

# A report on skills mismatches in Derby, Derbyshire, Nottingham, and Nottinghamshire LEP

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Centre for Progressive Capitalism  
*dynamic markets, inclusive societies*



Derby  
Derbyshire  
Nottingham  
Nottinghamshire

## About the research

The research provides detailed mapping of the supply and demand for technical and skills in a local economy. The project employed a new approach to classifying technical courses, apprenticeships and jobs into 5 primary and 59 secondary occupational groups to enable meaningful analysis of supply and demand. The design of this new approach involved analysing more than 400 college-based courses, almost 200 apprenticeships frameworks and pathways, and 228 technical occupations. Sources for the development of the approach included the ONS' SOC Code Manual, careers guidance published by the Skills Funding Agency and other organisations, and the websites of qualification bodies.

The mapping is used to analyse the supply of technical skills using data from the Skills Funding Agency's Data Cube on completions of college-based courses and apprenticeships. For the demand for technical skills, job vacancy data from Burning Glass is used along with data from the Labour Force Survey on qualification levels.

For 2015/16, this report analyses more than 19,000 college-based course completions, nearly 13,000 apprenticeships and around 200,000 job vacancies across the D2N2 area.

The report also gives a broad overview of employer demand within the local economy and includes analysis of raw data from UKCES' 2015 *Employer Skills Survey*. UKCES surveyed 3,127 employer establishments in D2N2 on a range of questions on recruitment, skills and training. Latter sections of this report focuses on the proportion of vacancies that were 'skills shortage vacancies', defined as those vacancies which were proving difficult to fill due to the establishment not being able to find applicants with the appropriate skills, qualifications or experience.

### **The Centre for Progressive Capitalism**

The Centre for Progressive Capitalism's mission is to develop policies and influence policymakers to instigate a more progressive and democratic capitalism. Our work is led by a cross-party advisory board and a steering group of technical and policy experts. We undertake original research and promote debate through publications, expert seminars and public engagement.

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## Definitions and Groupings

This report's primary focus is on technical occupations. It defines a technical occupation as any that on average is done by less than 30% graduates (as indicated by the highest level of education identified in the labour force survey) and can be linked to relevant FE courses or apprenticeships.

Our technical definition is broken down into 5 primary groups to allow for more detailed analysis.

The groups are defined as follows:

- **Core technical:** these are technical occupations that are typically held by people with level 3 qualifications or above.
- **Semi-technical:** these are occupations that are typically held by people with level 2 qualifications or below. While further education can lead to these occupations, it is also possible that some people will enter them without having done an FE course or apprenticeship, given the relatively low level of skill required.
- **Public sector technical:** technical occupations that are predominantly in the public sector. Examples include care workers and teaching and educational support assistants
- **Privately funded training:** these are occupations which are not typically done by graduates, but nor are they unskilled. They are occupations that are technical in nature but for which publicly funded training is not commonly provided. An example is skilled drivers.
- **Technical – advanced:** these are occupations towards which FE can often provide a first step or foundation qualification. Entry into these occupations straight from FE is not common. They also include some occupations that are more advanced versions of those found in the core technical group. Examples include artists and designers and engineering professionals.

Alongside these 5 technical primary groups, sections of the analysis consider four additional primary groups:

- **Professional:** occupations from the standard professional and associate professional SOC major groups that on average are done by more than 30% graduates
- **Managers:** same as the standard SOC major group
- **Elementary:** same as the standard SOC major group
- **Other:** those occupations that are not in the professional, associate professional, managers or elementary SOC major groups but cannot be considered technical or professional for a variety of reasons. These make up less than 3% of total vacancies.

Each of these primary groups consists of a number of secondary occupation groups and each of these comprises of similar 4 digit SOC code occupations. For example, there are five electrician related occupations at the 4 digit SOC code level. These are grouped into the 'Electricians and electronic trades/technicians/engineers' secondary occupation group. Because this group is made up of occupations that predominantly require level 3 qualifications, it has been put in the core technical primary group.

## Executive summary

This report on the skills mismatches in the Derby, Derbyshire, Nottingham and Nottinghamshire (D2N2) Local Enterprise Partnership provides a number of insights into the composition and dynamics of the area's labour markets.

The report indicates that core technical and semi-technical occupations dominate the composition of employer demand in D2N2, accounting for half of all vacancies. More detailed analysis of job vacancy data suggests slightly stronger than average employer demand for core technical skills – and technical skills more widely – in the area. 19% of job vacancies in D2N2 in 2016 were for core technical roles, compared to an average of 18% across the UK. Similarly, all technical roles made up 62% of total vacancies in D2N2, higher than the 60% seen nationally.

Combining the relative prevalence of technical vacancies with another of the report's findings – that technical roles generally enjoy an average pay premium of £13,840 over the national living wage, rising to £17,520 for core technical roles specifically – it is clear that there is significant opportunity for employment and income growth in this area.

However, analysis of UKCES's *Employer Skills Survey* suggests that as much as 23% of technical vacancies can be classed as skill shortage vacancies. As a reflection of the higher skill levels required, this figure rises to 31% for core technical occupations. The presence of skills shortage vacancies implies employers are having a hard time sourcing the technical skills they require to expand and grow. Technical education will therefore play a key role in unlocking D2N2's future economic success.

The report identifies a number of ways technical education provision in D2N2 could be re-balanced to better capitalise on these opportunities. While in many ways course provision reflects the needs of local employers, there is also potential significant under and oversupply of certain courses.

### Key findings:

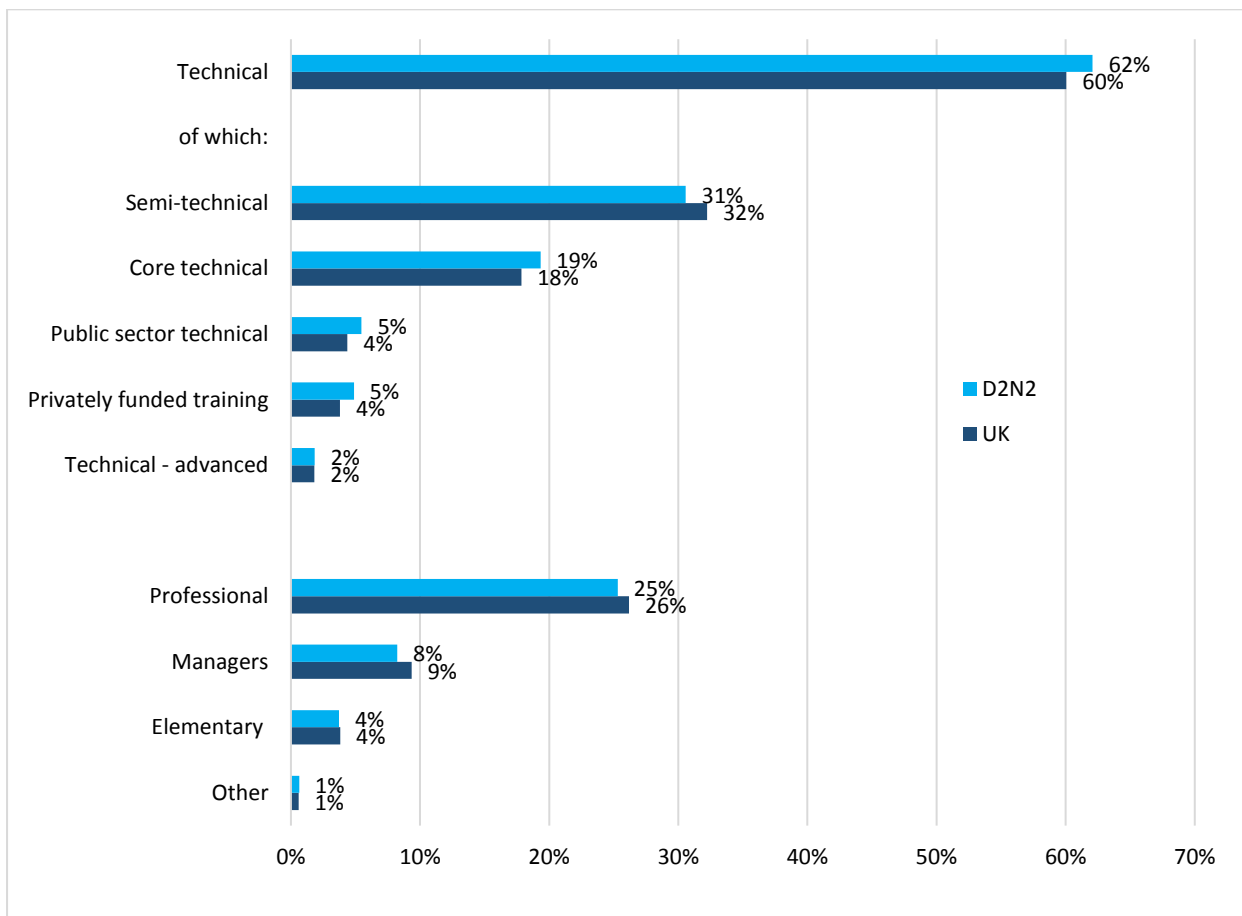
- Under the wider definition, technical vacancies make up 62% of vacancies in D2N2, slightly higher than the 60% recorded nationally. Of this, 31% are semi-technical, 19% are core technical, 5% are public sector technical and 5% are privately funded training.
- The health and social work sector is the largest source of employer demand in the area, with 24% of the total, followed by 17% for manufacturing and 15% for education.
- The core technical occupations have an average advertised salary of £30,600 in D2N2, compared to £25,700 for semi-technical.
- According to employers, 31% of core-technical vacancies in D2N2 are difficult to fill due to skills shortages. This is significantly higher than for semi-technical, with 19%, suggesting employers are struggling to find the higher skills they need in the current local labour market.
- There were an estimated 2,700 more skills shortage vacancies for core technical roles than relevant FE course completions in 2015/16. Breaking this down reveals a potential undersupply of 1,520 for IT engineers and technicians, 920 for metals, tools and instruments manufacturing and 870 for electricians and electronic trades/technicians/engineers FE course completions relative to skills shortage vacancies.

## Vacancy analysis at the primary and secondary group level

Technical vacancies make up 62% of vacancies in D2N2, slightly higher than the 60% recorded nationally.

Of this, 31% are semi-technical, 19% are core technical, 5% are public sector technical and privately funded training, and 2% are technical. 25% of vacancies are professional.

**Chart 1: Share of job vacancies by broad occupation level in Derby, Derbyshire, Nottingham and Nottinghamshire versus the UK average, 2016<sup>1</sup>**



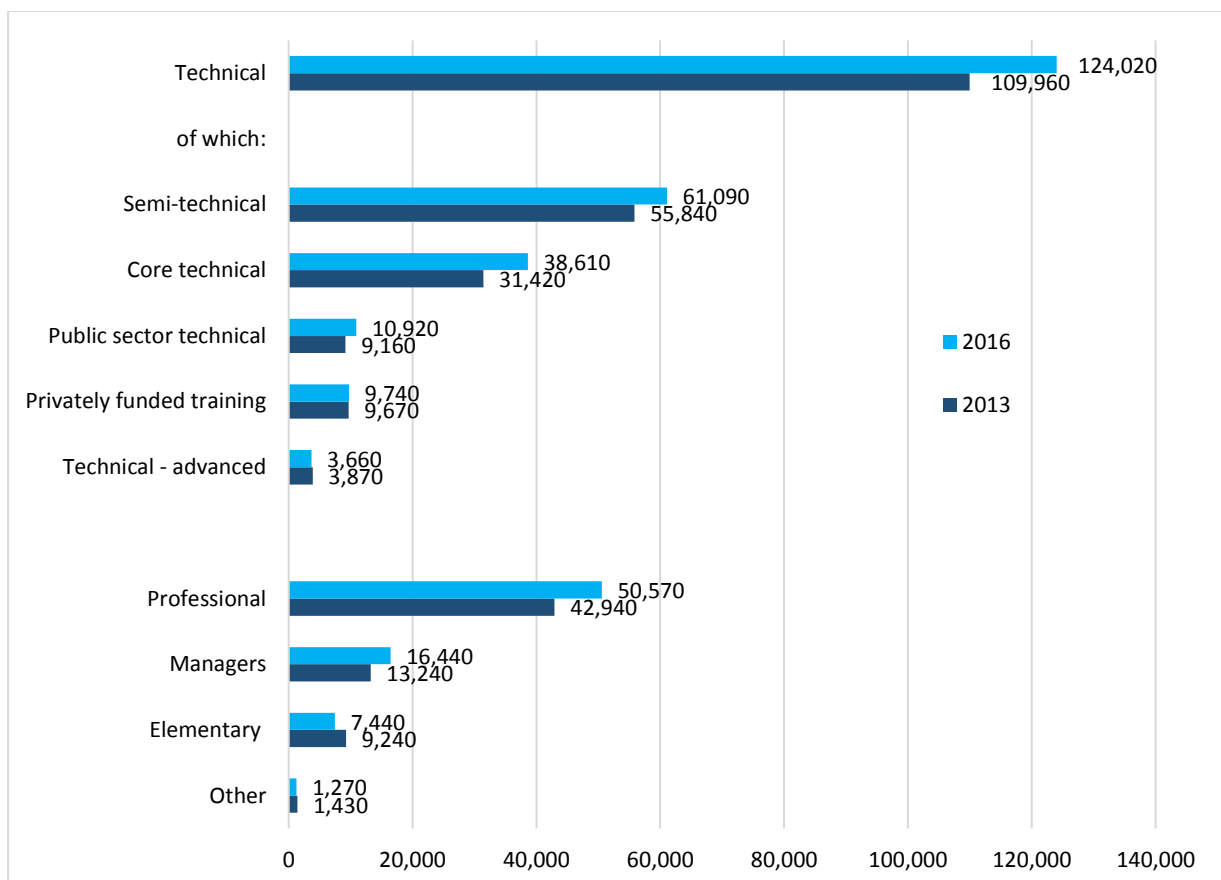
<sup>1</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

Since 2013 the D2N2 area has enjoyed steady growth in advertised job vacancies. Overall, technical vacancies have jumped from less than 110,000 to more than 124,000, an increase of 13%.

Breaking this down, semi-technical vacancies increased by 9%, from 55,840 in 2013 to 61,090 in 2016.

But it was for the core technical vacancies where the most substantial job growth was seen over this period. **The area saw growth of 23%, from 31,420 to 38,610, representing a significant strengthening in employer demand for core technical skills.** The core technical group’s share of total vacancies also increased, from less than 18% to more than 19%, while the share of semi-technical vacancies fell from 32% to 31%.

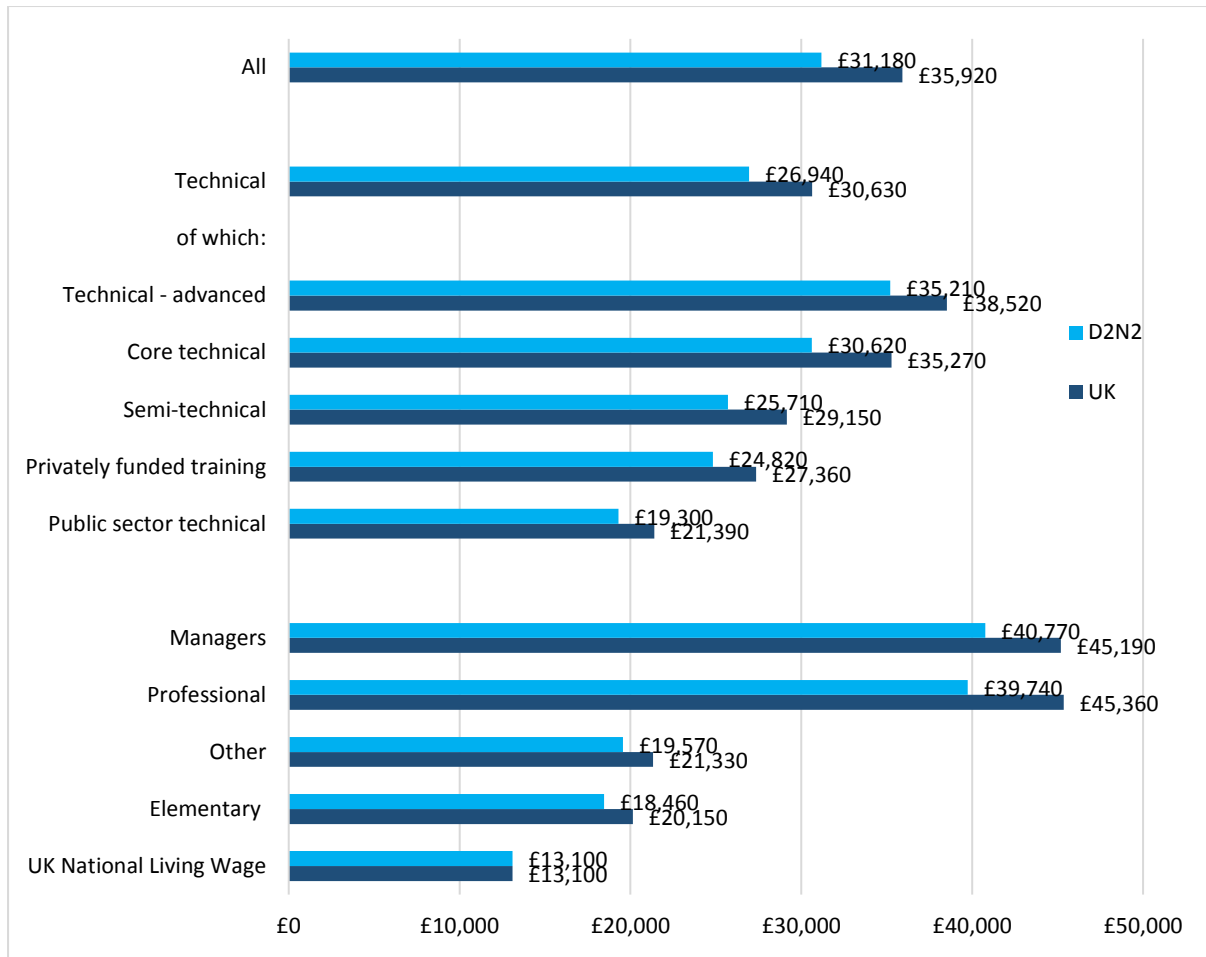
**Chart 2: Number of job vacancies by primary occupation group in Derby, Derbyshire, Nottingham and Nottinghamshire, 2016 versus 2013<sup>2</sup>**



<sup>2</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

**Core technical occupations have an average advertised salary of £30,630 in D2N2, compared to £25,710 for semi-technical.** This suggests that the upskilling provided by FE can help young people into significantly better paying jobs, contributing to the creation of inclusive growth in the area.

**Chart 3: Mean advertised salary for job vacancies by primary occupation group in Derby, Derbyshire, Nottingham and Nottinghamshire versus the UK average, 2016<sup>3</sup>**

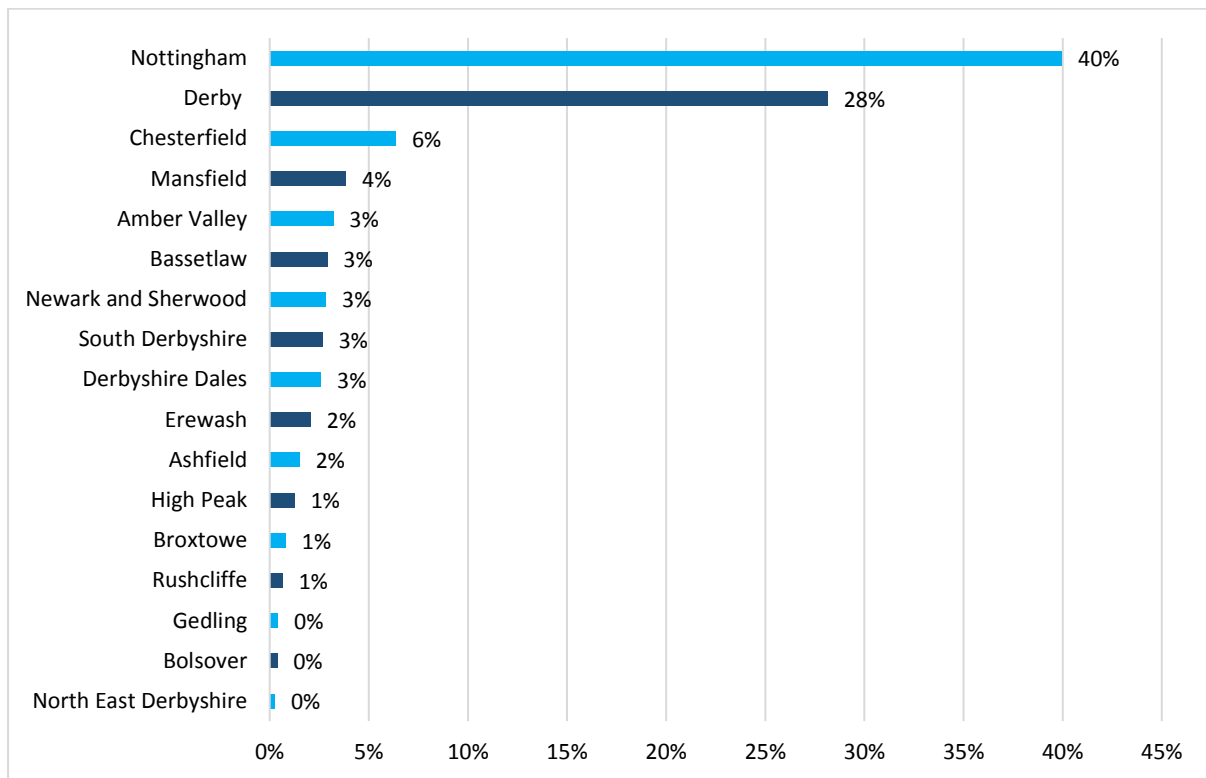


<sup>3</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data



Looking now at the geographical breakdown of job vacancies within the D2N2 area by local authority, **advertised vacancies were heavily concentrated in D2N2's two main urban centres in 2016**. More than two of every three vacancies advertised were for jobs based in the local authority area of either Nottingham or Derby.

**Chart 4: Share of job vacancies by local authority area in Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>4</sup>**



<sup>4</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

**A slightly higher proportion of vacancies were core technical in Derby than in Nottingham, with 20% and 19% respectively.** Similarly, 32% of vacancies in Derby were semi-technical, compared to 29% in Nottingham. Nottingham, however, had a higher share of professional vacancies, with 27% versus 24% for Derby

**Chart 5: Share of job vacancies by primary occupation group in Derby and Nottingham, 2016<sup>5</sup>**

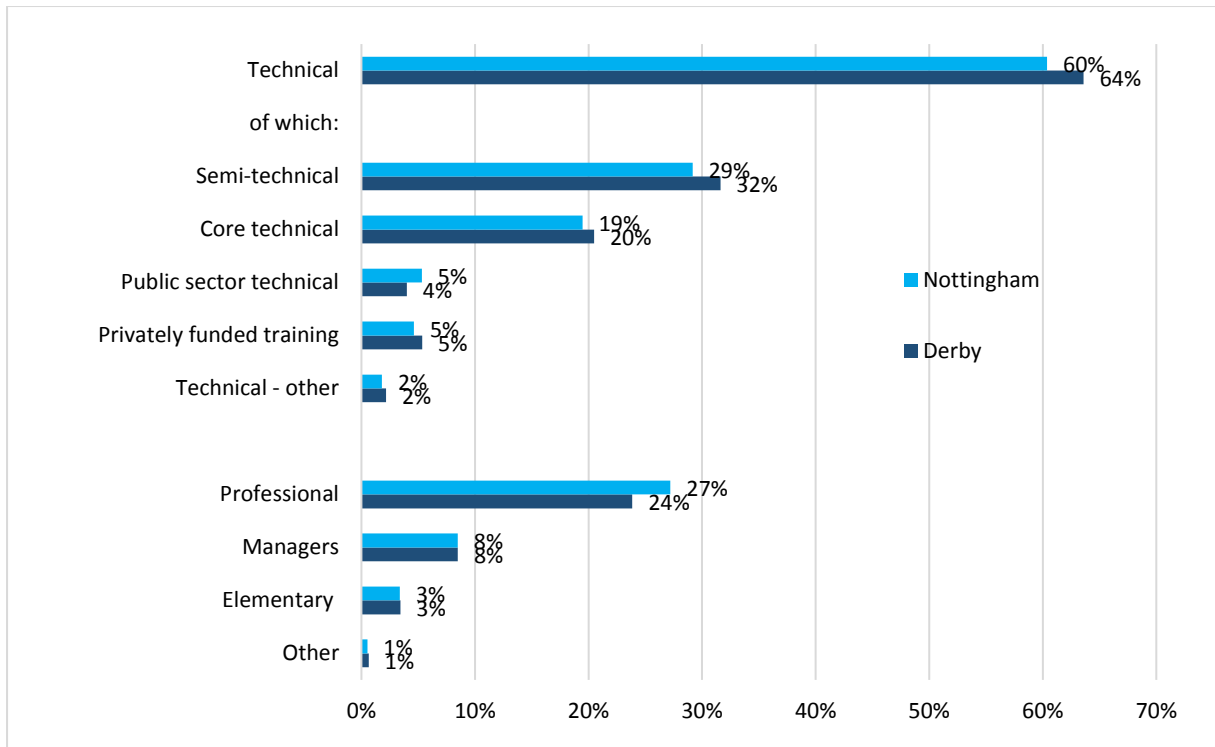


Chart 6 below turns the attention from primary to secondary occupation groups. These are groups of the ONS’s four digit SOC code occupations. The technical four digit SOC codes occupations have been allocated to 59 groups of similar occupations (secondary occupation groups) to allow for more meaningful analysis at a slightly higher level. This is necessary because it allows for a more realistic comparison of occupations and FE courses (see mismatch section below).

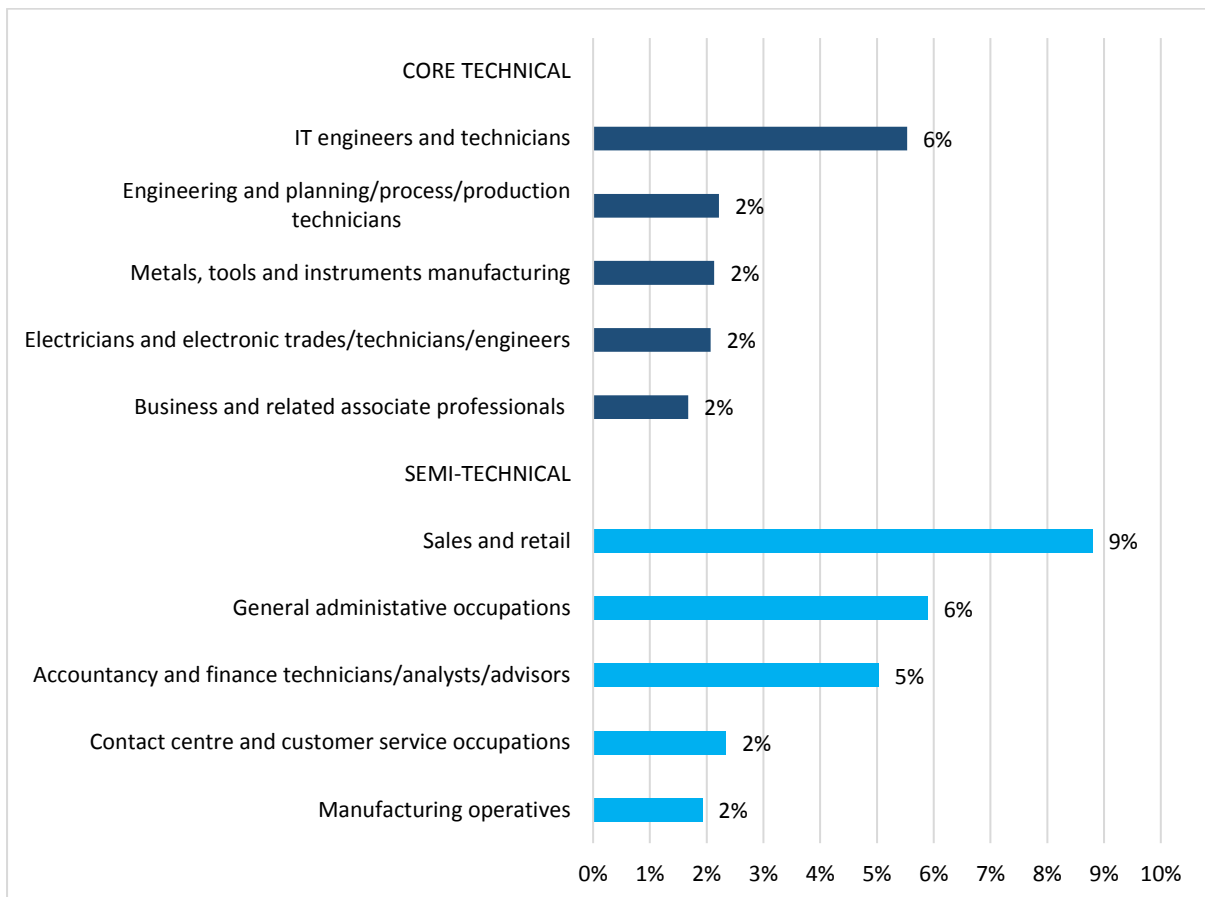
It is rare that completion of an FE course can only lead directly into a single occupation at the four digit SOC code level. In other words, FE course completions can correspond to a number of similar occupations, hence the need for slightly higher level groups.

Each of these secondary occupation groups corresponds to one of the primary occupation groups in the above chart. More details of how primary groups, secondary groups and occupations relate to one another can be found in the appendix.

<sup>5</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

Chart 6 identifies the five secondary occupation groups with the highest share of total vacancies, for both the core technical and semi-technical primary groups. For core technical groups, IT engineers and technicians had the highest share, with 6% of the total number of vacancies. For the semi-technical groups this was sales and retail, with 9% of the overall total.

**Chart 6: Top 5 secondary occupation groups by share of total vacancies for the core technical and semi-technical primary groups in Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>6</sup>**



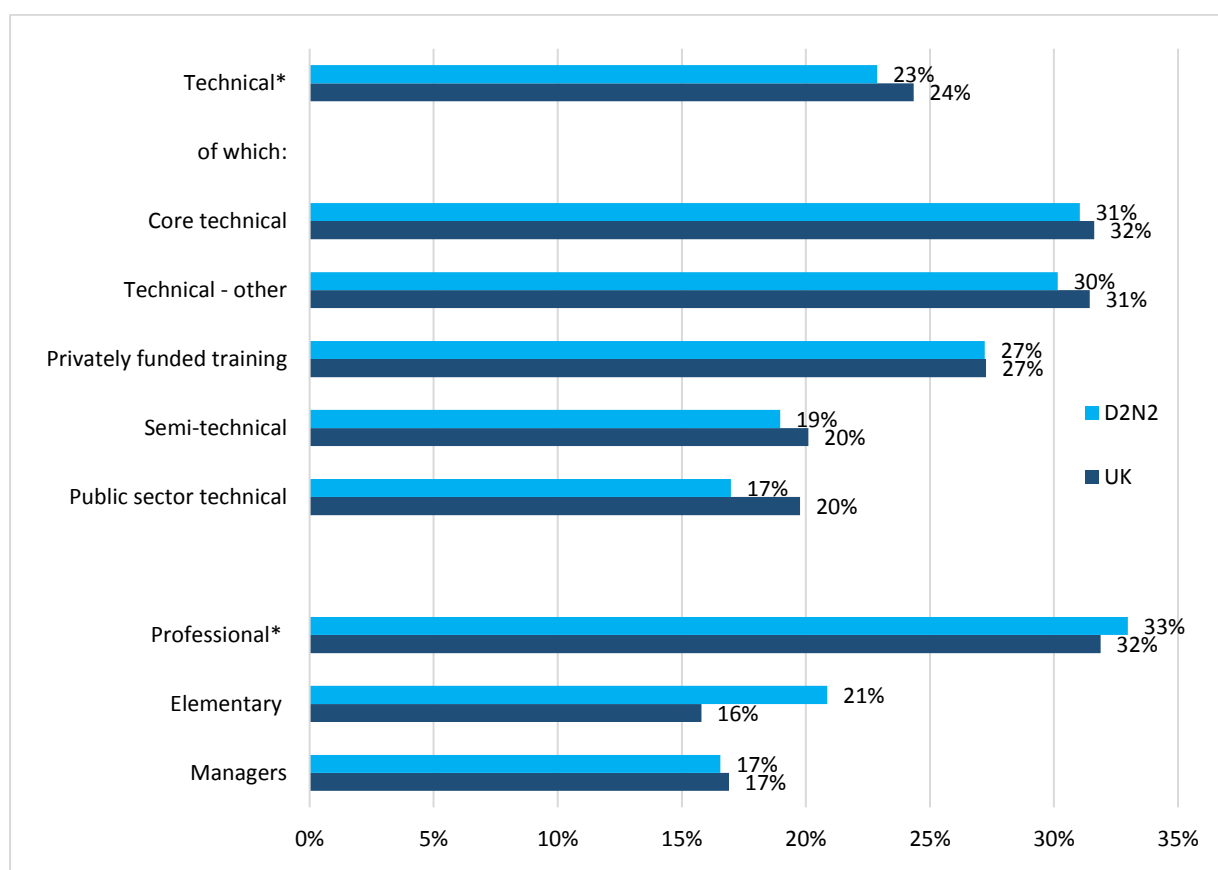
<sup>6</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

## The supply and demand for skills in technical occupations in D2N2

According to employers, 31% of core-technical vacancies in D2N2 are difficult to fill due to skills shortages<sup>7</sup>. This is significantly higher than for semi-technical, with 19%, indicating employers are struggling to find the higher skills they need in the current local labour market.

This points to a key role for FE colleges in supporting inclusive economic growth in D2N2. If FE course providers are able to offer the right kind of technical training in the right sorts of skills then not only will young people be able to move into higher paid jobs, local businesses will also be able to grow and prosper. Of course, this will also be an issue of capacity and student demand.

**Chart 7: The percentage of vacancies that were skills-shortage vacancies in Derby, Derbyshire, Nottingham and Nottinghamshire for vacancies in each primary occupation group, 2015<sup>8</sup>**



<sup>7</sup> Skills shortage vacancies are those vacancies that were proving difficult to fill due to the establishment not being able to find applicants with the appropriate skills, qualifications or experience.

<sup>8</sup> Centre for Progressive Capitalism analysis of the raw data from UKCES' 2015 Employer Skills Survey, which surveyed 3,127 employer establishments across Derby, Derbyshire, Nottingham and Nottinghamshire.

Below follows an analysis of the alignment of technical courses to technical occupations. The D2N2 datacube is analysed and courses are mapped to corresponding technical occupations to highlight potential over or undersupply of various skill sets.

The charts include data on apprenticeships, which also form a key part of how policy can combat skills shortages. The number of apprenticeships, however, is not taken into account for mismatch calculations.

Having said this, it is true that an occupation group with a large amount of skills shortage vacancies and few FE course completions will be in a better position to tackle the skills shortages if there are a good amount of apprenticeships. According to government data, 77% of apprentices stay with the same employer after finishing.<sup>9</sup>

The objective of the mismatch analysis is to identify possible skill areas where LEPs and FE providers can aim to either increase or decrease provision of technical courses or apprenticeships.

When considering the trend analysis it is important to note that the period 2014/15 to 2015/16 is defined by steady decline in FE course numbers and strong growth in job vacancies. More specifically, **there was a 17% fall in the total number of FE courses considered in this report, from 22,400 to 18,500.** This came during a period of particularly strong job vacancy growth of 46%.

The analysis is not conducted for professional roles, as the link between the provision of graduate courses and local labour market demand is far weaker and less direct. This is due both to the greater movement of graduates out of the area after course completion and the large variation in graduate course subject and eventual career path.

## Technical groupings

This section of the analysis looks at supply and demand of skills at the level of the primary technical groupings (core technical, semi-technical, privately funded training, public sector technical and technical – advanced). Each of these are made up of secondary groups of technical occupations, which in turn are comprised of similar four digit SOC code occupations.

**There were almost 24,000 more core technical vacancies than there were FE course completions in D2N2 in 2015/16.**

However, people already working in similar jobs will fill a certain portion of the core technical vacancies. In other words, some of this potential undersupply of FE course completions can be explained by industry churn. It is thus important to calculate how much of this undersupply is due to skills shortages, as it is these jobs that FE policy should be targeting.

An estimated 31% of core technical vacancies are due to skills shortages (see appendix for methodology). Hence, there were an estimated 2,700 more core technical skills shortage vacancies than relevant FE course completions. It is worth noting that not everyone that takes a course will necessarily continue into the corresponding occupation. Hence, supply would need to be slightly above demand in a stable or growing occupation group.

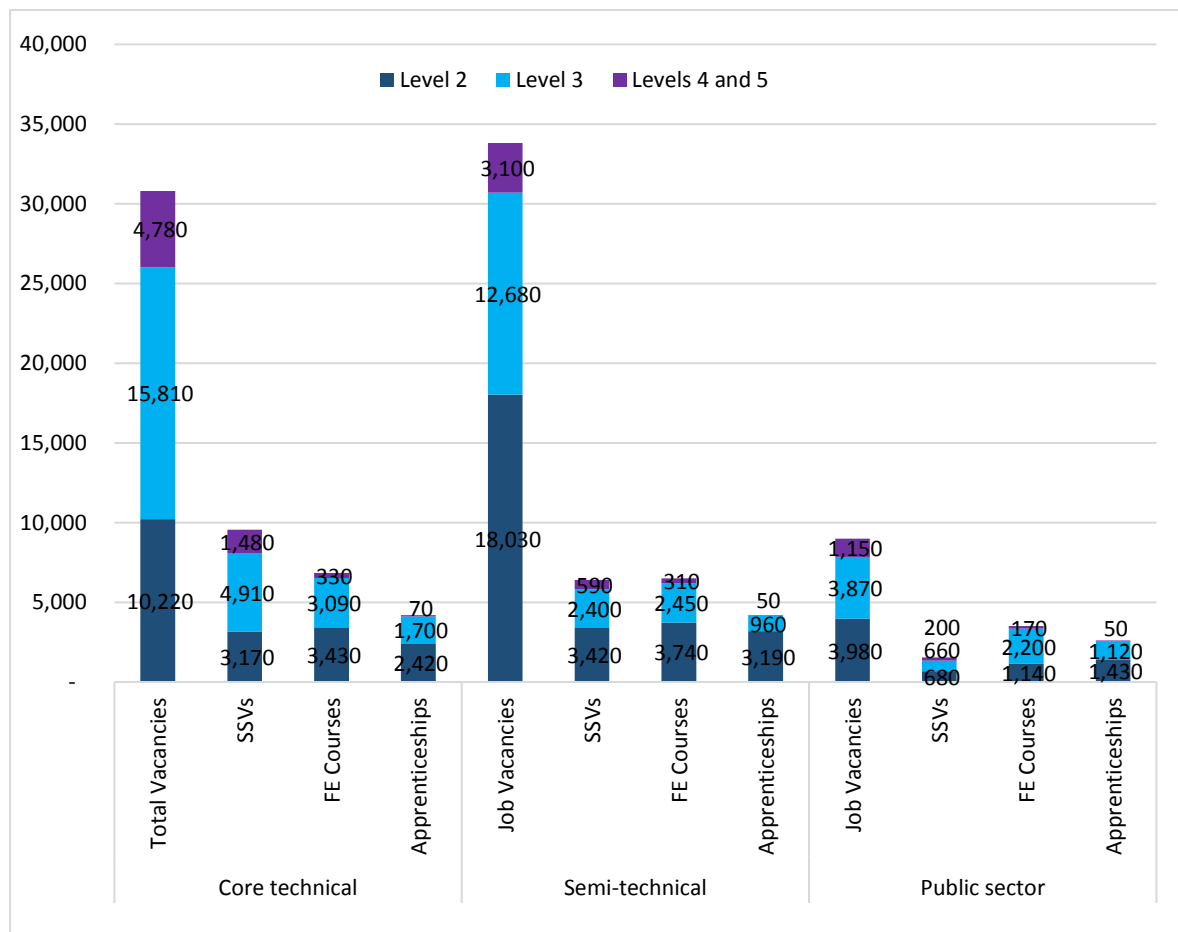
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<sup>9</sup> <https://www.gov.uk/government/publications/key-facts-about-apprenticeships/key-facts-about-apprenticeships>

If each of these 2,700 vacancies were filled by people currently earning the living wage it could provide a boost of more than £47.3m per year in income, and enable firms to meet the current demand for their goods and services. This boost in income would also stimulate the local economy due to higher consumption, which in turn may result in higher investment.

There were approximately 27,000 more semi-technical vacancies than there were FE course completions in D2N2 in 2015/16. Reflecting the lower skill level, only an estimated 19% of semi-technical vacancies were skills shortage vacancies. As such, the entire potential undersupply at the aggregate level disappears and FE course completions appear to be well aligned with the number of semi-technical skills shortage vacancies.

**Chart 8: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by primary technical group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>10</sup>**



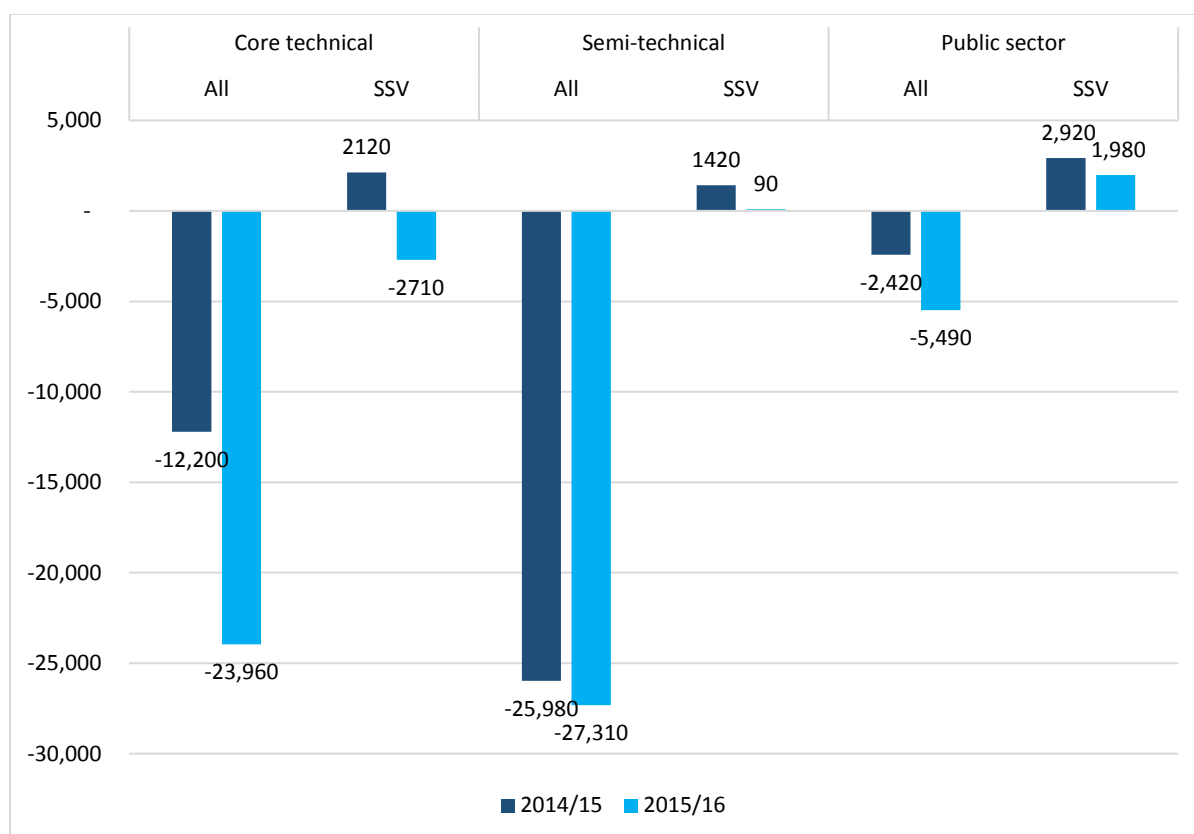
<sup>10</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code.

Chart 9 suggests that the number of skills shortage vacancies for core-technical roles was less than the number of relevant FE courses in 2014/15, but that the situation has significantly deteriorated since then.

**In all three of the primary groups in chart 8, the difference between the number of job vacancies and the number of FE course completions has increased.** In each case this is due both to the number of vacancies increasing and to the number of FE course completions falling.

Between 2014/15 and 2015/16 the number of core technical vacancies grew by 48%, but the number of FE course completions fell by 20%. Similarly, semi-technical vacancies were also up by 48%, with FE course completions down by 19%. Public sector technical vacancies grew by 40% and FE course completions fell 12%, explaining the more modest change in its mismatch.

**Chart 9: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) for each primary technical group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014-15 – 2015-16<sup>11</sup>**



It may seem contradictory that there are 19% skills shortage vacancies for semi-technical occupations when there is a slight surplus of courses. However, these are aggregate figures and may hide what is going on at the secondary group level.

<sup>11</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

For example, if there are 1,000 more FE course completions than SSVs for sports and fitness instructors and assistants but 1,000 fewer FE course completions than SSVs for accountancy and finance technicians/analysts/advisors then at the aggregate level the system is in balance – the 1,000 surplus for sports and fitness instructors and assistants balances out the 1,000 deficit for finance technicians/analysts/advisors. However, it is unlikely that in reality the 1,000 extra people who have sports instructor skills will be able to fill the skills shortages from the deficit of accountancy skills. As such, skills shortages can persist even when the aggregate is in balance because the alignment of courses to specific needs is important.

Similarly, the fact that there were 2,710 more skills shortage vacancies for core technical roles than there were course completions in 2015/16 hides important variations at the secondary occupation group level. The analysis now breaks down the primary technical groups to highlight these differences.

## **Core technical**

Chart 10 shows the supply and demand for secondary occupation groups within the core technical group that have the greatest undersupply of course completions relative to vacancies.

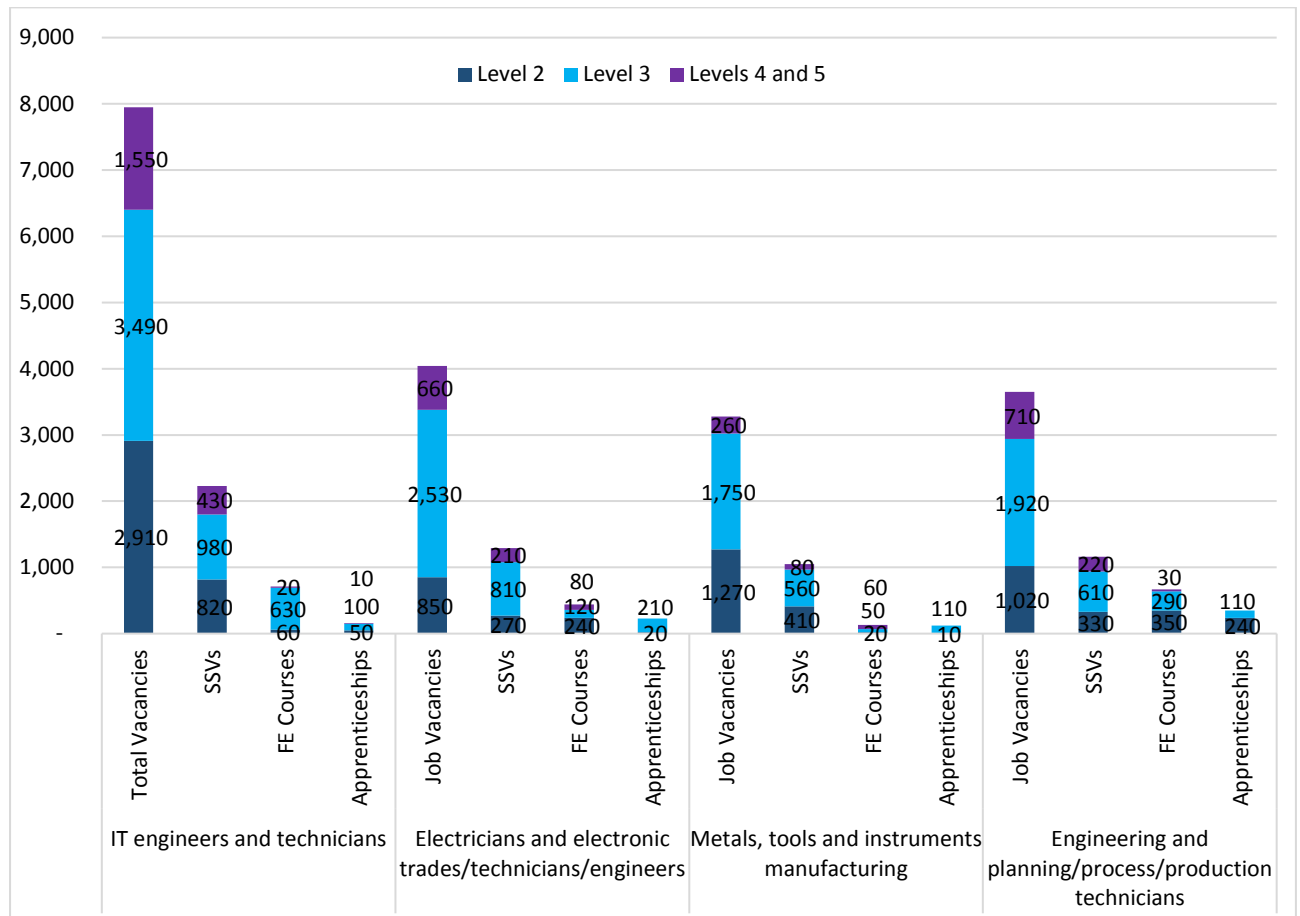
**For IT engineers and technicians there were 7,240 more vacancies than relevant course completions in 2015/16.** This figure is 1,520 when only skills shortage vacancies are considered, which still suggests that if course provision for IT engineers and technicians is boosted in conjunction with increased demand from students then the region could benefit significantly.

There is also a potential undersupply of nearly 900 courses for electricians compared to skills shortage vacancies in D2N2 in 2015/16.

Other core technical groups that could potentially benefit from greater course provision include metals, tools and instruments manufacturing and engineering planning/process/production technicians.



**Chart 10: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>12</sup>**

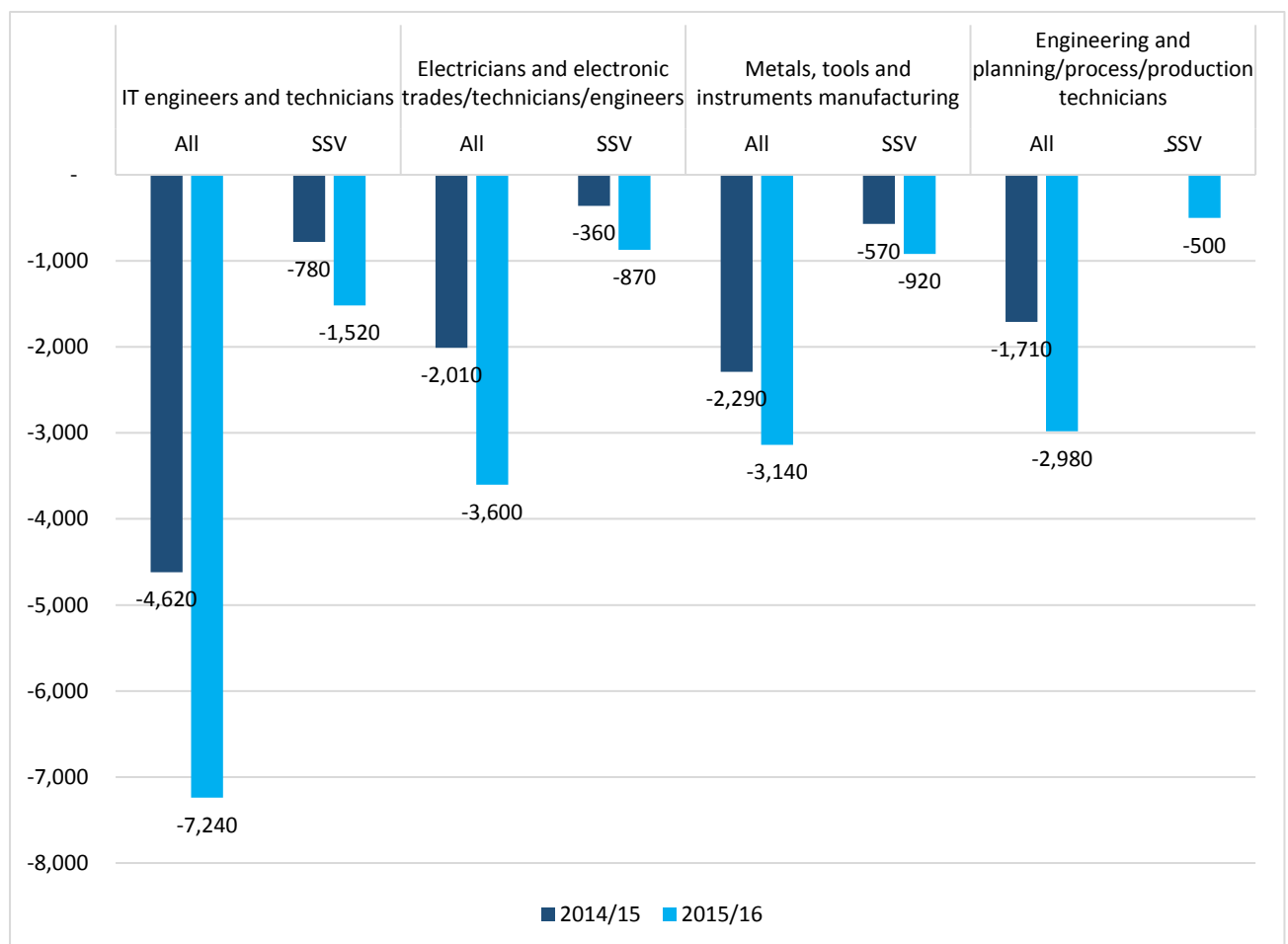


<sup>12</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

For each of the four groups identified above the position has deteriorated since 2014/15. This is an indication that course completions have failed to keep up with growth in employer demand for these skills.

**In fact, IT engineers and technicians saw a 49% increase in vacancies, compared to a 1% fall in FE course completions.** There was a small increase in electrician course completions of 5%, but this was well behind the 66% increase in vacancies.

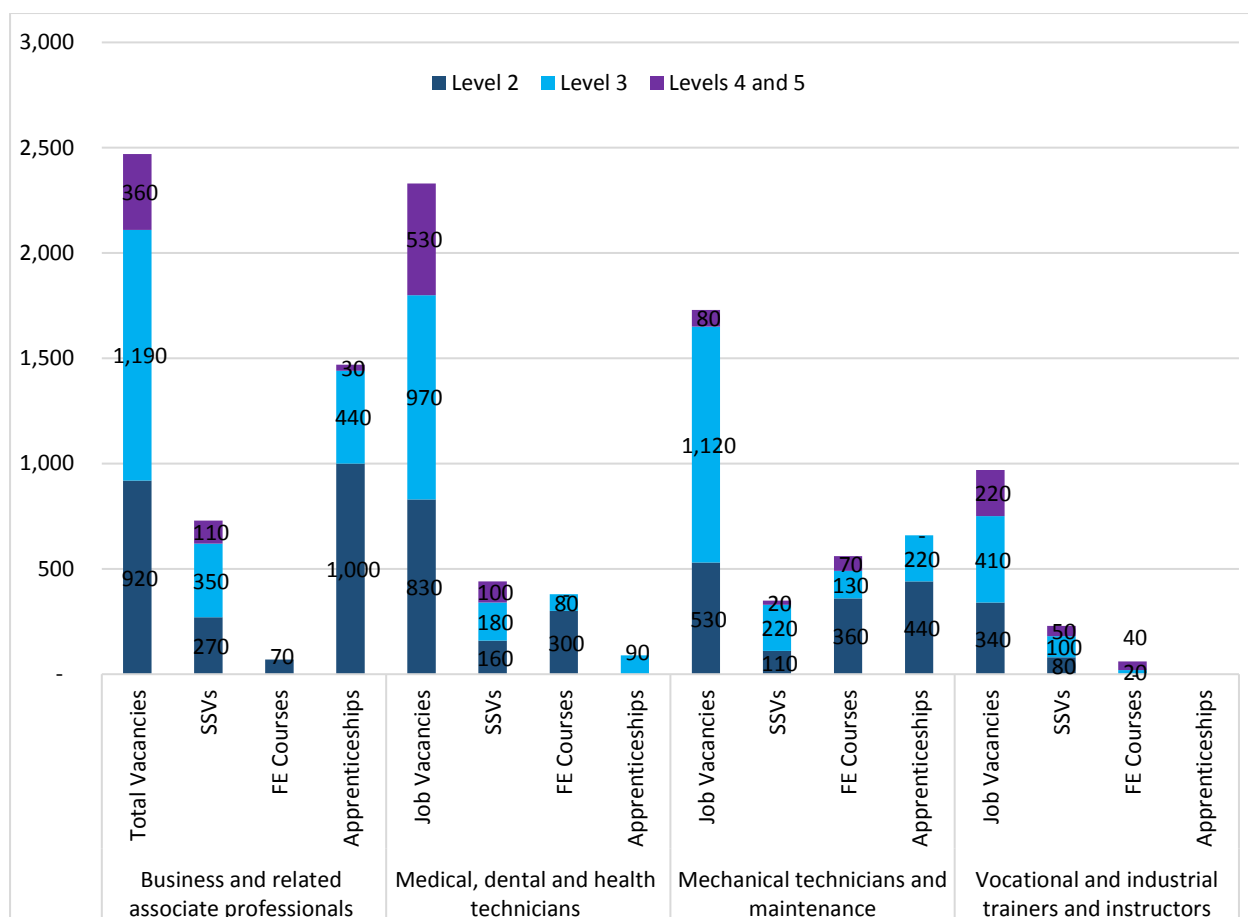
**Chart 11: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>13</sup>**



<sup>13</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

Chart 12 below outlines four further core technical secondary occupation groups for which there were more job vacancies in 2015/16 than relevant course completions.

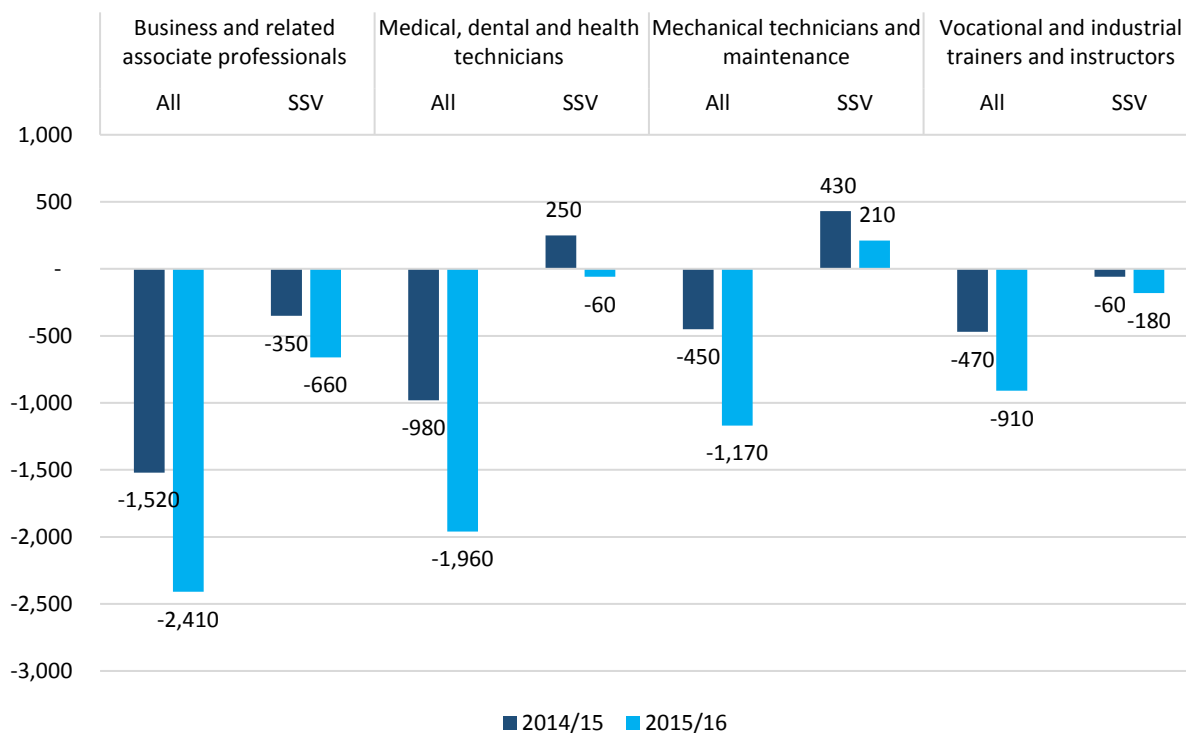
**Chart 12: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>14</sup>**



<sup>14</sup> Centre for Progressive Capitalism's analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

Once again, the situation is deteriorating for each of the secondary groups in the above chart. In each case vacancies went up and course completions went down.

**Chart 13: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>15</sup>**



## Semi-technical

Turning now to the semi-technical primary group, it is important to consider that while these occupations can be done by people with relevant courses, this is not necessarily always the case. The lower skill profile of these positions means it is more likely than for core technical occupations that they will be done by people without specific qualifications.

For example, the secondary group with the highest deficit of courses to skills shortage vacancies is sales and retail at 4,070. FE courses that correspond to sales and retail occupations do exist, but there were no completions in D2N2 in 2015/16.

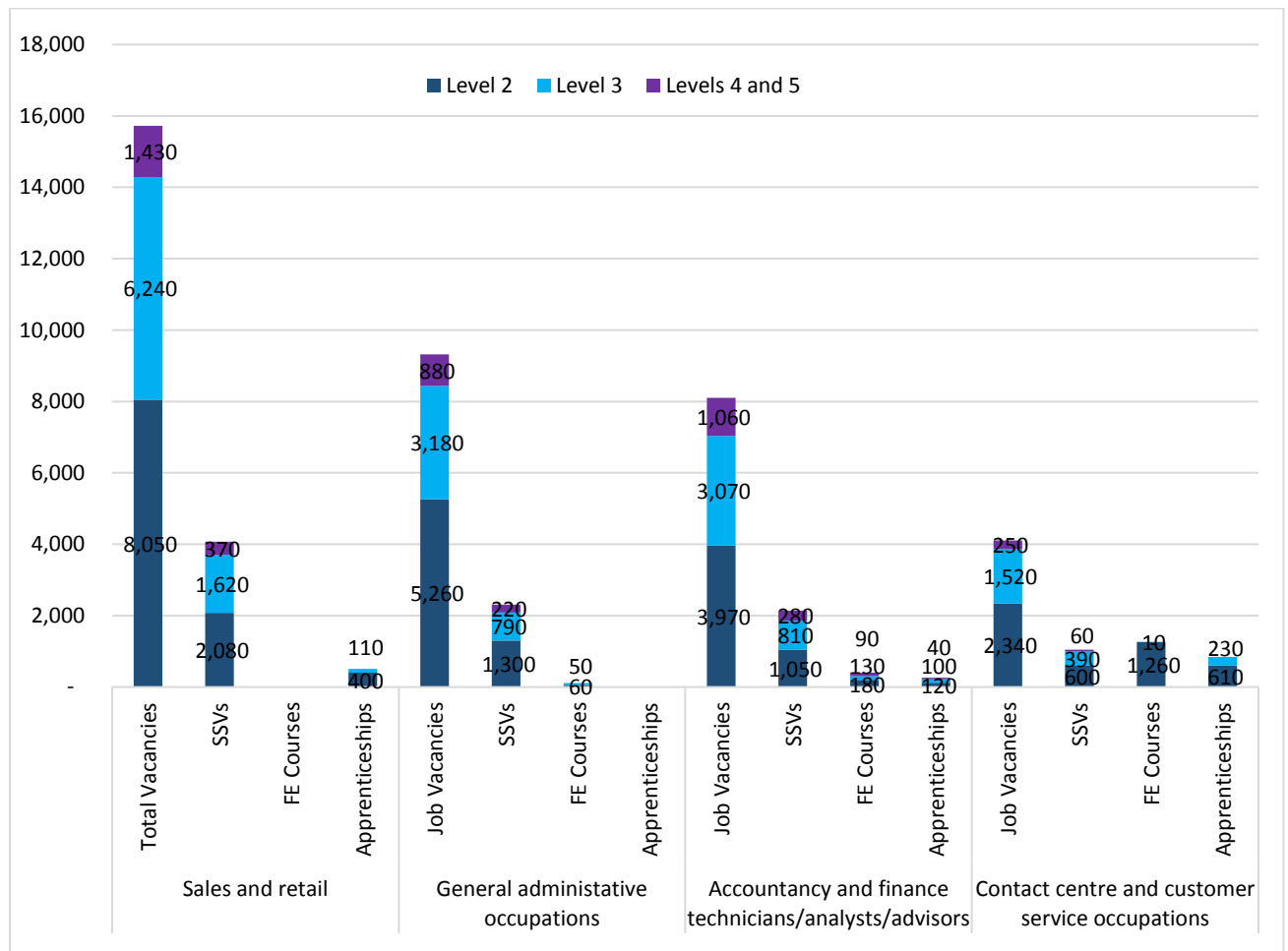
However, the fact that one of the 15 new technical pathways is sales, marketing and procurement suggests that FE will have a role to play in this area in the future, if only predominantly through apprenticeships. Furthermore, the estimated presence of more than 4,000 skills shortage vacancies in

<sup>15</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

the sales and retails secondary group suggests that employers are in fact finding it hard to fill these positions.

In the case of accountancy and finance technicians/analysts/advisors, the potential 1,750 undersupply of courses relative to skills shortages vacancies deserves policy attention. Filling these jobs seems more likely to require specific skills that FE courses can provide.

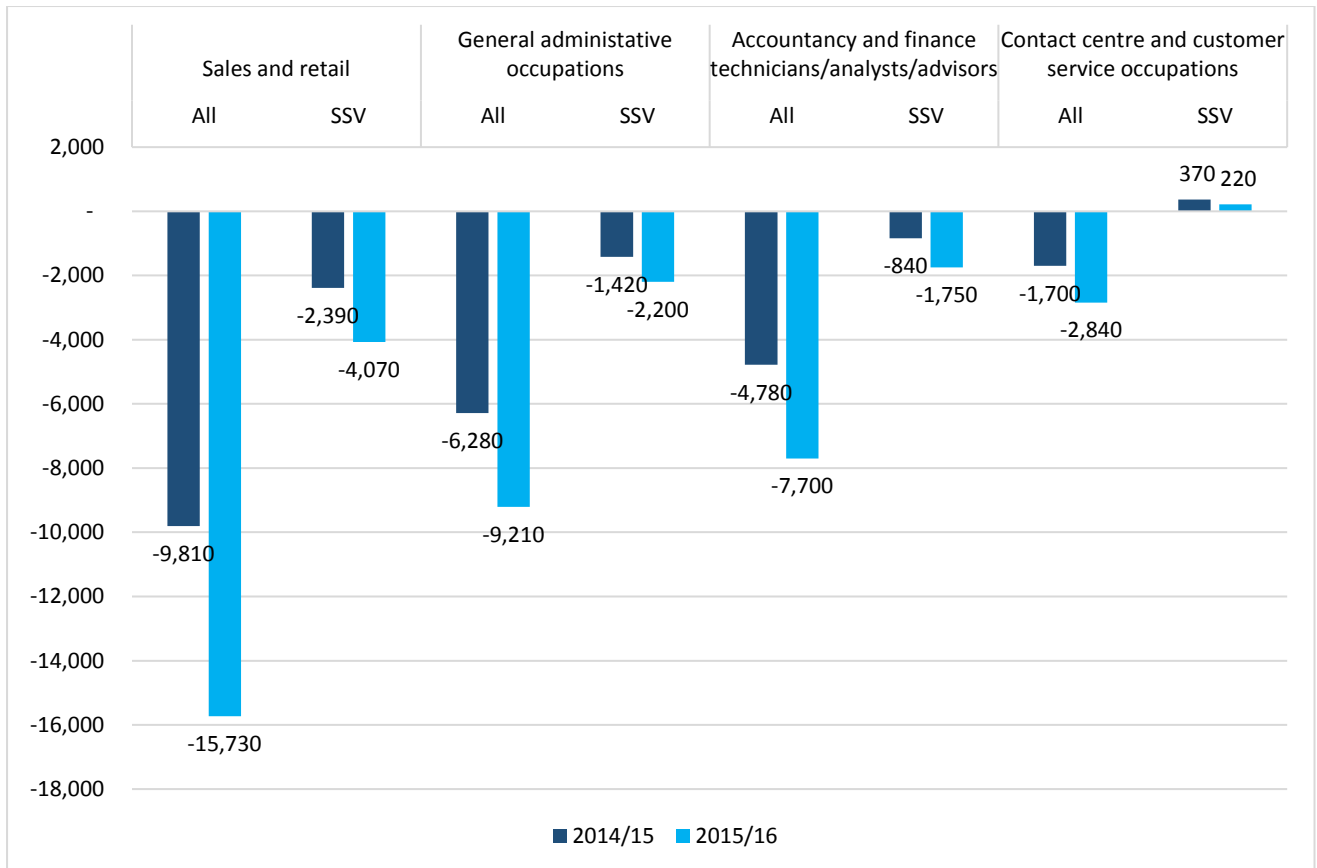
**Chart 14: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>16</sup>**



<sup>16</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

Judging from Chart 15, it once again seems likely that course provision is not keeping pace with job growth in these areas, with the difference between course completions and vacancies increasing.

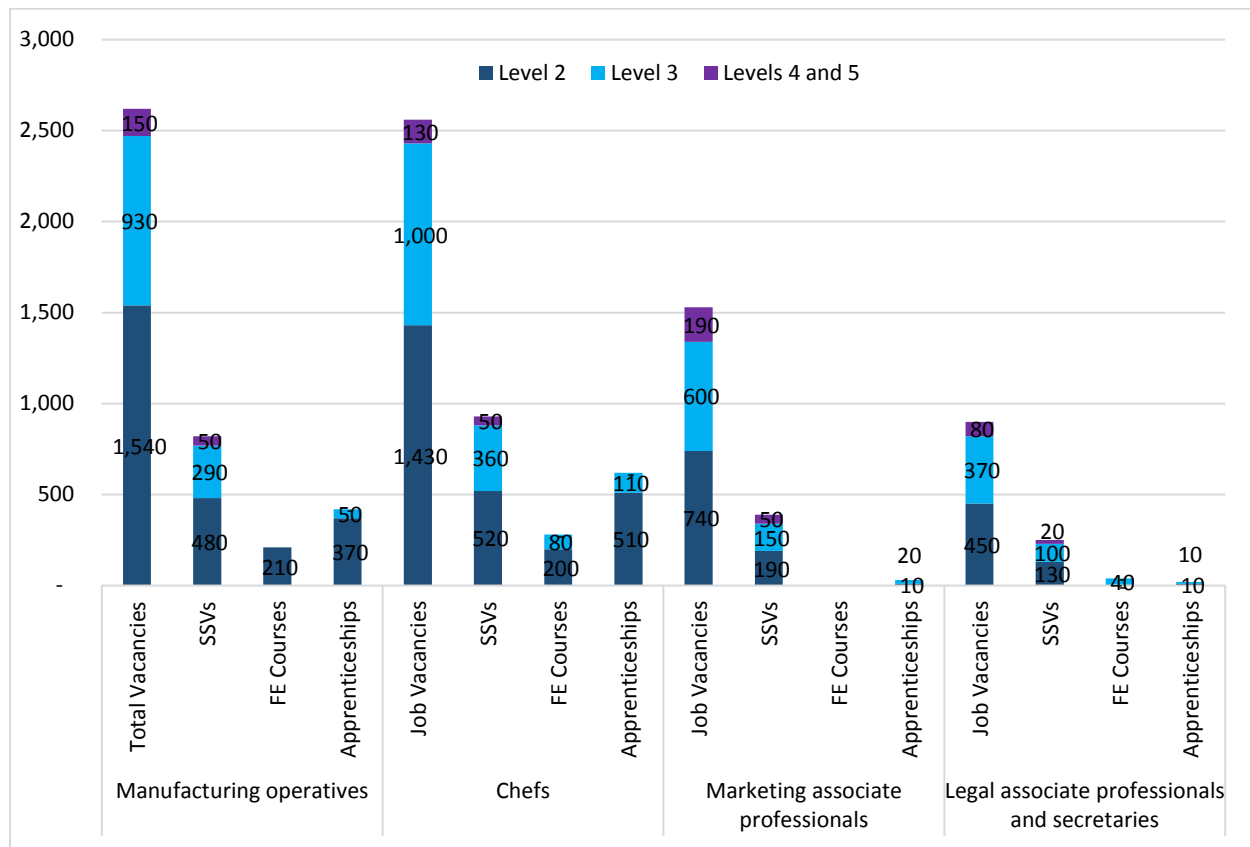
**Chart 15: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>17</sup>**



<sup>17</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

Chart 16 identifies four further semi-technical occupation groups with more job vacancies than FE course completions. For each there remains a potential deficit when considering only vacancies due to skills shortages.

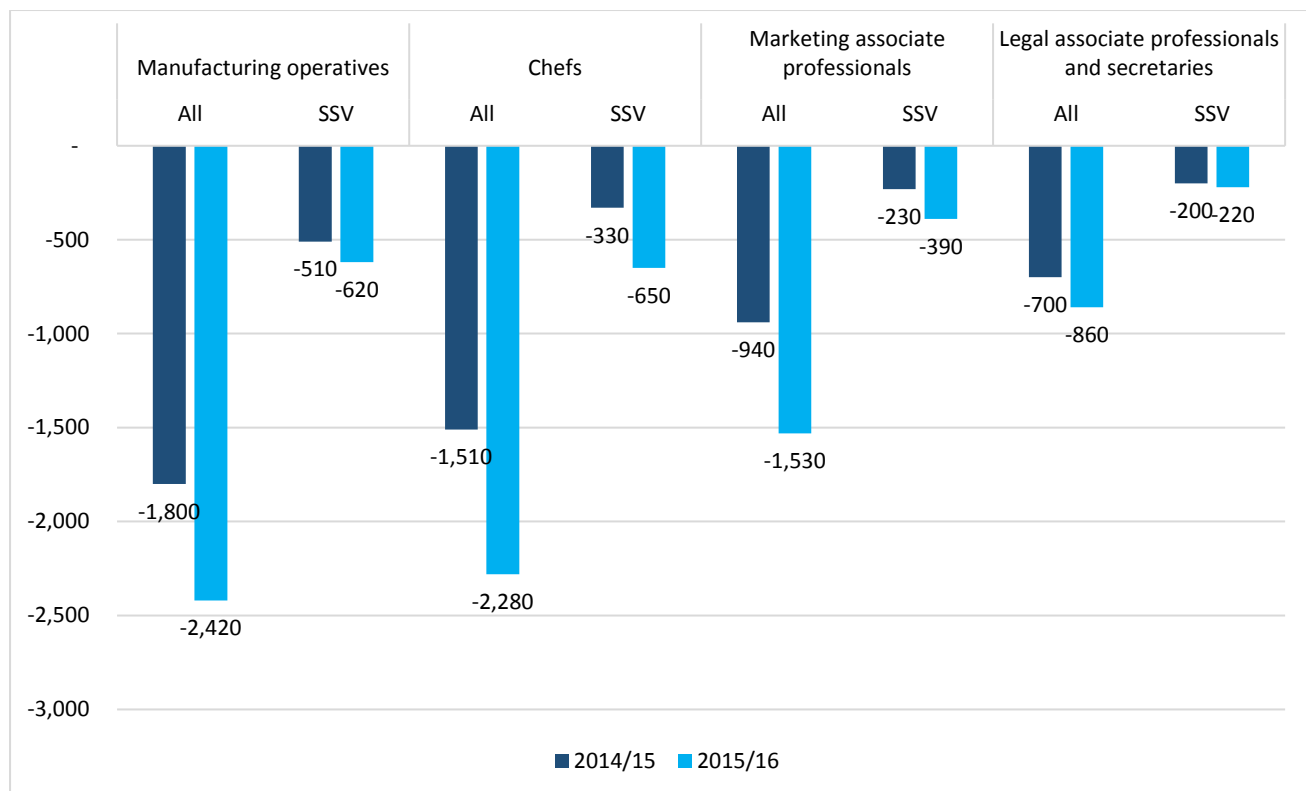
**Chart 16: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>18</sup>**



<sup>18</sup> Centre for Progressive Capitalism's analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

As shown in chart 17, once more FE courses failed to keep up with job vacancy growth leading to a deterioration across the mismatch between 2014/15 and 2015/16.

**Chart 17: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>19</sup>**



## Public sector technical

Chart 18 details the supply and demand for skills for secondary technical occupation groups primarily in the public sector.

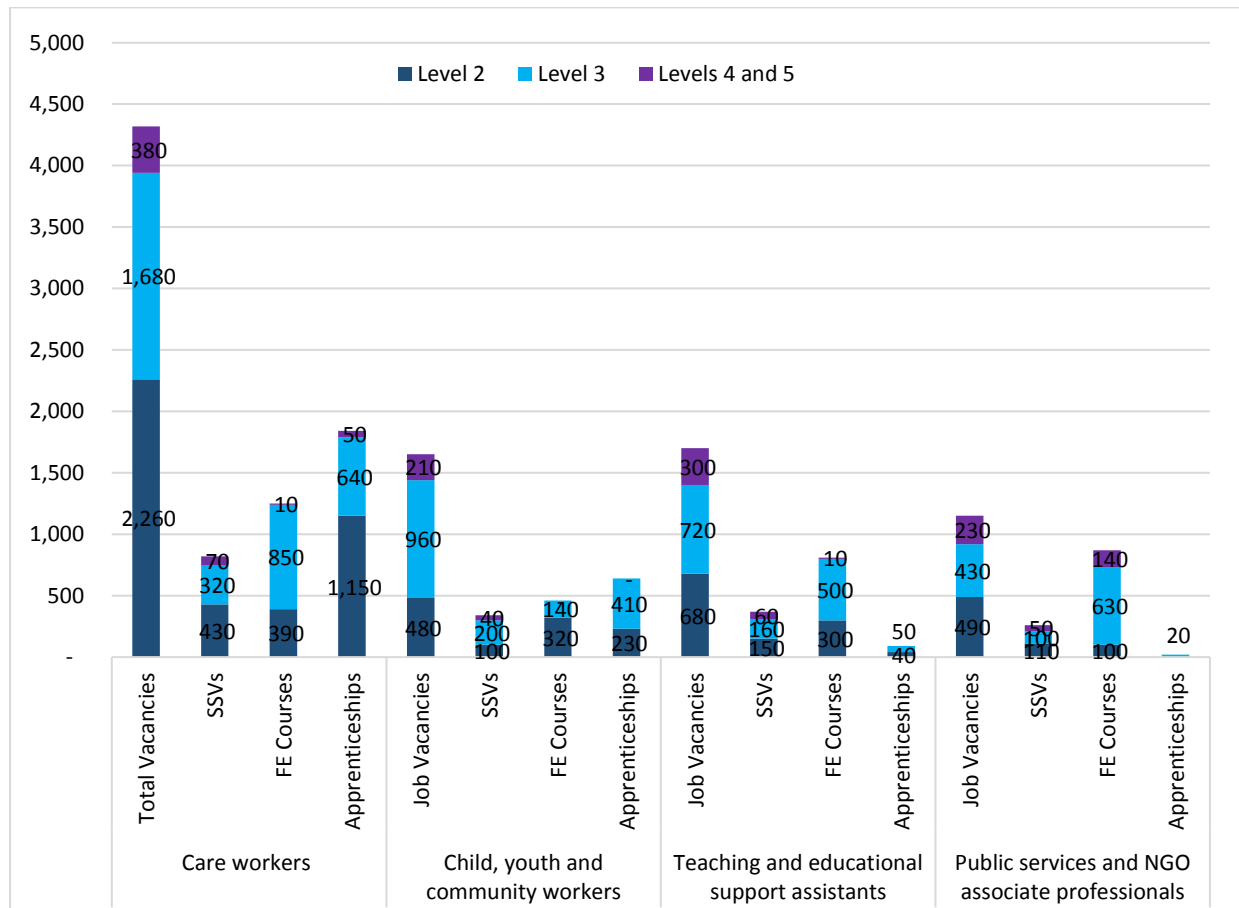
**Interestingly, while there were around 3,070 more job vacancies for care workers than relevant course completions in D2N2 in 2015/16, this deficit is eliminated when only considering skills shortages.** In fact, there were 430 more relevant course completions than skills shortage vacancies for care workers. This seems to suggest that while there is considerable need for more care workers in D2N2, that this is not an issue of lack of skills, more a lack of people wanting to go into the occupation in the first place, or in fact stay there when they do.

<sup>19</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.



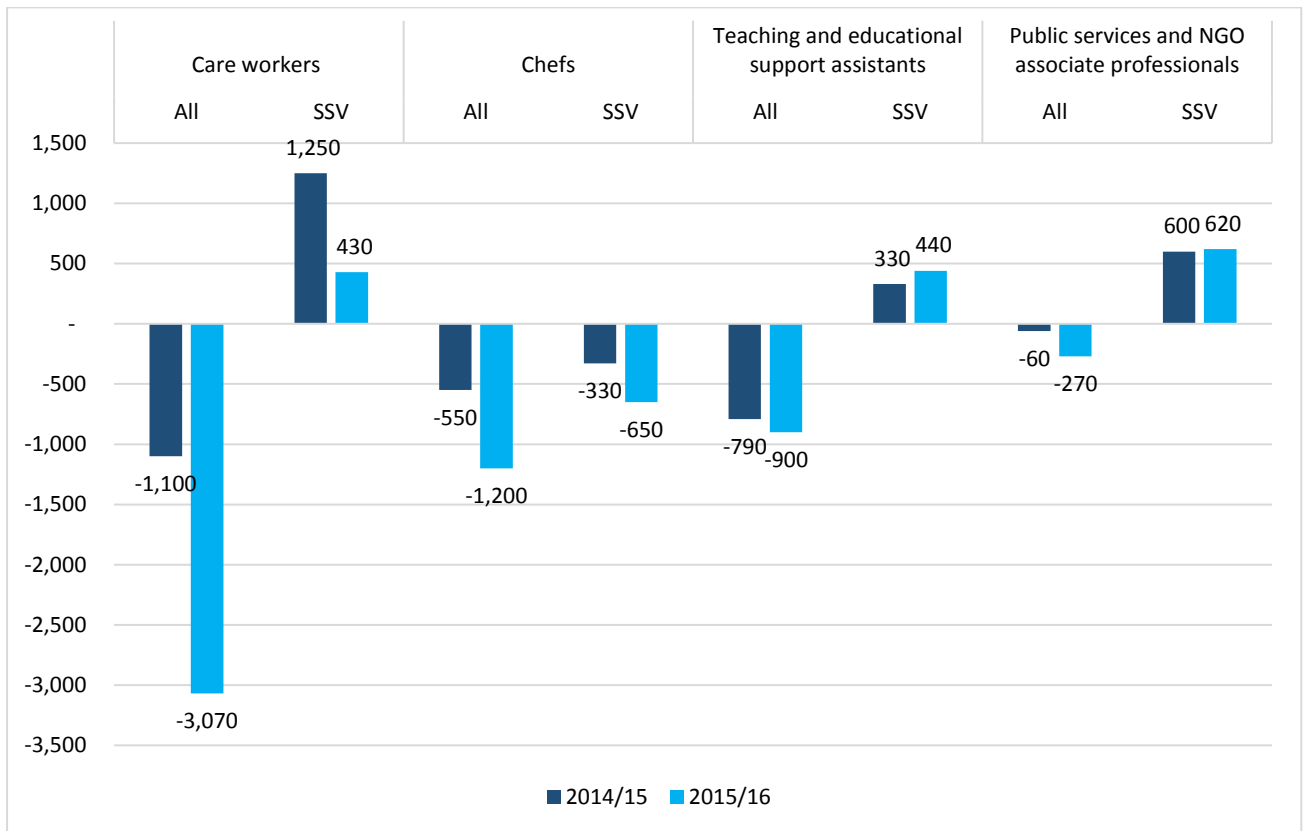
Similarly, in terms of dealing with the overall undersupply of care workers, with average salaries of only £18,400 in 2016 it is difficult to argue that greater course provision would be sufficient to fill all of these vacancies. It is likely that government policy is a more important factor, especially given the ongoing debate about the underfunding of adult social care in the UK.

**Chart 18: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>20</sup>**



<sup>20</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

**Chart 19: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>21</sup>**



## Privately funded training

Calculating a mismatch for technical occupations for which training is predominantly privately funded makes little sense considering the dataset only includes data on publically funded courses.

However, there are two secondary occupation groups in this category for which there are a significant estimated number of skills shortage vacancies. **There were 2,110 skills shortage vacancies for skilled drivers and 830 for human resources and careers advisors.** This suggests that the current model of privately funded training is not proving sufficient.

The situation for human resources and careers advisors is likely to be complicated. While privately funded training does exist – CIPD approved courses, for example – it is also possible that graduates of business degrees will enter into the human resources industry via graduate schemes.

<sup>21</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

## Reprioritising technical skills provision

**In order to meet the skills shortages for technical occupations outlined above, re-prioritisation may be necessary.**

It is likely that self-employment levels in some of the occupation groups discussed below will be relatively high. For example, ONS Labour Force Survey data suggest that there were 16,000 employees and 43,000 self-employed in the UK for fitness instructor roles in the second quarter of 2016. Furthermore, encouraging entrepreneurship is clearly key for developing a strong local economy.

However, there is still a strong case for some reprioritisation in further education provision given that skills shortages exist side by side with course surpluses in D2N2. There is also significant evidence to suggest that self-employed earnings are considerably below that of full employees. A report for the Department for Business Innovation & Skills found that the estimated median annual earnings for all self-employed was £10,800 in 2013/14, compared to £20,000 for all employees.<sup>22</sup>

Note, as alluded to above, the presence of skills shortage vacancies is not necessarily inconsistent with well balanced FE courses or even a surplus of FE courses, either at the primary or secondary occupation group level. At the primary level, a surplus of one secondary group can cancel out a deficit of another secondary group, even though the skills are not interchangeable.

There are a number of reasons why a surplus of courses at the secondary group level doesn't necessarily imply there should be no skills shortage vacancies:

- Any reduction in skills shortages from 2015/16 course completions will only be captured in future data
- It would be wrong to assume that everyone completing an FE course will go on to closely related employment
- It is possible that the courses are not producing all of the required skills
- This is still to some extent an aggregate level, hiding some variation at the four digit SOC code level

### Core technical

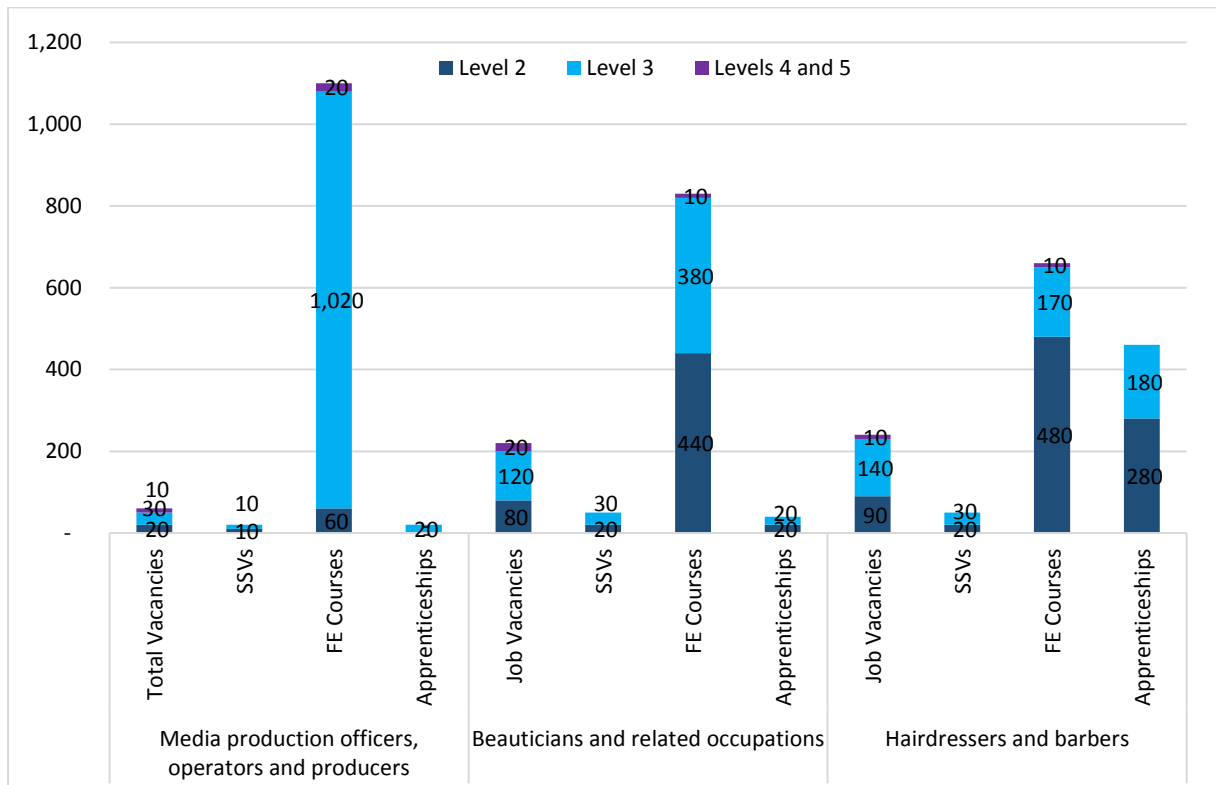
The analysis highlights three core technical occupations for which there were significantly more FE course completions than vacancies. The potential deficits are of course larger when only considering skills shortage vacancies.

For example, there were around 1,000 more FE course completions for media production officers, operators and producer roles than skills shortage vacancies. The analysis suggests these students may have had better job prospects had they chosen to do, for example, IT or electrician courses. The same point, albeit to a slightly lesser extent, could also be made for beauticians and hairdressers and barbers.

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<sup>22</sup> (BIS, 2016) *'The income of the self-employed'*

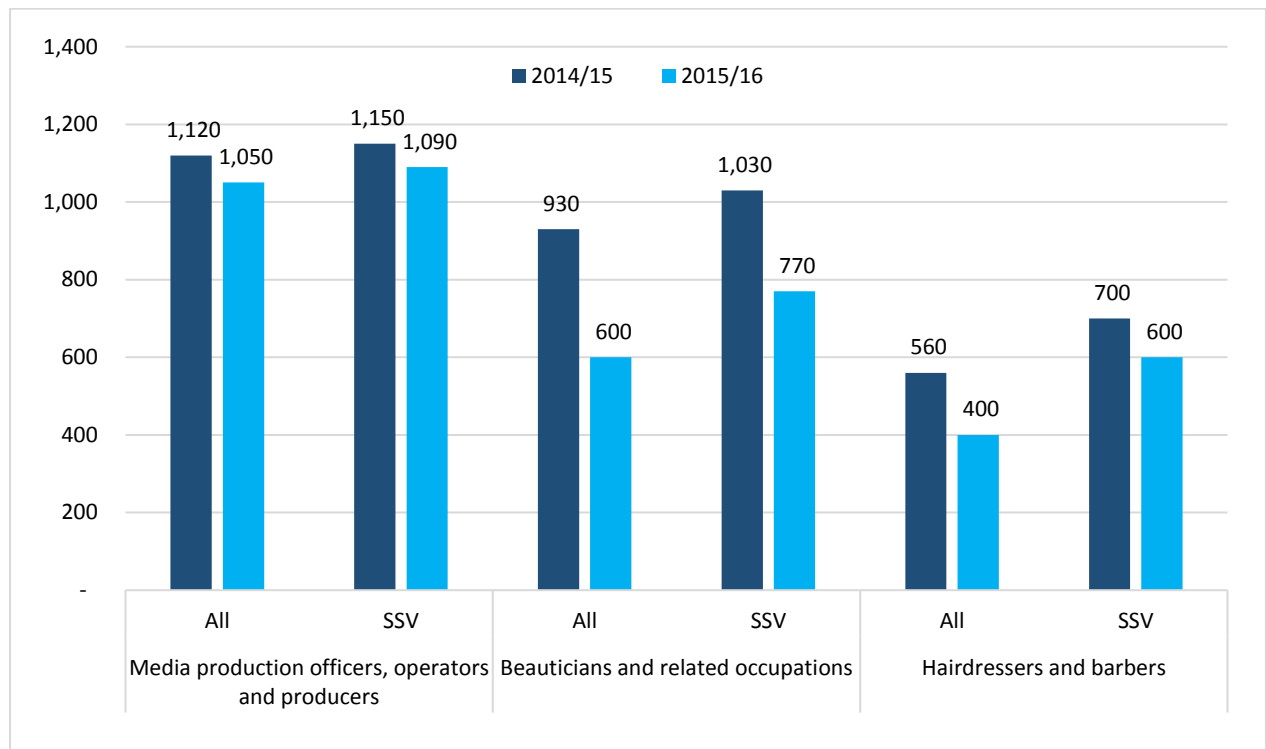
**Chart 20: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>23</sup>**



<sup>23</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

Encouragingly, the surplus has decreased for each of the three groups between 2014/15 and 2015/16. In each case this is due to the number of vacancies growing and the number of course completions falling.

**Chart 21: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>24</sup>**



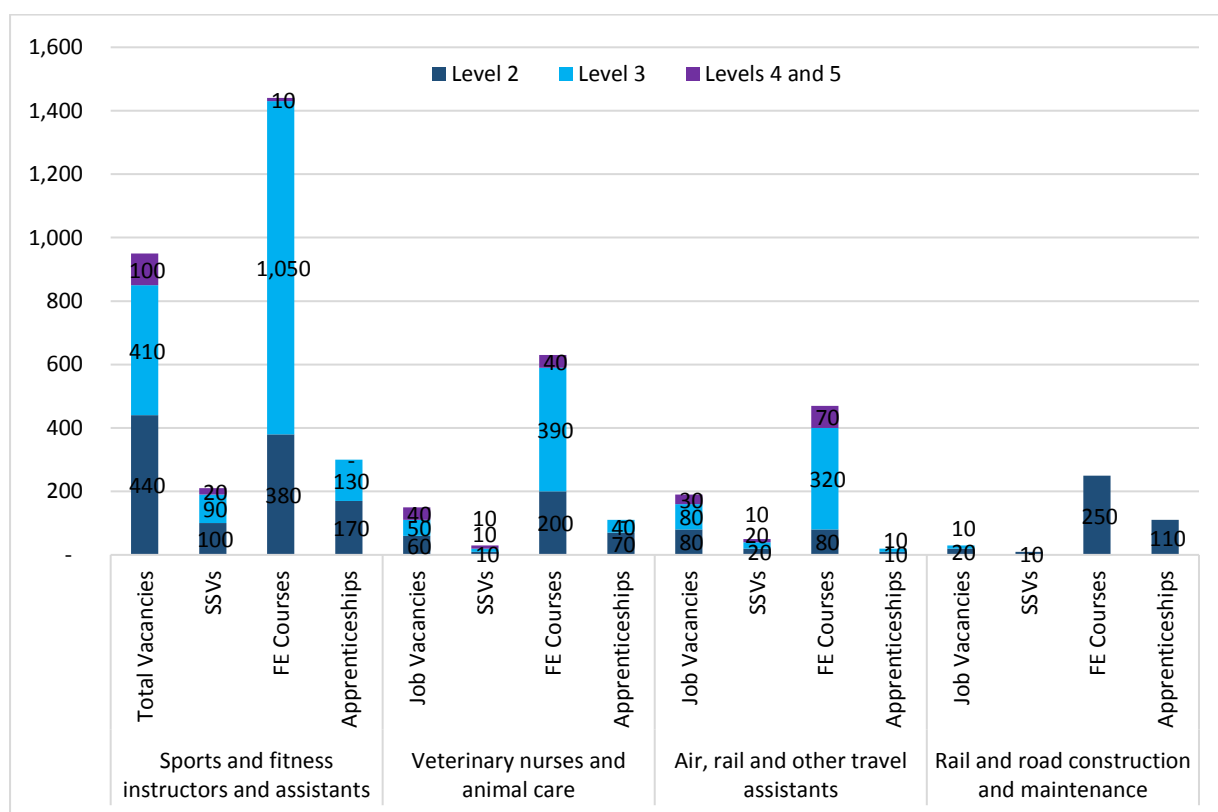
<sup>24</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

## Semi-technical

Chart 22 below shows semi-technical occupation groups for which there were more course completions than relevant vacancies in 2015/16 in D2N2, particularly when considering only skills shortage vacancies.

For sports and fitness instructors and assistants there were around 1,220 more course completions than skills shortage vacancies in 2015/16. While some of this potential oversupply can be accounted for by self-employment, this is an important area of potential realignment of course provision.

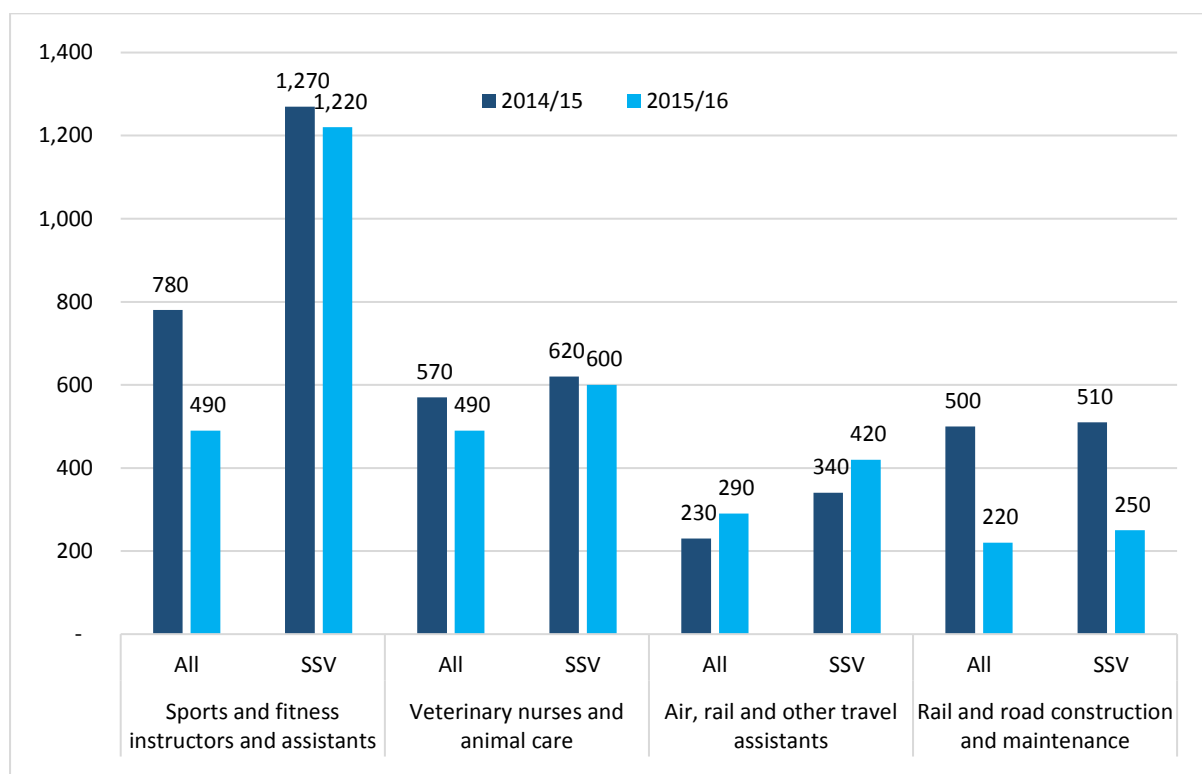
**Chart 22: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>25</sup>**



<sup>25</sup> Centre for Progressive Capitalism's analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

The potential oversupply is easing for each of the occupation groups identified above, with the exception of air, rail and other travel assistants, which has seen a slight increase since 2014/15. The increase for air, rail and other travel assistants can be explained by the fact that FE course completions grew by more than the number of vacancies. In each of the other cases the reverse was true.

**Chart 23: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>26</sup>**



<sup>26</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

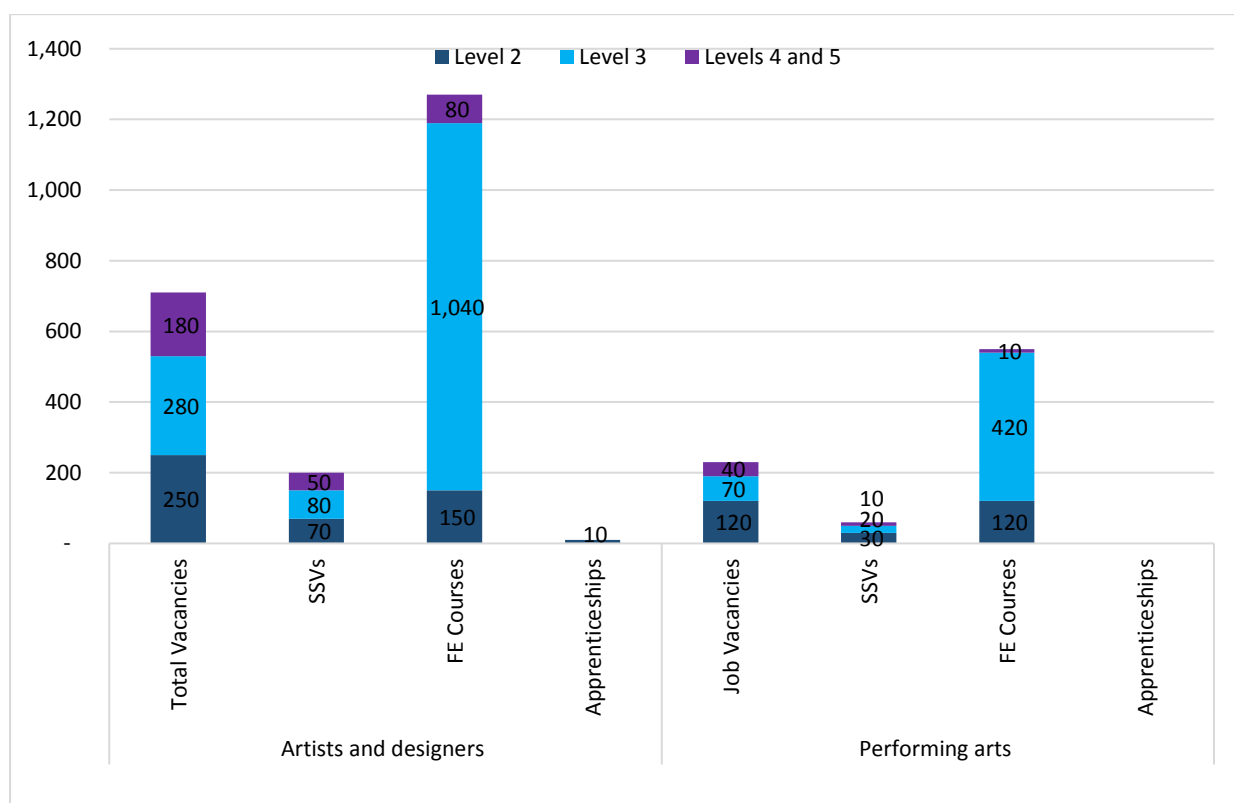
## Technical – advanced

The technical – advanced group is made up of occupations towards which FE can often provide a first step or foundation qualification. Entry into these occupations straight from FE is not common. They also include some occupations that are more advanced versions of those found in core technical.

Chart 24 below outlines the course completions for artists and designers and performing arts.

In both cases there are significantly more course completions than vacancies. In one respect this is to be expected as these courses are more of a foundation level before going on to further study, so it is likely that this number would eventually shrink. Additionally, self-employment will also cut this surplus down.

**Chart 24: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>27</sup>**

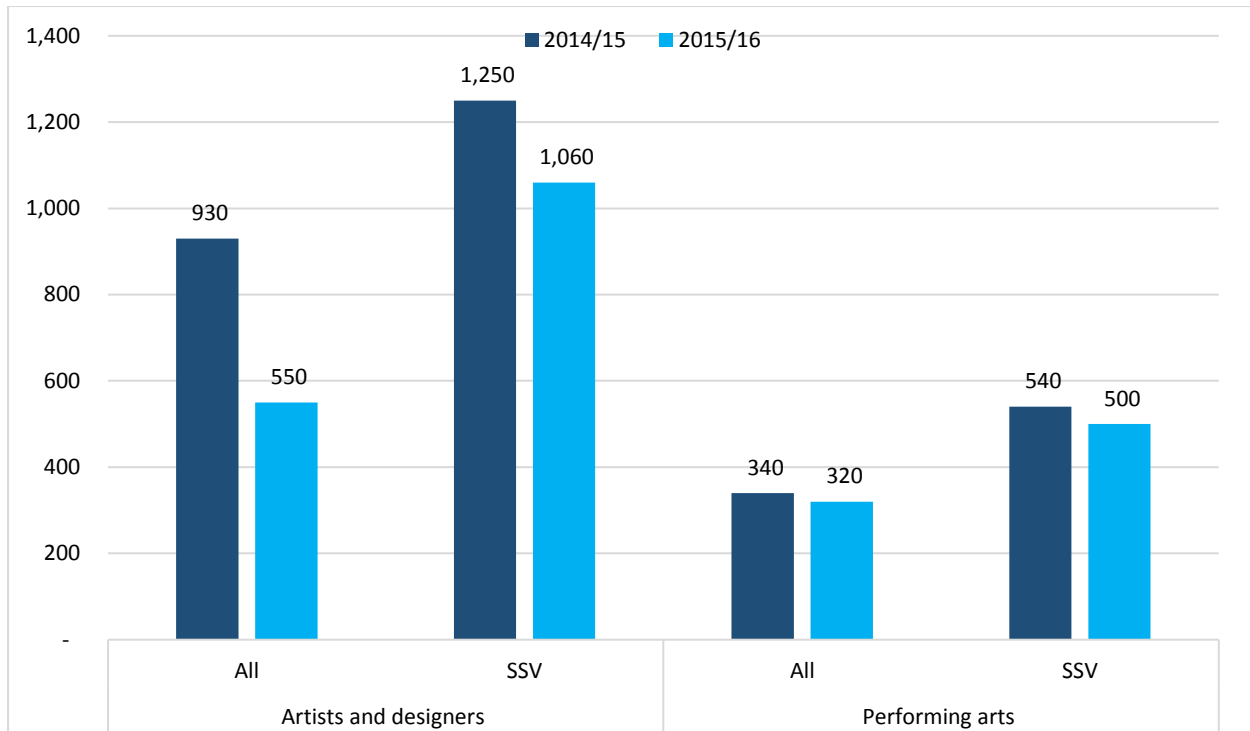


<sup>27</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.



The mismatch in performing arts has remained broadly similar between 2014/15 and 2015/16 because FE course completions and job vacancies grew by almost the same amount.

**Chart 25: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>28</sup>**



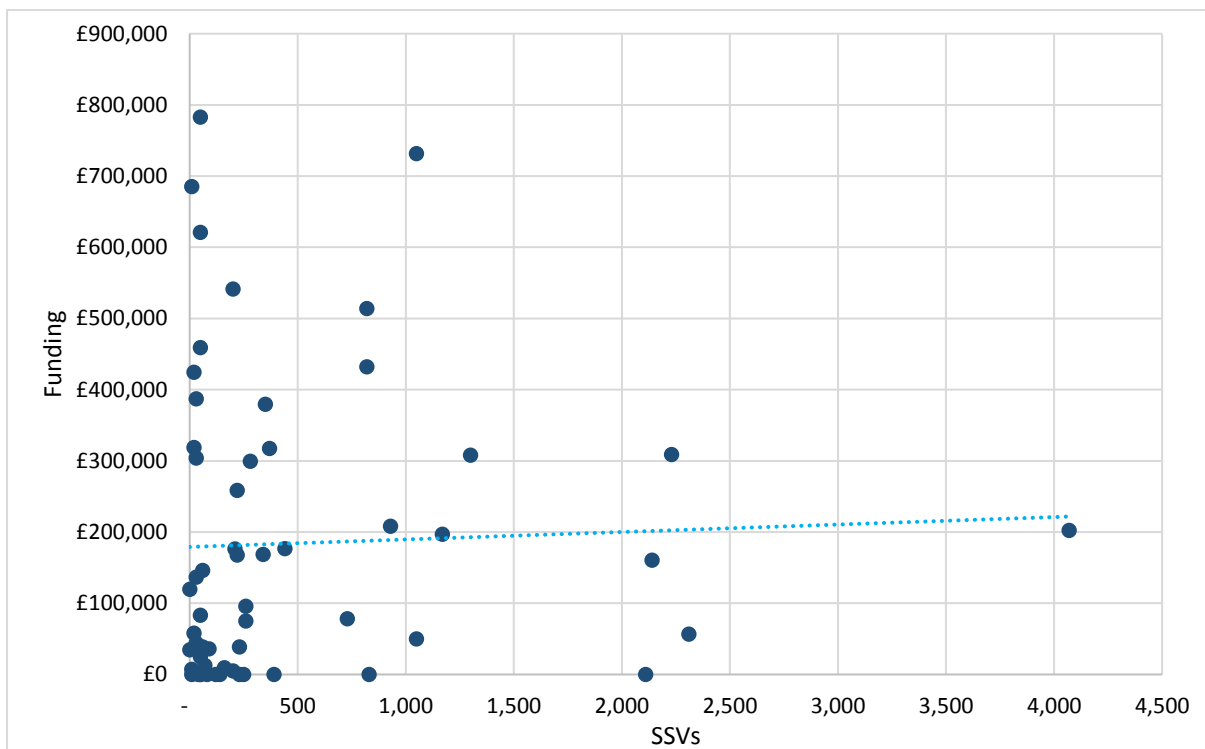
<sup>28</sup> Centre for Progressive Capitalism's analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

## SFA Funding

Chart 26 below is a scatter plot of skills shortage vacancies versus SFA funding for FE courses, with each point representing a secondary occupational group.

The chart shows that there appears to be little correlation between the two sets of data, although there is a very slight positive association. This is consistent with the finding that the number of FE courses is not strongly correlated with the number of skills shortage vacancies at the secondary occupation level.

**Chart 27: Skills shortage vacancies vs FE course funding by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16**

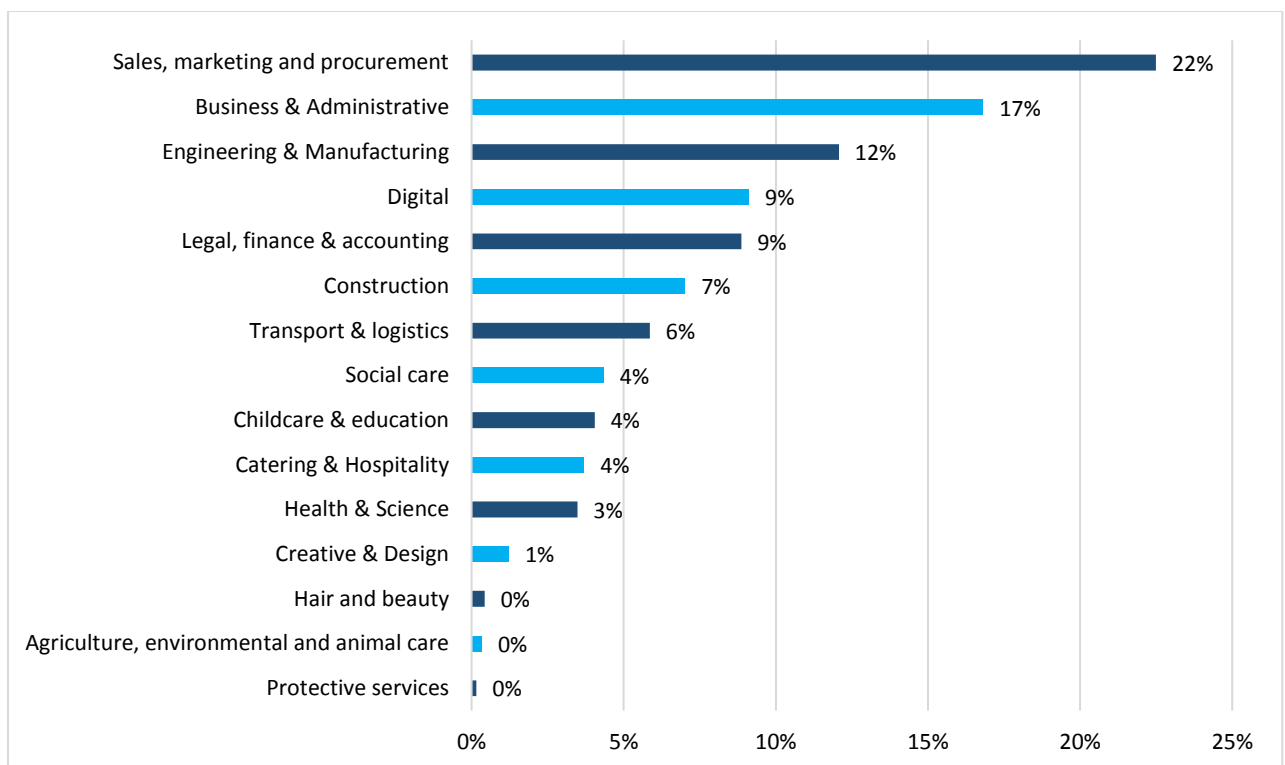


## The supply and demand for the 15 Pathways

The following section presents mismatch analysis along the lines of the 15 new technical pathways due to be introduced into the FE sector between 2019 and 2022. The vacancies include only those for technical occupations.

**Chart 27 shows that in terms of vacancies, sales, marketing and procurement was the largest pathway in 2015/16, with 22% of the total.** Business and administrative and engineering and manufacturing accounted for 17% and 12% of the total technical vacancies respectively.

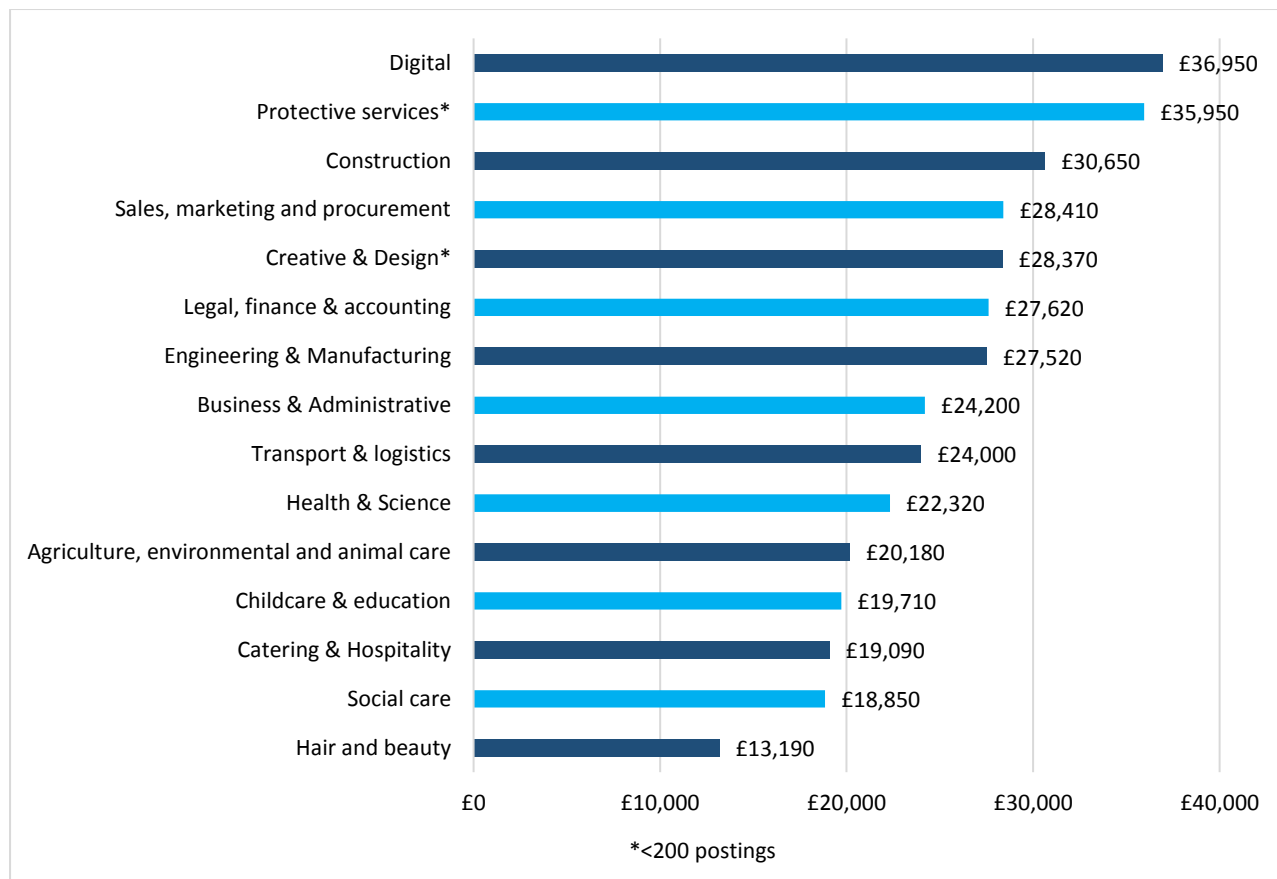
**Chart 27: Share of technical job vacancies by pathway in Derby, Derbyshire, Nottingham and Nottinghamshire versus the UK average, 2016<sup>29</sup>**



<sup>29</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

Chart 28 shows the average advertised salaries for technical vacancies across the 15 pathways. **The digital pathway has the higher average advertised salary at almost £37,000.** As outlined below, there were 1,660 more skills shortage vacancies for digital occupations than FE courses in 2015/16.

**Chart 28: Average advertised salaries of technical job vacancies by pathway in Derby, Derbyshire, Nottingham and Nottinghamshire versus the UK average, 2016<sup>30</sup>**



Charts 29, 31, 33 and 35 show the total number of vacancies, the number of skills shortage vacancies, FE course completions and apprenticeship completions for each of the 15 pathways in D2N2 in 2015/16.

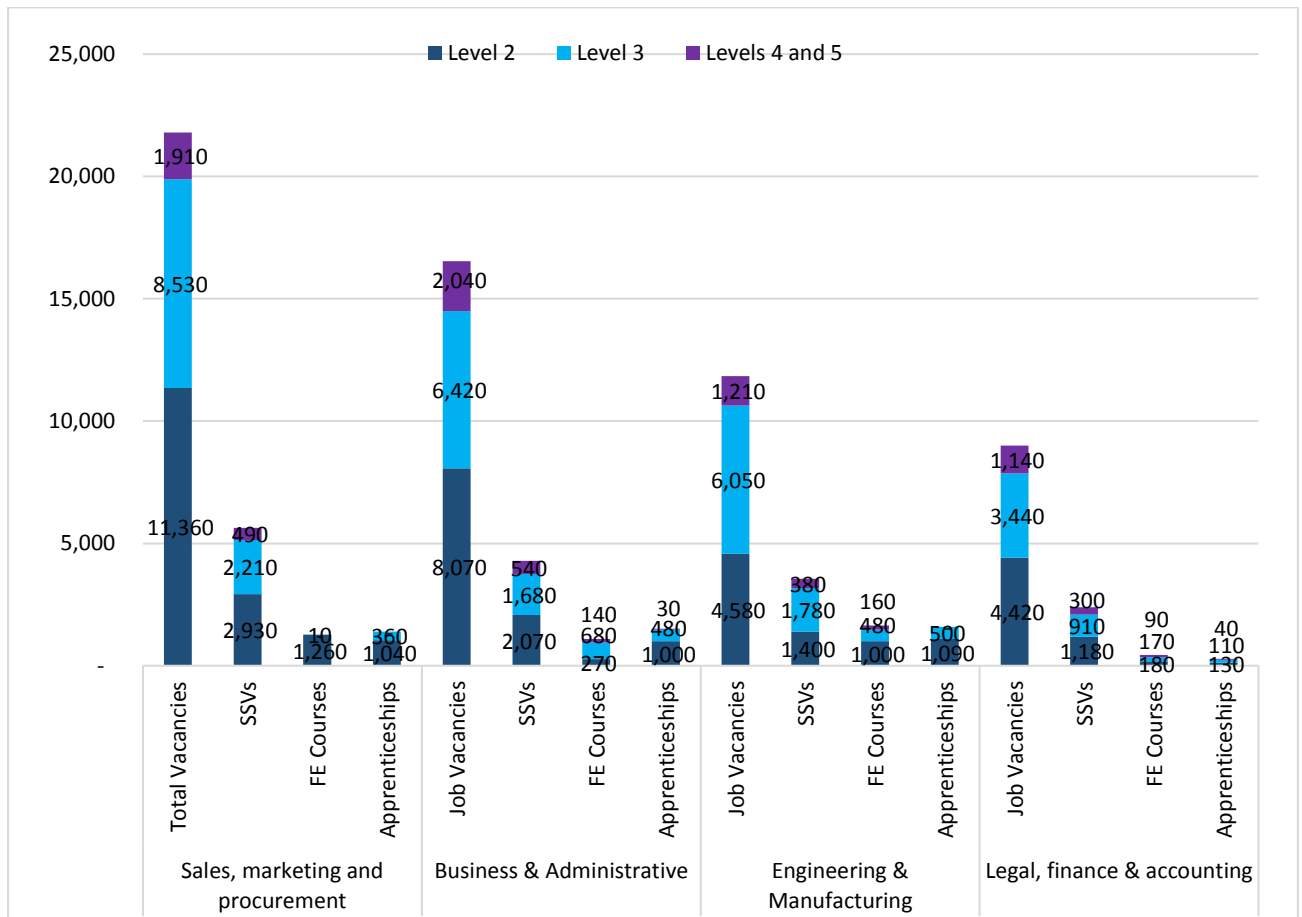
Charts 30, 32, 34 and 36 show how the mismatch for each pathway has evolved between 2014/15 and 2015/16.

Analysis at the level of the 15 pathways is useful for a number of reasons. Principally, it helps to account for the fact that there is inevitably some leakage between similar secondary occupation groups. For example, while most people on completion of a business FE course will go into occupations within the business and related associate professionals secondary group, some will go into occupations within the general administrative occupations secondary group. Thus, the business and administrative pathway outlined below accounts for this.

<sup>30</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

According to the data, the sales, marketing and procurement pathway has the largest deficit of course completions relative to job vacancies. However, as this pathway is closely aligned to the sales and retail secondary occupation group, the same points outlined regarding that mismatch apply here, principally regarding the likelihood that many of these roles can and will be filled by people without specific FE course qualifications.

**Chart 29: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by pathway, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>31</sup>**

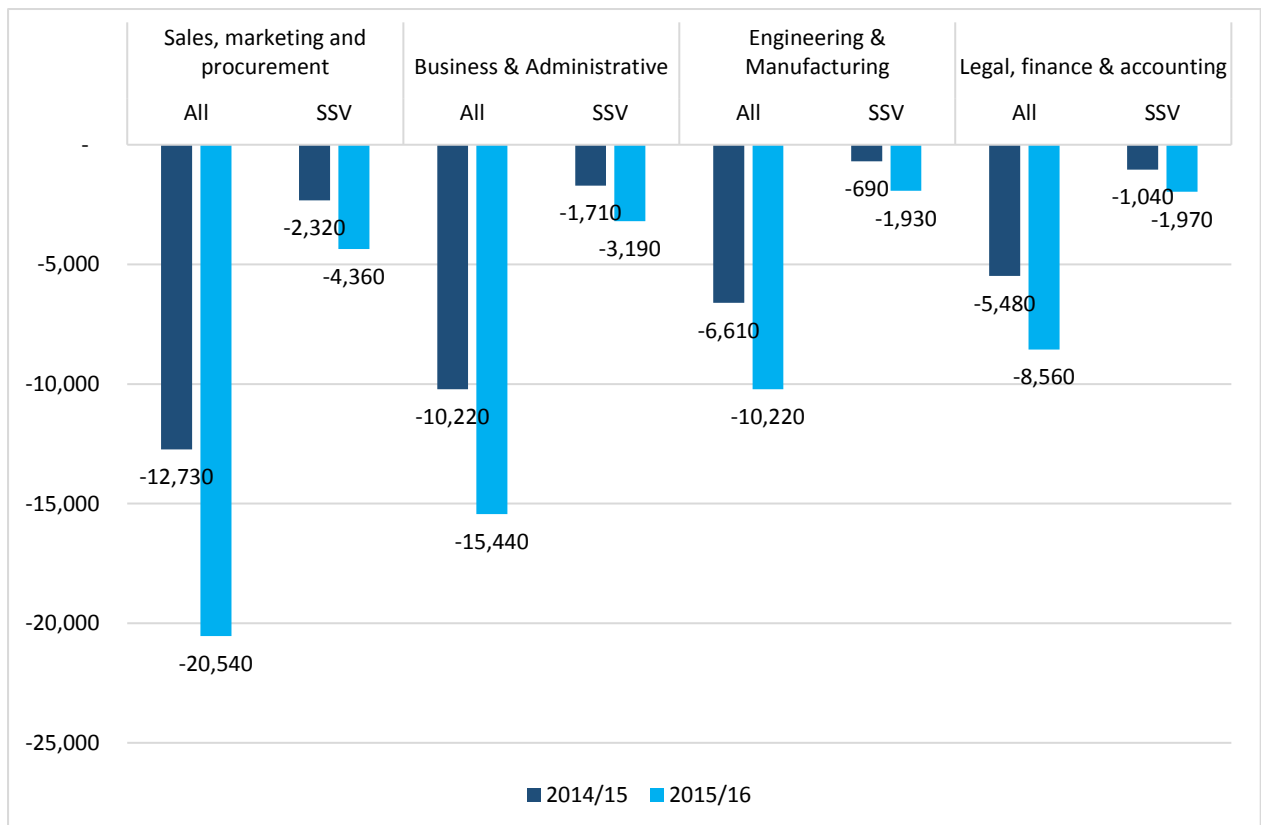


<sup>31</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

As shown in charts 30 and 32, the difference between course completions and job vacancies has increased across every pathway for which there were more completions than vacancies. This has been caused by strong jobs growth across the board, matched by a near universal decline in courses.

Sales, marketing and procurement vacancies grew by 55%, stronger than the vacancy growth of 44% for business and administrative. Vacancy growth for engineering and manufacturing and legal, finance & accounting was 40% and 48% respectively. FE course completions all fell, by between 2% and 24%.

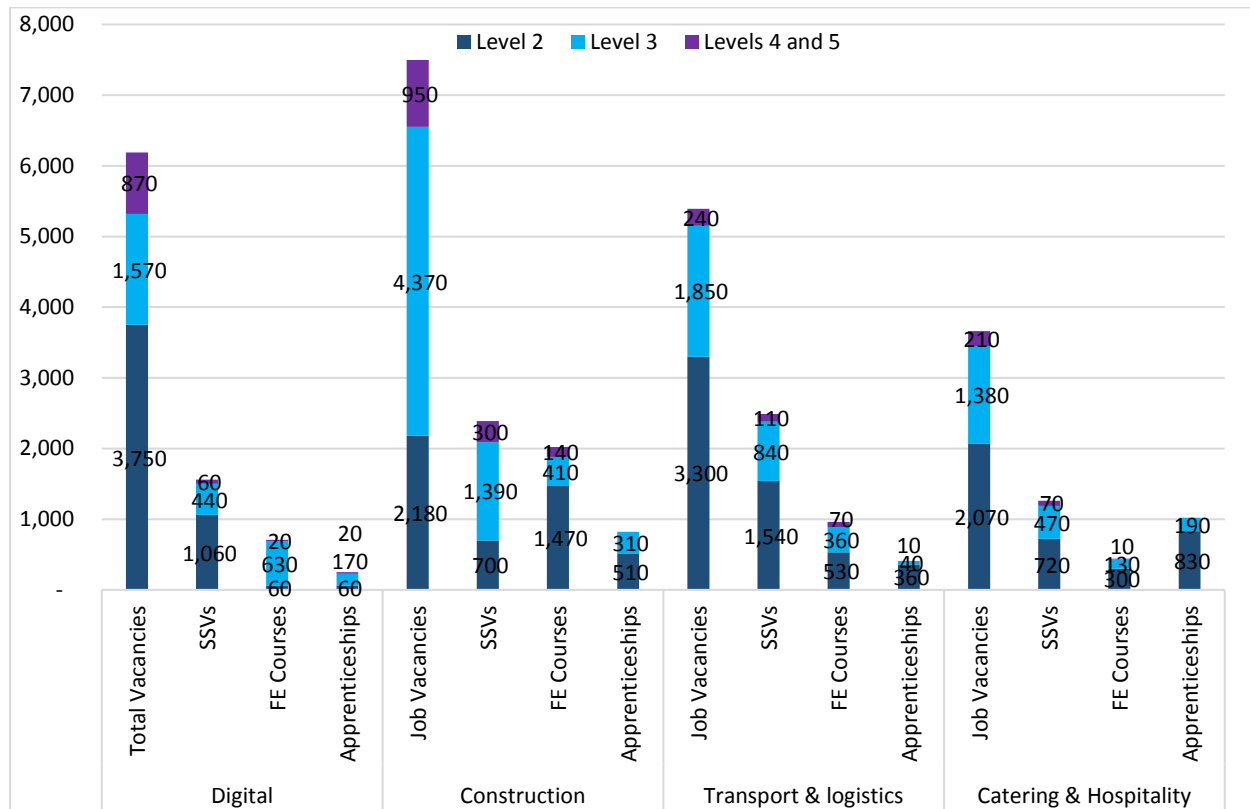
**Chart 30: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by pathway, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>32</sup>**



<sup>32</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

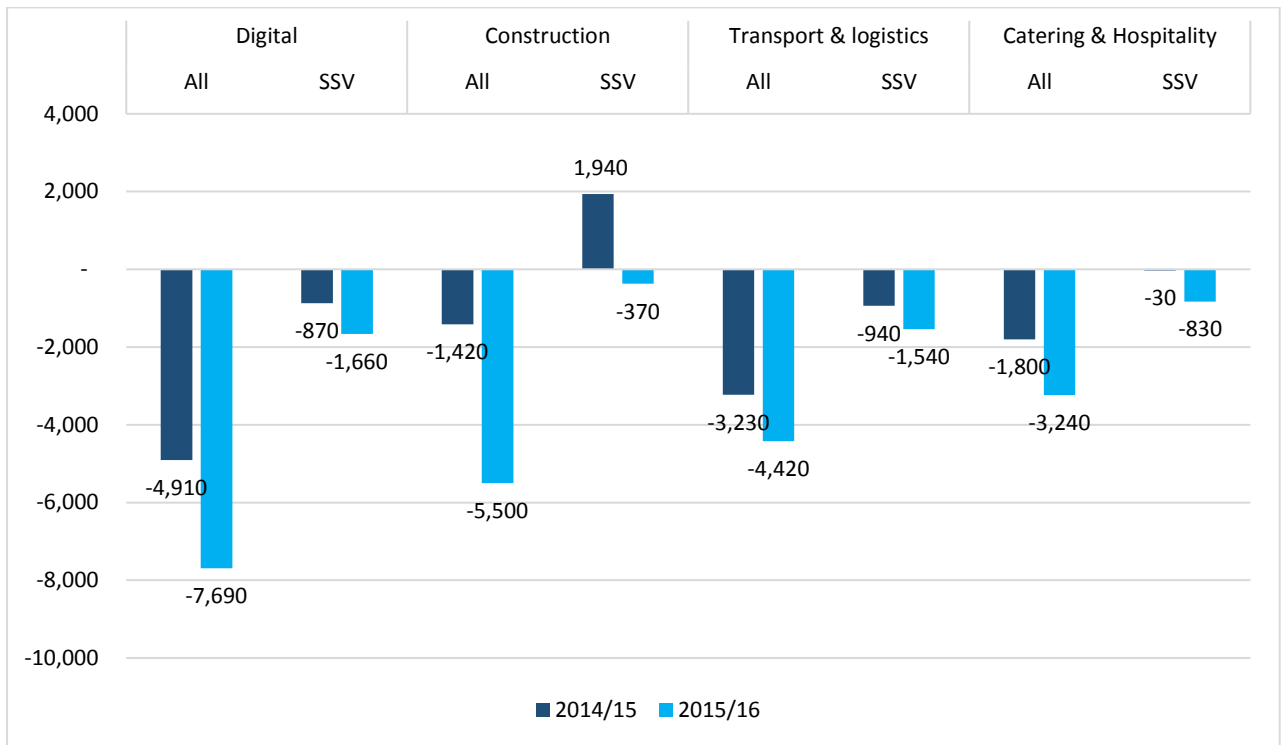
For the digital pathway, there were around 7,700 more courses than vacancies, falling to 1,660 for skills shortage vacancies.

**Chart 31: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by pathway, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>33</sup>**



<sup>33</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

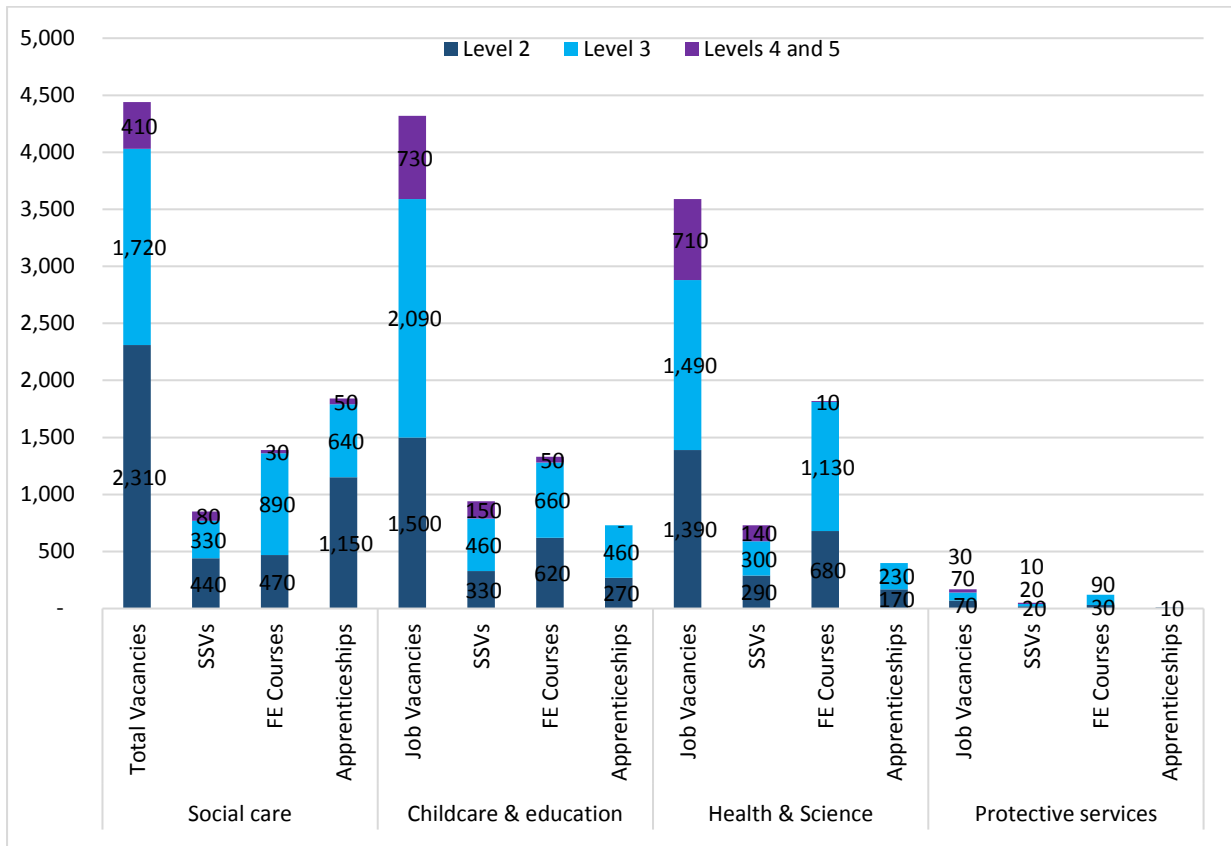
**Chart 32: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by pathway, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015/16<sup>34</sup>**



<sup>34</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.



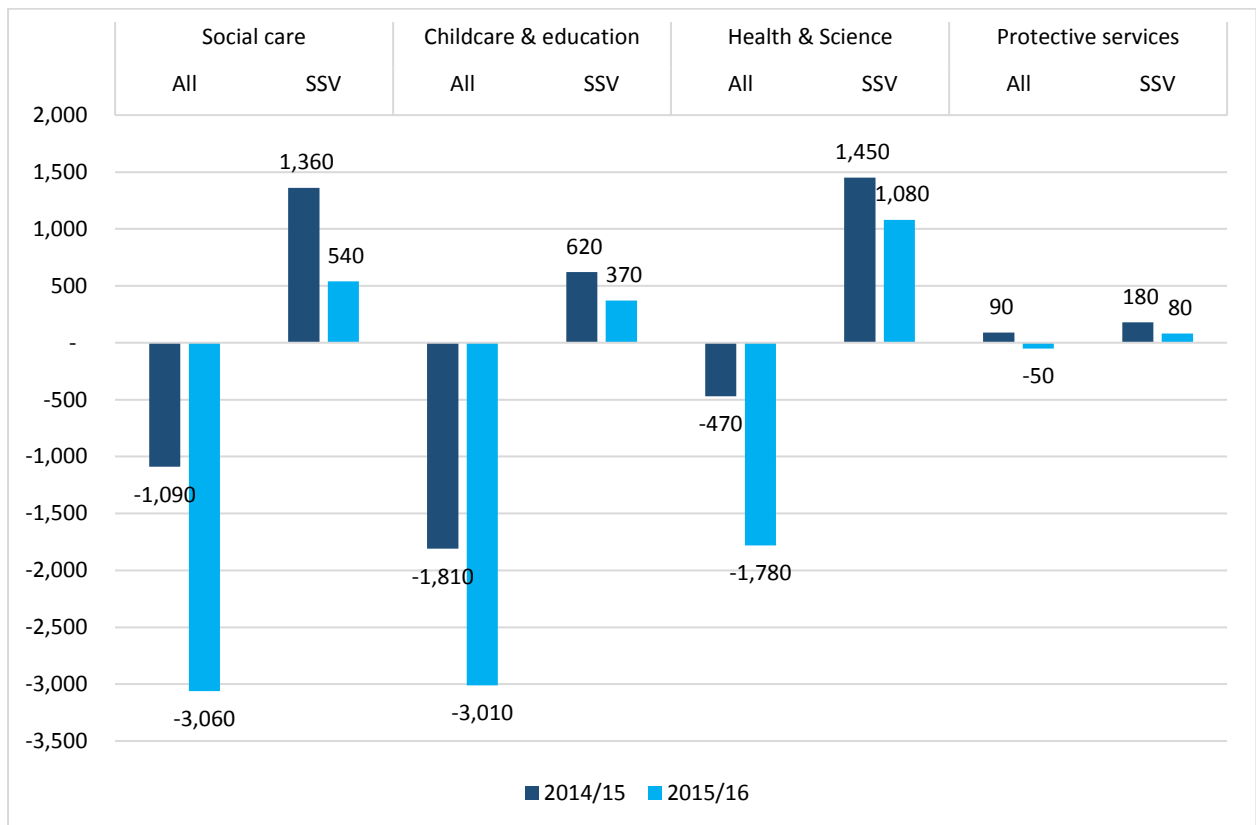
**Chart 33: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by pathway, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>35</sup>**



<sup>35</sup> Centre for Progressive Capitalism's analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

The only pathway to enjoy an increase in FE course completions was childcare and education, with 3% growth. This was, however, more than countered by the 39% growth in vacancies over the same period.

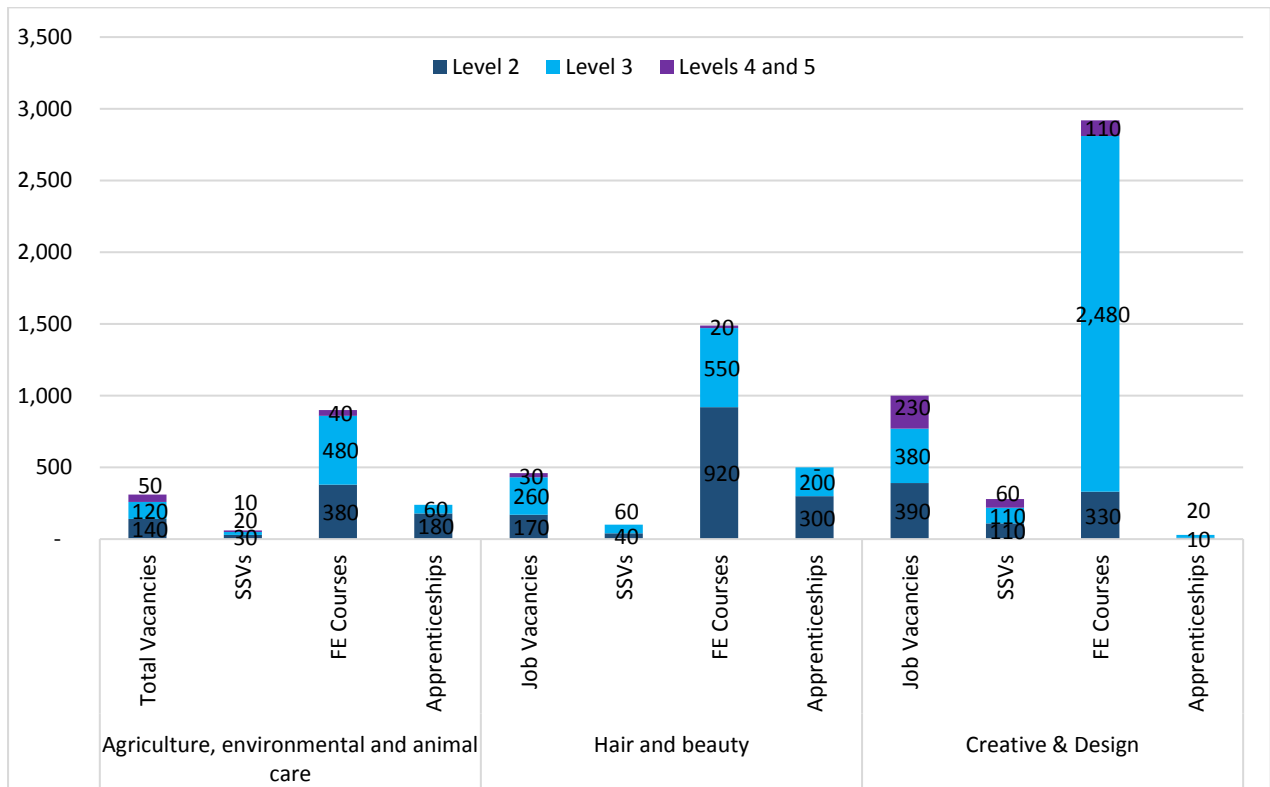
**Chart 34: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by pathway, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014-15 – 2015-16<sup>36</sup>**



<sup>36</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

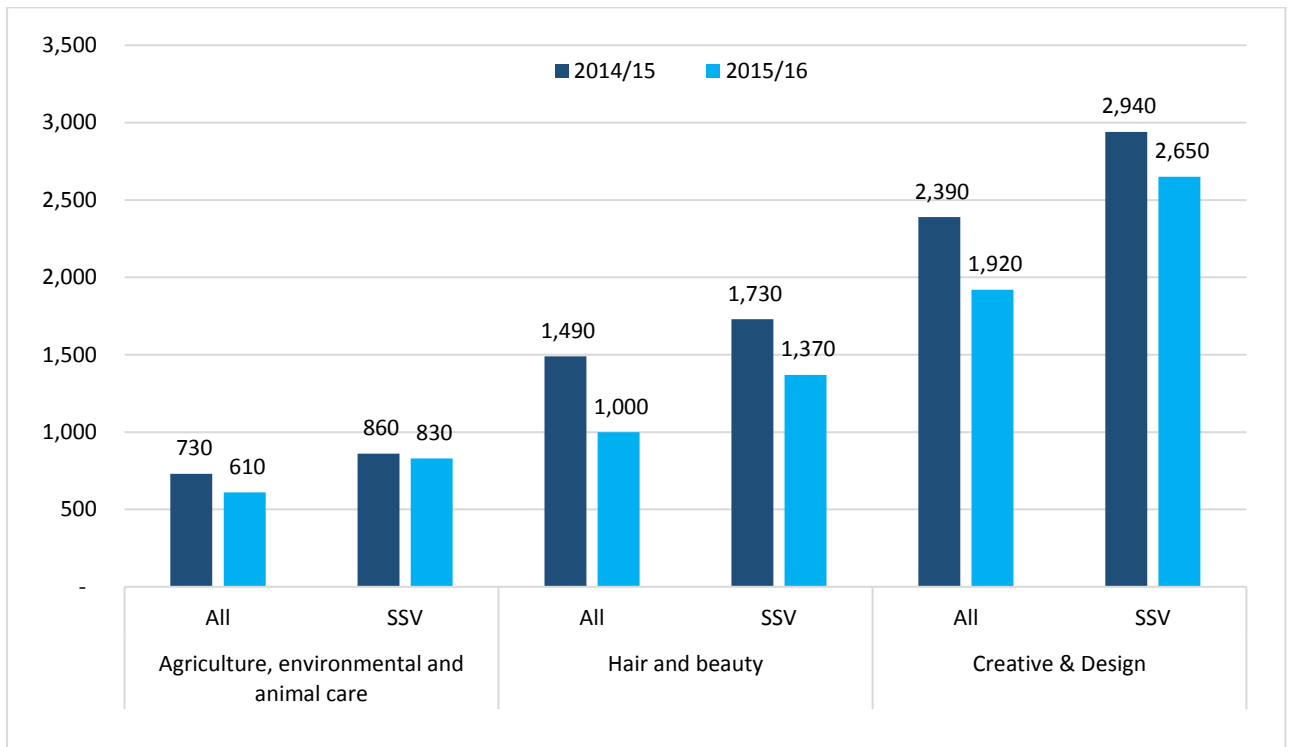
The largest potential oversupply of FE courses relative to job vacancies is for creative and design, with 1,920 more courses than job vacancies. However, as stated elsewhere, many of these courses can be classed as foundation courses, meaning they are a first step towards higher level jobs in the future. Therefore, it is likely that the number that has completed these courses will fall by the time they actual come to compete for these types of jobs.

**Chart 35: Total vacancies, skills shortage vacancies, FE course completions and apprenticeship completions by pathway, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015/16<sup>37</sup>**



<sup>37</sup> Centre for Progressive Capitalism’s analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code, UKCES Employer Skills Survey.

**Chart 36: The number of FE course completions at levels 2, 3, 4 and 5 minus the number of total vacancies / minus skills shortage vacancies (SSV) by pathway, Derby, Derbyshire, Nottingham and Nottinghamshire, 2014/15 – 2015-/16<sup>38</sup>**



<sup>38</sup> Centre for Progressive Capitalism's analysis of: Skills Funding Agency Data Cube; Burning Glass job vacancy data by 4 digit SOC code; Labour Force Survey UK data on highest qualification of workers by 4 digit SOC code; UKCES Employer Skills Survey.

## Sectors

### Sectors – All

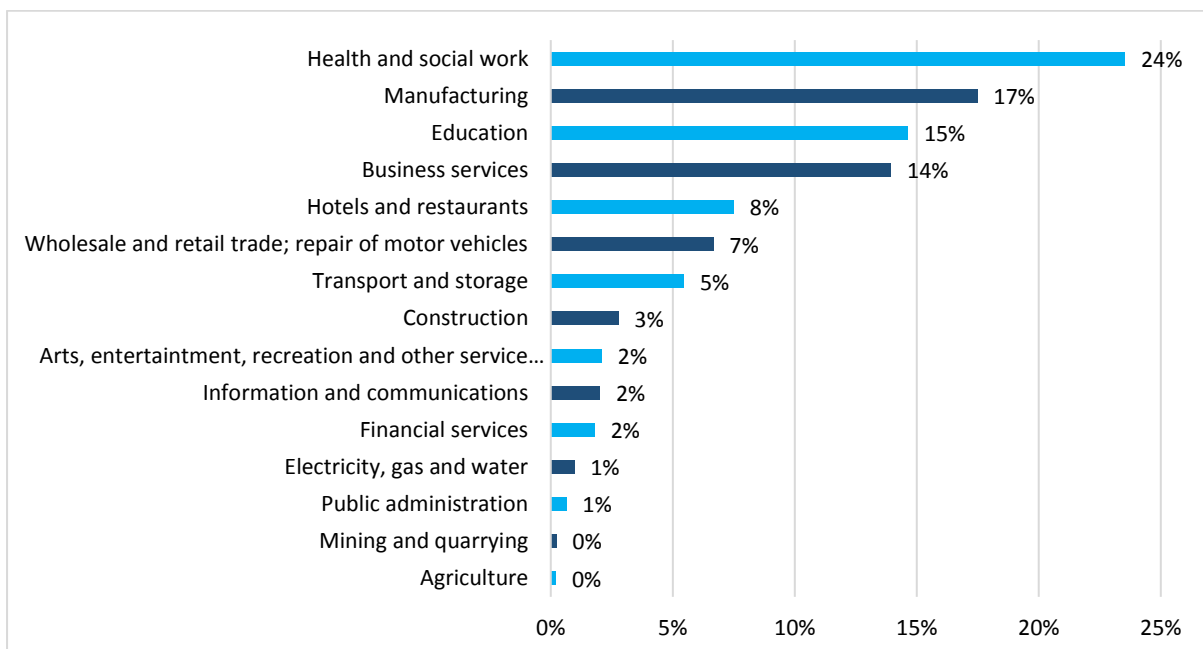
The following section provides an analysis of the sectoral composition of vacancies in the D2N2 area. Note that the sector refers to the employer and so any given occupation can be in any sector. For example, while most chef jobs will logically be in the hotels and restaurants sector, it is possible that there will be at least some in all other sectors.

As shown in chart 37, employers in the health and social work sector provided the greatest share of vacancies, at 24% of the total. More than half of all health and social work vacancies were for either nursing and midwifery professionals, care workers or health professionals, with 27%, 14% and 10% respectively of the sector total. As such, the majority of health and social work sector vacancies are for professional vacancies, as opposed to technical.

**Manufacturing was the second most important sector – and the largest non-public sector – for job vacancies in D2N2 in 2016, accounting for 17% of the total.** The composition of manufacturing vacancies was more widely spread than for those in the health and social work sector. No secondary occupation group provided more than 1 in 10 of the sector’s jobs, with engineering professionals, sales and retail and metals, tools and instruments manufacturing all with 10%.

Unsurprisingly, job vacancies for employers in the education sector were dominated by teaching and education professionals, which accounted for almost half of all vacancies in the sector.

**Chart 37: Share of job vacancies by sector in Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>39</sup>**



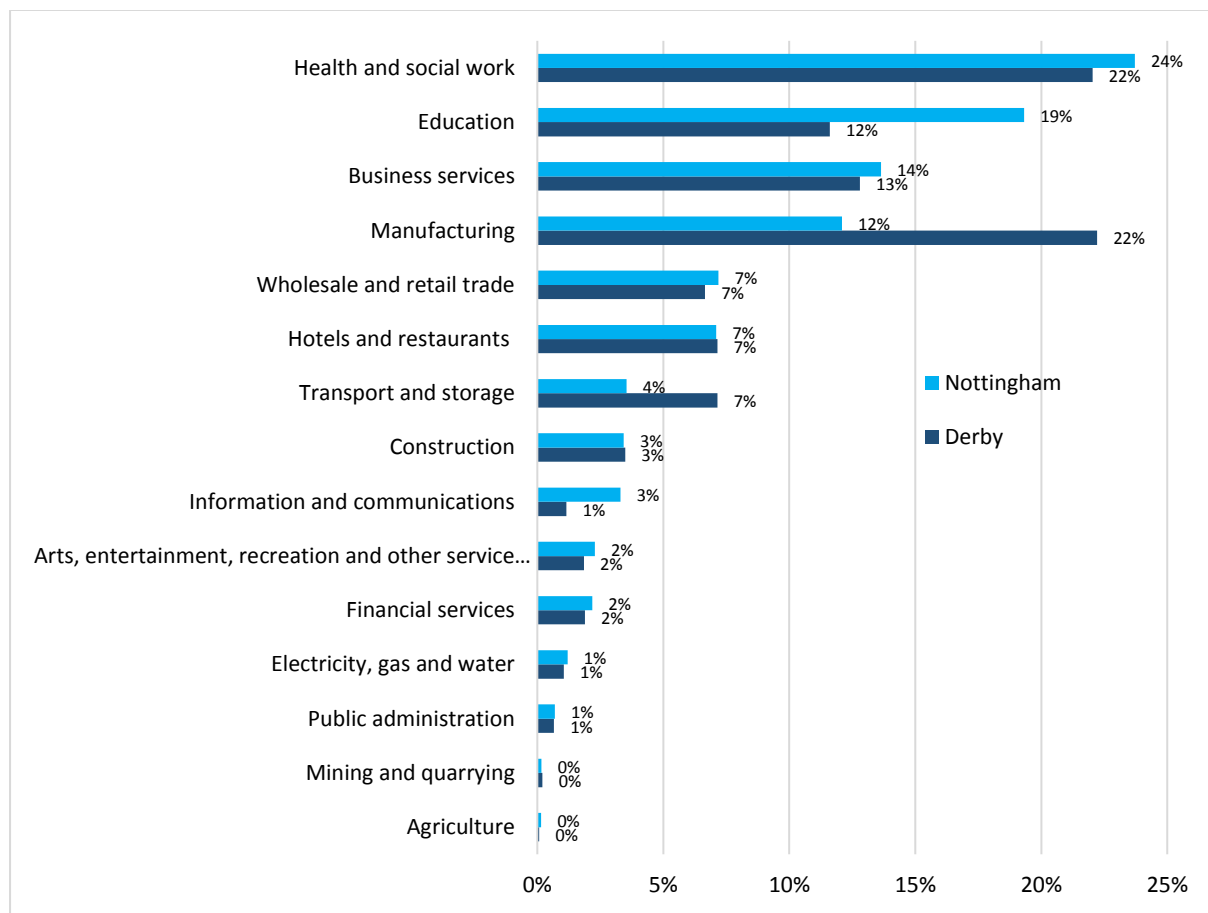
<sup>39</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

Breaking this down into local authority areas, **while the sectoral structure of vacancies is broadly similar for Derby and Nottingham, there are some important variations.** The data suggests that the education sector is a significantly more important source of employer demand in Nottingham than in Derby, likely due to the former’s large universities, which may also explain the greater prevalence of professional roles in Nottingham shown in chart 5.

**Additionally, employers in the manufacturing sector in Derby provided 22% of job vacancies, compared to just 12% in Nottingham.** This reflects the historical importance of car, planes and trains manufacturing in Derby, a contemporary example of which being the £1 billion bombardier contract to build Crossrail trains in the city.

**In both towns, employers in the health and social work sector provided a significant share of vacancies.** In Nottingham, it claimed the largest share, but it was the second largest in Derby, narrowly behind manufacturing.

**Chart 38: Share of job vacancies by sector in Derby and Nottingham, 2016<sup>40</sup>**



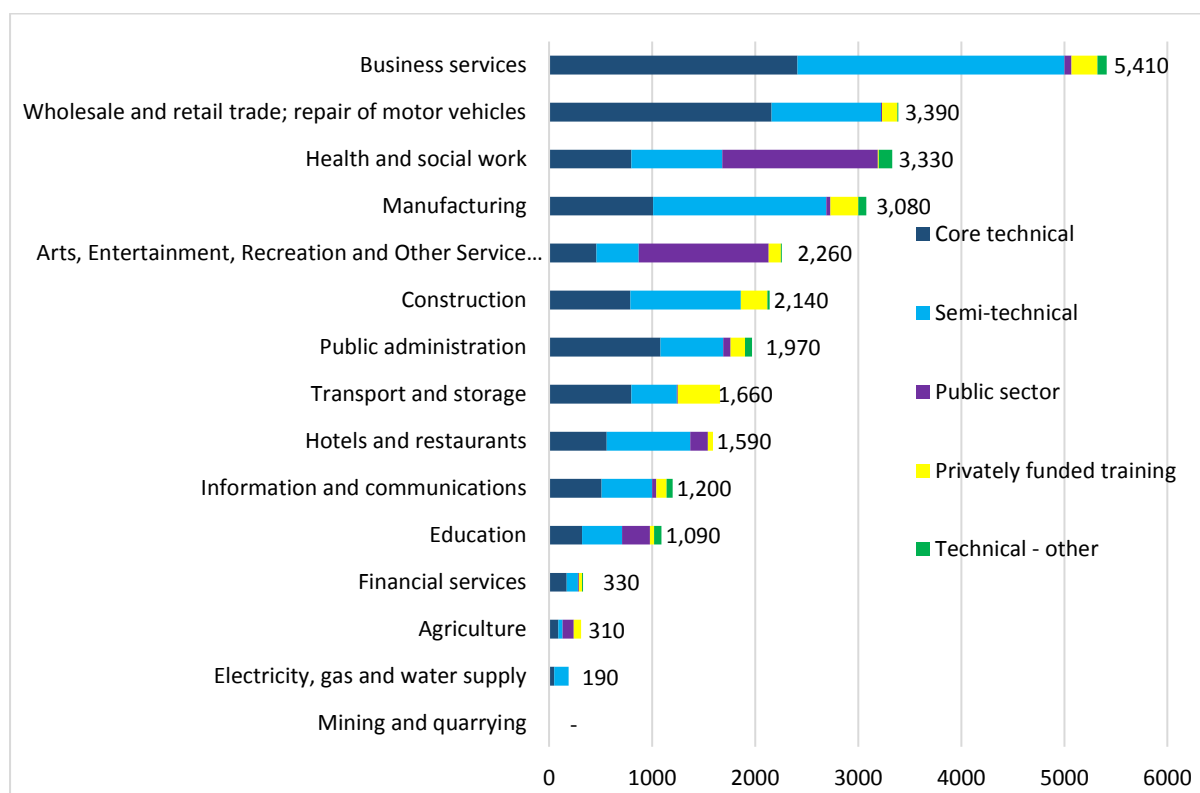
<sup>40</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

## Sectors – Technical

Chart 39 shows the distribution of skills shortage vacancies across each sector. **The business services sector accounted for the largest amount of technical skills shortage vacancies in 2015 with 5,410.** Wholesale and retail trade; repair of motor vehicles was second with 3,390 and health and social work was third with 3,330.

Chart 39 also shows how technical skills shortage vacancies for each sector are shared between the five primary technical groupings (core technical, semi-technical, privately funded training, public sector technical and technical – advanced). As can be seen, the technical skills shortage vacancies are predominantly core technical and semi-technical for every sector, other than health and social work and arts, entertainment, recreation and other service activities, where technical public sector jobs make up a greater share.

**Chart 39: The number of skills shortage vacancies for roles in the five technical primary groups by sector of the employer, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015<sup>41</sup>**



The below charts outline the nature of vacancies within sectors that are identified in chart 39 above as having an abundance of technical skills shortages. Note, this uses burning glass data and **the vacancies are not necessarily due to skills shortages.**

<sup>41</sup> Centre for Progressive Capitalism analysis of the raw data from UKCES' 2015 Employer Skills Survey, which surveyed 3,127 employer establishments across Derby, Derbyshire, Nottingham and Nottinghamshire. Note, the figures here have been annualised using annual data from Burning Glass, since the UKCES question asks respondents whether they 'currently' have vacancies.

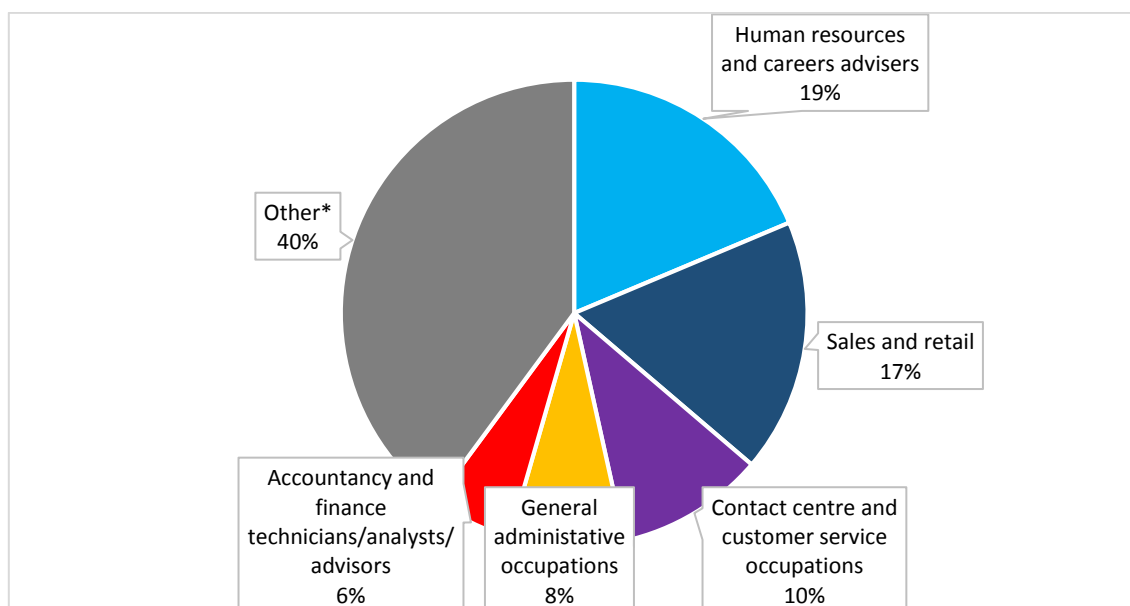
## Business services

**19% of technical vacancies in the business services sector were for human resources and careers advisors, 17% were for sales and retail and 10% for contact centre and customer services operations.**

It is likely that addressing technical skills shortages in the business services sector would require tackling the skills shortages for these three secondary occupation groups, which between them account for around 46% of the sector's technical vacancies.

The mismatch analysis can be seen on page 26 for human resources and careers advisors, 21 for sales and retail and 21 for contact centre and customer services operations. Note that the mismatch is done for each secondary occupation group for **employers in all sectors**, because FE courses and apprenticeships are not sector specific.

**Chart 40: Share of technical job vacancies with employers in the business services sector by occupation, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>42</sup>**



### Other<sup>43</sup>

IT engineers and technicians	4%
Legal associate professionals and secretaries	4%
Marketing associate professionals	3%
Electricians and electronic trades/technicians/engineers	3%
Engineering and planning/process/production technicians	2%
Artists and designers	2%
Estate agents and auctioneers	2%
Business and related associate professionals	2%
Metals, tools and instruments manufacturing	2%
Public services and NGO associate professionals	2%

<sup>42</sup> Centre for Progressive Capitalism's analysis of Burning Glass job vacancy data; occupation definitions are those developed by the Centre for the mismatch analysis; the industry sector is defined by Burning Glass using SIC codes

<sup>43</sup> Tables are included where 'other' constitutes a share of 25% or more of the total. Only occupation groups with 2% or more are reported.

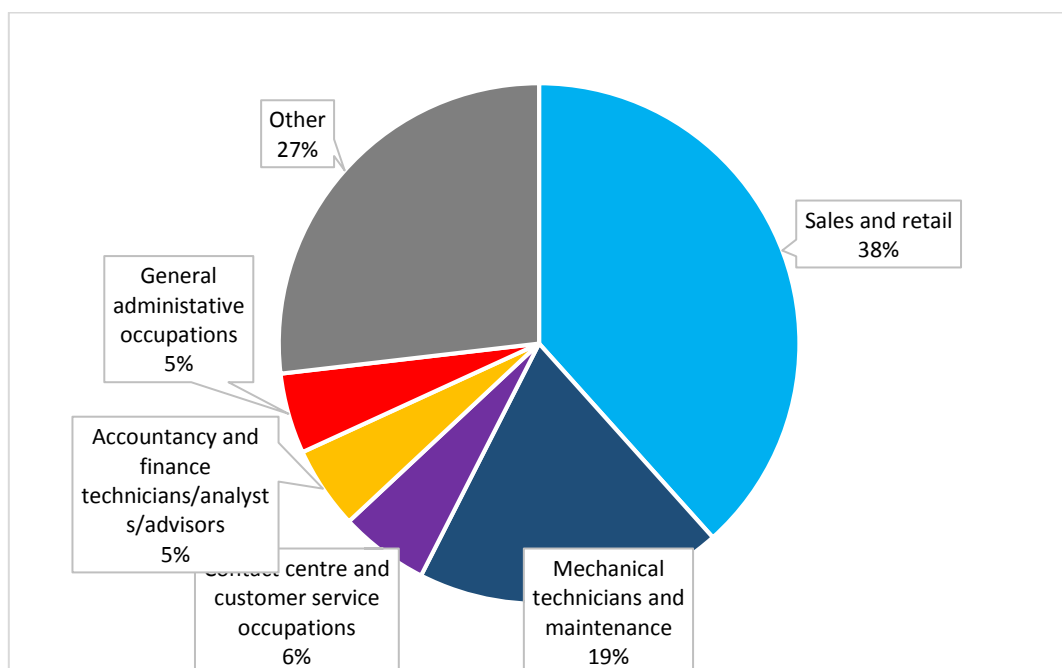


## Wholesale and retail trade; repair of motor vehicles

The second largest sector in terms of number of technical skills shortage vacancies was wholesale and retail trade; repair of motor vehicles. Chart 41 below breaks down the structure of all technical vacancies within the sector. **Sales and retail, mechanical technicians and maintenance and contact centre and customer service occupations contain the highest shares of vacancies, with 38%, 19% and 6% respectively.**

The mismatch analysis (across all sectors) can be seen for sales and retail on page 21, for mechanical technicians and maintenance on page 19, and for contact centre and customer service occupations on page 21.

**Chart 41: Share of technical job vacancies with employers in the wholesale and retail trade; repair of motor vehicles sector by occupation, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>44</sup>**



Other <sup>45</sup>	
IT engineers and technicians	3%
Business and related associate professionals	3%
Manufacturing operatives	2%
Beauticians and related occupations	2%

<sup>44</sup> Centre for Progressive Capitalism's analysis of Burning Glass job vacancy data; occupation definitions are those developed by the Centre for the mismatch analysis; the industry sector is defined by Burning Glass using SIC codes

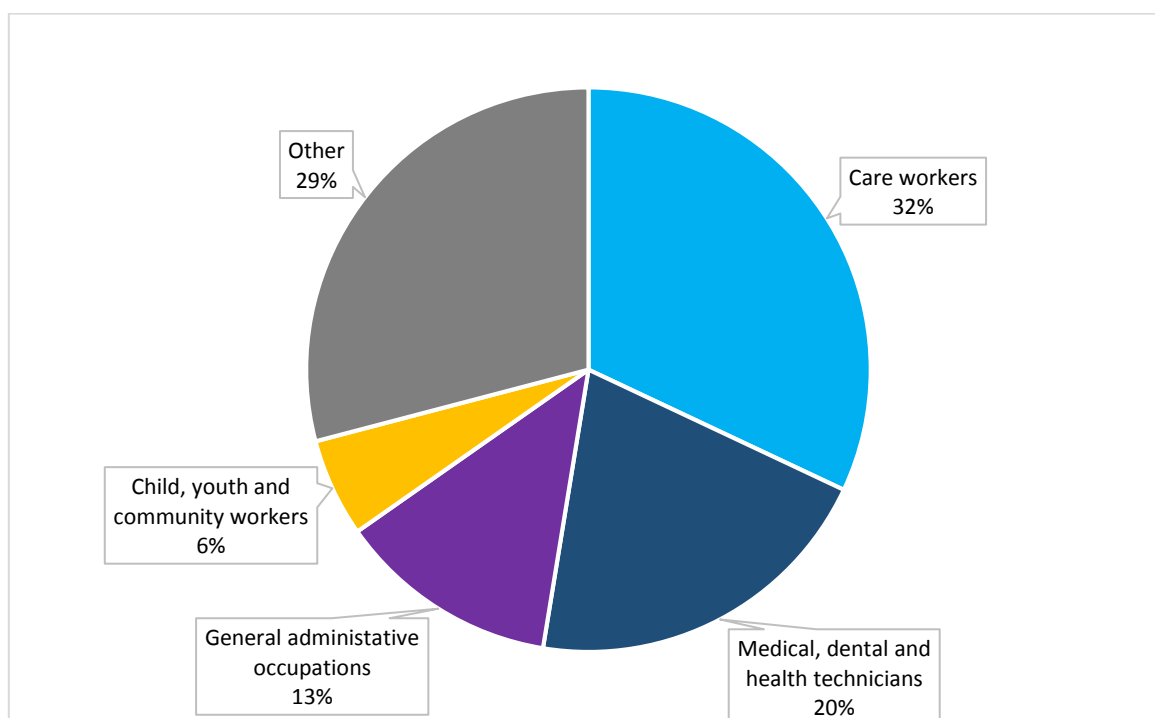
<sup>45</sup> Tables are included where 'other' constitutes a share of 25% or more of the total. Only occupation groups with 2% or more are reported.

## Health and social work

The third largest sector in terms of number of technical skills shortage vacancies was health and social work. **Within the sector, the care workers secondary group was responsible for the highest share of total technical vacancies with 32%**, followed by medical, dental and health technicians and general administrative occupations with 20% and 13% respectively.

The mismatch analysis (for employers across all sectors) can be seen on page 25 for care workers, 19 for medical, dental and health technicians and 21 for general administrative occupations.

**Chart 42: Share of technical job vacancies with employers in the health and social work sector by occupation, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>46</sup>**



### Other<sup>47</sup>

Sales and retail	4%
Public services and NGO associate professionals	3%
IT engineers and technicians	3%
Accountancy and finance technicians/analysts/advisors	3%
Beauticians and related occupations	2%
Human resources and careers advisers	2%
Contact centre and customer service occupations	2%

<sup>46</sup> Centre for Progressive Capitalism's analysis of Burning Glass job vacancy data; occupation definitions are those developed by the Centre for the mismatch analysis; the industry sector is defined by Burning Glass using SIC codes

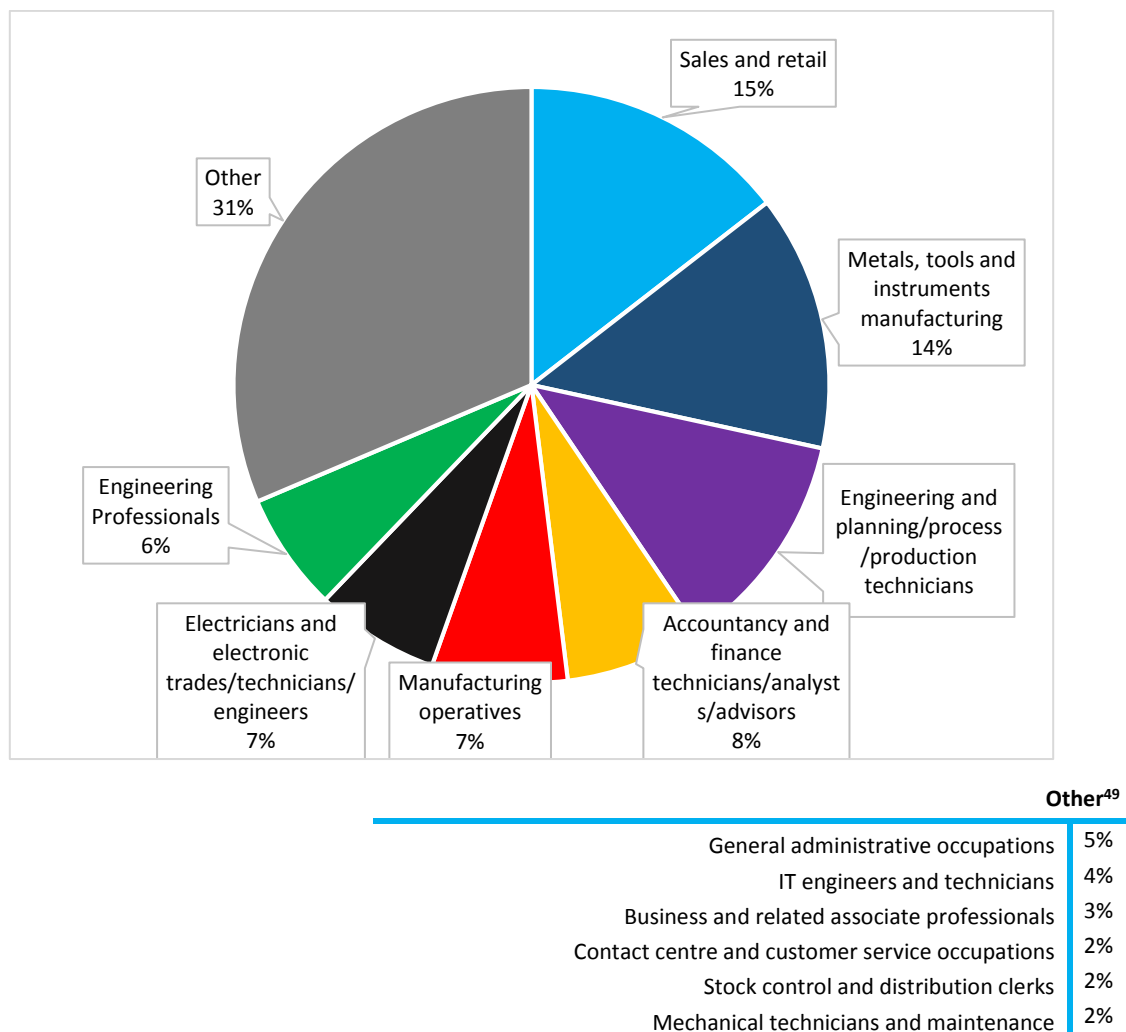
<sup>47</sup> Tables are included where 'other' constitutes a share of 25% or more of the total. Only occupation groups with 2% or more are reported.

## Manufacturing

Chart 43 shows the breakdown of technical vacancies within the manufacturing sector. **Again sales and retail top the share of vacancies with 15%, followed by 14% for metals, tools and instruments manufacturing and 12% for engineering and planning/process/production technicians.**

The mismatch analysis (across all sectors) can be seen on page 17 for metals, tools and instruments manufacturing and engineering and planning/process/production technicians.

**Chart 43: Share of technical job vacancies with employers in the manufacturing sector by occupation, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>48</sup>**



<sup>48</sup> Centre for Progressive Capitalism's analysis of Burning Glass job vacancy data; occupation definitions are those developed by the Centre for the mismatch analysis; the industry sector is defined by Burning Glass using SIC codes

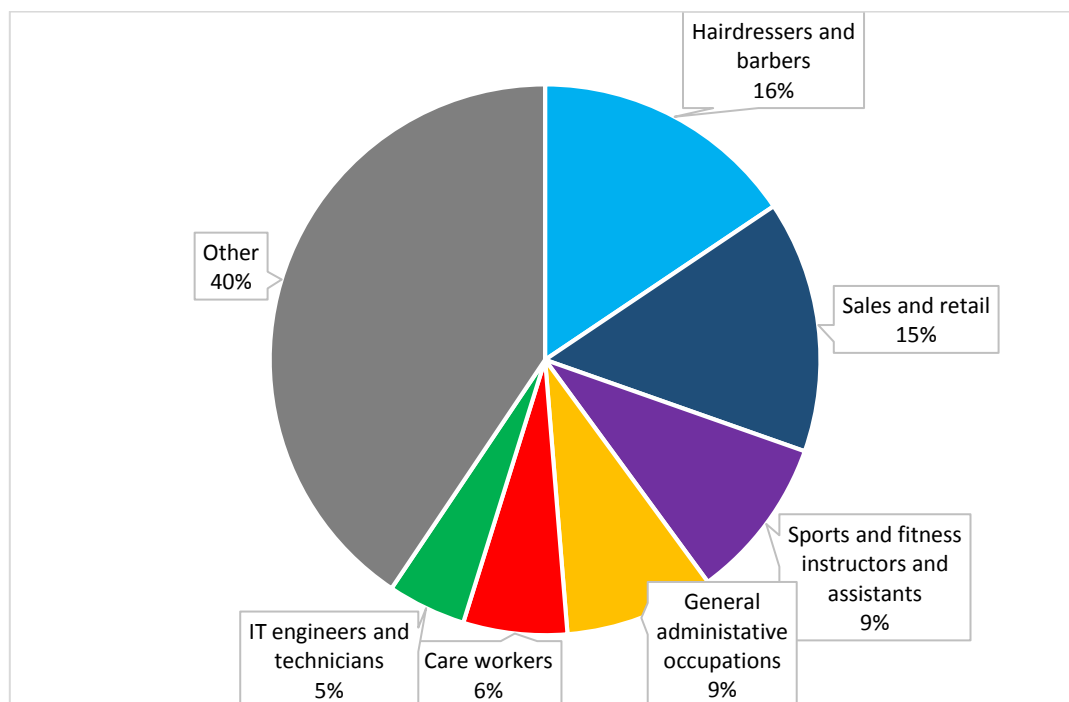
<sup>49</sup> Tables are included where 'other' constitutes a share of 25% or more of the total. Only occupation groups with 2% or more are reported.

## Arts, entertainment, recreation and other service activities

Chart 44 shows the breakdown of technical vacancies within the arts, entertainment, recreation and other service activities sector. **16% of technical vacancies in this sector were for hairdressers and barbers, 15% were for sales and retail and 9% were for sports and fitness instructors and assistants.**

The mismatch analysis (across all sectors) can be seen on page 28 for hairdressers and barbers and 30 for sports and fitness instructors and assistants.

**Chart 44: Share of technical job vacancies with employers in the arts, entertainment, recreation and other service activities sector by occupation, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>50</sup>**



### Other<sup>51</sup>

IT engineers and technicians	5%
Contact centre and customer service occupations	4%
Accountancy and finance technicians/analysts/advisors	4%
Cleaners and caretakers	3%
Marketing associate professionals	3%
Performing arts	2%
Public services and NGO associate professionals	2%
Beauticians and related occupations	2%
Medical, dental and health technicians	2%
Vocational and industrial trainers and instructors	2%
Engineering and planning/process/production technicians	2%

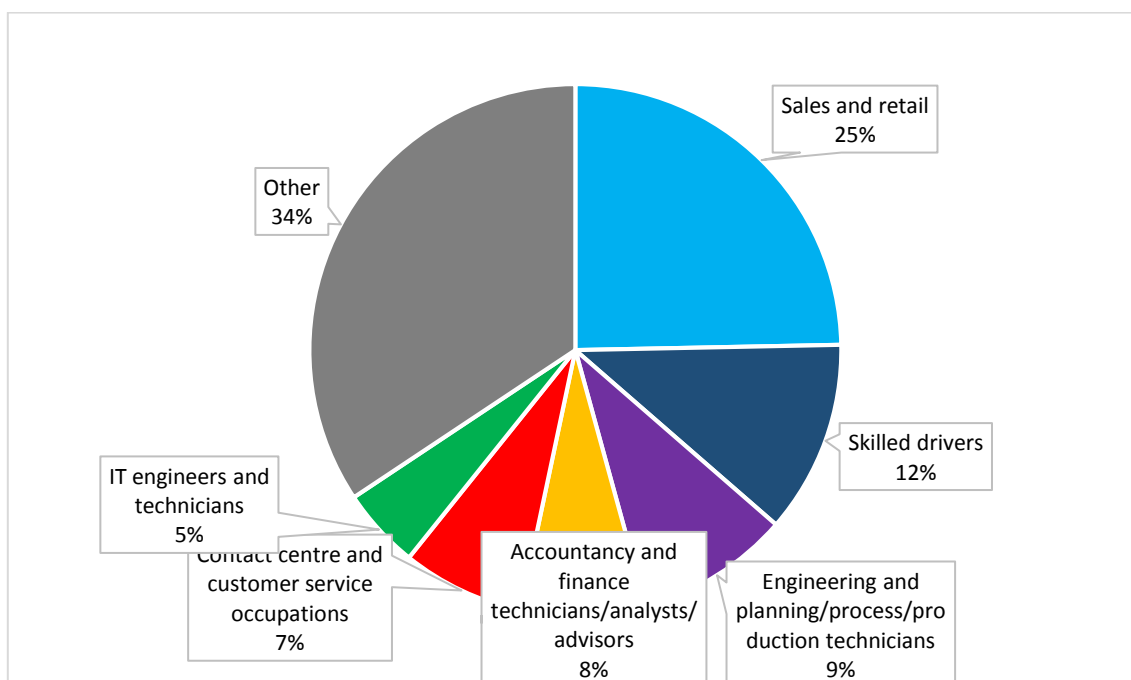
<sup>50</sup> Centre for Progressive Capitalism's analysis of Burning Glass job vacancy data; occupation definitions are those developed by the Centre for the mismatch analysis; the industry sector is defined by Burning Glass using SIC codes

<sup>51</sup> Tables are included where 'other' constitutes a share of 25% or more of the total. Only occupation groups with 2% or more are reported.

## Construction

In the construction sector, other than sales and retail, skilled drivers had the largest share of technical vacancies with 12%, followed by engineering and planning/process/production technicians.

**Chart 45: Share of technical job vacancies with employers in the construction sector by occupation, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>52</sup>**



### Other<sup>53</sup>

Manufacturing operatives	4%
General administrative occupations	4%
Electricians and electronic trades/technicians/engineers	3%
Marketing associate professionals	3%
Metals, tools and instruments manufacturing	3%
Engineering Professionals	2%
Human resources and careers advisers	2%
Business and related associate professionals	2%

<sup>52</sup> Centre for Progressive Capitalism's analysis of Burning Glass job vacancy data; occupation definitions are those developed by the Centre for the mismatch analysis; the industry sector is defined by Burning Glass using SIC codes

<sup>53</sup> Tables are included where 'other' constitutes a share of 25% or more of the total. Only occupation groups with 2% or more are reported.

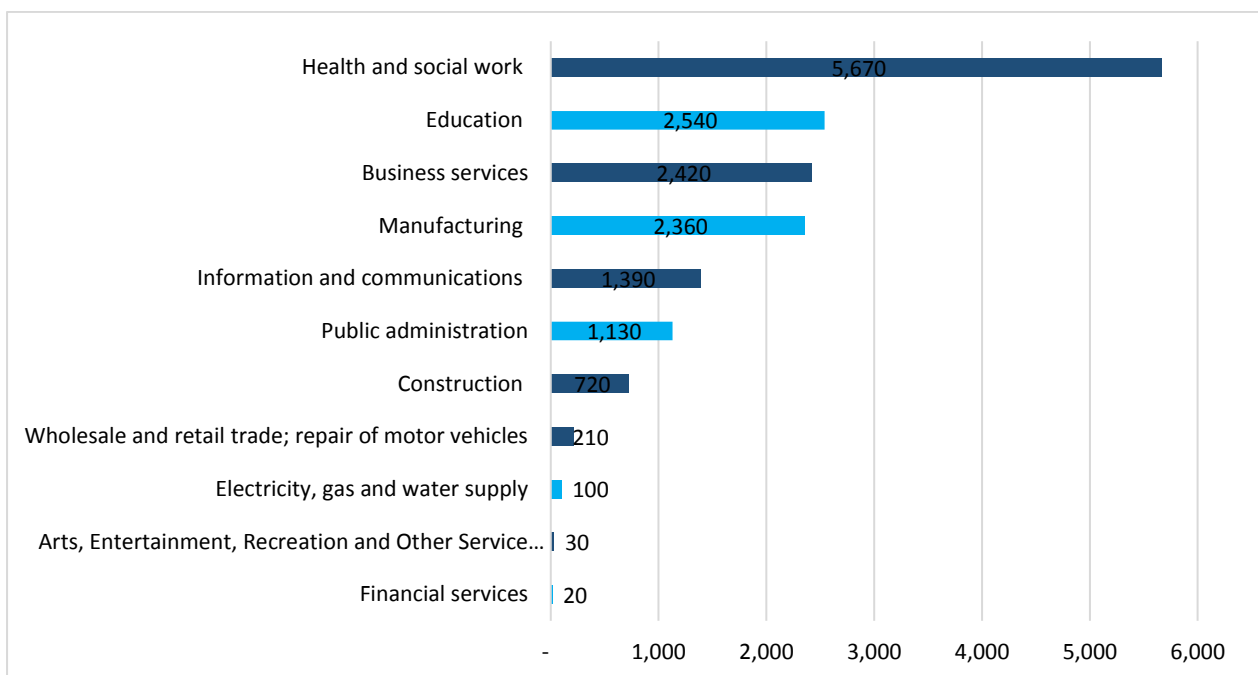
## Sectors – Professional

Chart 46 below shows the estimated number of skills shortage vacancies for professional roles for each sector.

The professional definition includes 84% of the SOC ‘major group 2: professional occupations’ and 4% of the SOC ‘major group 3: associate professional and technical occupations’.

**The health and social work sector has the largest number of skills shortage vacancies for professional roles with 5,670, followed by education with 2,540 and business services with 2,420.**

**Chart 46: The number of skills shortage vacancies for roles in the professional primary group by sector of the employer, Derby, Derbyshire, Nottingham and Nottinghamshire, 2015<sup>54</sup>**



The below charts show the nature of vacancies within sectors that are identified in chart 45 above as having an abundance of professional skills shortages. This uses burning glass data and the **vacancies are not necessarily due to skills shortages**.

As explained on page 13, no attempt is made to link professional roles to graduate courses, as it is highly likely that the links to the local labour market demands are far weaker and less direct. This is due both to the greater movement of graduates out of the area after course completion and the large variation in graduate course subject and eventual career path.

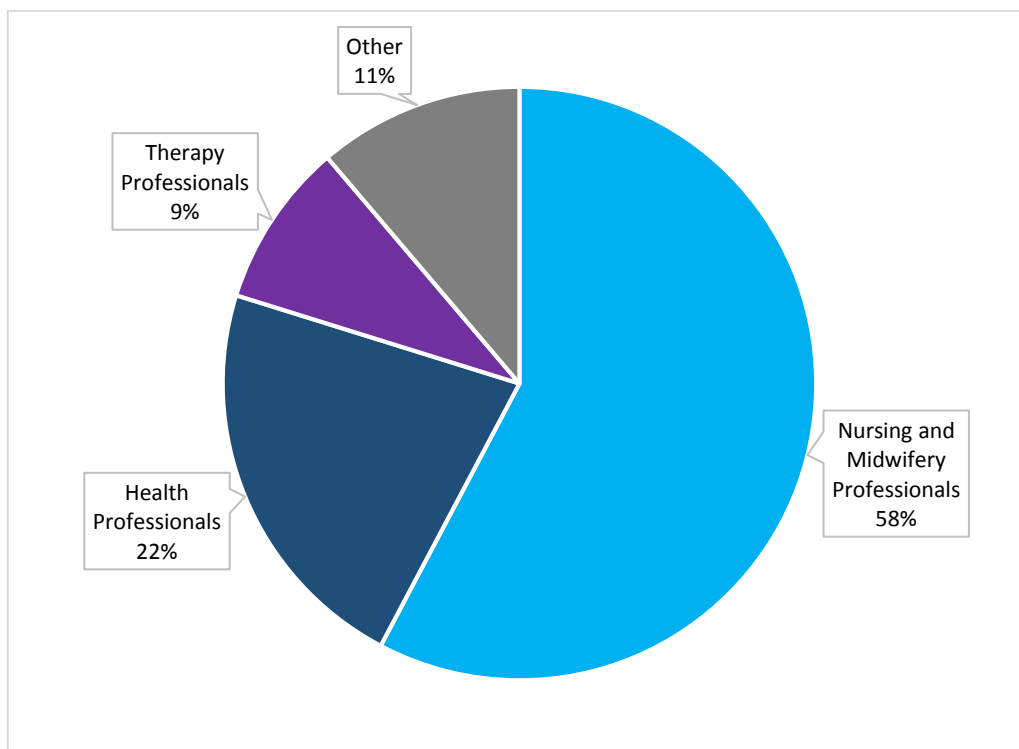
<sup>54</sup> Centre for Progressive Capitalism analysis of the raw data from UKCES' 2015 Employer Skills Survey, which surveyed 3,127 employer establishments across Derby, Derbyshire, Nottingham and Nottinghamshire. Note, the figures here have been annualised using annual data from Burning Glass, since the UKCES question asks respondents whether they 'currently' have vacancies.

## Health and social work

The sector with the greatest number of professional skills shortage vacancies was health and social work. Chart 47 details how professional vacancies are distributed across the sector.

**By far the largest group was nursing and midwifery professionals, with 58% of the total, followed by health professionals and therapy professionals with 22% and 9% respectively.**

*Chart 47: Share of professional job vacancies with employers in the health and social work sector by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>55</sup>*



<sup>55</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

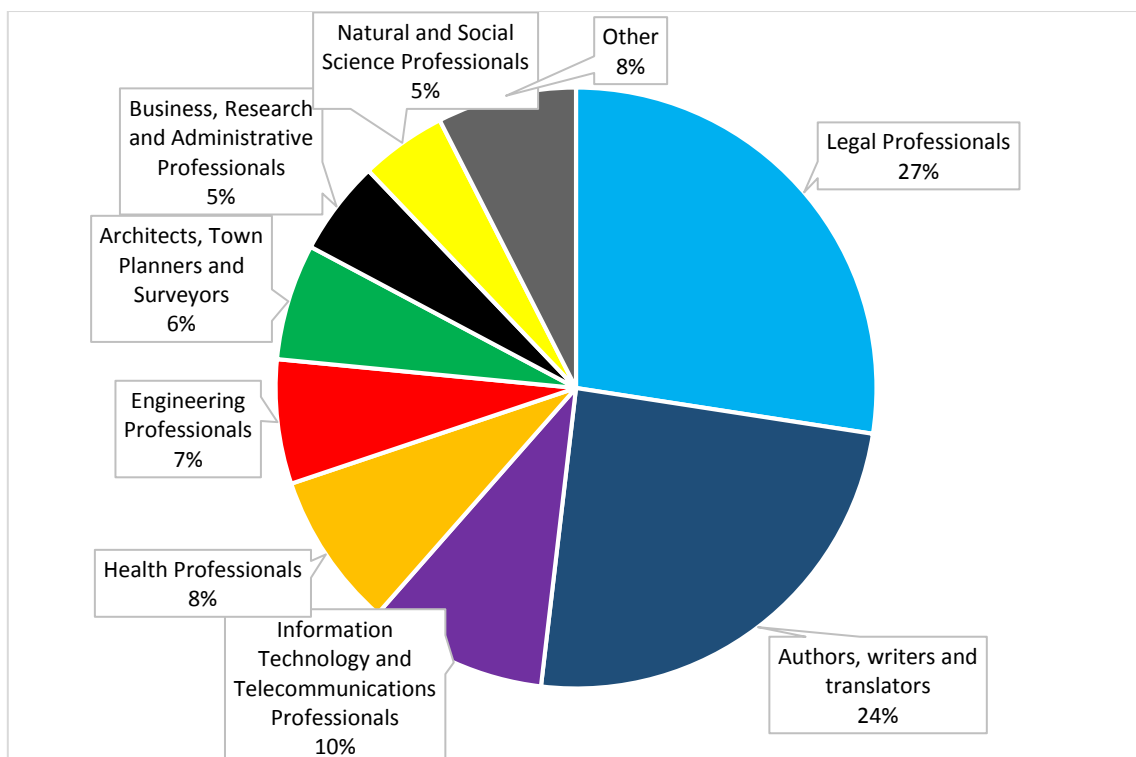
## Education

Unsurprisingly, the education sector was dominated by teaching and educational professionals, which accounted for 86% of professional vacancies. No other occupation achieved more than a 4% share of the total.

## Business services

Professional vacancies in the business services sector were dominated by legal professionals and authors, writers and translators, which between them accounted for more than half of the total.

**Chart 48: Share of professional job vacancies with employers in the business services sector by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>56</sup>**



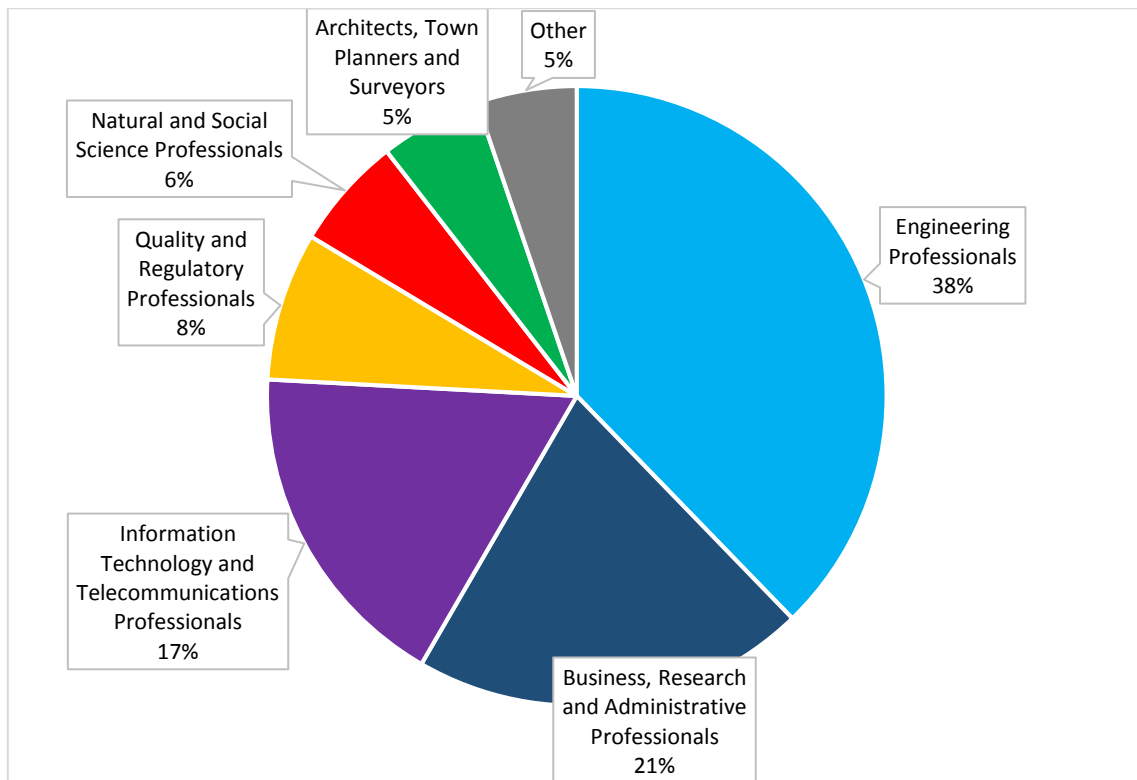
<sup>56</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data



## Manufacturing

Professional vacancies in the manufacturing sector were led by engineering professionals, with 38% of the total. Business, research and administrative professionals accounted for 21%, with information technology and telecommunications professionals on 17%.

**Chart 49: Share of professional job vacancies with employers in the manufacturing sector by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>57</sup>**

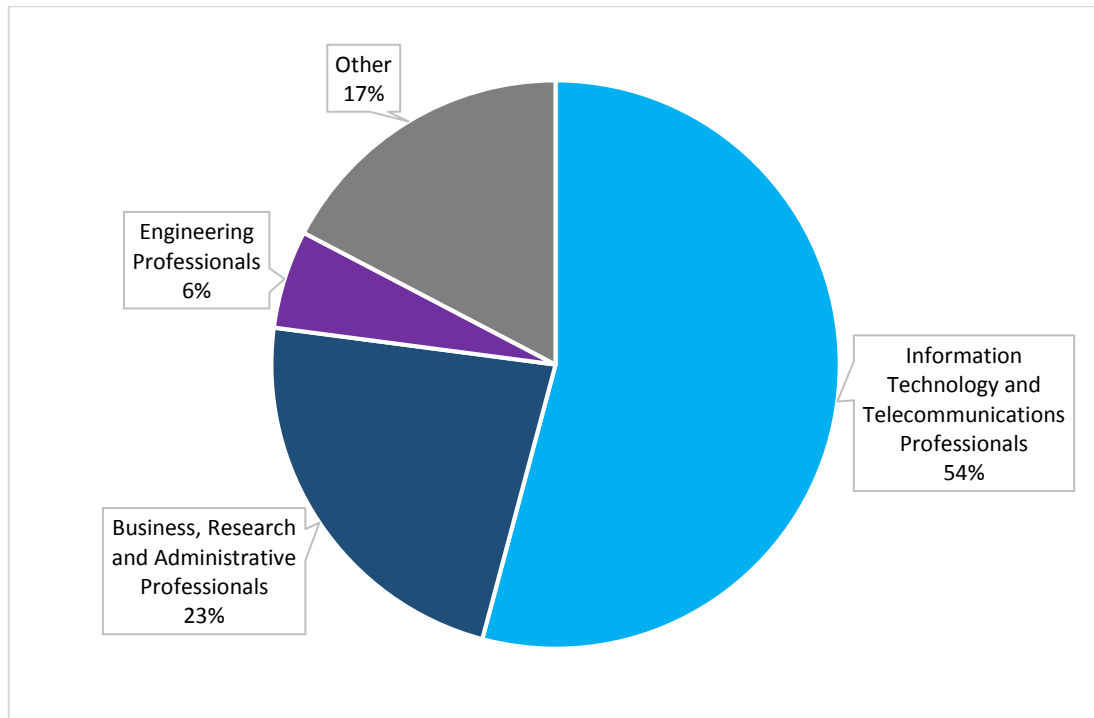


<sup>57</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

## Information and communications

Unsurprisingly, the largest source of professional vacancies in the information and communications sector was information technology and telecommunications professionals, with 54% of the total.

**Chart 50: Share of professional job vacancies with employers in the information and communications sector by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>58</sup>**

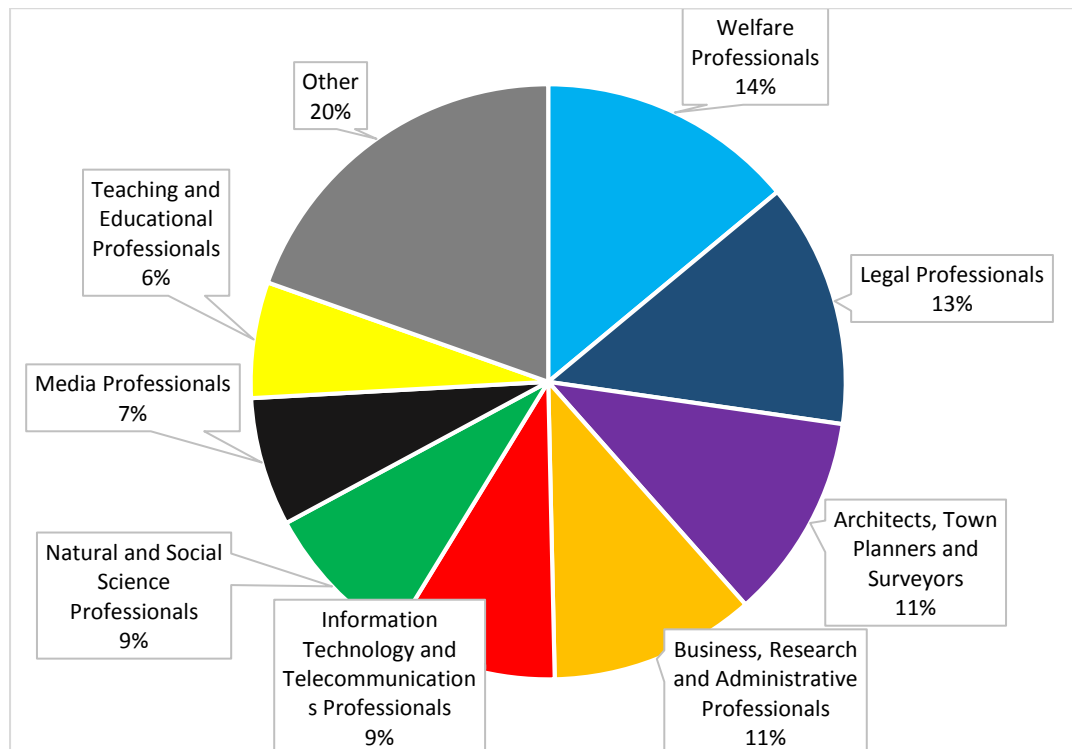


<sup>58</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

## Public administration

Professional vacancies were spread fairly evenly in the public administration sector, with 6 secondary occupation groups having between a 9% and 14% share of the total.

**Chart 51: Share of professional job vacancies with employers in the public administration sector by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>59</sup>**

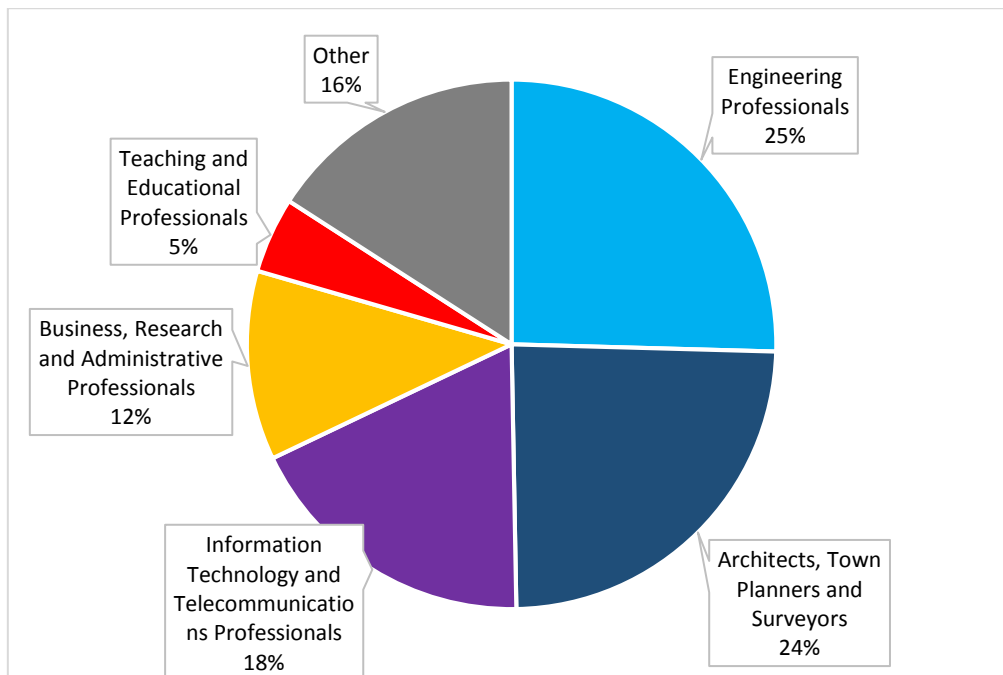


<sup>59</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

## Construction

Professional vacancies in the construction sector were predominantly in one of three secondary occupation groups: engineering professionals (25%), architects, town planners and surveyors (24%) and information technology and telecommunications professionals (18%).

**Chart 52: Share of professional job vacancies with employers in the construction sector by secondary occupation group, Derby, Derbyshire, Nottingham and Nottinghamshire, 2016<sup>60</sup>**



<sup>60</sup> Centre for Progressive Capitalism, Burning Glass job vacancy data

## Appendix – Methodology of the mismatch analysis

### Level of data

The mismatch analysis was conducted at the lowest level possible for each aspect at the LEP level. This included analysing apprenticeships by the pathway chosen by each apprentice. For example, an apprenticeship in Engineering Manufacture (Craft and Technician) has 11 diverse pathways including: aerospace; fabrication and welding; and electrical and electronic engineering.

The mismatch analysis was conducted for technical roles only as professional roles are predominantly filled by university graduates.

The data sources used were:

- **College-based technical courses:** Skills Funding Agency's LEP Data Cube data on the number of completions by individual learning aim (based on all skills providers within the LEP).
- **Apprenticeships:** Skills Funding Agency's LEP Data Cube data on the number of completions by pathway chosen for each apprenticeship framework (based on all skills providers within the LEP).
- **Job vacancies:** Burning Glass' LEP level data on vacancies by four-digit SOC code.
- **Education level:** Labour Force Survey's (LFS) UK data by four-digit SOC code. Data are not available at the LEP level. Note, the LFS was used instead of Burning Glass' data for advertised minimum education level as this specific part of their data is drawn from a small sample as only a small number of adverts specify this.
- **Skills shortages:** UKCES' 2015 Employer Skills Survey LEP-level skills shortages by 15 industry sectors, split by the ONS's 9 broad occupation groups.

### Scope of the demand-side analysis of technical vacancies

A technical occupation is any that on average is done by less than 30% graduates (as indicated by the highest level of education identified in the labour force survey) and can be linked to relevant FE courses or apprenticeships.

This is broken down into five primary technical groups:

- **Core-technical:** these are technical occupations that are typically held by people with level 3 qualifications or above.
- **Semi-technical:** these are occupations that are typically held by people with level 2 qualifications or below. While further education can lead to these occupations, it is also possible that some people will enter them without having done an FE course or apprenticeship, given the relatively low level of skill required.
- **Public sector technical:** occupations that are predominantly in the public sector. Examples include care workers and teaching and educational support assistants
- **Privately funded training:** these are occupations which are not typically done by graduates, but nor are they unskilled. They are occupations that are technical in nature but for which publicly funded training is not commonly provided. An example is skilled drivers
- **Technical – advanced:** these are occupations towards which FE can often provide a first step or foundation qualification. Entry into these occupations straight from FE is not common. They also include some occupations that are more advanced versions of those found in core-technical. Examples include artists and designers and engineering professionals.

In terms of the ONS Standard Occupational Classification (SOC) Hierarchy, the following were included:

- Roughly 16% of major group 2: professional occupations
- Roughly 96% of major group 3: associate professional and technical occupations
- All of major group 4: administrative and secretarial occupations
- All of major group 5: skilled trades occupations
- All of major group 6: caring, leisure and other service occupations
- All of major group 7: sales and customer service occupations
- Roughly 90% of major group 8: process, plant and machine operatives

The following major groups were not included:

- Major group 1: managers, directors and senior officials
- Major group 9: elementary occupations

## **Scope of the supply-side analysis**

For the number of completions of college-based courses, only 'education and training', 'traineeships' and 'community learning' funded courses were included. The small number of courses funded via 'workplace learning' (which has largely been phased out in favour of apprenticeships) were excluded since trainees on this route are in employment.

Only technical courses with a significant time commitment required for completion were included. This was defined as certificates (130 to 260 hours of learning) and diplomas (370 or more hours of learning). Awards, which can require as little as 10 hours of learning, were not included. AS and A-levels were also excluded given the report's focus on technical education and training.

## **Calculating skills shortage vacancies at the primary and secondary occupation group level**

The UKCES Employer Skills Survey (ESS) raw data provides estimates of skills shortage vacancy rates for each SOC major group. The estimates of SSV rates for the primary groups are a weighted average of the number of skills shortage vacancies for each SOC major group in the UKCES data divided by a weighted average of the number of vacancies for each SOC major group in the UKCES data.

The UKCES Employer Skills Survey (ESS) raw data provides estimates of skills shortage vacancy rates for each sector. It does not, however, provide estimates of skills shortage vacancy rates for individual occupations at the four digit SOC code level. Therefore, gauging the number of skills shortage vacancies for each secondary occupation group requires analysis of its sectoral composition. The skills shortage vacancy rate is thus the weighted average of all of the sectoral rates, based on how many vacancies the group has in each sector. This assumes a normal distribution of sector skills shortages across occupations.

For example, 89% of vacancies in the skilled drivers secondary group were in the transport and storage sector. The transport and storage sector has a skills shortage rate of 54%, based on the ESS. Therefore, the skills shortage rate of skilled drivers is heavily weighted towards this figure, with the final estimate being 51%.

## Example mapping - Electricians and electronic trades/technicians/engineers (secondary occupation group)

### Jobs

Burning Glass job vacancy data		Labour Force Survey UK-level data on the existing workforce (used to apportion the total number of job vacancies to levels)				
SOC code (4 digit)	SOC occupation (4 digit)	Degree or equivalent (Level 6)	Higher education (Levels 4 and 5)	GCE A level or equivalent (Level 3)	GCSE grades A*-C or equivalent (Level 2)	No qualification
3112	Electrical and electronics technicians	1%	18%	61%	20%	0%
2123	Electrical engineers	16%	23%	46%	10%	5%
5241	Electricians and electrical fitters	2%	11%	64%	20%	3%
5249	Electrical and electronic trades n.e.c.	5%	14%	54%	22%	5%
5250	Skilled metal, electrical and electronic trades supervisors	2%	14%	59%	21%	5%

As the highest average education level is level 3 (57%), electricians and electronic trades/technicians/engineers goes in the core technical primary group.

### Apprenticeships

Skills Funding Agency LEP data cube	
Framework	Pathway
Electrotechnical	All
Power industry	All
Electrical and Electronic Servicing	All
Electricity industry	All
Engineering Manufacture - Electrical and Electronic Engineering	All
Engineering Technology	Electrical/Electronics
Engineering	Electrical and electronic engineering
Engineering Manufacture (Craft and Technician)	Electrical and electronic engineering

### FE courses

Skills Funding Agency LEP data cube
BTEC HNC Diploma in Electrical and Electronic Engineering (QCF)
BTEC HND Diploma in Electrical and Electronic Engineering (QCF)
Diploma in Electrical Installations (Buildings and Structures) (QCF)
Diploma in Electrical/Electronic Engineering (QCF)

Diploma in Electrotechnical Services (Electrical Maintenance) (QCF)
NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment)
Diploma in Providing Electronic Security and Emergency Systems (QCF)
Diploma in Electrical and Electronic Engineering Technology (QCF)
Diploma in Electrical Installation (QCF)
Extended Diploma in Electrical/Electronic Engineering (QCF)
NVQ Diploma in Electrical and Electronic Engineering (QCF)
NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) (QCF)
Certificate in Electrical and Electronic Engineering Technology (QCF)
Diploma in Electrical Power Engineering - Distribution and Transmission (Technical Knowledge) (QCF)
Diploma in Electrical Power Engineering - Wind Turbine Maintenance (Technical Knowledge) (QCF)
Diploma in Electronic, security and emergency systems (QCF)
NVQ Diploma in Electrical Power Engineering - Wind Turbine Operations and Maintenance (QCF)
Certificate in Installing, Testing and Ensuring Compliance of Electrical Installations in Dwellings (QCF)
Diploma in Installing Engineering Construction Plant and Systems Electrical (QCF)
BTEC HND Diploma in Electronic Engineering (QCF)
Certificate in Electrical Power Engineering - Distribution and Transmission Technical Knowledge (QCF)
Certificate in Knowledge of Electronic Security and Emergency Systems (QCF)
Certificate in Providing Electronic Security and Emergency Systems (QCF)
Certificate in Electrical Power Engineering - Distribution and Transmission Technical Knowledge (QCF)
NVQ Certificate in Highway Electrical Systems (QCF)
Diploma in Auto Electrical and Mobile Electrical Principles (QCF)
NVQ Diploma in Bus and Coach Engineering and Maintenance (Electrical) (QCF)
Diploma in Power Engineering (QCF)
Diploma in Electrical Power Engineering - Underground Cables (QCF)
BTEC HND Diploma in Electrical Engineering (QCF)
BTEC HNC Diploma in Electrical Engineering (QCF)