional recognition. In three cases, there is a requirement in the apprenticeship standard that apprentices must achieve one internationally recognised vendor or professional qualification (from a list in the standard). This organisation is also a provider of industry certifications, both online and face-to-face. These are short programmes and charged at commercial rates. Two are described as 'advanced': AgilePM Foundation and Practitioner Certification, and BCS Business Analysis Foundation Certificate. A third is 'intermediate': CompTIA Security Plus+ Global Certification. Other short courses are bespoke, full-cost and usually vendor specific (such as Microsoft or Cisco). They are described as 'short, sharp' courses and they do not appear on its website.

The other specialist provider in digital skills in our sample is a national college based in London. Two apprenticeships are offered at Level 4. One is a Digital Innovation apprenticeship aligned to the Software Developer standard. The other is a Data Analytics and Visualisation apprenticeship aligned to the Data Analyst Standard. Each has a foundation degree as its embedded qualification. Both have an optional third year of study to 'top up' to a full bachelor degree. The numbers at Level 4 totalled 120. Another 110 are at Level 6.

For employers in our sample, digital literacy is a general requirement for all or most positions. The extent to which they sought specific digital skills varied by sector, by organisation and by the technical and specialist demands of job roles. Some employer organisations have a clear understanding of what they want. At the higher levels, they judge whether in-house programmes, specialist training courses or apprenticeships are the best vehicles to enhance the digital skills of their workforce.

Demand for short and tailored courses is strong, especially but not exclusively for industry certifications. Commercial training organisations are often the preferred type of provider. In approaching employers, especially those uncertain about their needs, the starting point is 'offering training solutions rather than selling courses'. Computer coding and digital marketing are among the other skillsets sought by employers in our sample. Where a Level 4 or Level 5 apprenticeship is the chosen model, demand for standards serving data analyst, business analyst and network engineer roles is reported to be growing. It is held to be increasing as well in the areas of cyber security, artificial intelligence, machine learning and robotics.

Universities, colleges and training organisations face similar problems in attracting, equipping and retaining staff with industry expertise. One of the employer organisations in our sample – a market leader in 5G technology – had set up 'academies' in universities and colleges. Four are in London. Three are located at member institutions of institutes of technology. As yet, only at one is their much reported activity. For this

global employer, 'mainstream qualifications are frequently found wanting' and 'education is always playing catch-up'.

In order to meet present and future demand for industry professionals in telecommunications, the lack of expertise among teachers had to be tackled. The costs of staff training are met by the academies and students are not charged for their industry certifications. Earlier attempts to offer vendor qualifications alongside or inside the HNC or HND had met with little success, 'mainly because the pace of change was too fast'. In the digital domain, higher national nationals are 'not very valuable on their own'. It is 'mainly vendor qualifications that businesses value'.

Much of this is at odds with the views of start-ups in our sample. For them, qualifications are not the way their software engineers gained or enhanced their knowledge. Nor is it how they searched and recruited their expert workers: 'we are not very interested in educational backgrounds and we do not necessarily start by looking for graduates'. On the tech side, it is about 'a passion for projects'. We look for people with at least two or three years work experience. There are high expectations of self-learning through the open source community: 'all our engineers get to work on everything' and 'we encourage the sharing of expertise internally'.

Digital skills by way of microqualifications or parts of qualifications are on the agenda of awarding organisations. One of the awarding bodies in our sample, an organisation whose work is focused on London, has a flexible suite of qualifications in Digital Marketing. These consist of ten single unit Awards, a Level 4 Certificate and a Level 4 Diploma. Students are able to start a substantial programme of study from the outset or build up in 'bite-sized chunks'. It is designed to be used as a standalone qualification or as continuous professional development. Level 4 Awards are available in Essentials of Digital Marketing, Marketing Fundamentals, Digital Advertising, Content Marketing, Digital Analytics, Digital Marketing Planning, Search Engine Marketing, Online Customer Experience, Email Marketing Essentials and Social Media Marketing.

4.4 CULTURE AND CREATIVE INDUSTRIES

Quantitative mapping

The creative and cultural sector contributes to the quality of life and well- being of Londoners, with concentrations of growth in areas such as Poplar – the starting point of the East London fashion cluster. According to *Skills for Londoners* (GLA 2018c), the creative industries are one of the fastest growing sectors of the London economy and across the UK. The number of people working in these industries is growing at almost three times the national average. In London, the creative industries generate £47bn per annum and the creative economy accounts for one in six jobs.

The GLA Economics Working Paper *London's Creative Industries* (2017) defines occupations within the sector using definitions developed by the Department for Culture, Media & Sport (DCMS)[7]. The analysis below is based on a mapping between DCMS SOC codes and related Sector Subject Areas (and courses

[7] Annex B SOC codes from DCMS creative industries economic estimates. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/523024/Creative_Industries_Economic_Estimates_January_2016_Updated_201605.pdf

on the HESA dataset mapped to these SSAs) for occupations that require Higher Technical Skills (SOC broad categories 3 and 4). Course lists were generated from the SSA Tier 2 classification and non-relevant courses removed.

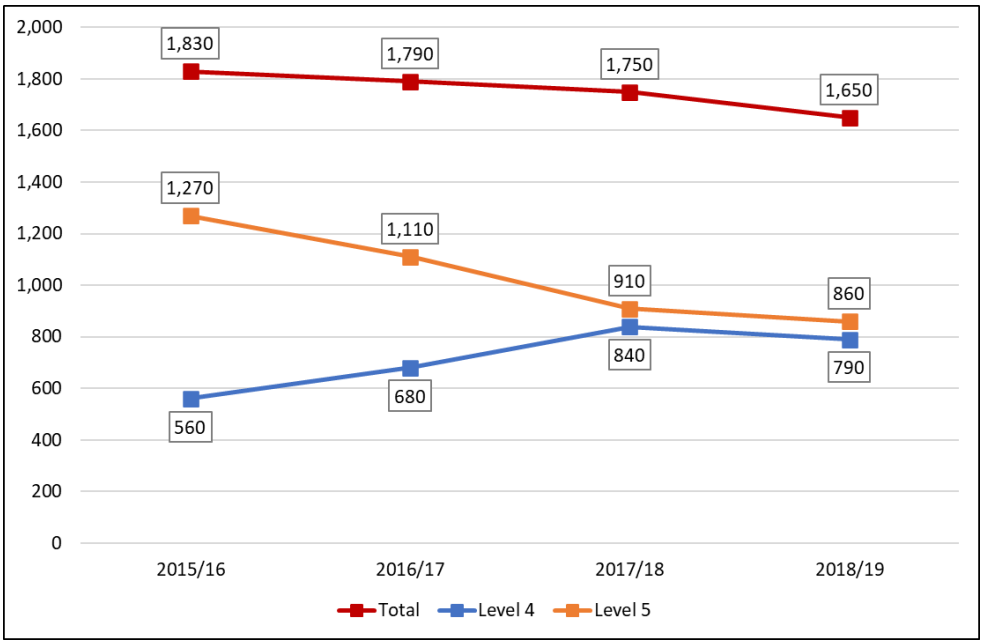
Figure 4.12: Creative and cultural definition – Level 4/5 courses

SOC	Occupation	SSA Tier 2
3121	Architectural technologists amd Town Planning technicians	5.1
3411	Artists	9.2
3412	Authors, Writers	9.4
3413	Actors, Entertainers	9.1
3414	Dancers and Choreographers	9.1
3415	Musicians	9.1
3416	Art officers, producers and directors	9.9
3421	Graphic designers	9.2
3422	Product, Clothing and related designers	9.2
3431	Journalists, Newspaper and Periodical editirs	9.4
3432	Brioadcasting associate professionals	9.3
3433	Public relations officers	9.3
3434	Photographers and Audio-Visual equipment operators	9.3
3543	Marketing associate professionals	15.4

Course provision (excluding apprenticeships)

The overall number of Level 4/5 London students in this sector declined by about 10% between 2015/16 and 2018/19. However, there was a big increase in Level 4 students (+41%) and a big decline in Level 5 students (-33%).

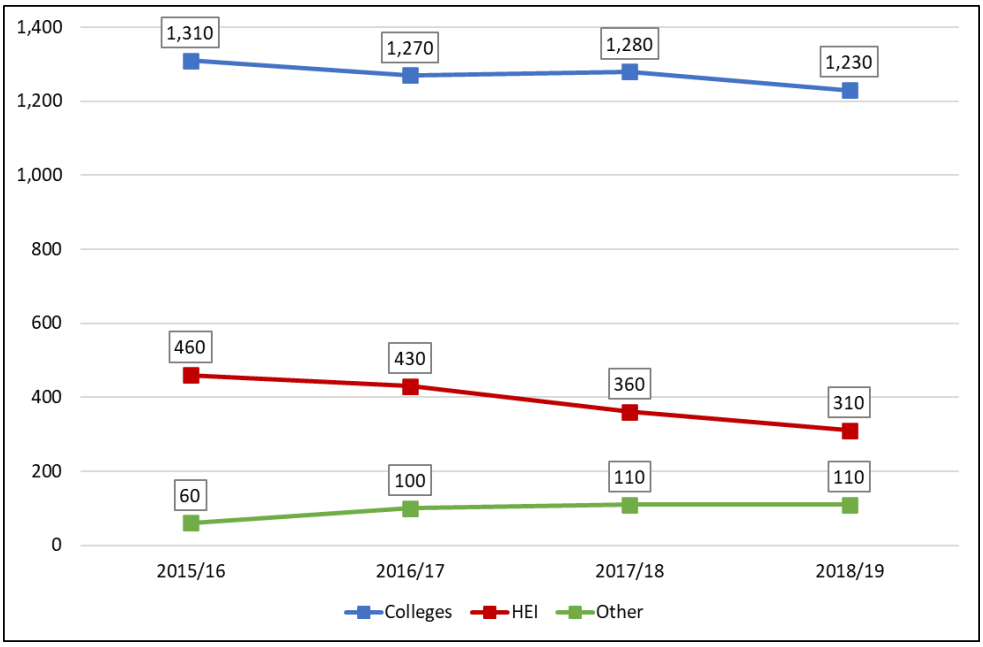
Figure 4.13: Creative and cultural: trends in student numbers by level of study



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

The majority of students in this category in 2018/18 (75%) were studying at a further education college with only 19% studying at an HEI. Over the three-year period between 2015/16 and 2017/18 the number of creative and cultural Level 4/5 students studying at an HEI fell from 460 to 310.

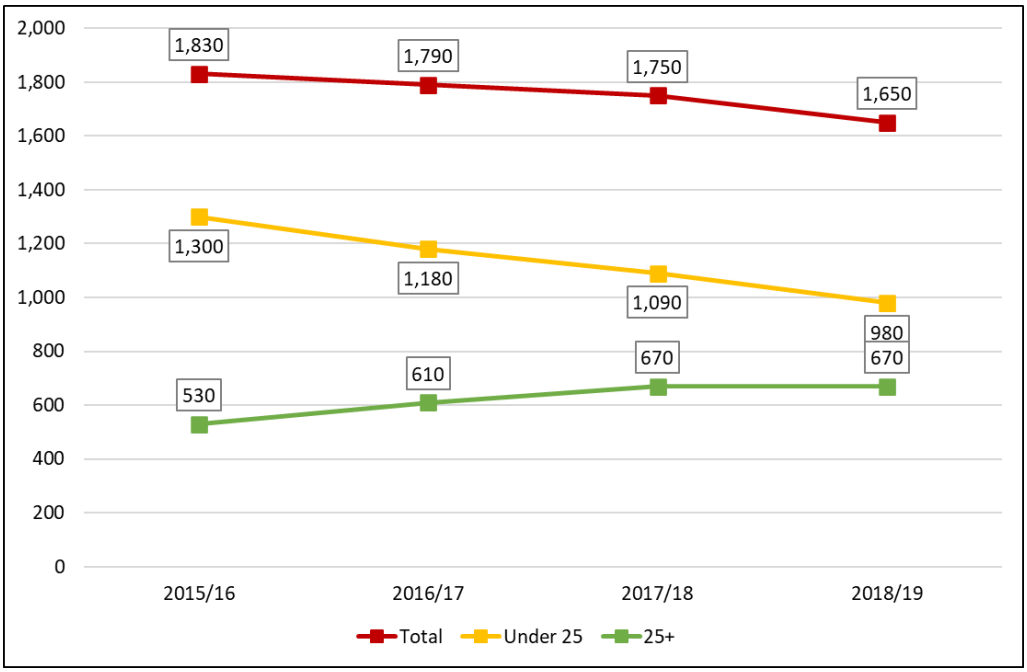
Figure 4.14: Creative and cultural: trends in student numbers by provider type



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

Between 2015/16 and 2018/19 students aged over 25 in this category increased by 25%, whilst students under the age of 25 fell by 25%. In 2018/19 59% of creative and cultural students were under 25 years of age.

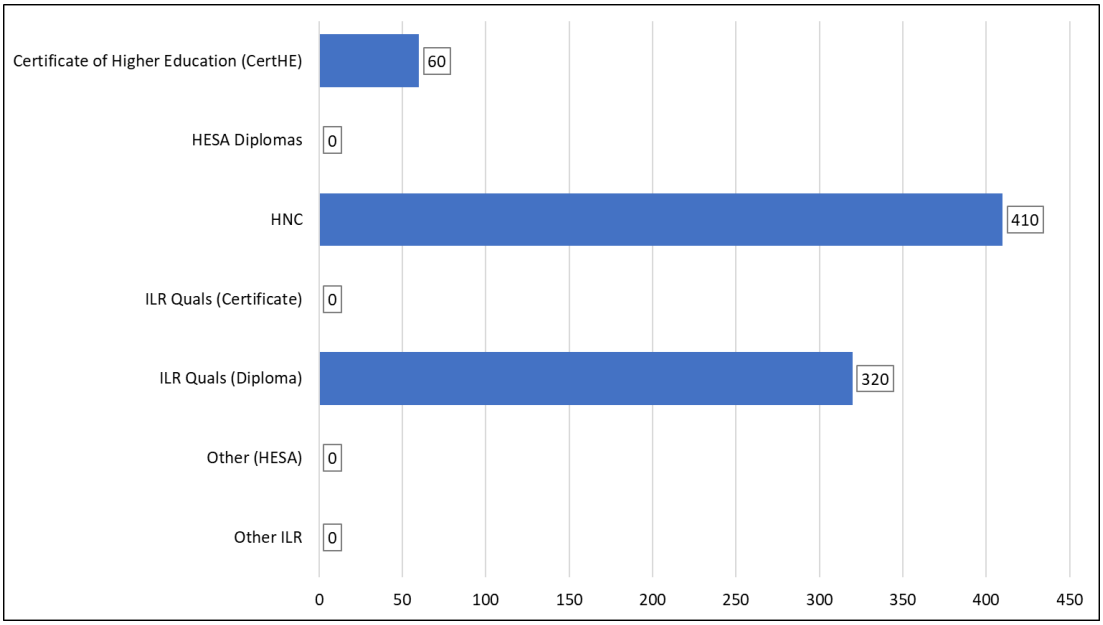
Figure 4.15: Creative and cultural: trends in student numbers by age band



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

HNCs were the most popular courses at Level 4 and were taken by just over half of all Level 4 students. In addition, there were a number of Level 4 diplomas, with the highest enrolments being on the Diploma in Art and Design (Foundation Studies) and the Extended Diploma for Creative Practitioners.

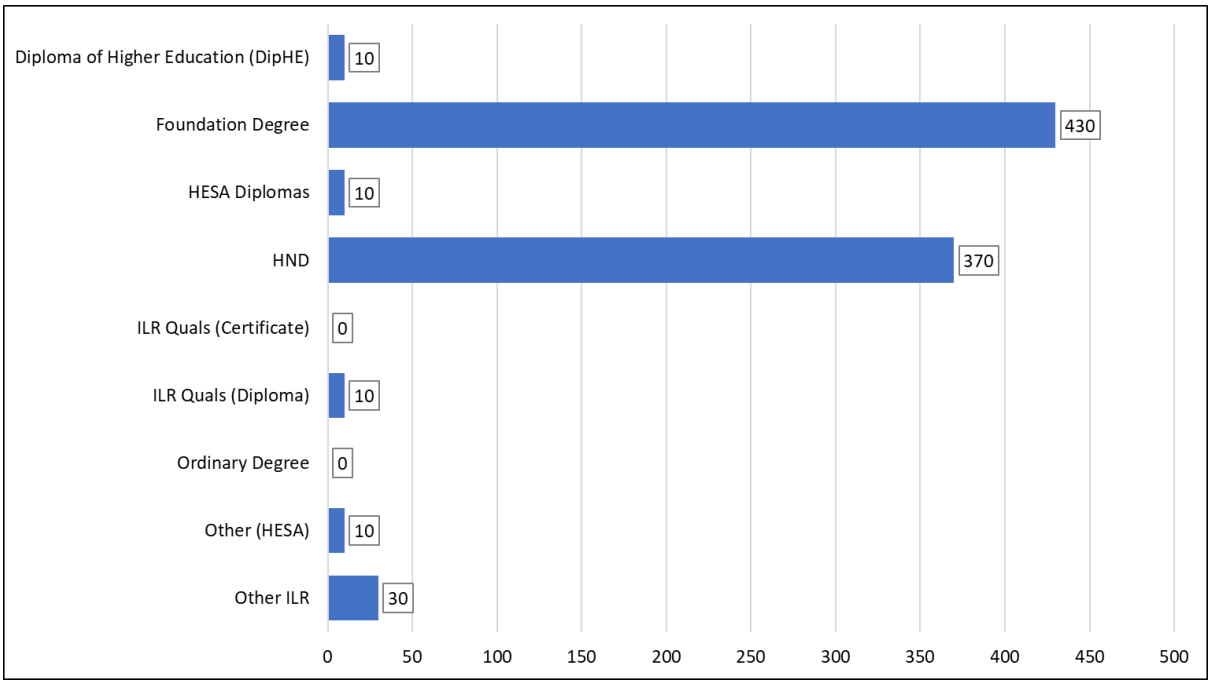
Figure 4.16: Creative and cultural: Level 4 student numbers by qualification type



Source: ILR (R14) 2018/19 and HESA data 2018/19

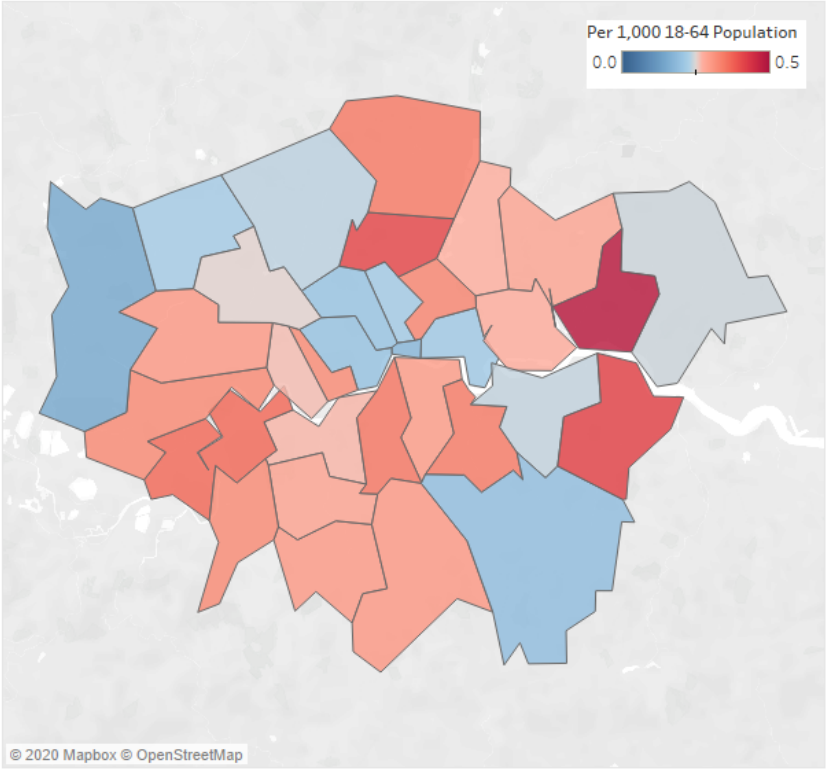
Over 90% of all Level 5 students in this sector were taking either a Foundation Degree or a HND.

Figure 4.17: Creative and cultural: Level 5 student numbers by qualification type



Source: ILR (R14) 2018/19 and HESA data 2018/19

Figure 4.18: Creative and cultural: students per 1,000 of the 18-64 population



Compared to other priority areas the distribution of students by borough was more widely spread. The highest concentration of creative and cultural students was in Barking and Dagenham, Bexley, Haringey and Richmond upon Thames.

Source: ILR (R14) 2018/19 and HESA data 2018/19

Foundation degrees, HNCs, HNDs and various Diplomas were available in a wide range of specialist areas including music technology, fashion and textiles, graphic design, 3D design, interior design and technical stage management. The table below shows all courses taken by students in 2018/19 in this priority area (with 20 or more enrolments).

Figure 4.19: Creative and cultural: top Level 4/5 courses taken by Greater London residents

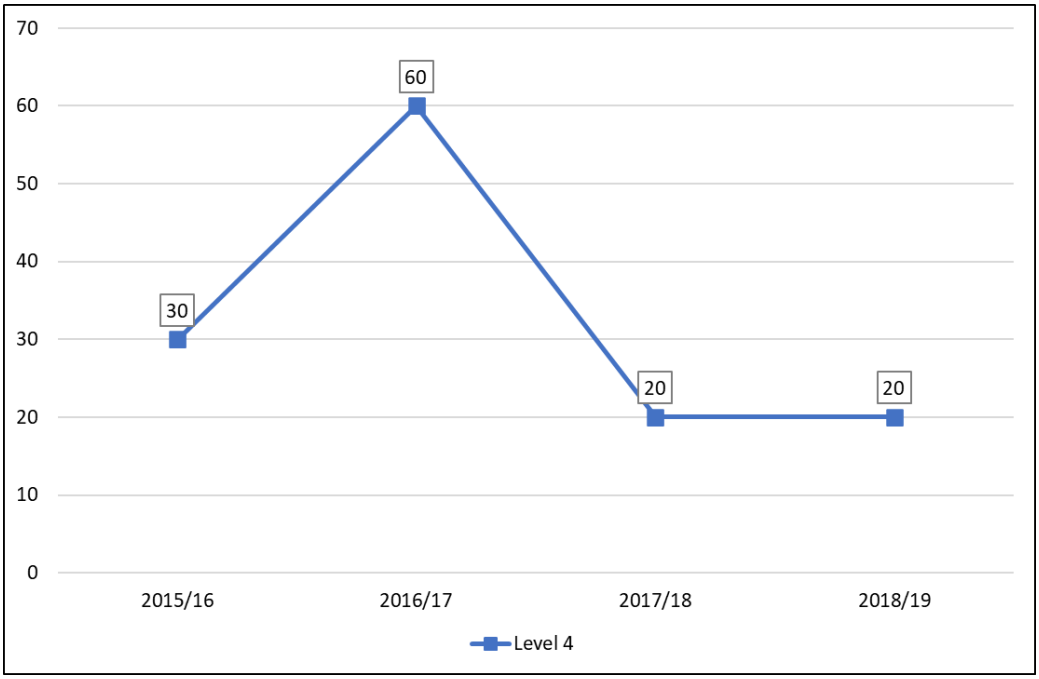
Top Courses	Volume
BTEC Higher National Certificate in Art and Design	240
Diploma in Art & Design - Foundation Studies	180
BTEC Higher National Diploma in Art and Design	160
Extended Diploma for Creative Practitioners	80
BTEC HND Diploma in Creative Media Production	60
Foundation degree in Music	40
BTEC HIgher National Certificate in Performing Arts	40
BTEC Higher National Certificate in Creative Media Production	40
BTEC HNC Diploma in Performing Arts	30
Certificate of Higher Education (CertHE) in Acting	30
BTEC HND Diploma in Performing Arts	30
BTEC HNC Diploma in Creative Media Production	30
BTEC HND Diploma in Music	30
Foundation degree in Graphic design	20
Foundation Degree in Music Technology	20
Foundation degree in Interior design	20
Foundation degree in Technical stage management	20
Foundation Degree in 3D Design	20
Foundation Degree in Art and Design in the Creative Industries (Fashion a	20
BTEC Higher National Diploma in Performing Arts	20

Source: ILR (R14) 2018/19 and HESA data 2018/19

Apprenticeship provision

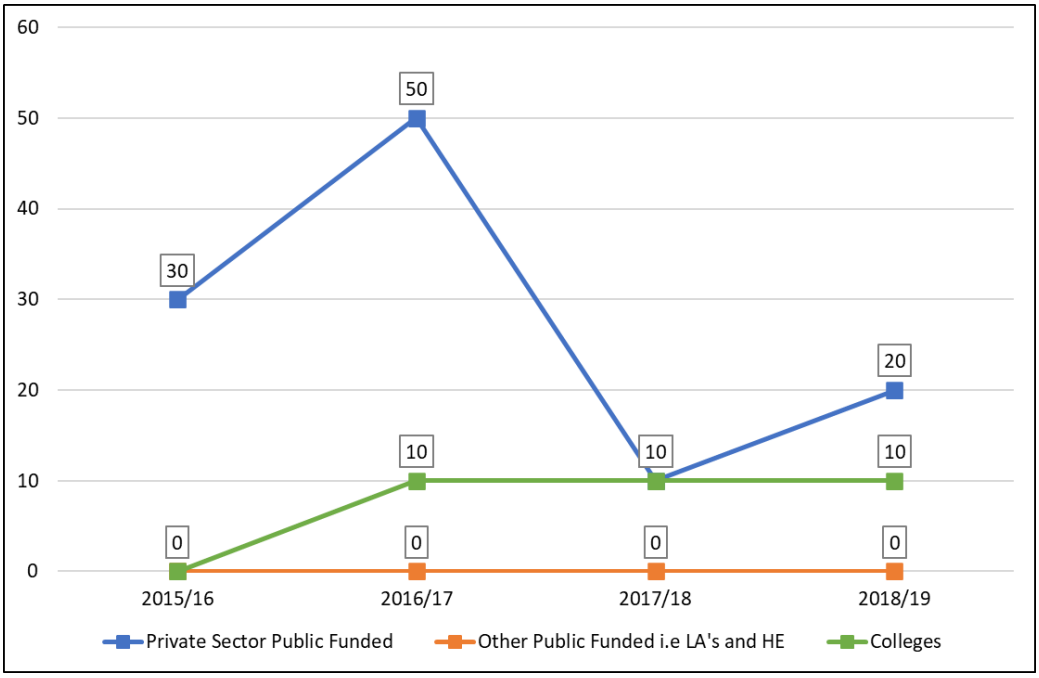
Apprenticeship starts in creative and cultural were very low. All apprenticeship starts were at Level 4.

Figure 4.20: Trends in Greater London apprenticeship starts by level of study



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

Figure 4.21: Trends in Greater London apprenticeship starts by provider type



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

In 2018/19 the only Level 4 apprenticeship that recruited at least 10 apprentices was the Junior 2D Artist (visual effects) standard.

Figure 4.22: Number of apprenticeship starts by framework/standard

Frameworks/Standards 2018/19	Number of Apprenticeships
Junior 2D Artist (visual effects) (S)	10

Source: ILR (R14) 2018/19

Qualitative commentary

According to a GLA report on *London's creative industries* (GLA 2017), this sector accounted for around 12% of total jobs in the capital. The report followed a definition of creative industries developed by the Department for Culture, Media and Sport: 'those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property'. The creative industries are a sub-set of the creative economy. The other parts of creative economy include workers with creative occupations in other industries and people in non-creative jobs who work in a creative industry. Across the creative economy in London, just over one in four jobs are held by self-employed workers.

Published soon after the GLA report, the *Independent Review of the Creative Industries* (Bazalgette 2017) highlighted the increasing importance of the skills and business models of this sector: blended technical and creative skills; collaborative interdisciplinary working; and entrepreneurialism and enterprise. In the digital era, there is a need to 'reimagine this as a "creative-tech" sector'. This applied not just to harnessing the value of intellectual property and investing in research and development. To keep innovation strong, the exploitation of new technologies was central, form virtual and augmented reality through to 5G, 3D printing and other techniques.

Key concepts in the Bazalgette review are 'clustering' and 'fusion'. The importance of regional growth, led by sector or specialist clusters, has been recognised by government for many years. Creative companies in particular benefit from clustering. Given that their average size is 3.3 full-time equivalents (4.7 in London) and that these are predominantly micro-enterprises, clustering is a way to 'address informational asymmetry' and enable 'more efficient provision of business support services'. A creative cluster is a geographic concentration of creative businesses and workers, often linked to similar value chains, which collaborate and compete with each other.

Importantly: 'Clusters can often include other institutions linked to the value chain such as higher education institutions, cultural institutions, trade associations and government bodies which support the cluster in a number of ways'. Creative clusters come in different sizes and configurations and can have a broad array of individual features which facilitate inter-organisational collaboration, including incubators, accelerators, shared hub space and studios. As examples of creative clusters in London, the report cited the King's Cross Creative Quarter, Soho, East London Fashion Hub, Makerversity and Playhubs.

Furthermore, there is evidence (Nesta 2016) that the unique benefits of the cultural sector and creative industries are associated with 'the fusion of skills they foster' alongside the spillover benefits for the wider economy through the knowledge, products and networks they generate. Fused companies are those that bring together creative and STEM skills. The creative industries have a high concentration of such firms and they contribute disproportionately to the growth of the sector. A focus on cultural activity and creative industries, it is claimed, will support not just economic improvements but also social benefits, such as participation and wellbeing, at a local level.

Creative occupations are expected to be 'highly resistant' to automation and, for this reason, their share of the workforce is likely to rise steadily in coming years. In addition, the percentage of self-employed, micro-enterprises and SMEs in the creative industries themselves is higher than in most other parts of the economy. That the sector is highly mobile represented both a risk and an opportunity. Regulatory and immigration regimes can accelerate or damage this growth.

With this profile, the creative industries are likely to have fewer organisations paying the apprenticeship levy. Micro-businesses, together with short term project-based working and freelancing, will mean they are likely to have fewer employees who are eligible to be apprentices. Although the sector has welcomed the focus on the needs of employers, small organisations reported that they lacked the capacity or expertise to develop industry-led standards.

In our fieldwork, the culture and creative industries are associated with the visual and performing arts, media (television, film, radio and photography), design and fashion, publishing and associated software and computer services. There is a significant overlap with tech and digital. The blurring between priority sectors is demonstrated most clearly in 'creative digital' (animation, gaming, 3D design) which is central to the work of some of the provider, awarding body and employer organisations in the sample.

Creative and Design is one of the 15 occupational groups delimited by the IfATE. It is split into three pathways: craft and design; media, broadcast and production; and cultural heritage and visitor attractions. At Level 4, the apprenticeship standards include Assistant Recording Engineer, Cultural Heritage Advice Assistant, Junior Animator, Media Production Coordinator and Post Production Technical Operator. At Level 5, they include Audiovisual Technician, Bespoke Tailor and Cutter, Broadcast and Media Systems Technician, Journeyman Bookbinder and Post Production Engineer.

At Levels 4 and 5, one of the HEIs in our sample has extensive validation partnerships with private partners in subjects related to the theatre (such as inclusive performance) and the music industry (such as music management and production, radio broadcasting, audio production and music business). The crossover with tech and digital is not limited to games programming and game art animation. Also encompassed are visual effects animation, digital film production, web development and software engineering.

A full-time HNC and a full-time HND in Creative Media Production (Games Development) are provided by the college partner to an IoT. Another further education institution, one with a distinguished history as an adult education institute, has full-time HNC and HND courses in Art and Design (Fashion), Art and Design (Production Design) and Performing Arts (Acting). There is also a HNC in Music (Performance or Technology) and a HND in Music (Artist Development or Production). The only part-time programme is a Level 4 Certificate for Music Educators. Reflecting its adult education tradition, this college offered more than 100 non-accredited courses which are described (by institutional managers) as 'higher level'.

Fashion courses are a notable feature of the provision in London at higher education institutions, colleges and private training providers. One of the private providers in our sample is a specialist training organisation in fashion technology. Its taught provision included a Level 4 Diploma for Retail Management and a Level 5 Diploma in Bespoke Tailoring. There is a Level 4 apprenticeship in Technical Textiles (Product Development and Sourcing) as well as a Level 4 Product Technologist apprenticeship.

One of the awarding organisations in our interview sample is concerned with qualifications in art and design, along with specialist subjects in fashion, retail and performance. Given the swift-moving nature of the sector, the design of its qualifications is based on an iterative, problem-solving model. A cross-disciplinary approach is taken. The use of digital platforms is stressed. Two of its qualifications span Levels 3 and 4: the Foundation Diploma in Art and Design, and the Diploma for Fashion Studio Assistant. These flexible qualifications incorporate modules at both Level 3 and Level 4. The balance between them will determine whether the award is at Level 3 or Level 4. All the others are at Level 4. For fashion retail, there is a dedicated Diploma as well as specialisms leading to Diplomas in Garment Technology, Merchandising, Visual Display and Branding, and Buying and Range Planning. In addition, there are Professional Diplomas in Technical and Production Practice, Creative Enterprise, and Performance.

While small and medium size enterprises feature strongly across the sector, there are also national broadcasting organisations with a creative, technical and professional workforce concerned with production, commissioning, journalism and management. Some have a single or major presence in London. Others are distributed organisations with regional centres.

The national broadcaster in our employer sample has a base in London. Seven apprenticeship schemes are operated at Levels 4 and 5. At Level 4, these include apprenticeships in the areas of tax and accountancy, software development, cyber security, data analysis and project management. Level 5 is a smaller set of activity, with apprenticeships offered in operations management and human resource management. These represent the technical and management sides of the organisation. The number of apprentices at these levels is described as ‘quite low’.

The levy is the major driver, with a target set for a certain percentage of the workforce to be employed as apprentices. A distinction is made between ‘early career’ apprentices (where the organisation will get their skillset effectively from ‘zero to hero’) and ‘staff apprentices’ (those who already have professional experience but require significant retraining). Most early career apprentices are aged 18 or 19, with some in their late 20s and early 30s. There is no age limit. A number of training providers are engaged: ‘It is quite challenging to work with multiple providers’. For early career apprentices, the preference is for face-to-face learning. For staff apprentices, the preference is for online and digital learning, especially for more professional and analytical services.

The animation and visual effects company in our sample has work featured in films, television, advertising, videos, games and mobile phone applications. Its base is in London, with offices in the USA, Canada, India and China. It has internships for undergraduate students and two higher apprenticeships at Level 4: Junior 2D Artist (Visual Effects) and Assistant Technical Director (Visual Effects). The off-the-job training is with a London further education college. There is no embedded qualification. Colleges could do so ‘but at a cost’. The absence of a qualification is viewed as a potential disadvantage since VFX is a global industry and work permits often require a Level 6+ qualification.

The company is working with the industry body on a Junior VFX Artist apprenticeship at Level 4 and others at Levels 6 and 7. It saw no need for apprenticeships at Level 5 since 'Level 4 more than covers it' and 'makes it possible for some completing to progress straight to 6'. For this organisation, graduates with bachelor degree do not suit their needs: 'the VFX industry has always been about learning on the job, so apprenticeships (which always existed at an informal level) are best'.

As for future demand, this is 'mostly covered now' with the new developments but there is space for an apprenticeship focused on the games industry, including immersive technologies. The company used a mix of further education colleges and private organisations to meet their training requirements. Colleges are seen as probably best placed to meet future demand.

Another organisation in our sample is the industry-led skills body for a major part of the creative sector. One of its roles is to quality mark courses and qualifications, mainly at universities and colleges. A strategy for continuing professional development is being devised. This will involve the accreditation of training, including the endorsement of short course programmes. These courses are likely to be offered by microbusinesses and specialist training organisations. It is unclear whether levels will be ascribed to this provision.

As a facilitator of trailblazer groups, the skills body has been involved in the development of four higher apprenticeships, each at Level 4: Assistant Technical Director (Visual Effects), Junior 2D Artist (Visual Effects), Junior Animator and Post-Production Technical Operator. For this part of the industry, its role is to look at the skills required for and generated by the enterprises, clusters and activities that populate this zone, concentrating on the creative aspects but not crafts.

For this organisation, there is a problem with the breadth of the occupational standards developed by the IfATE: 'the standards reflect occupational routes, not job roles, and are too generic – employers don't recognise them'. Indeed, there is a large underspend from the levy in this part of the sector. Another difficulty is attributing a level to skills: 'people often come in with a degree and then have to start as a runner and work their way up in terms of experience'. The industry requirement is less for a qualification and more for experience. Apprenticeships do not need to have an embedded qualification. To include one is a cost to the provider, as this is not covered by the levy. The key thing is that 'apprenticeships are long term and industry employment patterns are not'.

4.5 HEALTH AND SOCIAL CARE

Quantitative mapping

Skills for Londoners (GLA 2018c) states that sectors with acute skills shortages or gaps in London would be prioritised. One major example was health and social care, as raised by the London Workforce Board reporting to the London Health Board.

The health service is one of the major employers in the capital, with over 200,000 people working in the NHS (including general practice staff but excluding agency workers). The relatively high cost of housing makes it hard for frontline staff to afford accommodation in the areas where they work. London forms the hub of health-related research and development in the south east of England. It is where 25 per cent of UK doctors are trained. It is thus a centre for clinical education, training and research excellence. A

growing cluster of academic health science expertise – a 'Med City' – stretches along the Euston Road corridor from Whitechapel to Imperial West at White City.

The analysis below is based on a mapping between Health and Social Care SOC codes and related Sector Subject Areas (and courses on the HESA dataset mapped to these SSAs) for occupations that require Higher Technical Skills (SOC broad categories 3 and 4). Course lists were generated from the SSA Tier 2 classification and non-relevant courses removed.

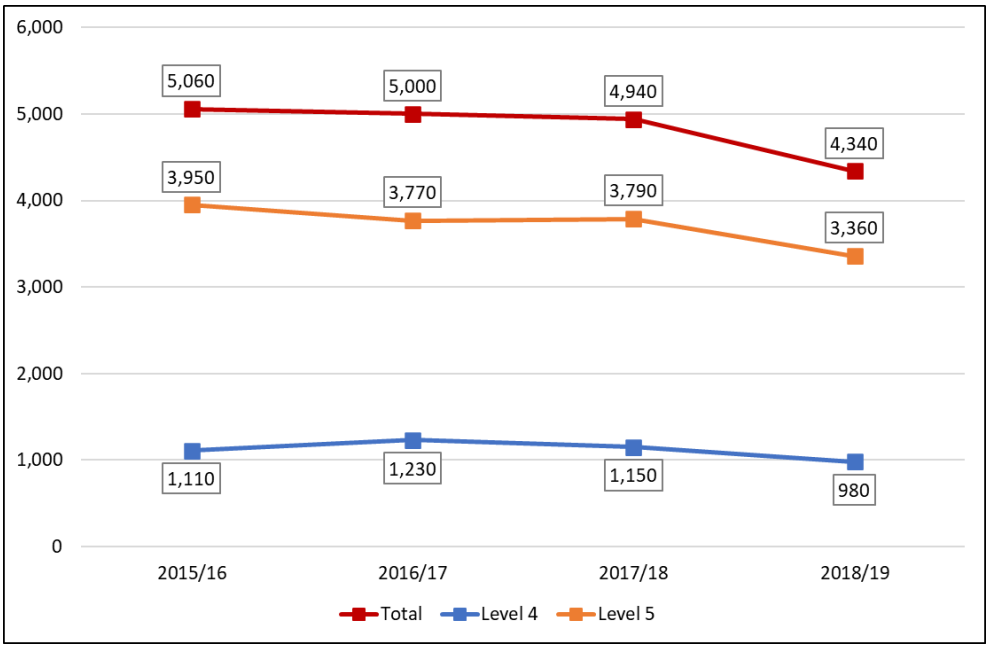
Figure 4.23: Health and social care definition – Level 4/5 courses

SOC	Description	SSA Tier 2
3213	Paramedics	1.2
3216	Dispensing Opticians	1.3
3217	Pharmaceutical Technicians	1.2
3218	Medical and Dental Technicians	1.1
3219	Health Associate Professionals	1.3
3231	Youth and Community Workers	1.5
3233	Child and Easrly Years Officers	1.5
3234	Housing Officers	1.4
3235	Counsellors	1.3
3239	Welfare and Housing Associate Professionals	1.4

Course provision (excluding apprenticeships)

Health and social care is by far the largest of the priority sectors with over 4,000 students enrolled in 2018/19. More than three quarters of these students were studying at Level 5. The total number of students in health and social care remained fairly constant with around 5,000 students between 2015/16 and 2017/18. However, this fell to 4,340 in 2018/19.

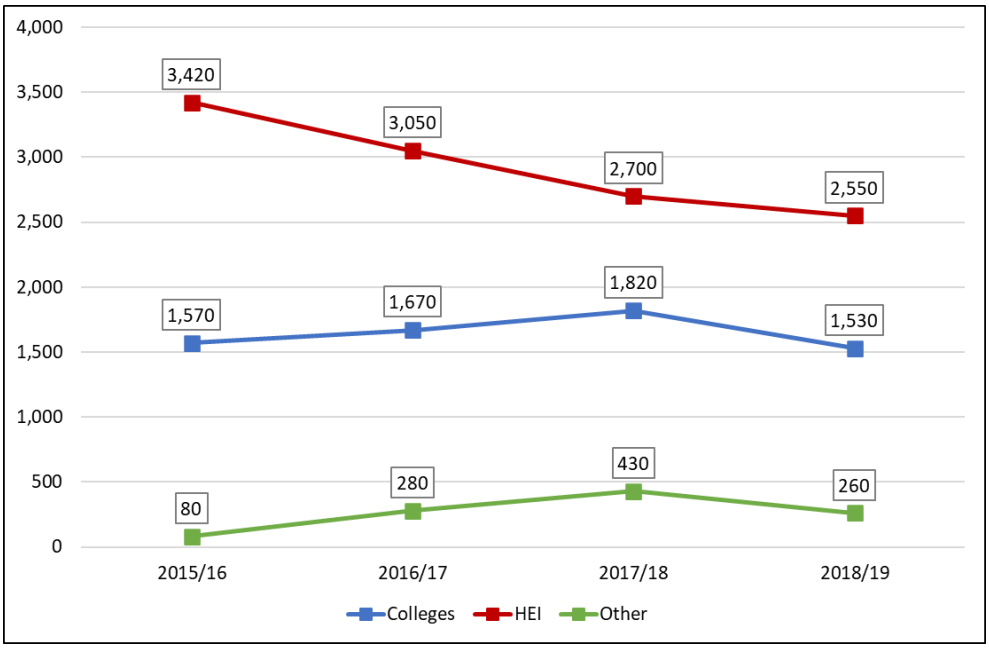
Figure 4.24: Health and social care: trends in student numbers by level of study



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

Numbers peaked at further education colleges and other providers in 2017-18. Across all four years, there was a steep decline in students studying at HEIs (-25%).

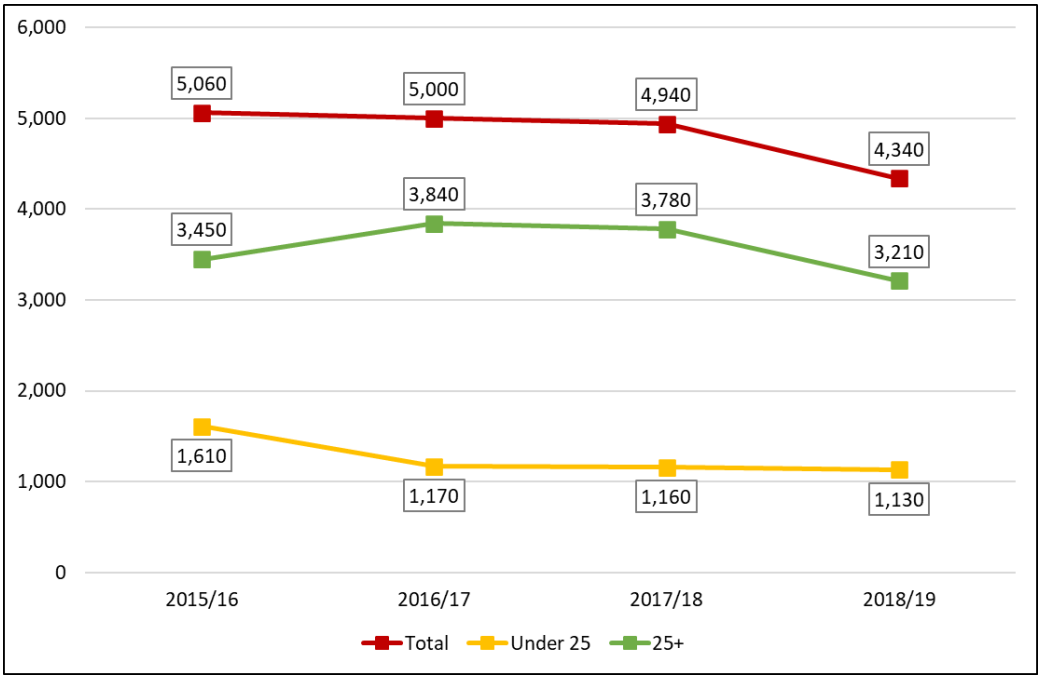
Figure 4.25: Health and social care: trends in student numbers by provider type



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

The vast majority of students in this priority sector (74%) were over 25 years of age although the numbers of students under 25 have remained fairly constant between 2016/17 and 2018/19.

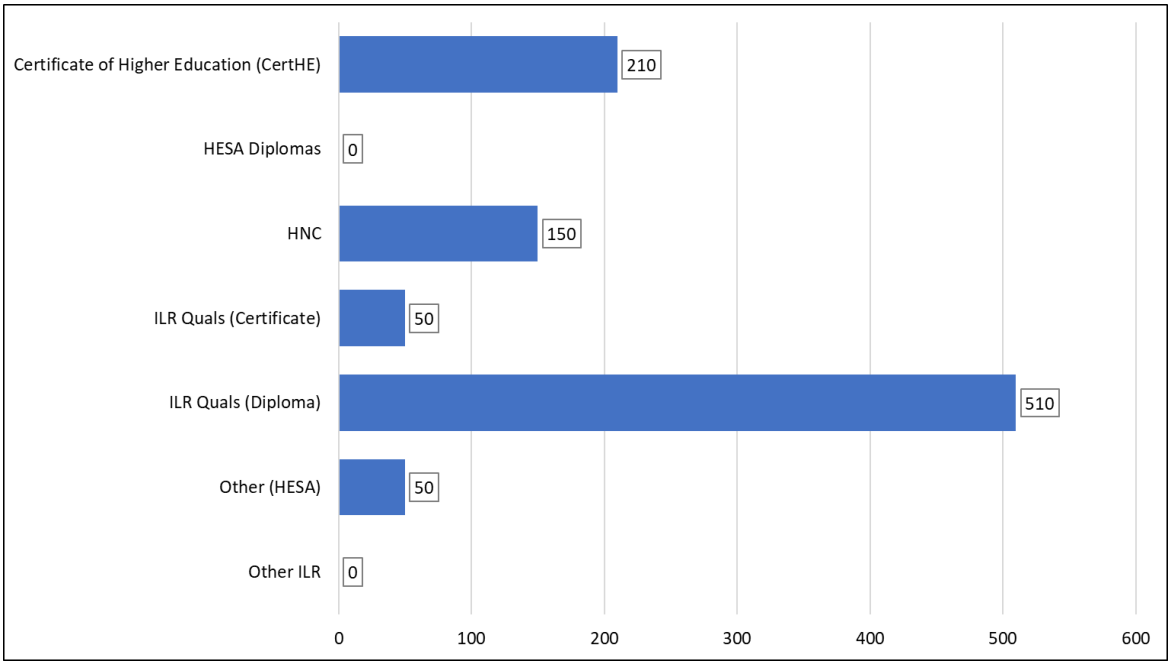
Figure 4.26: Health and social care: trends in student numbers by age band



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

Unlike in some other priority sectors, there were a wide range of different types of qualifications taken in health and social care at Level 4, including a number of specialist diplomas.

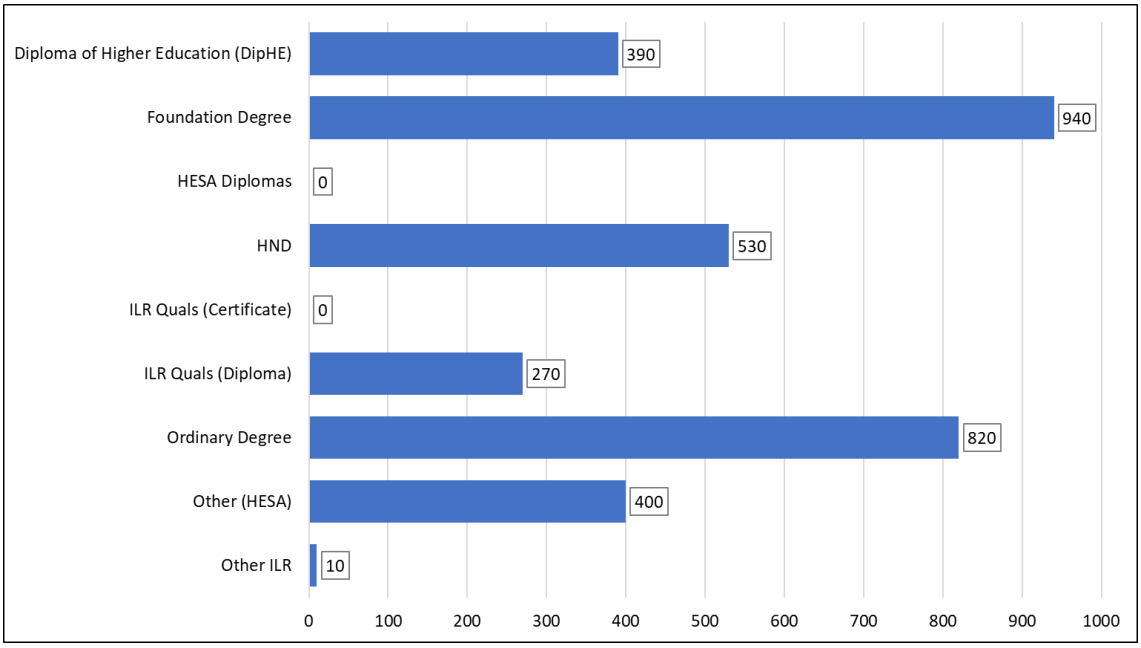
Figure 4.27: Health and social care: Level 4 student numbers by qualification type



Source: ILR (R14) 2018/19 and HESA data 2018/19

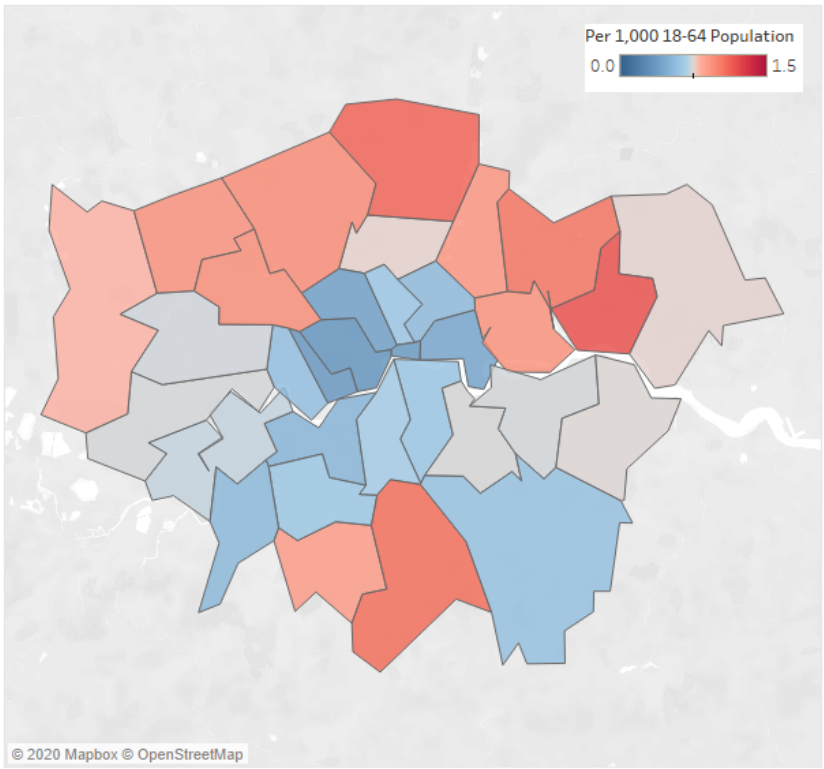
Similarly, at Level 5 the range of qualification types available is much wider than in other sectors. Provision tends to be dominated by Foundation Degrees and HNDs. Ordinary degrees and DipHEs, in particular, recruited over a thousand students in health and social care in 2018/19. These qualification types have very few student numbers in other priority sectors.

Figure 4.28: Health and social care: Level 5 student numbers by qualification type



Source: ILR (R14) 2018/19 and HESA data 2018/19

Figure 4.29: Health and social care: students per 1,000 of the 18-64 Population



The geographical distribution of students shows a higher concentration in outer London than in central London. Barking and Dagenham has a higher than average concentration and Bromley and Kingston upon Thames have lower than average concentrations.

Source: ILR (R14) 2018/19 and HESA data 2018/19

Figure 4.30 shows the health and social care courses in 2018/19 that had 30 or more students enrolled, ranked by volume of students. The course list includes general provision (such as the HND in Health and Social Care) and more specialist areas that are served by Level 4/5 provision, including nursing, counselling, early years, social work, opthalmics and social care.

Figure 4.30: Health and social care: top Level 4/5 courses taken by Greater London residents

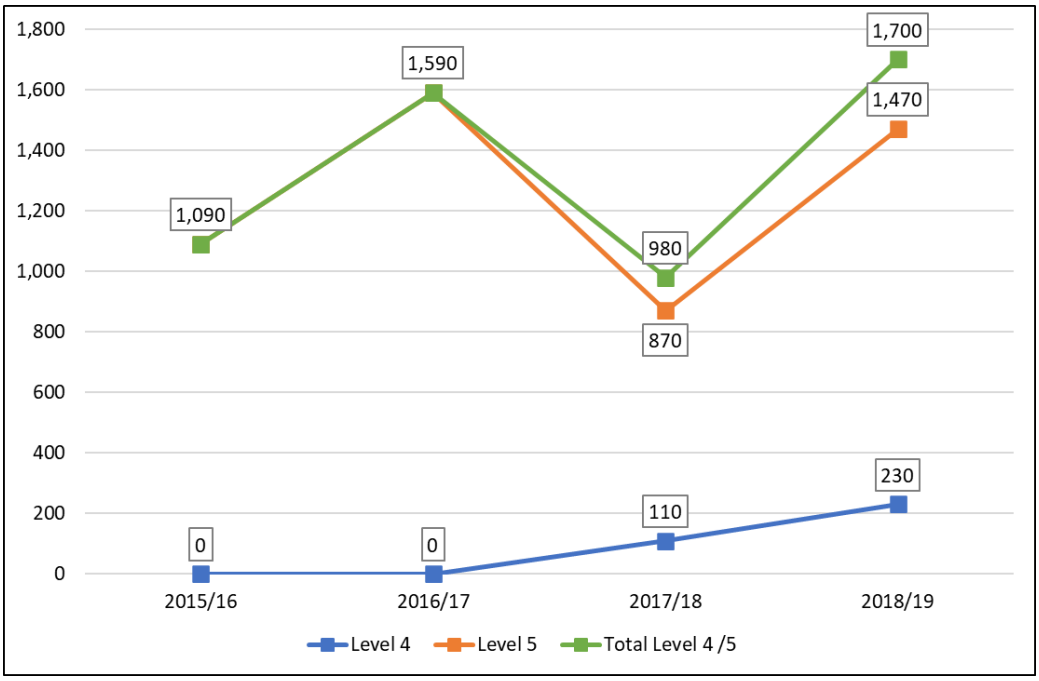
Top Courses	Volume
Diploma in Therapeutic Counselling (RQF)	380
Foundation degree in Nursing	340
Pre-registration ordinary (non-honours) first degree leading towards obtai	310
Pre-registration ordinary (non-honours) first degree leading towards obtai	290
BTEC HND Diploma in Health and Social Care	280
Diploma of Higher Education (DipHE) in Nursing not elsewhere classified	200
Pre-registration ordinary (non-honours) first degree leading towards obtai	140
Post-registration health and social care qualification at level J in Nursing r	140
Certificate of Higher Education (CertHE) in Counselling	140
Post-registration health and social care qualification at level I other than a	120
Post-registration health and social care qualification at level I other than a	120
Diploma in Therapeutic Counselling	90
BTEC Diploma in Therapeutic Counselling	90
BTEC Higher National Diploma in Healthcare Practice for England	80
Foundation degree in Health & welfare	80
Foundation Degree in Public Health and Social Care	80
BTEC Higher National Certificate in Healthcare Practice for England	80
Diploma of Higher Education (DipHE) leading towards obtaining eligibility	80
Foundation degree which on completion meets entry requirement for pre-	70
BTEC HND Diploma in Public Services	70
BTEC Higher National Diploma in Public Services	60
Diploma in Leadership for Health and Social Care and Children and Youn	50
Certificate for the Early Years Advanced Practitioner	50
Diploma in Leadership for Health and Social Care and Children and Youn	40
Foundation Degree in Health and Social Care (Full Time) (Care)	40
Foundation Degree in Children's and Young People's Services	40
Pre-registration ordinary (non-honours) first degree leading towards obtai	40
Higher National Certificate (HNC) in Health & welfare	40
Foundation degree in Ophthalmics	30
Diploma in Leadership for Health and Social Care and Children and Youn	30

Source: ILR (R14) 2018/19 and HESA data 2018/19

Apprenticeship provision

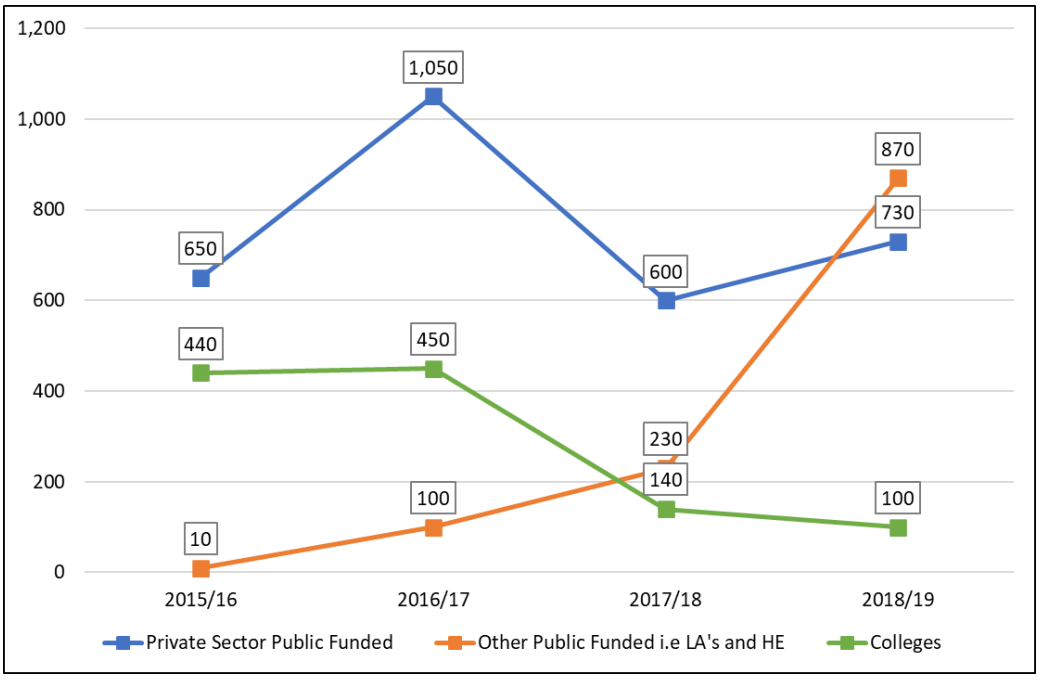
Apprenticeship starts in health and social care increased by 56% from 2016/17 to 2018/19, although a dip in apprenticeship starts was seen in 2017/18. The majority of the increase was seen at other publicly funded organisations (including HEIs) whereas the number undertaken in further education colleges over the four year period has seen a decrease of 77%.

Figure 4.31: Trends in Greater London apprenticeship starts by level of study



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

Figure 4.32: Trends in Greater London apprenticeship starts by provider type



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19

The numbers of apprenticeship starts in 2018/19 by London Borough (rounded to nearest 10), based on the home postcode of apprentices, are shown in Figure 4.33. Croydon (130 starts), Enfield (100 starts) and Newham (100 starts) had the highest number of starts.

Figure 4.33: Number of apprenticeship starts by London Borough

Number of Starts 2018/19, Final	Number of Apprenticeships
City of London	0
Barking and Dagenham	80
Barnet	60
Bexley	50
Brent	40
Bromley	70
Camden	10
Croydon	130
Ealing	60
Enfield	100
Greenwich	70
Hackney	50
Hammersmith and Fulham	30
Haringey	50
Harrow	40
Havering	80
Hillingdon	70
Hounslow	40
Islington	20
Kensington and Chelsea	10
Kingston upon Thames	30
Lambeth	70
Lewisham	80
Merton	30
Newham	100
Redbridge	70
Richmond upon Thames	30
Southwark	60
Sutton	50
Tower Hamlets	30
Waltham Forest	60
Wandsworth	30
Westminster	20

Source: ILR (R14) 2018/19

The Care Leadership and Management apprenticeship framework was far and away the most popular apprenticeship in this sector with 640 starts in 2018/19.

Figure 4.34: Number of apprenticeship starts by framework/standard

Frameworks/Standards 2018/19	Number of Apprenticeships
Care Leadership and Management (F)	640
Associate Ambulance Practitioner (S)	160
Healthcare Assistant Practitioner (S)	150
Nursing Associate (S)	70
Dental Practice Manager (S)	20

Source: ILR (R14) 2018/19

Qualitative commentary

Health and social care is a sector with acute shortages in recruitment and with high rates of turnover. It is a strategic priority for the GLA to help address skills needs in the sector and promote employer-provided collaboration (GLA 2018c). There are major differences between the health care and the social care domains, albeit with important overlaps. Indeed, they are frequently regarded or described as separate sectors. On the IfATE framework, the associated occupations are grouped under Health and Science on the one side and Care Services on the other.

Most job roles involving direct care in the health sector are regulated professions. There are over 30 regulated occupations, ranging from nurses, doctors and dentists to pharmacists, opticians and osteopaths. In order to practice, each must be registered with the appropriate regulatory body. A substantial number of health professionals are employed at NHS establishments, including in hospital, community and primary care settings. Typically, these form parts of large organisations which pay the apprenticeship levy. Nurses make up about one-quarter of all staff in the NHS. Nursing vacancy rates are high in London (15%), reaching 20% in London mental health trusts. Levels of international recruitment are high, varying from 30% to 36% in London regions. For domestic students, especially mature students, the removal of nursing bursaries and the introduction of fee-loans in 2017 are among the reasons for the under-supply of nurses (NAO 2020).

By contrast, job roles involving direct care in the social care sector are largely non-regulated occupations. Except for regulated professions (social workers, occupational therapists and registered nurses), the bulk of the social care workforce with responsibilities for direct care are care workers and senior care workers. The majority are employed by independent providers (private and voluntary). These autonomous businesses are responsible for employing, training and setting the pay and conditions for their own workforces. This has resulted in 'a care market that is fragmented with complex chains of commissioning, provision and accountability' (NAO 2018). In London, 13% of the care workforce is non-British EEA nationals.

In both sectors, there are administration and management roles at all levels. In the NHS, these include strategic, leadership and specialist positions. In the care sector, they include the care manager. This is the person in day-to-day charge of the regulated services provided at the care home. All care managers must be

registered with the Quality Care Commission (CQC). Across all care roles, vacancy rates are highest for registered managers.

At Levels 4 and 5, the job roles involving direct care in the health sector include healthcare assistant practitioner, senior healthcare worker and nursing associate. Since 2019, there has been a Nursing Associate apprenticeship standard at Level 5, with a duration of 24 months. The apprenticeship standard and its mandatory qualification – the Foundation degree – are recognised by the Nursing and Midwifery Council (NMC). Nursing Associate is a protected title on the NMC register. Other apprenticeship standards in allied fields at Levels 4 and 5 include Associate Ambulance Practitioner, Clinical Dental Technician, Healthcare Science Associate, Hygiene Specialist, Laboratory Scientist, Mammography Associate and Oral Health Practitioner.

The institutions approved by the NMC to offer the nursing associate apprenticeship are all universities. The same establishments are approved to offer the bachelor degree in nursing which, from 2013, replaced the DipHE as the required qualification level for registration. In Part Three, we noted that most of the Londoners studying for credit at Levels 4 and 5 are nurse practitioners undertaking modules that will enable them over time to achieve graduate-level registration.

At Levels 4 and 5, the job roles involving care and management roles in the social care sector include senior care worker, practitioner team leader, single organisation manager, and leader in adult care. The Lead Practitioner in Adult Care apprenticeship at Level 4 has an embedded qualification, the Level 4 Diploma in Adult Care. The Leader in Adult Care apprenticeship standard at Level 5 has the same duration as the Level 4 standard, typically 18 months. The embedded qualification is the Level 5 Diploma in Leadership and Management for Adult Care. The Level 4 and Level 5 qualifications are awarded by several organisations, including NCFE CACHE, Pearson and City and Guilds.

Two of the HEIs in our interview sample have large schools of health and social care. At the one, there are both freestanding courses and higher apprenticeships at Level 5. Courses include DipHE programmes in diagnostic imaging and radiotherapy practice. Healthcare Assistant Practitioner and Nursing Associate apprenticeships are developed in conjunction with NHS Trusts and other employers. A Healthcare Science Associate Apprenticeship at Level 4 is planned. At the other HEI, there are no freestanding courses at Levels 4 or 5 but there is a major Nursing Associate programme with over 200 apprentices. The majority on this programme are currently healthcare assistants. This HEI was one of the 11 pilot sites in England to be awarded a contract to develop the Nursing Associate programme. Both HEIs have extensive CPD programmes in health and social care, mostly but not exclusively at Level 6 and above.

At a third HEI – a university partner to an IoT – a Healthcare Assistant Practitioner apprenticeship is offered. This apprenticeship has a specialisation in arts in health. The embedded qualification is an FD in Arts in Health. At present, this is the only higher apprenticeship at this HEI. The award of a Level 5 qualification will be a new venture for this institution.

Level 5 courses in health and social care are prominent at one of the largest colleges in our sample. Two FDs in Health and Social Care (one in Care and the other in Early Years Care) offer progression to a linked bachelor degree at the validating university. The course information on the FDs is clear that these courses are not a progression route to bachelor degrees in nursing or social work. A third FD in Social Care Studies is franchised by a second university and designed to provide progression to its bachelor degree in social work studies. Three FDs are full-time courses.

The other health-related courses are a FD in Biomedical Science and a FD in Pharmaceutical Science. These are franchised programmes with the prospect of transfer to the corresponding bachelor degree at the university. Both FDs are able to be studied on a full-time or part-time basis. A Level 4 Diploma in Therapeutic Counselling is provided part-time and awarded by the Counselling and Psychotherapy Central Awarding Body (CPCAB). This is a platform for progression to the Level 5 Diploma in Therapeutic Counselling or the Foundation Degree in Counselling awarded by the Open University. The same L4 CPCAB qualification is taught part-time at two other colleges in the sample. At a third, a full-time FD is offered in Counselling.

At only one provider in our college sample is there a higher apprenticeship in Care Leadership and Management. This is an apprenticeship under frameworks leading to a Level 5 Diploma in Leadership for Health and Social Care and Children and Young People's Services. Whether acquired on completion of a freestanding course or through an apprenticeship, the Level 5 Diploma is the recommended route to qualify for registration as a care manager with the CQC. However, it is difficult for care workers to study part-time or be sponsored to do so.

Higher apprenticeships in the care industry are less common than in nursing where the Nursing Associate at Level 5 is designed to bridge the gap between healthcare assistants and registered nurses. If used at all, the apprenticeship levy is only an option where multiple care homes are owned and managed in common. Large NHS trusts will pay the levy but, given that apprentices must have 'supernumerary' status, they must pay 'back-fill' costs for additional staff. The levy cannot be used for these costs. The NMC is allowing an alternative approach by which students are not required to be supernumerary. It will evaluate this in due course.

This concern is echoed at the hospital NHS trust in our interview sample. Nevertheless, its apprenticeship programme has 'blossomed'. Currently, close to 130 staff undertake apprenticeships, making the second largest in London. These are at Levels 2 to 5. Apprenticeship training is undertaken with four universities (one of which is located outside London), two colleges and a private provider. Three of these partner institutions are also in our interview sample. The trust has a target number of 30 for the Nursing Associate apprenticeship. For the organisation as a whole, progression to the bachelor degree through preceding levels is 'very important', especially nursing, midwifery and radiography. Most of their in-house training provision is post-qualification clinical and provided by nurse educators.

Along with nursing, the areas of priority expansion are occupational and physical therapy and therapeutic radiography. The majority of their demand will be for degree apprenticeships, for bachelor-level awards and for programmes carrying professional recognition and accreditation. Higher education institutions are seen as best placed to meet future demand. This could involve franchising to colleges. Indeed, the trust might do it themselves as an employer, although 'it's a lot of work for a small return'.

As part of a government pledge to increase nurse numbers by 50,000 over the next five years, new and continuing bachelor-level nursing, midwifery and allied health students will be eligible for additional financial support to help with living costs. However, this is 'very limited' and 'doesn't take it back to the previous position'. More thought should be given about how trusts could attract and support students.

Another mechanism to foster workforce development health and social care is the sustainability and transformation partnerships (STPs) established across the country by NHS England in 2015. There are five in London. They are intended to run services in a more coordinated way. In some areas, STPs have evolved to become integrated health and care systems, requiring even closer collaboration between the NHS and local

councils. The *NHS Long Term Plan* (NHS 2019) set out the aim that every part of England will be covered by an integrated system.

The implications for the social care sector are significant since there is presently no national workforce strategy on this side of the system. In this sector, local and regional bodies (and partnerships) are expected to take the lead on workforce planning, training and apprenticeships. Local authorities fulfil this duty through their contract management arrangements with care providers. Given the pressures facing providers, local authorities are cautious about challenging them over their investment in workforce development. There is a view that STPs are too NHS-led and NHS-focused, with not enough engagement with local authorities. Either way, the integration of health and social care is not expected to significantly reduce the number of care jobs required. Barriers to integrating the two workforces include 'differences in working culture, professional boundaries and different terms and conditions across the health and local government sectors' (NAO 2018).

At the STP in our sample, the 'middle missions' in health and social care are a focus of attention. The importance of stand-alone qualifications at Levels 4 and 5 is emphasised, not just apprenticeships. Such qualifications can bring recognition to the roles at these levels. Yet, these awards must serve as a supply line to bachelor degrees and regulated occupations. Another issue is the extent to which careers in the NHS are linked to pay bands which, in turn, are linked to qualifications.

Professional boundaries and status hierarchies divide the health and social care sector. Qualifications for health professional roles, such as the FD, are 'almost wholly delivered by universities'. Courses and qualifications in social care are mainly provided by colleges, along with some training organisations. Such is the magnitude of the crisis in health and social care, however, that the idea of collaboration between colleges and universities is likely to gain wider acceptance.

Approved higher technical qualifications in the health and science route will be taught from autumn 2023. Awarding bodies are asked to put forward their qualifications for approval in autumn 2021. A list of approved higher technical qualifications in the health and science route will be published by IfATE in autumn 2022.

4.6 LOW CARBON AND ENVIRONMENTAL GOODS AND SERVICES

Quantitative mapping

The low carbon and environmental goods and services sector (LCEGS) supports the transition to a low carbon economy as outlined in the London Environment Strategy (GLA 2018a). The Department for Business, Innovation and Skills (BIS 2013) identified three Level 1 sub-sectors and twenty-four Level 2 sub-sectors within LCEGS.

Figure 4.35: LCEGS Level 1 and Level 2 sub-sectors

Level 1	Level 2
Environmental	Air Pollution Control
	Contaminated Land Reclamation
	Environmental Consultancy
	Environmental Monitoring
	Marine Pollution Control
	Noise and Vibration Control
	Recovery and Recycling
	Waste Management
	Water Supply and Waste Water Treatment
Renewable Energy	Biomass
	Geothermal
	Hydro
	Photvoltaic
	Wave and Tidal
	Wind
	Renewable Consultancy
Low Carbon	Additional Energy Sources
	Alternative Fuels and Vehicles
	Alternative Fuels
	Building Technologies
	Carbon Capture and Storage
	Carbon Finance & Storage
	Energy Management
	Nuclear Power

The definition of LCEGS cuts across many different areas of industry, both manufacturing and services. The occupations and skill levels required within these sectors vary significantly, from specific expertise within industries such as nuclear, and renewables requiring graduate qualifications and higher technical expertise in management; professional/consultancy, research, development and technician roles to skilled trade occupations linked to delivery and installation of equipment and administrative and sales roles involved in support service jobs across all the sector.

There are very few courses at Level 4 and 5 in either FE or HE datasets that specifically focus on LCEGS skills at the Level 2 sub-sector level. For example, a search of the FE Learning Aims Reference Service[8] found zero courses in England relating specifically to areas such as biomass, geothermal, wave, tidal power or alternative fuels. However, it is likely that many broader qualifications will address some of these aspects, but the detail will be embedded within the course curriculum. For example, the current BTEC Higher Nationals in Construction and the Built Environment include optional units in the principles

[8] Database of courses used in the FE ILR.

of alternative energy, alternative energy systems design and installation and environmental assessment and monitoring.

It is beyond the scope of this study to review the detailed course content of all Level 4/5 programmes, and therefore a mapping exercise linking sub-sectors to SIC, SOC and course content would neither be feasible nor practical. As several studies point out (GMCA and New Economy 2016), skills investment in LCEGS needs to be considered as a cross-sector question. It is much less an independent skill area in its own right.

Figure 4.36 shows sector subject areas (SSA Tier 2) that could potentially contain courses with content relevant for LCEGS (sub-sector 1). The degree of 'fit' will differ between subject areas. For example, most courses in Environmental Conservation (SSA 3.4) will be relevant whereas very few in Health & Social Care (SSA 1.3), Public Services (SSA 1.4) and Business and Management (15.3) will contain content related to LCEGS[9].

Figure 4.36: LCEGS sub-sectors to SSA mapping

LCEGS Level 1	SSA Tier 2	Description
Environmental	1.3	Health & Social Care
	1.4	Public Services
	3.4	Environmental Conservation
	4.1	Engineering
Renewable Energy	3.4	Environmental Conservation
	5.2	Building & Construction
Low Carbon	3.4	Environmental Conservation
	4.1	Engineering
	5.2	Building and Construction
	15.1	Accounting & Finance
	15.2	Administration
	15.3	Business and Management

We used these broad subject groupings to generate lists of individual Level 4/5 courses taken by students in London and removed those that were clearly not relevant to LCEGS. There were a large number of courses in Accounting & Finance, Administration and Business & Management but we could find very little evidence that these courses included content directly related to LCEGS (such as carbon financing) so these were also removed.

[9] Health & Social Care might include Air Pollution Control courses and Public Services might include Waste Management courses, for example.

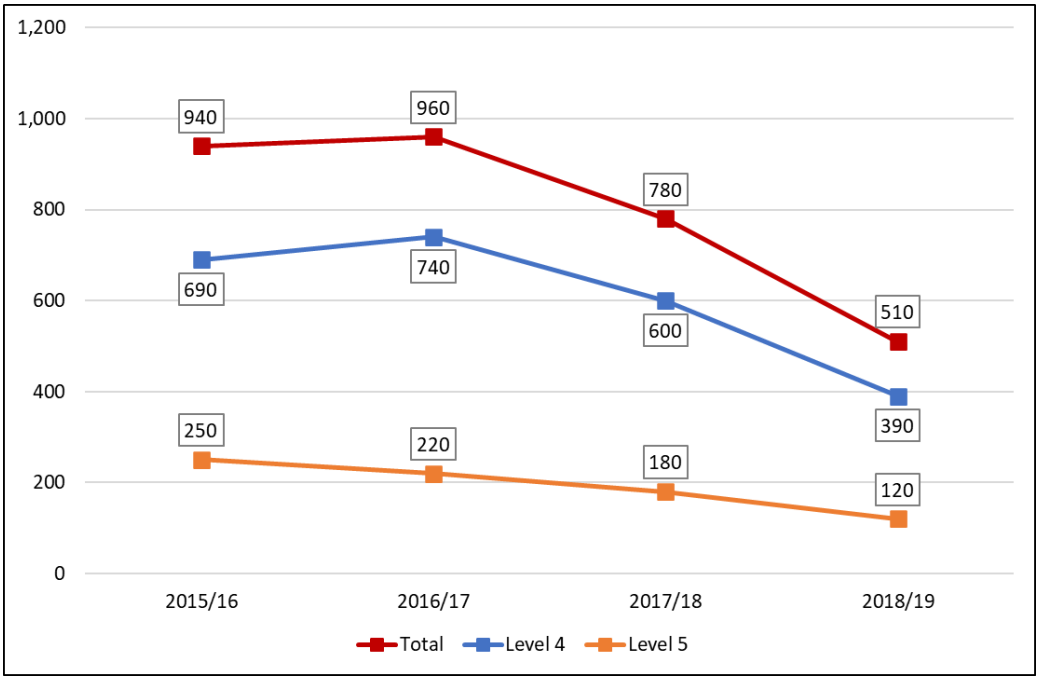
Figure 4.37 shows courses generated from this analysis with more than 20 London students. All of these were in the construction subject area. It is possible that some of the other areas (such as waste management, nuclear engineering, pollution control, electric vehicle technology) are embedded within the detailed curriculum. It is beyond the scope of this project to investigate these matters.

Figure 4.37: Courses with 20 or more students that map to LCEGS definition

Top Courses	Volume
BTEC Higher National Certificate in Construction and the Built Environme	190
BTEC HNC Diploma in Construction and the Built Environment	40
Higher National Certificate (HNC) in Quantity surveying	40
NVQ Diploma in Construction Site Supervision (Construction)	30
Higher National Certificate (HNC) in Building surveying	20
Higher National Certificate (HNC) in Construction management	20

The total number of students enrolled on these courses was 510 in 2018/19 and had fallen by 46% since 2015/16. Over three quarters of students were studying at Level 4.

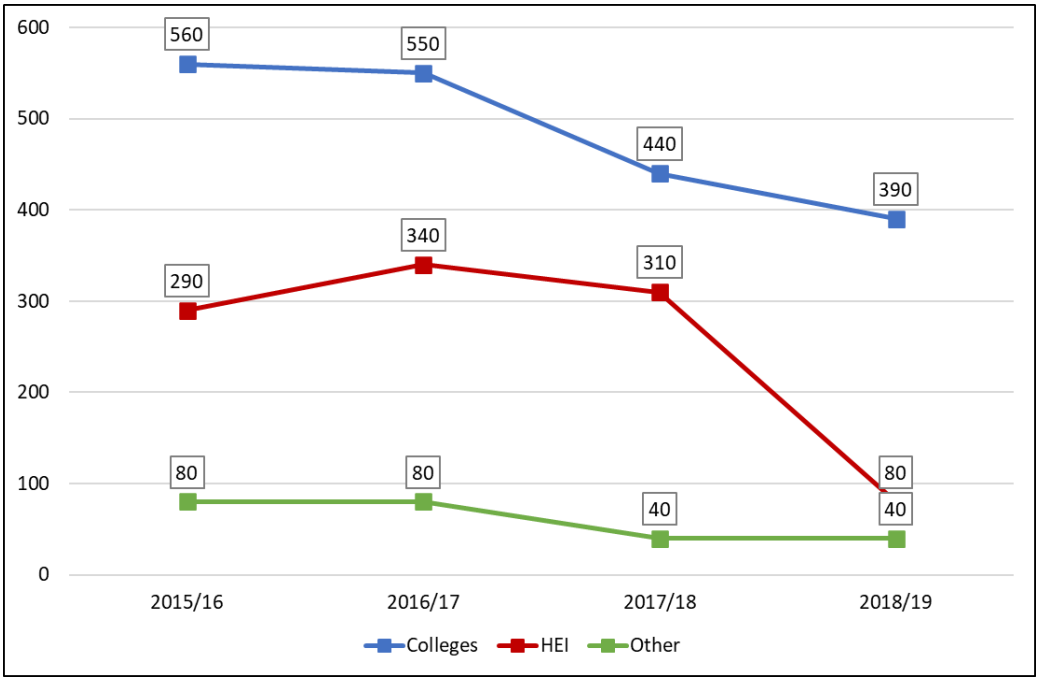
Figure 4.38: LCEGS: trends in student number by level of study



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

Over the four-year period, the number of students attending further education colleges dropped from 560 to 390 (a 31% decrease). The decrease in HEIs occurred between 2017/18 and 2018/19, dropping from 310 to 80.

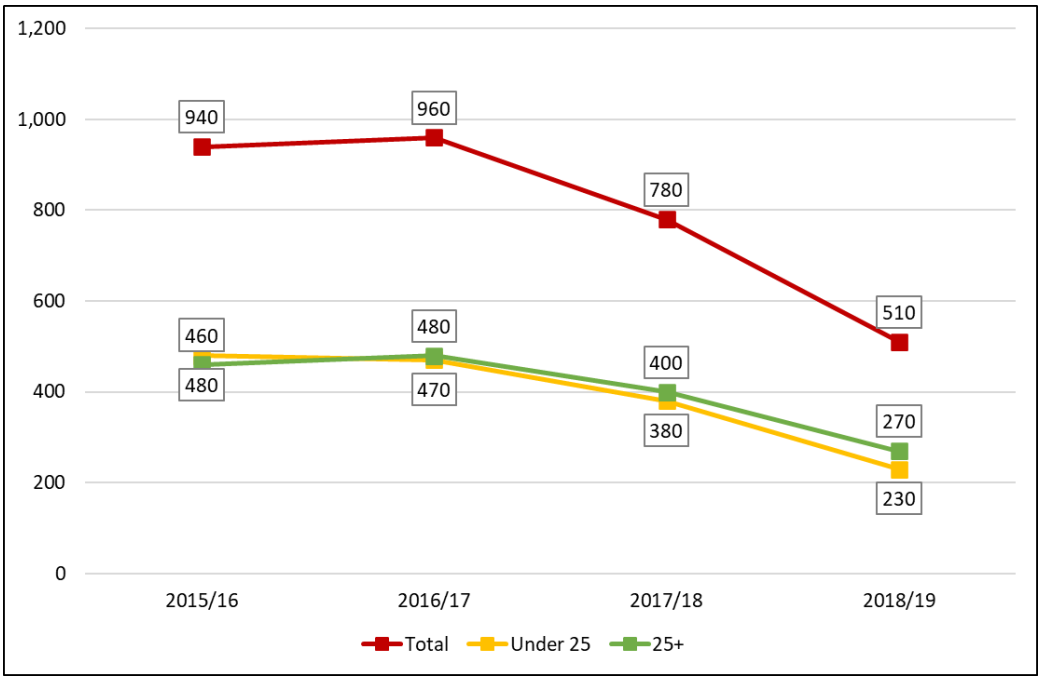
Figure 4.39: LCEGS: trends in student numbers by provider type



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

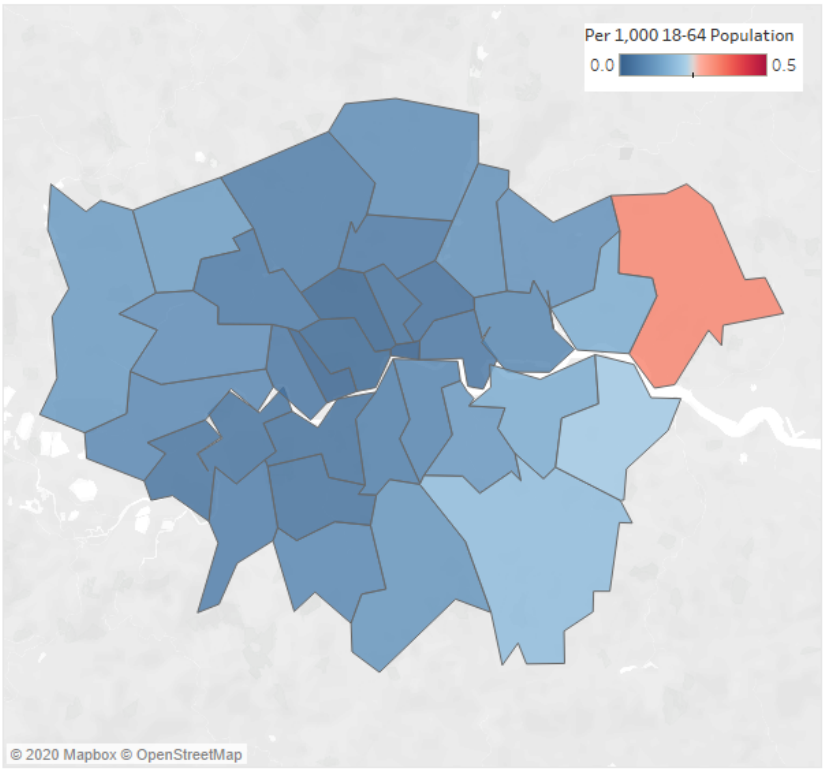
Approximately one half of the students were aged over 25 and one half aged under 25.

Figure 4.40: LCEGS: trends in student numbers by age band



Source: ILR (R14) 2015/16, 2016/17, 2017/18, 2018/19 and HESA data 2015/16, 2016/17, 2017/18, 2018/19

Figure 4.41: LCEGS: student numbers per 1,000 of the 18-64 population



Relatively high concentration of students occurred in Havering and to a lesser extent Bexley. This reflects local specialisms in construction.

Source: ILR (R14) 2018/19 and HESA data 2018/19

Qualitative commentary

In its document on *The Clean Growth Strategy* (HM Government 2017b), the UK Government described this element of its industrial strategy as 'a new technologically innovative, high growth and high value "low carbon" sector of the UK economy'. The new sector had its own low carbon businesses and supply chains. At the same time, the application of green systems, processes and products extended to every sector of the economy. In particular, clean technologies were central to improving the energy efficiency of homes and businesses, accelerating the shift to low carbon transport and achieving better environmental outcomes.

A report on the *London's Low Carbon Market* (GLA 2019b) identified nearly 14,000 companies and close to 250,000 employees working in the LCEGS sector. Within the LCEGS sector, the five largest sub-sectors by sales are carbon finance (carbon trading houses and consultancies), wind (including control systems development and manufacture), geothermal (including head office functions), building technologies (building systems consultants, providers and installers) and alternative fuels (including research and development functions). The range of roles and occupations is wide: from finance, management, research and consultancy through to design, development, manufacture and installation.

Given the cross-sector and sub-sector reach of LCEGS, it is within the content of apprenticeship standards and course programmes (rather than their titles) that references to its technologies, products and services are likely to be located. The word 'environmental' is included in the IfATE route on Agriculture, Environmental and Animal Care but this is a narrow usage. A search of IfATE apprenticeship standards at Levels 4 and 5 identified very few with low carbon, clean technology, environmental or sustainable in their

titles. Of the examples found, all are at Level 4: Corporate Responsibility and Sustainability Practitioner, Community Energy Specialist, Building Energy Management Systems Controls Engineer, and Countryside Ranger.

For courses at Levels 4 and 5, it is in subjects related to engineering, building and construction that LCEGS is a part of the curriculum or a cross-cutting theme. This family of subjects is strongly represented in one of the HEIs in our interview sample. In addition to full-time and part-time HNCs in Construction, there is a full-time HNC in Civil Engineering and full-time and part-time HNDs in Building Services Engineering. Subject to grades, progression to the associated bachelor degree is available in each case. Part-time study for these qualifications is particularly strong. A Construction Design and Build apprenticeship, a Construction Quantity Surveying Technician apprenticeship and a Construction Site Supervisor Apprenticeship are planned. Each is at Level 4, with an HNC in Construction as the embedded qualification.

This HEI is one of seven Construction Academy Hubs set up and funded by the GLA. These are intended to help address the construction skills shortage in the capital. According to *Skills for Londoners* (GLA 2018c), public and private housing construction is set to grow strongly between 2018 and 2022. More than one-quarter of the construction workforce in London is from the EU and it is a higher proportion in residential construction. Exit from the EU posed a particular problem to the future supply of skills in the homebuilding industry. The hubs look to strengthen communication, collaboration and coordination between employers and training providers. The aim overall is to improve the quality, accessibility and industry relevance of training across the capital.

At the other three HEIs in the interview sample, engineering and environmental subjects are only available as bachelor degrees. Provision at Levels 4 and 5 in building, construction and engineering is often a staple of the higher education in further education colleges. Five of the colleges in our sample offer undergraduate and professional qualifications at these levels and two of them are also hubs in the academy scheme. In one of the college hubs, HNC and HND courses are offered in Construction Management, Building Services, Building Surveying and Quantity Surveying. These are franchised courses with progression pathways to linked bachelor degrees at the partner university. A single HNC in Construction and the Built Environment is provided by the college in its own right. At the second college with a hub, there are Level 4 apprenticeships in construction and built environment, construction management, project management and commercial procurement and supply. A Level 5, an operations/departmental manager apprenticeship is offered.

A similar range of subjects is taught at the other three colleges in our sample. In the first, all its courses and pathways lead to HNC qualifications and all are studied part-time. They are provided alongside Level 4 apprenticeships in construction. In the second, all its HNC and HND courses are full-time. Its consultant/partner apprenticeship and its operations/departmental manager apprenticeship are at Level 5. In the third, Level 4 courses in site management and site supervisory studies lead to professional qualifications awarded by the Chartered Institute of Building.

Skills shortages in building and construction in London are long-standing. The employers in our sample acknowledged that the role of large organisations had become ever more important. On the one hand, the sector is characterised by a high level of sub-contracting, much sole trader activity and, for workers on major projects, movement between sites. On the other, there is increasing demand for specialist skills relating to advanced technologies and materials, legal and environmental responsibilities, project management, and site supervision and operations.

Engineering and Manufacturing, together with Construction, are the IfATE routes that most closely relate to LCEGS. Transport and Logistics is a third but we examine this route under the last of the priority sectors, Advanced Urban Services. There are 180 apprenticeship standards under Engineering and Manufacturing, including some under development. Twenty are at Level 4 and five at Level 5. Only one is explicitly addressed to environmental concerns, a Level 5 Metal Recycling Technical Manager apprenticeship. There are 105 apprenticeship standards under Construction. Only eight are at Level 4 and there are none at Level 5. One is concerned with the control, performance and of energy usage in commercial and public buildings.

At Levels 4 and 5, one of the reasons for the small number of Construction apprenticeships might be due to the reputation and the wide recognition and continuing appeal of the HNC and HND in the sector. The awarding organisation for the HNC and HND in Construction is in our interview sample. In the current specification, there is a wide range of general and specialist units, both core and option. As with other qualifications, the unit titles do not signal LCEGS themes or perspectives, although these might feature in the curriculum.

The alignment of the HNC and HND to professional body requirements is emphasised, including the exemptions secured from certain memberships for students. Important as well is the 'clear line of sight to employment' and to 'progression to a degree at Level 6'. For employers who previously sponsored their workers to undertake only these qualifications, the costs, risks and benefits of workforce development to a higher level are carefully weighed and regularly reviewed. We report employer and provider perspectives on this and related questions in Part Five.

4.7 ADVANCED URBAN SERVICES

Quantitative Commentary

The GLA *Economic Development Strategy for London* (GLA 2018b) described advanced urban services as the 'application of new technologies such as the "internet of things", big data and predictive analysis' to disciplines like architecture, urban design, planning, engineering, property development, energy and transport. The strategy states that 'these services have the potential to make cities work better, or "smarter", so they become more productive, sustainable and liveable'.

There is no single agreed definition of the advanced urban services sector. The GLA Economics discussion paper *Defining the Advanced Urban Services Sector* (GLA Economics 2018a) suggested a number of possible alternatives. Most of these are based on either a broad or detailed listings of SIC codes. The broad industry SIC categories suggested in the paper that are relevant for advanced urban services are listed below.

Figure 4.42: Draft broad definition of the advanced urban services sector

SIC07 Code	Description
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
35	Electricity, gas, steam and air conditioning supply
36	Water collection, treatment and supply
37	Sewerage
38	Waste collection, treatment and disposal activities; materials recovery
39	Remediation activities and other waste management services
41	Construction of buildings
42	Civil engineering
43	Specialised construction activities
49	Land transport and transport via pipelines
50	Water transport
51	Air transport
52	Warehousing and support activities for transportation
61	Telecommunications
62	Computer programming, consultancy and related activities
63	Information service activities
71	Architectural and engineering activities; technical testing and analysis
72	Scientific research and development
74	Other professional, scientific and technical activities
80	Security and investigation activities
81	Services to buildings and landscape activities
84	Public administration and defence; compulsory social security
86	Human health activities
87	Residential care activities
88	Social work activities without accommodation

It is important however to distinguish between the industries that could be transformed through the introduction of advanced urban services and the set of skills (and courses) needed to make this happen. This would not be achieved by simply 'mapping' SIC codes to occupations and courses. For example, most existing courses in human health, residential care, waste collection, energy and transport are likely to focus on existing skillsets rather than the application of new ways of working envisaged by advanced urban services.

In practice it will be the training and development of individuals with the type of skills outlined in the *GLA Economic Development Strategy for London* (such as the internet of things, big data and predictive analysis) working within the context of these 'urban services' which will be crucial to long term success. There will therefore be a high degree of overlap with the tech and digital priority sector in terms of courses discussed earlier in this part of the report. The key difference will be in the industrial sectors in which the individuals work rather than the courses taken.

Qualitative Commentary

In its response to the Green Paper *Building Our Industrial Strategy* (HM Government 2017a), the GLA highlighted the multidisciplinary and overlapping nature of advanced urban services, a sphere that is 'directly involved in designing and creating the sustainable and inclusive cities of the future' (GLA 2017).

In this conception, advanced urban services incorporated many traditional disciplines, ranging from urban design and management to environmental and transport infrastructure, housing and planning. It embraced newer fields relating to digital technology, data and sustainability. There are overlaps with other sectors across the London economy, including the 'cleantech' sector and the university and research sector. There is recognition of the leading role played by small and medium size enterprises in urban open data, spatial data analysis, modelling and visualisation. In *The London Plan* (GLA 2019c), architecture, property development and energy are added to the list of disciplines underpinning the advanced urban services sector.

London is expected to be 'a global test-bed' for smart city solutions. To support this, common standards for collecting data need to be established and more data made open to the public. Relationships are to be forged with the Catapult technology and innovation centres set up and overseen by Innovate UK. These are not-for-profit centres to connect businesses with research and academic communities. In 2019, the Future Cities Catapult and the Transport Systems Catapult merged to form the Connected Places Catapult. The function of merged entity is to 'convene the disparate parts of the market to help innovators navigate the complexity of doing business, creating new commercial opportunities and improving productivity, socio-economic and environmental benefits for places' (Connected Places Catapult 2020).

Given this breadth of definition, there are multiple intersections and crossovers between advanced urban services and two of the other priority sectors: tech and digital; and LCEGS. There are links as well to the health and social care sector and the culture and creative industries. In this commentary, we focus on transport and infrastructure. In part, this is because London is involved in major infrastructure projects concerned with rail (Crossrail, HS2), river (Thames Tideway Tunnel) and runway (Heathrow). Transport and Logistics is also one of the IfATE routes where apprenticeship standards have been approved, at Level 4, for Aviation Operations Manager, Port Marine Operations Officer and Passenger Transport Operations Manager and, at Level 5, for Marine Pilot. A Level 5 apprenticeship is in development for Transport and Warehousing Operations Manager. In the IfATE Engineering and Manufacturing route are apprenticeship approved, at Level 4, for High Speed Rail and Infrastructure Technician, Rail Engineering Advanced Technician and Road Transport Engineering Manager and, at Level 5, for Rail and Rail System Engineer.

Transport technology and urban mobility are specialisms at one of the London IoTs. Indeed, the original name for the IoT was the London Institute of Transport Technology. A leading industrial manufacturing company in rail technology and transportation is a partner employer. Another is the body responsible for trade, traffic, navigation and conservancy on the Thames tideway and estuary. The original plan was for a facility at Albert Island. The new proposal is for a presence in the Royal Docks Enterprise Zone.

At the HEI to the institute of technology, there is no intention to offer qualifications at Levels 4 and 5. It is at the FEC to the institute of technology that courses in transport will be developed, especially at Level 4. In the industries served by the college, 'Level 2, Level 4 and Level 6 are the entry points'. While it is 'easy' to recruit at Level 2 and Level 6, employers report that 'it is difficult to get skills at Level 4'. Unlike at the partner HEI, the engineering taught at the college is 'much more applied'. It is about 'how you keep transport infrastructure on the road' and 'doing retrofit'.

In the rest of our sample, only one institution has specialist provision in transport engineering at Level 4 or Level 5. At this HEI, the Level 5 Rail and Rail Systems Engineer apprenticeship is offered in five pathways: signalling and control; traction and rolling stock; track; telecom, networks and digital; and electrical. The embedded qualification is a FD. The same pathways are available in the Rail and Rail Systems Senior Engineer degree apprenticeship.

4.8 SUMMARY

- The use of administrative data to map between courses, occupations and sectors has limitations. Definitions of sectors are uneven and overlap. Coding systems for courses and subjects do not map directly to those for occupations and industries. Alignments between the content of courses and the skillsets required by sectors are not necessarily signalled in the titles of qualifications. Hence, the feasibility of mapping is firmer in some sectors than others.

- There is significant variation between sectors in the profile of Level 4 and 5. They differ in the volume of activity at these levels, the popularity of qualification types and the locations of study. For courses, the trend lines for recent years are flat or otherwise indicate a slight or significant fall. For apprenticeships, the numbers are smaller.

- In tech and digital, a sharp fall in the number of London residents enrolled on courses is accompanied by a significant increase in apprenticeship starts. Around three-quarters of course enrolments are at Level 5 and the decline has been steepest at Level 4. In this sector, vendor qualifications are available, often provided by private training organisations. Apprenticeship numbers have increased five-fold in the recent period. In culture and creative, there is a large increase at Level 4 and big decline at Level 5. Overall course numbers show a small decline. The number of apprenticeship starts is very low.

- In health and social care, course and apprenticeship numbers are by far the largest in this sector. There is a fall in course numbers but apprenticeship starts are increased. Efforts to tackle skills shortages and gaps are priority. Most course student numbers and the vast majority of apprenticeships are at Level 5. Three out of five students are registered at higher education institutions. Public institutions have recently replaced private organisations as the main providers of apprenticeship training.

- In low carbon and environmental, there is a fall in course enrolments at Levels 4 and 5. In this sector, broad subject groupings have to be used to generate a list of relevant courses. All of these are in the area of construction. Over three-quarters of students are studying at Level 4. In advanced urban, no single agreed definition is available to inform an analysis. There is a high degree of overlap with tech and digital and with low carbon.

- Newly approved apprenticeship standards are beginning to feature in some sectors, especially health and social care. Approved higher technical qualifications in the digital route will be offered from 2022. This will be followed by approved qualifications in the construction route and the health and science route in 2023.

- In Part Six, we highlight the importance of monitoring the effects of these developments and assessing the need for future organisational hubs in specialist fields and priority sectors.

PART FIVE: PROVIDER, EMPLOYER AND AWARDING BODY PERSPECTIVES

In this part of the report, we illustrate perspectives on the provision of, and demand for, courses and apprenticeships at Levels 4 and 5. Themes and issues are discussed under four headings. In the first, the forms taken by this education and training are considered. In the second, the demand for this provision is examined. In the third, the value of qualifications is discussed. Finally, the conditions for growth and change are reviewed.

The fieldwork findings reported here extend those presented in respect of priority areas in Part Four. They are illuminative, not representative. They contribute to a larger commentary on the dynamics of provision, participation and employer engagement in London. They convey a variety of viewpoints on how education and training at these levels is regarded, positioned and managed. In the opening section, we set the scene for the topics and discussions that follow.

5.1 DYNAMICS OF PROVISION

The education and training providers in our interview sample reflect the differing scales, styles and contexts of Level 4 and 5 activities in London. The range of their involvements is varied. Some make course provision and undertake apprenticeship training. Others do one but not the other. Some offer courses and apprenticeships in cognate or different subjects. Some do everything from designing and teaching programmes, including awarding qualifications and credits, through to sub-contracting student numbers and validating courses at other institutions. Some recruit their own students to Levels 4 and 5. Others only receive Level 4 and Level 5 students, usually into their bachelor degrees. Some only have full-time courses at these levels. All such variations and combinations are represented in our interview sample.

As noted in Part Two, these activities operate in a dynamic environment dominated by intense competition for full-time bachelor degree students, by the approval of higher and degree apprenticeships and by new regulatory regimes. Market-based funding reforms have accelerated undergraduate expansion at Level 6 (relative to Levels 4 and 5) and overwhelmingly favoured full-time over part-time modes of study. As reported in Part Three, the participation of Londoners in courses at Levels 4 and 5 has declined while, from a lower base, apprenticeship numbers at these levels have increased. Unlike at Level 6, the markets for course provision at Levels 4 and 5 are predominantly local. Older and part-time students feature strongly, including those with direct financial backing from employers. By design, most apprenticeships are geared to local populations.

Competitive conditions are, arguably, greater in London where there is a crowded market for higher education and for domestic and international students (HEFCE 2012). The number of higher education institutions and campuses in the capital has increased. Alternative providers and independent training organisations are many. There are fewer further education colleges due to mergers. As a result, their higher education is usually enlarged. On the back of a long-term relative decline in participation at Levels 4 and 5, a mix of institutional responses is evident.

With some notable exceptions, the older universities and conservatoires in London teach courses that lead mostly or only to bachelor and postgraduate degrees (OfS 2020). Among modern (post-1992) universities, there are examples of a retreat from Level 4 and 5, at least in the form of standalone courses. At the same time, apprenticeships at these levels are often a new venture. At other modern universities, there is rationalisation and renewal around areas of strength. As a response to heightened competition, the addition

of a foundation year to the standard bachelor degree is increasingly common, across older and younger universities.

Most general further education colleges in London are providers of higher education. New courses are offered alongside established programmes. Courses of higher education are generally accompanied by higher apprenticeships. Except at the London campuses of a college group holding degree awarding powers, further education colleges in the capital do not award their own qualifications. They have validation and sub-contractual partnerships with universities located inside and outside London. These serve as progression pathways to linked bachelor degrees.

A good number of alternative providers and independent training organisations have provision at Levels 4 and 5. Where this is course provision, as with APs, most is offered on a full-time basis. This provision is often their sole focus. Another group of APs only offer courses at Level 6 and above. Except at some specialist organisations, higher apprenticeships are rarely part of their provision. A third and much larger group of independent training organisations support apprenticeships. Much of their work is at Levels 2 and 3 but higher apprenticeships are included in the provision. Like colleges, alternative providers of higher education look to Pearson (or an HEI licensed by Pearson) for the award of higher national qualifications (HNC and HND) and, for their other undergraduate awards, they are dependent on universities for validation services.

In recent years, there have been concerns about the financial health of individual universities. In 2019, a private university in London (GSM) went into administration because it could not recruit and retain enough students. Many of its students transferred to other providers (OIA 2020). Concern about the financial viability of further education colleges triggered a process of area based review which resulted in the present merged institutions and college groups in London. Many APs are small and medium sized enterprises which are vulnerable to shifts in student demand.

University profiles

A majority of higher education institutions in London have student numbers at Levels 4 or 5 or both. In nearly all cases, this is a small – usually a very small – component of their higher education. In our fieldwork sample, there are four universities. Two are post-1992 universities, each with contrasting profiles at Levels 4 and 5. Two are pre-1992 universities, each party to an institute of technology.

At one of the modern universities, the volume of students taught at these levels is among the largest at London-based higher education institutions. Over 500 students are enrolled, including upwards of 100 individuals on apprenticeships. On courses, just over one-half are studying at Level 4. At both Level 4 and Level 5, the great majority are part-time students. Apprenticeship training is largely at Level 4. The significance of this provision is its concentration in a family of engineering, building and allied subjects. Enrolments on a two-year part-time HNC in Construction totalled 150. Numbers on a three-year part-time HND in Building Services Engineering are close to 100.

These are large volumes for single courses at Levels 4 and 5. They are complemented by sizeable numbers undertaking Level 4 engineering technician apprenticeships. Examples of critical mass at these levels are unusual in London. This exceptionalism is attributed to a track record of practice-based teaching and a hard-won reputation in the building industry. Students are routinely supported and sponsored by their employers. No specific or special relationships with employer organisations are necessary to sustain this standing.

Outside this subject cluster are smaller numbers in fields such as baking science and technology, accounting and finance, and diagnostic imaging. Whereas these courses lead to FD, CertHE and DipHE qualifications awarded by the university, all its HNC and HND courses in engineering, building and construction are awarded by the university under licence from Pearson. Only one course (at Level 5) is awarded by a professional body. Other provision is devoted to credit-bearing modules in continuing professional development, mainly in health. Only a small element is at Levels 4 and 5. There are partnerships with other providers in London, including further education colleges.

At the other modern university in our sample, there is no direct recruitment at Levels 4 and 5. At this institution, a decision had been taken to focus its undergraduate teaching and recruitment on bachelor degrees. These are full-time programmes which can be studied on a part-time basis. Except for apprenticeships, Level 4 and Level 5 are not part of the organisational language. In many ways, this is a break with the polytechnic inheritance and closer to the 'all-through' model of pre-1992 universities.

What involvements it has with courses at Level 4 and Level 5 are indirect and external, through academic partnerships concerned with articulation, validation, franchising and top-up degrees. Students studying courses at these levels at partner institutions can transfer to the bachelor degree at the university. Of its apprenticeships, all but one is at Levels 6 and 7. All the same, this Level 5 apprenticeship is the largest by far of its provision under standards.

At both universities, the coupling or integration of a foundation year with a bachelor degree programme is common. Offering 'a route into' the full degree, the additional year is cast as a year of higher education. The modular-credit structures at each institution are designed to facilitate progression into, within and between curriculum pathways. At the university with no freestanding undergraduate provision at Levels 4 and 5, there is long-established expertise in the accreditation of prior learning, including that in the workplace. This was developed at a time when partnerships with further education colleges in London were a key feature of its recruitment policy at the undergraduate levels.

At the two pre-1992 universities, there are no Level 4 and Level 5 programmes. A planned nursing associate apprenticeship leading to an FD will be, for one university, the first qualification to be awarded of this kind. At the other university, an 'FdCert' is the only sub-bachelor qualification to be awarded, in this case for standalone foundation courses available only to international students. Its three current apprenticeships are all at Level 6.

Like their post-1992 neighbours, both universities have developed integrated degrees with 'foundation courses/years'. This is less extensive at the university with a tradition of four-year undergraduate degrees which incorporate one-year ('thick') sandwich places in industry. This university is in membership of an IoT led by a further education college. At the other IoT, it is the university that is the lead institution. In both cases, the universities have not been previously involved in formal collaborations with their college partners. Within their IoTs, the expected division of labour is that further education colleges will undertake Levels 4 and 5 while the universities will do Levels 6 and 7.

College missions

There are seven further education colleges in our interview sample, three of which are partners in IoTs. Five are the result of recent mergers. Three are two-way mergers. Two are three-way mergers, one with a separate training arm for apprenticeships. The resulting configurations are consequential for the size, scope

and reach of the higher education now offered by enlarged colleges and by college groups. In some mergers, the constituent colleges retained their profiles and specialisms at Levels 4 and 5. In other cases, this provision is reshaped and managed from the centre.

Across the seven colleges, their provision and mission in higher education is broadly similar. Undergraduate courses at Levels 4 and 5 are the core provision, sometimes supplemented by top-up and full bachelor degrees. Students on these courses are eligible for fee-loans. Courses leading to professional qualifications listed on the Ofqual register are a smaller area of work. Many of these courses are designated for advanced learner loans. The number on higher apprenticeships is normally smaller (sometimes much smaller) than the total on courses. Even so, for individual colleges within a college group, the balance is reversed. Only one college did not support apprenticeships at these levels. Most apprenticeships are under standards, with a few still under frameworks.

At the six colleges which supplied data, the total number of students and apprentices at Levels 4 and 5 ranged from over 100 to around 600. One of the six – with a total of 500 – is part of a college group, so the overall number is larger. While the numbers for most courses or apprenticeships were able to be provided, there are gaps in a few cases. Whatever the reasons for this, it proved easier at some institutions than others for this information to be assembled. As highlighted in our search and analysis of provider websites, there are differences in where and how information is presented, especially as between higher education courses and higher apprenticeships.

In three colleges, numbers at Level 5 are the largest. At the three other colleges, most are at Level 4. Those studying on a part-time basis are a majority at four of the colleges. These are small majorities in two cases. Full-time students are a majority at one college and, at the other, all students study on a full-time basis. At two colleges, sub-contracted programmes coexist with their own higher education courses. Undergraduate courses mostly have FDs taught alongside HNDs and HNCs. At all but one of the six colleges, courses leading to professional certificates and diplomas are studied at Levels 4 and 5.

An array of professional and specialist subjects are offered. Courses span the creative and performing arts, fashion design and media production, education and counselling, construction and the built environment, engineering and computing, travel and tourism, health and social care, and business, accounting and management. At these colleges, apprenticeship training is undertaken in the areas of resource, project and site management, information technology and software development, manufacturing engineering, care leadership, commercial procurement and supply, and taxation and accounting.

Colleges in our sample, then, have a mission in higher education which is usually focused on Levels 4 and 5. The typical pattern is of a spread of courses and subjects, the majority recruiting middling, modest or low numbers. A few have larger intakes, especially where a popular programme is offered at more than one campus. However, the yardstick at Levels 4 and 5 is different from that applied to most university courses. For colleges, course enrolments of more than 15 students are frequently regarded as solid or strong. In some situations, the size of classrooms, studios and workshops is a constraint on numbers. Class sizes of this order, it is claimed, make for effective teaching and learning, especially where students are diverse in age and background.

Although a small segment of the college, it is common for its higher education to be organised and coordinated separately. In part, this is to do with arguments for 'higherness' and the expectations of students and staff. It is also a function of different funding, regulatory and quality requirements. This is not

straightforward. Undergraduate courses and professional programmes have their own oversight bodies. Apprenticeships bring other relationships into play. Rather than treat higher apprenticeships as part of higher education, there is often a stronger case for apprenticeships at all levels to be managed separately and as one enterprise.

Organisational matters relating to education and training at Levels 4 and 5 are brought into sharp relief by institutional mergers. During the study, one of the colleges in our interview sample merged with a second further education institution. Alongside their different institutional traditions and styles are two sets of higher education. In both, HNCs and HNDs are the main provision but these are all full-time at one college and all part-time at the other. Although there are similarities in some of the subject coverage (art, design and fashion), there is a wider range of qualification types and awarding bodies at the one, including a FD, a top-up degree and professional certificates and diplomas awarded by four different bodies. As a result of the merger, the numbers at Levels 4 and 5 have more than doubled.

A second source of turbulence is regulatory. For two colleges in our interview sample, their applications to join the OfS register were refused. This led to a serious reduction in their higher-level provision. Except for 'teach out' students approved by the OfS, they are no longer able to offer undergraduate (prescribed) courses in their own name. Both colleges are partners in separate IoTs. One is the lead institution. At this college, its overall numbers at Levels 4 and 5 dropped from around 500 to 300. The effects of these regulatory decisions extend to the whole college. The potential for reputational damage led this college to challenge the decision in the high court.

Alternative providers, independent training organisations and national colleges

Different again is the provision made by private providers. Most alternative providers offer undergraduate courses, some exclusively at Levels 4 and 5. These organisations are concentrated in London. Most independent training organisations undertake apprenticeship training at more than one level, including at Levels 4 and 5. Some ITOs are based in London but operate nationally.

Most APs are small and medium size enterprises, including micro companies and start-ups. The majority are for-profit businesses. Others are not-for-profit or charitable institutions. For many, higher education is their sole activity. Courses at levels below the bachelor degree are primarily at Level 5. The great majority of students study on a full-time basis. A limited range of subjects is taught. At one end are high-volume HND courses in business and management. At the other are specialist subjects leading to specific awards. Some ITOs are often aligned to particular industries or sectors. A minority operate in association with public providers.

Other specialist education and training providers are funded by employers, or through the government, or both. An early example was the Tunnelling and Underground Construction Academy (TUCA) set up by Crossrail in East London. With additional funding from central government, TUCA was expected to train people in the skills required by Crossrail over the lifetime of the project. After Crossrail, it would operate as an independent training organisation and become a long-term provider of construction skills for major building and infrastructure undertakings in London. The National Construction College (NCC), the training arm of the Construction Industry Training Board (CITB), was appointed as 'the skills delivery partner' for TUCA.

Three of the employer organisations in our interview sample, each involved in the building and operation of Crossrail and the Elizabeth Line, were asked about this experience. One commented on how they 'struggled' with the NCC and their staffing of TUCA. There came a point when 'we thought of running things ourselves'. The expertise in further education colleges 'did not match our needs' and they 'did not have the capacity to respond rapidly'. Eventually, TUCA was transferred to Transport for London and its running was subcontracted to Prospects College of Advanced Technology, a further education college based in Essex. As a result of financial difficulties it merged with South Essex College.

Those interviewed drew lessons from this episode. First, TUCA went for a purpose-built training facility: a 'flagship' in which 'everything was completely driven by the industry'. Securing 'a lasting skills and employment legacy' was always going to be difficult and the problems with NCC were not the only things to weaken this endeavour. Second, it was clear from the outset that the majority of skills needs were going to be at Levels 2 and 3 but, in retrospect, 'we should have done more on higher-level education and training'. Apart from skilled tunnellers with a licence to practise to agreed standards, there were skills gaps from engineers through to project managers to site supervisors. There was an opportunity here for colleges and universities to contribute 'vocational pathways'.

Third, it was sometimes too easy to point to the lack of continuity in employment in the industry for the shortage of skilled workers. Major infrastructure projects have been a regular feature of the London landscape and 'will remain so'. The legacy documents from these projects will repay a visit, if only to better understand how 'we were creating our own skills shortage'.

National colleges are another type of specialist provider. Five were announced in 2016. They were funded by government to act as national centres and hubs for high-level training in strategic sectors. One has a remit for digital skills and is located in London. Another two have sought to engage providers in city region. That for the creative and cultural industries is within the Thames Estuary Production Corridor, a hub for creative production funded by the GLA and the South East Local Enterprise Partnership. That for advanced transport and infrastructure entered into a partnership with a further education college in London. At the time, projects such as Crossrail and HS2 were among the reasons given to bring 'high-speed learning provision' to the London area.

In some respects, the national college in our sample resembled a local further education college, with sixth form provision for young people and apprenticeship training undertaken for employer organisations. Course provision is all at Level 3. Apprenticeships are at Level 4, with the possibility of extension to Level 6. At Level 3, the specialist focus on digital skills is reflected in subjects that include computer science, digital media, and graphic communication. The higher and degree apprenticeships are geared to software development, data analytics and digital innovation. There are no free-standing courses leading to qualifications at Levels 4 and 5. Nor are short courses provided for employers. Although its engagement with employers is London-wide, its role as a hub or beacon for digital skills is otherwise confined. The impact of the other two national colleges is considerably less. A number of interviewees commented on the low profile and the small size or scope of activity at the national colleges with a footprint in London.

Digital skills are also the specialist area of a private training organisation in the interview sample. As the commercial arm and subsidiary of a further education college, its work is affected by developments relating to the college as whole. Following a decision not to approve the college onto the OfS register, the teaching of HNC courses in computing by the training provider is in abeyance. Offered part-time, their 'twilight

sessions' made them attractive to people in employment. For now, apprenticeships and short bespoke courses are the main business.

For much of its existence, the training academy created to support Crossrail and its contractors was run through the Construction Industry Training Board. In this industry, employers make an annual payment ('the CITB levy') to support vocational training. In return, employers can access grants to improve the skills of the existing workforce. Only in this sector are such arrangements still in place. More common is the role of industry and professional bodies in the accreditation of training and the recognition of qualifications. As in the example from the creative sector in our example, these organisations identify future and current skills gaps in the industry, they map and quality-mark professional pathways, and they advise on the design and development of apprenticeships.

5.2 DIMENSIONS OF DEMAND

Employers have been assigned leadership, development and partnership roles in the reform of post-16 education and training, including measures to strengthen provision and demand at Levels 4 and 5. Nationally, an employer-led organisation – the IfATE – is responsible for the approval of occupational and apprenticeship standards. In Part Four, we identified the apprenticeship standards approved at Levels 4 and 5 relevant to the priority sectors. In partnership with employers, national colleges and institutes of technology were established to build technical education and routes into employment at Levels 4, 5 and 6. These organisations are expected to be among the first to offer approved higher technical qualifications. To be accorded a quality mark, the qualifications must be matched to the IfATE occupational standards.

Employer engagements

The majority of the 16 employer organisations in our sample are directly involved in these activities. Most pay the apprenticeship levy and have their own apprenticeships. Several are members of trailblazer groups and route panels within the IfATE. They lead on apprenticeship matters in professional bodies and trade associations. One company is part of a 'technical apprenticeship consortium' with its own preferred training providers and service-level agreements. Another organisation is part of a national operation with regional and sub-regional bodies that set targets for higher and degree apprenticeships. One is a funder of 'academies' dedicated to training staff and students at colleges and universities in its own technologies.

A number of businesses are involved in construction or infrastructure projects in London. Some have experience of previous ventures, when apprenticeships were under frameworks and when contractors had targets for recruiting and training local workers. For those interviewed, there are 'lessons to learn' about the role of education and training in these contexts. Some of the same companies expect to tender for future schemes in the capital. The work of these organisations is specialist in some or most of its areas. It is multilevel and multidisciplinary. Often, it is leading-edge.

Four employer organisations are 'anchor' partners to institutes of technology. A fifth is not an anchor employer but is represented on the governing body of the lead institution and through the 'employer advisory group' that will feed into the IoT. All but two of the other employer organisations are linked to education and training providers in the sample.

For some, the links largely relate to recruitment, including from courses at Levels 4 and 5 as well as onto their apprenticeships. For others, they relate mainly to workforce development, through the sponsorship of

employees to attend courses or, increasingly, the use of apprenticeship training to upgrade the skills of existing staff. In response to changing market conditions, commercial employers expect the balance between recruitment and workforce development at Levels 4 and 5 to alter. Where relationships with education and training providers are not working well, they are changed. Only the small and medium size enterprises in the sample do not have on-going relationships with education providers.

The organisations in our sample are mostly private companies, including consultancies. The public enterprises are national organisations. Several firms are international concerns, one a global leader in its field. A small number provide services exclusively in and for the capital. A more common pattern is for London to be a base for companies that operate nationwide or worldwide. For their operations in the capital, they look to recruit a large part of their staff from the London region. To meet their workforce development requirements, on the other hand, universities, colleges and training organisations in the capital are not the only providers of choice.

Our interviews indicated a variety of recruitment and training approaches. In some organisations, graduate recruitment at Level 6 is the key point of entry. Given a large and expanding population with bachelor degrees, it is conceded that not all are necessarily moving into graduate jobs. However, it is less clear whether their subsequent training is to remedy mismatches in skills or more a response to the evolving knowledge base of the organisation. Many businesses have restructured in recent years. Changes to their training schemes usually followed suit.

In some enterprises, there are graduate and non-graduate lines of recruitment. The non-graduate pipeline is usually associated with a wider range of occupations. Where these are technical or associate professional positions, the entry requirements are not limited to those with qualifications at Levels 4 and 5. Businesses adopt a variety of practices and preferences. Where the patterns of work, conceptions of talent and notions of career are very different, as in the creative industries, there is no assumption of ‘a graduate job’.

Levy effects

Except in our interviews with start-ups, there is widespread acknowledgement that the apprenticeship levy is a major influence on employer investment in education and training, especially at the higher levels. On attitudes and actions, ‘it has made a clear difference’. Dealing with the levy required organisations to get to grips with a language of standards, routes and levels. It brought them into relationship with training providers, sometimes for the first time. It invited a comparison of costs, as between course provision and apprenticeship training.

Employers cite examples where this has raised awareness of Levels 4 and 5, including the types of undergraduate and professional qualifications that might be included in a higher apprenticeship. For one organisation, the levy and the new apprenticeship standards occasioned a shift from non-accredited training (some provided in-house) to apprenticeship programmes at Levels 3, 5 and 7 leading to professional qualifications. In this case, the switch involved no change of training provider for the work at Levels 3 and 5, a private organisation based outside of the capital. For the work at Level 7, a university is expected to be engaged.

At the same time, there is agreement that the levy had probably turned attention away from other training options, such as taught courses leading to qualifications at the same levels as higher apprenticeships. This is less the case where employers already used such courses, although higher apprenticeships in the same

subject fields will, it is suggested, force some organisations to choose between routes. From another quarter came the view that, with funding incentives to stimulate demand for approved higher technical qualifications, the balance of advantage between courses and apprenticeships is likely to shift.

Alongside the levy, the designation of degree apprenticeships is widely regarded as significant. According to one source, they carry symbolic as well as educational value. They elevate the level and status of training, sometimes in ways that mirror or play to academic hierarchies. For a consultancy company well-known for its use of clean technologies, the approval of degree apprenticeships at Levels 6 and 7 prompted a move away from training at Levels 4 and 5. Universities thereby became the preferred or automatic choice of training provider. This is an organisation that faced stiff competition from the finance sector in its recruitment of people qualified in STEM subjects.

Nevertheless, there are other organisations in the sample whose needs and priorities are at Levels 4 and 5. They feature foremost among enterprises who are partners and associates to the institutes of technology. In line with the objectives set for IoTs, they look to contribute to, and benefit from, the enhanced facilities and training opportunities made available by these collaborations. All recognised that 'the IoT is in its infancy' and that there will be 'a change in provision as the IoT progresses'.

For one partner employer, the focus of their contribution is expected to be through a dedicated academy and industry certification. For two others, the curriculum is a likely focus of their effort. Another employer partner is 'a business leadership forum' representing nearly 200 members, from sole traders to multinationals. The organisation acted as a business voice and, in this capacity, it too expected to 'help shape the curriculum'. Another organisation also identified 'a social aim' in their partnership with an IoT. This is a leading supplier of building materials and equipment, with over 600 branches in the UK and many in London.

For each employer partner, the IoT is a chance 'to build our own talent pipeline'. It is about 'getting the right people and retaining them'. At this point, it is an open question whether course provision or apprenticeship training by IoTs will prove the more important to individual employers. Although IoTs are dedicated to specialist provision at Levels 4, 5 and 6, the biggest skills gaps at some partner employers are at Levels 2 and 3. They planned to offer work placements to students undertaking T Levels at their IoT as well as at colleges and schools, with the expectation that some would be recruited into their ranks.

In their talk about IoTs, some employers view them as places where 'young people' can prepare for, and move into, high skilled jobs. Others, by contrast, emphasised their role in 'upskilling' and 'reskilling' the existing workforce. The challenge posed to IoTs in combining these functions is recognised and understood. Either way, problems are anticipated (and already experienced) in attracting and retaining teaching staff with up-to-date knowledge and industry expertise. This is where the 'employer contribution' to IoTs is likely to be central.

In our sample, employer demand is frequently expressed through specific examples and immediate needs. In so doing, reference is regularly made to approved occupational and apprenticeship standards. Sometimes this is simply to instance a standard which is matched or suitably aligned to the requirements of the employer. Alternatively, it is to identify a relevant standard but one that it is not approved at the level sought. In some cases, it is to highlight an occupational role that is not under apprenticeship standards.

One partner employer had little difficulty in pointing to the apprenticeship standards in cyber security, artificial intelligence and project management which it had targeted. A second pointed to a standard for construction quantity surveying that is at Level 6 but not, for its purposes, at Level 4. The same employer described specialist needs in two further areas: one involving the operation of an advanced piece of equipment (not covered by a standard) and the other relating to public and commercial procurement (covered by separate standards). In addition to gaps in the areas and levels encompassed by occupational and apprenticeship standards, there is the problem of 'alignment'. In some fields, apprenticeship standards 'meet the needs from a client perspective rather than a contractor's perspective', yet 'these are two different things'.

In some sectors, such as digital, the issue for organisations is more often how to assess, anticipate and articulate demand. Here, apprenticeship standards can be useful but to a limited extent. Large organisations can sometimes draw on their own technical expertise to make these judgements. Some in our employer sample have used consultants. One of the private training organisations in our sample has a consultancy arm. Bespoke short courses are one outcome, particularly where vendor-specific qualifications are among the solutions purchased by the employer.

Competition effects

In London, providers of education and training at Levels 4 and 5 operate in a highly competitive market. At the undergraduate levels, demand for the bachelor degree is buoyant, with continuing growth in overall numbers. By contrast, the number enrolled for courses leading to sub-bachelor qualifications is little changed over recent years, so reducing its share of higher education.

At the education providers in the sample, demand for Level 4 and Level 5 education and training is variously experienced as 'stable', 'flat', 'soft' and 'uneven'. In not a few cases, weak demand for some courses coincided with solid recruitment to other programmes. Three universities in our sample did not offer courses at these levels. The other university expected to see growth in its higher apprenticeships. Most colleges report a moderate increase or an overall decline in enrolments but the picture is complicated by mergers (likely to bring additional numbers), by regulatory decisions (reducing numbers in the case of refused approvals) and by apprenticeships (not always included by providers in their descriptions of demand).

In undergraduate education at Levels 4 and 5, there is a measure of price competition. For UK and other EU students, universities usually charge the maximum allowable fee for all their undergraduate qualifications. Part-time fees are calculated and charged on the same basis. At further education colleges and alternative providers, the prices for HNCs, HNDs and FDs are generally lower. There are variations by subject. Charges for sub-contracted programmes are generally lower than at the partner university. The prices for Ofqual-regulated qualifications vary, partly reflecting the length and intensity of courses, including those recognised for advanced learner loans.

All providers commented on the effects of a decade of market-led reforms, especially the removal of the cap on the number of domestic students. For the HEIs in our sample, a sharpening of competition for home and international students is the context for their addition of a foundation year to selected bachelor programmes. In one case, it is why they remodelled the whole of their undergraduate curriculum 'towards a set of outcomes at Level 6'. The bachelor degree is the signature qualification: 'We don't recruit to Level 4 and 5 apart from apprentices'.

For colleges, the markets for higher education are predominantly local and regional. A number of alternative providers had hoped to attract students from other EU countries to their courses at Levels 4 and 5. This is seen to have met with limited success. At these levels, there is often competition with, and dependence on, neighbouring universities. The broader access and larger recruitment to universities afforded by foundation years is widely regarded as a competitive advantage, not least by colleges at risk of losing students from their Access to HE courses. The extent of these effects, including that of the rise of degree apprenticeships, is difficult to evidence. Colleges, in turn, can choose between individual universities for their validation services and partnerships. On sub-contracting, colleges encountered shifting policies and positions on the part of some universities. On both sides, this volatility is attributed to conditions of uncertainty, induced or increased by market-led reforms.

The bidding for IoT status revealed its own competitive behaviours. In one IoT, the university partner is not the local HEI but one that is located outside the capital with a London campus. In another, the university partner initially thought 'the IoT might be a competitor' and so decided to be part of it. At the third IoT, the university and college partners 'are not in competition' and it is important that nothing is done to 'blur the relationship between the two institutions'.

5.3 VALUE OF QUALIFICATIONS

Views about the place and purpose of qualifications in courses and apprenticeships are varied. On one matter, however, there is broad agreement. The dual role of undergraduate qualifications at Levels 4 and 5 – as both exit awards and transfer qualifications – is regarded as a normal and necessary feature of this type of provision. For most education providers, these are complementary functions but they required close working relationships with employers on the one side and relevant progression pathways to education and training from Level 3 through to Level 6.

This did not mean that there was no place for end-point qualifications in their own right. At least one college in our sample is active in building an alliance of employers to meet a demand for sector-specific provision at Level 4 or Level 5. There is also the view, voiced by a college leader with a particular interest in Level 4, that everything about regulation at this level is 'about progression' and that, without more prescription from funders, the market for end-point provision 'will not rise'.

Pathways and exits

Progression by way of internal top-up degrees and external transfer to partner universities featured among the further education colleges in our sample. These arrangements are extensive across the eight campuses of one of the large college groups. For their HNCs, HNDs and FDs, they have validation and sub-contractual partnerships with two universities. One of these held a licence from Pearson to award BTEC higher national qualifications. The other is responsible for all the top-up degrees in the college group. Each of these, plus a foundation year to an extended degree, is taught under franchise-type arrangements. In addition to the linked provision, the college group taught its own HNC and HND courses.

All these undergraduate programmes are closely aligned or matched to corresponding bachelor degree pathways at one or both universities. As well, a Diploma in Education and Training provided a route to qualified teaching status. The non-undergraduate courses included a Level 5 certificate in teaching English to speakers of other languages, a Level 4 diploma in therapeutic counselling and a Level 4 accounting professional diploma. A Level 3 accounting technician qualification at the college fed into the Level 4

qualification which, in turn, gave entry to a Level 6 accountancy qualification. As at all general further education colleges in London, the main qualifications at Level 3 (A Level, BTEC National and Access to HE Diploma) are recognised pathways into qualifications at Level 4 and 5, although these are mostly used for entry to bachelor degrees.

Similar types and combinations of qualifications are found at other colleges in our sample. In some, there are no sub-contracted courses or internal top-up degrees. In some, the only undergraduate qualifications are the HNC and HND. Partnerships with one or more universities are standard. Rates of progression to Level 6 are frequently high. At one of the modern universities in the interview sample, one-half of the students on the HNC in construction had moved onto the bachelor degree. Many of these students are employees of engineering and building companies. Their Level 4 studies are selected, encouraged and sponsored by their employers. The HNC in construction is a well-regarded qualification in the industry. It is taught in several colleges, albeit enrolling much lower numbers than at the university.

Progression to Level 6 is an additional cost to the employer but one which, in this occupational sector, many are willing to bear. A major consideration is the shortage of qualified skilled workers in the construction industry (where, for many employers, recruitment at Level 3 is the more difficult area). The need to retain and develop their existing workforce is another. Workers qualified at Level 6 brought income to their organisations, notably through consultancy services.

Mainstream, vendor and bespoke qualifications

Outside of what organisations provided for themselves, or where there are mandatory requirements for continuing professional education, there are few examples in universities and colleges of customised short course provision at Levels 4 and 5. All the same, the scope for shorter courses, shorter qualifications and microcredentials was recognised. Organisations that awarded units and credits are already in a position to do this.

At the private training provider in digital, all apprenticeships are at Level 4. They do not incorporate mainstream qualifications but most offer professional recognition or membership at specified levels. In the digital world, many apprentices 'prefer to study vendor specific qualifications'. Some of these can be provided within the apprenticeship and without additional charge. Alternatively, they are offered outside the apprenticeship at a price determined by the provider.

In the digital domain, it is frequently claimed that mainstream qualifications are found wanting. Higher nationals in this field are 'not very valuable'. Rather, 'it was mainly vendor qualifications that businesses value'. One of the employer organisations in our sample had set up 'academies' to meet a growing demand for industry certified professionals in telecommunications. Four are in London. Three are located at member institutions of IoTs, including where the organisation is a partner employer. The academies are a response to a lack of staff expertise in a sector where 'education is always playing catch-up'.

Only in one of the four academies is there much reported activity. Where the academies of other corporations charged students for their industry certifications, this was not the case with this organisation. The costs of staff training were also met by the academy sponsor. Earlier attempts to offer vendor qualifications alongside or inside the HNC and HND had met with little success, 'mainly because the pace of change was too fast'.

Much of this is at odds with the views of several organisations in our sample, especially start-ups. For them, qualifications – mainstream or otherwise – are not the way their software engineers gained or enhanced their knowledge. Nor is it how they search for and recruit their expert workers, especially in the world of data analytics: 'we are not very interested in educational backgrounds and we do not necessarily start by looking for graduates'. On the tech side, it is about 'a passion for projects'. We look for people with at least two or three years work experience. There were high expectations of self-learning through the open source community and 'we encourage the sharing of expertise internally'.

An organisation concerned with software applications rated experience and expertise above an academic qualification. The vast majority of learning is through 'tinkering' and 'self-teaching': 'all our engineers get to work on everything'. Both of these start-ups are largely unaware of recent government efforts to promote apprenticeships in small and medium size enterprises like theirs. If they did employ an apprentice, it is likely to be on the financial, commercial and marketing side.

Qualifications and apprenticeships

There are disagreements as well about the exclusion or inclusion of qualifications in apprenticeships. On the one hand, apprenticeships standards are expected, as a matter of principle, to be designed and approved without qualifications. Normally, only where a licence to practise is required, or where there is clear evidence that employers could not recruit to a particular job role, is a qualification allowable. If an employer wanted an embedded qualification, then this would need to be funded separately. Some of those involved in trailblazer groups argued that the credibility of some apprenticeships is undermined without an underpinning qualification. The problem at the moment is that 'the apprenticeship certificate on its own has no currency'.

On the other hand, there is the contrary and contradictory case of degree apprenticeships. In on our sample, only the universities are providers of degree apprenticeships. This is not the case elsewhere. For some employers, the problem with the apprenticeship model is its 'all or nothing' character. Without exit points, 'to continue for four to six years was a challenge', particularly for individual apprentices. There is strong support for stepping-off and stepping-on points, with credits awarded at each stage. At the national college in our sample, those who join Level 4 apprenticeships can achieve a FD and then progress to a bachelor degree.

Awards and awarding authorities

A wide range of bodies award qualifications at Levels 4 and 5 in London. These include degree-awarding institutions, national awarding bodies, professional institutes and occupational associations. For some, the London region is a major market for their awards. For those with a focus on the creative and cultural sectors and the accounting and finance sectors, the capital is a key location for their services.

One of the national awarding organisations in our sample is responsible for higher national qualifications, the largest group of Level 4 and Level 5 qualifications. These are taught by further education colleges and alternative providers in the capital. Three universities in London offer these qualifications under licence from the awarding organisation: Greenwich, Kingston and South Bank Universities. A fourth – Coventry University London – is the campus of a higher education institution based outside the capital.

For this awarding organisation, London accounted for eight per cent of its total higher national registrations in England. However, unlike elsewhere, there are more registrations in the city region for its professional awards than for its higher nationals. Registrations for professional awards in the capital are higher at Level 5 than at Level 4. For higher nationals, they are higher at Level 4 than at Level 5. These patterns are attributed to features of the London economy and labour market.

The other national awarding body in the sample is less of a presence in higher education. Its higher-level awards are non-undergraduate qualifications on the Ofqual register. They are offered mainly by further education colleges and private training organisations. Both awarding organisations have developed their qualifications in association with sector and industry bodies. Many of their qualifications carry professional recognition or registration. Where qualifications are authorised in apprenticeship standards at Levels 4 and 5, it is often professional body awards or university awards (such as the FD) that feature as mandatory qualifications.

The three other awarding organisations in the interview sample have a specific, special or specialist focus. Their qualifications have a strong purchase in the capital. Included in one is a wide range of Level 3 Access to HE Diplomas. These are offered by many of the further education colleges in London. Rather than for undergraduate qualifications at Levels 4 or 5, the vast majority of students use such courses to prepare for entry to bachelor degree courses at universities. This pattern is long-standing. Qualifications up to and including Level 3 are the bulk of its work. These are based on units. Higher-level awards are mostly at Level 4. They represent a small portion of the total activity: 'very much niche provision'. Much is driven by the needs of accredited centres. The involvement of employers is indirect. There is no endorsement by professional bodies.

The mission of a second awarding organisation is focused on the Foundation Diploma in Art and Design at Level 3 and 4, together with other diplomas in fashion, retail and technology, and with technical production and performance in the creative industries. In the capital, its qualifications are used by universities, colleges and private providers. The organisation has a distinctive approach and ethos, reflecting the art school tradition of fostering and training talent. Its main market is London and South East England. Bespoke diplomas have been developed with industry support and two are embedded in higher apprenticeships.

The focus of the third awarding organisation in this group is professional accounting. For this body, the financial and business sectors in London are a core market for its qualifications at all levels. Only one of these qualifications, albeit a popular one, is at Level 4 (Professional Diploma in Accounting). The qualification is included in the professional accounting technician apprenticeship standard.

For around one-third of its students, this qualification prepared people for progression to chartered accountant status. The majority are equipped for middle management positions across a range of careers in finance. A number of students funded their Level 4 qualification through advanced learner loans. Others funded themselves, including women returning to employment. It is not uncommon for students to have prior qualifications at Level 6 and above. The awarding body is not itself a provider. There are an estimated 50 centres in the capital which offer the qualification, including some of the further education colleges in our sample. The larger colleges are regarded as probably best placed to meet future demand (which is expected to remain stable). The challenge is not so much on the demand side but 'more on capacity in the market'.

Within this group of organisations, there is experience and expertise in modular designs and the award of units and credits as well as full qualifications. There are example of integrated frameworks for qualifications

at Levels 4 and 5. For one awarding organisation, the relationship and interface between Levels 3 and 4 are familiar territory. As reported in Part Four, some of the qualifications awarded by this organisation include modules at both Level 3 and Level 4. The level of the final award is determined by the balance between the two. In its view, there needed to be incentives for colleges and private providers to offer flexible and blended learning experiences that will support students in their work, family and other commitments. Devolution and targeting of the adult education budget was an opportunity to pilot part-time programmes for adults that span Levels 3 and 4.

Several colleges highlighted the potential of linked, unitised and interleaved provision at Levels 3, 4 and 5. At one, the success of their unaccredited short courses in facilitating progression to accredited programmes at the lower levels is a model it would like to extend to the higher levels. On the back of major growth in its short course provision, particularly in the evenings and Saturdays, close to one-half of students had moved to accredited programmes at Level 2 or below. Progression to Level 3 (where 'a massive skills deficit has been created') and progression to Levels 4 and 5 would require a change to current funding arrangements, especially geared to units, modules and credit-based qualifications. For the college, the barrier to recruitment was funding and financial support, not demand. A Level 3 course in cybersecurity based on this model had been trialled (with funding from the Education and Training Foundation).

5.4 CONDITIONS FOR GROWTH

There is broad recognition that the highly competitive conditions which attended recruitment to bachelor-level undergraduate education have been less than favourable to building and strengthening provision at Levels 4 and 5. As one employer observed, 'it feels like providers are fighting with each other'. Across the scene, 'there is a competitive edge rather than collaborating'. Franchising, validation and progression agreements require collaboration but there is an active market for these services. In some settings, colleges and their partner universities are neighbouring institutions. In other cases, colleges seek or prefer relationships with universities outside London, even if some distance away.

In this context, the approval for three IoTs in London is welcomed. There is appreciation of the importance attached to collaboration, specialisation and the expertise and resources of existing institutions and partner employers. Comparisons are made with national colleges. These are based on a different organisational model and are expected to serve as hubs to support infrastructure projects across the country.

Approval of the IoTs in the capital brought two 'selective' universities into partnership with further education colleges. One of these universities is branded a Russell Group institution. In both cases, their IoT involvements oblige them to engage with curriculum planning at Levels 4 and 5, even though their own institutions do not intend to provide courses at these levels. The university partner in the other IoT is located outside London. One of its London campuses abutted the main campus of the lead further education college, 'at the end of our garden'.

In many cases, the employers that are 'anchor' partners in the IoT are also new or recent associations. For them, the opportunity to 'understand how courses are delivered', to 'enhance the curriculum' and to 'secure a talent pipeline' is of immediate importance. Typically, they are organisations with their own separate partnerships with other education and training providers. Their collaborators include a private provider of courses by distance learning and a university provider of management education. Both of these training providers are outside London.

The two college members of IoTs refused registration by the Office for Students propose to recover their undergraduate education through sub-contractual arrangements. Another college provider in this part of London was also not accepted onto the OfS register. The resulting reduction in provision at Levels 4 and 5 posed strategic questions but, as highlighted in our interviews, there existed no planning or coordinating framework to address them. In one of the IoTs concerned, the university is not disposed to award qualifications below the level of the bachelor degree. In another IoT, the partner university is outside London. The need for one or more other universities to enter into sub-contractual arrangements potentially opened the IoTs to new member (or associate) institutions at an early stage in their development.

At the two universities in our sample that are outside an IoT, a key element in their strategy is to invest in higher and degree apprenticeships. In one of these institutions, there are no freestanding courses and qualifications at Levels 4 and 5. Government proposals to reform qualifications at these levels have led this university to review its funding and curriculum model for undergraduate education. The need for apprenticeships standards to map onto their mainstream provision is acknowledged. At the other university, a merger with a local further education college is expected to provide a supply line of Level 3 students and apprentices into its programmes at Levels 4, 5 and 6.

The proposed quality mark for approved higher technical qualifications and differentiated funding to promote these programmes will have major implications for the awarding bodies and education providers in our sample. The new approval system and the staged timetable for teaching the qualifications were announced in 2020. During the consultation on these proposals, several awarding bodies and provider organisations expressed reservations about the scheme, especially the lead role of the Institute for Apprenticeships and Technical Education.

Submission of qualifications for approval is voluntary. Apart from government-backed branding, approved qualifications are expected to carry funding incentives. Targeted funding for providers and differentiated student finance for approved and 'other' (non-approved) qualifications are signalled. The approvals criteria will allow higher technical qualifications to be tailored to local and sectoral needs. Approved qualifications will be able to include a substantial amount of additional occupationally relevant content. Awarding bodies will be able to submit qualifications against more than one occupational standard. Transfer of copyright in course materials is unlikely to be necessary. Modular structures will be encouraged.

The approval window for qualifications in the digital route will open in 2020 and the first approved qualifications taught from 2022. Approved qualifications in the construction route and the health and science route will be offered from 2023.

The further education colleges in our sample expected to share in the teaching of these qualifications, especially where their involvement in T Level programmes was likely to stimulate demand for progression to technical education at the higher levels. Only one of the universities in the sample expected to offer the approved qualifications, although this would depend on the conditions surrounding their approval and funding. The same institution voiced concerns about the standards of T Levels.

Ahead of funding decisions on higher technical qualifications, colleges are keen to strengthen their mission in higher education. While growth in student numbers at Levels 4 and 5 is a strategic goal, sometimes in tandem with apprentice training at these levels, the shape to be taken by future provision is less clear. At present, most colleges have a mixed portfolio of undergraduate and professional courses at Levels 4 and 5. There are differences in the extent and depth of specialisation. Nevertheless, colleges and college groups

with a firm base in higher education but outside the three IoTs in London saw their own institutions being in a position to act as future centres or hubs for higher technical education and training. That they might become members of existing IoTs did not invite mention.

5.5 SUMMARY

- Employer engagement at Levels 4 and 5 is centred on worker recruitment or workforce development or both. Recruitment is commonly from undergraduate courses or by way of higher apprenticeships. There are sometimes separate lines of graduate (Level 6) and non-graduate (Level 4 or 5) recruitment. In some sectors, there is no assumption of a graduate job. Workforce development is through sponsorship to attend courses or the use of apprenticeships or the use of in-house training. Some employers are willing to bear the additional cost of employees continuing their studies to Level 6.

- The apprenticeship levy is a spur to investment and involvement in higher apprenticeships in large organisations. Under standards, the alignment with employer requirements is frequently strong but not always at the level sought. In other cases, the standard is appropriate but not at the level sought. The levy probably turned attention away from other education and training options.

- Demand for Level 4 and Level 5 courses is variously described by providers as stable, flat, soft or downward. In not a few cases, weak demand for some courses coincided with strong recruitment to other programmes. The yardstick for recruitment at these levels is different to that applied to university bachelor degrees. There is a measure of price competition at Levels 4 and 5. There is a market of sorts for validation services. Regulatory decisions have impacted adversely on provision at these levels in London.

- The twin role of undergraduate awards as exit and transfer qualifications is valued. That said, patterns of progression are not necessarily linear or regular at Levels 4 and 5. Some who study at these levels already hold qualifications at Level 6 or above. The addition of a foundation year to the standard bachelor degree and the growth of degree apprenticeships are developments which impact on demand for freestanding qualifications at Levels 4 and 5.

- There are differences between sectors in the importance attached to higher-level qualifications. In some, industry certifications are an addition to mainstream qualifications at Levels 4 and 5. In others, the path to expertise is not certification but self-learning and work experience. There are competing views about the place of qualifications in higher apprenticeships. The all or nothing character of higher apprenticeships is a problem for some employers. Stepping-off and stepping-on points for apprentices are proposed, with credits awarded at each stage.

- A wide range of organisations award qualifications at Levels 4 and 5 in London. They are important to education providers which do not hold degree awarding powers. Some professional bodies award their own qualifications as well as recognising awards that meet their requirements. Many awarding bodies have an expertise in curriculum design and modular-credit certification, some with sector-specific specialisms. Short course provision is considered a potential market for microqualifications.

- There is scope for non-accredited provision to serve as a platform for progression to accredited provision at Levels 3, 4 and 5. Unitised and interleaved provision has been developed at the lower levels and trialled at Level 3. Some qualifications are designed to span Levels 3 and 4. Incentives for colleges and private providers to offer flexible learning experiences are advocated. There is scope for experiment and innovation.

- There is a broad welcome for institutes of technology. The three approved in London have a modest base in student numbers at Levels 4 and 5. The formal relationships forged between college and university partners are new or now placed on a regular footing. Each has a licence agreement, with key performance indicators set by central government. Each has growth targets. Their model of organisation is contrasted with national colleges. Three national colleges have a footprint in the city region but their influence on developments in the capital is considered to be slim.

- Employer partners to the institutes of technology are among the strongest in their search for, and advocacy of, skills-led provision at Levels 4 and 5. Alongside the IoTs, colleges and college groups with a firm base in higher education saw their institutions acting as centres or hubs for higher technical education and training.

- The role of collaboration between providers and partner employers, together with flexibilities in the structure and content of qualifications, are among the themes discussed in our conclusions in Part Six. Our recommendations to the GLA draw on the quantitative and qualitative findings analysed in each of the main parts of the report.

PART SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 SUMMARY

In the final part of the report, we draw together the main findings from the quantitative, qualitative and documentary studies. The research was designed by the GLA to equip them with a stronger evidence base on the value of higher level skills provision, including opportunities to grow future demand. In so doing, the research sought to understand what factors are shaping demand for provision at Levels 4 and 5 and, secondly, what features are specific to London. In particular, we were asked to focus on two sub-sets of participation and provision at these levels.

Participation by Londoners

The first sub-set was the resident population in London which accessed this provision. In Part Three, we identified around 30,000 London residents who are students and apprentices at these levels. Just over one-half are pursuing courses and apprenticeships at Level 5 (17,000 or 55%). Another 13,000 are doing so at Level 4. Of the total resident population at Levels 4 and 5, three in five are enrolled on courses (18,000 or 59%). The other 12,000 are undertaking apprenticeships. At each level, the balance between courses and apprenticeships is different. At Level 5, course enrolments are in the majority. At Level 4, the numbers are similar for courses and apprenticeships.

Most London residents are enrolled on courses at institutions located in the capital but over one-third (38%) are registered at providers outside London. Of these, 18% are in adjoining regions. Another 20% are registered at institutions further afield. Nevertheless, a number of these will be taught at locations in the capital. These will include the London campuses of institutions based outside the capital or the courses taught by London providers through sub-contractual arrangements with establishments outside London.

The resident population who study at London institutions is joined by students who reside outside the capital. Many of these will be people who work in London. There are an estimated 870,000 regular commuters into capital and they fill 19% of the jobs in London (GLA Economics 2017).

Profile of sectors

The second sub-set comprised the five priority sectors selected for study. In themselves, they represent a mix of types, including established undertakings, new spheres and emerging areas. Accordingly, there is significant variation in their profiles at Levels 4 and 5. Course and apprenticeship numbers are by far the largest in health and social care. In this sector, course numbers greatly outnumber apprenticeship starts. Most course enrolments and the vast majority of apprenticeships are at Level 5. In tech and digital, apprenticeship starts are in a small majority. Most course enrolments are at Level 5.

By contrast, the number of apprenticeship starts in creative and cultural is very low. Course numbers are mostly at Level 5. In carbon and environmental, most course numbers are at Level 4. For this sector, no apprenticeships could be mapped to this area. Definitional difficulties are most acute for advanced urban services for which no course or apprenticeship information could be produced. For a host of reasons, the feasibility of mapping is firmer in some sectors than others.

The five priority sectors identified for the research are not the full set of priority sectors in GLA literatures. In the seven sectors singled out for growth in *Skills for Londoners* (GLA 2018c), three additional sectors are

recognised: tourism, financial and business, and life sciences. For London residents taking courses at Levels 4 and 5, one-half are studying for subjects related to business, administration and law or for subjects allied to health, public services and care. Enrolment numbers are roughly equal in each. Other subjects with significant numbers are education and training followed by arts, media and publishing. In all four subject areas plus a fifth largest category – information and communication technology – most enrolments are at Level 5. Among the subjects with smaller numbers, the proportions are more varied, with construction, planning and the built environment along with retail and commercial enterprise having majorities at Level 4.

Demand for programmes

In the recent period, the number of Londoners undertaking course and apprenticeship programmes at Levels 4 and 5 increased by around 18%. However, those joining apprenticeships accounted for all of this growth. Taken together, the growth for courses and apprenticeships is highest at Level 4, at 40%. The rise at Level 5 is 5%. Taken separately, course numbers declined by roughly 15% whilst apprenticeship numbers accelerated by some 186%. Course enrolments fell by 22% at Level 5 and at Level 4 they decreased by 1%. The number of apprenticeship numbers grew by 140% at Level 4 and, from a lower base, by 214% at Level 5.

Within the priority sectors, there is variation in patterns of demand. In health and social care, the number of Londoners enrolled on courses at both Level 5 and Level 4 has declined by 14%. Apprenticeship starts, by contrast, have increased by 55%. In tech and digital, course numbers have fallen by 43%, with the decrease steepest at Level 4. Apprenticeship starts, on the other hand, increased five-fold in the recent period and are now in the majority. In creative and cultural, overall course numbers show a small decline. While numbers at Level 5 decreased by nearly one-half, those at Level 4 expanded by 41%. In low carbon and environmental, overall numbers in the area of construction have declined in recent years.

The largest subject categories for apprenticeships are the same as for course provision: business, administration and law followed by health, public services and care. The most popular apprenticeship frameworks and standards are for operations/departmental manager (nearly 1500 starts), nursing associate (close to 700 starts), care leadership and management (over 600 starts), associate project manager (close to 600 starts) and data analyst (approaching 600 starts).

Patterns of provision

The expansion of the bachelor degree and the contraction of course numbers at Levels 4 and 5 are long-term trends in London and England. Student demand for full-time bachelor degrees has been buoyant, from the shift to mass levels of participation beginning in the late 1980s through to the present day. Demand has not been dampened by the (re)introduction of fees in the 1990s, their near-tripling in the next decade and their near-tripling again from 2012. In London, the international market for bachelor and postgraduate education has been particularly strong.

Provision at Levels 4 and 5 in London is both highly concentrated and highly dispersed. Of the 100 or so higher education providers in London accepted by the Office for Students onto its register, around 60 are reported by this body to have full-time equivalent student numbers at Levels 4 and 5. Ten of these account for around one-half of the numbers at these levels. In this cluster, only two providers have numbers over 1,000 and another ten have numbers over 500. Outside this cluster, the remaining one-half of student numbers at Levels 4 and 5 are distributed among 50 or so institutions.

Undergraduate awards are generally the main qualification types at Levels 4 and 5. At Level 4, they are the HNC and CertHE, although non-undergraduate diplomas are the second largest category behind the HNC. Over the recent period, the numbers taking HNCs have increased whilst those on other Level 4 programmes have declined. At Level 5, the FD and HND are the dominant qualification types. The two awards account for around two-thirds of the total enrolments at this level. HND numbers have been increasing. FD numbers have been falling.

For both courses and apprenticeships at these levels, there is significant variation in their uptake by residents in different boroughs. For courses, the highest concentrations at Level 4 are in North East London. A different profile is evident at Level 5, with high concentrations in West London. Those undertaking Level 4 and Level 5 apprenticeships are more likely to live in outer London than central London. The highest concentrations are in boroughs in East and South London.

Distinctiveness of London

London is a regional, national and international hub, with many skilled workers supporting industries in the capital living outside as well as inside the capital, and with migrant skilled workers playing a particularly important role in the London economy. Across the city region, work roles and entry qualifications are increasingly concentrated at the higher levels, although there is variation by sector. Professional and financial services in support of business, management and administration, together with specialisms in tech and digital, tourism, the creative and cultural industries, and health and the life sciences are distinctive to London. Employer demand for higher level skills is expanding and, according to analyses by GLA Economics, the growth in high skilled jobs is expected to be faster in London than in any other UK region.

Over a long period, London has been host to the largest concentration in higher education in the UK. In recent years, the number higher education institutions and private higher education providers based in the capital have increased, along with the number of external institutions with campuses in the capital. Following the introduction of fee-loans, a key policy moment was the removal of the cap on the number of domestic undergraduate students able to be recruited by individual providers. At the same time, London was a magnet and market for international students paying premium fees for full-time bachelor and postgraduate degrees.

A separate set of policies was applied to further education colleges. Following year-on-year reductions in their unit of funding, the number of colleges in England and London was significantly reduced through mergers. In the capital, most were two-way mergers or three-way mergers. Some emerged as single institutions, some as college groups. All became larger establishments. To a lesser or greater extent, all increased the size of their higher education. In one case, a college with little or no higher education provision merged with a higher education institution. In another, a general further education college merged with a former adult education institution, roughly doubling the higher education numbers.

In these ways, London acquired a large and distinctive mix of universities, colleges, alternative providers and independent training organisations. Some universities are devoted solely to higher education at Level 6 and above. Others have courses and apprenticeships at Levels 4 and 5 alongside their bachelor and postgraduate degrees. In colleges and college groups, their higher education is nearly always a minority of their provision, the bulk of which is at Level 3 and below. Courses and apprenticeships at Levels 4 and 5 are usually the primary focus of their higher skills provision. By contrast, the higher education offered by alternative providers is frequently their single or main activity. Typically, their teaching is offered in a limited range of

generally low-cost subjects. Some, on the other hand, are specialist providers in specific fields and minority subjects. The work of independent training organisations is focused on apprenticeships, including those at the higher levels.

In our analysis of the participation of the resident population at Levels 4 and 5, we noted that London is different from England in several respects. Firstly, the percentage taking courses at publicly funded institutions and apprenticeships at these levels is lower in London. For the 18-64 year old population, the proportion pursuing courses in London is 0.35% compared to 0.41% in England. For the same population, the proportion undertaking apprenticeships in the capital is 0.08% compared to 0.11% in the rest of the country.

Secondly, the share of Levels 4 and 5 taken by higher education institutions and further education colleges is different in the capital. For the resident population, the proportion enrolled on courses at further education colleges is 55%. For England, it is 61%. The proportion attending courses at higher education institutions is 39% in London and 32% in England.

Thirdly, the proportion of the resident population taking courses and apprenticeships in engineering and construction at Levels 4 and 5 is smaller in London. For the resident population in London, the proportion pursuing courses in subjects related to engineering and construction is 6% (2018/17) compared to 18% in England (2017/18). For apprenticeships in the same subjects, the figure is 3% for London and 6% for England (2018/10).

6.2 CONCLUSIONS

We draw four main conclusions from the findings of the research. These, in turn, inform our recommendations to the GLA.

Present-day provision is uneven, unstable and uncoordinated.

The small size of the provision in the capital and its uneven distribution across providers is a product of historical trends as well as features specific to the London economy and skills system. The sources of instability are more recent and include financial sustainability, area based review, the introduction of student-led undergraduate funding, the opening of the market to new providers and the actions of a new regulator for higher education. Arguably, education and training at Levels 4 and 5 has not fared well in this environment, especially given the crowded and highly competitive conditions for higher education in London.

Although early policies favoured collaboration between universities and colleges at Levels 4 and 5, efforts to stimulate demand for sub-bachelor higher education were overtaken by popular demand for the full-time bachelor degree. That pattern is unchanged after a decade of market-led reforms. There is a measure of price competition between colleges, alternative providers and universities at Levels 4 and 5 but insufficient to increase participation overall or switch demand to further education institutions. To a significant extent, the expansion of alternative providers has split rather than increased the market for higher education at these levels.

Institutes of technology are vehicles for growth and transfer.

The establishment of three institutes of technology in London is widely recognised as an opportunity to invest in collaboration and specialisation. The model is premised on a partnership between a college and a university (one of which is the lead institution) and selected employer organisations. As an organisation, its curriculum is based on the vertical integration of specialist provision at Levels 4, 5 and 6. These and other design principles reflect lessons learnt from the attempt to create national colleges.

Institutes of technology are nonetheless a policy experiment. Given skills shortages in strategic areas and a landscape otherwise dominated by competition, they attract broad support from the parties to education and training at Levels 4 and 5. For these reasons, they invite systematic evaluation. Central government will monitor their performance in relation to key performance indicators but it will be for the authorities in London to consider their impact on local communities and the priority sectors. In this, there will need to be an eye to unintended as well as intended consequences.

Institutes of technology will lead on the introduction of newly approved higher technical qualifications. Their role in higher apprenticeships is less clear. In some sectors, growth in apprenticeships at Levels 4 and 5 is in contrast to decline in course enrolments. As organisations with subject and sector specialisms, their reach is expected to be local and sub-regional. Geographically, this will leave some parts of London potentially under-served. Over time, other specialist subjects and skills might benefit from the model. There are universities and colleges in London with complementary expertise, some with strong provision in specialist areas, which might serve as additional centres. Partnerships with alternative providers and independent training organisations might be part of the scene.

Smaller qualifications and shorter programmes are anticipated.

Flexibilities in the structure, content and approval of qualifications at Levels 4 and 5 are sought by both employers and providers. There is frequently an under-appreciation of the modular structures and specialist options within existing qualifications. Alignments between the content of courses and the skillsets required by sectors are not easily signalled or studied. Neither students nor employers are always aware of the occupational and sector specialisms embedded in curriculum pathways.

Full qualifications and long programmes are less suited to some training needs. In the case of higher apprenticeships, employers and apprentices commit themselves to a long period of engagement, sometimes leading to no external qualification. For apprentices needing to step-off and step-on an apprenticeship programme, their ability to gain credits or staged awards would be welcomed. In some sectors, the award of microqualifications is attractive, especially where leading-edge knowledge and skills are at a premium and where international recognition is important. A number of awarding institutions and organisations already award units and credits. They are well-placed to stimulate and extend the market for microcredentials.

Some London residents undertaking courses at Levels 4 and 5 already hold qualifications at Levels 6 or 7. One-quarter of those enrolled at higher education institutions have a bachelor or postgraduate qualification. Some of these students will be pursuing studies for liberal purposes. Others will be equipping themselves for career progression or career change. Some, including women returning to the workforce, are looking to qualify for entry to professional occupations. Some will be supported by their existing employer. Others will be self-funding. Graduates in the labour market are a potential new source of demand for education and training at Levels 4 and 5, especially in sectors where change in the knowledge and skills base is rapid.

Planned reforms call for enhanced policy intelligence.

The government reform of education and training at Levels 4 and 5 is part of a ten-year plan to build a technical route comparable in standing to the academic route. Apprenticeship standards, national colleges, institutes of technology and T Levels will be followed by approved higher technical qualifications. As with T Levels, these qualifications will be referenced to technical routes and will be introduced in stages. There will be a need for the relevant authorities in London to gauge the impact of these changes, especially on the choice-making of students, workers and employers.

At Levels 4 and 5, there are complexities attached to appraisal and analysis. A significant proportion of Londoners are registered with providers outside the capital. Those who work in London but live outside the capital are among those enrolled for courses at London institutions. An integrated database on tertiary education and training will be able to identify and track these populations. Conceptions of sectors will need to capture their dynamics, diversities and overlaps.

6.3 RECOMMENDATIONS

Our recommendations are strategic, operational and curricular. They look to the medium term.

The recommendations are addressed to the GLA as the project commissioner. However, they have implications for providers and employers and for GLA led collaborations. In order for the GLA to take forward the recommendations there are considerations with regard to policy and funding at regional and national level.

STRATEGIC

Recommendation 1: Measures should be taken to monitor the effects of national policy reform at Levels 4 and 5 in London.

The ambition of the *Skills and Adult Education Strategy for London* is to create a more strategic, whole-system approach to skills formation.

The UK government post-16 reform programme is premised on a two-type system of academic and technical education, with proposals to recognise higher technical qualifications that are matched to occupational standards. The effects of such policies will need to be monitored on a systematic basis.

Recommendation 2: The GLA should consider actions that should be taken to increase the scope for collaboration and coordination between education providers and employer partners at Levels 4 and 5 in London, particularly where it has a role in supporting economic priorities.

There are few examples in London of centres with large numbers or dedicated specialisms at Levels 4 and 5.

A deregulated and reregulated market in higher education has reduced the scope for collaboration and coordination. Nor have large infrastructure projects been a catalyst for investment in strong and durable training centres.

Recommendation 3: The need for additional organisational hubs at Levels 4, 5 and 6 should be explored by the GLA with providers and employers.

London is ineligible to apply for additional institutes of technology in the next round when other specialist disciplines are expected to feature.

Institutes of technology can augment their membership and adjust their focus, subject to approval. The larger colleges and college groups, some with training arms or wholly owned subsidiaries, are candidates for analogous centres and networks.

Recommendation 4: Action should be taken to safeguard and extend opportunities at Level 4 and 5, where they might be at risk due to mergers, closures, restructuring and regulatory decisions.

Changes of this order are likely to be a continuing feature of education and training at Levels 4 and 5.

Decisions by institutions on whether to renew or retreat from provision at these levels will be influenced by a host of factors. If implemented as planned, the reform of Level 4 and Level 5 technical qualifications will bring funding incentives on the one side and regulatory requirements on the other.

OPERATIONAL

Recommendation 5: The GLA should explore the options for a London-wide catalogue of courses and apprenticeships at Levels 4 and 5 to be published to support the choice-making of individuals and the understanding of employers.

It is not common for education and training at these levels to be brought together, clearly described and suitably explained to public audiences.

Courses and apprenticeships at Levels 4 and 5 are parallel and intersecting sets of provision, sometimes with qualifications in common. The opportunity to compare programmes and pathways at these levels is a basis for extended participation as well as an aid to economic analysis.

Recommendation 6: Labour market intelligence should be used to identify new audiences for education and training at Levels 4 and 5 among the graduate workforce.

Career mobility and the changing nature of work require graduate and non-graduate workers to acquire new skillsets and capabilities. The GLA and providers should engage with employers to understand emerging needs.

Specialist courses leading to professional qualifications at Levels 4 and 5 already attract graduate students. In some sectors, the job retention strategies of employer organisations are expected to drive this demand.

CURRICULAR

Recommendation 7: The GLA should convene providers, employers and awarding bodies to explore the options for industry-focused microqualifications which align with national and international frameworks at Levels 4 and 5. London providers should be used as a testbed for credit-based microcredentials.

Short courses with academic accreditation, industry endorsement and employer sponsorship are under-developed at these levels.

Institutes of technology are a potential vehicle for short course development and accreditation in sectors with leading-edge technologies. Those in tech and digital, low carbon and renewables, and advanced urban services are among the markets to be stimulated for microqualifications.

Several awarding organisations with a significant footprint in London have expertise in curriculum design and modular-credit certification, at intermediate and higher levels.

A number of London universities have online platforms which offer open or paid access to taster modules, short courses and long programmes, many with academic and professional accreditation. For buyers and users, customisation, blended learning and a swift turnaround in course approval are likely requirements.

Recommendation 8: The potential for developing and funding interleaved provision at Levels 3 and 4 should be investigated.

The devolution of the adult education budget is an opportunity to pilot innovative part-time programmes for adults that span Levels 3 and 4, which carry credit and which can be balanced with work and other commitments supported by changes to access to loans as proposed in the report to the Review of Post-18 Education and Funding.

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ANNEX A

PROJECT DESIGN, METHODOLOGY AND SOURCES OF DATA

The tender for the research specified a two-type design based on the collection and analysis of quantitative and qualitative data.

The quantitative component was addressed to mapping provision and participation by Londoners at Levels 4 and 5 as well as analysing their patterns and profiles in five priority areas. The methodology applied to the quantitative mapping and the priority sectors is outlined in Part Three and Part Four.

The qualitative component was concerned with analysing the perspectives of providers, employers and awarding bodies on education and training at Levels 4 and 5, especially as they relate to the five priority sectors in London. The use of documentary and fieldwork data to provide a qualitative commentary on the priority sectors is outlined in Part Four. The organisations participating in the fieldwork and the representatives interviewed are listed at Annex B.

A mixed-methods approach was employed in order to:

1. Generate a robust evidence base in terms of coverage, meaningfulness and relevance.
2. Enable the quantitative analysis to be informed by qualitative and documentary findings, and for grounded understanding to be informed by quantitative evidence.
3. Provide for high-order research analysis and interpretation that will enhance policy intelligence and practical action.

The research was to encompass all forms of education and training at Levels 4 and 5, including accredited courses, non-accredited programmes, academic and occupational qualifications, and apprenticeships.

In this overview, we describe the sources of data and the methods of data collection and analysis adopted in the quantitative and quantitative parts of the research.

QUANTITATIVE STUDIES

Sources of administrative data

The resident population was defined as those with a normal permanent residency within Greater London. Those residents who travelled to providers outside of London were included in the data. Those who studied in London but resided outside the capital were excluded, even if they had temporary term-time accommodation in the city.

This population was analysed using two administrative datasets. The individualised learner record is collected on behalf of the Education and Skills Funding Agency. The record is the primary source of information on students, courses and providers in the further education and skills sector in England. Included in the ILR are data on prescribed and non-prescribed education at Levels 4 and 5 where the provider is in receipt of direct or indirect public funding for higher education. Data is also returned on the ILR for higher apprenticeships. A subset of the ILR was made available to the project by the GLA in the form of a data cube. This was for the years 2015/16, 2016/17, 2017/18 and 2018/19.

The second of the two administrative datasets is the student record collected by the Higher Education Statistics Agency. The student record is the chief source of information on students, courses and higher education institutions in the UK higher education sector. Data is also returned for higher and degree apprenticeships. Most higher education institutions are universities or conservatoires for music, dance and drama.

In some cases, higher education institutions sub-contract the teaching of courses to other providers, especially further education colleges. While the students on sub-contracted courses are assigned to higher education institutions in the HESA dataset, we have attributed them to the providers who undertake the actual teaching. HESA data was specified for the years 2015/16, 2016/17, 2017/18 and 2018/19.

Controls on administrative data

The ILR data was filtered to include the following:

- students with a home postcode in Greater London
- students identified on provision at Level 4 or Level 5
- students are only included if they passed the funding qualifying period (excluded from the data was any learning aim which was transferred)
- students attending any provider recorded on the ILR
- students on provision under the Offender Learning and Skills Service was excluded
- volumes are based on students active within the academic year unless stated otherwise

The HESA data was filtered to include the following:

- students with a domicile in Greater London
- students identified on provision at Level 4 or Level 5
- students were counted as full-person equivalents
- students attending alternative providers were excluded
- students registered with a higher education institution but taught at another provider were attributed to the establishment providing the teaching

Unless indicated otherwise, all outputs count the number of students engaged in higher education or higher apprenticeship training within a given academic year.

The ILR and HESA datasets were combined to generate statistical pictures of patterns and trends in provision and participation at Levels 4 and 5 for London residents, including provider and qualification types, student characteristics and geographical distributions. The same datasets were analysed to create statistical pictures of supply and demand for education and training at these levels within each of the five priority occupational sectors. The soundness of the mapping exercise and its methodological and interpretive limitations were discussed.

QUALITATIVE STUDIES

Collection and analysis of qualitative data

The bulk of the fieldwork comprised interviews with representatives of education providers, employer organisations and awarding bodies. In the case of education and training providers, the fieldwork included

the completion of templates listing the courses and apprenticeships offered in 2019/20 and the number of current enrolments. Ahead of the interview, this provided an up-to-date picture of the provision and served as a platform for discussion in the interview.

Semi-structured interviews were undertaken with 35 organisations. Our original target was 40 organisations but the coronavirus epidemic prevented us from getting to this number. Interviews were carried out at 13 education and training providers, 16 employer organisations and five awarding bodies. However, the number of interviews completed and the number individuals interviewed was larger. At two organisations, two separate interviews were undertaken in each case. An additional interview was completed where the interviewee declined to make the content available to the project. This interview was not reported or otherwise used. The total number of interviews was 37. In other cases, there were multiple interviewees involved in a single interview. The total number of interviewees was 51.

Sampling frames and interview schedules

The sites selected for the fieldwork began with three institutes of technology in London since their occupational specialisms and partner employers spanned four out of five of the priority sectors. For the same reasons, the one national college with a base in London (Ada, the National College for Digital Skills) was also included at this stage. The other education and training providers operated outside the IoTs and they were selected to ensure coverage of all five priority areas. Private training organisations were included along with universities and further education colleges. They were chosen with an eye to their involvement in both courses and apprenticeships at Levels 4 and 5. The economic and social geography of London was another factor in their selection. Overall, interviews were conducted at 14 education and training providers.

The employer organisations were mostly selected on the basis of their association with the chosen education and training providers. Universities, further education colleges and private training organisations were able to provide us with named contacts. In a small number of cases, we went to organisations with no formal relationships with education providers. These interviews were mainly with small and medium size enterprises and mostly in the tech and digital sector. The sampling frame for employer organisations was alert to coverage by size and reach of the enterprise. Those participating in the fieldwork ranged from global corporations through to local businesses. These spanned private and public enterprises. An employer-led skills organisation was included. Overall, interviews were undertaken with 16 employer organisations.

The recognised awarding organisations were chosen for the significance of their Level 4 and Level 5 qualifications. They included national examination and assessment bodies responsible for awarding qualifications in a wide range of academic and vocational subjects and at all the main education levels. Other bodies were chosen for their focus on London or their subject and sector specialisms. Overall, interviews were carried out at five awarding bodies.

Separate interview schedules were designed for education providers, employer organisations and recognised awarding organisations. That for education providers was more structured, partly due to the need for the interview to engage with the enrolment data at Levels 4 and 5 supplied by the organisation. The interview schedule for providers, together with the template on programmes and enrolments, were piloted at a higher education institution. The interview schedules for employer organisations and recognised awarding organisations were more open. This was in recognition of the diversity of these enterprises and need for interviewers to customise their schedules.

Letters were sent to named individuals inviting the participation of their organisations. These were accompanied by a briefing note on the project. Most interviews were conducted face-to-face at the workplace of the interviewee. Even before the lockdown was announced, they began to be replaced by telephone interviews. Most were scheduled for 60 to 90 minutes. Several were longer, especially where more than one interviewee was present. The schedule of questions or a summary list was sent in advance to interviewees.

An interview agreement form was signed by each participant. This stated that any views given 'off the record' would be treated in complete confidence. Individuals would not be named in the project report. Participants would be listed by their job roles along with the names of their organisations.

Notes on the interview were taken by the researcher and, in a few instances, the interview was recorded by agreement. Interview reports were written-up in a common format, with researchers highlighting themes and issues to consider in the analysis. The drafting of interview reports frequently led to clarifications sought from interviewees. Completed reports were held in a secure system. Only the project team had access to these.

The experience and effectiveness of interviews was reviewed at meetings of the fieldwork team. At these meetings, early findings were shared and frameworks for analysis were developed. The interviews were carried out in two phases. Given that the IoTs were newly established, the interviews at their member and partner organisations were scheduled for the second phase (January-March 2020). In the first (September-December 2019), the majority of interviews were with education providers and recognised awarding organisations.

Interviews with employer organisations usually took longer to set up. Those planned for the first phase often took place in the second wave. In turn, the timing of these and other interviews was affected by the appearance and advance of the coronavirus epidemic. Some pre-arranged interviews with organisations did not happen. Others were delayed until May 2020.

The completion of interviews and the analysis of the fieldwork findings extended over a longer period than planned. The quantitative studies were completed and shared with the project team at earlier points. It was originally intended that data and findings would be exchanged at the early, middle and final stages of the project. In the event, the interleaving of quantitative and qualitative findings, especially the integration and interpretation of the combined evidence, was largely undertaken in the later part of the project.

The findings of the interview studies are illustrative and illuminative, not representative. The documentary and other sources reviewed include the main contemporary academic, policy and professional literatures relevant to London and England.

Search and review of literature

The purpose of the literature review was to underpin the design and analysis of the quantitative and qualitative research with evidence and interpretation drawn from relevant sources. Previous studies undertaken by members of the team afforded access to a wide range of academic, policy, professional and practitioner literatures. The quantitative and qualitative findings from these same studies provided supplementary data and a wider lens to view provision and participation in London.

The main work of the literature review was devoted to (a) comprehending the current and changing policy, regulatory, quality, funding and reporting arrangements for education and training at Levels 4 and 5, and (b) gathering evidence on demand for education and training at these levels across occupational sectors, including the five priority areas identified by the GLA for inclusion in the research. Across the study, the review of sources guided the design of instruments, the analysis of findings and the synthesis of evidence.

Coordination of the fieldwork and the review of the literature were undertaken by Anne Thompson.

ANNEX B

ORGANISATIONS WHICH PARTICIPATED IN THE PROJECT

The following education providers, employer organisations and awarding organisations participated in the study. One of more of their representatives was interviewed. We thank everyone for their assistance with the study.

Name and type of organisation	Position or role of interviewee
Education and training provider	
Ada, National College for Digital Skills	Head, Apprenticeship Programmes
Barking & Dagenham College	Principal and CEO
	Vice Principal, Curriculum
	Director, Advanced Technologies in STEM
	Head, Higher Level Skills
	Director, Marketing and Recruitment
	Head, Apprenticeships
Brunel University	Dean, School of Engineering Design and Physical Sciences
College of Haringey, Enfield and North East London (known as CONEL and member of Capital City College Group)	Principal, CONEL
	Deputy Principal, CONEL
	Higher Education Coordinator, Capital City College Group
College of North West London (part of United Colleges Group)	Vice Principal Curriculum, College of North West London
Digital Skills Solutions	CEO
The Fashion Technology Academy	CEO
Harrow College Uxbridge College (known as HCUC)	Principal and CEO
	Lead, Higher Education
London South Bank University	Director of Corporate Affairs, Executive Office
	Head, Division of Construction, Property and Surveying
London South East Colleges	Vice Principal, FE/HE and Business Lead, Head of College, Bromley
	Director, Apprenticeships
Middlesex University	Chief Commercial Officer
	Director, Apprenticeships and Professor of Higher Education and Skills
Morley College	Higher Education Development Coordinator
Newham College	Principal and CEO
Queen Mary University of London	Deputy Vice Principal, Research (Enterprise)
Employer organisation	
BBC	Senior Early Years Portfolio Manager
	Business Advisor
Crossrail	Former Head, Skills and Employment
Dragados/Sisk Joint Venture	Former Responsible Procurement Manager
Framestore	Head of Talent, Film, London

Heathrow Airport	Director, IT Programme Delivery
Huawei	ICT Academy Manager, Western Europe Region
Jewson	HR Business Partner
Morgan Sindall Infrastructure	Manager
MTR Elizabeth Line	Manager, Strategic Labour Needs and Training
NHS North West London Sustainability and Transformation Partnership	Apprentice, Learning and Development Visiting Senior Research Fellow, King's College London
North Middlesex Hospital NHS Trust	Head, Education and Professional Development
Paybase	CEO
ScreenSkills	Lead, Apprentices and Skills
Snowplow Analytics	Co-founder and CPO
Waterman Group	Manager, Group Learning and Development
West London Business	CEO

Awarding organisation

Association of Accounting Technicians	CEO Marketing Director
City & Guilds of London Institute	Executive Director, Strategic Partnerships, Stakeholders and Contracts
OCN London	Head, Curriculum and Partnership Development
Pearson	Head, Higher Education Research Qualifications Higher Education Qualifications Subject Lead for Healthcare and Social and Community Work
University of the Arts Awarding Body	Deputy Director and Head of Products, Services and Projects Qualifications Manager Chief Examiner, Performing Arts