Emsi

Skills and Labour Market Analysis

REPORT TO EM3 STAG

ENTERPRISE M3

Duncan Brown

26 February 2020

Contents

Executive Summary

The Enterprise M3 Local Enterprise Partnership region represents something of a paradox: it is high productivity, high employment and high skill — all the things a region would want to be — and delivers a high quality of life to most of its residents. But it has seen net job loss over the past few years, with most of the losses in its frontier sectors driving its productivity, squeezed by competition in nearby geographies and growth in the local 'lifestyle' economy. To succeed in the future, Enterprise M3 region needs to encourage creativity in employment and education, to conceive of new models for business and work, and ensure close alignment of learning with opportunity.

A mixed urban and rural economy cutting across Surrey and Hampshire, the Enterprise M3 region is a £55 billion economy with 760,500 jobs and a workforce of 804,500 people. It has the fourth highest productivity among LEP and Combined Authority regions, and productivity has grown vigorously, second among LEP and Combined Authority regions in the most recent five years of data. The region is second among LEP and Combined Authority regions for employment, with 81.8 per cent of working age people in work; it has the fifth highest share of workers with higher education, and it is ranked third for gross disposable income per head.

Since the recession in 2010, the region has grown jobs by 6.3 per cent, but this compares poorly with the 12.9 per cent growth across England in the same period. More concerning is that in the most recent three years, it is estimated that while jobs across England have grown by 2.8 per cent, in the Enterprise M3 LEP region, they have declined by 1.6 per cent. This decline — absolute and relative — cannot be ascribed simply to "running out of workers" given that other regions with high existing employment rates have seen superior jobs growth during the same period.

Jobs in digital and professional services have both fallen, even though in the former case, national trends during this period would have suggested rapid growth. At the same time, it is the number of jobs in these high value added sectors which support the Enterprise M3 region's substantial productivity advantage over other regions. If there are declines, relative as well as absolute, in the region's frontier industries like digital and professional services, then they need to be understood — in many ways, the region's industry structure prepares it well for technology change, so there seems to be a shift in the region's attractiveness asa location for hiring and retaining talent.

A critical feature of the region's labour market is its high churn nature, because of its proximity to substantial professional labour markets in London, the Thames Valley, Southampton and Portsmouth.

In the 2011 Census, 30 per cent of employees resident in the Enterprise M3 region commuted elsewhere, most of them to these markets. The Enterprise M3 region's infrastructure and quality of life combine to make it an attractive residential location, but part of its appeal is its access to opportunity in adjacent labour markets — and the recent path of jobs suggest that employers within the region may be struggling to compete.

Almost every local authority — the exception is Surrey Heath — has seen a decline in jobs relative to national trends, and all but four half seen absolute falls. That suggests that improving business attractiveness and talent attraction and retention will take place in the Enterprise M3 region's significant network of towns. Lacking a metropolitan centre, the town-level economy is critical, but the region's towns are highly diverse, from Egham with concentrations in education, research and digital, to Winchester with its concentration of public services and transport, the towns each have a significant economic story of their own.

The different geographies of the region also show through in employment, with the high overall performance masking some pockets of economic inactivity, with Winchester moving higher in recent years, and Elmbridge, East Hampshire and Guildford all higher than the region. At the same time though, the employment rate is high for good reason: a highly qualified workforce, slightly older than the English average, and although suffering a net loss of young people for university and graduation, the region benefits from a sustained flow of domestic migration of 30 to 45 year olds, seeking a better quality of life.

In terms of producing talent, the region has extremely high levels of education attainment: fourth highest for Attainment 8 scores; fifth highest for attainment of Level 3 by age 19; fifth lowest for NEET after Key Stage 4. Very high numbers of young people from the region attend university, reflecting a dominance of the academic route to level 3, and also a relatively low engagement with apprenticeship. The local education system, including a number of colleges and HE institutions, produced nearly 69,000 domiciled learners with qualifications, including 12,500 with higher education qualifications.

In further education, health and care, and business and finance are the leading areas across levels, with science and maths, and arts, media and publishing becoming more important from Level 3. Perhaps reflecting the high participation area, locally domiciled students are more likely to pursue humanities degrees in higher education rather than the more technically focused qualifications which might reflect local labour market demand.

The jobs produced by the local labour market are more likely to be professional or technical than nationally, and less likely to be process or elementary roles. Recruitment activity is strong, reflecting an underlying labour market turnover even if net job creation is poor. The labour market has a diverse — and therefore, implicitly resilient — skills demand, but is also ranked fourth for its demand for analytical skills. Skills shortages are relatively moderate among LEP and Combined Authority regions on the basis of 2017 employer testimony, with some hot spots in financial services and in the arts and other services. Leading roles in the local economy include programmers, sales accounts and business development managers, and sports coaches — the latter reflecting a high number of jobs in 'lifestyle' service sector, reflecting the high incomes in the region.

Analysis of the region's talent pipeline has to incorporate both the competing demands of London, the Thames Valley and Portsmouth and Southampton, and the net loss of graduates. Once complete, it demonstrates a number of job roles with acute gaps between projected demand and the current pattern of education supply, suggesting room for growth in: sales and marketing skills; teaching skills; analytical skills; administrative skills; and customer service skills.

Tackling these issues is particularly important given the job creation challenges seen in the region in the past few years: there is a need not only to ensure education provision responds, by emphasising the right courses and ensuring relevant course design, but also employer involvement. Careers interventions may also serve a purpose, in helping young people to align, but also helping the successful mid-career workforce to identify opportunities to work within the region.

The Enterprise M3 labour market

JOBS AND GROWTH

0.76m
jobs in 2018
ranked 11 / 38 for jobs

-1.7%
growth 2016-2018
ranked 35 / 38 for growth

RECRUITMENT ACTIVITY

287k
postings in 12m
ranked 7 / 38 for rel. postings

7.5%
growth 2 yrs
ranked 17 / 38 for growth

WORKFORCE AVAILABILITY

1.02m
workforce 2018
ranked 15 / 38 for size

2.4%
unemployed 2018
ranked 35 / 38 for unemployment

PAY AND GROWTH

£33,580
median salary 2018
ranked 5 / 38 for salary

10%
growth since 2011
ranked 34 / 38 for growth

WORKFORCE CHARACTERISTICS

46.3%
some HE in 2018
ranked 5 / 38 for share

11.3%
aged 25-34 2018
ranked 29 / 38 for share

AUTOMATION AND SKILLS

10.3%
jobs with high auto exposure
ranked 36 / 38 for share

117
analytical skills index
ranked 4 / 38 for index

CHAPTER 1:

Introduction

The Enterprise M3 Local Enterprise Partnership region cuts across west Surrey and most of Hampshire, representing a mix of towns and rural areas, but bracketed between London at its north east end and Portsmouth and Southampton in the south west. With that geography it is an important home base for a highly-skilled local workforce, but it also has its own frontier industries giving it a high productivity economy. The combination of high skills, high churn and high productivity makes for a unique local labour market.

THE CHALLENGES OF SUCCESS

A region like Enterprise M3 starts with a set of advantages which in turn present challenges in framing an industrial strategy. The region has a strong skills base with a high level of educational attainment and healthy participation in further and higher education. The region has a strong presence in cutting edge industries ranging from digital to precision engineering, generating high value jobs which support regional productivity. The region's quality of life attracts a workforce which is able to benefit from the demand for professional and technical surrounding labour markets in London, Thames Valley and Portsmouth and Southampton.

But each of these advantages can be viewed from another perspective. The region has less to gain from the cohort effects of increased educational opportunity which are improving qualification levels across the country. The region has to maintain its competitive edge as a location for frontier industries, to protect its productivity advantage. The region is attractive enough that housing becomes expensive and its workforce needs to take advantage of commuting opportunities to support the quality of life, making it difficult for local businesses to attract the necessary talent.

For all these reasons, thinking robustly about the people dimension is essential to forming and implementing a successful local industrial strategy (LIS). Only by doing so can the Enterprise M3 get the greatest leverage from its advantages, without being inhibited by the challenges they bring with them; applying pressure at the right points, to continue to develop and improve its workforce while also improving their connectivity with the developing economic base within the region.

THE TALENT PIPELINE

The approach taken in this report is to seek to consider the different facets of the demand and supply of skills. Demand starts from understanding the make-up, direction and performance of the economy. As businesses grow and succeed, they

create the demand for skills, and their influence is decisive. Where the outcome is felt is in job creation, and understanding which industries are driving it and how job creation is shaped by a tightening labour market in the region.

Skills demand is met by skills supply, and understanding the available workforce is critical. There are different dimensions here: the workforce is characterised by demographics, especially in terms of age, but it also changes over time — as people move into and out of the region at different stages and from different places. That changes the employment choices facing organisations, which translate into the specific requests they make for skills: what kind of jobs they employ, they hire for and what skills they demand for critical roles.

These questions help to understand the variables on the demand side, and the supply available from the installed workforce. But the critical variables on the supply side — those most directly influenced — are in the education and training system, and so that becomes the the major part of the talent pipeline. The ability to influence the volume, form and content of education supply is a key tool among those available to the Enterprise M3 LEP and so understanding which changes will have the most impact is particularly important as the region's LIS takes shape.

TALENT INTELLIGENCE

This report has been prepared by Emsi for Enterprise M3's Skills and Talent Action Group (STAG), to inform their discussions over the best way to maximise the region's ability to attract, retain and deploy talent in support of the LEP's Local Industrial Strategy (LIS). It presents a battery of analyses on the economy and its underlying trends; the recent experience of jobs growth; the changing workforce; skills demand; and new skills supply through education, before concluding in a summary assessment of the region's talent pipeline and an identification of its critical challenges. Throughout there are analyses of change over time and comparisons with other LEP regions to provide the greatest context for the data presented.

The analysis presented here draws upon a range of data, including from official sources and from Emsi's own labour market intelligence sources, which go beyond those available from ONS through the use of modelling to improve granularity as well as adding in proprietary intelligence, such as our Job Posting Analytics. The background on the data used is presented in the appendices; the report also provides a battery of background data for reference purposes. The structure of the report and the questions it tackles have been informed by helpful discussions with the Enterprise M3 team (especiall Rob Dunford, Jeannie Satchell and Kevin Lloyd) and with the members of STAG after a presentation on the 29th September.

CHAPTER 2:

A knowledge-intensive economy

The Enterprise M3 region is a £55 billion economy with high productivity and high incomes for its residents. Its productivity advantage rests on the presence in large numbers of digital and professional services jobs, as well as strengths in education and research and development, utilities, and civil engineering. Lacking a metropolitan centre, the region has a range of towns with different strengths and contributions, and its concentration in leading industries mean it has limited exposure to technology change, with most jobs affected being in local service industries.

The economy provides the vital context for any labour market investigation. Skills demands are driven chiefly by business demands: as organisations seek new opportunities for their products and services, there are tasks to perform, and those tasks require people with the requisite skills. For that reason, getting a handle on the state of the economy, and its shifting composition, is critical to understanding the nature of skills demands in the years ahead.

In this chapter, we start by establishing the facts on the Enterprise M3 region's productivity level. Like many other regions in the belt to the west of London, Enterprise M3 is an economy characterised by high — higher than national — productivity, when measured on the basis of Gross Value Added per filled job. What is more, despite having long held such high productivity levels, the five years to the latest data have seen sustained growth in the Enterprise M3 region's productivity level, ranked second among LEP and Combined Authority regions.

The productivity advantage is built primarily on high performance within industries, but two key clusters of industries — digital and professional services — make a decisive contribution through their large numbers of high value-added jobs in the region. The presence in these industries positions the region well given national growth trends, with particular advantages in computer consultancy and programming, and a rapid growth in computer games publishing, wired telecommunications and computer facilities management.

As well as knowledge-intensive services, the region also hosts significant concentrations in precision technology and the production of appliances and other personal goods — ranging from medical instruments to fibre optic cables and sports goods. Its resident population also supports a range of lifestyle services such as sports and leisure. The lack of a metropolitan centre means that the region sees substantial variety across its thirteen districts, with towns showing a wide variation in terms of productivity — with Egham nearly twice as productive as Winchester or Leatherhead — and

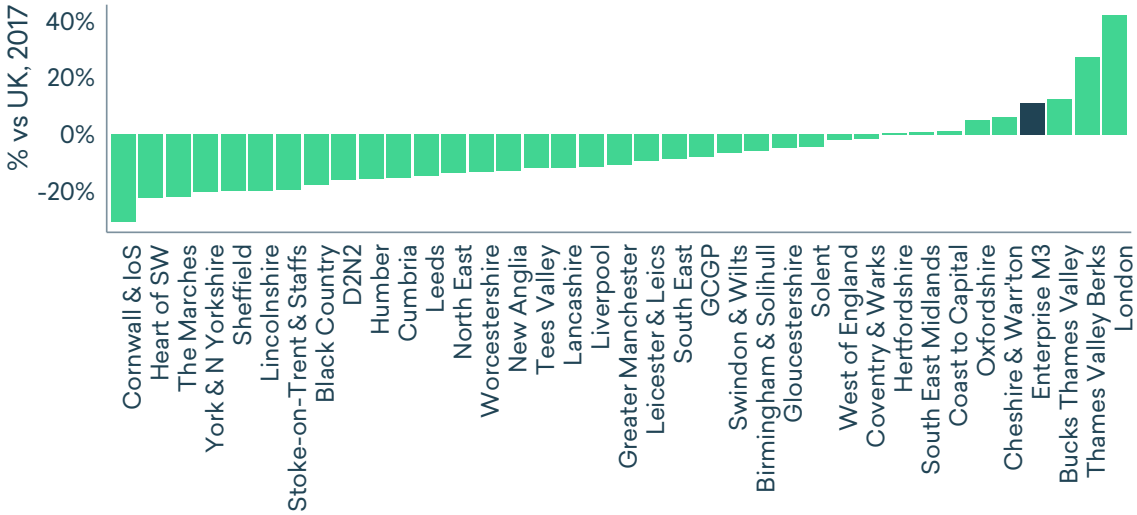
the industry strengths they have, although some of the leading clusters such as digital are a regular feature of towns' industry structures.

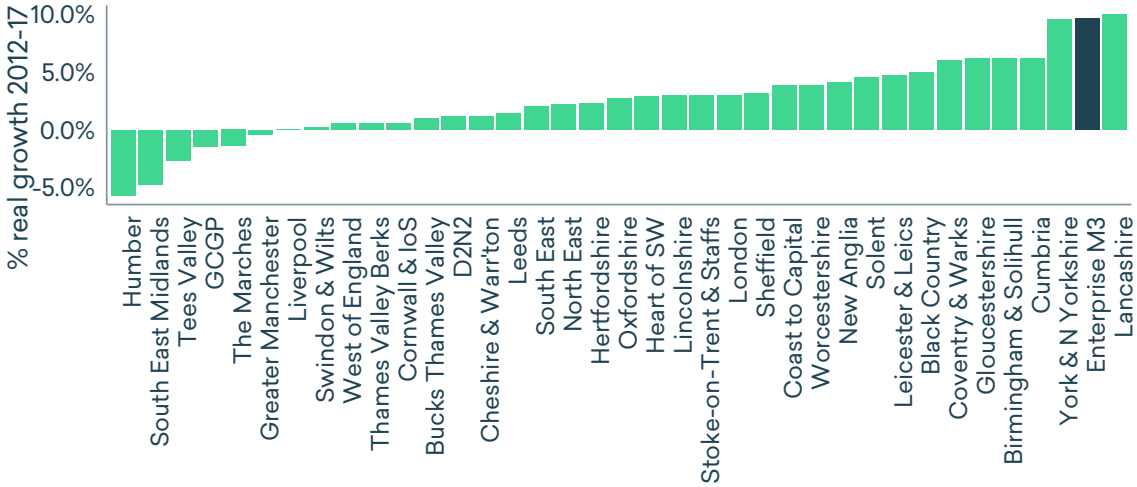
The region's industry make-up gives it good prospects in terms of future national growth trends, and in sustaining its productivity advantage. They also mean that it is much less exposed to risks from technology change in the next two decades — in fact, on Emsi's Automation Index, the region is ranked fourth-lowest out of LEP and Combined Authority regions. That said, although the presence in the Enterprise M3 region of large numbers of jobs in local service industries, especially food and beverage, commercial services, and building services, mean there remain significant numbers of jobs potentially affected by the 'automation' process set to disrupt many areas of work over the coming years.

HIGH AND GROWING PRODUCTIVITY

In 2017, Enterprise M3 LEP region had a productivity level — measured by GVA per filled job — estimated as 11 per cent higher than the UK level, placing it fourth in the land (see top chart). The region is one of just six LEP regions with a productivity level higher than nationally, although it is worth noting that the second and third ranked LEP regions are near neighbours (Thames Valley in Berkshire and Buckinghamshire), as is the top-ranked London region.

Although growing more slowly in the most recent years, the bottom chart shows that over the preceding five years the Enterprise M3 region's high productivity level has not impeded a strong growth performance, adding nearly 10 per cent in real terms GVA per filled job over that period, second in the country and significantly better than the other LEP regions with productivity above the national level.



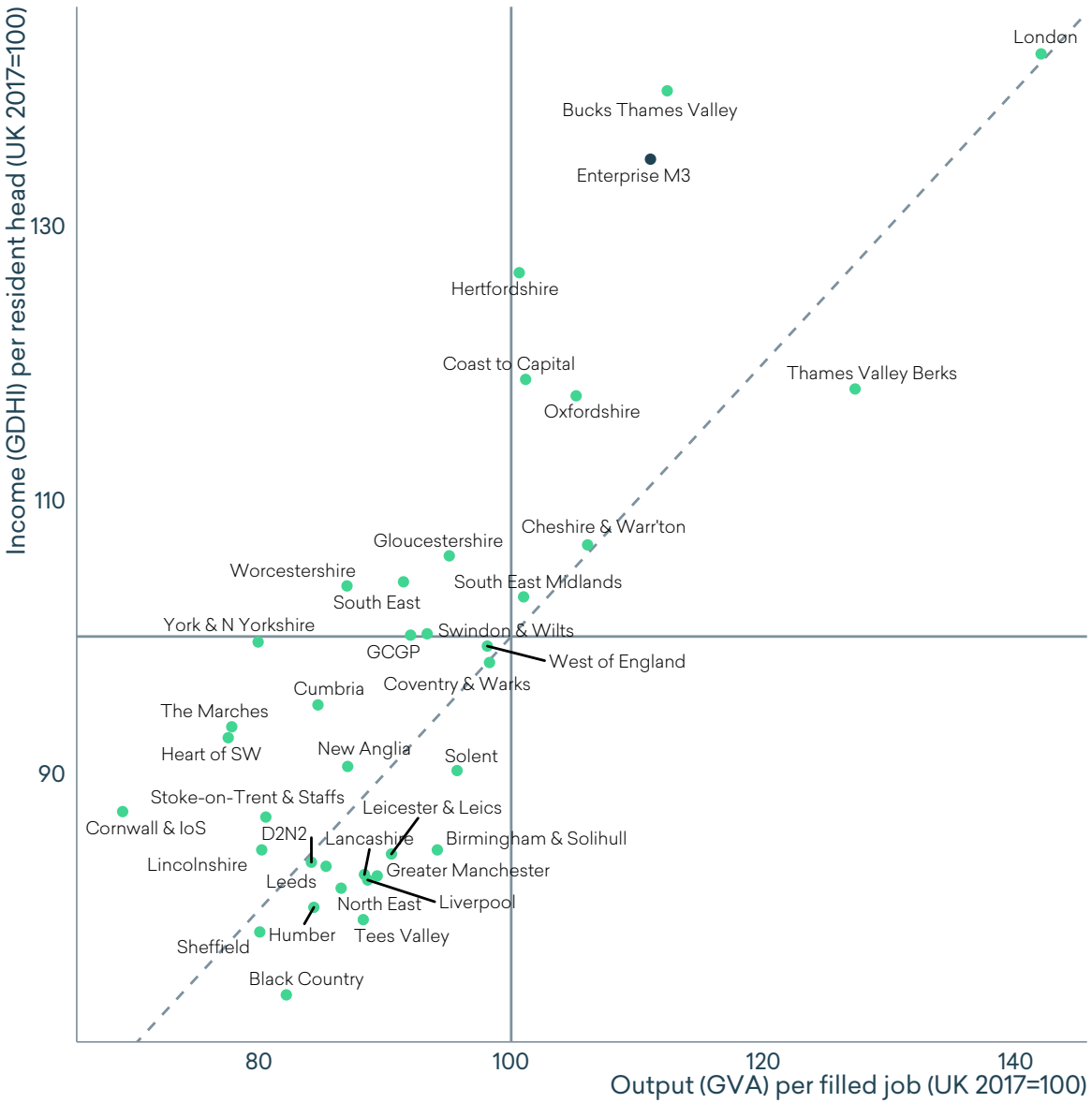


Data: Emsi analysis of ONS Subregional Productivity (Dorset excluded)

HIGHER RESIDENTIAL INCOME THAN PRODUCTIVITY

Regional productivity is a workplace concept; it compares the output generated in workplaces in a region with the jobs employed by them. For a region with a significant commuting population, as Enterprise M3 region is, this does not always tally with local living standards. For example, central London has extremely high productivity but also has areas of high deprivation. For this reason, it is worth comparing productivity with the residential *gross disposable household income* (GDHI) concept, comparing that to the resident population.

Happily, Enterprise M3 not only scores above the national level productivity but also for resident income per head, in the top-right quadrant of the chart. Perhaps more striking is its place some distance above the diagonal line, which represents an alignment between relative productivity and income. That suggests that residents' income advantage is higher than workplaces' productivity advantage, highlighting that while the region is productive, the region's prosperity is substantially changed by its commuting links.

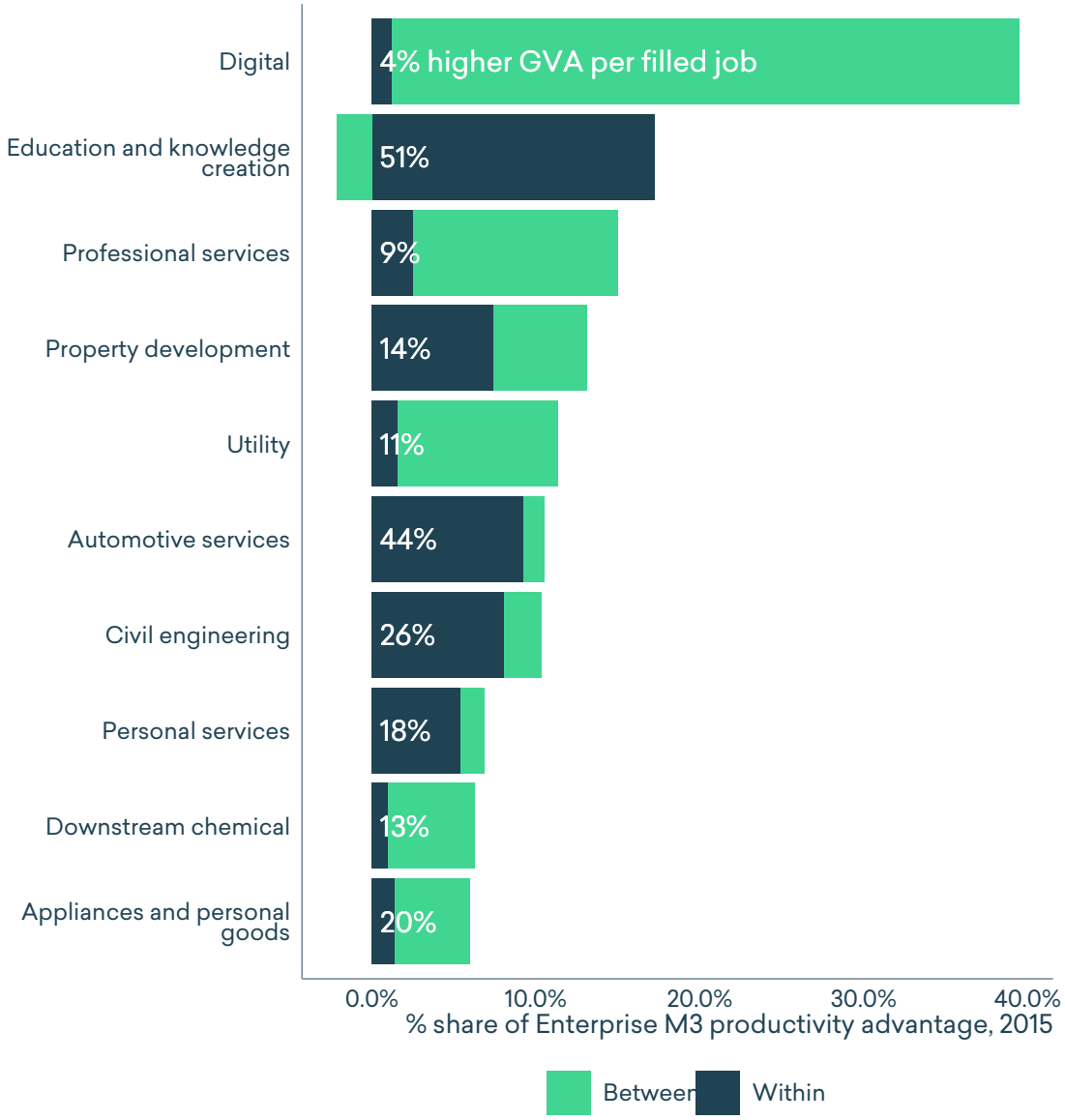


Data: Emsi analysis of ONS data (Dorset excluded)

DIGITAL AND PROFESSIONAL JOBS CRITICAL TO PRODUCTIVITY

Two-thirds of Enterprise M3's productivity advantage over national performance reflects greater productivity *within* workplaces (i.e. they produce more value from each job) and the other third reflects a better mix of jobs *between* industries (i.e. they have more jobs in higher value industries). This chart sets out the ten biggest industry cluster contributions to the region's productivity advantage, broken down by those two explanation.

Digital stands out, even though it is only slightly more productive in the Enterprise M3 region than nationally. Because the region has more than double the typical number of jobs in digital, and digital jobs are always high productivity, that one cluster contributes 39 per cent to the difference in productivity (the 'between' aspect), even though digital in Enterprise M3 is only marginally more productive than the national average (the 'within' aspect). Professional services in third is a similar story to digital, but second-placed education and knowledge creation — driven in large part by the region's research base — has the opposite story: an extremely highly productive local cluster driving 15 per cent of the region's higher productivity because of higher performance 'within', balanced out by having relatively fewer jobs than the national average.



Data: Emsi Input-Output Economic Model

A KNOWLEDGE AND SERVICE ECONOMY

The charts to the right break down the Enterprise M3 economy into seven large industry groupings, and track their job numbers from 2003 to 2019; the green lines are Enterprise M3 and the blue lines represent the national split of jobs between industries, in numbers equivalent to the Enterprise M3 region. The most important point is that three sectors dominate employment here as in all regions: retail services and logistics has nearly 250,000 jobs and professional and business services and public administration approach 200,000 jobs.

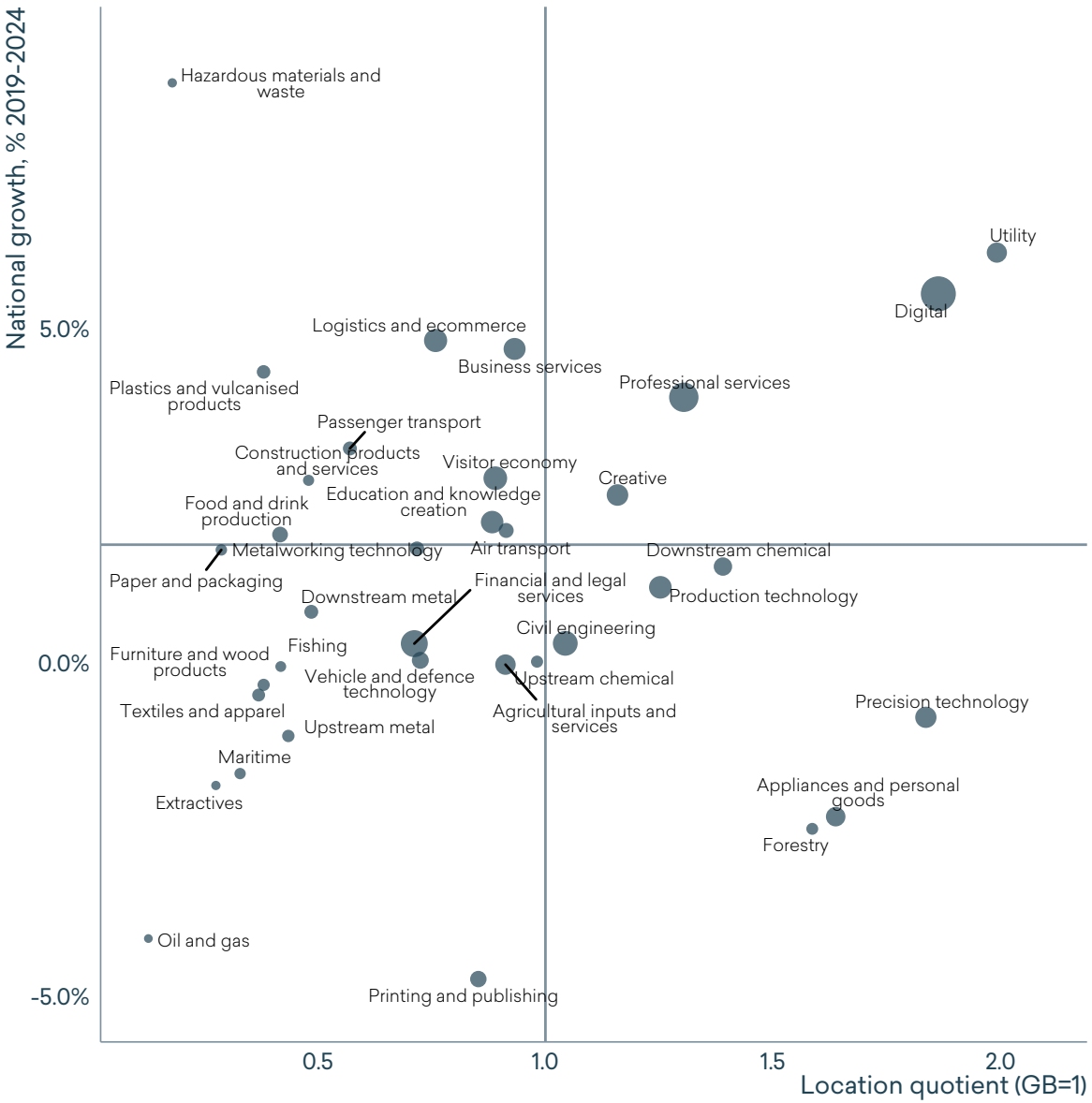
But the differences between the green and blue lines help to draw out critical differences from the national picture: Enterprise M3 has significantly more jobs in construction and professional and business services, with construction in particular growing recently above the national trend. In terms of job numbers, as of 2019 the region has nearly 30,000 more jobs in professional and business services than national trends would imply — reflected in the previous page's productivity analysis, showing the greater presence of digital and professional services jobs within the region is a key factor in driving its productivity advantage.

Data: Emsi 2019.1

DIGITAL AND PROFESSIONAL ARE POSITIONED WELL FOR NATIONAL GROWTH

To understand the industry mix within the region, in two charts (this page and next page) we look at the competitive positioning of each industry cluster. We look at local concentrations using a *location quotient* (x-axis; where values above 1 indicate a relative concentration) and the future jobs growth opportunity using national projected growth (y-axis; over five years to 2024).

We focus here on 'tradable' clusters which drive economic development, producing goods and services for customers wherever they may be. In the top-right 'strengths' quadrant, digital, utility and professional services stand out as high concentrations with growth prospects; in the top-left 'opportunities' quadrant, business services and logistics and ecommerce are set to grow fast but have a limited local profile; in the bottom right 'risks' quadrant, several manufacturing clusters feature.

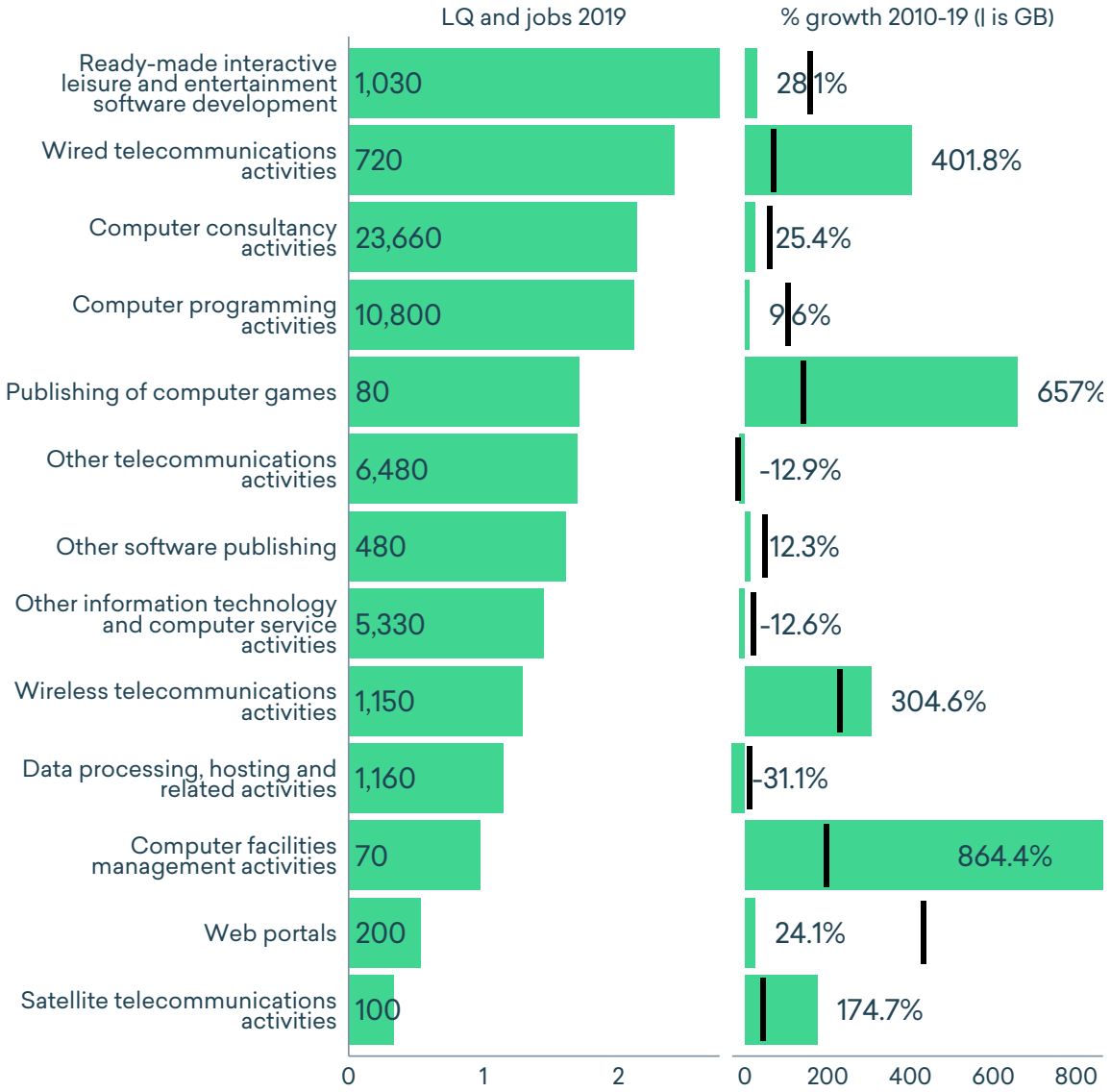


Data: Emsi 2019.1

PROFILE: **DIGITAL**

Digital industries account for over 50,000 jobs in the Enterprise M3 region, some 86 per cent more jobs than would be suggested by the national labour market profile. Adding more than 5,000 jobs since 2010 (12 per cent), they remain an important source of high productivity job creation.

As the charts to the right show, the cluster of digital industries has a particular pattern in the region, led by the niche industry of game development (LQ 2.75), accounting for 1,030 jobs — although growing less quickly than nationally, it has still added 28 per cent since 2010. Following that, the most concentrated industries being wired telecommunications (LQ 2.42); computer consultancy (LQ 2.14) and computer programming (LQ 2.12). As is typical with digital, it is the latter two industries which dominate employment, accounting for more than two-thirds of digital jobs — but their growth is more moderate than others, in double digits rather than the 402 per cent growth since 2010 seen by wired telecommunications.



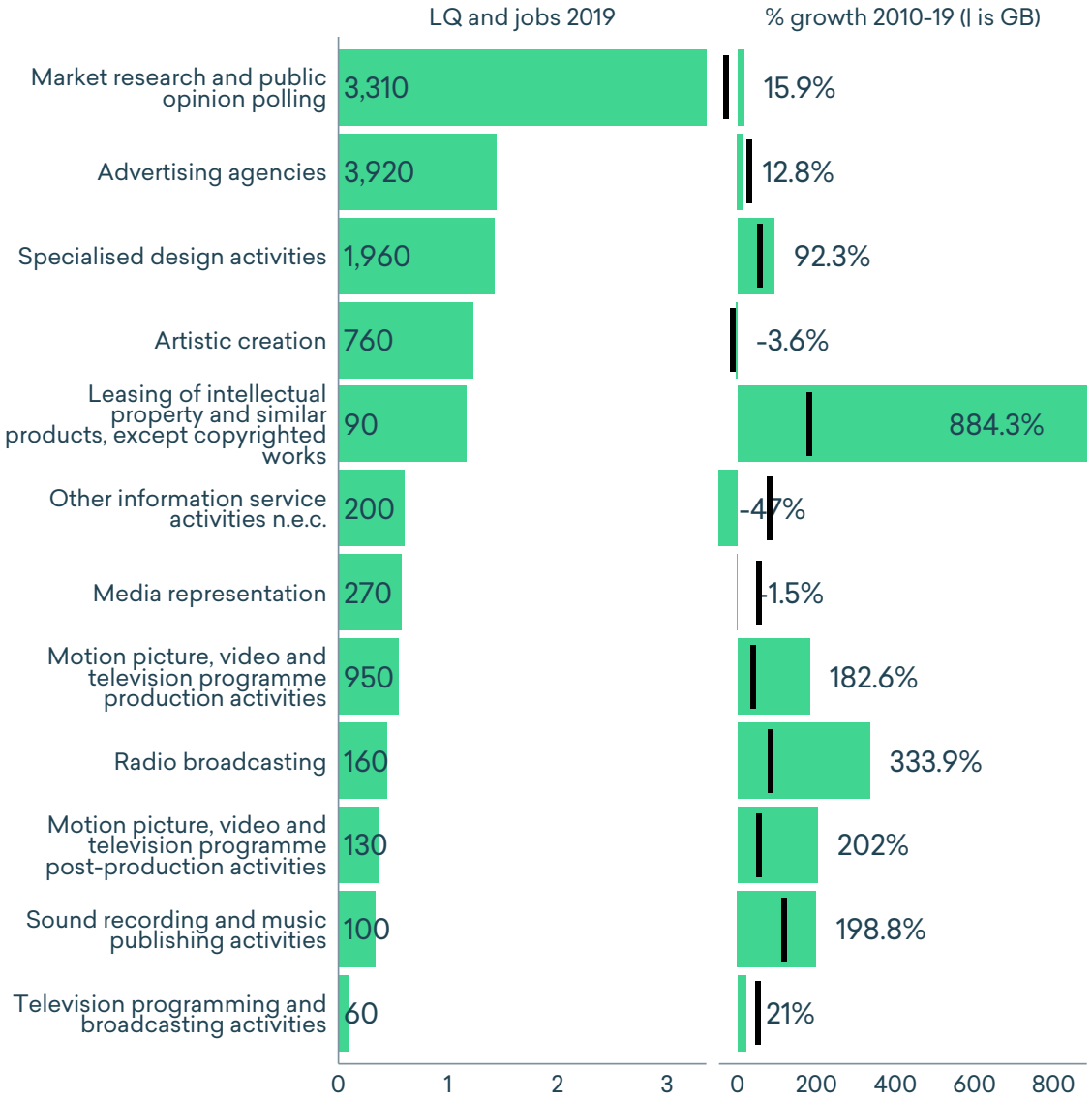
Data: Emsi 2019.1

PROFILE: **CREATIVE**

Creative industries are small but fast-growing — 28.3 per cent jobs growth since 2010, moving from nearly 9,400 jobs to 12,000 jobs in that time, with a projection to grow a further 5 per cent by 2027. The cluster is only mildly significant in the region — jobs are 16 per cent above the national share — but this rapid growth suggests important opportunity.

By far the most significant industry is in market research and opinion polling: 3,300 jobs accounting for more than a quarter of the total cluster, and more importantly 236 per cent larger than the national profile would imply. Also, the industry is seeing relatively fast growth: 15.9 per cent since 2010, compared to a substantial reduction in jobs (28.3 per cent) nationally. Advertising is also a significant industry (LQ 1.44, 3,920 jobs) and growing, albeit below the national trend (12.8 per cent within the region, 30.1 per cent nationally).

Specialised design activities comes third, and is particularly fast-growing, adding 92.3 per cent since 2010 compared to 57 per cent nationally; the industry is now significantly concentrated in the Enterprise M3 region (LQ 1.43).



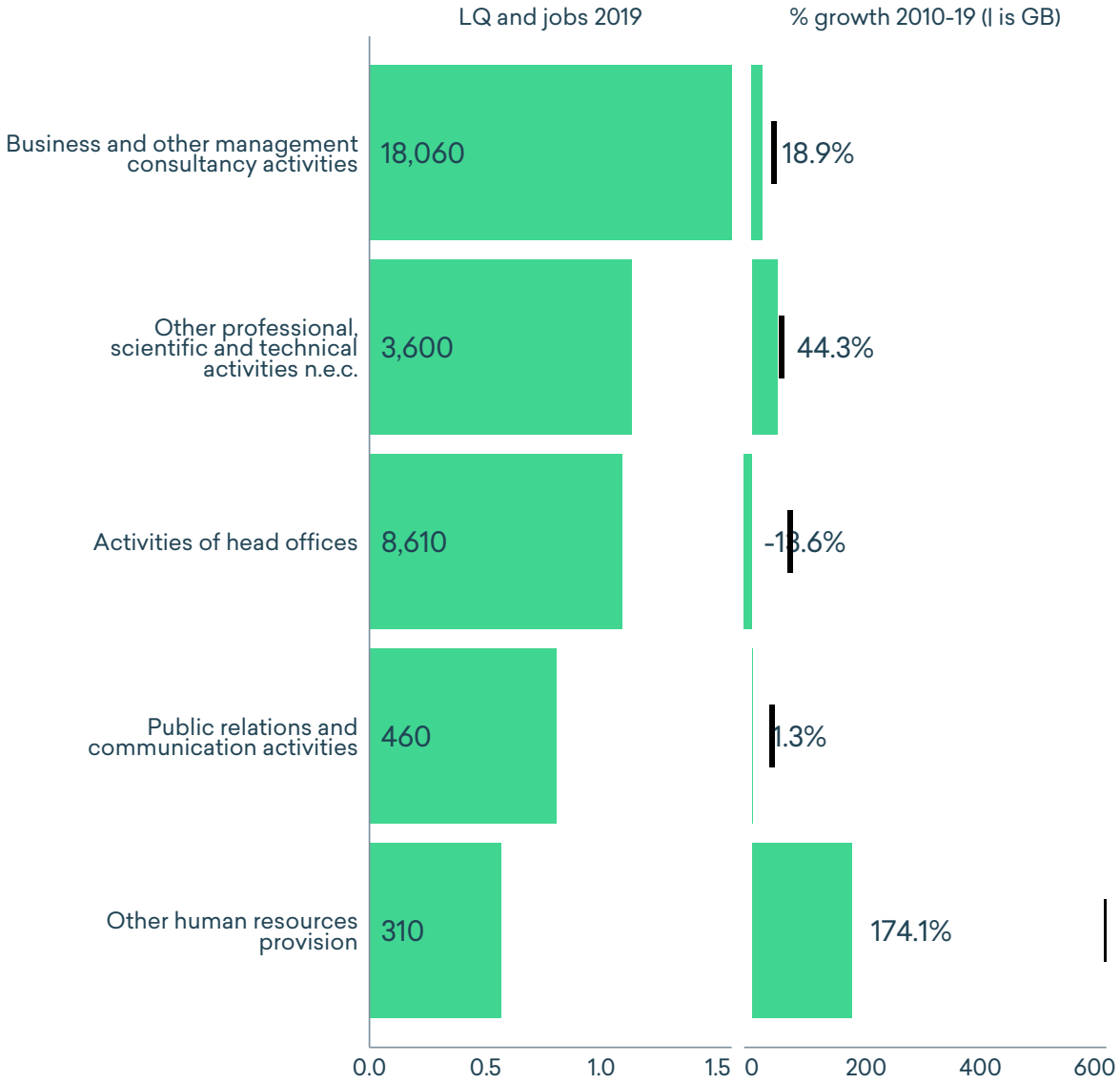
Data: Emsi 2019.1

PROFILE: **PROFESSIONAL SERVICES**

Professional services brings 31,000 typically high value jobs to the Enterprise region, 30 per cent more than the national profile would imply. The cluster of industries has grown by 10 per cent since 2010, although the overall trend is projected by Emsi to decline somewhat in the region, 5 per cent by 2027.

The cluster is dominated by management consultancy; some 18,000 jobs, 56 per cent above the national profile, and growing, having added 2,900 jobs since 2010. But growth is at half the pace compared to national trends: 18.9 per cent growth since 2010 in the Enterprise M3 region, compared to 38.3 per cent nationally.

Head offices and other professional activities bring large job numbers — 3,600 and 8,610 respectively — but are only marginally significant (LQ 1.09 and 1.13 respectively). That said, head office jobs have declined in the region (13.6 per cent) and grown nationally (66.8 per cent). A notable feature for all the industries is that growth is slower than national trends: PR and communication activities is essentially stable (1.3 per cent) but growing strongly nationally (35.8 per cent).



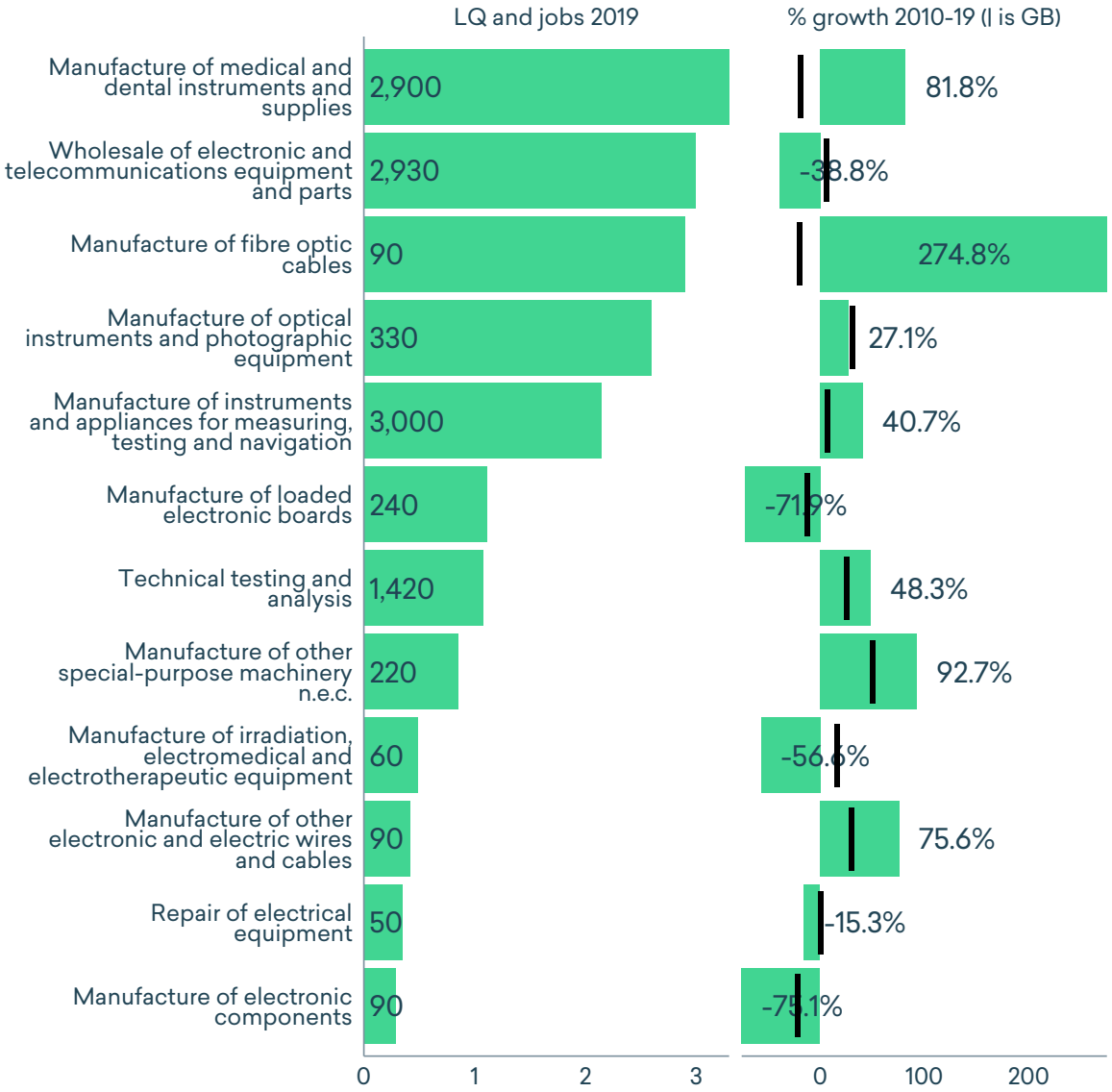
Data: Emsi 2019.1

PROFILE: **PRECISION TECHNOLOGY**

Precision technology has seen some decline nationally, but has been relatively stable (0.2 per cent decline) in the Enterprise M3 region. Employing more than 11,500 jobs, the cluster of industries is 84 per cent larger than the national profile would imply.

Medical and dental instrument manufacture leads the cluster, with 2,900 jobs and a location quotient of 3.3. The cluster has also grown well above the national trend since 2010, 81.8 per cent growth compared to an 18.3 per cent decline. By contrast, the second-placed industry, the wholesale of electronic and telecommunications equipment, has a similar number of jobs and a similar location quotient, but has declined by 38.8 per cent, compared to 6.6 per cent growth nationally.

Fifth-placed in terms of location quotient, the manufacturing of instruments and appliances for measuring, testing and navigation accounts for 3,000 jobs, 115 per cent above the national profile, but has grown by 40.7 per cent since 2010, far ahead of the national trend of 7 per cent growth over the same period.



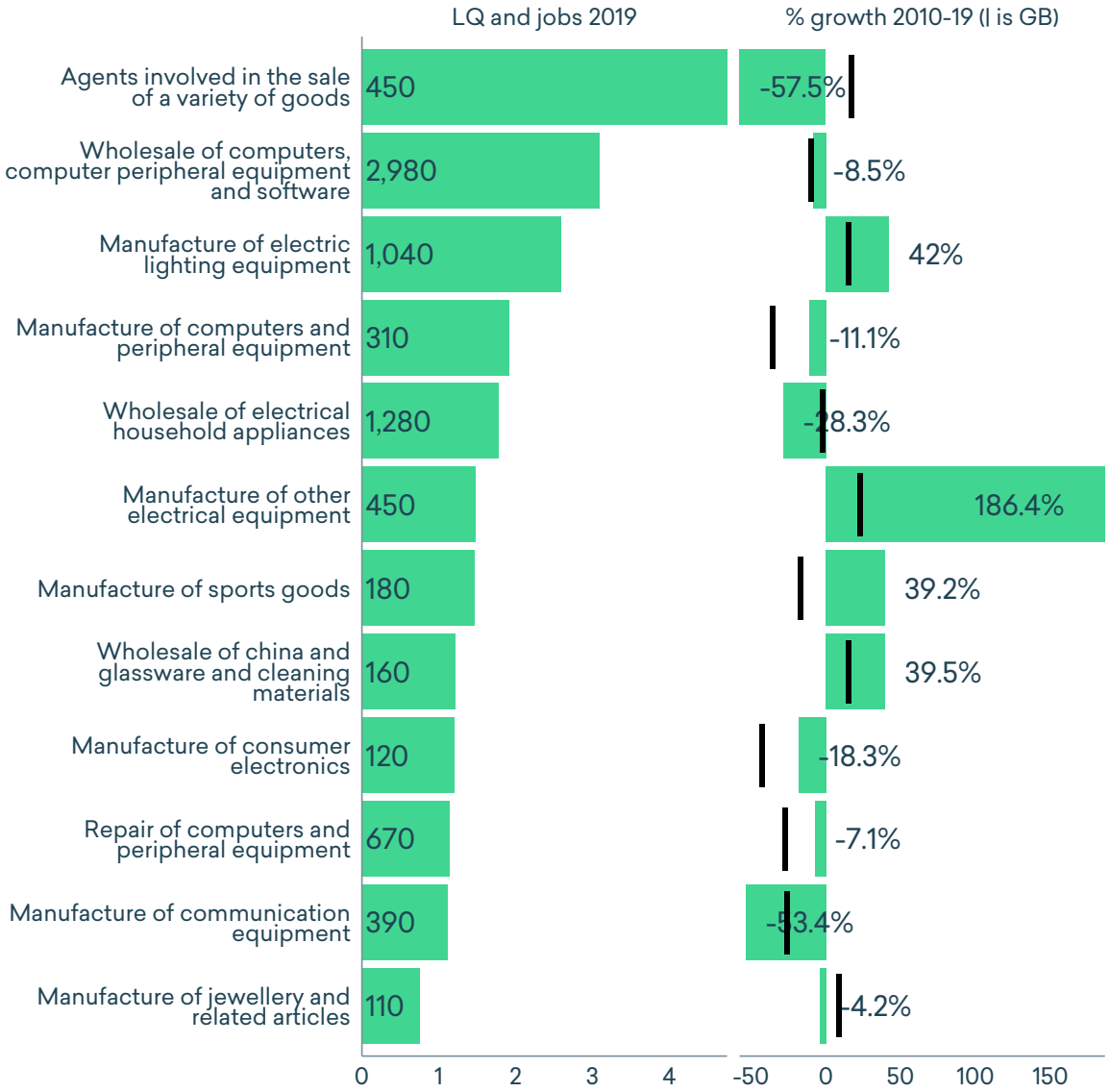
Data: Emsi 2019.1

PROFILE: **APPLIANCES AND PERSONAL GOODS**

Appliances and personal goods represents a range of industries around the production and distribution of various goods. It's on the distribution side that the Enterprise M3 region has its most significant concentrations, with agents involved in the sale of a variety of goods (LQ 4.75) and wholesale of computers, peripheral equipment and software (LQ 3.09), the latter accounting for nearly 3,000 of the cluster's more than 8,500 jobs in the region.

The cluster overall has declined since 2010, losing 1,300 jobs (13.2 per cent), a trend we project to continue, losing 11.4 per cent of jobs by 2027. Beyond those distribution industries leading the cluster, there are a number of manufacturing niches which are important in the region: electric lighting (LQ 2.59 and 1,000 jobs); computers and peripheral equipment (LQ 1.91 and 300 jobs); household appliances (LQ 1.78 and 1,300 jobs).

Growth performance is variable, in many ways reflecting national trends, although electric lighting and other electrical equipment manufacture stand out for being above national trend (42 per cent and 201 per cent respectively), while sports good manufacture — although small in terms of jobs — has grown by 39.2 per cent in the region, while declining nationally.

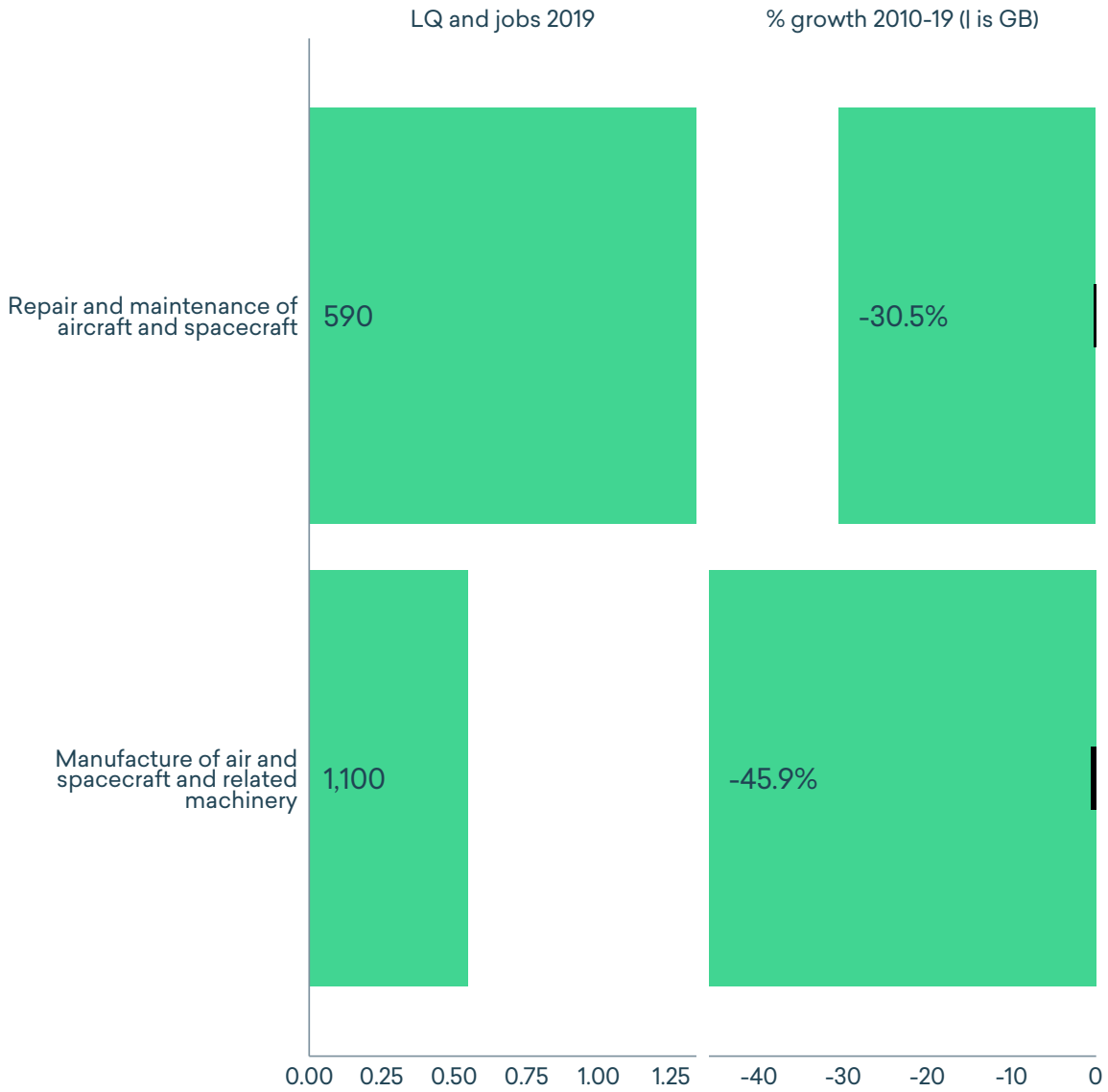


Data: Emsi 2019.1

PROFILE: **SPACE AND SATELLITE**

Turning now to some of those sectors selected by the Enterprise M3 region as priorities for the local industrial strategy, we start with the highly niche space and satellite sector. There are three industries in the sector, although one (space transport, SIC class 5122) does not have jobs in the region. Across the region, 1700 jobs are in this niche sector, with two thirds in manufacture of air and spacecraft and related machinery, and a third in repair and maintenance. (It should be noted that the SIC taxonomy does not allow disaggregation of space manufacture and repair as a specific group.)

The Enterprise M3 region is relatively specialised in the repair and maintenance of aircraft and spacecraft, with a Location Quotient of 1.34. Reflecting high productivity growth in this environment, job numbers have declined significantly, with nearly 1,300 jobs lost in the years since 2010, with the Enterprise M3 region particularly affected, when compared with national trends.



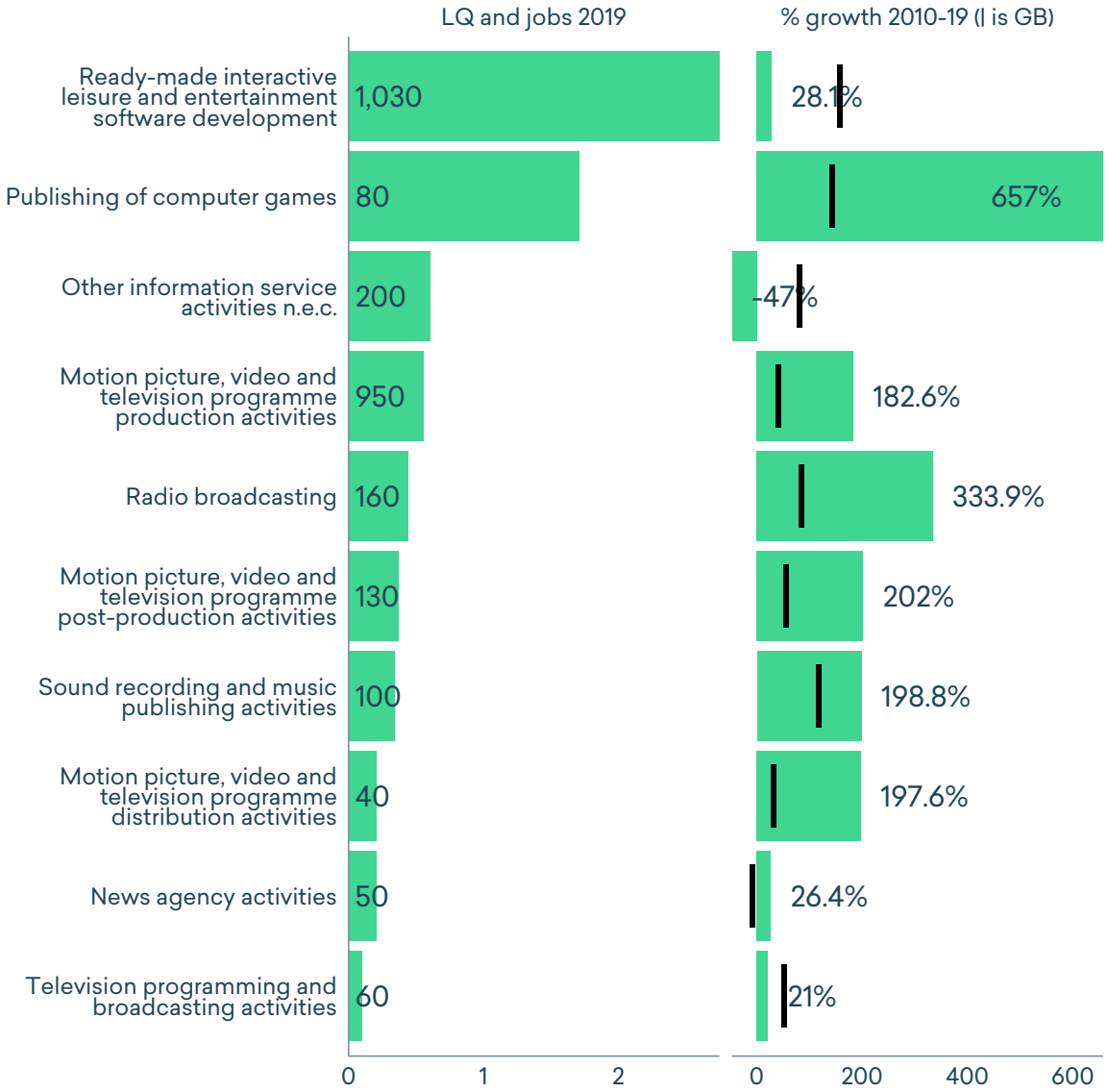
Data: Emsi 2019.1

PROFILE: **CREATECH**

Another priority sector for the region is createch, involving the application of technology to creative industries. Accounting for 1,800 jobs in 2019, the sector has nearly doubled in size since 2010.

Its largest concentration within the region, is in the production of gaming software — 1,030 jobs and a Location Quotient of 2.75, making it also the largest single source of jobs. It has grown since 2010 although starting from a higher base, its significant growth of 28 per cent is some way behind the national growth of 157 per cent over that same time. On the other, publishing of computer games has grown significantly, although still accounts for relatively few jobs.

In employment terms, TV production and post-production account for the next largest part of the sector (1,080 jobs) and have also seen robust growth, trebling in size since 2010.



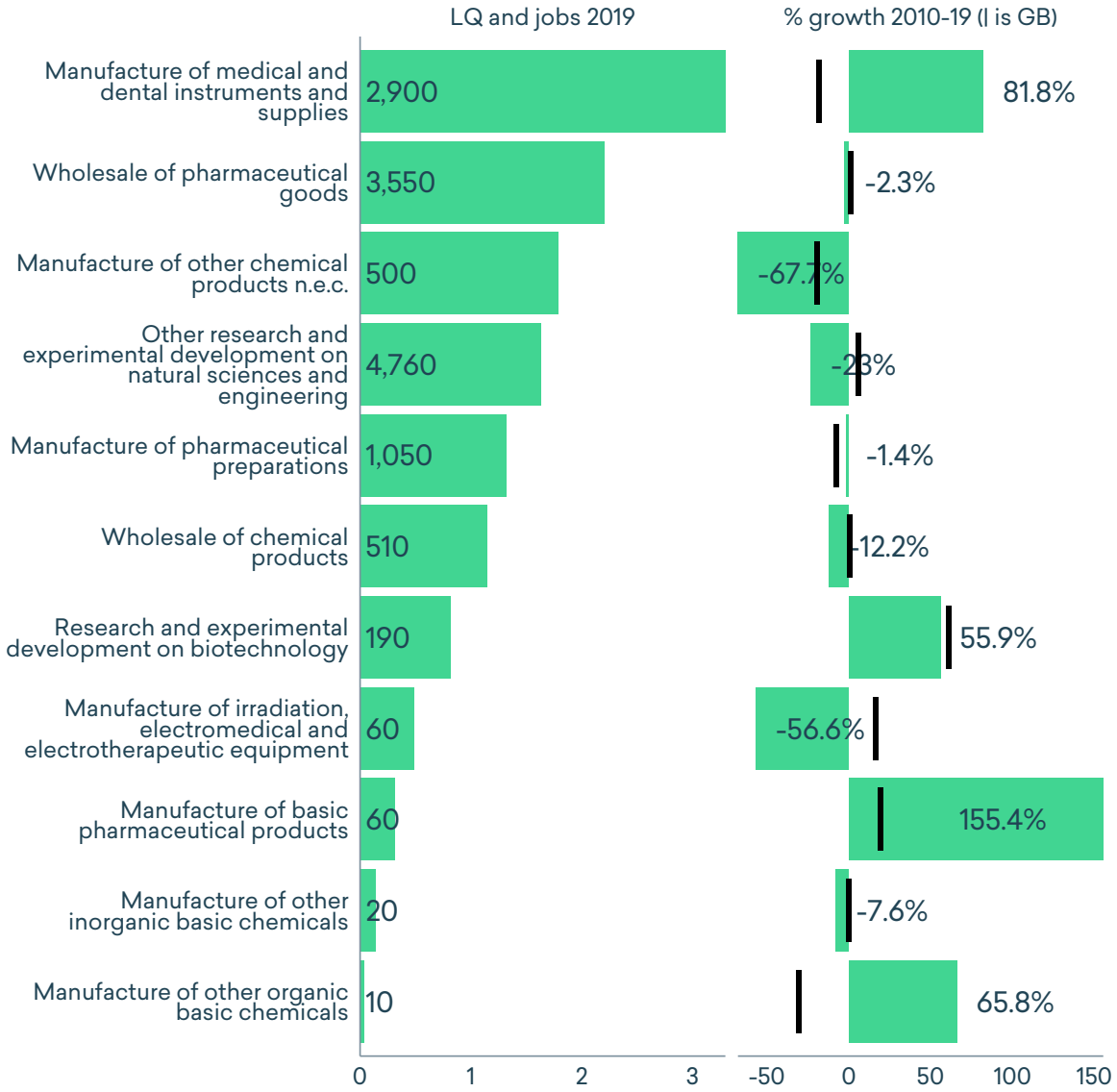
Data: Emsi 2019.1

PROFILE: **LIFE SCIENCES AND MED-TECH**

The life sciences and med-tech sector defined by Enterprise M3 accounts for 13,600 jobs across the region, having declined by 9 per cent in job terms since 2010; such declines in job numbers are often a part of change in high-value production industries of this type.

Manufacture of medical and dental instruments and supplies leads as a local concentration, with Location Quotient of 3.30, followed by wholesale of pharmaceutical goods (2.21) and manufacture of other chemical products (1.79); science R&D and pharmaceutical preparations manufacture are also significant concentrations.

Manufacture of medical and dental instruments and supplies has also seen robust growth in the period since 2010, well ahead of national trends: growing by 82 per cent or 1,300 jobs in that time, while the national industry saw jobs decline by 18 per cent. That suggests the Enterprise M3 region's competitive features made it an attractive region for the industry to consolidate into.

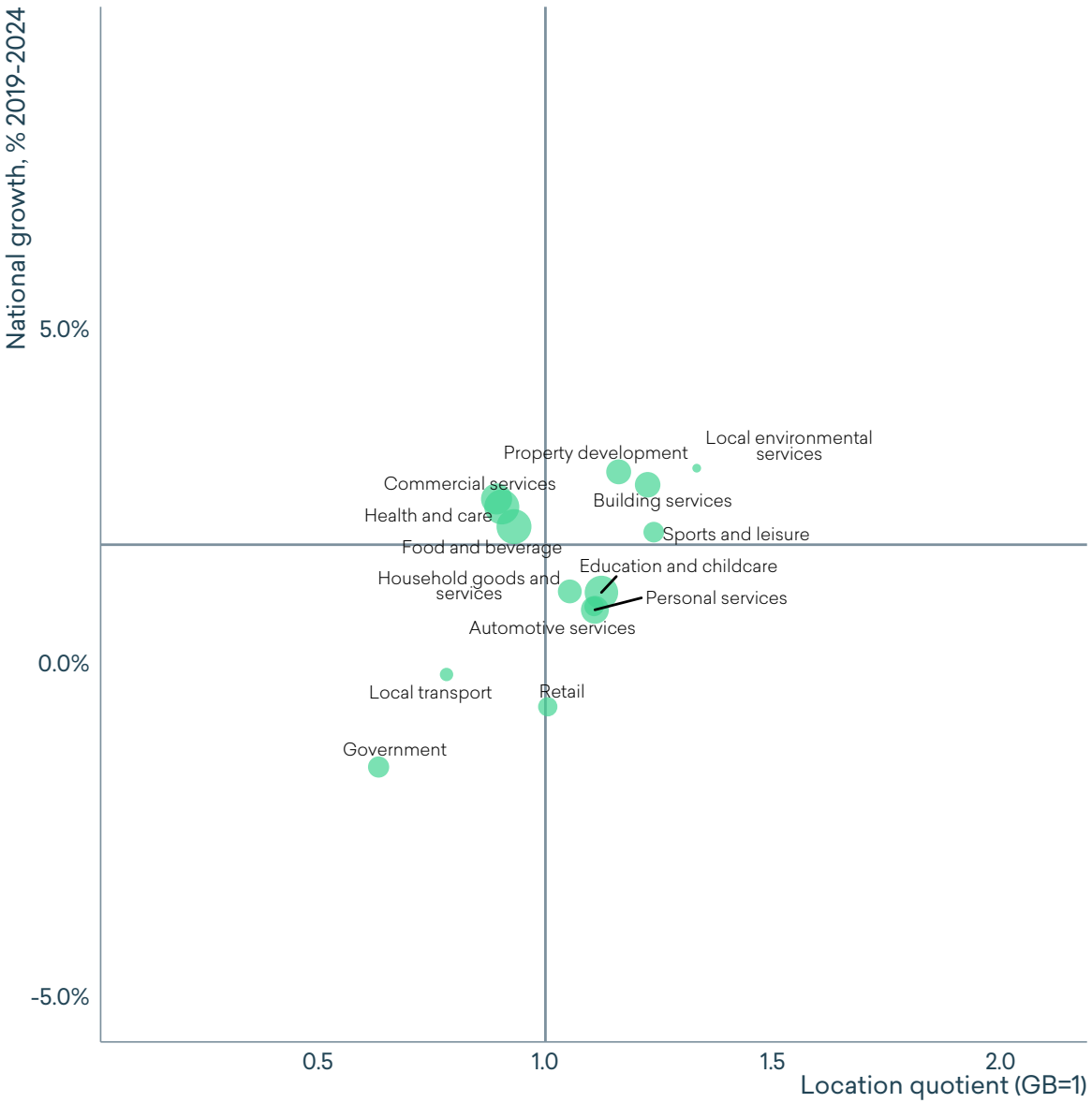


Data: Emsi 2019.1

LOCAL SERVICES CONCENTRATING IN 'LIFESTYLE' ECONOMY

'Local' services are distinct from tradables because consumption typically takes place nearby to production; therefore, they are produced wherever people live. For this reason, concentrations are typically muted, as production is naturally spread out.

As a prosperous commuter region, Enterprise M3's profile of local services is distinctive because local consumers have high disposable incomes. Therefore sports and leisure, local environment services, education and childcare, automotive services, and personal services are all relatively concentrated. The region's quality of life and access to economic opportunity makes it an attractive place to live, and property development and building services are also concentrated accordingly.



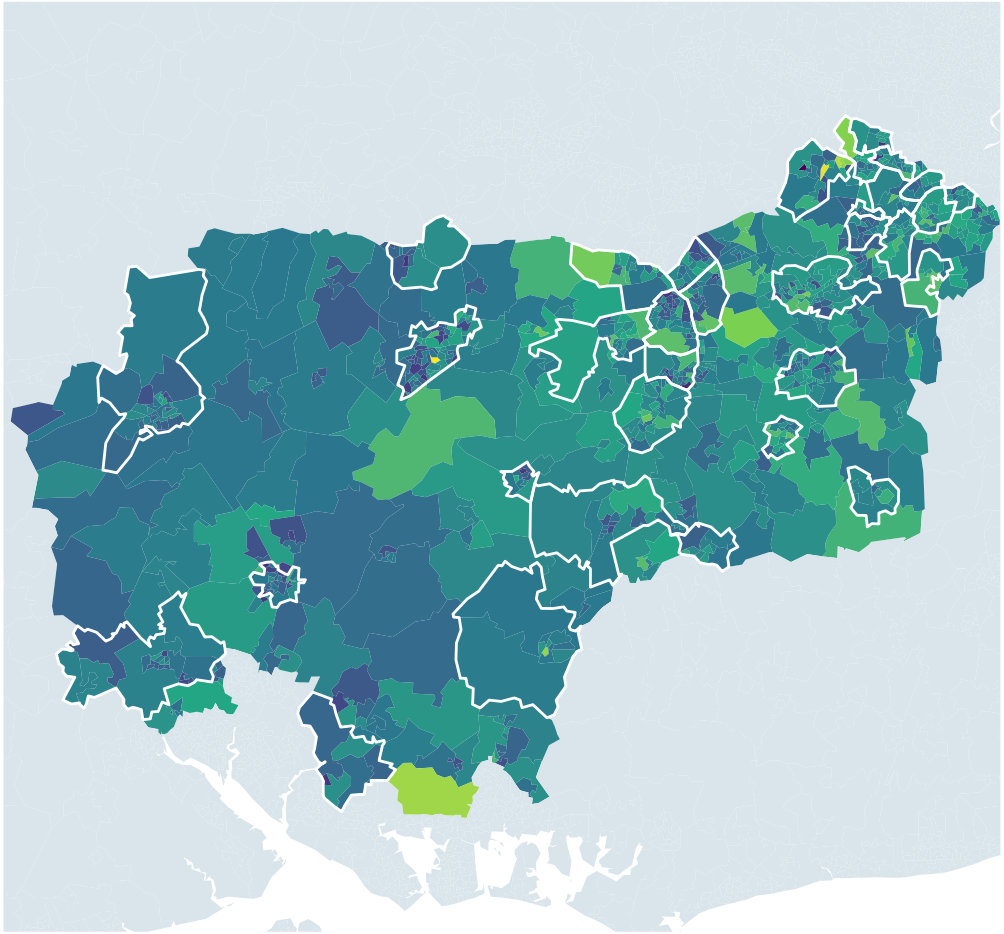
Data: Emsi 2019.1

A DIVERSE REGIONAL ECONOMY

Economic activity tends to cluster spatially — it's why towns and cities exist, as businesses gain from the 'externalities' associated with concentrating together, in accessing shared infrastructure and talent pools, and in being near to customers. For a large region with no dominant urban centre but a range of mid-sized towns, that provides Enterprise M3 with a highly diverse economy, stretching from the edges of south west London through a large tract of farming country, to the coastal cities area in the south.

This map provides an estimate of productivity levels and how they vary across the region. Constructed for 2015 at the ONS' 'Lower Layer Super Output Area' (LSOA) geography, we have used the detailed industry mix of jobs in each LSOA and the local authority-level productivity performance for each industry to estimate productivity.

One feature common in this region as elsewhere is the heavy concentration of productivity in small areas, with larger areas more mixed between production and residential housing. At this level, single workplaces can be decisive: the highest productivity area in 2015 was with SSE, then in Basingstoke; second and fourth-placed are in Egham and around Southwick, both for science and engineering R&D; third is in Runnymede, with a mix of utility (gas trading), computer consulting and head office.



£000 GVA per filled job, estimate 2015

Data: Emsi analysis

TOWN-LEVEL PERFORMANCE: JOBS AND PRODUCTIVITY

The lack of a large urban centre within the region means that its towns become an important part of understanding the Enterprise M3 economy. The table here sets out the 20 significant built-up areas, using set of towns defined by Hardisty Jones Associates for the Enterprise M3 LEP. Each town is defined as a the collection of Lower Layer Super Output Areas (LSOAs); against them we have identified their jobs, estimated gross value added and implied productivity (GVA per job) in 2015, the latest available data at this level.

The larger urban centres include Basingstoke (61,600 jobs, £2.9bn economy), Guildford (54,200 jobs, £2.6bn economy), Woking (38,500 jobs, £1.9bn economy), Andover (29,200 jobs, £1.2bn economy) and Winchester (30,700 jobs, £1.1bn economy). In productivity terms, Egham in Surrey leads — £64,600 GVA per job, around 40 per cent higher than the region's already-high average. (Data estimated from Emsi jobs data at local authority level, with BRES jobs at MSOA and LSOA level, with Emsi estimates of industry-level GVA.)

Built-up Area	GVA £m	Jobs	GVA per job £
Egham	1,721.6	26,600	64,600
Cobham	400.1	6,900	57,700
Weybridge	1,119.5	20,300	55,200
Walton-on-Thames	484.5	8,900	54,400
Staines-upon-Thames	627.7	11,600	54,100
Blackwater/Yateley	515.5	9,600	53,800
Fleet	702.8	13,900	50,600
Ashford	463.5	9,200	50,500
Godalming	544.2	10,800	50,500
Farnham	942.4	18,900	49,800
Woking	1,888.7	38,500	49,000
Guildford	2,598.4	54,200	47,900
Basingstoke	2,937.3	61,600	47,700
Farnborough	1,460.3	30,700	47,600
Sunbury	243.5	5,200	46,700
Stanwell	173.7	3,700	46,700
East and West Molesey	255.7	5,600	45,800
Shepperton	258.6	5,700	45,300
Frimley	1,018.6	22,700	44,800
Aldershot	821.6	18,300	44,800
Camberley	908.9	20,600	44,100
Whiteley	972.4	22,300	43,700
Petersfield	452.0	10,400	43,600
Cranleigh	169.7	3,900	43,300
Haslemere	233.8	5,400	43,100
Alton	356.6	8,300	42,800
Chertsey	287.3	6,800	42,400
Andover	1,201.9	29,200	41,100
Bordon/Lindford/Headley	311.8	7,600	40,800
Addlestone	298.9	7,500	39,800
Romsey	510.8	13,400	38,000
Winchester City	1,136.2	30,700	37,100
Tadley	119.1	3,300	36,000

KNOWLEDGE-INTENSIVE CLUSTERS DRIVE HIGH PRODUCTIVITY TOWNS

Analysis of the key industry clusters driving each built-up area sheds some light on the productivity differences between them. Egham's economy, as the highest productivity, is dominated by knowledge-intensive industries: the presence of the Royal Holloway, University of London campus gives it a location quotient of 20 for education and knowledge creation, with a further digital cluster having a location quotient of 10, representing 3,300 jobs.

For third-placed Weybridge, the appliances and personal goods sector is its largest cluster, with downstream chemicals and precision technology also featuring: a knowledge-intensive production location. Among the larger centres, Basingstoke again has a production orientation, while Guildford combines education and knowledge creation with downstream chemical and retail, and Woking has vehicle and defence technology at the top, but also a 3,700 job digital cluster (LQ 9) and a 1,400 job creative cluster (LQ 8). Taken together, 8 of the 33 towns have digital clusters in their top 3, with creative, chemical and precision technology also featuring widely.

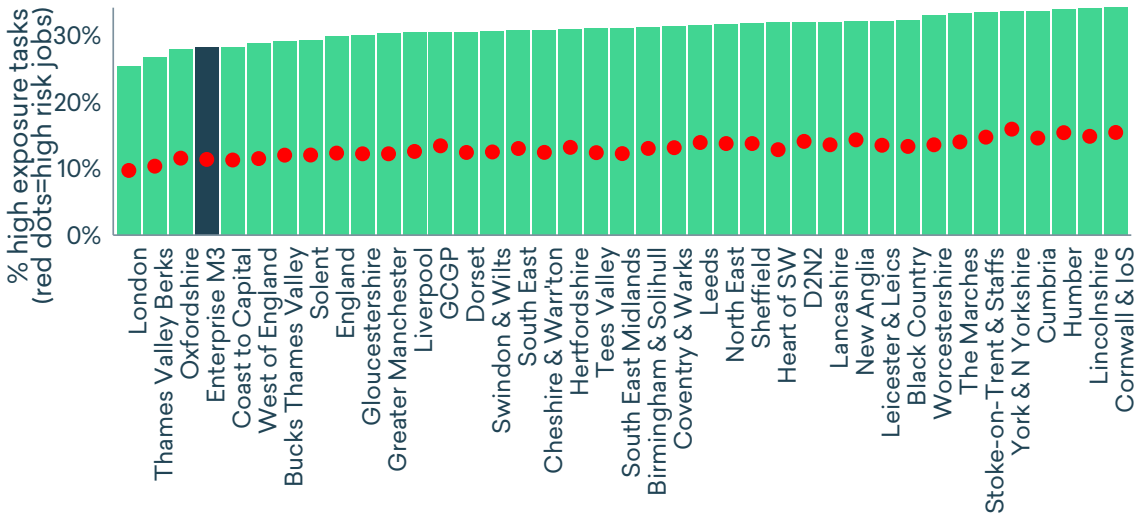
	No.1 cluster	No.2 cluster	No.3 cluster
Egham	Utility	Education and knowledge creation	Digital
Cobham	Property development	Professional services	Food and beverage
Weybridge	Appliances and personal goods	Downstream chemical	Precision technology
Walton-on-Thames	Local environmental services	Creative	Sports and leisure
Staines-upon-Thames	Digital	Creative	Retail
Blackwater/Yateley	Precision technology	Local environmental services	Education and knowledge creation
Fleet	Digital	Property development	Building services
Ashford	Utility	Building services	Logistics and ecommerce
Godalming	Digital	Commercial services	Education and childcare
Farnham	Utility	Property development	Business services
Woking	Vehicle and defence technology	Digital	Creative
Guildford	Education and knowledge creation	Downstream chemical	Retail
Basingstoke	Appliances and personal goods	Precision technology	Downstream chemical
Farnborough	Air transport	Digital	Production technology
Sunbury	Building services	Sports and leisure	Education and childcare
Stanwell	Construction products and services	Local transport	Local environmental services
East and West Molesey	Printing and publishing	Agricultural inputs and services	Building services
Shepperton	Creative	Logistics and ecommerce	Building services
Frimley	Utility	Downstream chemical	Precision technology
Aldershot	Digital	Local environmental services	Paper and packaging
Camberley	Creative	Downstream chemical	Appliances and personal goods
Whiteley	Air transport	Precision technology	Household goods and services
Petersfield	Downstream chemical	Local environmental services	Government
Cranleigh	Education and childcare	Sports and leisure	Building services
Haslemere	Sports and leisure	Education and childcare	Automotive services
Alton	Downstream chemical	Upstream metal	Appliances and personal goods
Chertsey	Professional services	Digital	Production technology
Andover	Production technology	Downstream metal	Food and drink production
Bordon/Lindford/Headley	Plastics and vulcanised products	Precision technology	Building services
Addlestone	Appliances and personal goods	Downstream chemical	Household goods and services
Romsey	Precision technology	Civil engineering	Production technology
Winchester City	Personal services	Passenger transport	Government
Tadley	Building services	Health and care	Automotive services

AUTOMATION

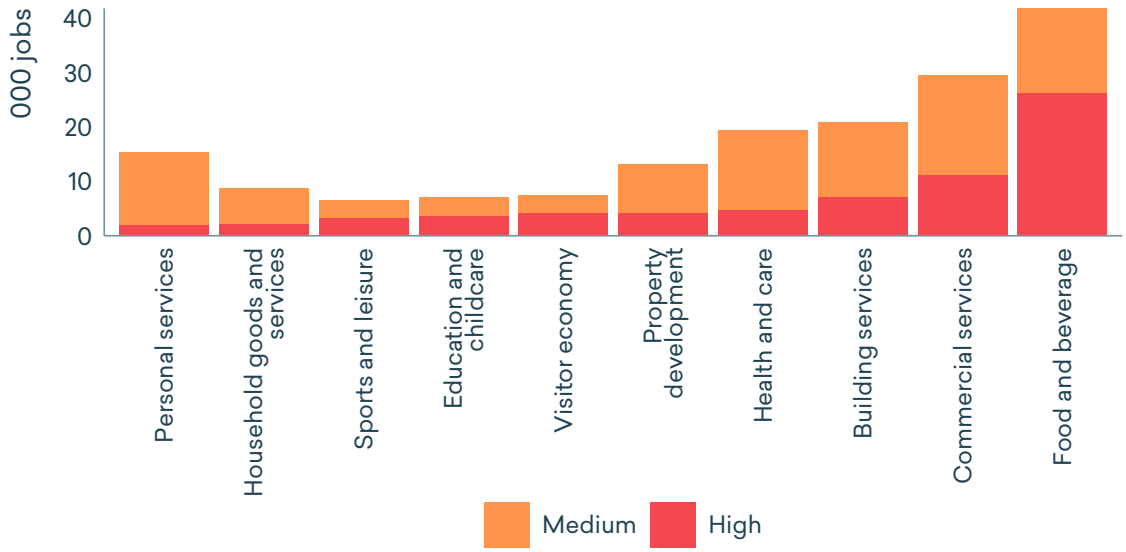
New technologies will cause substantial disruption to a range of different roles in different industries: often referred to as 'automation', the application of a range of technologies together has substantial potential to change the growth outlook over the coming decades.

Emsi's Automation Index identifies a range of tasks according to their exposure to this technology disruption, and estimates the time commitment in different roles to them. In Enterprise M3, the share of high exposure working time across jobs is the fourth lowest among LEP regions at 28 per cent.

Around 11 per cent of jobs are 'high risk', where more than 70 per cent of time is at high disruption risk. As the lower chart shows, these jobs are concentrated in labour-intensive service industries: 26,400 jobs in food and beverage service; 11,200 in commercial services; 7,200 in building services. In each cases, a wider number of jobs are in the medium-risk category, with between 30 and 70 per cent of time at risk.



Data: Emsi Automation Model



CHAPTER 3:

Jobs: decline amidst competition?

The eleventh largest LEP and Combined Authority labour market, the striking feature of recent history is a decline in job numbers against a national trend of growth. Despite the region's strong positioning in growth industries, these industries seem to have born some of the brunt; only Surrey Heath has grown above trend. While supply constraint may play a role given the high employment rate, comparison with other regions suggests a role for competition from nearby labour markets — the region has some of the highest commuting flows.

The Enterprise M3 region has very high levels of employment and in keeping with the positive recovery trend seen nationally, has seen strong jobs growth since the end of the last recession, adding 44,700 jobs in the years since. Curiously though, in the most recent few years, the region has diverged from the national trend, leading to a decline in regional jobs as most regions have seen a continued increase — only one LEP region has seen a faster decline.

Industry analysis suggests a key role for professional and business services, as well as the lower value retail and logistical services in driving the decline; closer examination suggests roles for professional services, property development and even digital — an industry in which the region is strong and has been growing robustly on a national level. Reflecting the spread of these industries across the region's towns, few parts of the region have been spared their share in the decline, with only Surrey Heath growing beyond that level expected given national trends.

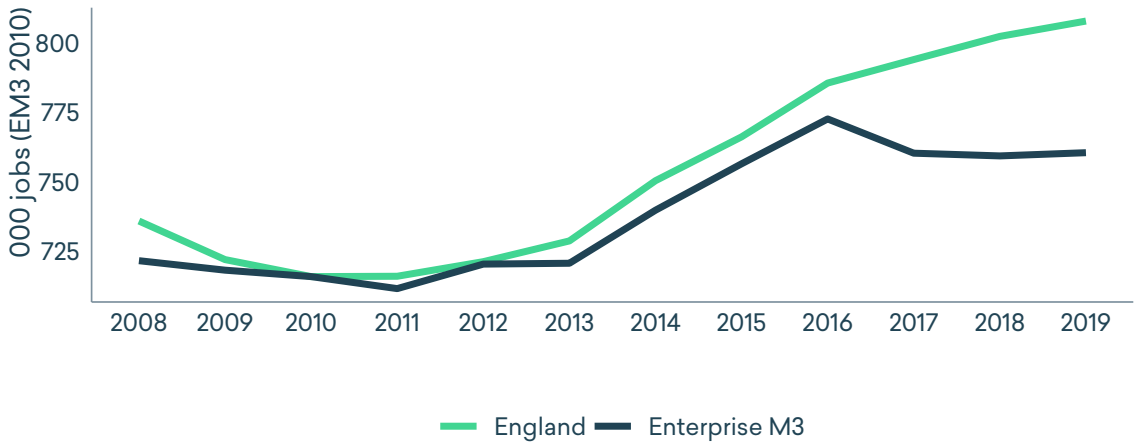
One potential explanation for the decline is the tightness of the local labour market, with the second-highest employment rate among LEP and Combined Authority regions; but other regions with similarly high employment have often seen better job growth performance. That said, the combination of labour market tightness and robust job growth in commutable labour markets may make for a highly competitive recruitment environment facing businesses in the Enterprise M3 region, constraining their ability to create jobs.

RELATIVE DECLINE IN JOBS

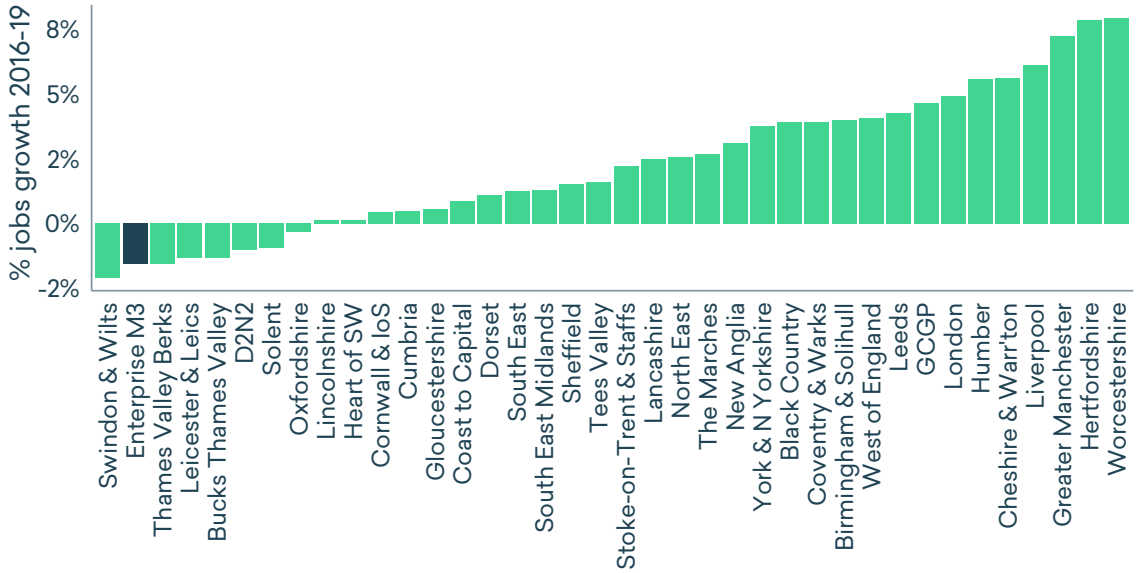
The Enterprise M3 region is 11th placed among the LEP and Combined Authority regions for job numbers, with an estimated 760,500 jobs in the region in 2019. That number has grown by 44,700 since the end of the last recession in 2010, representing growth of 6.3 per cent in that time. But this performs poorly compared with national trends, with England has a whole seeing 12.9 per cent growth over the same period.

As the top chart shows, while the Enterprise M3 region lagged somewhat in the early years of this period, the largest divergence has been in the most recent years; while nationally job growth has continued, Enterprise M3 has seen a modest decline. Specifically, since 2016 Enterprise M3 has seen 12,200 net job loss, representing a 1.6 per cent decline, compared to 2.8 per cent growth across England.

The outlying nature of this poor job growth performance is seen in comparison with other LEP regions (bottom chart), where Enterprise M3 has the second slowest job growth over the 2016-2019 period; over the longer 2010-2019 period the region was tenth slowest.



Data: Emsi 2019.1

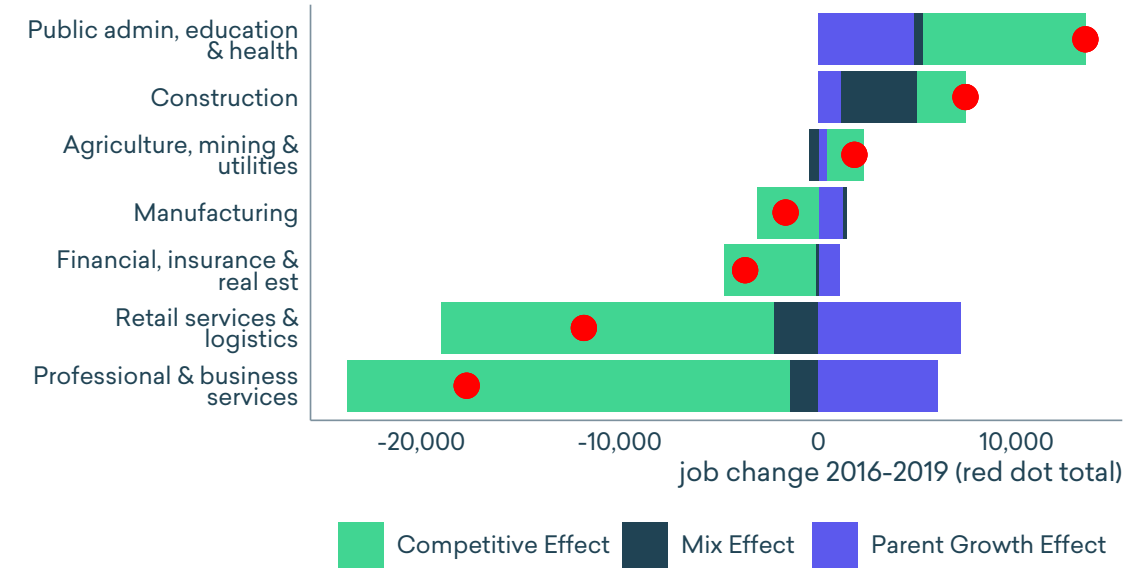


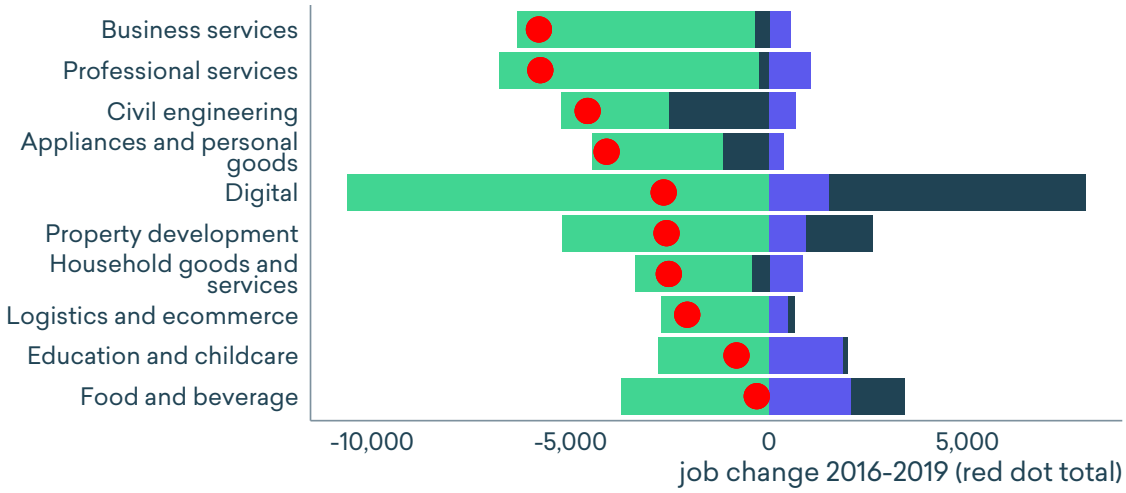
SERVICES SLOWDOWN?

To explore the make-up of this slow job growth, we start with an industry analysis, focusing first (top chart) on broad industry groupings and using a *shift-share analysis*. Shift-share breaks down job change into those components reflecting (a) 'parent growth' given the overall change in jobs across England; (b) 'mix' reflecting the specific pattern of industry growth; and (c) the residual 'competitive' effect of job change which must reflect local competitive factors.

The analysis is striking for showing that, relative to England-wide trends, the EM3 region has seen sizeable reductions in service sector jobs, with 'competitive' effect job losses of 22,300 for professional and business services and 16,800 in retail services and logistics; further competitive losses were sustained in manufacturing, financial, insurance and real estate.

The bottom chart sets out ten of the largest 'competitive' effect job losses using the more detailed Emsi cluster taxonomy (described in the appendices). The largest loss here is in digital; losing 10,600 jobs compared to the national trend, balanced out mostly by rapid growth in digital across the country. At this level of detail, there is a striking spread across high and low value service industries, with losses ranging from digital and professional services to food and beverage service and logistics and ecommerce.



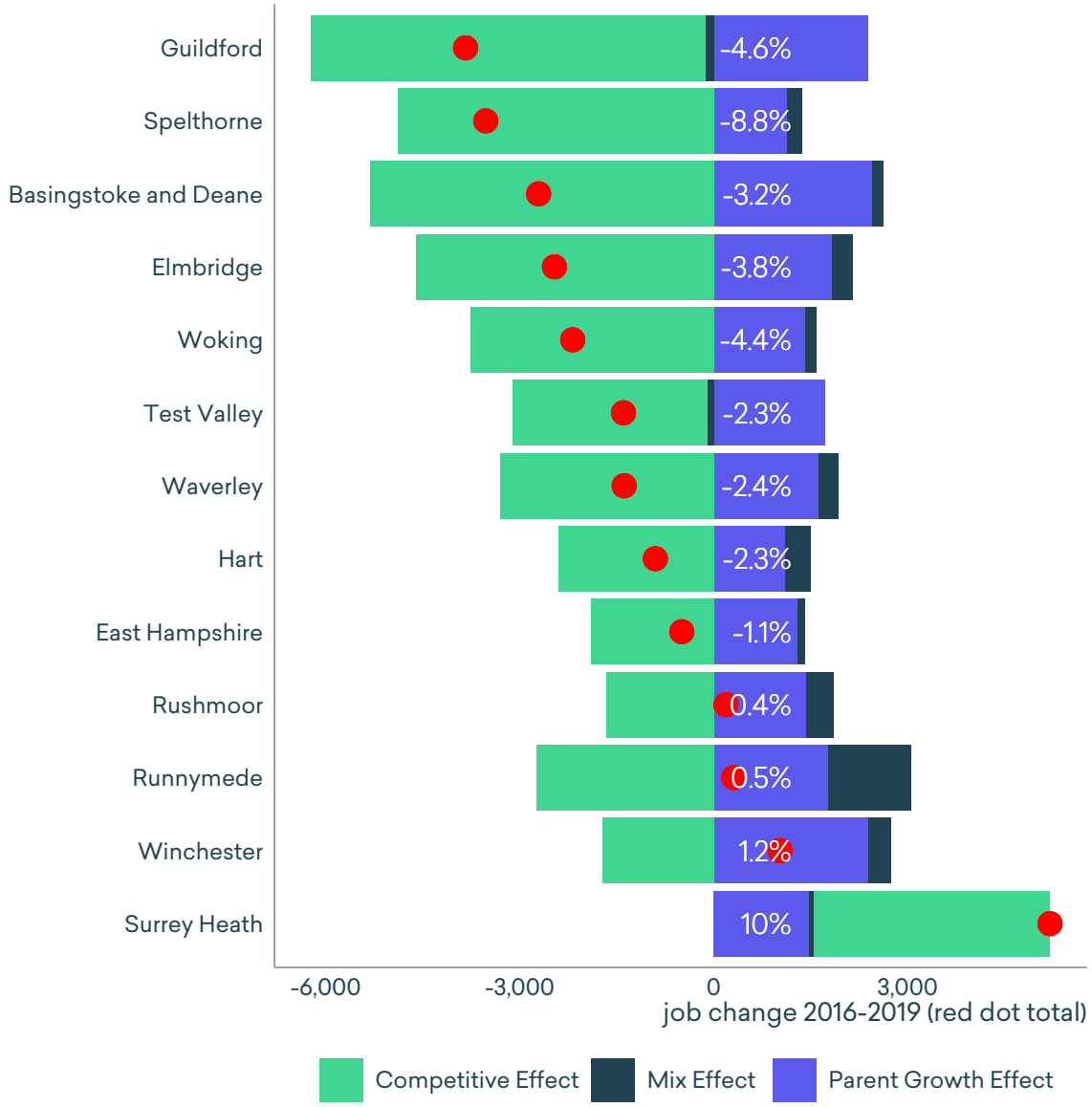


Data: Emsi 2019.1 Industry

RELATIVE DECLINE EVERYWHERE EXCEPT SURREY HEATH

The relative decline in jobs in the Enterprise M3 region over the period 2016 to 2019 can also be understood in geographic terms. To some extent, areas strongest in those industries seeing the greatest decline relative to national trends, but the widespread nature of the decline in jobs is striking: relative to national jobs growth, especially when conditioned upon industry shares, only Surrey Heath has seen a positive competitive effect on jobs — meaning that all other areas declined or had slow growth because of local factors, not their industry mix.

Local authorities differ in size, and total growth rates (labelled on the chart) show that the drop in jobs has been particularly stark in Spelthorne (8.8 per cent), Woking (4.4 per cent) and Guildford (4.6 per cent). Some of the most substantial job losses in these areas relative to national trend include logistics and ecommerce, digital and professional services, and food and beverage services all featuring. Across these three areas, digital saw a net decline of over 500 jobs, where national trends would have suggested growth of over 1,500 jobs.



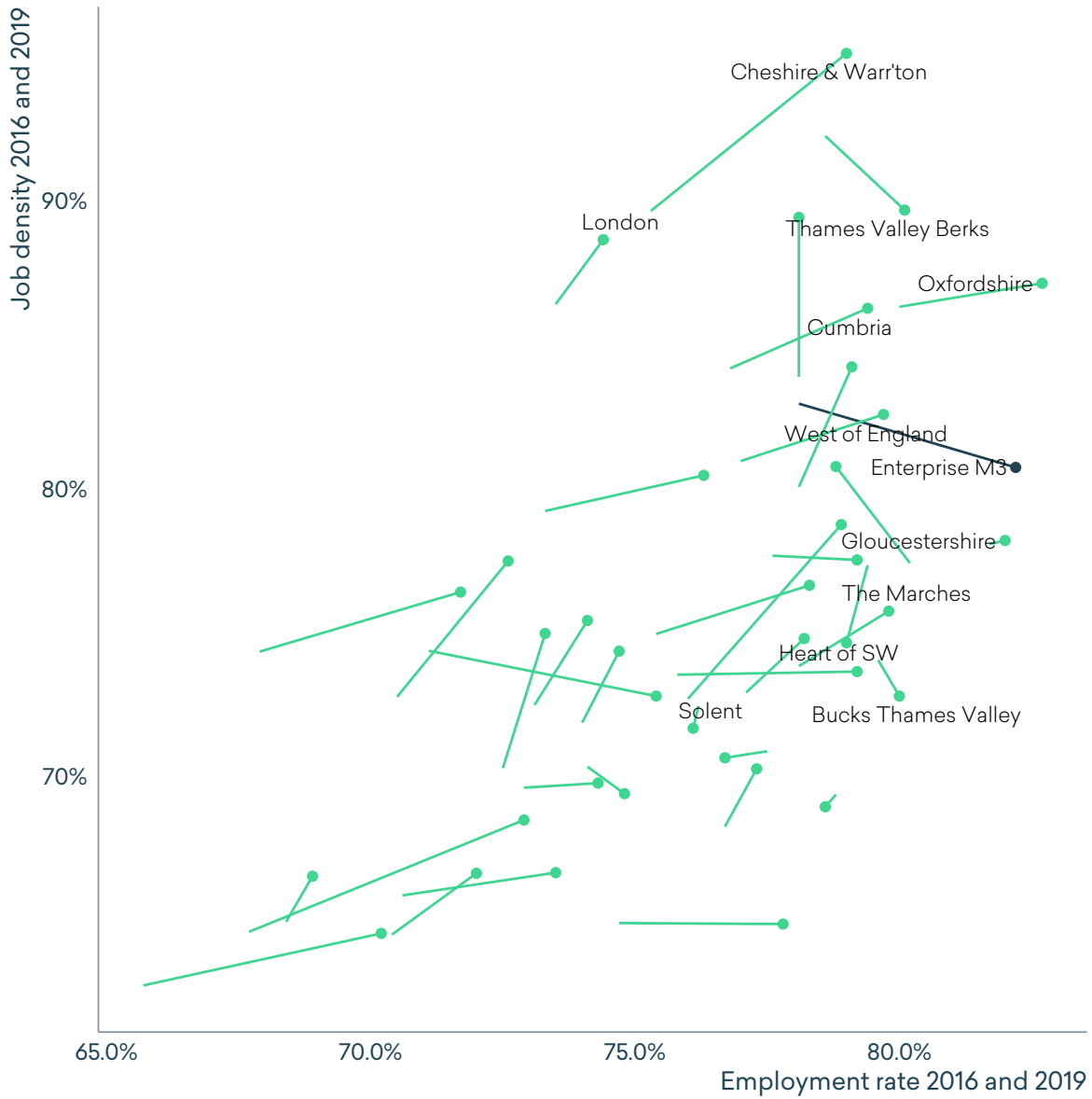
Data: Emsi 2019.1 Industry

HITTING LIMITS ON DEMAND?

If jobs have declined across most of the region, and significant local industries have led this change, declining quickly when compared to national trends, is it a reflection of the high employment levels in the region, such that demand is constrained by supply and that's why jobs aren't being created?

This chart suggests that may not be a complete explanation. On the x-axis we plot the employment rate from 2016 to 2019, and on the y-axis an estimate of 'jobs density', measuring the jobs created by regional workplaces relative to the local working age population; the line represents the movement between years, with the dot representing 2019.

While Enterprise M3 has seen a substantial increase in its employment rate, and is second-placed among LEP regions, its job density is not the highest and has fallen; other regions have seen similar employment rate performances but also increased jobs relative to the working age population. What perhaps matters more is job growth nearby: if we look at west London and central London, jobs growth was 4.7 per cent over the same period — it may be that while supply alone isn't the constraint, there is a struggle to compete for available workers against job demands elsewhere.



Data: Emsi analysis including employment rates via Nomis

FIERCE COMPETITION IN A TIGHT LABOUR MARKET

As we will be seen later in this chapter, Enterprise M3 has intense commuting flows with London but also the Solent and Thames Valley Berkshire regions. From 2016 to 2019 period, across these four regions, employment has increased by 163,000, with the employment rate climbing from 74.4 per cent to 75.8 per cent.

In the chart here, we have looked at the top 10 sector job losses for the Enterprise M3 region, and run the same analysis across all four of these regions. Across these ten industries, Enterprise M3 has lost a net 30,800, but this rises to 42,800 jobs when set in the context of national and industry trends; a competitive loss of 15 per cent over the 3 year period.

Across the four regions, this is the most striking performance: Thames Valley Berkshire and the Solent have seen 11 and 9 per cent competitive losses respectively, while London has added 4 per cent of jobs above trend. Overall, the pattern is of a tightening labour market, with demand accelerating above demand, creating a fierce competition for new job creation — corresponding with large-company moves outside of the Enterprise M3 region.

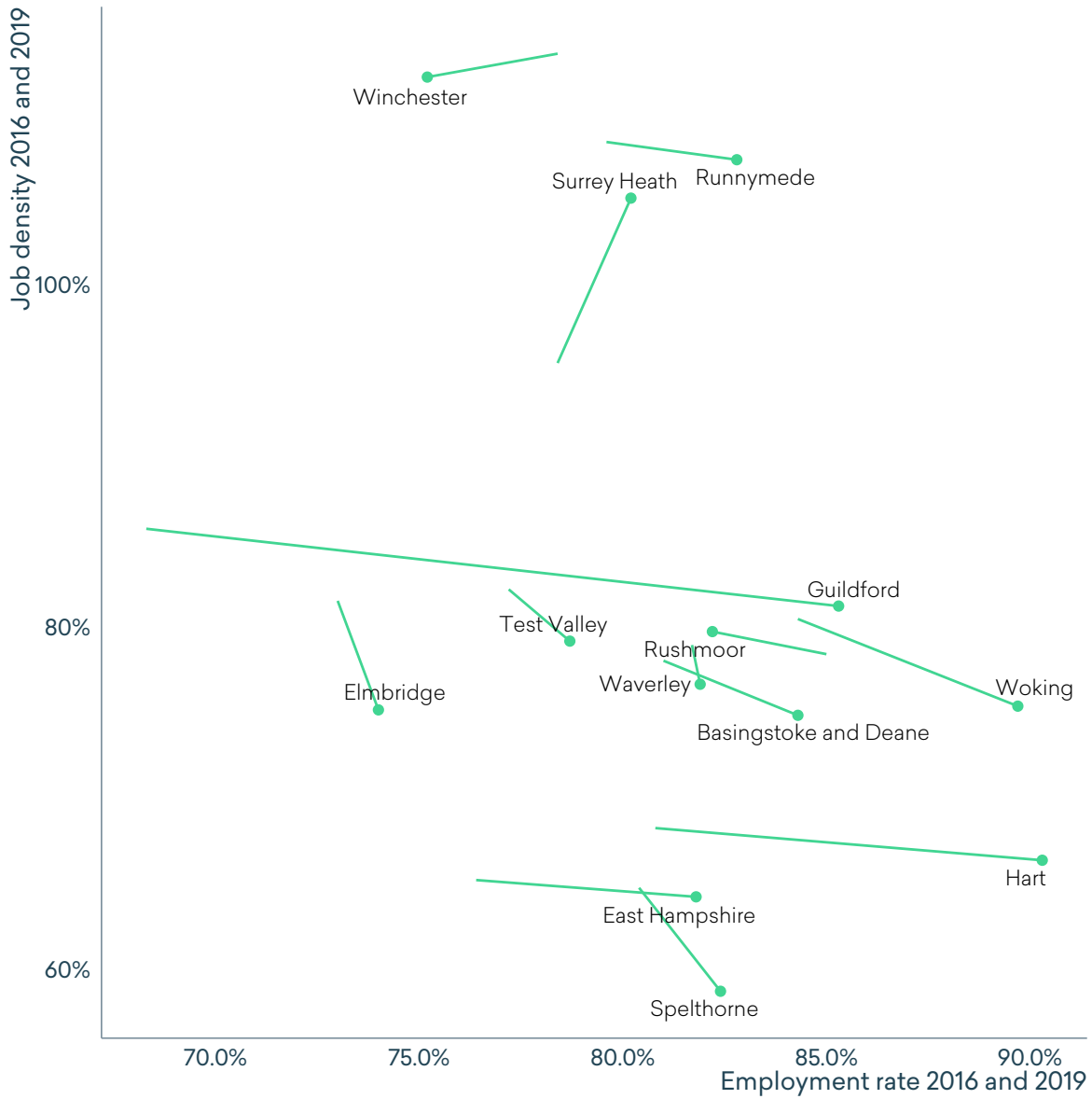
Data: Emsi 2019.1

LOCAL VARIATIONS

There also remain substantial variations in employment performance *within* the Enterprise M3 region. This chart reproduces the same analysis as the previous page, but now for each of the local authority districts within the region. As the data become more granular, greater variety in outcomes is expected: some districts have a lot more economic activity than others, and the population profile also differs.

As might be expected, some of the larger urban centres have a performance which reflects the regional average, with Basingstoke and Deane, Woking and Guildford all moving in a similar direction to the LEP region as a whole. But there remain substantial outliers: Surrey Heath for example, has seen its job density increase alongside its local employment rate.

At the top of the chart, Winchester is an important outlier, as the only region seeing a decline in its employment rate from 83 per cent in 2016 to 75 per cent in 2019, driven overwhelmingly by a rise in economic inactivity — as the chart shows, local employment was relatively stable during this period, more so than in most of the region.

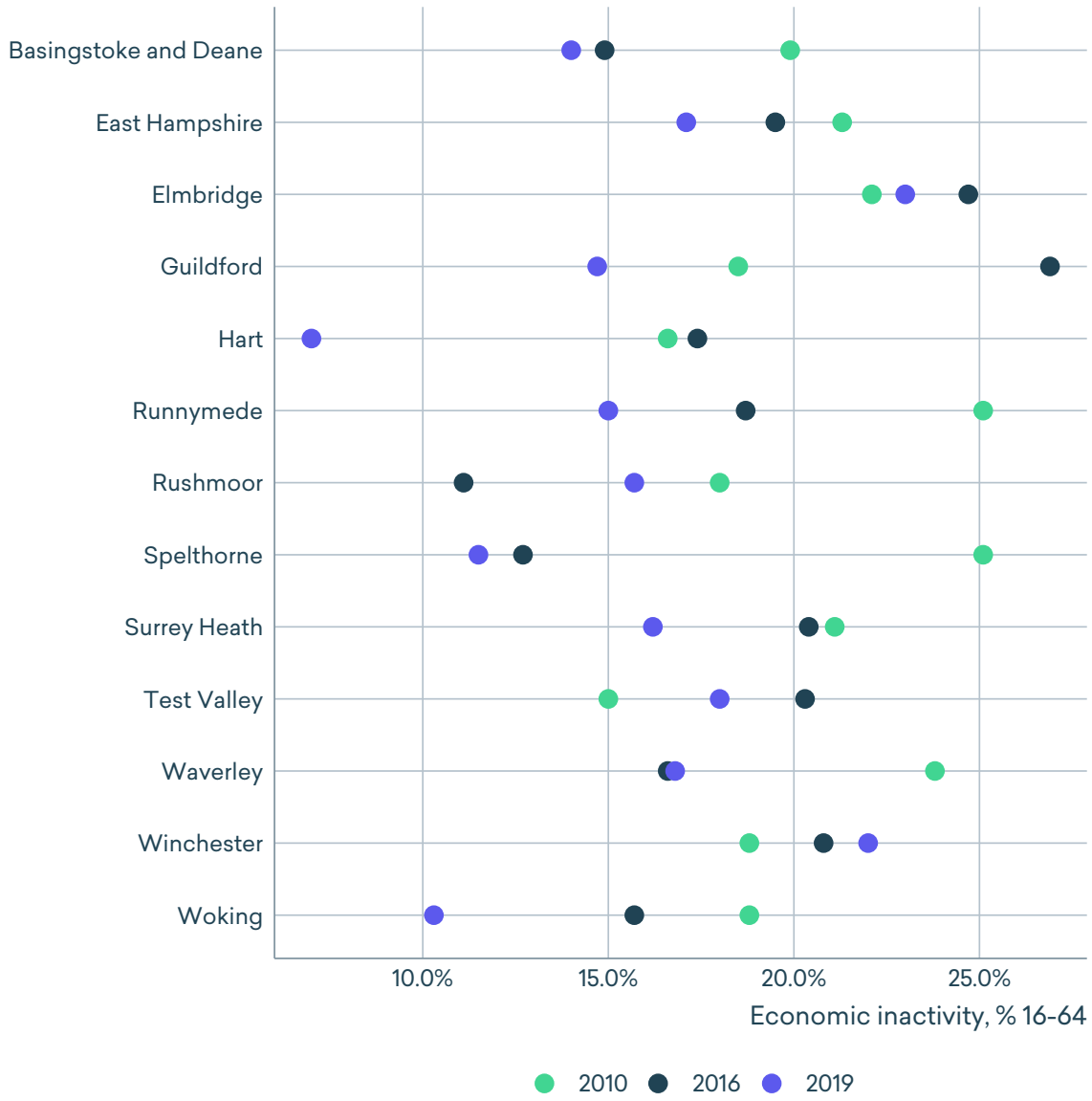


Data: Emsi analysis including employment rates via Nomis

SIGNIFICANT DIFFERENCES IN LABOUR MARKET SLACK

Although overall the region has among LEP regions the second-highest employment rate (81.8 per cent) and the lowest economic inactivity rate (16.1 per cent), this conceals considerable variation between the different local authorities, as demonstrated in the previous chart. While unemployment rates are generally low, this chart moves to focus specifically on the 'economic inactivity' rate — the share of working age (16 to 64) people who are not working or actively seeking work.

The general trend is for lower rates more recently, especially when compared to 2010 (the green dots). Reflecting the employment finding on the previous chart, only one district (Winchester) has seen an increase in economic inactivity since 2016, moving from 16.9 per cent to 21.8 per cent — even higher than it was at the end of the recession in 2010. But other districts also have high levels of economic inactivity, with East Hampshire (19.1 per cent), Elmbridge (20.8 per cent) and Guildford (19 per cent) all above the regional rate in 2019.



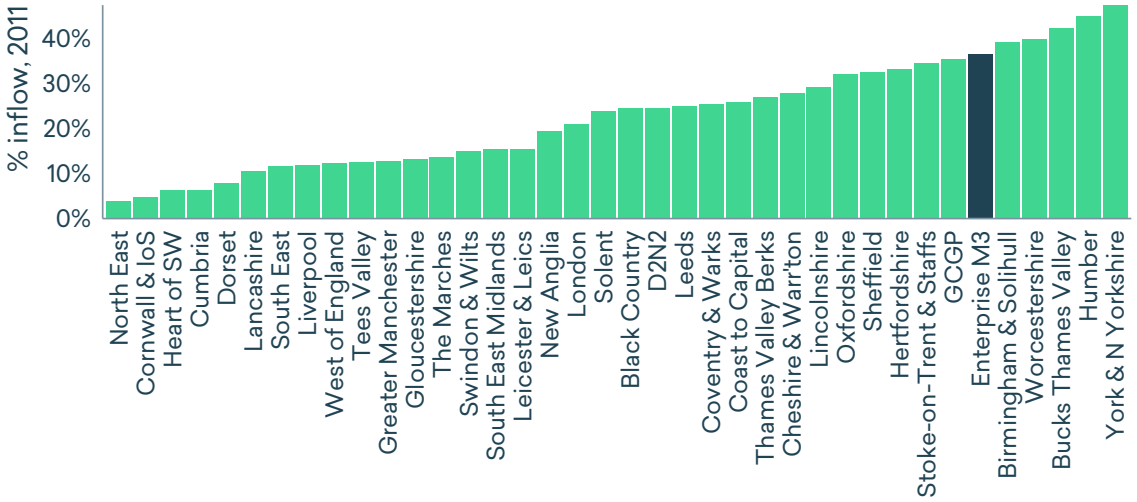
Data: Emsi analysis including employment rates via Nomis

A HIGH VOLUME OF COMMUTER IN-FLOWS AND OUTFLOWS

One of the characteristics of the Enterprise M3 geography is its location between two major urban areas — Greater London to the north east, and then Southampton and Portsmouth to the south west. It is also very close to the bustling economy along the Thames Valley area, and together these factors make for a significant churn in the local labour market.

These charts highlight the high-churn nature of the Enterprise M3 labour market. Using 2011 Census data, they explore the percentage outflow and inflow of workers each day; nearly a third (29 per cent) of the Enterprise M3 workforce at that time left the region for work each morning, making it the third-highest for outflow. Unsurprisingly, the largest destination was London, with 13 per cent of the resident workforce commuting there, with then 6 per cent working in Solent and 5 per cent in Thames Valley Berkshire.

On the other side, around 28 per cent of the region's workplace population came from outside the region, the sixth-highest proportion among LEPs. Only Buckinghamshire Thames Valley, York and North Yorkshire have higher commuting churn; the region in 2011 was a significant net exporter of employees — faster growth in workforce than jobs since then suggests this has increased.



Data: ONS Census 2011

CHAPTER 4:

A changing workforce

The large commuter outflow from the Enterprise M3 region's workforce hints at the high levels of education and experience available. Growing in line with national trends, the Enterprise M3 workforce is older than average, although set to age more slowly than some regions. Qualification levels are among the top five, and while there is a net loss of young people around the age of a typical university start, there are inflows from 30- and 40-somethings, and from international migration.

Reflecting the high levels of outward commuting, the Enterprise M3 has a larger workforce than the number of available jobs — 804,500 people in work in 2019, having grown around 12 per cent since 2010, half from increased labour market tightness and half from population growth, including organic growth as well as migration-driven increases.

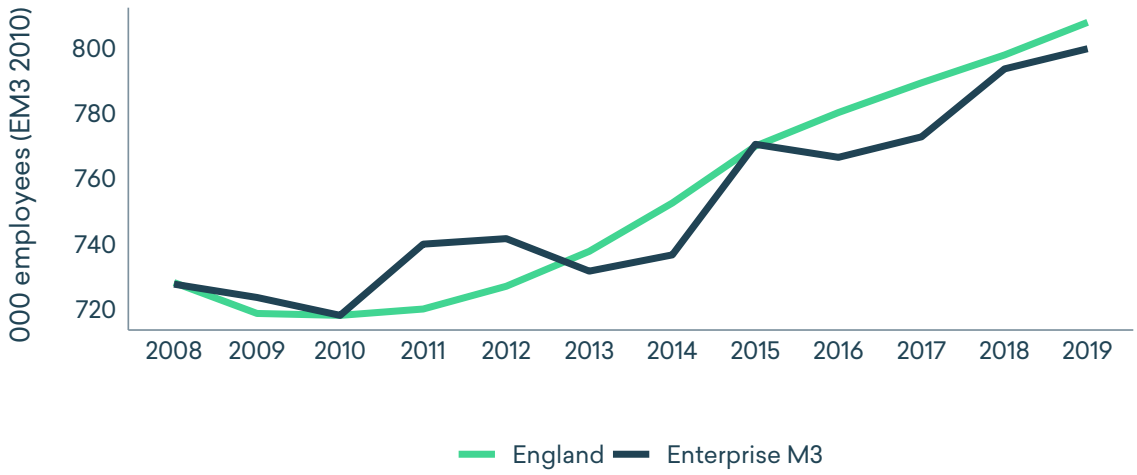
In common with most non-metropolitan regions, the Enterprise M3 region has an older workforce, with relatively fewer employees in the established 'Millennial' age band and more in the late 30s, the 40s and 50s. Ranked twenty ninth for the former category, the Enterprise M3 region is at least not aging as fast as some other regions.

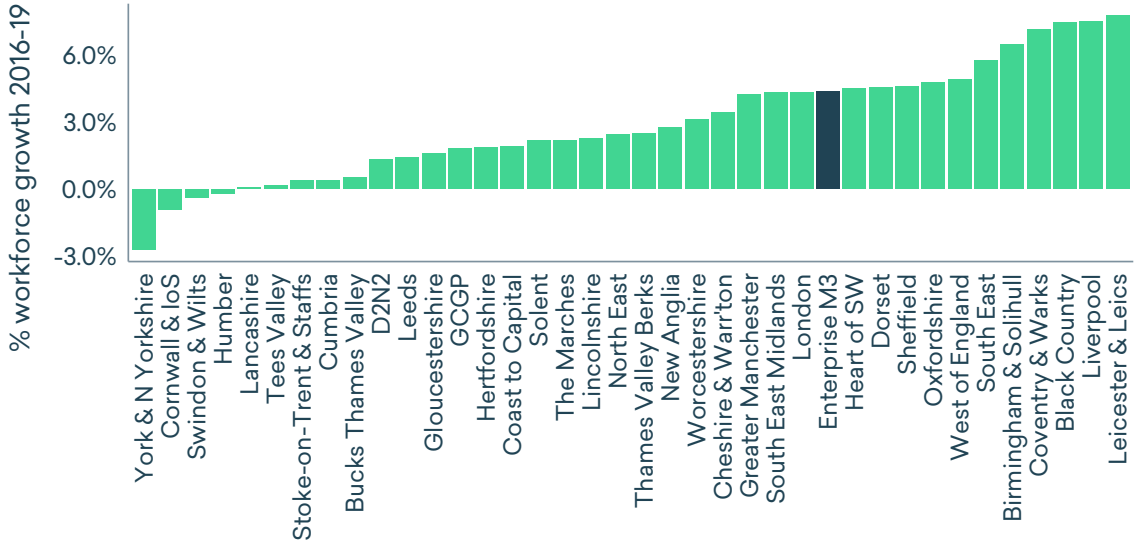
The educational quality of the workforce is among the highest in the country — only four LEP and Combined Authority regions have higher levels of attainment, especially at the higher education level. The attractiveness of the region as a residential location also explains why more working age people are arriving than leaving, with net inflows across the 30 to 45 year age range in recent years, and the foreign national workforce has seen some of the fastest growth among LEP regions over the past three years.

A GROWING WORKFORCE

With 804,500 people in work in 2019, the Enterprise M3 region has the thirteenth largest workforce among LEP regions, the number growing around 12 per cent (86,500) from its depth in the recession, reflecting both increased local population and economic recovery — the adult population increased by 6 per cent (69,700) and the employment rate increased from 62.8 per cent to 66.3 per cent over the same period; each factor accounts for around half of the increase.

The increase in employed workforce is essentially in line with the England-wide national trend. Looking at the more recent period 2016 to 2019 and comparing with other LEP regions (bottom chart), the Enteprise M3 region has seen 4 per cent (30,700) growth in its employed workforce, ranking twelfth among LEP and Combined Authority regions — although with most of those seeing more rapid growth starting with lower initial employment rates.





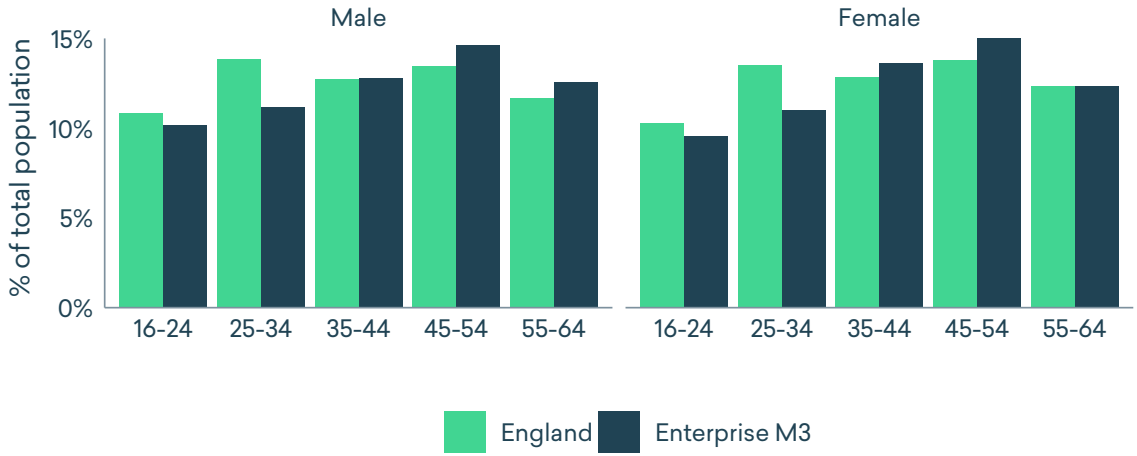
Data: ONS Annual Population Survey via Nomis

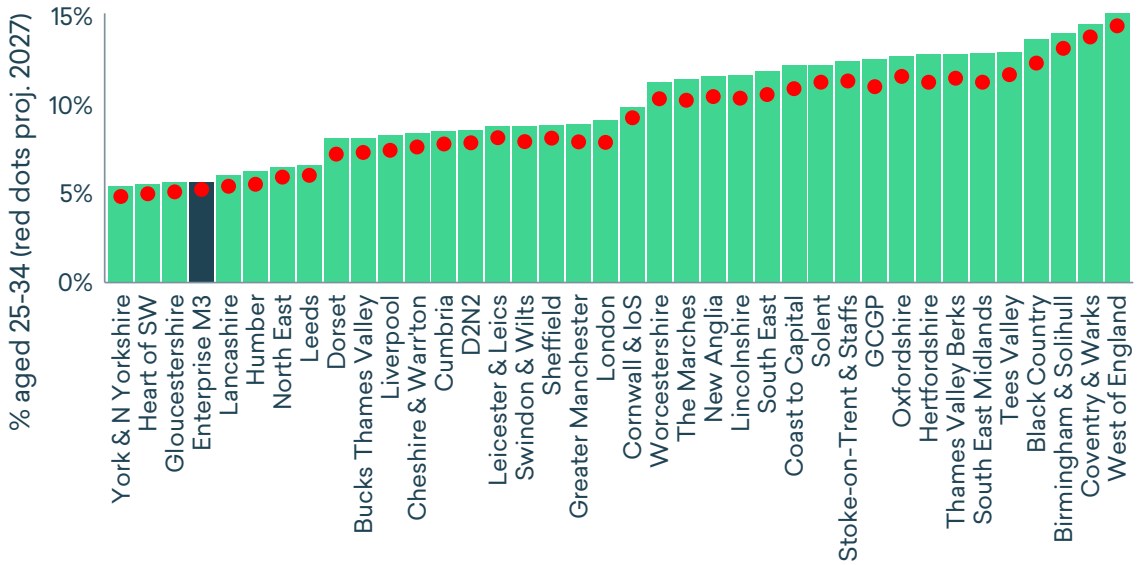
AN OLDER WORKFORCE, NOT AGING AS FAST AS SOME

Compared to England, Enterprise M3 has a somewhat older population profile — 7 per cent fewer 16 to 24 year olds than nationally; 17 per cent fewer 25 to 34 year olds. Balancing that out, the area has relatively more people in older age categories, and especially in the 45-54 age range, with around 8 per cent more people.

The large concentration of young people in London and other large urban centres mean that the older working age population profile is relatively normal for a region like Enterprise M3. That said, looking at the 25 to 34 'Millennial' cohort, Enterprise M3 has the twenty-ninth lowest share among LEP regions at 11 per cent, compared to 14 per cent across England.

In common with all regions, the share of 25 to 34 year olds is set to decline over the years ahead — in Enterprise M3 it will move from 11 per cent to 10 per cent by 2027. But this rise is somewhat more muted than other regions, meaning that Enterprise M3 will move up to twenty-fifth place over that time.





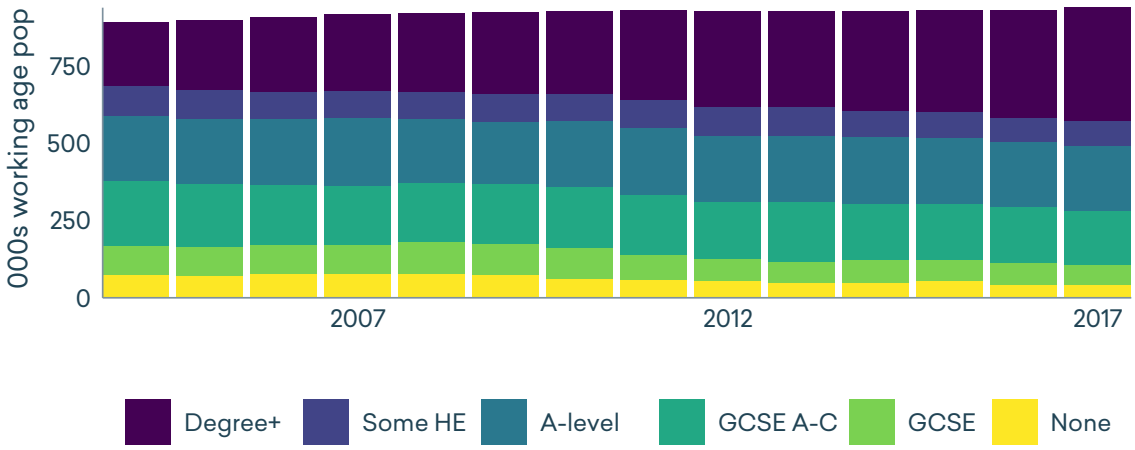
Data: Emsi 2019.1 Demographics

A HIGHLY QUALIFIED WORKFORCE

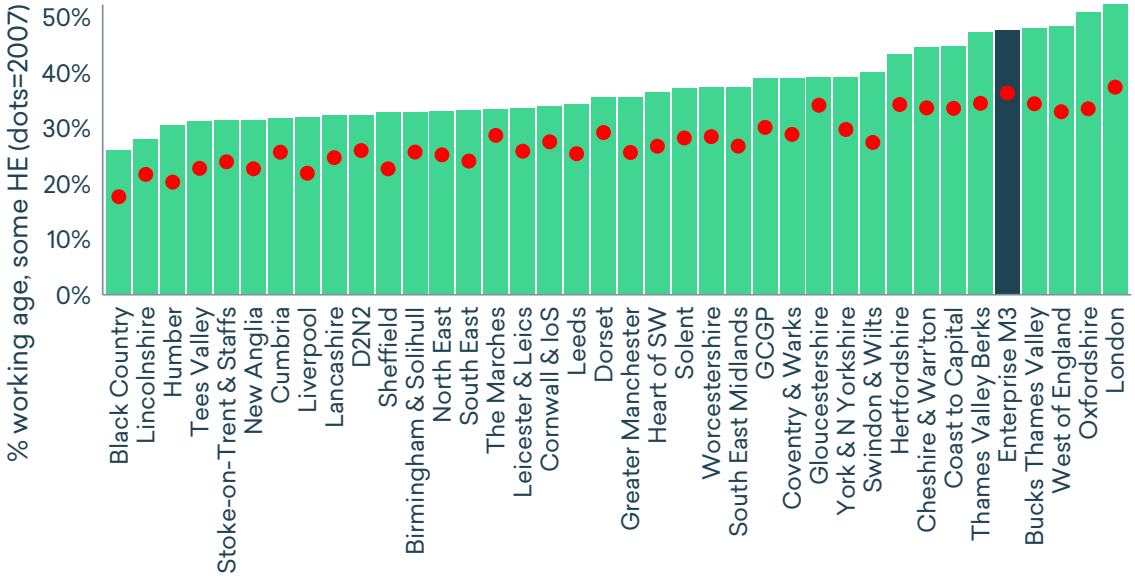
One of the most remarked changes in the UK labour market over recent decades is a sustained increase in typical qualification levels. The cohort effects of expanded educational opportunity, and the exit of workers educated before then, compound to see a rising level of educational attainment.

Enterprise M3 has long been a relatively well-educated region, but it has not been immune to this further advance. Between 2004 and 2017, there is an estimated 79 per cent increase in the number of working age people educated to degree level or higher (rising from 23 to 39 per cent); the number with no qualifications has almost halved (falling from 8 to 4 per cent).

Measured on all those with some participation in higher education, Enterprise M3 is fifth among LEP regions, with 48 per cent of working age people, rising from 36 per cent in 2007. That said, the rapid progress is slower than average: in 2007, Enterprise M3 was ranked second, with Oxfordshire and the two Thames Valley regions leapfrogging it.



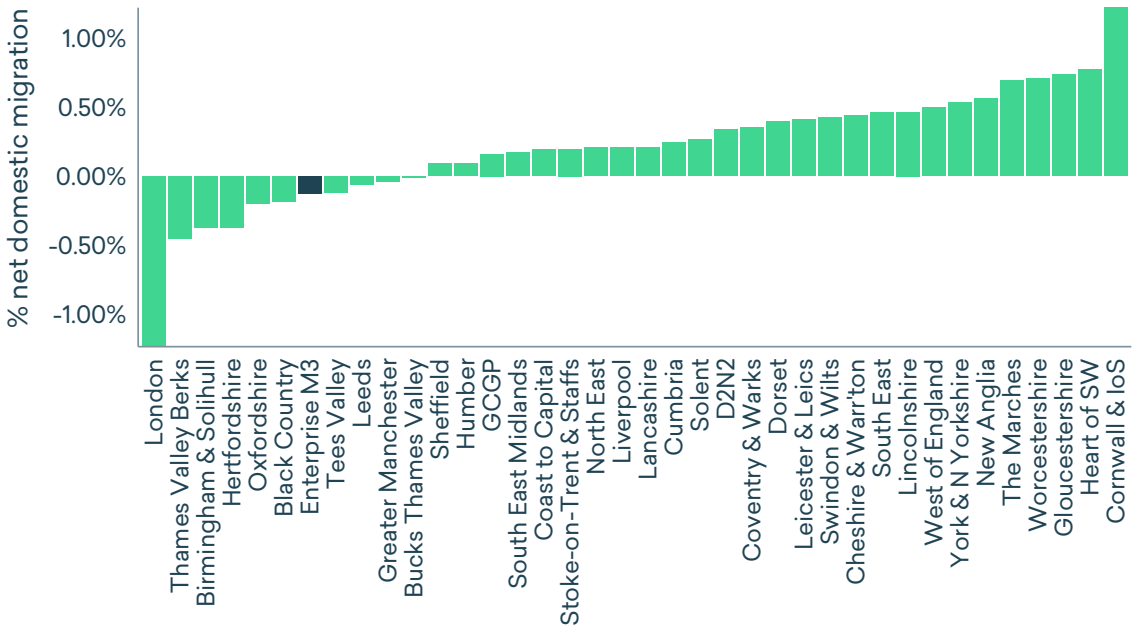
Data: Emsi analysis of APS via Nomis



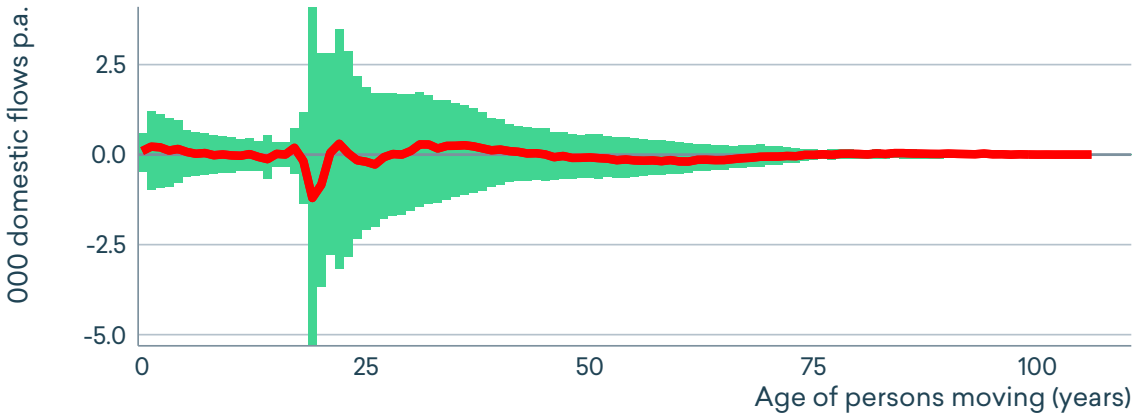
DOMESTIC MIGRATION: SETTLING DOWN AT 30-45?

As we have seen, the Enterprise M3 workforce is highly mobile in commuting terms; but mobility can also be more lasting, with people moving out of and into the region. Looking at UK residents' movements, averaged across 2016 to 2018, Enterprise M3 region has seen a small net outflow of residents — averaging around 0.13 per cent per annum, it is the seventh largest outflow among LEP and Combined Authority regions; London stands alone here for its net ouflow (1.2 per cent).

The age profile of net migration is distinctive (bottom chart); here the green bars show flows and the red line indicates the net flow. In common with most non-metropolitan regions, Enterprise M3 sees a large net outflow in the 18 to 20 year old bracket, as many students set off to study at universities around the country; on average over these years, there is a 2,000 person net outflow in this age group. While many other age groups see very slight net losses, there is a sustained inflow of around 2,500 persons in the ages 30 to 45 years old. Anecdotally, many of those leaving London (often around this age) but seeking to maintain careers in the capital, find the Enterprise M3 region an attractive destination.



Data: Emsi analysis of ONS Internal migration: detailed estimates 2016-2018

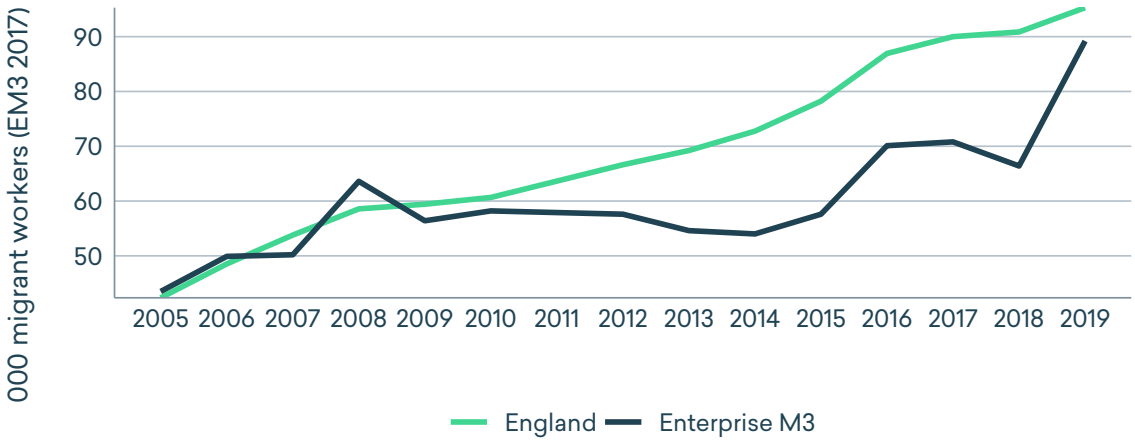


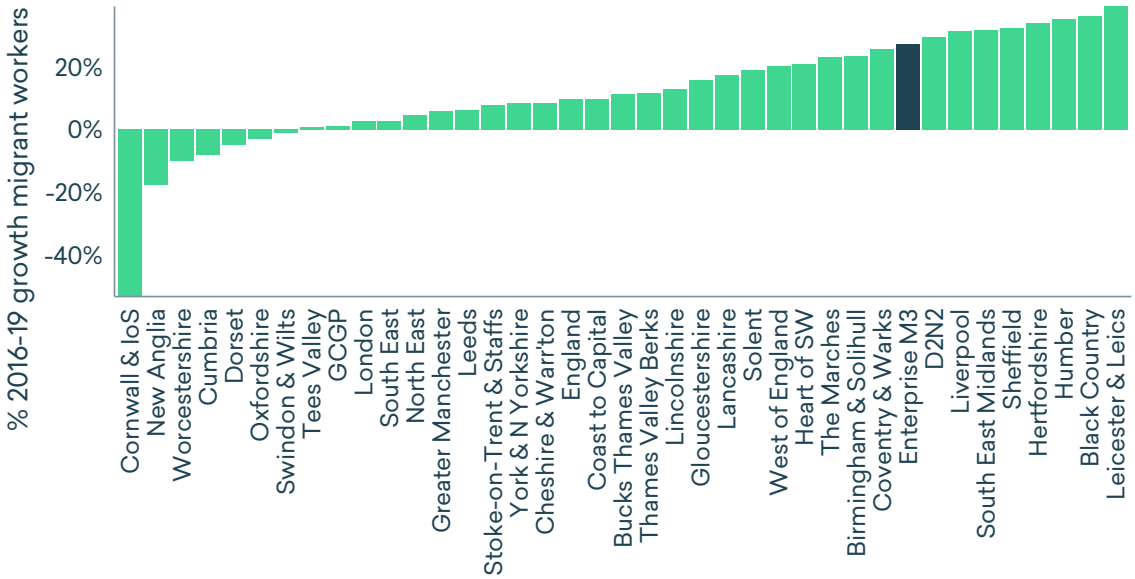
INTERNATIONAL MIGRATION: A RECENT SURGE

The sustained pattern of net immigration — beginning before, but given significant momentum by the extension of free movement to the EU Accession states in the mid-2000s — is one of the most substantial disruptions in labour market trends of the past two decades. Opening new sources of labour supply, Enterprise M3 region like many others has seen significant impact resulting from net migration.

The region has a number of foreign national workers below the England-wide average (top chart), but that reflects the size of the national trend, and its concentration in metropolitan labour markets, especially in London. Nevertheless, between 2005 and 2019, it is estimated that foreign national workers more than doubled in the Enterprise M3 region, from 41,600 to 87,300 employed people.

In the most recent three years (bottom chart), the Enterprise M3 region has seen particularly rapid growth, adding more than a third to the number of foreign national workers (34.3 per cent), a growth rate beaten only by eight other LEP regions, several of which are growing from a smaller historic base in terms of the share of migrants within the local workforce.





Data: Emsi analysis of ONS Local Area Migration Indicators

DOES MIGRATION DRIVE UP THE QUALIFICATION LEVEL?

The net inflow of 30 to 45 year olds in domestic migration is seen as a sustained shift in the demographics of the region, and one question it raises is whether it contributes to improving the quality of the region's workforce along the way. The suggestion is that the decision to move to the Enterprise M3, often motivated for lifestyle reasons and in many cases following career success e.g. in London, means that relatively high-skilled workers are moving to the region, elevating the median level.

Testing this proposition directly is difficult given data limitations, however we use here the change over 10 years on the share of 50 to 64 year olds with higher qualifications; we have used this older age category as it captures the cumulative effect; a 40 year old moving in to the region in 2006 will be a 50 year old in 2016.

The data indicate some support for the proposition, with a caveat. Enterprise M3 has long had a high level of educational attainment in its population: in 2006 it ranked third among LEP and Combined Authority regions for the share with at least some higher education. So while its change might not be the fastest, it continues to improve faster than Buckinghamshire Thames Valley, although it seems in line with the wider pattern among South East regions: although it is likely that it is improving workforce qualification levels, this is part of a wider trend.

Data: Emsi analysis of ONS Annual Population Survey

CHAPTER 5:

High education participation

Building on its highly qualified workforce, the Enterprise M3 region scores well on headline measures of educational attainment for young people: among the highest for secondary school attainment and level 3 attainment at age 19. The strength of the academic route supports some of the best higher education achievement, but limits development of the apprenticeship route. Further and higher education systems together deliver substantial volumes of qualifications, including 8,500 bachelors degrees, with varied local levels of participation.

Fourth among LEP and Combined Authority regions for the 2016 Attainment 8 scores and fifth for the share of 19 year olds gaining level 3 qualifications, the Enterprise M3 region is able to build on its established workforce education attainment as new cohorts come through. One wrinkle in the picture is with apprentices; while at bachelor degree level, the Enterprise M3 region is fifth highest among LEP and Combined Authority regions, it is seventh lowest for the selection of apprenticeship as a destination by age 19. Where apprenticeships are delivered, they are highest by volume by some distance in public service fields: health and social care; child development and wellbeing; direct learning support make up 3 of the top 4 subject groupings.

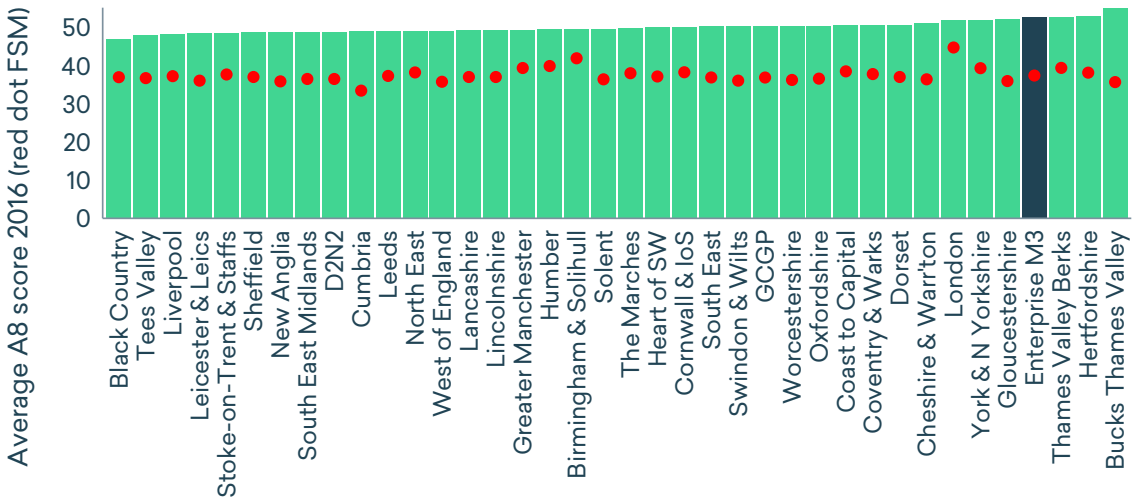
That reflects a high level of success in getting young people through the academic route and into university, although this success is not shared equally across the region — Elmbridge has the highest number of new graduates of all local authorities, much higher than its cohort size suggests. By contrast, level 2 and 3 completions in further education are led by Basingstoke and Deane and Test Valley, again more so than their cohort sizes suggest.

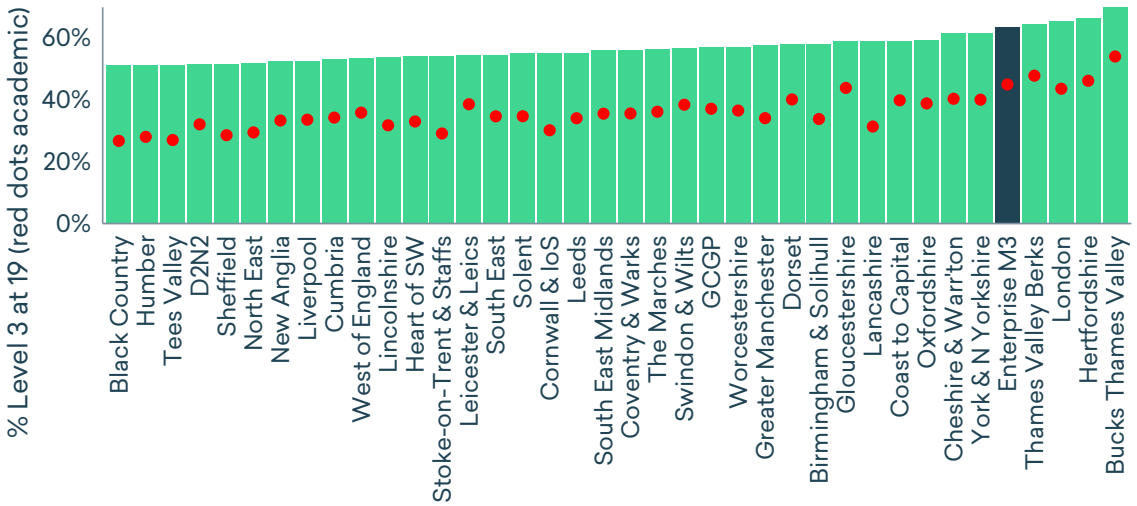
There seems little reflection of the region's industry strengths on undergraduate choices: there are low shares of achievement in biological sciences, engineering, computer sciences and technology degrees, and high shares in humanities subjects. At further education, there is a mix between health, public services and care; business, administration, finance and law — both of these are important across levels 2, 3 and 4 and 5 provision — with more specific roles for retail and commercial enterprise (level 2); and then arts, media and publishing and science and mathematics (level 2).

HIGH PERFORMING EDUCATION

The Enterprise M3 region scores well for the performance of the school and 16-19 education systems. In 2016, the latest data for which the Department for Education provides a local authority level breakdown, the region ranks fourth for Attainment 8 (A8 in the chart) scores at 16 years old (52.6 points compared to 50.1 English average), although falling to fourteenth place for the scores of children eligible for Free School Meals (FSM in the chart) — the numbers here are small; reflecting its general level of prosperity, only Buckinghamshire Thames Valley has fewer than the 7 per cent of Enterprise M3 16 year olds eligible for Free School Meals.

Looking at 16-19 performance, the Enterprise M3 region is ranked fifth out of LEP and Combined Authority regions, with 63 per cent of 19 year olds reaching Level 3 qualification, compared to an England-wide average of 57 per cent reaching that level. Looking at the share reaching Level 3 qualification through the academic route, Enterprise M3 region is placed fourth among regions, with 45 per cent of 19 year olds, compared to an England-wide average of 36 per cent — so a considerable contrast here, which ties with the region's high level of Higher Education participation and achievement. At the local authority level, Level 3 attainment is highest in Winchester and Hart (72 and 71 per cent), and lowest in Rushmoor (49.3 per cent).





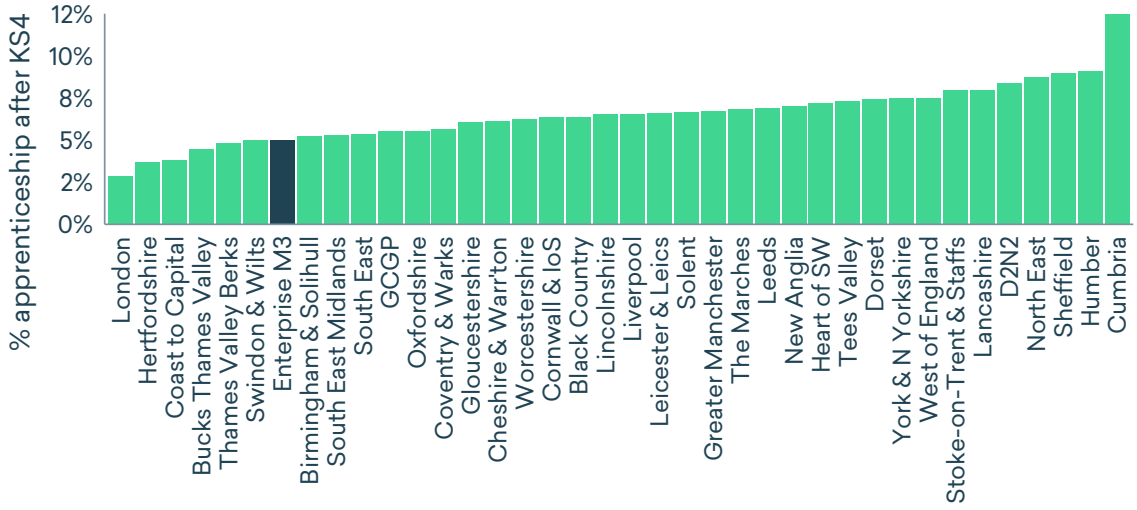
Data: Emsi analysis of DfE Secondary and 16-19 Attainment Data

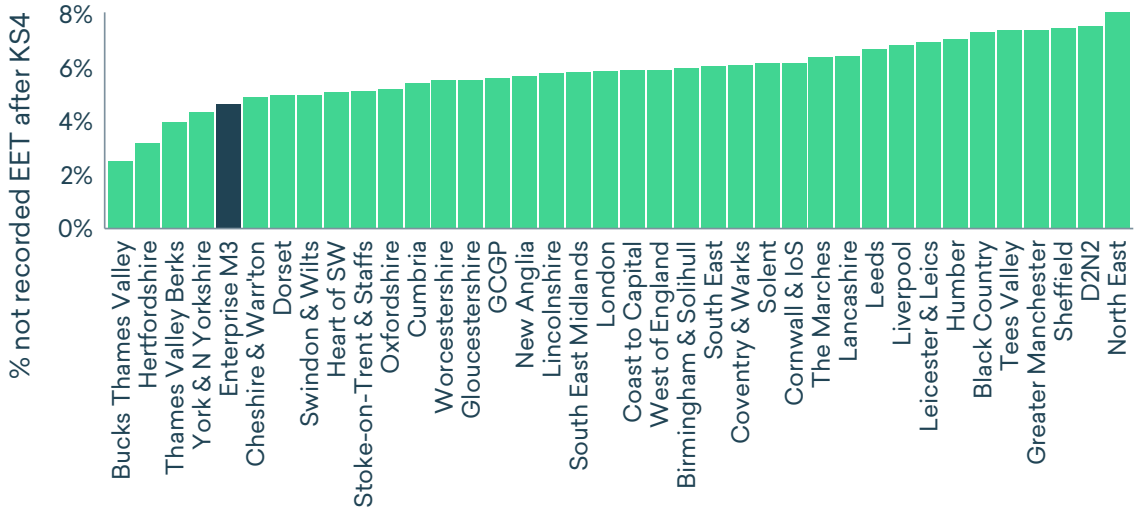
LOW APPRENTICESHIP TAKE-UP, BUT LOW FOR N.E.E.T. TOO

Using the same Department for Education data, we can also explore other dimensions of the education system's performance in helping young people make successful transitions to the labour market, and the routes chosen to do so.

A corollary of the Enterprise M3 region's extremely high level of Level 3 attainment through the academic route is that it has lower participation in other routes. Apprenticeships for example were chosen as the path after Key Stage 4 for 5 per cent of local students, compared to 6 per cent across England; the region has the seventh lowest apprenticeship participation on this measure out of LEP and Combined Authority measures.

While this may be disappointing from the perspective of developing the apprenticeship route, the total picture — with some of the highest Level 3 attainment rates, and especially through the academic route — is still very positive, with the region seeing just 4.7 per cent of students not finding sustained education, employment or training (NEET) destinations, compared to 6.2 per cent across England.





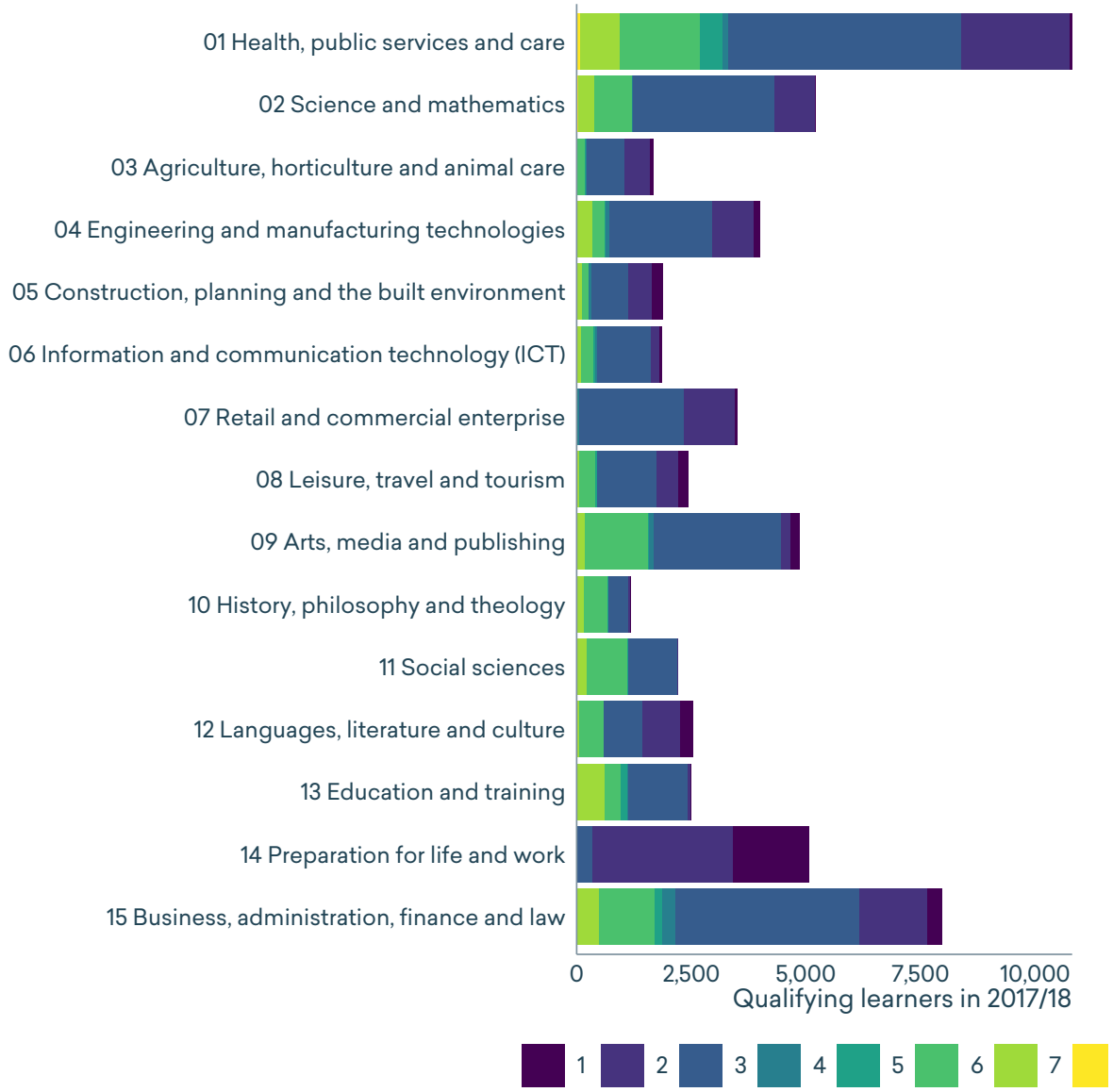
Data: Emsi analysis of DfE 16-19 Attainment Data

EDUCATION DEMAND: SUBJECT AND LEVEL MIX

Moving beyond the age-cohort analysis, we turn to look at what the data tell us about the composition of qualifications achieved by residents of the Enterprise M3 region across the further and higher education systems, including apprenticeships. Across levels 1 to 8 of the regulated qualifications framework, these systems produced qualifications for 56,400 people across the Enterprise M3 region each year (2016/17 and 2017/18).

The HE system produced around 12,500 qualifications for people domiciled in Enterprise M3, with the other learners gaining qualifications through the FE system or apprenticeship. For the FE system, qualification are understood in terms of equivalent learner numbers, where only a learner's highest level qualifications are counted, and counted as parts where more than one is achieved; e.g. a learner completing two same-level qualifications in different subjects will count as half an achievement in either.

As the chart shows, qualifications were completed in a wide variety of substantive subjects, with health, public services and care being the most popular (10,800 learners achieving qualifications), followed by business, administration, finance and law (8,000), and science and mathematics (5,200). 12,700 learners achieved at RQF level 2, 27,500 at RQF level 3, and 14,000 at level 4 and above, including 8,600 learners at Bachelors degree level.

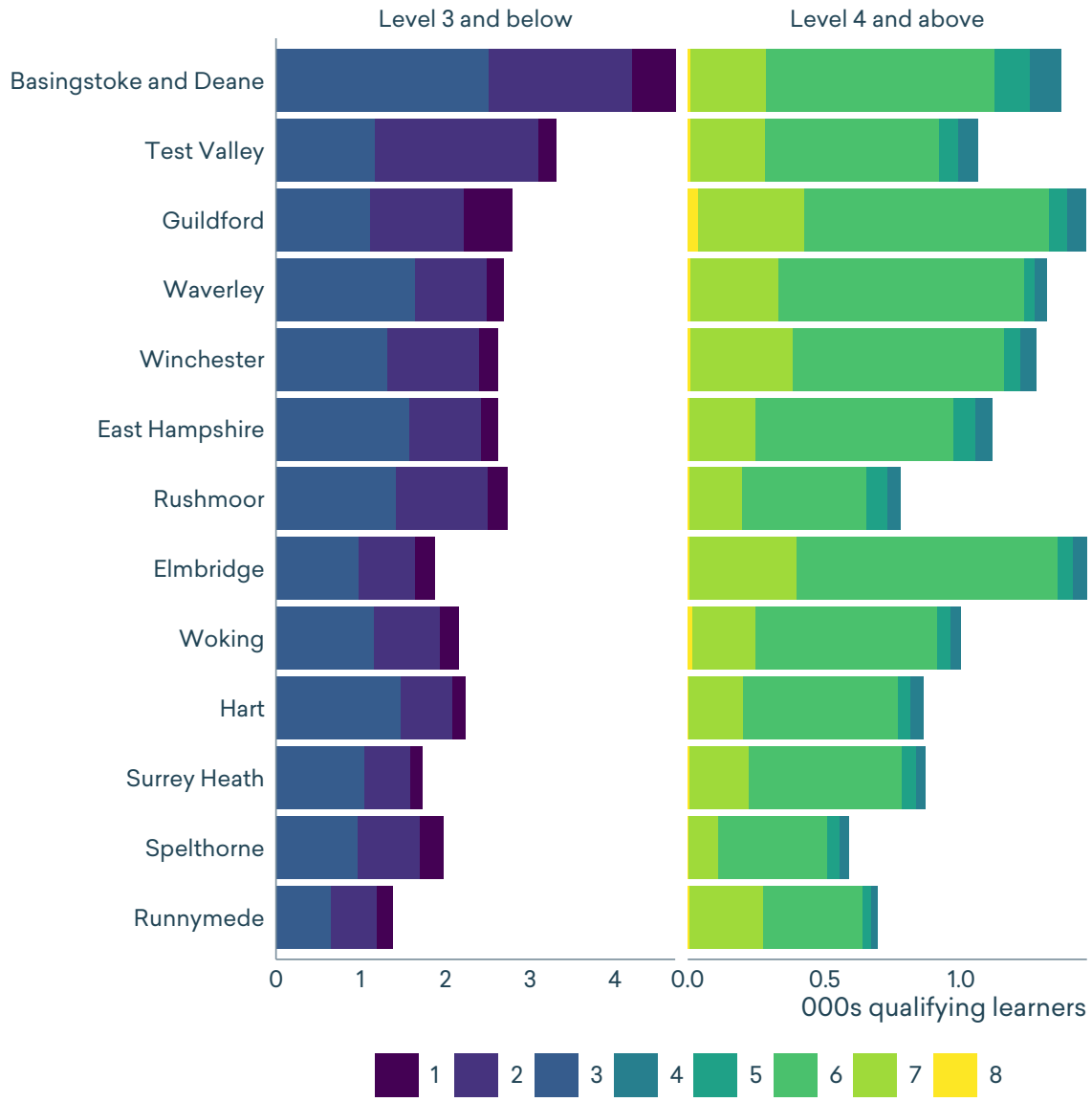


Data: Emsi analysis of ESFA Data Cube and HESA

EDUCATION DEMAND: LOCAL VARIATIONS

In this analysis, we look at learner achievement for each local authority domicile, breaking down the number of learners by qualification level in each of two categories (level 3 and below; level 4 and above), to understand the mix between areas.

To a great extent, differences here will reflect population differences between local authority districts. For example, just looking at the 16 to 24 year old population, Guildford has nearly triple the numbers found in Woking, Hart or Surrey Heath; Basingstoke and Winchester are double those smaller areas' numbers. That said, there are variations which become apparent even within that frame: for example, Elmbridge, with a middle-ranking population, produced the most Bachelors degree graduates in 2017/18, beating Guildford despite its much larger initial population; Waverley similarly outperformed here. At level 2 and 3, Basingstoke and Deane clearly dominates, beating Guildford into fourth and eighth place, respectively. In such a knowledge-intensive economy, it is also worth noting that high numbers complete Masters-level qualifications; again, Elmbridge leads here, with Guildford and Winchester not far behind.



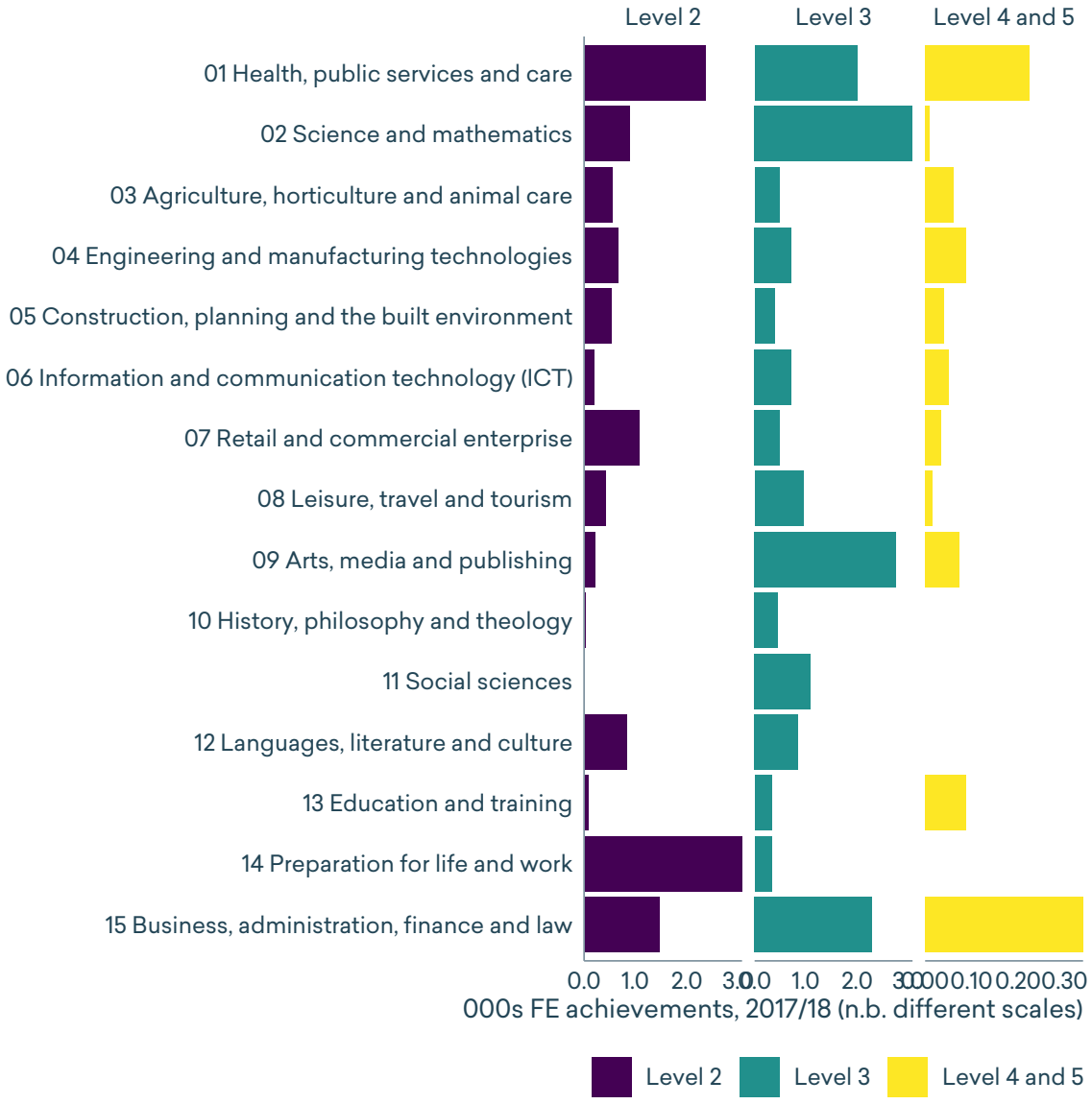
Data: Emsi analysis of ESFA Data Cube and HESA

FOCUS ON F.E.: HEALTH AND BUSINESS LEAD ACROSS LEVELS

Unpacking Further Education provision alone, and focusing on levels 2, 3, and 4 to 5, we can see how subject areas differ in importance between these levels. The most striking finding is the sustained importance of health, public services and care across all three qualification levels: 2,400 achievements at Level 2; 2,000 at Level 3; 200 at Level 4 and 5, ranking second, fourth and first at each level.

At level 2, the generic preparation for life and work category remains the largest, with the service-driven business, administration, finance and law (1,600) and retail and commercial enterprise (1,100) third and fourth placed. At level 3, science and mathematics (3,100), and arts, media and publishing (2,800) lead, with business, administration, finance and law in third place (2,300); at levels 4 and 5, business, administration, finance and law leads (350).

Within business administration, business management is the largest second-tier category, accounting for half of provision at levels 3, 4 and 5, with administration leading at level 2. In health and care at level 2, counselling and psychology leads, with child development and wellbeing also important at levels 2 and 3. Mathematics and statistics leads in level 2 and 3 science and mathematics, with arts and media provision split fairly evenly across crafts, creative arts and design; media and communication, and then performing arts.



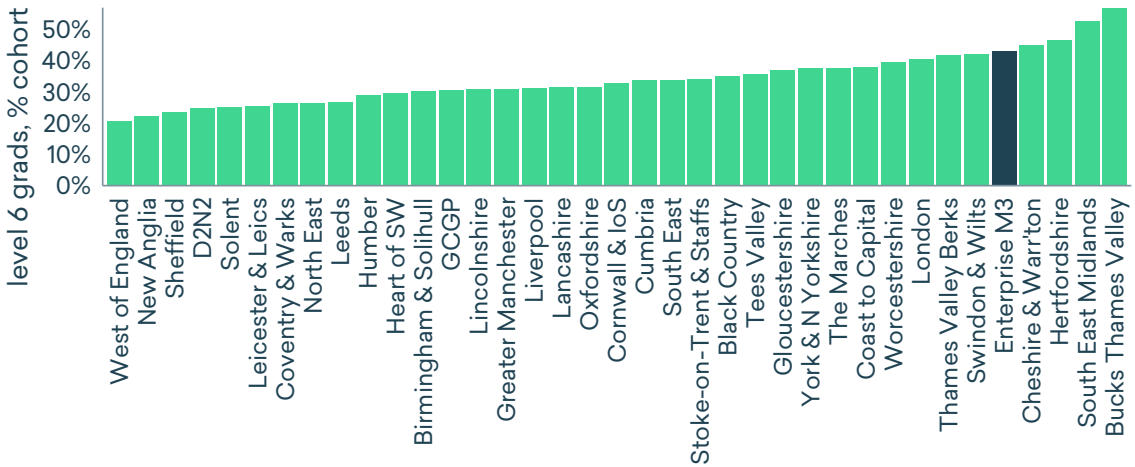
Data: Emsi analysis of ESFA Data Cube and HESA

FOCUS ON GRADUATES: HIGHER EDUCATION IN ENTERPRISE M3

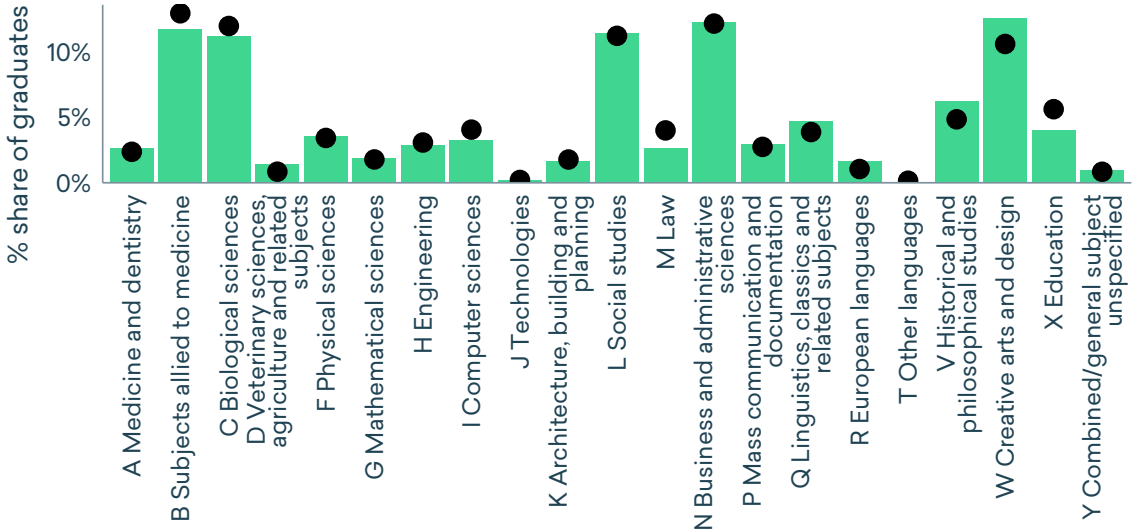
Looking specifically at Higher Education achievements, we first compare the Enterprise M3 region in terms of the number of people achieving a Bachelors degree or equivalent relative to the typical cohort of 19 to 24 year olds. On this measure, the 8,500 Bachelors degree qualifying learners represents 43 per cent of the cohort, placing the Enterprise M3 region fifth among all LEP and Combined Authority regions — with Buckinghamshire Thames Valley top, reaching 57 per cent on this measure.

That high level of participation may also explain a distinctive pattern of subject choice, not obviously connected to the composition of the local labour market (bottom chart). Here, the black dots represent the typical, UK-wide profile of subject choices and the purple bar the shares of graduates by 1-digit JACS subject areas. What stands out are pronounced interest in subjects like European languages (1.7 per cent, compared to 1.1 per cent); historical and philosophical studies (6.2 per cent, compared to 4.9 per cent).

Despite their importance in the local economy, subjects including biological sciences, engineering, computer sciences and technology all have lower shares in the Enterprise M3 region than nationally; in computer sciences' case, 3.3 per cent of regional graduates have pursued the subject, compared to 4.1 per cent nationally.



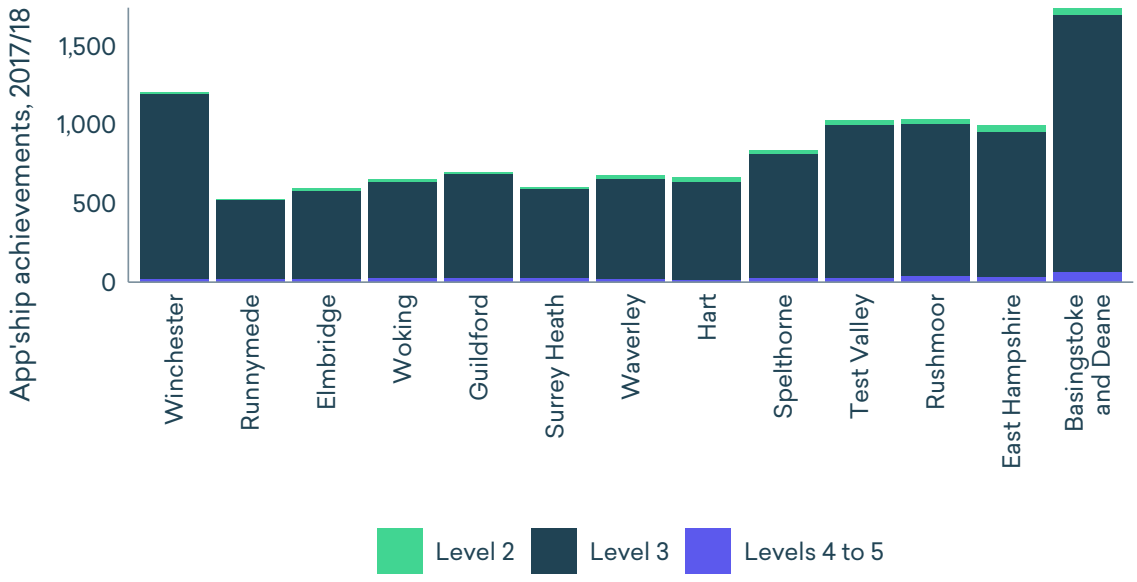
Data: Emsi analysis of HESA

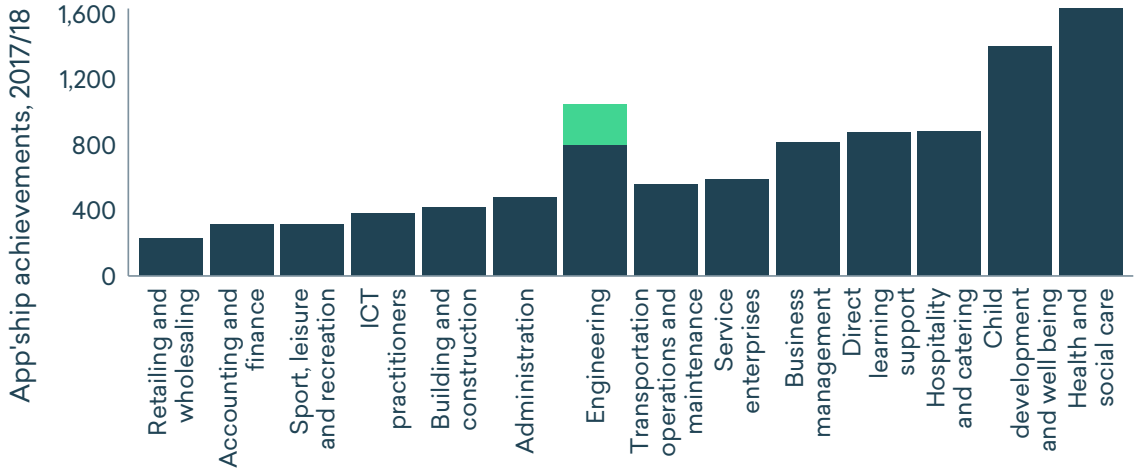


FOCUS ON APPRENTICES: STRONG IN PUBLIC SERVICES

As already noted, the Enterprise M3 region's strengths in the academic route and university-level participation lead to more limited numbers of achievements, although there were nearly 11,300 apprenticeships achieved in 2017/18 in the region. Of these, 9,200 were at level 3 on the regulated qualification framework, with 1,750 at level 3 and 350 at levels 4 and 5. Geographically, apprenticeship achievements were somewhat more frequent in Spelthorne, East Hampshire, Basingstoke and Deane and Rushmoor (all more than 2 per cent of local jobs), and less frequent in Elmbridge, Guildford and Runnymede (fewer than 1 per cent of local jobs).

Perhaps more interesting is the subject split. Apprenticeships in the region are led by public services. At level 3, 1,600 apprenticeships are in health and social care; 900 in learning support; only then does engineering feature, with 600 achievements. In terms of higher apprenticeships, these were led by apprenticeships in care (200), management (50) and Health and social care (20). Level 2 is again dominated by public services, with 1,400 in child development and well-being, although second-placed computer engineering accounted for 250 achievements.





Data: Emsi analysis of ESFA Data Cube

EDUCATION SUPPLY: THE ROLE OF COLLEGES

In this section, we turn to look at the provision of the leading local providers, specifically the colleges: Alton College; Basingstoke College of Technology; Brooklands College; Esher College; Farnborough College of Technology; Guildford College; Peter Symonds College; Queen Mary's College; Sparsholt College, and Woking College.

Here, the tables show the spread of provision for these colleges' provision across qualification levels; in the appendices, there is a full tabulation of total FE achievements broken down by first tier Sector Subject Area and RQF level. An important feature made clear in this table is the partial account of the FE system made by looking only at the local college system. In addition to these colleges, there are other providers — ranging from the County Councils to the British Army to commercial providers — and the supply of other colleges from outside the region, either because they are in neighbouring regions and so for many learners represent more convenience, or they have a specialism around particular subjects or learners.

College	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Total
Alton College	20	260	1,050	0	0	0	0	1,340
Basingstoke CoT	390	1,480	1,100	100	60	10	0	3,140
Brooklands College	400	780	760	20	30	0	0	2,000
Esher College	0	0	1,490	0	0	0	0	1,500
Farnborough CoT	260	1,240	1,040	60	70	120	10	2,800
Farnborough SFC	0	90	3,070	0	0	0	0	3,160
Guildford College	680	1,450	1,620	130	100	50	0	4,030
Peter Symonds College	20	280	3,340	20	60	40	0	3,750
Queen Mary's College	20	190	1,430	0	0	0	0	1,640
Sparsholt College	410	1,440	2,370	50	90	70	10	4,420
Woking College	70	180	1,010	0	0	0	0	1,270
Total (Colleges)	2,280	7,400	18,270	380	410	290	20	29,040
Total	**4,760**	**14,610**	**25,190**	**500**	**560**	**290**	**20**	**45,920**
Local college share	*47.9%*	*50.7%*	*72.5%*	*76%*	*73.4%*	*100%*	*100%*	*63.2%*

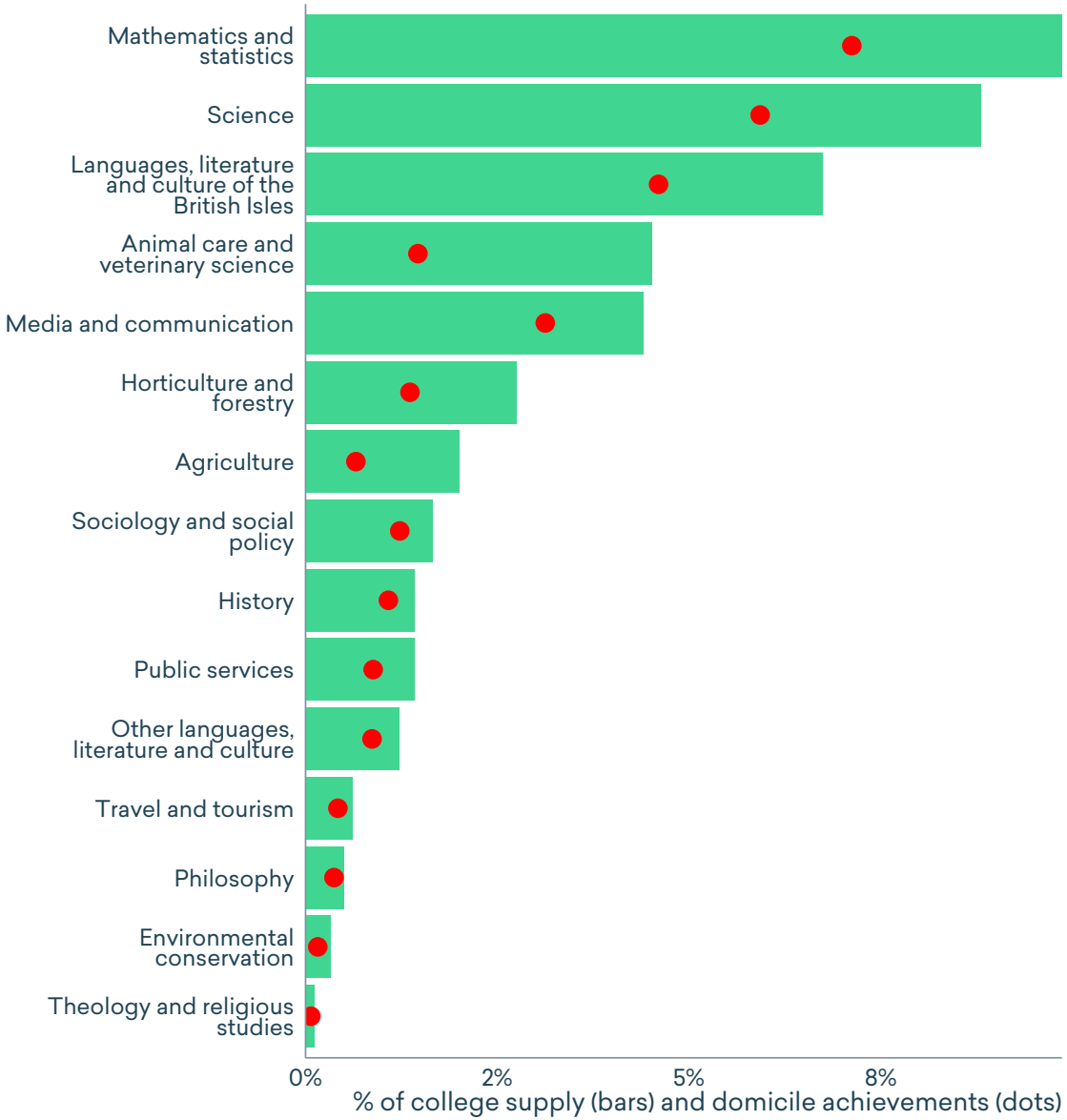
Data: Emsi analysis of ESFA Data Cube

EDUCATION SUPPLY: FE SPECIALISATION

Looking at the local colleges as a group, we can explore their role in delivering to different subject requirements, comparing the composition of their FE supply to the demand from residents, as expressed through the achievements of domiciled residents. Each subject area is expressed as a percentage of local college supply and domicile demand, and the shares are compared — here we have the top 15 for local college supply, with comparison.

The Enterprise M3 region's strong academic bias is particularly pronounced, characterising most of the leading subjects, and in all cases with more provision within the college system than outside it; the exception is in the related fields of animal care and veterinary science, horticulture and forestry, and agriculture — along with environmental conservation, these are all subjects where the percentage of local college supply is double or triple that of local demand, suggesting a high concentration of delivery.

Where local college supply is weak compared to demand is in areas (not charted as relatively small) such as retailing and wholesaling, warehousing and distribution, administration and hospitality and catering. ICT practitioners has the same proportion as local demand.

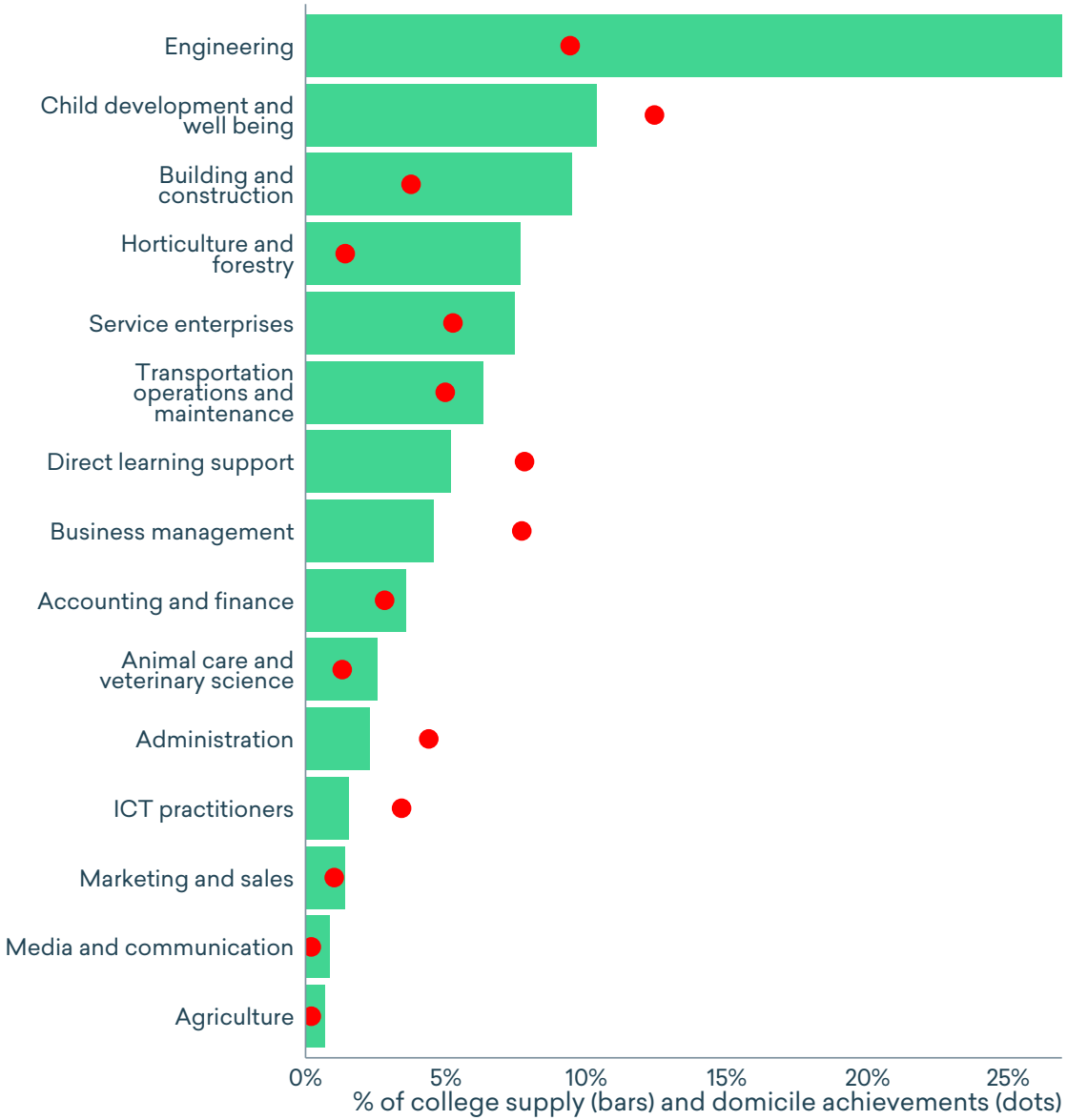


Data: Emsi analysis of ESFA Data Cube

EDUCATION SUPPLY: APPRENTICE SPECIALISATION

The same analysis features here for apprenticeship provision across the region's college, comparing their supply to the share of demand. Most notable — and reassuring given the presence of several high-tech engineering industry clusters — is that engineering provision is positioned much more strongly in college provision than in local demand, with a quarter of apprenticeships achieved in regional colleges being in this subject area, compared to 9 per cent of domiciled residents' achievements. The same applies to several other more technical and commercial fields: building and construction; service enterprises; horticulture and forestry.

By contrast, child development and well-being, direct learning support, business management and hospitality and catering — for these areas, higher achievements may require careers advice interventions. On the other hand, not on the chart, but there are certain technical fields where colleges greatly underserve local demand: manufacturing technologies; ICT practitioners (1.3 per cent versus 3.4 per cent), which suggest that opportunity is there if colleges are able to act upon it. As the table shows, the share of local colleges in FE system supply affecting the LEP region rises significantly as the qualification level moves up, with half of Level 1 provision being delivered through other routes, and all of FE Level 6 and 7 provision being based in these colleges.

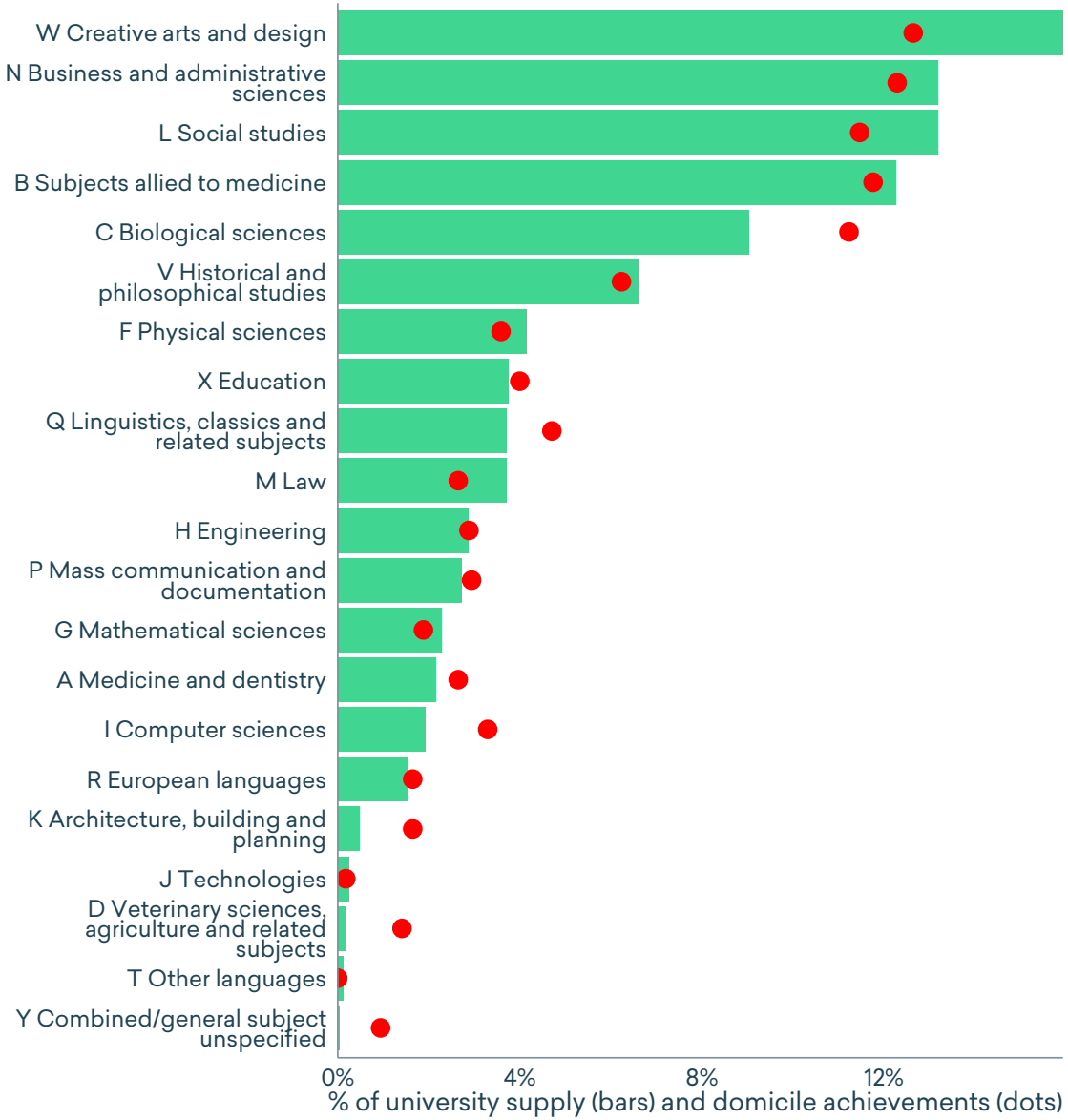


Data: Emsi analysis of ESFA Data Cube and HESA

EDUCATION SUPPLY: UNIVERSITY SPECIALISMS

The local university system is made up of three identified institutions: the Universities of Surrey, Winchester, Southampton; the University of the Creative Arts and then Royal Holloway, University of London. Between them, they delivered 12,500 Bachelors level graduates in 2017/18, along with 900 lower level qualifications, and 10,100 higher level qualifications. In terms of subject specialisation, the nature of universities as centres of expert knowledge means that differences are entirely natural between local supply and local demand, although they may suggest opportunities to expand (we use JACS in this analysis for translation to university decision-making).

The subject with the largest difference between university expertise and domicile demand is creative arts and design — 16 per cent of supply and 12.6 per cent of demand. Social studies (13.2 per cent versus 11.5 per cent) and business and administrative science follows (13.2 per cent versus 12.3 per cent), and then subjects allied to medicine (12.3 per cent versus 11.8 per cent). Despite the large digital sector, computer science is underserved: 1.9 per cent of supply, and 3.3 per cent of demand.



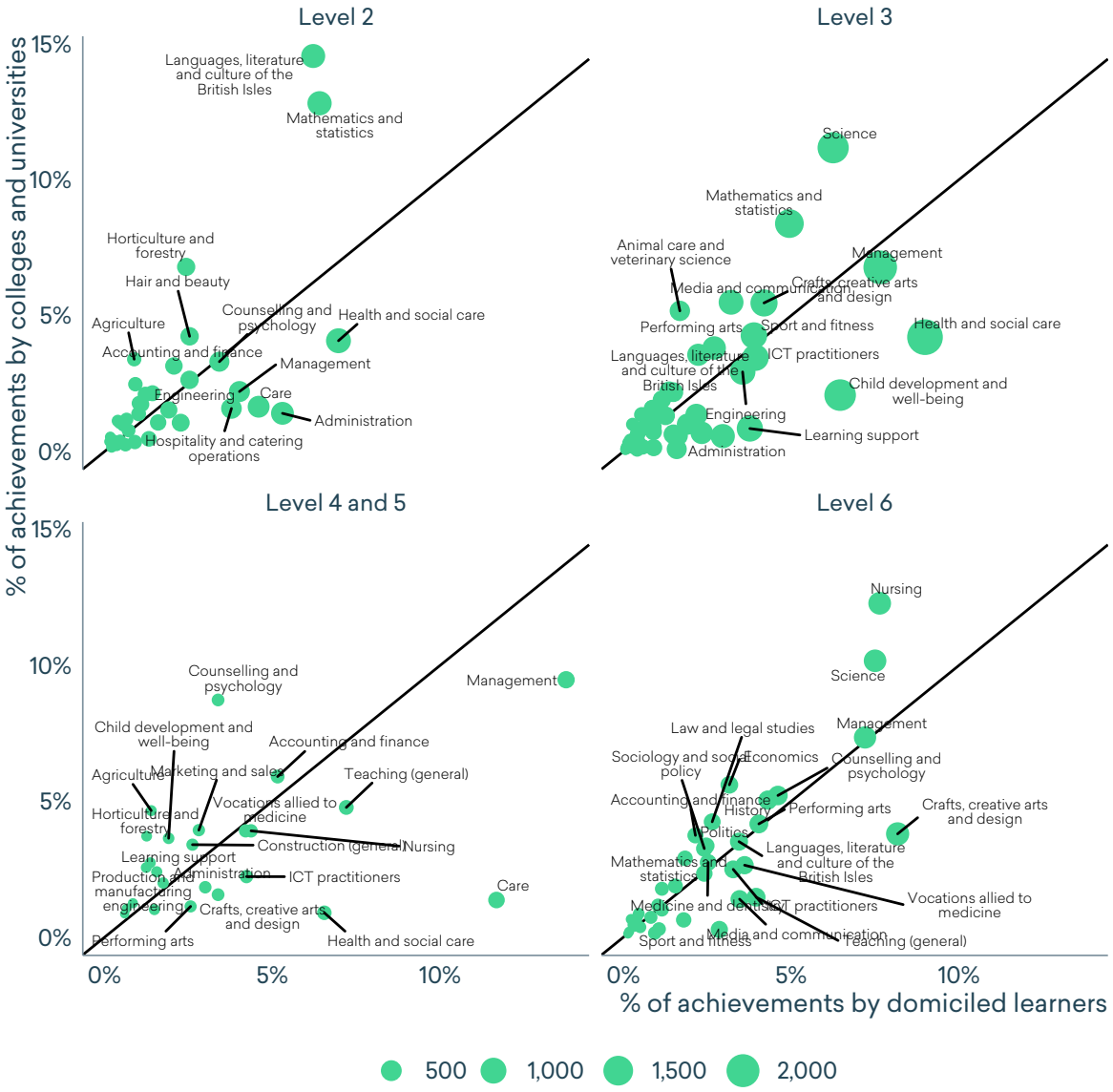
Data: Emsi analysis of ESFA Data Cube and HESA

LOCAL SUPPLY AND STUDENT DEMAND: ALIGNMENT

One of the questions underlying this analysis is how well local supply is configured to meet student demand; the caveat here is that student demand may need to be better informed by improved careers education, information and guidance. This chart looks at each of the major qualification levels and compares the share of qualification achievements (x-axis) for residents to the share of qualification achievements (y-axis) for local supply. The diagonal line represents alignment; below the line, demand is relatively greater than supply, and *vice versa*.

As already discussed, there will be gaps as some provision specialises locally and learners seek supply out of region or from smaller niche providers, especially for more specialist subjects. But it is clear again that local college supply at levels 2 and 3 works well for the academic route, with mathematics and statistics, science, language and literature all featuring — but so too do areas such as animal care, agriculture, horticulture and others.

Under-developed areas, which may represent opportunities for colleges relative to student demand include level 2 and 3 health and social care provision; level 3 engineering and ICT provision; learning support. At levels 4 and 5, ICT provision, health and social care, and at level 6, creative design, medicine-allied vocations and teaching all figure, as does sport and leisure.



Data: Emsi analysis of ESFA Data Cube and HESA

CHAPTER 6:

Diverse skills with increasing demands

The labour market is where business needs are turned into jobs: tasks bundled together, requiring a range of skills to deliver on them. Reflecting the region's economy, the Enterprise M3 labour market is biased towards professional and technical roles, and against process and elementary jobs. Despite the recent relative decline in job numbers, recruitment shows a robust volume compared to underlying demand, and overall skills demand is diverse across the region but leans towards high levels of analytical skills being required.

In most regions in the UK today, professional and technical jobs have become the largest categories, but Enterprise M3 has an enhanced profile in both, with correspondingly fewer jobs in low-skill roles. Compared to estimates of underlying demand — reflecting the change in overall job numbers, and the need to replace exiting workers — recruitment activity remains vigorous in the Enterprise M3, suggesting perhaps that the fall in jobs reflects underlying competitive factors rather than any demand-side issue as such.

The emphasis on professional and technical jobs is a direct result of the region's industry strengths in knowledge-intensive services and production industries — there are roles for IT professionals, consultants, design engineers and scientists as a result of those industries' location within the Enterprise M3 region. Those jobs share a need for high levels of analytical skill, and the region is fourth-placed among LEP and Combined Authority regions on this measure.

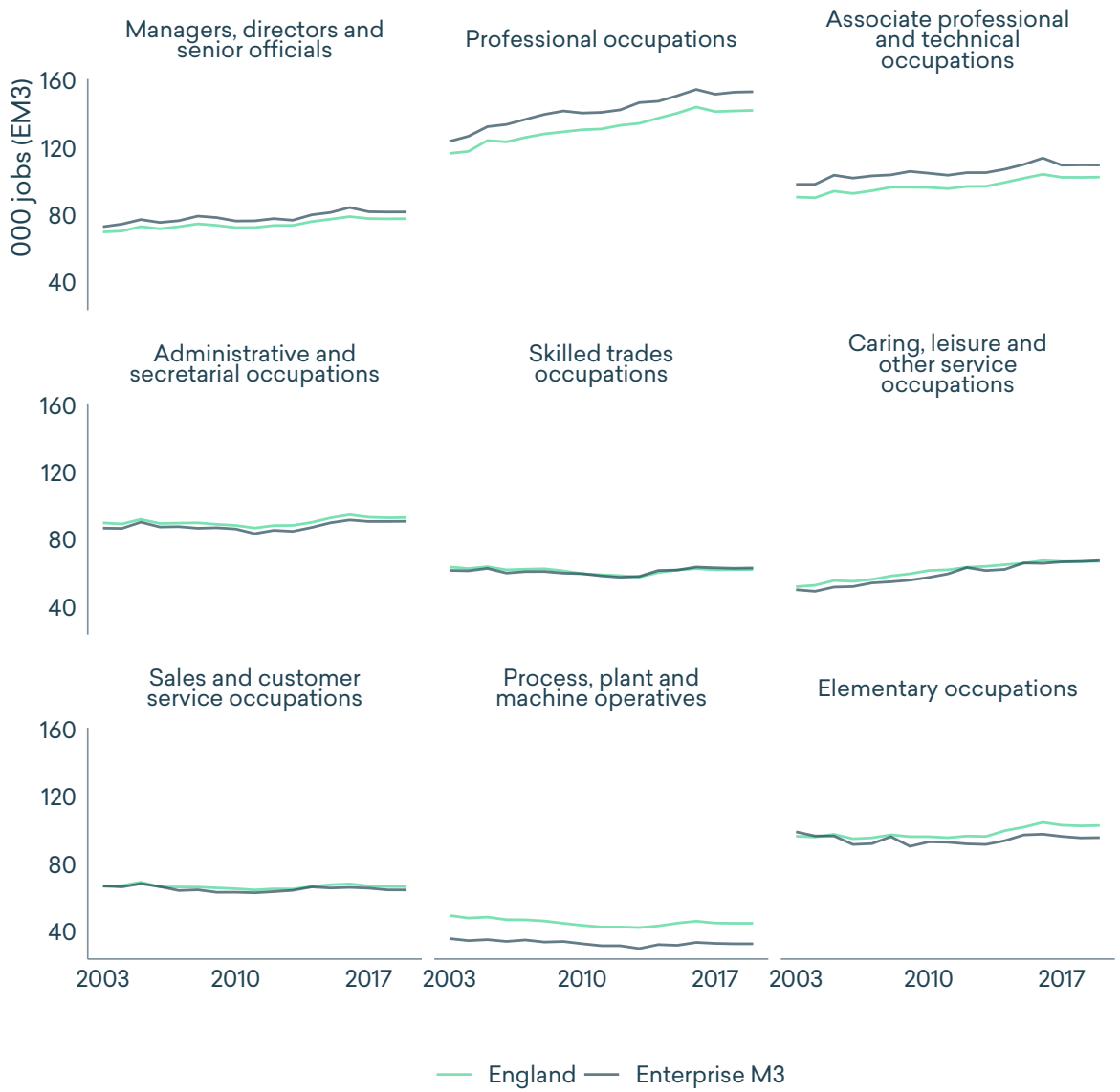
One of the other characteristics of the region's economy is a relative concentration of 'lifestyle' services like sports and leisure. Taken together with the knowledge-intensive production and service industries, that gives the Enterprise M3 region a very broadly based economy, and skill demand is correspondingly the third most diverse among LEP and Combined Authority regions, which does suggest a resilience.

A PROFESSIONAL AND TECHNICAL LABOUR MARKET

Each of the nine charts to the right hand side take a 'major group' of the ONS Standard Occupation Classification and set out the path of demand for the Enteprise M3 region with a comparison to England, where jobs in England have been set on an equivalent scale, to allow for comparison. The pattern that emerges is simple to state:

- Jobs in *professional occupations* and *associate professional and technical occupations* are in significantly greater demand in the Enterprise M3 region than more widely; as of 2019 there were 8 per cent and 7 per cent respectively more jobs in these groups than their national profile would suggest.
- *Process, plant and machine occupations* and more recently *elementary occupations* are under-represented in the region's labour market, with job numbers 17 per cent and 7 per cent respectively lower than the national profile.

These patterns have stayed fairly consistent over time, with *managers, directors and senior officials* marginally less prominent than the professional groupings, and the gap in elementary occupations changing most — back in 2003, these jobs were slightly above trend in the region.



Data: Emsi 2019.1

STRONG RECRUITMENT TREND

Using the same ONS Standard Occupation Classification major groups, in this case we compare Emsi's job posting data for the Enterprise M3 region with national trends. Job postings can be volatile for a range of reasons, and so here we compare the two geographies on the basis of 'postings per opening', using the relationship between the number of postings and the number of modelled job openings (the number of jobs created by growth and the need to replace exiting workers) over time.

Generally, the data suggests a robust level of recruitment activity, suggesting no lack of turnover even if job growth has been poor over this same time period — as of the latest data, the number of postings relative to job openings is higher in all nine major groups, and in several cases this represents a change from several years ago, especially for professional occupations.

Data: Emsi Job Posting Analytics

SKILLS DEMAND: DIVERSE AND ANALYTICAL

To understand the skills demand which these occupations represent, we compare the Enterprise M3 region here with all other LEP regions using two measures, each indexed to 100 as the 'average' case across the group. The first measure, on the x-axis, is the diversity of skills demand, reflecting the relative mix between the 369 occupations in the SOC taxonomy. To score highest on this measure, every occupation would be equally sized, reflecting no particular dependence; to score low would have all jobs in one occupation.

On this measure, Enterprise M3 region is third only to Oxfordshire and London, with London benefiting from its sheer size as a region — as geography gets larger, diversification tends to increase. The other measure, on the y-axis, is the average demand for analytical skills, measured across all occupations and weighted by their relative number of jobs. With its strengths in digital, professional services, precision technology and other fields, it is not surprising to see the region ranked fourth out of 38 on this measure, with London, Oxford and Thames Valley Berkshire scoring more highly.

The high diversity suggests a resilience in the economy, and one perhaps reflective of the high demand for 'lifestyle' services already seen in this report. The high demand for analytical skills suggests that the impression of industry structure has important consequences for skills demand — a need for workers with the skills to meet the needs of the region's frontier industries.

Data: Emsi 2019.1

TOWNS BY LEADING OCCUPATION

Following on from the earlier analysis of leading towns' distinctive industry clusters, here we look at the jobs which distinguish their labour markets. Typically these reflect the industry clusters which characterise them, with some standing out for particular reasons: for example, the presence of aircraft pilots and flight engineers in Farnborough (LQ relative to Great Britain: 16, 100 jobs). As with industry clusters, we use the location quotient measure to look at the occupations which stand out, rather than those simply with many jobs.

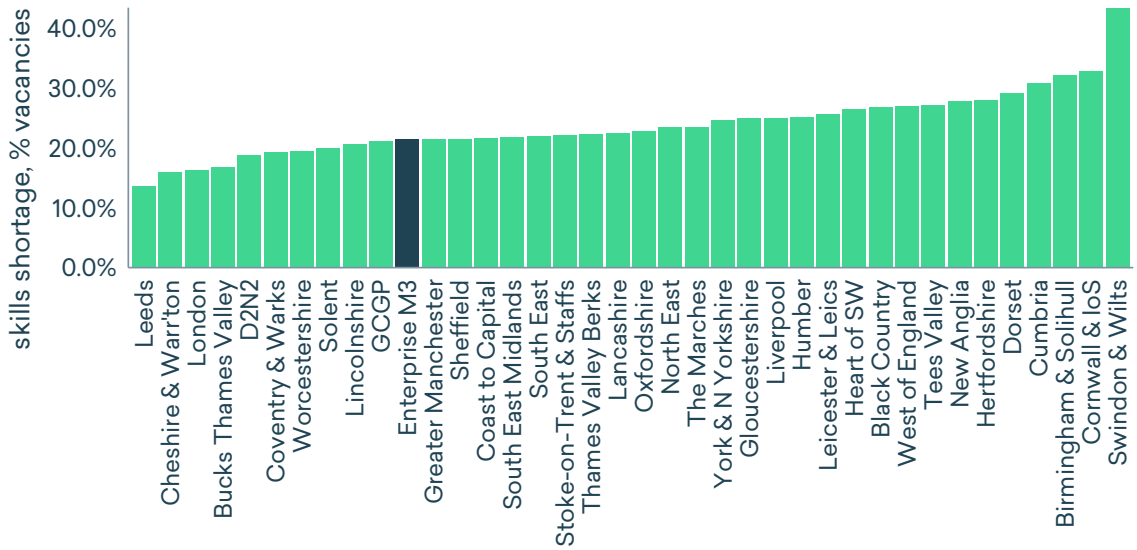
Fleet's strength in digital shines through: programmers and software development professionals are its most characteristic occupation, followed by IT business analysts, with Aldershot similarly configured. Egham's role in higher education and research is clear from the presence of teachers and researchers in the top 3. Winchester's prison and the presence of the County Council bring probation officers and social workers to the top. By far the greatest concentration is the 140 jobs for air transport operatives in Stanwell — a location quotient of 222.

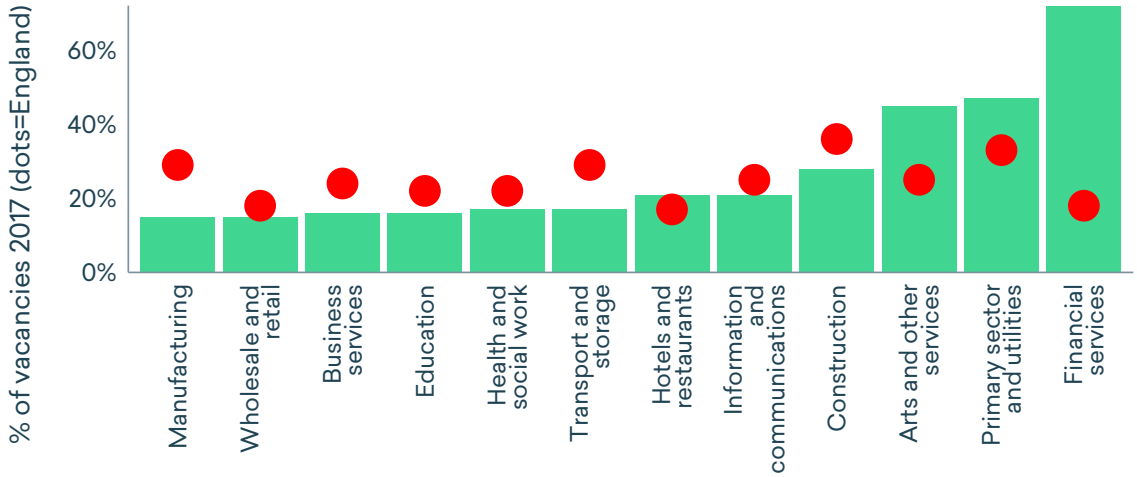
	No.1 role	No.2 role	No.3 role
Egham	Quality assurance technicians	Higher education teaching professionals	Natural and social science professionals n.e.c.
Cobham	Property, housing and estate managers	Primary and nursery education teaching professionals	Retail cashiers and check-out operators
Weybridge	Travel agents	Buyers and procurement officers	Estate agents and auctioneers
Walton-on-Thames	Postal workers, mail sorters, messengers and couriers	Property, housing and estate managers	Care workers and home carers
Staines-upon-Thames	Police officers (sergeant and below)	Programmers and software development professionals	Information technology and telecommunications professionals n.e.c.
Blackwater/Yateley	Catering and bar managers	Cooks	Kitchen and catering assistants
Fleet	Programmers and software development professionals	Information technology and telecommunications professionals n.e.c.	IT business analysts, architects and systems designers
Ashford	Electricians and electrical fitters	Medical practitioners	Programmers and software development professionals
Godalming	Human resources and industrial relations officers	Secondary education teaching professionals	Programmers and software development professionals
Farnham	Childminders and related occupations	Nursery nurses and assistants	Hairdressers and barbers
Woking	Undertakers, mortuary and crematorium assistants	Assemblers (vehicles and metal goods)	Sports players
Guildford	Actuaries, economists and statisticians	Higher education teaching professionals	Pensions and insurance clerks and assistants
Basingstoke	Security guards and related occupations	Telecommunications engineers	Electrical and electronic trades n.e.c.
Farnborough	Aircraft pilots and flight engineers	Travel agents	Air travel assistants
Sunbury	Electricians and electrical fitters	Secondary education teaching professionals	Primary and nursery education teaching professionals
Stanwell	Air transport operatives	Transport and distribution clerks and assistants	Managers and directors in transport and distribution
East and West Molesey	Primary and nursery education teaching professionals	Kitchen and catering assistants	Sales accounts and business development managers
Shepperton	Large goods vehicle drivers	Secondary education teaching professionals	Primary and nursery education teaching professionals
Frimley	Medical and dental technicians	Midwives	Medical radiographers
Aldershot	Information technology and telecommunications professionals n.e.c.	IT project and programme managers	Programmers and software development professionals
Camberley	Market research interviewers	Security guards and related occupations	Marketing associate professionals
Whiteley	Air traffic controllers	Dispensing opticians	Ophthalmic opticians
Petersfield	National government administrative occupations	Local government administrative occupations	Secondary education teaching professionals
Cranleigh	Secondary education teaching professionals	Kitchen and catering assistants	Sales and retail assistants
Haslemere	Primary and nursery education teaching professionals	Teaching assistants	Secondary education teaching professionals
Alton	Elementary storage occupations	Primary and nursery education teaching professionals	Sales accounts and business development managers
Chertsey	Programmers and software development professionals	Chartered and certified accountants	Book-keepers, payroll managers and wages clerks
Andover	Pensions and insurance clerks and assistants	Shelf fillers	Financial institution managers and directors
Bordon/Lindford/Headley	Cleaners and domestics	Primary and nursery education teaching professionals	Teaching assistants
Addlestone	Gardeners and landscape gardeners	Secondary education teaching professionals	IT specialist managers
Romsey	Sports coaches, instructors and officials	Call and contact centre occupations	Secondary education teaching professionals
Winchester City	Social workers	Dental nurses	Prison service officers (below principal officer)
Tadley	Care workers and home carers	Primary and nursery education teaching professionals	Sales and retail assistants

SKILLS SHORTAGES MODERATE IN EMPLOYER SURVEYS

Employer-reported levels of skills shortage are relatively moderate in the Enterprise M3 region; according to the most recent Employer Skills Survey, collected in 2017 and with a sample of 2,161 respondent workplaces in the region, more than 1 in 3 vacancies were reported as hard-to-fill, with 21 per cent of vacancies described as hard-to-fill because of skills shortages. That places the region in the bottom third of LEP and Combined Authority regions for reported skills shortage, some distance from the most acute cases.

Looking at the mix of skills shortage reports between high levels of industry, given the area-wide view it is not surprising that most industries report lower levels of skills shortage than their counterparts elsewhere, although the pattern of variation offers some insight: financial services has acute skills shortages compared to the national level, which may reflect the difficulty of attracting local workers given the proximity to London; the region's large utility sector also hits constraints, and so too do creative employers.





Data: Emsi analysis of DfE Employer Skills Survey 2017

LEADING OCCUPATIONS

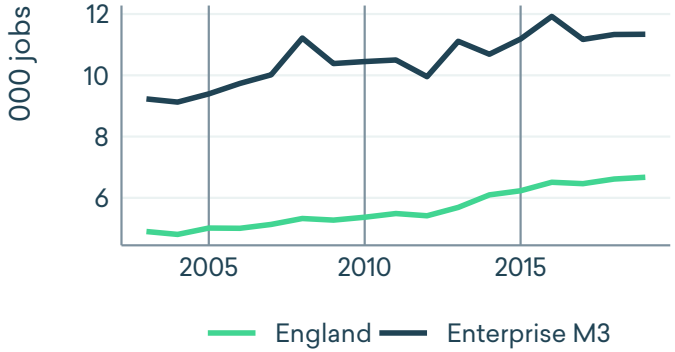
To understand skills needs in greater deal, over the following ten pages we profile a set of occupations which the data suggest will be critical to the developing Enterprise M3 labour market. The occupations selected are summarised below in terms of jobs, location quotient, openings — the numbers needed to meet increased demand and replace exiting workers — and median annual earnings. A table setting out job numbers for each occupation in the Enterprise M3 region is set out in the appendices to this report for reference. Data here are from Emsi (including Job Posting Analytics and Professional Profiles), except on education supply, which are drawn from the ESFA Data Cube and HESA.

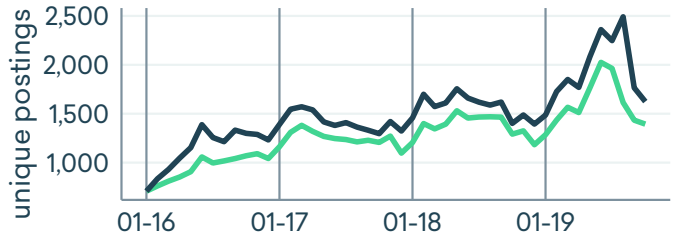
The top ten were selected by a simple measure: the minimum combined rankings on Location Quotient — representing the role's distinctive importance to the region — and job openings — representing the role's relative size. Each of the top ten is presented in further detail on the pages following in terms of four measures. On the right hand side, we detail the relative path of job growth over recent years, compared to English job growth on an equivalent scale; repeating the same for job postings; and then look at the pipeline of relevant qualifications at different levels, where the red line represents future job openings.

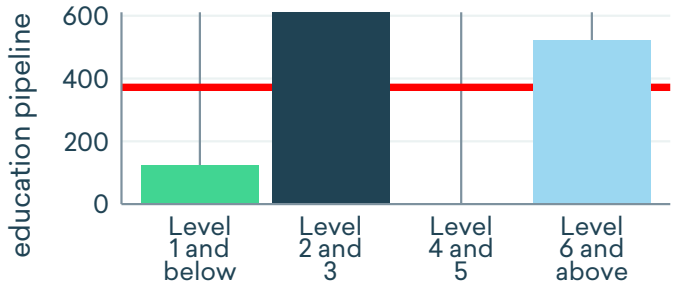
The education pipeline needs to be approached as a pipeline: there are many people gaining qualifications at level 2 and below relevant to programming, but most programmers need much more advanced skills. The final element, the main panel, is an analysis comparing skills demand from job postings' citations of specific skills with skills supply from individual worker profiles' citations of the same skills — those with the greatest distance between the share demanded and the share supplied are displayed, showing the potential skills shortage areas.

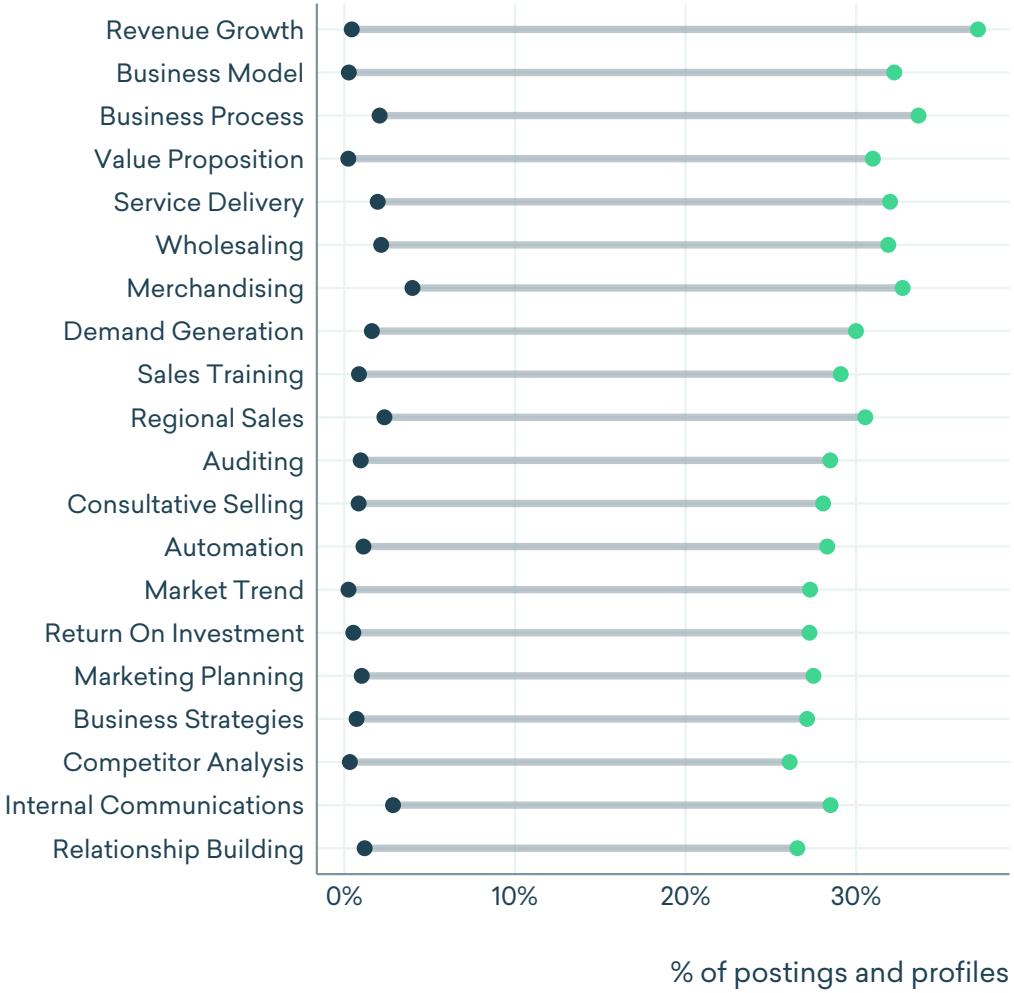
SOC	Occupation	Jobs 2019	Location Quotient 2019	Openings 2019	Earnings 2018
2136	Programmers and software development professionals	11,340	1.78	400	49,230
3545	Sales accounts and business development managers	17,110	1.34	710	50,420
2139	Information technology and telecommunications professionals n.e.c.	7,580	1.64	260	42,240
3442	Sports coaches, instructors and officials	3,380	1.71	210	27,410
2133	IT specialist managers	8,530	1.55	280	53,060
5113	Gardeners and landscape gardeners	3,030	1.67	200	20,800
1132	Marketing and sales directors	6,990	1.33	290	80,790
2423	Management consultants and business analysts	5,880	1.33	280	42,040
3542	Business sales executives	5,830	1.35	260	32,070
6139	Animal care services occupations n.e.c.	3,040	1.63	170	17,330

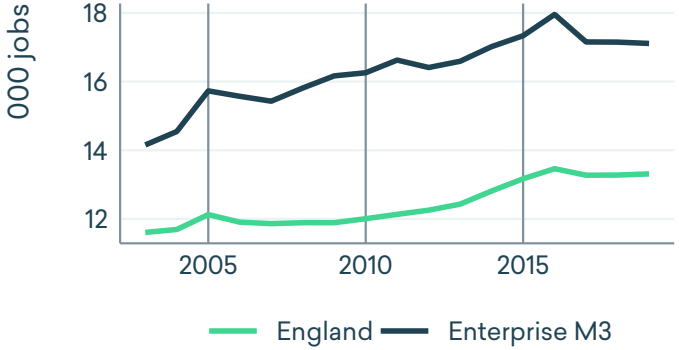

Kubernetes
Code Review
Ansible
Operating Systems
Windows PowerShell
Configuration Management
PostgreSQL
Big Data
Microservices
TypeScript
Docker
Extract Transform Load (ETL)
Continuous Delivery
Automation
Business Requirements
React.js
DevOps
Machine Learning
Scalability
JIRA
0%
5%
10%
15%
20%
25%
% of postings and profiles

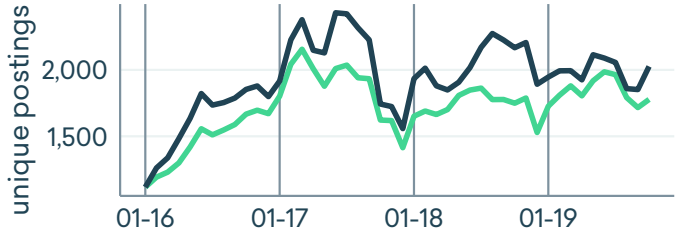

000 jobs
12
10
8
6
2005
2010
2015
England
Enterprise M3

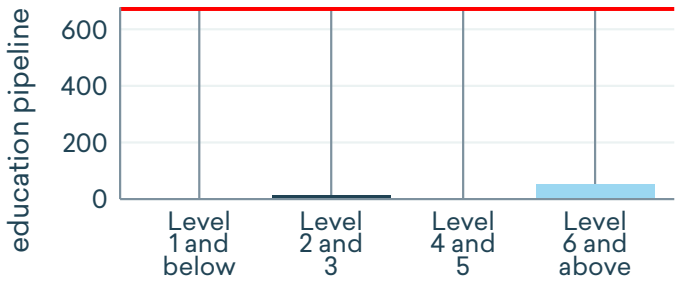

unique postings
2,500
2,000
1,500
1,000
01-16
01-17
01-18
01-19

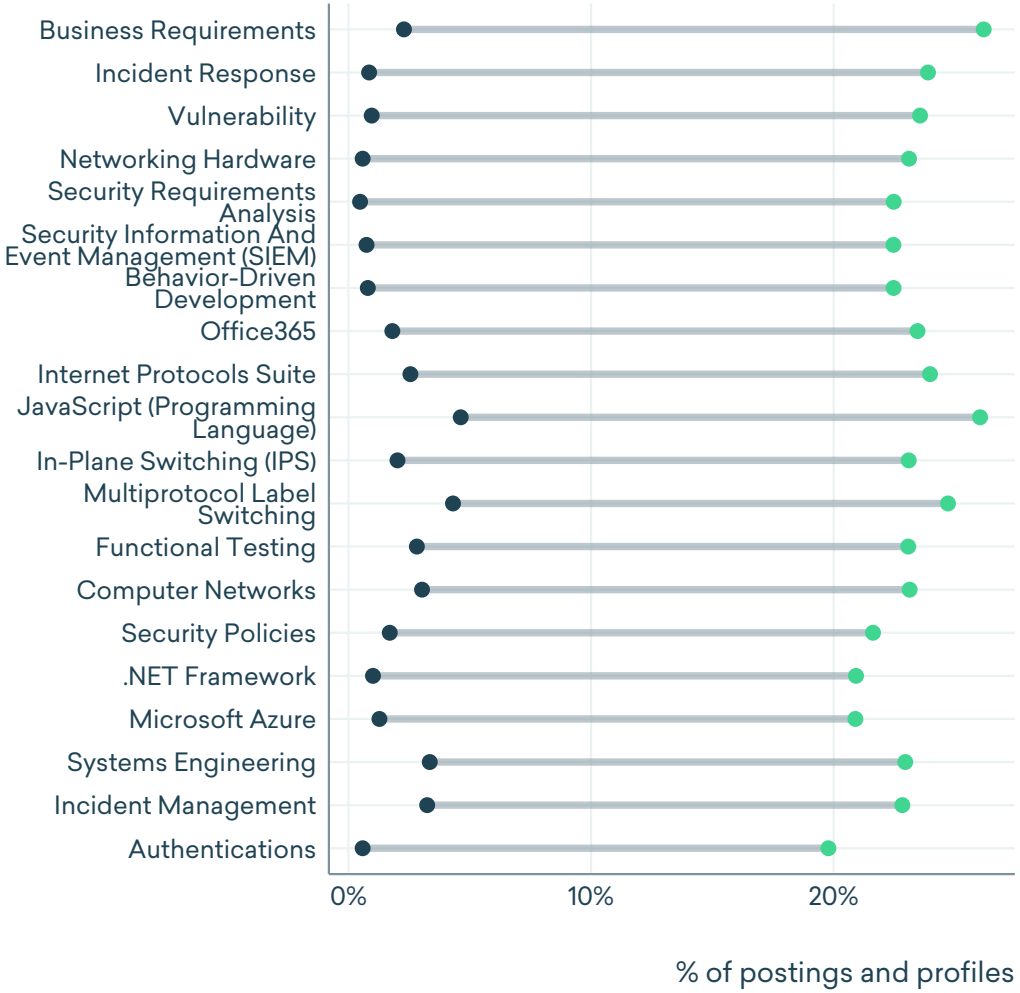

education pipeline
600
400
200
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

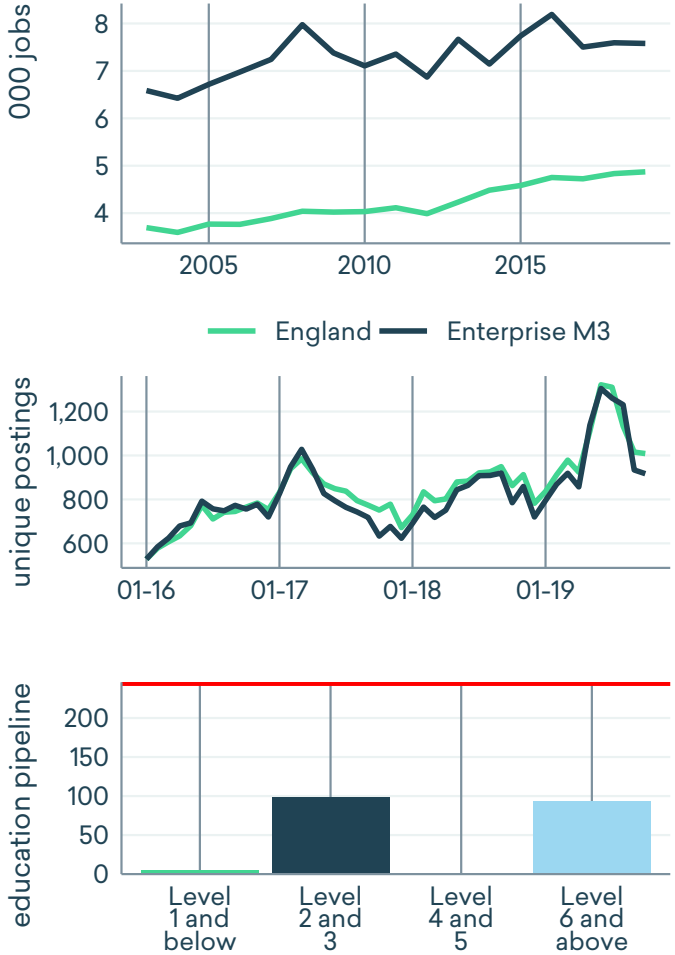

Revenue Growth
Business Model
Business Process
Value Proposition
Service Delivery
Wholesaling
Merchandising
Demand Generation
Sales Training
Regional Sales
Auditing
Consultative Selling
Automation
Market Trend
Return On Investment
Marketing Planning
Business Strategies
Competitor Analysis
Internal Communications
Relationship Building
0%
10%
20%
30%
% of postings and profiles

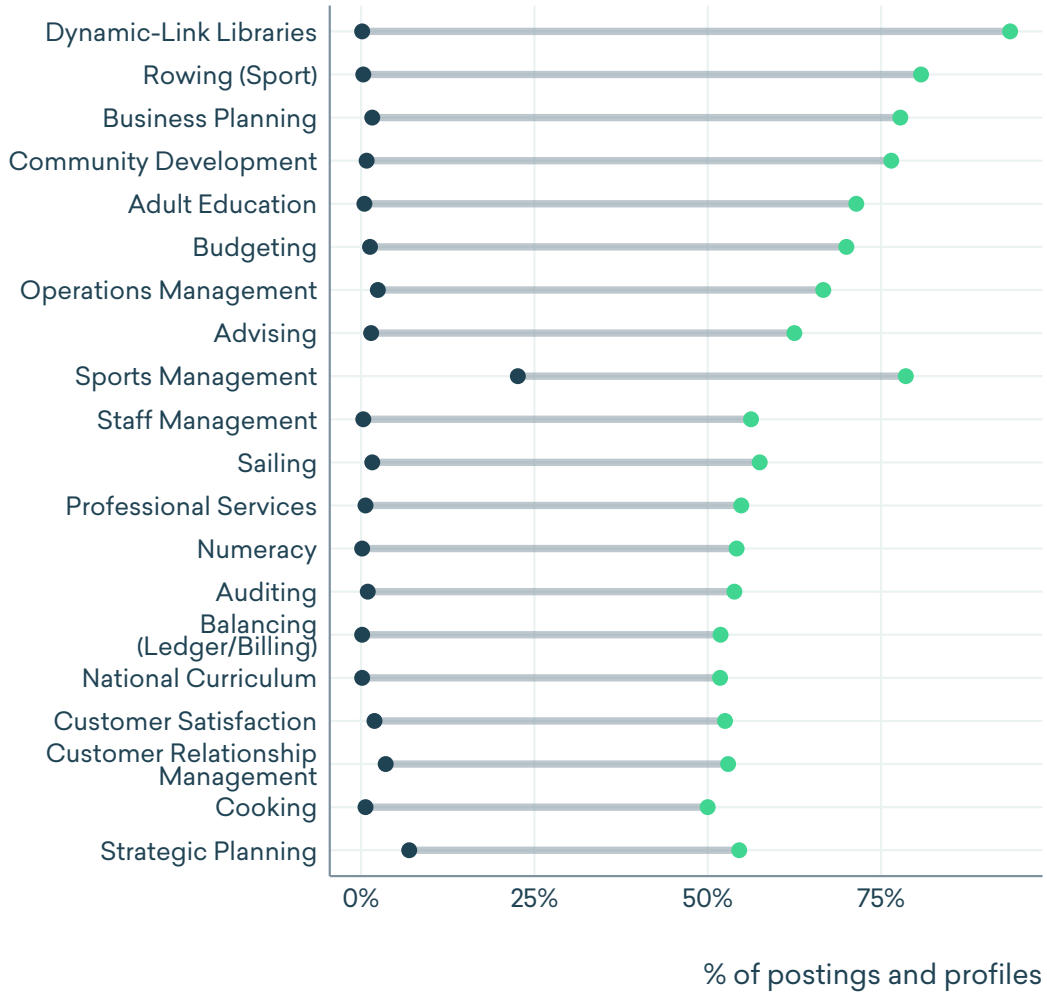

000 jobs
18
16
14
12
2005
2010
2015
England
Enterprise M3

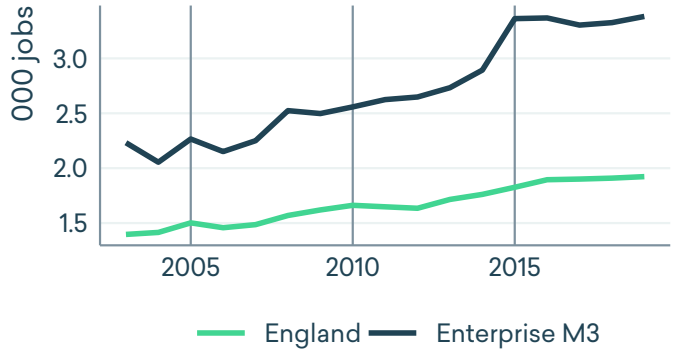

unique postings
2,000
1,500
01-16
01-17
01-18
01-19

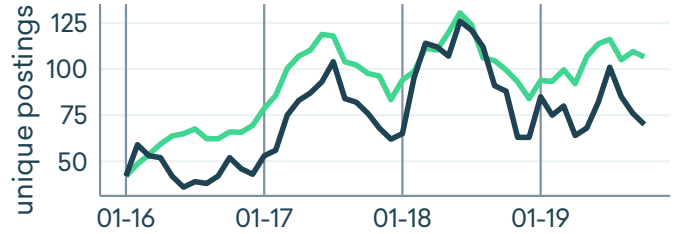

education pipeline
600
400
200
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

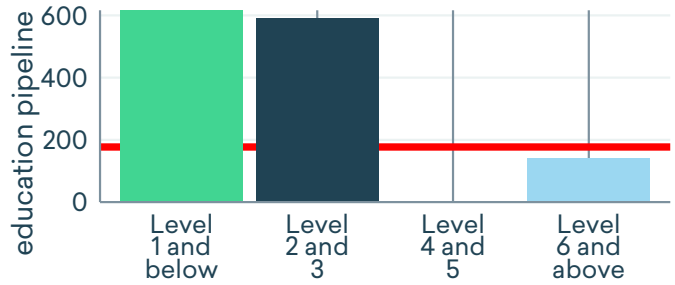

Business Requirements
Incident Response
Vulnerability
Networking Hardware
Security Requirements Analysis
Security Information And Event Management (SIEM)
Behavior-Driven Development
Office365
Internet Protocols Suite
JavaScript (Programming Language)
In-Plane Switching (IPS)
Multiprotocol Label Switching
Functional Testing
Computer Networks
Security Policies
.NET Framework
Microsoft Azure
Systems Engineering
Incident Management
Authentications
0%
10%
20%
% of postings and profiles


000 jobs
8
7
6
5
4
2005
2010
2015
England
Enterprise M3
unique postings
1,200
1,000
800
600
01-16
01-17
01-18
01-19
education pipeline
200
150
100
50
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above


Dynamic-Link Libraries
Rowing (Sport)
Business Planning
Community Development
Adult Education
Budgeting
Operations Management
Advising
Sports Management
Staff Management
Sailing
Professional Services
Numeracy
Auditing
Balancing (Ledger/Billing)
National Curriculum
Customer Satisfaction
Customer Relationship Management
Cooking
Strategic Planning
0%
25%
50%
75%
% of postings and profiles

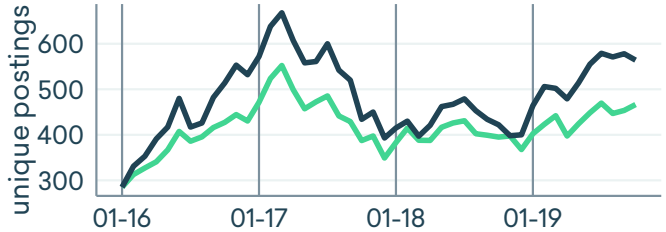

000 jobs
3.0
2.5
2.0
1.5
2005
2010
2015
England
Enterprise M3

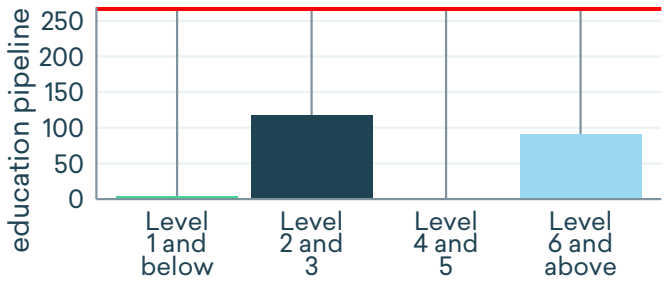

unique postings
125
100
75
50
01-16
01-17
01-18
01-19

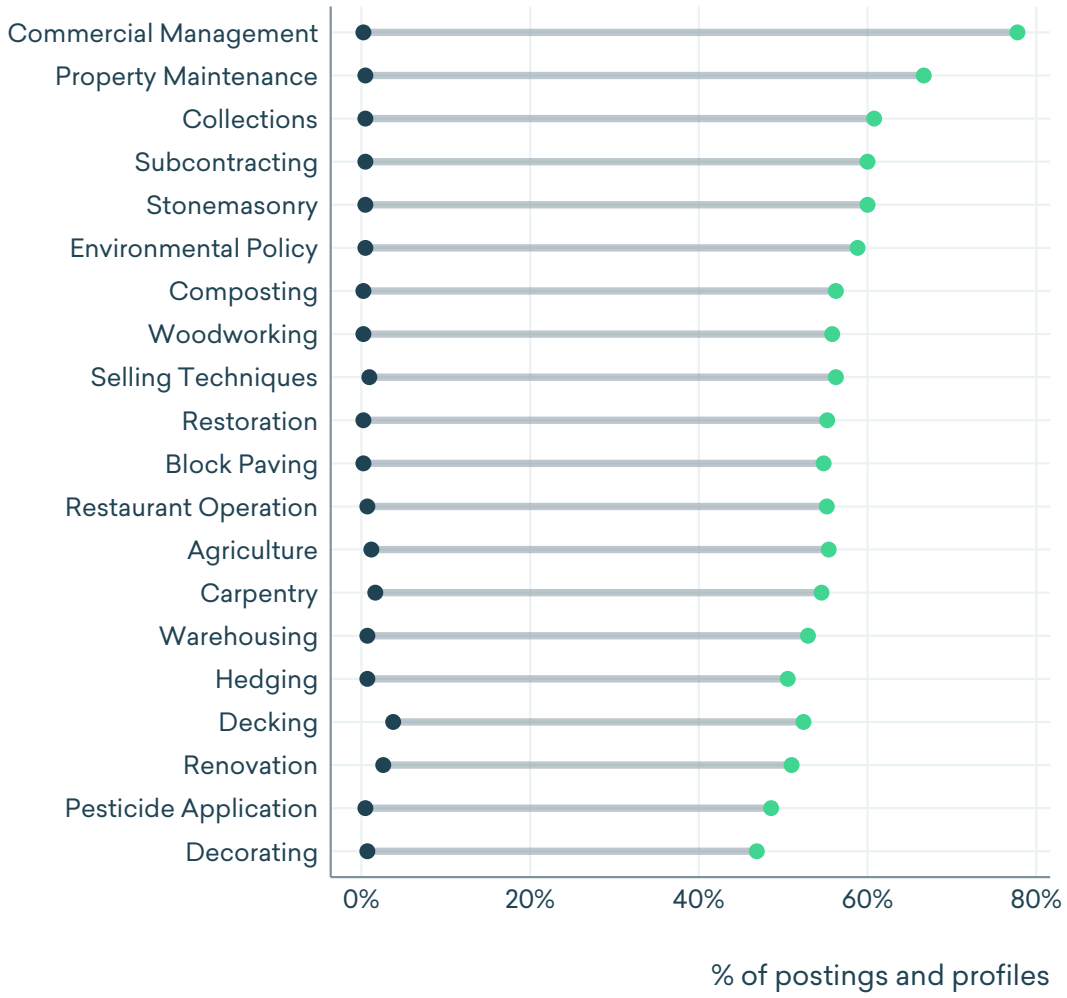

education pipeline
600
400
200
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

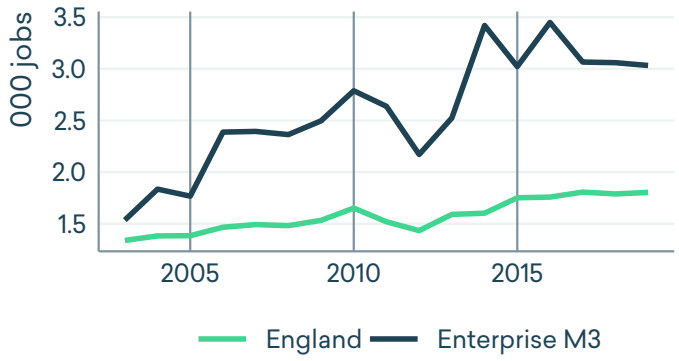

Communication Planning
Information Systems
Continuous Improvement Process
Resourcing
Service Level
Forecasting
Key Performance Indicators (KPIs)
Service Design
Service Provider
Product Management
Customer Satisfaction
Budgeting
Service-Level Agreement
Change Control
Operations Support Systems
Procurement
Customer Support
Release Management
Business Systems
Customer Experience
0%
10%
20%
30%
40%
% of postings and profiles

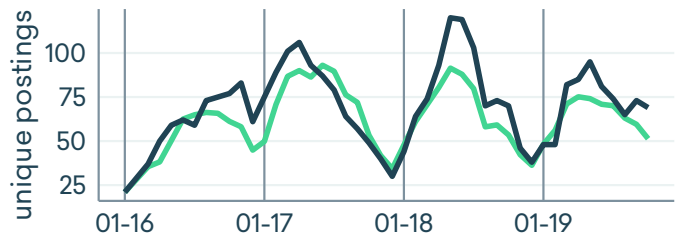

000 jobs
9
8
7
6
5
2005
2010
2015
England
Enterprise M3

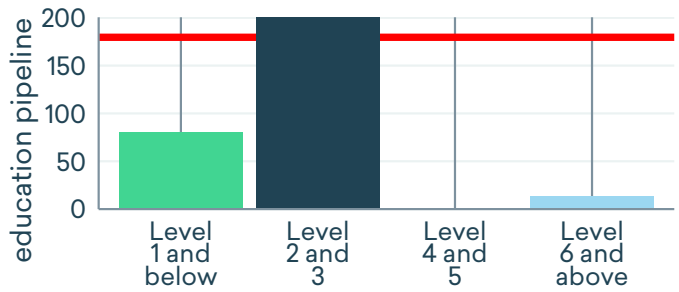

unique postings
600
500
400
300
01-16
01-17
01-18
01-19


education pipeline
250
200
150
100
50
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

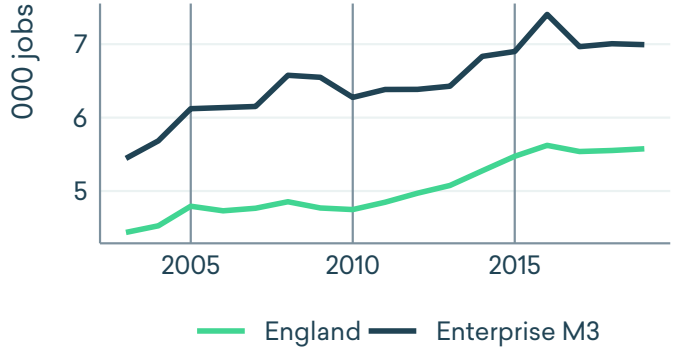

Commercial Management
Property Maintenance
Collections
Subcontracting
Stonemasonry
Environmental Policy
Composting
Woodworking
Selling Techniques
Restoration
Block Paving
Restaurant Operation
Agriculture
Carpentry
Warehousing
Hedging
Decking
Renovation
Pesticide Application
Decorating
0%
20%
40%
60%
80%
% of postings and profiles

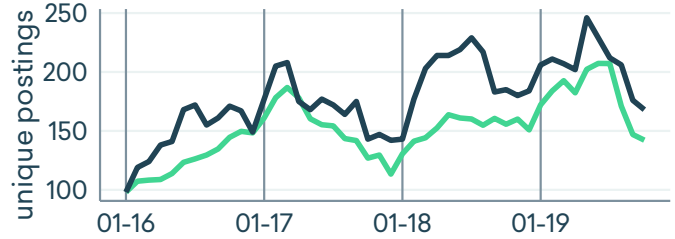

000 jobs
3.5
3.0
2.5
2.0
1.5
2005
2010
2015
England
Enterprise M3

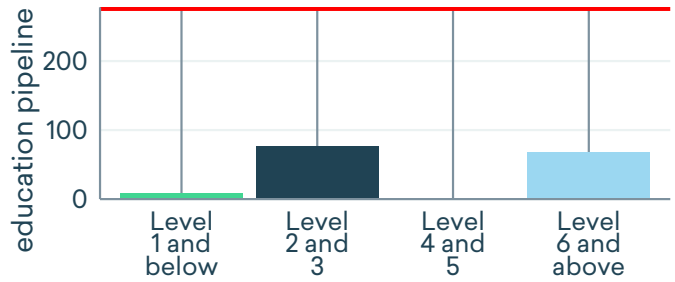

unique postings
100
75
50
25
01-16
01-17
01-18
01-19

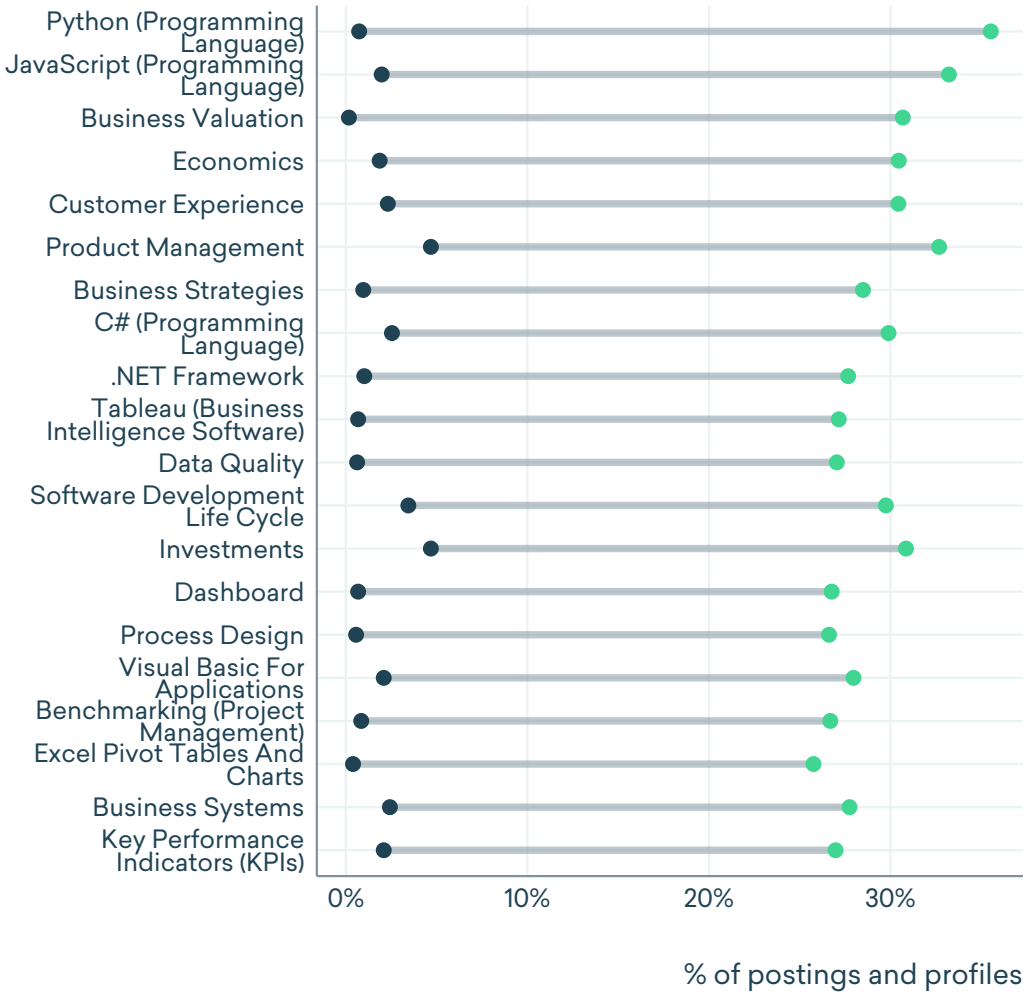

education pipeline
200
150
100
50
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above


Regional Sales
Growth Strategies
Value Proposition
Service Provider
Direct Selling
Complex Sales
Financial Management
Consultative Selling
Cloud Computing
International Sales
Demand Generation
Performance Management
Brand Management
Request For Proposal
Business Strategies
Organic Growth
Billing
Pay Per Click
Automation
Business Model
0%
20%
40%
% of postings and profiles

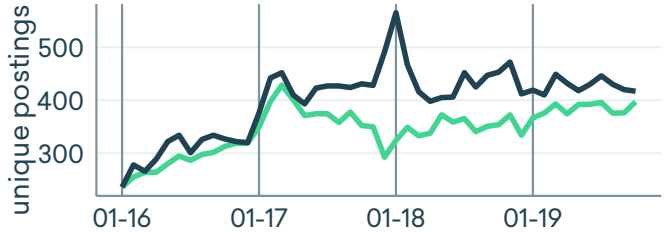

000 jobs
7
6
5
2005
2010
2015
England
Enterprise M3

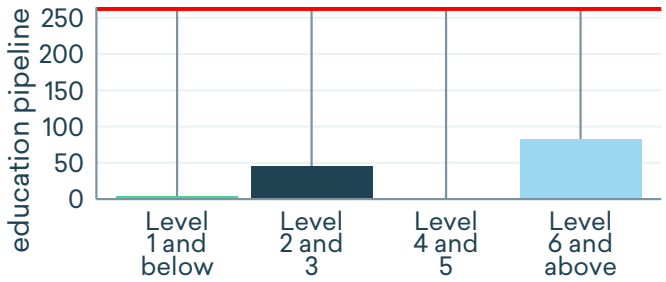

unique postings
250
200
150
100
01-16
01-17
01-18
01-19

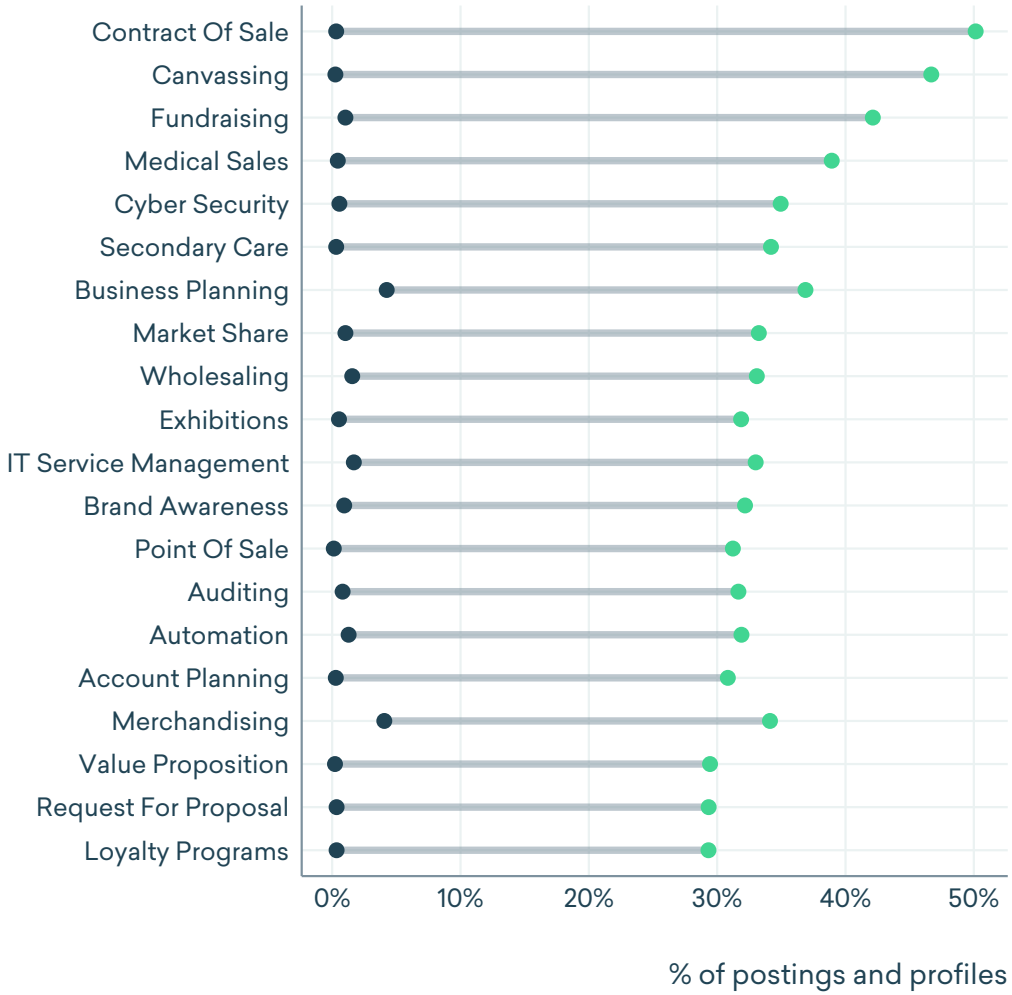

education pipeline
200
100
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

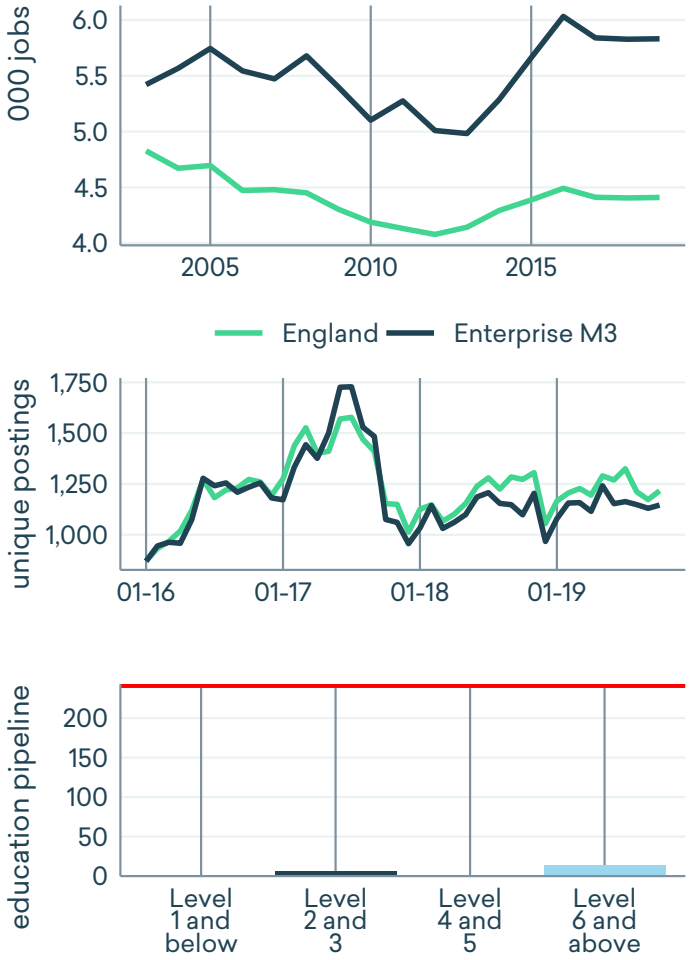

Python (Programming Language)
JavaScript (Programming Language)
Business Valuation
Economics
Customer Experience
Product Management
Business Strategies
C# (Programming Language)
.NET Framework
Tableau (Business Intelligence Software)
Data Quality
Software Development Life Cycle
Investments
Dashboard
Process Design
Visual Basic For Applications
Benchmarking (Project Management)
Excel Pivot Tables And Charts
Business Systems
Key Performance Indicators (KPIs)
0%
10%
20%
30%
% of postings and profiles


000 jobs
6
5
4
3
2005
2010
2015
England
Enterprise M3

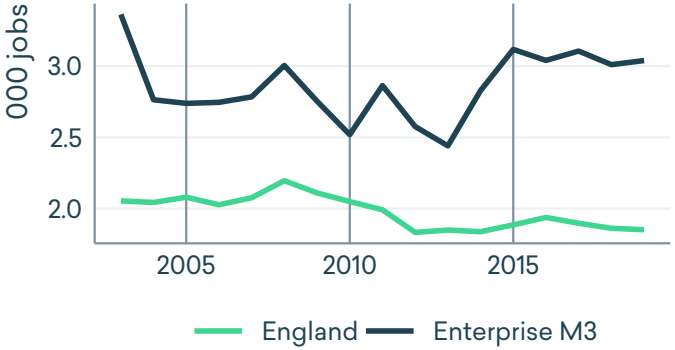

unique postings
500
400
300
01-16
01-17
01-18
01-19

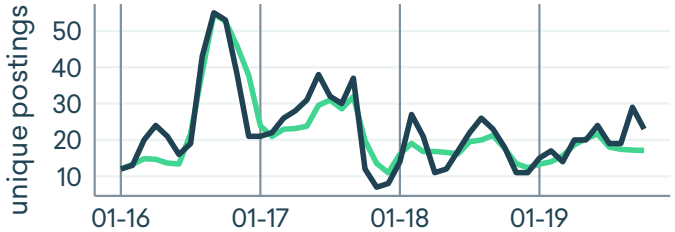

education pipeline
250
200
150
100
50
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

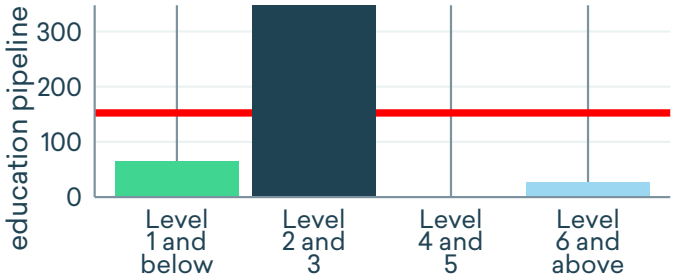

Contract Of Sale
Canvassing
Fundraising
Medical Sales
Cyber Security
Secondary Care
Business Planning
Market Share
Wholesaling
Exhibitions
IT Service Management
Brand Awareness
Point Of Sale
Auditing
Automation
Account Planning
Merchandising
Value Proposition
Request For Proposal
Loyalty Programs
0%
10%
20%
30%
40%
50%
% of postings and profiles

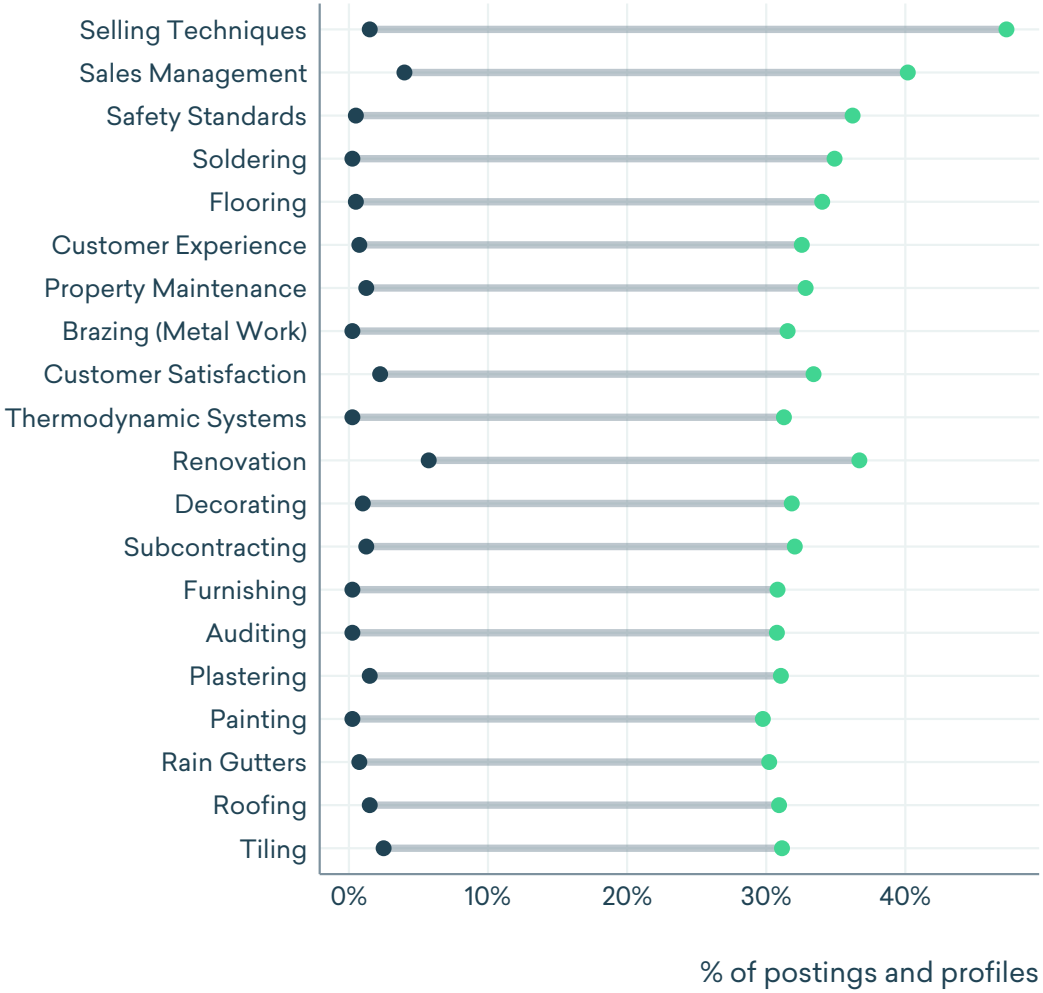

000 jobs
6.0
5.5
5.0
4.5
4.0
2005
2010
2015
England
Enterprise M3
unique postings
1,750
1,500
1,250
1,000
01-16
01-17
01-18
01-19
education pipeline
200
150
100
50
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

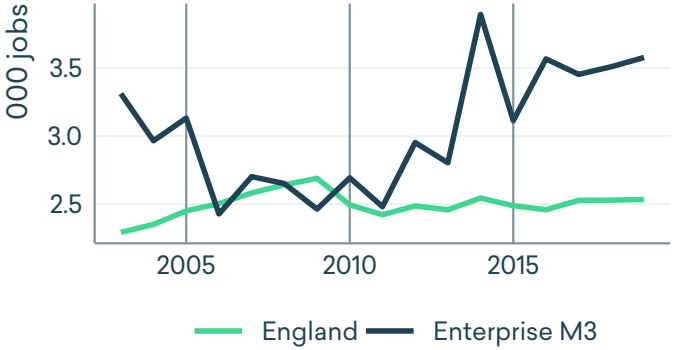

Stock Rotation
Patrolling
Hydrotherapy
Drawing
Auditing
Fundraising
Stock Control
Rehabilitation
Agriculture
Apache Pig
Customer Relationship Management
Bakeries
Psychology
Staff Management
Selling Techniques
Social Work
Property Management
Food Preparation
Anatomy
Skin Treatments
0%
25%
50%
75%
100%
% of postings and profiles

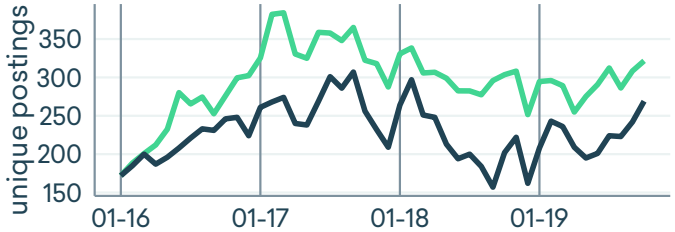

000 jobs
3.0
2.5
2.0
2005
2010
2015
England
Enterprise M3

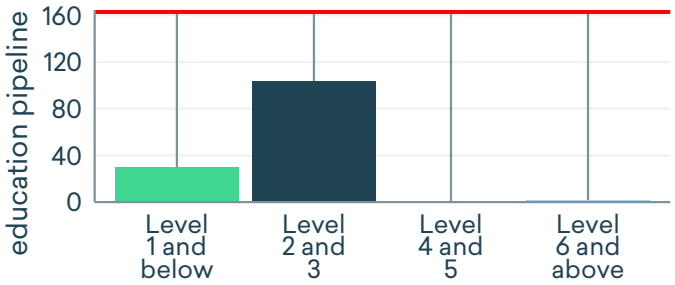

unique postings
50
40
30
20
10
01-16
01-17
01-18
01-19

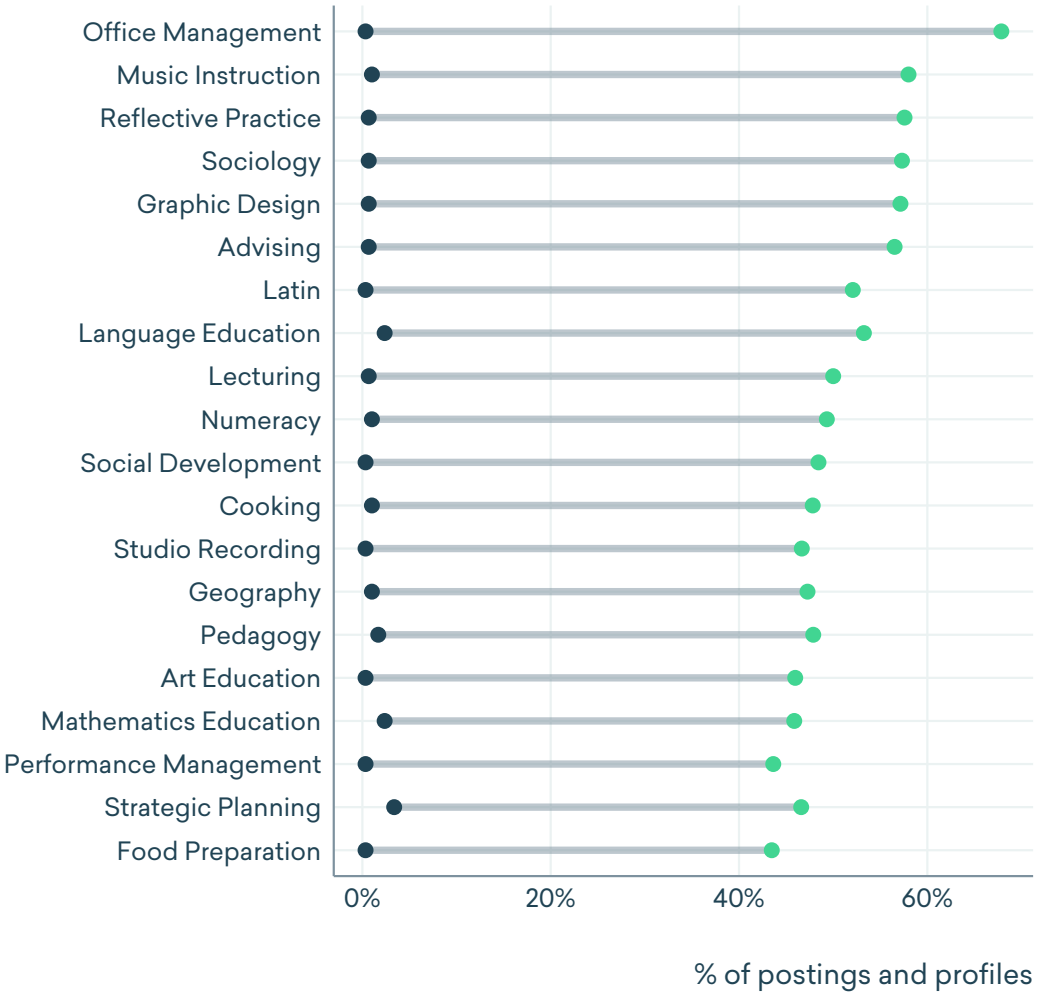

education pipeline
300
200
100
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

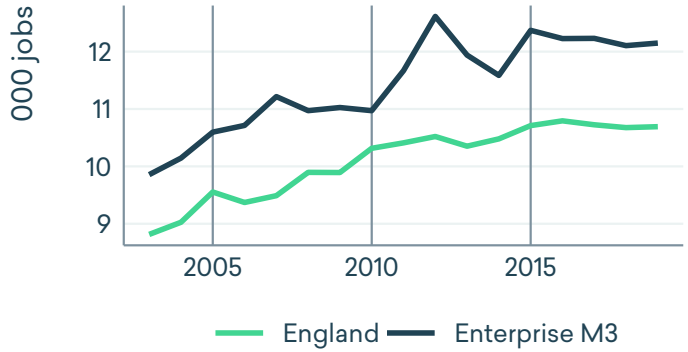

Selling Techniques
Sales Management
Safety Standards
Soldering
Flooring
Customer Experience
Property Maintenance
Brazing (Metal Work)
Customer Satisfaction
Thermodynamic Systems
Renovation
Decorating
Subcontracting
Furnishing
Auditing
Plastering
Painting
Rain Gutters
Roofing
Tiling
0%
10%
20%
30%
40%
% of postings and profiles


000 jobs
3.5
3.0
2.5
2005
2010
2015
England
Enterprise M3

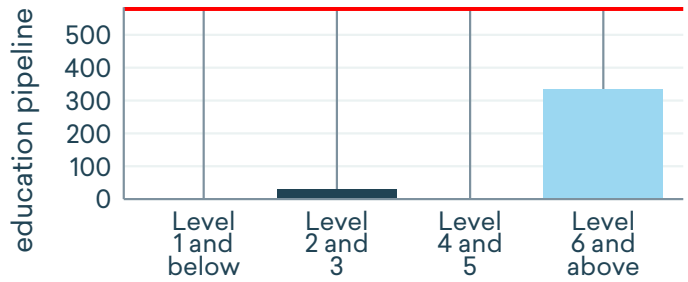

unique postings
350
300
250
200
150
01-16
01-17
01-18
01-19


education pipeline
160
120
80
40
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above


Office Management
Music Instruction
Reflective Practice
Sociology
Graphic Design
Advising
Latin
Language Education
Lecturing
Numeracy
Social Development
Cooking
Studio Recording
Geography
Pedagogy
Art Education
Mathematics Education
Performance Management
Strategic Planning
Food Preparation
0%
20%
40%
60%
% of postings and profiles


000 jobs
12
11
10
9
2005
2010
2015
England
Enterprise M3


unique postings
1,500
1,000
500
01-16
01-17
01-18
01-19


education pipeline
500
400
300
200
100
0
Level 1 and below
Level 2 and 3
Level 4 and 5
Level 6 and above

CHAPTER 7:

The Enterprise M3 talent pipeline

For the Enterprise M3 LEP, the task of understanding the changing labour market is motivated by the desire to make the most of it, to support a local industrial strategy which can encourage greater innovation and high value added job creation. In this final chapter of the report, we bring together analysis of demand and education supply to understand the key opportunities in the talent pipeline for the region.

As previous chapters have set out, the Enterprise M3 LEP regional labour market has a series of complexities which need to be factored into any analysis of future supply and demand. First, it is a high-churn labour market, with 2011 Census data showing 37 per cent of the workfore accessed labour market opportunities in adjacent geographies. Second, it is a net *exporter* of university undergraduates and graduates — around 2,200 per annum net loss on account of this trend. Any analysis of demand and supply has to adjust to take account of this gain in competition for scarce skilled workers and the loss in supply of those skilled workers early in their career.

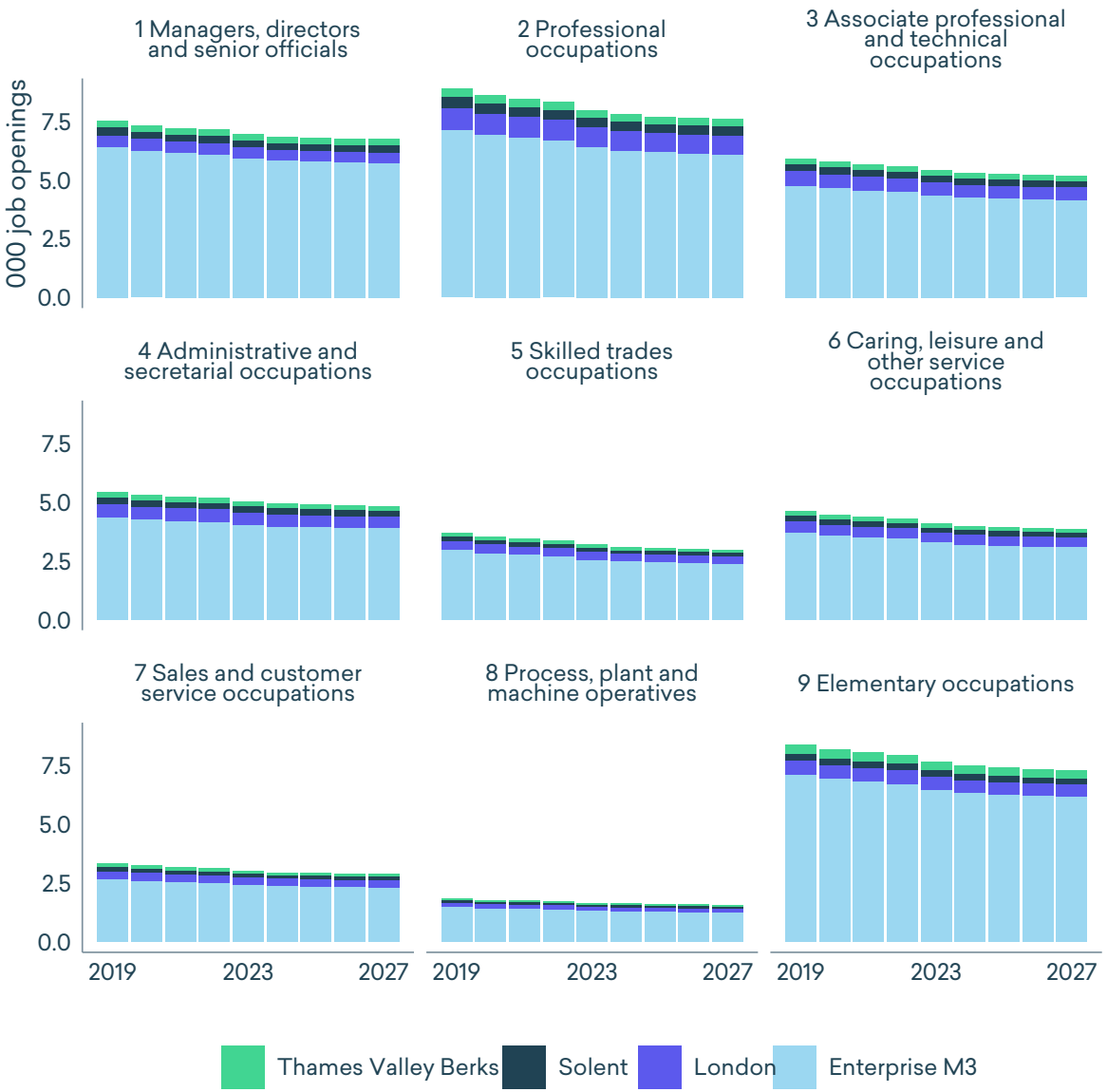
Those changes result in significant differences, and so does a third factor of population growth, which we focus on among the younger cohorts as they key variable in analysing education supply. Once these steps are complete, we use Emsi's gap analysis methodology across FE, apprenticeship and HE supply to understand how the supply of skills — both 'job-ready' with the right subject and qualification level, and 'pipeline' whe the qualification level isn't there — meets demand in different occupations and subjects. We set out the headline result at SOC major group level, and then the detailed unit group results.

Overall, the substantial FE and HE sector in the Enterprise M3 region provide a good volume of supply, but there are significant gaps which emerge at the occupational level. Among managerial and professional roles, sales and marketing leads, with a significant presence in marketing, but also important gaps for highly analytical roles: production managers, consultants and accountants. At middle-skill levels, clerical and financial roles dominate, with chefs and building trades featuring. At low-skill level, retail and food service roles lead because of their sheer volume — we conclude with a commentary on potential next steps.

LABOUR DEMAND FOR THE EM3 COMMUTER REGION

As we have already seen, Enterprise M3 is a high-churn labour market, with substantial commuter flows to London, the Thames Valley and the coastal cities of Southampton and Portsmouth. In LEP region terms, in 2011 these accounted for 12.9, 4.9 and 6.4 per cent of Enterprise M3 workforce destinations, with 70.8 per cent remaining within the region and the remainder commuting elsewhere. Given that the jobs decline within the region seems tied to this intense competition for talent, a supply and demand analysis needs to account for the demand from these sources.

To do so, we use these percentages for 2011 and project out the *job openings* for a total 'Enterprise M3 commuter region', including a share of these three LEP regions on the basis that same relationship continues into the future — this accounts for the likely loss that the region feels for any increase it makes in its future workforce. The chart (right) shows the effect this has on the total demand for each SOC major group in the years of the projection, 2019 to 2027.



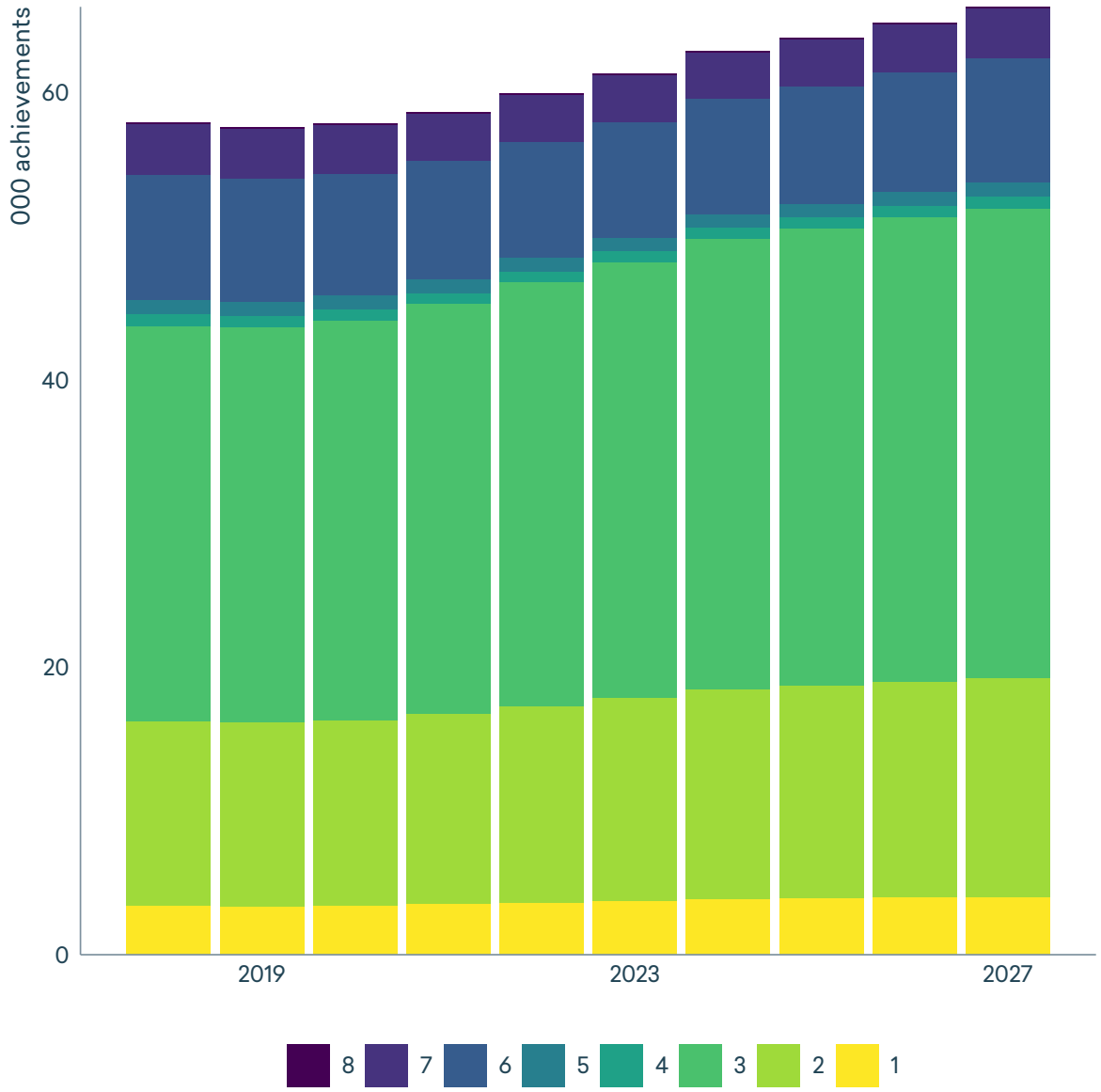
Data: Emsi 2019.1 with additional analysis

ADJUSTING SUPPLY TO MATCH DEMOGRAPHIC CHANGE

On the education supply side there are two main factors to take account of:

1. Changing cohort size over time, such that the cohort of 2017/18 will retain the same composition in terms of levels and subject, but be adjusted to match the larger number of young people passing through the system — we assume that other age groups will move in similar fashion, as young people are the largest group and the overall path of the population is to grow more rapidly than the younger cohorts.
2. The net loss of university-aged young people, averaging 2,200 in the three years to 2018. Although the net loss masks a substantial degree of churn, as many young people leave for university and others arrive; and although in turn some will then move on after graduation, we model the net loss *pro rata* to the HE cohort domiciled in Enterprise M3, as this will be the largest block within the resultant population.

The results of these changes, applied to all provision from Level 0 to Level 8 are an increase in total achievements (in learner equivalent numbers) from 107,000 in 2018 to 124,000 in 2027, a 16 per cent increase over that period.



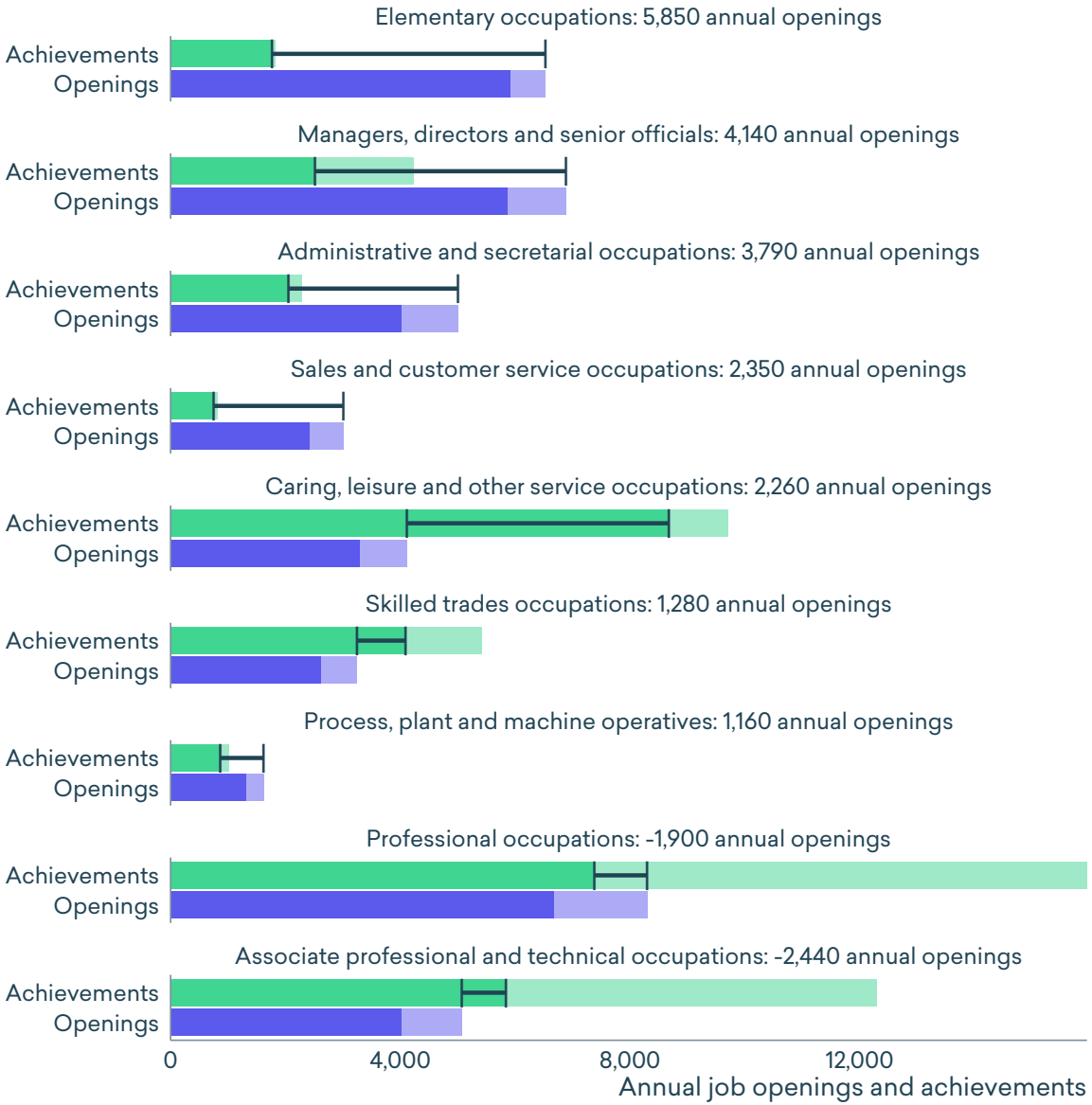
Data: Emsi 2019.1 with additional analysis

UNDERSTANDING GAP ANALYSIS

From these basic volumes, we can build the analysis of the talent pipeline, identifying gaps and oversupplies at different levels. As the chart (right) shows, reflecting the number of colleges and universities involved, there is a generally healthy supply: at the SOC major group level, a surplus of achievements over openings in each case.

The gap analysis for an occupation group is defined in terms of four volumes. Achievements are broken down into a strict 'job-ready' category (the solid green bar), which is subject-relevant and at or above the typical qualification level; there is then a 'pipeline' category (the light green bar), which is subject relevant but at a lower qualification level. Openings are broken down into the Enterprise M3 relevant and then the wider commuting element (the solid and light purple bars respectively). The gap is defined as between the full set of openings and the 'job-ready' achievements, measured on the chart by the 'dumb-bell' bar.

The generally healthy supply picture reflects a the volume of learning taking place, but the critical question is alignment; as we shall see over the following pages, in each of high- (managerial, professional and technical), middle- (clerical and skilled trades) and low-skilled (care, service, process) occupations, there are roles facing significant gaps when comparing projected demand with supply.

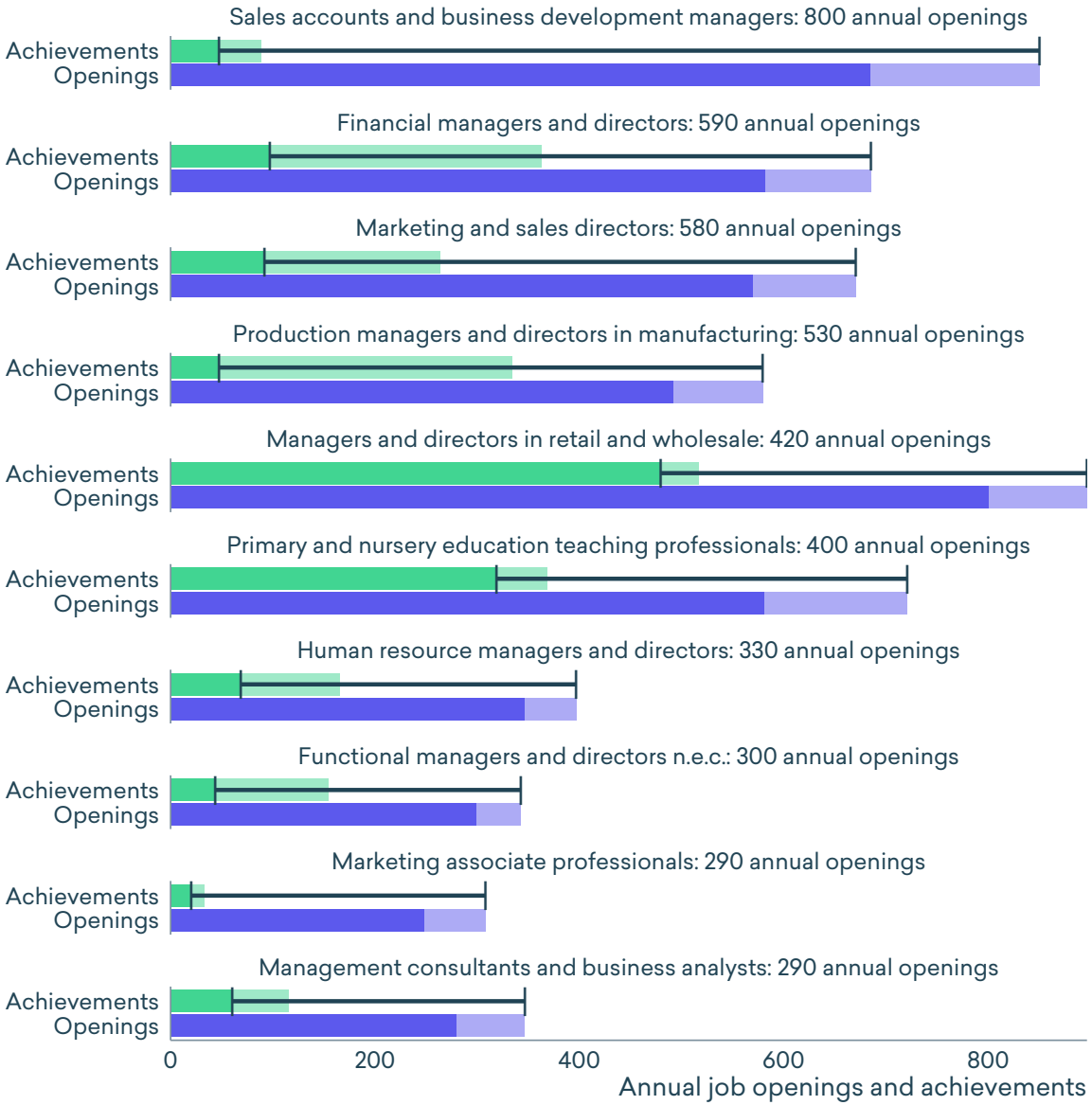


Data: Emsi gap analysis

HIGH-SKILLED ROLES: SALES, EDUCATION AND ANALYTICAL SKILLS

Analysis of high-skilled role highlights an interesting mix of skills:

- In common with all regions, but especially one like Enterprise M3 with a large knowledge-intensive business services sector, the economy creates jobs related to sales and marketing faster than current educational practices produce the relevant skills — taken together, sales accounts and business development managers; marketing and sales directors; marketing associate professionals and business sales executives generate 1,900 annual openings but fewer than 200 relevant job-ready achievements.
- Teachers are under-served — primary and secondary, with 1,300 openings against 585 achievements — but this will in part be remedied by switching across of degree graduates from other subjects.
- Analytical roles are important, reflecting the industry mix: production managers, management consultants, business analysts, and financial managers and directors all figure, including two of the largest four gaps.

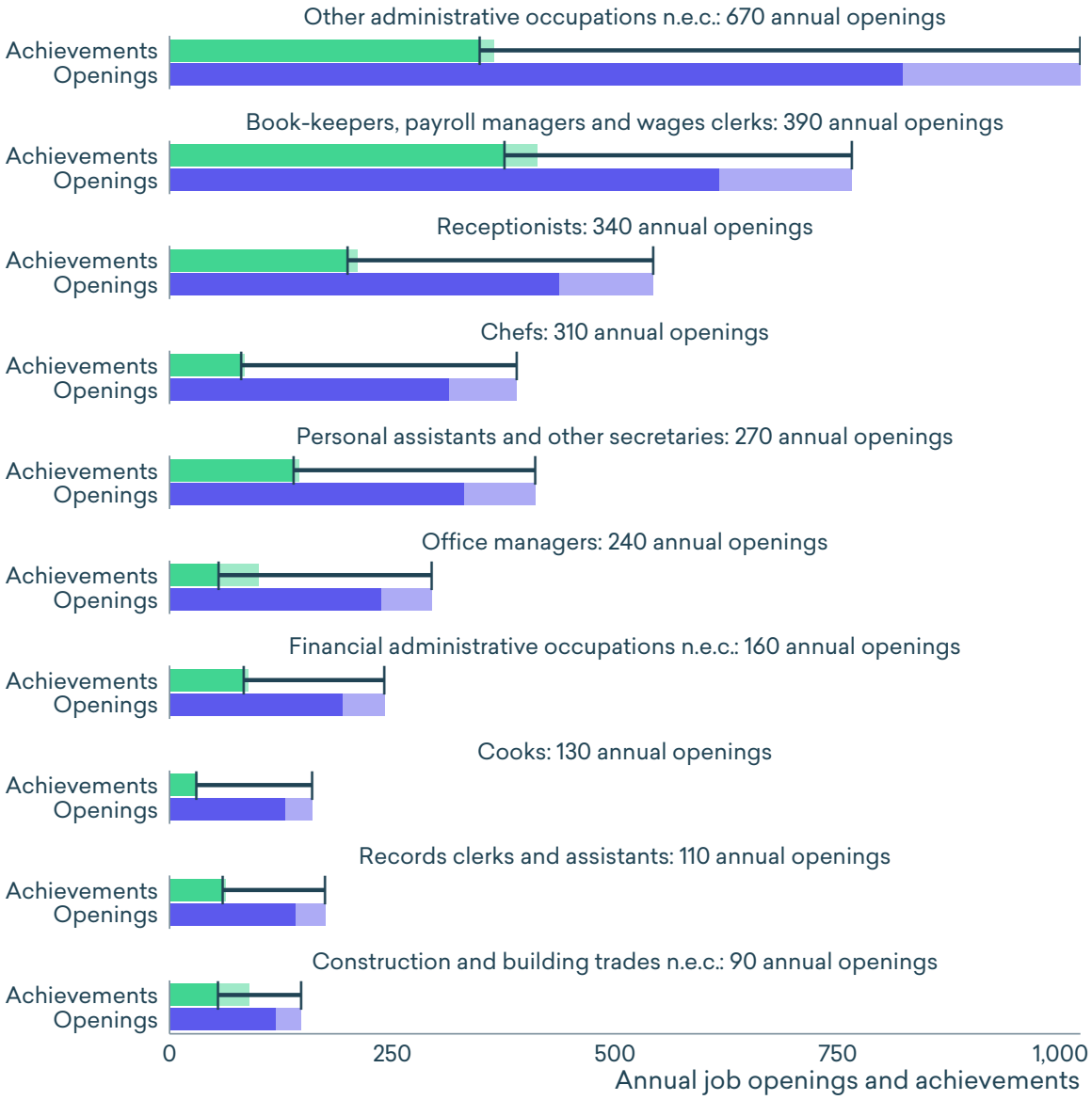


Data: Emsi gap analysis

MIDDLE-SKILL ROLES: CLERICAL, CHEFS AND TRADES

In the middle-skill occupations — including administrative and clerical, but also skilled trades — the following key factors emerge:

- Regardless of commentary over falling demand for administrative roles, there are significant gaps across the board, from office managers and receptionists, through to PAs.
- Financial roles and information roles are also continuing to be important, regardless of the progress of automation technology: financial administrative roles, book-keepers and record clerks all feature.
- Outside of administrative roles, critical cases are chefs — a key entry point for migrant workers, but future migration trends may enhance demand compared to previously — and miscellaneous construction and building trades.

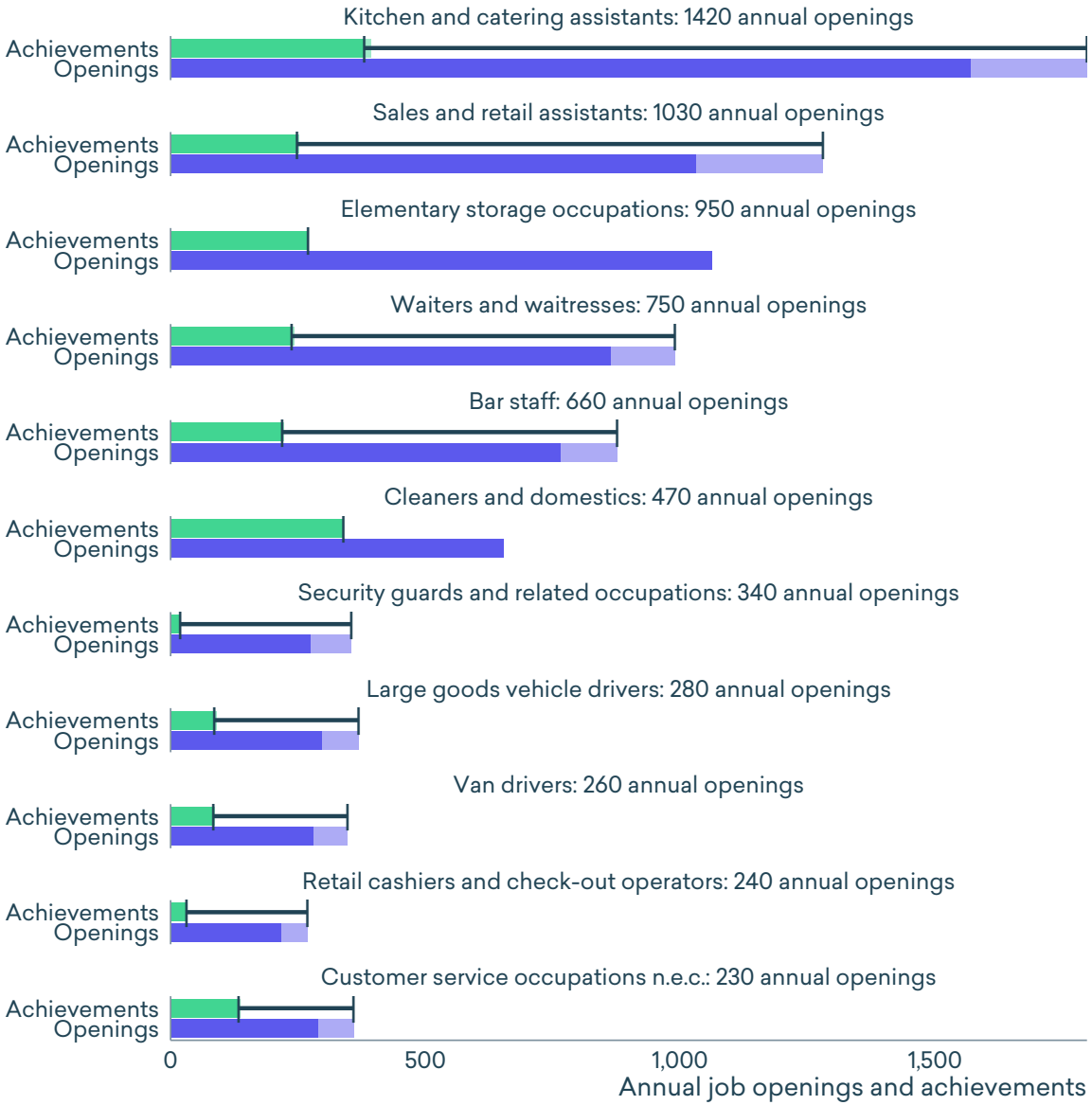


Data: Emsi gap analysis

LOW-SKILLED ROLES: HIGH VOLUME IN RETAIL

Retail generally is in decline, but the sheer size of the workforce continues to create labour market opportunity as workers turn over, and therefore it is no surprise to see it leading the analysis here:

- Sales and retail assistants, and retail cashiers and check-out operators together generate 1,600 annual job openings, but current provision provides only around 130 directly relevant, job-ready achievements each year over the projection period.
- Food service roles feature for similar reasons, although better growth prospects also help: kitchen and catering staff have 1,000 unmet annual openings; waiters and waitresses, 550 openings; but there are 350 and 150 annual job-ready achievements in each case.
- Other roles represent a mix, including security guards (340 opening annual gap).

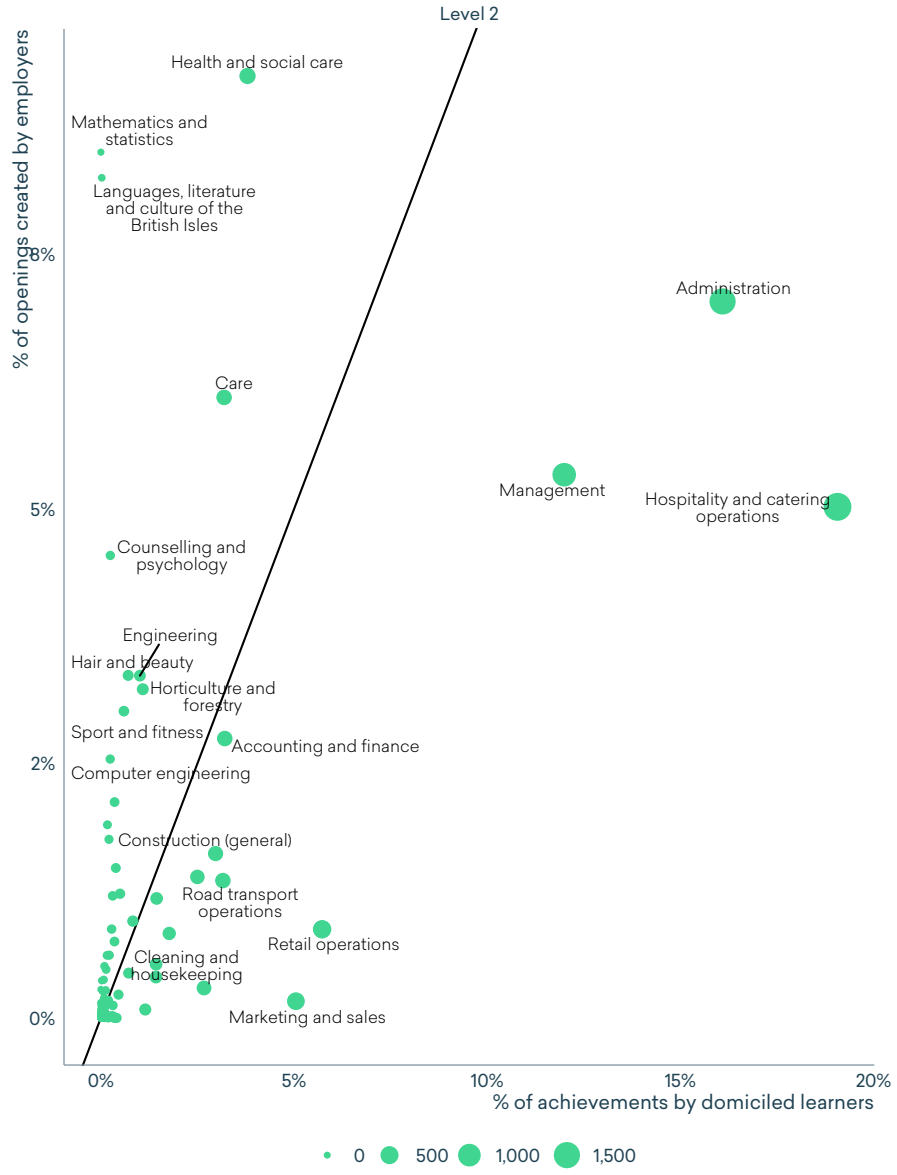


Data: Emsi gap analysis

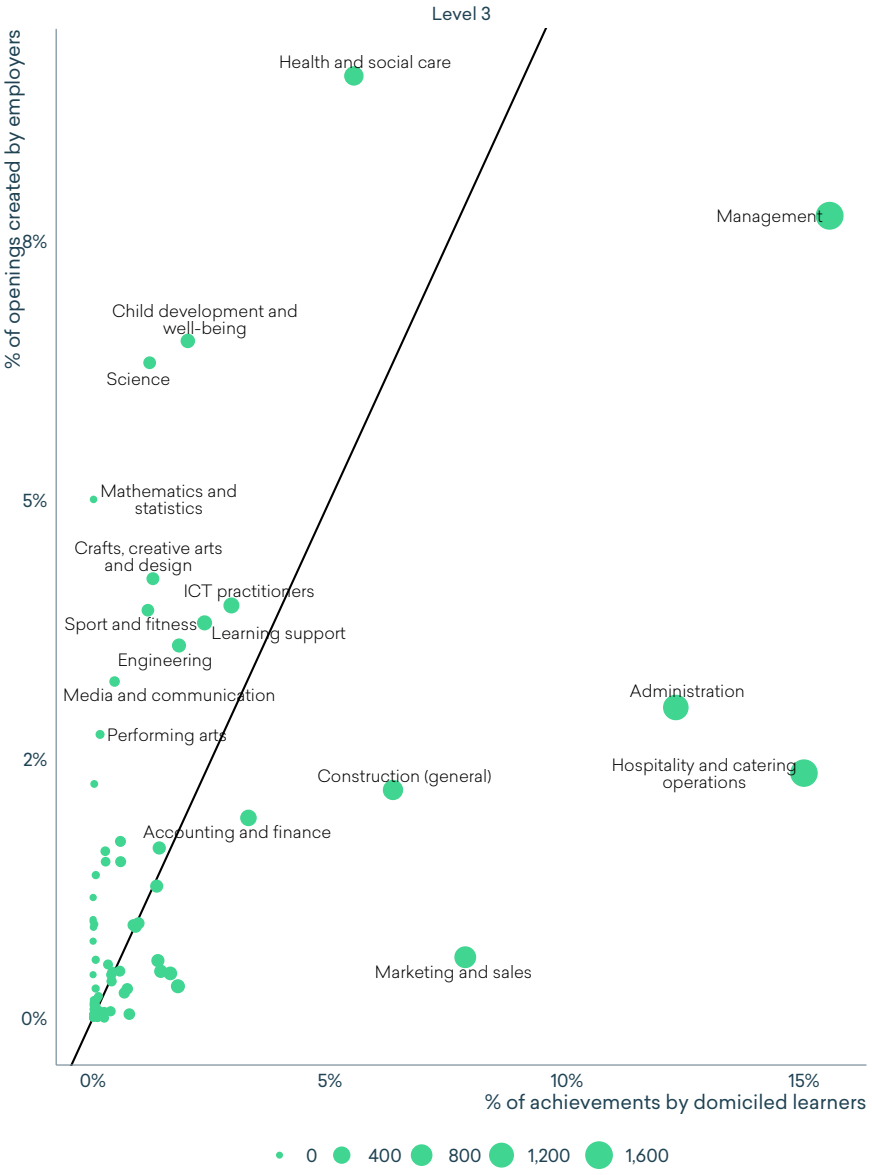
SUBJECT LEVEL ANALYSIS: PROVIDER OPPORTUNITIES

To conclude the analysis, we can look from the provider side, to see which market areas those gaps represent in terms of delivery; on the x-axis are learners' achievements and on the y-axis are employer demands; points above the diagonal line offer opportunities to expand to meet employer demand; points below the line are creating oversupply. Reaggregating around subject areas can point up the shared possibilities across occupations, as an oversupply in some relevant occupations may be balanced by gaps elsewhere.

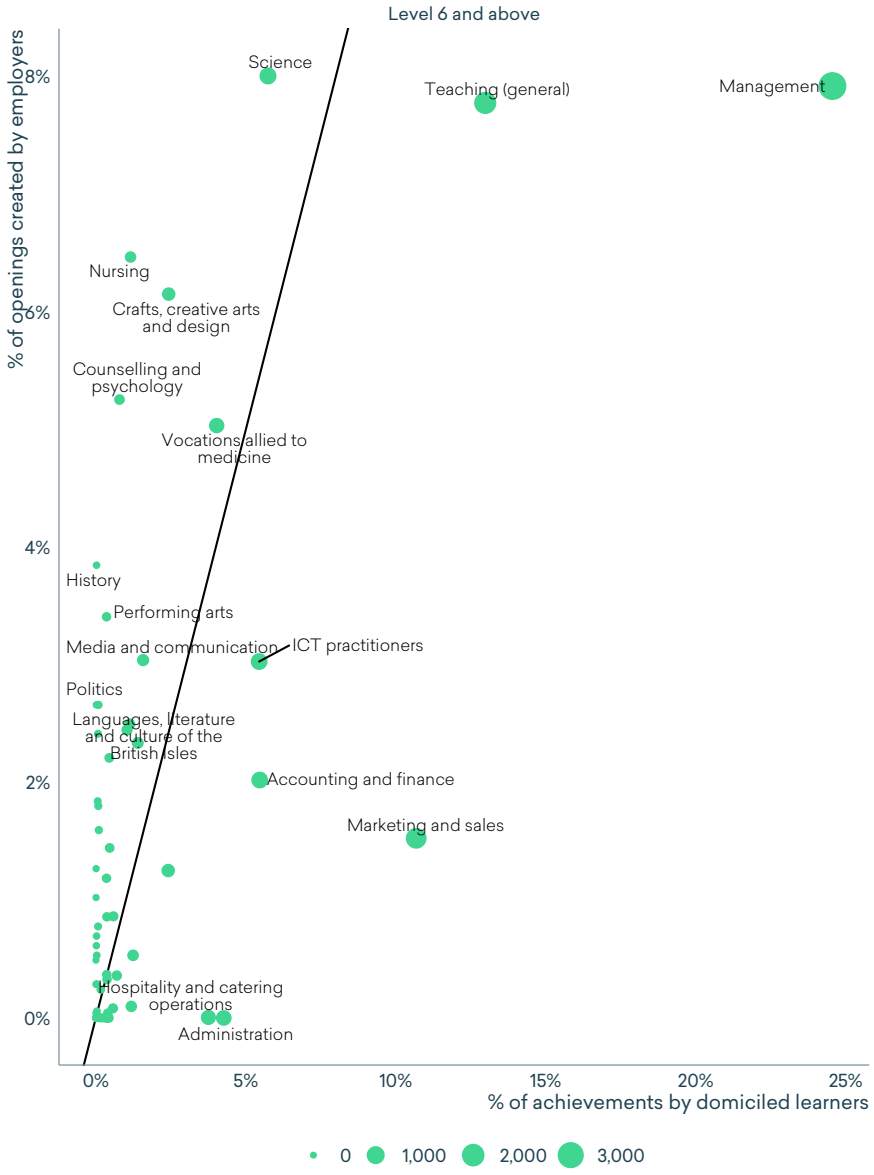
- At level 2, health and social care represents a substantial opportunity to expand in level 2, given very high job creation.
- At level 3, there continue to be opportunities in the engineering sector and for ICT practitioners, but also lifestyle services such as sports and fitness and performing arts.
- At level 6 and above, nursing, science, medicine and dentistry, mathematics and statistics, law and legal studies, and crafts, creative arts and design are all important.



Data: Emsi gap analysis



Data: Emsi gap analysis



Data: Emsi gap analysis

IMPLICATIONS FOR ENTERPRISE M3

Quantitative data provides a powerful evidence base with which to identify and prioritise economic phenomena. In this report we have reviewed a wealth of intelligence across the Enterprise M3 LEP region's economic structure; its job creation; its workforce's evolution; its education level; and its skills demand, before exploring, in this concluding chapter, the interaction of supply and demand in a talent pipeline. That analysis highlights that while the volume of learning provision is in line with demand, there are significant gaps which emerge when compared to occupational demand e.g.

- Sales and marketing skills
- Teaching skills
- Analytical skills
- Administrative skills
- Customer service skills

These represent substantial challenges, cutting across education levels and requiring solutions from a range of different stakeholders to make progress. In this section we review some of these implications, as well as considering some caveats over the analysis.

The need to validate

Quantitative data is powerful, but it can also overlook local subtleties. A headline indicator can miss a particular story, and so quantitative insights need to be matched with qualitative feedback — findings need to be socialised with stakeholders, and investigated further in discussions with colleges, providers, and especially employers. Understanding whether the data is an accurate reflection is one part of that task, but another is to challenge the meaning of the data — while interpretation can seem obvious, discussions with employers can cast light on much more nuanced skills needs than surveys or online data can capture.

The big picture challenge

Enterprise M3's labour market appears at something of a crossroads. Currently supporting a highly productive economy, the total obscures a division between a highly dynamic set of frontier industries — digital, professional services, creative, precision engineering technology — and a thriving set of lifestyle service industries. Its geography creates another divide, between in-region demand and the vigorous demand for the workforce to commute to London or the Thames Valley, with more than a third of employees doing so, including many of the most-skilled.

The recent decline in jobs, amidst growth nationally, suggests these divides are providing resistance to continuing the region's previous growth path: shift-share analysis shows that job numbers have been well below trend in the most critical, value-adding sectors: digital, professional services, civil engineering, appliances and personal goods: all have seen declines relative to the national trends. It may well be that there is a squeeze between, on the one hand, commuter demand for these kinds of workers, and local demands to expand lifestyle service industries, because of the region's high level of prosperity — which is even higher than that indicated by its productivity level.

If so, then it represents something of a resource trap for the Enterprise M3 region, where on the one hand, by being an attractive and prosperous region it attracts the best quality workforce, but on the other hand, the economy is focused on serving that workforce rather than applying its skills locally. There are other dimensions to this problem; for example, the growth of these services puts pressure on infrastructure and costs. Unaddressed, such a trap may in the long run limit the further growth prospects of the Enterprise M3 region.

To sum up, we can characterise the region as facing three linked challenges to its labour market future:

First, **jobs, especially frontier industry jobs e.g. in digital and professional services, have declined in the region.** As the wider region's labour market has tightened, with demand accelerating ahead of supply, the constraint on skilled workforce availability seems to have bound particularly tightly on Enterprise M3, with similar effects in Thames Valley Berkshire and the Solent.

Beyond the statistics, there have been notable large-company moves away from the region, which may carry substantial downstream consequences given their role in the supply chain and in raising standards of best practice. While there is no panic here — Enterprise M3 continues to be competitive in frontier industries — should the trend develop

further, it suggests a challenge to the region's economic future.

The solution here will be in tackling obstacles to competitiveness for the region as a business location, going far beyond questions of skills, to cover a range of 'horizontal' interventions. Targeted investments in infrastructure — e.g. to anticipate transport and employment site scarcities and also to ensure digital connectivity, especially given the region's geography.

Second, **the region has not been able to fully capitalise on its sustained growth in the high-skilled workforce**. The continued growth of the workforce, and it's highly qualified nature, goes side-by-side with declining jobs *and* high employment performance. The reason is the high level of commuting to London and other regions. The migration data suggests a sustained inflow of 30-45 year olds, and anecdotally it seems likely that many of these are highly-skilled professional workers — but it also seems likely that they move residence while retaining jobs outside the region.

This second challenge, complementing resolution to the first challenge on ensuring competitiveness for jobs growth, is to improve connection between the region's highly-skilled labour supply and its labour demand, by engaging with more of those high-skilled workers and attracting them to seek a career path within the region.

Third, **ensuring that skills supply is responsive to skills demand**, which has several aspects. Overall, the region has a strong education supply, which as is the case in every region, could improve its alignment with labour market demand. The challenge in part here is in balancing improved employer responsiveness with student responsiveness: education choices from domiciled students are often further away from employer demands than providers are.

There is always an interaction between these different push and pull factors, and there is not always a clear 'right' answer. The region's high level of Higher Education participation and its relatively low levels of deprivation go some distance in explaining its high number of undergraduates pursuing less vocational subjects e.g. in the humanities. Many will go on to achieve successful careers, and many will also be pursuing their own academic aspirations. The important point in all cases is to ensure choices are informed: and so careers intelligence becomes particularly important across Further and Higher Education choices.

A look at the skills gaps among the region's leading occupations hints at a larger point: the region's place in the frontier industries means that many of its most pressing skill needs are not ones which are amenable to solution by education providers alone. Advanced programming skills, or the skills to manage business development, for example, are often learned more on the job than in the classroom — and so employers will have a critical role to play in tackling them, and education providers' role will be in collaboration with them. The same point suggests that development of careers intelligence should not be confined to young people making their way through education, but needs to engage and be accessible to the installed talent base within the region.

Tackling these challenges will only require creativity and collboration between the LEP, its employers and education providers. The challenge is to develop the local workforce, but also to apply and develop it locally. The signs of misalignment between domiciled student demand and local job creation may be another indicator of the same problems: the drifting apart between the Enterprise M3 region's economic life — increasingly earned elsewhere — and its social life, and so only shared action can tackle it.

Solution spaces

There are many potential avenues to explore in considering how to address this collection of problems, but for now we will draw this report to a close by touching on a few which are most obvious:

Enterprise M3 will need to consider the questions raised here about the positioning of the region in a wider context, as it develops its local industrial strategy. The LEP can only achieve its ambitions to sustain growth in high value added sectors if its labour market continues to provide an attractive business location. The paradox is that while the labour market has many of the features other LEPs would envy, recent trends suggest that these may not persist in the long run without interventions along the lines suggested above: the challenge is to break out of the cycle and reconnect the growing high qualified workforce to local businesses seeking to grow. As noted above,

targeted interventions on infrastructure and improvements to digital connectivity will be important, and so too will efforts to ensure retention of major companies within the region given their 'halo' effect on business competitiveness.

Employers need to consider how they develop their business models to make attractive employment propositions to the local workforce; only they can make the offers that will attract and engage the high-skilled workforce currently outside the region. This may start with strategy and innovation, but if the region is struggling to compete with job opportunities in adjacent geographies, there will be underlying regions. Beyond the business model will be the employment model: many of those commuting choose to do so because at the margin, they gain pay or benefits from jobs in London and the Thames Valley that more than compensate them for the additional travel time — employers within the Enterprise M3 region need to consider how they can rethink their approach to compete better. That process may involve reflecting on job design as well as on workforce development strategies to engage long-term career interest.

Education providers should think about whether they have the right mix of course provision, and also the right content within that provision. This report provides a start point for rethinking these problems in a region-wide setting, but education providers are independent organisations and must make their own choices about what courses to provide, and how to design them. There is extensive intelligence available now — some of it highlighted for priority roles in this report — on what skills it takes to succeed in different careers, what skills employers look for, and what skills are scarce in supply comapred to demand, but as Ofsted have recognised in the new Education Inspection Framework, the further education sector is some way from making full use of that intelligence.

Careers intelligence is another part of this puzzle, and not only for young people — part of the second challenge outlined above is in engaging local professionals, often working outside of Enterprise M3, to consider other options for their career. The areas of misalignment are not only for providers, but also for students: in fact, Enterprise M3's colleges are somewhat closer to labour market demand than the courses selected by local students. Ultimately students make their own choices, but it is important that these are informed and advised choices. In terms of mid-career workers, the net influx of 30-45 year olds and the potential for technology to disrupt labour markets, not to mention the high level of commuting workers, all suggest a role for careers intelligence to reach mid-career and help those looking to rethink.

Future investigation

This study has looked across different dimensions of the Enterprise M3 labour market to gain an overview on how it is developing, and the risks and opportunities it presents to the developing local industrial strategy. In some areas, it raises questions worthy of further exploration:

- The town dimension is critical for the region, and understanding in more depth how the town economy is changing over time in terms of industries, occupations and skills seems particular important — we give a snapshot here, and the recent Hardisty Jones Associates report cuts across general questions of population, housing and workspace. Data does exist which would permit a look at the evolution of towns since the end of the last recession, and potentially also to explore the recruitment environment.
- Given the nature of the workforce with mid-career migration, exploring whether career pathways differ for Enterprise M3's professional workforce compared to elsewhere, and what stock of skills it has, offers the potential to better understand what skills they might bring to local employers.
- Looking at the mix between commuting workers' skills and in-region workers' skills in more depth offers another dimension to explore, to identify just what is missing about local jobs demand, and to explore also how this tallies with offered pay rates in key commuting markets.
- Exploring the role of careers intelligence in closing the gap between aspiration — be that for students or installed talent — and opportunity may also be an important avenue of research, particularly in such a high employment labour market.

Glossary

Cluster: a group of industries defined by their shared economic linkages, in terms of place, people and purchasing through the supply chain. Emsi has developed a set of Benchmark Cluster Definitions following the methodology of Michael Porter and co-authors.

Employees: the number of people with at least one job, typically measured on a residential basis, as distinct from the number of jobs — an employee can hold one or more jobs, while a job only has one employee.

Gross Value Added: a measure of the value of goods and services produced in an area or sector of the economy, defined as the value of output minus the value of intermediate inputs consumed in production.

Input-Output Economic Model: an economic model which estimates the effects of an initial change in economic activity within a regional economy by understanding the links between different industries and final demand through their sales to and purchases from each other and other areas.

Jobs: the number of roles employed by workplaces, as distinct from the number of employees or the number of jobs held by employees.

Job openings: a measure of the number of job opportunities in an occupation, resulting from expansion in the number of jobs and replacement of jobs necessary because of workers exiting from the occupation workforce.

Job postings: the posting of an advertisement online for a job, typically by the hiring organisation or a staffing company on their behalf, and used as the basis for labour market analysis by Emsi.

Joint Academic Coding System (JACS): the subject area classification used for higher education provision by the Higher Education Statistics Agency, currently in version 3.0, and in the process of replacement by the Higher Education Classification of Subjects (HECoS).

LAU1: the administrative classification, maintained by the Office for National Statistics, and including all unitary, borough and district councils across the United Kingdom, the lowest level of available data for many official statistics.

Location Quotient: a measure of local specialisation, taking the ratio of the local share of an industry or occupation in an economic statistic and its national share; where that ratio is over 1, that industry or occupation is concentrated locally.

Lower Layer Super Output Area (LSOA): a Office for National Statistics' geographical classification, derived from the Census 2011, which classifies all parts of England and Wales into areas with residential populations averaging 1,500 in 2011.

Median earnings: a measure of typical earnings – specifically, the earnings of a worker in the middle of the range within an occupation.

ONET: the US Government's database of occupational information, measuring each occupation in terms of generic knowledge, skills and abilities indicators as set out in the O*NET Content Model.

Regulated Qualification Framework (RQF): the qualification level classification regulated by Ofqual, which classifies qualifications on Levels from 1 to 8, where 6 is a Bachelors degree and 8 is a Doctoral degree.

Shift-share: a regional analysis method which decomposes a change into the component which can be accounted for by national trends; a component which can be accounted for by local composition; and a residual 'competitive effect' which reflects unique local factors.

Staffing pattern: a cross-tabulation of industry and occupation jobs, to identify how occupations are distributed between detailed industries.

Standard Industry Classification (SIC): the hierarchical classification scheme produced and published by the Office of National Statistics to categorise establishments by their primary activity. Currently in its 2007 edition.

Standard Occupational Classification (SOC): the hierarchical classification scheme produced and published by the Office of National Statistics to categorise job roles by their primary activity. Currently in its 2010 edition.

Sector Subject Area (SSA): a classification of aims codes over two hierarchical tiers issued by the Skills Funding Agency for further education provision. Further developed by Emsi to a third tier consisting of 109 categories to allow for more granular analysis.

Workforce: the number of employees within a grouping, in this case typically geographical, but may also be divided demographically.

Data and methods

EMSI DATA

Emsi provides the most detailed and localised labour market intelligence available in the UK, which in turn creates a robust base upon which to create uniquely localised and detailed employment projections. Emsi brings together different data sources to create a robust composite dataset that provides detailed labour market intelligence on hundreds of industries and occupations at the lowest geographic levels; millions of job postings detailing employer requirements; and millions of professional profiles setting out individual workers' skills. By joining together these datasets, Emsi can provide unique insights into the relationship between industry trends and associated occupational requirements.

Labour market intelligence

Emsi builds its labour market intelligence from 9 different government data sources, each describing different aspects of the labour market that in isolation only tell part of the story or contain inherent weaknesses, but when modelled together provide a more holistic and robust view of the labour market. This combination – some 20 million data points added each year – provides the platform for employment forecasts to be created that describe locally-specific employment trends, and which are updated annually as more up-to-date data is made available through the government sources.

Combining data from these sources creates something entirely unique, allowing gaps in individual sources to be filled in, providing employment forecasts at a level of detail that makes labour market data useful to a broad range of local, regional, and national organisations. Linking this with skills and competency intelligence helps to understand shifts in training priorities associated with a changing labour force.

Emsi data together delivers not only depth in terms of local detail, industry detail, and occupational detail, but applications in a range of different directions, with data on demographics, educational attainment, competency, earnings and staffing patterns. All data are reported in current (SIC 2007 / SOC 2010) classifications. Our data includes consistent series back to 2003 and projected forward to 2027 and are updated annually.

Job postings

Since January 2016, Emsi have been harvesting, deduplicating and parsing all available job postings from across the UK. As of writing, this set — updated daily — includes around 40 million unique job posting documents, deduplicated from around 150 million postings we have collected from tens of thousands of job boards and other sites. Each posting is classified using machine learning algorithms to identify its job title and role within the SOC taxonomy; the company seeking the role; and its location. Every job posting is also classified against Emsi's skills library (see below) to account for the skills cited by employers in describing the role they are hiring for. Postings are measured in terms of the date observed online, and their

posting duration i.e. the number of days the posting was online for.

Professional profiles

From 2019, Emsi has gathered together a unique resoure of over 11 million individual worker profiles. Each profile has been sourced using opt-in data from a range of different channels and is kept anonymously by Emsi without demographic characteristics, strictly for data analysis around labour market questions. Each profile is classified using machine learning algorithms in much the same way as job postings — to identify its job title and role within the SOC taxonomy; the company seeking the role; and its locations. Just as with postings, we classify against Emsi's skills library, thereby providing a supply-side complement to the demand-side data provided by job postings.

Emsi Skills

During the past decade, Emsi has processed hundreds of millions of documents — job postings, CVs and profiles, education course outlines — and amassed a library of nearly 30,000 skills which are cited in them. That library is made operational through tools to parse new documents for mentioned skills, and we continuously survey new documents for new skills, to add them on a fortnightly cycle to our library.

ADDITIONAL DATA

Given the scope of Enterprise M3's requirements, this report draws upon a number of other sources, which we set out here; where not stated, data is from Emsi's major sources as outlined above:

- **LEP productivity** (p.8) is taken from the ONS *Subregional productivity: labour productivity indices by local enterprise partnership*, released February 2019, with calculations to compare GVA per filled job (smoothed) between LEPs and the UK, and to use the real terms GVA per filled job data to caculated growth from 2012 to 2017.
- **LEP disposable income** (p.9) is combined with the ONS productivity data to compare workplace value added with residential value received; the income on gross disposable income per head was obtained from Nomis for 2017, to match the latest available productivity data.
- **Enterprise M3 productivity analysis** (p.10) uses Emsi's own estimates of detailed local industry gross value added, which are a part of our Input-Output Economic Model, estimated to 2016; this was necessary because the industry cluster definitions require the 4-digit SIC industry scale Emsi's estimates allow and ONS data does not.
- **LSOA-level analysis of productivity and jobs** (pp.19-21) uses Emsi's jobs and gross value added estimates for local authority (LAU1) level data, with Business Register and Employment Survey (BRES) estimates for jobs in each Lower Layer Super Output Area (LSOA), multiplying detailed industry job estimates for each LSOA against gross value added per job estimates for 4-digit SIC industries at LAU1 level.
- **Automation** (p.22) uses Emsi's Automation Index, which estimates the time spent performing a range of task categories for almost all occupations, and then estimates their relationship with automation risk given the direction and significance of their correlation with that risk at occupation level; these data are then used to estimate impacts by region and industry.
- **Job density and employment and inactivity rates** (pp.27-29) combine different sources of Emsi data — jobs and demographics — to estimate changing job density (jobs as percentage of working age resident population), with employment and inactivity rates taken directly from Nomis Annual Population Survey analysis.
- **Commuter inflows and outflows** (p.30) are taken from the ONS Census of England and Wales 2011, accessible as the Origin-Destination file.
- **Workforce size** (p.32) is drawn from ONS Annual Population Survey estimates of employment in each constituent local authority, added together over all available years, accessed via Nomis.
- **Qualified workforce** (p.34) data is estimated on the basis of ONS Annual Population Survey data accessed via Nomis, but with substantial fitting and modelling work to obtain a consistent set for this study.
- **Domestic migration** (p.35) data come from

the ONS *Internal migration: detailed estimates by origin and destination local authorities, age and sex* dataset, with analysis across the three most recent years' data so as to smooth volatility.

- **International migration** (p.36) is measured using ONS Annual Population Survey estimates of employment by ethnicity and nationality, with 'non-UK nationals' counted as a simple measure of the migrant employed workforce.
- **Education attainment analysis** (pp.39-40) draws on measures from Department for Education-published Secondary Attainment Data and 16-19 Attainment Data, from the most recent date published with measures for local authority (LAU1) level, from 2016.
- **Education supply data** (pp.41-49) is taken from two main sources: (a) data on participation and qualifications by domicile, subject and qualification sourced by Emsi from the Higher Education Statistics Agency (HESA); (b) data analysed from the ESFA Localities Data Cube sourced with necessary permissions via Enterprise M3 LEP.
- **Analytical skills demand** (p.48) data is measured through using a set of skills in the ONET database, mapped over to UK SOC unit groups and then summarised and rescaled; the accompanying skills demand diversity measure reflects a Herfindahl index taken on SOC unit group job numbers in each LEP and Combined Authority region.
- **Skills shortage reports** (p.50) from workplaces by region and then by industry within the Enterprise M3 region are taken from the Department for Education Employer Skills Survey 2017 England and local toolkit.

EMSI'S GAP ANALYSIS METHODOLOGY

Working with further and higher education institutions across the US, Canada and the UK over hundreds of gap analyses, Emsi has developed a proprietary methodology to bring demand and supply data to offer colleges and universities actionable curriculum intelligence. The methodology uses Emsi's intelligence on occupation demand — i.e. openings for each job role — and education supply in the form of qualification achievements. Using granular mappings, Emsi can translate demand and supply into a common language, and identify where the gaps and overlaps exist in current provision.

Supply and demand model

Emsi builds a model using demand-side data (average annual job openings) and supply-side data (postsecondary education output) to compare workforce demand with education supply. The purpose of this analysis is to find the difference or 'gap' between the openings for an occupation and the number of people completing a relevant qualification for that occupation.

While the concept is simple, implementation takes some work. Job openings projections are categorised around the 369 SOC unit groups. Achievements data are available in the form of primary learning aims, categorised to Sector Subject Areas (with 14 categories).

The challenge is then to bring occupation and course categorisations into a common language, to allow for translation from demand to supply. To do that, Emsi has invested in extensive mapping between the two categorisations, reflecting available knowledge on potential career destinations at different levels. While sometimes links are straightforward because of clear vocational links, others reflect intelligence on future career paths; the result is a cluster of relevant occupations mapped to a cluster of similar qualifications.

Understanding demand by qualification level

Emsi captures occupational demand with a proprietary employment dataset. Emsi primarily uses the BRES data source, which measures business establishments' employment down to local areas and specific industries, and uses its own algorithms to remove the suppressions in the published data to yield the most precise possible picture of local employment levels. Emsi then uses a range of other data to understand the staffing pattern which distributes industry workforces across different occupations, defined as SOC unit groups.

Projections are developed to 2022, using Emsi's own projection methodology, identifying both the

level of 'replacement' demand as workers leave occupations, but also the 'expansion' demand created by growth and contraction. Together, over the projection period, these two forms of demand create job openings, which are then averaged across the years to provide the annual openings figure as the key currency for the gap analysis.

Emsi have also used micro data from the Labour Force Survey to develop a profile of the qualification attainment of current workers in each occupation. That data describes the percentage of workers within the SOC unit group with qualifications below Level 2 on the RQF, at Level 2 or 3, at Level 4 or 5, or at Level 6 and above. Emsi adjust these profiles to focus on the currently expected qualification level, so that for example, jobs with high levels of graduate underemployment are shifted somewhat downward.

Adjusting for occupation overlaps

Most courses and qualifications are designed to give learners a broad base of skills which will equip them for a range of career pathways. The upshot is that many occupations are linked with more than one course subject area. This presents a complexity when comparing supply and demand, with a potential for double or multiple counting of job openings. For instance, Retail Management maps to the Managers and directors in retail and wholesale occupation. But that occupation is mapped to another four different subject areas: Retail Operations, Wholesale Operations, Management, and Marketing and Sales.

If we mapped the openings for retail managers to all five relevant subject areas, we'd be counting those job openings five times. To avoid that, it is necessary to either align mappings to avoid any such duplications – which doesn't reflect the reality that course areas do result in overlapping career pathways – or identify the proportion of demand relevant to each course area.

Emsi takes this second approach, which better reflects the messy reality of the labour market but also allows for a traceable flow from course to occupation, to allow for the gap analysis to be interpreted in terms of completion data. Emsi's formula weights job openings by distributing them according to the share of completers across the relevant subject areas. This method works on the assumption that higher output course areas are likely feeding a higher degree of demand within the region.

Industry cluster data

Industry cluster	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Utility	4,010	9,630	5,610	139.9	15.1	1.99
Digital	45,020	50,230	5,210	11.6	0.9	1.86
Precision technology	11,550	11,520	-30	-0.2	0.0	1.84
Appliances and personal goods	9,840	8,540	-1,300	-13.2	-11.4	1.64
Forestry	470	850	380	80.4	9.5	1.59
Downstream chemical	8,310	6,890	-1,430	-17.1	-5.3	1.39
Local environmental services	3,130	4,630	1,510	48.1	15.4	1.33
Professional services	28,210	31,040	2,830	10.0	-4.8	1.30
Production technology	20,250	14,140	-6,110	-30.2	-5.0	1.25
Sports and leisure	15,940	18,500	2,570	16.1	3.0	1.24
Building services	25,770	32,190	6,420	24.9	6.5	1.22
Property development	25,650	30,190	4,540	17.7	0.7	1.16
Creative	9,370	12,020	2,660	28.3	5.0	1.16
Education and childcare	61,610	64,500	2,890	4.7	1.1	1.12
Personal services	38,500	40,580	2,080	5.4	2.3	1.11
Automotive services	17,330	16,040	-1,300	-7.5	1.1	1.11
Household goods and services	28,680	26,900	-1,780	-6.2	-3.6	1.05
Civil engineering	20,350	18,860	-1,490	-7.3	-11.6	1.04
Retail	16,960	15,540	-1,430	-8.4	-3.5	1.01

(continued)

Industry cluster	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Upstream chemical	970	940	-40	-3.6	-3.9	0.98
Business services	10,740	12,870	2,130	19.9	-9.9	0.93
Food and beverage	61,950	71,720	9,770	15.8	1.6	0.93
Air transport	2,250	2,940	690	30.6	5.1	0.91
Agricultural inputs and services	8,210	10,050	1,840	22.5	6.8	0.91
Health and care	59,640	72,000	12,360	20.7	4.6	0.90
Commercial services	55,380	53,440	-1,940	-3.5	0.2	0.89
Visitor economy	12,380	16,280	3,910	31.6	5.2	0.89
Education and knowledge creation	12,180	13,890	1,720	14.1	4.0	0.88
Printing and publishing	6,420	4,380	-2,040	-31.7	-2.4	0.85
Local transport	6,350	6,720	370	5.9	-6.1	0.78
Logistics and ecommerce	11,230	15,180	3,960	35.3	1.2	0.76
Vehicle and defence technology	4,600	4,990	390	8.5	-3.3	0.73
Metalworking technology	3,750	2,580	-1,170	-31.3	-8.4	0.72
Financial and legal services	27,240	24,210	-3,020	-11.1	-5.0	0.71
Government	23,320	19,730	-3,590	-15.4	-1.5	0.63
Passenger transport	3,020	2,090	-920	-30.5	-0.1	0.57
Downstream metal	2,930	2,050	-880	-30.0	-2.8	0.49
Construction products and services	550	550	0	-0.9	13.5	0.48
Upstream metal	1,120	1,090	-30	-2.6	-9.7	0.44
Fishing	200	440	230	114.2	0.6	0.42
Food and drink production	3,350	3,670	320	9.5	1.2	0.42
Furniture and wood products	1,040	1,010	-30	-3.2	-14.3	0.38
Plastics and vulcanised products	2,170	1,820	-350	-16.1	0.4	0.38
Textiles and apparel	1,500	1,370	-130	-8.8	-8.2	0.37
Maritime	1,040	600	-440	-42.1	-3.0	0.33
Paper and packaging	980	670	-310	-31.3	2.3	0.29
Extractives	240	150	-90	-38.7	-15.3	0.28

(continued)

Industry cluster	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Hazardous materials and waste	30	150	120	411.5	-6.8	0.18
Oil and gas	50	120	70	139.9	-21.1	0.13

College data

College	SSA	Subject	1	2	3	4	5	6	7
Alton College	01	Health, public services and care	0	20	140	0	0	0	0
	02	Science and mathematics	0	90	230	0	0	0	0
	03	Agriculture, horticulture and animal care	0	0	10	0	0	0	0
	04	Engineering and manufacturing technologies	0	10	90	0	0	0	0
	06	Information and communication technology (ICT)	10	0	60	0	0	0	0
	08	Leisure, travel and tourism	0	10	30	0	0	0	0
	09	Arts, media and publishing	0	10	210	0	0	0	0
	10	History, philosophy and theology	0	0	30	0	0	0	0
	11	Social sciences	0	0	60	0	0	0	0
	12	Languages, literature and culture	0	100	50	0	0	0	0
	13	Education and training	0	0	10	0	0	0	0
	14	Preparation for life and work	10	10	10	0	0	0	0
	15	Business, administration, finance and law	0	10	120	0	0	0	0
	01	Health, public services and care	10	310	200	0	0	0	0
	02	Science and mathematics	0	170	50	0	0	0	0

(continued)

College	SSA	Subject	1	2	3	4	5	6	7
Basingstoke CoT	03	Agriculture, horticulture and animal care	0	10	50	0	0	0	0
	04	Engineering and manufacturing technologies	30	110	170	30	10	0	0
	05	Construction, planning and the built environment	0	120	60	0	0	0	0
	06	Information and communication technology (ICT)	0	20	50	0	0	0	0
	07	Retail and commercial enterprise	20	100	90	10	0	0	0
	08	Leisure, travel and tourism	0	30	90	0	0	0	0
	09	Arts, media and publishing	40	30	200	0	0	10	0
	12	Languages, literature and culture	30	210	0	0	0	0	0
	13	Education and training	0	0	30	20	10	0	0
	14	Preparation for life and work	260	220	0	0	0	0	0
	15	Business, administration, finance and law	10	170	120	40	40	0	0
	01	Health, public services and care	10	60	180	10	10	0	0
	02	Science and mathematics	0	150	60	0	0	0	0
	04	Engineering and manufacturing technologies	80	70	120	0	0	0	0
	05	Construction, planning and the built environment	50	40	10	0	0	0	0
	06	Information and communication technology (ICT)	40	30	40	0	0	0	0
	07	Retail and commercial enterprise	10	80	60	0	0	0	0
	08	Leisure, travel and tourism	10	30	70	0	0	0	0
	09	Arts, media and publishing	0	30	120	0	0	0	0
	12	Languages, literature and culture	10	150	0	0	0	0	0
	13	Education and training	0	10	10	0	0	0	0
	14	Preparation for life and work	200	80	0	0	0	0	0

(continued)

College	SSA	Subject	1	2	3	4	5	6	7
	15	Business, administration, finance and law	0	50	80	10	30	0	0
Esher College	01	Health, public services and care	0	0	20	0	0	0	0
	02	Science and mathematics	0	0	380	0	0	0	0
	06	Information and communication technology (ICT)	0	0	40	0	0	0	0
	08	Leisure, travel and tourism	0	0	80	0	0	0	0
	09	Arts, media and publishing	0	0	360	0	0	0	0
	10	History, philosophy and theology	0	0	120	0	0	0	0
	11	Social sciences	0	0	170	0	0	0	0
	12	Languages, literature and culture	0	0	170	0	0	0	0
	14	Preparation for life and work	0	0	100	0	0	0	0
	15	Business, administration, finance and law	0	0	60	0	0	0	0
	01	Health, public services and care	10	190	170	10	20	20	0
	02	Science and mathematics	0	150	50	0	0	10	0
	03	Agriculture, horticulture and animal care	0	10	10	0	0	0	0
	04	Engineering and manufacturing technologies	20	60	90	0	0	0	0
	05	Construction, planning and the built environment	20	60	20	0	0	0	0
	06	Information and communication technology (ICT)	0	10	50	0	0	0	0
	07	Retail and commercial enterprise	20	110	80	0	0	0	0
	08	Leisure, travel and tourism	0	10	70	0	0	10	0
	09	Arts, media and publishing	0	10	180	0	0	30	0
	10	History, philosophy and theology	0	0	10	0	0	0	0
	11	Social sciences	0	0	30	0	0	0	0

(continued)

College	SSA	Subject	1	2	3	4	5	6	7
	12	Languages, literature and culture	0	150	10	0	0	0	0
	13	Education and training	0	0	60	0	10	10	10
	14	Preparation for life and work	170	330	90	0	0	0	0
	15	Business, administration, finance and law	20	140	110	30	40	20	0
Farnborough SFC	01	Health, public services and care	0	0	80	0	0	0	0
	02	Science and mathematics	0	40	1,170	0	0	0	0
	06	Information and communication technology (ICT)	0	0	90	0	0	0	0
	08	Leisure, travel and tourism	0	0	100	0	0	0	0
	09	Arts, media and publishing	0	10	510	0	0	0	0
	10	History, philosophy and theology	0	0	90	0	0	0	0
	11	Social sciences	0	0	330	0	0	0	0
	12	Languages, literature and culture	0	20	250	0	0	0	0
	14	Preparation for life and work	0	20	30	0	0	0	0
	15	Business, administration, finance and law	0	10	410	0	0	0	0
	01	Health, public services and care	0	70	280	20	40	10	0
	02	Science and mathematics	0	140	100	0	0	10	0
	03	Agriculture, horticulture and animal care	50	440	290	40	40	0	0
	04	Engineering and manufacturing technologies	0	30	40	0	0	0	0
	05	Construction, planning and the built environment	60	160	110	40	10	0	0
	06	Information and communication technology (ICT)	0	10	30	0	0	0	0
	07	Retail and commercial enterprise	10	100	100	0	0	0	0
	08	Leisure, travel and tourism	0	30	150	0	0	0	0

(continued)

College	SSA	Subject	1	2	3	4	5	6	7
	09	Arts, media and publishing	50	30	240	0	0	0	0
	10	History, philosophy and theology	0	0	10	0	0	0	0
	11	Social sciences	0	0	30	0	0	0	0
	12	Languages, literature and culture	220	170	20	0	0	0	0
	13	Education and training	0	0	40	0	10	0	0
	14	Preparation for life and work	240	220	40	0	0	0	0
	15	Business, administration, finance and law	60	40	140	20	0	20	0
Peter Symonds College	01	Health, public services and care	0	50	140	10	30	20	0
	02	Science and mathematics	0	90	1,170	0	0	0	0
	04	Engineering and manufacturing technologies	0	0	40	0	0	0	0
	06	Information and communication technology (ICT)	0	0	90	0	0	0	0
	07	Retail and commercial enterprise	0	20	20	0	0	0	0
	08	Leisure, travel and tourism	0	0	100	10	0	0	0
	09	Arts, media and publishing	0	0	430	0	0	0	0
	10	History, philosophy and theology	0	0	210	0	0	0	0
	11	Social sciences	0	0	360	0	0	0	0
	12	Languages, literature and culture	0	60	330	0	0	0	0
	13	Education and training	0	10	50	0	20	10	0
	14	Preparation for life and work	20	30	100	0	0	0	0
	15	Business, administration, finance and law	0	20	280	0	10	10	0
	01	Health, public services and care	0	10	130	0	0	0	0
	02	Science and mathematics	0	70	240	0	0	0	0

(continued)

College	SSA	Subject	1	2	3	4	5	6	7
Queen Mary's College	06	Information and communication technology (ICT)	0	0	100	0	0	0	0
	08	Leisure, travel and tourism	10	10	80	0	0	0	0
	09	Arts, media and publishing	0	20	340	0	0	0	0
	10	History, philosophy and theology	0	0	30	0	0	0	0
	11	Social sciences	0	0	110	0	0	0	0
	12	Languages, literature and culture	0	60	80	0	0	0	0
	14	Preparation for life and work	10	10	40	0	0	0	0
	15	Business, administration, finance and law	0	10	270	0	0	0	0
	01	Health, public services and care	10	170	270	0	10	0	0
	02	Science and mathematics	0	110	250	20	0	0	0
	03	Agriculture, horticulture and animal care	160	500	1,050	0	70	70	10
	04	Engineering and manufacturing technologies	70	90	40	0	0	0	0
	05	Construction, planning and the built environment	20	80	10	0	0	0	0
	06	Information and communication technology (ICT)	10	120	60	0	0	0	0
	07	Retail and commercial enterprise	10	40	30	0	0	0	0
	08	Leisure, travel and tourism	10	20	190	0	0	0	0
	09	Arts, media and publishing	0	0	200	10	0	0	0
	10	History, philosophy and theology	0	0	30	0	0	0	0
	11	Social sciences	0	0	30	0	0	0	0
	12	Languages, literature and culture	0	140	30	0	0	0	0
	13	Education and training	0	0	40	10	10	0	0
	14	Preparation for life and work	80	60	30	0	0	0	0

(continued)

College	SSA	Subject	1	2	3	4	5	6	7
	15	Business, administration, finance and law	60	60	110	10	0	0	0
Woking College	01	Health, public services and care	0	10	60	0	0	0	0
	02	Science and mathematics	0	30	200	0	0	0	0
	04	Engineering and manufacturing technologies	0	0	30	0	0	0	0
	06	Information and communication technology (ICT)	0	10	70	0	0	0	0
	08	Leisure, travel and tourism	0	10	80	0	0	0	0
	09	Arts, media and publishing	0	20	160	0	0	0	0
	10	History, philosophy and theology	0	0	20	0	0	0	0
	11	Social sciences	0	0	70	0	0	0	0
	12	Languages, literature and culture	0	60	90	0	0	0	0
	14	Preparation for life and work	60	40	0	0	0	0	0
	15	Business, administration, finance and law	10	10	220	0	0	0	0

Occupation data

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Air traffic controllers	250	350	100	39.3	5.7	2.86
Veterinary nurses	560	760	190	34.3	12.6	2.04
Veterinarians	600	920	320	54.1	10.1	1.99
Florists	380	460	80	21.8	1.6	1.93
Programmers and software development professionals	10,450	11,340	890	8.5	0.2	1.78
Sports coaches, instructors and officials	2,560	3,380	820	32.2	5.0	1.71
Dispensing opticians	200	250	50	24.9	4.5	1.68
Gardeners and landscape gardeners	2,790	3,030	240	8.8	-3.7	1.67
Ophthalmic opticians	540	760	220	41.0	4.2	1.67
Market research interviewers	610	690	80	12.6	8.4	1.65
Information technology and telecommunications professionals n.e.c.	7,110	7,580	470	6.6	-0.5	1.64
Forestry workers	160	190	20	13.1	8.2	1.64
Information technology and telecommunications directors	2,590	2,840	250	9.6	-0.5	1.63
Animal care services occupations n.e.c.	2,520	3,040	520	20.7	2.9	1.63
Electroplaters	230	190	-40	-17.5	-3.3	1.62
Chartered architectural technologists	100	100	0	1.9	-1.9	1.61

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
IT project and programme managers	2,800	2,960	170	6.0	-1.0	1.59
Agricultural and fishing trades n.e.c.	530	740	200	38.6	3.6	1.58
IT specialist managers	8,140	8,530	390	4.8	-0.9	1.55
Electronics engineers	1,030	1,090	60	5.6	-2.6	1.54
Fitness instructors	1,170	1,360	200	16.8	1.0	1.54
IT business analysts, architects and systems designers	3,970	4,250	270	6.9	-0.7	1.53
Sports players	630	730	100	16.0	3.1	1.52
Importers and exporters	390	330	-60	-15.2	-8.9	1.51
Telecommunications engineers	1,560	1,840	270	17.3	3.7	1.49
Electrical and electronics technicians	600	690	90	15.4	2.1	1.49
Coal mine operatives	50	40	-10	-16.3	-5.1	1.47
IT engineers	1,500	1,480	-30	-1.8	-2.9	1.44
Managers and proprietors in forestry, fishing and related services	310	270	-50	-14.8	1.5	1.42
Physical scientists	800	930	130	16.3	-3.6	1.42
IT user support technicians	3,300	3,500	200	6.0	-0.3	1.40
Social and humanities scientists	370	450	80	20.8	1.1	1.37
IT operations technicians	3,620	4,010	390	10.7	-0.4	1.37
Business sales executives	5,100	5,830	730	14.3	0.4	1.35
Sales accounts and business development managers	16,260	17,110	850	5.3	-0.7	1.34
Plumbers and heating and ventilating engineers	2,690	3,580	880	32.9	5.5	1.34
Management consultants and business analysts	5,200	5,880	680	13.1	-1.9	1.33
Marketing and sales directors	6,280	6,990	720	11.4	-0.7	1.33
Archivists and curators	290	360	70	23.8	4.2	1.32
Web design and development professionals	1,580	1,780	200	12.8	0.9	1.32
Leisure and sports managers	1,710	1,940	240	13.8	1.6	1.32
Air-conditioning and refrigeration engineers	360	430	70	19.6	2.8	1.29

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Garage managers and proprietors	980	760	-220	-22.4	-0.3	1.29
Pensions and insurance clerks and assistants	2,250	2,080	-170	-7.5	-8.3	1.28
Graphic designers	1,530	1,900	370	24.5	1.3	1.28
Research and development managers	1,190	1,230	40	3.2	0.7	1.27
Vehicle and parts salespersons and advisers	1,310	1,440	130	9.6	0.5	1.27
Conservation professionals	420	470	40	10.3	0.3	1.26
Dental practitioners	540	610	70	12.5	3.0	1.26
Groundsmen and greenkeepers	900	1,070	170	19.3	1.1	1.26
Medical and dental technicians	790	1,060	270	34.0	4.6	1.26
Sales related occupations n.e.c.	1,700	1,990	300	17.6	1.3	1.24
Water and sewerage plant operatives	260	220	-40	-14.4	-4.6	1.24
Smiths and forge workers	120	100	-20	-15.4	-1.9	1.24
Precision instrument makers and repairers	410	560	140	34.9	2.9	1.24
Estate agents and auctioneers	2,270	2,270	0	0.1	-0.2	1.23
Health care practice managers	610	820	210	34.7	9.3	1.22
Functional managers and directors n.e.c.	3,370	3,600	230	6.8	-0.3	1.22
Leisure and theme park attendants	870	1,070	190	22.0	2.6	1.21
Electrical and electronic trades n.e.c.	1,880	1,980	100	5.3	0.4	1.20
Clergy	860	1,010	140	16.4	6.1	1.20
Marketing associate professionals	5,800	5,960	160	2.8	-0.9	1.19
Dental nurses	1,330	1,830	500	37.5	7.5	1.19
Childminders and related occupations	1,110	1,420	310	27.9	3.8	1.19
Customer service managers and supervisors	4,030	4,410	380	9.5	0.4	1.18
Catering and bar managers	1,790	2,250	460	25.8	2.4	1.18
Air transport operatives	260	420	160	64.1	3.2	1.18
Company secretaries	1,130	1,260	130	11.9	0.3	1.18
Nursery nurses and assistants	3,210	4,630	1,420	44.4	4.2	1.18
Sales administrators	2,500	2,650	140	5.7	-0.2	1.18

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Conservation and environmental associate professionals	200	270	70	35.0	2.4	1.17
Production managers and directors in construction	3,420	3,970	550	16.1	2.5	1.17
Authors, writers and translators	1,120	900	-220	-19.3	-1.4	1.17
Education advisers and school inspectors	630	770	140	22.4	3.5	1.17
Artists	370	320	-50	-14.3	-2.8	1.16
Engineering professionals n.e.c.	2,380	2,260	-120	-5.1	-1.8	1.16
Special needs education teaching professionals	1,680	1,840	160	9.8	0.9	1.16
Primary and nursery education teaching professionals	10,970	12,150	1,180	10.7	1.1	1.15
TV, video and audio engineers	240	260	30	11.0	2.1	1.15
Financial managers and directors	6,410	7,170	770	12.0	0.0	1.14
Roofers, roof tilers and slaters	430	520	90	20.8	4.7	1.14
Estimators, valuers and assessors	2,040	1,860	-180	-8.8	-3.8	1.14
Personal assistants and other secretaries	7,040	7,320	280	4.0	0.2	1.14
Bricklayers and masons	750	880	130	18.0	4.3	1.13
Teaching assistants	8,510	9,460	950	11.2	1.3	1.13
Telephone salespersons	1,320	1,480	160	11.9	1.4	1.13
Construction and building trades n.e.c.	2,630	2,930	290	11.2	1.1	1.13
Painters and decorators	1,430	1,460	30	2.3	4.6	1.13
Kitchen and catering assistants	13,010	16,640	3,630	27.9	2.8	1.13
Glass and ceramics makers, decorators and finishers	270	250	-30	-9.8	2.3	1.13
Tyre, exhaust and windscreen fitters	430	390	-40	-10.0	-0.5	1.12
Electrical engineers	840	860	20	2.2	0.8	1.12
Travel agency managers and proprietors	260	240	-20	-8.2	-2.3	1.12
Construction project managers and related professionals	1,610	1,860	250	15.4	2.2	1.12

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Office managers	4,980	5,310	340	6.8	0.7	1.11
Typists and related keyboard occupations	1,440	1,440	0	0.3	-1.6	1.11
Purchasing managers and directors	1,370	1,460	100	7.1	-1.0	1.11
Undertakers, mortuary and crematorium assistants	330	510	180	54.5	6.3	1.10
Collector salespersons and credit agents	310	370	60	18.9	-1.4	1.10
Property, housing and estate managers	4,140	5,680	1,550	37.4	2.6	1.10
Tailors and dressmakers	160	170	10	7.5	-6.7	1.10
Managers and proprietors in other services n.e.c.	4,580	5,110	530	11.5	-0.5	1.10
Financial and accounting technicians	780	910	130	16.6	0.9	1.09
Chemical scientists	680	610	-70	-10.0	-4.9	1.09
Receptionists	7,190	8,480	1,290	18.0	4.5	1.09
Hairdressers and barbers	2,200	2,800	610	27.5	0.7	1.09
Carpenters and joiners	2,530	3,050	530	20.8	2.0	1.09
Elementary sales occupations n.e.c.	830	830	0	-0.2	1.8	1.08
Conference and exhibition managers and organisers	1,810	1,740	-70	-3.7	-0.5	1.08
Insurance underwriters	610	580	-30	-4.8	-9.3	1.08
Managers and directors in storage and warehousing	3,140	3,010	-130	-4.1	-2.0	1.08
Draughtspersons	910	860	-40	-4.9	-4.0	1.08
Ship and hovercraft officers	260	170	-90	-33.3	-5.2	1.08
Design and development engineers	1,900	1,750	-150	-7.8	-3.5	1.07
School secretaries	1,440	1,630	190	12.9	0.9	1.07
Town planning officers	500	500	0	0.3	-3.3	1.07
Refuse and salvage occupations	920	1,270	340	37.4	9.3	1.07
Educational support assistants	3,000	3,320	310	10.4	1.6	1.07
Publicans and managers of licensed premises	1,810	1,670	-150	-8.0	-3.1	1.06
Security guards and related occupations	4,480	5,390	910	20.3	2.4	1.06

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Actuaries, economists and statisticians	1,100	1,050	-50	-4.5	-6.1	1.06
Elementary construction occupations	2,880	3,220	340	11.7	3.5	1.06
Dancers and choreographers	130	140	10	10.4	3.0	1.06
Quality assurance technicians	380	570	190	50.0	4.7	1.06
Playworkers	740	900	150	20.2	3.2	1.06
Residential, day and domiciliary care managers and proprietors	1,140	1,300	160	14.1	2.2	1.06
Managers and directors in retail and wholesale	10,110	10,180	70	0.7	-0.8	1.06
Welfare professionals n.e.c.	520	510	-10	-1.4	0.8	1.05
Financial accounts managers	3,670	4,060	390	10.6	-0.2	1.05
Print finishing and binding workers	370	410	40	11.7	1.4	1.05
Mechanical engineers	1,740	1,630	-110	-6.1	-4.9	1.05
Finance and investment analysts and advisers	4,010	4,490	490	12.2	-0.9	1.05
Telephonists	450	520	70	15.5	-1.7	1.05
Horticultural trades	570	510	-60	-10.1	-1.4	1.05
Chartered and certified accountants	4,890	5,590	690	14.2	0.3	1.05
Human resources administrative occupations	1,700	1,750	50	2.7	0.5	1.05
Teaching and other educational professionals n.e.c.	3,160	3,440	280	8.8	1.8	1.04
Hairdressing and beauty salon managers and proprietors	240	270	30	12.0	-1.4	1.04
Floorers and wall tilers	370	380	10	4.0	-0.1	1.04
Environment professionals	740	830	100	13.2	-2.4	1.04
Chief executives and senior officials	1,690	1,960	270	16.0	-0.3	1.04
Book-keepers, payroll managers and wages clerks	12,250	13,450	1,200	9.8	0.6	1.04
Cooks	1,930	2,770	840	43.4	3.3	1.04
Laboratory technicians	1,790	1,910	120	6.5	-0.5	1.03
Secondary education teaching professionals	8,230	8,700	470	5.7	0.3	1.03
Therapy professionals n.e.c.	480	550	70	15.4	1.1	1.03

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Engineering technicians	1,910	1,740	-170	-8.9	-1.5	1.03
Other administrative occupations n.e.c.	17,480	18,710	1,230	7.0	0.5	1.03
Human resource managers and directors	4,020	4,170	150	3.8	0.4	1.03
Photographers, audio-visual and broadcasting equipment operators	1,060	1,140	90	8.1	-1.8	1.03
Finance officers	930	1,060	130	14.1	0.8	1.02
Buyers and procurement officers	2,380	2,190	-180	-7.7	-2.7	1.02
Electricians and electrical fitters	4,770	4,880	110	2.3	1.2	1.02
School midday and crossing patrol occupations	2,420	2,880	460	18.9	1.7	1.02
Probation officers	190	180	-10	-6.3	-0.6	1.02
Protective service associate professionals n.e.c.	1,230	1,260	40	2.9	0.1	1.02
Business, research and administrative professionals n.e.c.	710	1,010	300	42.2	3.7	1.02
Waste disposal and environmental services managers	210	260	50	24.8	2.5	1.01
Business and related associate professionals n.e.c.	3,300	3,370	60	1.9	-0.8	1.01
Sports and leisure assistants	1,420	1,590	160	11.6	3.2	1.01
Printers	790	800	0	0.6	0.8	1.01
Beauticians and related occupations	1,280	1,340	70	5.3	-0.8	1.01
Youth and community workers	1,980	1,900	-80	-4.2	0.6	1.01
Chartered surveyors	1,460	1,500	40	2.6	-2.9	1.01
Van drivers	5,530	6,020	490	8.9	0.0	1.00
Elementary administration occupations n.e.c.	1,080	1,230	150	14.2	1.3	1.00
Careers advisers and vocational guidance specialists	750	840	90	11.5	3.0	1.00
Business and financial project management professionals	5,050	5,200	150	3.1	-1.2	1.00
Architects	1,050	980	-70	-7.0	-5.6	1.00
Biological scientists and biochemists	1,940	2,090	150	7.9	-1.5	1.00

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Customer service occupations n.e.c.	6,470	7,290	820	12.7	0.9	1.00
Launderers, dry cleaners and pressers	490	640	150	29.7	2.5	0.99
Bar staff	9,060	8,720	-340	-3.8	-0.5	0.99
Counsellors	370	420	50	12.2	1.3	0.99
Waiters and waitresses	8,610	9,510	900	10.5	2.0	0.99
Occupational therapists	780	850	70	8.8	0.9	0.98
Human resources and industrial relations officers	4,830	4,960	140	2.8	2.8	0.98
Vehicle technicians, mechanics and electricians	5,640	4,630	-1,000	-17.8	-0.1	0.98
Science, engineering and production technicians n.e.c.	700	840	140	20.3	-0.3	0.98
Vehicle body builders and repairers	660	540	-120	-17.5	0.0	0.98
Senior professionals of educational establishments	1,980	2,260	280	14.0	3.5	0.98
Street cleaners	260	340	90	34.5	7.7	0.98
Vehicle valeters and cleaners	760	730	-30	-4.2	1.7	0.97
Market and street traders and assistants	270	190	-80	-28.3	-4.9	0.97
Building and civil engineering technicians	420	390	-20	-6.0	-1.5	0.97
Vocational and industrial trainers and instructors	3,520	3,540	20	0.5	0.1	0.97
Chefs	6,350	7,250	910	14.3	1.8	0.97
Medical practitioners	4,570	5,980	1,420	31.0	4.9	0.97
Other drivers and transport operatives n.e.c.	490	560	70	14.4	1.0	0.97
Retail cashiers and check-out operators	6,100	5,630	-460	-7.6	1.1	0.97
Restaurant and catering establishment managers and proprietors	2,590	2,940	350	13.4	2.8	0.96
Advertising accounts managers and creative directors	590	810	220	36.7	2.3	0.96
Production managers and directors in manufacturing	6,150	6,180	30	0.5	-1.2	0.96
Quality assurance and regulatory professionals	1,850	1,820	-30	-1.5	-0.3	0.96
Senior care workers	1,580	1,880	300	19.0	2.8	0.96

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Houseparents and residential wardens	810	830	20	2.5	0.3	0.95
Officers of non-governmental organisations	1,270	1,330	50	4.1	-0.4	0.95
Advertising and public relations directors	520	600	80	16.3	1.4	0.95
Transport and distribution clerks and assistants	1,600	1,720	120	7.5	-1.5	0.95
Road construction operatives	370	340	-20	-6.4	6.7	0.95
Product, clothing and related designers	880	990	110	12.3	-1.2	0.94
Records clerks and assistants	3,190	3,130	-60	-1.9	0.2	0.94
Public relations professionals	980	1,020	40	4.0	-1.0	0.94
Cleaning and housekeeping managers and supervisors	2,270	1,860	-410	-18.0	-2.7	0.94
Sales supervisors	5,320	5,210	-120	-2.2	-0.9	0.93
Construction operatives n.e.c.	1,880	1,830	-50	-2.5	0.6	0.93
Construction and building trades supervisors	1,130	1,200	60	5.7	3.3	0.93
Housekeepers and related occupations	740	830	90	11.4	2.7	0.93
Shelf fillers	2,750	2,430	-310	-11.4	-0.2	0.93
Production and process engineers	1,130	1,010	-130	-11.2	-4.7	0.93
Assemblers (electrical and electronic products)	1,090	650	-440	-40.6	-5.0	0.92
Scaffolders, stagers and riggers	550	750	190	34.6	7.3	0.92
Financial administrative occupations n.e.c.	4,430	4,430	0	-0.1	0.1	0.92
Call and contact centre occupations	2,450	3,030	580	23.8	2.0	0.92
Plasterers	390	400	10	3.6	-1.0	0.92
Pest control officers	120	150	30	28.6	2.3	0.92
Mobile machine drivers and operatives n.e.c.	950	930	-20	-2.4	3.8	0.91
Care workers and home carers	15,250	18,270	3,020	19.8	2.3	0.91
Social workers	1,720	1,710	-10	-0.6	0.1	0.91
Sheet metal workers	350	340	-10	-3.7	-4.0	0.91
Sales and retail assistants	28,790	28,100	-690	-2.4	-0.8	0.91
Health associate professionals n.e.c.	480	530	60	11.9	-0.1	0.91

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Window cleaners	300	240	-50	-18.1	-9.3	0.91
Musicians	450	380	-60	-14.2	-1.0	0.91
Pre-press technicians	120	100	-20	-14.7	-2.5	0.90
Aircraft maintenance and related trades	540	430	-110	-21.0	-7.1	0.90
Skilled metal, electrical and electronic trades supervisors	870	890	20	2.2	0.3	0.90
Civil engineers	1,470	1,340	-130	-8.6	-5.0	0.90
Actors, entertainers and presenters	540	460	-80	-14.6	-2.6	0.90
Taxi and cab drivers and chauffeurs	1,040	1,290	250	23.8	-1.9	0.90
Cleaners and domestics	19,740	15,880	-3,850	-19.5	-3.2	0.89
Credit controllers	1,100	1,080	-10	-1.3	-1.0	0.89
Travel agents	830	820	-10	-1.7	-2.7	0.88
Pharmacy and other dispensing assistants	1,430	1,650	220	15.4	2.3	0.88
Library clerks and assistants	480	480	0	0.0	-1.6	0.88
Debt, rent and other cash collectors	1,020	980	-40	-3.9	-4.5	0.88
Welfare and housing associate professionals n.e.c.	2,450	2,550	100	3.9	0.4	0.88
Fishing and other elementary agriculture occupations n.e.c.	570	610	40	7.0	-0.7	0.88
Elementary security occupations n.e.c.	680	660	-20	-2.9	1.6	0.88
Midwives	960	1,040	80	8.4	1.7	0.88
Office supervisors	1,030	1,050	20	2.1	0.3	0.88
Shopkeepers and proprietors - wholesale and retail	2,200	1,730	-470	-21.5	-1.1	0.87
Physiotherapists	910	1,020	110	12.5	0.5	0.86
Quantity surveyors	740	830	90	11.7	1.9	0.86
Energy plant operatives	60	100	40	65.7	7.9	0.86
Communication operators	620	660	50	7.4	-0.8	0.86
Caretakers	1,780	1,880	100	5.4	1.3	0.86
Medical secretaries	1,470	1,760	290	19.7	4.5	0.85

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Podiatrists	160	150	0	-2.4	2.4	0.85
Stock control clerks and assistants	2,860	2,670	-190	-6.7	-2.3	0.85
Social services managers and directors	830	850	20	2.0	0.0	0.85
Journalists, newspaper and periodical editors	740	990	250	34.3	2.3	0.85
Postal workers, mail sorters, messengers and couriers	3,230	3,020	-200	-6.3	0.6	0.85
Taxation experts	730	830	100	13.2	1.8	0.85
Natural and social science professionals n.e.c.	630	740	110	17.6	4.3	0.85
Weighers, graders and sorters	370	450	80	22.6	-0.7	0.84
Elementary storage occupations	12,140	12,570	430	3.5	-1.1	0.84
Public services associate professionals	1,800	2,000	200	11.3	1.9	0.83
Nursing auxiliaries and assistants	6,190	7,130	940	15.2	2.7	0.83
Legal associate professionals	1,430	1,550	120	8.5	0.2	0.83
Business and related research professionals	780	830	60	7.6	0.7	0.83
Legal professionals n.e.c.	950	1,040	90	9.1	-0.9	0.83
Health and safety officers	870	840	-30	-3.7	-2.5	0.82
Health services and public health managers and directors	810	950	130	16.2	1.0	0.82
Aircraft pilots and flight engineers	310	350	40	13.5	0.5	0.82
Further education teaching professionals	2,450	2,400	-40	-1.7	1.8	0.82
Air travel assistants	620	1,110	490	78.1	2.0	0.82
Printing machine assistants	290	300	10	4.5	0.5	0.82
Steel erectors	200	170	-30	-15.8	1.6	0.81
Merchandisers and window dressers	730	750	10	1.5	-2.1	0.81
Other elementary services occupations n.e.c.	760	870	110	14.1	2.2	0.81
Inspectors of standards and regulations	910	910	0	-0.2	-1.2	0.80
Architectural and town planning technicians	430	380	-40	-9.9	-3.5	0.80
Furniture makers and other craft woodworkers	350	490	150	41.7	1.9	0.80
Medical radiographers	490	570	80	16.0	3.0	0.80

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Managers and directors in transport and distribution	1,530	1,620	90	6.1	-1.3	0.80
Housing officers	1,290	1,320	30	2.0	-2.6	0.79
Legal secretaries	1,150	1,070	-80	-7.3	-1.9	0.79
Tool makers, tool fitters and markers-out	340	260	-90	-24.8	-2.4	0.79
Health professionals n.e.c.	740	810	70	9.2	1.4	0.78
Managers and proprietors in agriculture and horticulture	440	490	50	11.9	1.3	0.78
Textiles, garments and related trades n.e.c.	90	100	10	10.1	-0.7	0.78
Nurses	11,690	13,180	1,490	12.8	2.5	0.77
Speech and language therapists	270	300	30	10.2	-0.6	0.77
Brokers	770	790	20	2.4	-2.6	0.77
Prison service officers (below principal officer)	470	440	-40	-7.7	-0.7	0.77
Financial institution managers and directors	1,750	1,620	-120	-7.1	-2.6	0.77
Other skilled trades n.e.c.	620	560	-60	-9.8	-0.1	0.76
Agricultural machinery drivers	130	180	50	41.3	1.1	0.76
Child and early years officers	460	500	40	8.3	0.8	0.76
Glaziers, window fabricators and fitters	610	570	-40	-6.5	2.1	0.76
Quality control and planning engineers	560	490	-70	-11.7	-2.6	0.76
Leisure and travel service occupations n.e.c.	420	450	30	6.9	0.6	0.76
Higher education teaching professionals	1,780	2,530	750	42.2	9.8	0.75
Routine inspectors and testers	1,520	1,320	-200	-13.2	-2.1	0.75
Roundspersons and van salespersons	370	280	-100	-25.8	0.4	0.74
Pharmacists	670	770	100	14.6	1.1	0.74
Parking and civil enforcement occupations	480	360	-120	-24.9	-0.8	0.74
Environmental health professionals	130	150	20	18.1	2.0	0.74
Large goods vehicle drivers	5,470	6,160	680	12.5	0.3	0.74
Metal working production and maintenance fitters	3,570	3,090	-470	-13.3	-2.1	0.73
Bakers and flour confectioners	690	610	-80	-12.0	0.1	0.72

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Elementary process plant occupations n.e.c.	1,470	1,450	-20	-1.1	1.2	0.71
Arts officers, producers and directors	670	980	310	46.5	-0.9	0.71
Elementary cleaning occupations n.e.c.	180	170	-10	-5.7	1.1	0.70
Psychologists	520	540	20	4.5	1.1	0.70
Rail construction and maintenance operatives	130	160	30	22.6	7.6	0.70
Local government administrative occupations	2,480	2,430	-50	-2.1	0.3	0.69
Hospital porters	320	340	20	7.7	2.4	0.69
Rail transport operatives	250	220	-30	-13.8	-1.9	0.68
Police officers (sergeant and below)	3,130	2,130	-1,000	-32.0	-6.3	0.68
Ambulance staff (excluding paramedics)	330	320	-10	-2.1	-4.8	0.68
Boat and ship builders and repairers	200	100	-100	-48.5	-7.5	0.67
Assemblers and routine operatives n.e.c.	790	630	-160	-20.3	-0.6	0.67
Fork-lift truck drivers	2,250	2,160	-90	-3.9	0.3	0.67
Crane drivers	120	160	40	34.0	7.8	0.67
Pharmaceutical technicians	460	500	40	8.6	0.7	0.67
Welding trades	1,020	920	-90	-9.1	-2.9	0.67
Care escorts	250	280	40	14.8	0.3	0.66
Plant and machine operatives n.e.c.	560	460	-110	-18.7	-2.1	0.66
Librarians	340	360	30	8.6	1.3	0.65
Production managers and directors in mining and energy	200	200	0	-0.7	-3.3	0.65
Assemblers (vehicles and metal goods)	740	650	-90	-12.6	1.1	0.64
Marine and waterways transport operatives	120	70	-50	-38.9	-5.3	0.64
Hotel and accommodation managers and proprietors	690	690	0	0.5	1.6	0.64
Packers, bottlers, canners and fillers	3,310	3,230	-80	-2.5	-0.6	0.63
Chemical and related process operatives	730	540	-190	-26.3	-2.3	0.63
Bank and post office clerks	2,280	1,880	-400	-17.6	-1.6	0.62
Elected officers and representatives	160	170	10	6.9	1.5	0.62

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Vehicle paint technicians	270	200	-70	-26.0	-1.0	0.62
Planning, process and production technicians	440	370	-80	-17.3	-2.1	0.60
Upholsterers	90	150	60	64.7	-5.7	0.60
Butchers	490	540	60	12.0	1.2	0.60
Senior police officers	260	170	-80	-32.8	-6.7	0.59
Paper and wood machine operatives	470	440	-20	-4.9	0.8	0.58
Rail travel assistants	230	230	0	1.8	1.3	0.58
Process operatives n.e.c.	310	240	-80	-24.9	2.0	0.57
National government administrative occupations	2,760	2,810	50	1.9	0.7	0.57
Pipe fitters	80	90	10	6.5	0.3	0.57
Driving instructors	80	60	-20	-24.4	-3.6	0.56
Police community support officers	300	200	-100	-32.6	-6.2	0.56
Solicitors	1,650	1,650	0	-0.1	-1.4	0.56
Senior officers in fire, ambulance, prison and related services	160	150	-10	-5.9	-0.2	0.56
Footwear and leather working trades	50	60	10	28.4	-1.2	0.55
Industrial cleaning process occupations	490	400	-80	-17.1	-1.6	0.53
Metal working machine operatives	840	630	-210	-24.8	-4.3	0.52
Rail and rolling stock builders and repairers	60	70	0	7.6	-0.1	0.52
Bus and coach drivers	1,360	1,550	200	14.4	-1.0	0.52
Fire service officers (watch manager and below)	480	480	0	0.5	0.9	0.52
Metal machining setters and setter-operators	870	620	-250	-28.7	-4.6	0.51
Paramedics	310	310	0	-1.2	-4.4	0.51
Train and tram drivers	260	260	0	1.0	0.1	0.50
Metal making and treating process operatives	200	130	-70	-36.6	-5.6	0.49
Fishmongers and poultry dressers	90	110	10	12.5	-0.5	0.49
Farmers	1,800	1,850	50	2.5	-0.3	0.49
Plastics process operatives	590	380	-200	-34.4	-1.2	0.47

(continued)

Occupation	Jobs 2010	Jobs 2019	Change 2010-19	% growth 2010-19	% growth 2019-27	LQ 2019
Metal plate workers, and riveters	150	110	-40	-29.2	-1.1	0.47
Barristers and judges	210	220	0	0.7	-1.4	0.45
Glass and ceramics process operatives	60	60	0	-2.3	5.8	0.45
Rubber process operatives	80	50	-40	-45.6	-10.8	0.43
Farm workers	1,020	890	-130	-13.2	-0.8	0.42
Sewing machinists	250	230	-30	-10.6	-5.2	0.40
Textile process operatives	110	110	0	-3.0	-2.8	0.38
Food, drink and tobacco process operatives	1,370	1,290	-80	-5.7	0.3	0.35
Quarry workers and related operatives	60	50	-10	-18.4	-0.1	0.29
Moulders, core makers and die casters	10	10	0	-1.2	-11.0	0.24
Weavers and knitters	10	10	0	53.5	4.1	0.16

Industry cluster definitions

Cluster	SIC	Industry
Agricultural inputs and services	0161	Support activities for crop production
Agricultural inputs and services	0162	Support activities for animal production
Agricultural inputs and services	0163	Post-harvest crop activities
Agricultural inputs and services	0164	Seed processing for propagation
Agricultural inputs and services	0170	Hunting, trapping and related service activities
Agricultural inputs and services	01A0	Growing of crops, market gardening, horticulture; Farming of animals
Agricultural inputs and services	1091	Manufacture of prepared feeds for farm animals
Agricultural inputs and services	2830	Manufacture of agricultural and forestry machinery
Agricultural inputs and services	4611	Agents involved in the sale of agricultural raw materials, live animals, textile raw materials and semi-finished goods
Agricultural inputs and services	4622	Wholesale of flowers and plants
Agricultural inputs and services	4623	Wholesale of live animals
Agricultural inputs and services	4661	Wholesale of agricultural machinery, equipment and supplies
Agricultural inputs and services	7500	Veterinary activities
Agricultural inputs and services	7731	Renting and leasing of agricultural machinery and equipment
Air transport	5110	Passenger air transport
Air transport	5121	Freight air transport
Air transport	5122	Space transport
Air transport	5223	Service activities incidental to air transportation

(continued)

Cluster	SIC	Industry
Air transport	7735	Renting and leasing of air transport equipment
Appliances and personal goods	1724	Manufacture of wallpaper
Appliances and personal goods	2521	Manufacture of central heating radiators and boilers
Appliances and personal goods	2620	Manufacture of computers and peripheral equipment
Appliances and personal goods	2630	Manufacture of communication equipment
Appliances and personal goods	2640	Manufacture of consumer electronics
Appliances and personal goods	2652	Manufacture of watches and clocks
Appliances and personal goods	2740	Manufacture of electric lighting equipment
Appliances and personal goods	2751	Manufacture of electric domestic appliances
Appliances and personal goods	2752	Manufacture of non-electric domestic appliances
Appliances and personal goods	2790	Manufacture of other electrical equipment
Appliances and personal goods	3212	Manufacture of jewellery and related articles
Appliances and personal goods	3213	Manufacture of imitation jewellery and related articles
Appliances and personal goods	3230	Manufacture of sports goods
Appliances and personal goods	3240	Manufacture of games and toys
Appliances and personal goods	3291	Manufacture of brooms and brushes
Appliances and personal goods	4619	Agents involved in the sale of a variety of goods
Appliances and personal goods	4643	Wholesale of electrical household appliances
Appliances and personal goods	4644	Wholesale of china and glassware and cleaning materials
Appliances and personal goods	4648	Wholesale of watches and jewellery
Appliances and personal goods	4651	Wholesale of computers, computer peripheral equipment and software
Appliances and personal goods	9511	Repair of computers and peripheral equipment
Appliances and personal goods	9512	Repair of communication equipment
Appliances and personal goods	9521	Repair of consumer electronics
Appliances and personal goods	9522	Repair of household appliances and home and garden equipment
Appliances and personal goods	9525	Repair of watches, clocks and jewellery
Appliances and personal goods	9529	Repair of other personal and household goods
Automotive services	4511	Sale of cars and light motor vehicles
Automotive services	4519	Sale of other motor vehicles

(continued)

Cluster	SIC	Industry
Automotive services	4520	Maintenance and repair of motor vehicles
Automotive services	4531	Wholesale trade of motor vehicle parts and accessories
Automotive services	4532	Retail trade of motor vehicle parts and accessories
Automotive services	4540	Sale, maintenance and repair of motorcycles and related parts and accessories
Automotive services	4730	Retail sale of automotive fuel in specialised stores
Building services	1623	Manufacture of other builders' carpentry and joinery
Building services	4312	Site preparation
Building services	4321	Electrical installation
Building services	4322	Plumbing, heat and air-conditioning installation
Building services	4329	Other construction installation
Building services	4331	Plastering
Building services	4332	Joinery installation
Building services	4333	Floor and wall covering
Building services	4334	Painting and glazing
Building services	4339	Other building completion and finishing
Building services	4391	Roofing activities
Building services	4399	Other specialised construction activities n.e.c.
Building services	4613	Agents involved in the sale of timber and building materials
Building services	4673	Wholesale of wood, construction materials and sanitary equipment
Building services	4674	Wholesale of hardware, plumbing and heating equipment and supplies
Business services	7430	Translation and interpretation activities
Business services	7990	Other reservation service and related activities
Business services	8211	Combined office administrative service activities
Business services	8220	Activities of call centres
Business services	8230	Organisation of conventions and trade shows
Business services	8291	Activities of collection agencies and credit bureaus
Business services	8299	Other business support service activities n.e.c.
Business services	9411	Activities of business and employers membership organisations
Business services	9412	Activities of professional membership organisations

(continued)

Cluster	SIC	Industry
Civil engineering	3700	Sewerage
Civil engineering	4211	Construction of roads and motorways
Civil engineering	4212	Construction of railways and underground railways
Civil engineering	4213	Construction of bridges and tunnels
Civil engineering	4221	Construction of utility projects for fluids
Civil engineering	4291	Construction of water projects
Civil engineering	4299	Construction of other civil engineering projects n.e.c.
Civil engineering	4311	Demolition
Civil engineering	4313	Test drilling and boring
Civil engineering	4950	Transport via pipeline
Civil engineering	7111	Architectural activities
Civil engineering	7112	Engineering activities and related technical consultancy
Civil engineering	7732	Renting and leasing of construction and civil engineering machinery and equipment
Commercial services	4762	Retail sale of newspapers and stationery in specialised stores
Commercial services	5621	Event catering activities
Commercial services	6920	Accounting, bookkeeping and auditing activities; tax consultancy
Commercial services	7420	Photographic activities
Commercial services	7810	Activities of employment placement agencies
Commercial services	7820	Temporary employment agency activities
Commercial services	8010	Private security activities
Commercial services	8020	Security systems service activities
Commercial services	8110	Combined facilities support activities
Commercial services	8121	General cleaning of buildings
Commercial services	8122	Other building and industrial cleaning activities
Commercial services	8129	Other cleaning activities
Commercial services	8219	Photocopying, document preparation and other specialised office support activities
Commercial services	9601	Washing and (dry-)cleaning of textile and fur products
Construction products and services	2314	Manufacture of glass fibres
Construction products and services	2332	Manufacture of bricks, tiles and construction products, in baked clay

(continued)

Cluster	SIC	Industry
Construction products and services	2351	Manufacture of cement
Construction products and services	2352	Manufacture of lime and plaster
Construction products and services	2361	Manufacture of concrete products for construction purposes
Construction products and services	2362	Manufacture of plaster products for construction purposes
Construction products and services	2363	Manufacture of ready-mixed concrete
Construction products and services	2364	Manufacture of mortars
Construction products and services	2365	Manufacture of fibre cement
Construction products and services	2369	Manufacture of other articles of concrete, plaster and cement
Construction products and services	2370	Cutting, shaping and finishing of stone
Construction products and services	3530	Steam and air conditioning supply
Creative	5911	Motion picture, video and television programme production activities
Creative	5912	Motion picture, video and television programme post-production activities
Creative	5913	Motion picture, video and television programme distribution activities
Creative	5920	Sound recording and music publishing activities
Creative	6010	Radio broadcasting
Creative	6020	Television programming and broadcasting activities
Creative	6391	News agency activities
Creative	6399	Other information service activities n.e.c.
Creative	7311	Advertising agencies
Creative	7312	Media representation
Creative	7320	Market research and public opinion polling
Creative	7410	Specialised design activities
Creative	7740	Leasing of intellectual property and similar products, except copyrighted works
Creative	9003	Artistic creation
Digital	5821	Publishing of computer games
Digital	5829	Other software publishing
Digital	6110	Wired telecommunications activities
Digital	6120	Wireless telecommunications activities
Digital	6130	Satellite telecommunications activities

(continued)

Cluster	SIC	Industry
Digital	6190	Other telecommunications activities
Digital	6201	Computer programming activities
Digital	6202	Computer consultancy activities
Digital	6203	Computer facilities management activities
Digital	6209	Other information technology and computer service activities
Digital	6311	Data processing, hosting and related activities
Digital	6312	Web portals
Downstream chemical	1722	Manufacture of household and sanitary goods and of toilet requisites
Downstream chemical	1910	Manufacture of coke oven products
Downstream chemical	2012	Manufacture of dyes and pigments
Downstream chemical	2020	Manufacture of pesticides and other agrochemical products
Downstream chemical	2030	Manufacture of paints, varnishes and similar coatings, printing ink and mastics
Downstream chemical	2041	Manufacture of soap and detergents, cleaning and polishing preparations
Downstream chemical	2042	Manufacture of perfumes and toilet preparations
Downstream chemical	2051	Manufacture of explosives
Downstream chemical	2052	Manufacture of glues
Downstream chemical	2059	Manufacture of other chemical products n.e.c.
Downstream chemical	2110	Manufacture of basic pharmaceutical products
Downstream chemical	2120	Manufacture of pharmaceutical preparations
Downstream chemical	2391	Production of abrasive products
Downstream chemical	2399	Manufacture of other non-metallic mineral products n.e.c.
Downstream chemical	4646	Wholesale of pharmaceutical goods
Downstream chemical	4675	Wholesale of chemical products
Downstream metal	2511	Manufacture of metal structures and parts of structures
Downstream metal	2512	Manufacture of doors and windows of metal
Downstream metal	2571	Manufacture of cutlery
Downstream metal	2572	Manufacture of locks and hinges
Downstream metal	2573	Manufacture of tools
Downstream metal	2591	Manufacture of steel drums and similar containers

(continued)

Cluster	SIC	Industry
Downstream metal	2592	Manufacture of light metal packaging
Downstream metal	2593	Manufacture of wire products, chain and springs
Downstream metal	2594	Manufacture of fasteners and screw machine products
Downstream metal	2599	Manufacture of other fabricated metal products n.e.c.
Downstream metal	2814	Manufacture of other taps and valves
Downstream metal	2815	Manufacture of bearings, gears, gearing and driving elements
Downstream metal	3092	Manufacture of bicycles and invalid carriages
Downstream metal	3211	Striking of coins
Downstream metal	3311	Repair of fabricated metal products
Education and childcare	8510	Pre-primary education
Education and childcare	8520	Primary education
Education and childcare	8531	General secondary education
Education and childcare	8532	Technical and vocational secondary education
Education and childcare	8559	Other education n.e.c.
Education and childcare	8560	Educational support activities
Education and childcare	8891	Child day-care activities
Education and knowledge creation	7211	Research and experimental development on biotechnology
Education and knowledge creation	7219	Other research and experimental development on natural sciences and engineering
Education and knowledge creation	7220	Research and experimental development on social sciences and humanities
Education and knowledge creation	8541	Post-secondary non-tertiary education
Education and knowledge creation	8542	Tertiary education
Extractives	0510	Mining of hard coal
Extractives	0520	Mining of lignite
Extractives	0710	Mining of iron ores
Extractives	0721	Mining of uranium and thorium ores
Extractives	0729	Mining of other non-ferrous metal ores
Extractives	0811	Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate
Extractives	0812	Operation of gravel and sand pits; mining of clays and kaolin
Extractives	0891	Mining of chemical and fertiliser minerals

(continued)

Cluster	SIC	Industry
Extractives	0892	Extraction of peat
Extractives	0893	Extraction of salt
Extractives	0899	Other mining and quarrying n.e.c.
Extractives	0990	Support activities for other mining and quarrying
Extractives	4612	Agents involved in the sale of fuels, ores, metals and industrial chemicals
Financial and legal services	6411	Central banking
Financial and legal services	6419	Other monetary intermediation
Financial and legal services	6420	Activities of holding companies
Financial and legal services	6430	Trusts, funds and similar financial entities
Financial and legal services	6491	Financial leasing
Financial and legal services	6492	Other credit granting
Financial and legal services	6499	Other financial service activities, except insurance and pension funding, n.e.c.
Financial and legal services	6511	Life insurance
Financial and legal services	6512	Non-life insurance
Financial and legal services	6520	Reinsurance
Financial and legal services	6530	Pension funding
Financial and legal services	6611	Administration of financial markets
Financial and legal services	6612	Security and commodity contracts brokerage
Financial and legal services	6619	Other activities auxiliary to financial services, except insurance and pension funding
Financial and legal services	6621	Risk and damage evaluation
Financial and legal services	6622	Activities of insurance agents and brokers
Financial and legal services	6629	Other activities auxiliary to insurance and pension funding
Financial and legal services	6630	Fund management activities
Financial and legal services	6910	Legal activities
Financial and legal services	8030	Investigation activities
Fishing	0311	Marine fishing
Fishing	0312	Freshwater fishing
Fishing	0321	Marine aquaculture
Fishing	0322	Freshwater aquaculture

(continued)

Cluster	SIC	Industry
Fishing	1020	Processing and preserving of fish, crustaceans and molluscs
Fishing	4638	Wholesale of other food, including fish, crustaceans and molluscs
Food and beverage	1071	Manufacture of bread; manufacture of fresh pastry goods and cakes
Food and beverage	4617	Agents involved in the sale of food, beverages and tobacco
Food and beverage	4631	Wholesale of fruit and vegetables
Food and beverage	4632	Wholesale of meat and meat products
Food and beverage	4634	Wholesale of beverages
Food and beverage	4639	Non-specialised wholesale of food, beverages and tobacco
Food and beverage	4711	Retail sale in non-specialised stores with food, beverages or tobacco predominating
Food and beverage	4721	Retail sale of fruit and vegetables in specialised stores
Food and beverage	4722	Retail sale of meat and meat products in specialised stores
Food and beverage	4723	Retail sale of fish, crustaceans and molluscs in specialised stores
Food and beverage	4724	Retail sale of bread, cakes, flour confectionery and sugar confectionery in specialised stores
Food and beverage	4725	Retail sale of beverages in specialised stores
Food and beverage	4726	Retail sale of tobacco products in specialised stores
Food and beverage	4729	Other retail sale of food in specialised stores
Food and beverage	4781	Retail sale via stalls and markets of food, beverages and tobacco products
Food and beverage	5610	Restaurants and mobile food service activities
Food and beverage	5629	Other food service activities
Food and beverage	5630	Beverage serving activities
Food and drink production	1011	Processing and preserving of meat
Food and drink production	1012	Processing and preserving of poultry meat
Food and drink production	1013	Production of meat and poultry meat products
Food and drink production	1031	Processing and preserving of potatoes
Food and drink production	1032	Manufacture of fruit and vegetable juice
Food and drink production	1039	Other processing and preserving of fruit and vegetables
Food and drink production	1041	Manufacture of oils and fats
Food and drink production	1042	Manufacture of margarine and similar edible fats
Food and drink production	1051	Operation of dairies and cheese making

(continued)

Cluster	SIC	Industry
Food and drink production	1052	Manufacture of ice cream
Food and drink production	1061	Manufacture of grain mill products
Food and drink production	1062	Manufacture of starches and starch products
Food and drink production	1072	Manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes
Food and drink production	1073	Manufacture of macaroni, noodles, couscous and similar farinaceous products
Food and drink production	1081	Manufacture of sugar
Food and drink production	1082	Manufacture of cocoa, chocolate and sugar confectionery
Food and drink production	1083	Processing of tea and coffee
Food and drink production	1084	Manufacture of condiments and seasonings
Food and drink production	1085	Manufacture of prepared meals and dishes
Food and drink production	1086	Manufacture of homogenised food preparations and dietetic food
Food and drink production	1089	Manufacture of other food products n.e.c.
Food and drink production	1092	Manufacture of prepared pet foods
Food and drink production	1101	Distilling, rectifying and blending of spirits
Food and drink production	1102	Manufacture of wine from grape
Food and drink production	1103	Manufacture of cider and other fruit wines
Food and drink production	1104	Manufacture of other non-distilled fermented beverages
Food and drink production	1105	Manufacture of beer
Food and drink production	1106	Manufacture of malt
Food and drink production	1107	Manufacture of soft drinks; production of mineral waters and other bottled waters
Food and drink production	1200	Manufacture of tobacco products
Food and drink production	2053	Manufacture of essential oils
Food and drink production	4621	Wholesale of grain, unmanufactured tobacco, seeds and animal feeds
Food and drink production	4633	Wholesale of dairy products, eggs and edible oils and fats
Food and drink production	4635	Wholesale of tobacco products
Food and drink production	4636	Wholesale of sugar and chocolate and sugar confectionery
Food and drink production	4637	Wholesale of coffee, tea, cocoa and spices
Forestry	0210	Silviculture and other forestry activities
Forestry	0220	Logging

(continued)

Cluster	SIC	Industry
Forestry	0230	Gathering of wild growing non-wood products
Forestry	0240	Support services to forestry
Forestry	1610	Sawmilling and planing of wood
Furniture and wood products	1621	Manufacture of veneer sheets and wood-based panels
Furniture and wood products	1622	Manufacture of assembled parquet floors
Furniture and wood products	1624	Manufacture of wooden containers
Furniture and wood products	1629	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials
Furniture and wood products	3101	Manufacture of office and shop furniture
Furniture and wood products	3102	Manufacture of kitchen furniture
Furniture and wood products	3103	Manufacture of mattresses
Furniture and wood products	3109	Manufacture of other furniture
Furniture and wood products	4665	Wholesale of office furniture
Furniture and wood products	9524	Repair of furniture and home furnishings
Government	8411	General public administration activities
Government	8412	Regulation of the activities of providing health care, education, cultural services and other social services, excluding social security
Government	8413	Regulation of and contribution to more efficient operation of businesses
Government	8421	Foreign affairs
Government	8422	Defence activities
Government	8423	Justice and judicial activities
Government	8424	Public order and safety activities
Government	8425	Fire service activities
Government	8430	Compulsory social security activities
Hazardous materials and waste	2446	Processing of nuclear fuel
Hazardous materials and waste	3812	Collection of hazardous waste
Hazardous materials and waste	3822	Treatment and disposal of hazardous waste
Hazardous materials and waste	3900	Remediation activities and other waste management services
Health and care	4773	Dispensing chemist in specialised stores
Health and care	8610	Hospital activities

(continued)

Cluster	SIC	Industry
Health and care	8621	General medical practice activities
Health and care	8622	Specialist medical practice activities
Health and care	8623	Dental practice activities
Health and care	8690	Other human health activities
Health and care	8710	Residential nursing care activities
Health and care	8720	Residential care activities for learning disabilities, mental health and substance abuse
Health and care	8730	Residential care activities for the elderly and disabled
Health and care	8790	Other residential care activities
Household goods and services	4615	Agents involved in the sale of furniture, household goods, hardware and ironmongery
Household goods and services	4647	Wholesale of furniture, carpets and lighting equipment
Household goods and services	4649	Wholesale of other household goods
Household goods and services	4676	Wholesale of other intermediate products
Household goods and services	4690	Non-specialised wholesale trade
Household goods and services	4719	Other retail sale in non-specialised stores
Household goods and services	4742	Retail sale of telecommunications equipment in specialised stores
Household goods and services	4743	Retail sale of audio and video equipment in specialised stores
Household goods and services	4752	Retail sale of hardware, paints and glass in specialised stores
Household goods and services	4753	Retail sale of carpets, rugs, wall and floor coverings in specialised stores
Household goods and services	4754	Retail sale of electrical household appliances in specialised stores
Household goods and services	4759	Retail sale of furniture, lighting equipment and other household articles in specialised stores
Household goods and services	4774	Retail sale of medical and orthopaedic goods in specialised stores
Household goods and services	4775	Retail sale of cosmetic and toilet articles in specialised stores
Household goods and services	4778	Other retail sale of new goods in specialised stores
Household goods and services	4779	Retail sale of second-hand goods in stores
Household goods and services	4789	Retail sale via stalls and markets of other goods
Household goods and services	7729	Renting and leasing of other personal and household goods
Household goods and services	8130	Landscape service activities
Household goods and services	9523	Repair of footwear and leather goods
Local environmental services	3811	Collection of non-hazardous waste

(continued)

Cluster	SIC	Industry
Local environmental services	3821	Treatment and disposal of non-hazardous waste
Local environmental services	3832	Recovery of sorted materials
Local environmental services	4677	Wholesale of waste and scrap
Local transport	4931	Urban and suburban passenger land transport
Local transport	4932	Taxi operation
Local transport	4939	Other passenger land transport n.e.c.
Local transport	5229	Other transportation support activities
Local transport	7711	Renting and leasing of cars and light motor vehicles
Local transport	8553	Driving school activities
Logistics and ecommerce	4791	Retail sale via mail order houses or via Internet
Logistics and ecommerce	4920	Freight rail transport
Logistics and ecommerce	4941	Freight transport by road
Logistics and ecommerce	5040	Inland freight water transport
Logistics and ecommerce	5210	Warehousing and storage
Logistics and ecommerce	5224	Cargo handling
Logistics and ecommerce	5320	Other postal and courier activities
Logistics and ecommerce	7712	Renting and leasing of trucks
Maritime	3011	Building of ships and floating structures
Maritime	3012	Building of pleasure and sporting boats
Maritime	3315	Repair and maintenance of ships and boats
Maritime	5010	Sea and coastal passenger water transport
Maritime	5020	Sea and coastal freight water transport
Maritime	5222	Service activities incidental to water transportation
Maritime	7734	Renting and leasing of water transport equipment
Metalworking technology	2561	Treatment and coating of metals
Metalworking technology	2562	Machining
Metalworking technology	2824	Manufacture of power-driven hand tools
Metalworking technology	2841	Manufacture of metal forming machinery
Metalworking technology	2849	Manufacture of other machine tools

(continued)

Cluster	SIC	Industry
Metalworking technology	2891	Manufacture of machinery for metallurgy
Metalworking technology	4662	Wholesale of machine tools
Oil and gas	0610	Extraction of crude petroleum
Oil and gas	0620	Extraction of natural gas
Oil and gas	0910	Support activities for petroleum and natural gas extraction
Oil and gas	1920	Manufacture of refined petroleum products
Paper and packaging	1711	Manufacture of pulp
Paper and packaging	1712	Manufacture of paper and paperboard
Paper and packaging	1721	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard
Paper and packaging	1723	Manufacture of paper stationery
Paper and packaging	1729	Manufacture of other articles of paper and paperboard
Paper and packaging	2222	Manufacture of plastic packing goods
Paper and packaging	8292	Packaging activities
Passenger transport	3317	Repair and maintenance of other transport equipment
Passenger transport	4910	Passenger rail transport, interurban
Passenger transport	5030	Inland passenger water transport
Passenger transport	5221	Service activities incidental to land transportation
Personal services	5310	Postal activities under universal service obligation
Personal services	7911	Travel agency activities
Personal services	8810	Social work activities without accommodation for the elderly and disabled
Personal services	8899	Other social work activities without accommodation n.e.c.
Personal services	9313	Fitness facilities
Personal services	9420	Activities of trade unions
Personal services	9491	Activities of religious organisations
Personal services	9492	Activities of political organisations
Personal services	9499	Activities of other membership organisations n.e.c.
Personal services	9602	Hairdressing and other beauty treatment
Personal services	9603	Funeral and related activities
Personal services	9604	Physical well-being activities

(continued)

Cluster	SIC	Industry
Personal services	9609	Other personal service activities n.e.c.
Plastics and vulcanised products	2016	Manufacture of plastics in primary forms
Plastics and vulcanised products	2211	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres
Plastics and vulcanised products	2219	Manufacture of other rubber products
Plastics and vulcanised products	2221	Manufacture of plastic plates, sheets, tubes and profiles
Plastics and vulcanised products	2223	Manufacture of builders' ware of plastic
Plastics and vulcanised products	2229	Manufacture of other plastic products
Plastics and vulcanised products	2311	Manufacture of flat glass
Plastics and vulcanised products	2312	Shaping and processing of flat glass
Plastics and vulcanised products	2313	Manufacture of hollow glass
Plastics and vulcanised products	2319	Manufacture and processing of other glass, including technical glassware
Plastics and vulcanised products	2320	Manufacture of refractory products
Plastics and vulcanised products	2331	Manufacture of ceramic tiles and flags
Plastics and vulcanised products	2341	Manufacture of ceramic household and ornamental articles
Plastics and vulcanised products	2342	Manufacture of ceramic sanitary fixtures
Plastics and vulcanised products	2343	Manufacture of ceramic insulators and insulating fittings
Plastics and vulcanised products	2344	Manufacture of other technical ceramic products
Plastics and vulcanised products	2349	Manufacture of other ceramic products
Precision technology	1820	Reproduction of recorded media
Precision technology	2611	Manufacture of electronic components
Precision technology	2612	Manufacture of loaded electronic boards
Precision technology	2651	Manufacture of instruments and appliances for measuring, testing and navigation
Precision technology	2660	Manufacture of irradiation, electromedical and electrotherapeutic equipment
Precision technology	2670	Manufacture of optical instruments and photographic equipment
Precision technology	2680	Manufacture of magnetic and optical media
Precision technology	2731	Manufacture of fibre optic cables
Precision technology	2732	Manufacture of other electronic and electric wires and cables
Precision technology	2733	Manufacture of wiring devices
Precision technology	2899	Manufacture of other special-purpose machinery n.e.c.

(continued)

Cluster	SIC	Industry
Precision technology	3220	Manufacture of musical instruments
Precision technology	3250	Manufacture of medical and dental instruments and supplies
Precision technology	3313	Repair of electronic and optical equipment
Precision technology	3314	Repair of electrical equipment
Precision technology	4652	Wholesale of electronic and telecommunications equipment and parts
Precision technology	7120	Technical testing and analysis
Printing and publishing	1811	Printing of newspapers
Printing and publishing	1812	Other printing
Printing and publishing	1813	Pre-press and pre-media services
Printing and publishing	1814	Binding and related services
Printing and publishing	5811	Book publishing
Printing and publishing	5812	Publishing of directories and mailing lists
Printing and publishing	5813	Publishing of newspapers
Printing and publishing	5814	Publishing of journals and periodicals
Printing and publishing	5819	Other publishing activities
Production technology	2529	Manufacture of other tanks, reservoirs and containers of metal
Production technology	2530	Manufacture of steam generators, except central heating hot water boilers
Production technology	2711	Manufacture of electric motors, generators and transformers
Production technology	2712	Manufacture of electricity distribution and control apparatus
Production technology	2720	Manufacture of batteries and accumulators
Production technology	2811	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
Production technology	2812	Manufacture of fluid power equipment
Production technology	2813	Manufacture of other pumps and compressors
Production technology	2821	Manufacture of ovens, furnaces and furnace burners
Production technology	2822	Manufacture of lifting and handling equipment
Production technology	2823	Manufacture of office machinery and equipment (except computers and peripheral equipment)
Production technology	2825	Manufacture of non-domestic cooling and ventilation equipment
Production technology	2829	Manufacture of other general-purpose machinery n.e.c.
Production technology	2892	Manufacture of machinery for mining, quarrying and construction

(continued)

Cluster	SIC	Industry
Production technology	2893	Manufacture of machinery for food, beverage and tobacco processing
Production technology	2894	Manufacture of machinery for textile, apparel and leather production
Production technology	2895	Manufacture of machinery for paper and paperboard production
Production technology	2896	Manufacture of plastics and rubber machinery
Production technology	3299	Other manufacturing n.e.c.
Production technology	3312	Repair of machinery
Production technology	3319	Repair of other equipment
Production technology	3320	Installation of industrial machinery and equipment
Production technology	4614	Agents involved in the sale of machinery, industrial equipment, ships and aircraft
Production technology	4663	Wholesale of mining, construction and civil engineering machinery
Production technology	4664	Wholesale of machinery for the textile industry and of sewing and knitting machines
Production technology	4666	Wholesale of other office machinery and equipment
Production technology	4669	Wholesale of other machinery and equipment
Production technology	7733	Renting and leasing of office machinery and equipment (including computers)
Production technology	7739	Renting and leasing of other machinery, equipment and tangible goods n.e.c.
Professional services	7010	Activities of head offices
Professional services	7021	Public relations and communication activities
Professional services	7022	Business and other management consultancy activities
Professional services	7490	Other professional, scientific and technical activities n.e.c.
Professional services	7830	Other human resources provision
Property development	4110	Development of building projects
Property development	4120	Construction of residential and non-residential buildings
Property development	4942	Removal services
Property development	6810	Buying and selling of own real estate
Property development	6820	Renting and operating of own or leased real estate
Property development	6831	Real estate agencies
Property development	6832	Management of real estate on a fee or contract basis
Retail	4618	Agents specialised in the sale of other particular products
Retail	4645	Wholesale of perfume and cosmetics

(continued)

Cluster	SIC	Industry
Retail	4741	Retail sale of computers, peripheral units and software in specialised stores
Retail	4751	Retail sale of textiles in specialised stores
Retail	4761	Retail sale of books in specialised stores
Retail	4763	Retail sale of music and video recordings in specialised stores
Retail	4765	Retail sale of games and toys in specialised stores
Retail	4771	Retail sale of clothing in specialised stores
Retail	4772	Retail sale of footwear and leather goods in specialised stores
Retail	4776	Retail sale of flowers, plants, seeds, fertilisers, pet animals and pet food in specialised stores
Retail	4777	Retail sale of watches and jewellery in specialised stores
Retail	4782	Retail sale via stalls and markets of textiles, clothing and footwear
Retail	4799	Other retail sale not in stores, stalls or markets
Retail	7722	Renting of video tapes and disks
Sports and leisure	4764	Retail sale of sporting equipment in specialised stores
Sports and leisure	5914	Motion picture projection activities
Sports and leisure	8551	Sports and recreation education
Sports and leisure	9101	Library and archive activities
Sports and leisure	9200	Gambling and betting activities
Sports and leisure	9311	Operation of sports facilities
Sports and leisure	9312	Activities of sport clubs
Sports and leisure	9319	Other sports activities
Textiles and apparel	1310	Preparation and spinning of textile fibres
Textiles and apparel	1320	Weaving of textiles
Textiles and apparel	1330	Finishing of textiles
Textiles and apparel	1391	Manufacture of knitted and crocheted fabrics
Textiles and apparel	1392	Manufacture of made-up textile articles, except apparel
Textiles and apparel	1393	Manufacture of carpets and rugs
Textiles and apparel	1394	Manufacture of cordage, rope, twine and netting
Textiles and apparel	1395	Manufacture of non-wovens and articles made from non-wovens, except apparel
Textiles and apparel	1396	Manufacture of other technical and industrial textiles

(continued)

Cluster	SIC	Industry
Textiles and apparel	1399	Manufacture of other textiles n.e.c.
Textiles and apparel	1411	Manufacture of leather clothes
Textiles and apparel	1412	Manufacture of workwear
Textiles and apparel	1413	Manufacture of other outerwear
Textiles and apparel	1414	Manufacture of underwear
Textiles and apparel	1419	Manufacture of other wearing apparel and accessories
Textiles and apparel	1420	Manufacture of articles of fur
Textiles and apparel	1431	Manufacture of knitted and crocheted hosiery
Textiles and apparel	1439	Manufacture of other knitted and crocheted apparel
Textiles and apparel	1511	Tanning and dressing of leather; dressing and dyeing of fur
Textiles and apparel	1512	Manufacture of luggage, handbags and the like, saddlery and harness
Textiles and apparel	1520	Manufacture of footwear
Textiles and apparel	2060	Manufacture of man-made fibres
Textiles and apparel	4616	Agents involved in the sale of textiles, clothing, fur, footwear and leather goods
Textiles and apparel	4624	Wholesale of hides, skins and leather
Textiles and apparel	4641	Wholesale of textiles
Textiles and apparel	4642	Wholesale of clothing and footwear
Upstream chemical	2011	Manufacture of industrial gases
Upstream chemical	2013	Manufacture of other inorganic basic chemicals
Upstream chemical	2014	Manufacture of other organic basic chemicals
Upstream chemical	2015	Manufacture of fertilisers and nitrogen compounds
Upstream chemical	2017	Manufacture of synthetic rubber in primary forms
Upstream chemical	4671	Wholesale of solid, liquid and gaseous fuels and related products
Upstream metal	2410	Manufacture of basic iron and steel and of ferro-alloys
Upstream metal	2420	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
Upstream metal	2431	Cold drawing of bars
Upstream metal	2432	Cold rolling of narrow strip
Upstream metal	2433	Cold forming or folding
Upstream metal	2434	Cold drawing of wire

(continued)

Cluster	SIC	Industry
Upstream metal	2441	Precious metals production
Upstream metal	2442	Aluminium production
Upstream metal	2443	Lead, zinc and tin production
Upstream metal	2444	Copper production
Upstream metal	2445	Other non-ferrous metal production
Upstream metal	2451	Casting of iron
Upstream metal	2452	Casting of steel
Upstream metal	2453	Casting of light metals
Upstream metal	2454	Casting of other non-ferrous metals
Upstream metal	2550	Forging, pressing, stamping and roll-forming of metal; powder metallurgy
Upstream metal	3831	Dismantling of wrecks
Upstream metal	4672	Wholesale of metals and metal ores
Utility	3511	Production of electricity
Utility	3512	Transmission of electricity
Utility	3513	Distribution of electricity
Utility	3514	Trade of electricity
Utility	3521	Manufacture of gas
Utility	3522	Distribution of gaseous fuels through mains
Utility	3523	Trade of gas through mains
Utility	3600	Water collection, treatment and supply
Utility	4222	Construction of utility projects for electricity and telecommunications
Vehicle and defence technology	2540	Manufacture of weapons and ammunition
Vehicle and defence technology	2910	Manufacture of motor vehicles
Vehicle and defence technology	2920	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers
Vehicle and defence technology	2931	Manufacture of electrical and electronic equipment for motor vehicles
Vehicle and defence technology	2932	Manufacture of other parts and accessories for motor vehicles
Vehicle and defence technology	3020	Manufacture of railway locomotives and rolling stock
Vehicle and defence technology	3030	Manufacture of air and spacecraft and related machinery
Vehicle and defence technology	3040	Manufacture of military fighting vehicles

(continued)

Cluster	SIC	Industry
Vehicle and defence technology	3091	Manufacture of motorcycles
Vehicle and defence technology	3099	Manufacture of other transport equipment n.e.c.
Vehicle and defence technology	3316	Repair and maintenance of aircraft and spacecraft
Visitor economy	5510	Hotels and similar accommodation
Visitor economy	5520	Holiday and other short-stay accommodation
Visitor economy	5530	Camping grounds, recreational vehicle parks and trailer parks
Visitor economy	5590	Other accommodation
Visitor economy	7721	Renting and leasing of recreational and sports goods
Visitor economy	7912	Tour operator activities
Visitor economy	8552	Cultural education
Visitor economy	9001	Performing arts
Visitor economy	9002	Support activities to performing arts
Visitor economy	9004	Operation of arts facilities
Visitor economy	9102	Museum activities
Visitor economy	9103	Operation of historical sites and buildings and similar visitor attractions
Visitor economy	9104	Botanical and zoological gardens and nature reserve activities
Visitor economy	9321	Activities of amusement parks and theme parks
Visitor economy	9329	Other amusement and recreation activities