NI Skills Barometer
Update Report

"Skills in demand"

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Contents

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Introduction

Background

- The original skills barometer research was published in November 2015 with the aim of building a model to estimate the quantum of future skill needs and gaps by level, sector and subject area. Following publication there was very significant demand for the forecast information from across a wide range of stakeholder groups, including:
  - **Careers advisors, young people and parents** – in order to help inform young people when choosing their career pathway;
  - **Teachers and schools** – to help inform curriculum development;
  - **Employers** – to use as a means to articulate skills needs;
  - **DfE (and wider Government)** – to inform policy development and level of provision to meet skills needs of the NI economy.
- **This update report** has now been completed as part of the 3 year sponsorship arrangement between UU and DfE to ensure the information reflects the latest economic conditions.

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Economic change

- The last 12 months has been a time of significant change in the UK and global macro-economic environment. The EU referendum decision has resulted in important changes to policy:
  - **Monetary policy** – interest rates have been reduced and are likely to stay lower for longer; and
  - **Fiscal policy** – the UK Government has abandoned its target of a balanced budget by 2020.
- These factors have a significant impact on the economic outlook and as a consequence the areas of the economy where jobs are likely to be created.
- In addition, the uncertainty will almost certainly continue in 2017 and beyond as negotiations on the UK exit from the EU commence and elections take place across major EU member states (including France, Germany and the Netherlands). Each of these elections has the potential to create instability within the Eurozone which in turn creates more complexity to the Brexit negotiations.

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New Industrial Strategy for NI

- The Department for the Economy recently published its Draft Industrial Strategy for Northern Ireland – Economy 2030. It is welcome that within the draft strategy one of the "Five Pillars of Growth" is focused on "*Enhancing education, skills and employability*".
- In this regard, it is important that this revision to the Skills Barometer reflects the priorities and milestones identified in the strategy. The Industrial Strategy aims for 80,000 new jobs by 2030* and the Skills Barometer High Growth scenario (which we recognise is highly aspirational but on which skills demand is based) assumes 87,000 new jobs by 2026.
- Therefore the assumptions used in the Skills Barometer to identify the demand for skills will support the delivery of the new Industrial Strategy.

* The final agreed strategy document will include targets against a wider range of indicators.

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New Industrial Strategy for NI

- The Draft Industrial Strategy for Northern Ireland – Economy 2030, finds that small advanced economies cannot be expert or world class in every area and has undertaken research to identify the following priority sectors for growth.

Priority Sectors for Growth	
Financial, Business and Professional Services	Life and Health Sciences
Digital and Creative Technologies	Agri-Food
Advanced Manufacturing, Materials and Engineering	Construction and Materials Handling

- The growth assumptions applied in the Skills Barometer also reflect these priority areas.

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Key lessons from 2 years of research

- Having completed the research for a second year and reflecting on the wider skills development issues in Northern Ireland, the following key lessons have been identified (**these are explored in more detail in the 'Policy comments' section of this document**):
  - **STEM related subjects still under-supplied** – the research has shown for a second year that STEM related subjects are under-supplied. This is a skills shortage identified across many developed economies and given the likelihood of continued demand for these skills and the FDI potential in these sectors, ways to increase provision in these subject areas (at both FE and HE) should be considered;
  - **Funding mechanism to reflect the skills shortages** – separately, there is currently significant debate on the future funding of Higher Education in Northern Ireland. An appropriate funding model should incentivise the study of under-supplied subject areas, but also recognise that some of these under-supplied skills are expensive to deliver (e.g. engineering);

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Key lessons from 2 years of research

- Key lessons (contd):
  - **Understanding student outcomes 18 – 24 months after qualification** – a more comprehensive survey is required of student outcomes 18 – 24 months after qualification to:
    - identify the level of employment achieved (e.g. graduate or non-graduate employment) across all individual subject areas;
      - identify appropriate response to over-supplied subject areas – rather than simply reducing provision in over-supplied subject areas in the first instance, determine if qualifiers in these areas are finding suitable level employment and demand exists for the skills they have developed. Only then can an appropriate response be identified.
    - understand the reasons why some have found employment at a level below that for which they are qualified. If the reason is insufficient job opportunities, that has a very different policy solution than if the reason is that young people do not have the skills that employers require;

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Key lessons from 2 years of research

- Key lessons (contd):
  - **Provision of careers advice and a Labour Market Intelligence (LMI) portal** – the popularity of the Skills Barometer since its launch has highlighted the demand for labour market information across a wide range of stakeholder groups. The Skills Barometer forms an important component of the overall information which could be included in an LMI portal and the Department should consider ways in which this could be developed.
  - **Work placement and internship** – employment based learning is increasingly important in terms developing the broader employability skills employers require from potential recruits. Work placement and internship opportunities have an increasingly prominent role in most tertiary level courses but this should be rolled-out across all courses where practical. This requires buy-in from both employers and education institutions and therefore a strategic push at Department level could encourage greater levels of participation and roll-out.

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Key lessons from 2 years of research

- Key lessons (contd):
  - **Dealing with under-achievement –** the proportion of school leavers not achieving NQF level 2 (at least 5 GCSE's A*-C) has improved considerably over the past decade falling from 37% in 2004/05 to 19% in 2014/15. However, the proportion of school leavers without achieving at least 5 GCSE's including English and maths remains high at 34%, albeit a significant improvement from 49% a decade earlier. This cohort then typically move into Further Education and training programmes. In order to meet supply gaps at medium and higher levels, it is essential that the level of under-achievement is addressed.
  - **Potential changes to course content** – the original Skills Barometer research identified the importance of employability skills and this remains critical moving forward, but other potential changes to course content should be considered. Skills such as commercial awareness and good communication (written and presentational) are required across a wide range of occupations and sectors, therefore the inclusion of business and communications modules across a wider range of course disciplines should be considered.

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Approach

- Given the increased uncertainty, **forecasting is more challenging than ever**. However, as with the original skills barometer, the approach adopted has been to take an aspirational view of employment growth and hence identify the skills required for Northern Ireland to achieve its economic ambitions.
- The forecast of both the demand and supply of skills across the economy includes analysis of:
  - Job growth – including both expansion demand (as sectors grow and contract) and replacement demand (where people leave and need to be replaced);
  - Changing skills mix – there is an established trend of increasing the level of skills in the workforce across all sectors; and
  - Supply of skills into the economy.
- Analysis of both supply and demand gives a picture of the scale of imbalance across both qualification levels and subject areas. Further context is provided in Annex A.

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Approach – the model

Identify demand and supply factors

Demand side indicators

- Demand for jobs (by industry and occupation)
  - Expansion demand
  - Replacement demand
- Demand for skills
  - Current and Projected skills mix
  - HE and FE skills (by subject area and NQF Levels 0 to 8)

Plan for High Growth

Supply side indicators

- Supply of people
  - Demographics
- Supply of HE and FE skills (by subject area and NQF levels 0 to 8)
  - Attainment

Supply/ Demand (im)balance

- Identify the annual average supply gap
  - by HE (JACS) and FE (SSA)
  - by NQF Levels 0 to 8
- High skills need (supply gap by subject area)

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*CP – Slides denoted with a 'CP' may also be suitable for careers presentations and include speaking notes below.

Supply and demand – Key terms

- **Annual Average Gross demand** in simple terms, refers to all vacancies to be filled in a year. It is the total expansion and replacement demand for staff per annum and the jobs are filled by those currently working in the labour market, those currently out of work and also those from education and migration.
- **Expansion demand** is the additional jobs created due to growth in a sector.
- **Replacement demand** refers to the number of positions which become available as a result of staff leaving employment (typically due to retirement, family reasons, ill health or to move to another sector).
- **Net requirement from education and migration** indicates the number of vacancies that can not be filled from within the existing labour market and therefore must be met from those leaving education and/ or from migration.

The **annual average net requirement from education and migration** does not include the positions to be filled by labour market participants from other sectors, from unemployment or from economic inactivity. It is important to recognise the possibility that the trend of jobs filled from the labour market can change over time.

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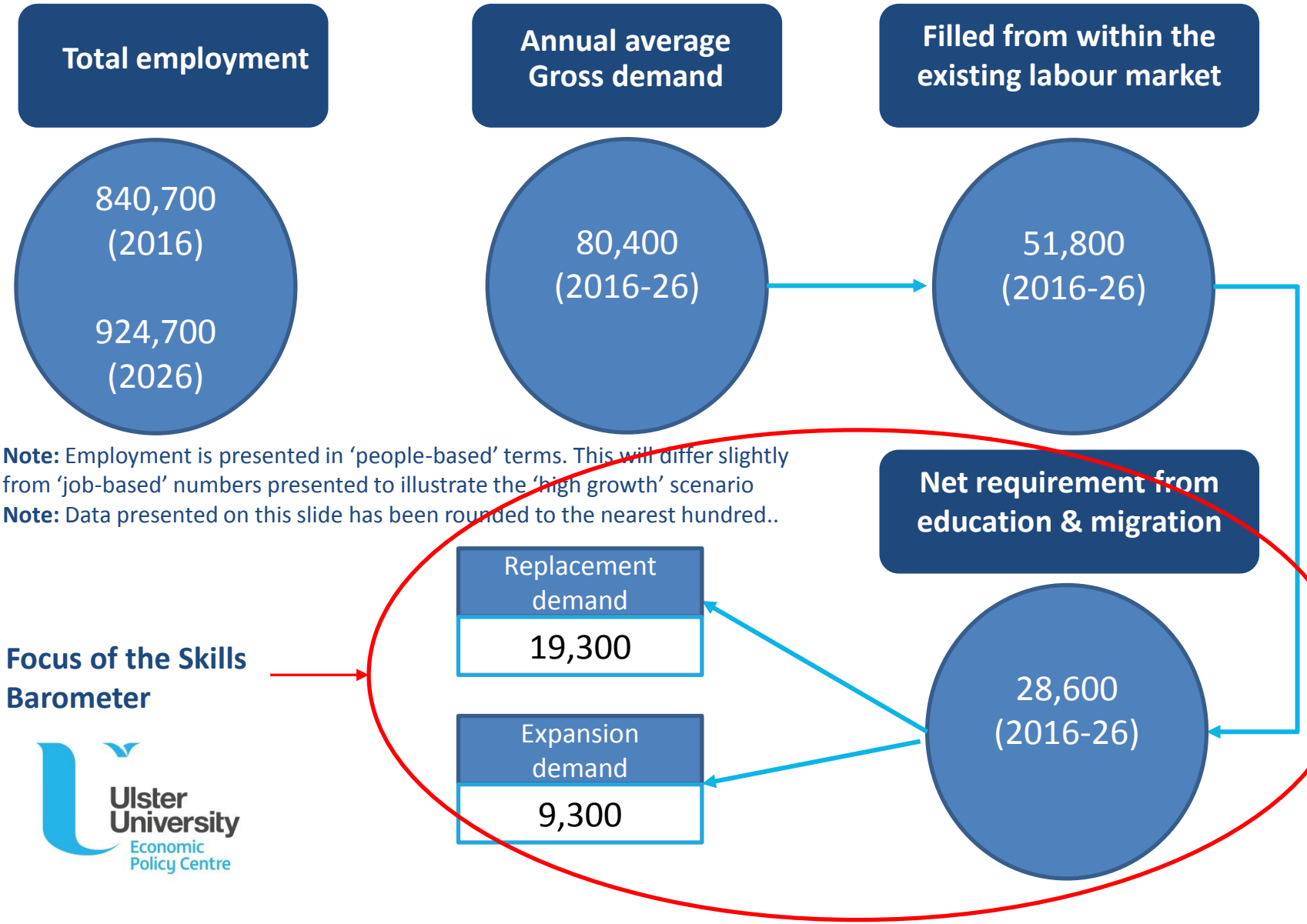
Supply and demand



Note: Employment is presented in 'people-based' terms. This will differ slightly from 'job-based' numbers presented to illustrate the 'high growth' scenario

Note: Data presented on this slide has been rounded to the nearest hundred..

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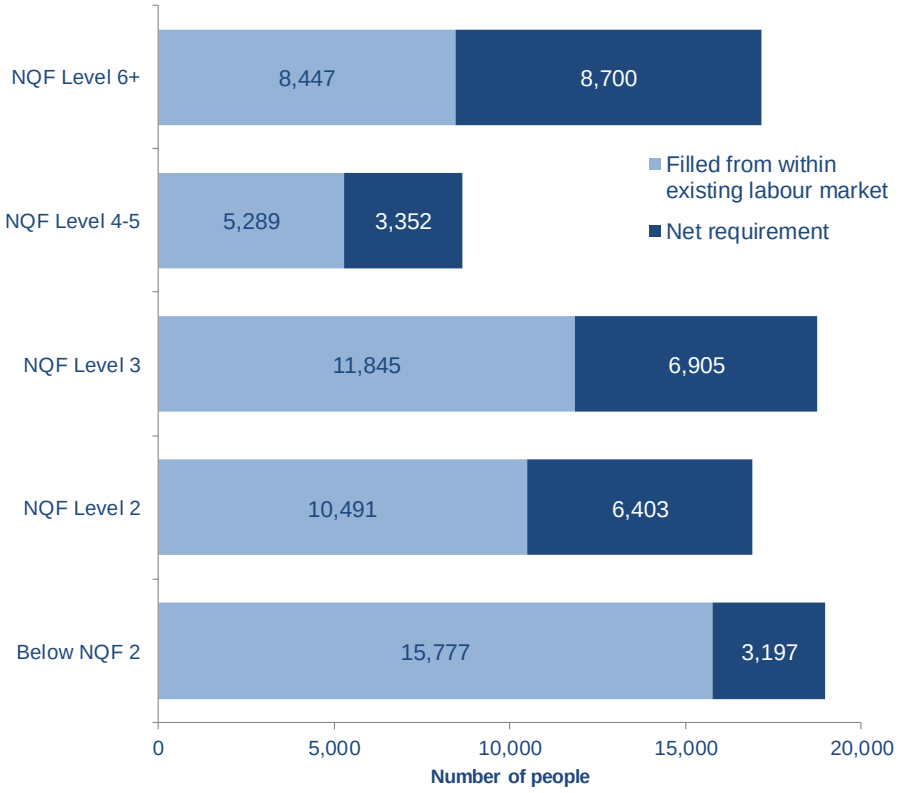
Supply and demand

Annual average gross demand for skills (2016-26)



- This charts sets out the annual average gross demand (i.e. 80,400) by skills level.
- The largest net requirement (i.e. from education) is at the graduate level, followed by NQF L3 and then NQF L2.
- Overall large demand for low level skills (below NQF L2) but a very significant proportion of that demand will be met from within the existing labour market. Demand for people with low/ no skills from education is small (and decreasing).

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51,800 jobs filled from within the existing labour market

28,600 jobs required from education and migration

The High Growth Scenario

- The UUEPC produces regular economic forecasts outlining the most likely economic outcome (the Baseline scenario), however if NI is to achieve its economic ambitions, a higher level of economic growth is required (the High Growth scenario).

- At the macro level, the assumptions applied to high growth scenario are based on the following principles:
  - The NI employment rate would convergence with the current UK employment rate* (average over 3 years, assumed to increase from 69% to 73%);
  - The largest growth is applied to the higher value added areas of the economy identified in the new Draft Industrial Strategy (Professional Services, ICT and Finance & Insurance). A significant number of additional jobs have also been allocated to the health sector, which is expected to benefit from additional Government spending;
  - Lower but appropriate levels of growth applied to the wider supporting sectors such as Hospitality, Construction, and Administration & Support services.

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* The rate is the average of the difference in the workforce jobs rate and the LFS rate, which are markedly different at present. This INCLUDES lower corporation tax but is more akin to a 'desired outcome' and should be viewed as highly aspirational.

The High Growth Scenario

- **The assumptions on job creation (and demand for skills) used in the Skills Barometer are based on this High Growth scenario.**

- The job growth assumptions are detailed further below and have been compared to actual job growth achieved in the period 1997 to 2007 (the last period of sustained employment growth). A few key points:
  - The overall forecast level of job creation from 2016 to 2026 is lower than the ten year period to 2007 (10.1% compared to 16.9%). In contrast the baseline forecast employment growth is 3.8%.
  - Assumed growth in ICT and Professional Services is ambitious but still lower than in 1997 to 2007.
  - Manufacturing is forecast to grow significantly reversing a long term trend of decline and typically in higher value sectors driven by an increase in FDI.
  - A more detailed analysis between baseline and high growth is set out in Annex B1 and B2.

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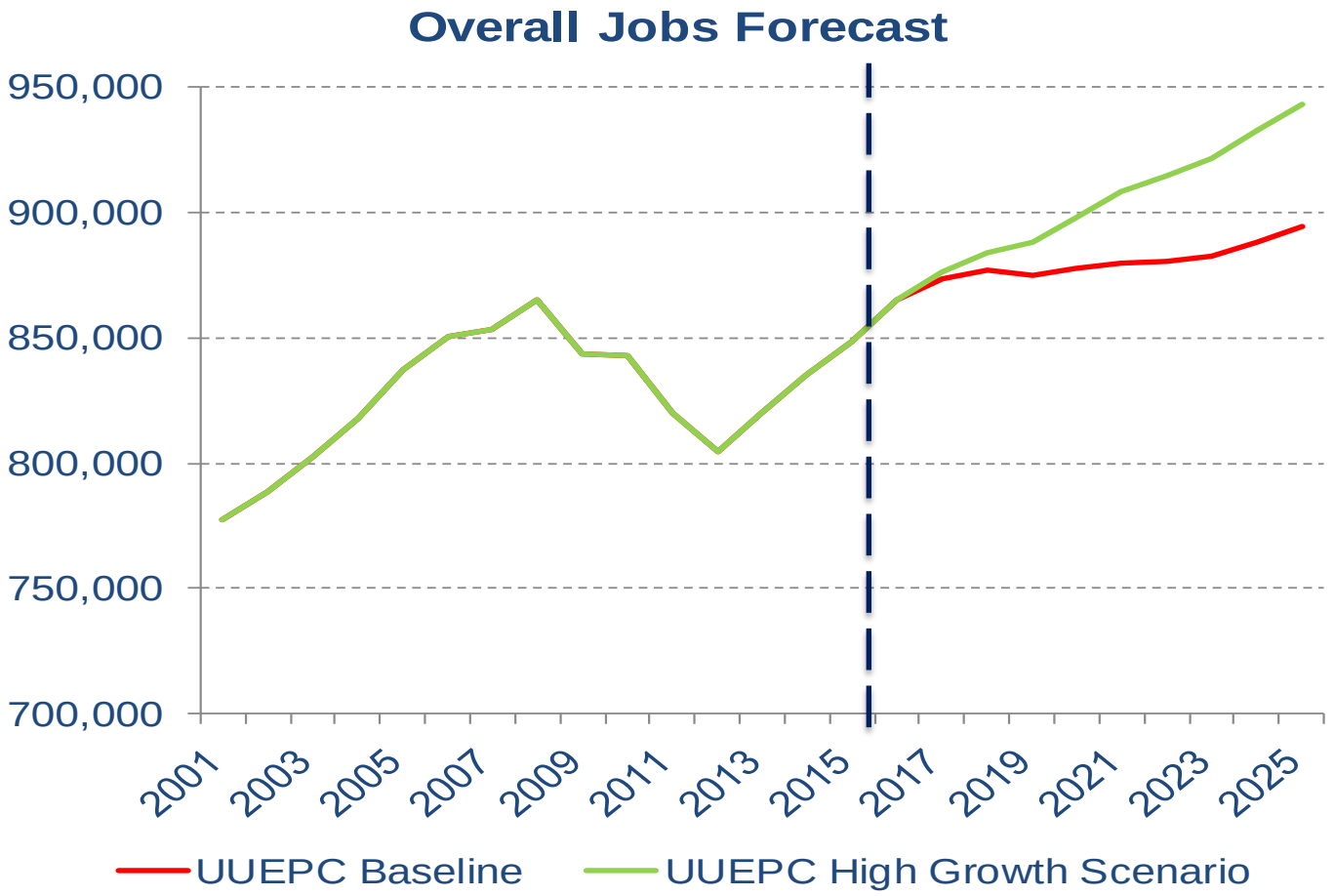
The High Growth Scenario



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Source: UUEPC

High Growth job creation

Industry	Total jobs 2016 baseline	Job growth 2016-26		% change in jobs	
		Baseline	High Growth	High Growth 2016-26	Actual 1997-07
Agriculture	32,250	-596	+374	+1%	-27%
Mining	2,750	+14	+14	+1%	+50%
Manufacturing	89,250	+2,623	+9,264	+10%	-21%
Electricity & gas	3,750	-37	+157	+4%	-42%
Water supply & waste	5,000	+4	+198	+4%	+5%
Construction	50,750	+4,104	+6,594	+13%	+57%
Wholesale & retail	137,000	+14	+2,781	+2%	+27%
Transport & storage	36,340	+2,141	+2,971	+8%	+20%
Restaurants and hotels	54,000	+3,735	+6,503	+12%	+30%
Information & communication	21,250	+3,775	+13,407	+63%	+95%
Finance & insurance	20,500	-397	+3,754	+18%	+27%
Real estate	7,000	+791	+1,179	+17%	+155%
Professional scientific & technical	40,000	+6,692	+16,470	+41%	+103%
Administrative & support services	57,000	+6,914	+9,736	+17%	+96%
Public admin & defence	54,000	-3,904	-2,797	-5%	-3%
Education	75,000	-1,447	-63	-0%	+11%
Health & social work	134,750	+3,938	+9,473	+7%	+22%
Arts & entertainment	19,250	+2,500	+4,714	+24%	+24%
Other service activities	25,250	+1,578	+2,269	+9%	-3%
People employed by households	400	+15	+15	+4%	-69%
Total	**865,490**	**+32,457**	**+87,013**	**+11%**	**+17%**

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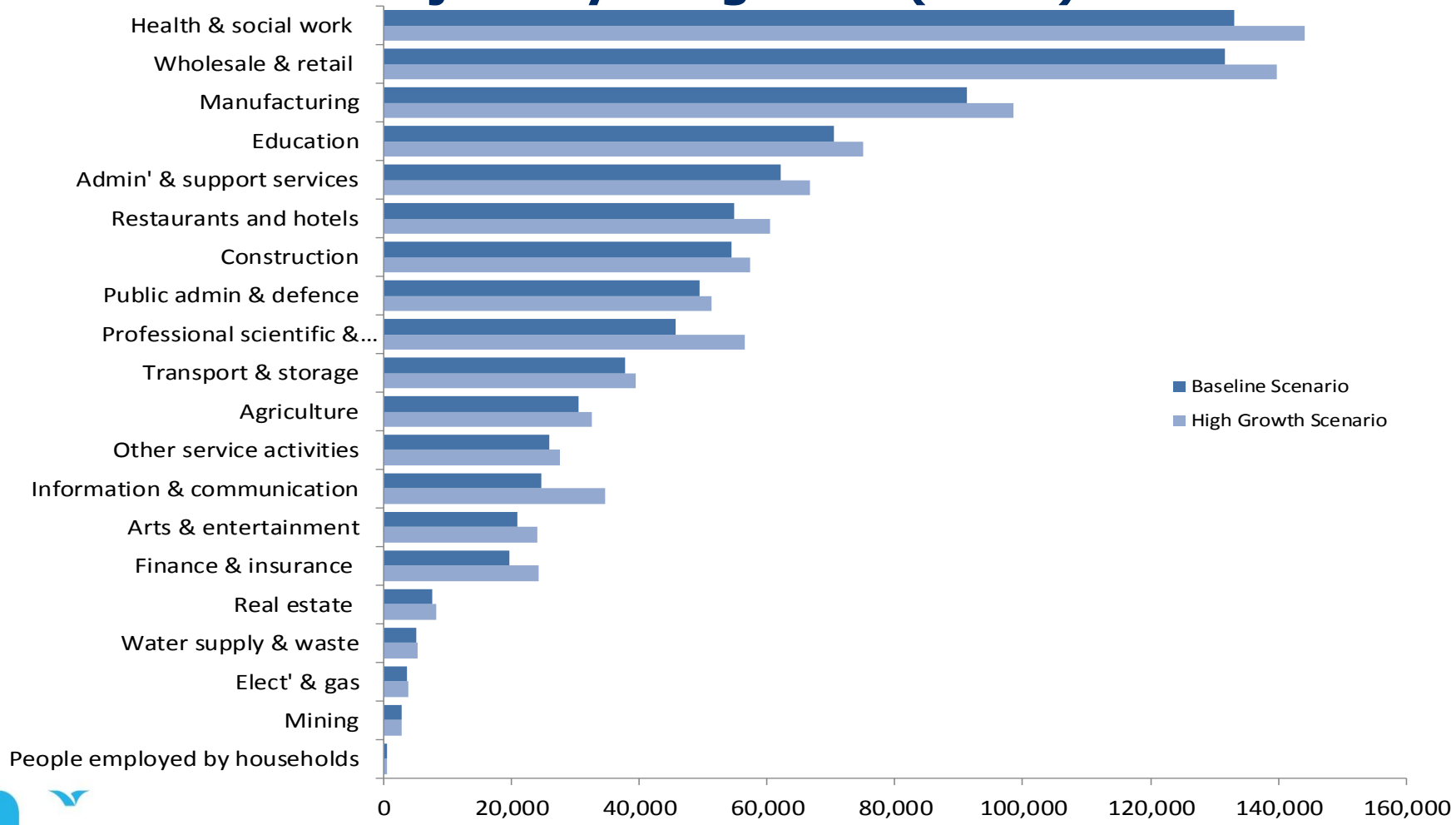
Note: Employment is presented in 'job-based' terms and therefore differs from forecasts calculated on 'people-based' terms shown previously (i.e. some people have more than one job). It is essential to convert the forecasts from 'jobs' to 'people' based to determine the skills requirements of the labour market.

Source: EPC

Total job projections by sector

Total jobs by 1 digit SIC (2026)



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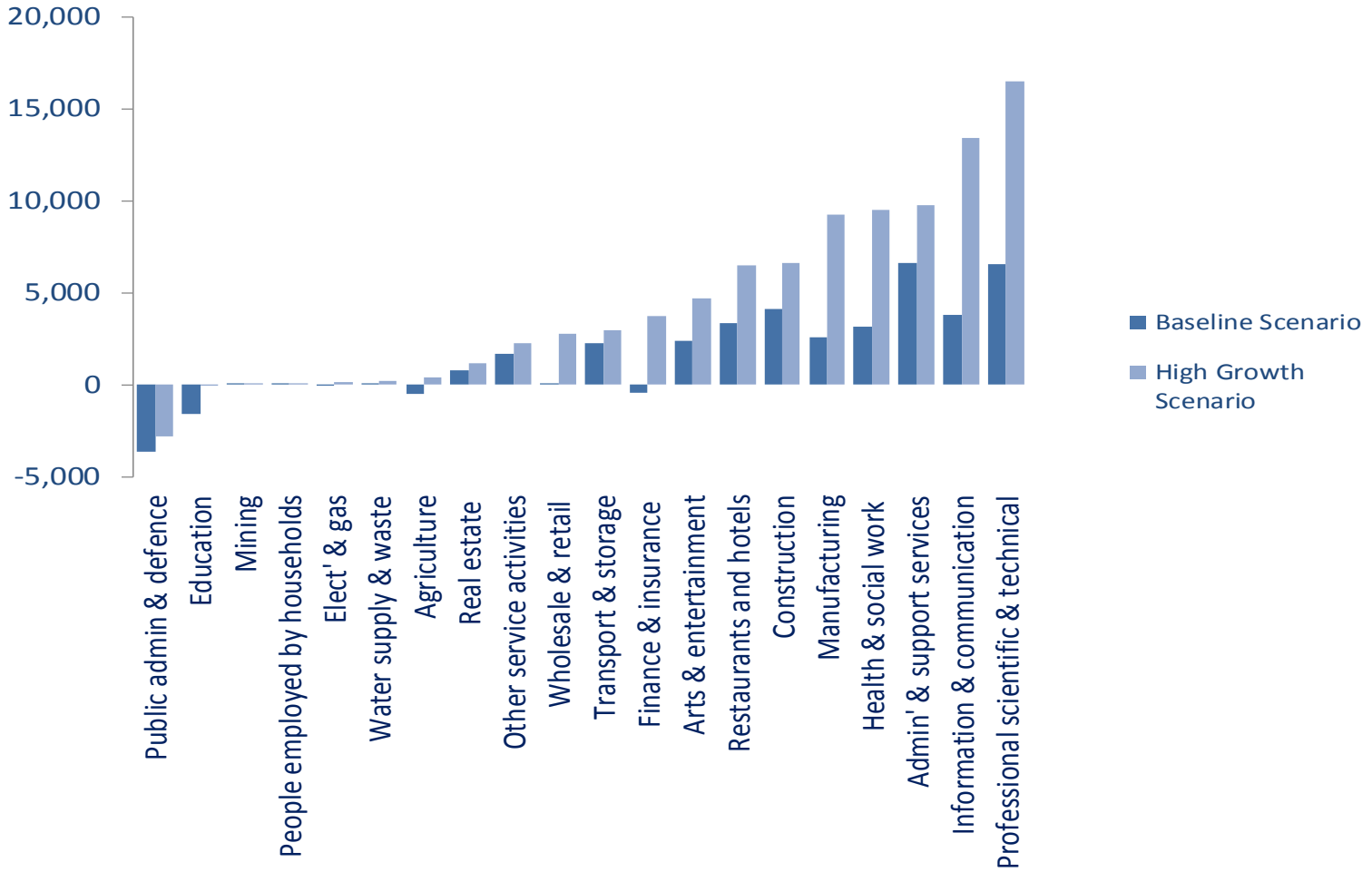
Source: EPC

Projected change in jobs by sector

Change in jobs by 1 digit SIC (2016-26)



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Source: EPC

Employment projections by sector

- In 2016 the 5 largest sectors in employment terms are retail, health, manufacturing, education and admin and support services (in that order). Yet only one of those sectors, manufacturing, has a significant export focus.
- Other high value added sectors such as professional services and ICT are much smaller in total employment terms. However, these sectors are forecast to deliver the greatest level of job growth over the next 10 years.
- The administration and support services, health and restaurants and hotels sectors represent the next largest sectors with regard to job growth.
- The construction sector has also developed an export focus in recent years and this is also an area of projected employment growth over the forecast period.
- Public Administration is the only sector forecasted to reduce in size over the next 10 year period.

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The Supply/ Demand (Im)balance
– identifying the HE and FE Supply Gaps

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The supply/demand (im)balance

- The supply/ demand imbalance or "supply gap" information is presented in charts in the following pages based on the high growth scenario. The following definitions are used in the analysis:
  - **JACS** (Joint Academic Coding System) – the coding system used to group HE subjects (1 digit is the highest level group and 2 digit is a lower level grouping).
  - **SSAs** (Sector Subject Areas) – the coding system used to group FE subjects (which also has a similar 1 and 2 digit hierarchy).
  - **NQF** (National Qualification Framework) – there are 8 levels within the NQF denoting the level of qualification:
    - Level 8 – PhD (or equivalent)
    - L7 – Masters (or equivalent)
    - L6 – Degree (or equivalent)
    - L4-5 – Foundation Degree/ HNC/ HND (or equivalent)
    - L3 – A-Level (or equivalent)
    - L2 – 5 GCSEs Grades A – C (or equivalent)
    - L1 – 5 GCSEs Grades D – G (or equivalent)
    - L0 – No qualifications

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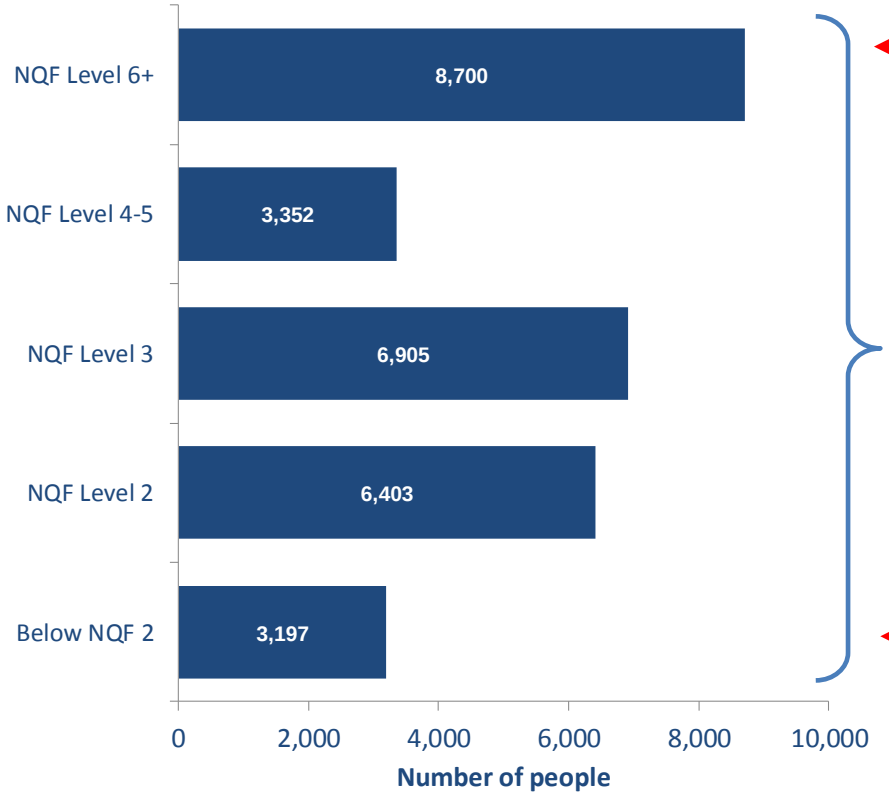
The supply/demand (im)balance

Annual average net requirement for skills (2016-26)



30% of the average net requirement require degree level qualifications

Total = 28,600 p.a.

Current forecast: 11%

2009 forecast: 22%

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- This chart sets out the annual average net requirement (i.e. **the demand for skills from education and migration**) by skills level.

The supply/demand (im)balance

- **Annual Average Supply Gap** – this represents the difference between supply and demand and is forecast over a 10 year period (2016 to 2026). **The information is presented on an annual average basis**. Therefore if the supply gap for a subject area is estimated at 200, that means 200 additional qualifiers are forecast to be required in that subject area annually.
- This section identifies the annual average supply gap across individual subject areas (1 digit JACS and 1 digit SSAs) at both the NQF Level 6+ and NQF Level 4-5.
  - Most of the analysis focuses on HE level skills (i.e. NQF L6 and above) because the data available for HE is more comprehensive.
  - Subject area forecasting for NQF L3 and below is different as students tend to study more than one subject area. As a result, this skills barometer forecasts demand for L3 skills and below at industry rather than subject level.

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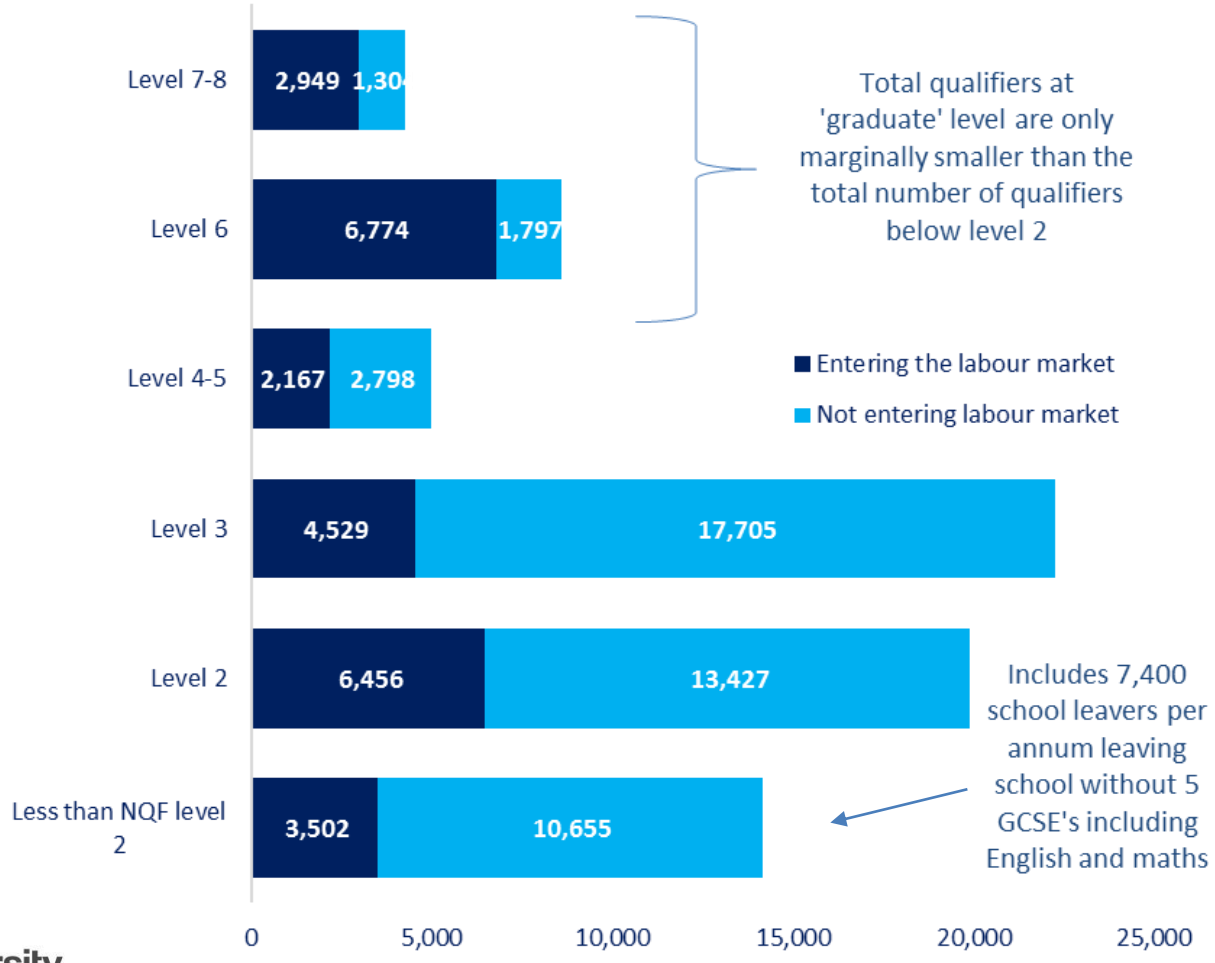
Destination of leavers – NQF Level

Annual average destination of leavers 2016-26 (NQF L1 to L8)



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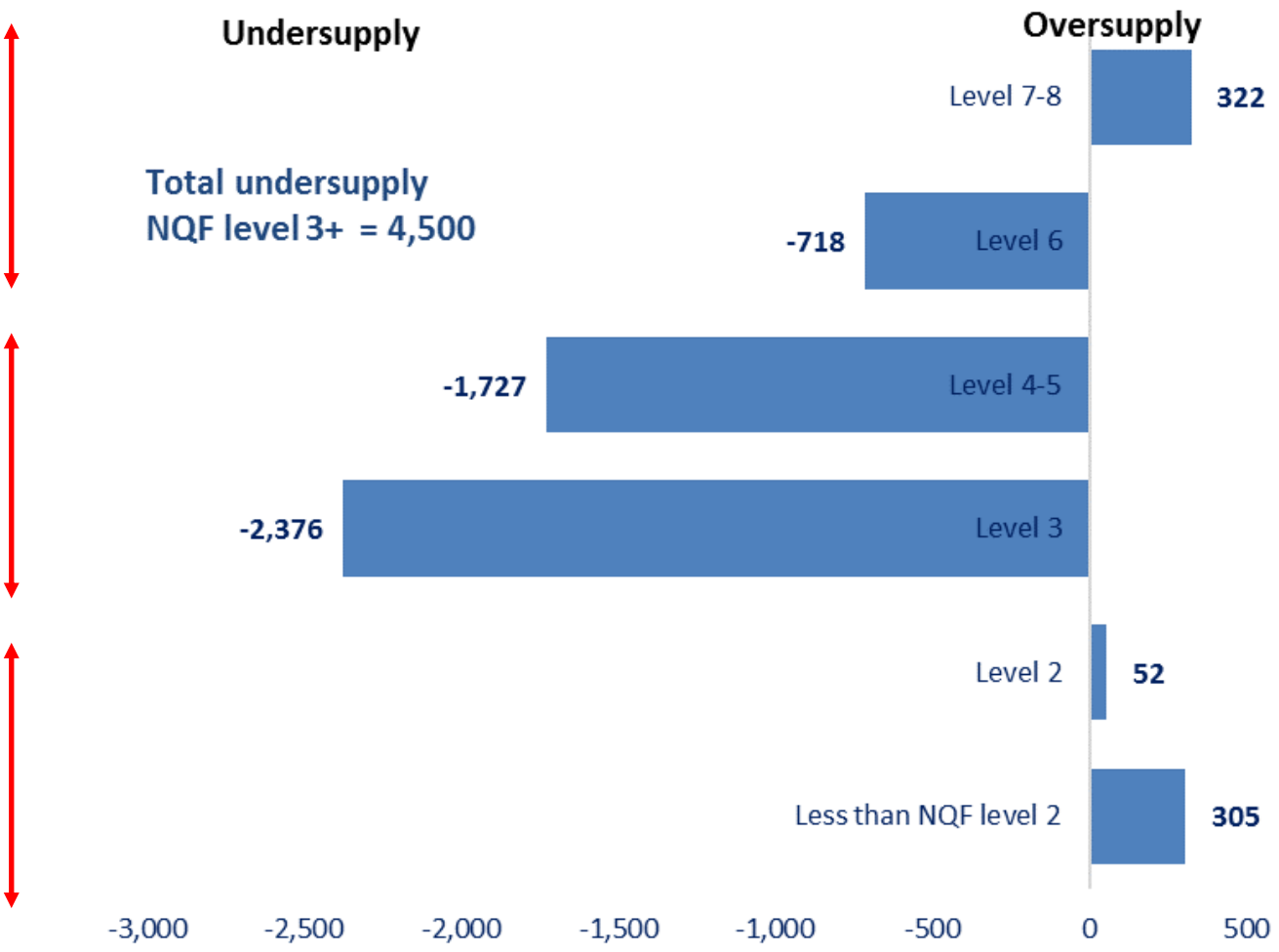
Supply gap – NQF Level

Annual average labour market supply gap (NQF L1 to L8)

High Level (L6+)
- Marginal under-supply

Mid Level (L3-5)
- Significant under-supply

Low Level (L2 and below)
- Over-supply



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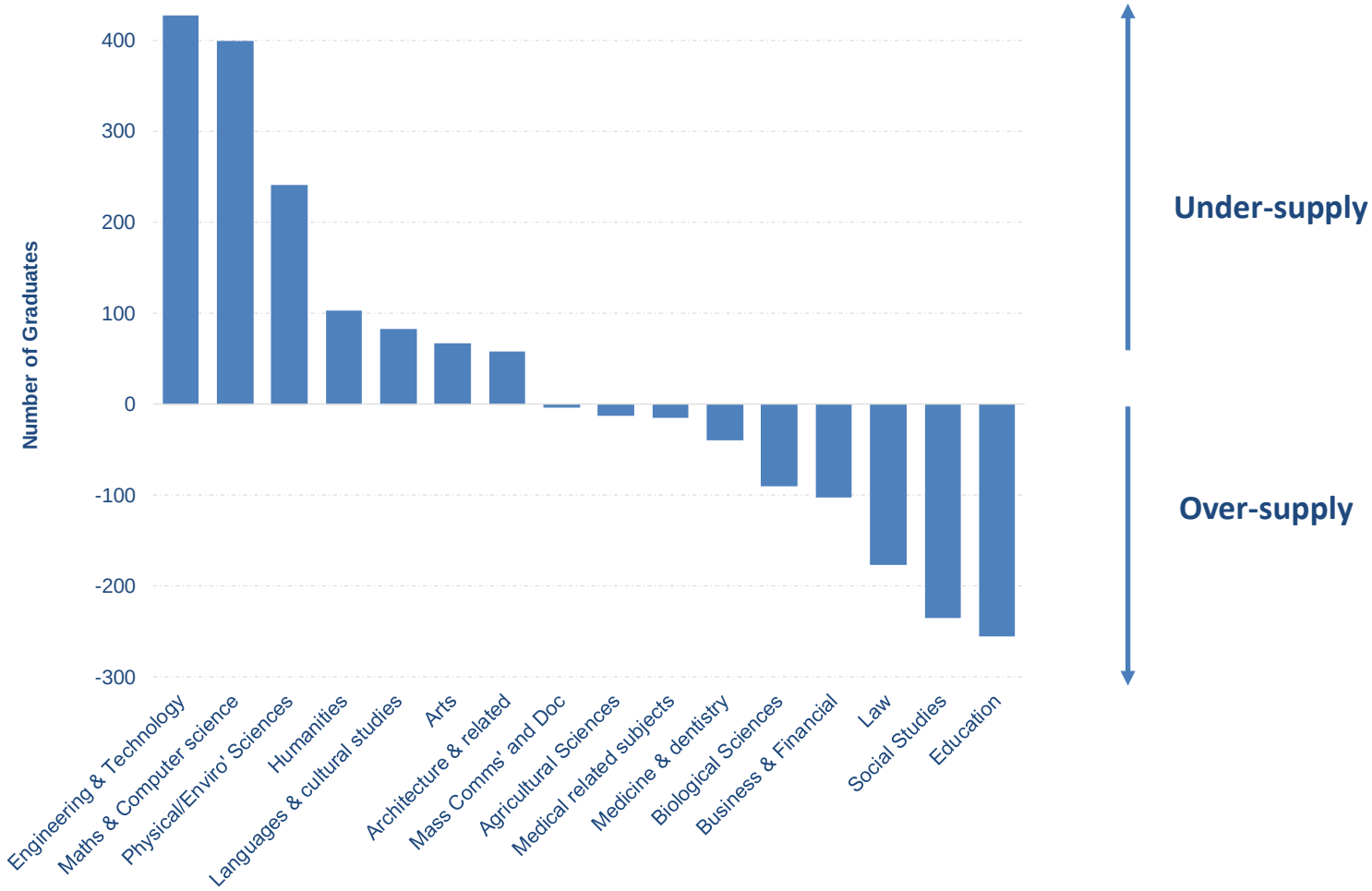
NQF L6+ supply gap – Broad subject area

Annual average supply gap NQF L6+ (JACS 1 digit)



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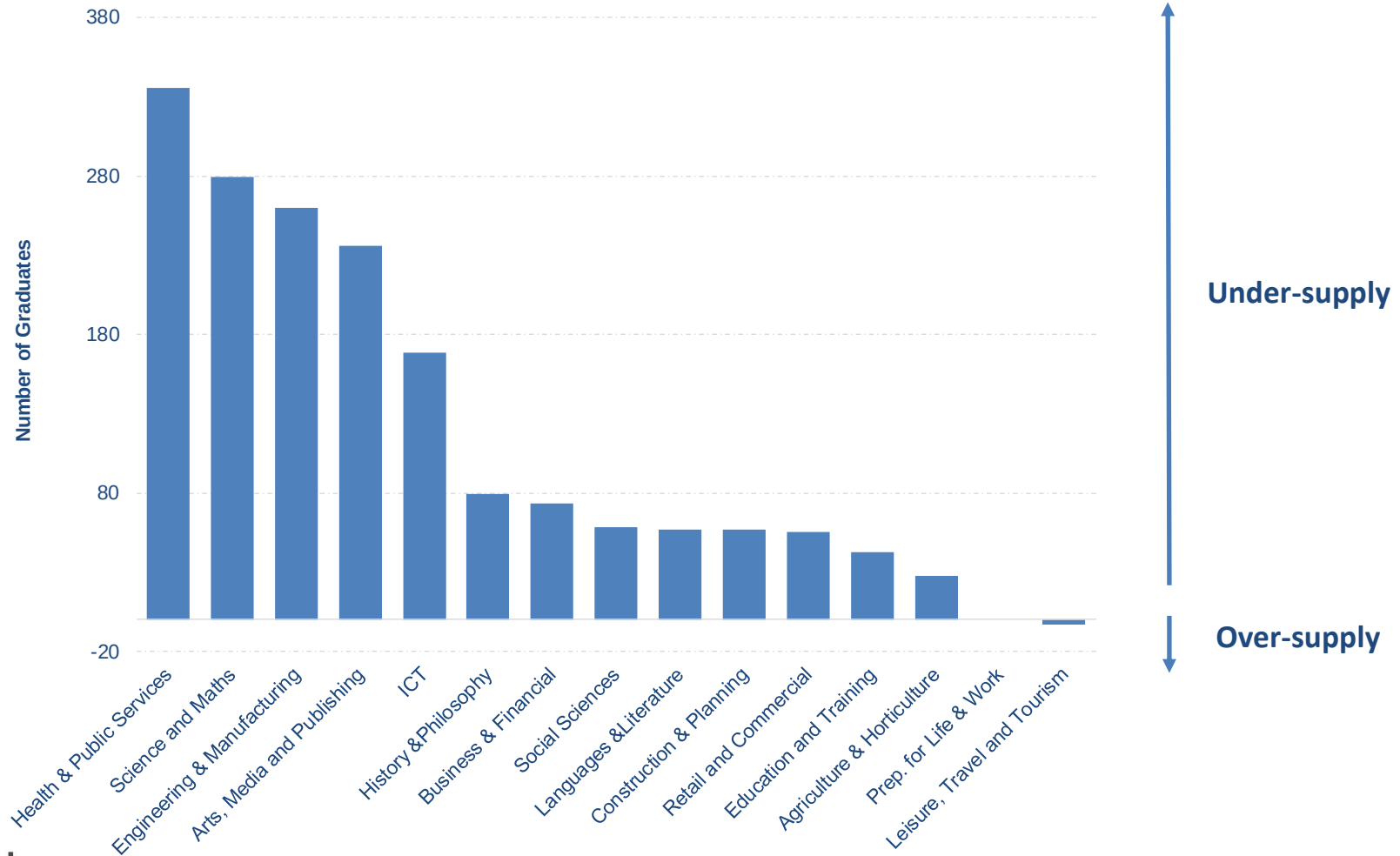
Source: HESA, EPC

NQF L4-5 supply gap – Broad subject area

Annual average supply gap NQF L4-5 (SSAs 1 digit)



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Source: HESA, EPC

Research Findings

- These results are sensitive to economic performance and given they are based on a high growth scenario, if this high economic growth is not achieved then levels of skills oversupply could materialise.
- **A tolerance level should be applied when interpreting the results** – where the level of over/under supply is relatively low then it could be concluded they are broadly in balance. As a result only subject areas at the extreme ends of over/ under supply should be given more detailed consideration.
- **A marginal under-supply exists at NQF Level 6 and above** – overall the supply of graduates and post-graduates will fall marginally short of demand. The fundamental issue is the mix of subject areas studied which is out of balance:
  - There is significant **undersupply** in: Engineering & Technology; Mathematics & Computer Science; and Physical & Environmental Sciences
  - There is **oversupply** in: Education; Social Studies; Law; and Business and Financial studies.

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Research Findings

- A **significant imbalance exists at NQF Levels 3-5 and below**. It is forecast that a large under-supply of mid-level skills (L3-5).
- There is *significant* **undersupply** forecast in NQF L4-5 in:
  - Health and Public Services;
  - Science & Mathematics;
  - Engineering & Manufacturing;
  - Arts, Media and Publishing; and
  - ICT.

- Furthermore, an over-supply of low level skills (L2 and below) will occur and this lower skilled cohort must be encouraged to increase their skills to the mid-level.

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Research Findings

Further analysis, presented in the slides which follow, sets out the sectors which demand skills across different NQF levels.

- **High level skills** (i.e. NQF L6 and above) tend to be demanded in:
  - Professional & Scientific Services; Information and Communications; and Health.
- **Mid-level skills** (i.e. NQF L4-5) tend to be demanded in the following sectors:
  - Public sector (in particular Health and Education); Administration Services; Professional and Scientific; and Manufacturing.
- **Lower-level skills** (i.e. NQF L3 and below) tend to be demanded in:
  - Retail; Restaurants and Hotels; and Manufacturing.

- **Public sector** takes a significant proportion of high and medium skilled people.

- **Retail sector** employs significant numbers across all skills levels (perhaps offering graduates their first job).

- The high value added sectors (**Prof Services, ICT and manufacturing**) are 'degree hungry', but manufacturing also provides opportunities across all skills levels.

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Research Findings

Understanding why STEM related subjects are always undersupplied

- STEM related subjects remain under-supplied and this has been a consistent finding across skills research for several years. There are many reasons for this finding, not least because sectors such engineering have significant growth potential and those skills are in demand across a wide range of sectors and occupations.
- Further work should be undertaken to understand this in more detail, but findings from the consultations highlighted that engineering is amongst a relatively small number of occupations that typically requires a qualification in a STEM related subject discipline. Whilst those with STEM related qualifications are not bound to these sectors. As a consequence, this places greater reliance on the volume of qualifications being achieved in these subjects relative to other subject areas.
- In contrast, other professions (e.g. accountancy) do not recruit solely from sector specific subject disciplines. Perhaps recruiting from a broader range of subject areas alongside a comprehensive training programme could help alleviate shortages.

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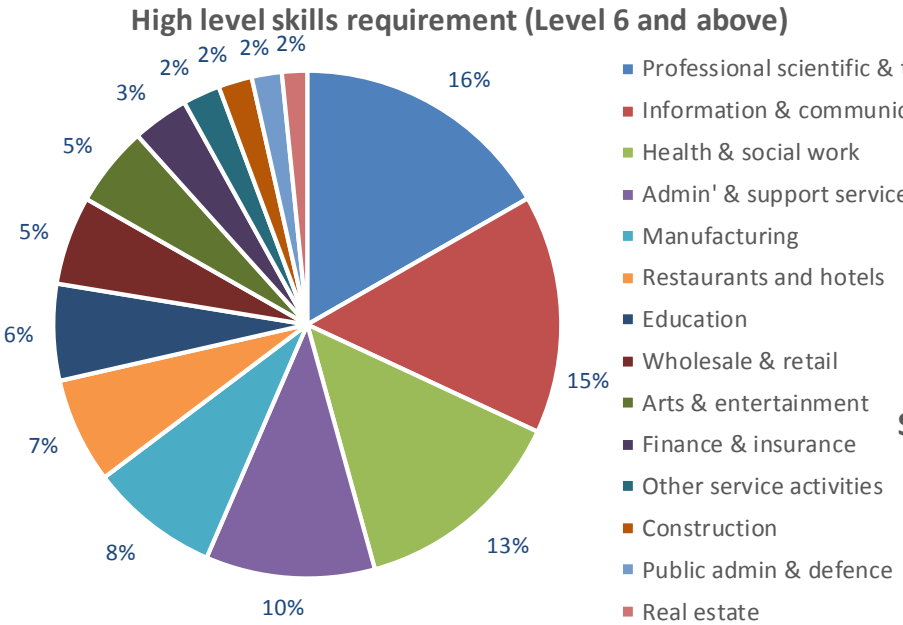
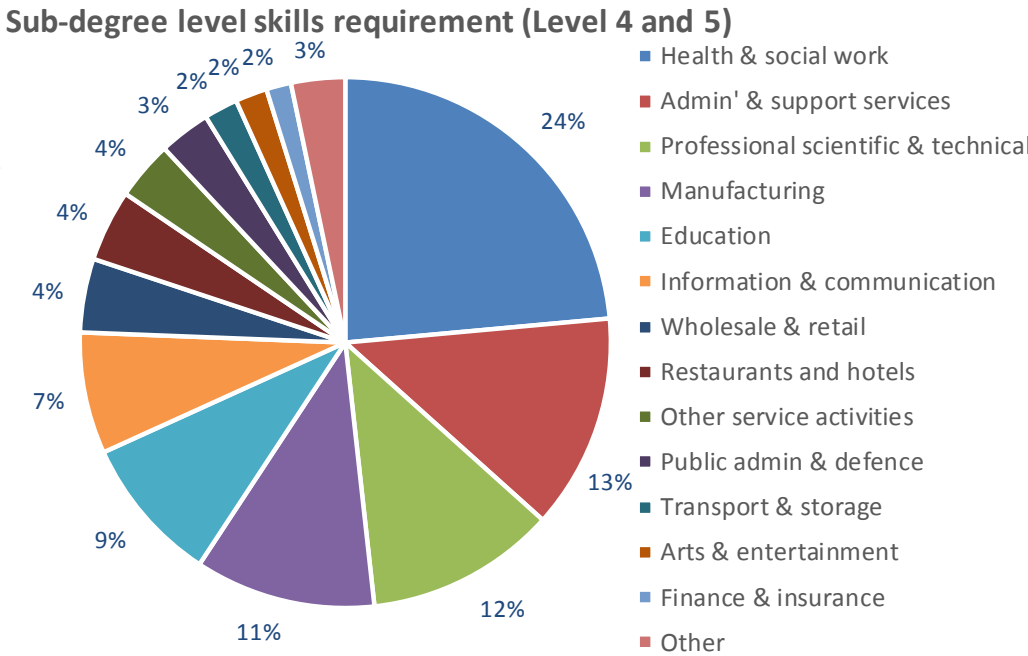
Sectoral demand (net requirement) by skills level

CP

Which sectors recruit high (L6+) and medium skilled (L4-5) people?





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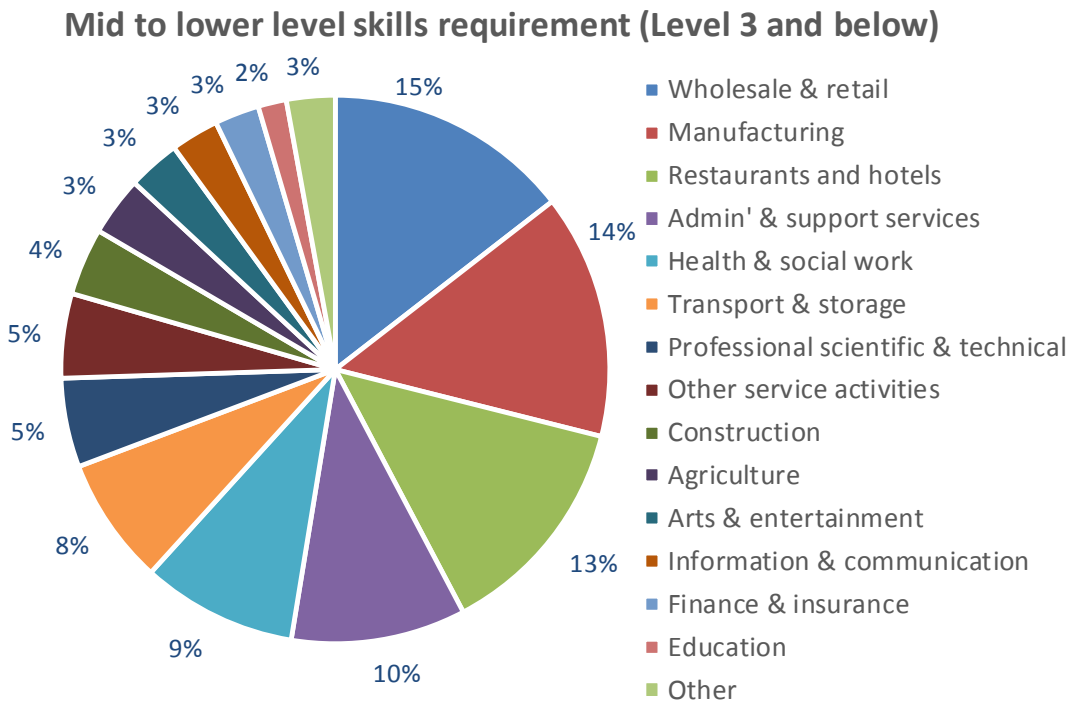
Source: EPC

Sectoral demand (net requirement) by skills level

CP

Which sectors recruit medium to lower skilled (L3 and below) people?



Source: EPC

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Policy comments

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Priority policy comments

The following policy areas have been identified as a priority following a second year of research and extensive stakeholder engagement undertaken in the last 12 months.

- Increasing provision of STEM related subjects;
- Introducing a funding mechanism to reflect skills shortages;
- Understanding student outcomes 18-24 months after qualification;
- Providing careers advice and an LMI Portal;
- Increasing work placement and internship opportunities;
- Dealing with under-achievement; and
- Changing course content.

A summary of the other policy areas raised in the original Skills Barometer research is then provided further below.

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Increasing STEM provision

- **Increasing STEM provision** – the research has shown for a second year that STEM related subjects are under-supplied, therefore the Department should consider ways to increase provision in these subject areas (at both FE and HE) for the following reasons:
  - Jobs requiring these skills/ qualifications tend to be in higher value added sectors, growth prospects in these sectors are strong (contributing to the forecast skills short-fall) and facilitating growth in these sectors is a priority for the Executive.
  - There are reported STEM skills shortages across many developed economies, which creates FDI opportunities in these sectors for nations/ regions that can meet the skills needs of these employers.
  - Employment outcomes for STEM graduates is good, providing enhanced employment prospects for these students.

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Increasing STEM provision

- **Removing barriers to studying STEM subjects** – work to increase provision could also explore any barriers to students taking up STEM courses and identify ways to address these barriers. This work could be wide ranging but some examples could include:
  - Gender – is there sufficient work being done to ensure that courses and a career in STEM areas are seen as attractive to both genders?
  - Pathways onto STEM courses – is it possible to expand the number of pathways onto STEM related courses and/ or promote existing pathways further?
  - Teaching of STEM related entry subjects – are pedagogical changes required to STEM related subjects in post-primary education to encourage higher levels of uptake in tertiary education.

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Funding mechanisms

- **Introducing a funding mechanism to reflect skills shortages** – identifying an appropriate HE funding model should consider subject areas of under-supply. There are a number of elements to consider (these are not exhaustive):
  - If HE students are to be asked to make a larger contribution to the cost of their education through increased fees, the funding mechanism could be used to incentivise potential students into areas of under-supply.
  - Some under-supplied subject areas (such as engineering) are more expensive to deliver, therefore the funding mechanism will also need to incentivise HEIs to increase provision in these subject areas.
  - The new funding mechanism could also include an outcome based component. If Government want to encourage improved outcomes (e.g. higher employment outcomes from those leaving education), then a proportion of the publicly funded component should reward those outcomes.

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Understanding student outcomes

- **Understanding student outcomes** – A comprehensive survey of student outcomes 18 – 24 months after qualification should be undertaken. The time delay proposed after graduation should be sufficient for students to find employment equivalent to their qualification. Surveys taken less than 12 months from qualification is often too short to properly reflect the level of employment a student can achieve.
- The research should focus on the following areas (not exhaustive):
  - understand the reasons for underemployment where relevant (e.g. those working fewer hours or in a lower skilled job relative to their qualification). Lack of job opportunities has a very different policy solution than students with the wrong skills.

    The specific problem is not fully understood, but consultations undertaken in the initial research suggested that technical content on FE and HE courses was generally good, but some students lacked broader employability skills. This should be explored further.

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Understanding student outcomes

- Student outcome research, areas of focus (contd.):
  - identify the level of employment achieved (e.g. graduate or non-graduate employment) across individual subject areas;
  - identify outcomes in over-supplied subject areas – identifying the employment (or further study) outcomes of students in over-supplied subject areas would provide a sound basis on which to determine if provision levels should be reduced or maintained. For example, if significant numbers of qualifiers in over-supplied subject areas are achieving employment outcomes at a level equivalent to their qualification, then a strong argument can be made to maintain provision at existing levels. Furthermore, it would be important to understand the sectors these students were moving into and the specific skills those sectors found most appropriate.

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Understanding student outcomes

- Student outcome research, areas of focus (contd.):
  - Identify nature of skills shortage in under-supplied subjects/ sectors – understand from STEM employers the skills gaps they are experiencing. There may be technical gaps in course provision, there may be gaps in employability skills and/ or there may simply be a shortage in numbers qualifying.
    - Is there potential for employers in under-supplied sectors to consider the technical skills in other non-STEM subject areas?
  - Explore the use of tax data to undertake a longitudinal study to identify earnings potential across all students from a single year cohort e.g. 2006. An analysis of all students (not just a survey) allows for a detailed understanding of employment and earnings differences across individual degree subjects.

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Providing careers advice

- **Providing careers advice and an LMI Portal** – the demand for careers related information became very evident following the launch of the NI Skills Barometer in November 2015. The UUEPC has developed a separate paper providing suggestions for the potential content of a **one-stop-shop careers/ LMI portal**. The proposed content has not been taken from a single source but the Skills Development Scotland website "My World of Work" provides a good basis on which to model a LMI portal for Northern Ireland.
- Four broad components have been identified for inclusion within a portal:

1. Finding appropriate career options – the development/ integration of a tool which analyses the academic strengths, aspirations and interests of young people to identify a range of potential career options.
2. Routes to an identified career – provide information on a range of career pathways available into each career and options on courses of study across a range of education institutions.

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Providing careers advice

- **Providing careers advice and an LMI Portal (contd.)**

3. Labour Market Information – the purpose of this is to give young people information on:

   - where job opportunities are likely to arise – including sectoral, geographic and individual employer organisations where appropriate.
   - how to access those job opportunities – in particular national and global opportunities which most people may be unaware of the options available to them.
   - vacancy information including salary information and skills/ qualifications required to work in those areas
   - This information should be provided at global, national, regional and local levels.

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Providing careers advice

- **Providing careers advice and an LMI Portal (contd.)**

4. Supporting information for students and advisors – this could include on-line support developing CVs, interactive interview practice software and the listings of internship/ placement opportunities as well as recruitment opportunities.

- This brief overview illustrates that the Skills Barometer is only a small component of the overall information which should be included in a LMI portal.
- DfE may be aware that the provision of careers advice is also being developed by commercial organisations and therefore relevant Department staff may consider working with these organisations to encourage the development of the portal.
- Finally, care needs to be taken in the dissemination of the skills barometer information as wrongly interpreted data could lead to bad advice.

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Work placement and internship

- **Increasing work placement and internship opportunities** – the importance of employability skills was stressed in the original Skills Barometer research and this remains just as relevant following this research. Employability skills can be developed in a number of ways within education institutions but one of the most effective ways is through work placement and internship opportunities. This is also becoming more important for young people as a route into employment, because graduate employers are increasingly recruiting their full-time staff from students they have previously employed through internship/ work placement.
- Employment-based learning is taking an increasingly prominent role in many tertiary level courses but should be extended to as many areas of study as possible.
- Therefore tertiary level education institutions must also ensure they have sufficient links with employers to supply work placement/ internship opportunities. This requires employer buy-in across all sectors which, if demand for placements outstrips supply, may require some employer incentives. However, there is no evidence at present that incentives are currently required.

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Work placement and internship

- Work placement and internship opportunities tends to be the preserve of tertiary level education providers. However, it is also important that young people at school also have access to work experience opportunities:
  - **Experience a range of sectors prior to making career decisions** – provide young people with access to a range of work experience opportunities prior to them making decisions about tertiary level career paths.
  - **Recognise the value of retail/ hospitality employment** – for many people part-time employment in the retail and hospitality sectors is their first experience in the labour market and can develop a range of important employability skills including: customer service; commercial awareness; team working; and people management. Often young people with work experience gained in retail or hospitality have a wide range of skills important in securing work placement and internship opportunities when they reach tertiary education.

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Dealing with under-achievement (1)

- The proportion of young people leaving post-primary education during 2014/15 with low or no skills (i.e. below NQF L2, equivalent to 5 GCSE's A*-C) was 19%. This represents a significant improvement relative to a decade earlier when 37% of school leavers failed to achieve qualifications equal to level 2.
- However, the proportion of school leavers having not achieved 5 GCSE's A*-C including English and Maths remains high at 34%, albeit a significant improvement from 49% 10 years earlier. In addition to being a major social issue of our time, under-achievement must be addressed in order to meet the skills gaps at medium and higher levels.
- This is a group of approximately 7,600 young people per annum, who then typically enter into Further Education and training programmes. Of known destinations, 85% of school leavers who fail to achieve NQF level 2 proceed to either Further Education or training programmes.

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Dealing with under-achievement (2)

- Many young people are recycled through the education system through a number of academic years before finally entering the labour market. Approximately 30% of FE leavers achieving a qualification equal to level 2 or below proceed to further study.
- This is a critical issue because the proportion of jobs which require low skills (particularly for those leaving school) is falling. Research completed for DfE (then DEL) in 2009 estimated that 22% of total job opportunities available for those leaving education required a low level of skills (i.e. below NQF L2). However this is falling and the latest estimate is only 11% of total jobs require below NQF L2 qualifications. All indications suggest this trend will continue.
- It is likely this will require a cross-departmental solution.

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Potential changes to course content

- **Potential changes to course content** – the original Skills Barometer research did not identify any criticisms of the technical content of individual courses (in contrast to the employability skills issue). However, there are some technical skills which could be included in a broader range of tertiary level courses.
- One such skills area identified from the consultations related to 'commercial awareness'. This tends to be restricted to business related qualifications, but many other sectors with their own specific technical skills also require commercial skills. By way of example, young people entering the creative industries sector have strong creative arts skills but limited business acumen.
- As a result, a business/ commercial module could form a component of a much broader range of qualifications. Other examples also exist such as communication skills (written and oral) which could become a component of a wide range of qualifications.
- Further research should be undertaken to identify a more comprehensive range of cross-cutting technical skills required across all subject areas.

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Summary of other policy comments

The original Skills Barometer identified a wide range of policy issues which remain relevant and these are summarised below. Summary of relevant policy comments raised previously:

- **High growth is required** – the skills barometer has identified the level of under and over supply of skills required in a "high growth" scenario. However, a skills over-supply issue could arise if the level of economic growth achieved is lower.
- **Skills implications of austerity** – lower levels of government spending and reductions in recruitment levels will have implications in terms of reduced demand for skills particularly in the public sector. The 2016 Autumn Statement abandoned the balanced budget target by 2020. As a result the impact on public sector recruitment will not now be as significant as previously anticipated.
- **Lack of employability skills is impacting supply** – employers raised concerns about the wider employability skills of potential recruits rather than gaps in technical skills. Therefore a greater focus on improving employability is required. (This is explored further below).

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Summary of other policy comments

- **Policy response to areas of oversupply** – the policy response to subject areas of over-supply may not be to simply reduce provision. Alternative approaches could include: selling NI as a FDI location to industries requiring those skills; and marketing over-supplied courses more aggressively to over-seas students.
- **Mitigating the impact of over-supply** – conversion courses can re-skill students in areas which are in higher demand. In addition, some oversupply may be the outcome of austerity and these skills/ courses will be required in future.
- **Need for depth analysis in key sector areas** – the NI Skills Barometer provides a breadth of analysis across the entire economy but further analysis should be undertaken for priority sectors to understand the skills requirements at a more detailed level.
- **Sector attractiveness** – it is recognised that graduates/ qualifiers in STEM related subjects are in demand across a wide range of sectors. As a result sectors such as engineering and ICT have an increased need to increase the attractiveness of their sectors to potential/ future employees.

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Summary of other policy comments

- **Policy response to areas of oversupply** – the policy response to subject areas of over-supply may not be to simply reduce provision. Alternative approaches could include: selling NI as a FDI location to industries requiring those skills; and marketing over-supplied courses more aggressively to over-seas students.
- **Mitigating the impact of over-supply** – conversion courses can re-skill students in areas which are in higher demand. In addition, some oversupply may be the outcome of austerity and these skills/ courses will be required in future.
- **Advice to students** – young people should always be encouraged to study in an area for which they have a passion. But should understand the supply and demand dynamics of the subject area in which they want to study
- **Advice to education institutions** – the work-place relevant skills developed in oversupplied subject areas should be clearly articulated.
- **Advice to employers –** employers could broaden their search criteria and consider the skills of people with qualifications in over-supplied subject areas.

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Summary of other policy comments

- **The image of a Professional & Technical education** – the consultations highlighted that there remains a cultural perception in NI that professional/ technical study is of lower value than academic study. Other developed economies have successfully created an education system which places equal credibility on both technical/ professional and academic career pathways.
- **Employers should articulate their skills needs to Government in a collective way –** it is important that employer groups work together to provide a consistent message to Government in terms of the skills requirements for their sector.

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Detailed analysis by subject area
(2 digit JACS and SSAs)

Detailed analysis

- A more detailed analysis is provided below in respect of individual subject areas (2 digit JACS and SSAs level) and sets out the following:

  NQF level 6+

  - Top 15 Subjects – Annual average under-supply
  - Top 15 Subjects – Annual average over-supply

  *NQF level 4-5**

  - Top 15 Subjects – Annual average under-supply
- The modelling analysis has been completed at the 1 digit JACs and SSAs level, and as a result the 2 digit analysis is less robust but still indicative of the more detailed areas of over and under supply.

** At NQF level 4-5 no subjects are materially over supplied, therefore an oversupply chart is not presented.*

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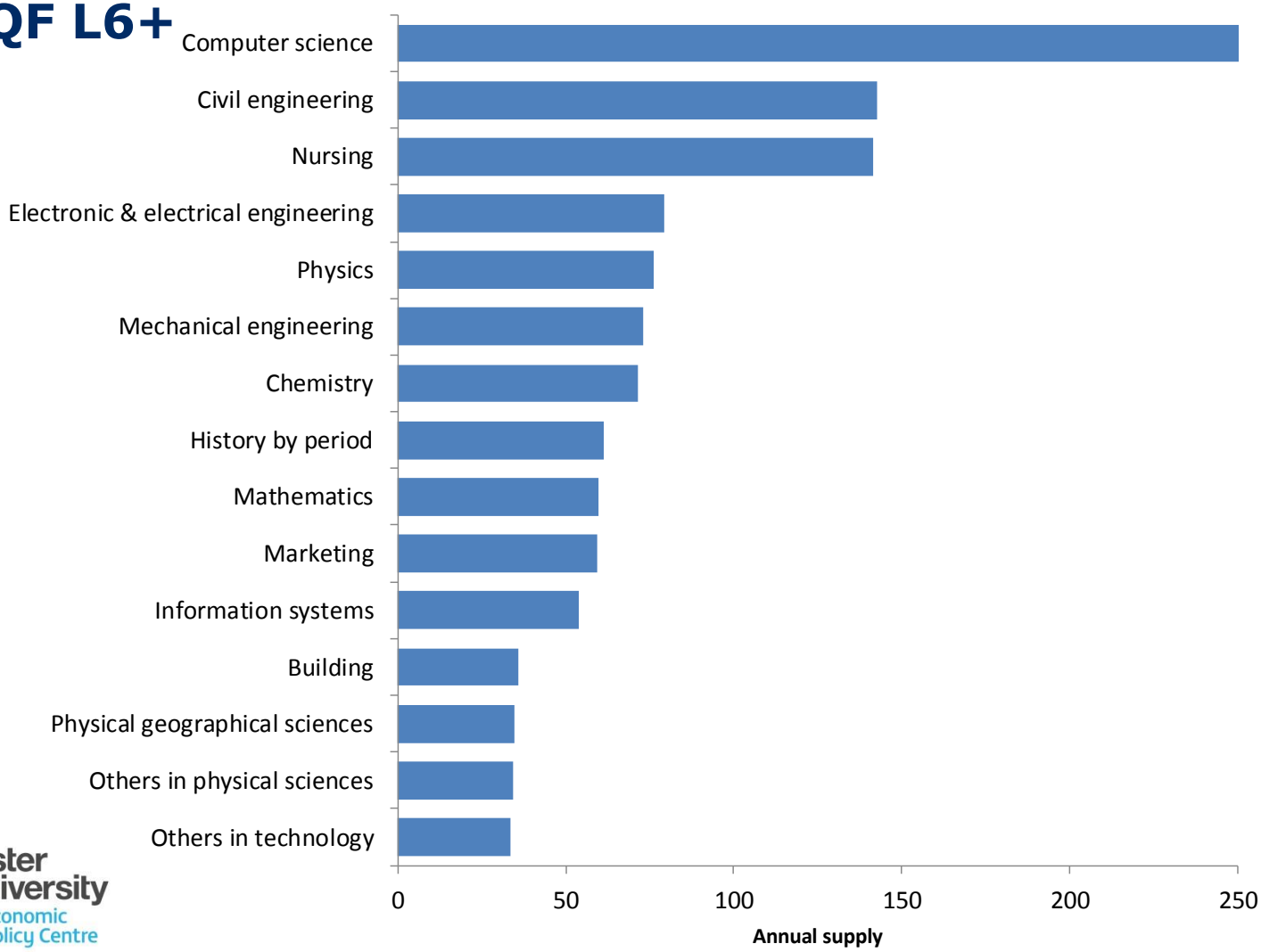
NQF L6+ undersupply – Detailed subject area

Top 15 Skills Annual Average Undersupply (2 Digit JACS) – NQF L6+



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Source: HESA, EPC

NQF L6+ oversupply – Detailed subject area

Top 15 Skills Annual Average Oversupply (2 Digit JACS) – NQF L6+

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Source: HESA, EPC

Oversupplied subject areas

- The previous chart shows some of the most over-supplied subject areas as per the analysis conducted. The following important points are made in respect of oversupplied subject areas:
  - Decisions on reducing the supply of oversupplied subjects should be resisted until further research is conducted to understand where these graduates find employment subsequent to qualification. For example, if a high proportion consistently find graduate level employment in some subject areas, then clearly these courses develop skills of value to the labour market and there may not be a need to reduce provision.
  - The capacity for education institutions to continue existing levels of provision should be maintained if additional demand can be sourced from international students or if changes to Government policy could result in significant increases in demand.

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Oversupplied subject areas

- The following comments are made in respect of some over-supplied subject areas:
  - **Education** – includes teaching and academic studies in education. This issues has been well publicised in recent years both in terms of the supply of teaching graduates and also in terms of the number of institutions providing teaching qualifications.
  - **Law** – most law students work in areas other than the law and is therefore considered to be a good 'General Arts' degree. Typically, the skills developed (such as critical thinking, good oral and written communication, research ability and making an argument) are attractive in the labour market;
  - **Business Studies** – high demand for this skill across many sectors in the economy but is also one of the largest qualifications in terms of supply;
  - **Psychology** – psychology graduates often do not work as psychology professionals but work in many sectors across the economy.
  - [Continued overleaf]

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Oversupplied subject areas

- Comments in respect of over-supplied subject areas (contd.):
  - **Social Work** – the level of over-supply has come down significantly since the Skills Barometer research was completed previously. This has been driven primarily by an increase in the forecasted spending on health. Other factors should also be considered in respect of the Social Work degree:
    - The implementation of a number of Government policies (such as Transforming Your Care and the Bengoa report) could result in a further increase in demand for Social Workers, as greater levels of care are provided in the community.
    - Historically Probations Officers have all required a Social Work degree qualification however, it is only recently that professionals in Youth Justice and Education Welfare must now be equally qualified.
    - Consultations with the Northern Ireland Social Care Council (NISCC) also indicated that due to the age profile of the workforce the levels of retirement could also increase significantly.
    - Taken together, these factors could potentially justify an over-supply in the short-term, but should be monitored.

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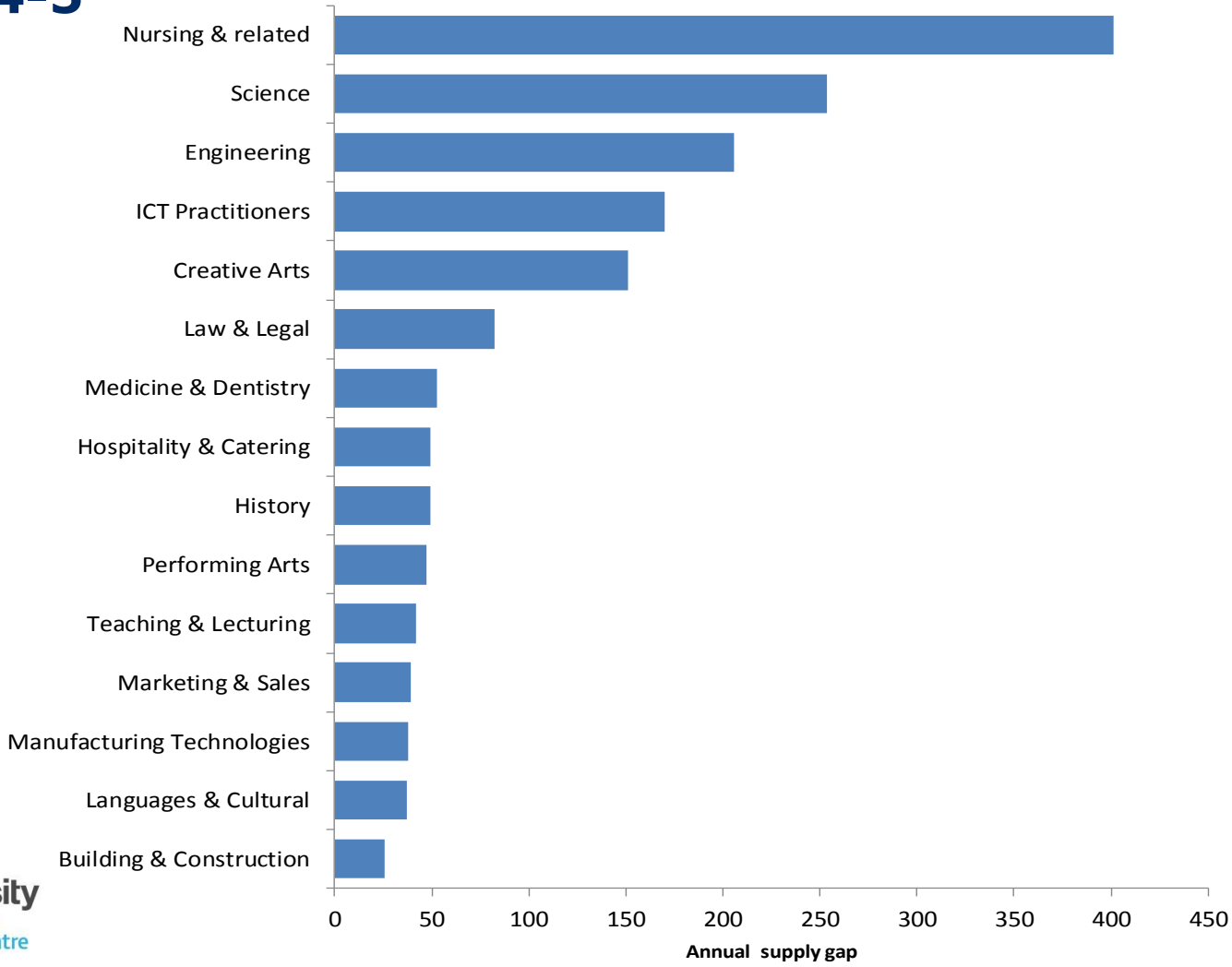
NQF L4-5 undersupply – Detailed subject area

Top 15 Skills Annual Average Undersupply (2 digit SSAs) – NQF L4-5



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Source: HESA, EPC

Detailed analysis

- The following charts provide detailed analysis on the NQF level 6+ subject areas where a higher level of under and over supply has been identified. This analysis provides an estimate for the level of over and under-supply of each 2 digit JACS subject within its parent 1 digit JACS.
- This 2 digit analysis is less robust (than 1 digit JACs analysis) but still indicative of the more detailed areas of over and under supply.

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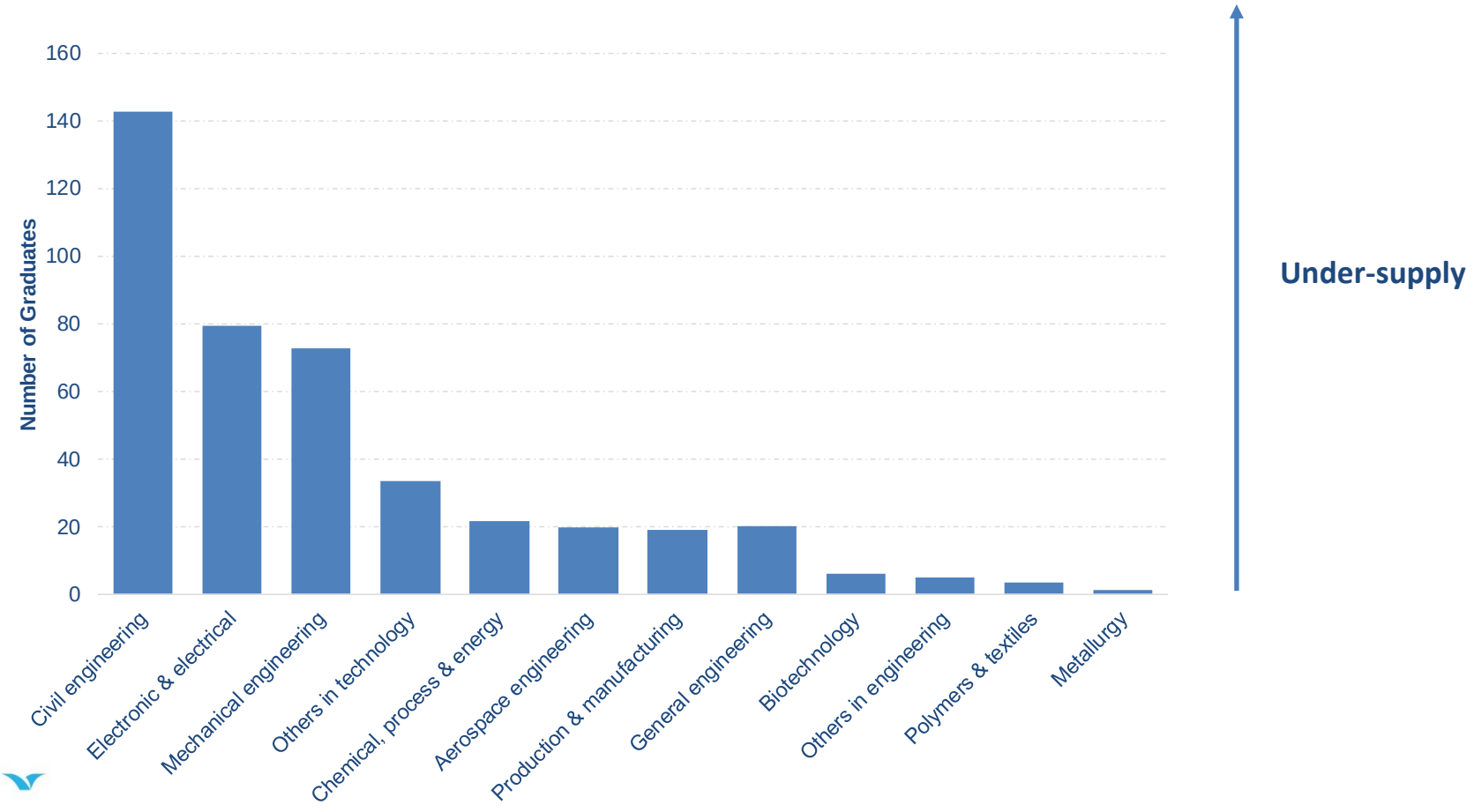
NQF L6+ supply gap – Detailed subject area

Engineering & Technology – 2 digit JACS (annual average supply gap)



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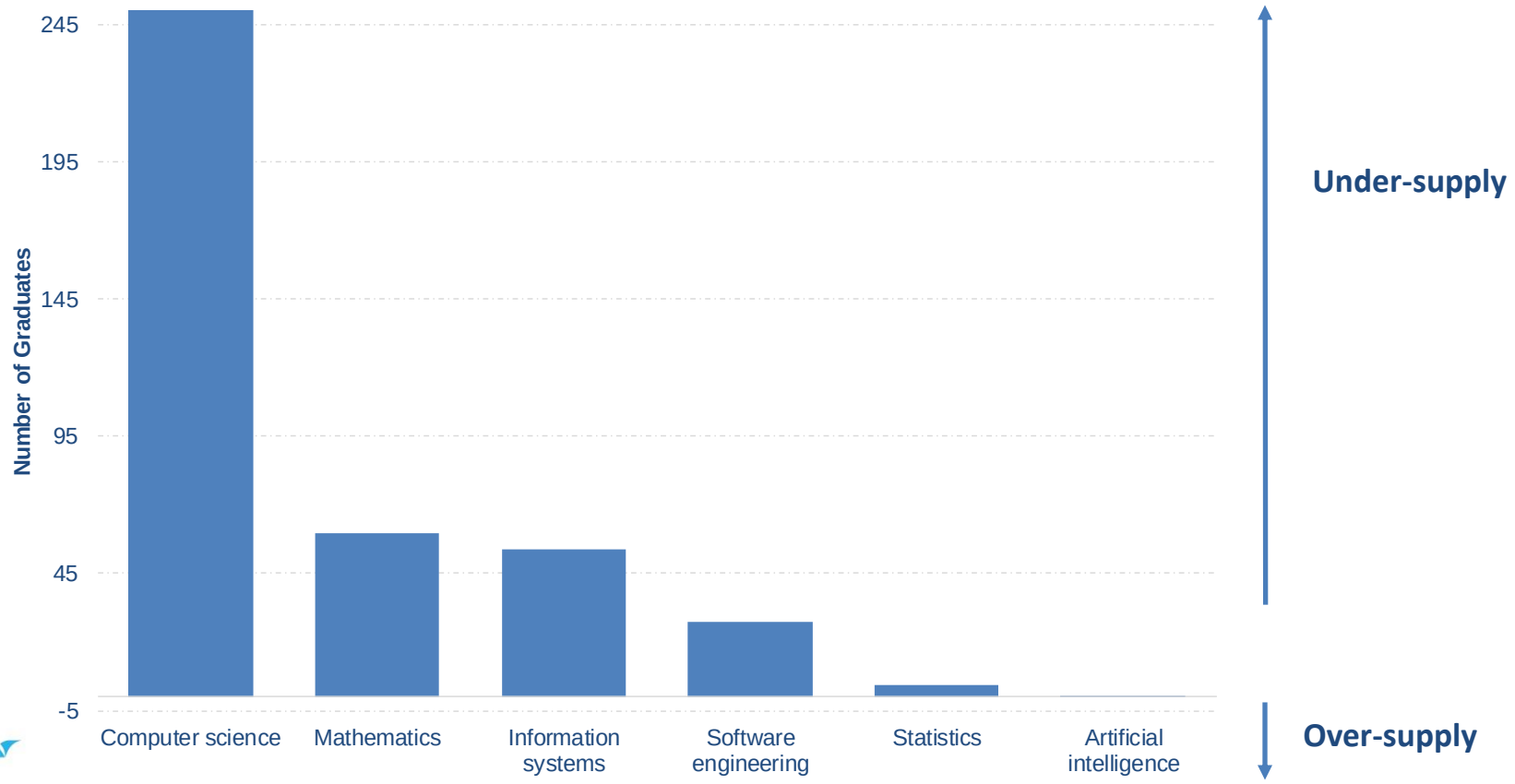
Source: HESA, EPC

NQF L6+ supply gap – Detailed subject area

Maths and Comp Science – 2 digit JACS (annual average supply gap)



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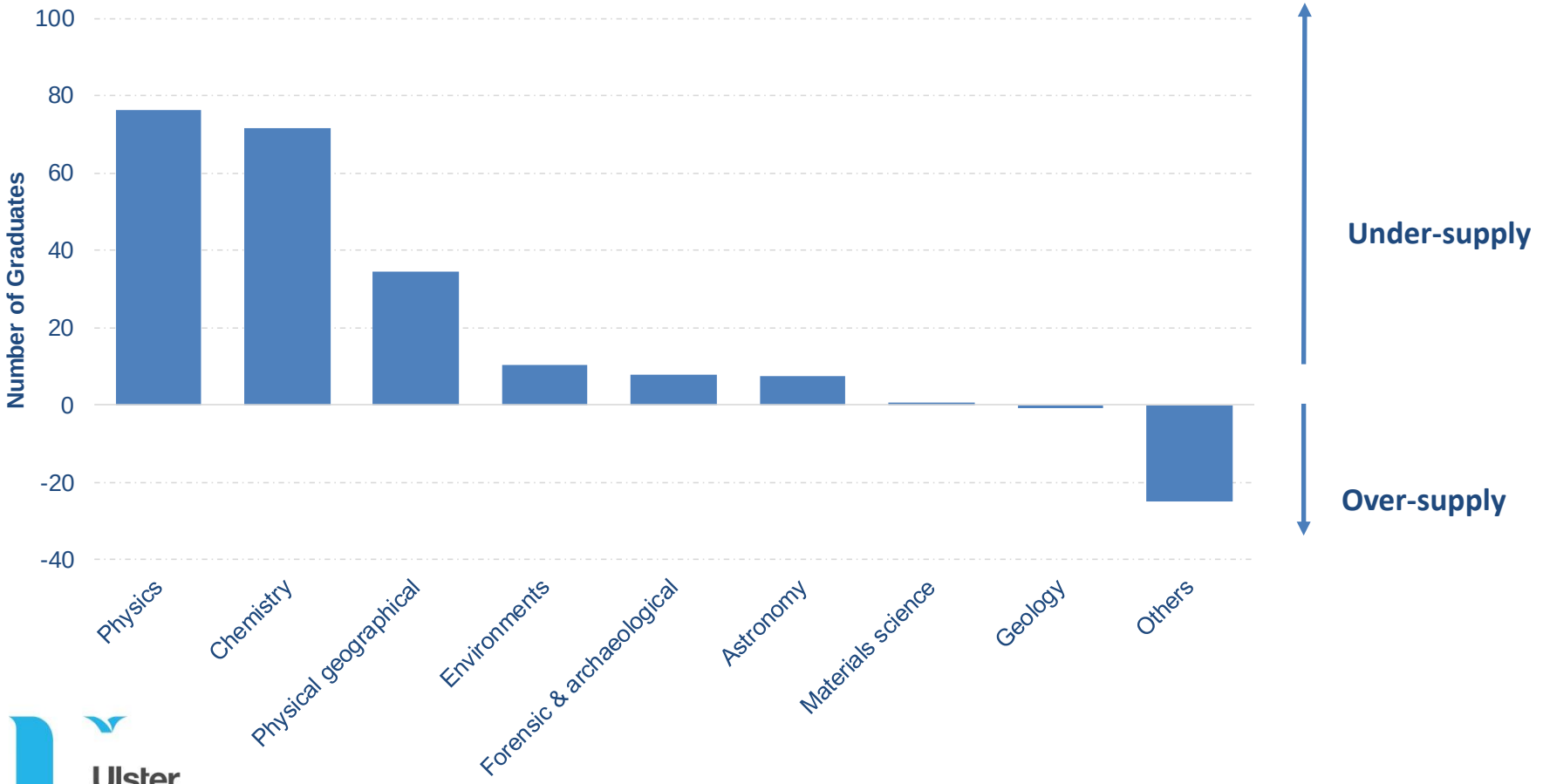
Source: HESA, EPC

NQF L6+ supply gap – Detailed subject area

Physical/Enviro'tal Science – 2 digit JACS (annual average supply gap)



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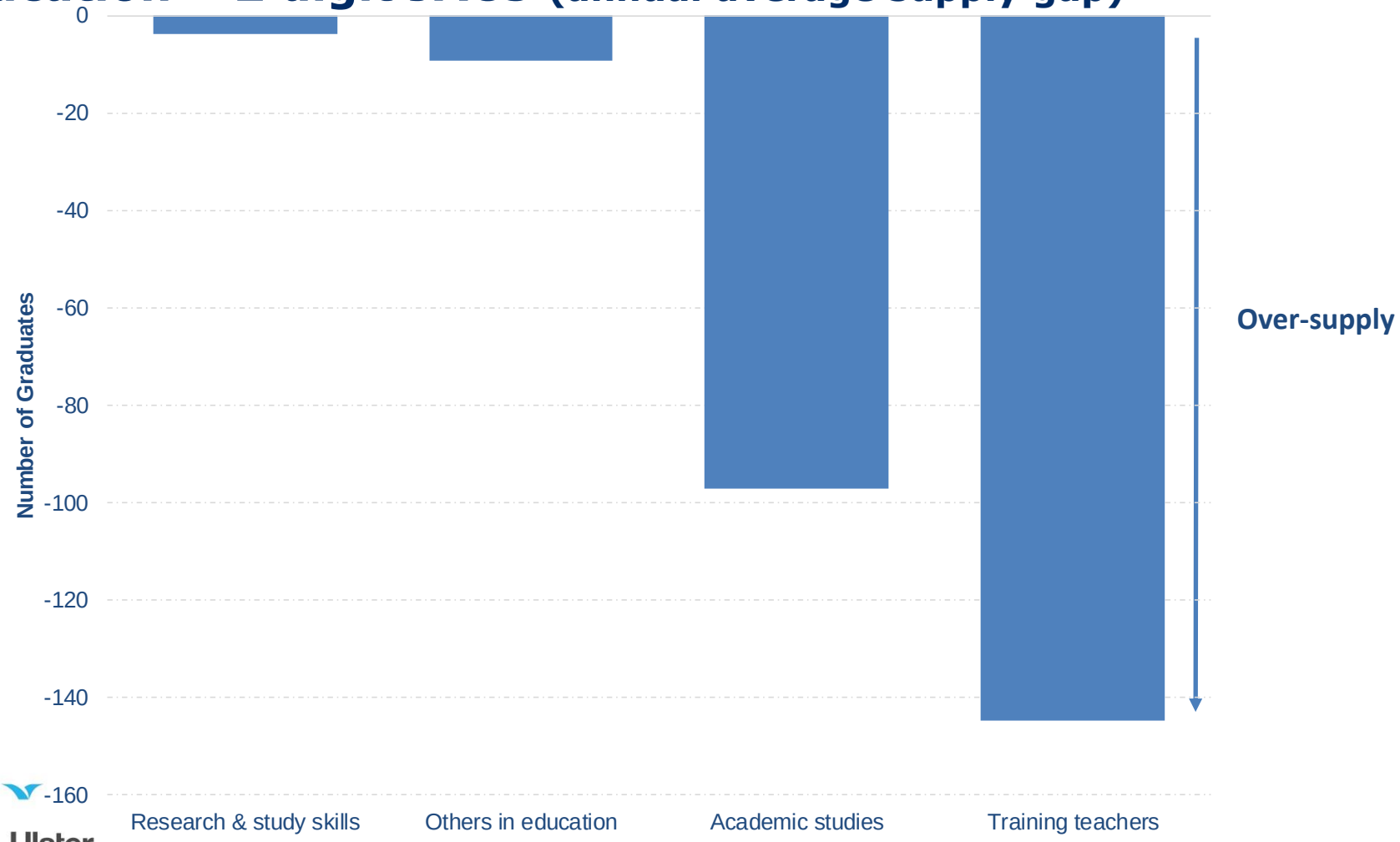
Source: HESA, EPC

NQF L6+ supply gap – Detailed subject area

Education – 2 digit JACS (annual average supply gap)



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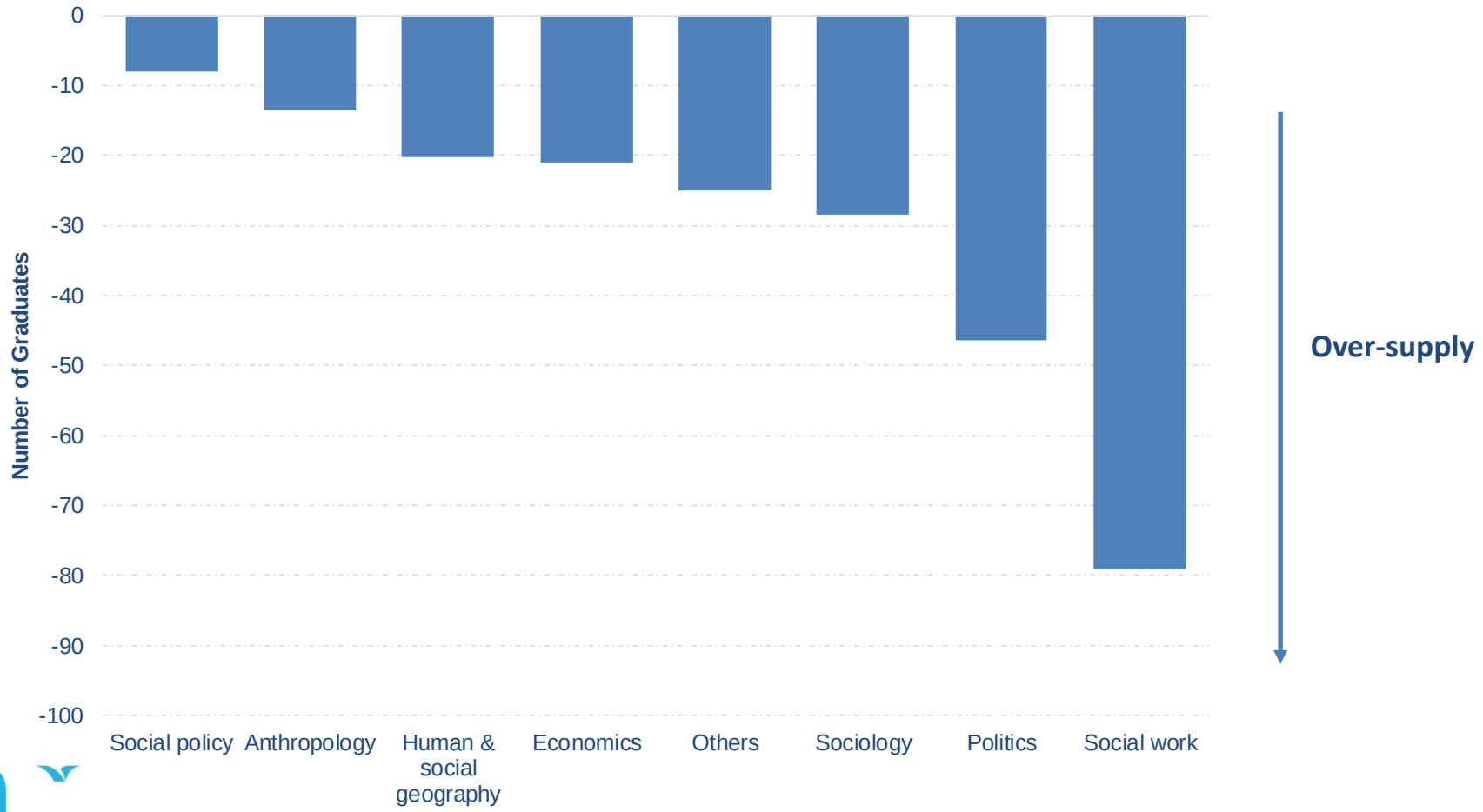
Academic studies in education: this includes the study of teaching and learning, and the arrangement of the curriculum to improve learning.

Source: HESA, EPC

NQF L6+ supply gap – Detailed subject area

Social studies – 2 digit JACS (annual average supply gap)



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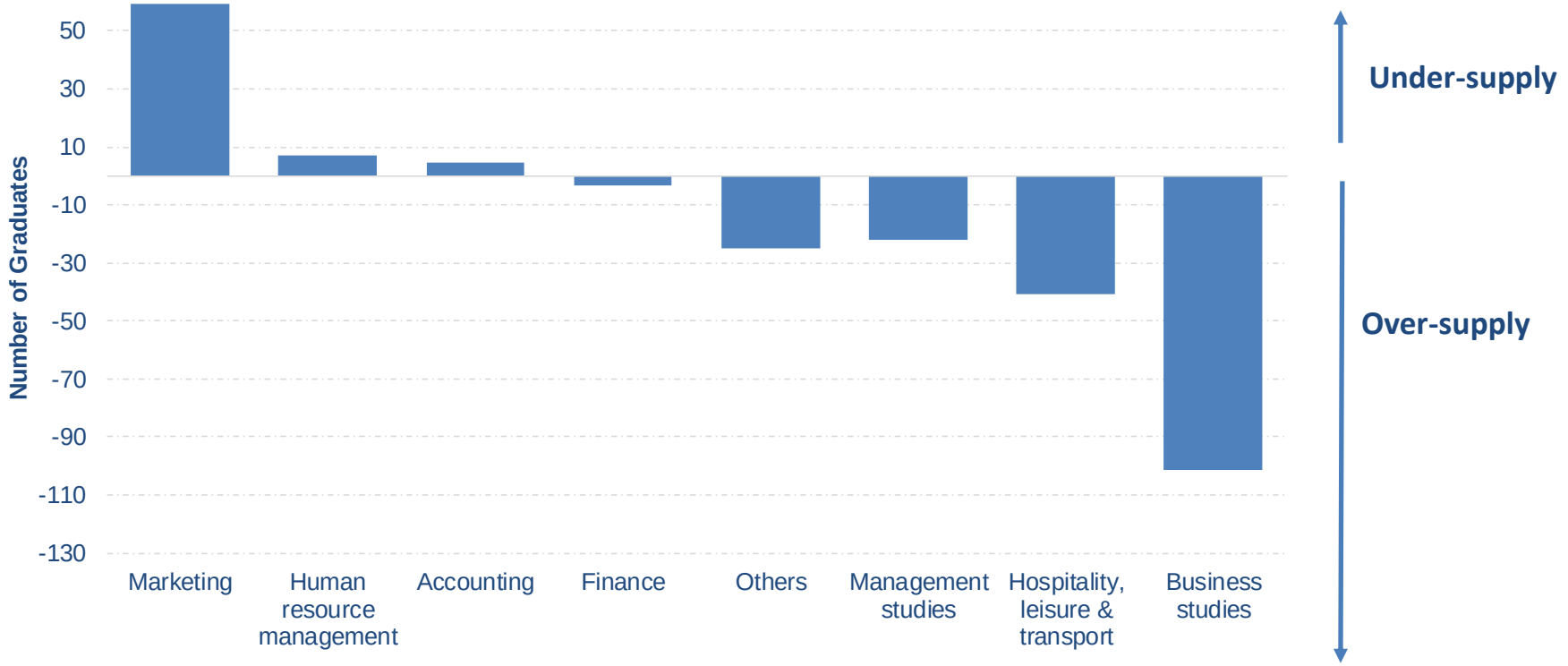
Source: HESA, EPC

NQF L6+ supply gap – Detailed subject area

Business and Financial – 2 digit JACS (annual average supply gap)



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Source: HESA, EPC

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Demand for jobs and skills

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Demand for jobs and skills

A detailed analysis of the demand for both jobs and skills has been conducted. This is the first element in determining the supply gaps detailed previously. This section sets out the following:

Jobs

- Overall jobs forecast – including baseline and high growth scenarios.
- Employment projections by industry sector – 2016 and 2026.
- Average annual requirement for jobs – expansion and replacement demand.

Skills

- Current and projected skills mix by industry sector – 2016 and 2026.
- Demand for skills by subject area – 2016 and 2026.
- Subject area demand by sector – analysis of degree subject mix by sector.

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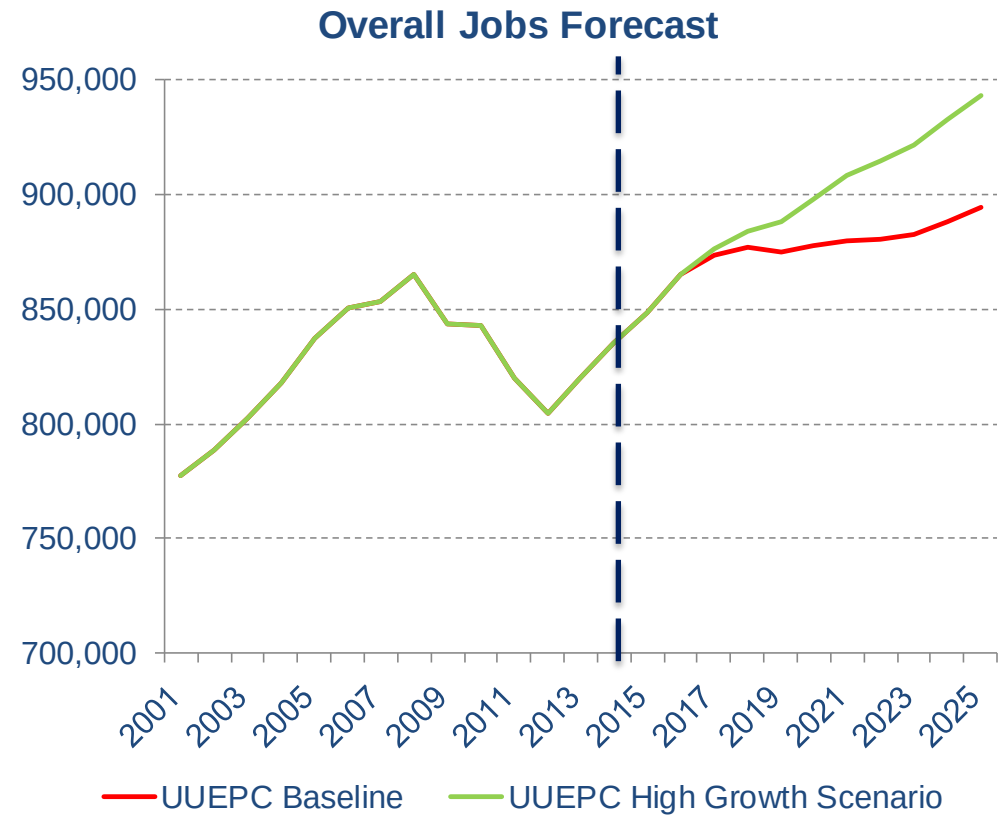
Overall jobs forecast

Boosted by 'High Growth' scenario



Source: EPC

- The UUEPC produces regular economic forecasts outlining the most likely economic outcome. This is presented in the UUEPC Baseline scenario in the chart to the left.
- However a higher rate of growth, could help transform the NI economy and job creation would be higher.
- **This 'high growth' scenario forms the basis of the jobs and skills demand forecasts**.
- We are planning for the NI we want to achieve.

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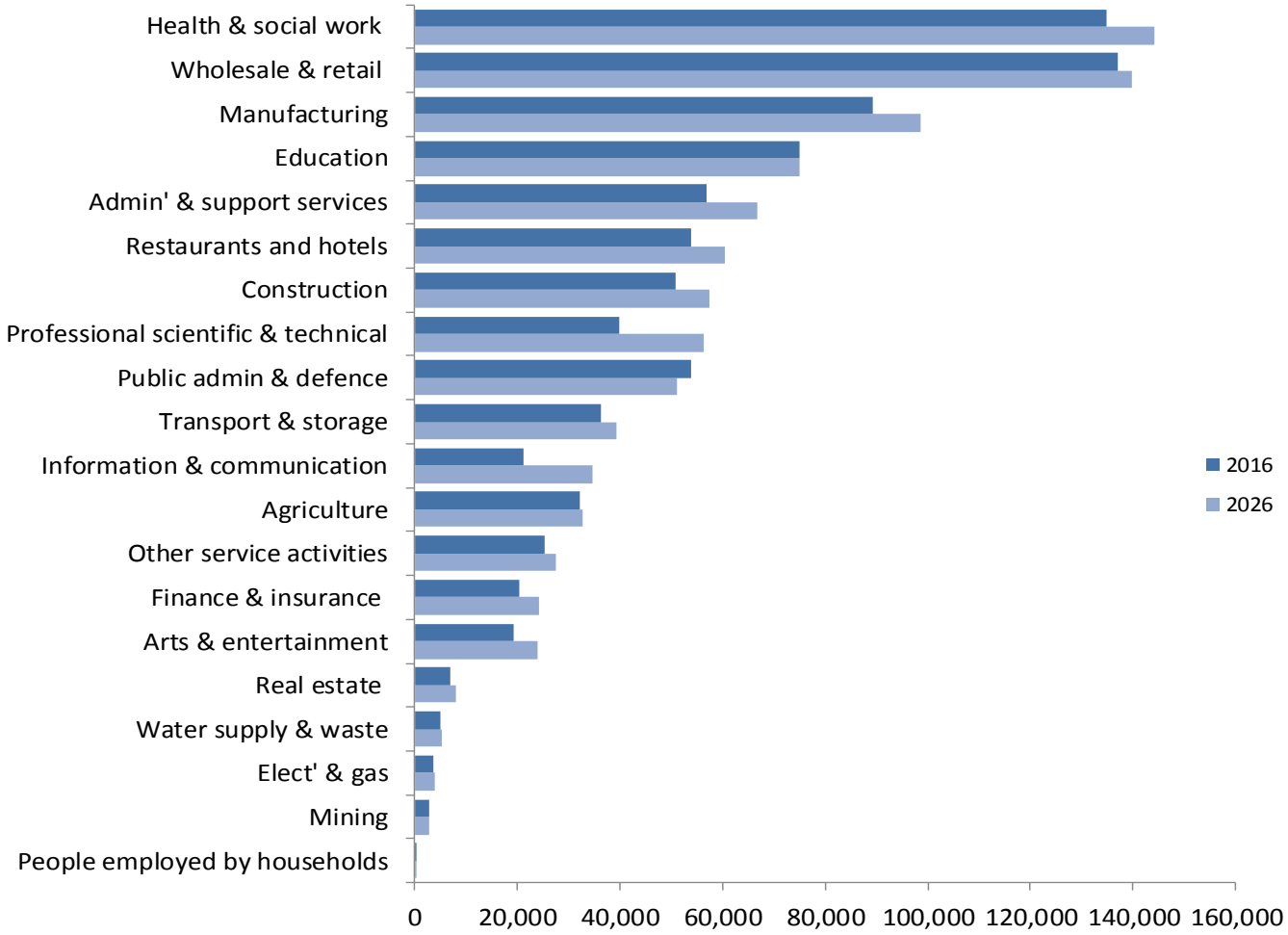
Employment projections by sector

Total employment by 1 digit SIC (2016 and 2026)



- Public administration is the only sector in the economy where employment levels are expected to be lower in 2026.

Source: EPC

Employment projections

2015-25 Annual average requirement from education and migration

The charts below set out the **annual average net requirement from education and migration between 2016 and 2026** for each industry sector (at 1 digit SIC level) and then the Top 10 sectors (2 digit SIC) and Top 10 occupations (3 digit SOC). This is identified in terms of expansion demand and replacement demand:

- **Expansion demand** is directly related to the growth (or reduction) in size of the sector.
- **Replacement demand** refers to the number of positions which become available as a result of staff leaving employment (typically due to retirement, family reasons, ill health or to move to another sector). This calculation refers specifically to the number required from education and migration.

The **annual average net requirement from education and migration** does not include the positions to be filled by labour market participants from other sectors, from unemployment or from economic inactivity.

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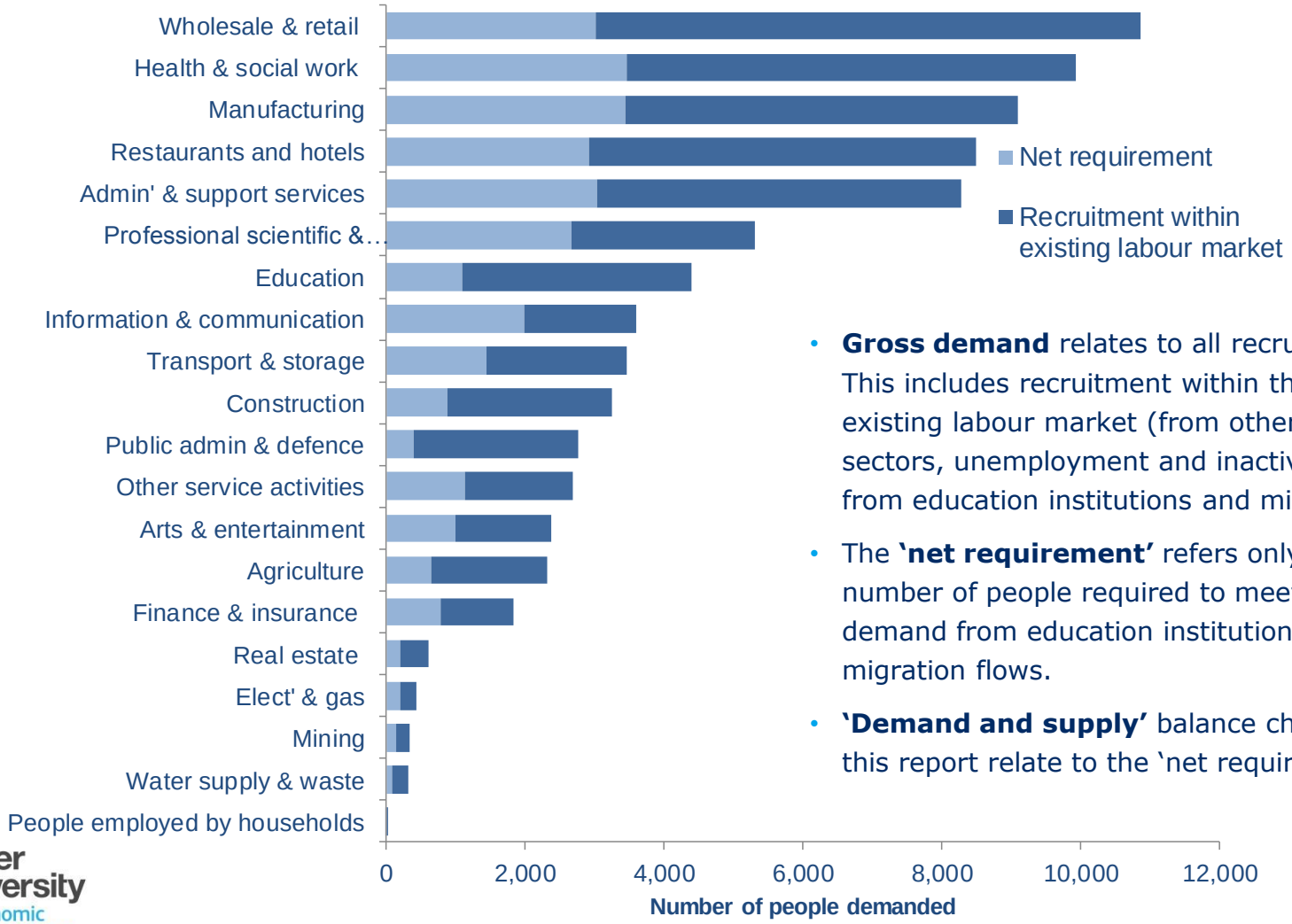
Gross demand by sector

Gross demand by industry (SIC 1 digit)



- **Gross demand** relates to all recruitment. This includes recruitment within the existing labour market (from other sectors, unemployment and inactivity) and from education institutions and migrants.
- The **'net requirement'** refers only to the number of people required to meet demand from education institutions and migration flows.
- **'Demand and supply'** balance charts in this report relate to the 'net requirement'.

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Source: EPC

Employment projections by sector

2016-26 Annual average requirement by industry (SIC 1 digit)

Net Requirement from education and migration

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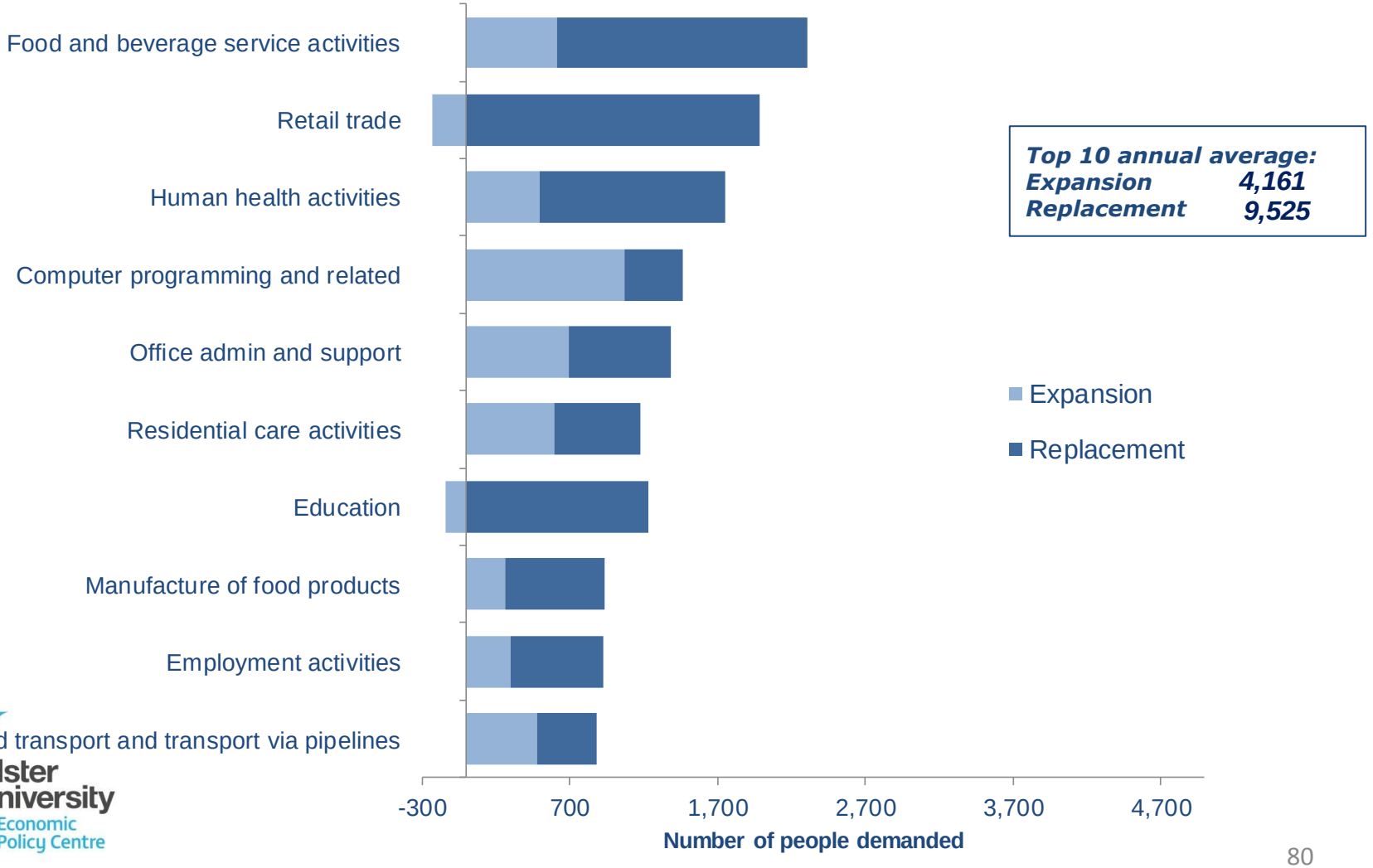
Source: EPC

Employment projections by sector

2016-26 Annual average requirement from education and migration

Top 10 Industry Sectors (SIC 2 digit)



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Source: EPC

Employment projections by occupation

2016-26 Annual average requirement from education and migration

Top 10 Occupational Sectors (SOC 3 digit)

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Source: EPC

Employment projections findings

- **Job opportunities emerging across a wide range of sectors/ occupations** with an eclectic mix of skills requirements. The retail, health, manufacturing and hospitability sectors will continue to create the most employment opportunities. It is not all at the high value end.
- **The most significant portion of job openings is derived from *replacement* rather than *expansion* demand**. It should be recognised that replacement rates are based on current trends, however this may change for a number of reasons. E.g.:
  - In austere times people may become more reluctant to leave the security of their current job;
  - A change in policy could change behaviour, for example the introduction of the Living Wage could increase supply from unemployment or the economically inactive.
- Although there is likely to be significant pressure on public sector employment, significant levels of replacement demand will exist over the next 10 years.

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Skills projections

Assessment of current and projected skills mix

The skills mix refers to the proportion of staff in a sector with a particular level of skills as measured on the National Qualifications Framework (NQF) scale. This scale is set out below:

- Level 8 – PhD/ Doctorate
- Level 7 – Masters
- Level 6 – Honours Degree
- Level 5 – HND and equivalent
- Level 4 – Diploma, HNC and equivalent
- Level 3 – A-Levels and equivalent
- Level 2 – GCSEs (Grades A – C)
- Level 1 – GCSEs (Grades D – G)
- Level 0 – No qualifications

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Skills projections findings

- There is an established trend of increasing the skills mix across all sectors. Typically older members of the workforce have lower levels of formal qualifications who are replaced by people with more formal qualifications (but less experience).
- ICT, education, finance and insurance and professional service sectors have the highest portions of their overall workforce with a degree level qualification or higher.
- The public sector (education, health and public administration) also demand high numbers of employees with NQF L4 and 5 level qualifications.
- Sectors such as transport, agriculture, construction and hospitality all have significant proportions of their workforce with relatively low levels of skills. Given the future labour market will continue to have low/ no skills in future, it is important these sectors continue to create significant levels of employment opportunities for this section of the labour market.

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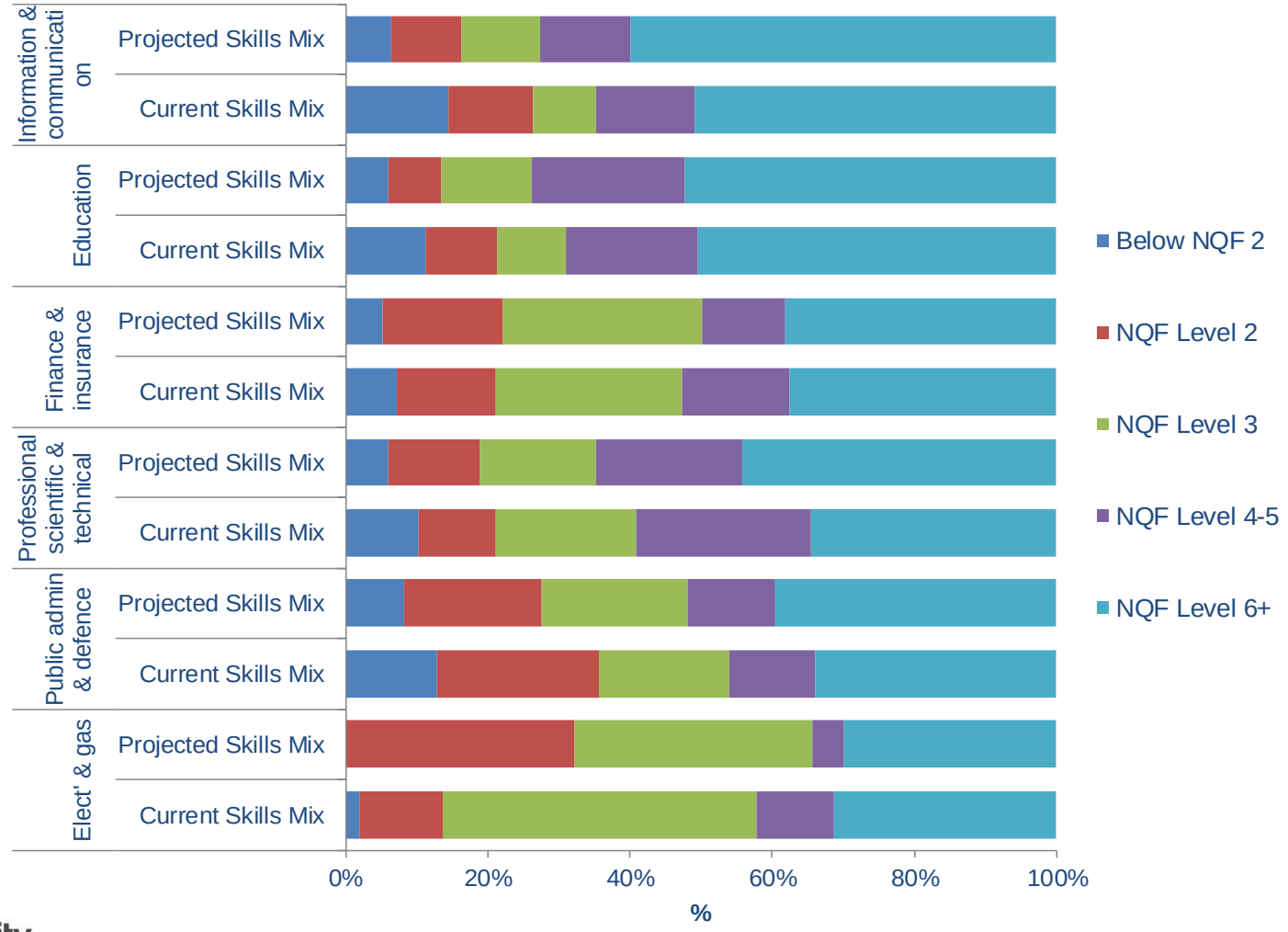
Skills projections by sector

Current and projected skills mix 2016 and 2026 (SIC 1 digit)



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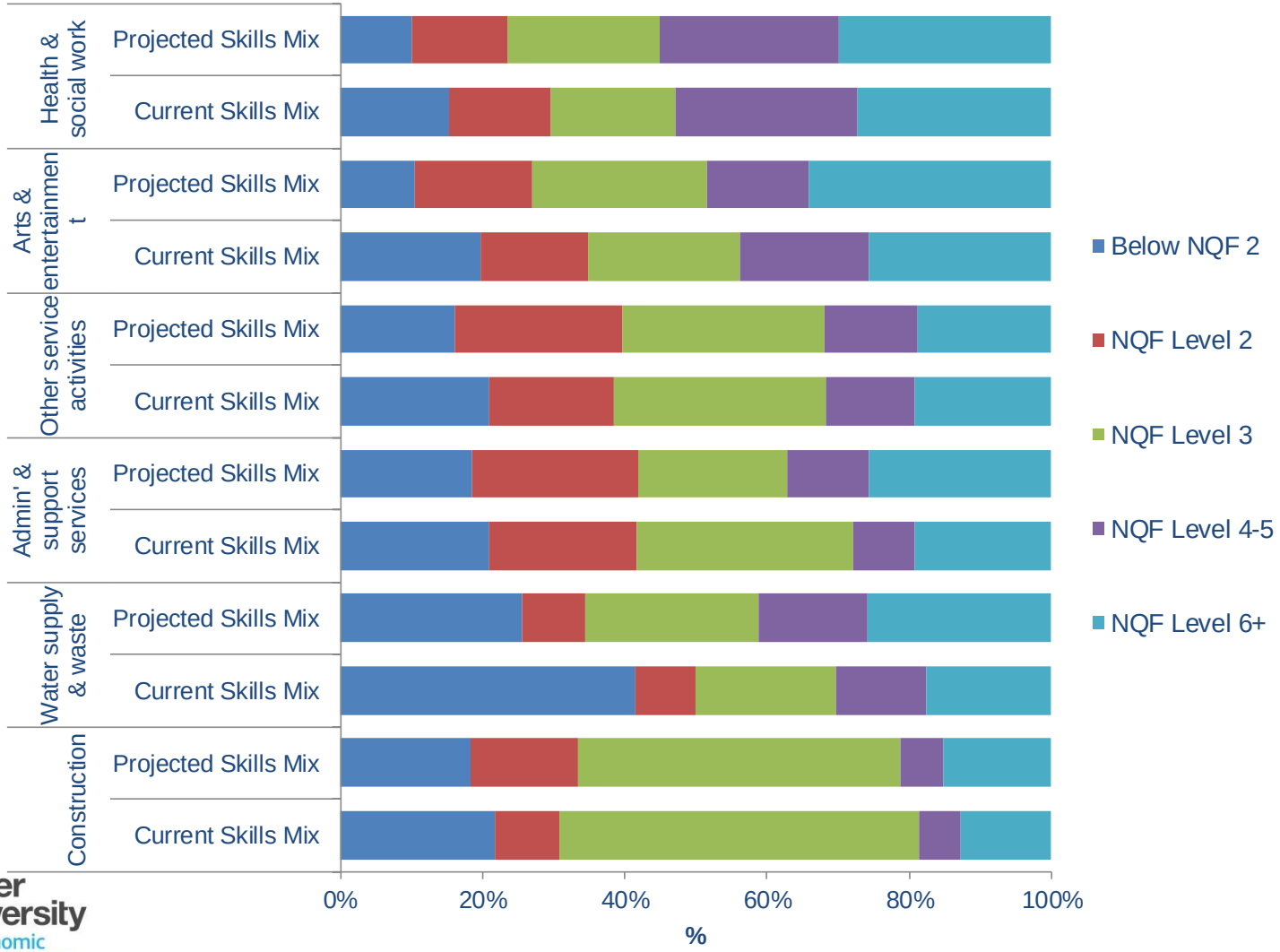
Source: LFS, EPC

Skills projections by sector

Current and projected skills mix 2016 and 2026 (SIC 1 digit)



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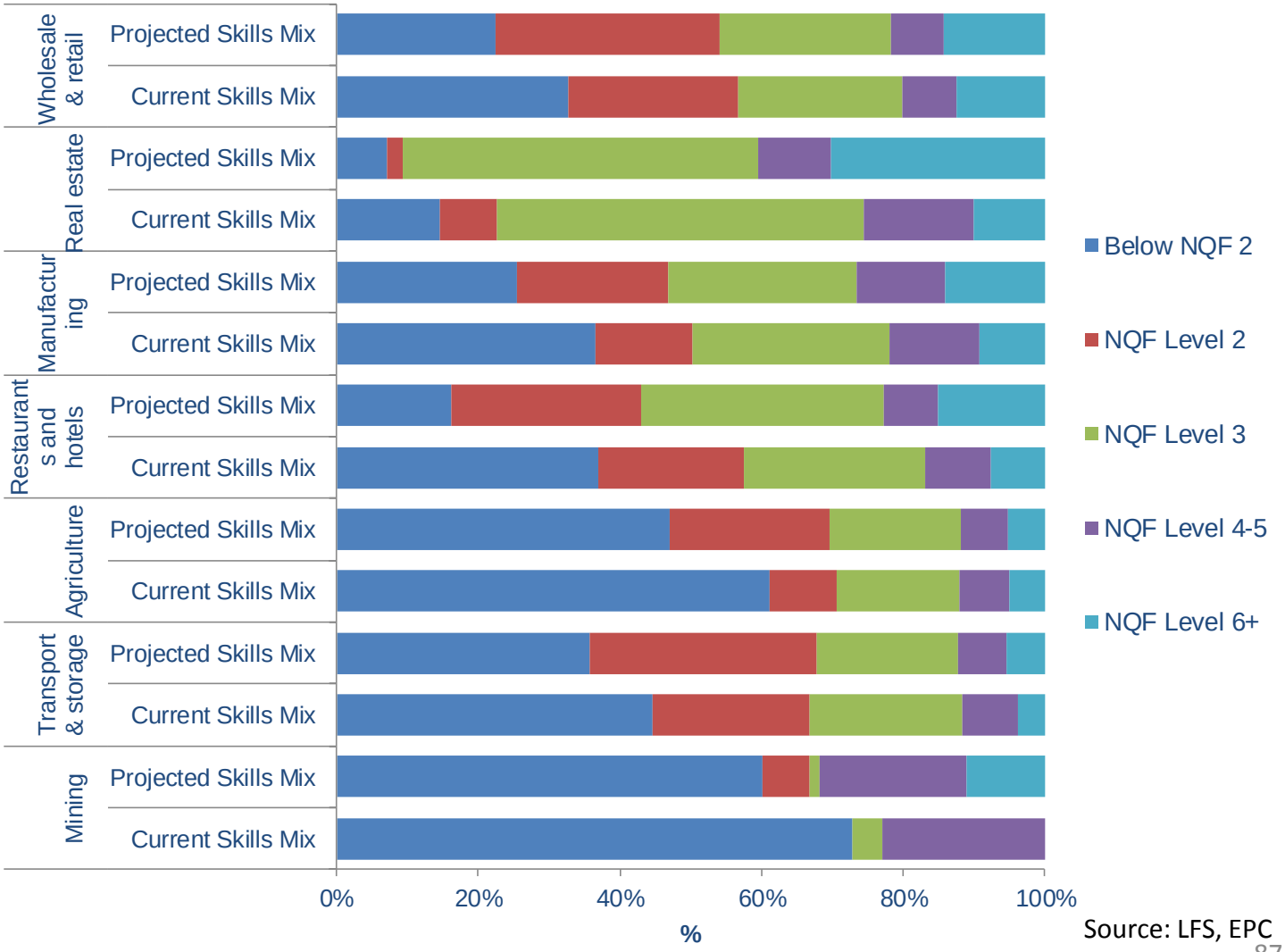
Source: LFS, EPC

Skills projections by sector

Current and projected skills mix 2016 and 2026 (SIC 1 digit)



Source: LFS, EPC

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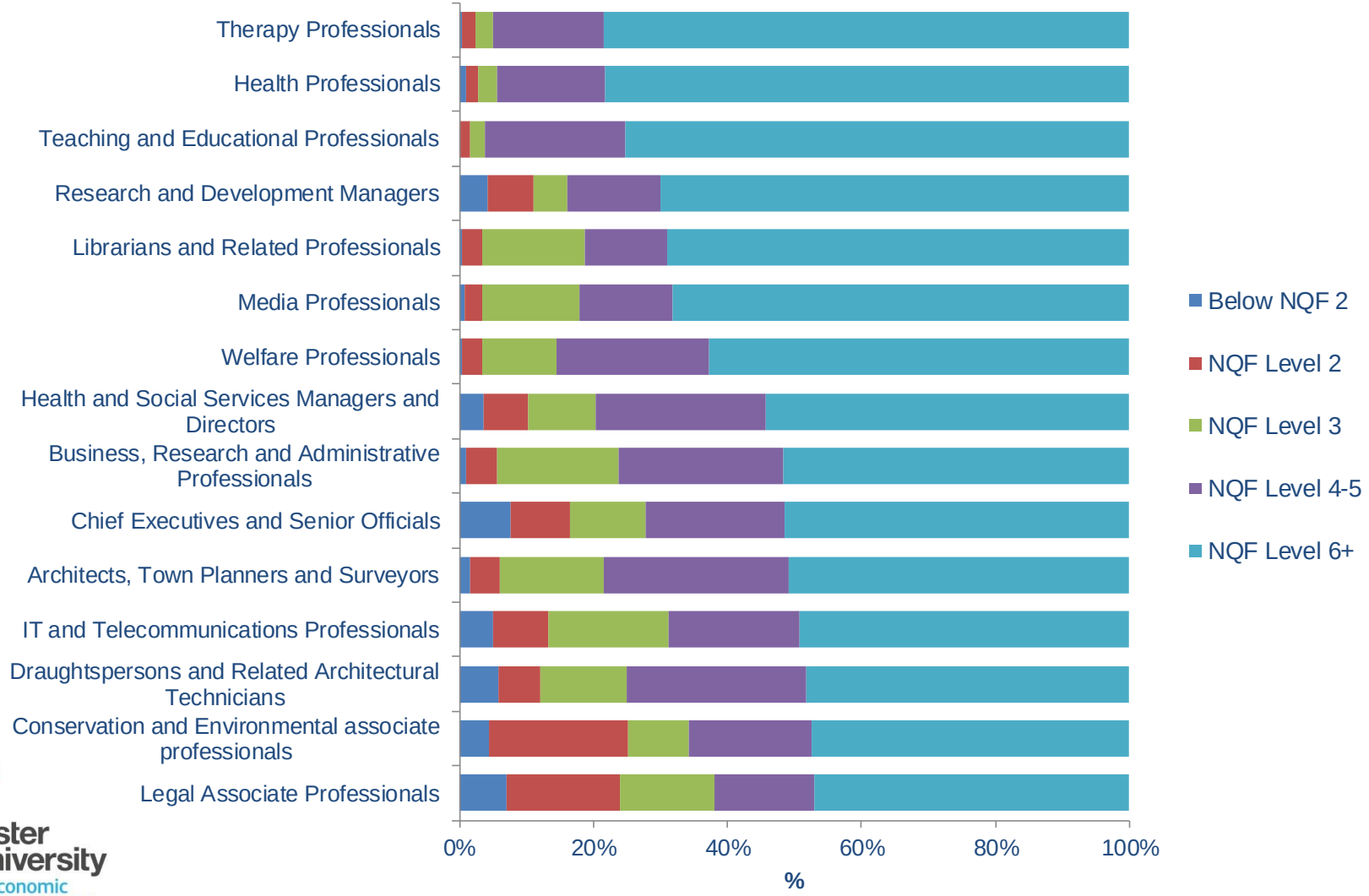
Skills stock by occupation

Top 15 highest skilled occupations (SOC 3 digit) – 2016



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Source: LFS, EPC

Demand for skills by subject area

- The annual average **demand** for qualifications at the subject level (at NQF L6+ and NQF L4-5) is set out in the following slides. This forecast is based on the following information:
  - The employment growth across sectors and occupations;
  - The replacement demand across sectors and occupations; and
  - The mix of JACS subjects (NQF L6 and above) and SSA subjects (NQF L4-5) recruited into each sector and occupation is then used to forecast the total number of qualifications by subject demanded.
- The annual average requirements for skills at Level 3 and below has not been identified at individual subject level because students typically study a wide range of subjects at the lower NQF levels. As a result demand at Level 3 and below has been identified by industry (1 digit SIC).

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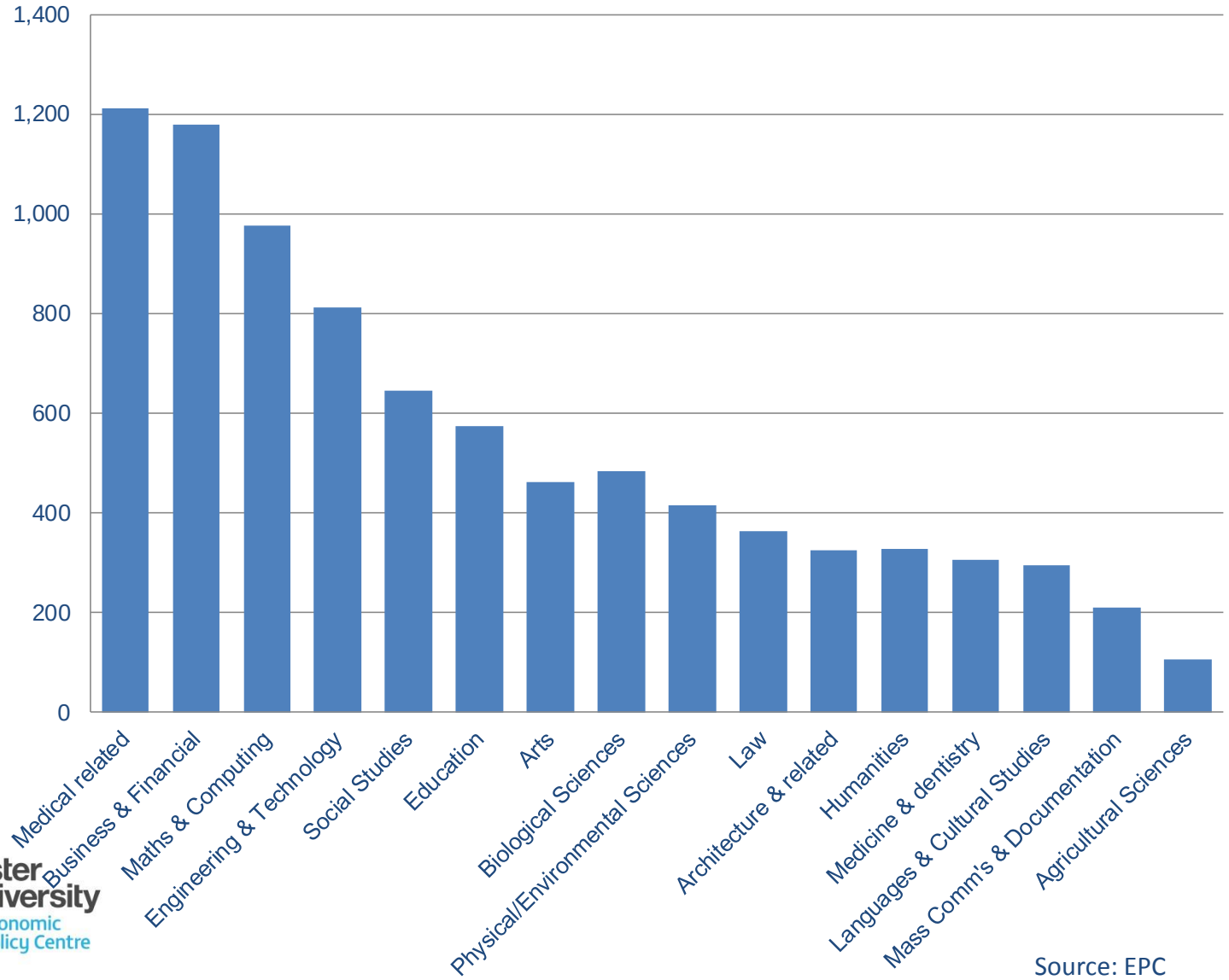
Demand for L6+ qualifications

Annual average skills NQF L6+ (JACS 1 Digit)



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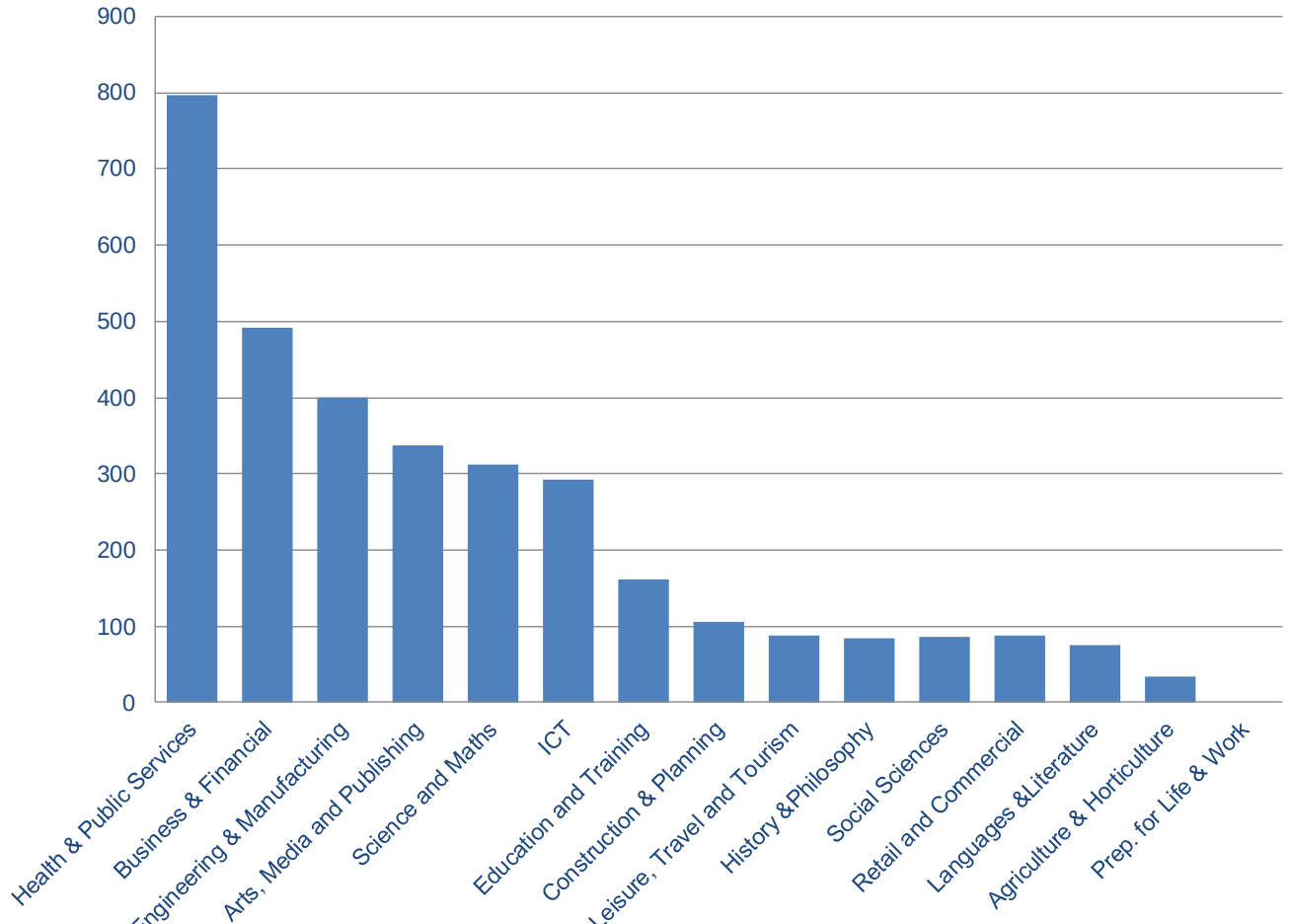
Source: EPC

Demand for L4-5 qualifications

Annual average skills NQF L4-5 (SSAs 1 Digit)



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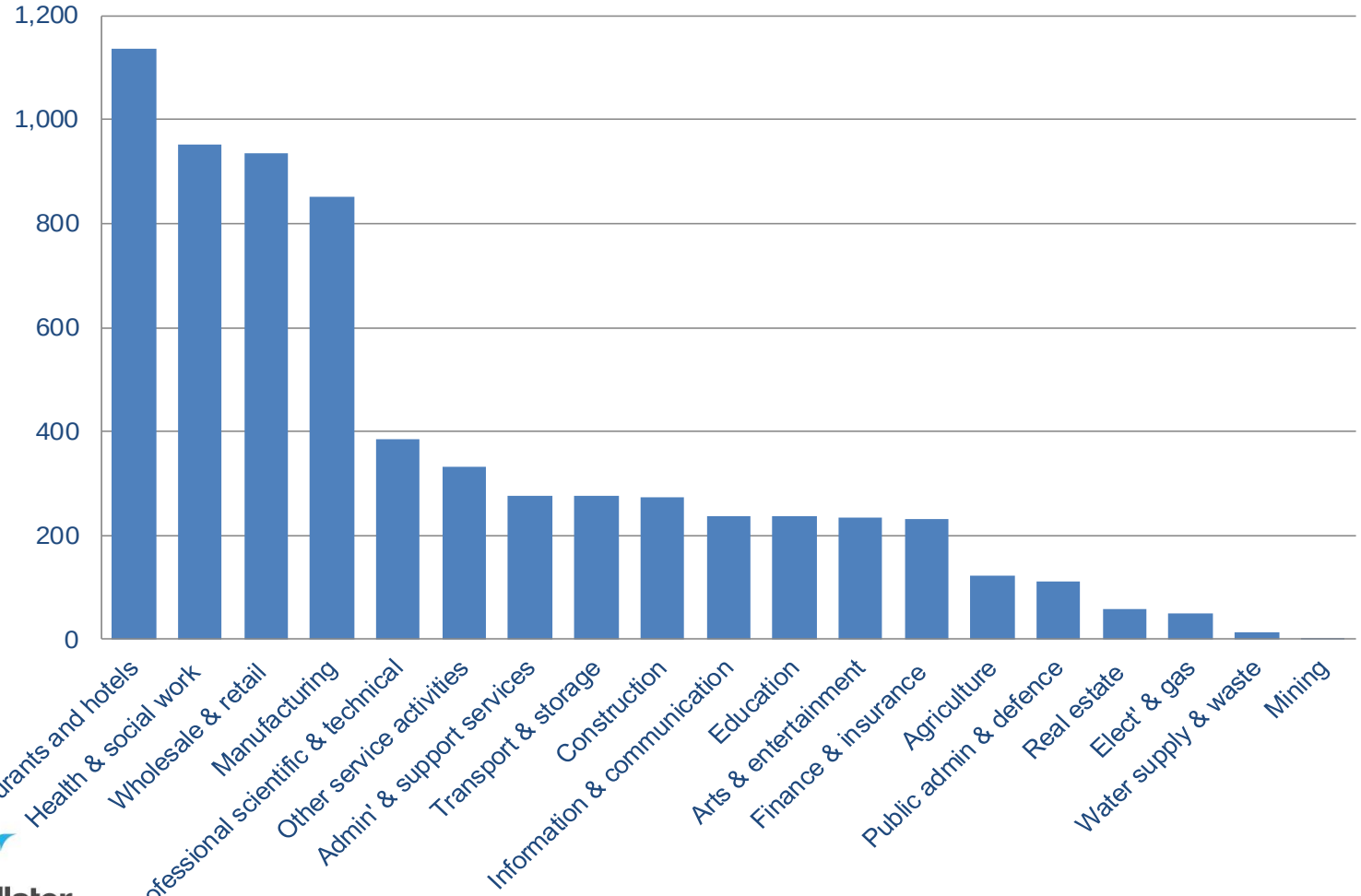
Source: EPC, DEL, LFS

Demand for L3 qualifications (by industry)

Annual average skills NQF L3 2016-26 (SIC 1 Digit)



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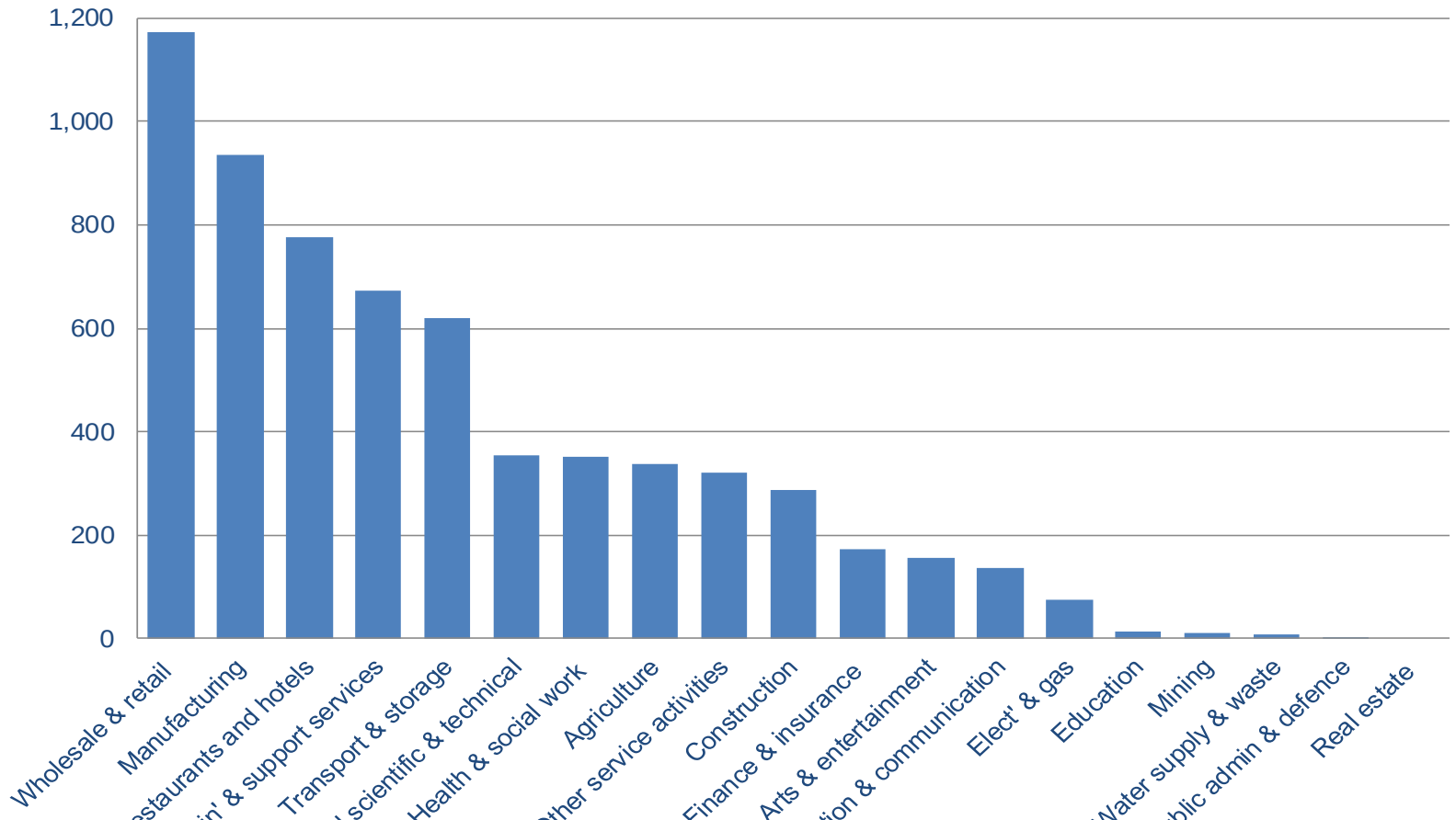
Source: EPC

Demand for L2 qualifications (by industry)

Annual average skills NQF L2 2016-26 (SIC 1 Digit)



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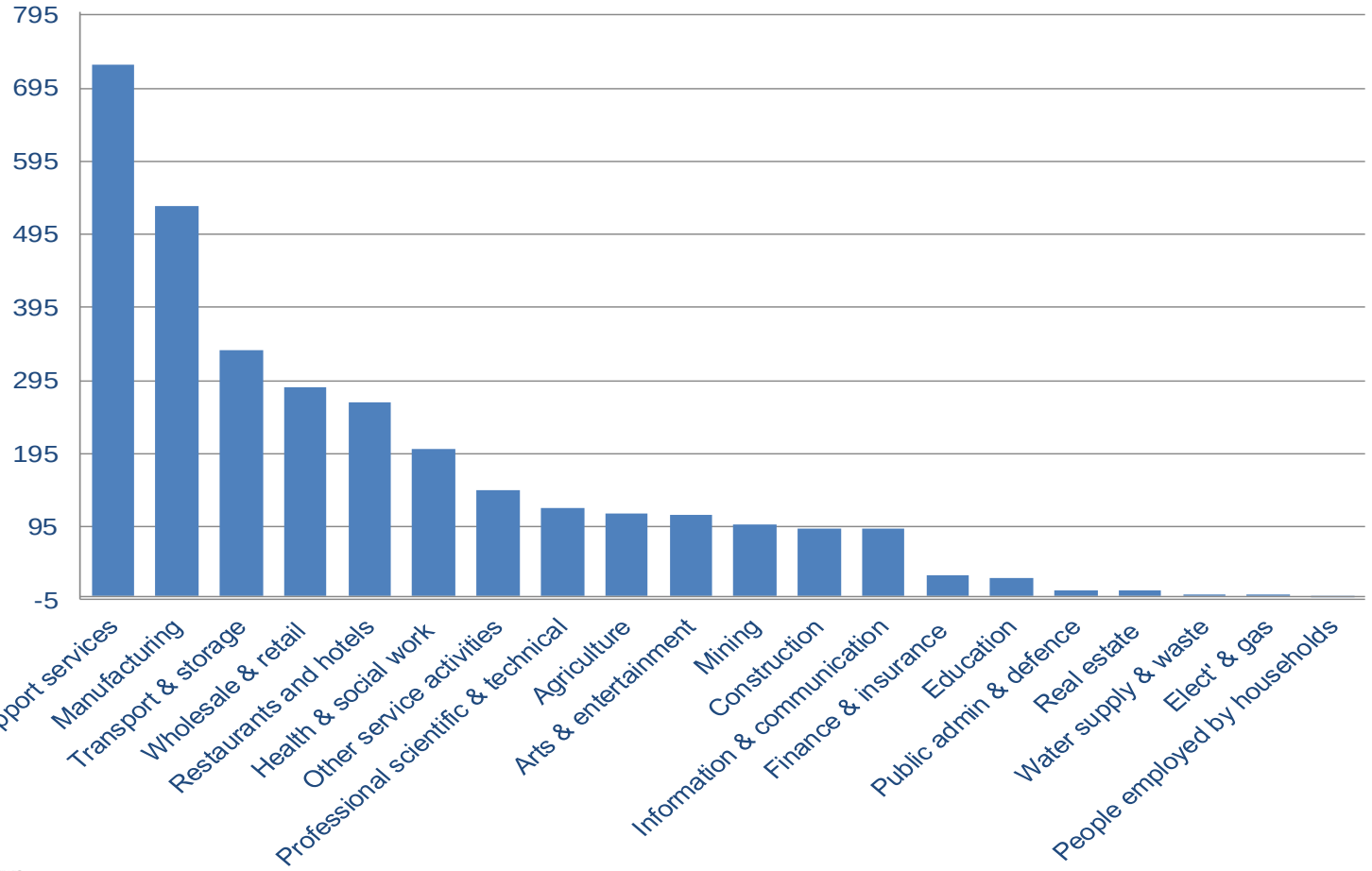
Source: EPC

Demand for quals below L2 (by industry)

Annual average skills NQF below L2 2016-26 (SIC 1 Digit)



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Source: EPC

Subject area demand by sector

Overview of the degree (or equiv) mix employed in each sector

The following charts provide an overview of the mix of degrees (or equivalent) recruited into each broad industry sector (1 digit SIC). This mix is used to inform the demand for degree subjects across the economy as a whole.

There is a strong link between some degree subjects and industry sectors e.g.:

- Agricultural Sciences is the largest degree subject in the agriculture sector;
- Engineering in mining, utilities, manufacturing and construction;
- Maths and Computing in Info & Communications; and
- Health and Education related subjects in the Health and Education sectors respectively.

In contrast Business & Finance degree subjects are significantly represented across most sectors, reflecting the demand for those skills across the economy. Arts graduates are also employed across a wide range of sectors.

From a sectoral perspective the Retail and Public Admin sectors recruit staff from a broad range of subject backgrounds.

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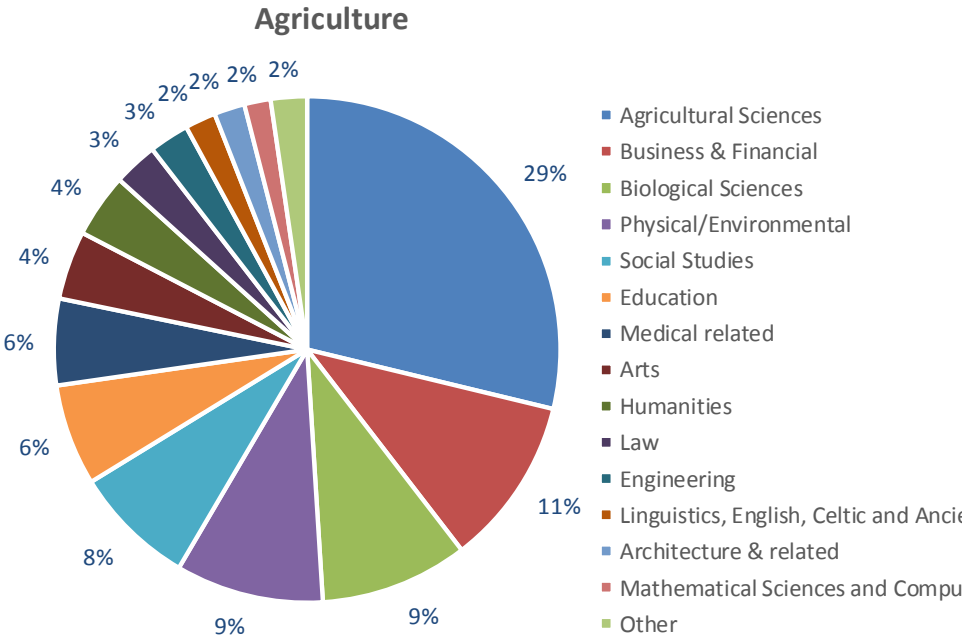
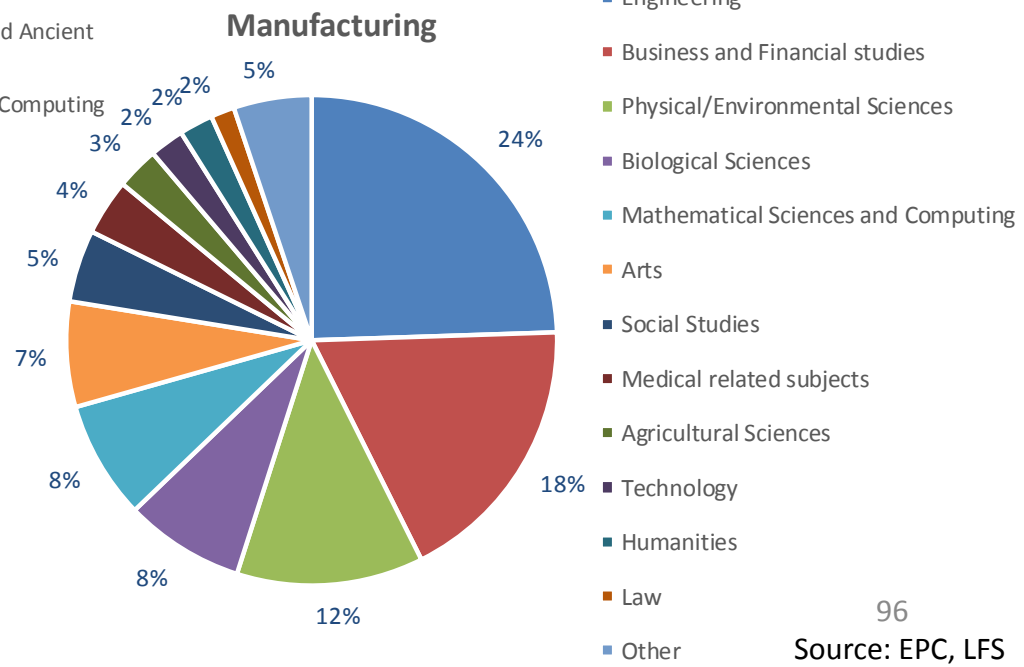
Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Agriculture include: Mass Communications and Documentation, Eastern, Asiatic, African, American, and Australasian Languages, literature, European Languages, Technology, Medicine and dentistry.



Other subjects in Manufacturing include: Linguistics, English, Celtic and Ancient, Education, Mass Communications and Documentation, Architecture and related studies, Medicine and dentistry, European Languages, Non-European languages

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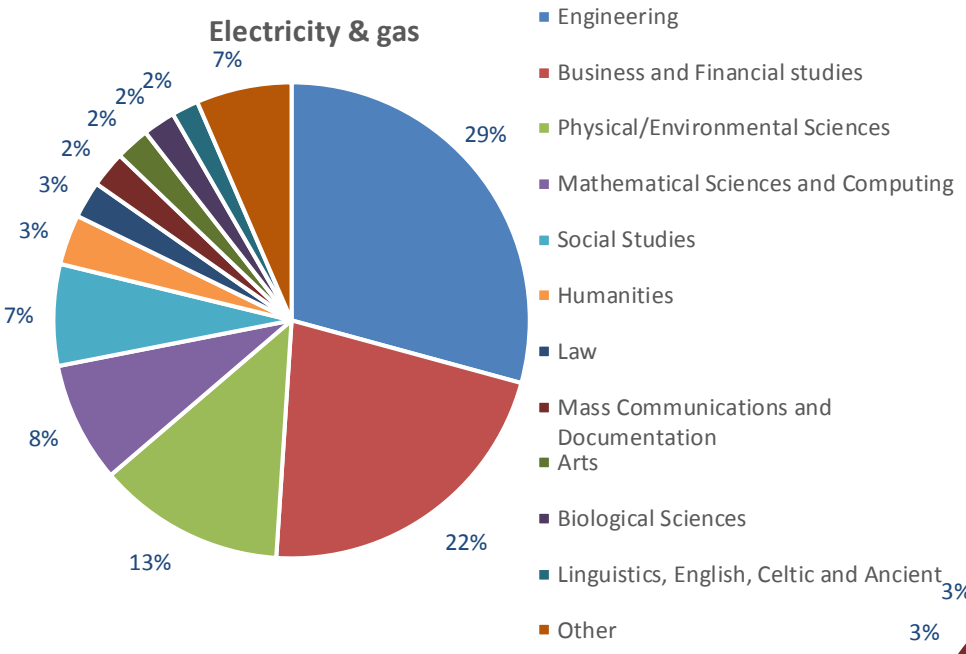
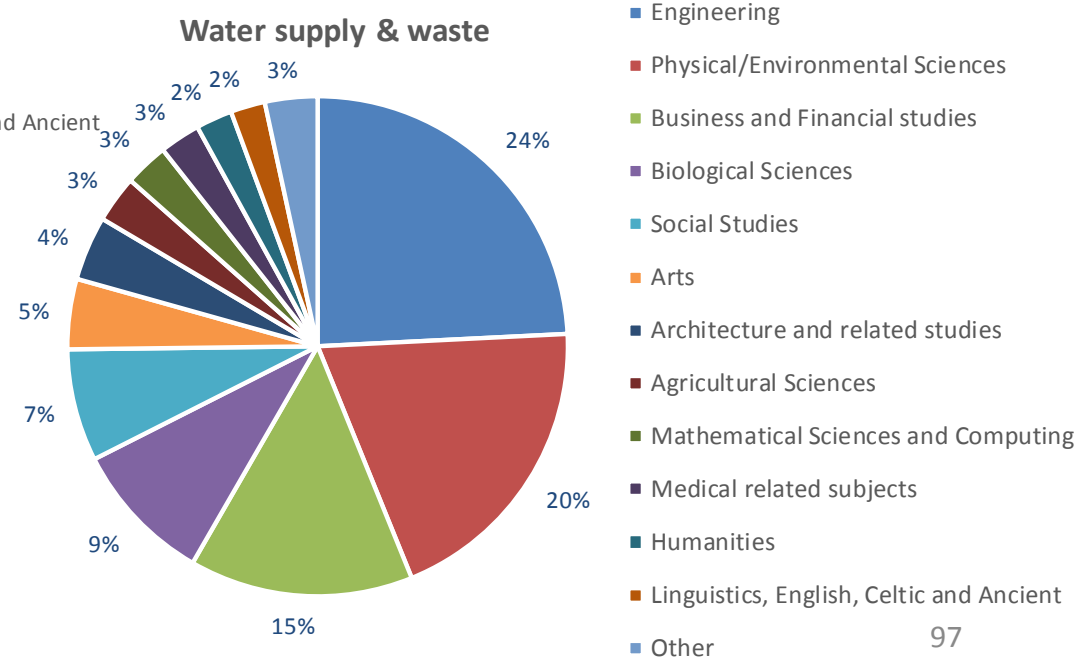
Source: EPC, LFS

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Electricity & gas includeArchitecture and related studies, Technology, Agricultural Sciences, Education, Medical related subjects, Medicine and dentistry, European Languages and Non-European languages



Other subjects in Water supply & waste include:Law, Education, Technology, Mass Communications and Documentation, European Languages, Medicine and dentistry and Non-European languages

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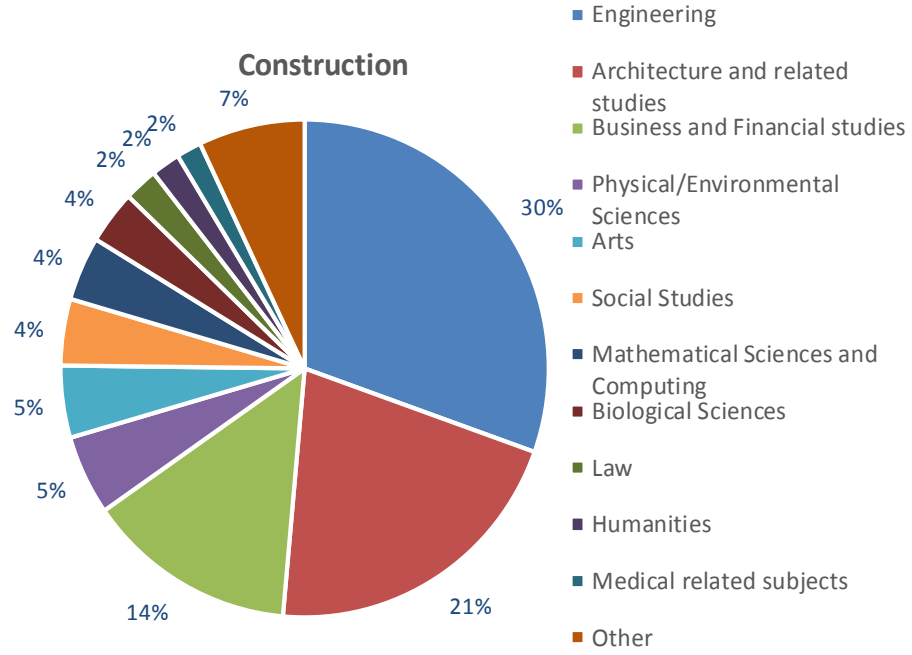
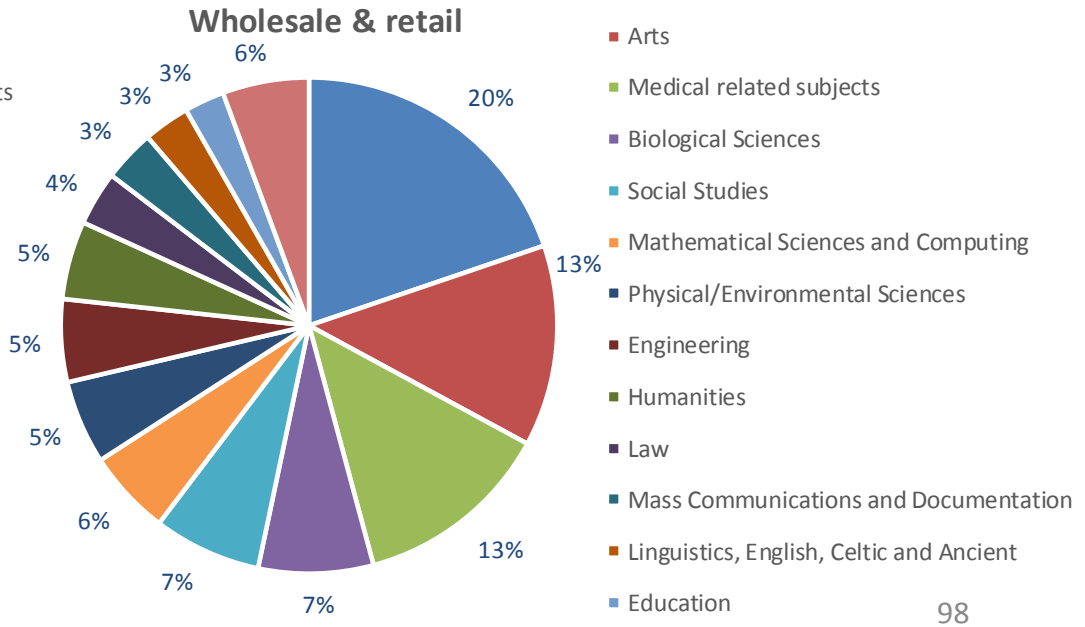
Source: EPC, LFS

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Construction include: Agricultural Sciences Education, Linguistics, English, Celtic and Ancient, Mass Communications and Documentation, Technology, European Languages, Medicine and dentistry and Non European languages



Other subjects in Wholesale & retail include: Technology, Agricultural Sciences, Architecture and related studies, European Languages, Non-European languages and Medicine and dentistry

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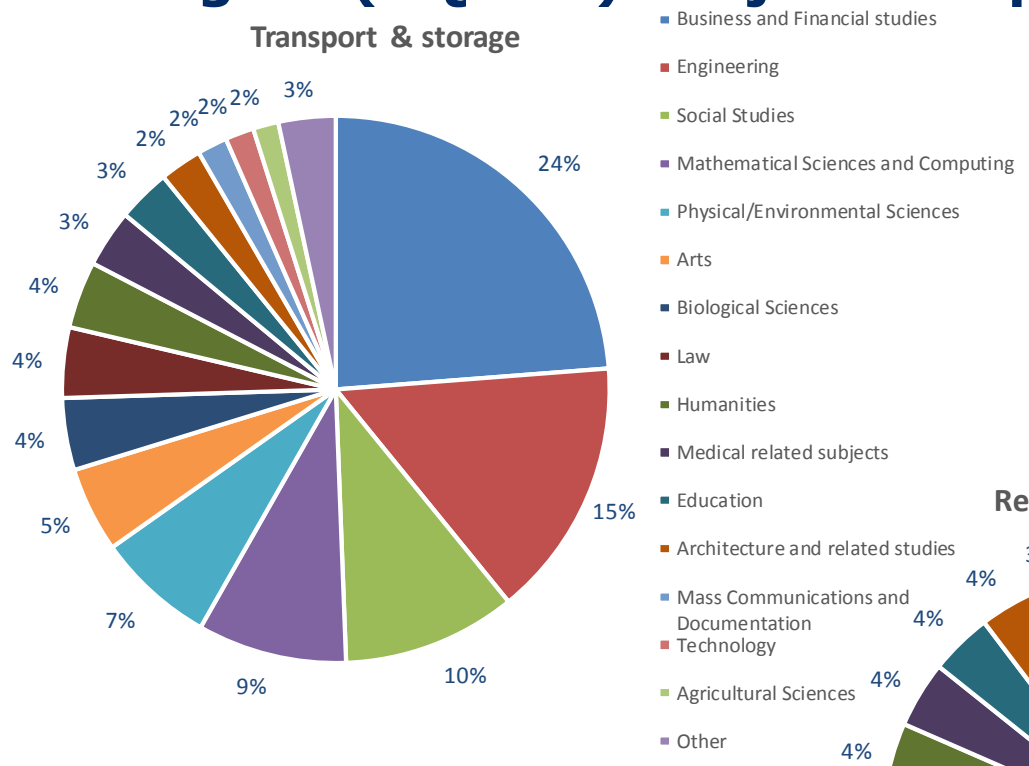
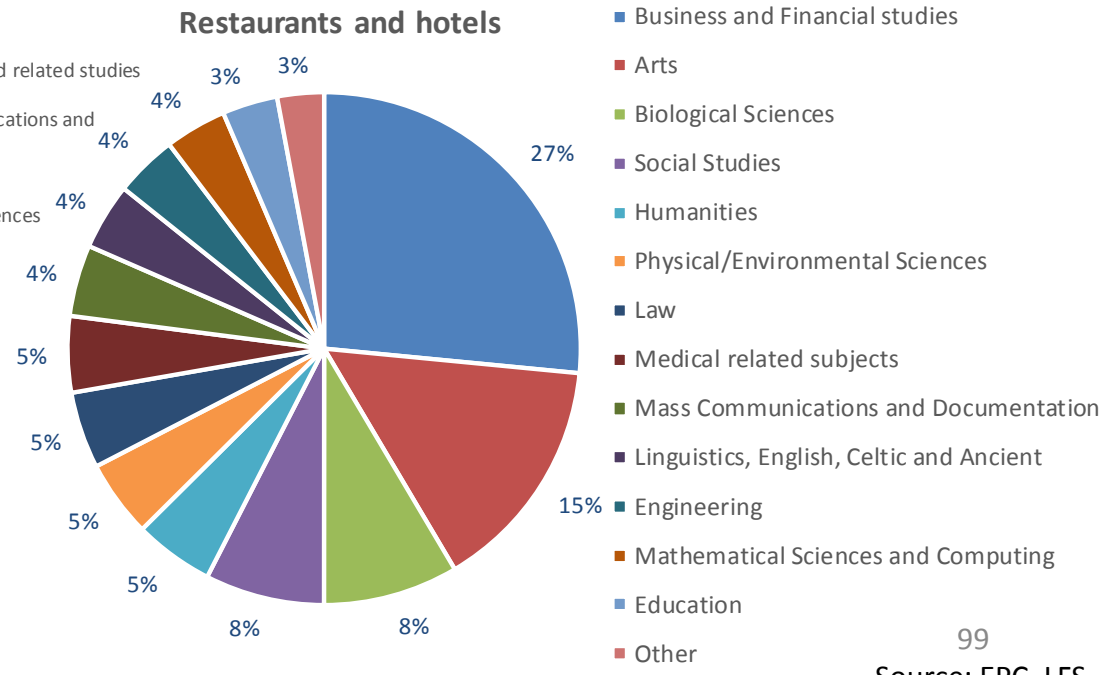
Source: EPC, LFS

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Transport & storage include: Linguistics, English, Celtic and Ancient, European Languages, Non-European languages, Medicine and dentistry



Other subjects in Restaurants and hotels include: European Languages, Technology, Eastern, Asiatic, African, American, and Australasian Languages, literature, Medicine and dentistry

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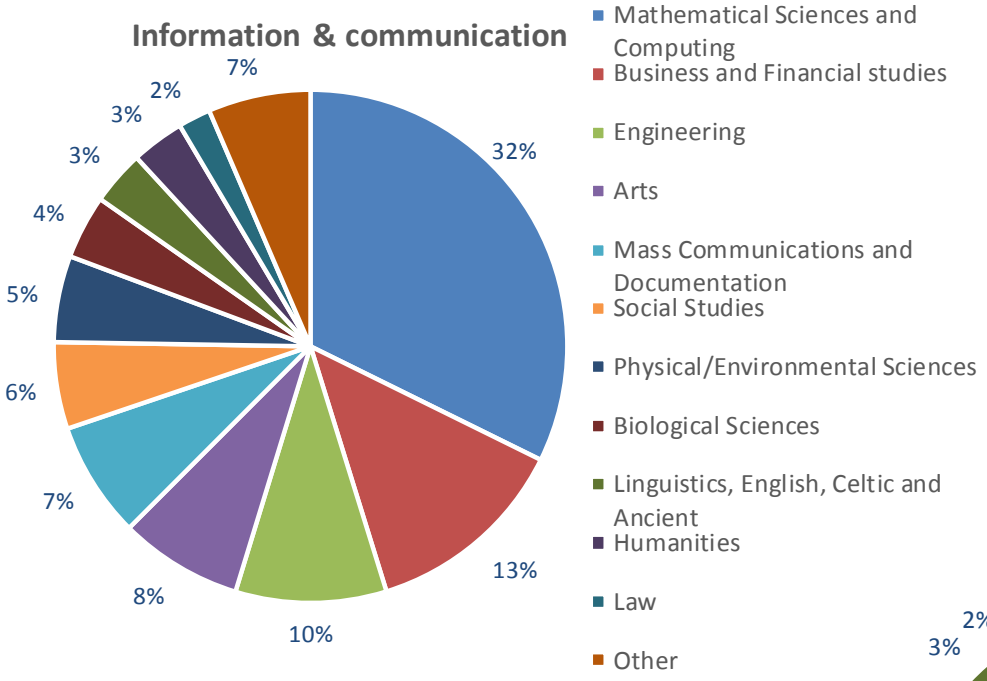
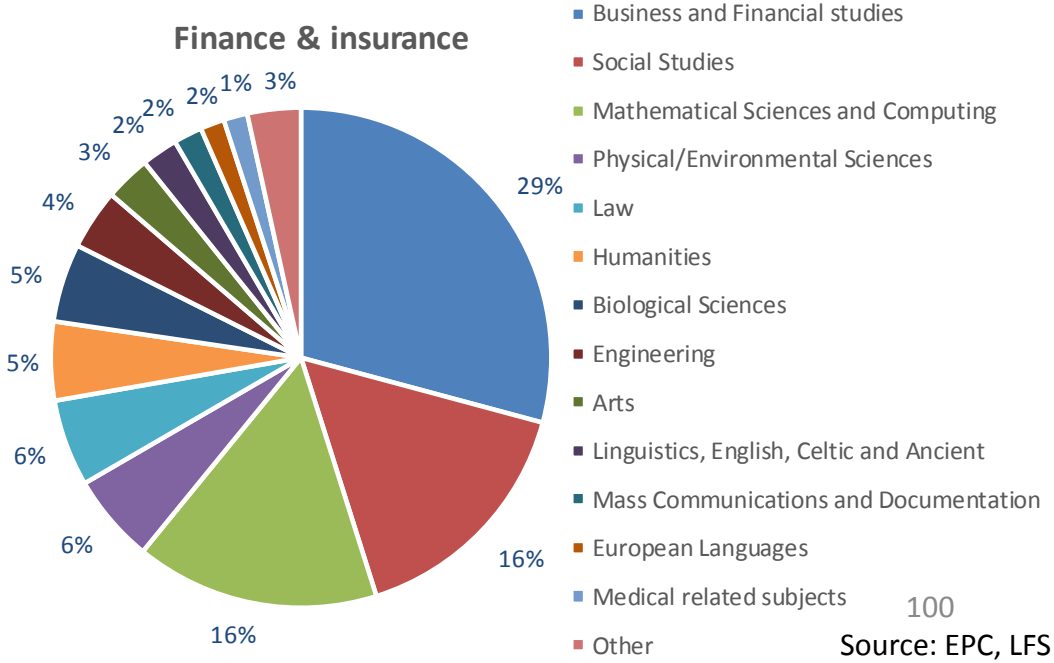
Source: EPC, LFS

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects In Information & communication include: Law, European Languages, Education, Technology, Architecture and related studies, Medical related subjects, Agricultural Sciences, Non-European languages and Medicine and dentistry.



Other subjects in Finance & insurance include: Agricultural Sciences, Education, Technology, Architecture and related studies, Non literature Medicine and dentistry

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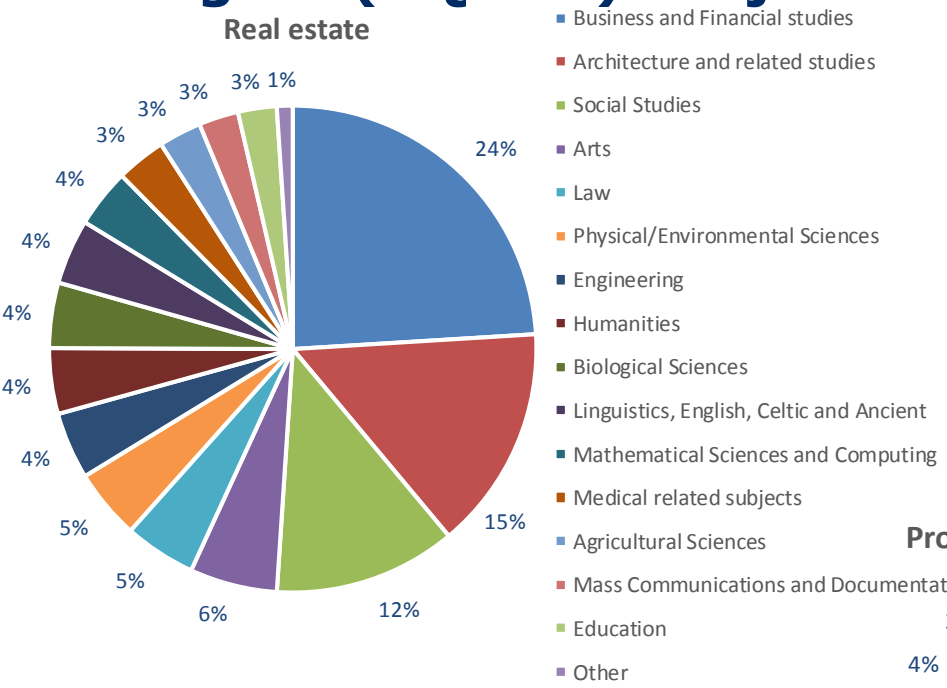
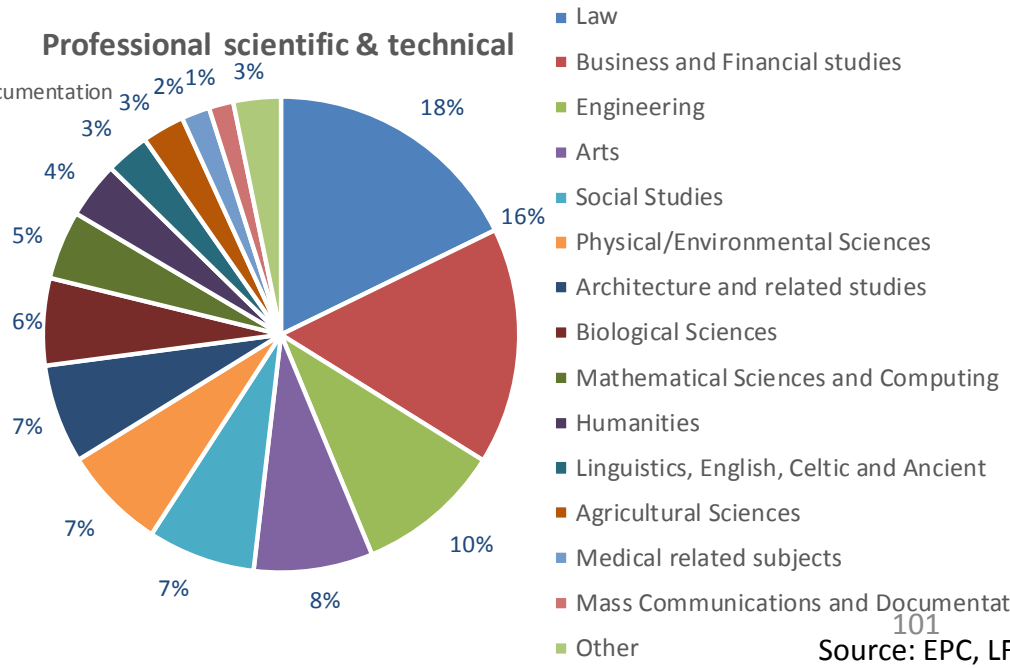
Source: EPC, LFS

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Real estate include: Technology Non-European languages, Medicine and dentistry, European Languages



Other subjects in Professional scientific & technical include: Education, European Languages, Technology, Medicine and dentistry, Non-European languages

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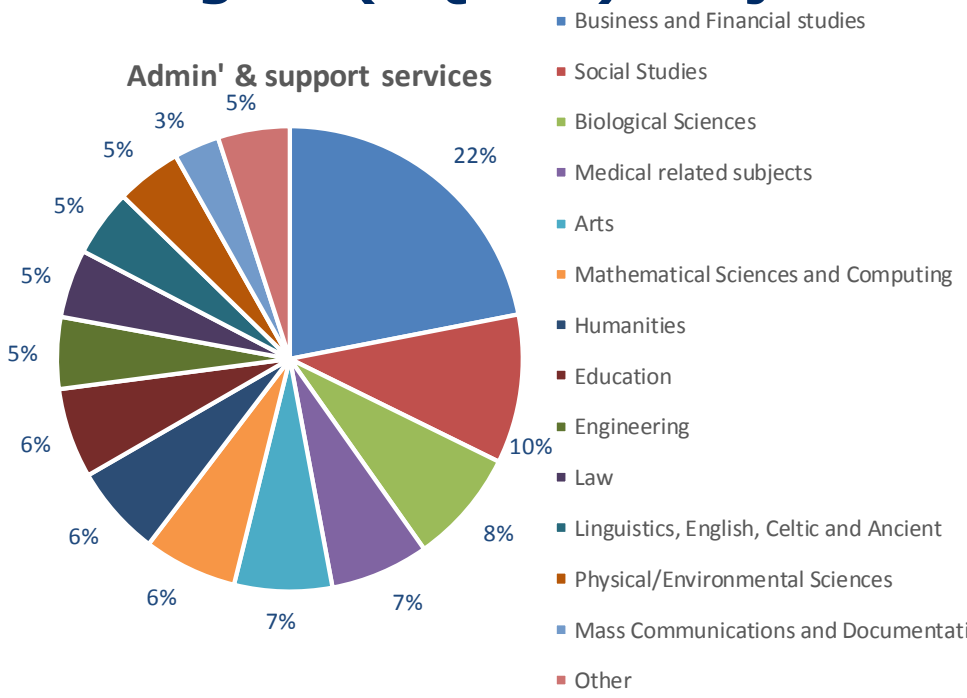
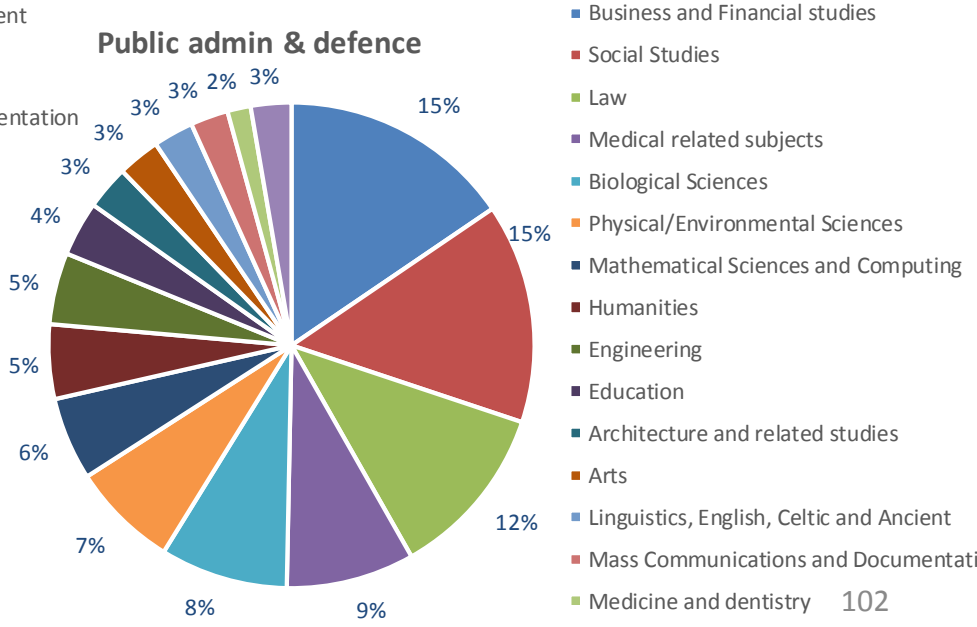
Source: EPC, LFS

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Admin' & support services include: European Languages, Architecture and related studies, Technology, Agricultural Sciences, Non-European languages and Medicine and dentistry.



Other subjects in Public admin & defence include: Agricultural sciences, European Languages, Technology, Non-European languages

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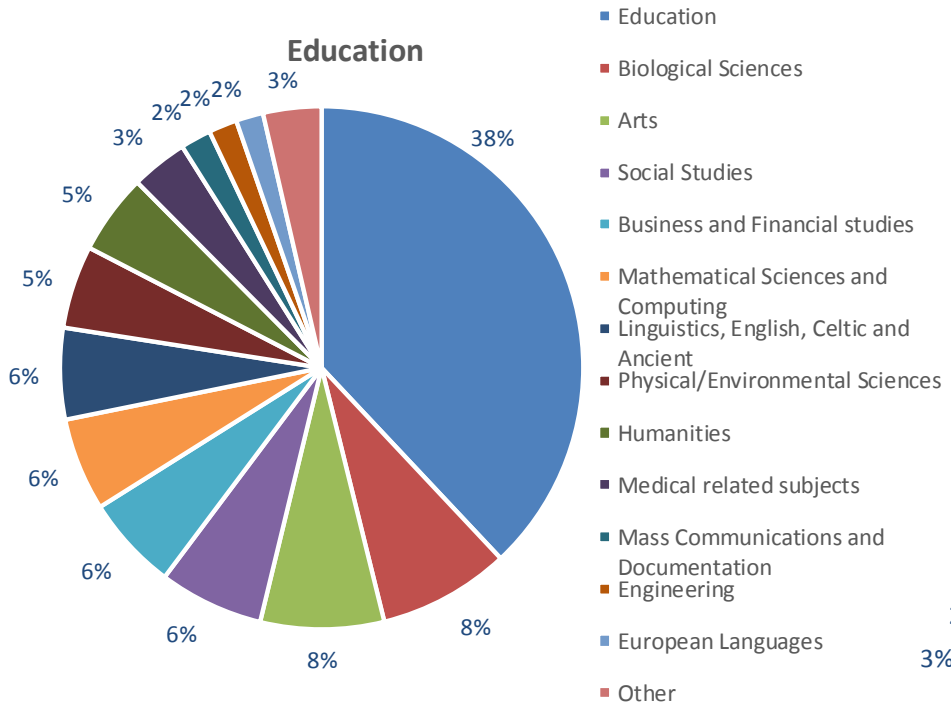
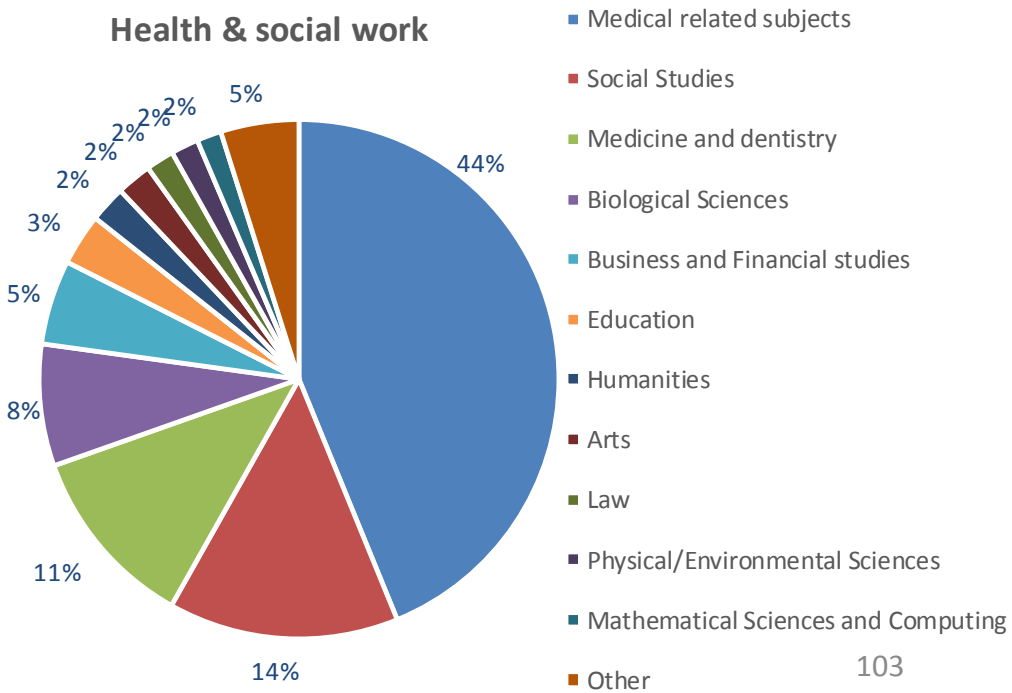
Source: EPC, LFS

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Education include: Law, Agricultural Sciences, Technology, Architecture and related studies, Medicine and dentistry and Non-European languages



Other subjects in Arts & entertainment include: European Languages, Technology, Non-European languages, Medicine and dentistry

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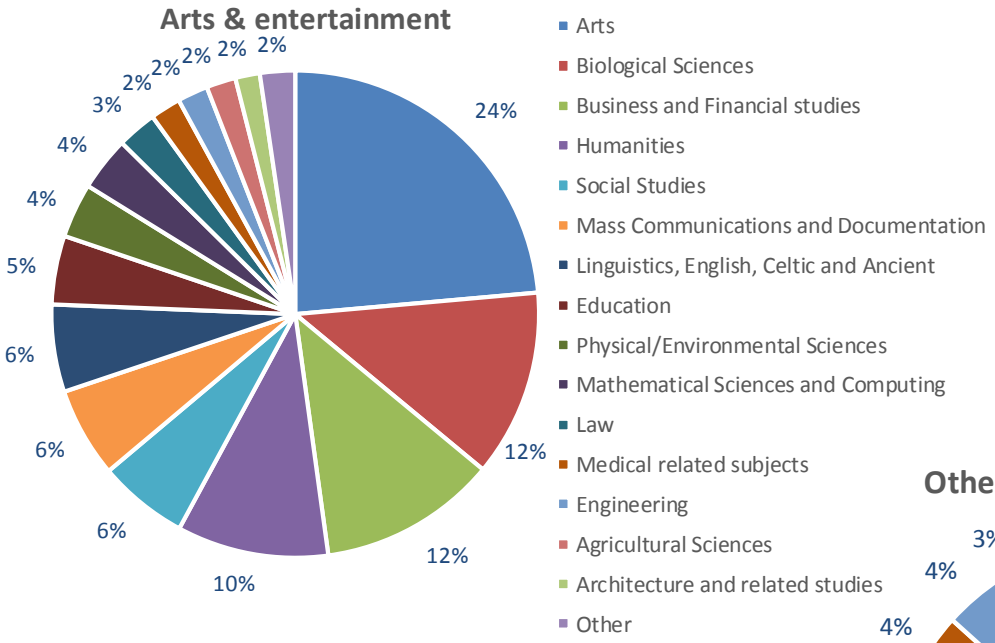
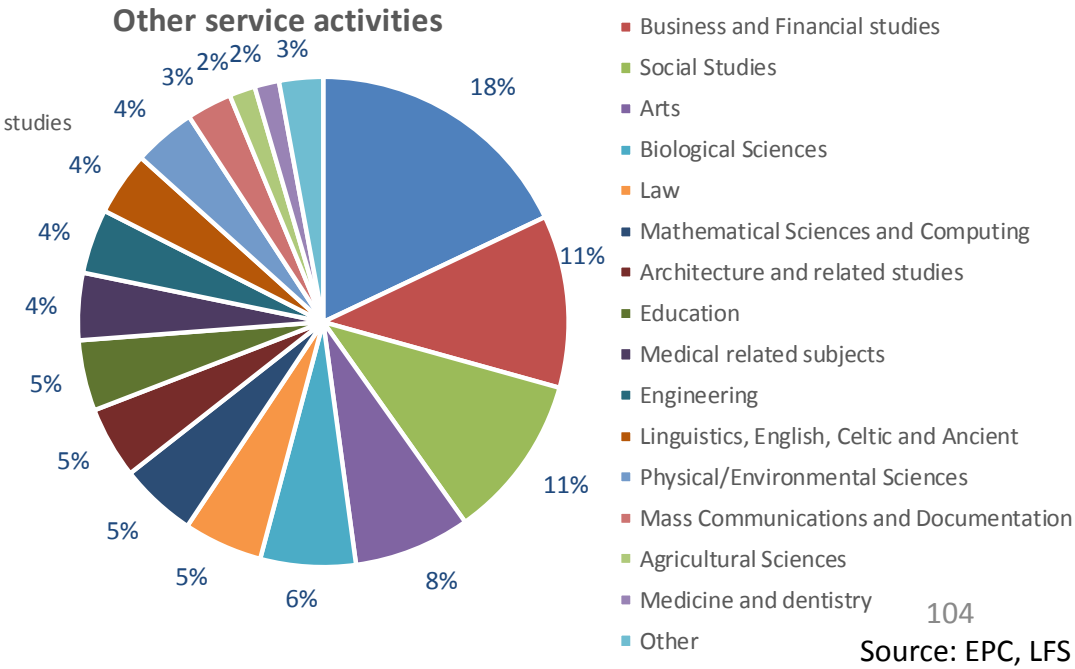
Source: EPC, LFS

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Health & social work include: Linguistics, English, Celtic and Ancient, Engineering, Mass Communications and Documentation Agricultural Sciences, European Languages, Architecture and related studies, Technology, Non-European languages



Other subjects in Other service activities include: European Languages Technology and Non-European languages

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Source: EPC, LFS

Supply of people and skills

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Supply of people and skills

This section sets out the following information:

Supply of people

- Current demographics by industry sector (by 1 digit SIC).
- Population demographics – analysis of the number of young people qualifying/ graduating from the education system over the next 10 years.

Supply of skills

- Analysis of the supply of skills/ degree subjects (by 1 digit JACS)

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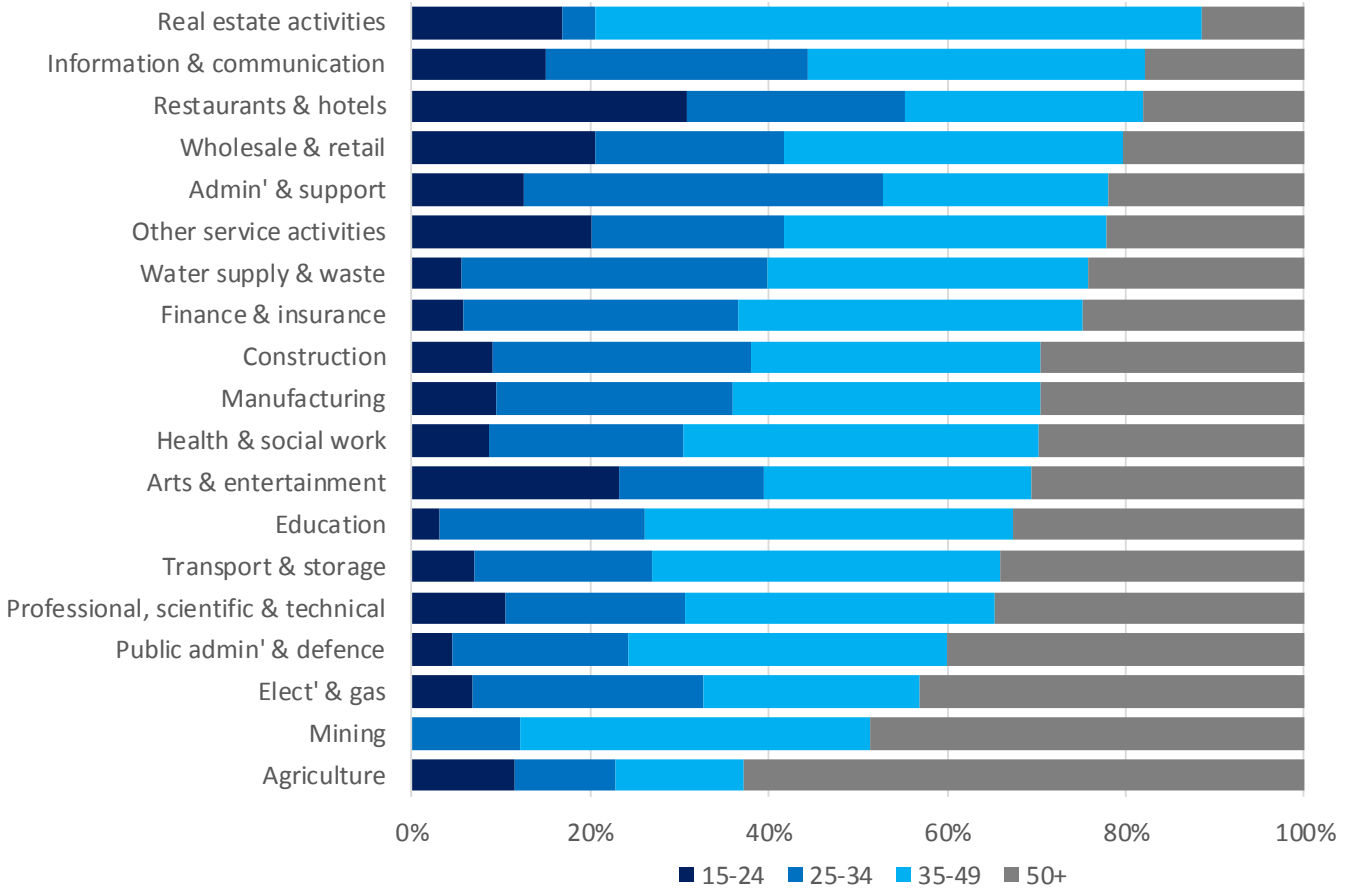
Supply of people

Current demographics 2016 by industry (SIC 1 Digit)



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Source: LFS

Supply of people

Current Demographics 2016 by industry (SIC 1 Digit)

The demographic profile of the workforce varies significantly across different sectors:

- Agriculture and the public sector (health and education) show high proportions of older workers.
  - In the private sector this will be reflected in higher levels of replacement demand, but in a funding constrained public sector, recruitment levels are likely to be much lower.
- However the rate of replacement will also vary across sectors and is not just driven by age profile:
  - The hospitality and retail sectors have a young demographic but also high levels of replacement demand. Typically, employees in these sectors have a greater tendency to move on to other sectors after a relatively short period of time.

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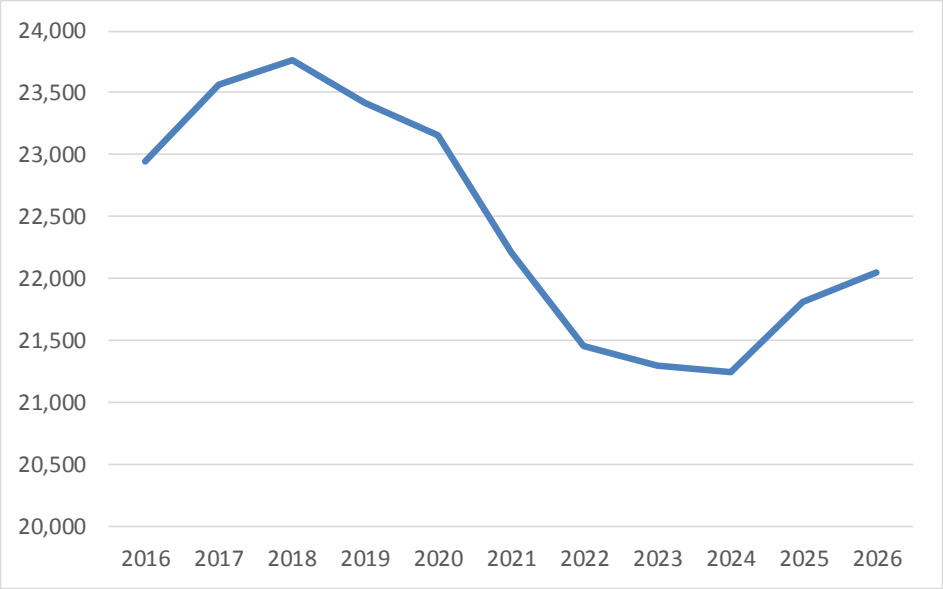
Supply of people

Population demographics – 21 year olds from 2016 to 2026



Source: NISRA

This chart shows a forecast 4% decrease in 21 year olds in the demographic profile of Northern Ireland over the next 10 years. However, the trend is expected to reverse towards the latter part of the coming 10 years.

The corresponding supply of skills/ qualifications at NQF L4-5 and L6+ reflects this demographic picture. The Skills Barometer forecasts a minor reduction in L4-5 qualifications and a broadly flat L6 and above supply.

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Supply of skills

The supply forecast is based on the current levels of supply from education institutions amended to take account of the changing demographics. It does not assume a change in policy, therefore highlighting areas where under or over supply could become an issue.

The supply estimate also considers the supply adjustment and other factors and so a number of supply estimates are calculated:

- **Gross Supply** – the number of qualifiers produced by NI institutions.
- **Net Supply** – this includes all students educated in NI institutions *plus* an estimate of NI students returning from education outside NI *minus* students educated in NI who then leave *minus* students who remain in education.
- **Effective Supply** – effective supply is calculated on the Net Supply but includes a supply adjustment*. The adjustment factor is applied across both FE and HE.

* See overleaf for further information on the 'supply adjustment'.

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Supply of people and skills

- **Supply adjustment** – consultations undertaken during the initial Skills Barometer research highlighted a need to make a supply adjustment which reduces the supply of graduates/ qualifiers at HE and FE. This adjustment recognises that some graduates and other qualifiers require additional skills development before they would be capable of taking employment opportunities at a grade for which they are qualified.
- The impact of the supply adjustment increases the under-supply of skills in some subject areas and reduces the over-supply in other subject areas.

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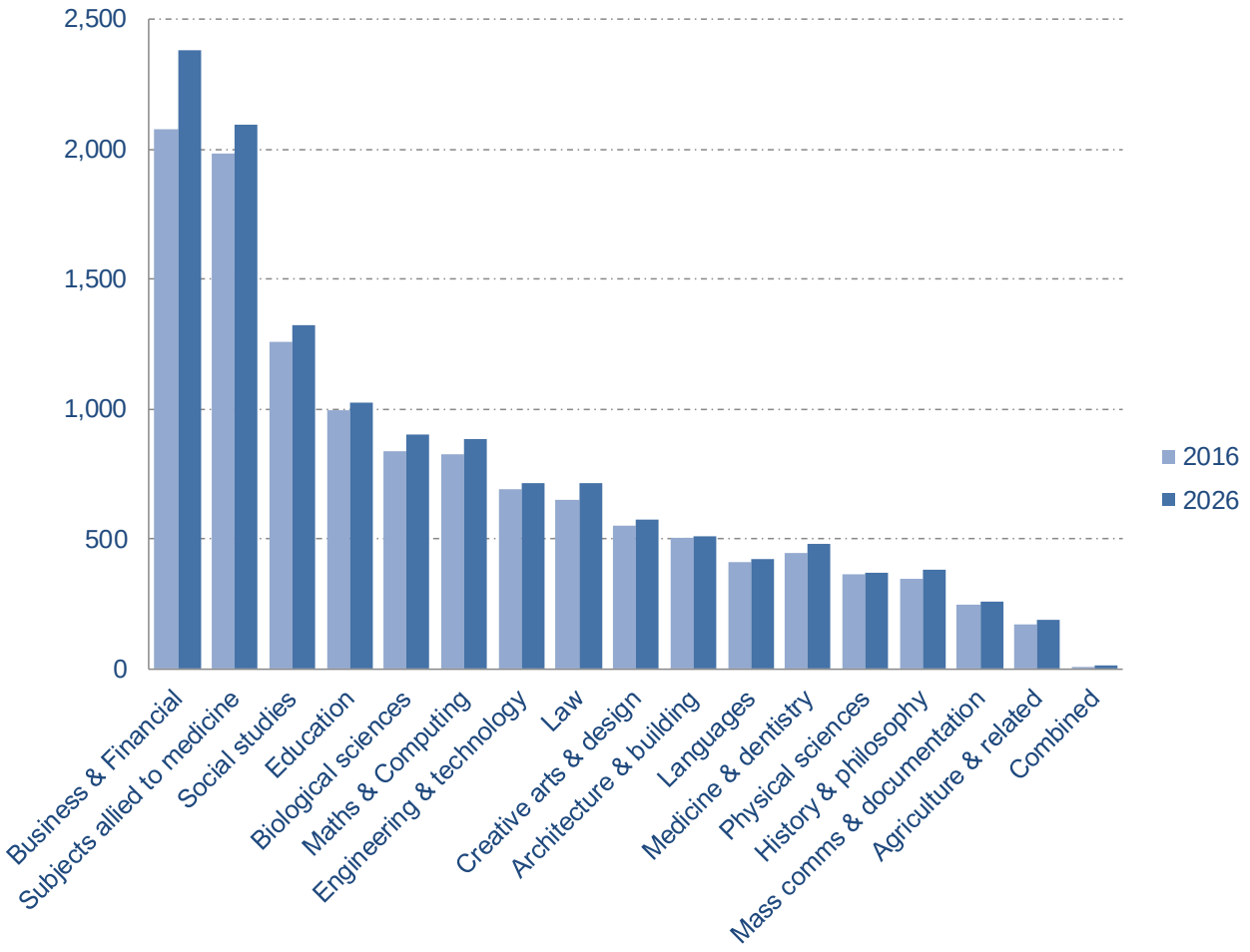
Supply of skills

Gross supply of skills NQF L6+ (JACS 1 digit)



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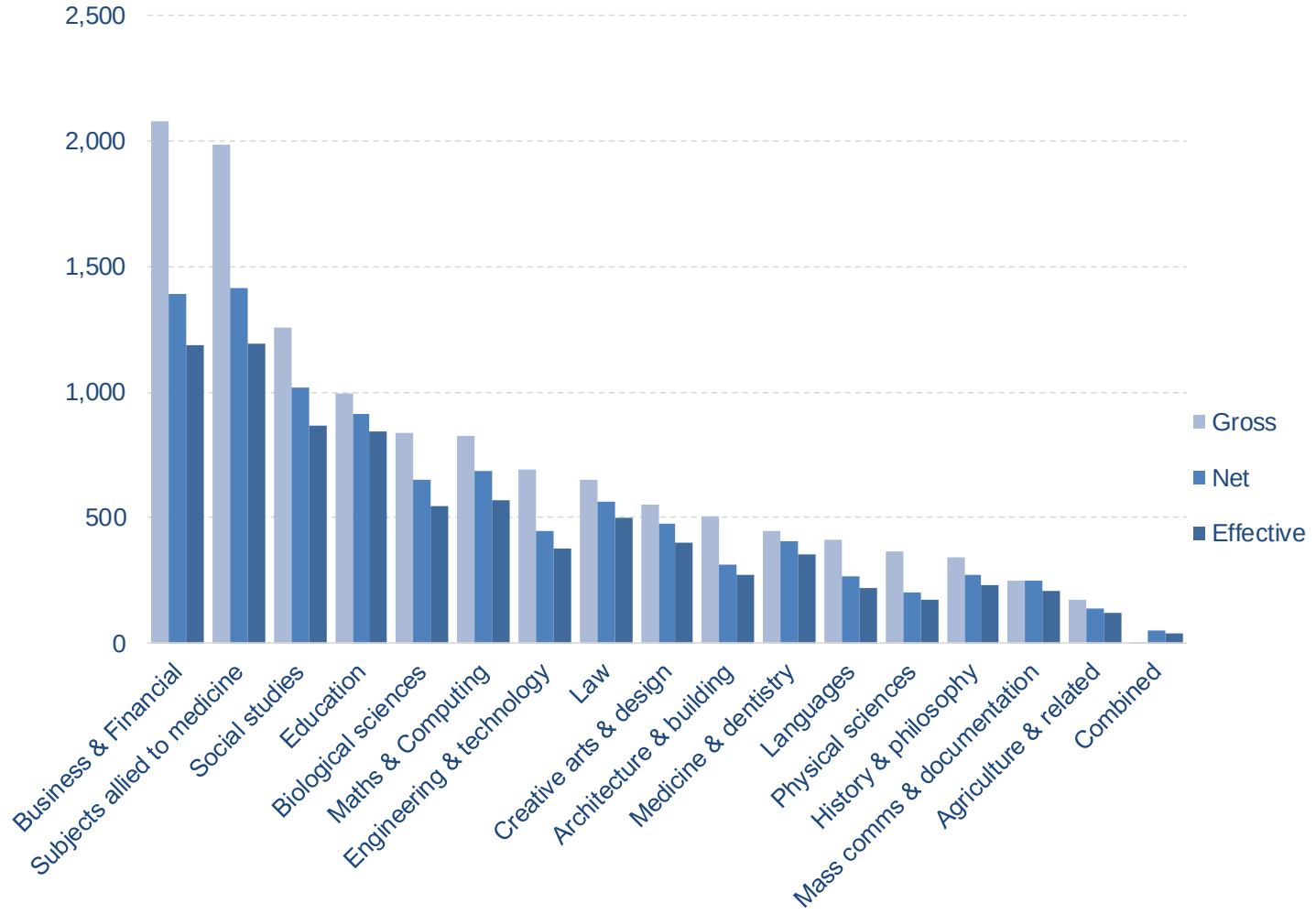
Source: EPC, HESA, DEL

Supply of skills

Gross, net and effective supply of Skills NQF L6+ (JACS 1 digit)

(Based on 2016 supply)



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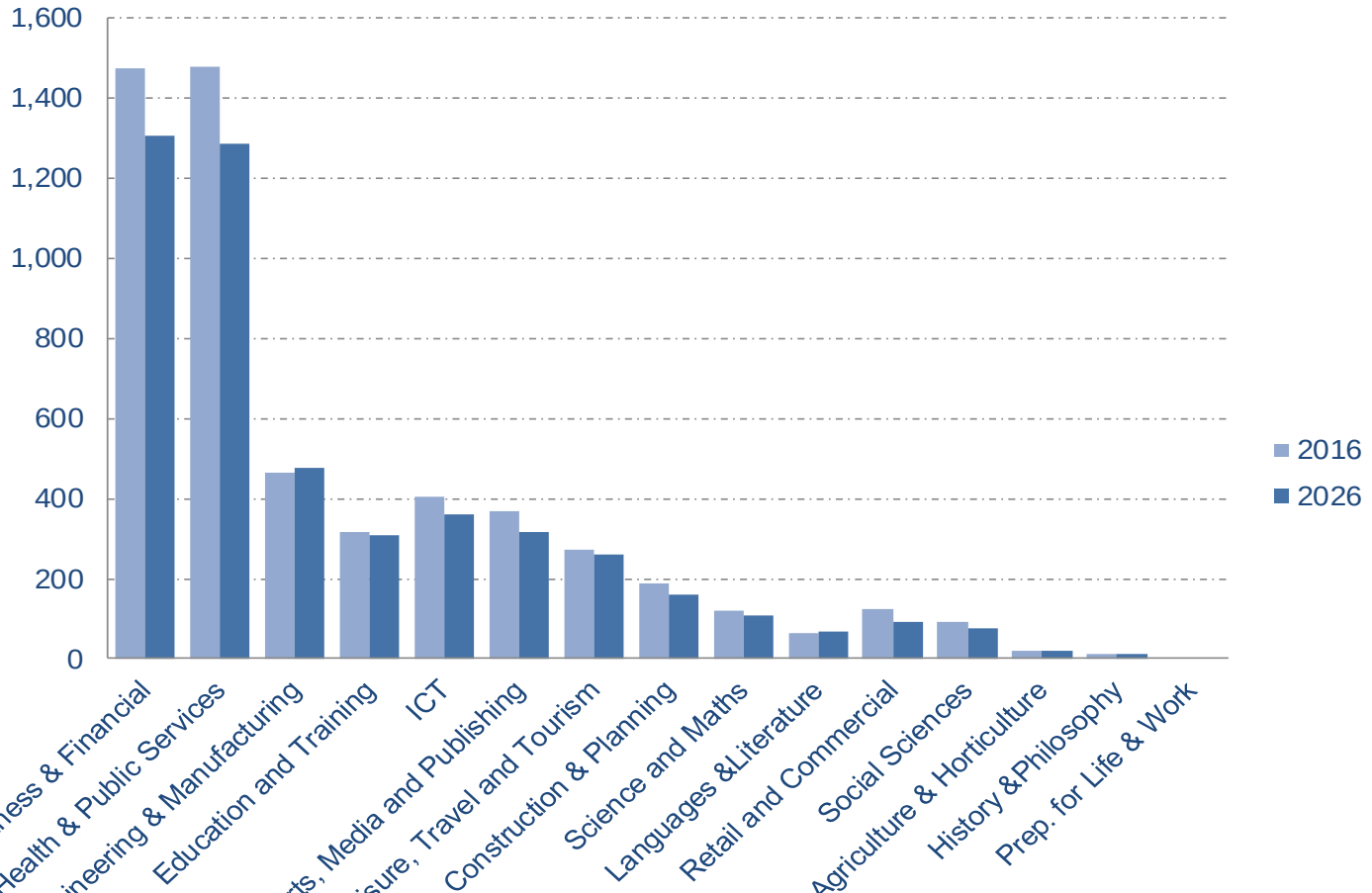
Source: EPC, HESA, DEL

Supply of skills

Gross supply of skills NQF L4-5 (JACS 1 digit)



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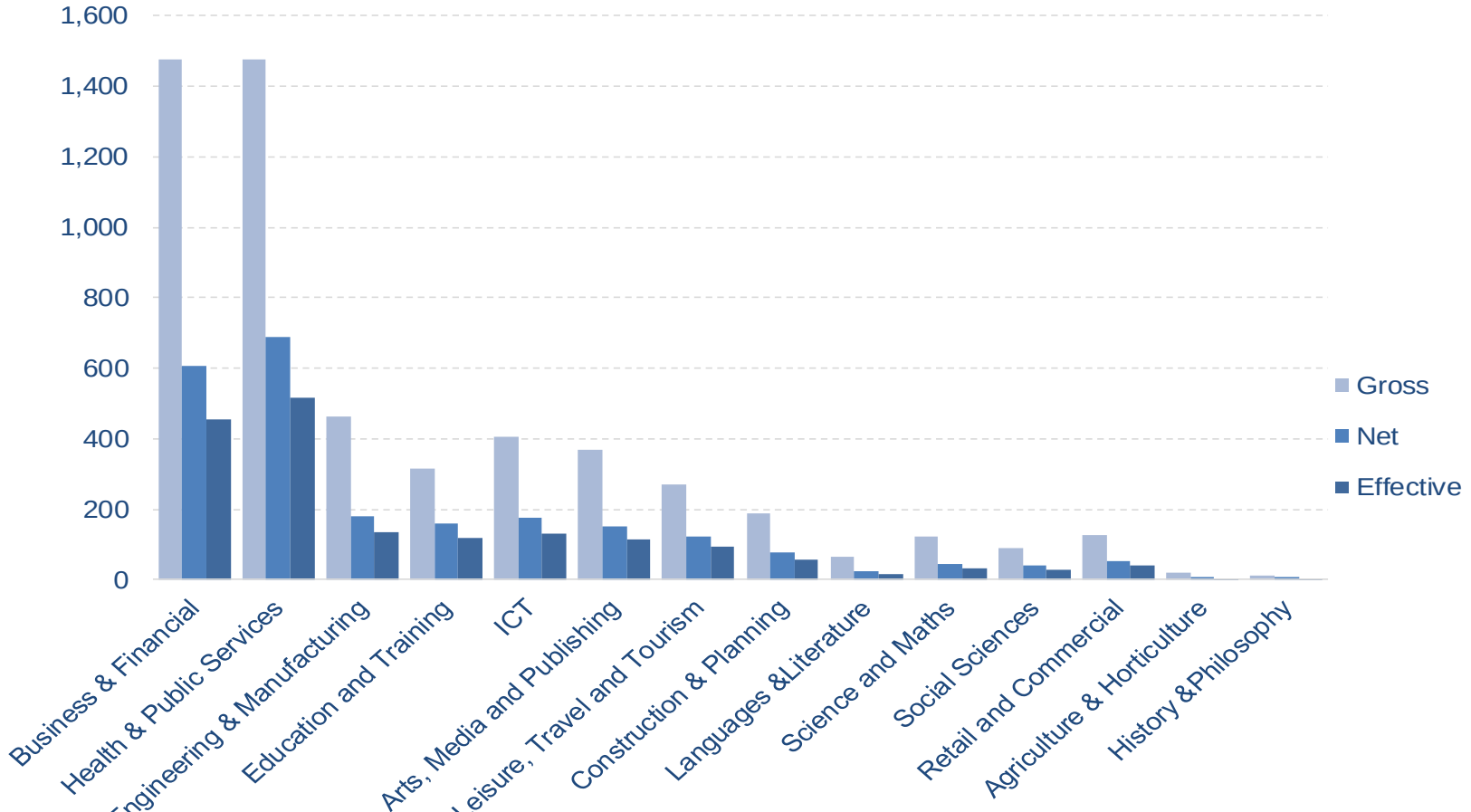
Source: EPC, HESA, DEL

Supply of skills

Gross, net and effective supply of skills NQF L4-5 (SSA 1 digit)

(Based on 2016 supply)



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Source: EPC, HESA, DEL

Supply of skills

- The difference between Gross and Net supply is explained as follows:
  - **Migration flows:** A number of students qualifying from NI institutions will leave NI to live and work elsewhere. This trend has increased in recent years as the number of international students has increased. Similarly, there are a number of NI domiciled students qualifying from institutions outside NI who return upon graduating. Net supply takes account of these migration flows.
  - **Labour market participation:** Students are only counted as part of the net supply if they leave the education institution to actively participate in the labour market (i.e. classified as either employed or unemployed after six months). Many students tend to progress to further study.
- Within FE the difference between Gross and Net is much more significant overall as greater proportions of FE students choose to continue in education than would occur in HE.
- The supply adjustment further exacerbates the skills shortage problems. This additional reduction in supply has not been considered in previous skills forecast work but is an important element in understanding the skills challenges faced by local employers.

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Careers information

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Careers information

This section sets out the following information:

- Average earnings by level of education
- Employment prospects by level of education
- Prospects by degree subject
- Where are skilled people employed?
- The importance of employability skills
- Destination of graduates 6 months after graduation

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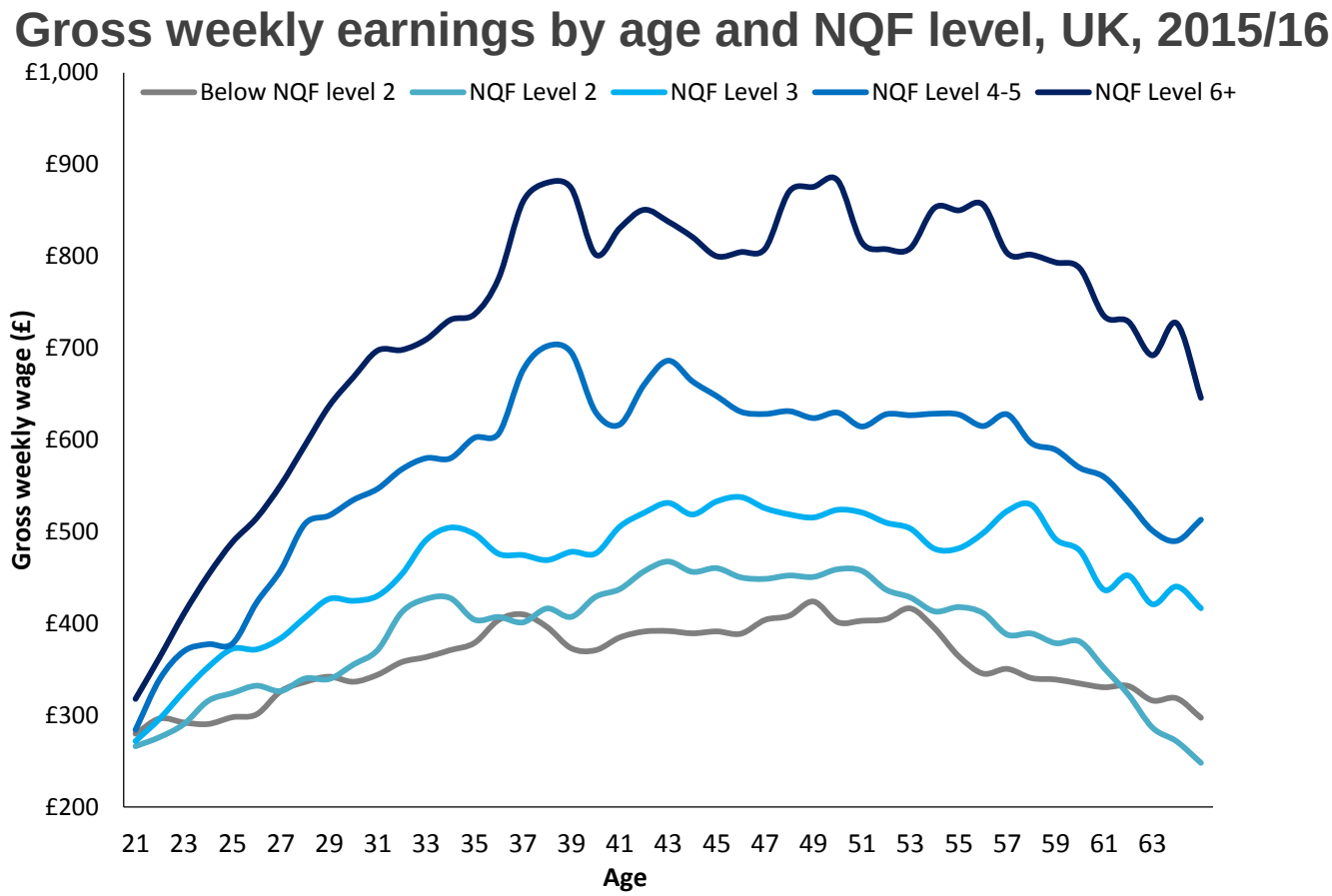
Average earnings by level of education



Source: Labour Force Survey, UUEPC analysis

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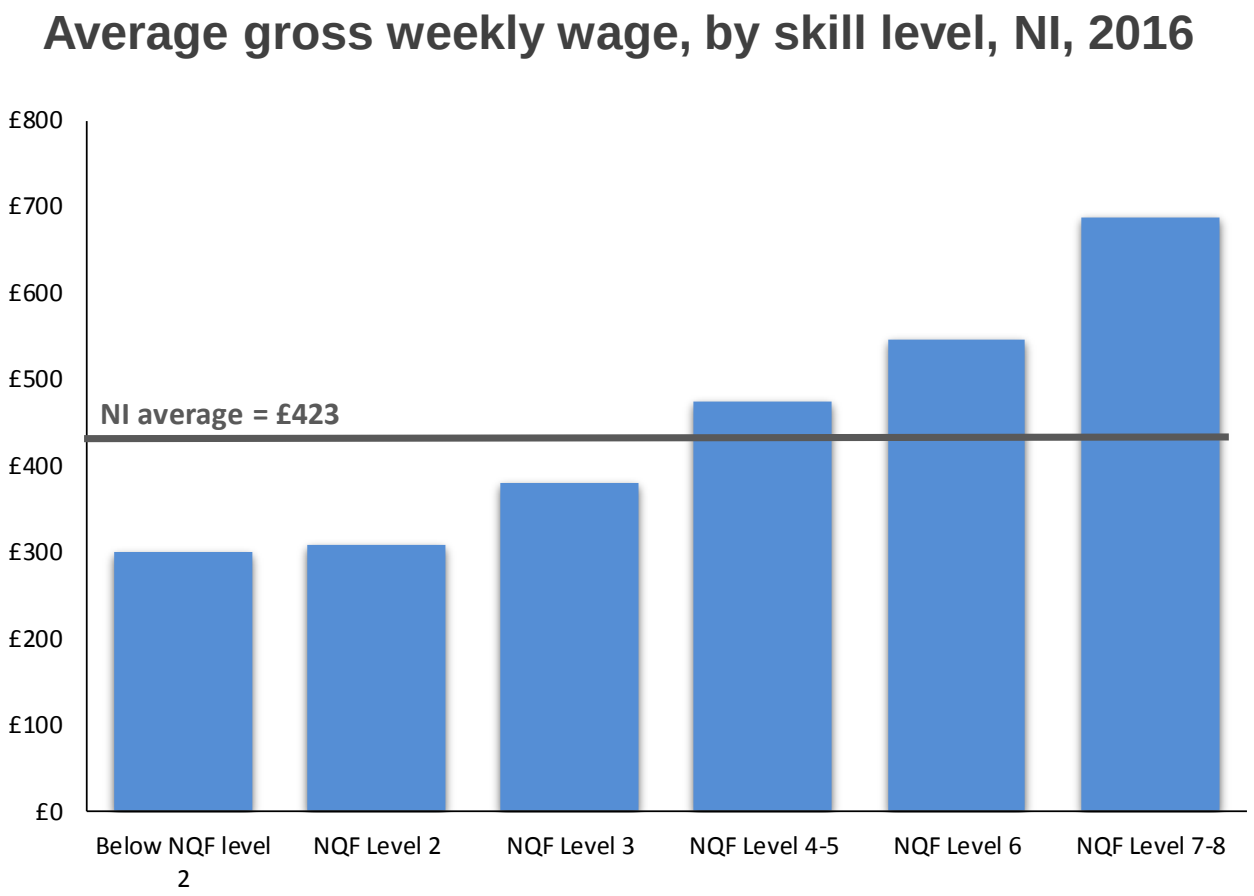
Average earnings by level of education



Source: LFS

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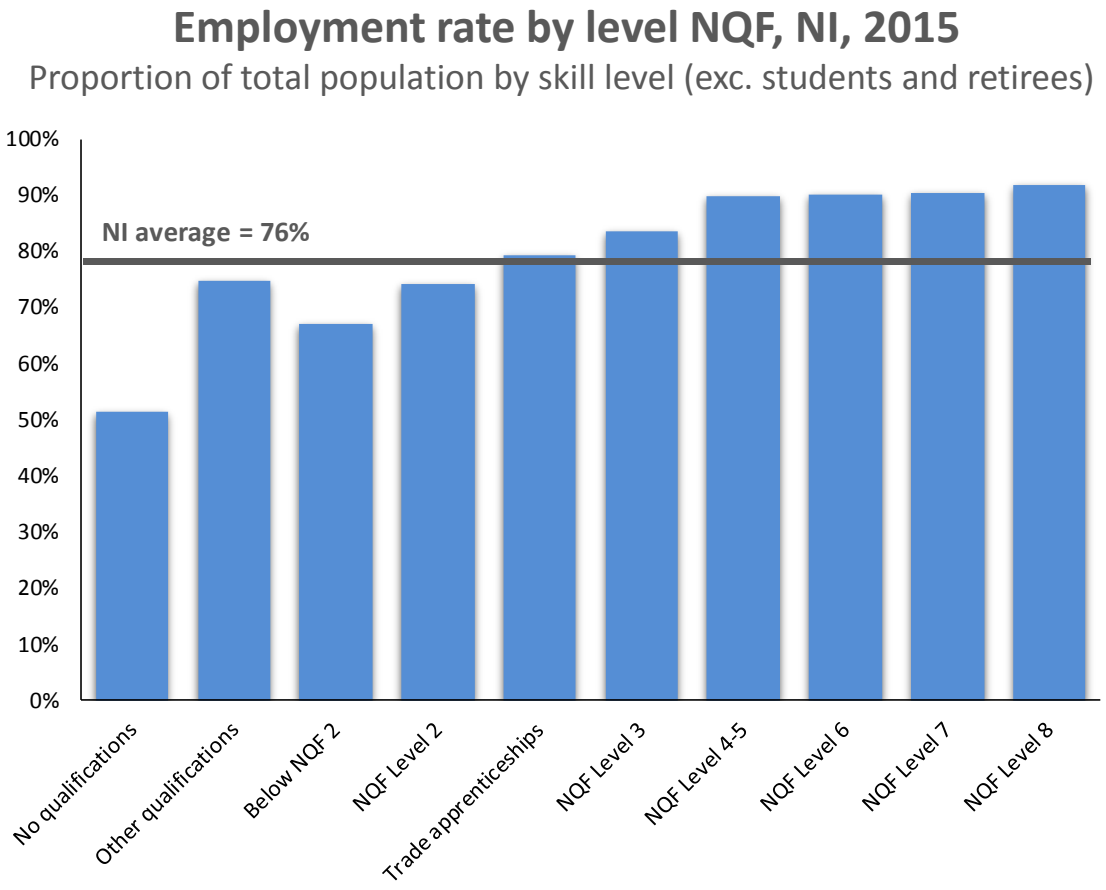
Employment prospects by level of education



Source: LFS

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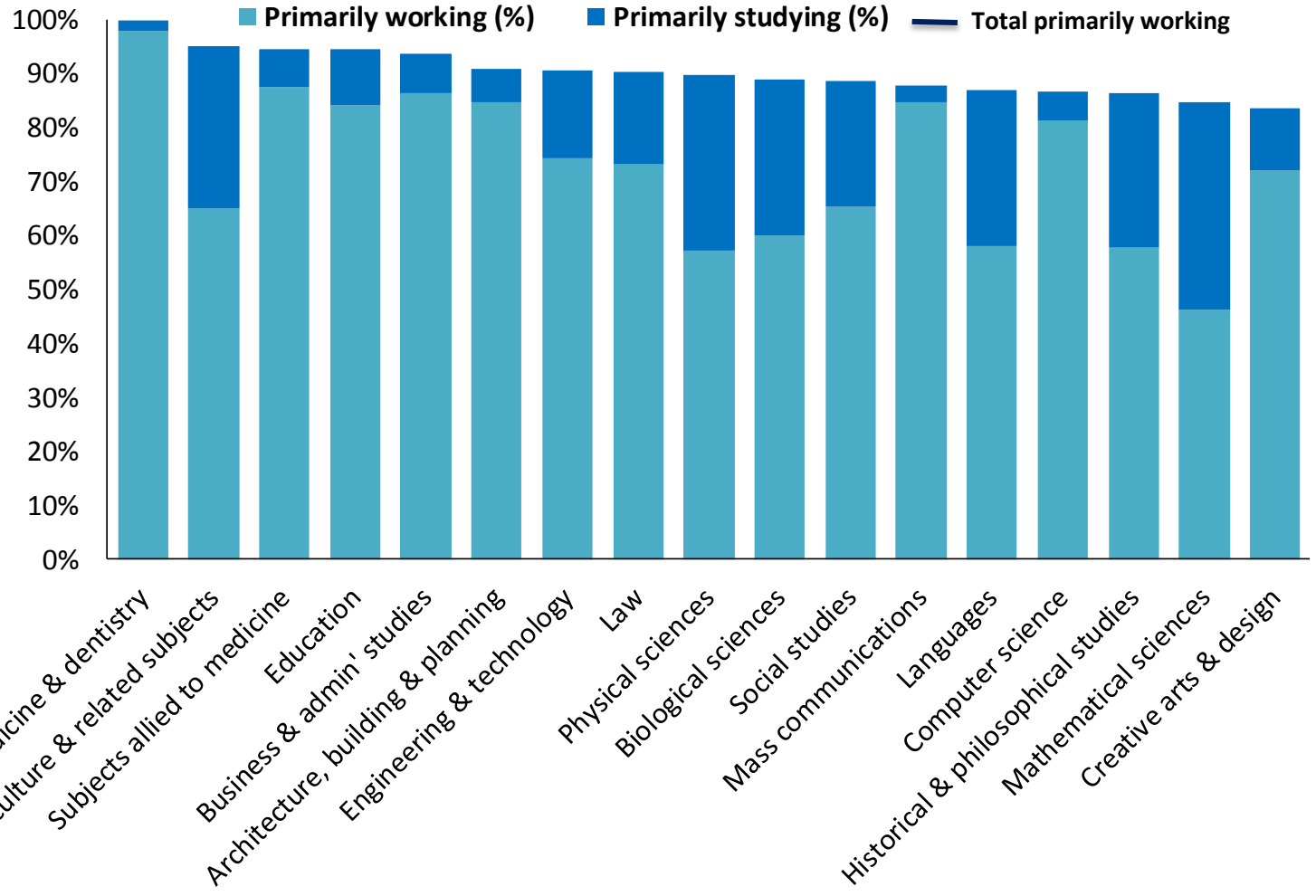
Prospects by degree subject
(6 months after graduation)

CP



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Source: HESA

NB: HESA data refers to graduates from NI HEI's based on 2014/15

Employment earnings and prospects

- The evidence strongly suggests that the higher the level of qualification, the higher the earnings potential and employment prospects. A fundamental message to young people (and the wider labour market) is the importance of continuing employment to tertiary level (either FE or HE).
- This HE data shows employment prospects after 6 months for individual subjects. This is an imperfect measure because it does necessarily reflect graduate level employment and 6 months is often too soon for recent graduates to move into the labour market (many choose to travel) and this underestimates the final percentage that find employment but nonetheless it shows that not all degrees are the same:
  - STEM related subjects tend to have higher employment prospects (reflecting the shortage of skills in those subject areas);
  - Mathematical subjects have lower employment outcomes after 6 months because a significant proportion stay in education to study for NQF L7 and L8.
  - Computer science employment outcomes are lower than expected given the scale of undersupply forecast. However this may reflect the quality issue raised by some employers in the sector.

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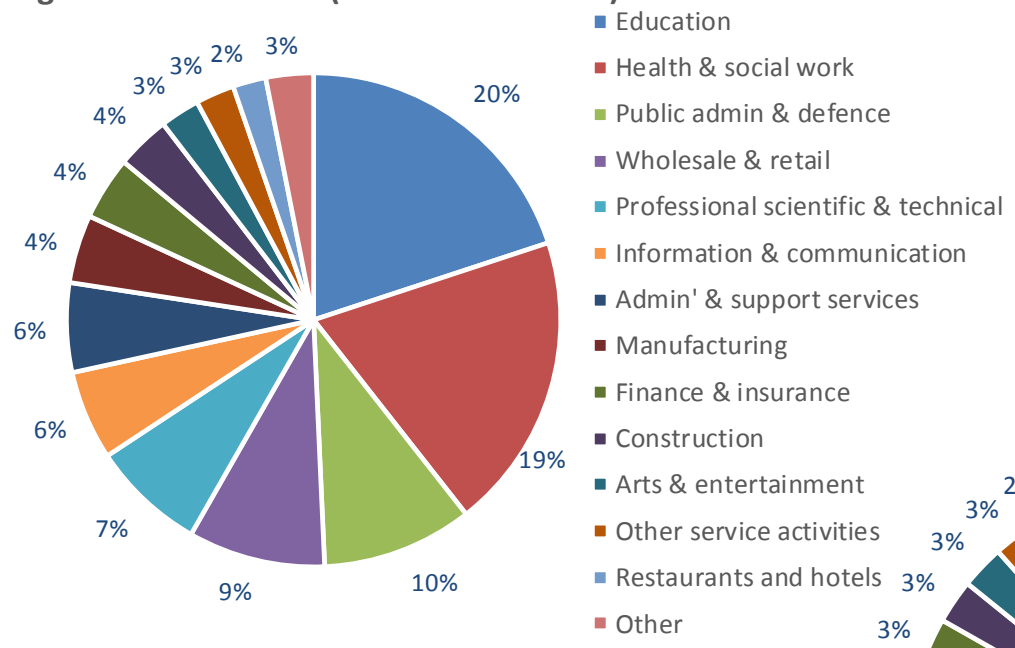
Where are skilled people employed?

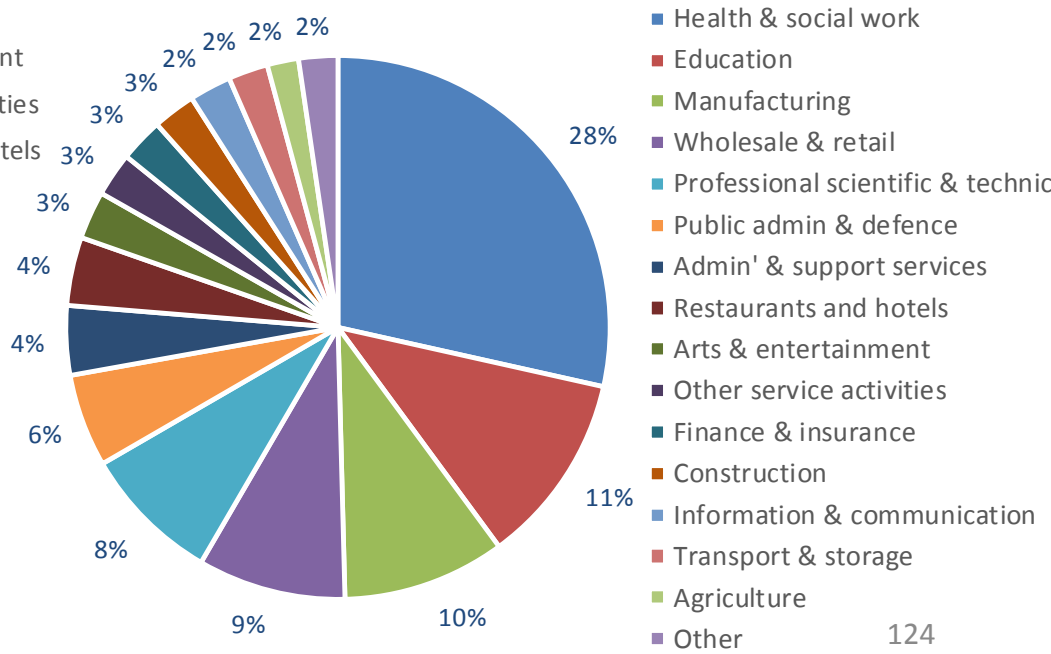
Where do high (L6+) and medium skilled (L4-5) people work?

High level skills stock (Level 6 and above)



Other sectors in High level skills include: Real estate, Water supply & waste, Mining, People employed by households, Elect' & gas, transport and agriculture

Sub-degree level skills stock (Level 4 and 5)



Other sectors in Sub-degree level skills include: Real estate, Water supply & waste, Mining, Elect' & gas and People employed by households.

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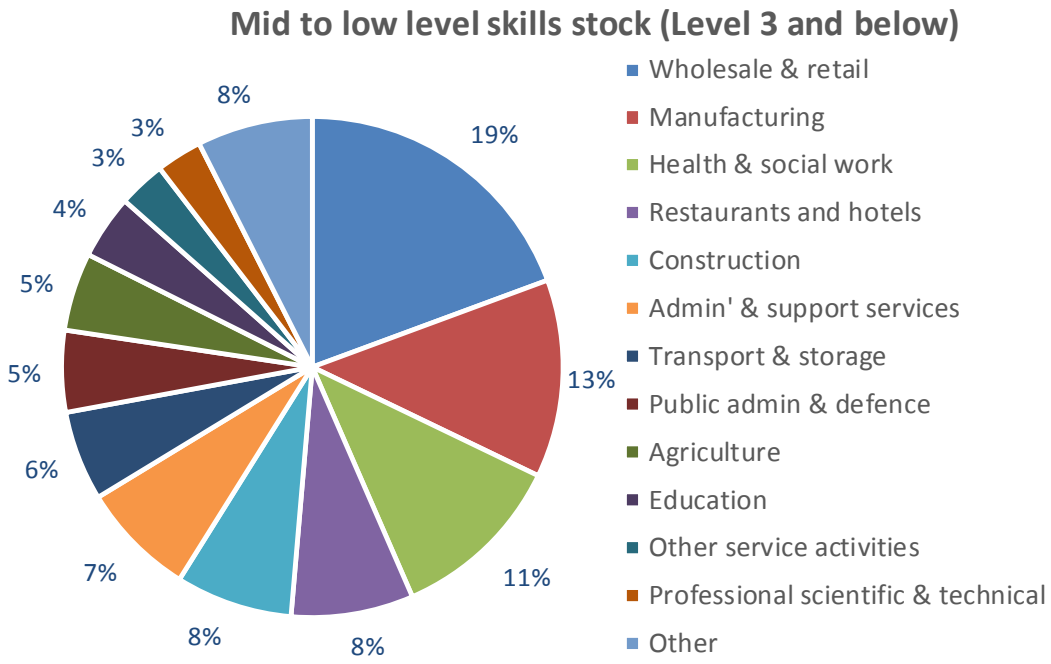
Source: LFS, EPC

Where are skilled people employed?

Where do medium to low skilled (L3 and below) people work?



Other sectors in Mid to low level skills include: Arts & entertainment, finance & insurance, Information & communication, Real estate, Water supply & waste, Mining, Elect' & gas and People employed by households

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Source: LFS, EPC

Where are skilled people employed?

- The public sector, in particular health and education, is the major employer for people with high and medium level qualifications.
- The wholesale and retail sector is a large employer across all skill levels, but particularly at the lower skill levels. This reflects the overall scale of the wholesale and retail sector as an employer (approximately 130,000 or 15% of the entire workforce). But retail is also an important first destination sector for many with higher level qualifications and represents the first step on the employment ladder.
- Manufacturing, wholesale and retail and professional and scientific are the major employment sectors within the private sector for high and medium level skills.
- Given increased levels of austerity and the associated reductions in public sector recruitment, it is essential that the higher value added sectors such as Professional services, manufacturing and ICT grow very strongly to absorb the large numbers of graduates from both HE and FE.

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The importance of employability skills

- The definition of employability skills varies and although this is not to be considered as exhaustive, they tend to centre on the following key areas:
  - Problem solving;
  - Team working;
  - Communication;
  - People management;
  - Commercial awareness;
  - Critical/ objective thinking;
  - Professional attitude; and
  - Initiative.

Employers are seeking to identify these skills (or the potential to develop these skills) in young people during their recruitment process.

- The key challenge for education institutions is to integrate the development of these skills into course delivery. **However it is also important that young people in education also develop their employability skills through work experience, typically through a placement and/ or internship in a role linked to the career they wish to pursue.**

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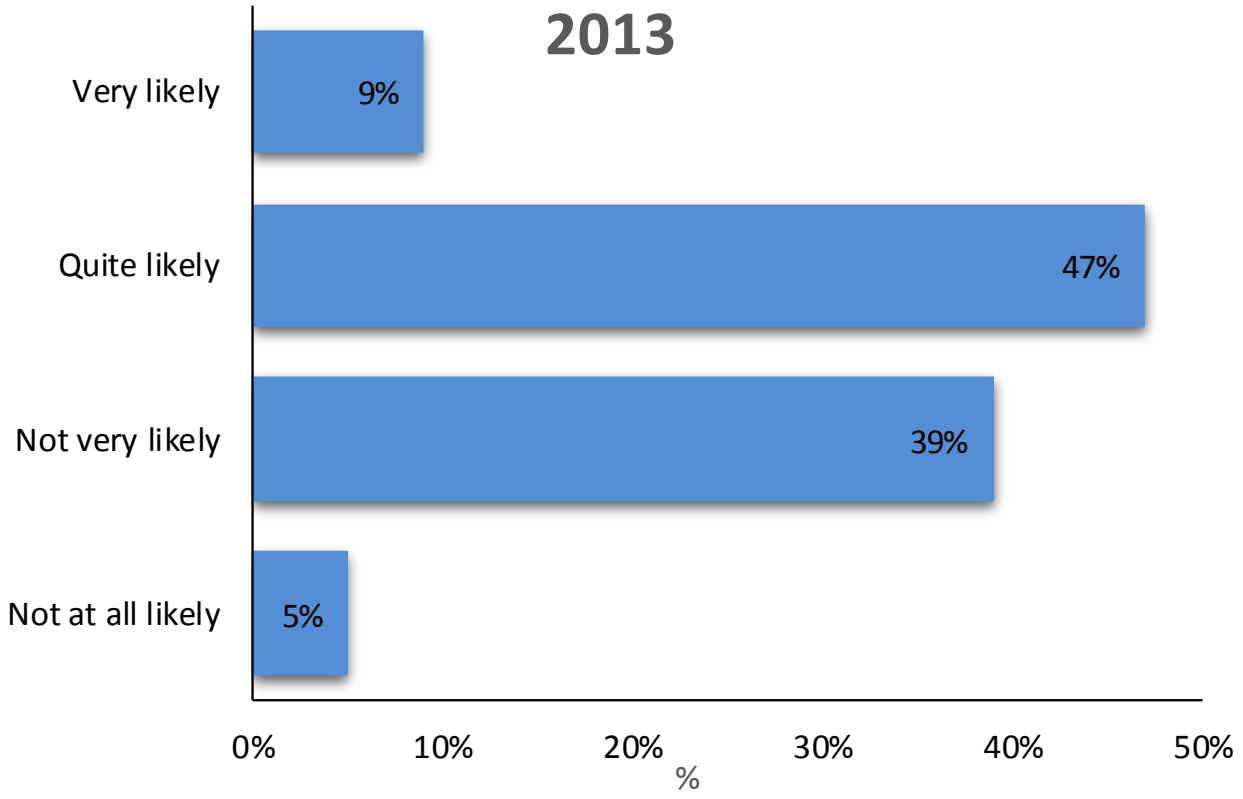
Work experience matters

Likelihood that graduates with no work experience would get a job offer



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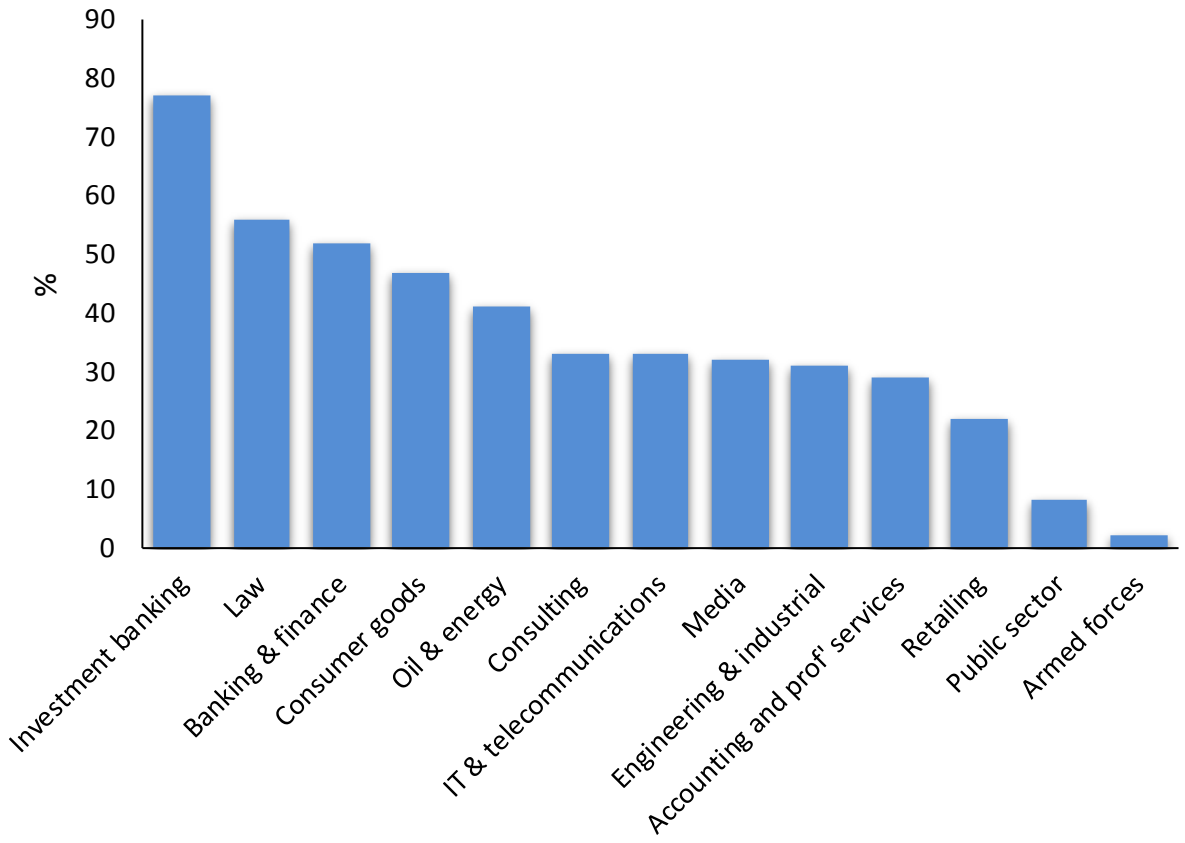
Over half of graduate employers believe it is unlikely a candidate with no work experience would be given a job offer.

… particularly for a Blue Chip employer

Vacancies likely to be filled by grads who had already worked for employer



Source: The Graduate Market 2016

Typically more than a quarter of graduate jobs go to candidates who have already worked for that employer (typically through a placement or internship).

The importance of employability skills

- The research sets out a number of key learning points for education institutions, employers and young people making career decisions:
  - Employability skills are a fundamental requirement to secure employment, particularly in high skilled sectors for blue chip employers;
  - Students should make every effort to gain work experience during their studies and education institutions should seek to incorporate internships and/ or placement options within their course delivery;
  - Given the value employers place on employability skills and given these skills are typically gained in employment, there is an onus on employers to provide these opportunities for young people. Firms which do not already provide internships and placements should be encouraged to do so. This could be done in a number of ways including the promotion of benefits which employers can gain from having an internship or placement programme.

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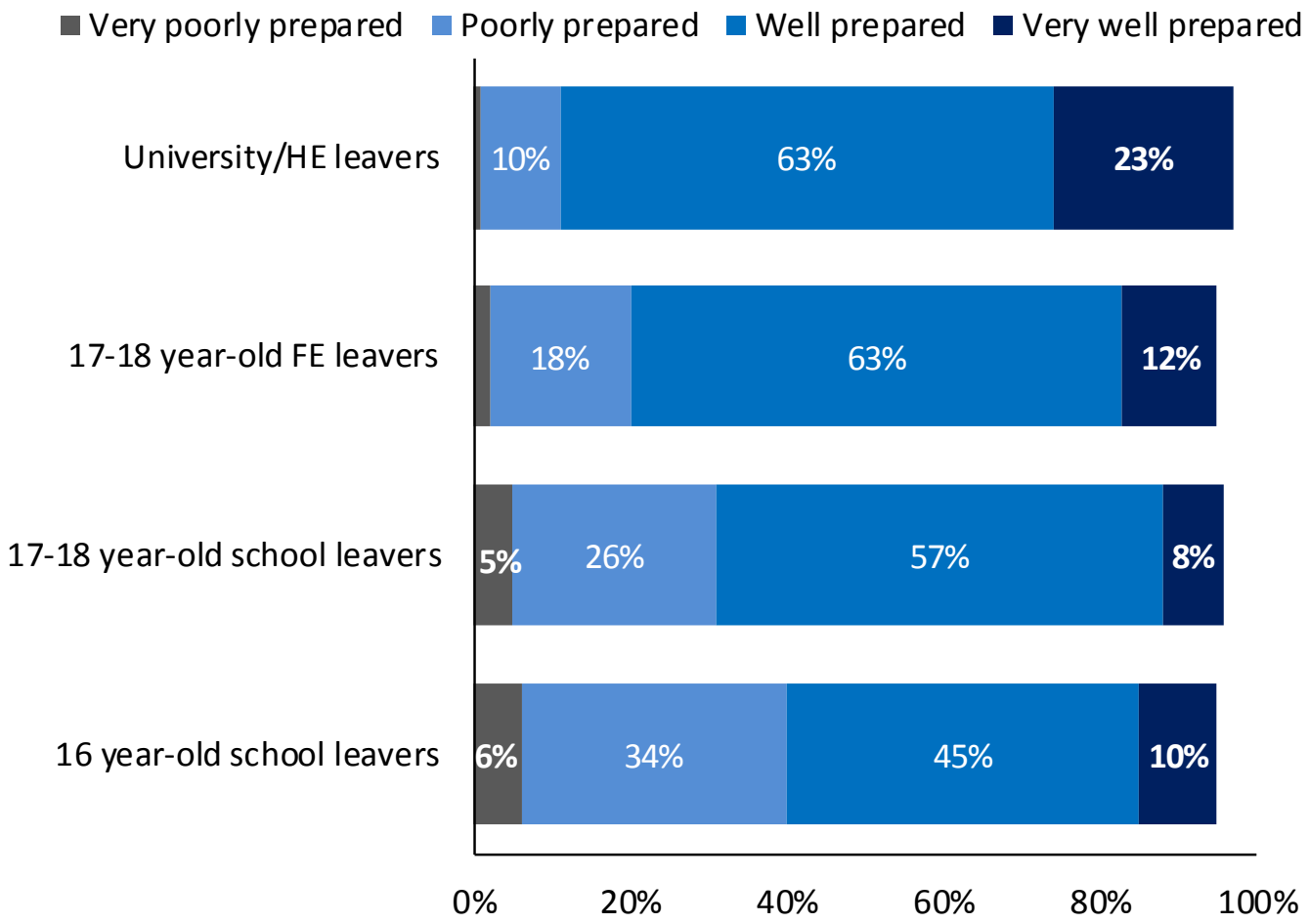
Work readiness of education leavers



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Source: DE, EPC

Final thoughts

- **Experience a range of sectors/ jobs** – find out what you don't like before its too late.
- **Study a subject you love** – STEM is important, but you should only study an area you enjoy and in which you perform well.
- **Sector attractiveness** – some sectors need to work harder to make their industry attractive to potential recruits. BUT young people should consider sectors that may not be seen as attractive.
- **Professional & Technical v Academic** – P&T qualifications (typically delivered by FE colleges) have a lower status than academic qualifications (typically delivered by HE/ universities). Choose the course that is right for the person, not one based on status .
    - For more info – just Google "NI Skills Barometer"

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Destination of graduates after 6 months

- The following slides provide an analysis of the sector destination of graduates by subject area, 6 months after graduation. This provides an insight into the linkage between specific sectors and degree subjects.
- This analysis has the advantage of showing recent movements from HE into employment but has the disadvantage of showing only a partial picture:
  - The nature of employment is not clear, it may be a temporary position until a permanent 'graduate level' opportunity becomes available; and
  - A significant proportion of students are not in employment after 6 months, either through choice or because they are unable to find employment. This group has been excluded from the analysis.

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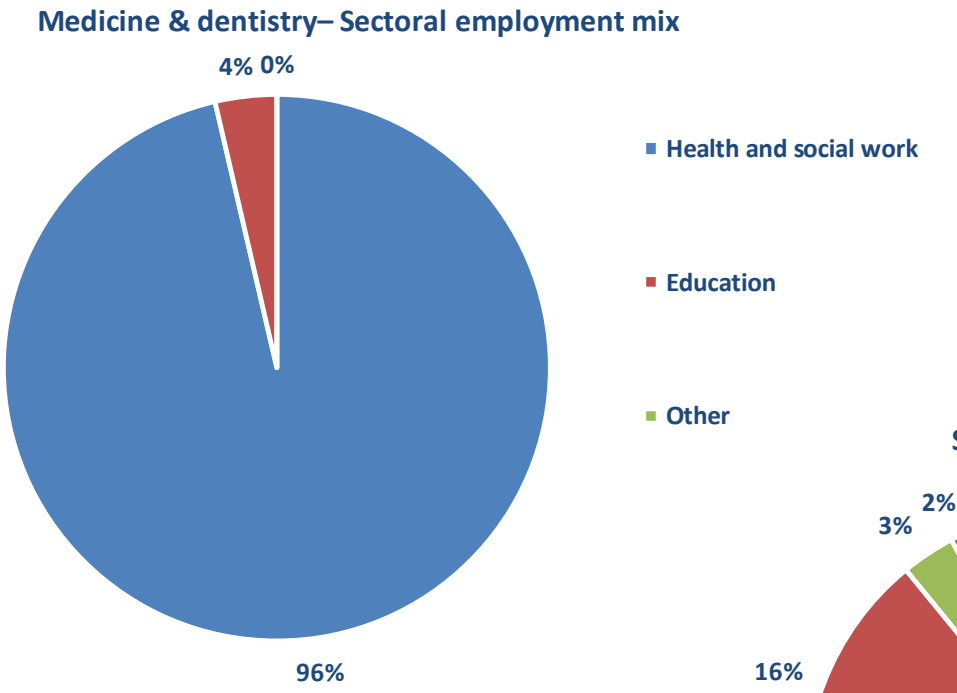
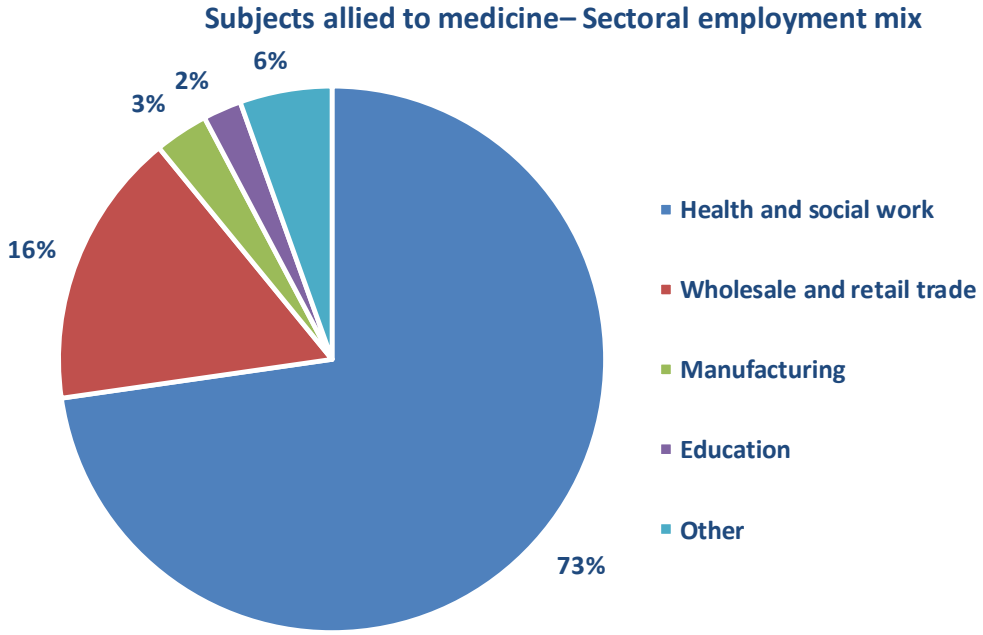
Destination of graduates after 6 months



Other sectors in Medicine & Dentistry include: Public admin', Agriculture, Mining, Manufacturing, Transport and storage, Accommodation and food, ICT, Financial and insurance activities, Real estate activities, Professional, scientific and technical, Administrative and support, Arts and entertainment, etc.



Other sectors in subjects allied to medicine include: Education, Manufacturing, Professional, scientific and technical, Public admin', Accommodation and food, Construction, Real estate activities, Arts and entertainment, Agriculture, Transport and storage, ICT, etc.

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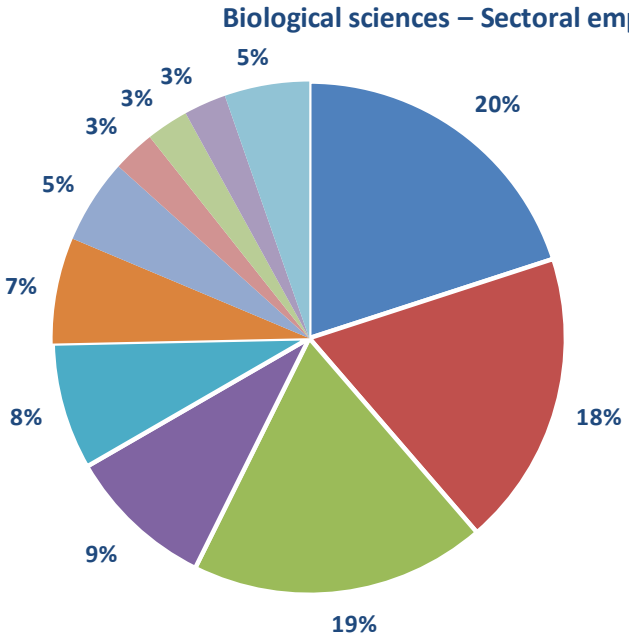
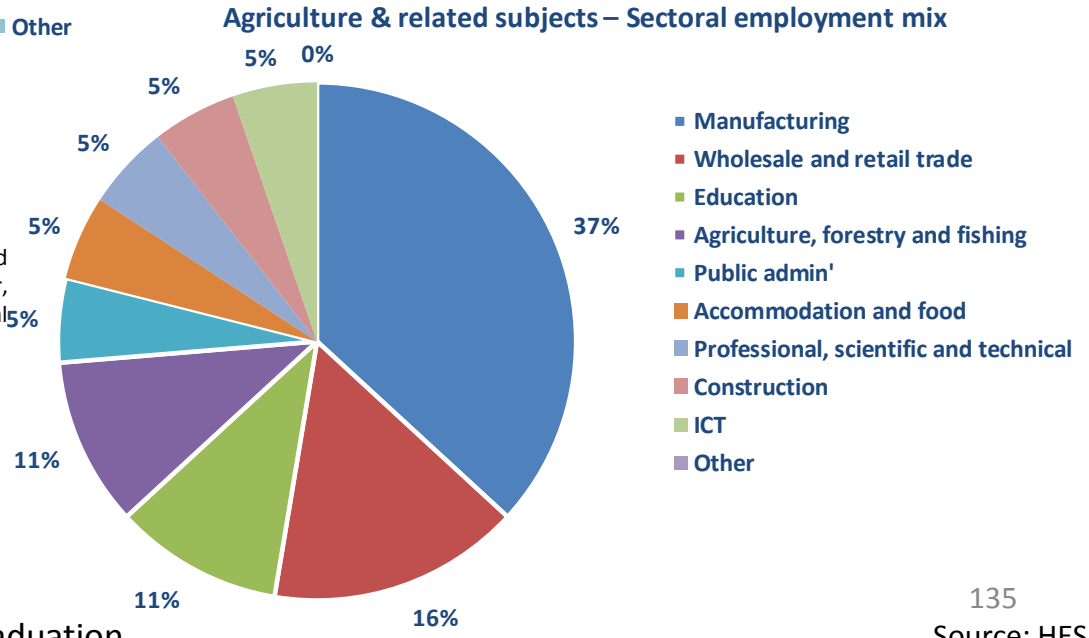
N.B. Sector of employment after 6 months of graduation

Source: HESA

Destination of graduates after 6 months



Other sectors in Biological sciences include: Manufacturing, Financial and insurance activities, Construction, Transport and storage, ICT, Agriculture, forestry and fishing, Mining and quarrying, Real estate activities, etc.



Other sectors in Agriculture & related subjects include: Mining and quarrying, Electricity, gas, steam and air conditioning supply, Water, sewerage and waste, Construction, Transport and storage, ICT, Financial and insurance activities, etc.

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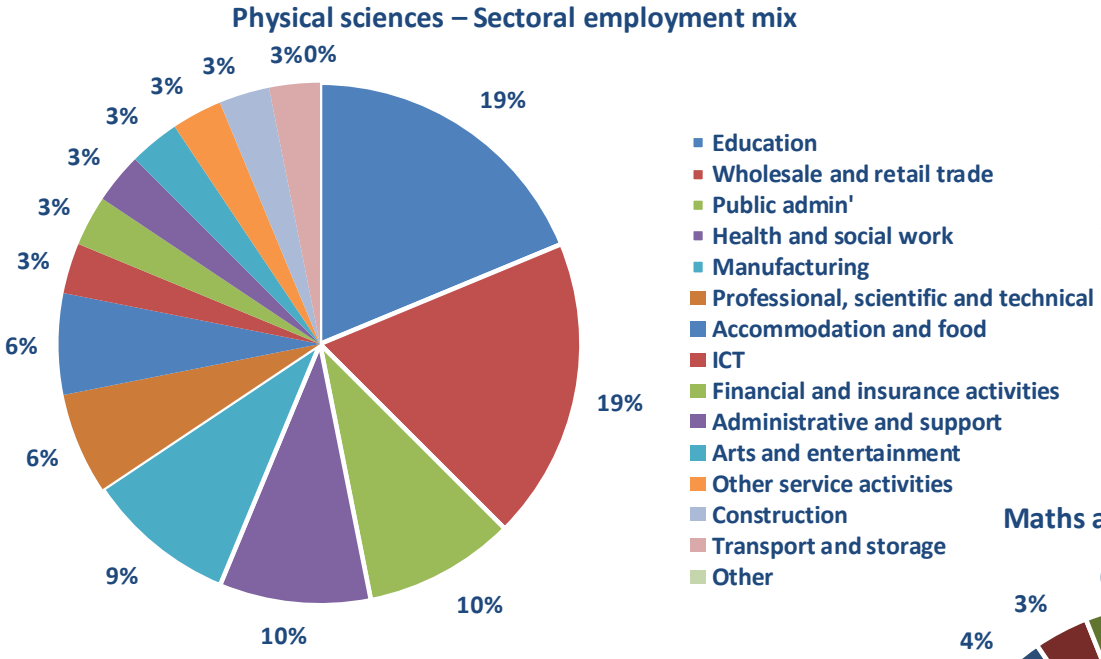
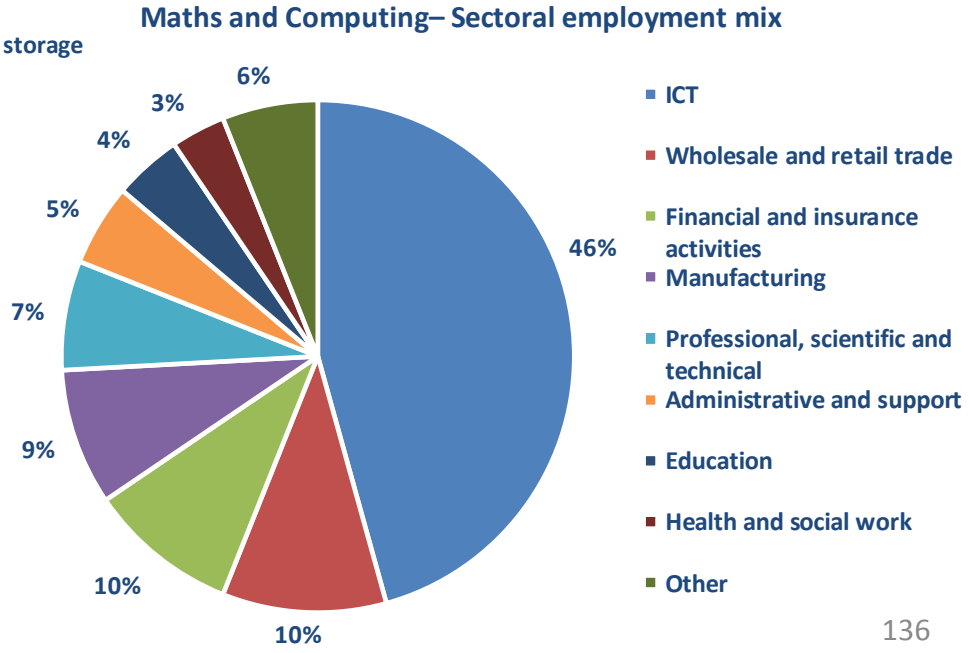
N.B. Sector of employment after 6 months of graduation

Source: HESA

Destination of graduates after 6 months



Other sectors in Physical sciences include: ICT, Financial and insurance activities, Administrative and support, Arts and entertainment, Other service activities, Agriculture, forestry and fishing, Mining and quarrying, Real estate activities, etc.



Other sectors in Maths and computing include: Health and social work, Public admin', Agriculture, forestry and fishing, Mining and quarrying, Manufacturing, Accommodation and food, Real estate activities, Administrative and support, Arts and entertainment, Other service activities, etc.

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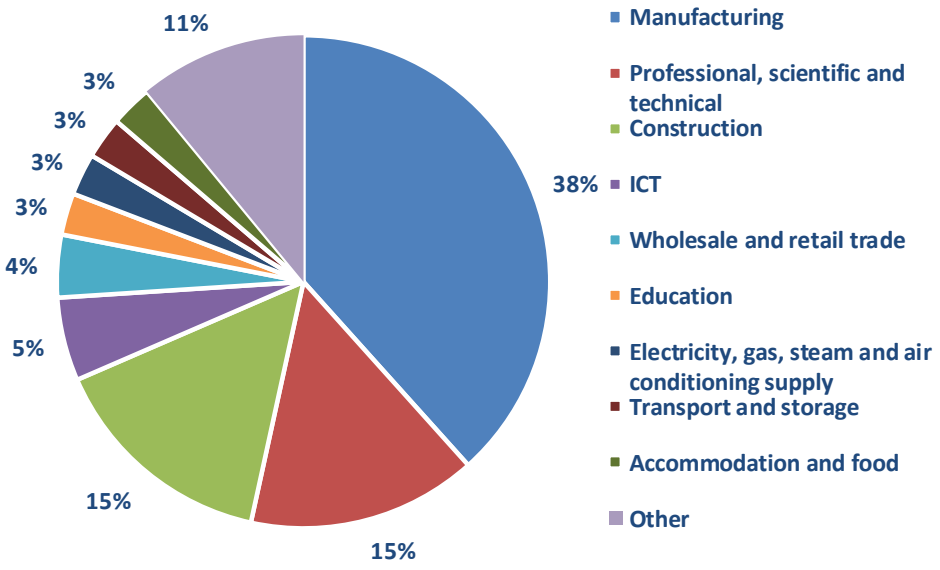
N.B. Sector of employment after 6 months of graduation

Source: HESA

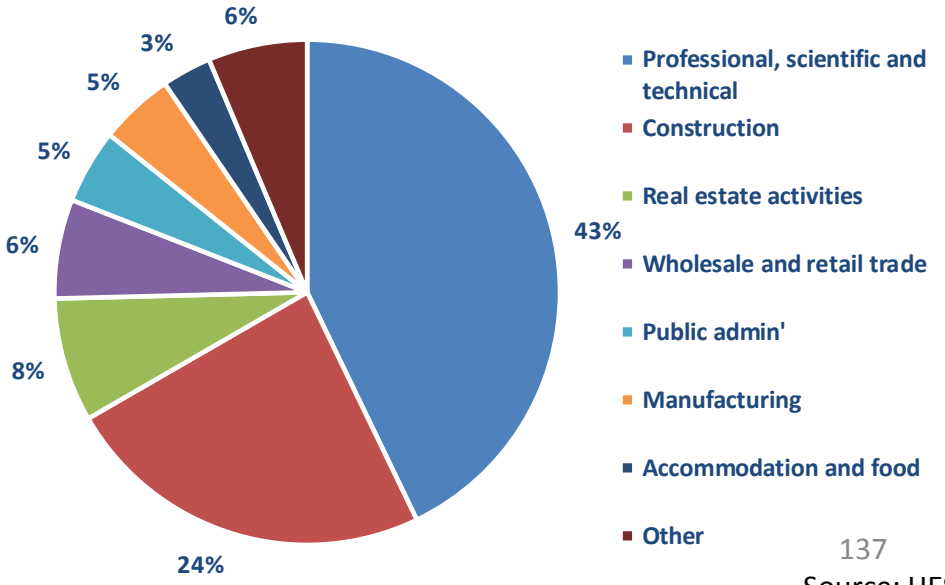
Destination of graduates after 6 months

Engineering & technology – Sectoral employment mix



Other sectors in Engineering & Technology include: Education, Mining and quarrying, Health and social work, Public admin', Electricity, gas, steam and air conditioning supply, Water, sewerage and waste, Transport and storage, Financial and insurance activities, Administrative and support, etc.

Architecture, building & planning – Sectoral employment mix



Other sectors in Architecture, building & planning include: Health and social work, Education, Agriculture, forestry and fishing, Mining and quarrying, Transport and storage, Financial and insurance activities, Administrative and support, Arts and entertainment, ICT, etc.

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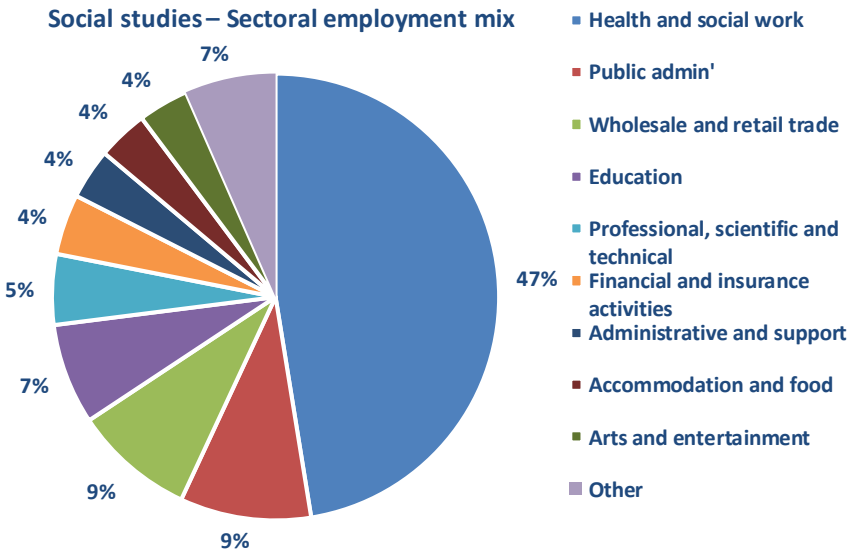
N.B. Sector of employment after 6 months of graduation

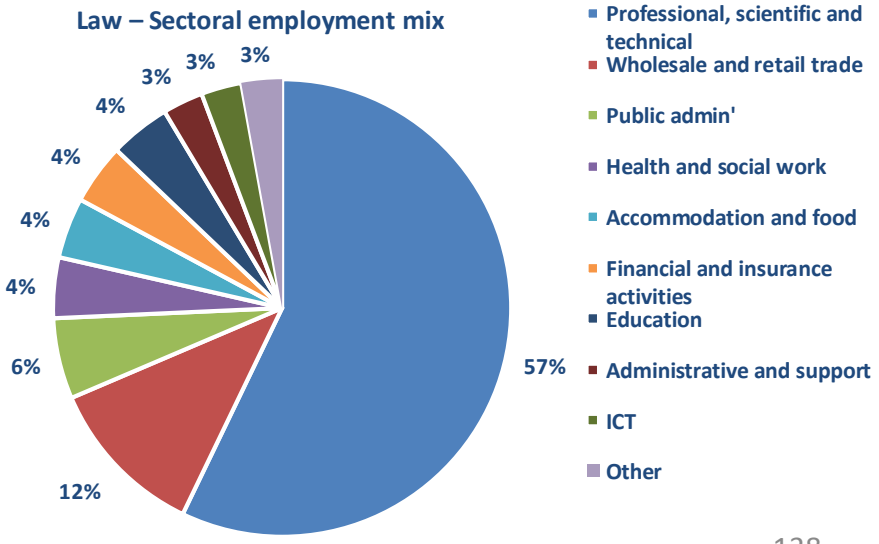
Source: HESA

Destination of graduates after 6 months



Other sectors in Social studies include: Manufacturing, ICT, Arts and entertainment, Electricity, gas, steam and air conditioning supply, Construction, Transport and storage, Real estate activities, Agriculture, forestry and fishing, Mining and quarrying, etc.

Other sectors in Law include: Arts and entertainment, Manufacturing, Construction, Transport and storage, ICT, Real estate activities, Other service activities, Agriculture, forestry and fishing, Mining and quarrying, etc.



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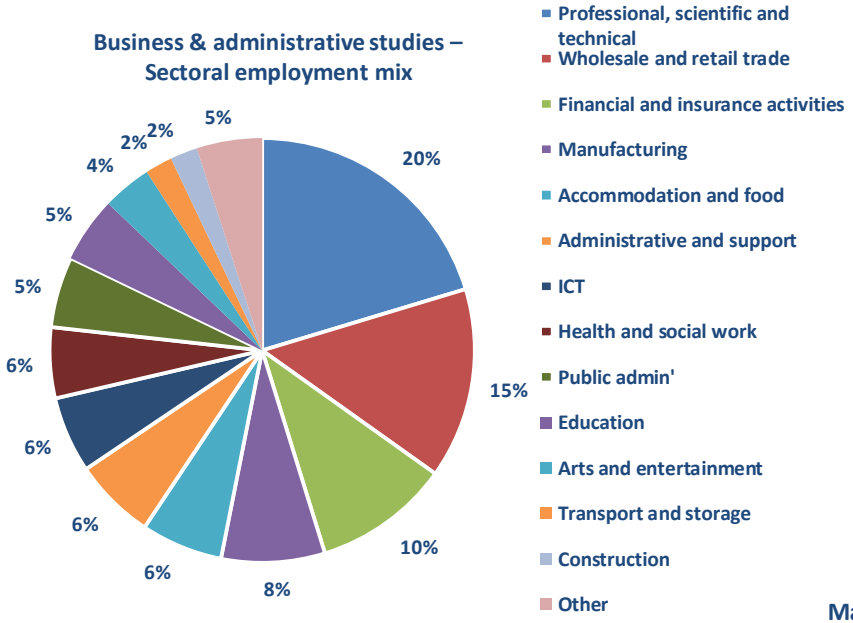
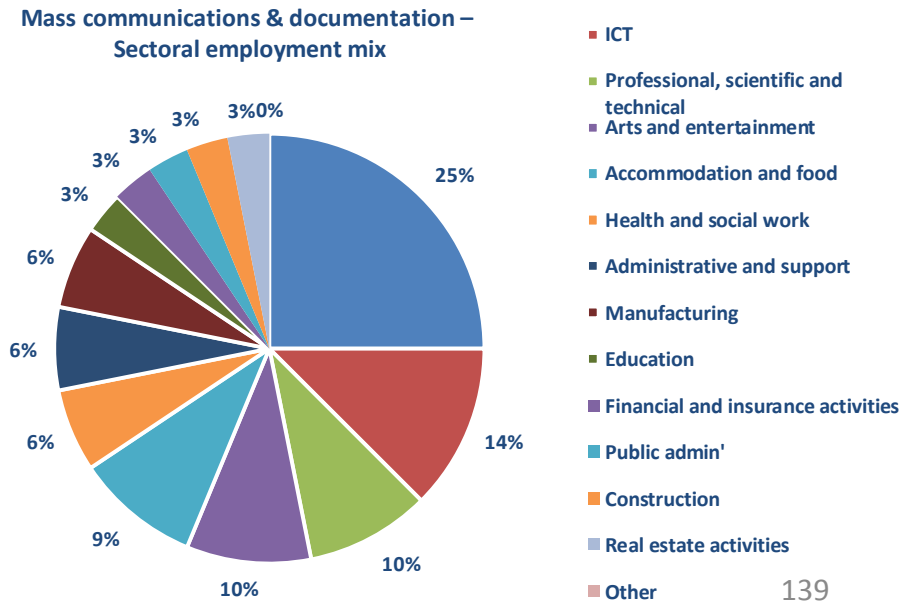
N.B. Sector of employment after 6 months of graduation

Source: HESA

Destination of graduates after 6 months



Other sectors in Business & administrative studies include: Construction, Arts and entertainment, Electricity, gas, steam and air conditioning supply, Real estate activities, Other service activities, Agriculture, forestry and fishing, Water, sewerage and waste, etc.



Other sectors in Mass communications & documentation include: Public admin', Manufacturing, Construction, Real estate activities, Agriculture, forestry and fishing, Mining and quarrying, Electricity, gas, steam and air conditioning supply, etc.

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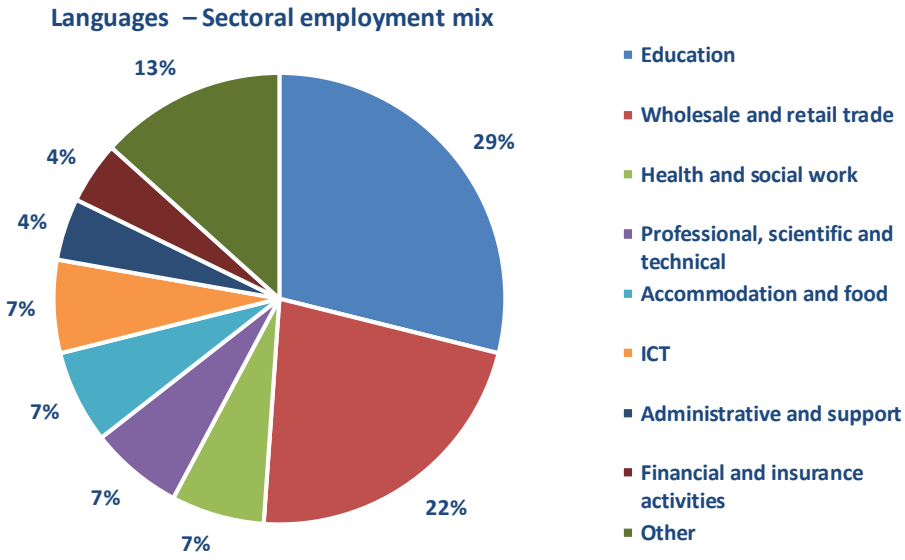
N.B. Sector of employment after 6 months of graduation

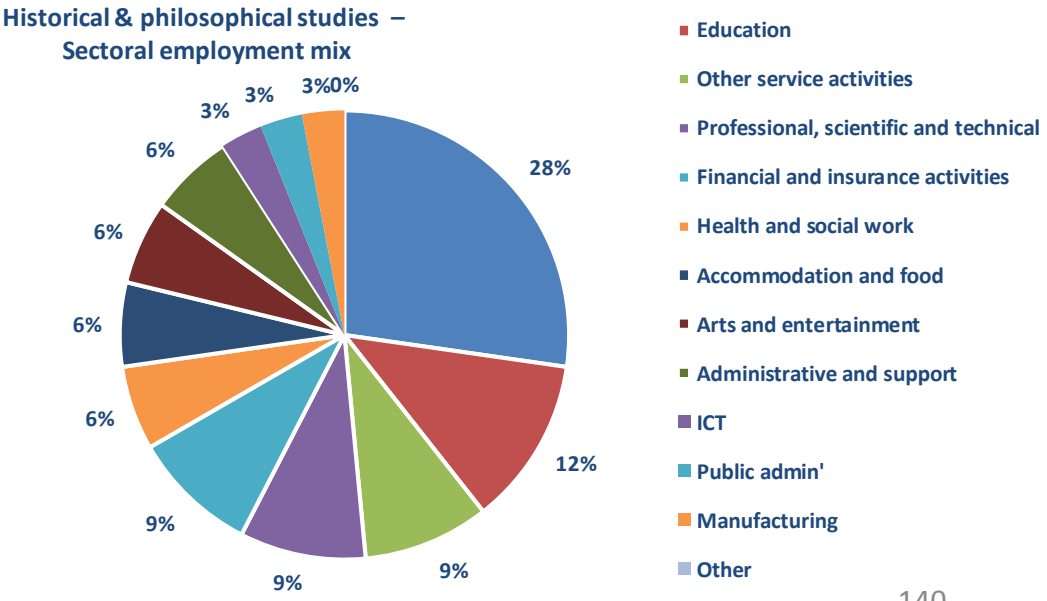
Source: HESA

Destination of graduates after 6 months



Other sectors in Historical & philosophical studies include: Public admin', Manufacturing, Financial and insurance activities, Agriculture, forestry and fishing, Mining and quarrying, Water, sewerage and waste, Construction, Real estate activities, etc.

Other sectors in Languages include: Transport and storage, Public admin', Other service activities, Manufacturing, ICT, Financial and insurance activities, Electricity, gas, steam and air conditioning supply, Arts and entertainment, Water, sewerage and waste, Real estate activities, etc.



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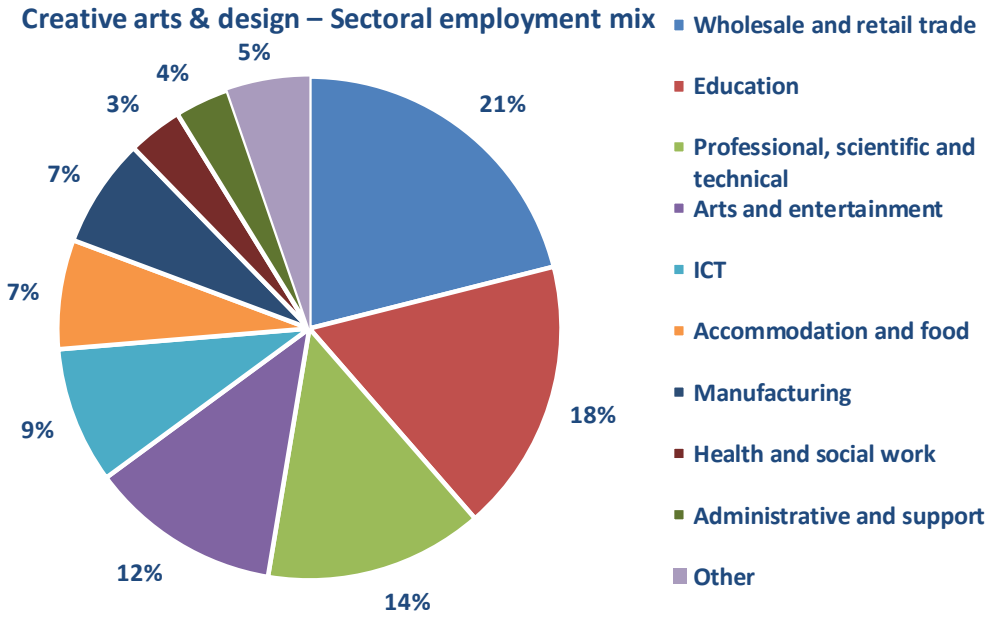
N.B. Sector of employment after 6 months of graduation

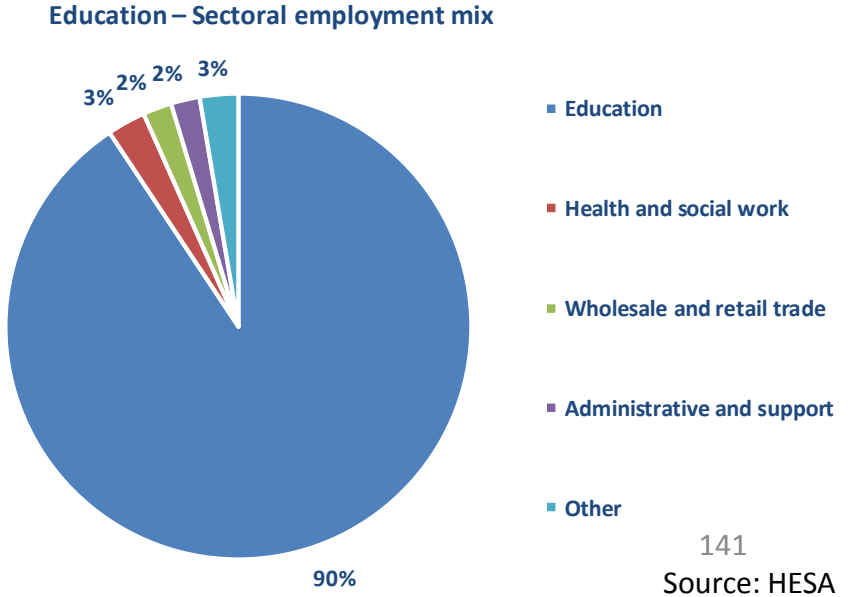
Source: HESA

Destination of graduates after 6 months



Other sectors in Creative arts & design include: Public admin', Financial and insurance activities, Other service activities, Agriculture, forestry and fishing, Mining and quarrying, Electricity, gas, steam and air conditioning supply, Construction, Transport and storage, Real estate activities, etc.

Other sectors in Education include: Wholesale and retail trade, Administrative and support, Public admin'
Accommodation and food, Other service activities, Agriculture, forestry and fishing, Mining and quarrying, Manufacturing, Construction, Transport and storage, ICT, Financial and insurance activities, Real estate activities, Professional, scientific and technical, Arts and entertainment, etc.



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N.B. Sector of employment after 6 months of graduation

Source: HESA

Sectoral employment stock mix by subject area

- As a result of the disadvantages of destination after 6 months data, a separate analysis has been completed outlining the sectoral mix of all graduates by degree subject. **This is based on the stock of all graduates working in each sector, not the destination after 6 months analysed in the previous slides**. This data is more comprehensive but recent trends in terms of flows of students will not be highlighted.
- This data is sourced from an aggregated Labour Force Survey file using the latest available four quarters of data (this covers the four quarters to quarter two 2016).

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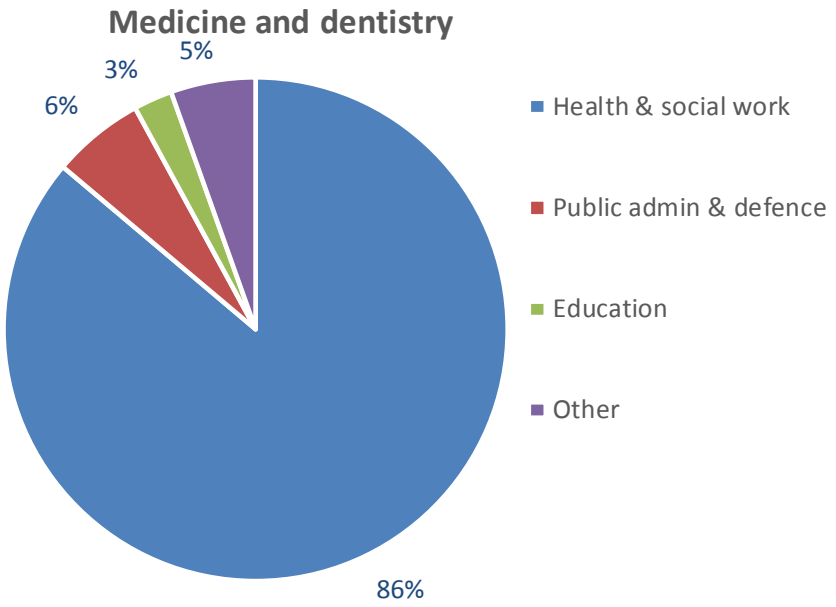
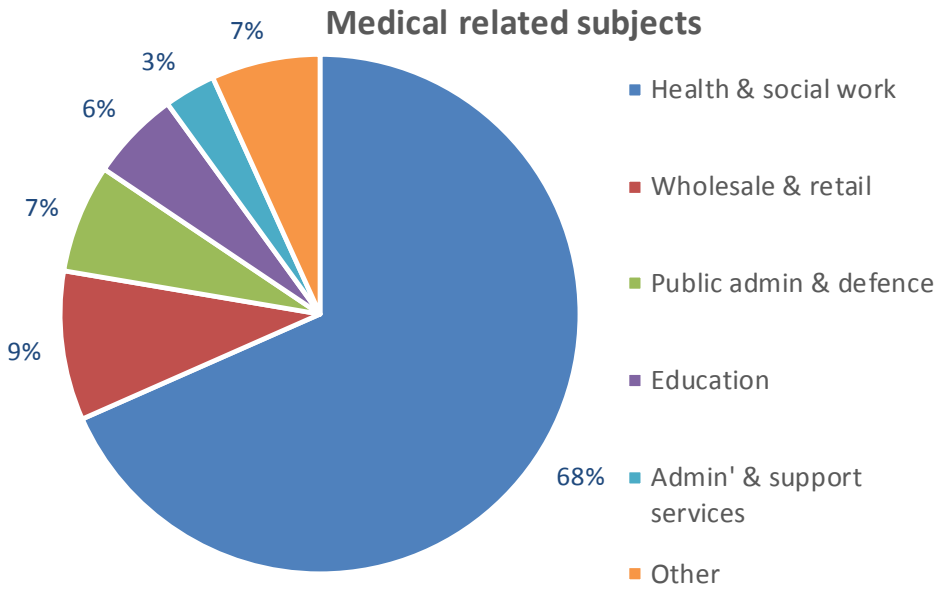
Stock by subject area

Sectoral employment stock mix per degree subject



Other sectors in Medicine & dentistry include: Wholesale & retail , Professional scientific & technical, Other service activities, Admin' & support services, Manufacturing, Information & communication, Real estate , Arts & entertainment, Construction, Agriculture, Restaurants and hotels, Finance & insurance , Mining, Elect' & gas, Water supply & waste, Transport & storage, People employed by households



Other sectors in Medical related subjects include: Professional scientific & technical, Manufacturing, Other service activities, Arts & entertainment, Restaurants and hotels, Agriculture, Construction, Finance & insurance , Information & communication, Real estate , Water supply & waste, Transport & storage, Elect' & gas, Mining, People employed by households

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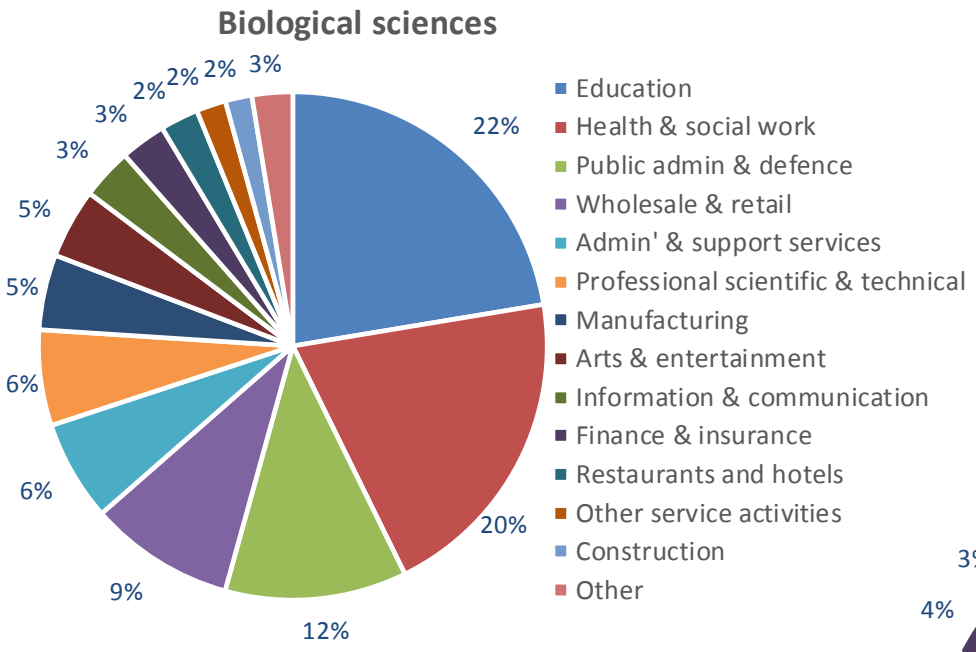
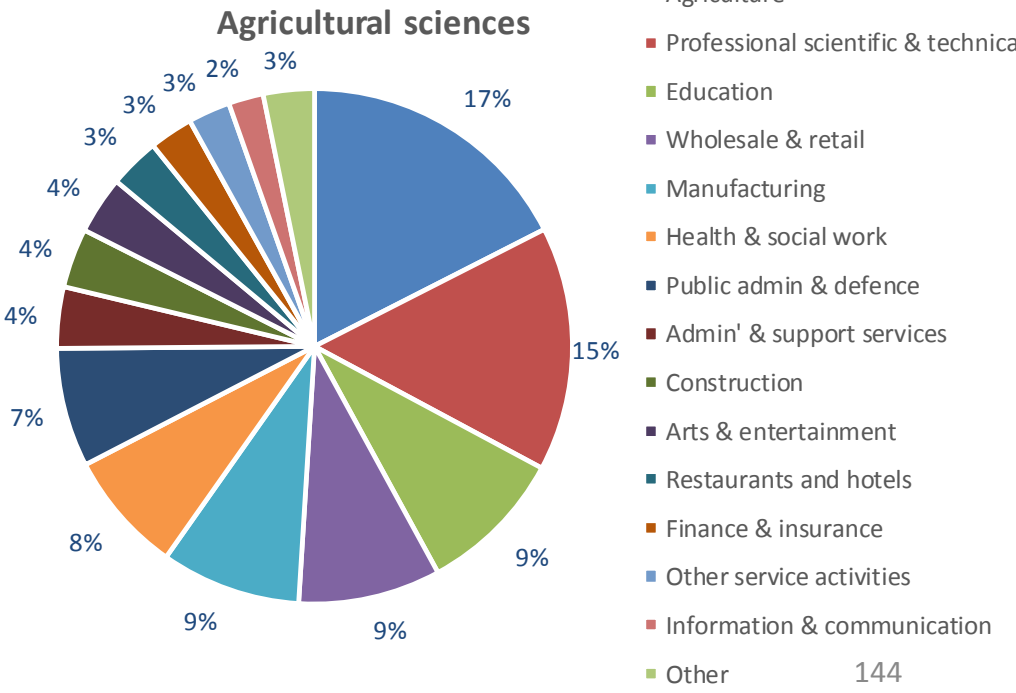
Source: EPC

Stock by subject area

Sectoral employment stock mix per degree subject



Other sectors in Biological sciences include: Agriculture, Water supply & waste, Transport & storage, Real estate , Elect' & gas, Mining, People employed by households



Other sectors in Agricultural sciences include:Water supply & waste, Transport & storage, Real estate , Elect' & gas, Mining, People employed by households

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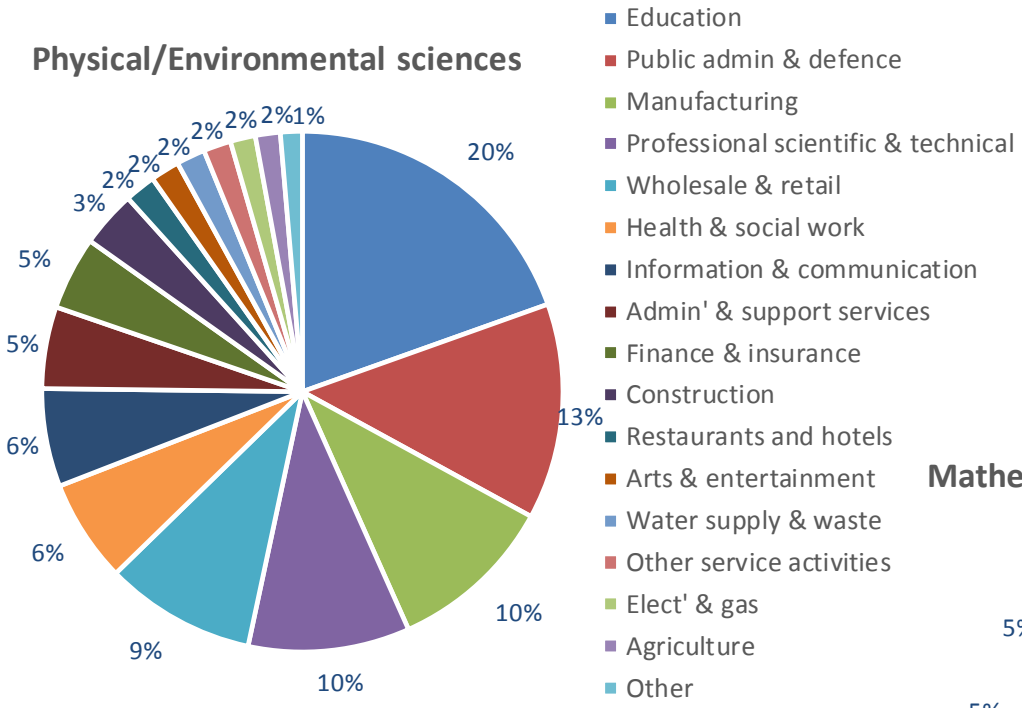
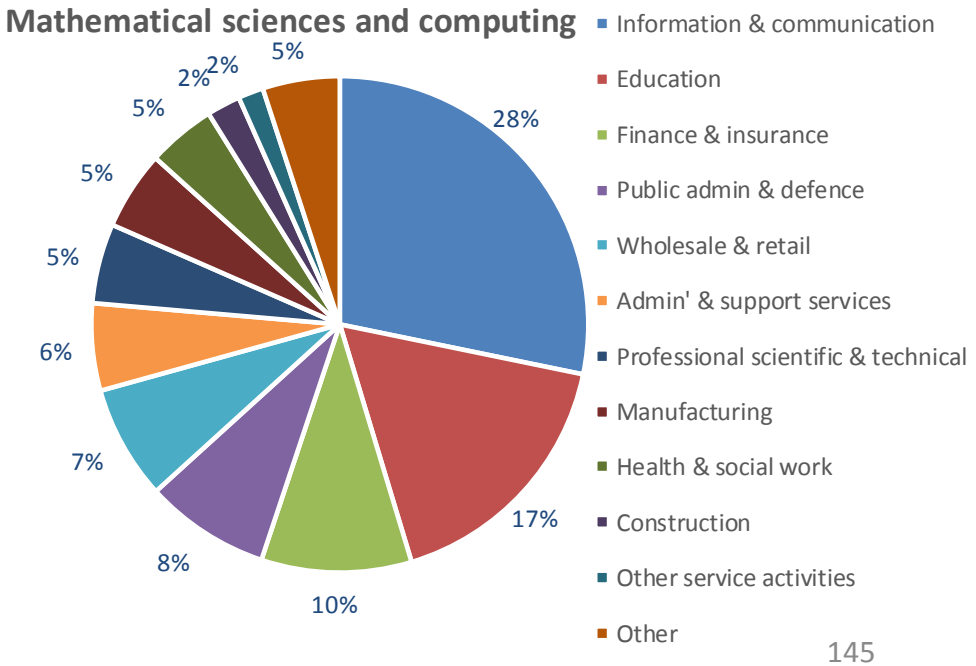
Source: EPC

Stock by subject area

Sectoral employment stock mix per degree subject



Other sectors in Physical/ Environmental Sciences include: Transport & storage, Real estate , Mining, People employed by households



Other sectors in Mathematical Sciences and Computing include:Arts & entertainment, Restaurants and hotels, Transport & storage, Elect' & gas, Real estate , Agriculture, Water supply & waste, Mining, People employed by households

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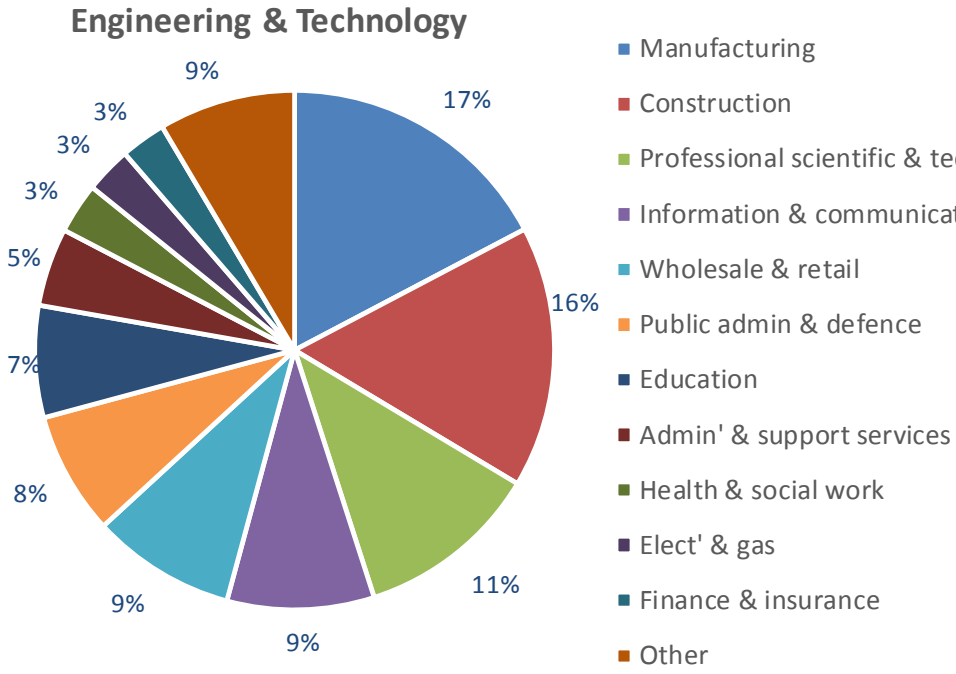
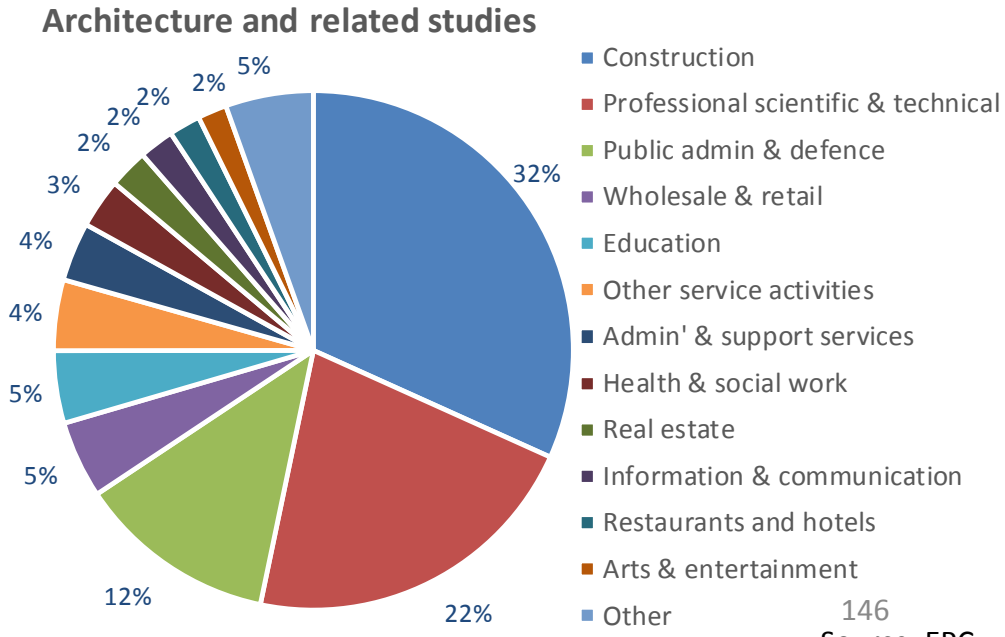
Source: EPC

Stock by subject area

Sectoral employment stock mix per degree subject



Other sectors in Engineering subject include: Transport & storage, Water supply & waste, Other service activities, Restaurants and hotels, Arts & entertainment, Agriculture, Real estate , Mining, People employed by households



Other sectors in Architecture and related studies include: Manufacturing, Finance & insurance , Water supply & waste, Transport & storage, Agriculture, Elect' & gas, Mining, People employed by households

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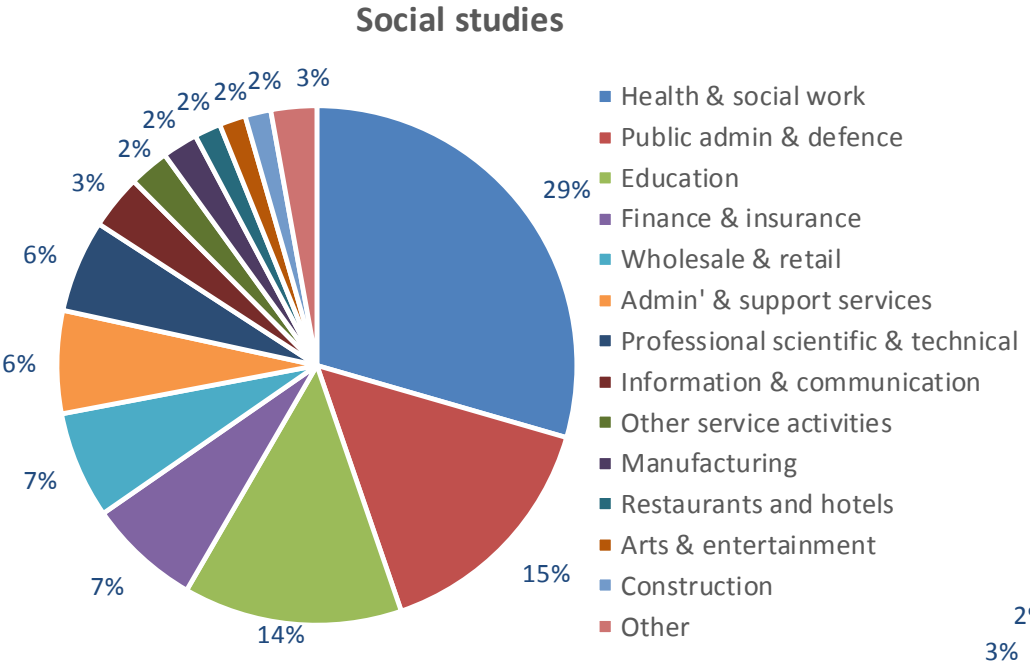
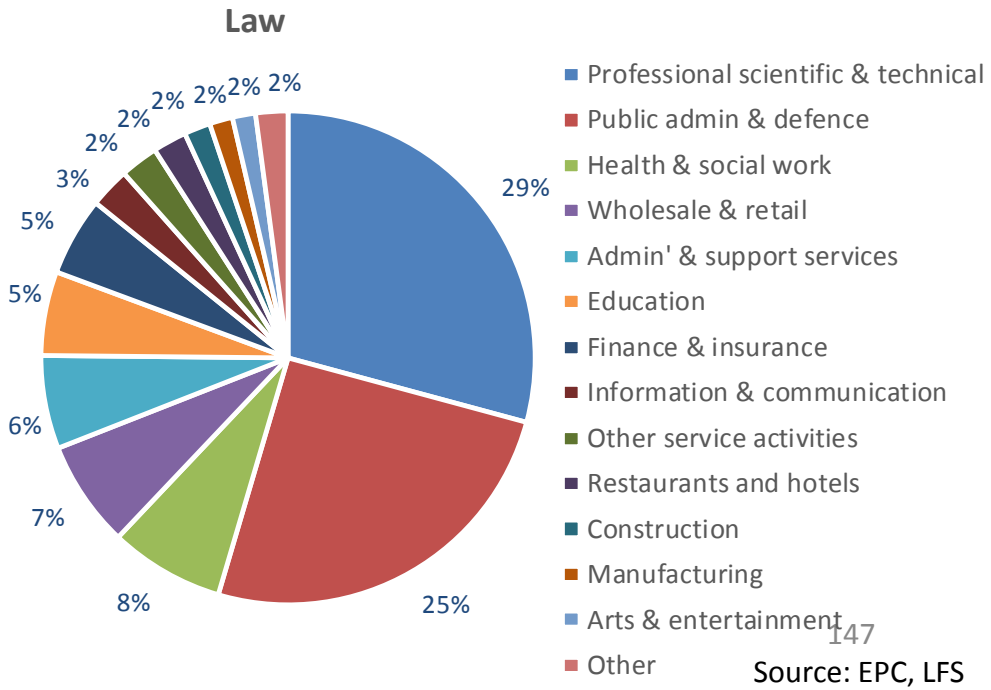
Source: EPC

Stock by subject area

Sectoral employment stock mix per degree subject



Other sectors in Social studies include: Transport & storage, Agriculture, Real estate , Elect' & gas, Water supply & waste, Mining, People employed by households



Other sectors in Law subject include:Transport & storage, Agriculture, Real estate , Elect' & gas, Water supply & waste, Mining, People employed by households

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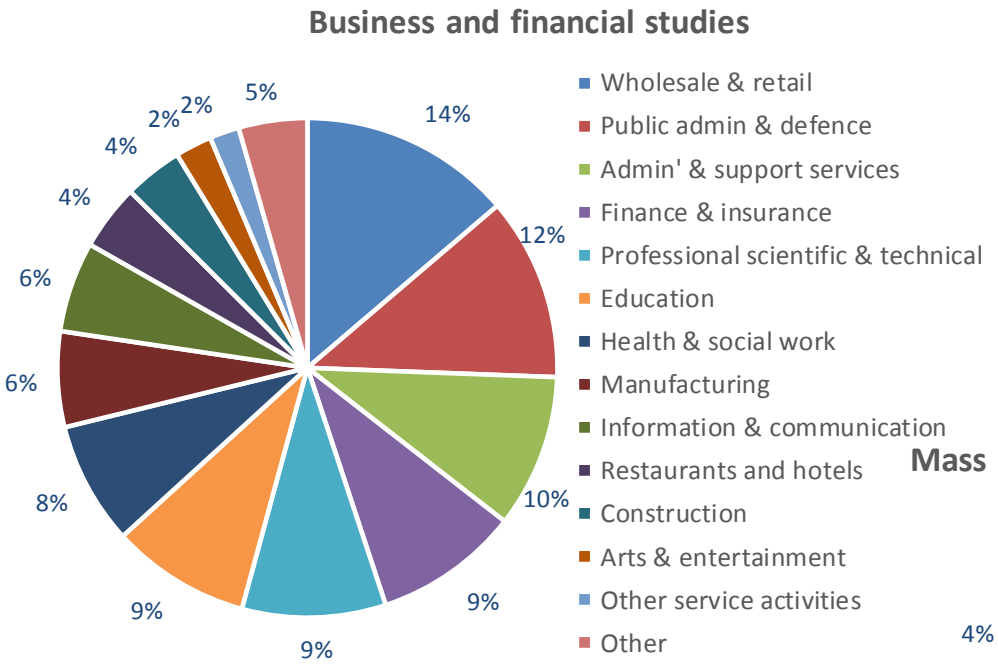
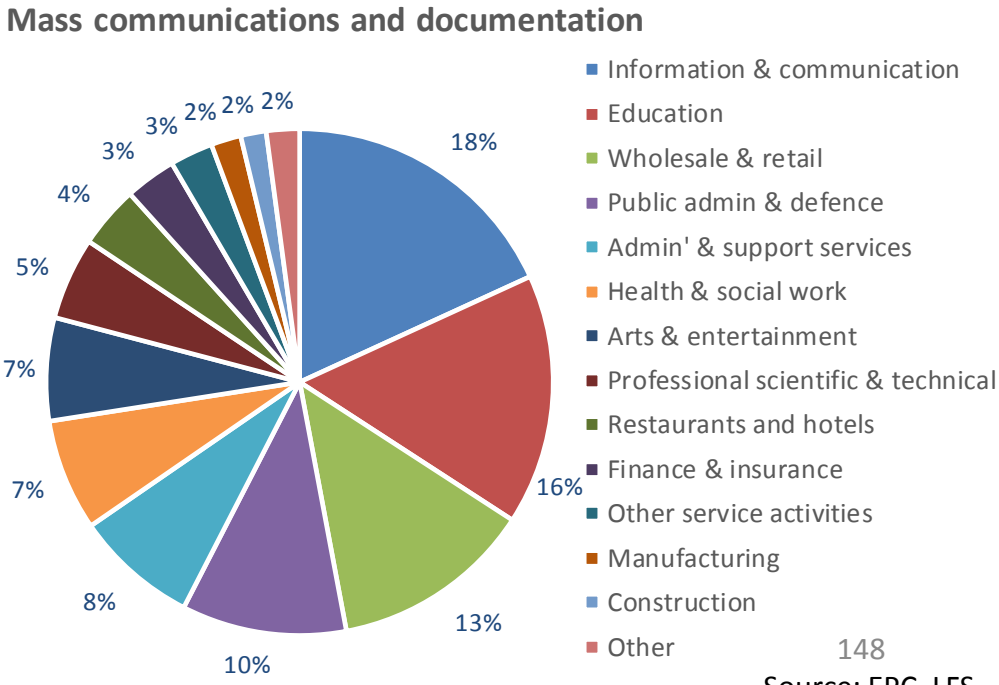
Source: EPC, LFS

Stock by subject area

Sectoral employment stock mix per degree subject



Other sectors in Business and Financial studies include: Transport & storage, Elect' & gas, Agriculture, Real estate , Water supply & waste, Mining, People employed by households



Other sectors in Mass Communications and Documentation include: Elect' & gas, Transport & storage, Real estate , Agriculture, Water supply & waste, Mining, People employed by households

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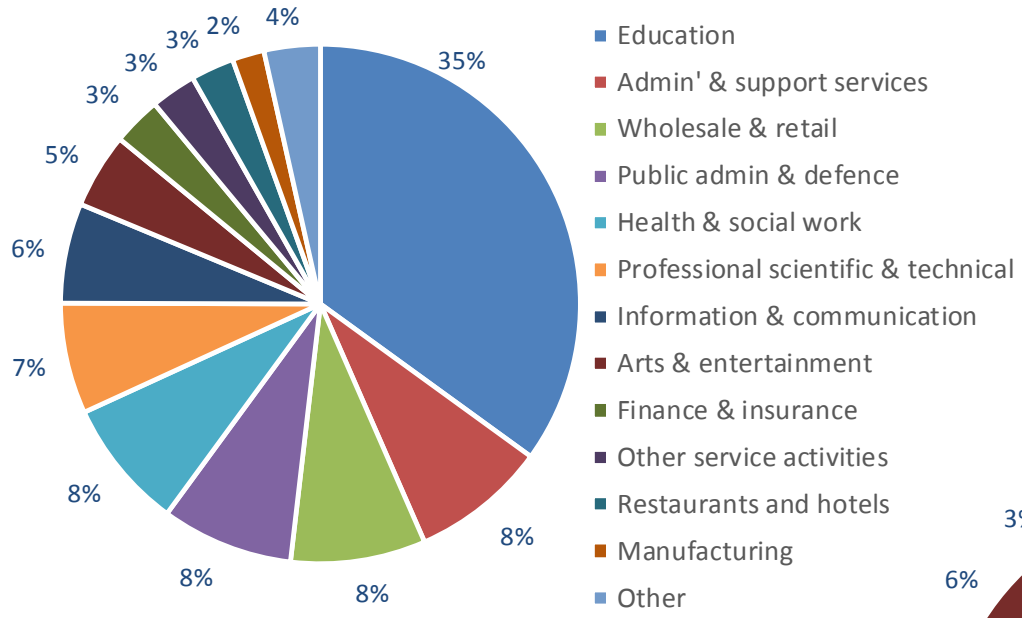
Source: EPC, LFS

Stock by subject area

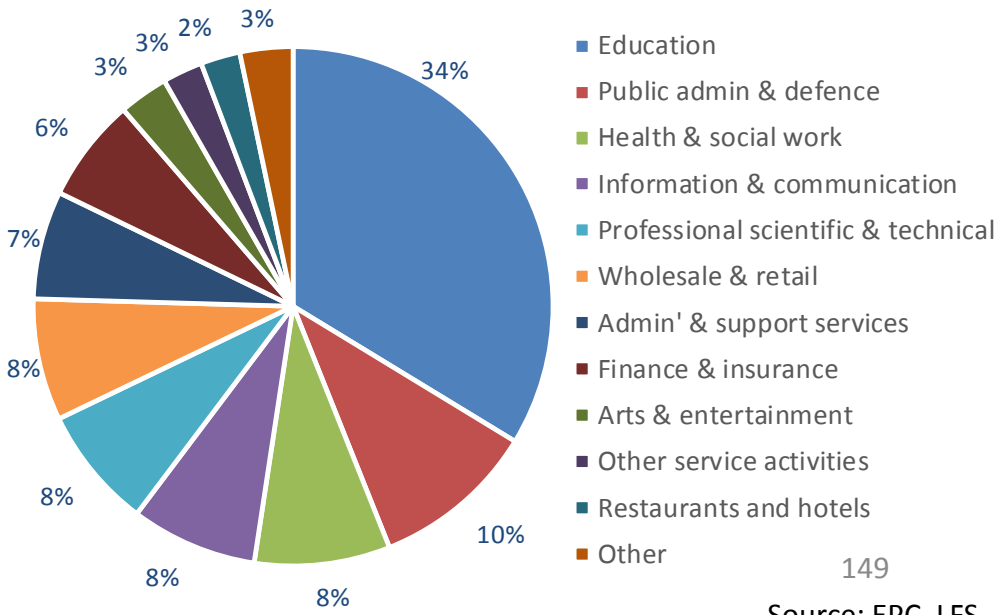
Sectoral employment stock mix per degree subject

Linguistics, English, Celtic and Ancient



Other sectors in Linguistics, English, Celtic and Ancient studies include: Construction, Agriculture, Real estate , Elect' & gas, Transport & storage, Water supply & waste, Mining, People employed by households

European languages



Other sectors in European Languages subject include: Construction, Manufacturing, Transport & storage, Agriculture, Real estate , Water supply & waste, Elect' & gas, People employed by households, Mining

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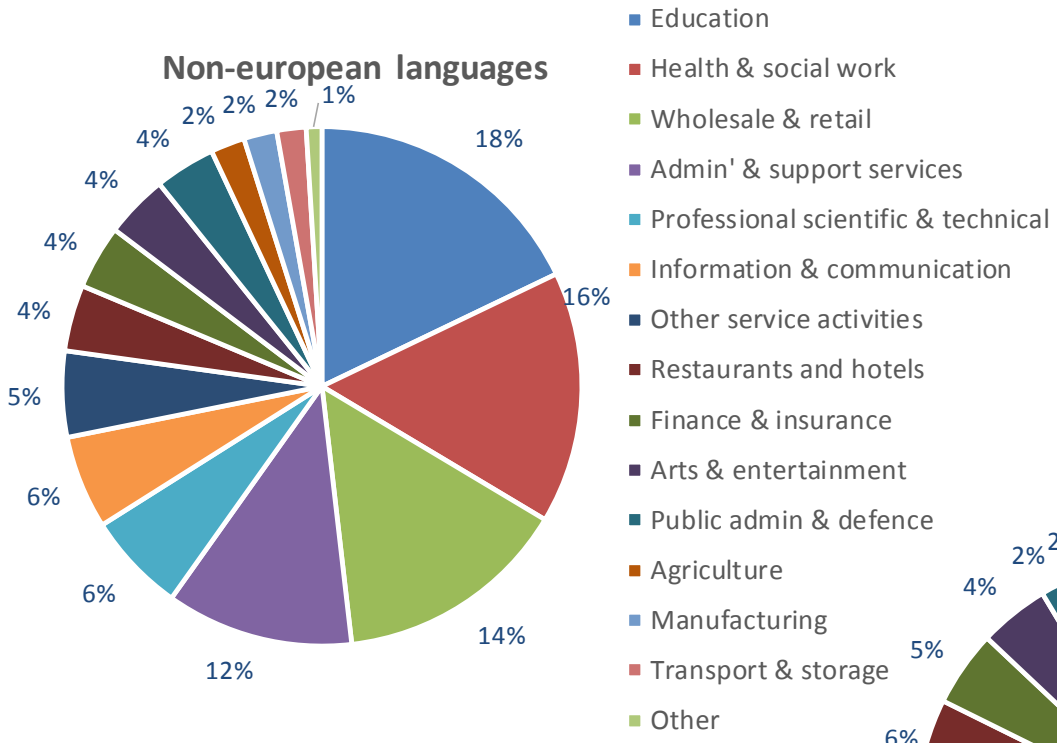
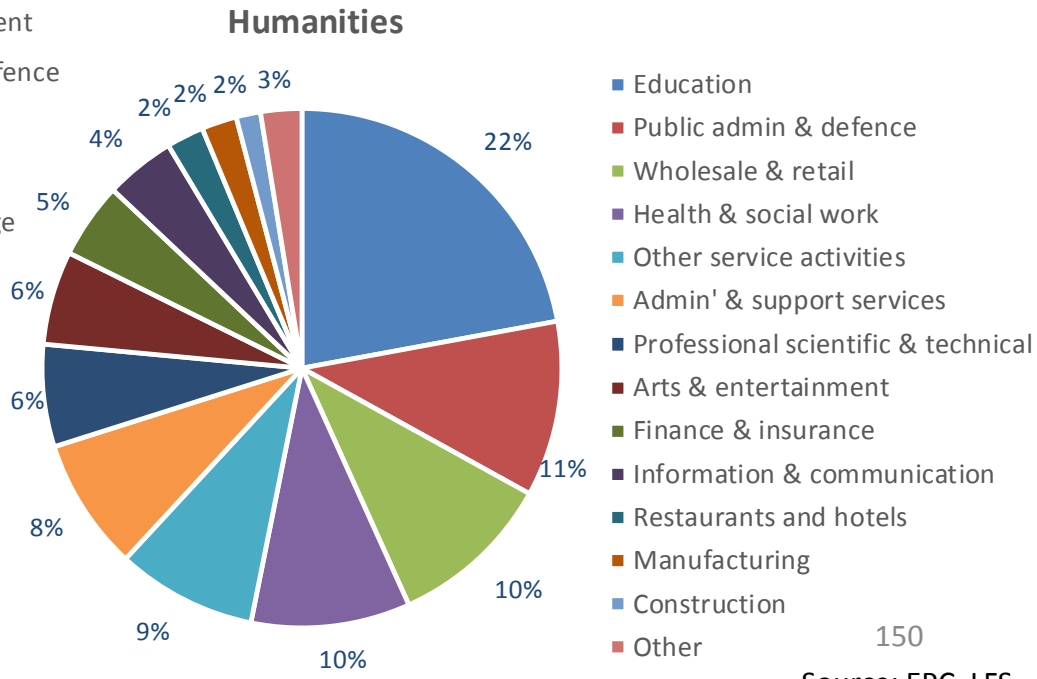
Source: EPC, LFS

Stock by subject area

Sectoral employment stock mix per degree subject



Other sectors in Non-European languages subject include: Construction, Real estate , Mining, Elect' & gas, Water supply & waste, People employed by households



Other sectors in Humanities subjects include: Agriculture, Transport & storage, Elect' & gas, Real estate , Water supply & waste, Mining, People employed by households

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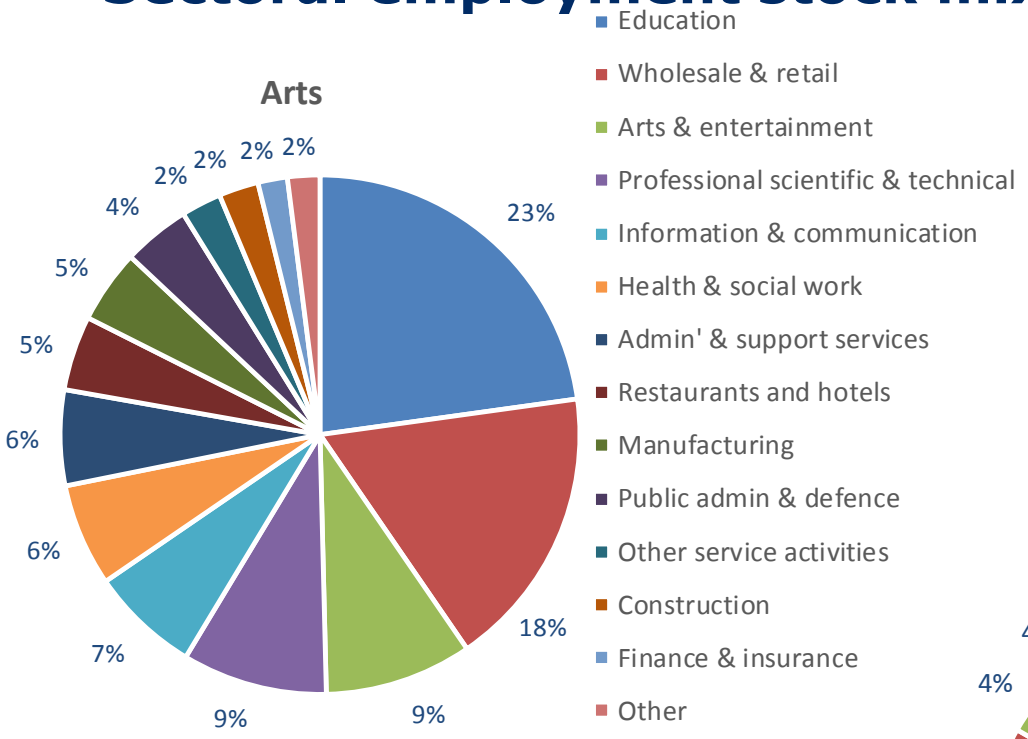
Source: EPC, LFS

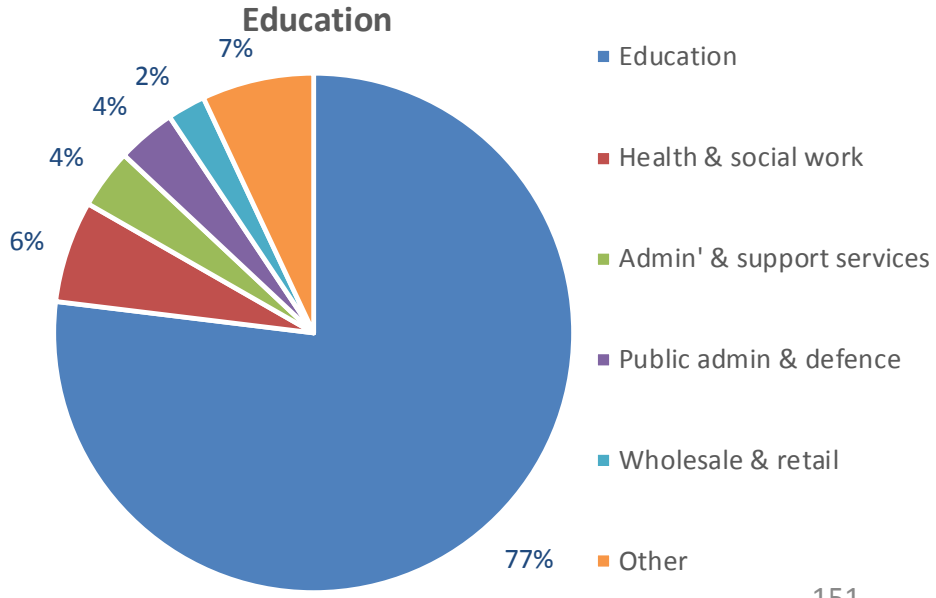
Stock by subject area

Sectoral employment stock mix per degree subject



Other sectors in Arts subject include: Transport & storage, Agriculture, Real estate , Water supply & waste, Elect' & gas, Mining, People employed by households

Other sectors in Education subject include: Arts & entertainment, Other service activities, Professional scientific & technical, Restaurants and hotels, Information & communication, Manufacturing, Agriculture, Construction, Finance & insurance , Transport & storage, Real estate , Elect' & gas, Water supply & waste, Mining, People employed by households



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Source: EPC, LFS

Sectoral demand by subject area

Findings from subject area analysis

The following comments are made in respect of the subject area analysis:

- A relatively small number of subject areas are industry specific:
  - Health qualifications tend to lead to employment in the health sector;
  - Education qualifications to the education sector;
  - Architecture to construction and professional services; and
  - Law to professional services and public administration.
- In contrast, a much larger number of subject areas provide opportunities to work across a wide range of sectors, such as business and finance which reflects demand for these skills across all parts of the economy.

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Annex A –
Context to methodological approach

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Context to skills forecasting

- **The focus of this skills barometer is to forecast the skills net requirement from the education and migration**. It is also recognised that businesses recruit from a wide range of other sources:
  - Most skills needs will be met by existing labour market participants moving between sectors/ occupations;
  - Other recruitment needs are met by people from unemployment and inactivity;
  - The EU referendum result is likely to result in lower levels of migration than experienced in recent years. Therefore it becomes increasingly important that the economic skills needs are met through education rather than being able to partially rely on inward migration.
- **Upskilling**[1] in the labour market is an important feature of meeting industry skills needs. Upskilling has been excluded from the supply-side based on initial assumptions, however it is currently being researched by the Centre.

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Note 1: Upskilling refers to people in employment and undertaking an accredited qualification, which is related to their current job

Context to skills forecasting

- **Level and scope of skills forecasting** – the skills barometer forecasts skills requirements across all industry sectors and occupational groups in the economy. It also assesses the level of skills required from NQF level 2 (i.e. GCSE equivalent) through to NQF level 8 (i.e. PhD equivalent) and a further level of analysis is also provided to forecast the subject areas over and under-supplied at both FE and HE.

- **Detailed sectoral analysis not provided** – although the level of detail provided is broad in scope, individual sectoral bodies may wish to undertake more detailed analysis to assess the level of over or under-supply of specialist disciplines within broader subject areas. E.g. the current supply of medicine and dentistry graduates meets demand, but within the medical profession there have been reported shortages in some areas (such as GPs). The skills barometer focus at present is at the wider subject area level.

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Context to skills forecasting

- **Breaking new ground** – the skills barometer provides a greater level of detail than previous skills forecasting work across a number of areas:
  - **more detailed analysis** – providing analysis at 2 digit SIC (Standard Industrial Classification/ industry sectors) and 3 digit SOC (Standard Occupational Classification/ occupational areas) level. This has required the development of a large LFS (Labour Force Survey) dataset to allow for a greater level of analysis;
  - Inclusion of skills requirements **across all NQF levels**, not just at higher skills levels.
  - identifying areas of over and under supply at the subject area level (1 digit JACS and SSAs);
  - **recognition of employability** issues and the associated reduction in the supply of skills has been considered in this report for the first time;
  - **recognition of upskilling**, this analysis makes initial assumptions on the level of upskilling but further research is being undertaken to understand in greater detail the quantity of upskilling ongoing and required.

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Annex B1 –
Baseline Scenario

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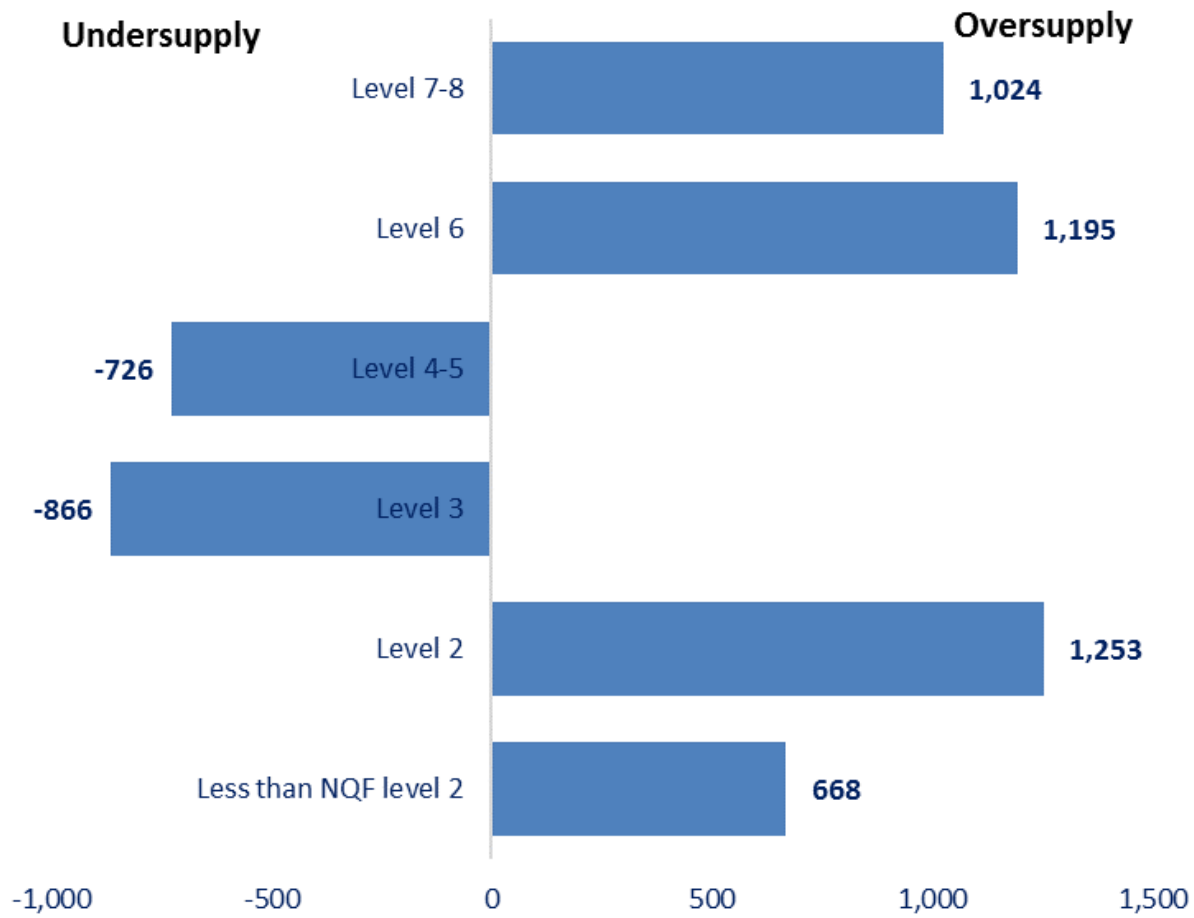
Supply gap – NQF Level

Annual labour market supply gap (NQF L1 to L8)

High Level (L6+)

Mid Level (L3-5)

Low Level (L2 and below)



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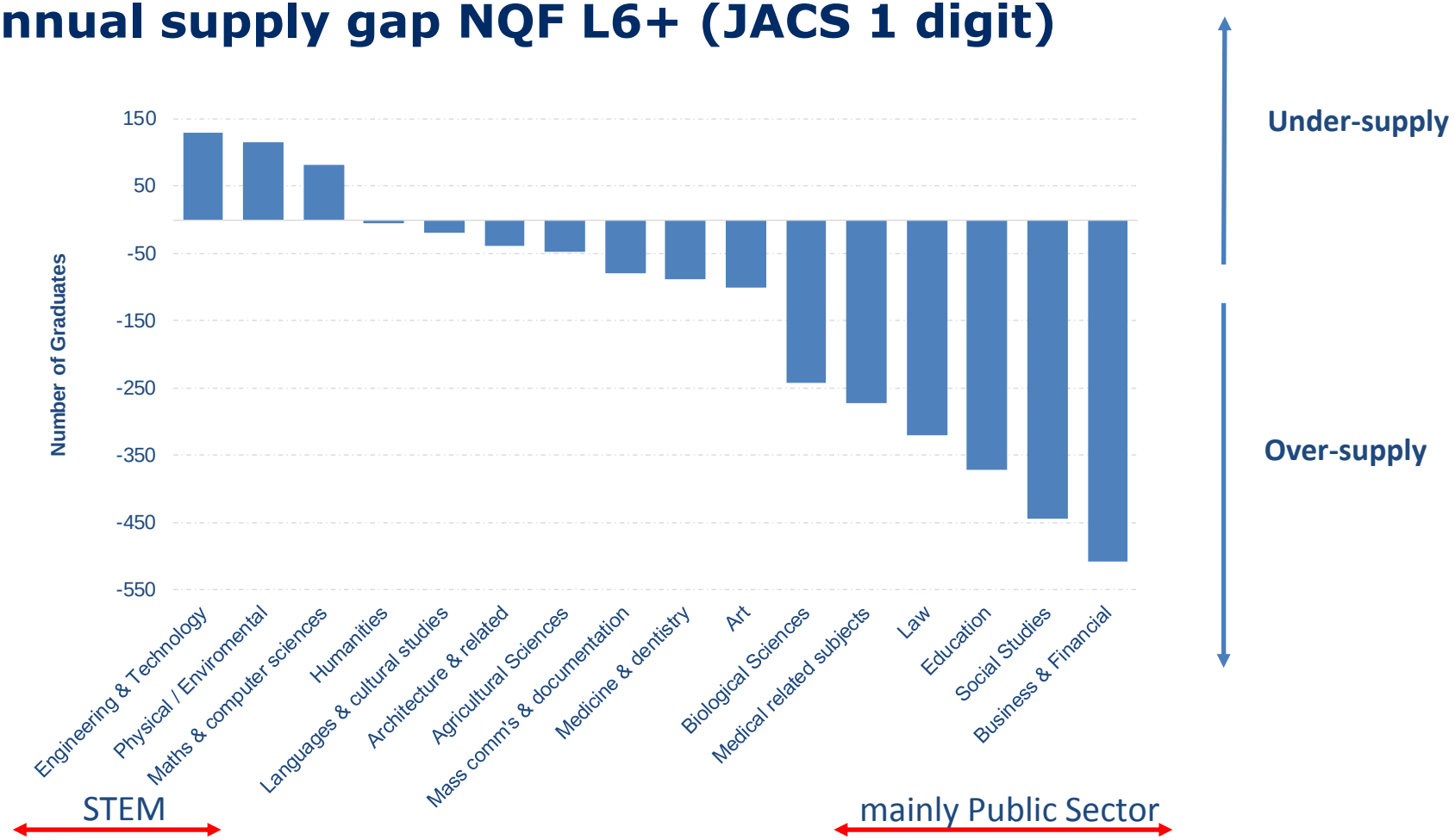
- **Much greater levels of over-supply given the reduced demand in the baseline scenario.**

NQF L6+ supply gap – Broad subject area

Annual supply gap NQF L6+ (JACS 1 digit)



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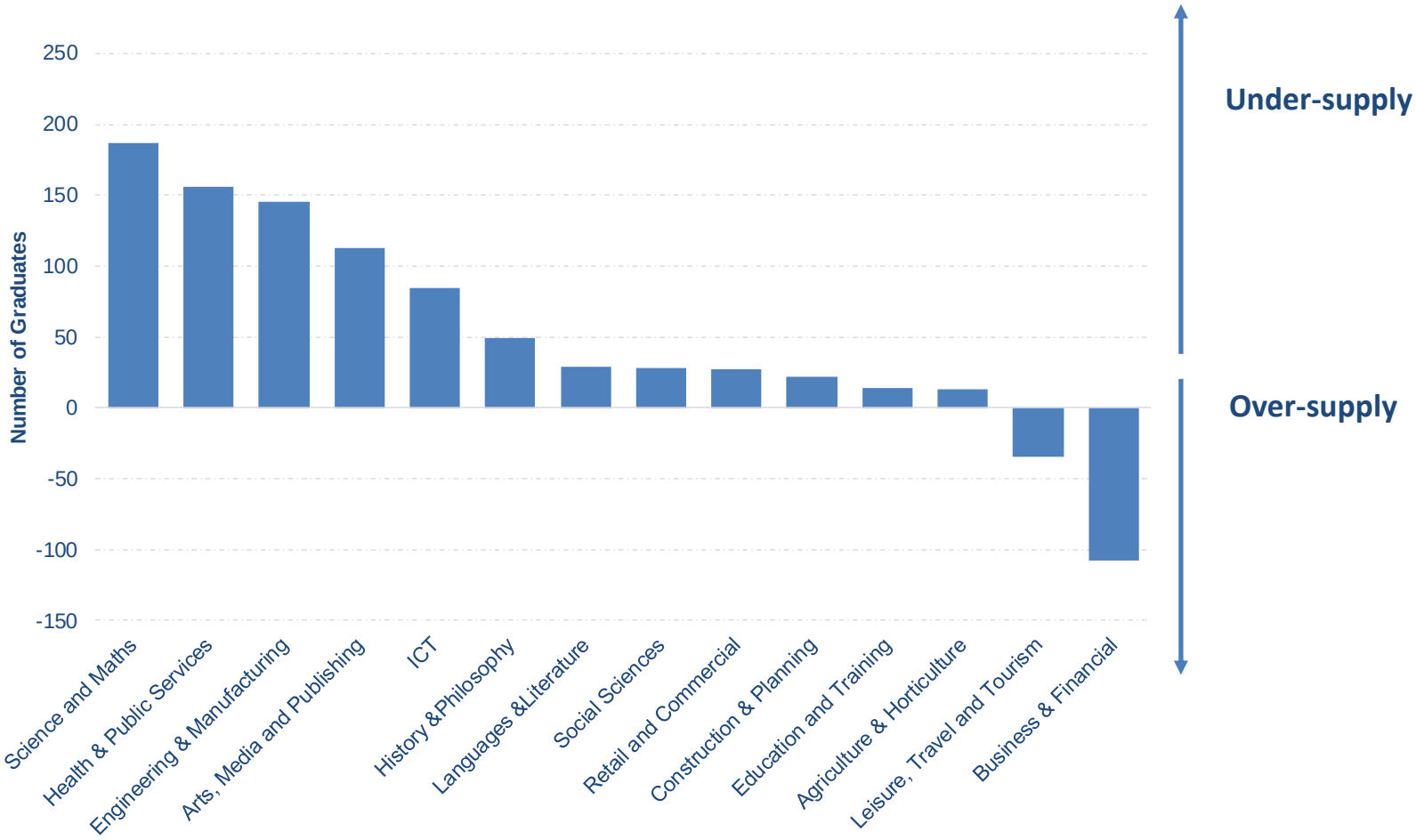
Source: HESA, EPC

NQF L4-5 supply gap – Broad subject area

Annual supply gap NQF L4-5 (SSAs 1 digit)



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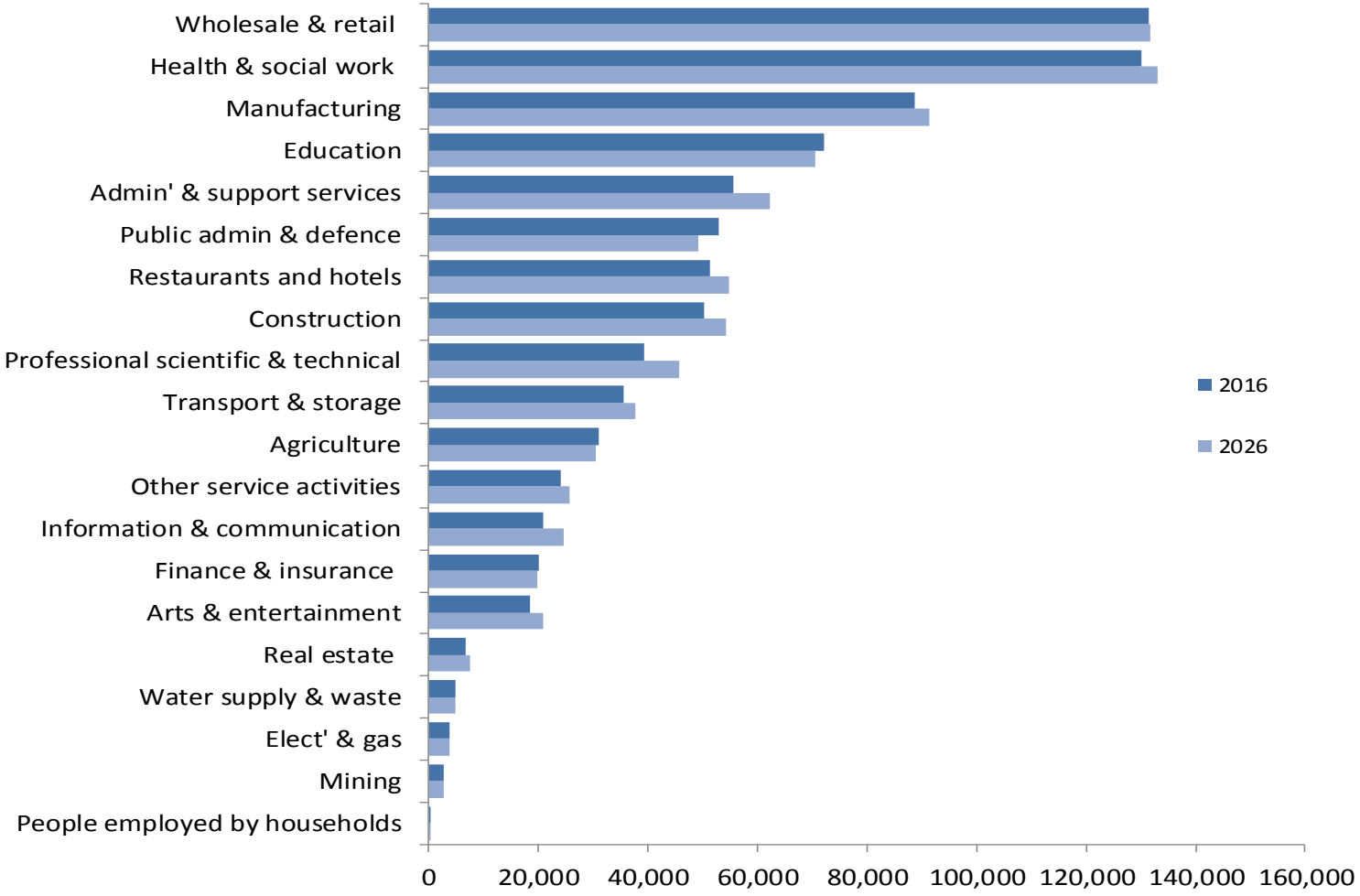
Source: HESA, EPC

Job projections by sector

Total jobs by 1 digit SIC (2016 and 2026)



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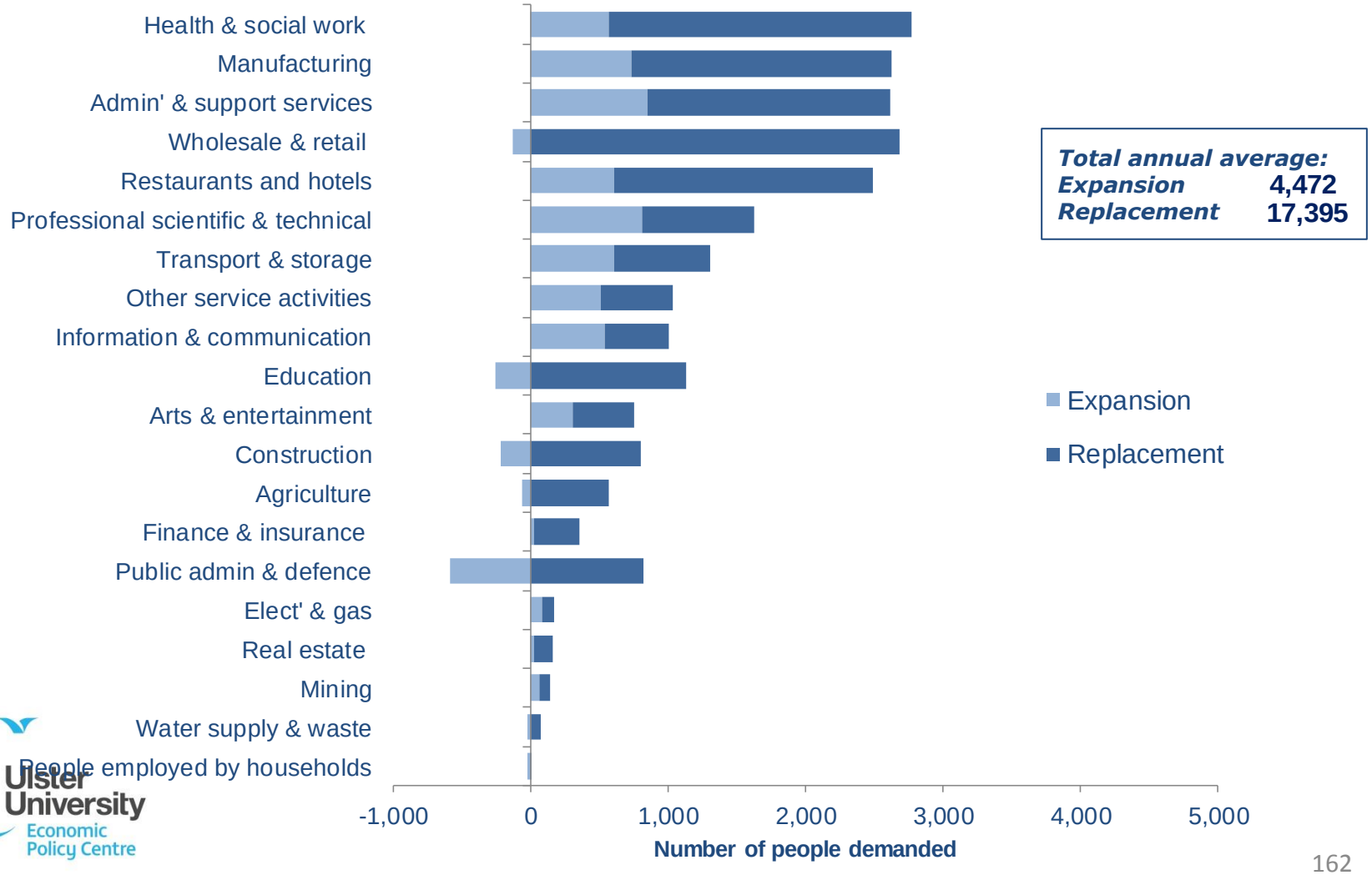
Source: EPC

Employment projections by sector

Annual average requirement by industry (SIC 1 digit)

Net Requirement from education and migration



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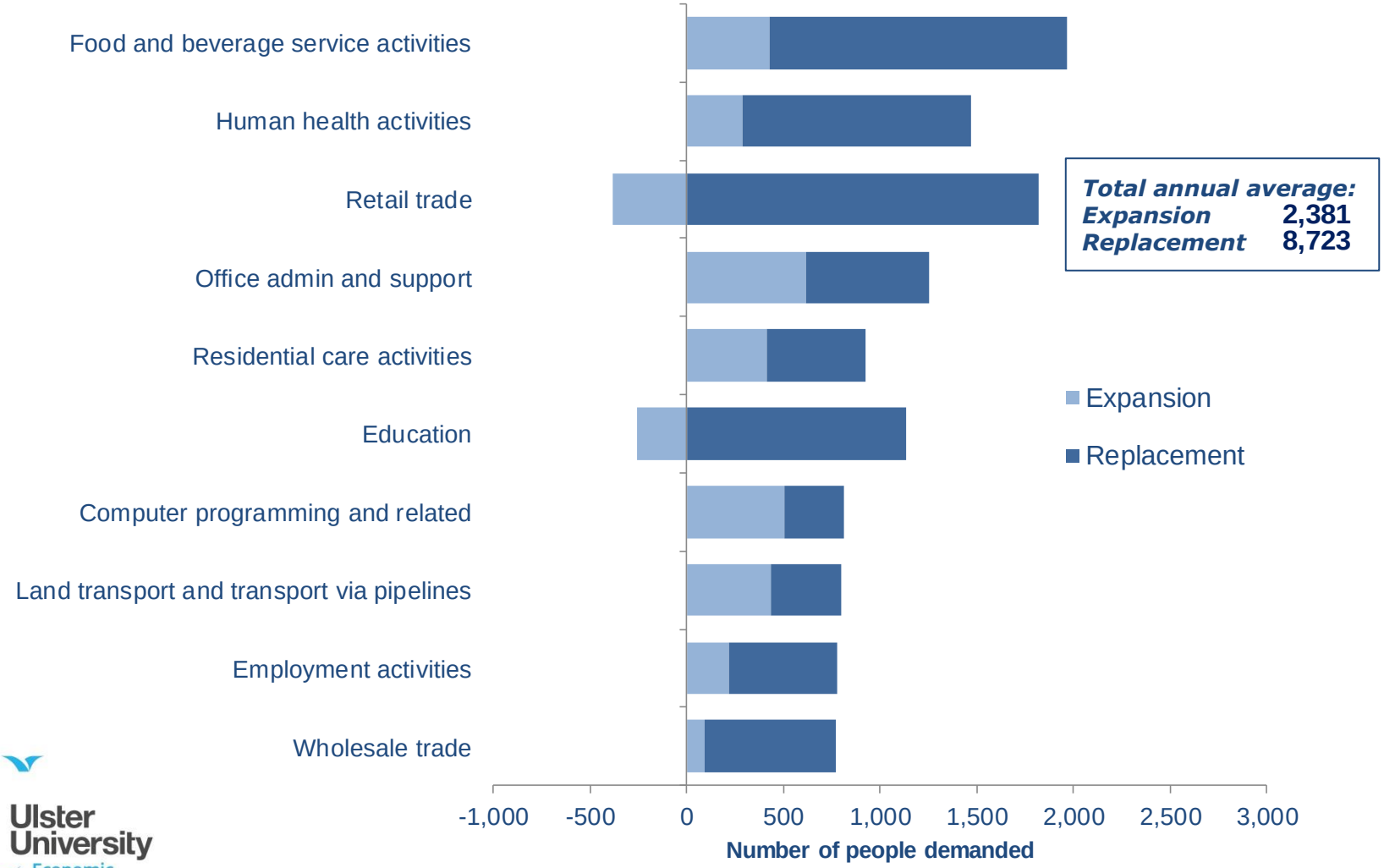
Source: EPC

Employment projections by sector

Top 10 Industry Sectors (SIC 2 digit)

Net Requirement from education and migration



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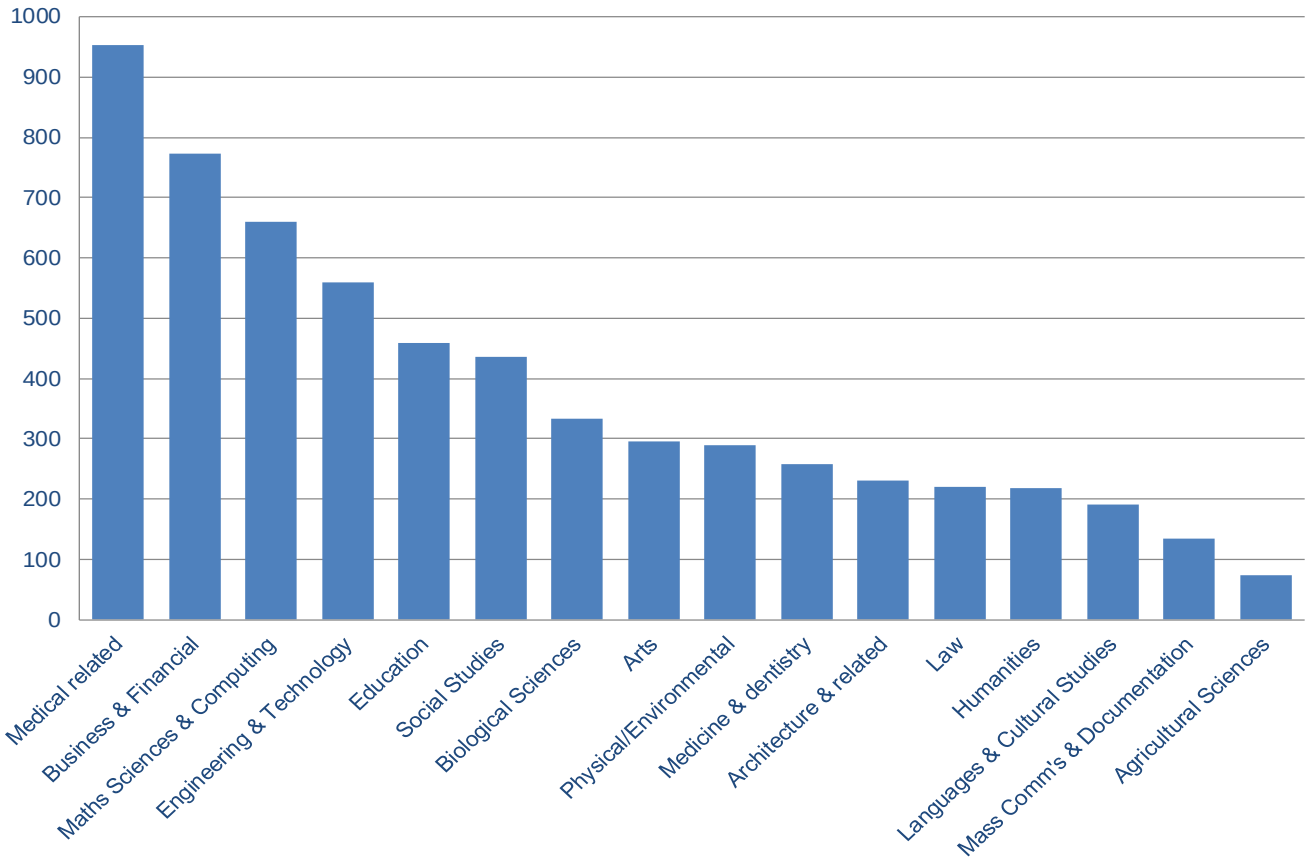
Source: EPC

Demand for L6+ qualifications

Annual average skills NQF L6+ (JACS 1 Digit)



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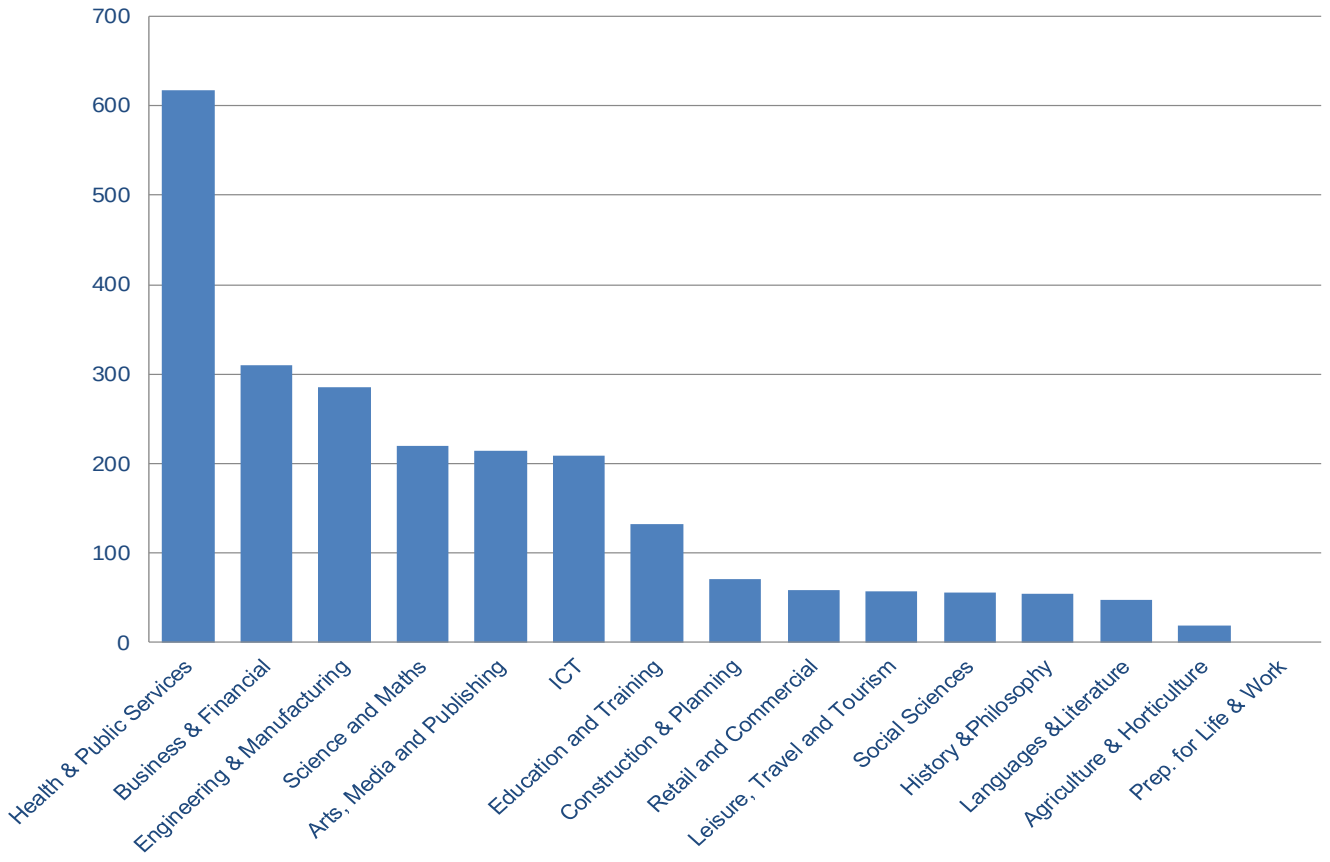
Source: EPC

Demand for L4-5 qualifications

Annual average skills NQF L4-5 (SSAs 1 Digit)



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Source: EPC, DEL, LFS

Annex B2 – Baseline Scenario vs. High Growth Scenario

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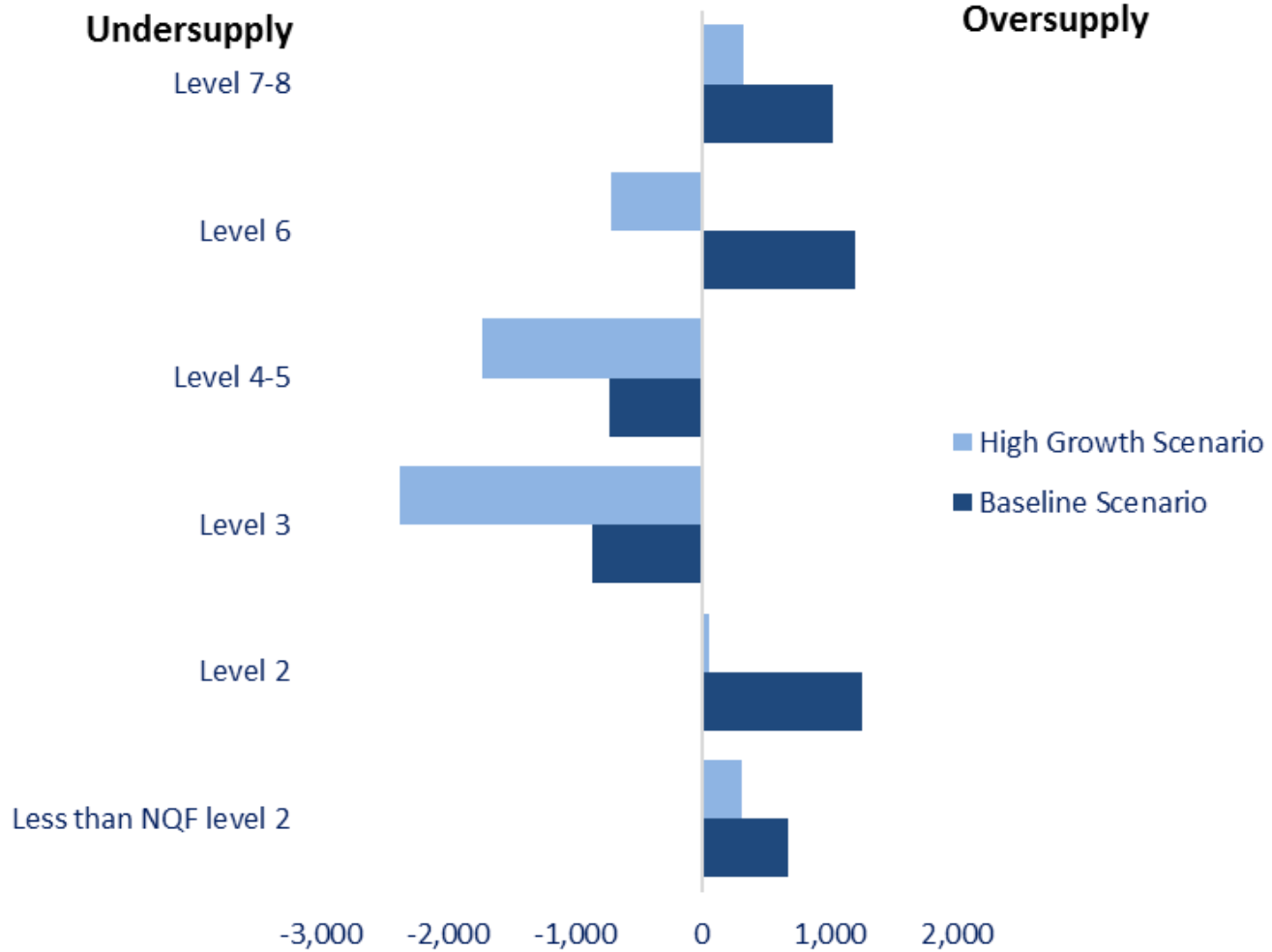
Supply gap – NQF Level

Annual labour market supply gap (NQF L1 to L8)

High Level (L6+)

Mid Level (L3-5)

Low Level (L2 and below)



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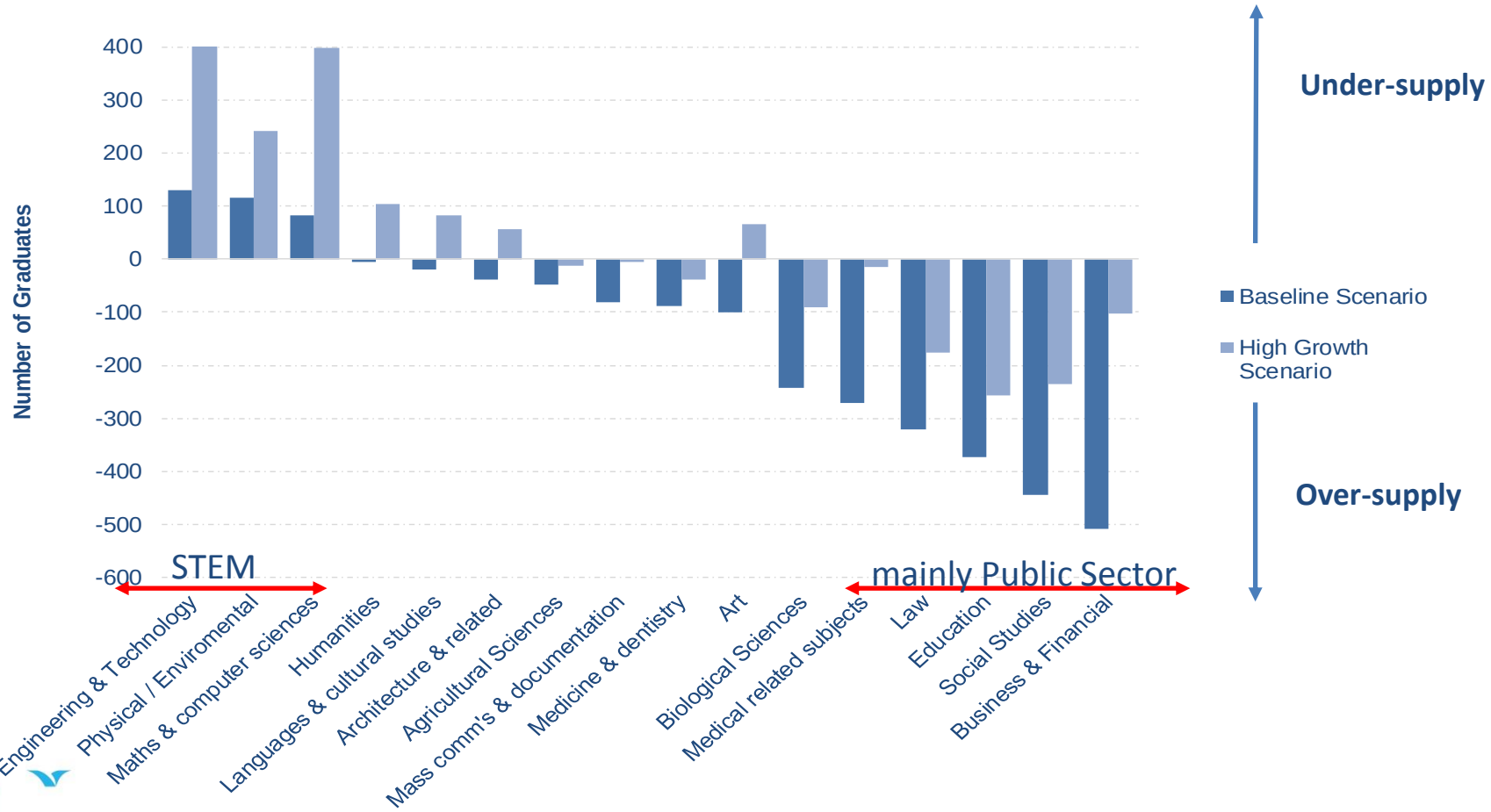
NQF L6+ effective supply gap

Annual effective supply gap NQF L6+ (JACS 1 digit)



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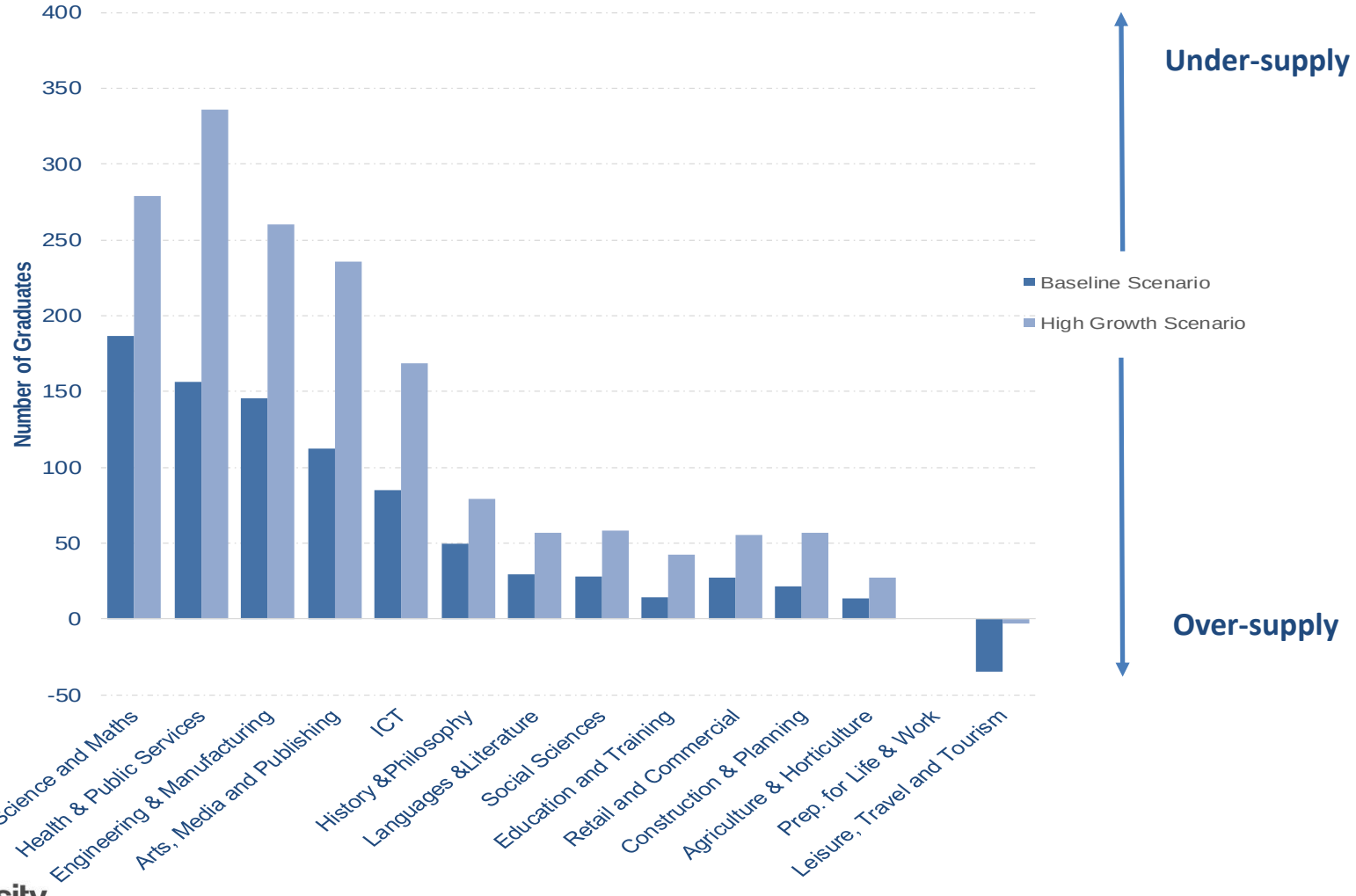
Source: HESA, EPC

NQF L4-5 effective supply gap

Annual effective supply gap NQF L4-5 (SSAs 1 digit)



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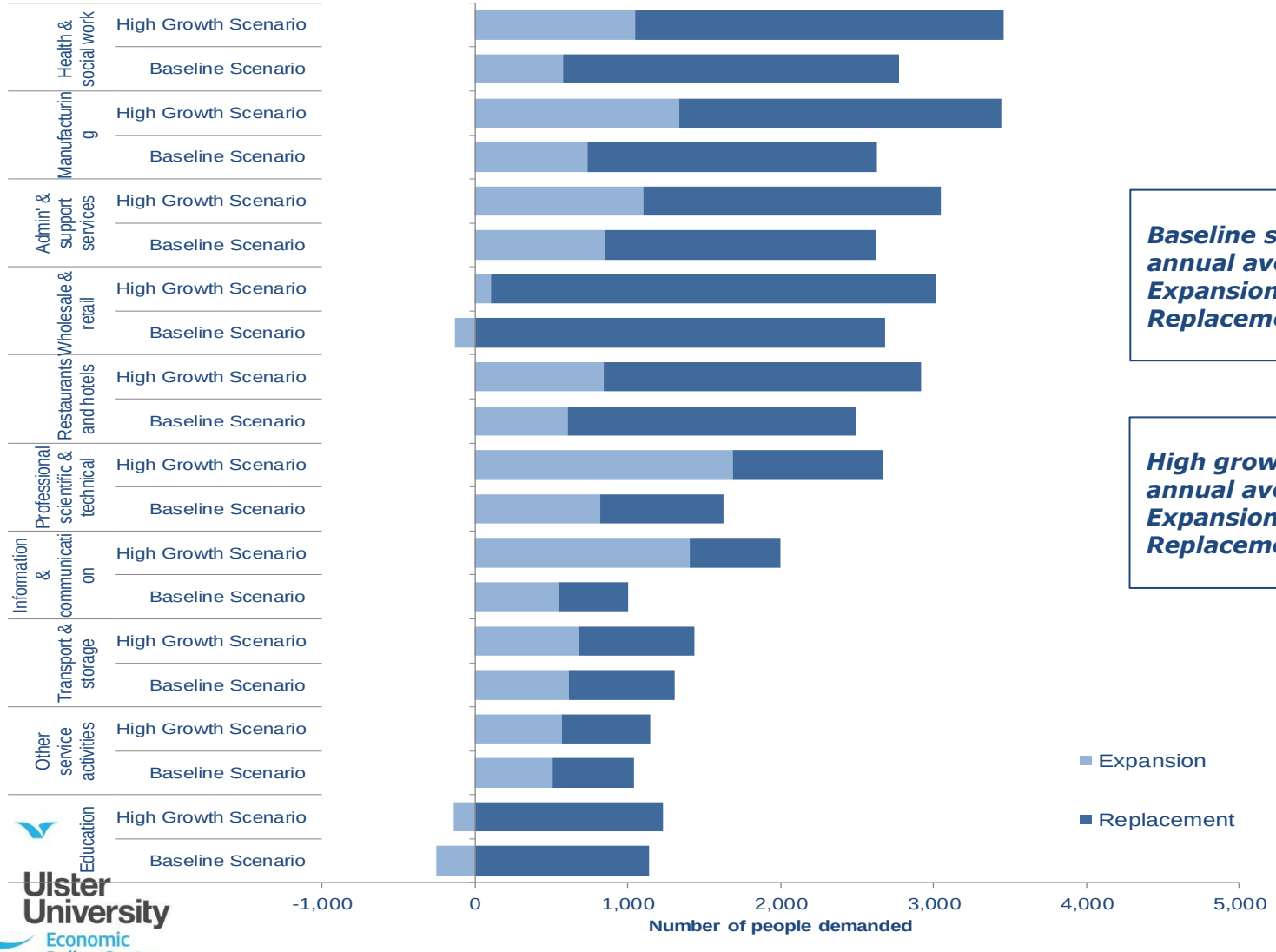
Source: HESA, EPC

Employment projections by sector

Annual average requirement by industry (SIC 1 digit)

Net Requirement from education and migration



Baseline scenario total annual average:

Expansion	**4,472**
Replacement	**17,395**

High growth total annual average:

Expansion	**9,287**
Replacement	**19,271**

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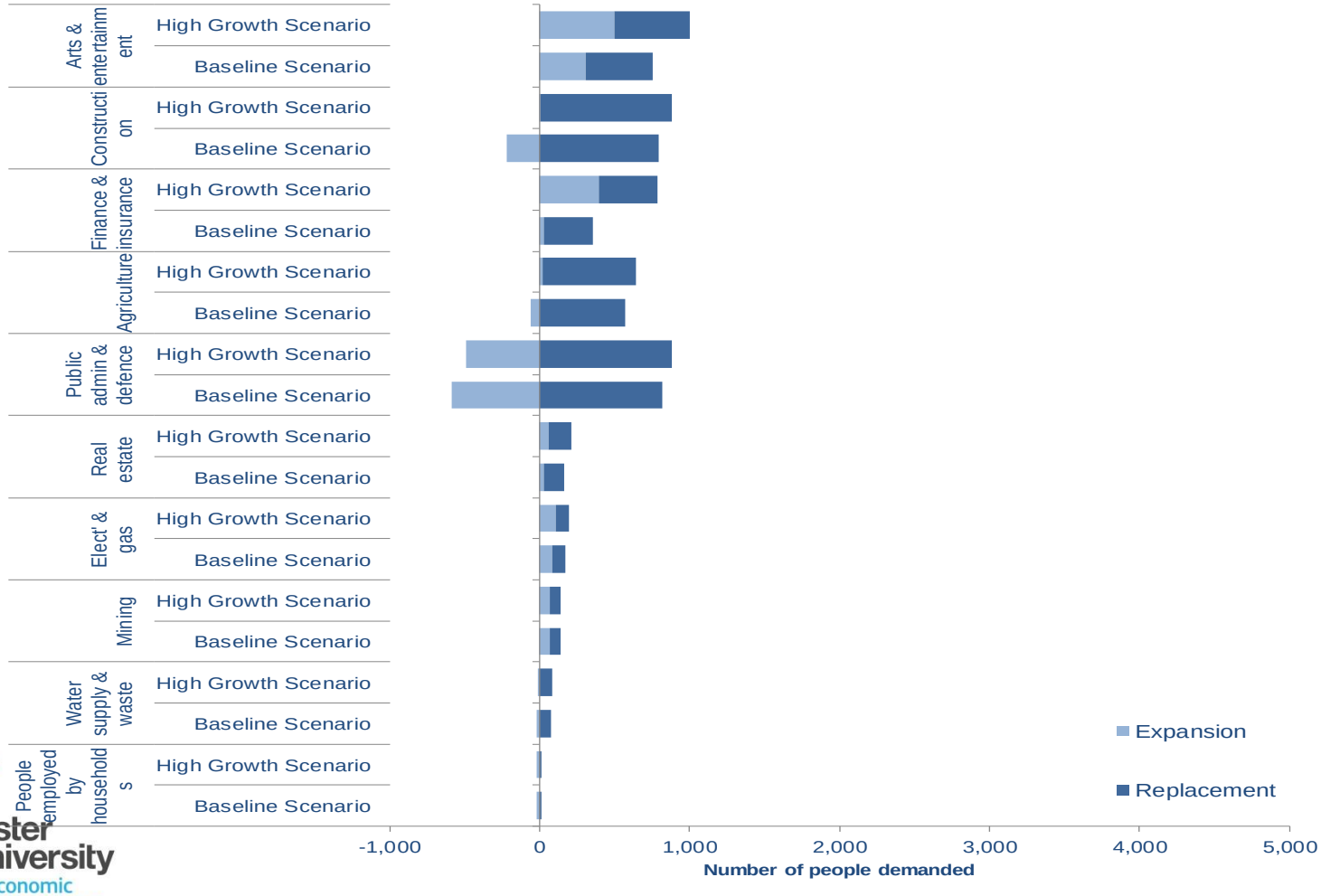
Source: EPC

Employment projections by sector

Annual average requirement by industry (SIC 1 digit)

Net Requirement from education and migration



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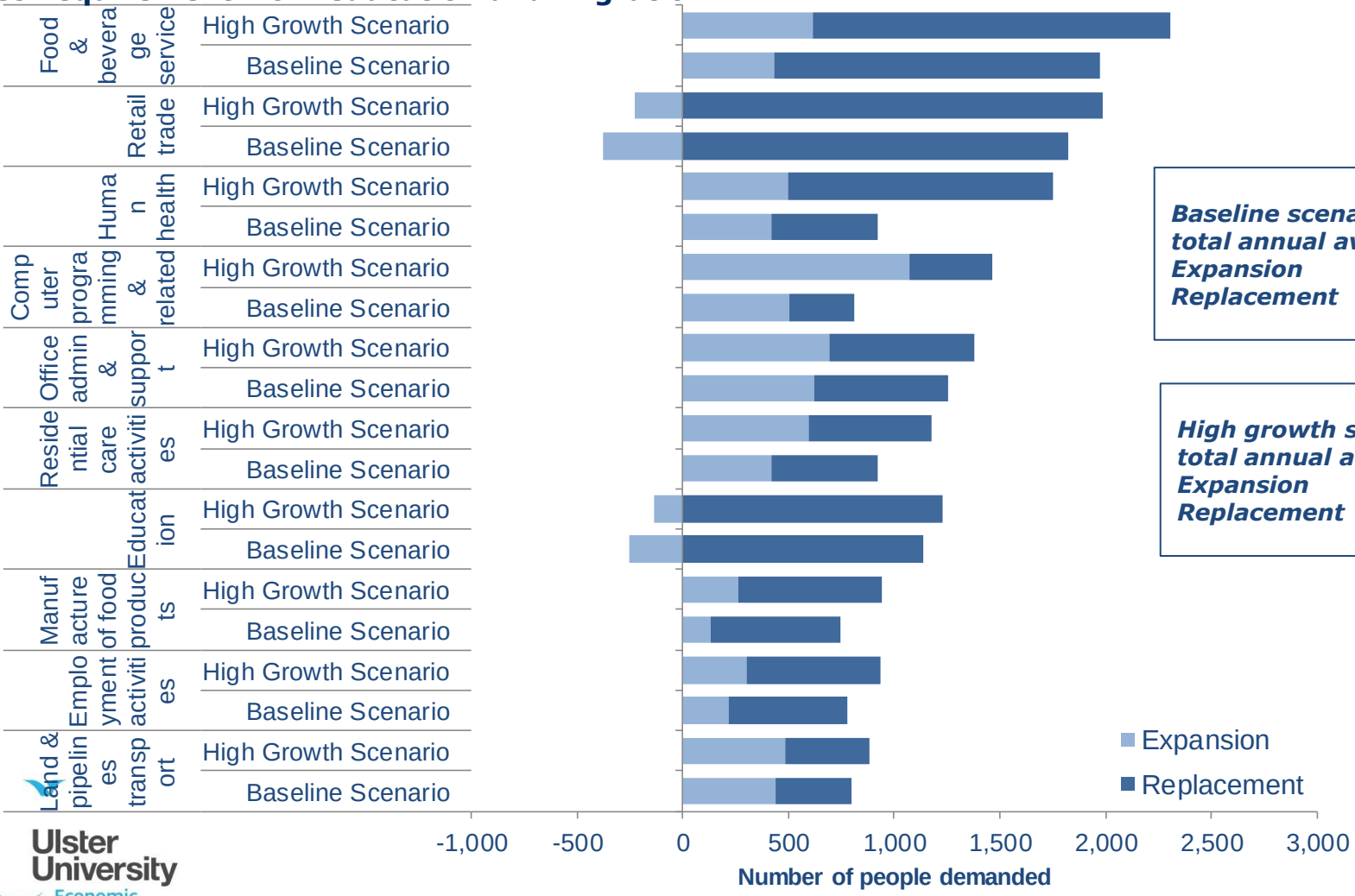
Source: EPC

Employment projections by sector

Top 10 industry sectors (SIC 2 digit)

Net Requirement from education and migration



Baseline scenario total annual average:

Expansion	***2,381***
Replacement	***8,723***

High growth scenario total annual average:

Expansion	***4,161***
Replacement	***9,525***

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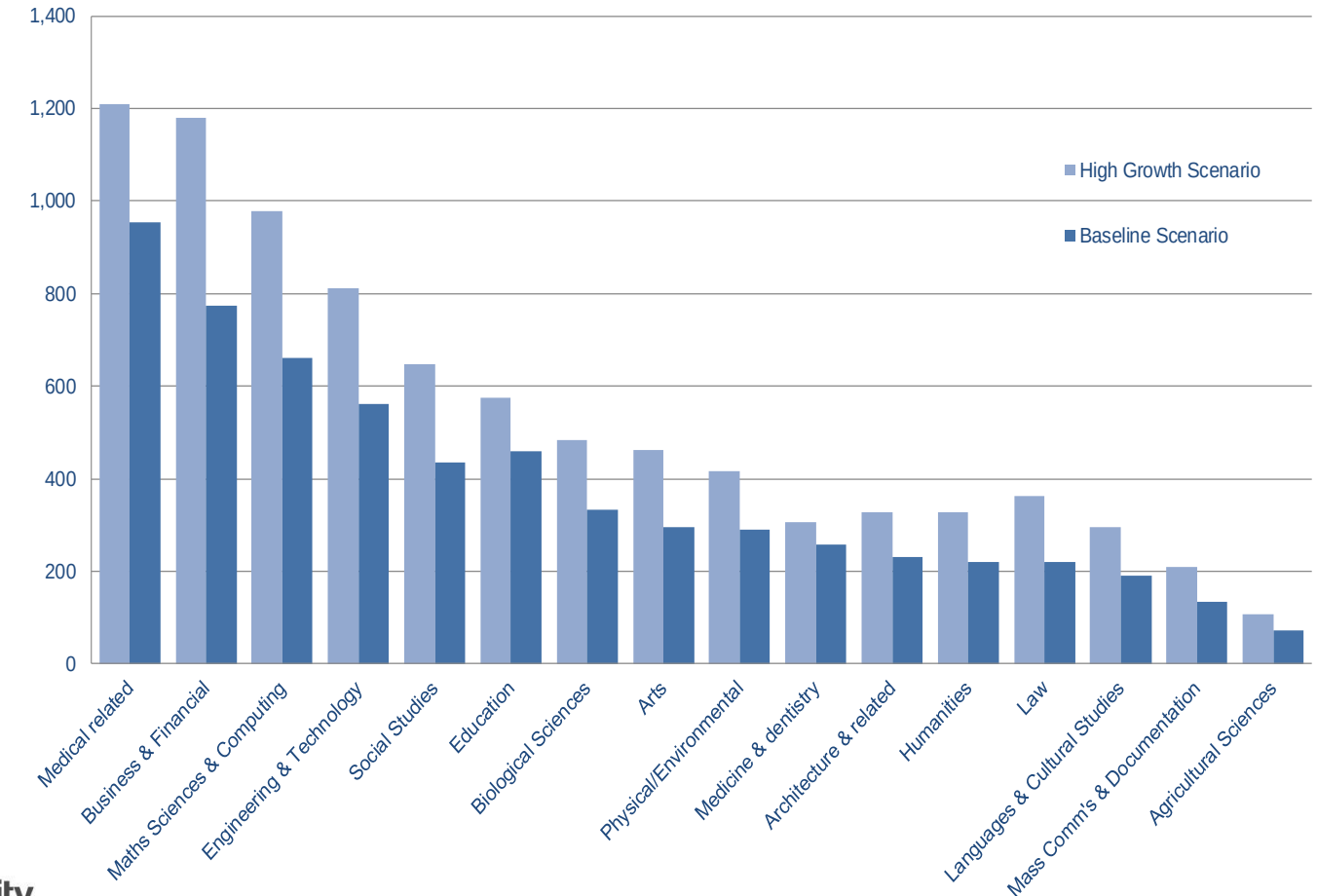
Source: EPC

Demand for L6+ qualifications

Annual average skills NQF L6+ (JACS 1 Digit)



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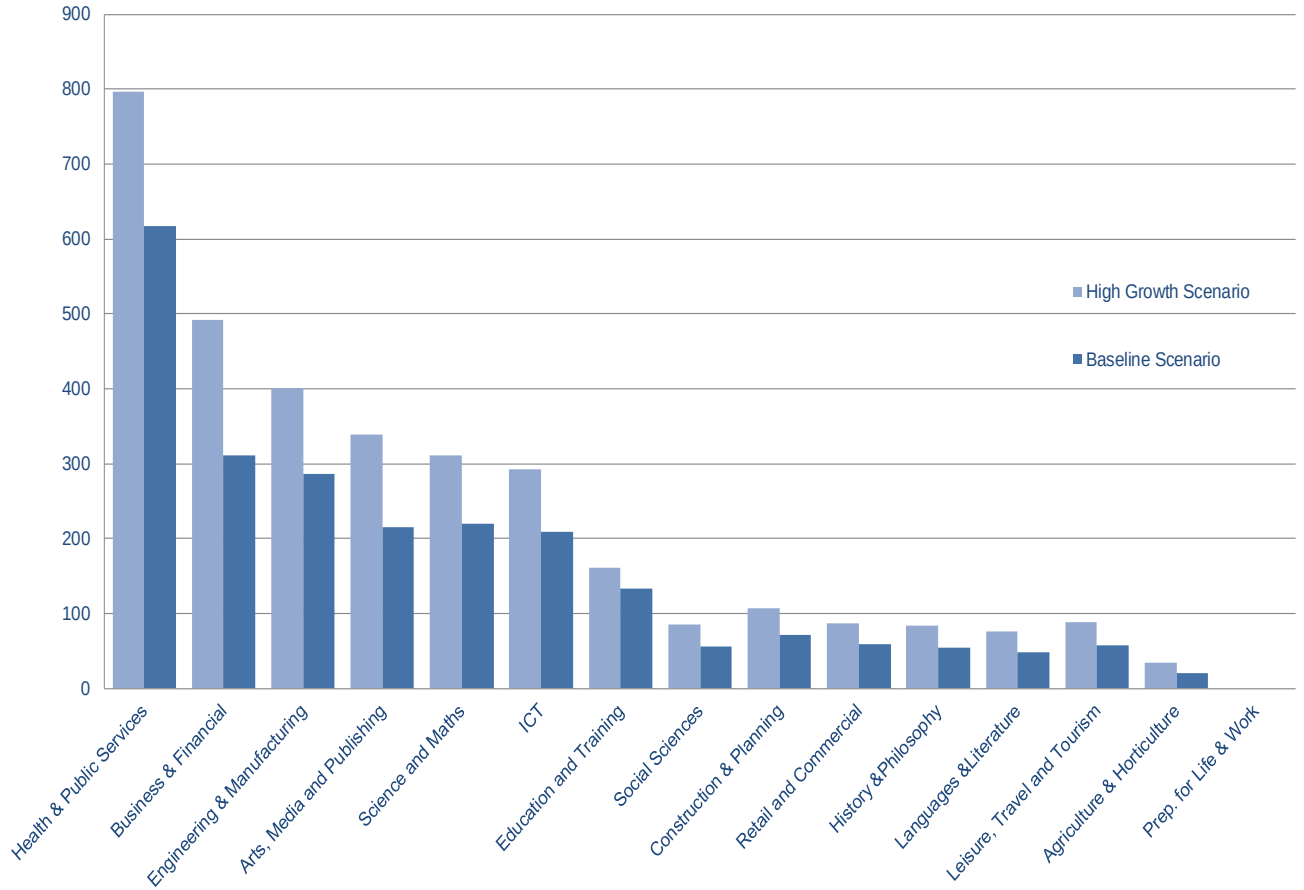
Source: EPC

Demand for L4-5 qualifications

Annual average skills NQF L4-5 (SSAs 1 Digit)



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Source: EPC, DEL, LFS

Annex C – Differences from 2015 Skills Barometer publication

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New

Differences from 2015 Skills Barometer

Industry	Baseline			High growth		
	2015-25	2016-26	Difference	2015-25	2016-26	Difference
Agriculture	+1,580	-596	-2,176	+2,999	+374	-2,625
Mining	+151	+14	-137	+298	+14	-284
Manufacturing	+8,191	+2,623	-5,568	+13,769	+9,264	-4,505
Electricity & gas	+69	-37	-106	+348	+157	-191
Water supply & waste	+124	+4	-120	+360	+198	-162
Construction	+3,787	+4,104	+317	+5,952	+6,594	+642
Wholesale & retail	+4,431	+14	-4,417	+7,429	+2,781	-4,648
Transport & storage	+1,961	+2,141	+180	+3,866	+2,971	-895
Restaurants and hotels	+3,910	+3,735	-175	+7,731	+7,615	-116
Information & communication	+5,951	+3,775	-2,176	+15,430	+12,281	-3,149
Finance & insurance	+85	-397	-482	+3,338	+3,755	+417
Real estate	+1,085	+791	-294	+1,926	+1,179	-747
Professional scientific & technical	+7,876	+6,692	-1,184	+15,398	+16,481	+1,083
Administrative & support services	+5,448	+6,914	+1,466	+9,959	+9,736	-223
Public admin & defence	-7,754	-3,904	+3,850	-7,015	-2,797	+4,218
Education	-1,520	-1,447	+73	-566	-63	+503
Health & social work	+3,293	+3,938	+645	+7,232	+9,473	+2,241
Arts & entertainment	+3,734	+2,500	-1,234	+5,072	+4,714	-358
Other service activities	+1,321	+1,578	+257	+2,157	+2,270	+113
People employed by households	+52	+15	-37	+100	+15	-85
Total	**+43,774**	**+32,457**	**-11,317**	**+95,782**	**+87,012**	**-8,770**

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Source: EPC, DEL, LFS

Annex D – NQF Level 2 analysis

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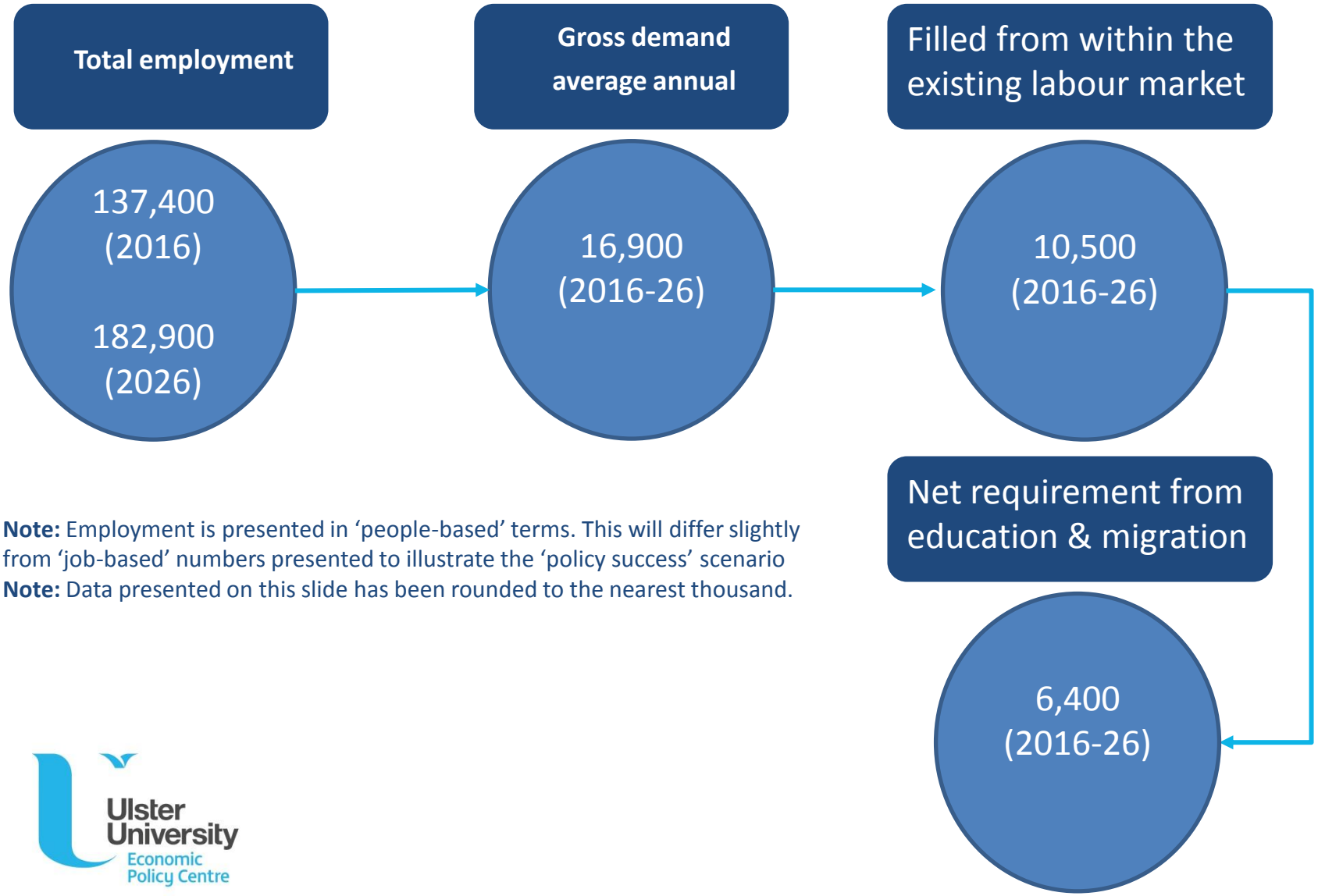
Overview of demand and supply for NQF level 2



Note: Employment is presented in 'people-based' terms. This will differ slightly from 'job-based' numbers presented to illustrate the 'policy success' scenario
Note: Data presented on this slide has been rounded to the nearest thousand.

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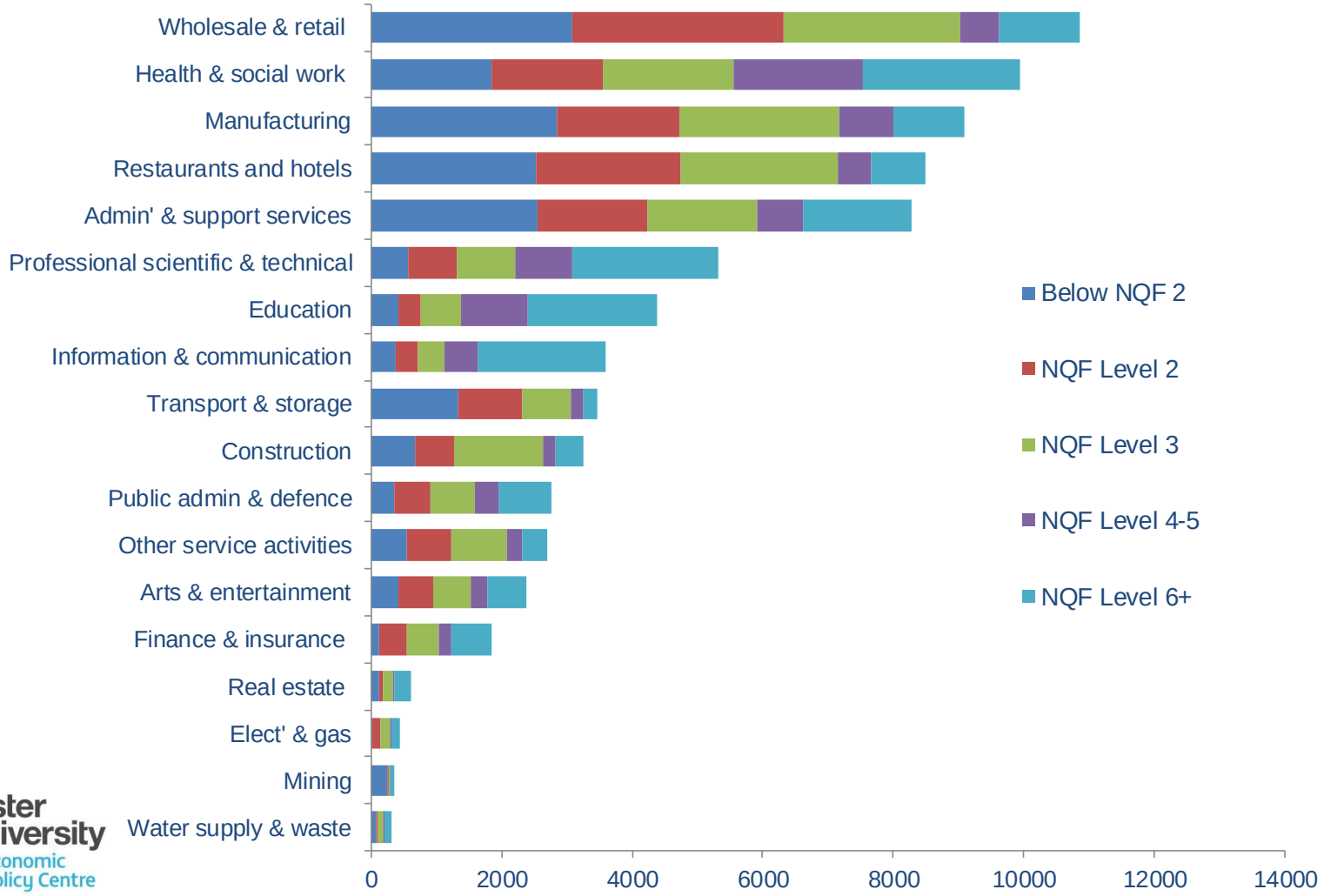
Gross demand skills mix by sector

Average 2016-26 gross demand skills mix (SIC 1 digit)



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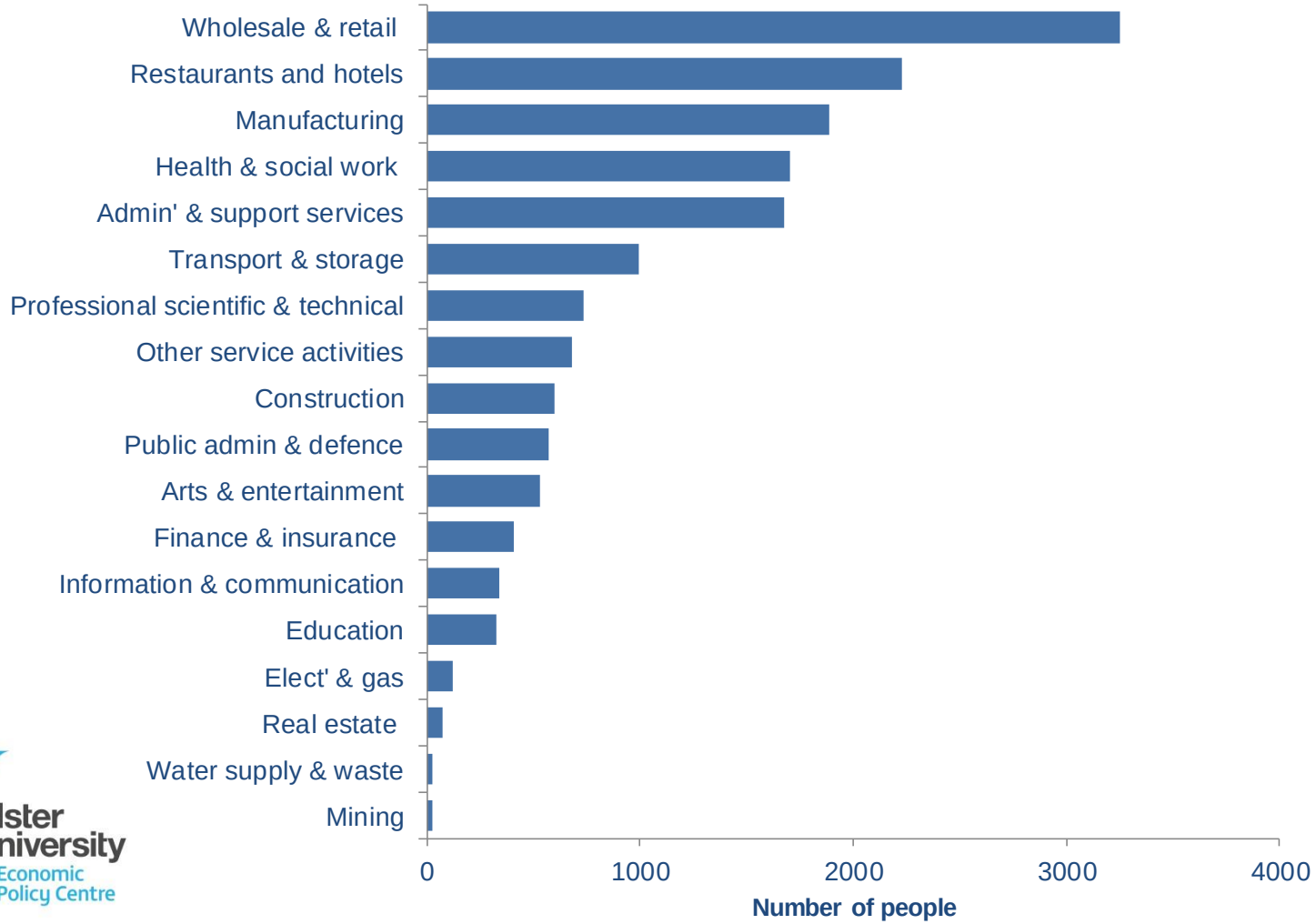
Source: EPC

Gross demand for Level 2 (by industry)

Average 2016-26 gross demand for Level 2 by industry (SIC 1 digit)

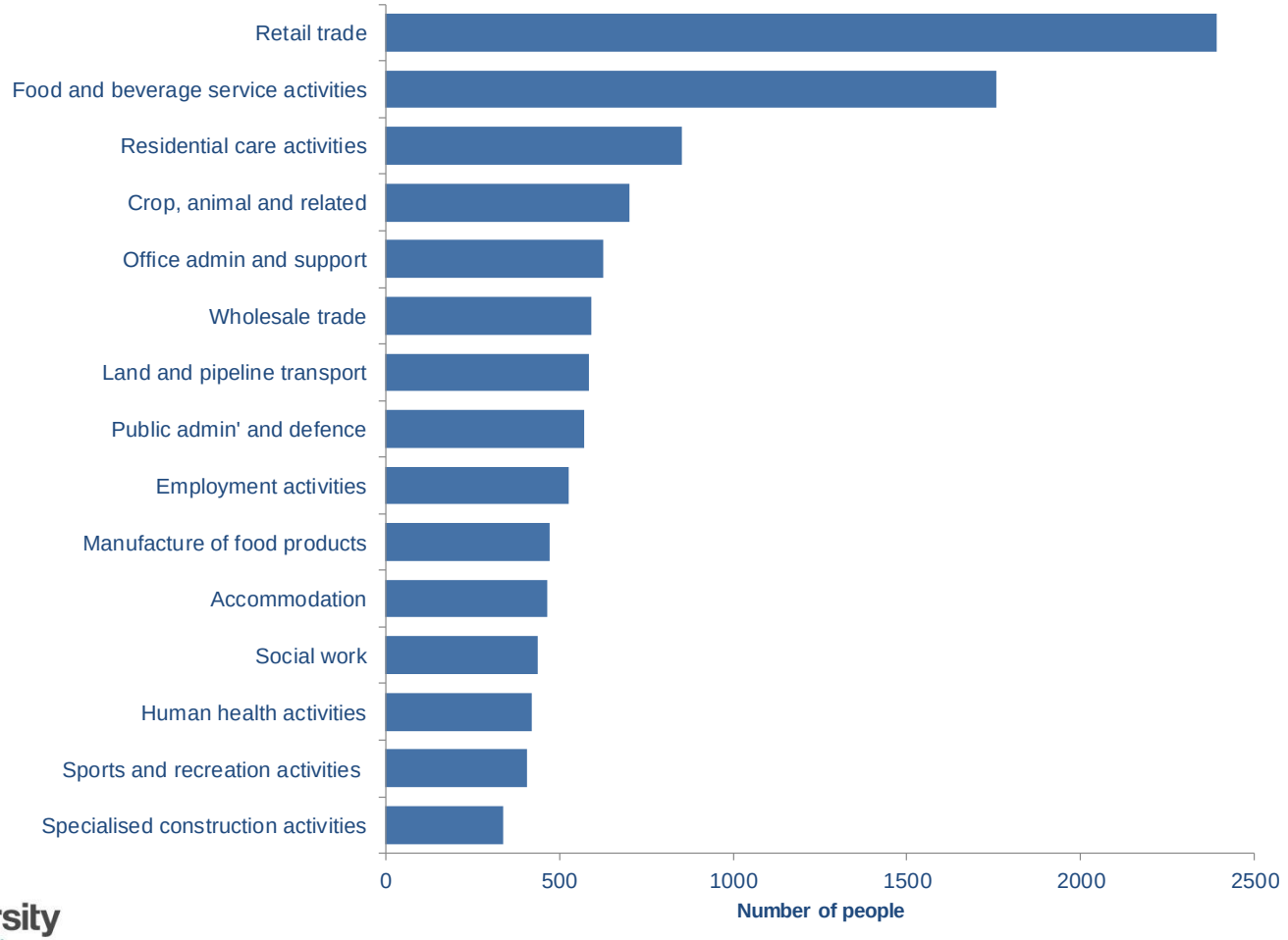


Ulster University Economic Policy Centre

Source: EPC

Gross demand for Level 2 (by industry)

Top 15 average 2016-26 gross demand for Level 2 by industry (SIC 2 digit)

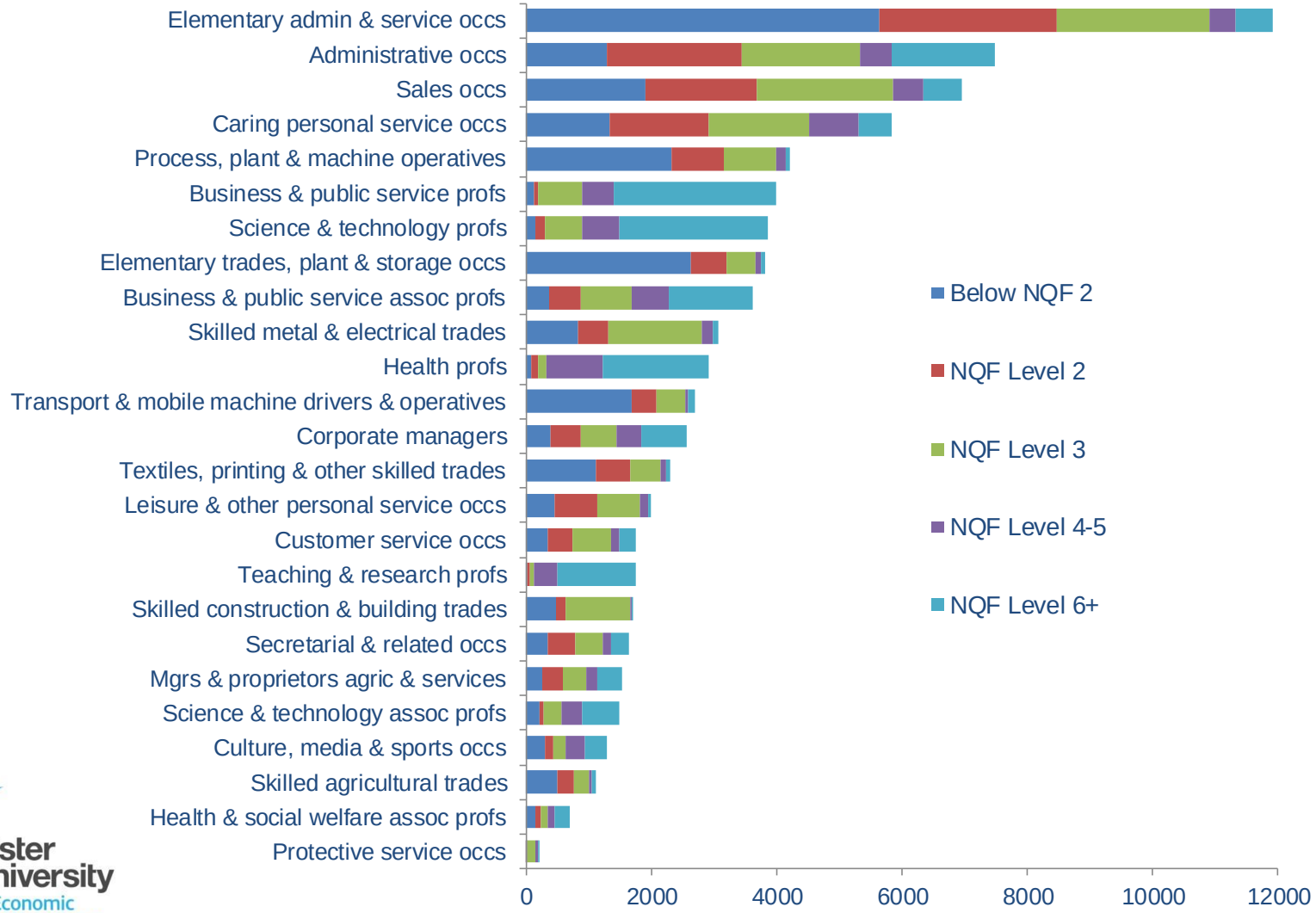


Ulster University Economic Policy Centre

Source: EPC

Gross demand skills mix by occupation

Average 2016-26 gross demand skills mix(SOC 2 digit)



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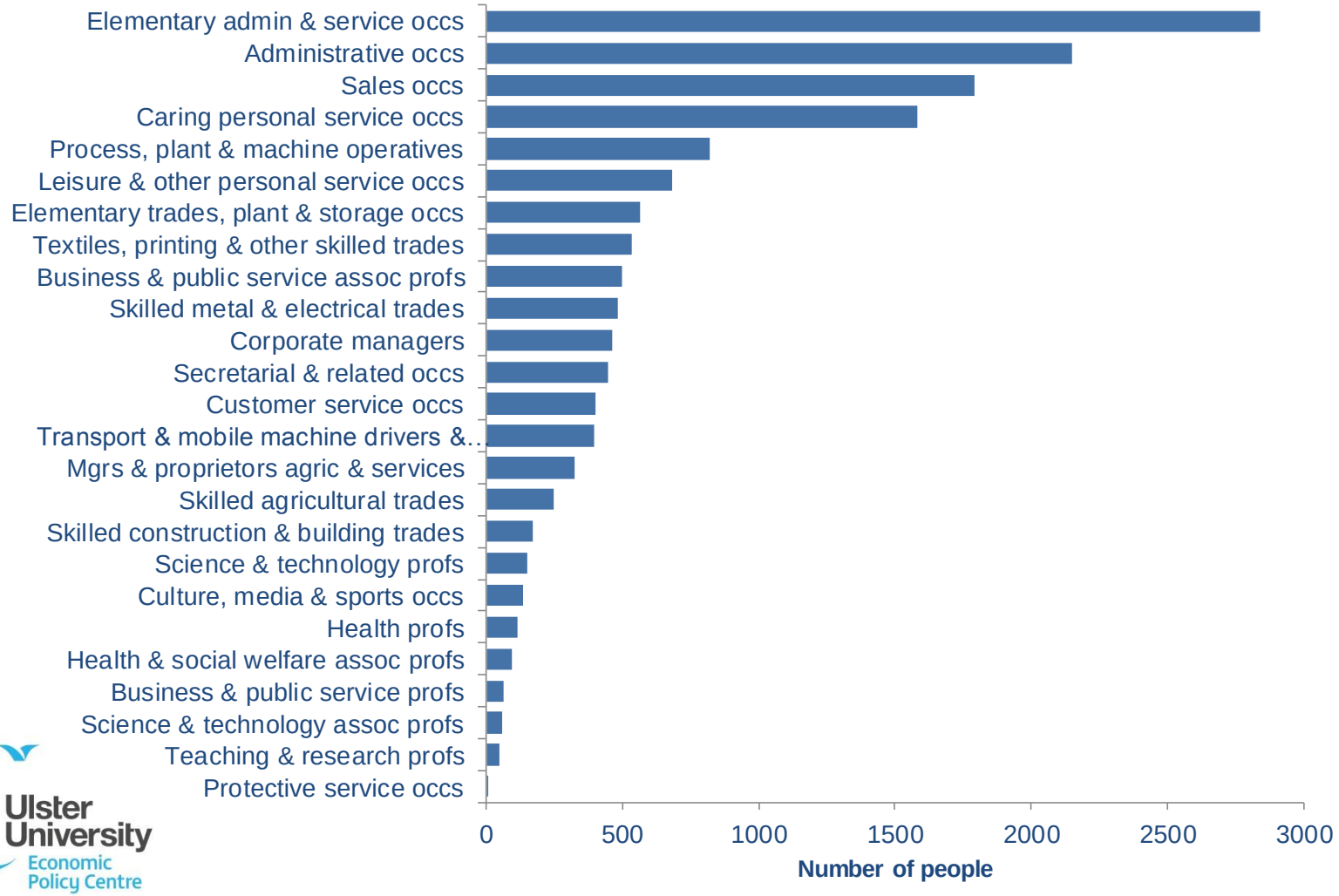
Source: EPC

Gross demand for Level 2 (by occupation)

Average 2016-26 gross demand for Level 2 by occupation (SOC 2 digit)



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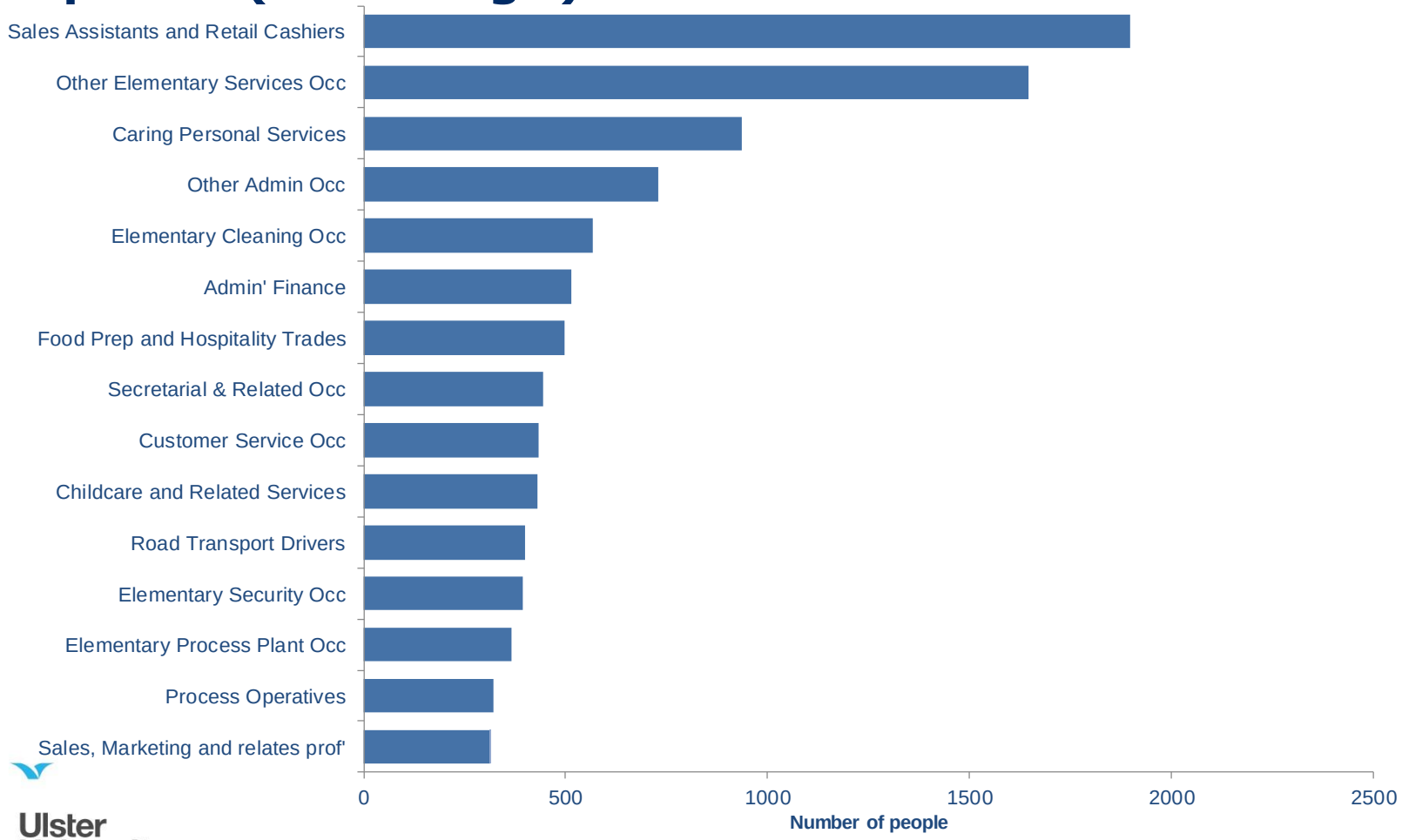
Source: EPC

Gross demand for Level 2 (by occupation)

Top 15 average 2016-26 gross demand for Level 2 by occupation (SOC 3 digit)



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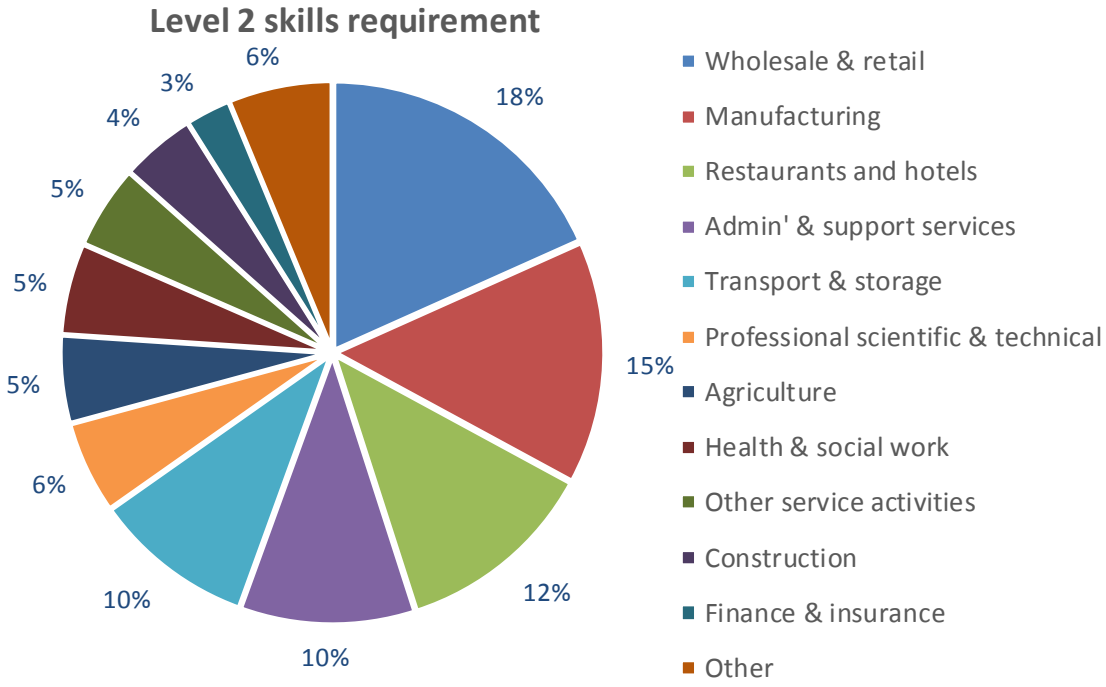
Source: EPC

Sectoral demand (net requirement) by skills level

Which sectors recruit low skilled (L2) people?



Other sectors in Mid to low level skills include: Other service activities, Restaurants and hotels, Real estate, Agriculture, Water supply & waste, Transport & storage, Mining, Elect' & gas and People employed by households

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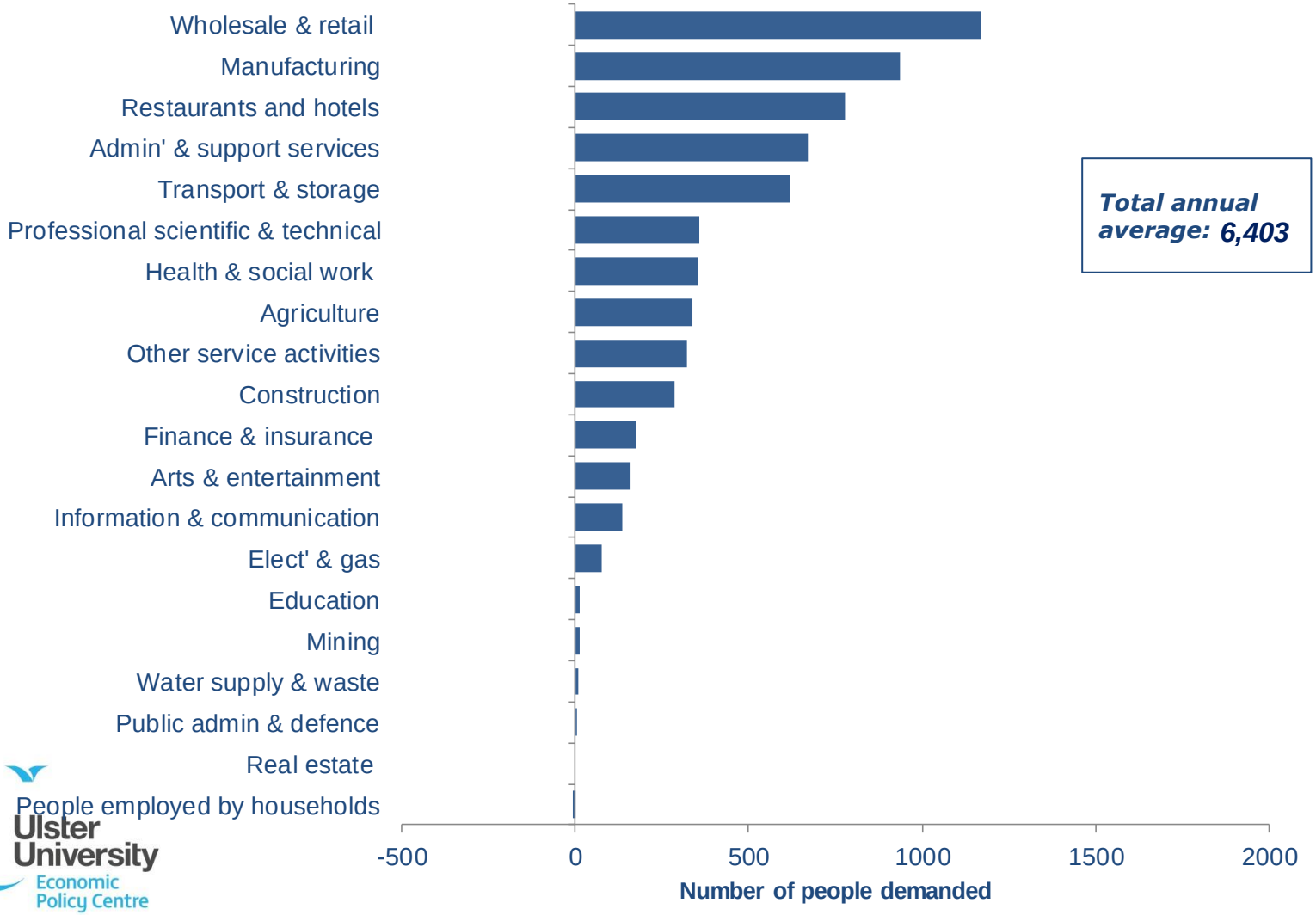
Source: EPC

Employment projections by sector

Annual average requirement by industry for L2 (SIC 1 digit)

Net requirement from education and migration



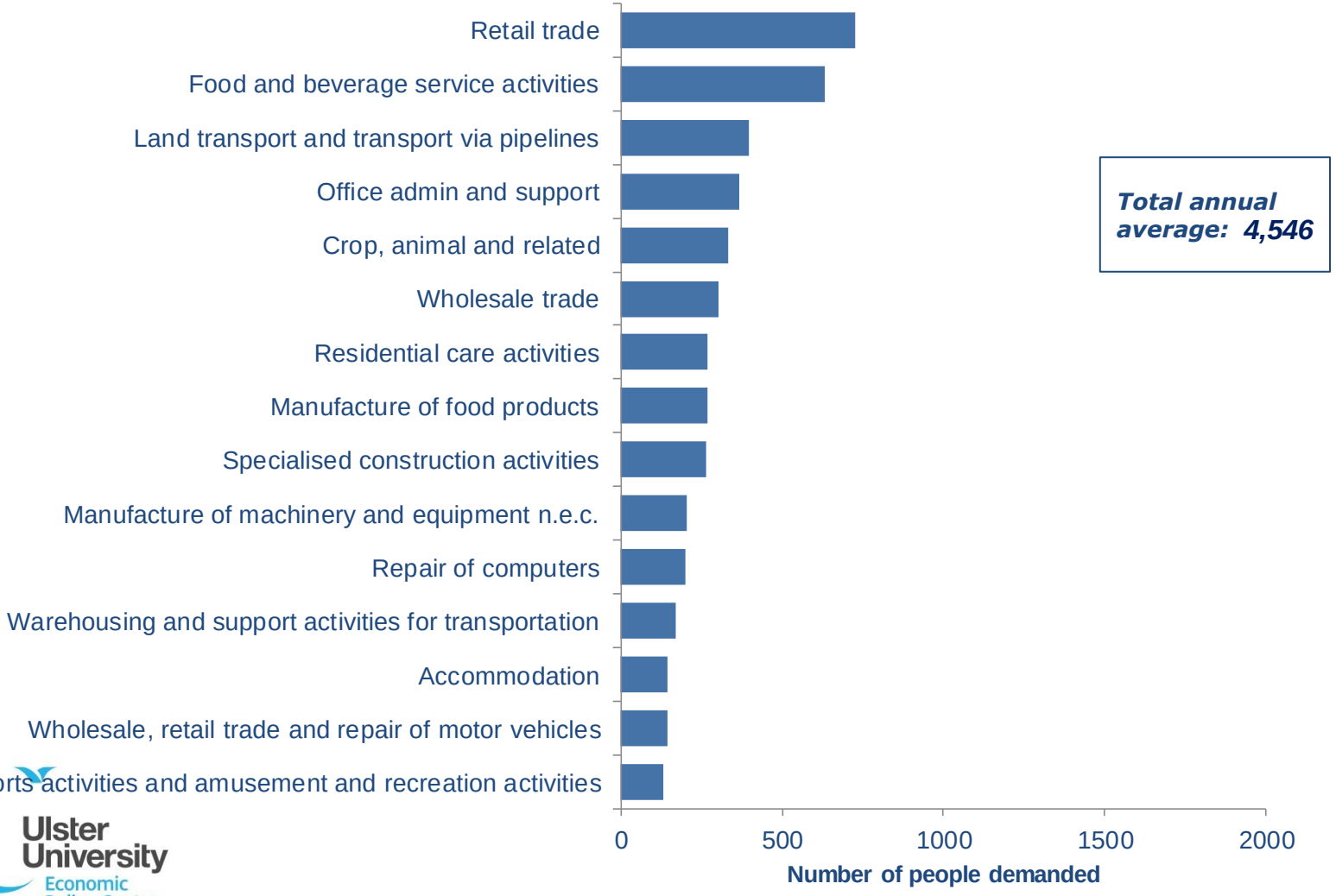
Ulster University Economic Policy Centre

Source: EPC

Employment projections by sector

Top 15 Industry Sectors for L2 (SIC 2 digit)

Net requirement from education and migration

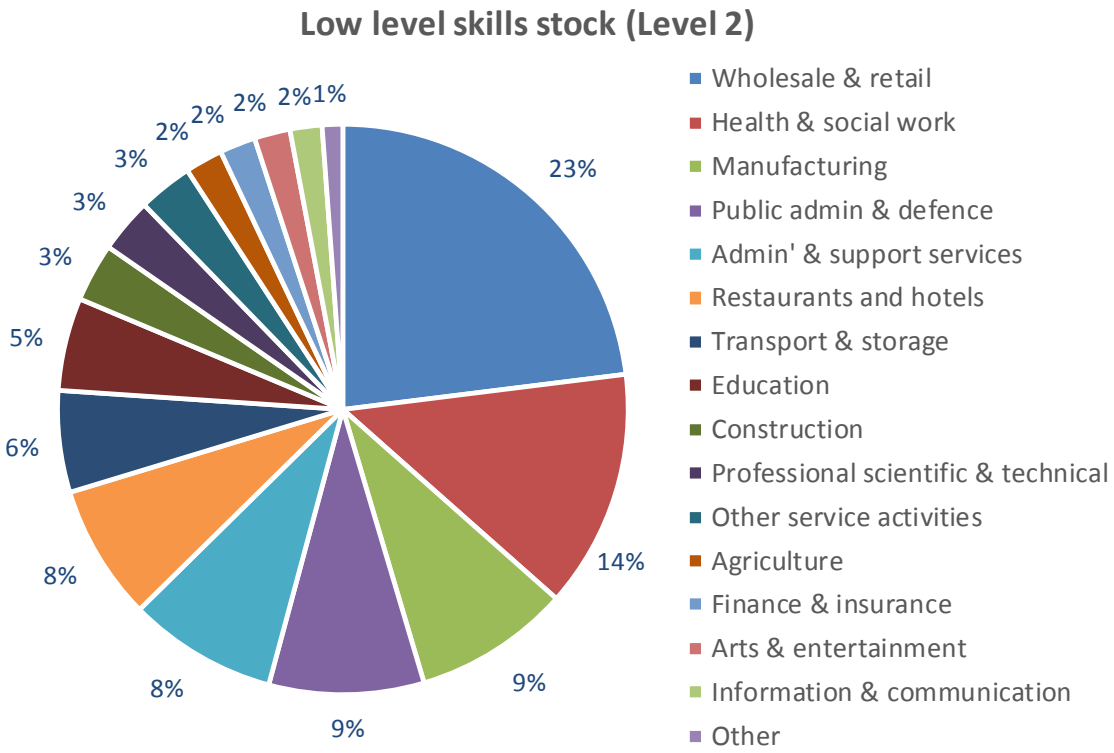


Ulster University Economic Policy Centre

Source: EPC

Where are skilled people employed?

Where do low skilled (L2) people work?



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Other sectors in Mid to low level skills include: Information & communication, Water supply & waste, Mining, Elect' & gas, People employed by households.

Source: LFS, EPC

Annex E – NQF Level 3 analysis

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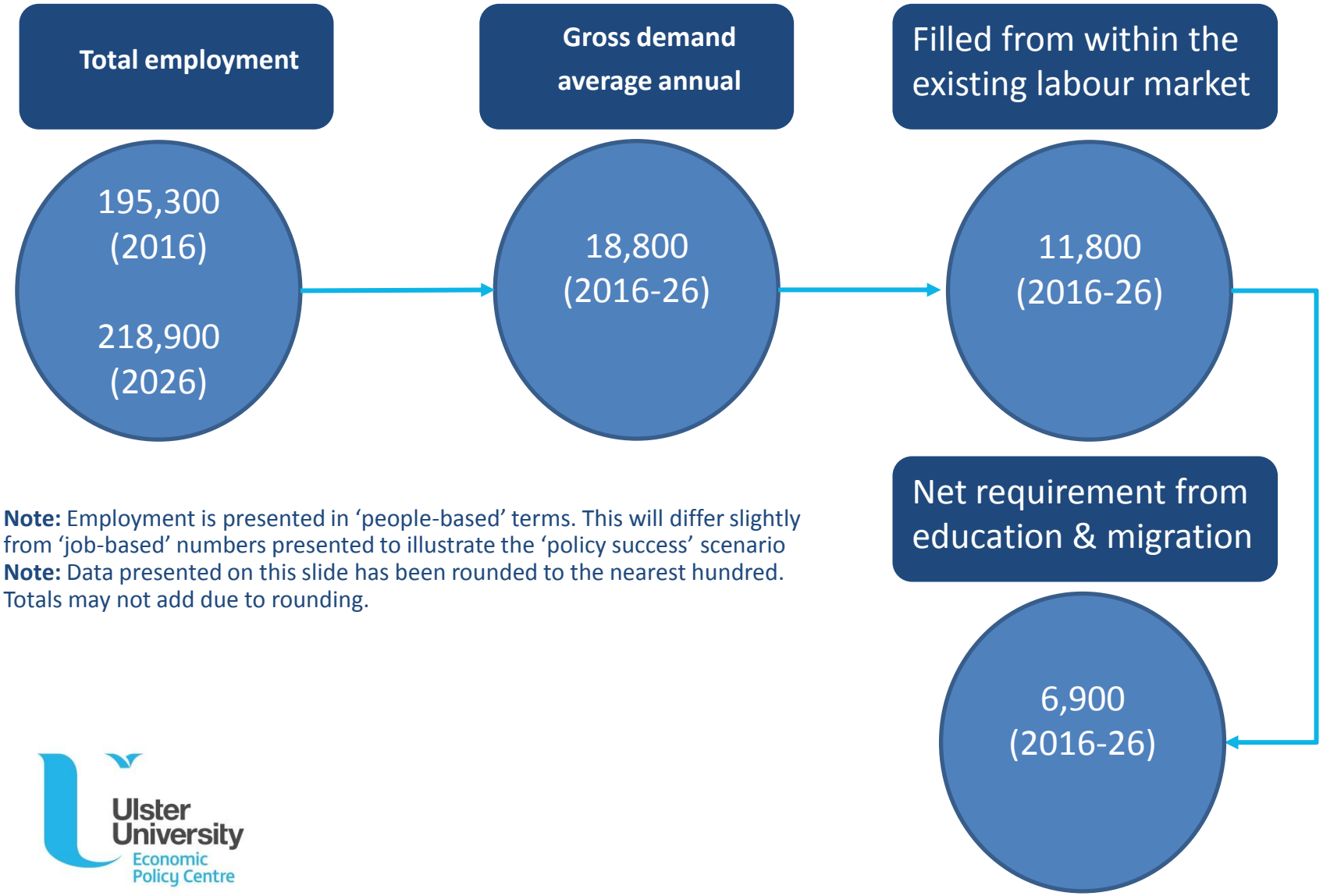
Overview of demand and supply for NQF level 3



Note: Employment is presented in 'people-based' terms. This will differ slightly from 'job-based' numbers presented to illustrate the 'policy success' scenario
Note: Data presented on this slide has been rounded to the nearest hundred. Totals may not add due to rounding.

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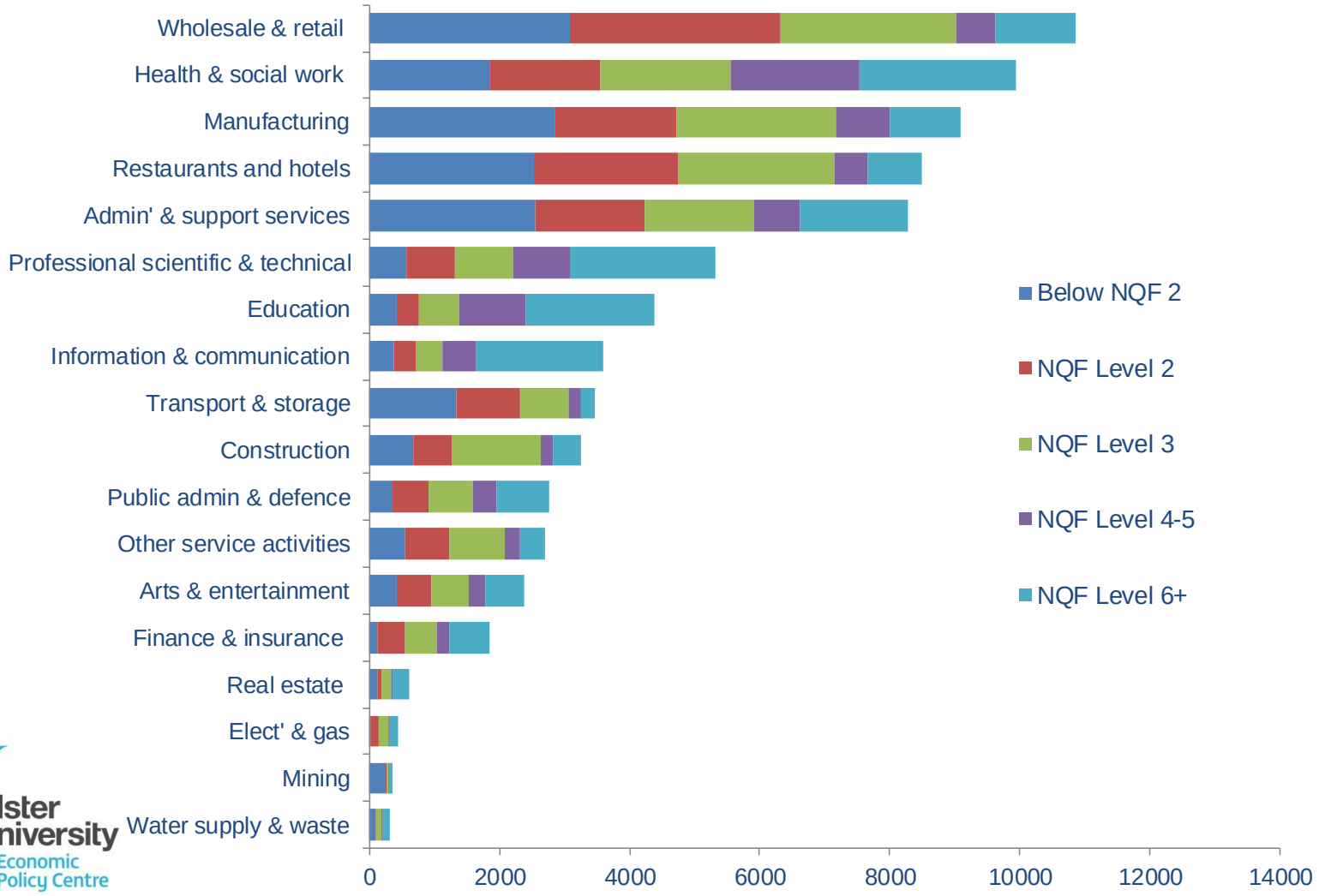
Gross demand skills mix by sector

Average 2016-26 gross demand skills mix (SIC 1 digit)

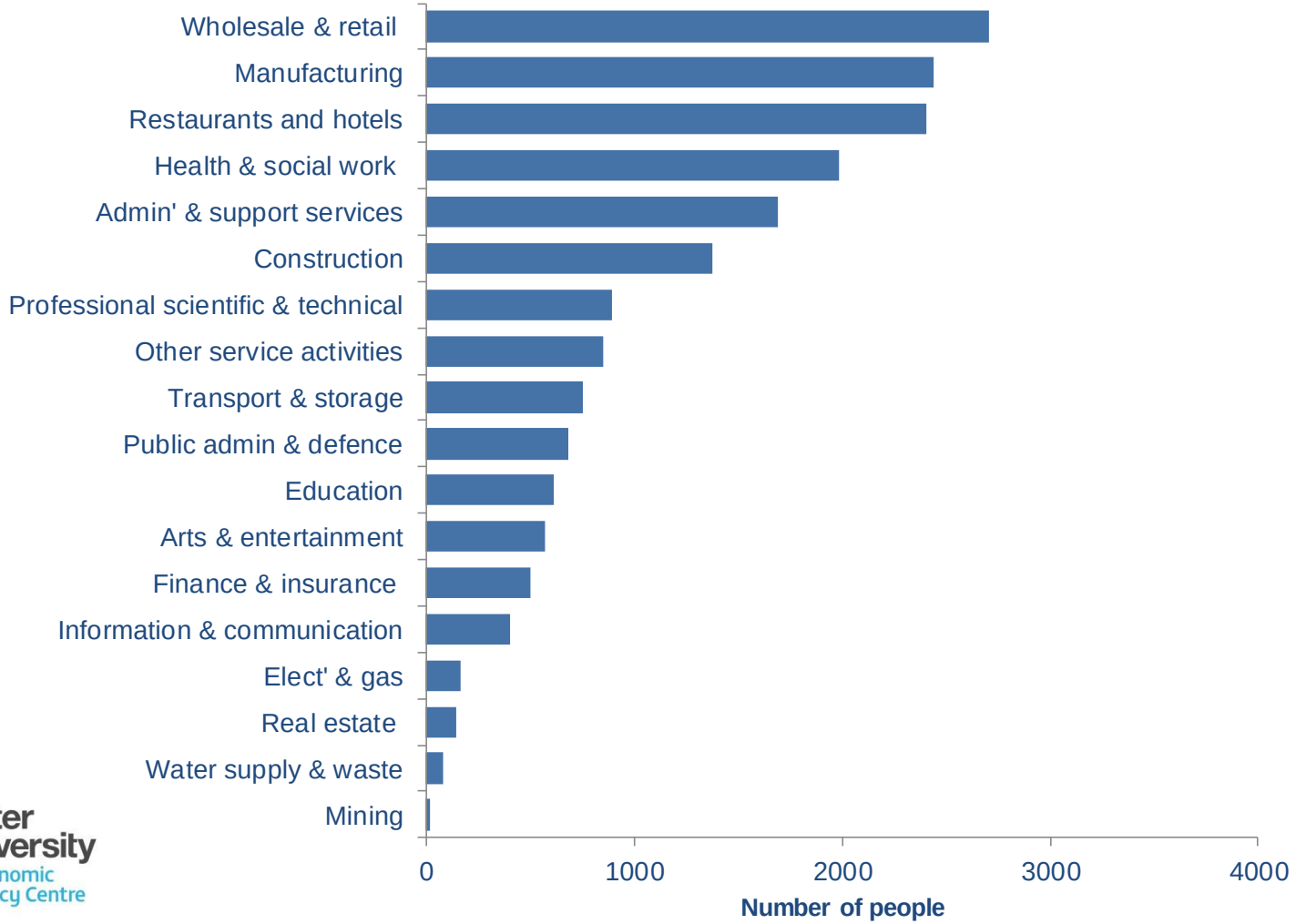


Ulster University Economic Policy Centre

Source: EPC

Gross demand for Level 3 (by industry)

Average 2016-26 gross demand for Level 3 by industry (SIC 1 digit)

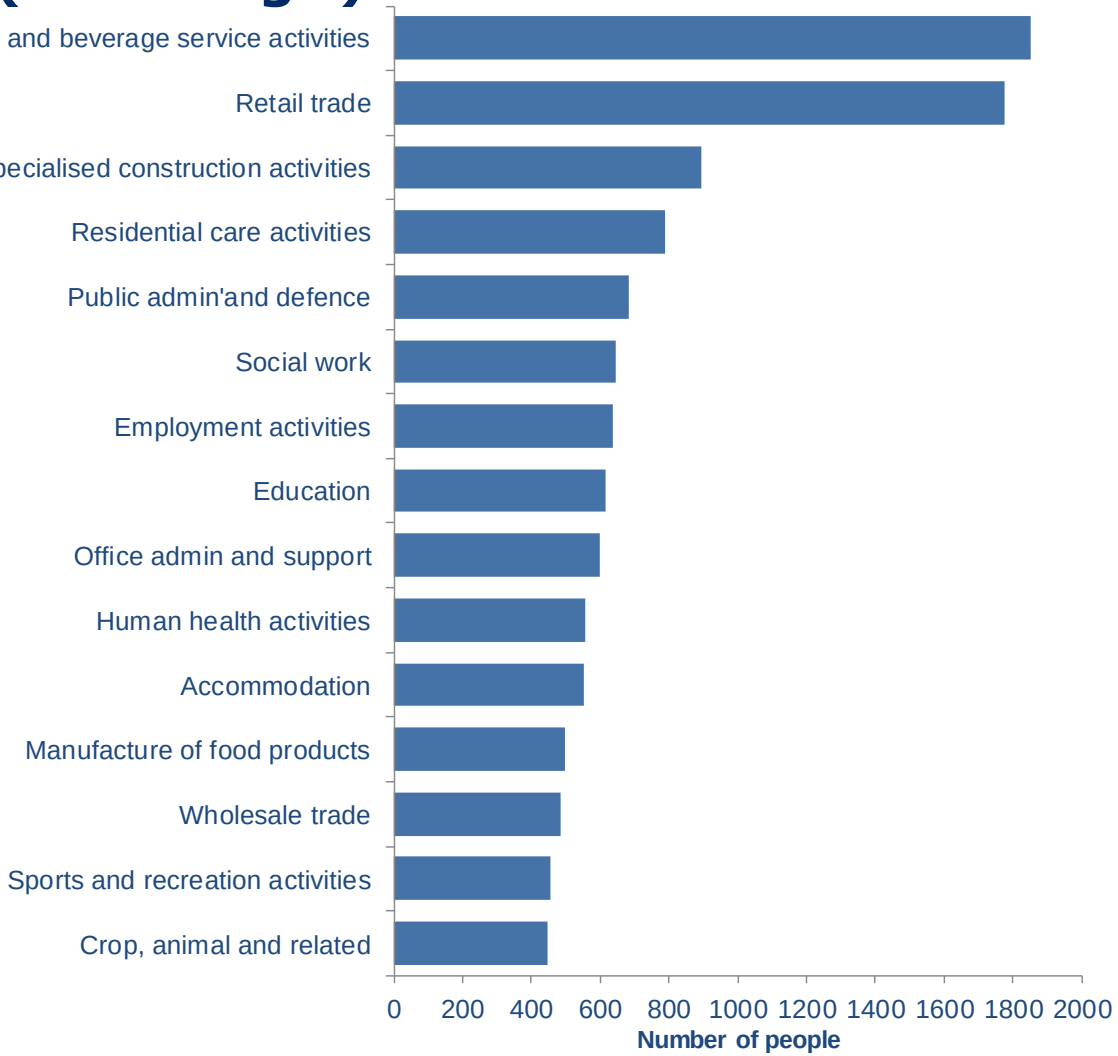


Ulster University Economic Policy Centre

Source: EPC

Gross demand for Level 3 (by industry)

Top 15 average 2016-26 gross demand for Level 3 by industry (SIC 2 digit)

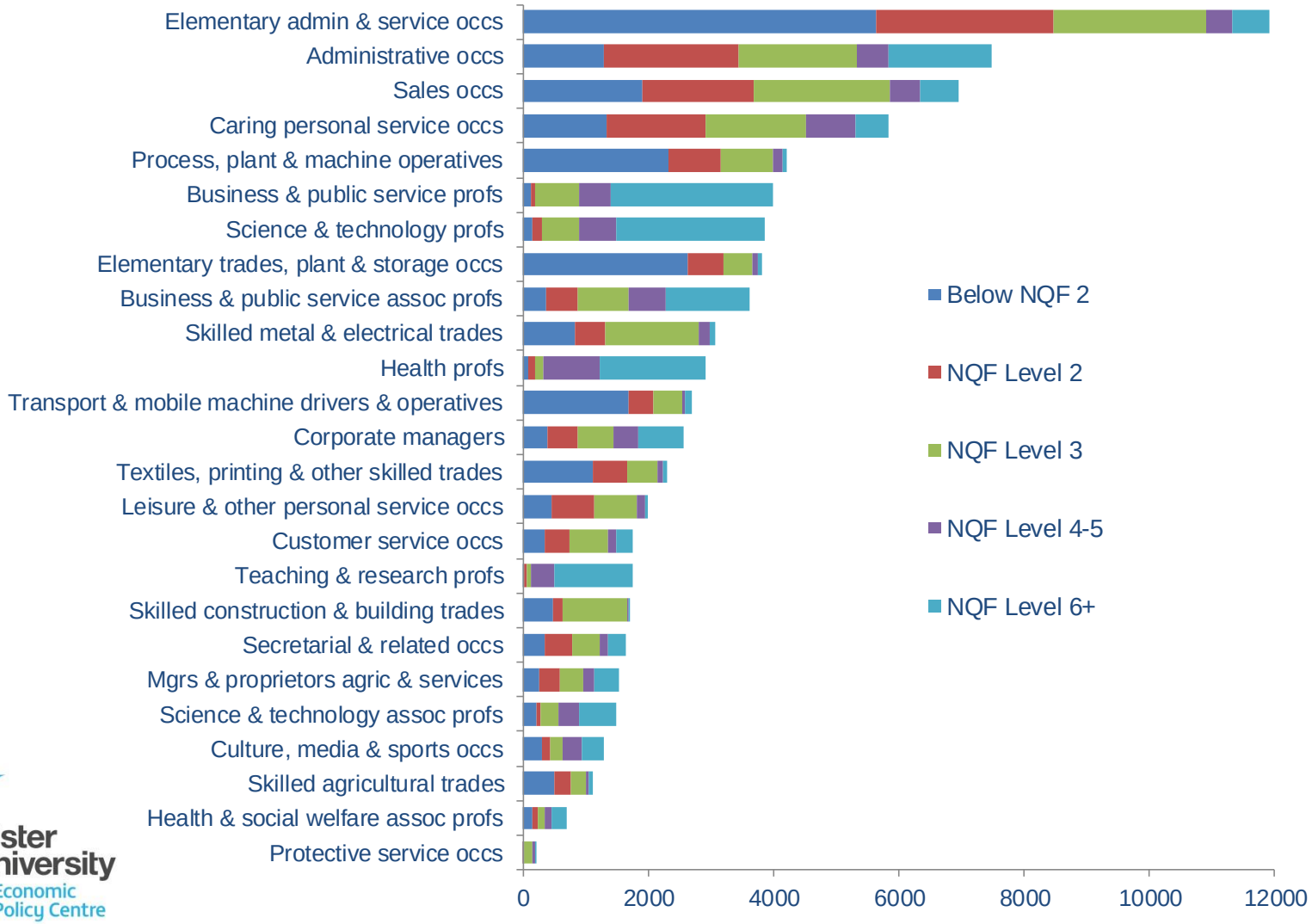


Ulster University Economic Policy Centre

Source: EPC

Gross demand skills mix by occupation

Average 2016-26 gross demand skills mix (SOC 2 digit)



Ulster University Economic Policy Centre

Source: EPC

Gross demand for Level 3 (by occupation)

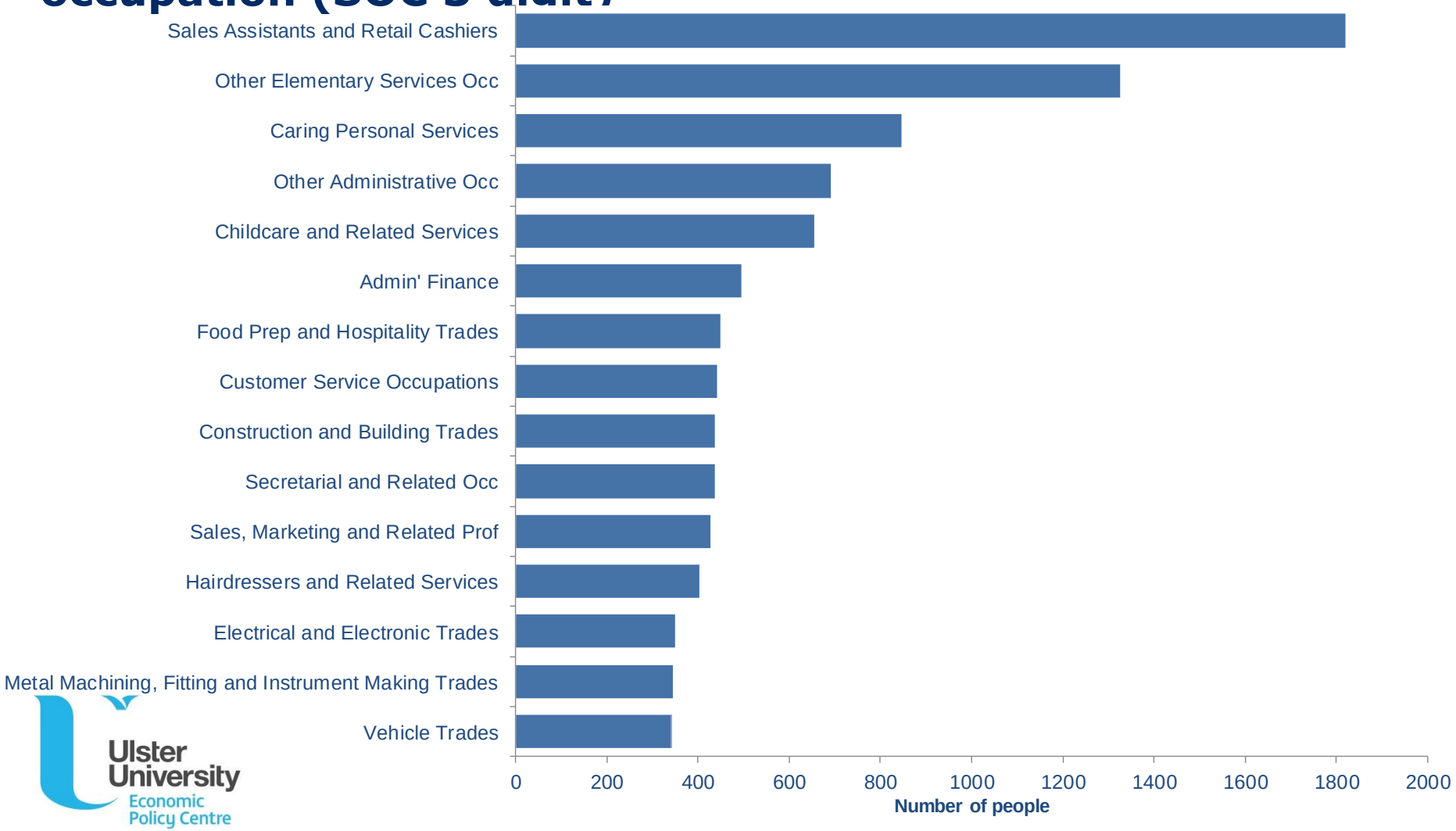
Average 2016-26 gross demand for Level 3 by occupation (SOC 2 digit)

Ulster University Economic Policy Centre

Source: EPC

Gross demand for Level 3 (by occupation)

Top 15 average 2016-26 gross demand for Level 3 by occupation (SOC 3 digit)

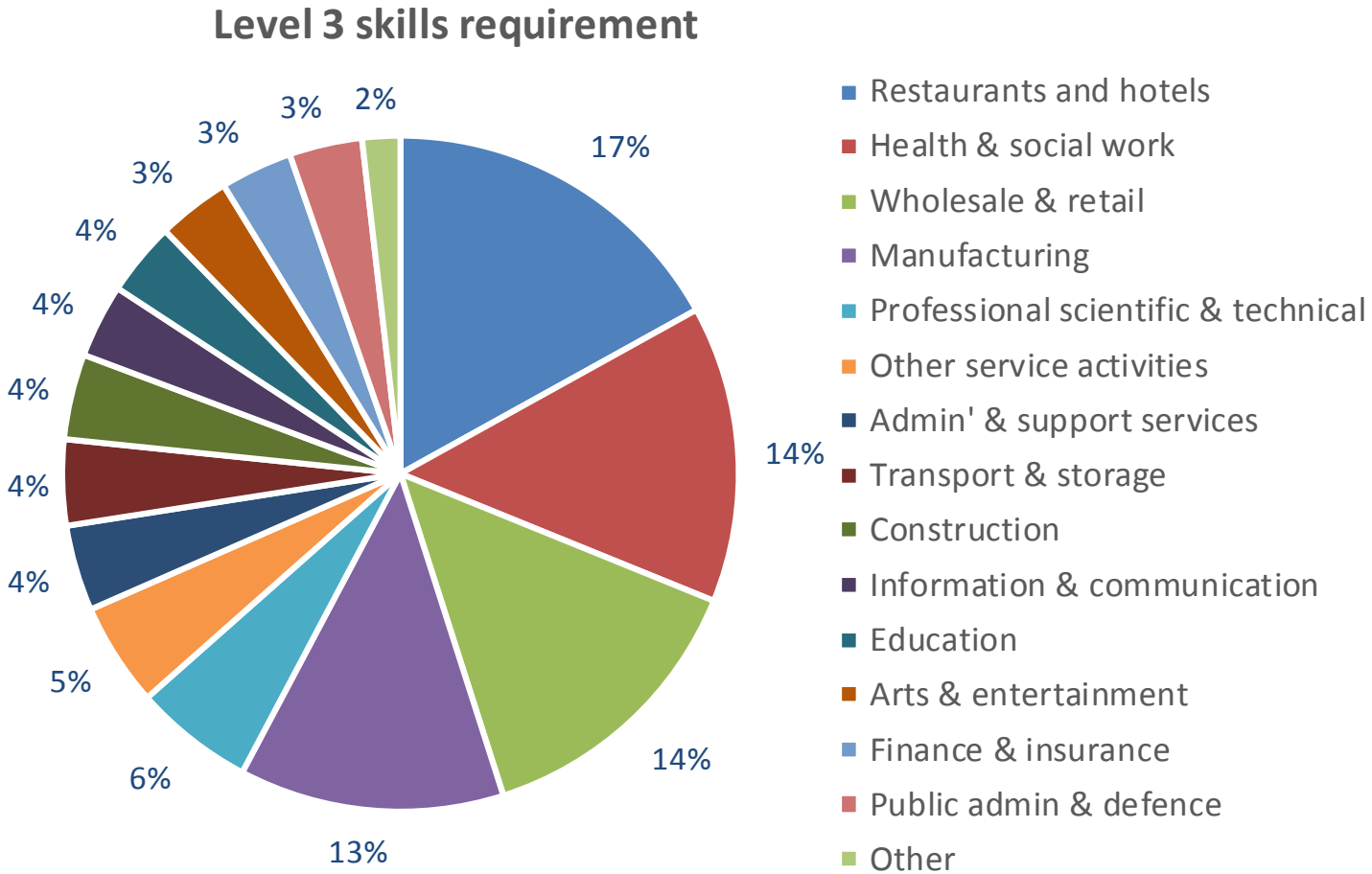


Ulster University Economic Policy Centre

Source: EPC

Sectoral demand (net requirement) by skills level

Which sectors recruit Level 3 people?



Other sectors in Mid to low level skills include: Other service activities, Restaurants and hotels, Real estate, Agriculture, Water supply & waste, Transport & storage, Mining, Elect' & gas and People employed by households

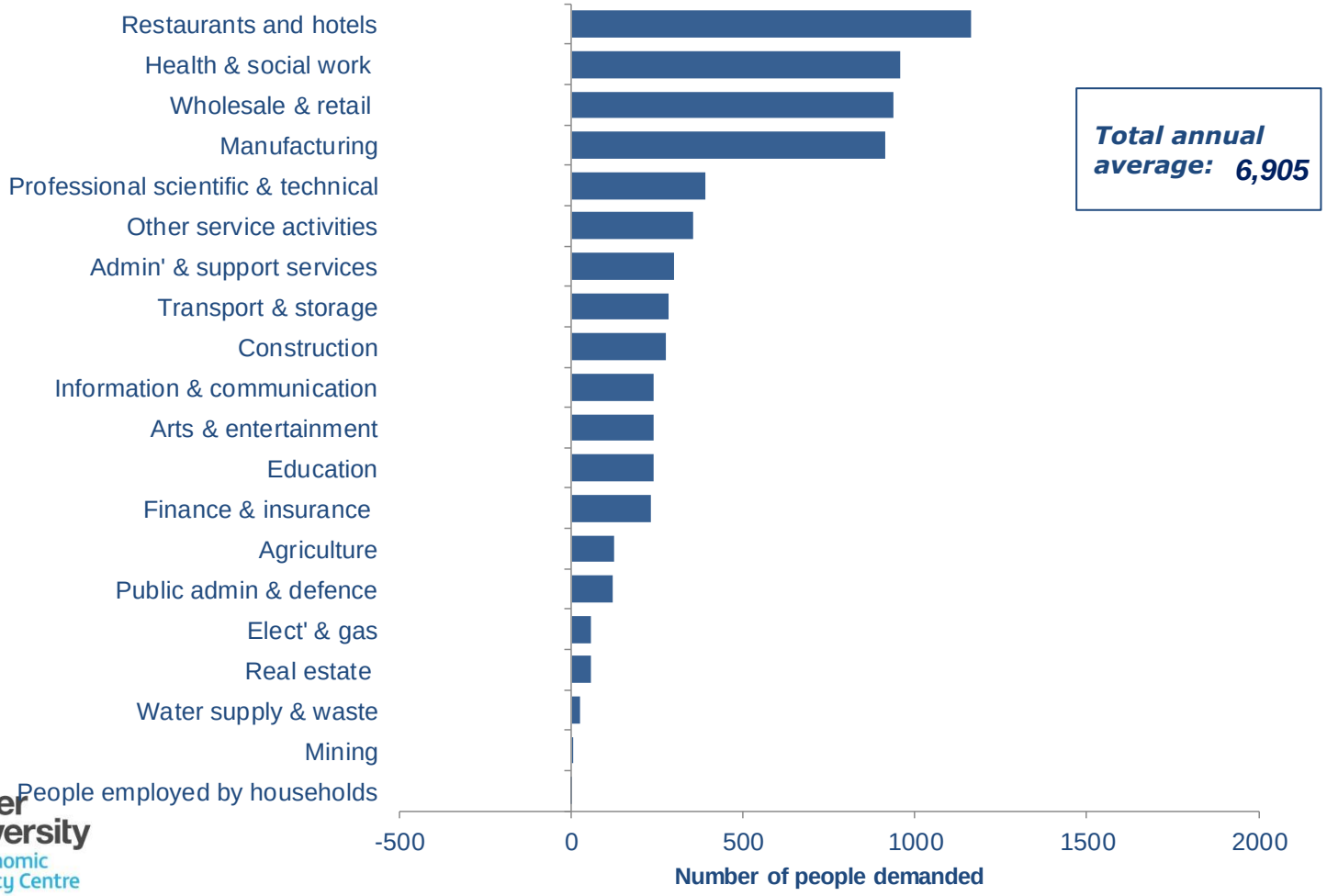
Source: EPC

Ulster University Economic Policy Centre

Employment projections by sector

Annual average requirement by industry for L3 (SIC 1 digit)

Net Requirement from education and migration



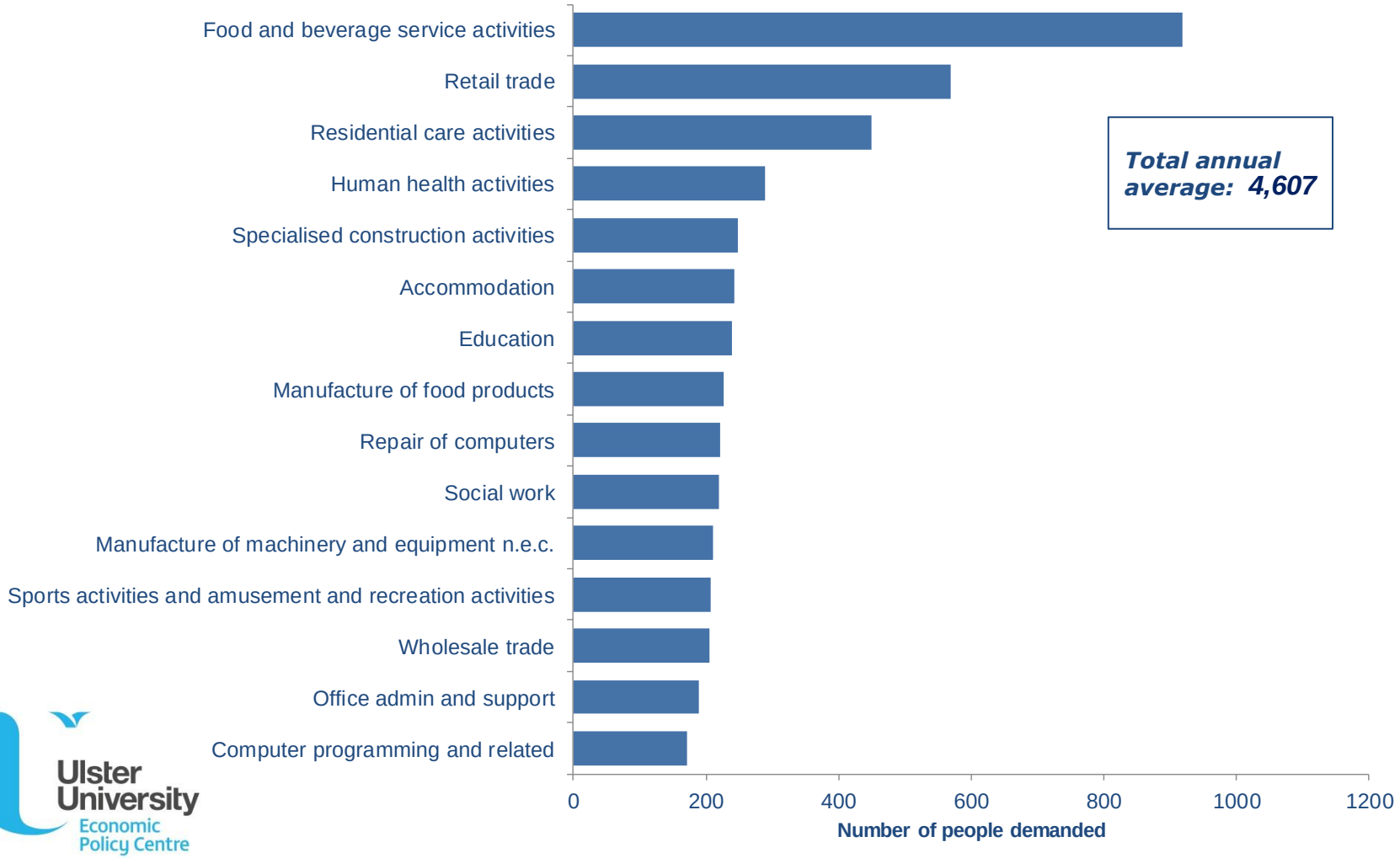
Ulster University Economic Policy Centre

Source: EPC

Employment projections by sector

Top 15 L3 Industry Sectors (SIC 2 digit)

Net requirement from education and migration



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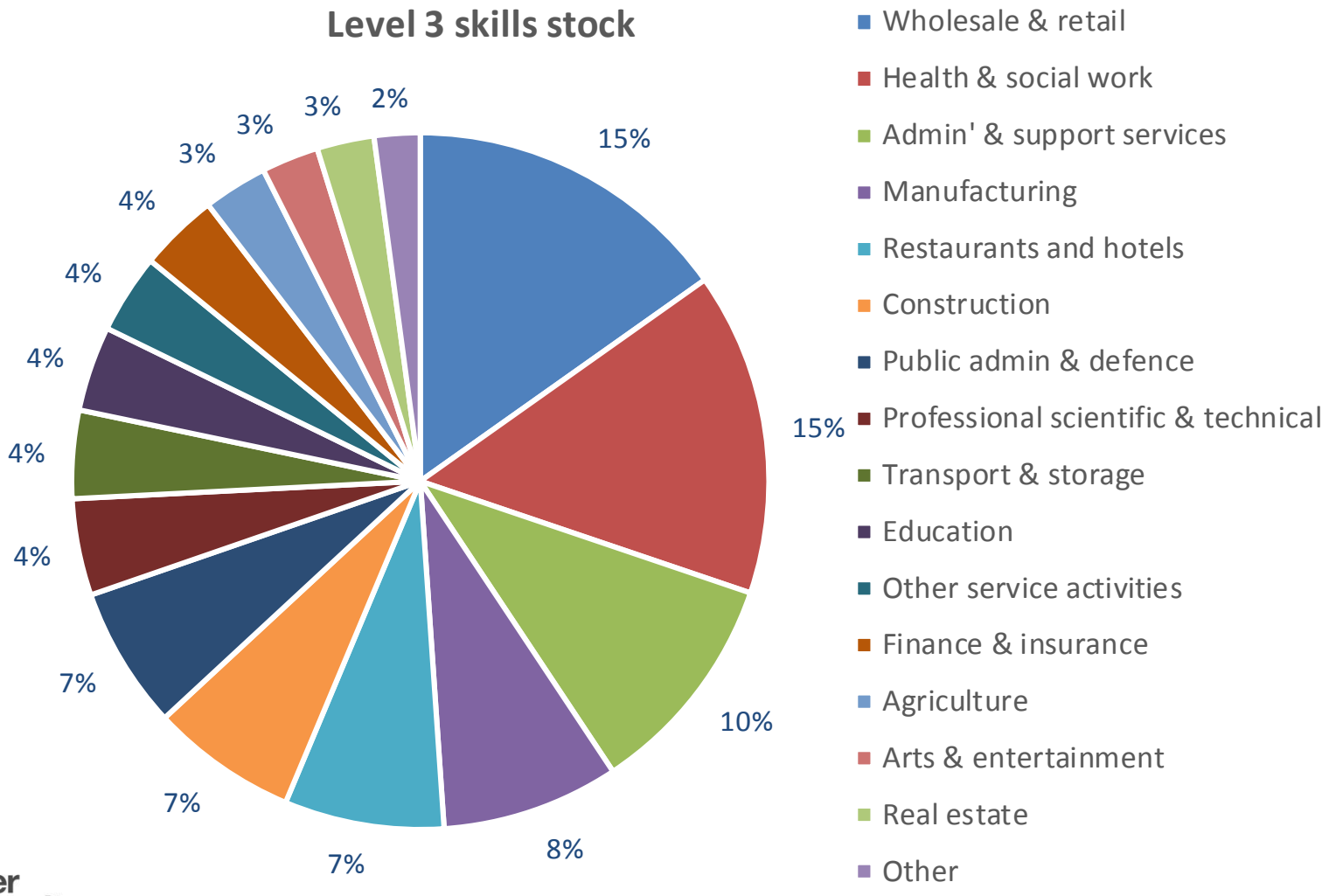
Source: EPC

Where are skilled people employed?

Where do level 3 people work?



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Other sectors in Mid to low level skills include: Information & communication, Water supply & waste, Mining, Elect' & gas, People employed by households.

Source: LFS, EPC

Annex F – Supply side assumptions and data caveats

Supply side assumptions – Upskilling (1)

- The key supply side assumption made relates to 'upskilling'. No data exists to indicate the level of upskilling taking place in the economy. But it is necessary to make an adjustment to provide a more realistic estimate of the supply from education.
- A person who is in training whilst in employment and intends to stay in their current job is 'upskilling'. This person is therefore not available to fill vacancies within the labour market and is not counted as part of the 'effective supply'.
- Estimating the number of people who are 'upskilling' within the NI education system is extremely difficult due to data constraints. The number of people who are 'upskilling' is estimated by two different approaches reflecting differences in the availability of data between the FE and HE sectors (described overleaf).

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Supply side assumptions – Upskilling (2)

- The level of 'upskilling' in FE is estimated using data from the FE leavers survey. This survey was unavailable when the previous version of the Skills Barometer was published. The quantum of 'upskilling' is derived based upon an analysis of the labour market status of qualifiers before commencing their studies compared to their status six months after achieving their qualification. This data has been interpreted alongside questions within the FE leavers survey which explore learners reasons for undertaking their study. The results indicate that approximately 17% of qualifiers in FE are 'upskilling'.

- In HE 40% of people undertaking an 'other undergraduate' course on a part time basis are assumed to be 'upskilling'. In HE 30% of people qualifying from a part time postgraduate degree are assumed to be 'upskilling'. The results indicate that approximately 6% of qualifiers in HE are 'upskilling'.

Further research is commencing in 2017 in respect of upskilling which will be used to inform this assumption moving forward.

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Further Education statistics (1)

- Only FLU funded enrolment are included in the Skills Barometer analysis.
- Only final year enrolment on courses leading to a regulated qualification are included in this analysis.
- Courses with a regulated qualification are those which appear on the Register of Regulated Qualifications (RRQ) or the Department's Prescribed List of Approved Non NQF/QCF Qualification (PLAQ) list (for level 3 and below) or are Higher Education (HE) in FE courses (level 4 and above). Anything which falls outside this definition is not considered, by the Department for the Economy, as 'regulated' regardless of whether it is considered to produce "outcomes" e.g. internal college certification.
- FLU funded final year completer achieved are those FLU funded final enrolments, which have a student status of continuing, completed or withdrawn with a full or partial achievement and have a full and partial achievements within outcome.

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Further Education statistics (2)

- Sector Subject Area (SSA) is derived from a look-up process with the OFQUAL register based on the qualification/unit code.
- Level is the value entered by the college for the enrolment.
- Individuals within each SSA tier category are determined only in the SSA tier option. i.e. Individual figures within SSA tier 1.1 are determined from all enrolments within SSA tier 1.1.
- If the same individual appears within the same SSA Tier 2 option then the record with the highest level is selected and counted in the analysis. This methodology allows the same individual to appear across multiple SSA tier 2 categories. The individual counts within the total are determined within each level.

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Higher Education statistics (1)

- The information in this report is based on data supplied by the Higher Education Statistics Agency (HESA). HESA is the official agency for the collection of information on publicly funded Higher Education (HE) institutions in the UK. The HESA data presented here relate to students at HE institutions in the UK only and therefore do not include HE enrolments at institutions in the Republic of Ireland.
- From 2014/15, after a full public consultation, the Department for the Economy (DfE) have changed the allocation of Open University (OU) students to England, Scotland, Wales and Northern Ireland. Previously, all OU enrolments and qualifications were counted as being within England, where the OU has its administrative centre. DfE has decided from their 2014/15 release onwards that enrolments and qualifications registered at one of the OU's national centres in Scotland, Wales or Northern Ireland will contribute to the totals of those countries where the statistics are shown by country of provider.
- The figures in this report show the old methodology, where OU is treated as a wholly English institution, for consistency and comparability purposes. Therefore, the figures in this report will not match figures from DfE releases from the 2014/15 academic year onwards.

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Higher Education statistics (2)

- The destinations of leavers figures in this report are based on data returned to HESA in respect of the new version of the 'Destinations of Leavers from Higher Education (DLHE) survey'. The DLHE survey is carried out annually, approximately six months after a student graduates from Higher Education (HE). Although the DLHE survey aims to capture the destinations of all graduates there are certain exclusions. As it is a survey there are also a number of students who do not respond, however response rates are usually approximately 80%, and are widely representative of the full leaving population. For more information on the DLHE survey visit DfE's latest Destinations of Leavers from Higher Education publication at the following link:

- https://www.economy-ni.gov.uk/publications/destinations-leavers-uk-higher-education-institutions-northern-ireland-analysis-201415

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Higher Education statistics (3)

- DfE conform to HESA rounding strategy. Due to the provisions of the Data Protection Act 1998 and the Human Rights Act 1998, HESA (and therefore DfE) implements a strategy in published and released tabulations designed to prevent the disclosure of personal information about any individual. This strategy involves rounding all numbers to the nearest multiple of 5 and suppressing percentages and averages based on small populations.
- The HESA rounding strategy changed for the 2013/14 releases onwards. The strategy includes the following procedures:
  - 0, 1 and 2 are rounded to 0;
  - all other numbers are rounded to the nearest multiple of 5;
  - percentages based on fewer than 22.5 individuals are suppressed;
  - averages based on fewer individuals are also suppressed;
  - percentages and averages are based on unrounded figures; and
  - percentages are rounded to one decimal point.

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Glossary of terms

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Glossary of terms (1)

Jobs

The number of jobs is measured by the Workforce Jobs (WFJ) and is the sum of employee jobs from employer surveys, self-employment from the Labour Force Survey (LFS), those in HM Forces and Government-Supported trainees. A person can have more than one job.

Employment (people based)

The number of people with jobs is not the same as the number of jobs. This is because a person can have more than one job. Therefore employment is calculated in people based terms. It is essential to convert the forecasts from 'jobs' to 'people' based to determine the skills requirements of the labour market.

Expansion demand

Refers to the additional jobs created due to growth within a sector.

Replacement demand

Represents the number of positions which become available as a result of staff leaving employment (typically due to retirement, family reasons, ill health or to move to another sector).

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Glossary of terms (2)

Net requirement

Indicates the number of vacancies that can not be filled from within the existing labour market and therefore must be met from those leaving education and/or from migration.

Gross demand

Refers to all vacancies to be filled. It is the total expansion and replacement demand for staff and the jobs are filled by those currently working in the labour market, those currently out of work and also those from education and migration.

Gross supply

Denotes the number of qualifiers from NI institutions.

Net supply

Represents all qualifiers from NI institutions *plus* an estimate of NI domiciled students who have returned home after qualifying from an institution outside NI *minus* students qualifying from NI institutions who leave NI *minus* qualifiers who remain in education.

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Glossary of terms (3)

Effective supply

Is the net supply after accounting for a supply adjustment. The adjustment recognises that some qualifiers require additional skills development before they would be capable of taking employment opportunities at a grade for which they are qualified. The supply adjustment factor is applied across both FE and HE for all tertiary qualifications.

Supply gap

This represents the difference between effective supply and demand. This information is forecasted over a ten year period (2016-26) and is presented on an annual average basis.

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