



NI Skills Barometer Findings Report

“Skills in demand”

November 2015

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Introduction

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Background

- This skills barometer project represents an investment by the Department for Employment and Learning (DEL) to build a model to estimate the quantum of future skill needs and gaps by level, sector and subject area across a range of economic outcomes (including a base case and a high growth scenario). This will also be a useful tool to consider the skills implications of the forthcoming Programme for Government and future NI Executive economic strategies and the model can be adapted to reflect the priorities within those.
- This project is being undertaken as part of a 3 year sponsorship arrangement between DEL and the Ulster University Economic Policy Centre (UUEPC) and this report has been completed following work completed in Year 1.
- The principle of “**Every job matters**” has been adopted to reflect the contribution all jobs make to the economy. As the NI Executive endeavours to reduce levels of unemployment and economic inactivity, it is important society places a value on all employment opportunities. As a result, this skills barometer analyses skills requirements at all levels and across all sectors of the economy.

Background

- A broad range of stakeholder groups have been identified as potential users and beneficiaries of the skills barometer:
 - **Young people and parents** – young people should be appropriately informed when choosing their career pathway and subjects areas to study;
 - **Careers Advisors** – the Skills Barometer could also provide careers advisors with further information and evidence to improve the quality of advice given to their clients;
 - **Teachers** – also recognising the important role teachers also have in dispensing careers advice;
 - **Employers** – as a vehicle to articulate skills needs;
 - **Education institutions** – to help inform future levels of provision; and
 - **DEL (and wider Government)** – to develop policy responses to meet skills needs of the NI economy.

Approach – modelling

- A detailed modelling exercise has been conducted to forecast both the demand and supply of skills across the economy. This included analysis of:
 - Job growth – including both expansion demand (as sectors grow and in some instances contract) and replacement demand (e.g. people leave due to retirement, for family reasons or to move to another sector and they must 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.
- All forecasts are based on “high growth” assumptions which has identified an aspirational level of employment growth. See sub-section “Understanding the High Growth Scenario” (see page 16).

Approach – modelling

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)

Approach – consultations

- In addition to the modelling/ forecasting work, a significant level of consultation has also been undertaken to review the quantitative analysis and provide sectoral expertise. The stakeholders consulted include:
 - Sector skills organisations;
 - Employers;
 - HE and FE institutions; and
 - Government departments and agencies.
- The consultation exercise provided significant sectoral insight and in general the forecasts were judged to be reasonable. However, in some instances, the forecasts were revised to reflect the insight provided by stakeholders.
- A detailed list of consultees is set out in Annex A.

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;
 - With the free movement of people across the EU and the accession of Eastern European nations in 2004 and 2007 there is an increased trend of employing migrant labour. Therefore the net requirement identified by the Skills Barometer not supplied by education, will be met, at least in part, by migration.
- **Upskilling¹** 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 further research is required in this area.

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.

Context to skills forecasting

- **Breaking new ground** – this 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 recommended to understand in greater detail the quantity of upskilling ongoing and required.

Context to skills forecasting

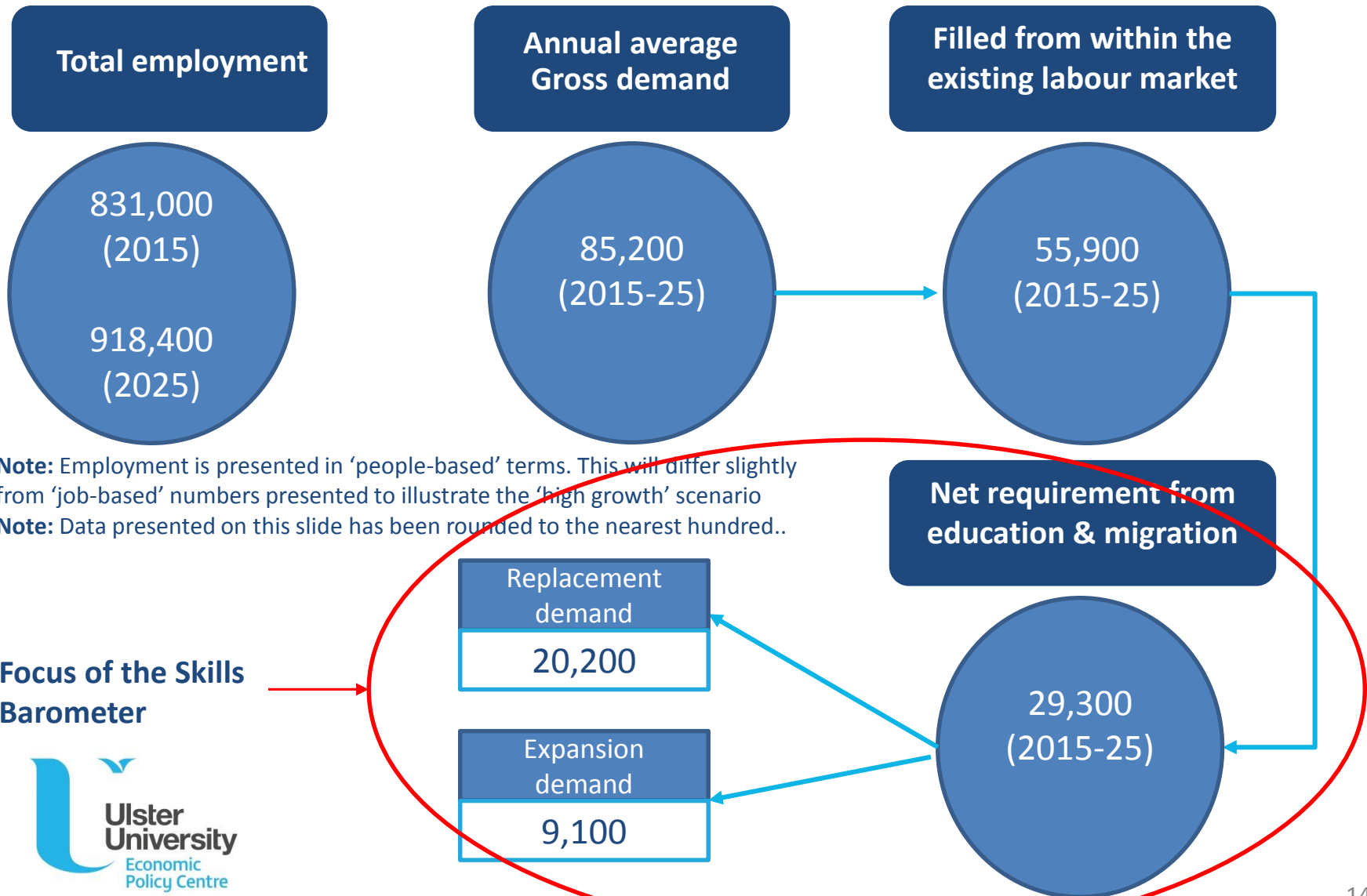
- **The impact of austerity** – the scale of budget cuts facing the NI Assembly is more significant than experienced previously and as a result, the baseline outlook for the local economy would suggest a relatively low level of demand for skills. This is in contrast to previous skills forecasting projects which would have been made against a backdrop of a much more positive economic outlook.

Supply and demand – Key terms

- **Annual Average Gross demand** refers to the total expansion and replacement demand for staff per annum. These jobs are filled by those currently working in the labour market, those currently out of work and also those from education and migration. In simple terms, all vacancies to be filled.
- **Expansion demand** is directly related to the growth 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.
- **Net requirement from education and migration** indicates the number of vacancies that can not be filled from within the existing labour market.

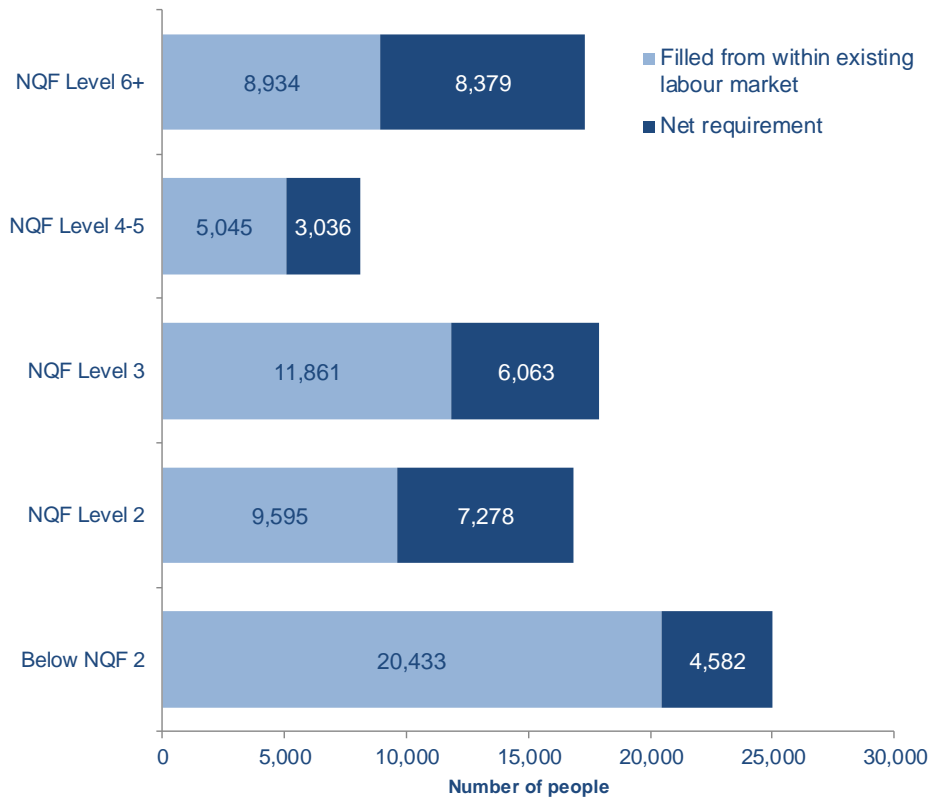
The **annual average net requirement from education and migration** does not include the positions to be filled by labour market participants from other sectors, from unemployment or from economic inactivity. It is also important to recognise the possibility that the trend of jobs filled from the labour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

Overview of demand and supply



Overview of demand and supply

Annual average gross demand for skills (2015-25)



- This chart sets out the annual average gross demand (i.e. 85,200) by skills level.
- The largest net requirement (i.e. from education) is at the graduate level, followed by NQF L2 and then NQF L3.
- 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.

Understanding 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 rise closer to the current UK employment rate (average over 3 years, assumed to increase from 68% to 71.5%);
 - The biggest growth is applied to the higher value added and export potential areas of the economy (ICT, Professional Services and Manufacturing);
 - Lower but appropriate levels of growth applied to the wider supporting sectors such as Retail, Hospitality, Construction and Transport;
 - Increased private sector growth should also increase the tax base and therefore the reduction in spending on public sector services would not be as significant.

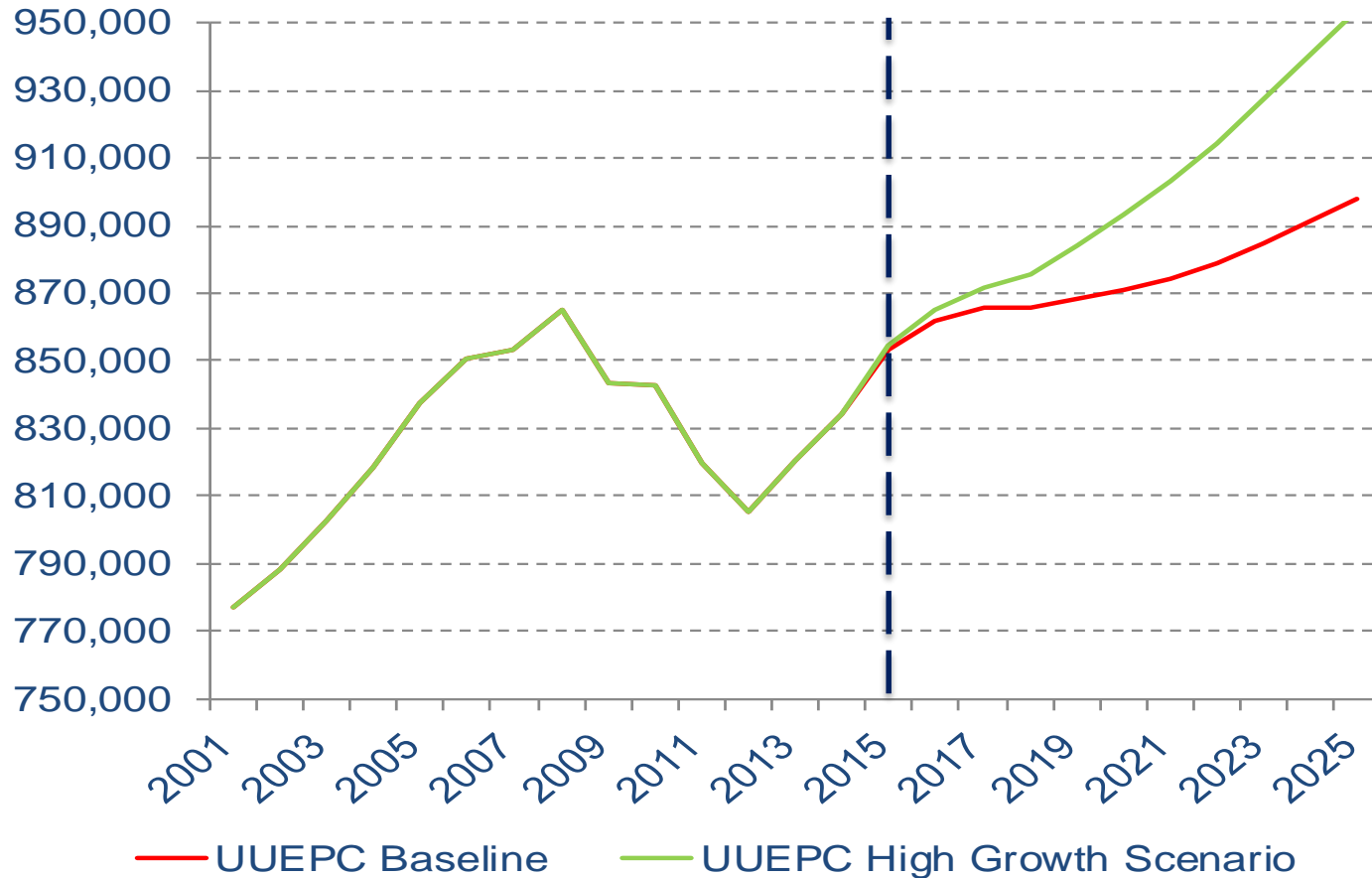
Understanding the High Growth Scenario

- **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 2015 to 2025 is lower than the ten year period to 2007 (11% compared to 17%). In contrast the baseline forecast employment growth is 5%.
 - 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.

Understanding the High Growth Scenario

Overall Jobs Forecast



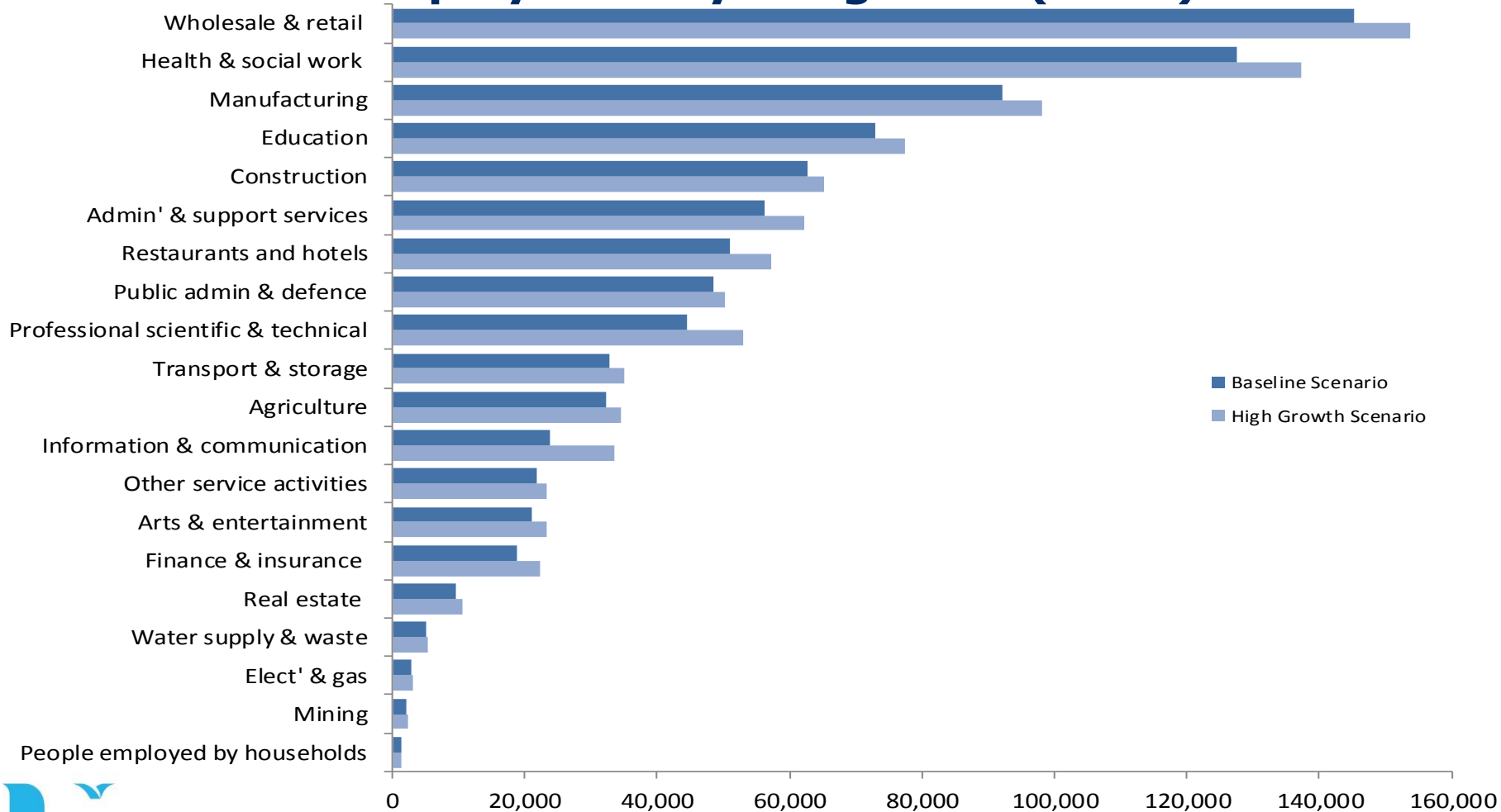
High Growth job creation

Industry	Employment 2015	Employment growth 2015-25		% change in employment	
		Baseline	High Growth	High Growth 2015-25	Actual 1997-07
Agriculture	31,500	+1,580	+2,999	+10%	-27%
Mining	2,000	+151	+298	+15%	+50%
Manufacturing	84,250	+8,191	+13,769	+16%	-21%
Electricity & gas	2,750	+69	+348	+13%	-42%
Water supply & waste	5,000	+124	+360	+7%	+5%
Construction	59,250	+3,787	+5,952	+10%	+56%
Wholesale & retail	146,250	+4,431	+7,429	+5%	+27%
Transport & storage	31,250	+1,961	+3,866	+12%	+20%
Restaurants and hotels	49,500	+3,910	+7,731	+16%	+30%
Information & communication	18,000	+5,951	+15,430	+86%	+95%
Finance & insurance	19,000	+85	+3,338	+18%	+27%
Real estate	8,750	+1,085	+1,926	+22%	+155%
Professional scientific & technical	37,500	+7,876	+15,398	+41%	+103%
Administrative & support services	52,250	+5,448	+9,959	+19%	+96%
Public admin & defence	57,250	-7,754	-7,015	-12%	-3%
Education	78,000	-1,520	-566	-1%	+11%
Health & social work	130,000	+3,293	+7,232	+6%	+22%
Arts & entertainment	18,250	+3,734	+5,072	+28%	+24%
Other service activities	21,250	+1,321	+2,157	+10%	-3%
People employed by households	1,200	+52	+100	+8%	-69%
Total	853,200	+43,774	+95,782	+11%	+17%

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.

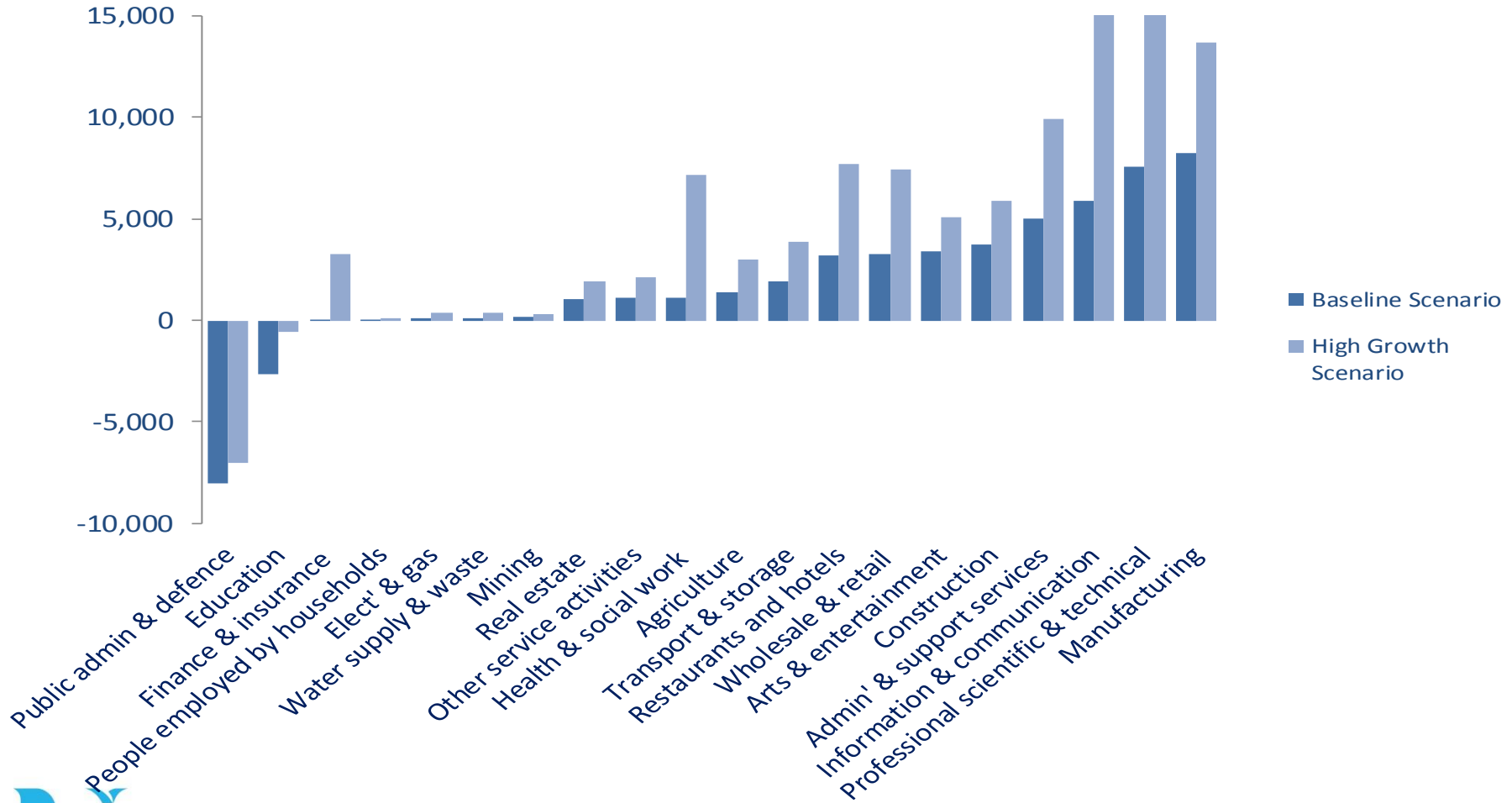
Employment projections by sector

Total employment by 1 digit SIC (2025)



Employment projections by sector

Total employment change by 1 digit SIC (2015-25)



Employment projections by sector

- The 5 largest sectors in employment terms are retail, health, manufacturing, education and construction (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 but they are the sectors assumed to deliver the greatest level of job growth over the next 10 years.
- 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 and Education are the only two sectors forecasted to reduce in size over the next 10 year period.

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

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/ HND/ HNC (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

The Supply/ Demand (Im)balance

- **Supply adjustment** – consultations undertaken during the 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.

Therefore to help identify the supply adjustment, analysis of employment prospects by skill level was undertaken. The detailed findings of this analysis is set out in the Careers Information section of this pack but a summary is provided overleaf.

The Supply/ Demand (Im)balance

- **Supply adjustment** – there is a range of employment trend data to inform the supply adjustment:
 - HESA data indicates that average employment levels 6 months after graduation are approximately 65%¹, but this varies by subject type. However, this survey is not judged to be appropriate for making a reliable assessment of employment prospects for a number of reasons:
 - 6 months is often too short a time period for people to secure graduate level employment;
 - Many continue their education into post-graduate level;
 - Some take time off before entering employment (e.g. to travel).

1. Based on analysis of Higher Education Statistics Agency (HESA) data 2011/12 and 2012/13 and the detailed findings are presented in the Careers Information section of this pack. This is the most up to date information made available by HESA.

The Supply/ Demand (Im)balance

- **Supply adjustment (contd)**

- A European-wide study² found that 89% of graduate employers indicated that graduates recruited had the skills to work in their company. This presents a more positive picture but is representative only of the graduates who successfully found employment with graduate employers. It is reasonable to assume that these successful graduates have a higher level of skills than those who were unsuccessful.
- Analysis of LFS data provides insight into employment prospects by different qualification levels. These results show employment levels of approximately 85%³ for those with a NQF L6 and above qualification and 79%³ for those with a NQF L4-5 qualification. This is more reliable but does not consider if employment is at a level equivalent to the qualification achieved.

2. 'Employers' perception of graduate employability' (2010), European Commission

3. Based on analysis of Labour Force Survey (LFS) 2014.

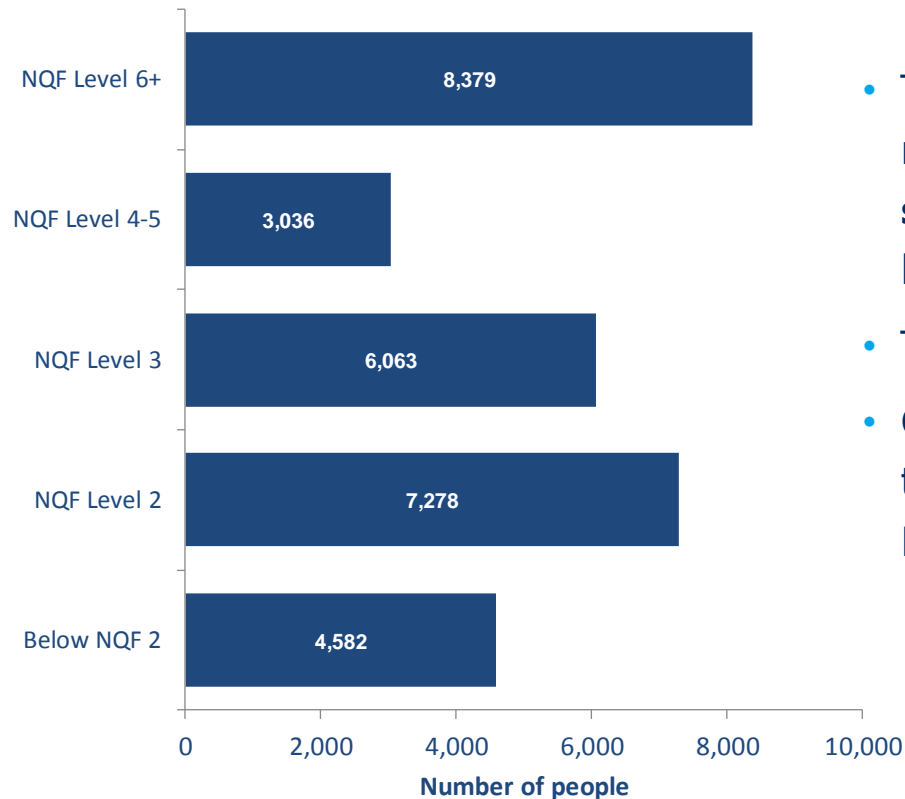
The Supply/ Demand (Im)balance

- **Supply adjustment (contd)**

- The research in this area is incomplete in terms of identifying a highly accurate supply adjustment percentage. However given the significance of the issue and its impact on supply, an adjustment is considered necessary.
- An initial assumption has been made, based on the research reviewed, to make a supply adjustment of 20% to NQF Level 6 and above and a 25% supply adjustment to Level 4-5. The assumed differential between Level 6 and Levels 4-5 reflects the differential in employment outcomes evidenced in the LFS data.
- It is recognised more research is needed in this area, ideally surveying students 18-24 months after leaving qualifying/ graduating to help determine more accurate effective supply estimates.

The Supply/ Demand (Im)balance

Annual average net requirement for skills (2015-25)



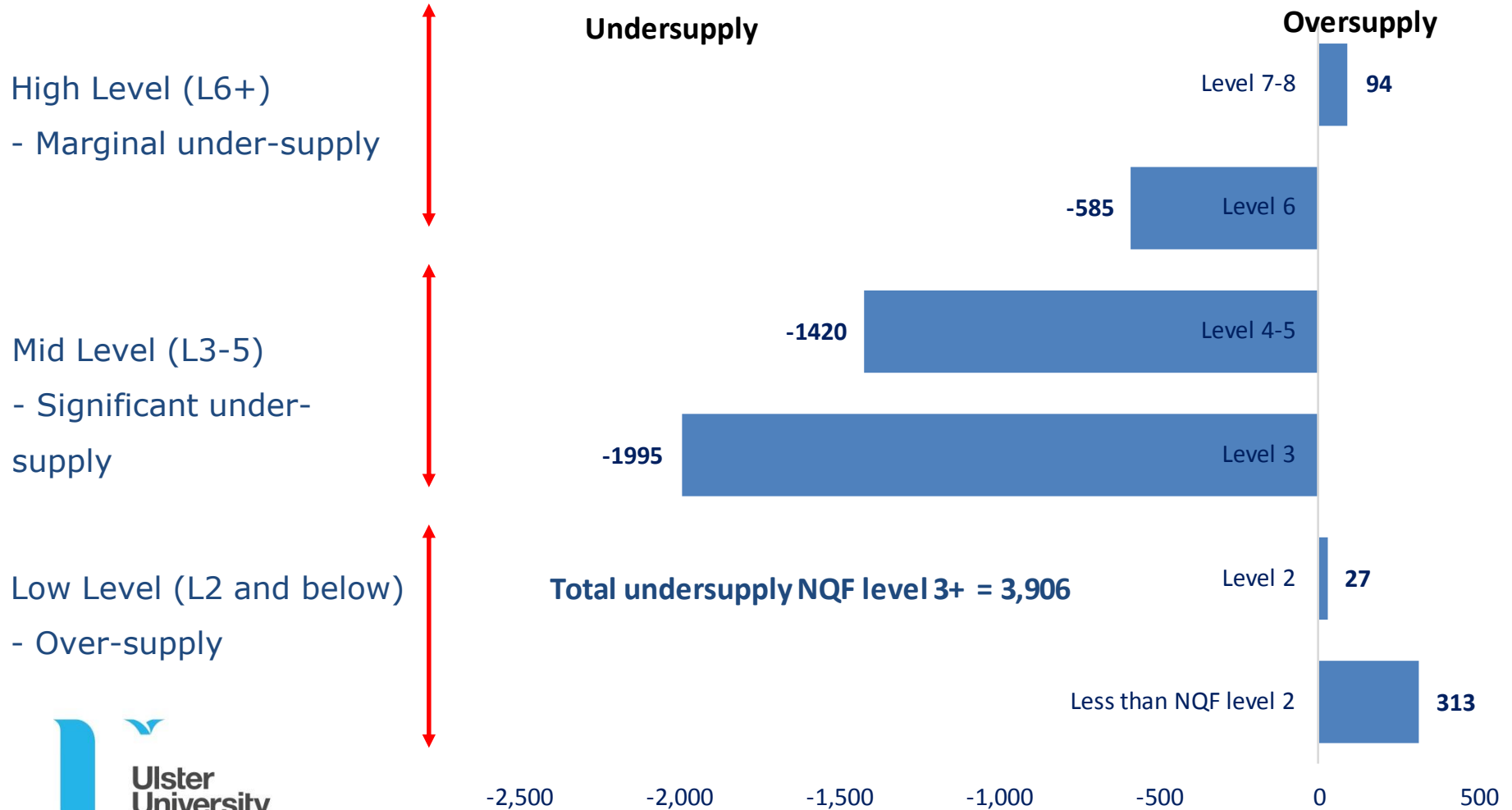
- This chart sets out the annual average net requirement (i.e. **the demand for skills from education and migration**) by skills level.
- Total across all skills levels is 29,300 p.a.
- Graduate skills are forecast to represent the largest area of demand followed by NQF L2 and then NQF L3.

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 (2015 to 2025). **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.

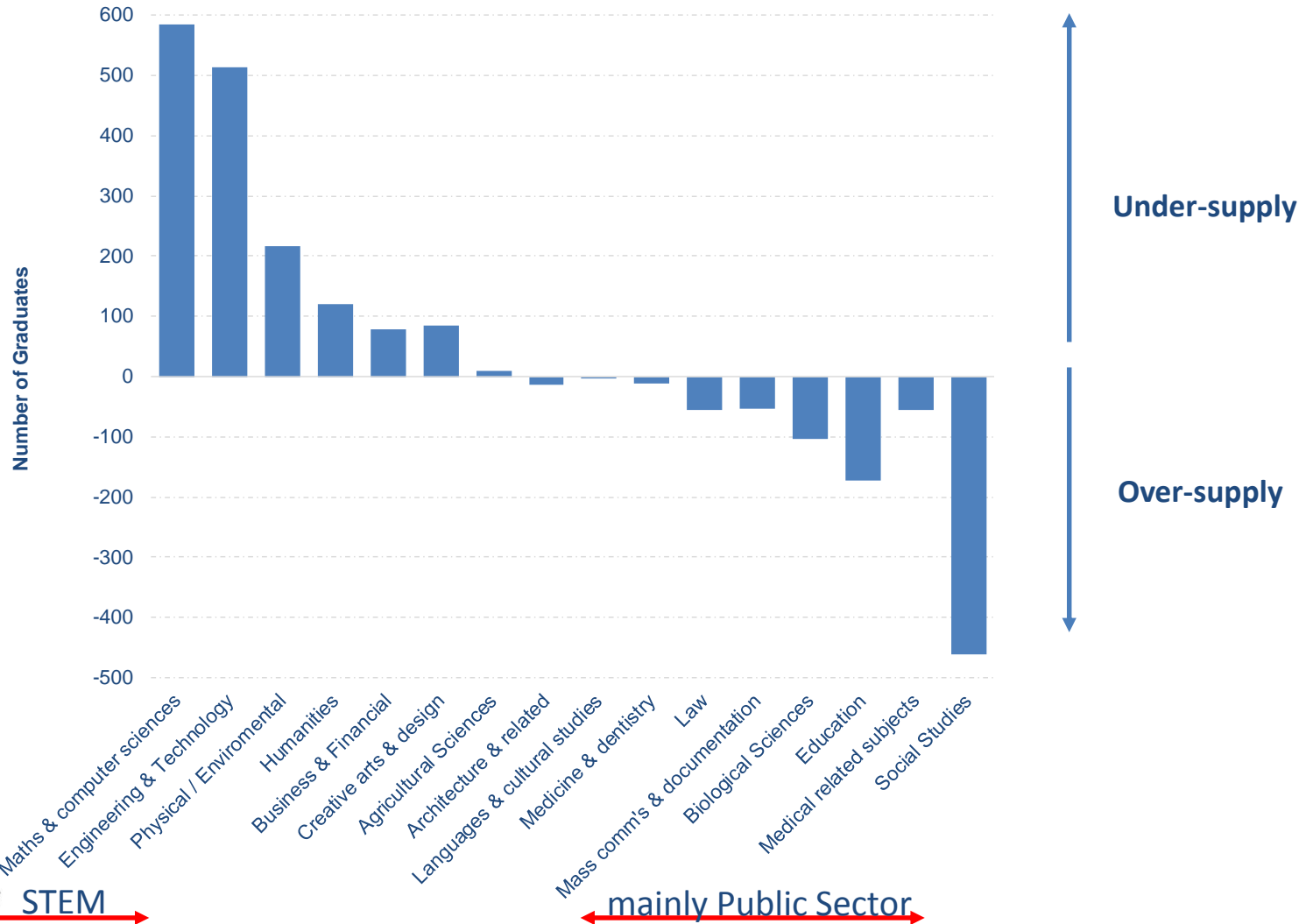
Supply Gap – NQF Level

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



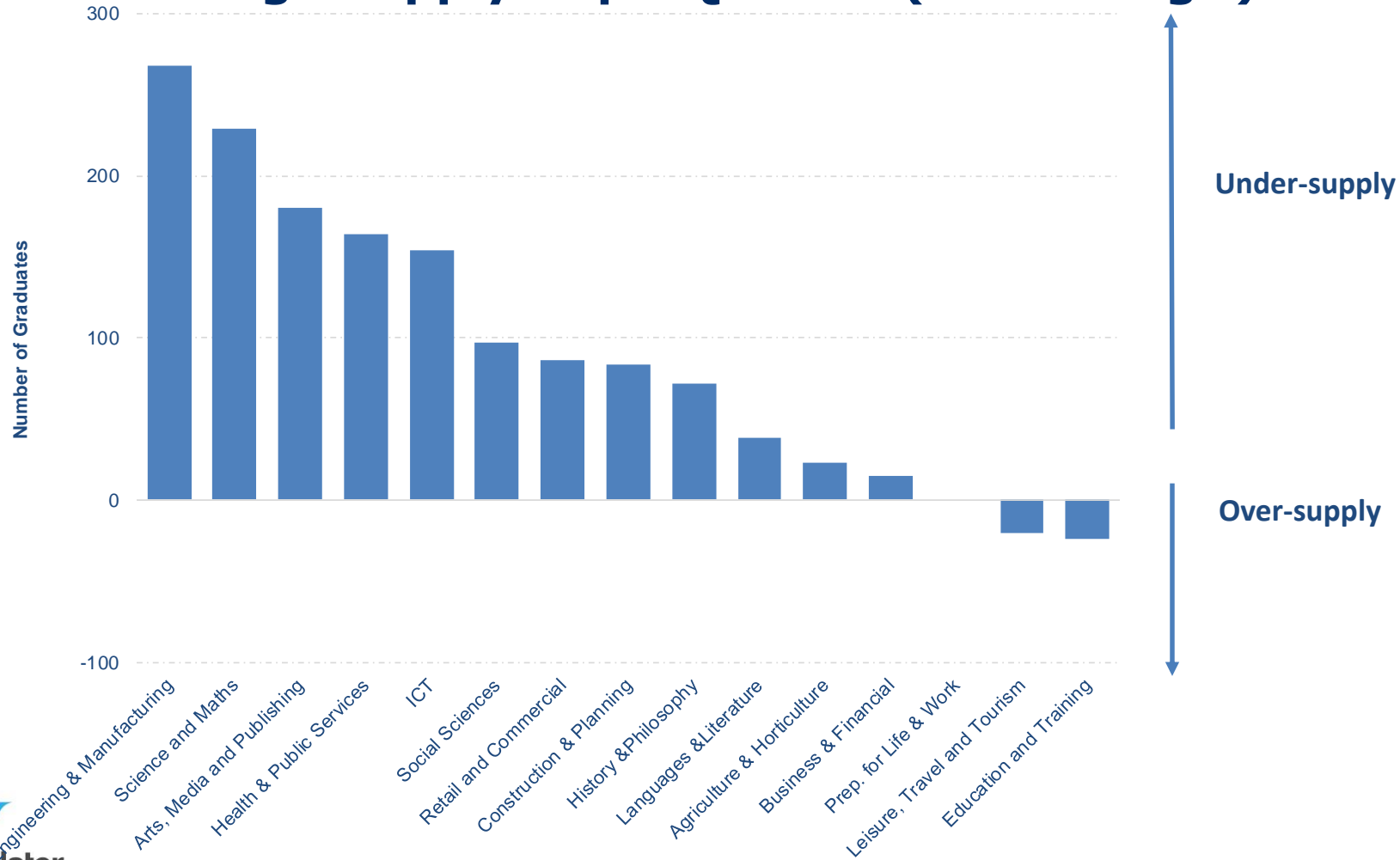
NQF level 6+ Supply Gap – Broad subject area

Annual Average Supply Gap NQF L6+ (JACS 1 digit)

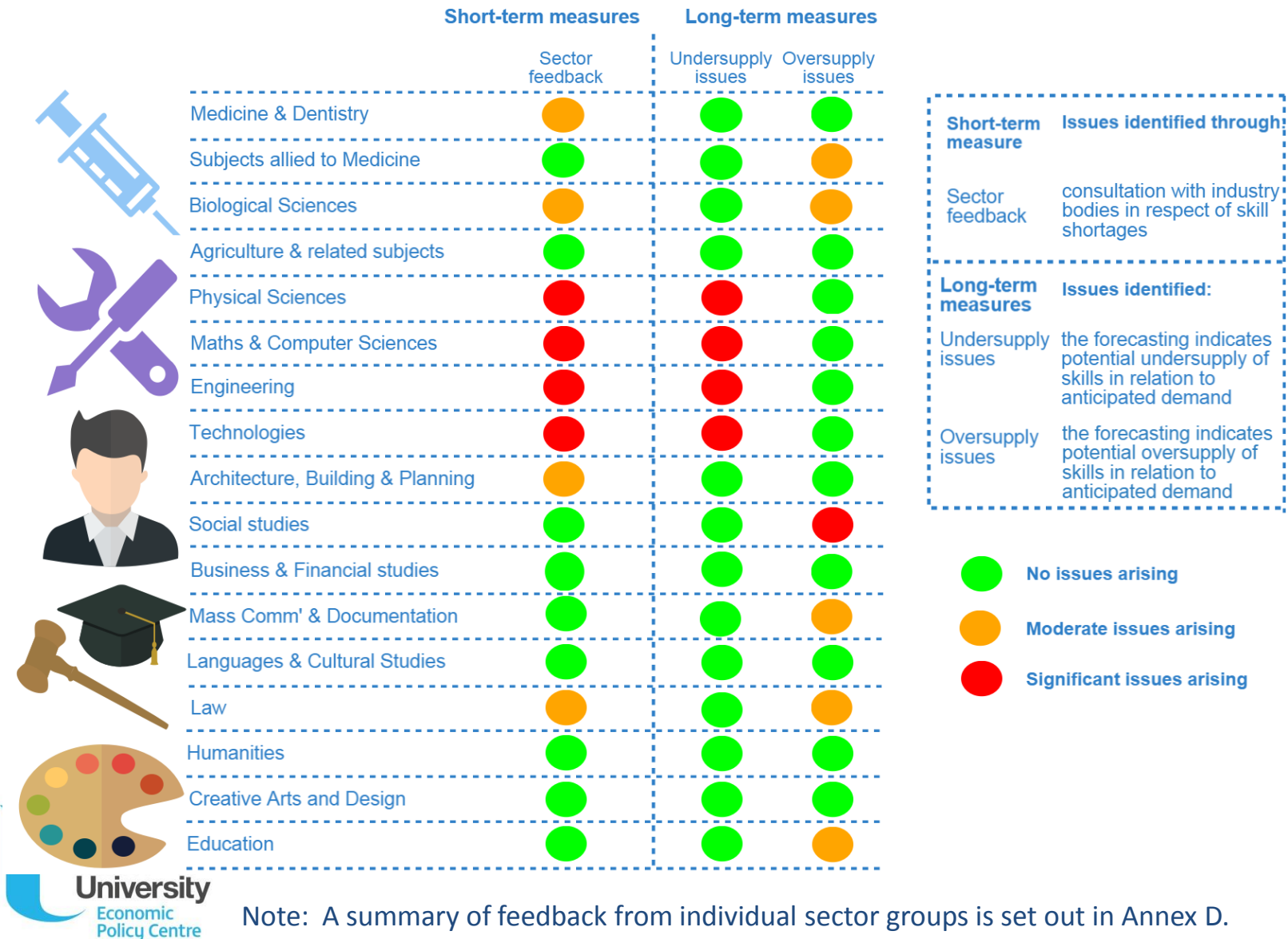


NQF level 4-5 Supply Gap – Broad subject area

Annual Average Supply Gap NQF L4-5 (SSAs 1 digit)



NQF level 6+ Skills Barometer



Note: A summary of feedback from individual sector groups is set out in Annex D.

NQF level 6+ Skills Barometer

- As indicated above detailed sector feedback is provided Annex D, but there are a small number of subject areas where the quantitative modelling and the sector feedback do not align. These are explained below:
 - **Medicine & Dentistry** – the modelling indicates a subject area broadly in balance, however sector feedback indicates significant areas of undersupply in some disciplines (such as General Practice). The skills barometer does not currently assess individual demand within sectors.
 - **Biological Sciences** – the modelling identifies an oversupply but sector feedback suggests a shortage. The two very dominant subject areas within Biological Sciences in supply terms are Psychology and Sports & Exercise Science both of which are oversupplied. Other Biological Science subjects are NOT oversupplied.
 - **Architecture, Building and Planning** – the modelling indicates a subject area broadly in balance, however sector feedback suggests a lot of skills have been lost to the sector following the recession.
 - **Law** – the modelling indicates moderate oversupply and consultations confirm that law graduates often do not pursue a career in the law, but a shortage in commercial law skills was reported.

Research Findings

- It is important to note that the results are sensitive to economic performance. In addition they are based on a high growth scenario and include a supply adjustment. However, if 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: Social Studies; Medical Related Subjects; Biological Sciences; and Education.

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:
 - Engineering & Manufacturing;
 - Science & Mathematics;
 - Arts, Media and Publishing; and
 - ICT.
- **The over-supply in NQF L4-5 is only moderate for a small number of individual subjects:**
 - Business and Finance;
 - Education & Training;
 - Leisure, Travel and Tourism.
- 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.

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); Information and Communications; and Administration Services.
- **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.

Research Findings

Why are STEM related subjects always undersupplied?

An undersupply in STEM related subjects is a consistent finding across skills research for many years now. There are many reasons for this finding, not least because sectors such as ICT and engineering have significant growth potential and the skills are in demand across a wide range of sectors and occupations.

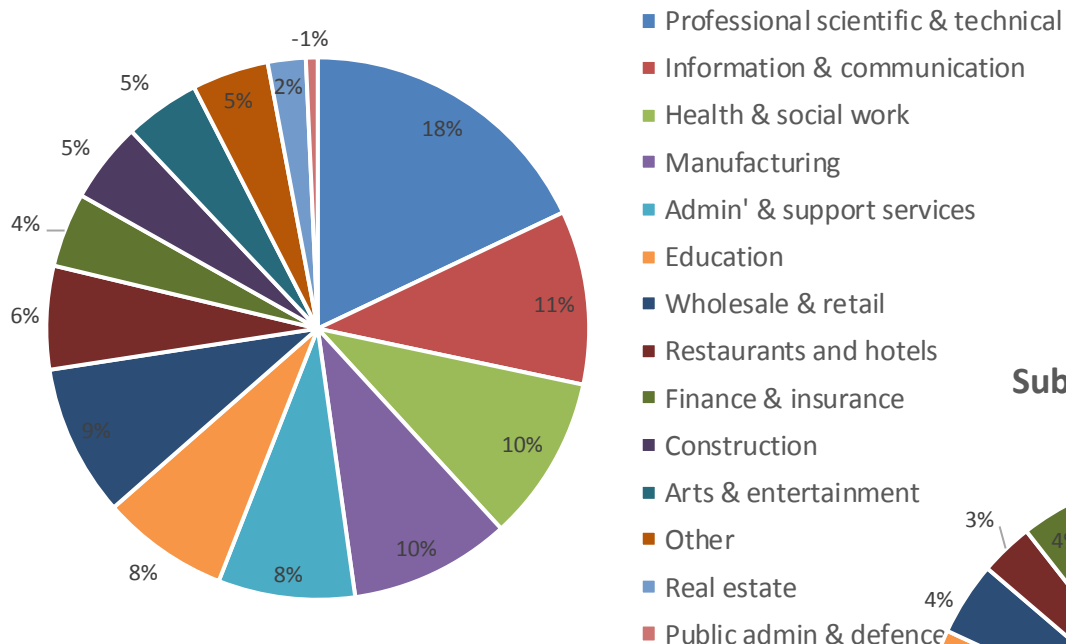
However, a further reason could be that ICT and engineering are amongst a relatively small number of occupations that require a qualification in a relevant subject discipline. This places greater significance on the volume of qualifications being achieved in these subjects on an annual basis relative to other subject areas.

In contrast, an occupation such as accountancy (also technical, numerate and at a professional level) does not recruit solely from accountancy related disciplines. Accountancy firms recruit graduates from a wide range of degree disciplines including the Arts, who then embark on a 3 year “training contract” to achieve their chartered status.

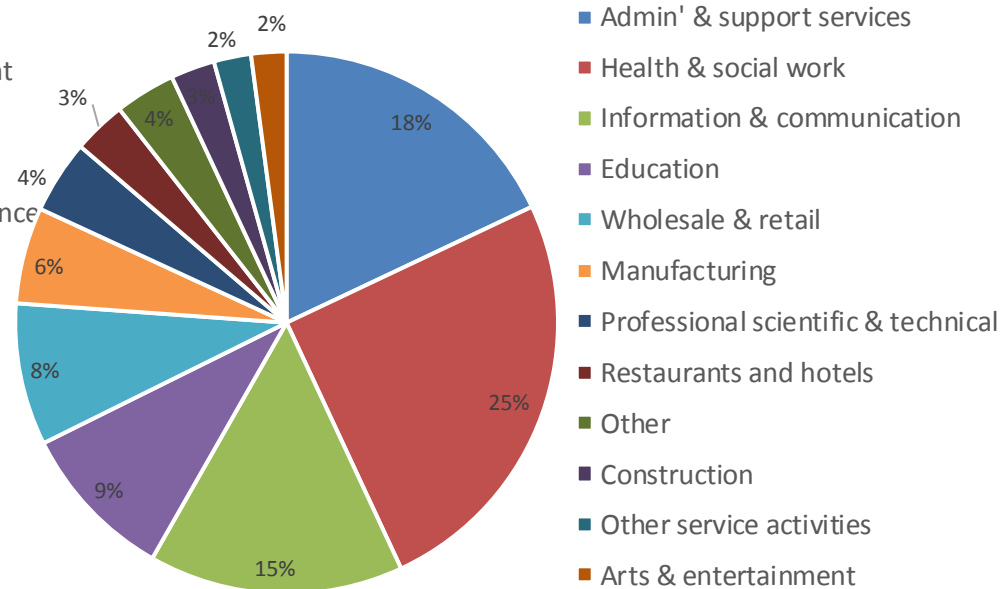
Sectoral demand (net requirement) by skills level

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

High level skills requirement (Level 6 and above)



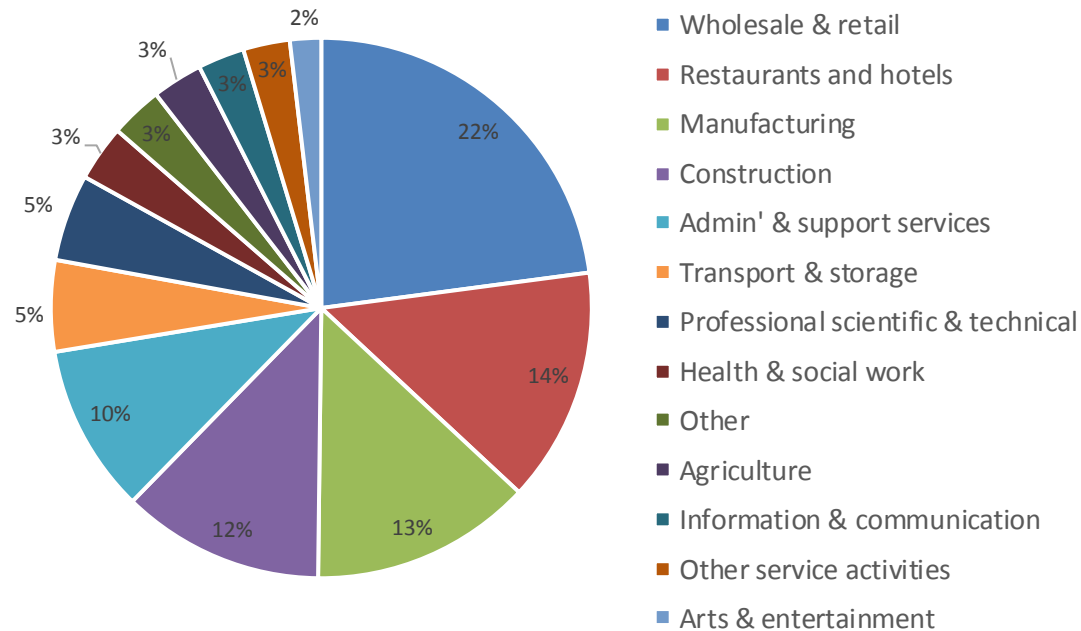
Sub-degree level skills requirement (Level 4 and 5)



Sectoral demand (net requirement) by skills level

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

Mid to low level skills requirement (Level 3 and below)



Source: EPC



Policy implications

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Policy Comments

The following policy comments have been made from the analysis:

- **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.
 - Although the intention is to provide the level of skills necessary to allow NI to reach its economic aspirations, it is also recognised that large numbers of skilled people will leave NI if employment opportunities are not available for them.
 - This outcome is preferred to an under-supply of skills which could constrain economic growth in NI and result in higher levels of unemployment.
- **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 (but also in areas such as construction). Given the historic scale of higher skilled recruitment into the public sector, over supply could be an issue into the medium term.
 - However, in the longer term Government spending and demand will increase, therefore care must be taken with the policy response so as not to lose the capability to deliver this training.
 - Taking a positive perspective, reductions in public sector recruitment should create greater supply of higher level skills for the private sector.

Policy Comments

- **The employability issue is impacting supply** – an assessment of ‘effective supply’ has been made to estimate the number of graduates/ qualifiers with the appropriate skills to work at a level equivalent to the qualification achieved. This significantly reduces the overall supply of appropriately skilled people entering the labour market, resulting in supply gaps across a range of subject areas. This gives rise to a number of potential policy responses:
 - Increase the number of students to provide a sufficient number with the appropriate employability skills and accept the high wastage rate. This is currently seen as unachievable and unsatisfactory given tightening Government budgets.
 - Focus on improving the employability rather than quantity of graduates/ qualifiers – this could include incentivising potential students into subjects which are under-supplied to raise the employability of the intake in those subjects.
 - This could also impact the balance of students moving into HE and FE. A complex area requiring cultural change (discussed further below).
 - Assess the capacity of education institutions to increase supply in under-supplied subject areas.

Policy Comments

- **Policy response to areas of oversupply** – the policy response to an area of under-supply is simply to increase provision, but the response to areas of over-supply should be much more nuanced. The initial (knee-jerk) response to subject areas over-supplied could be to simply reduce provision (and this may be necessary), but alternative approaches could be adopted:
 - Selling NI as a FDI location to industries requiring those skills – this is relevant to subject areas which support higher value added business sectors. This has started in the legal sector but potential exists elsewhere, e.g. healthcare.
 - Some areas of over-supply could be austerity related, but when austerity ends demand could significantly increase. Therefore the capability to deliver these courses should not be lost.
 - Conversion courses could be made available to graduates (e.g. those with at least a 2:1) with qualifications in over-supplied subject areas.
 - Education institutions could seek to market over-supplied courses more proactively to international students to meet any reduction in enrolments from local students. This could utilise the skillsets and capacity of subject delivery in local institutions for the benefit of the international labour market until a time when local demand returns.
 - Local education institutions indicated the importance of offering a wide portfolio of courses. Many of which will meet the needs of the local economy but in some instances they are equipping students with the skills required in the international labour market.

Policy Comments

- **Advice to different stakeholders regarding areas of oversupply:**
 - **Advice to potential students** – young people should always be encouraged to study in an area for which they have a passion. If that happens to be in a subject area which is over-supplied it is important they understand that they will need to excel in order to progress in that specific area (e.g. in general a 2:2 in Engineering is likely to be more sought after than a 2:2 in Social Studies, in the current climate);
 - **Advice to education institutions** – the work-place relevant skills developed in oversupplied subject areas should be clearly articulated (i.e. a qualification in an oversupplied subject area may provide a wide range of skills suitable for the labour market in general and not specific to the subject area. These skills should be marketed effectively to employers.)
 - **Advice to employers** – employers could broaden their search criteria and consider the skills of people with qualifications in over-supplied subject areas. E.g. the skills sets gained in a Psychology degree are attractive across a wide range of industry sectors.
- **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 (e.g. 2 or 3 digit JACs and SSAs).

Policy Comments

The importance of **employability skills**:

- **This skills barometer focuses on the technical skills** required by employers as determined by NQF qualifications. There is less of a focus on the wider transversal/ employability skills such as team working; good communication; people management; problem solving and critical/ objective thinking. Consultations with all sector skills bodies highlighted the absolute requirement for these skills, but these skills are required across all sectors. **Therefore employability skills must be developed in all subject areas across all levels of education (HE, FE, training and school).**
- This sets a key challenge for education institutions to integrate the development of these skills into course delivery. By way of example, this may include the promotion of team/ project working, the verbal and written presentation of work and the introduction of challenge sessions and debating into the teaching of courses. Furthermore, appropriate exposure to meaningful work experience, typically through a placement and/ or internship, in addition to the more traditional part-time “student jobs” should be encouraged.
- Also, much of employability skills development will fall on employers as it is difficult for education to mimic the work place environment. This would most likely include increasing numbers of employers offering placement and internship opportunities to students.

Policy Comments

- **Young people experience a range of sectors/ occupations 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. This could include giving each student work experience across a number of different sectors and occupations to allow them to make better informed decisions.
- **The image of FE** – the consultations highlighted that there remains a cultural perception in NI that FE (technical/ professional) study is of lower value than HE (academic) study. Other developed economies have successfully created an education system which places equal credibility on both technical/ professional and academic career pathways.
 - If young people are to match their career choices with their abilities, then the image of FE must be considered the equal of HE;
 - One issue impacting the image of FE could be linked to their breadth of provision (NQF Level 1 to Level 6). The potential for FE to focus on mid to high-level skills (i.e. NQF L3 to L5) should be explored with other providers delivering low level skills training.

Policy Comments

- **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. This is more relevant where a sector has a number of organisations representing its interests and providing input to Government policy.

However it is also important employers are realistic about the skills which can only be effectively developed in the workplace.

This is equally important when engaging with Government on all policy matters (i.e. beyond skills issues).

- **Setting appropriate funding incentives** – the current funding model encourages a high throughput approach and high levels of student retention. However, if Government want to encourage improved outcomes (e.g. higher employment outcomes), then the funding regime should incentivise and reward those outcomes.

Policy Comments

- **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.
- **The cost of undersupplying skills** – the Skills Barometer has applied ambitious assumptions for jobs growth and skills demand because it is recognised the cost of undersupplying skills to the economy could be very significant. The most significant implication would be that economic growth would be constrained, the skills mismatch would result in a continued loss of talent to employment opportunities overseas and higher levels of unemployment could result in the local economy.

In addition, a shortage of skills could also lead to employers sourcing skilled labour from overseas and increased levels of immigration. The free movement of labour across borders is generally accepted to be positive for economic growth, but immigration also has wider social implications.



Research suggestions

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Research suggestions

The work to complete the skills barometer has identified a number of areas for potential further research. The research priorities for year 2 are currently being discussed with sponsors and subject to agreement. These are summarised below:

- **Understanding the employability skills issue** – strong feedback from employer groups indicate issues with the skills of young people leaving the education system. This creates the need/ demand for an oversupply of graduates/ qualifiers, however a reasonable measure to estimate the quantity of oversupply has not been identified. A number of areas of research could be considered:
 - Literature review of graduate underemployment
 - Survey of employers (HR/ recruitment teams) – to understand the following:
 - gaps in skills (technical or employability?)
 - any recent/ proposed changes to minimum application criteria (and reasons)
 - reasons for not recruiting applicants who meet the criteria
 - Survey of students – HE and FE leavers in 2012 and 2013 to understand:
 - levels of employment and underemployment (correlate by subject area and NQF level)
 - reasons for failure to secure qualification appropriate employment
 - lack of job opportunities
 - not meeting minimum application criteria or failure at interviews

Research suggestions

- **Understanding the employability skills issue (areas of research contd):**
 - Understanding the balance of responsibility between education institutions and employers/ wider economic conditions. If the economy is growing but graduates/ qualifiers are unable to secure employment in an area relevant to their subject qualification, then it could be an issue for the education institution. However, if employment opportunities are limited, then wider economic conditions may be to blame. Understanding this is fundamental to identifying the appropriate policy response.
 - Analysis of existing quantitative information E.g.: NI Civil Service – analysis of NICS recruitment aptitude test results and interview results by subject area and NQF level; HESA – 6 month employment data; LFS – UK unemployment by graduate subject (Under 35s); and Number of graduates working in retail (may be a proxy for underemployment).
- **Opportunity for apprenticeships** – given the importance of the new apprenticeships model to the delivery of skills, further research should be undertaken to understand the areas which offer the best opportunity for apprenticeships. In line with the structure of the skills barometer, the opportunities could be assessed both by sector and occupation.

Research suggestions

- **Upskilling** – the current skills barometer does not include upskilling in the results. The reason being, it is assumed that these individuals are already in the labour market, will remain with their current employers after training and do not represent additional supply to the labour market. However it is recognised that following upskilling, staff can make significant productivity improvements and therefore further research is merited to understand this important strand of skills development.
The barometer currently makes a number of high level assumptions regarding the level of upskilling across all NQF levels, which is netted out of the analysis, however further research is required to understand:
 - the scale of current upskilling; and
 - the demand over the forecast period.
- **Wider labour market research** – the economic modelling under both the baseline and high growth scenarios provides the opportunity to conduct wider labour market analysis. This could include forecasting levels of unemployment, inactivity and productivity.



Sector Comments

A summary of feedback from sector organisations

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Sector comments

Introduction

A wide number of sector/ industry skills bodies were consulted as part of the research programme. The following table sets out a summary of the key points made. A more detailed overview is provided in Annex D of the individual sector feedback.

Summary of sector feedback

- **Importance of general employability skills** – all sector bodies stressed the importance of generic employability skills such as: ability to work as part of a team, good communication, ability to critically appraise information and find solutions to problems, professional attitude to work and willingness to learn. There is a key challenge for education institutions to integrate this learning into the delivery of all courses.
- **Skills linked to qualifications** – this is a key issue for employers and strongly linked to the 'employability skills' issue. Although graduates/ qualifiers may have appropriate formal qualifications to undertake a job role, many applicants do not have sufficient skills to justify a job at the level for which they are qualified. This has a significant impact on the level of supply of skills.

Sector comments

Summary of sector feedback

- **Multi-skilling and the need for an evolving skillset** – there is an increasing expectation that employees will need to have a range of skills (in addition to employability skills). This is important for a flexible workforce that can undertake a range of tasks. Furthermore sectors have evolving skills needs and it is critical that labour market participants keep their skills up to date.
- **Business/ commercial acumen** – in addition to the technical skills required in many sectors across the economy, there is a need for all recruits to have a basic level of business acumen. This is needed to understand the financial implications of work being undertaken and decisions being taken in the work place.
- **Conversion courses** – many employers, particularly at the higher skills end, find conversion courses an effective alternative (if not ideal) for students with non-relevant degree subject qualifications.
- **Balance of skills to be developed in-house post-FE/ HE** – there is a recognition from employers that there must be a balance between the skills expected from FE/ HE and the skills development to be undertaken by the employer

Sector comments

Summary of sector feedback

- **Export focus requires sales and language skills** – an export focused economic development strategy requires businesses with both overseas sales and language skills across all relevant sectors.
- **Understanding the requirements of the job** – in some instances young people need to have a better understanding of the nature and requirements of the career they have chosen. Expectations can be unrealistic based on perception rather than the real world. This leads to a skills mismatch as students develop skills for sectors in which they will not seek employment.



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

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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**

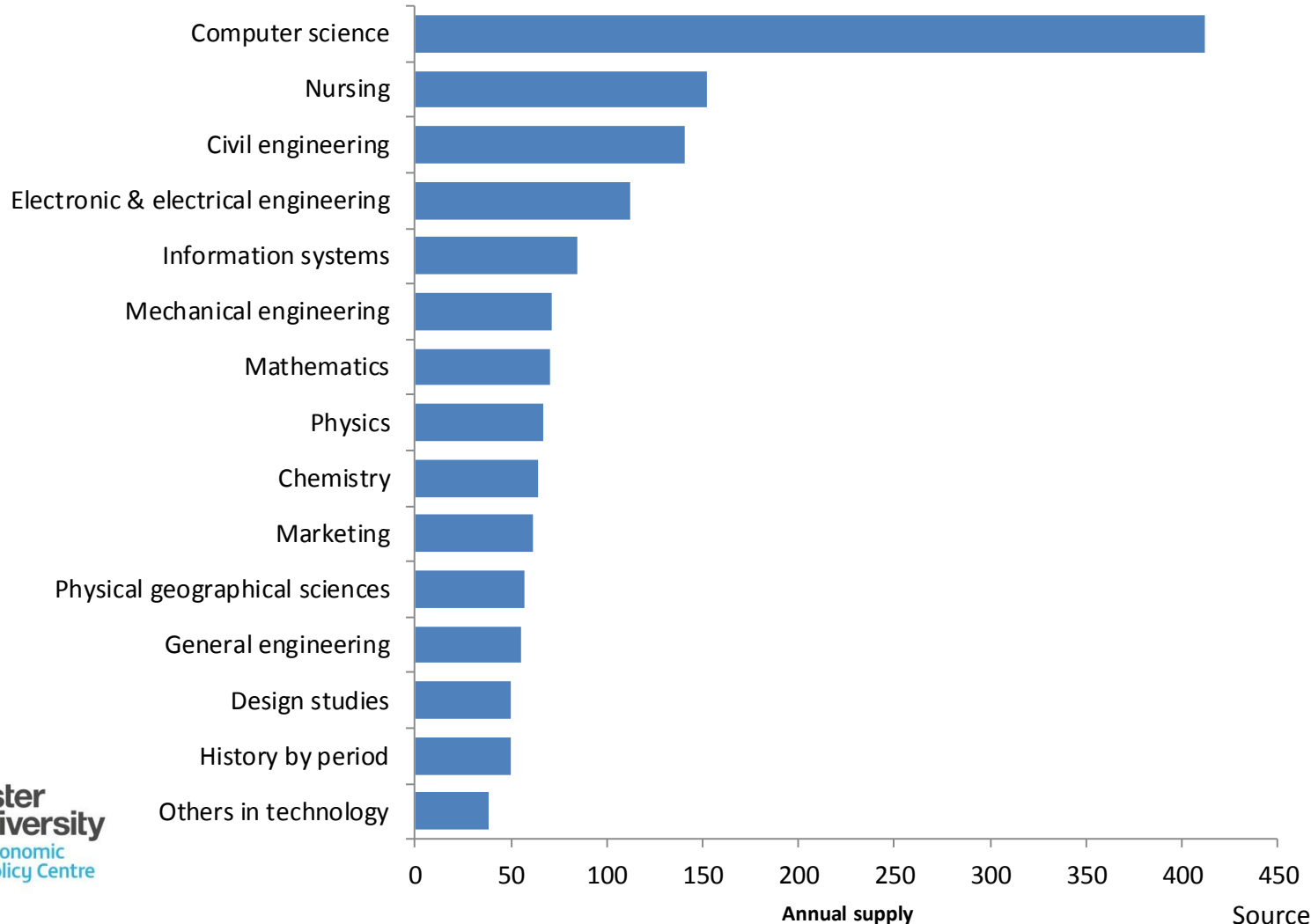
- Top 10 Subjects – Annual average under-supply
- Top 5 Subjects – Annual average over-supply

- 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.

** Only a small number of NQF level 4-5 subjects are materially over or under supplied, hence only 'Top 10' and 'Top 5' lists are produced.*

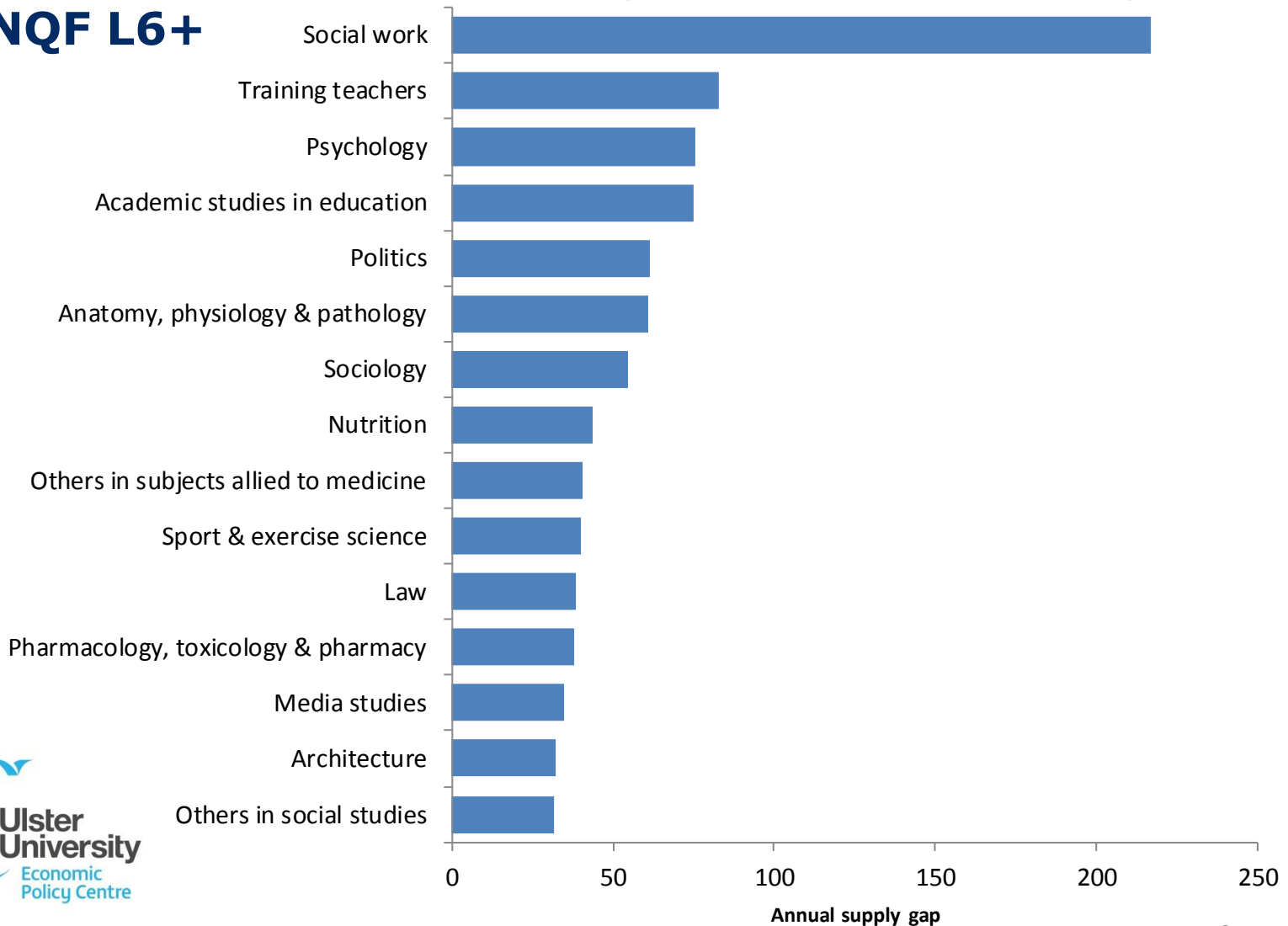
NQF level 6+ Undersupply – Detailed subject area

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



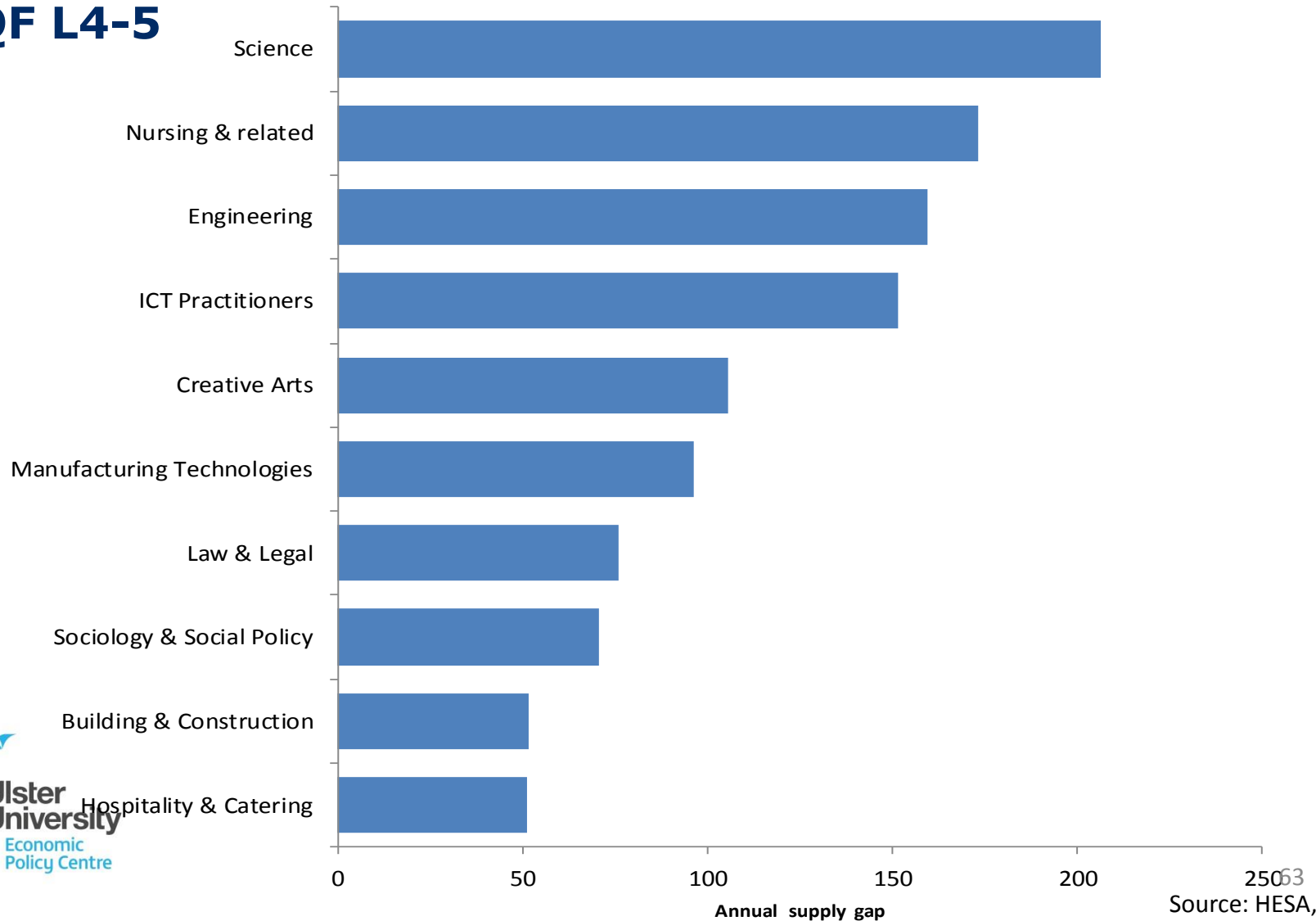
NQF level 6+ Oversupply – Detailed subject area

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



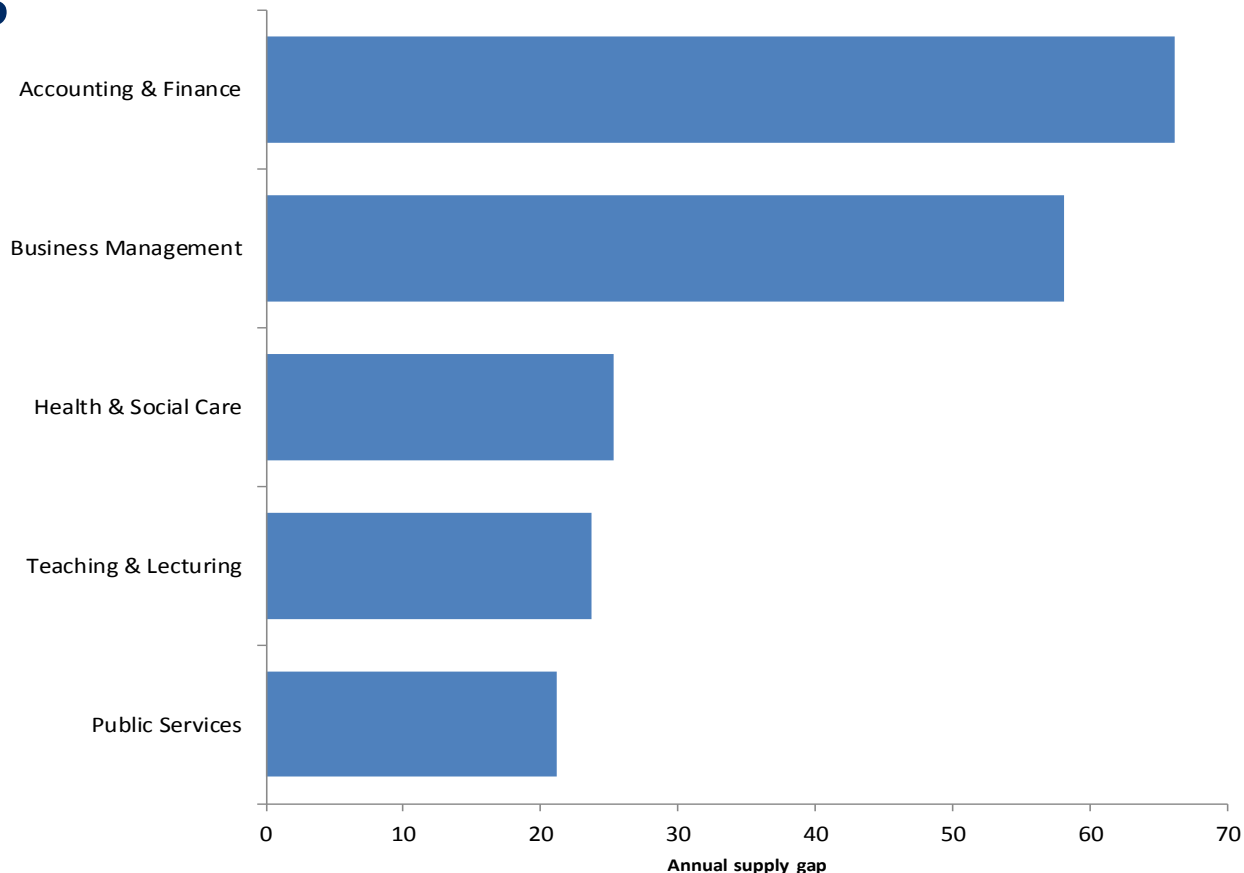
NQF level 4-5 Undersupply – Detailed subject area

Top 10 Skills Annual Average Undersupply (2 digit SSAs) – NQF L4-5



NQF level 4-5 Oversupply – Detailed subject area

Top 5 Skills Annual Average Oversupply (2 Digit SSAs) – NQF L4-5



The levels oversupply at NQF Levels 4 and 5 are very marginal. Even in the most over-supplied subject areas of Accounting & Finance and Business Management.

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. The subjects assessed include:

Undersupply

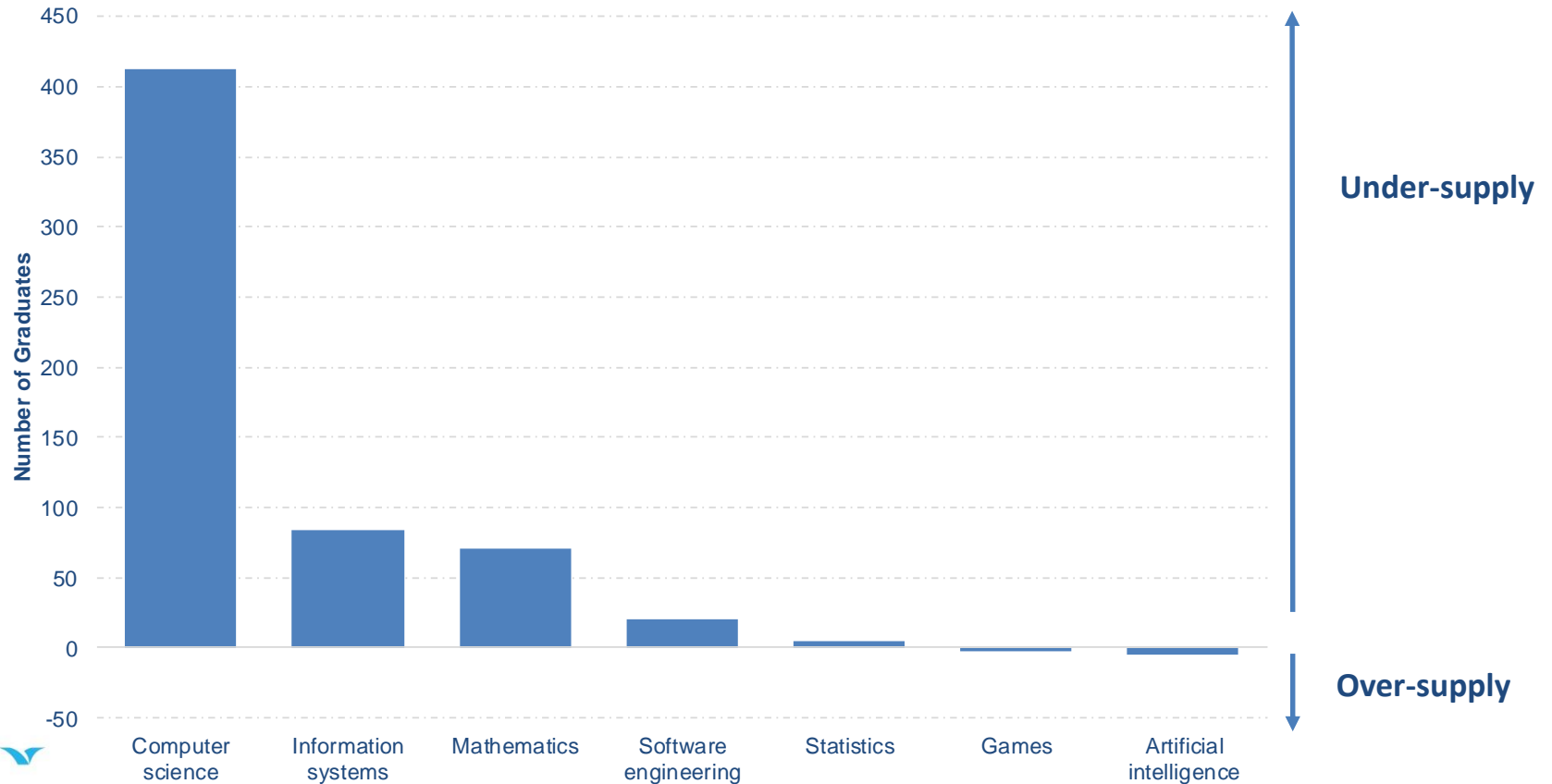
- Mathematics and Computer Science; Engineering; Physical and Environmental Sciences.

Oversupply

- Social Studies; Medical Related Subjects; Biological Sciences; Education.
- 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.

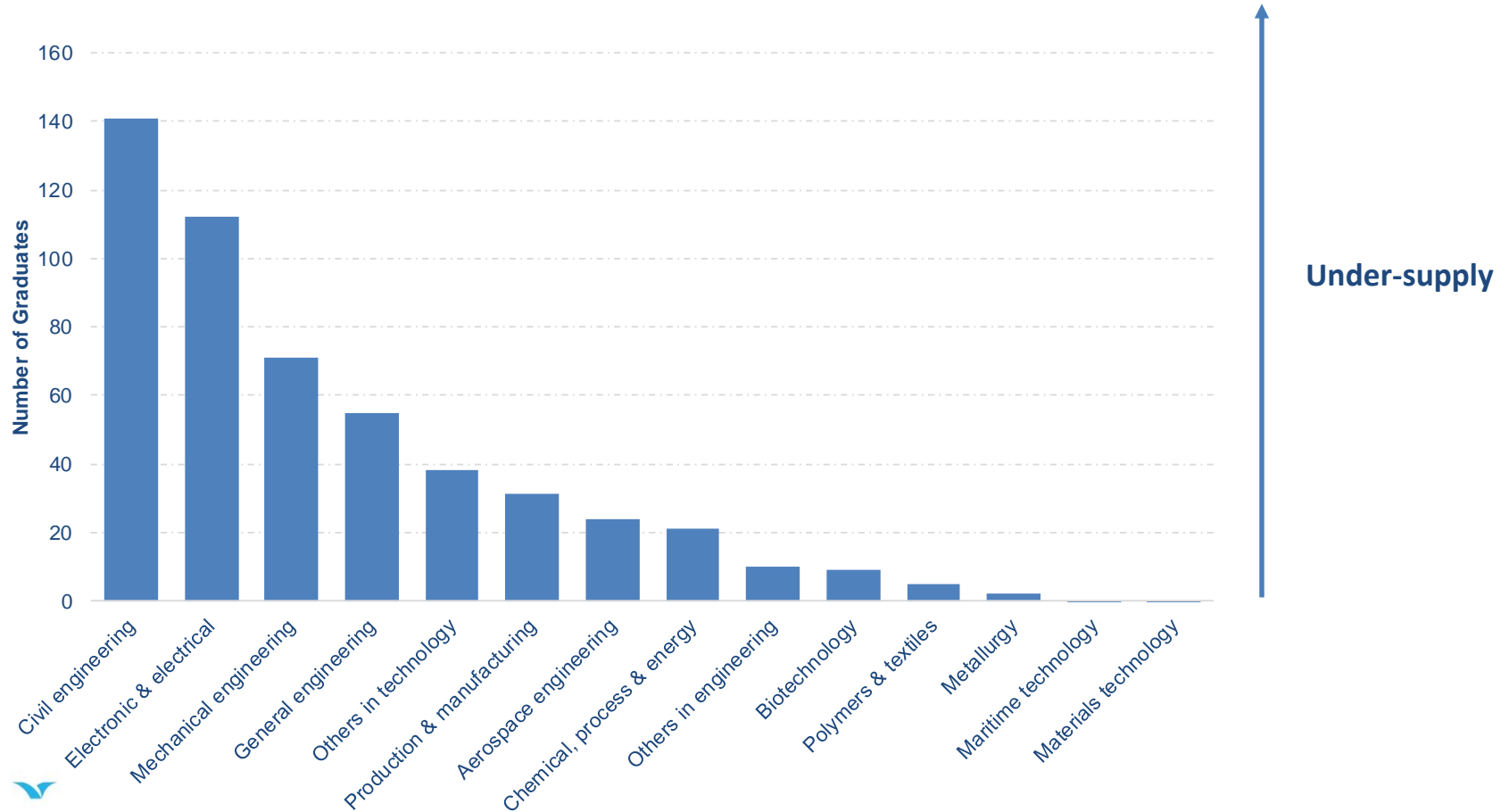
NQF level 6+ Supply Gap – Detailed subject area

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



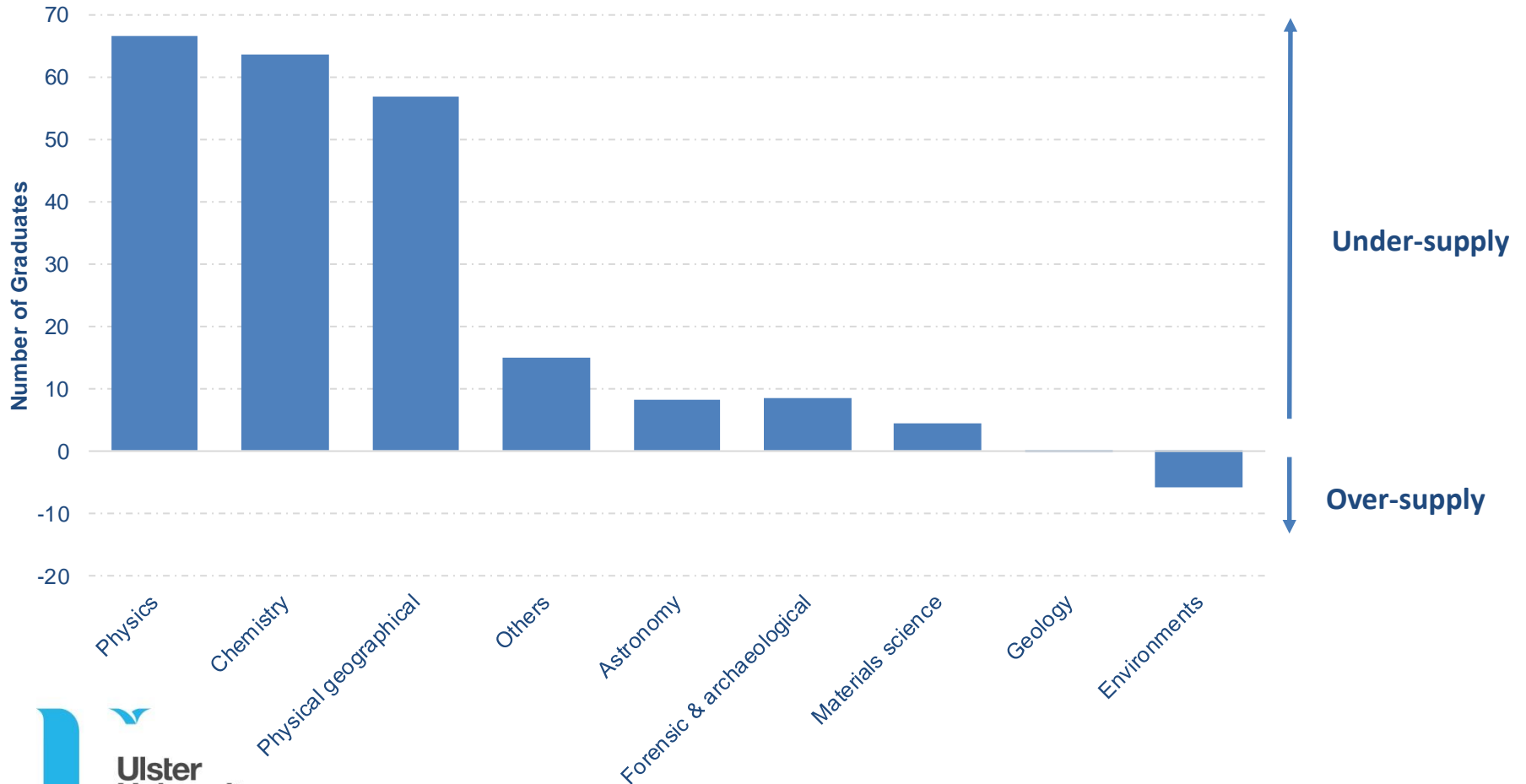
NQF level 6+ Supply Gap – Detailed subject area

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



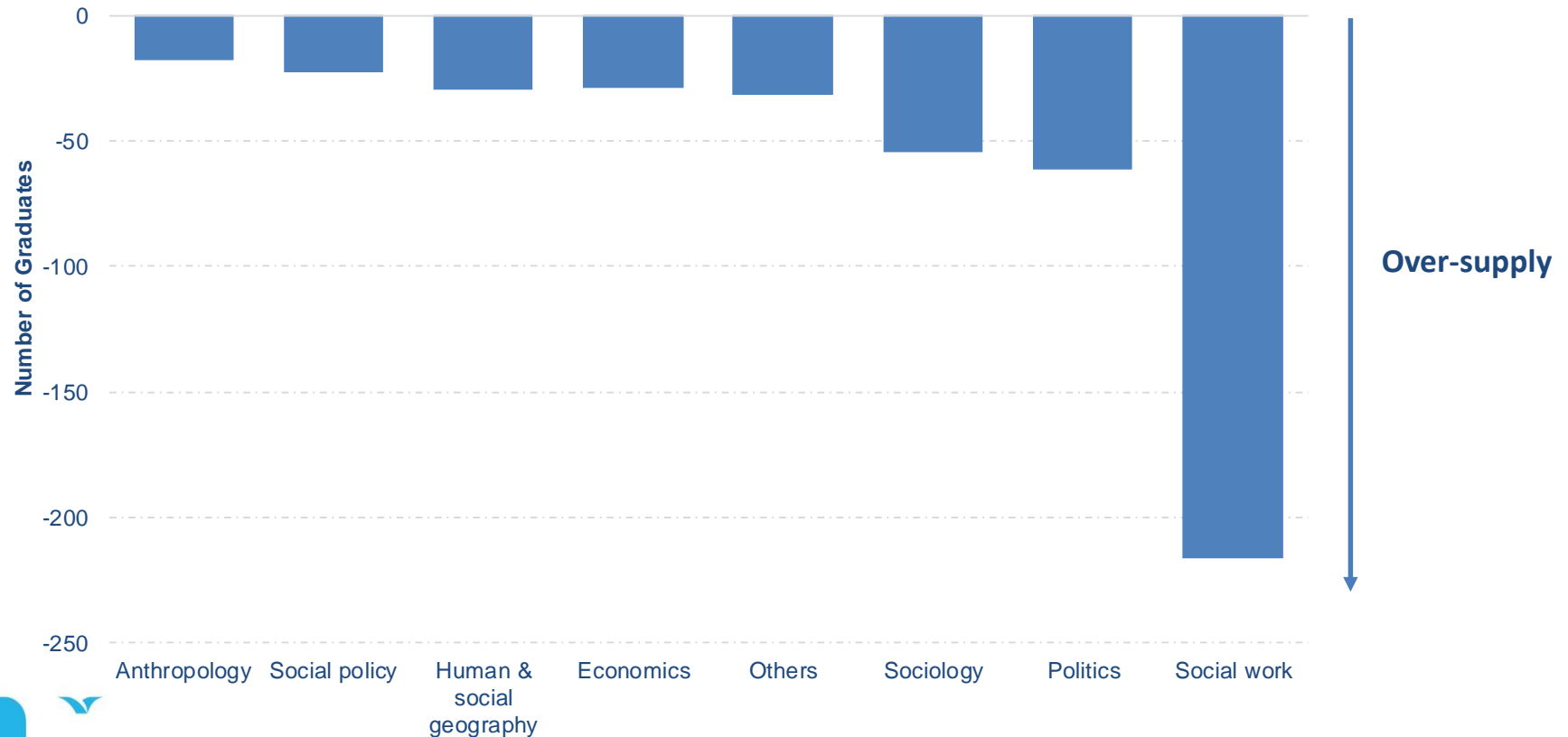
NQF level 6+ Supply Gap – Detailed subject area

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



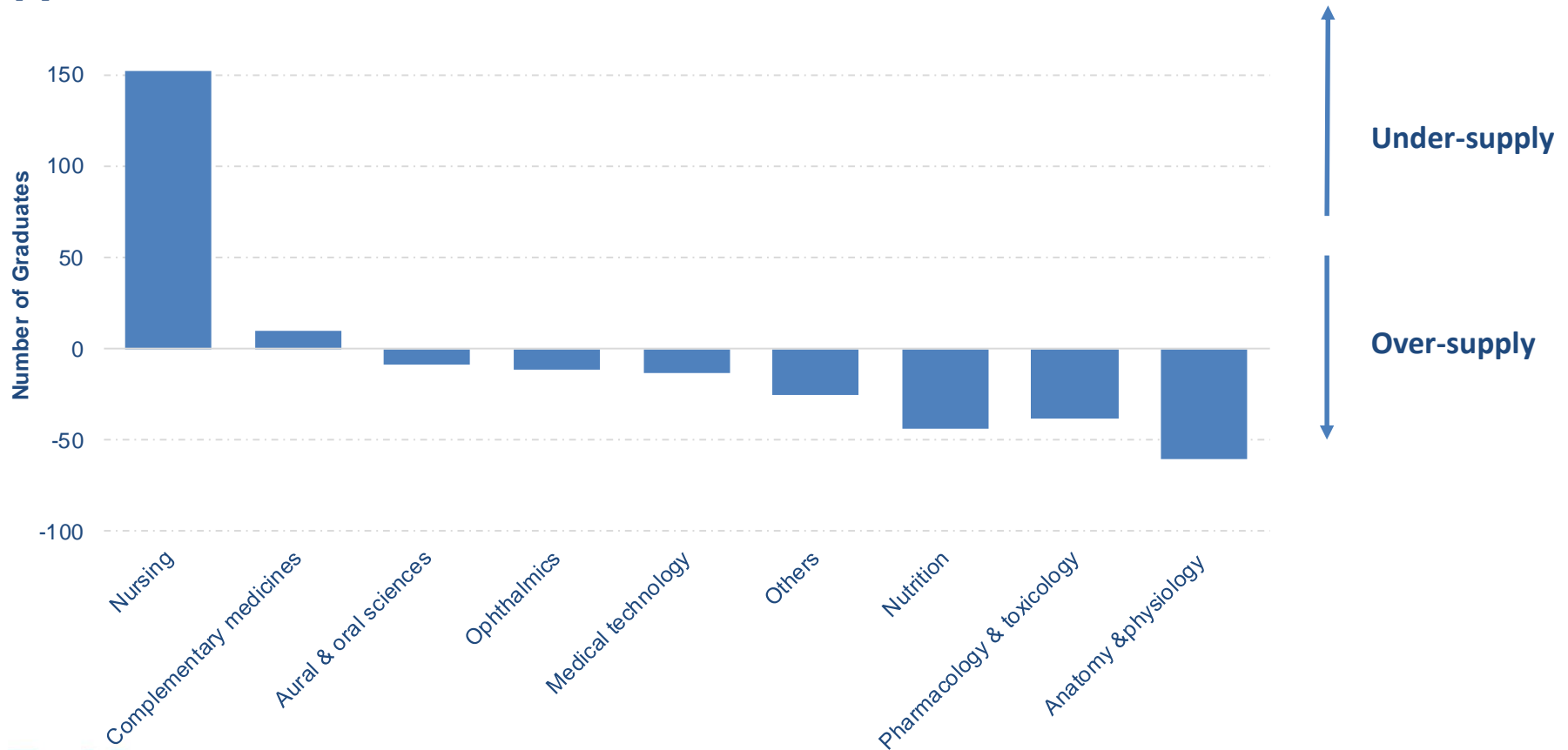
NQF level 6+ Supply Gap – Detailed subject area

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



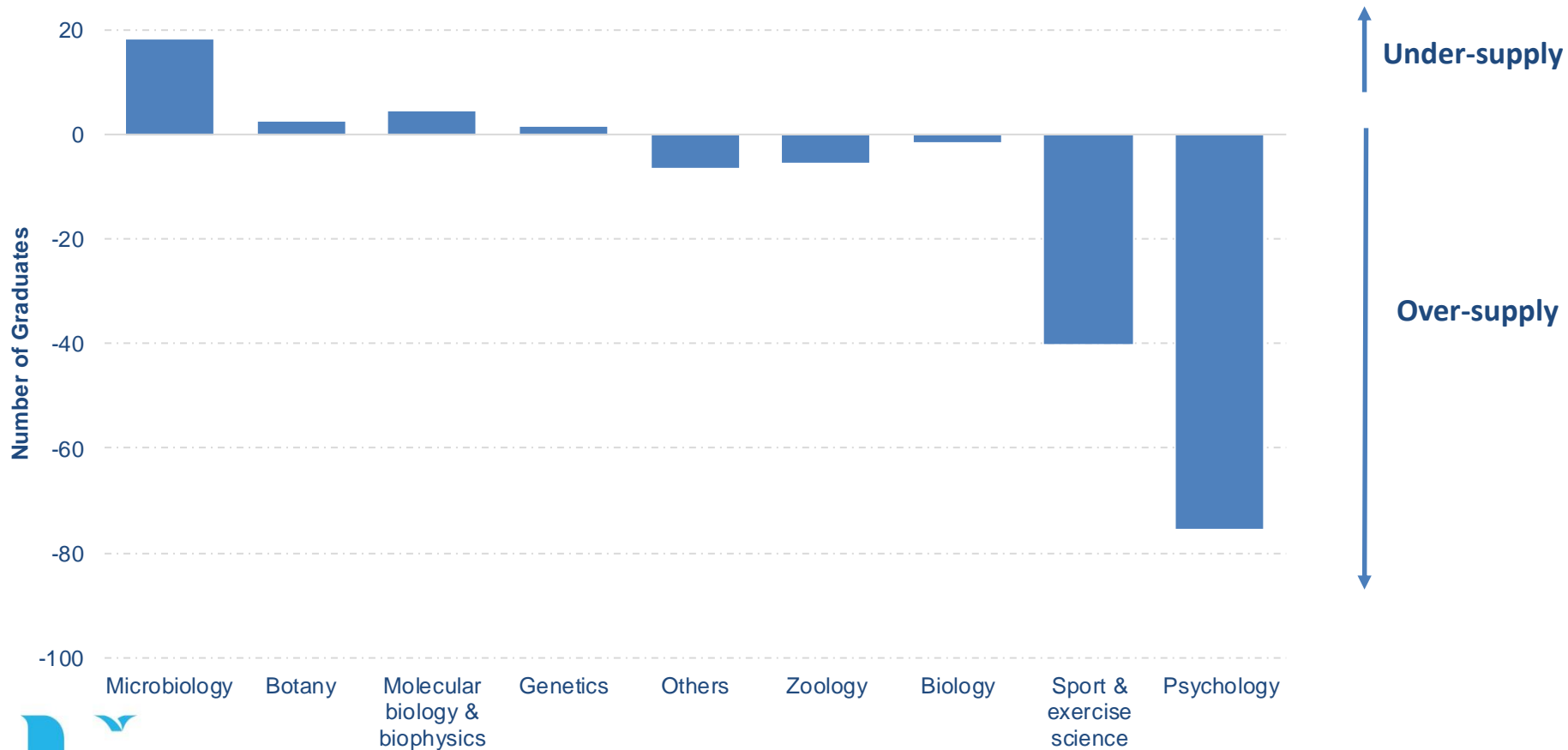
NQF level 6+ Supply Gap – Detailed subject area

Medical related subjects – 2 digit JACS (annual average supply gap)



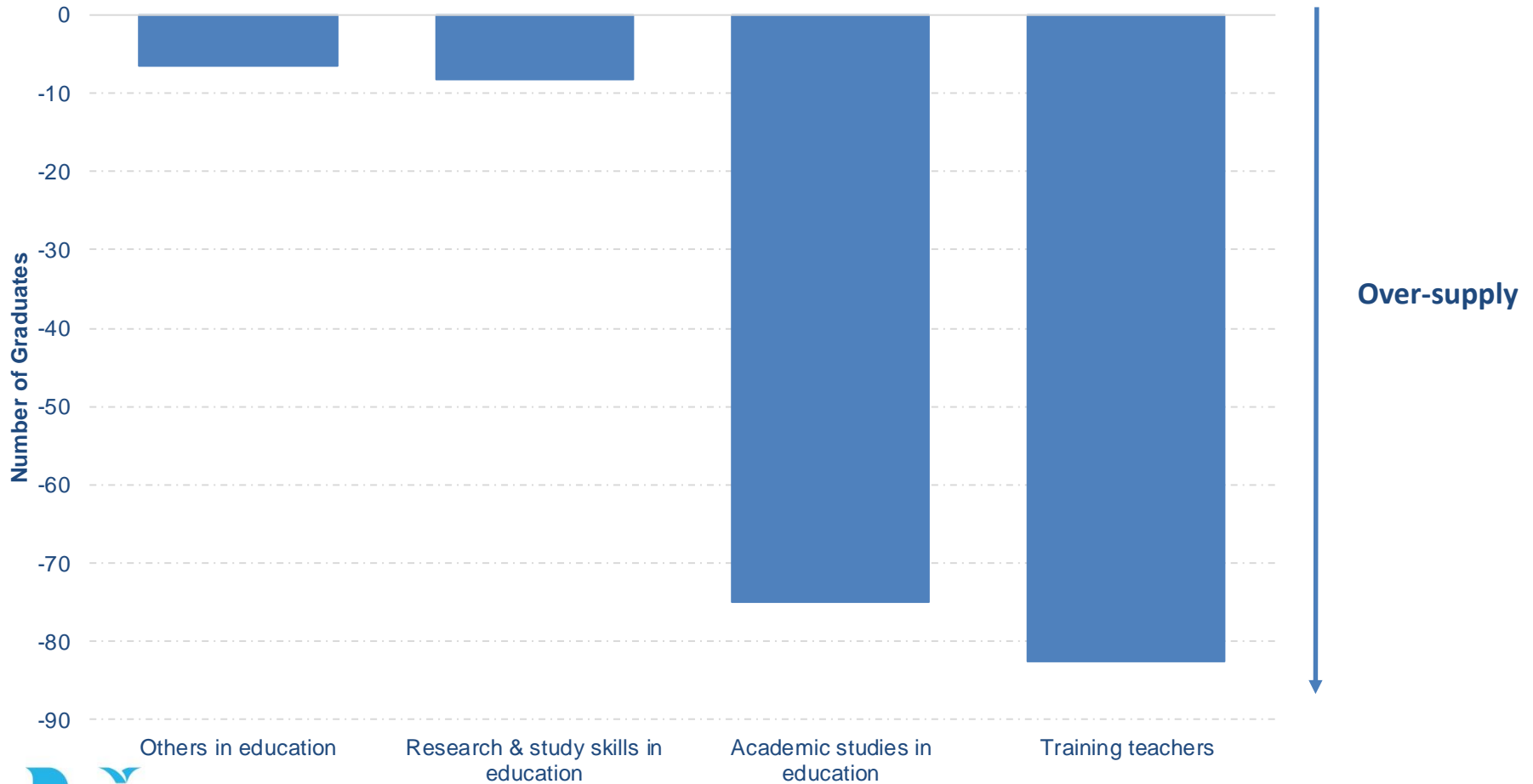
NQF level 6+ Supply Gap – Detailed subject area

Biological Sciences – 2 digit JACS (annual average supply gap)



NQF level 6+ Supply Gap – Detailed subject area

Education – 2 digit JACS (annual average supply gap)





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 – 2015 and 2025.
- Average annual requirement for jobs – expansion and replacement demand.

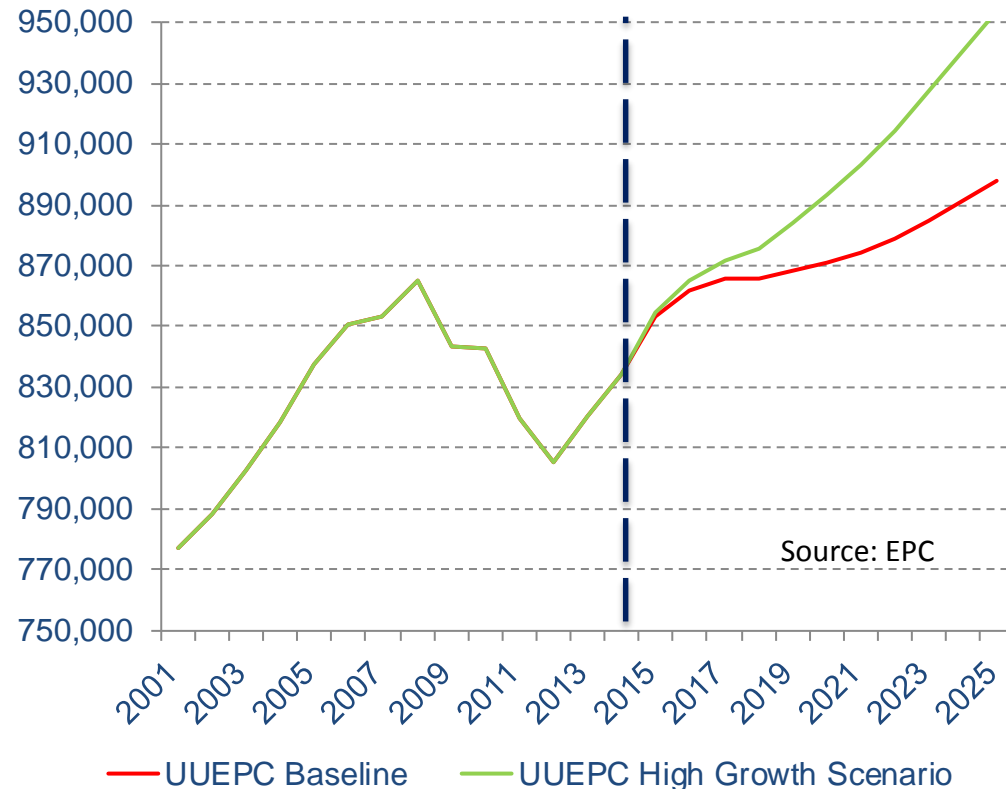
Skills

- Current and projected skills mix by industry sector – 2015 and 2025.
- Demand for skills by subject area – 2015 and 2025.
- Subject area demand by sector – analysis of degree subject mix by sector.

Overall jobs forecast

Boosted by 'High Growth' scenario

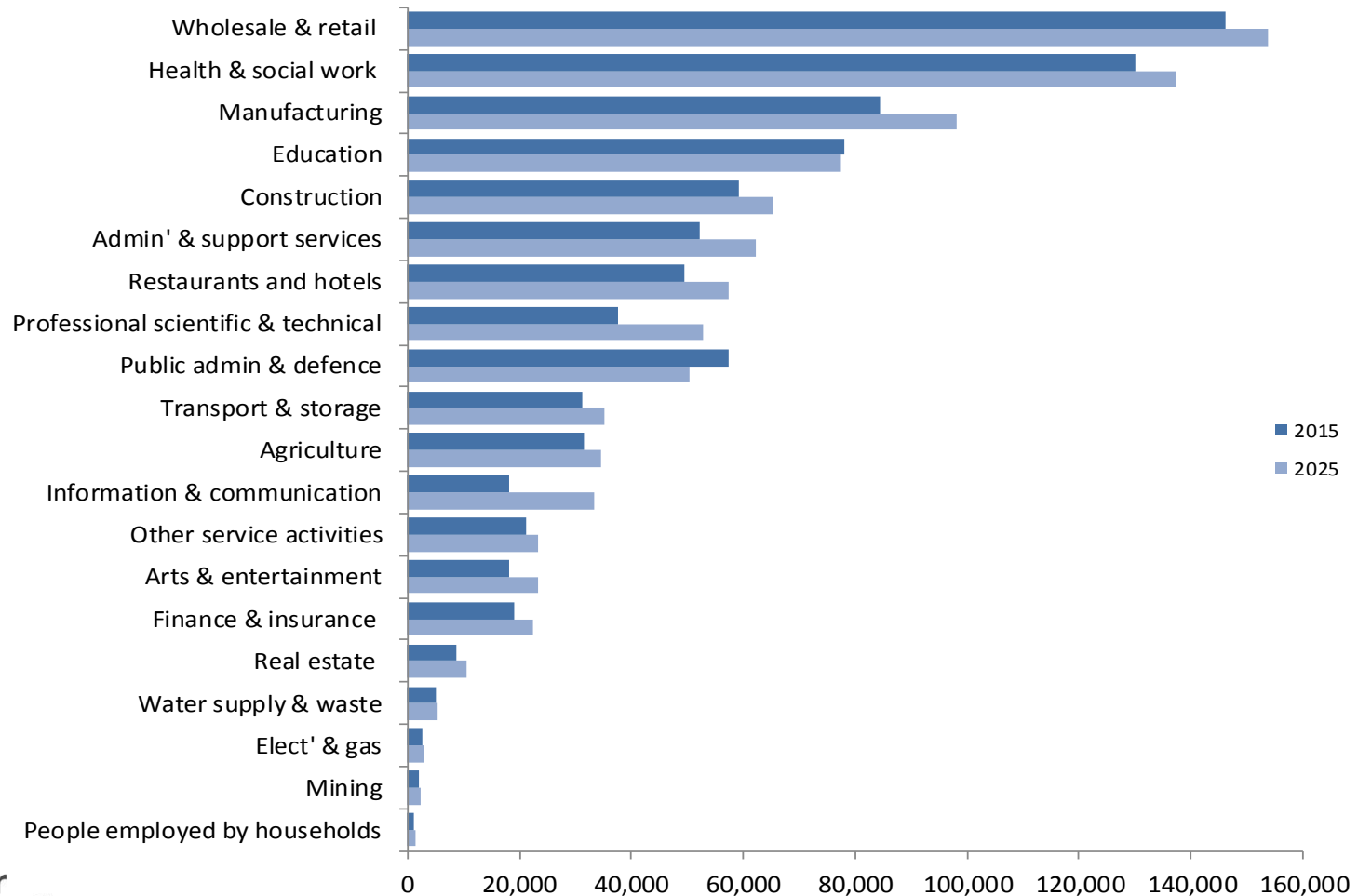
Overall Jobs Forecast



- 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 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.

Employment projections by sector

Total employment by 1 digit SIC (2015 and 2025)



- Public administration is the only sector in the economy where employment levels are expected to be lower in 2025.

Employment projections

2015-25 Annual average requirement from education and migration

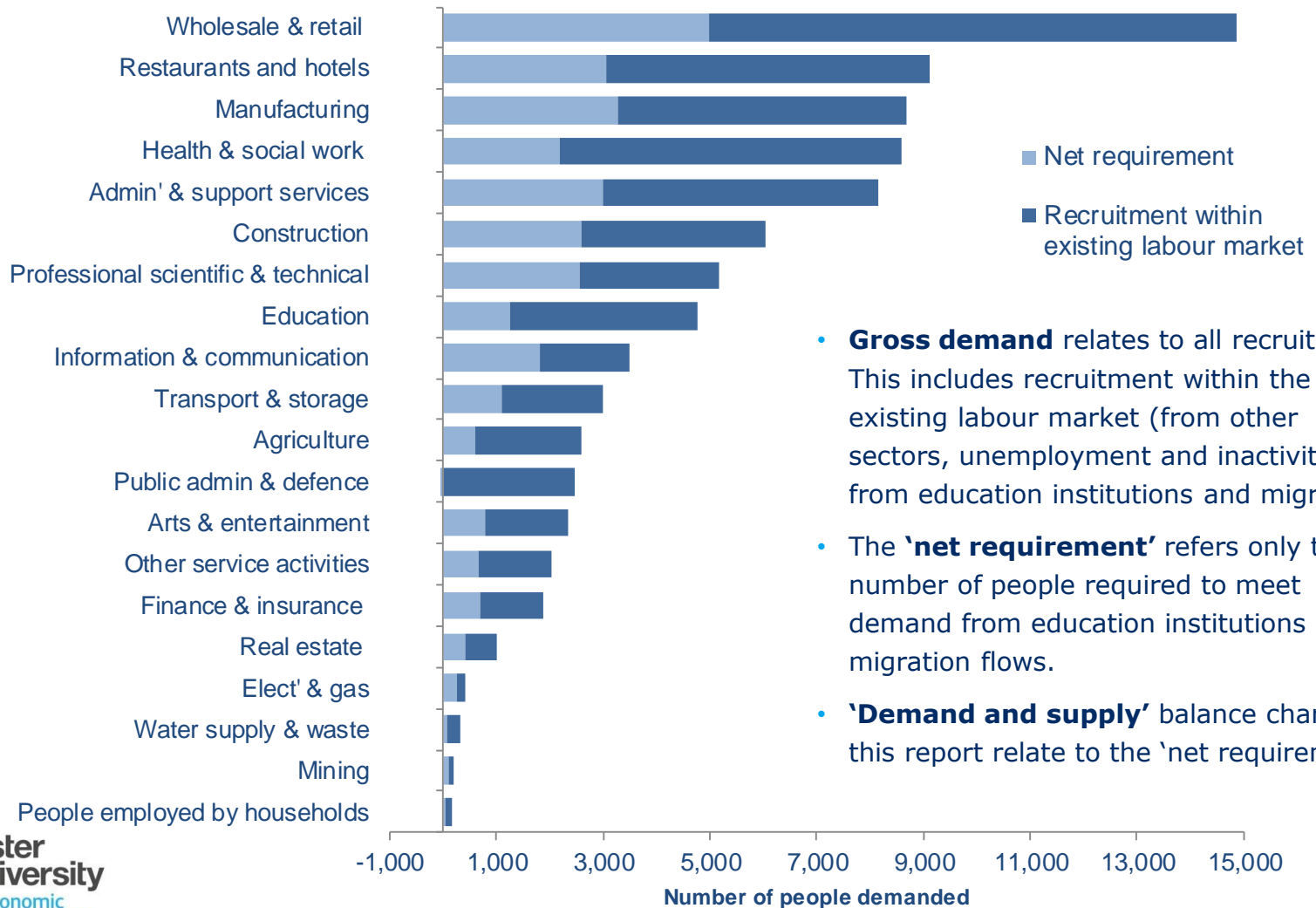
The charts below set out the **annual average net requirement from education and migration between 2015 and 2025** for each industry sector (at 1 digit SIC level) and then the Top 10 sectors (2 digit SIC) and Top 10 occupations (3 digit SOC). This is identified in terms of expansion demand and replacement 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.

Gross demand by sector

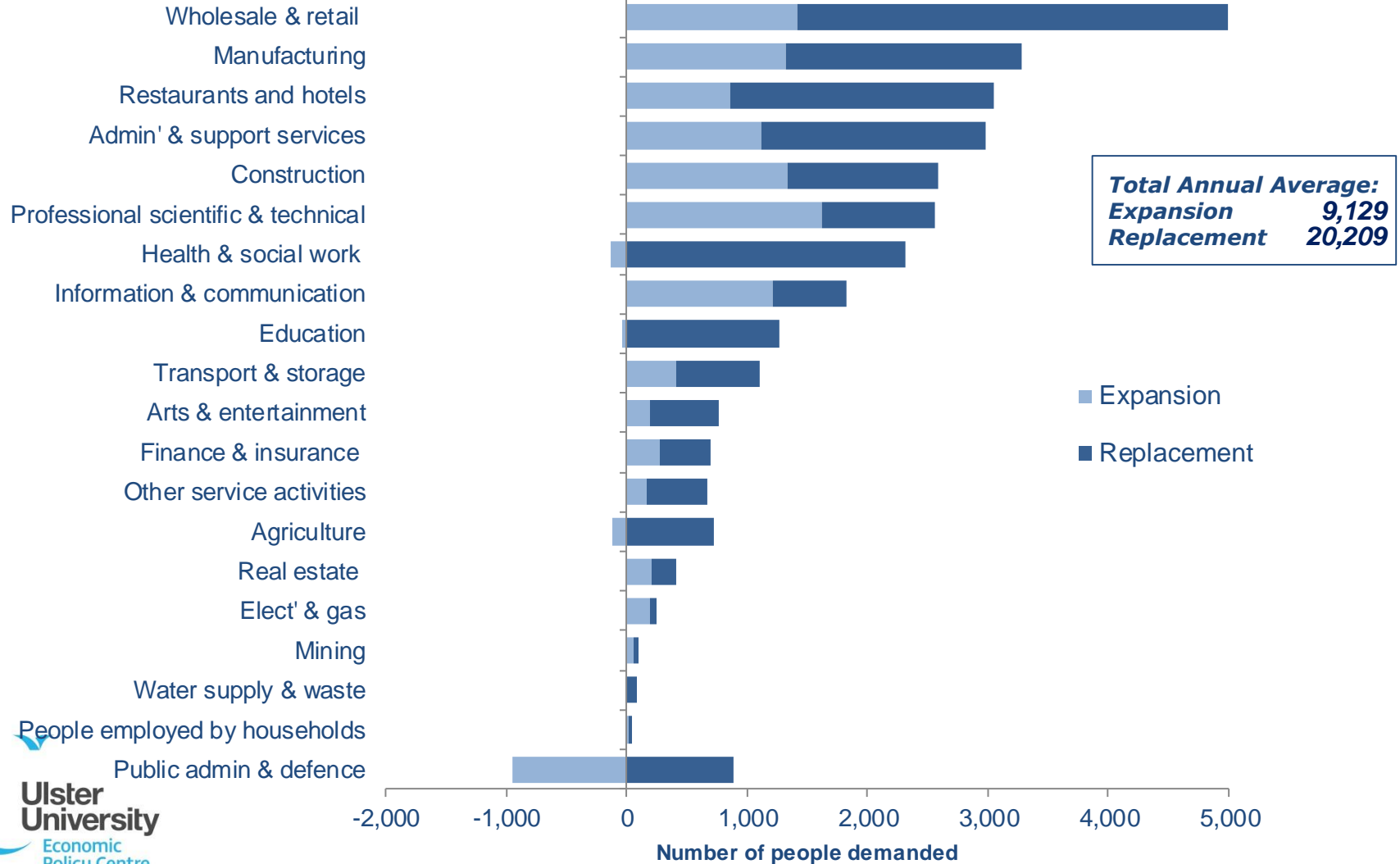
Gross demand by industry (SIC 1 digit)



- **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'.

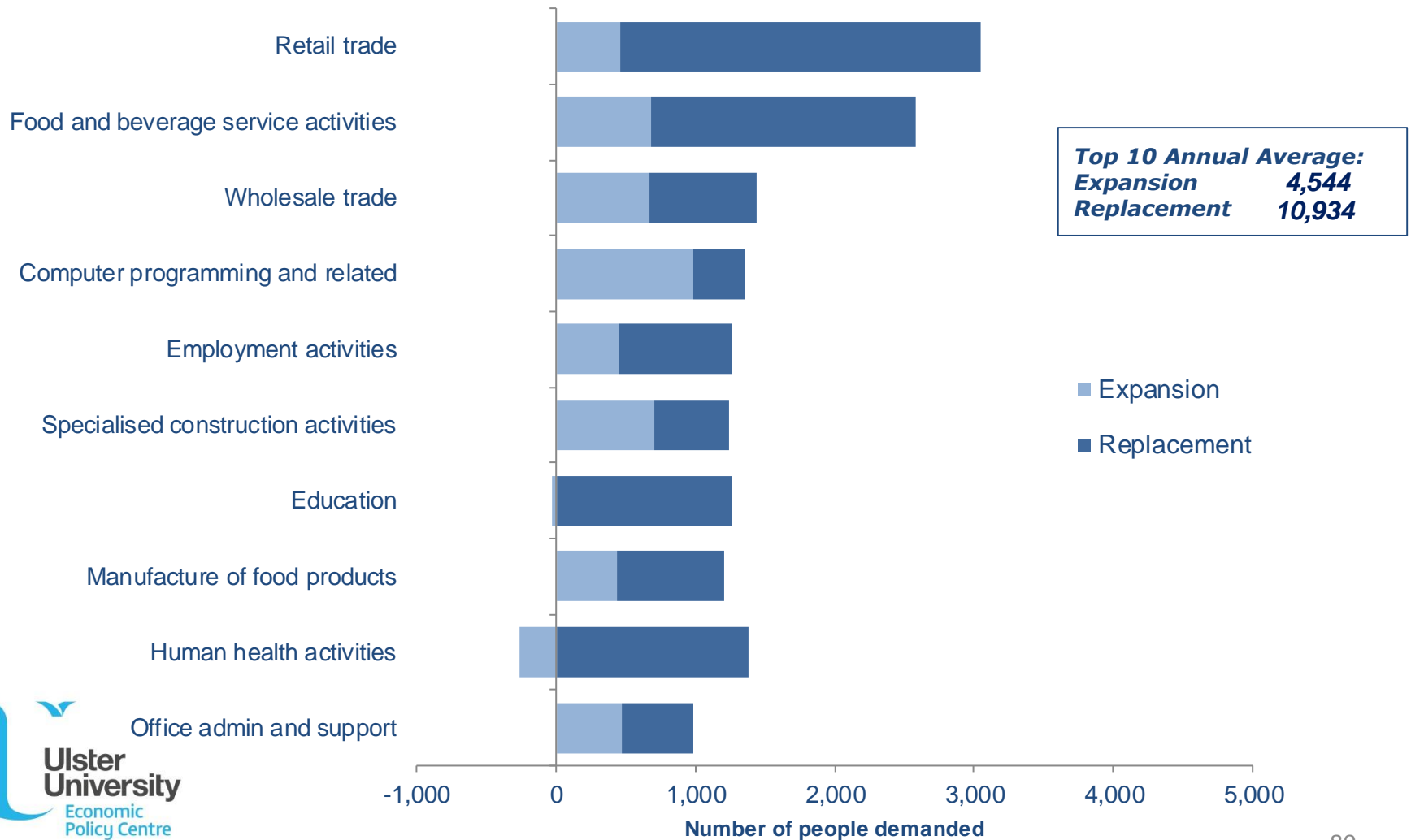
Employment projections by sector

2015-25 Annual average requirement by industry (SIC 1 digit) Net Requirement from Education and Migration



Employment projections by sector

2015-25 Annual average requirement from education and migration
Top 10 Industry Sectors (SIC 2 digit)



Employment projections by occupation

2015-25 Annual average requirement from education and migration Top 10 Occupational Sectors (SOC 3 digit)



Employment projections findings

- **Job opportunities emerging across a wide range of sectors/ occupations** with an eclectic mix of skills requirements. Retail, manufacturing, hospitality and health 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.

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:

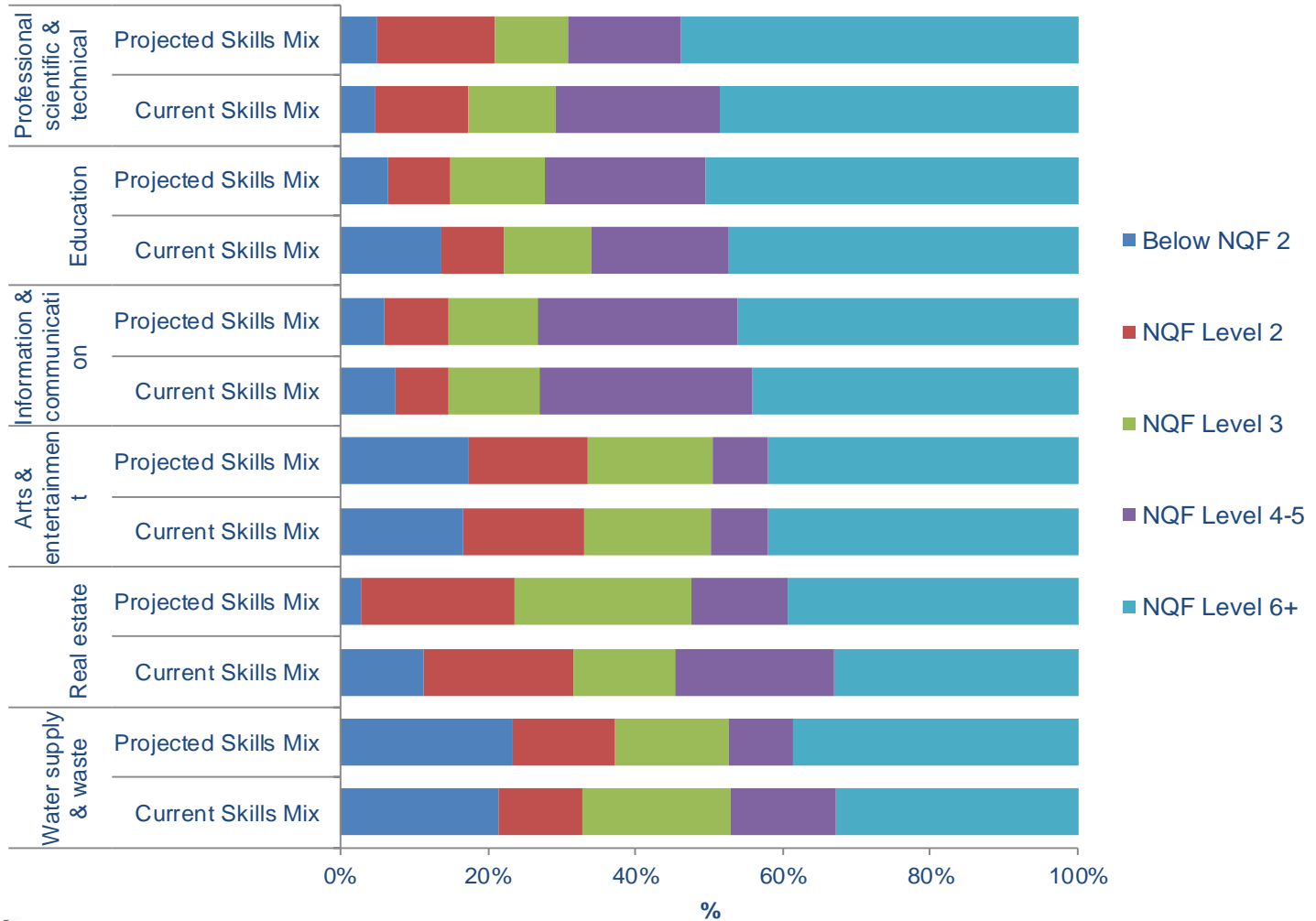
- Level 8 – PhD/ Doctorate
- Level 7 – Masters
- Level 6 – Honours Degree
- Level 5 – HND and equivalent
- Level 4 – Diploma, HNC and equivalent
- Level 3 – A-Levels and equivalent
- Level 2 – GCSEs (Grades A – C)
- Level 1 – GCSEs (Grades D – G)
- Level 0 – No qualifications

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).
- The professional services, education and ICT sectors have the highest portions (approximately 50%) 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.

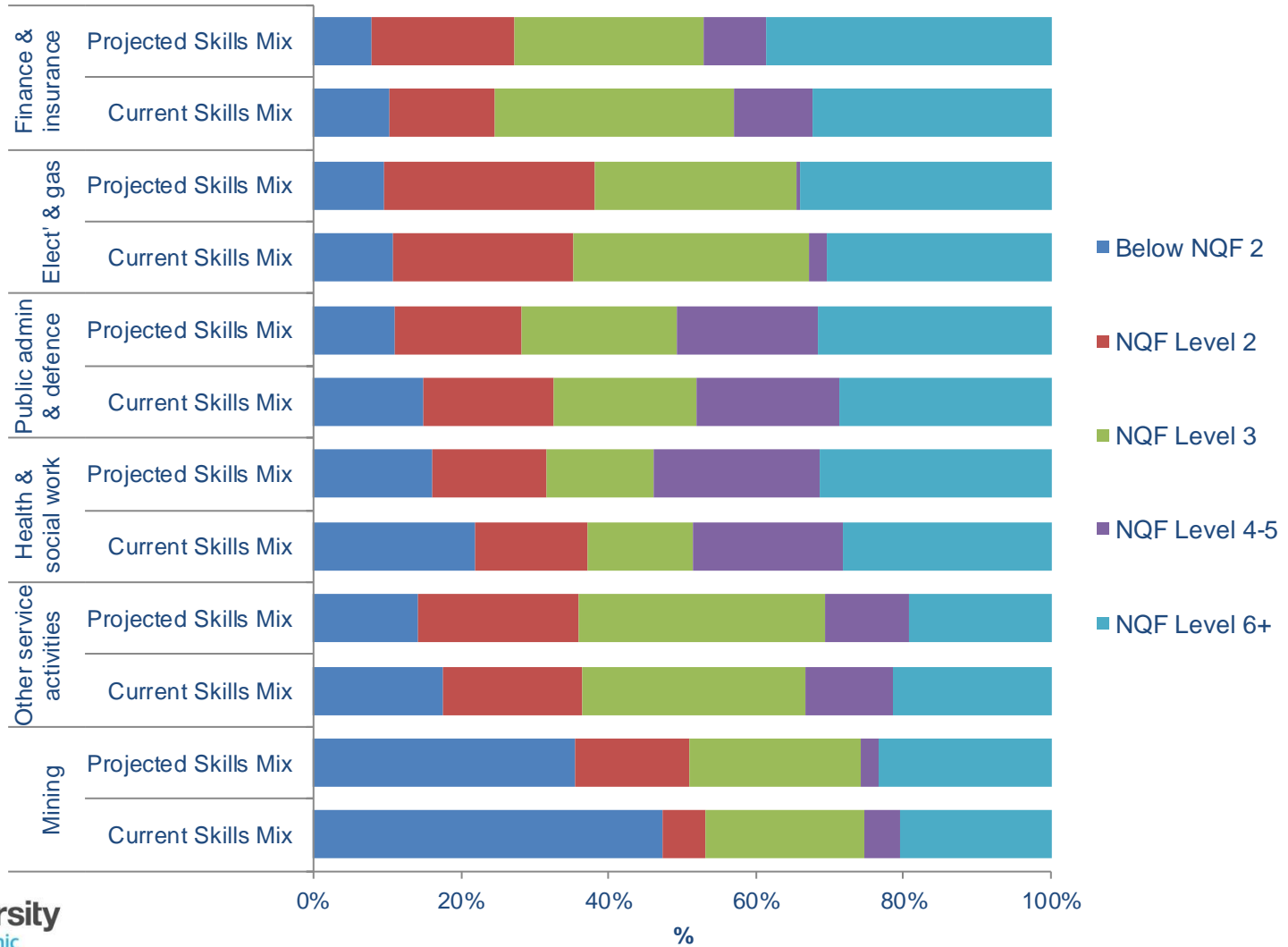
Skills projections by sector

Current and projected skills mix 2015 and 2025 (SIC 1 digit)



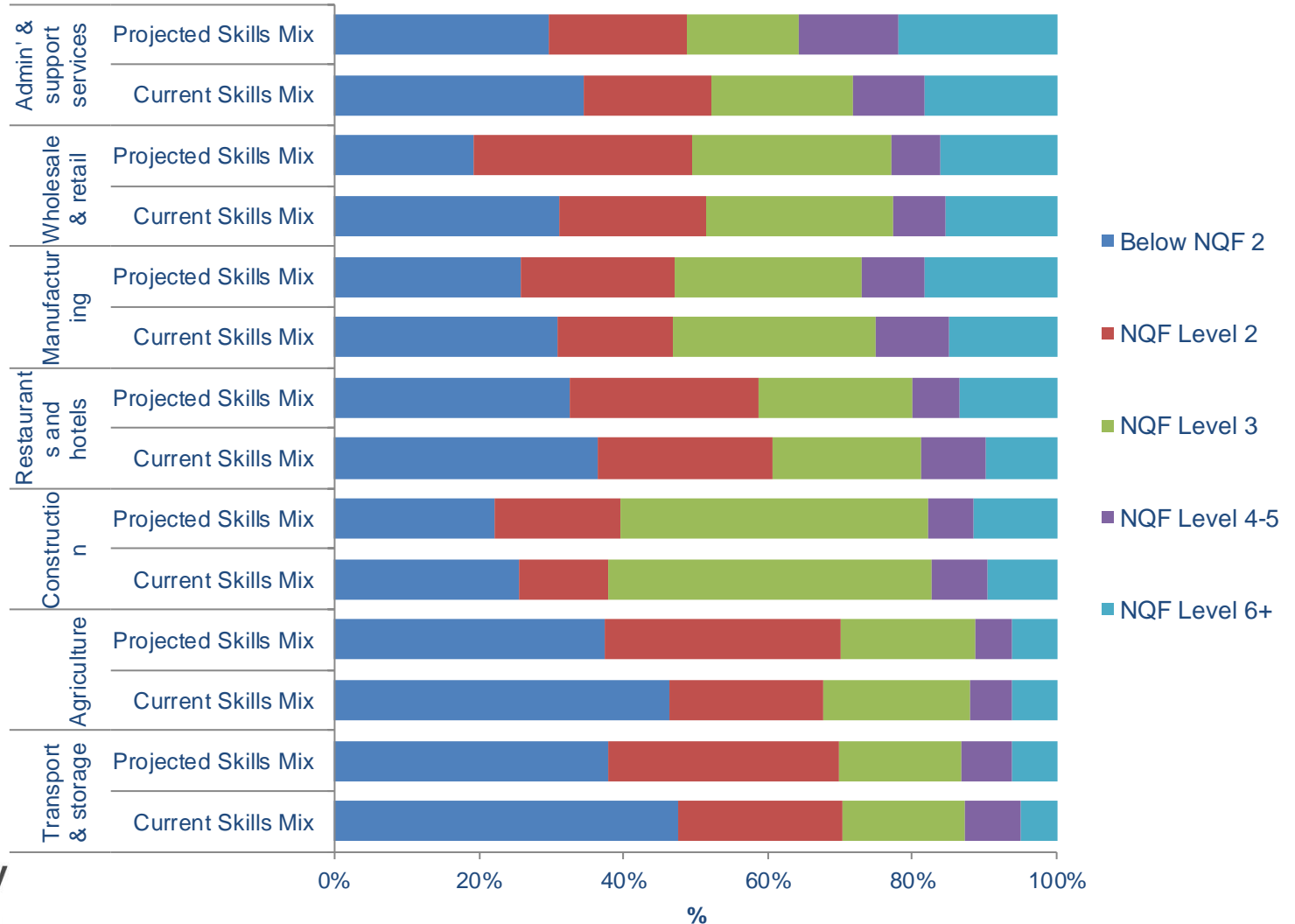
Skills projections by sector

Current and projected skills mix 2015 and 2025 (SIC 1 digit)



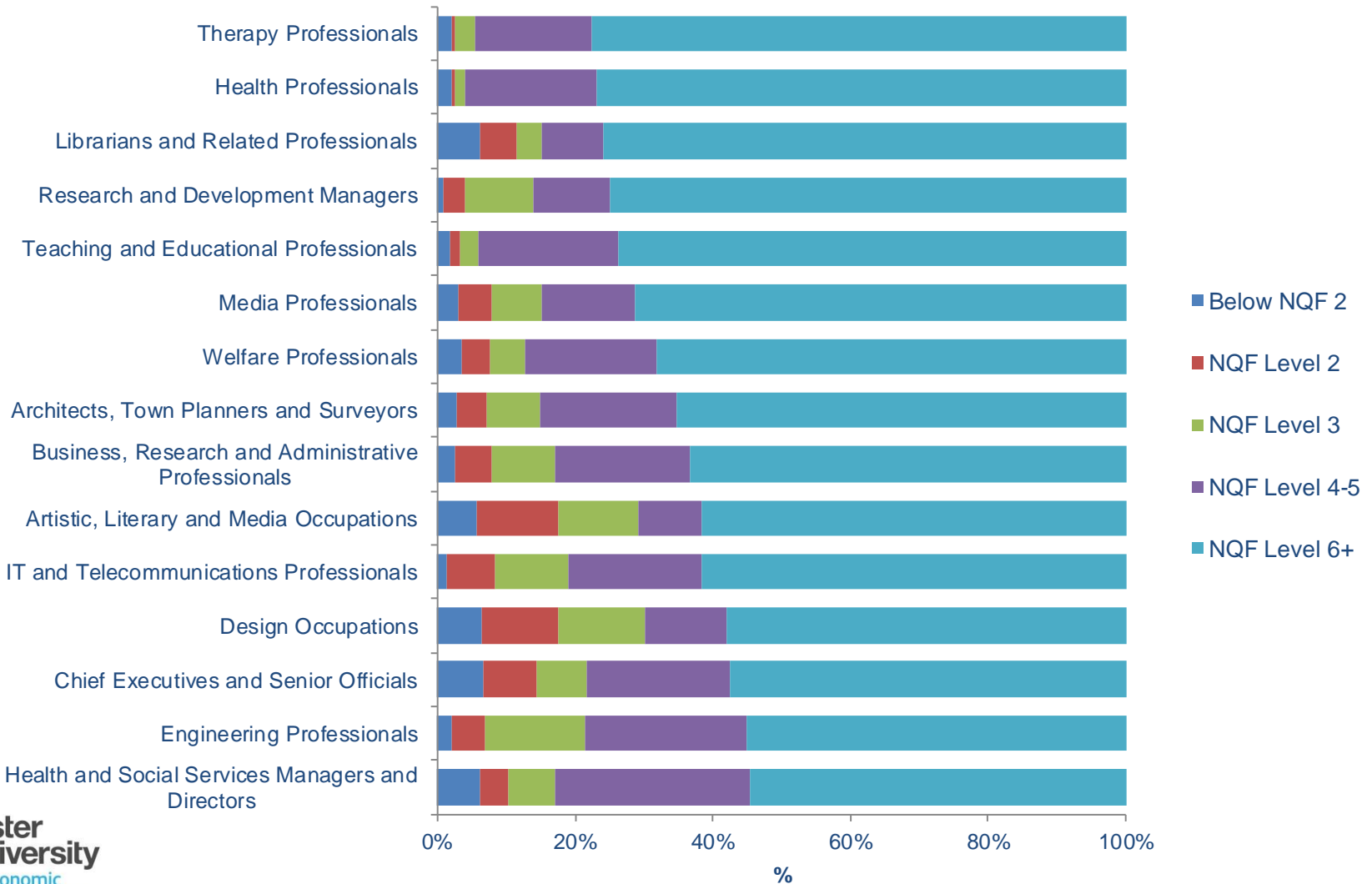
Skills projections by sector

Current and projected skills mix 2015 and 2025 (SIC 1 digit)



Skills stock by occupation

Top 15 highest skilled occupations (SOC 3 digit) – 2015

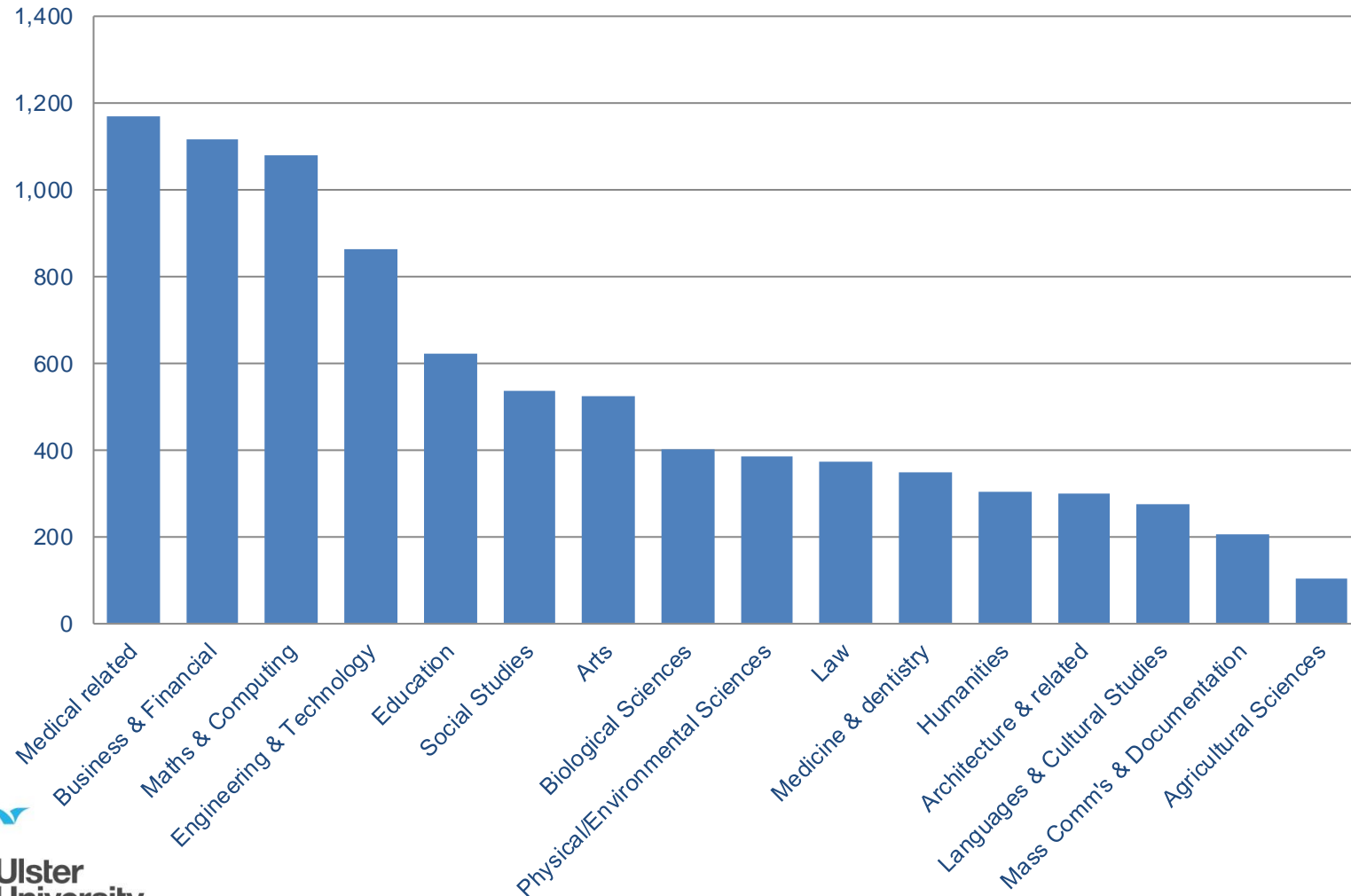


Demand for skills by subject area

- 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).

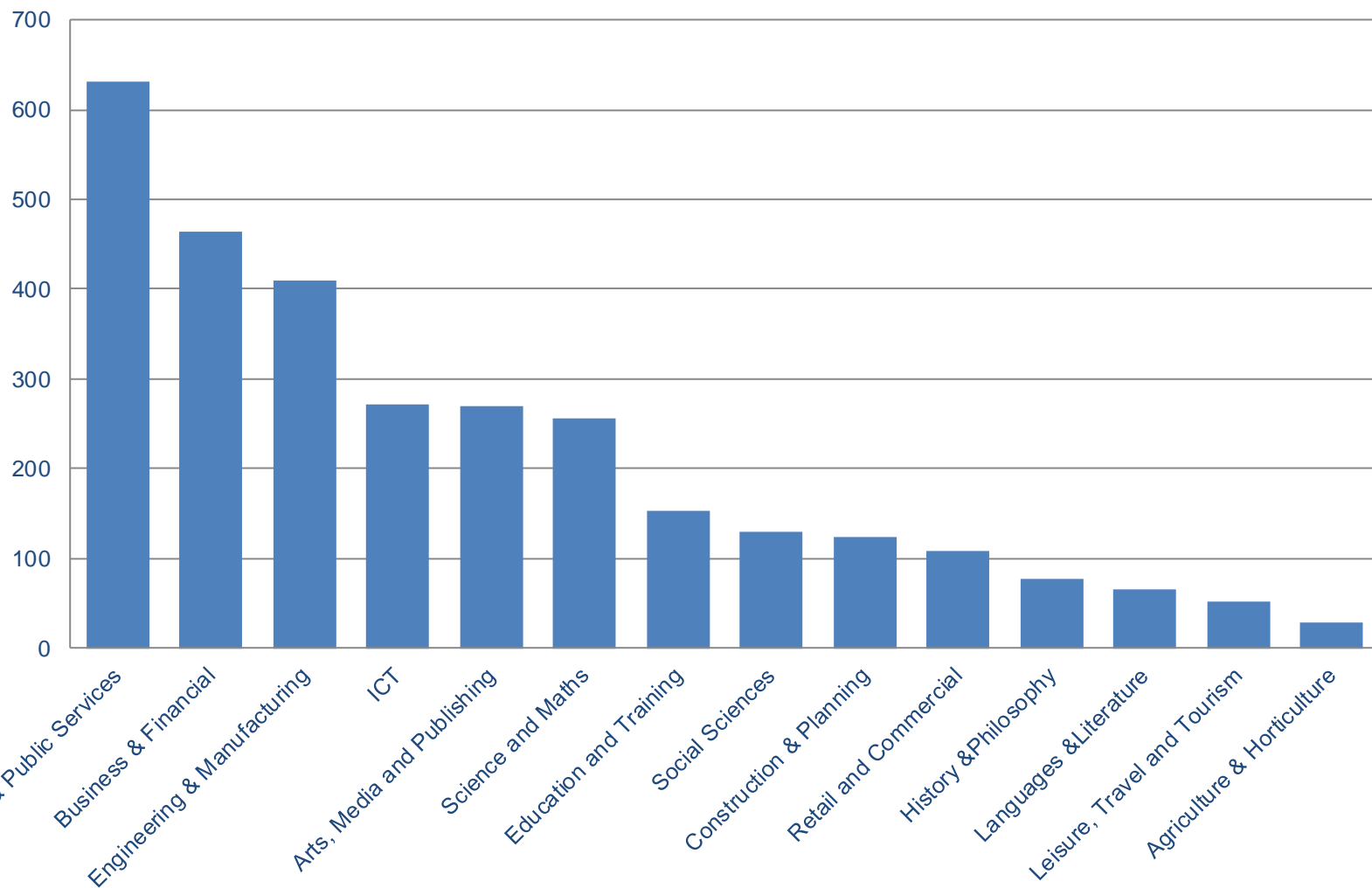
Demand for L6+ qualifications

Annual Average Skills NQF L6+ (JACS 1 Digit)



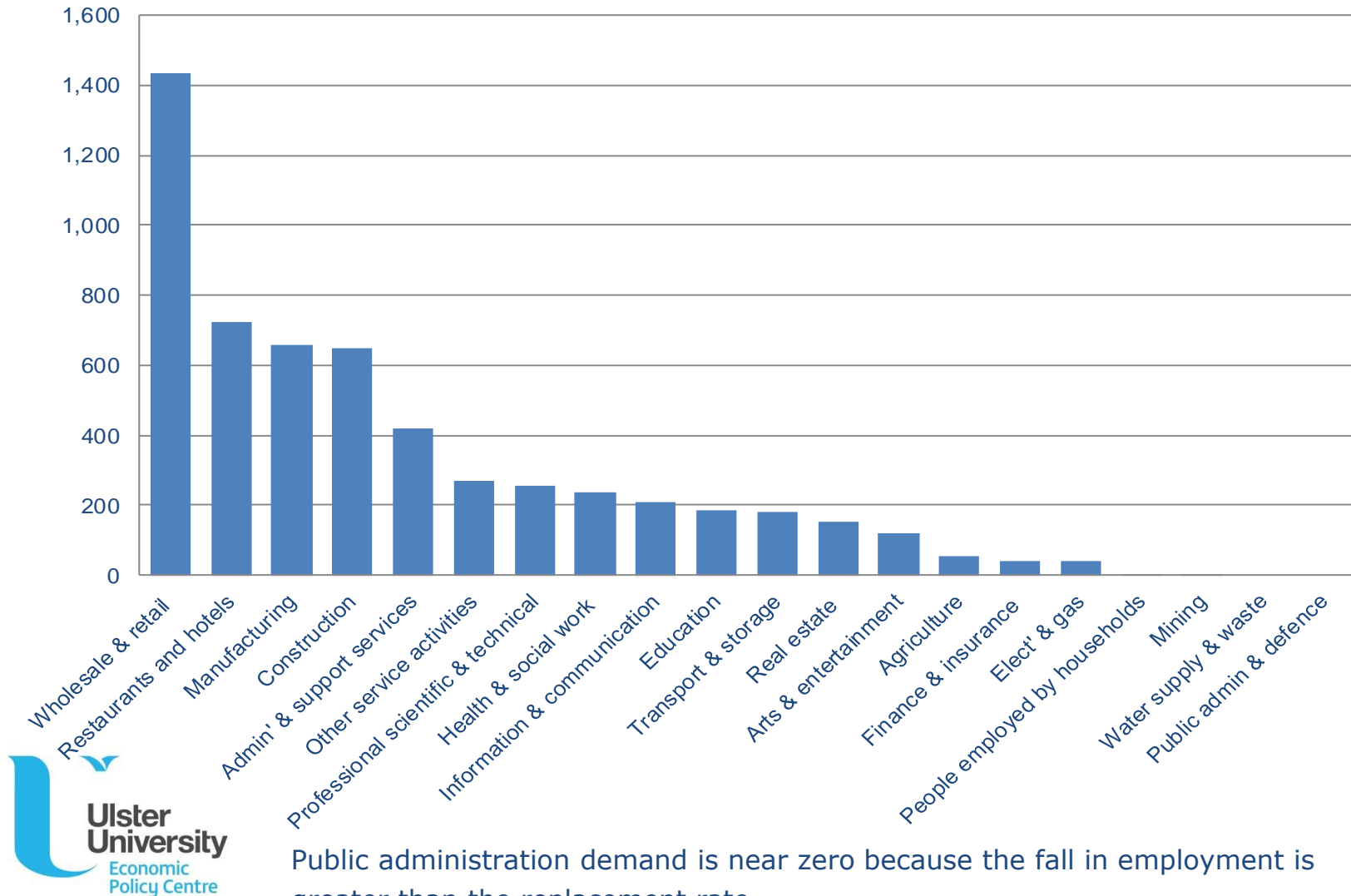
Demand for L4-5 qualifications

Annual Average Skills NQF L4-5 (SSAs 1 Digit)



Demand for L3 qualifications (by industry)

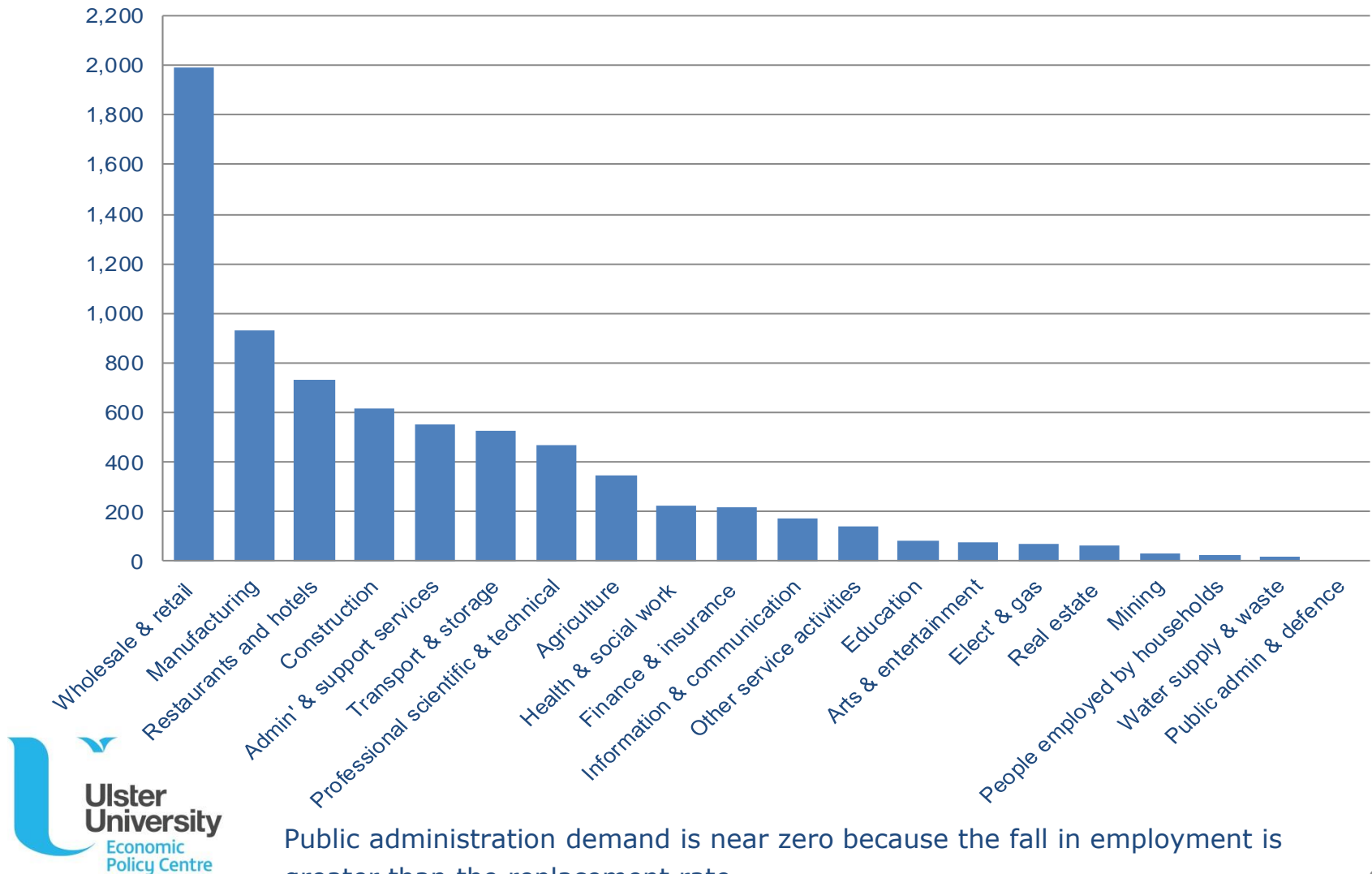
Annual Average skills NQF L3 2015-25 (SIC 1 Digit)



Public administration demand is near zero because the fall in employment is greater than the replacement rate.

Demand for L2 qualifications (by industry)

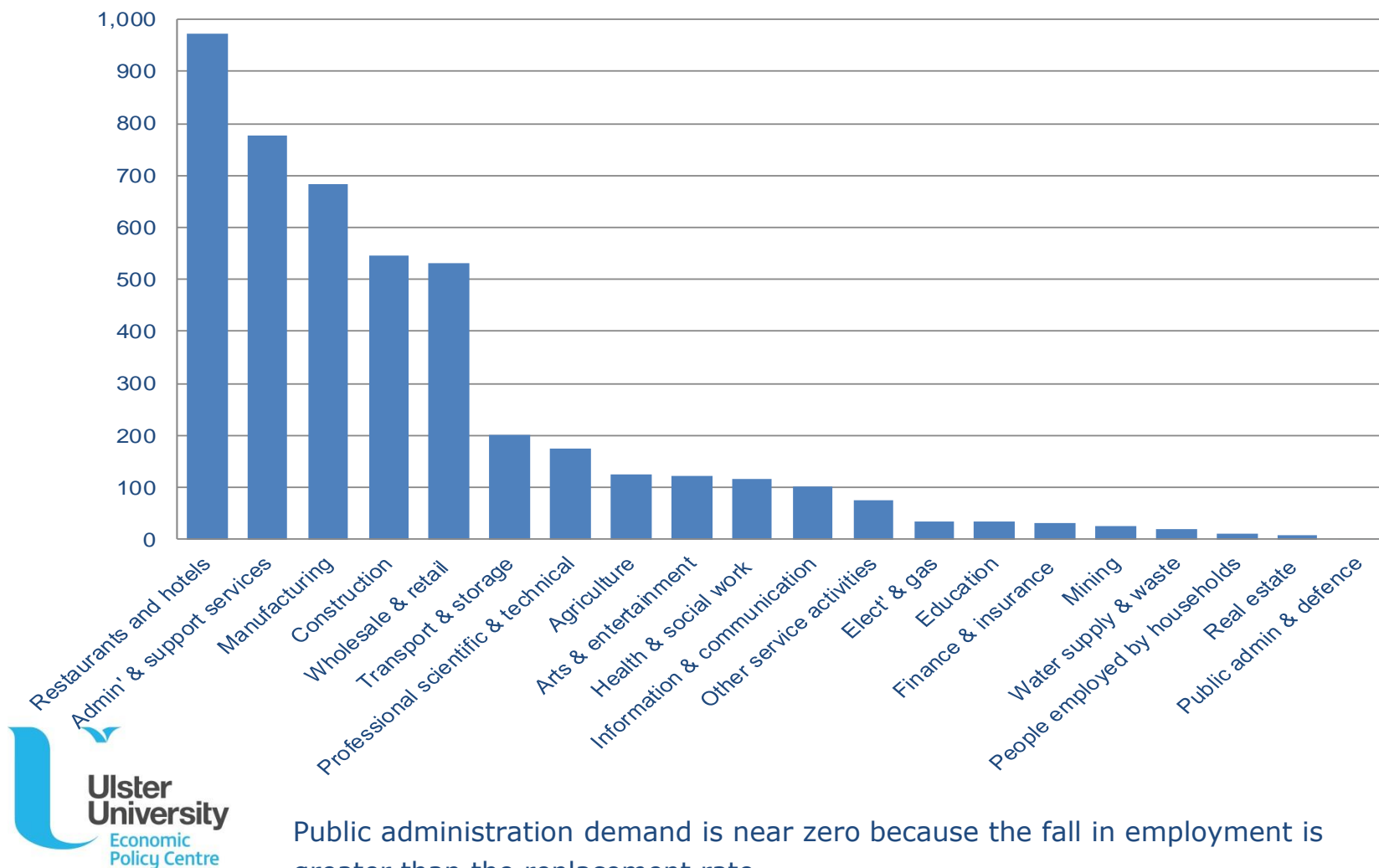
Annual Average skills NQF L2 2015-25 (SIC 1 Digit)



Public administration demand is near zero because the fall in employment is greater than the replacement rate.

Demand for qualifications below L2 (by industry)

Annual Average skills NQF below L2 2015-25 (SIC 1 Digit)



Public administration demand is near zero because the fall in employment is greater than the replacement rate.

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.

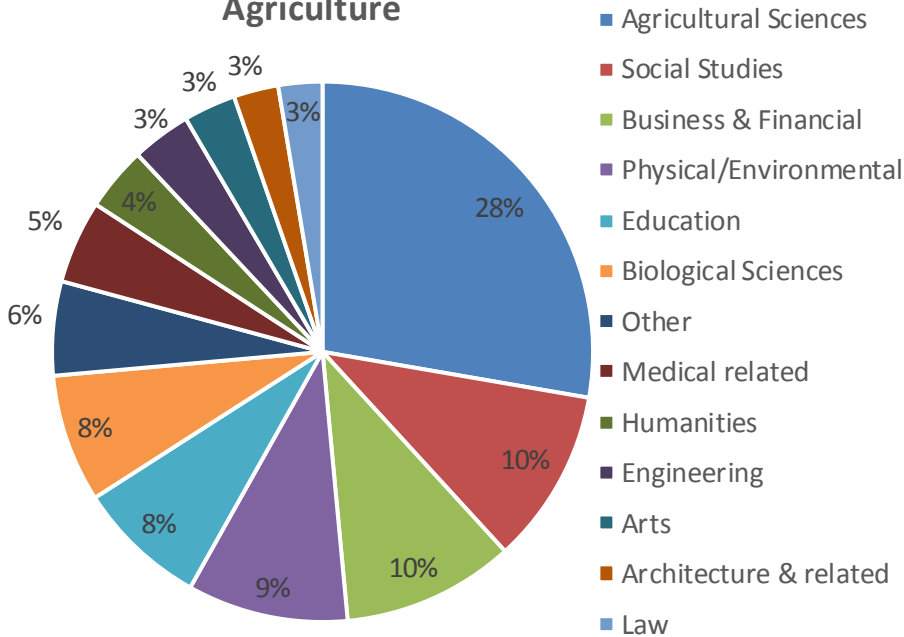
In contrast Business & Finance degree subjects are significantly represented across most sectors, reflecting the demand for those skills across the economy. Arts graduates are also employed across a wide range of sectors.

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

Subject area stock by sector

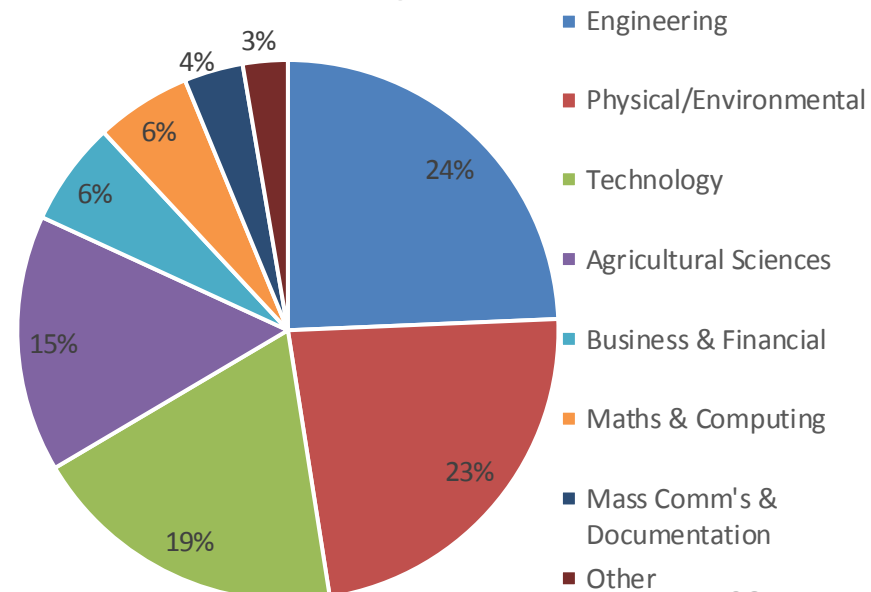
Degree (NQF L6) subject mix per sector

Agriculture



Other subjects in Agriculture include: Linguistics, Mathematical Sciences and Computing, Mass Communications and Documentation, Non-European Languages, Medicine and dentistry, Technology and European Languages.

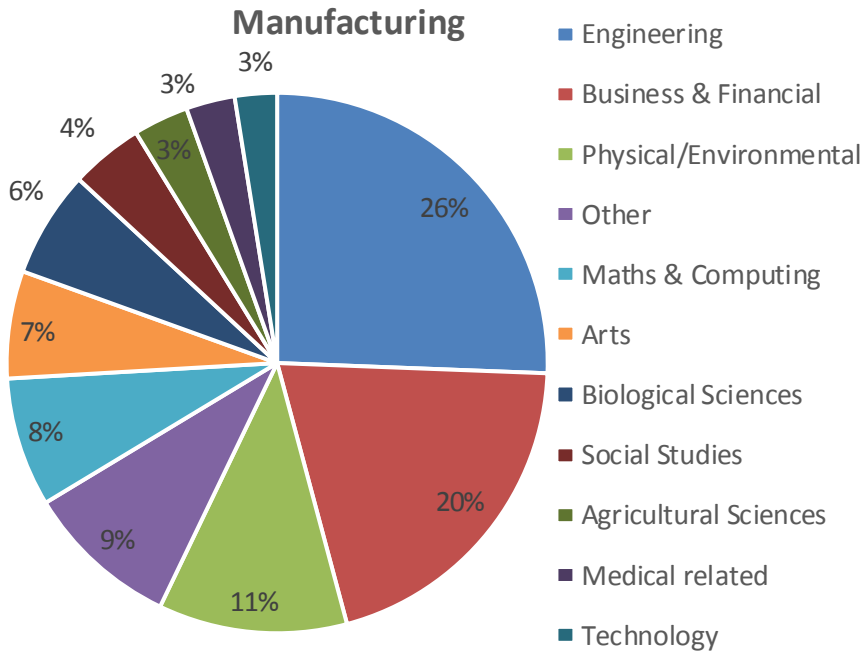
Mining



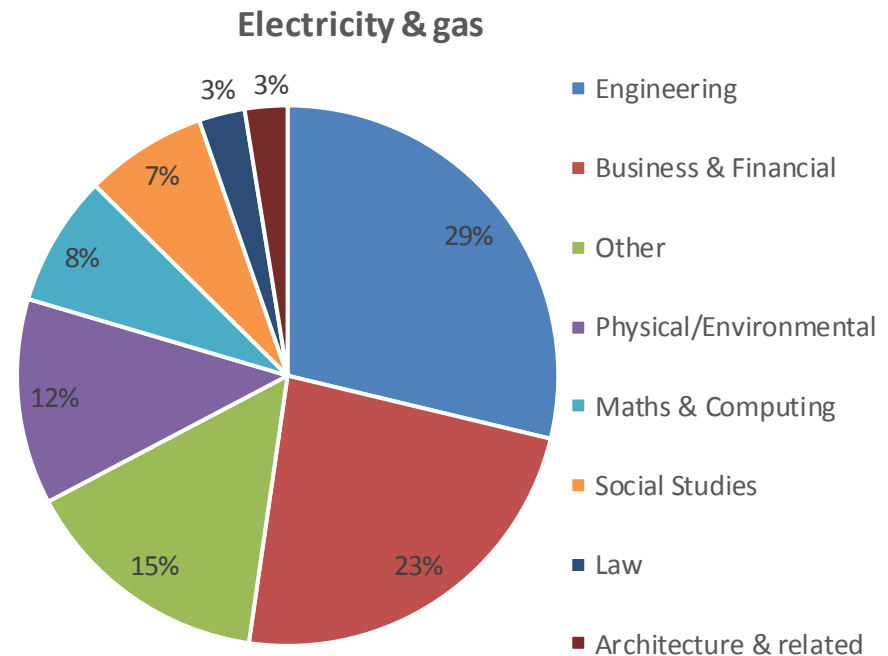
Other subjects in Mining include: Arts, Law, Social Studies, Biological Sciences, Medical related subjects, Linguistics, Education, Humanities, Architecture and related studies, Medicine and dentistry, European Languages and Non-European languages.

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Manufacturing include: Humanities, Linguistics, Education, Law, Mass Communications and Documentation, Architecture and related studies, Medicine and dentistry, European Languages and Non-European languages.

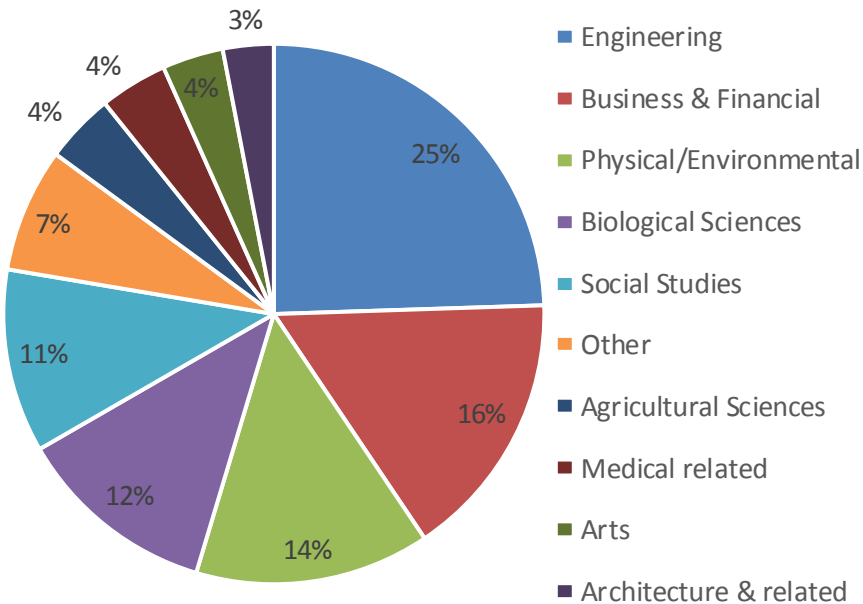


Other subjects in Electricity & gas include: Medical related subjects, Humanities, Technology, Biological Sciences, Arts, Linguistics, Agricultural Sciences, Mass Communications and Documentation, Education, European Languages, Medicine and dentistry and Non-European languages,

Subject area stock by sector

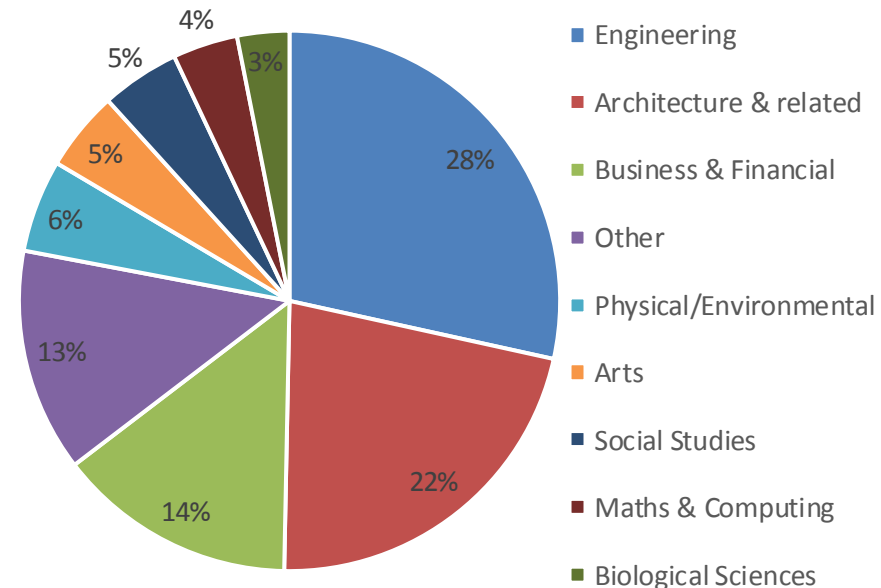
Degree (NQF L6) subject mix per sector

Water supply & waste



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

Construction

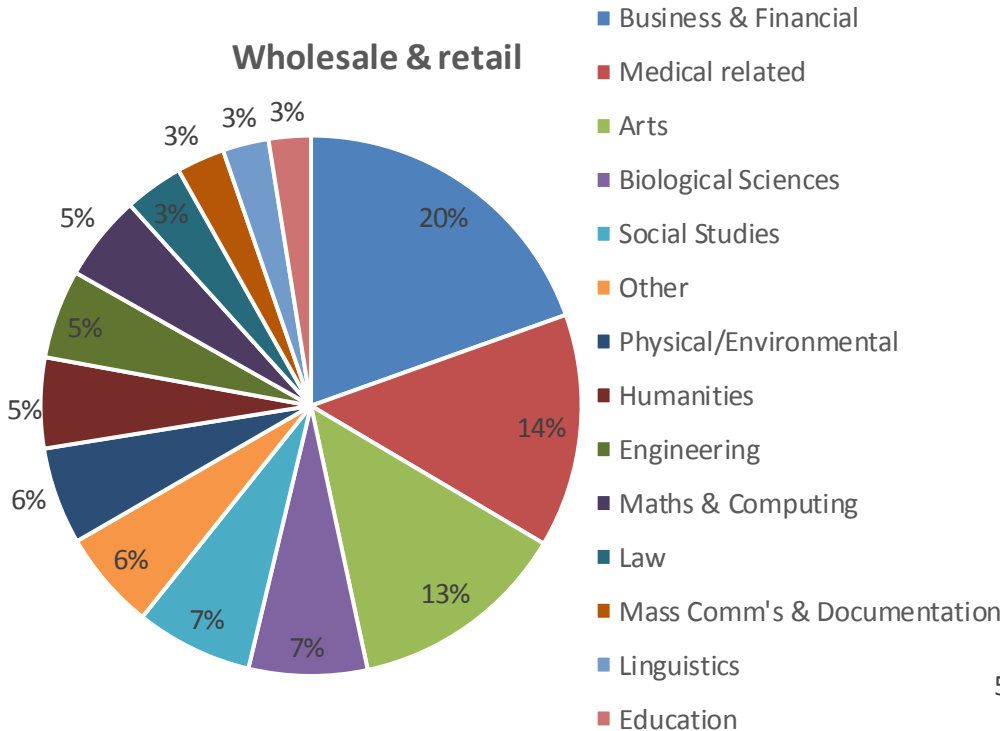


Other subjects in Construction include: Law, Humanities, Education, Medical related subjects, Agricultural Sciences, Mass Communications and Documentation, Linguistics, Technology, European Languages, Medicine and dentistry and Non-European languages.

Subject area stock by sector

Degree (NQF L6) subject mix per sector

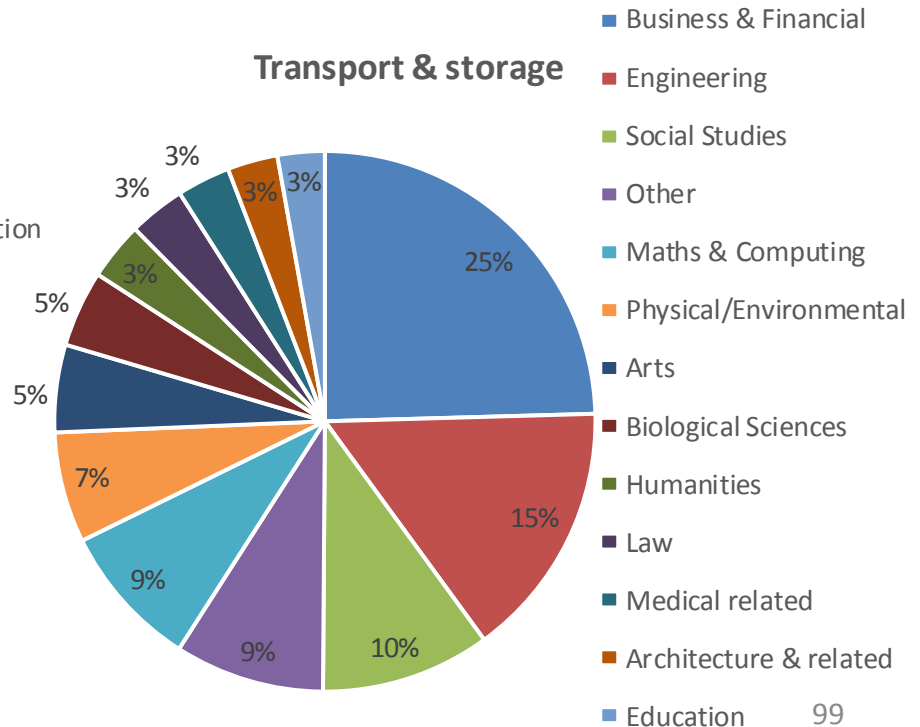
Wholesale & retail



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

Other subjects in Transport & storage include: Linguistics, Technology, Agricultural Sciences, Mass Communications and Documentation, European Languages, Non-European languages and Medicine and dentistry.

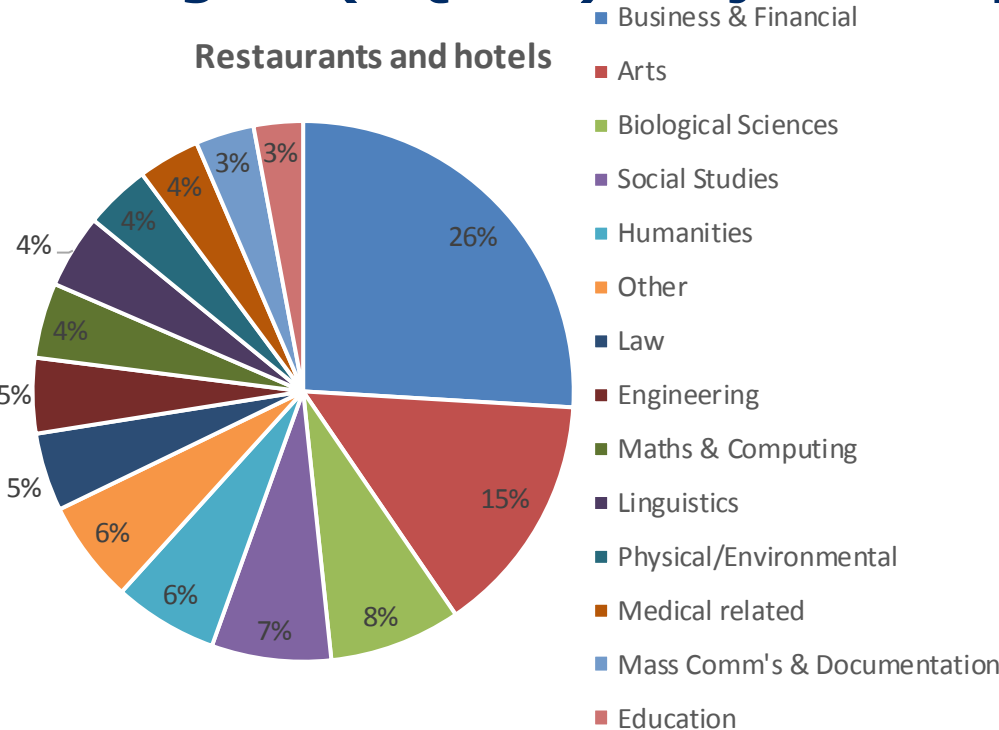
Transport & storage



Subject area stock by sector

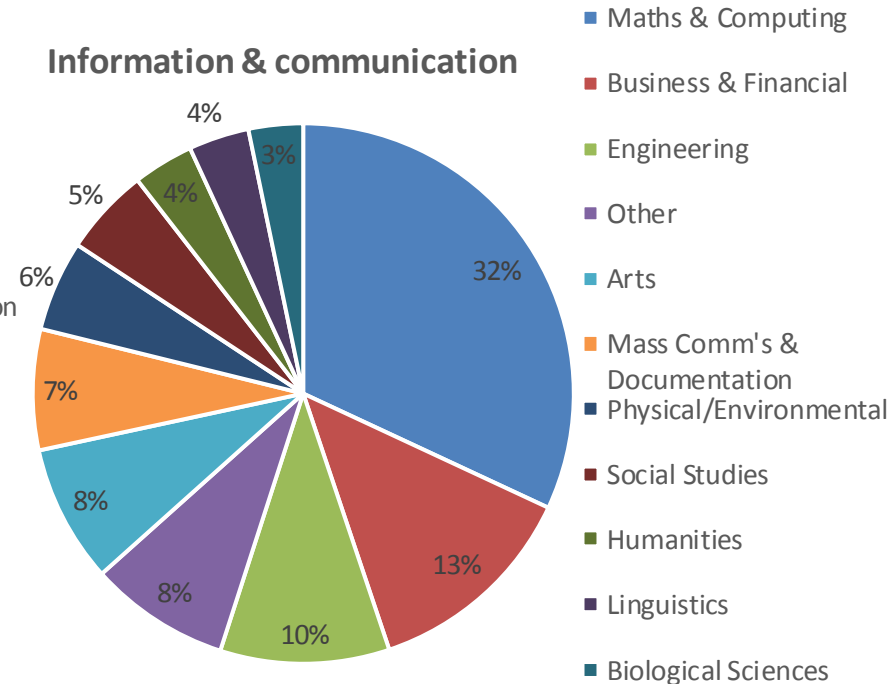
Degree (NQF L6) subject mix per sector

Restaurants and hotels



Other subjects in Restaurants and hotels include: Agricultural Sciences,, Architecture and related studies, European Languages, Technology, Non-European languages and Medicine and dentistry.

Information & communication

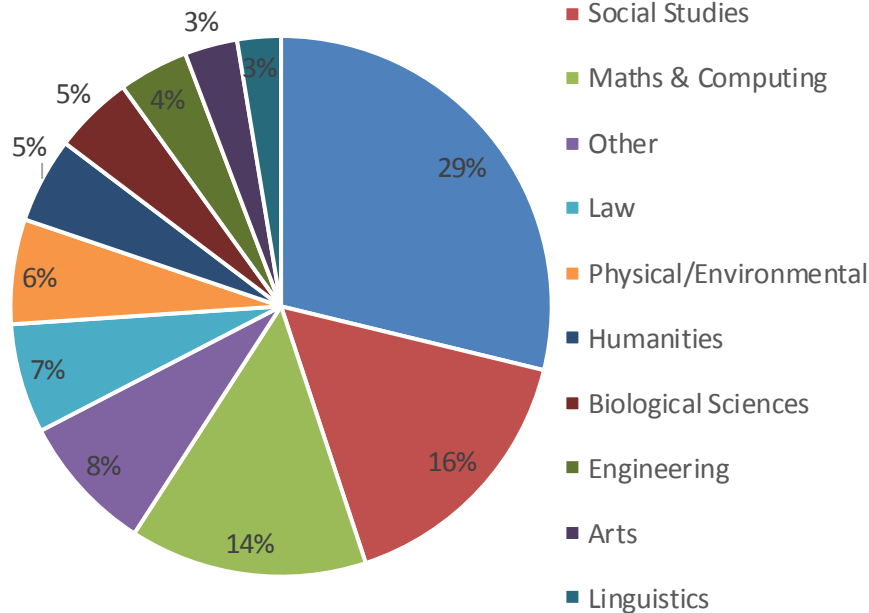


Other subjects in Information & communication include: Law, European Languages, Education, Technology, Architecture and related studies, Medical related subjects, Agricultural Sciences, Non-European languages and Medicine and dentistry.

Subject area stock by sector

Degree (NQF L6) subject mix per sector

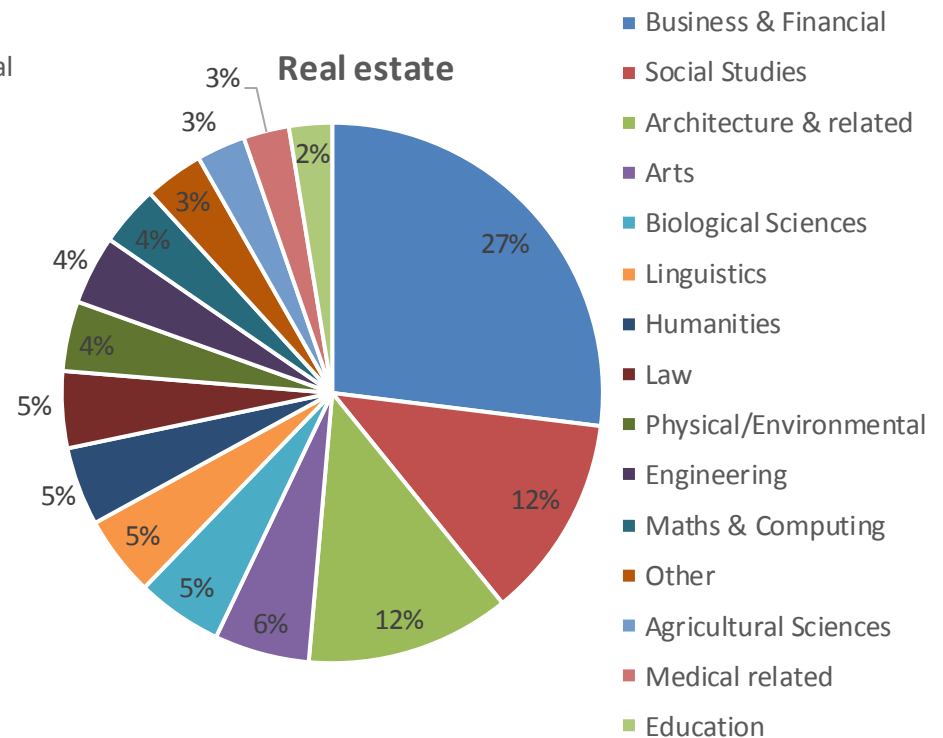
Finance & insurance



Other subjects in Finance & insurance include: Mass Communications and Documentation, Medical related subjects, European Languages, Education, Technology, Agricultural Sciences, Architecture and related studies, Non-European languages and Medicine and dentistry.

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

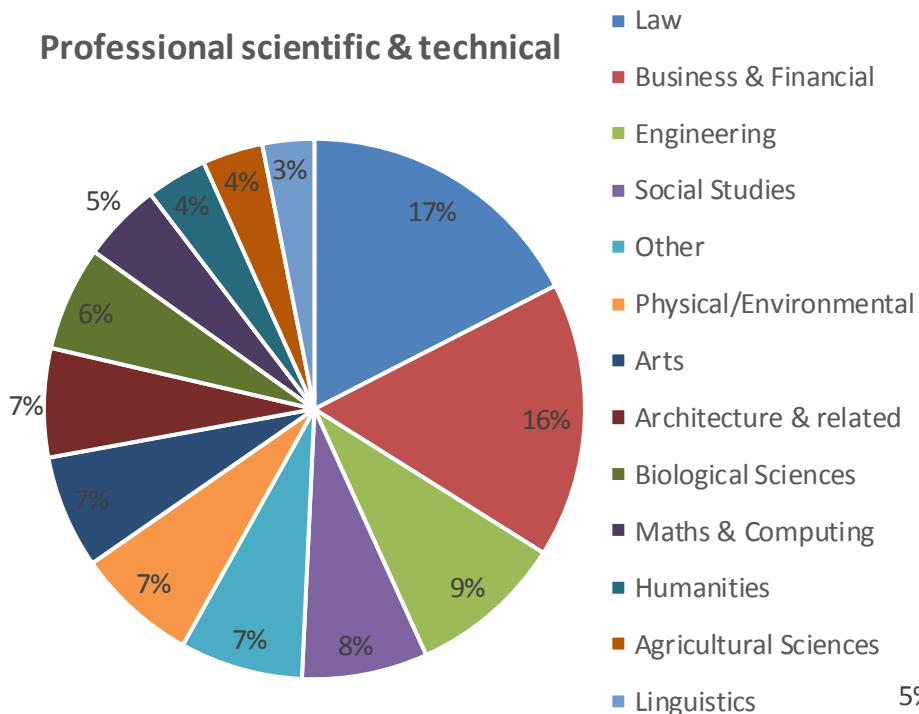
Real estate



Subject area stock by sector

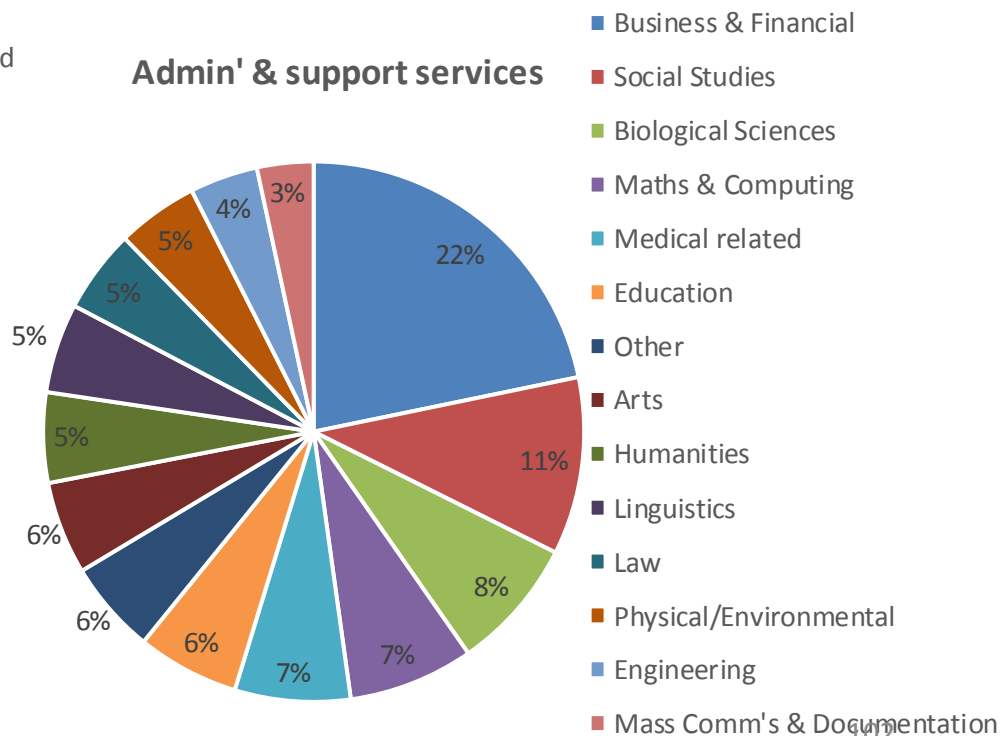
Degree (NQF L6) subject mix per sector

Professional scientific & technical



Other subjects in Professional scientific & technical include: Medical related subjects, Mass Communications and Documentation, Education, European Languages, Technology, Medicine and dentistry and Non-European languages.

Admin' & support services

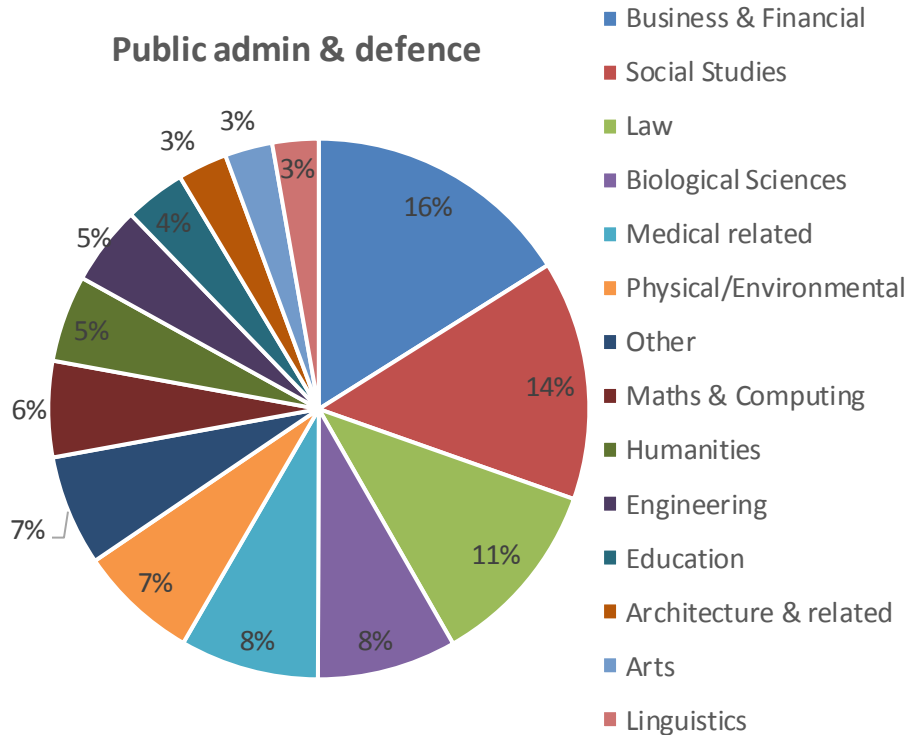


Other subjects in Admin' & support services include: European Languages, Architecture and related studies, Technology, Agricultural Sciences, Non-European languages and Medicine and dentistry.

Subject area stock by sector

Degree (NQF L6) subject mix per sector

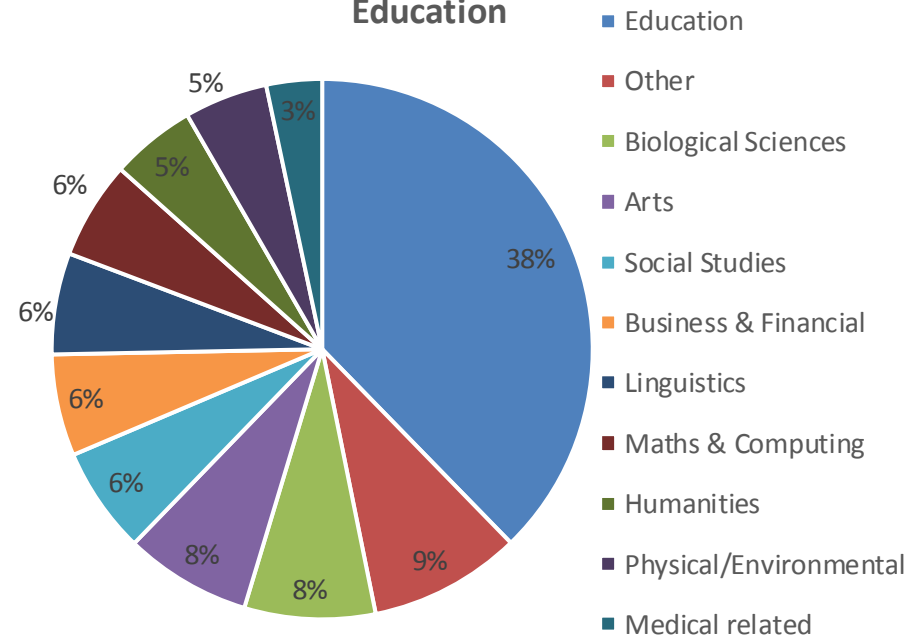
Public admin & defence



Other subjects in Education include: Engineering, Mass Communications and Documentation, European Languages, Law, Technology, Agricultural Sciences, Architecture and related studies, Medicine and dentistry and Non-European languages.

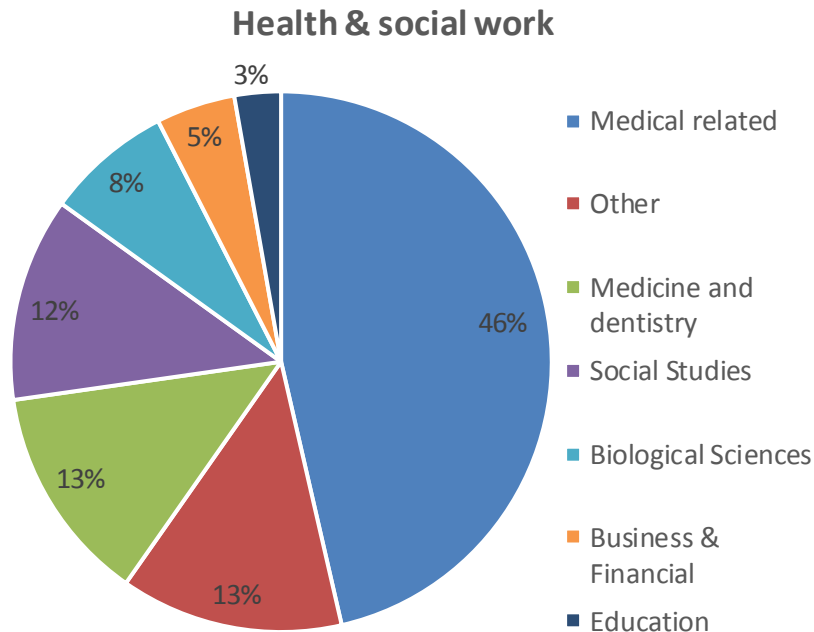
Other subjects in Public admin & defence include: Mass Communications and Documentation, Medicine and dentistry, Agricultural Sciences, European Languages, Technology and Non-European languages.

Education

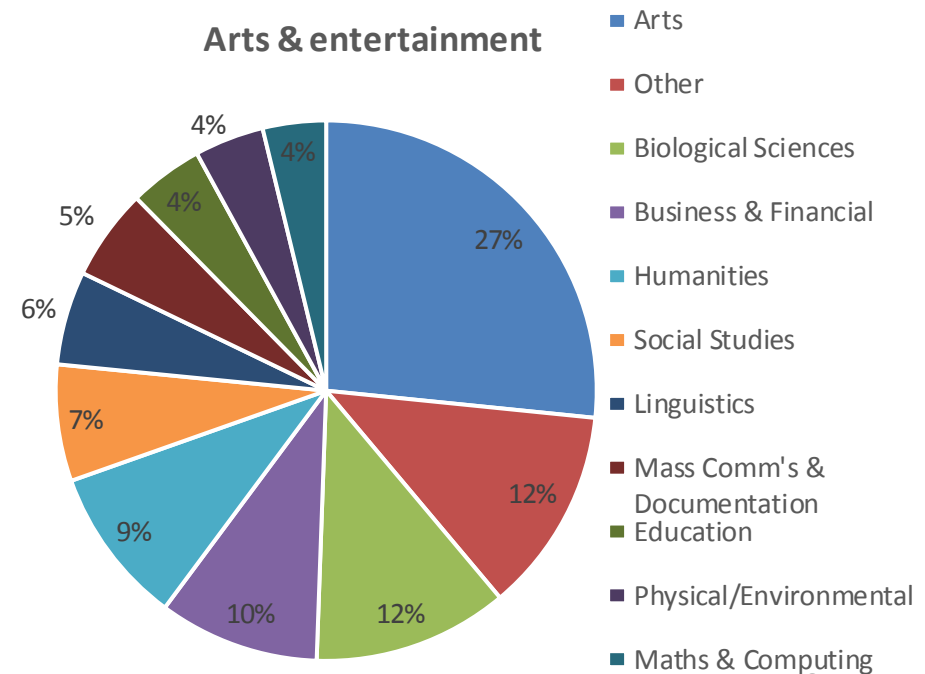


Subject area stock by sector

Degree (NQF L6) subject mix per sector



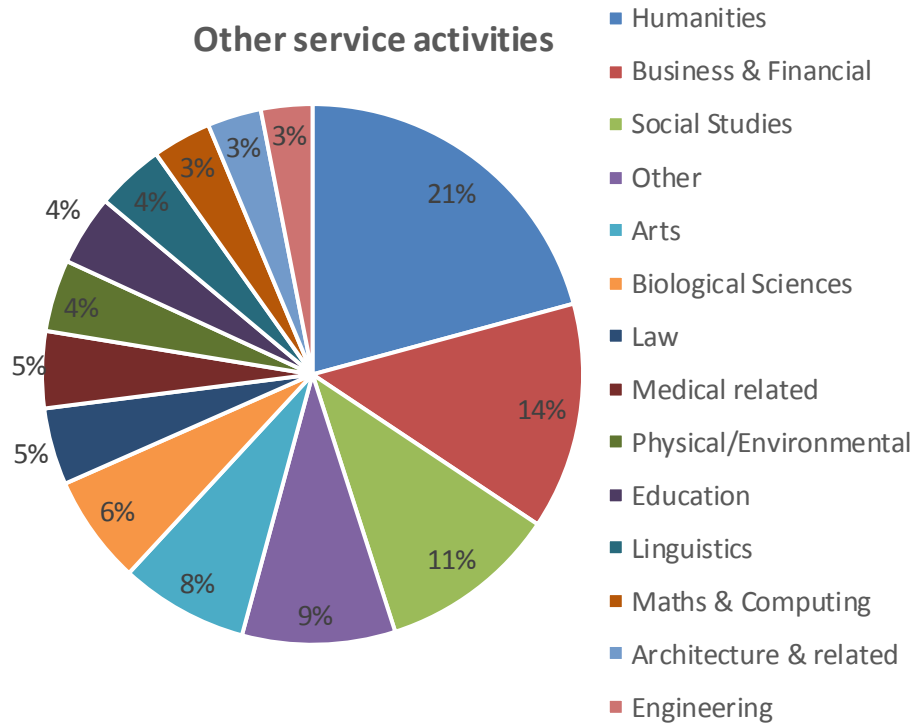
Other subjects in Health & social work include: Humanities, Arts, Mathematical Sciences and Computing, Physical/Environmental Sciences, Law, Linguistics, Mass Communications and Documentation, Engineering, Agricultural Sciences, Architecture and related studies, European Languages, Non-European languages and Technology.



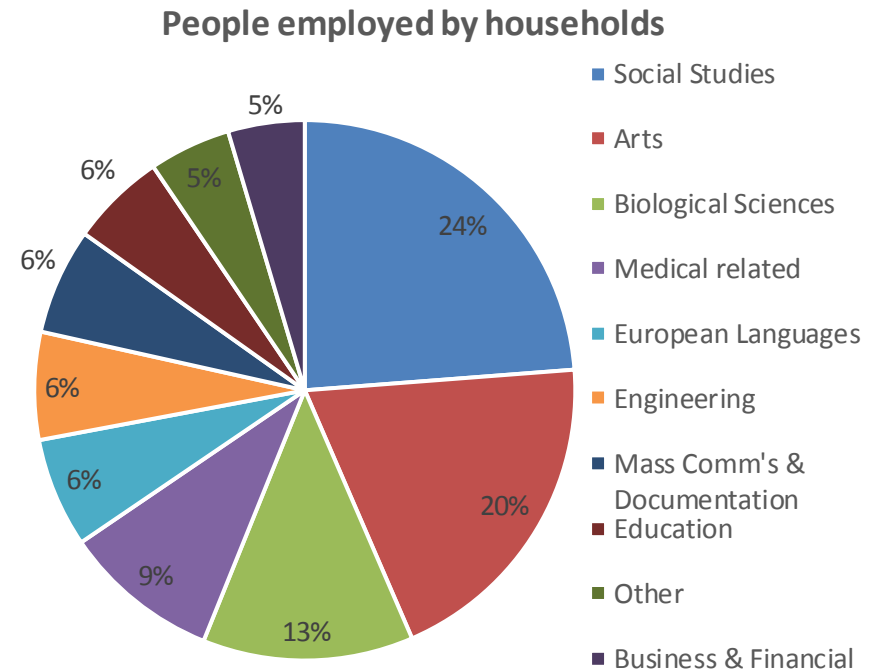
Other subjects in Arts & entertainment include: Law, Medical related subjects, Engineering, Architecture and related studies, Agricultural Sciences, European Languages, Technology, Non-European languages and Medicine and dentistry.

Subject area stock by sector

Degree (NQF L6) subject mix per sector



Other subjects in Other service activities include: Mass Communications and Documentation, European Languages, Agricultural Sciences, Medicine and dentistry, Technology and Non-European languages.



Other subjects in employment by households include: Linguistics, Humanities, Technology, Medicine and dentistry, Agricultural Sciences, Physical/Environmental Sciences, Mathematical Sciences and Computing, Architecture and related studies, Law and Non-European languages.



Supply of people and skills

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Supply of people and skills

This section sets out the following information:

Supply of people

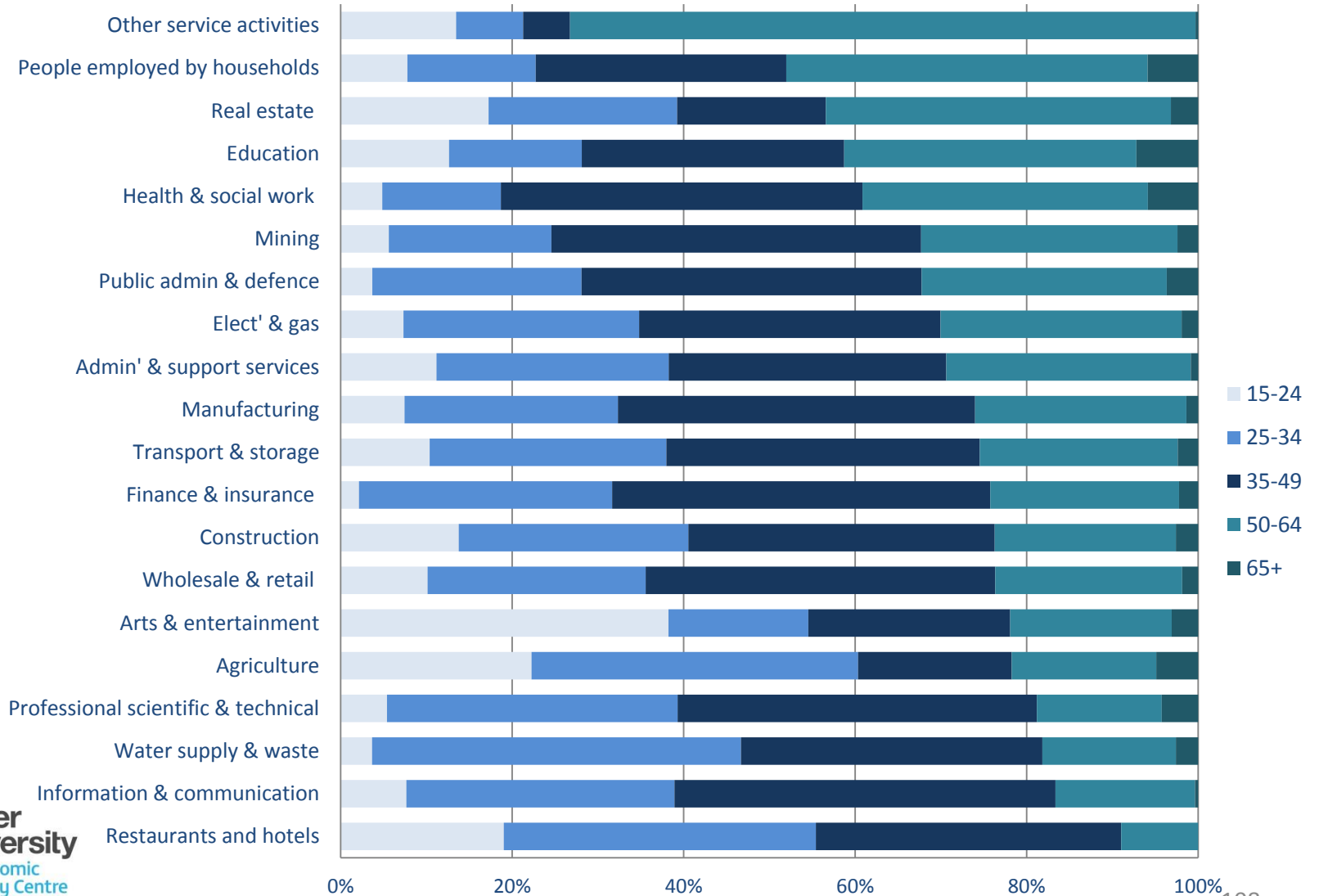
- Current demographics by industry sector (by 1 digit SIC).
- Population demographics – analysis of the number of young people qualifying/ graduating from the education system over the next 10 years.

Supply of skills

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

Supply of people

Current Demographics 2015 by industry (SIC 1 Digit)



Supply of people

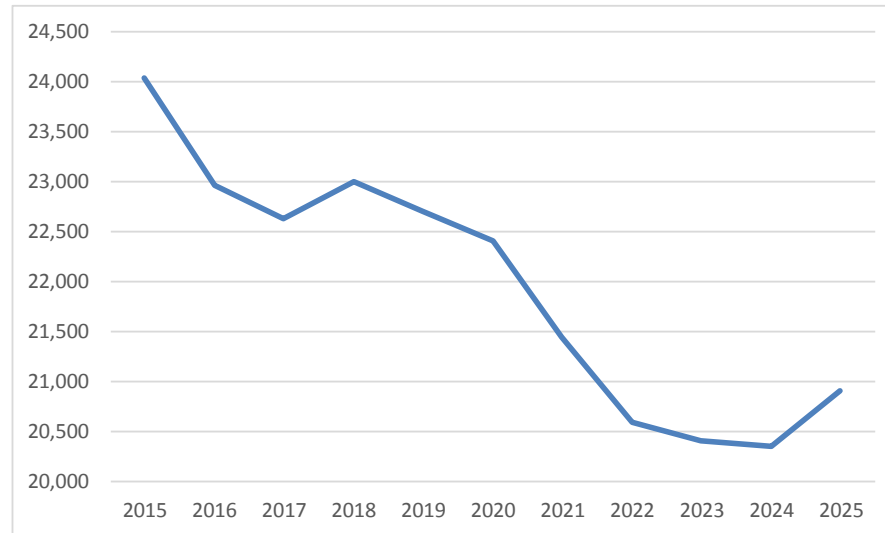
Current Demographics 2015 by industry (SIC 1 Digit)

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

- 'Other service activities' (such as hairdressing, laundrettes and membership organisations) 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.
 - The construction sector has a relatively younger demographic, but given the nature of the work, it can be an increasingly unattractive for older age groups.

Supply of people

Population Demographics – 21 year olds in 2015 and 2025



Source: NISRA

This chart shows a forecast 13% decrease in 21 year olds in the demographic profile of Northern Ireland over the next 10 years. The corresponding supply of skills/ qualifications at NQF L4-5 and L6+ reflects this demographic picture. The Skills Barometer forecasts a reduction in L4-5 qualifications and a broadly flat L6 and above supply.

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.

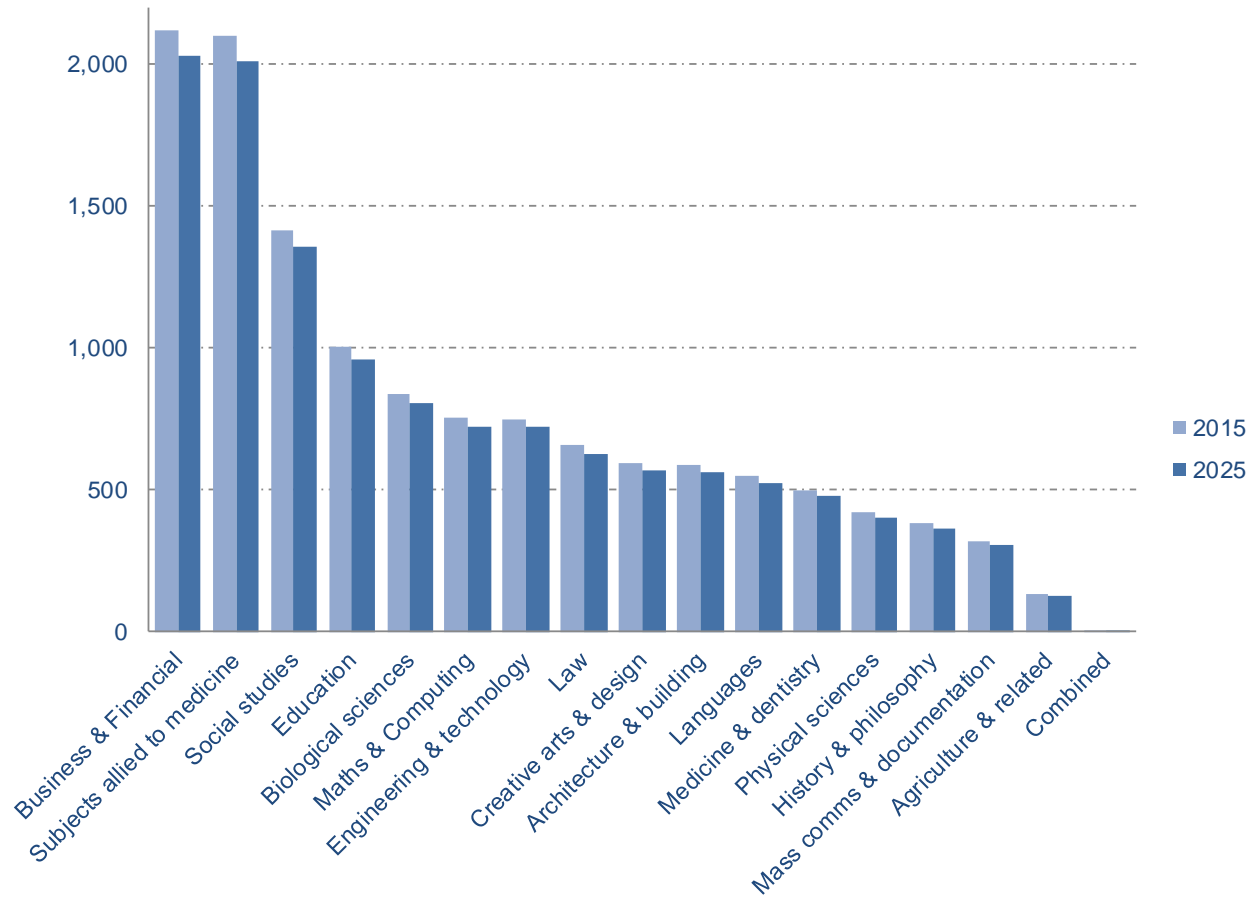
The supply estimate also considers the supply adjustment and other factors and so a number of supply estimates are calculated:

- **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.

* 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.

Supply of skills

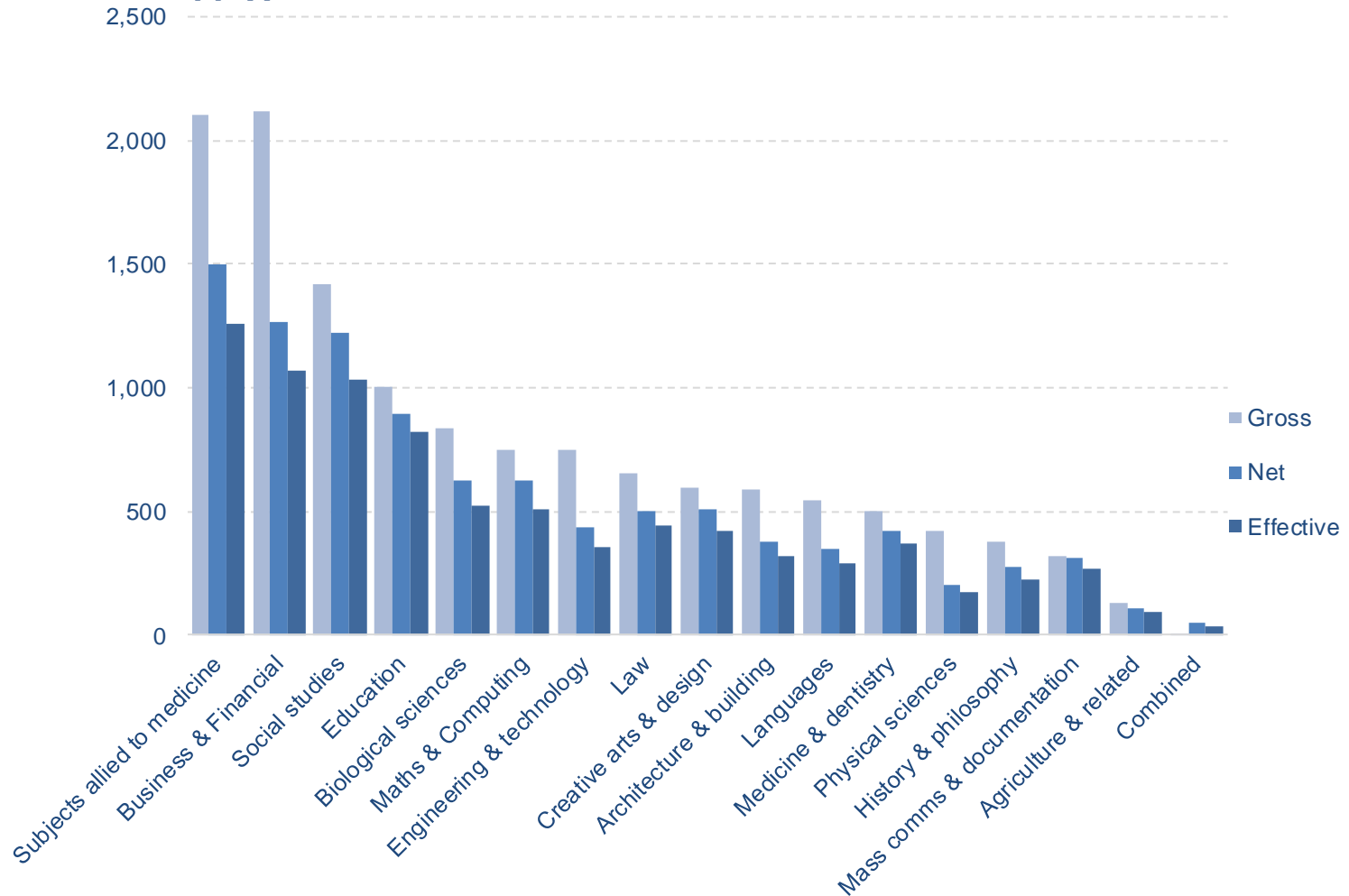
Gross Supply of Skills NQF L6+ (JACS 1 digit)



The level of supply in 2025 is anticipated to fall marginally to reflect the demographic profile of 21 year olds.

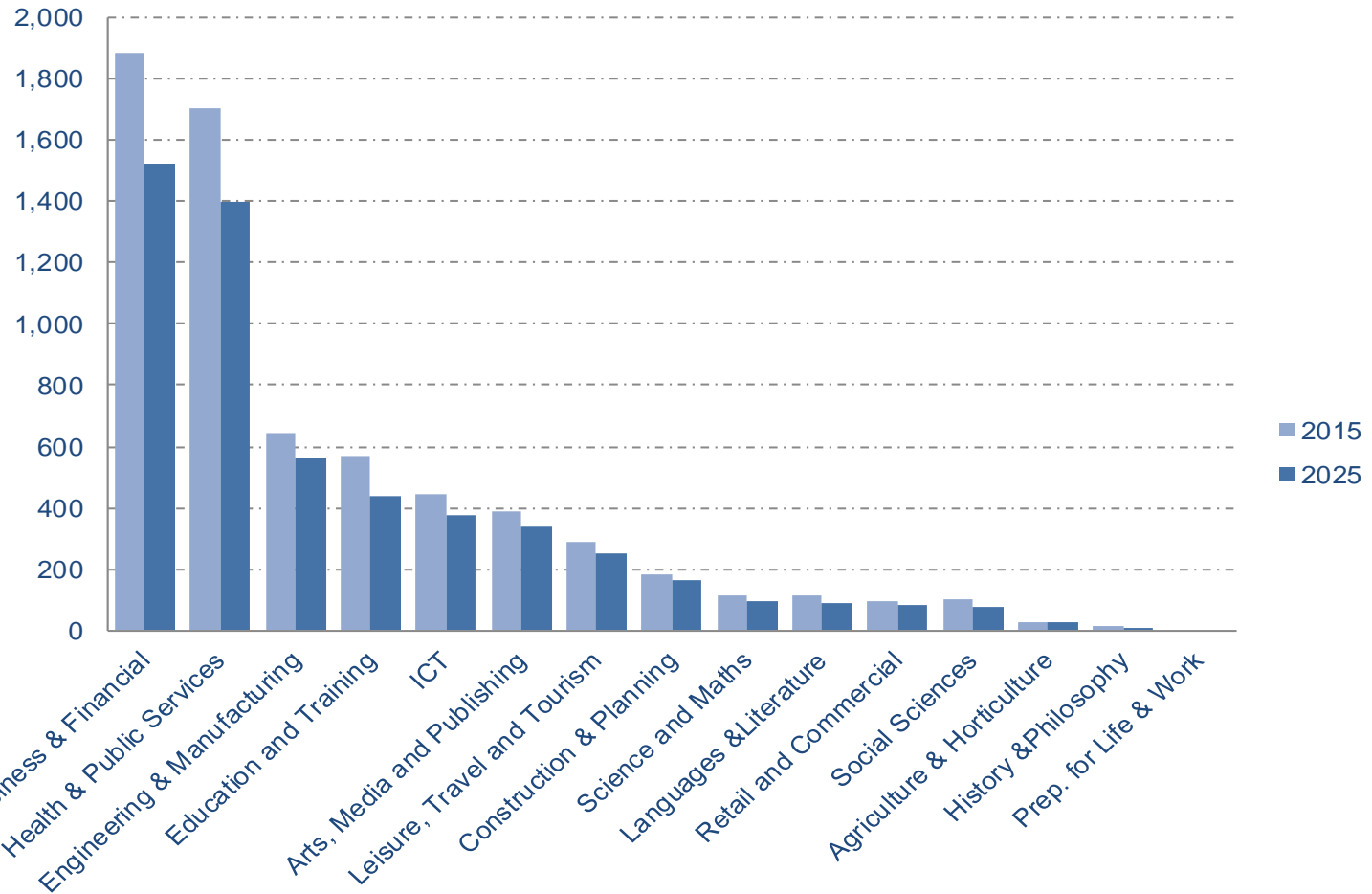
Supply of skills

Gross, Net and Effective Supply of Skills NQF L6+ (JACS 1 digit) (Based on 2015 supply)



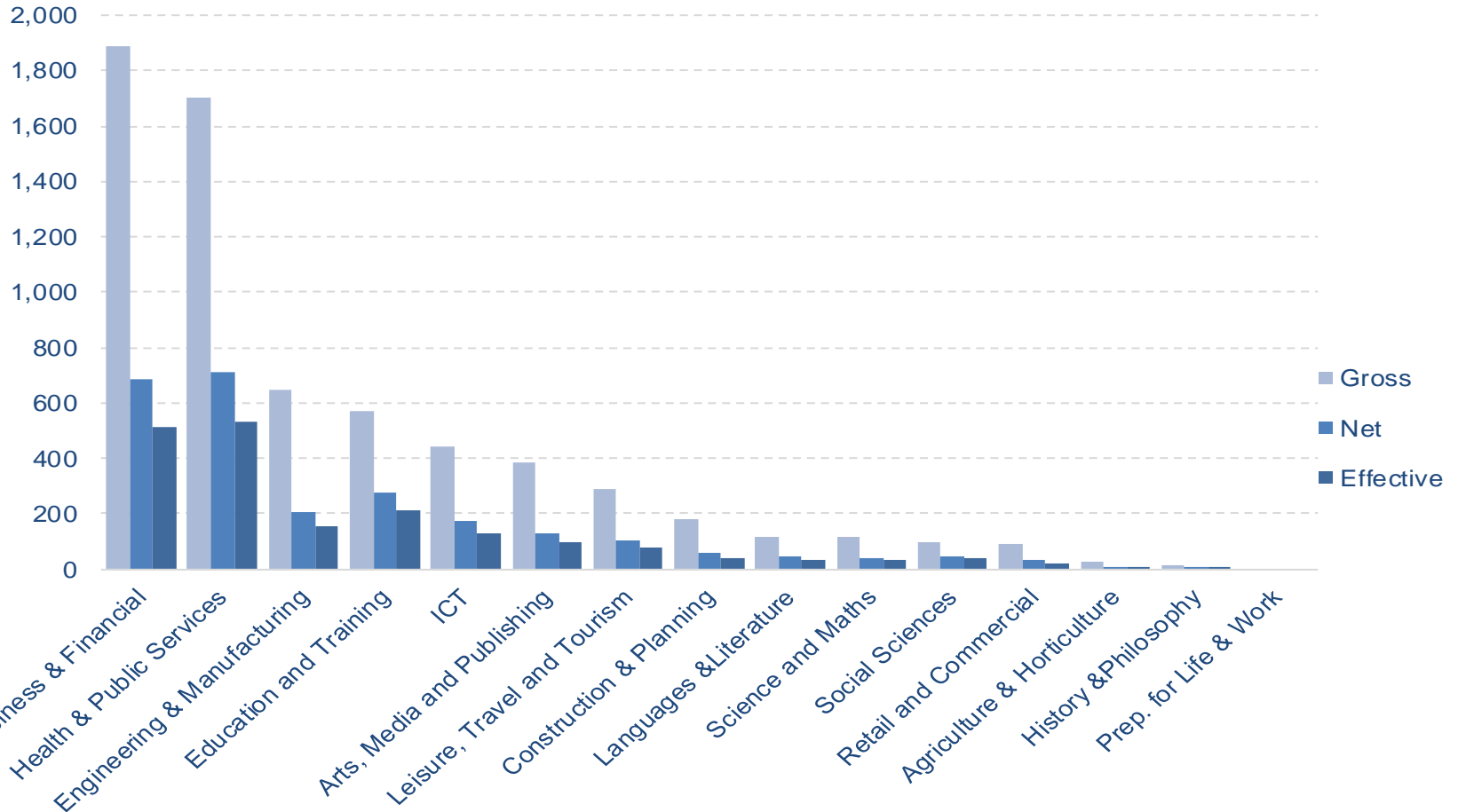
Supply of skills

Gross Supply of Skills NQF L4-5 (JACS 1 digit)



Supply of skills

Gross, Net and Effective Supply of Skills NQF L4-5 (SSA 1 digit) (Based on 2015 supply)



Supply of skills

- The difference between Gross and Net supply is explained by three factors:
 - **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 their 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.



Careers information

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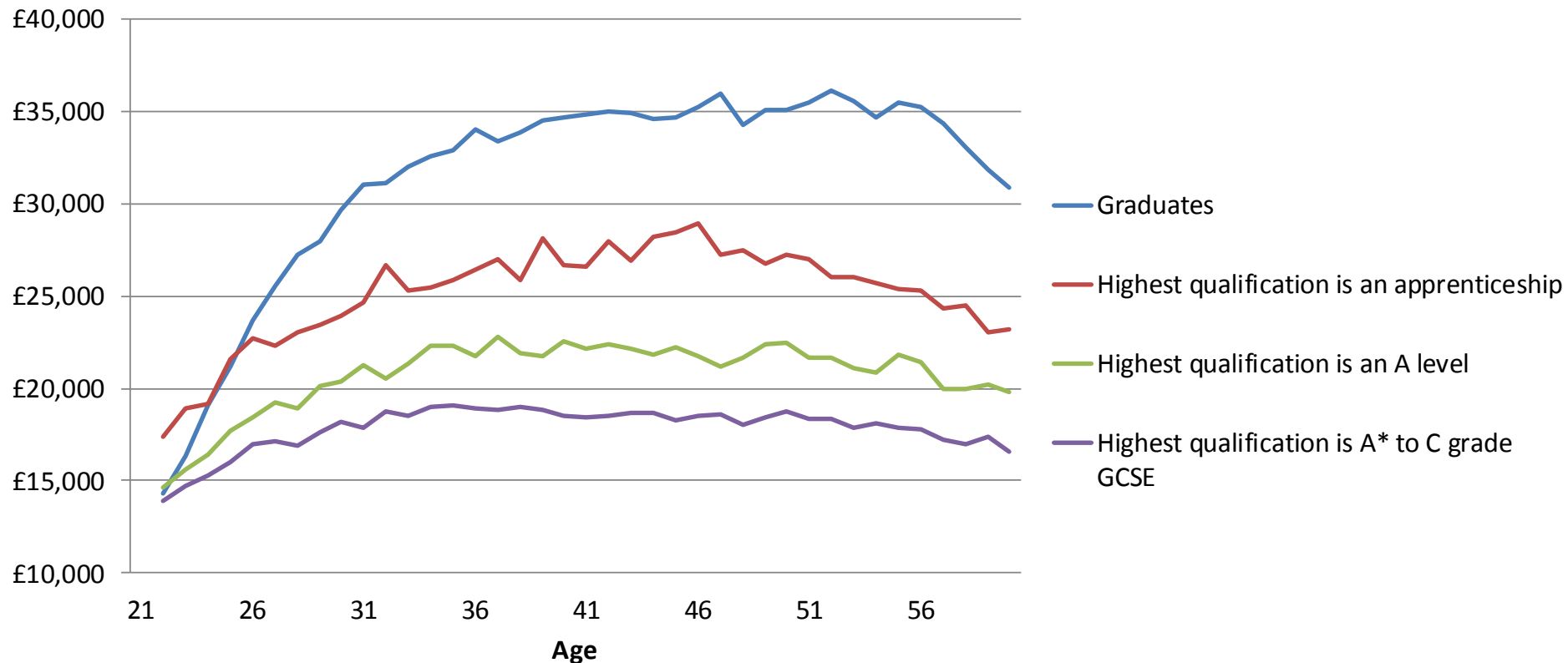
Careers information

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

Average earnings by level of education

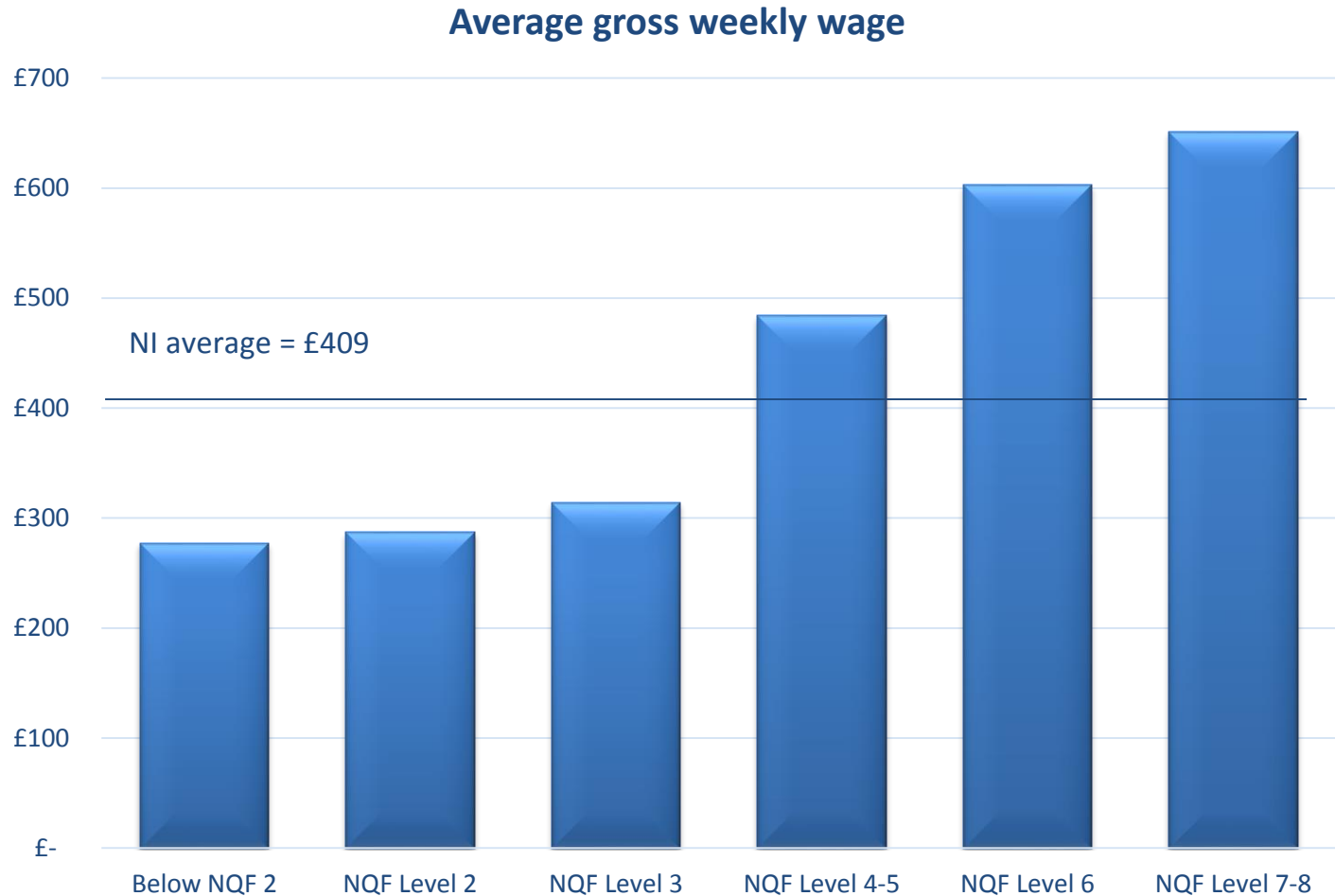
Salary progression by age and level of qualification, UK, 2012/13



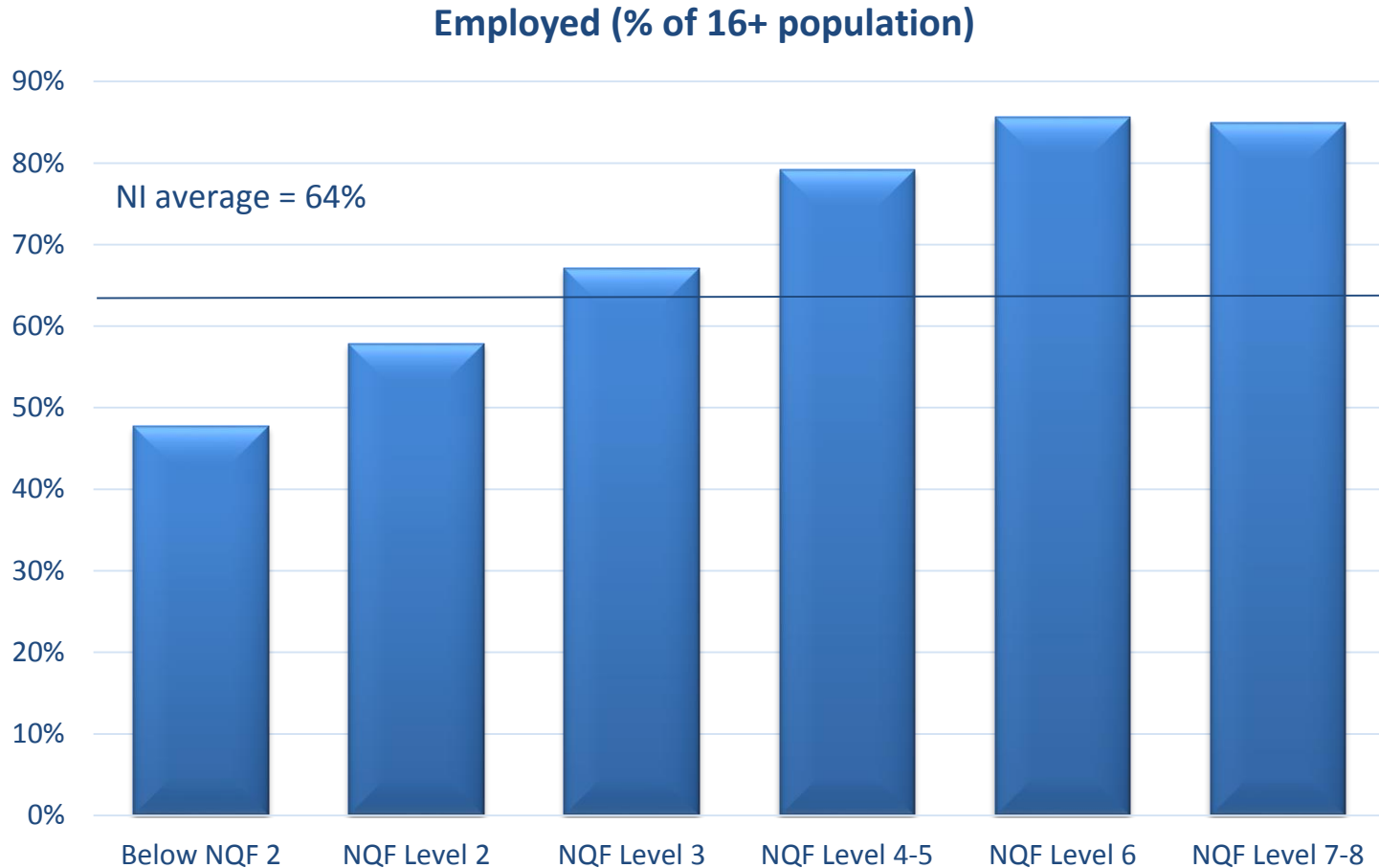
Source: ONS

- 2012/13 is the latest data available from ONS in respect of salary progression. ONS currently have no plans to update this data release.

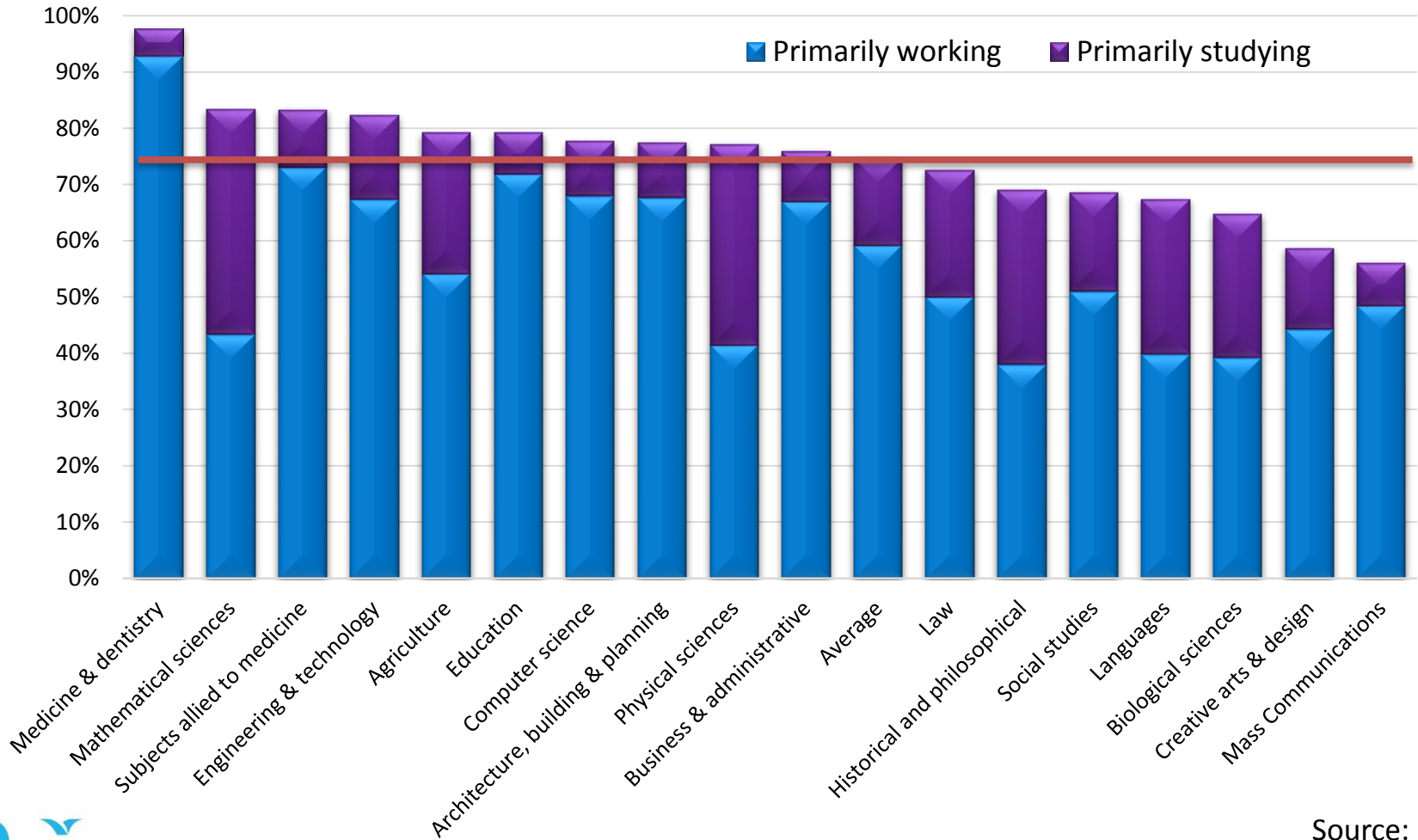
Average earnings by level of education



Employment prospects by level of education



Prospects by degree subject (6 months after graduation)



Source: HESA

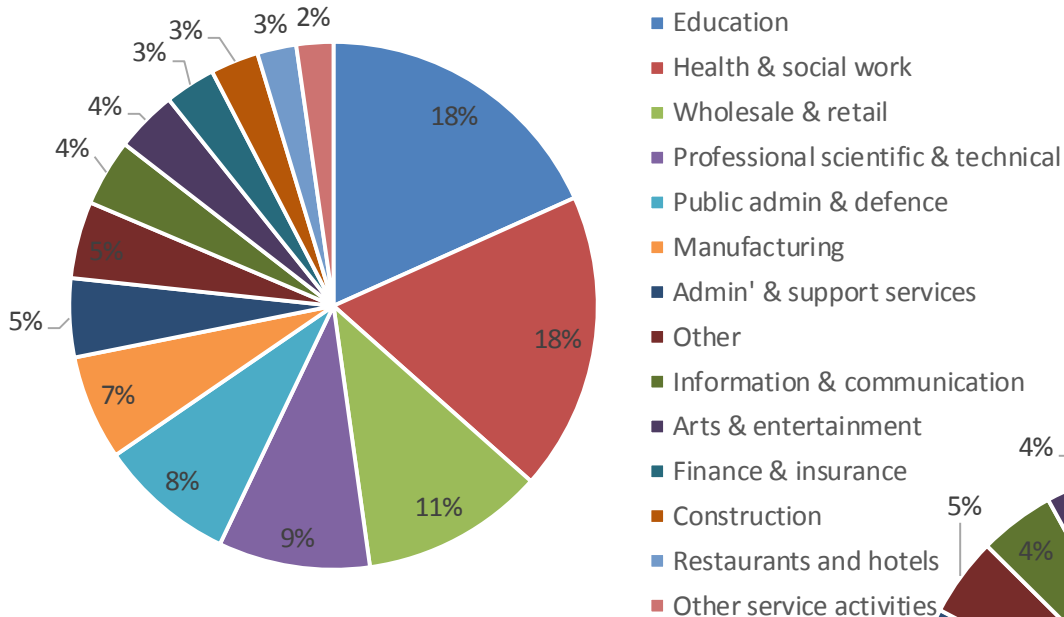
Employment earnings and prospects

- 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).
- The HE subject data shows employment prospects after 6 months. This is an imperfect measure because it does not necessarily reflect graduate level employment but 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; and
 - Some Arts related subjects tend to show lower levels of employment.

Where are skilled people employed?

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

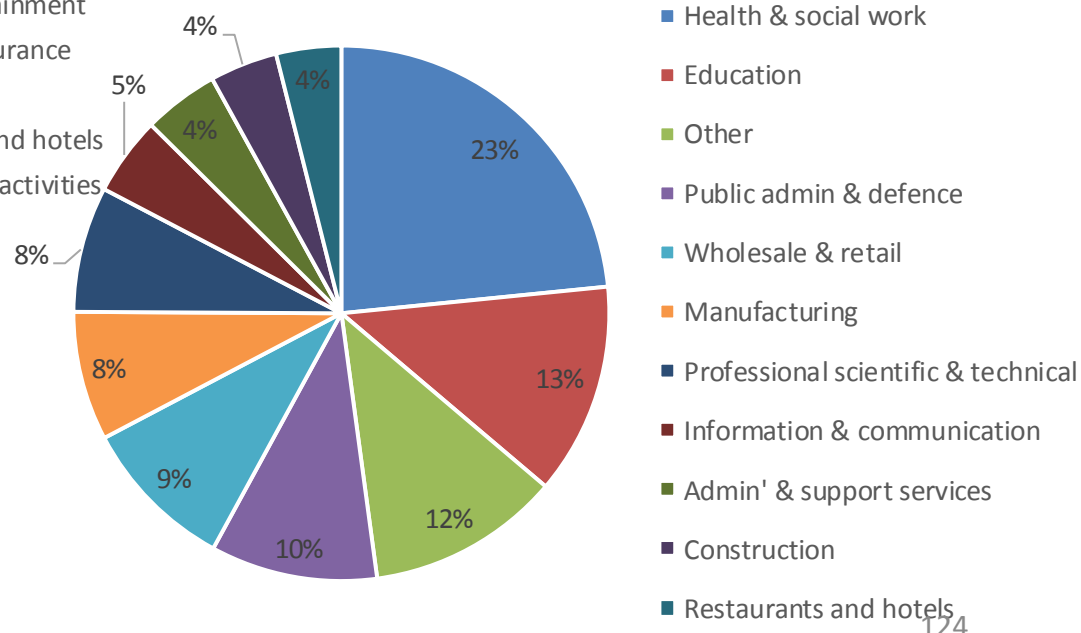
High level skills stock (Level 6 and above)



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

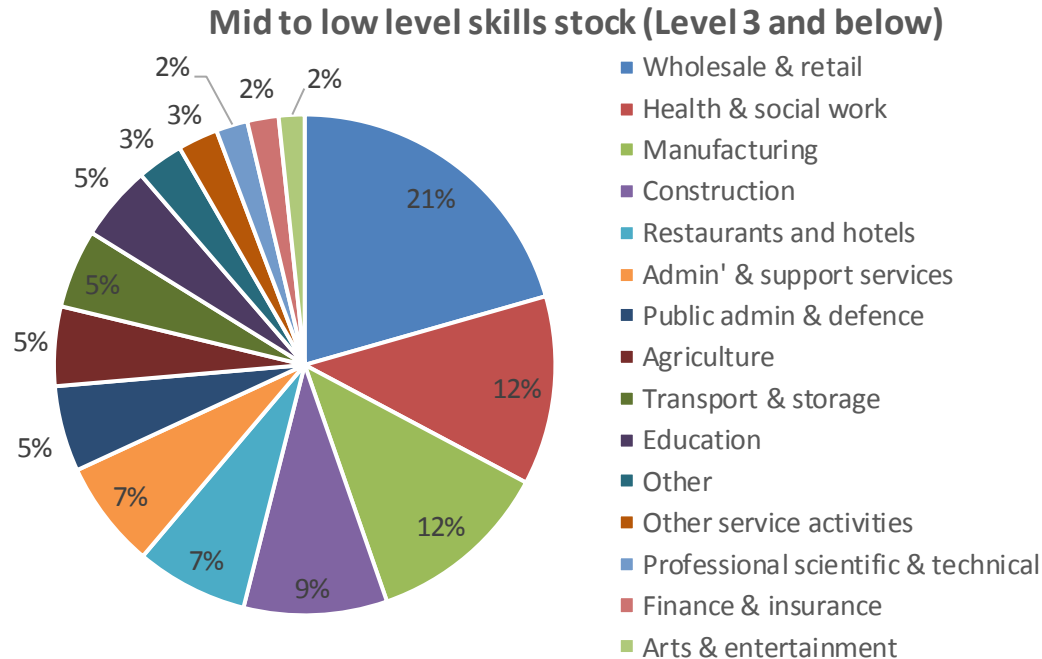
Other sectors in Sub-degree level skills include: Other service activities, Transport & storage, Finance & insurance, Real estate, Agriculture, Arts & entertainment, Water supply & waste, Mining, Elect' & gas and People employed by households.

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



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: Real estate, Agriculture, Water supply & waste, Mining, Elect' & gas and People employed by households

Where are skilled people employed?

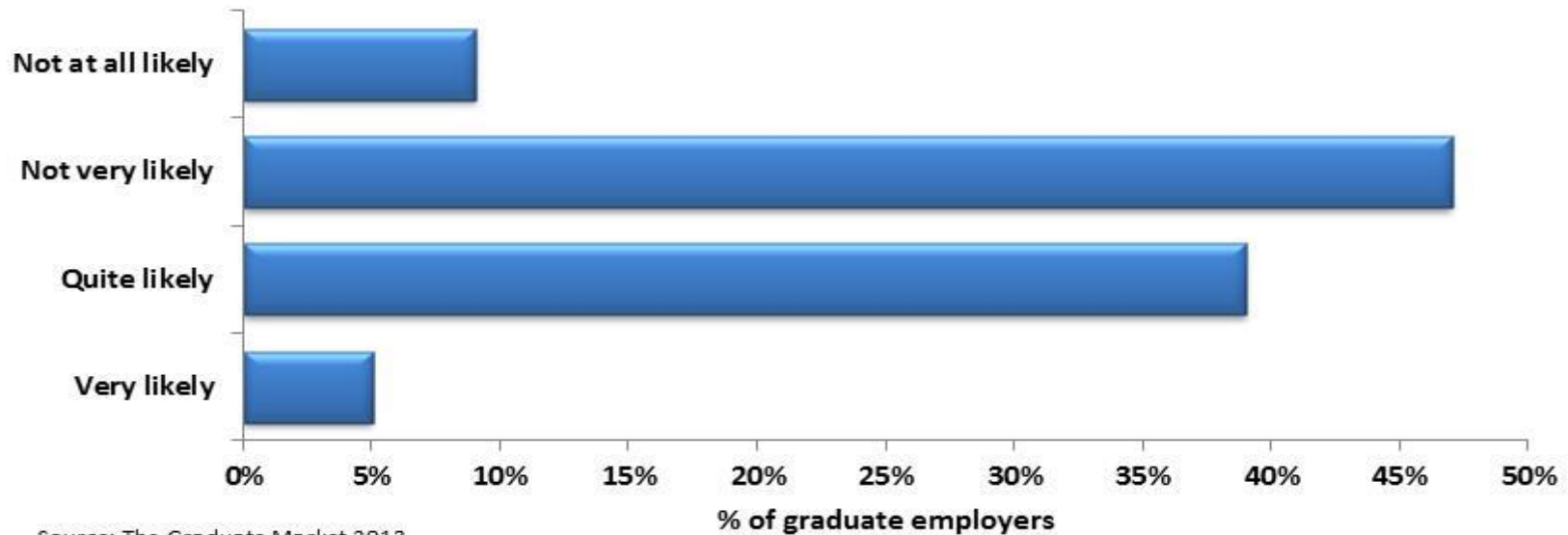
- The public sector, in particular health and education, is the major employer for people with high and medium level qualifications.
- The wholesale and retail sector is a large employer across all skill levels, but particularly at the lower skill levels. This reflects the overall scale of the wholesale 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.
- Professional services, manufacturing and ICT 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.

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.
- 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.

Work experience matters

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

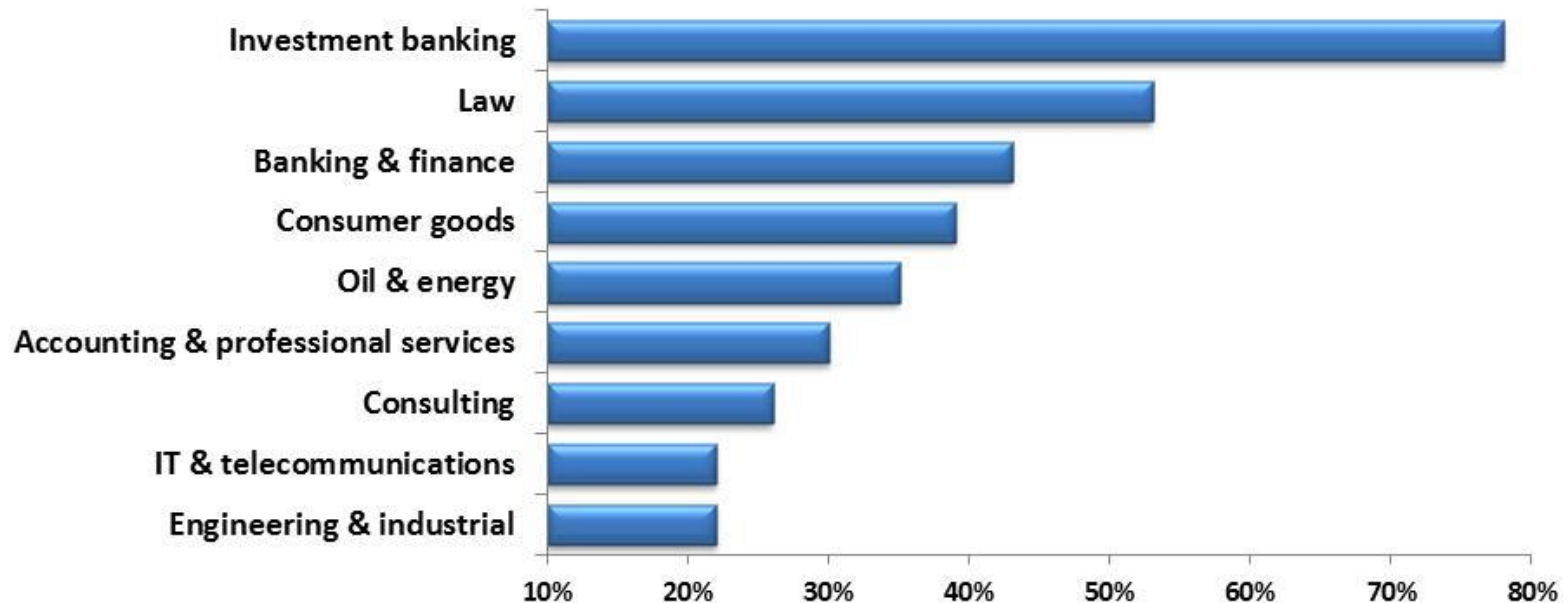


Source: The Graduate Market 2013

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 filled by graduates who've already worked for the employer



Source: The Graduate Market 2013

At least 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

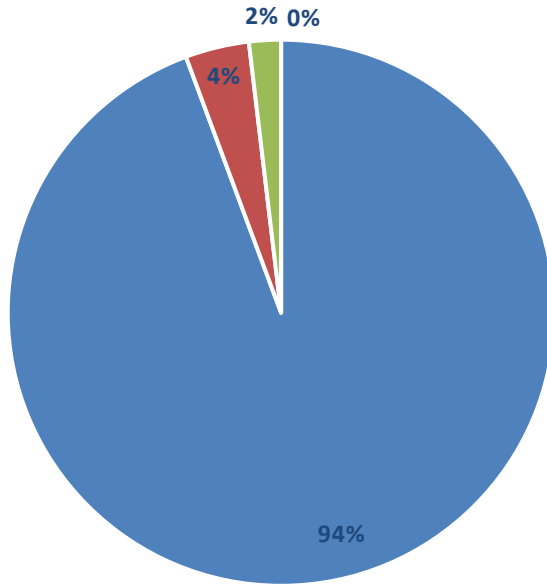
- The research sets out a number of key learning points for education institutions, employers and young people making career decisions:
 - Employability skills are a fundamental requirement to secure employment, particularly in high skilled sectors for blue chip employers;
 - Students should make every 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.

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.

Destination of graduates after 6 months

Medicine & Dentistry– Sectoral employment mix



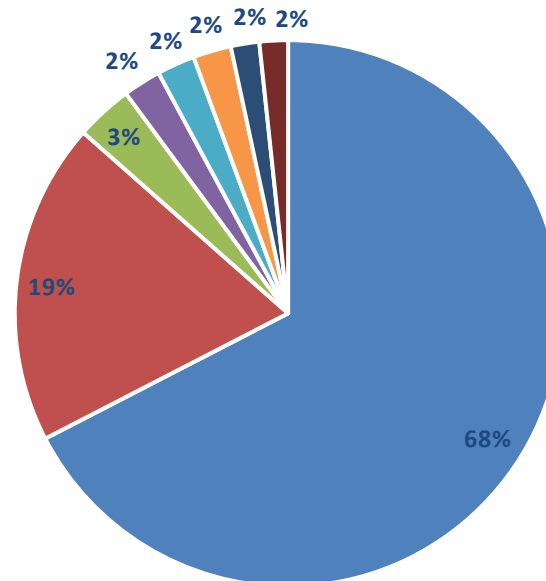
- Health and social work
- Education
- Public admin'
- Other

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.



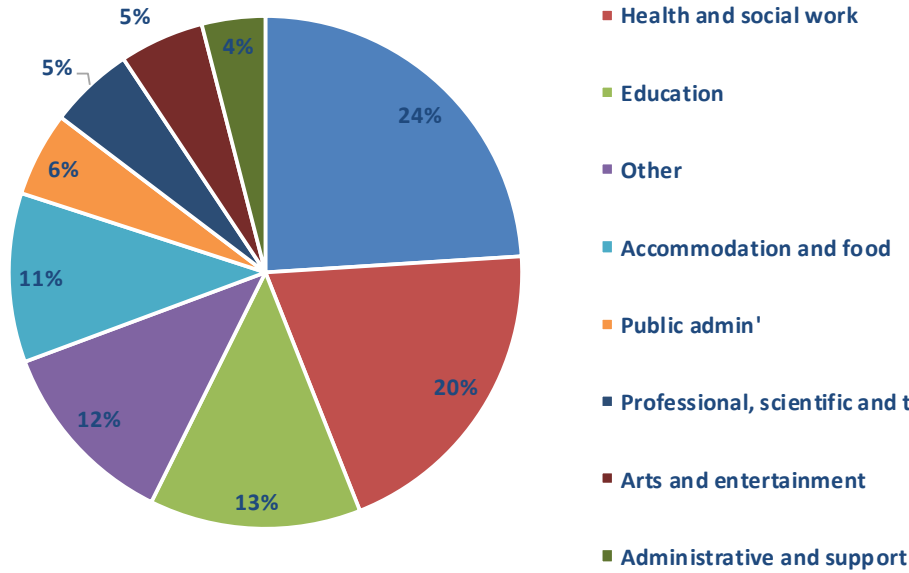
Subjects allied to medicine– Sectoral employment mix



- Health and social work
- Wholesale and retail trade
- Other
- Education
- Manufacturing
- Professional, scientific and technical
- Public admin'
- Accommodation and food

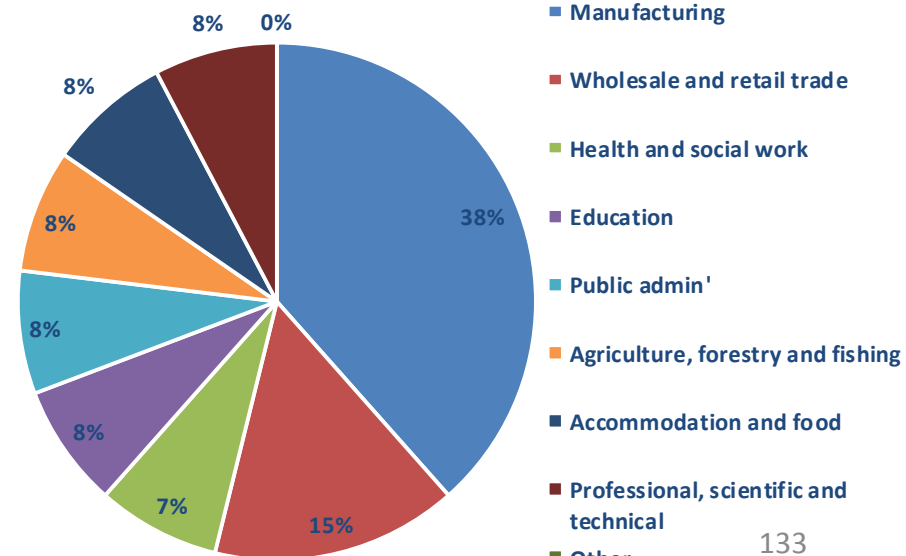
Destination of graduates after 6 months

Biological sciences – Sectoral employment mix



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.

Agriculture & related subjects – Sectoral employment mix



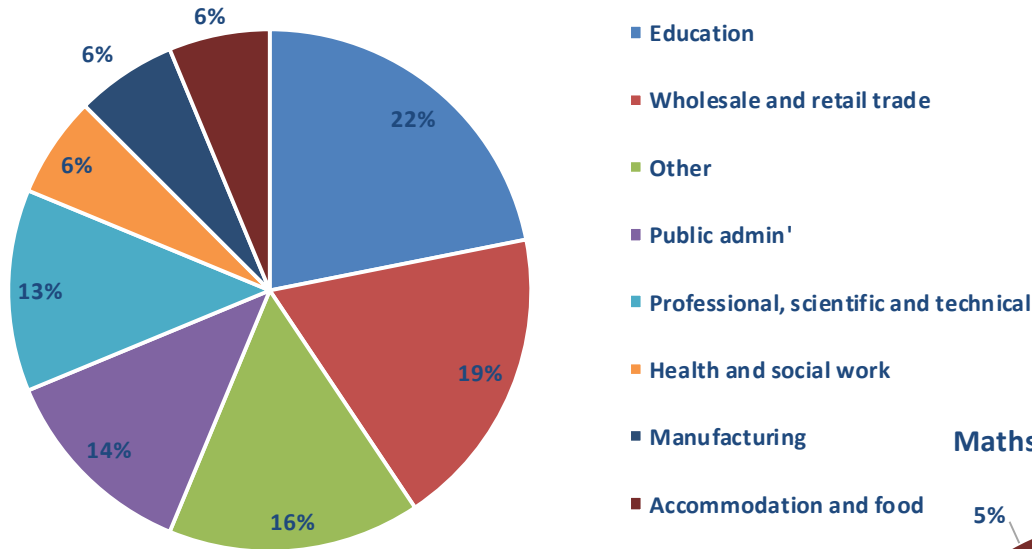
Other sectors in Agriculture & related subjects include: Mining and quarrying, Electricity, gas, steam and air conditioning supply, Water, sewerage and waste, Construction, Transport and storage, ICT, Financial and insurance activities, etc.



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

Destination of graduates after 6 months

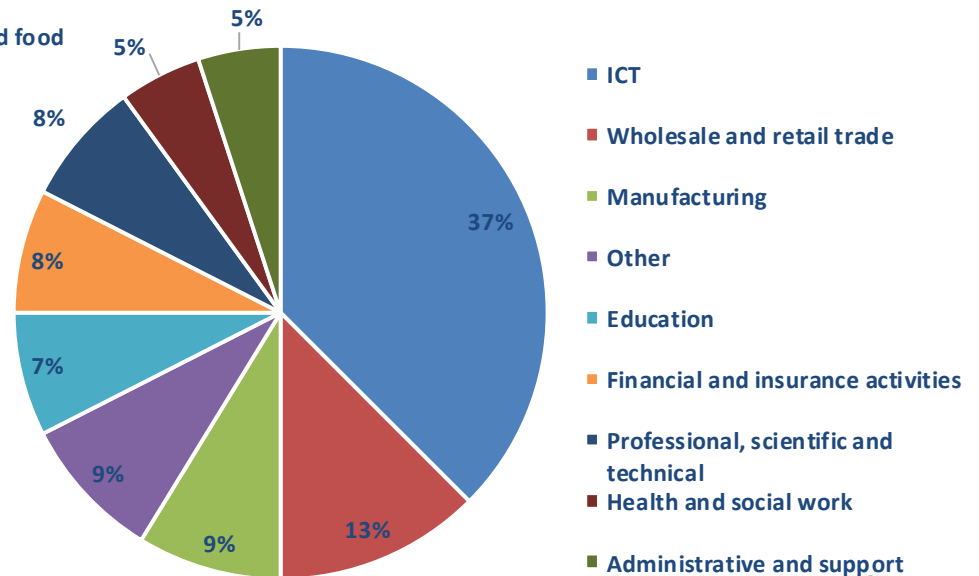
Physical sciences – Sectoral employment mix



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.

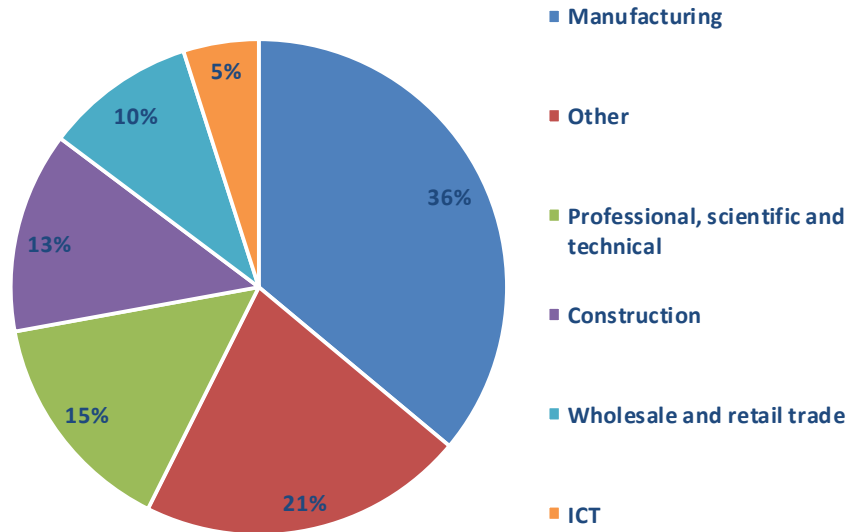
Other sectors in Maths and computing include: Health and social work, Public admin', Agriculture, forestry and fishing, Mining and quarrying, Manufacturing, Accommodation and food, Real estate activities, Administrative and support, Arts and entertainment, Other service activities, etc.

Maths and Computing – Sectoral employment mix



Destination of graduates after 6 months

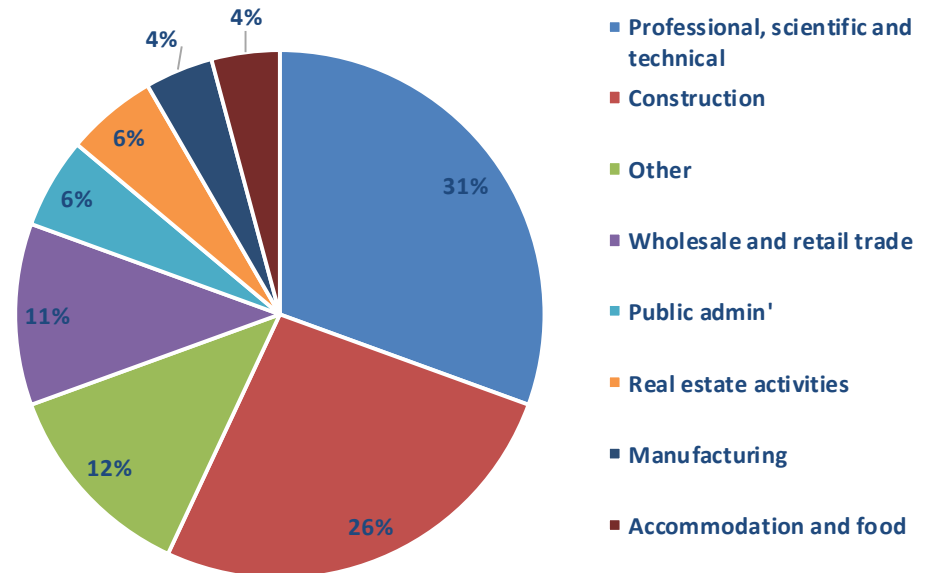
Engineering & technology – Sectoral employment mix



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.

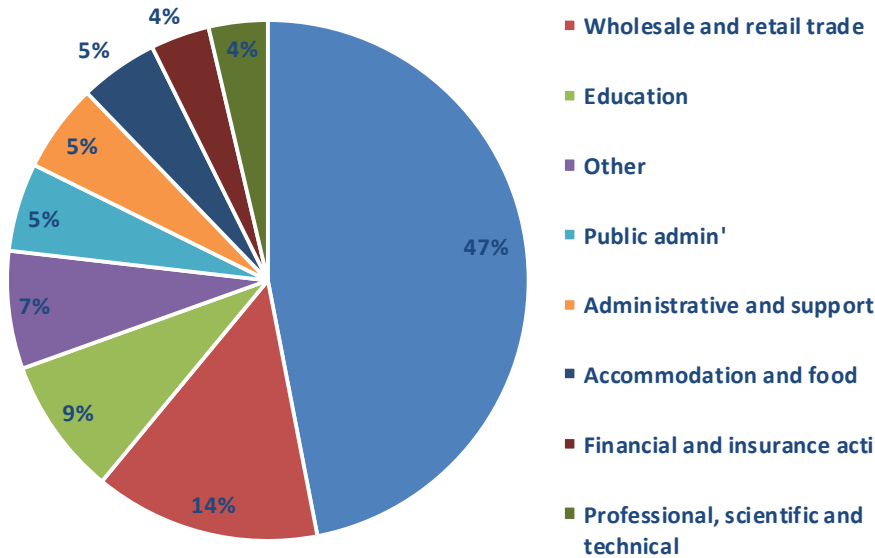
Other sectors in Architecture, building & planning include: Health and social work, Education, Agriculture, forestry and fishing, Mining and quarrying, Transport and storage, Financial and insurance activities, Administrative and support, Arts and entertainment, ICT, etc.

Architecture, building & planning – Sectoral employment mix



Destination of graduates after 6 months

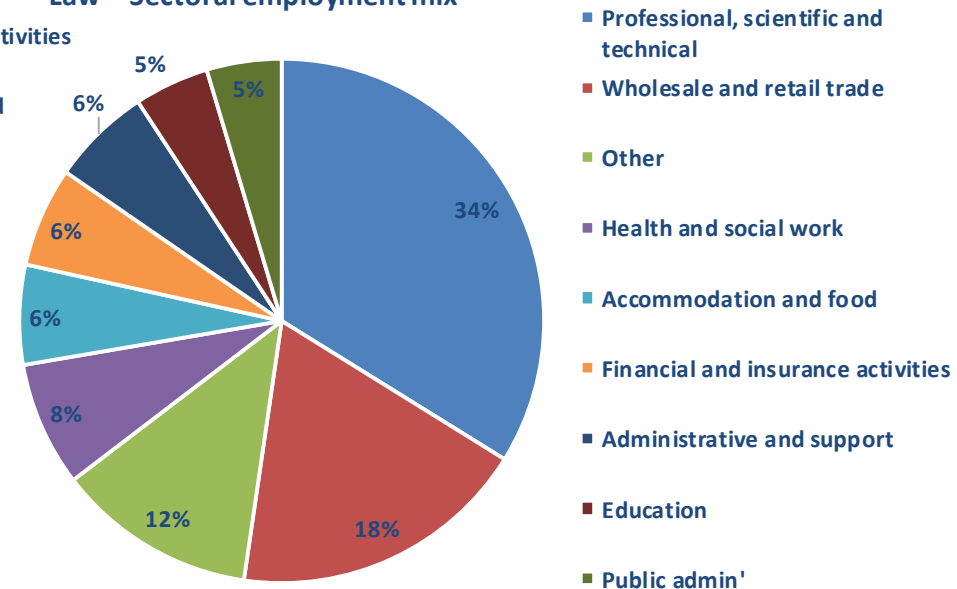
Social studies – Sectoral employment mix



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.

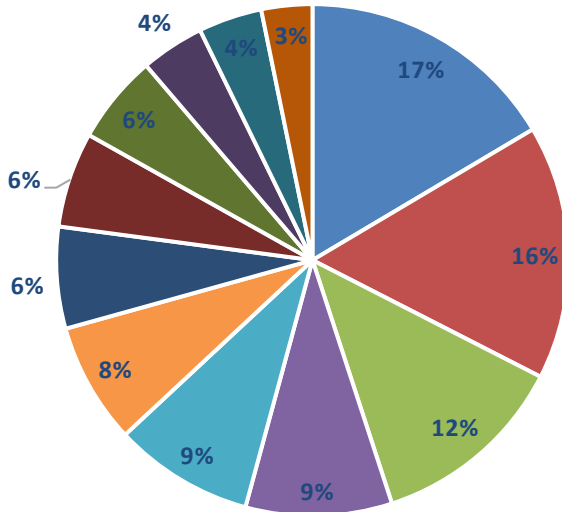
Other sectors in Law include: Arts and entertainment, Manufacturing, Construction, Transport and storage, ICT, Real estate activities, Other service activities, Agriculture, forestry and fishing, Mining and quarrying, etc.

Law – Sectoral employment mix



Destination of graduates after 6 months

Business & administrative studies – Sectoral employment mix

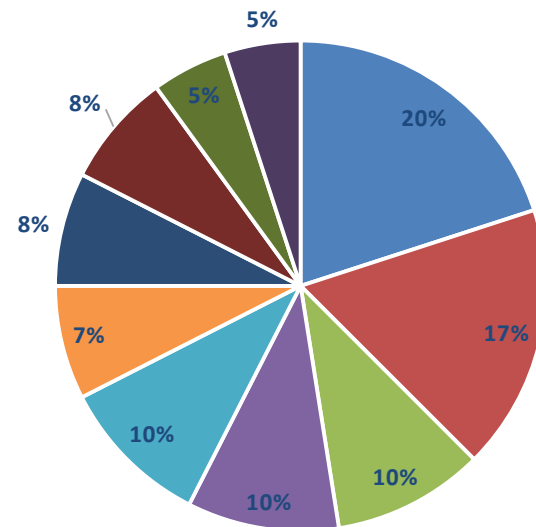


- Professional, scientific and technical
- Wholesale and retail trade
- Financial and insurance activities
- Manufacturing
- Other
- Health and social work
- Accommodation and food
- Administrative and support
- Public admin'
- Education
- ICT
- Transport and storage

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.

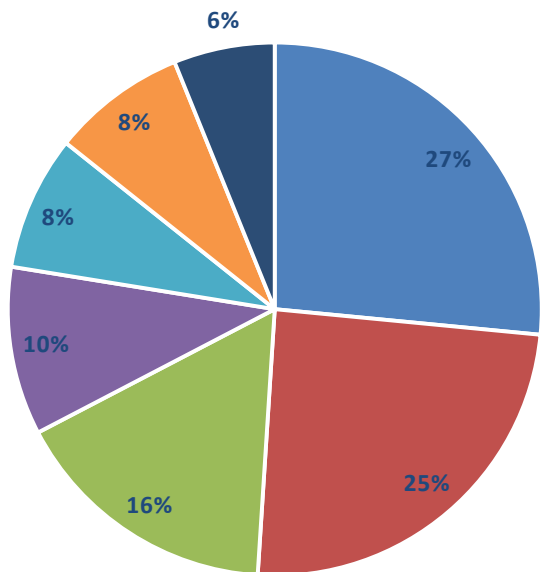
Mass communications & documentation – Sectoral employment mix



- Wholesale and retail trade
- ICT
- Professional, scientific and technical
- Arts and entertainment
- Other
- Health and social work
- Education
- Accommodation and food
- Financial and insurance activities
- Administrative and support

Destination of graduates after 6 months

Languages – Sectoral employment mix



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.

■ Wholesale and retail trade

■ Education

■ Other

■ Health and social work

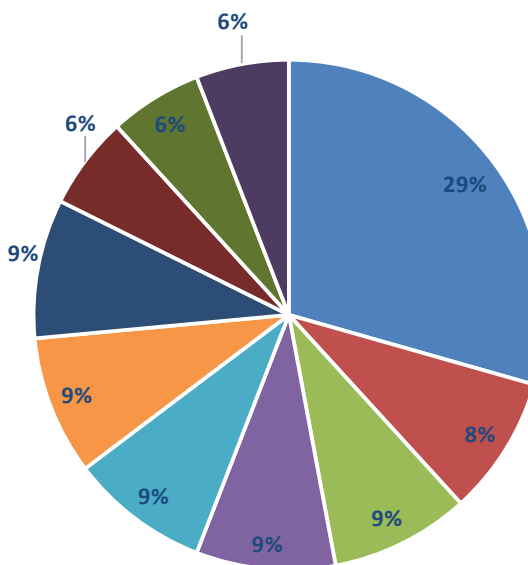
■ Professional, scientific and technical

■ Accommodation and food

■ Administrative and support

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.

Historical & philosophical studies – Sectoral employment mix



■ Wholesale and retail trade

■ Health and social work

■ Education

■ Accommodation and food

■ Arts and entertainment

■ Other service activities

■ Other

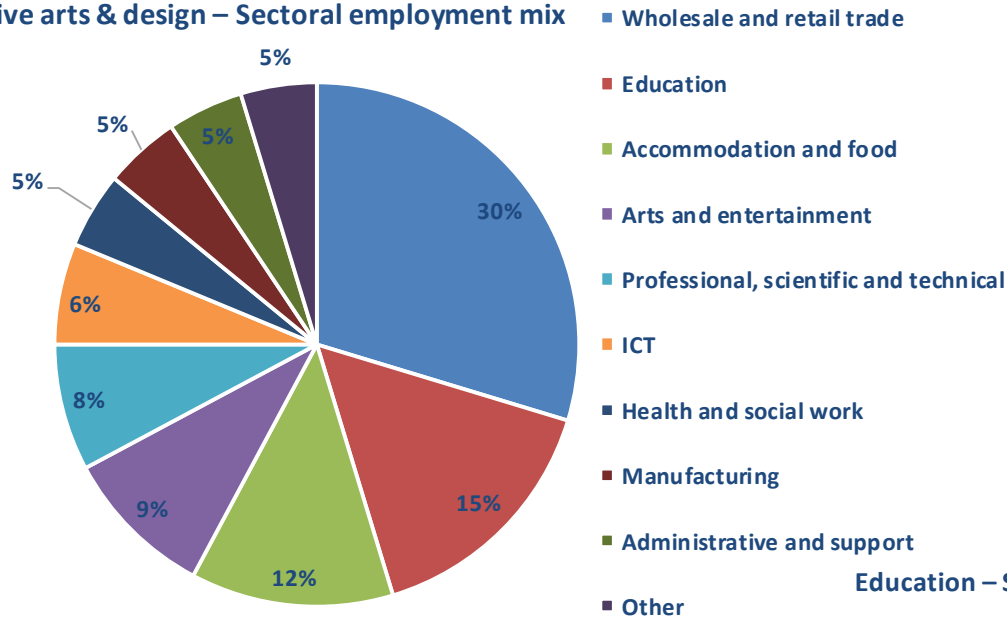
■ ICT

■ Professional, scientific and technical

■ Administrative and support

Destination of graduates after 6 months

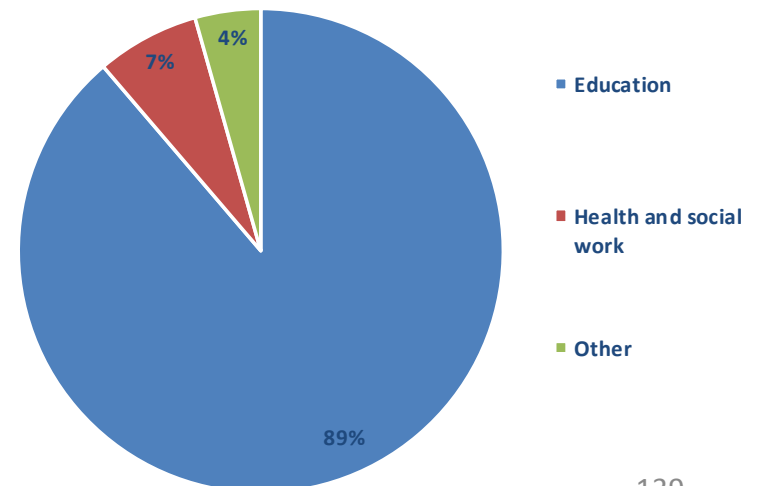
Creative arts & design – Sectoral employment mix



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.

Education – Sectoral employment mix



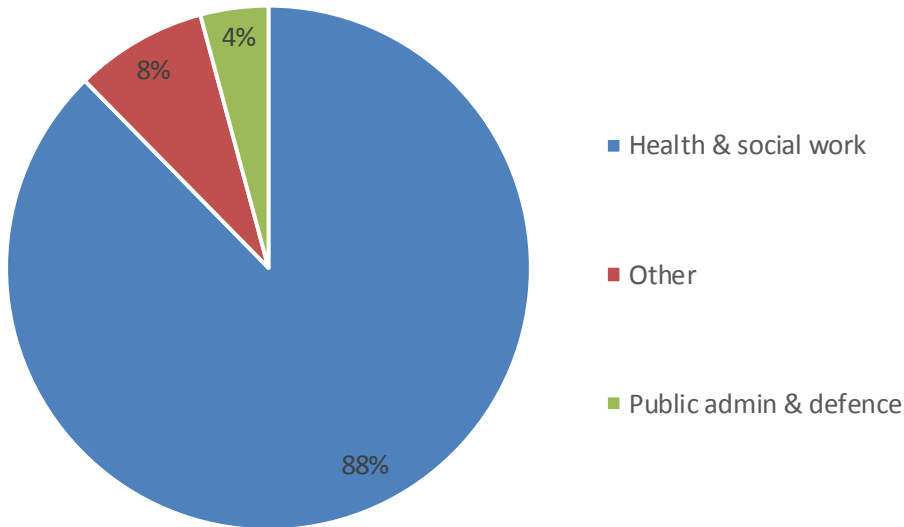
Sectoral employment stock mix by subject area

- 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 the 2015 Labour Force Survey (LFS).

Stock by subject area

Sectoral employment stock mix per degree subject

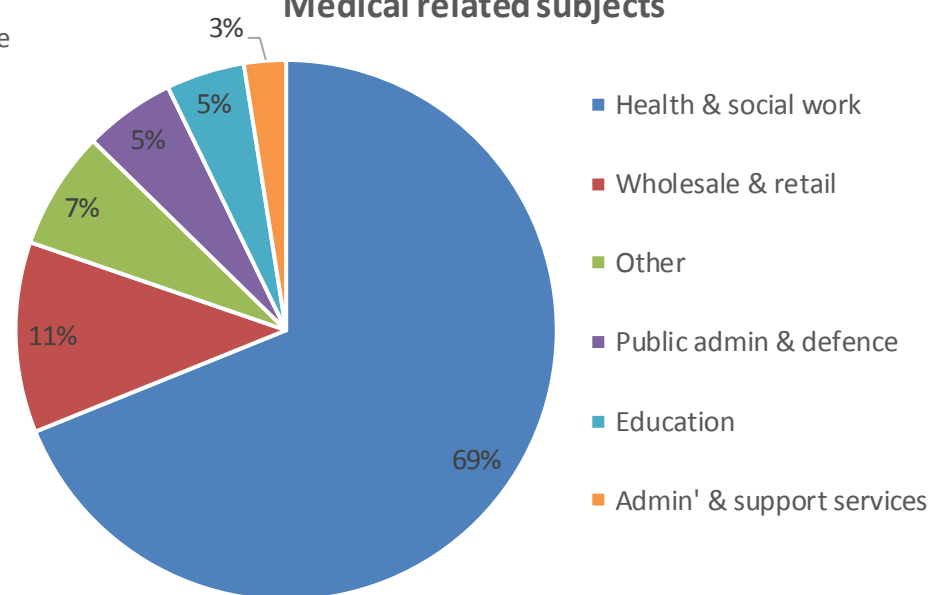
Medicine and dentistry



Other sectors in Medicine & dentistry include: Education, Wholesale & retail, Professional scientific & technical, Other service activities, Admin' & support services, Manufacturing, Information & communication, Arts & entertainment, Construction, Mining, etc.

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, etc.

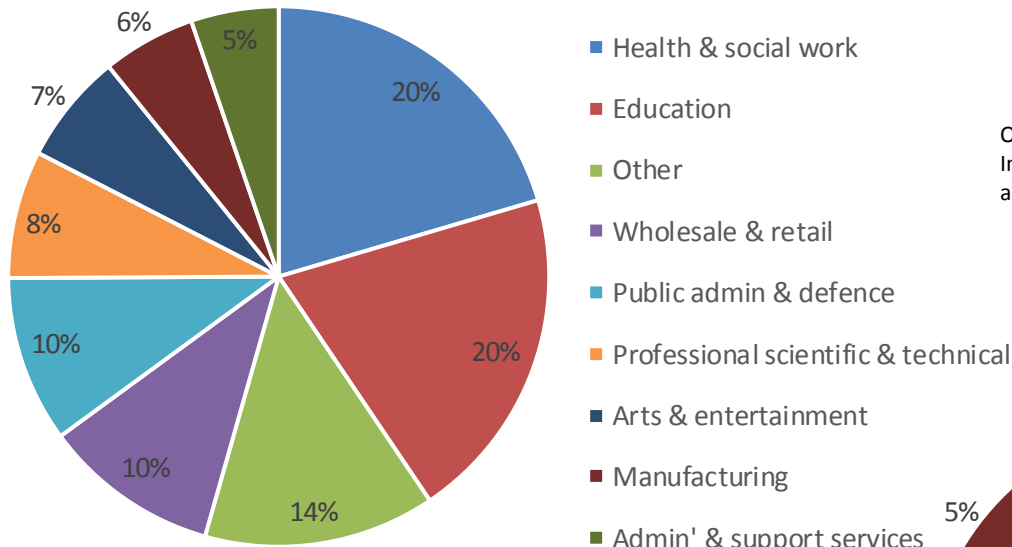
Medical related subjects



Stock by subject area

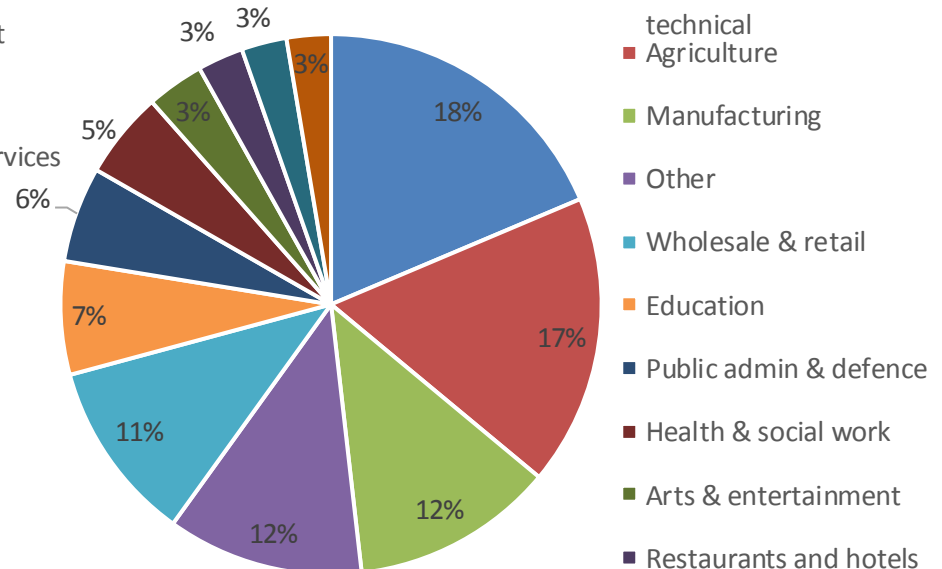
Sectoral employment stock mix per degree subject

Biological Sciences



Other sectors in Biological sciences include: Restaurants and hotels, Information & communication, Finance & insurance, Other service activities, Water supply & waste, Construction, Agriculture, etc.

Agricultural Sciences

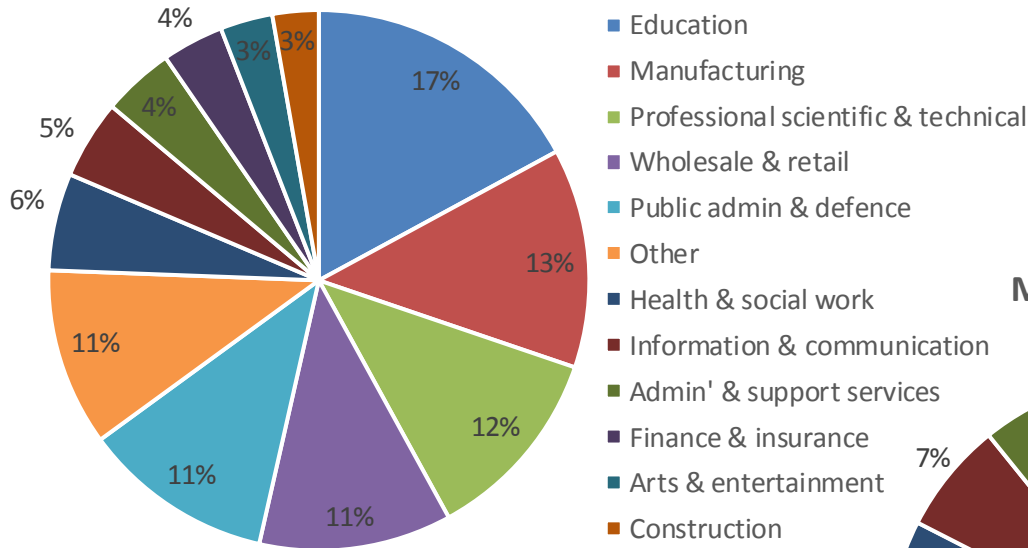


Other sectors in Agricultural sciences include: Real estate, Other service activities, Water supply & waste, Mining, Finance & insurance, Information & communication, Transport & storage, Elect' & gas, etc.

Stock by subject area

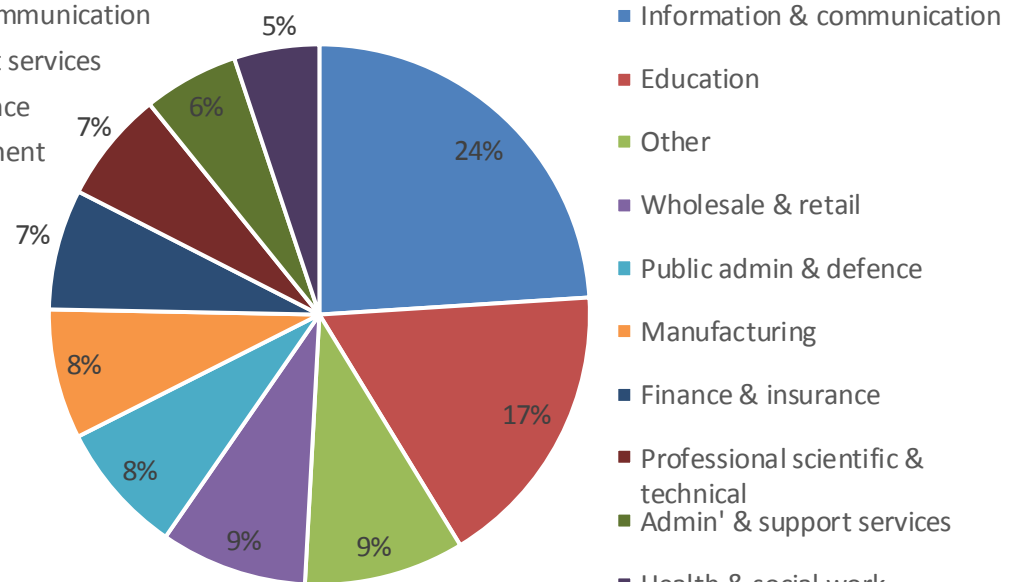
Sectoral employment stock mix per degree subject

Physical/Environmental Sciences



Other sectors in Physical/ Environmental Sciences include: Water supply & waste, Agriculture, Restaurants and hotels, Other service activities, Real estate, Transport & storage, Mining, etc.

Mathematical Sciences and Computing

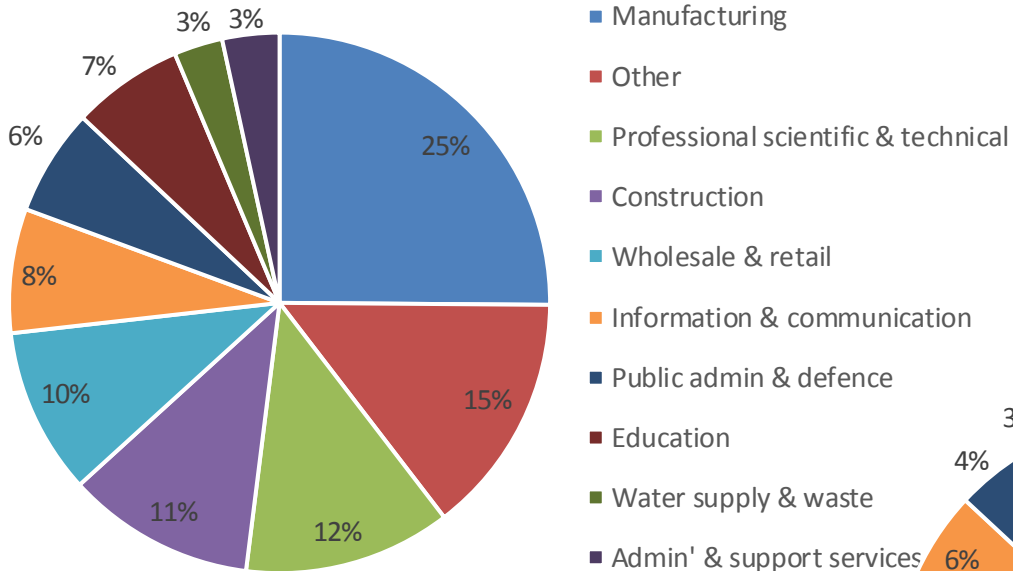


Other sectors in Mathematical Sciences and Computing include: Arts & entertainment, Construction, Restaurants and hotels, Other service activities, Transport & storage, Real estate, Agriculture, etc.

Stock by subject area

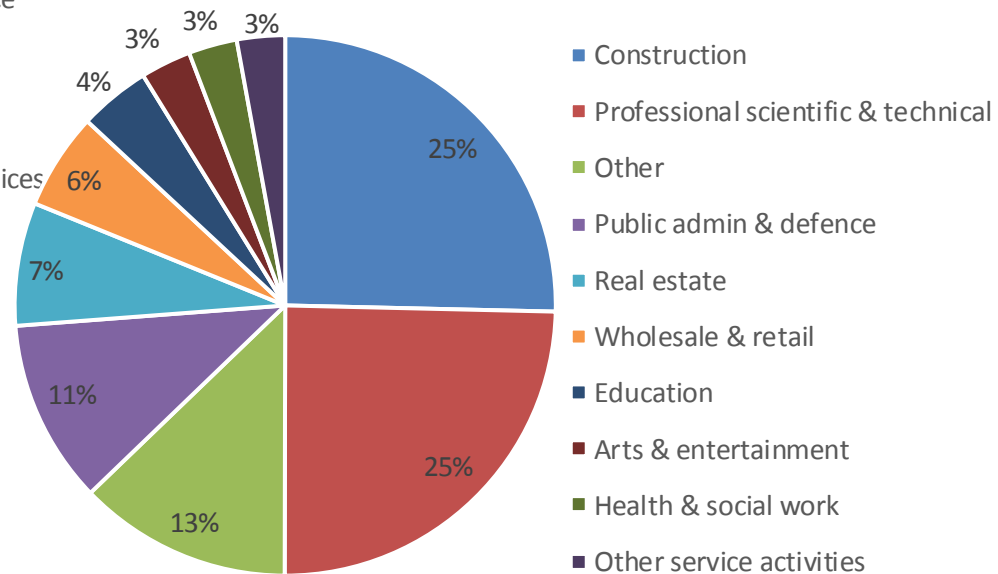
Sectoral employment stock mix per degree subject

Engineering & TEchnology



Other sectors in Engineering subject include: Health & social work, Finance & insurance, Transport & storage, Restaurants and hotels, Arts & entertainment, Other service activities, Real estate, Mining, etc.

Architecture and related studies

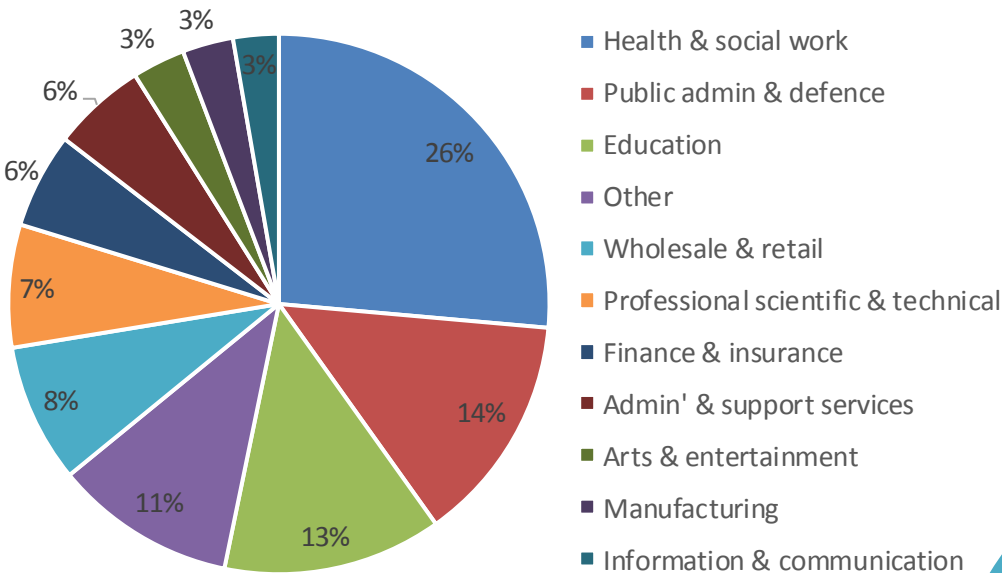


Other sectors in Architecture and related studies include: Manufacturing, Admin' & support services, Restaurants and hotels, Information & communication, Agriculture, Water supply & waste, Transport & storage, Finance & insurance, etc.

Stock by subject area

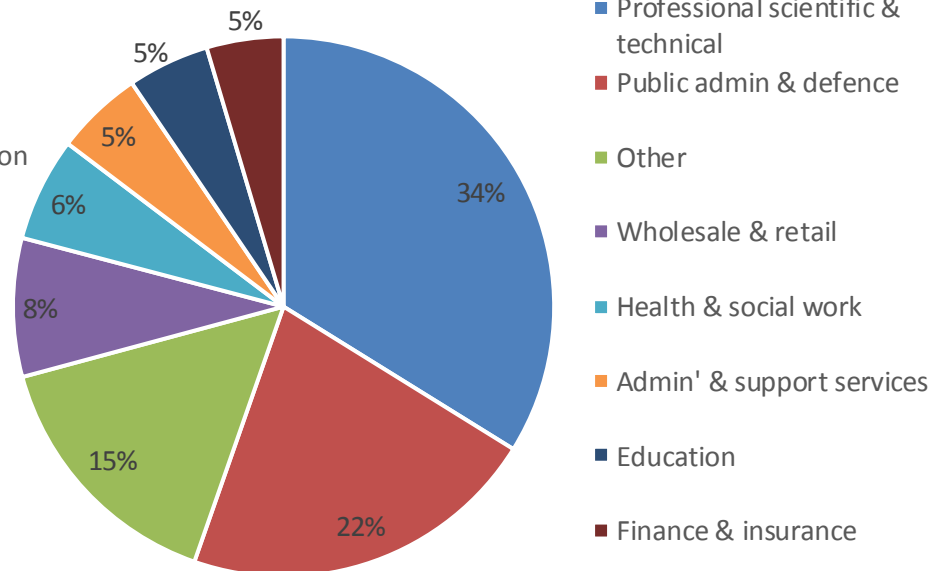
Sectoral employment stock mix per degree subject

Social Studies



Other sectors in Social studies include: Other service activities, Real estate, Restaurants and hotels, Construction, Agriculture, Water supply & waste, Transport & storage, Elect' & gas, etc.

Law

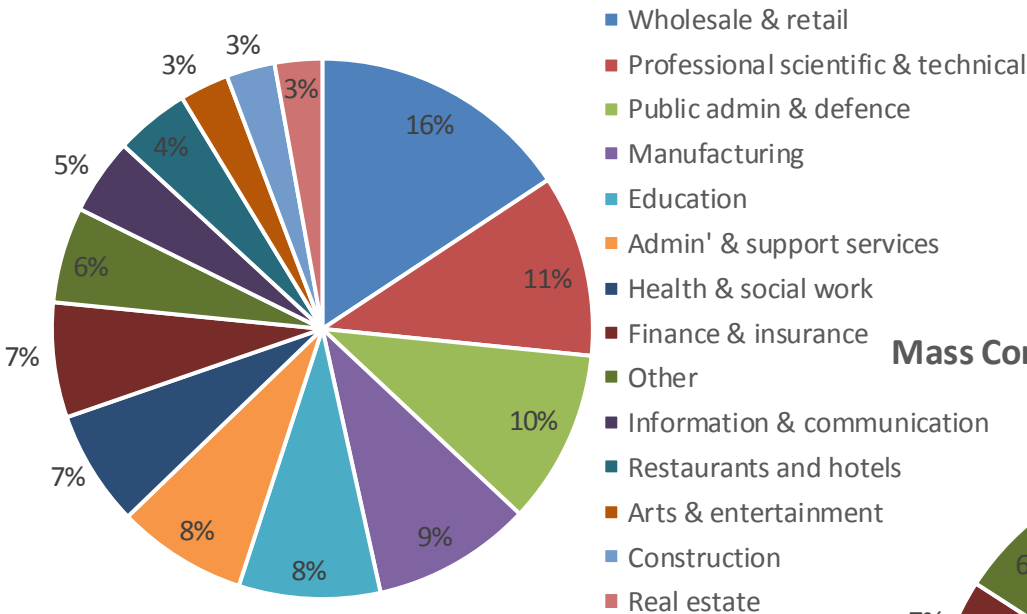


Other sectors in Law subject include: Restaurants and hotels, Information & communication, Other service activities, Manufacturing, Arts & entertainment, Real estate, Construction, Agriculture, etc.

Stock by subject area

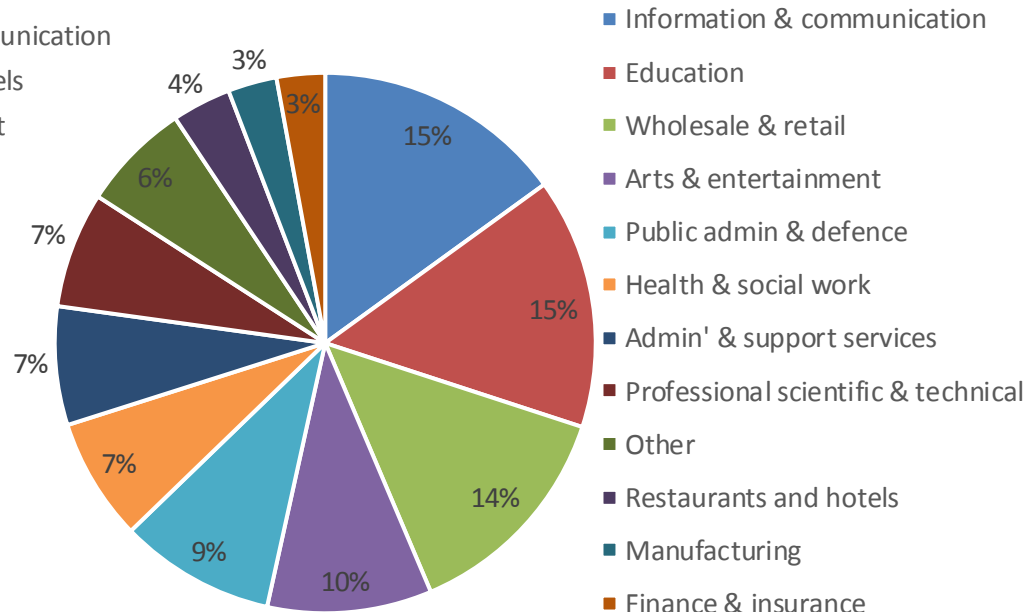
Sectoral employment stock mix per degree subject

Business and Financial studies



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

Mass Communications and Documentation

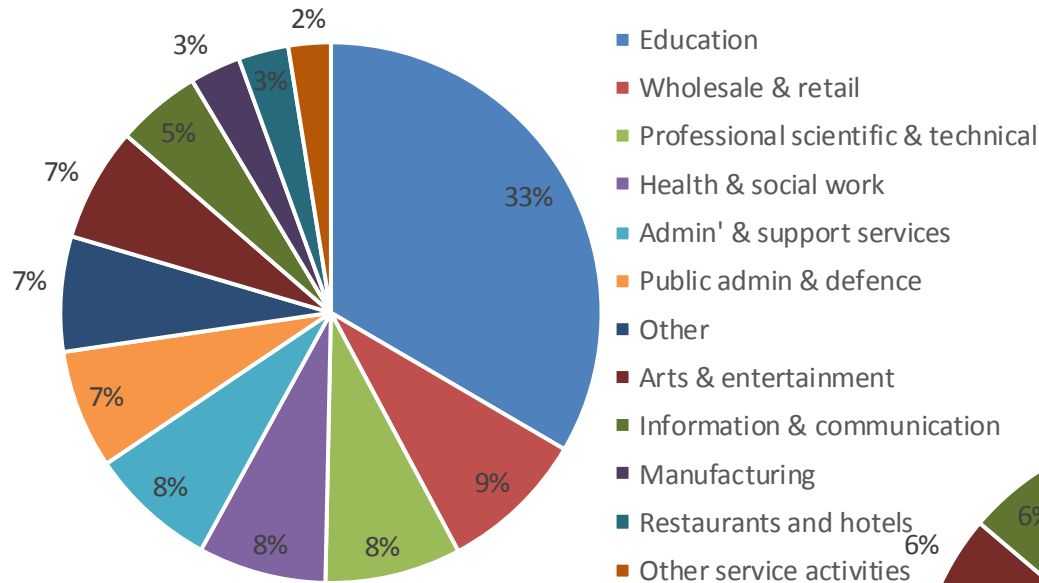


Other sectors in Mass Communications and Documentation include: Other service activities, Real estate, Construction, Agriculture, Transport & storage, Mining, Water supply & waste, Elect' & gas, etc.

Stock by subject area

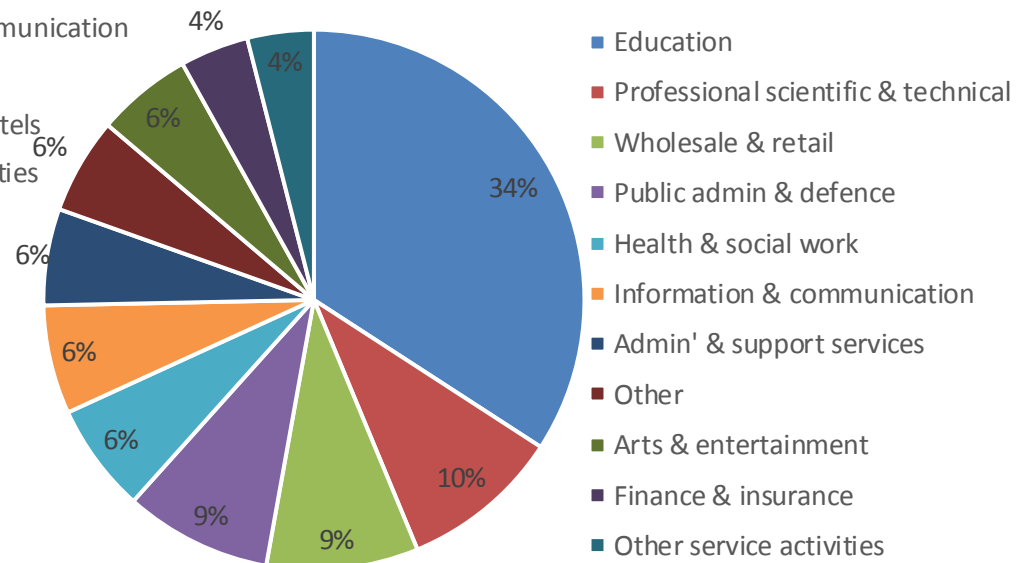
Sectoral employment stock mix per degree subject

Linguistics, English, Celtic and Ancient



Other sectors in Linguistics, English, Celtic and Ancient studies include: Finance & insurance, Real estate, Construction, Agriculture, Transport & storage, Water supply & waste, Elect' & gas, etc.

European Languages

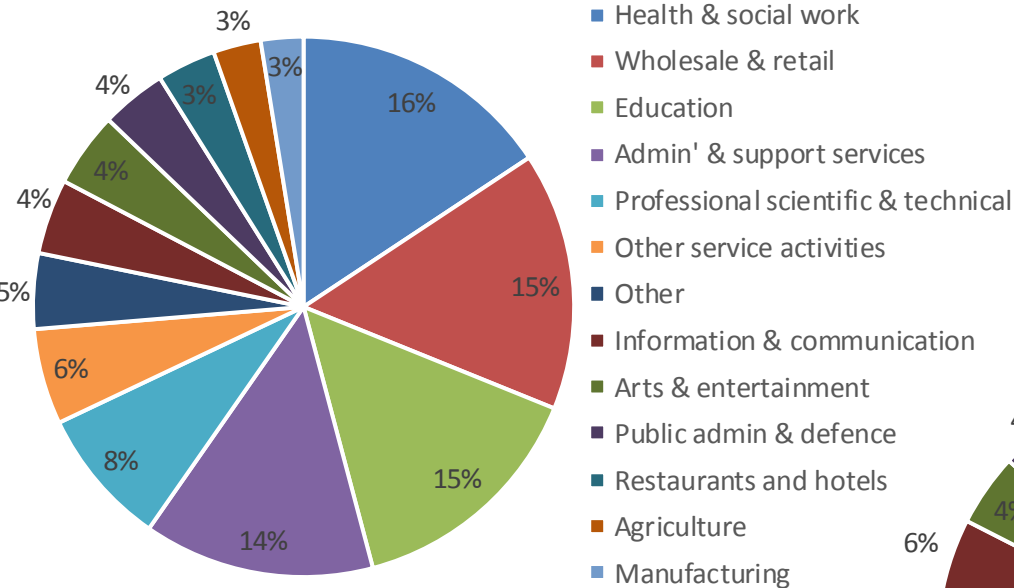


Other sectors in European Languages subject include: Restaurants and hotels, Manufacturing, Construction, Transport & storage, Real estate, Elect' & gas, Water supply & waste, etc.

Stock by subject area

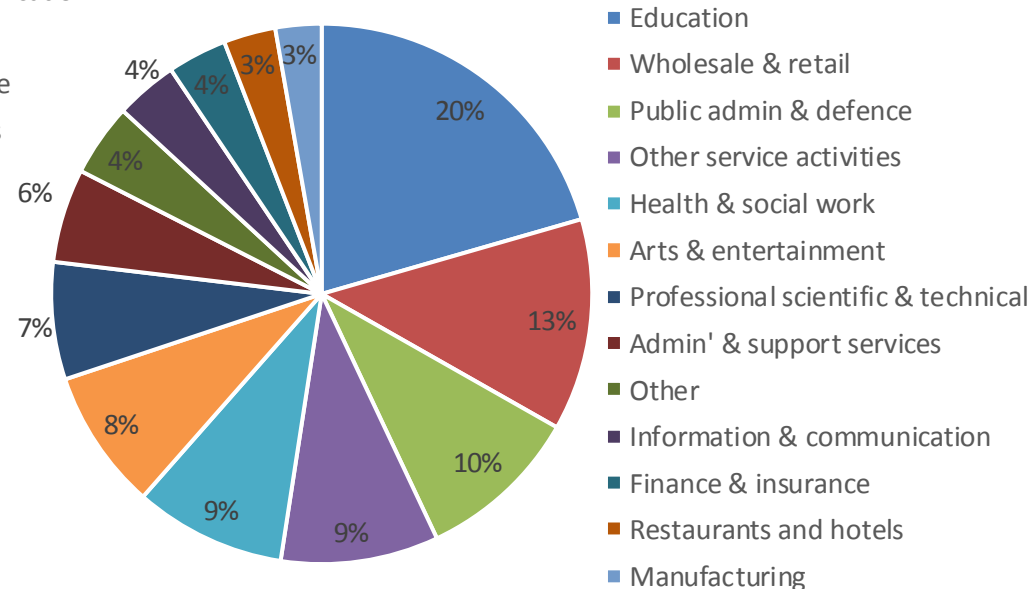
Sectoral employment stock mix per degree subject

Non-European languages



Other sectors in Non-European languages subject include: Finance & insurance, Transport & storage, Construction, Real estate, Mining, Elect' & gas, etc.

Humanities

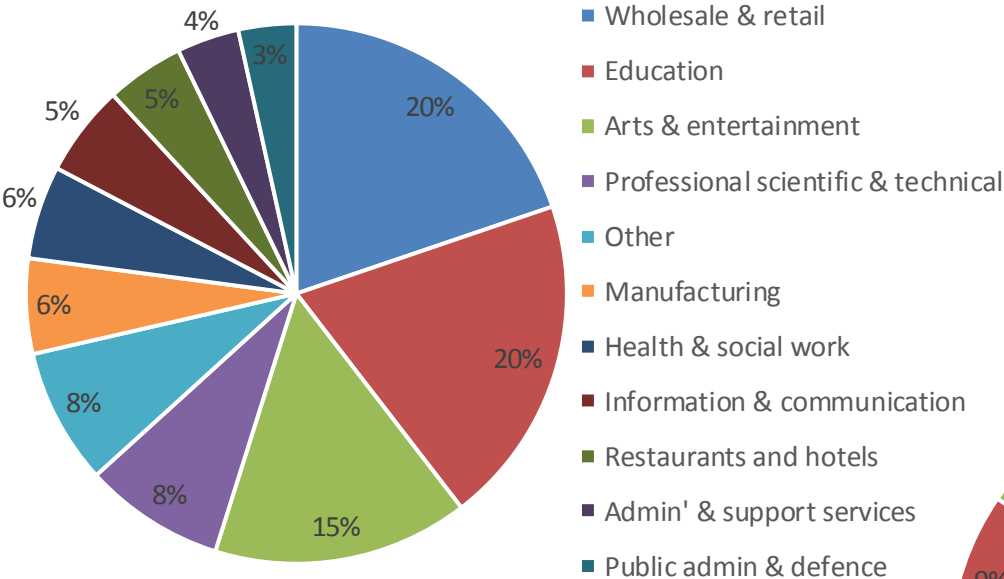


Other sectors in Humanities subjects include: Real estate, Construction, Agriculture, Transport & storage, Water supply & waste, Elect' & gas, etc.

Stock by subject area

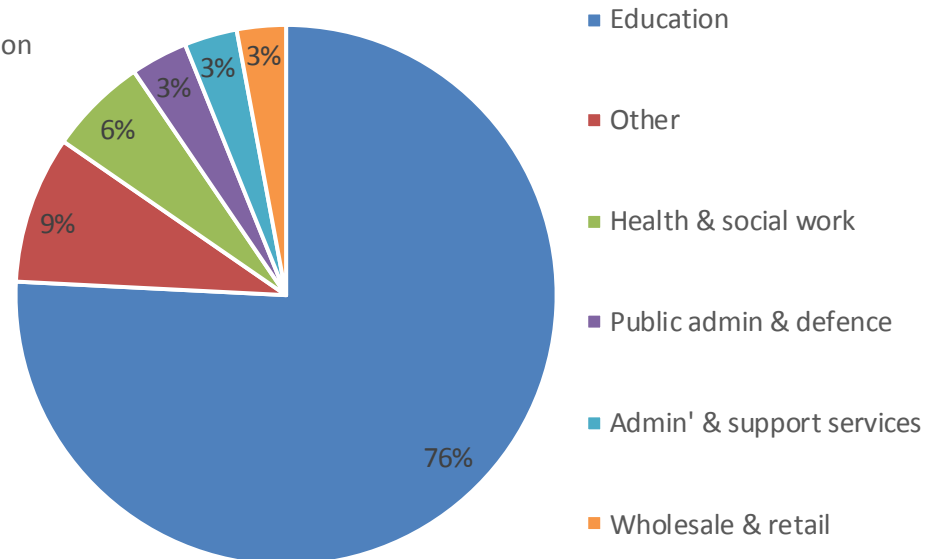
Sectoral employment stock mix per degree subject

Arts



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

Education



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

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.



Annex A – List of consultees

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List of consultees

Staff from the following organisations were consulted as part of this detailed research exercise:

- ADS (Aerospace Defence Security Sector Body)
- CBI
- Colleges NI
- Construction Industry Training Board NI;
- Creative and Cultural Skills
- Creative Skillset
- Department of Culture Arts and Leisure
- Department for Education
- Department of Health and Social Services and Public Safety
- Energy & Utility Skills
- Engineering Training Council
- e-Skills
- Improve-FDSS (Food & Drink Sector Skills)

List of consultees contd.

Staff from the following organisations were consulted as part of this detailed research exercise:

- Invest NI
- Lantra
- Matrix
- Moy Park
- Momentum (IT Skills Organisation)
- People 1st
- Queens University Belfast
- Skills for Health
- Skills for Justice
- Summit Skills/ Specialist Engineers Contracting (SEC) Group
- Ulster University

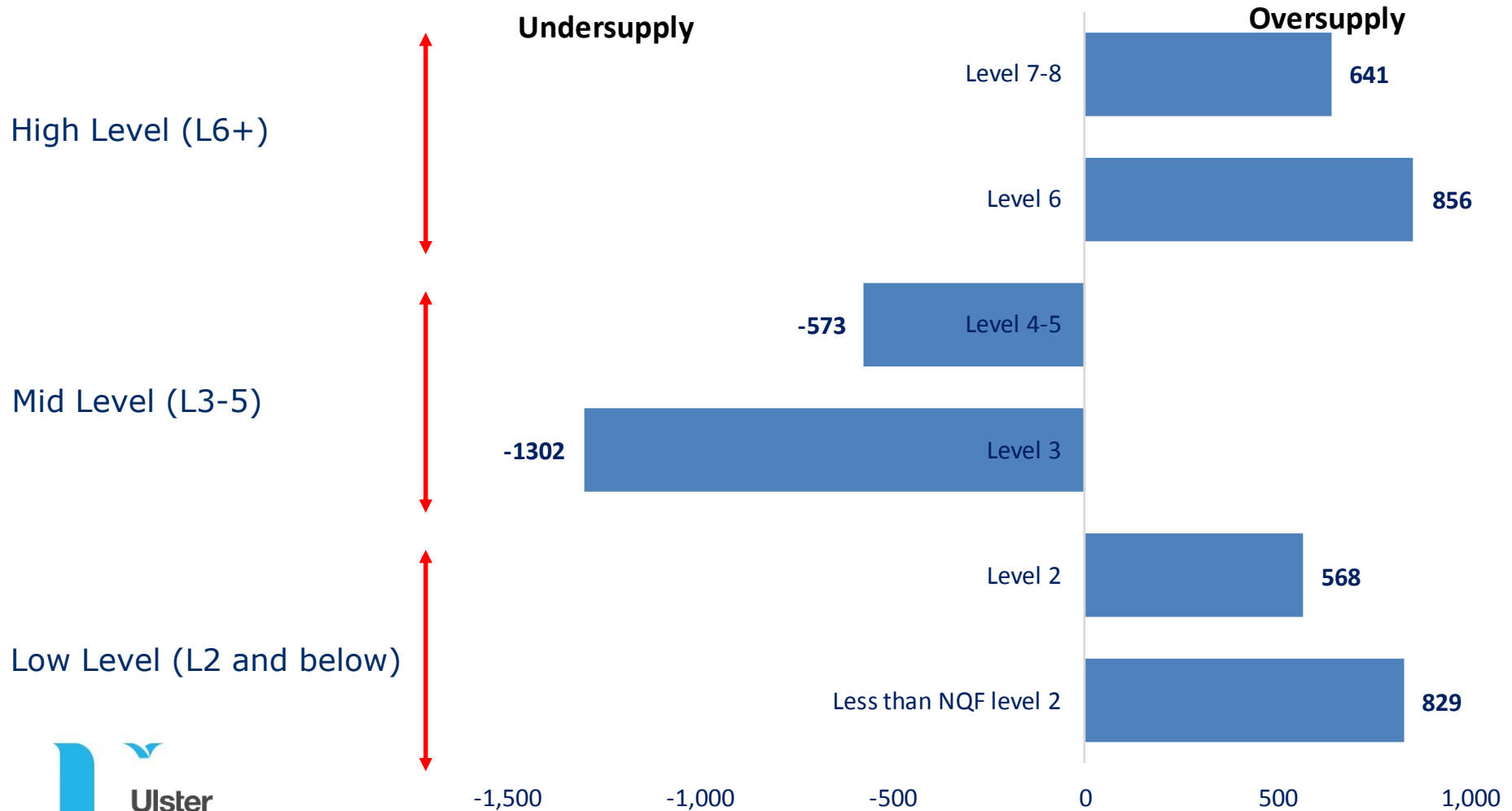


Annex B1 – Baseline Scenario

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Supply Gap – NQF Level

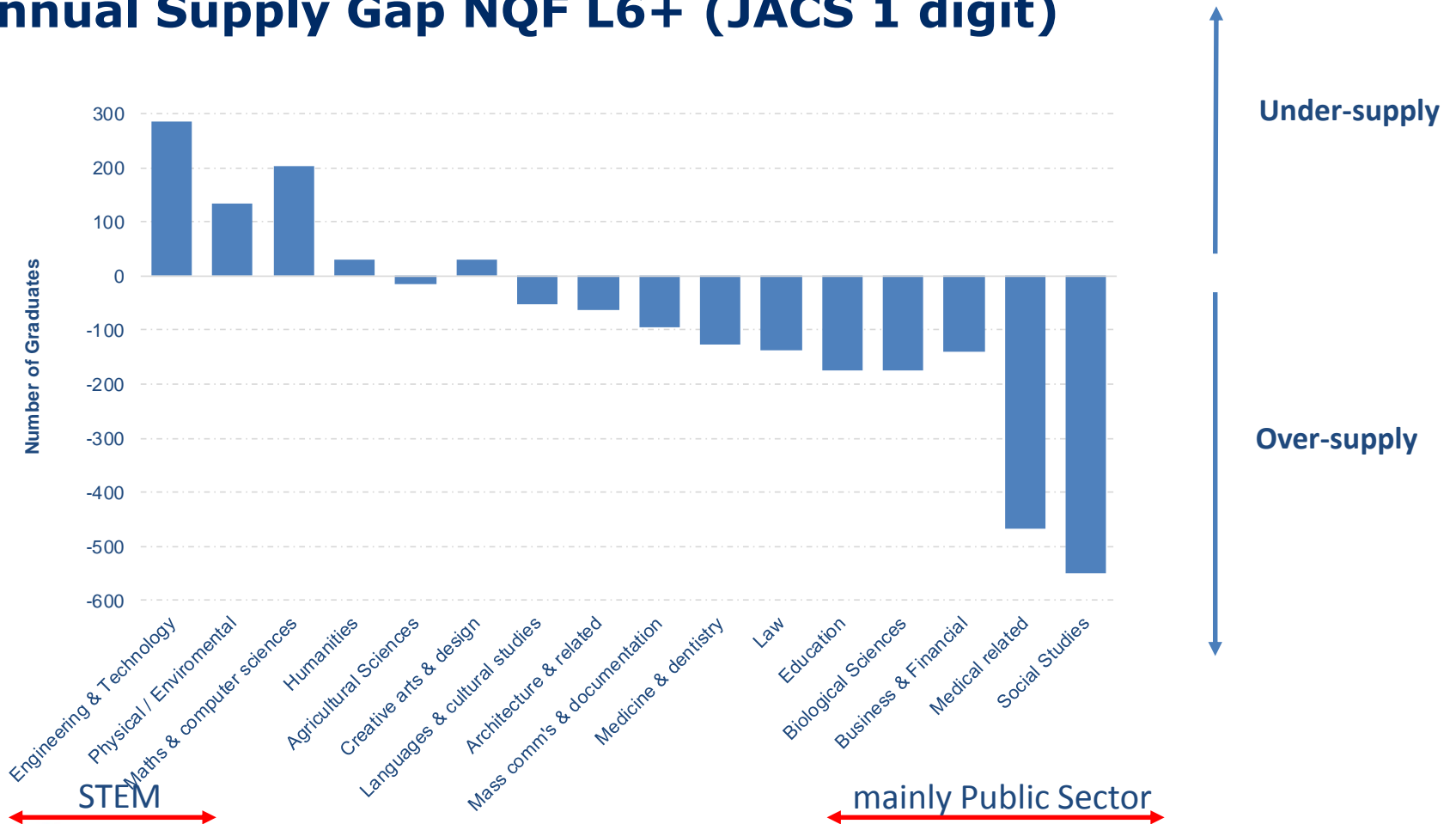
Annual labour market supply gap (NQF L1 to L8)



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

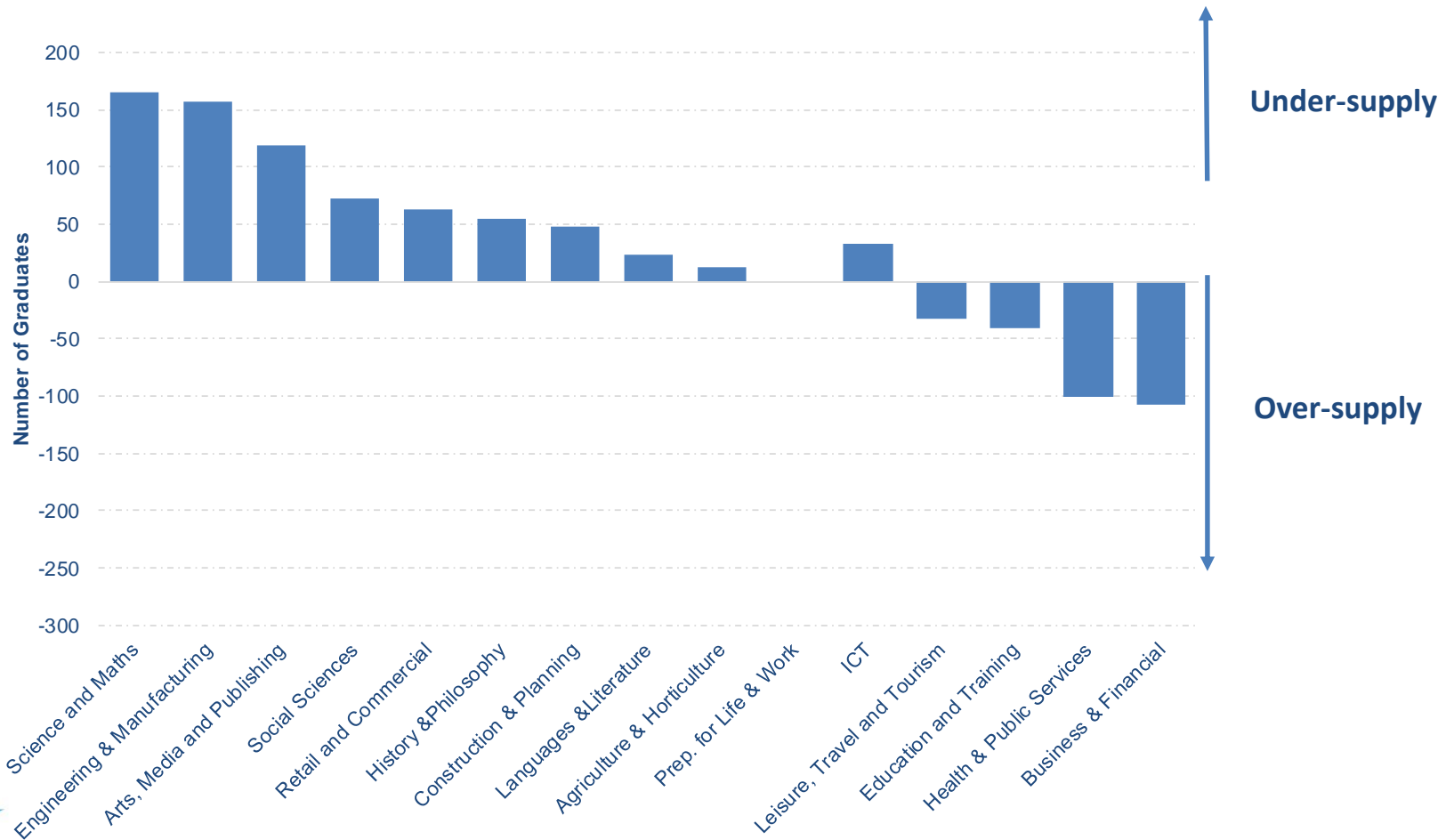
NQF level 6+ Supply Gap – Broad subject area

Annual Supply Gap NQF L6+ (JACS 1 digit)



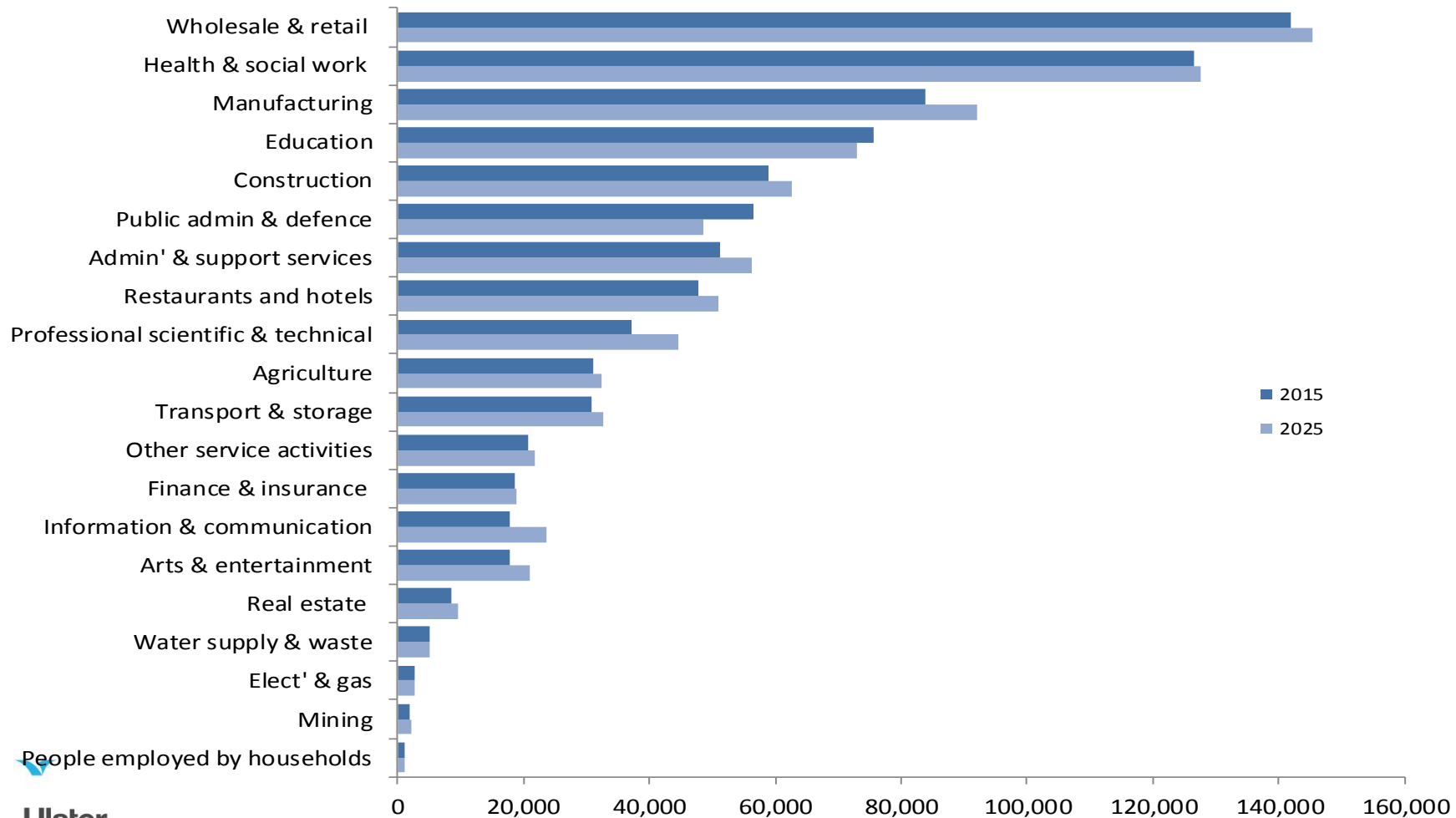
NQF level 6+ Supply Gap – Broad subject area

Annual Supply Gap NQF L4-5 (SSAs 1 digit)



Employment projections by sector

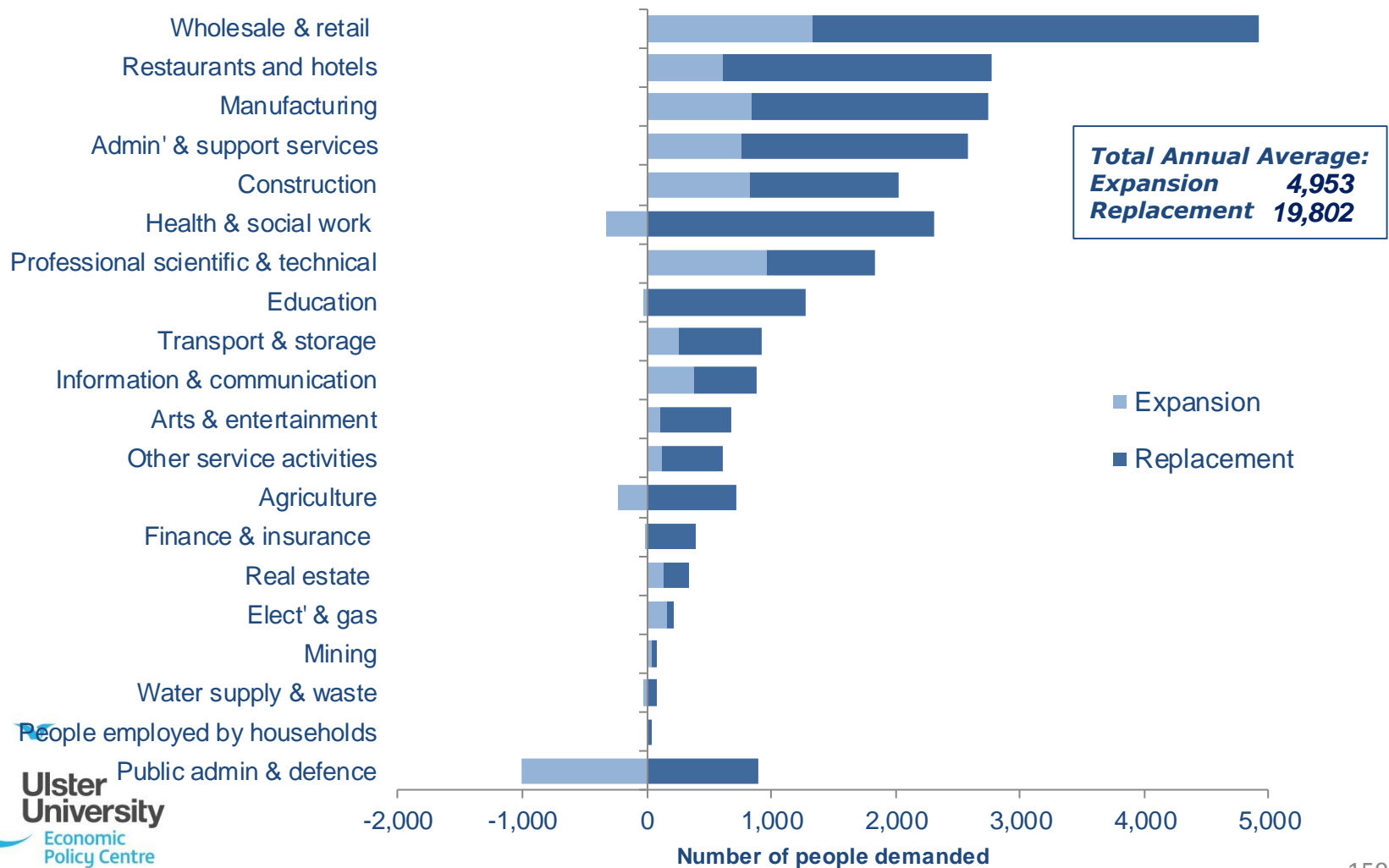
Total employment by 1 digit SIC (2015 and 2025)



Employment projections by sector

Annual average requirement by industry (SIC 1 digit)

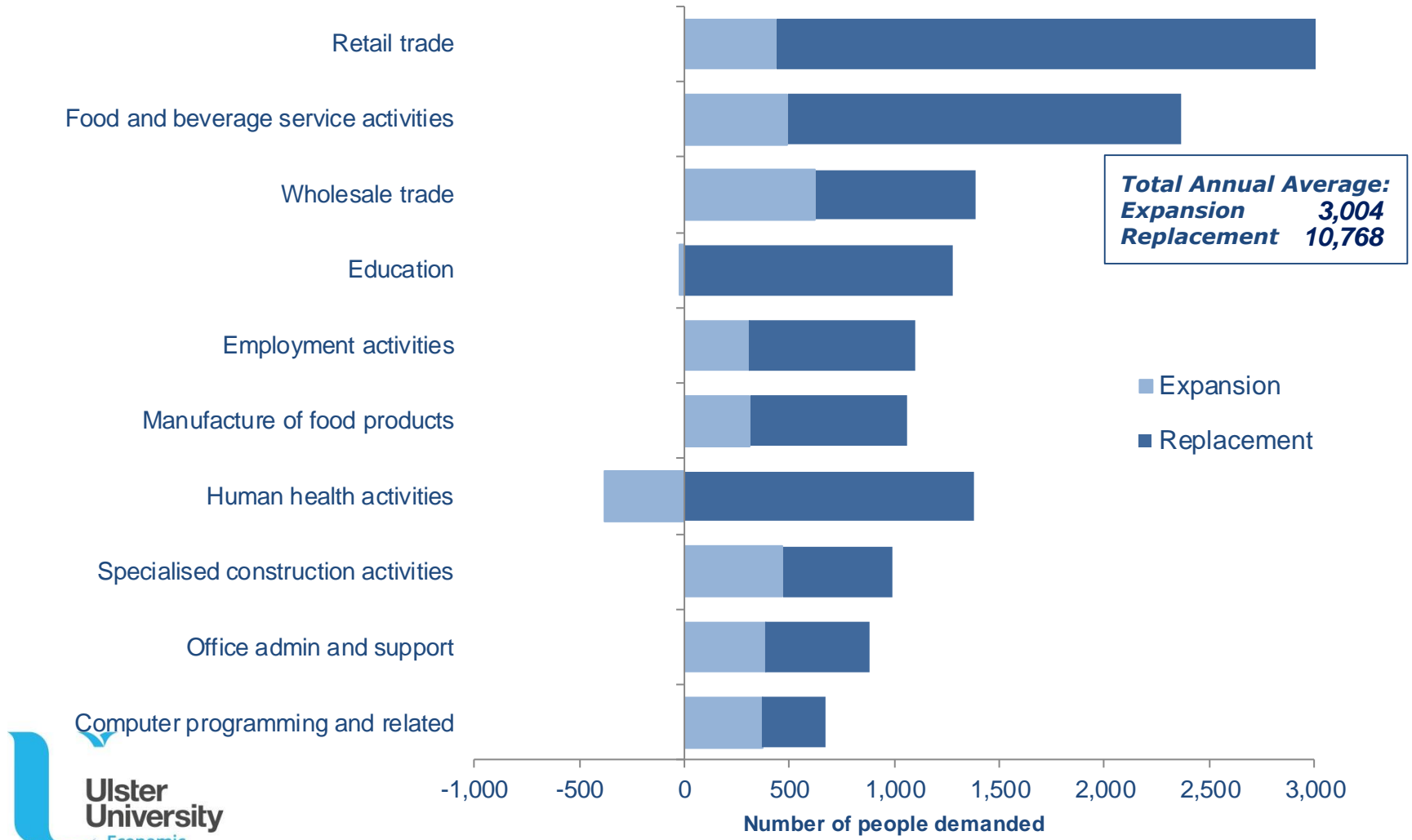
Net Requirement from Education and Migration



Employment projections by sector

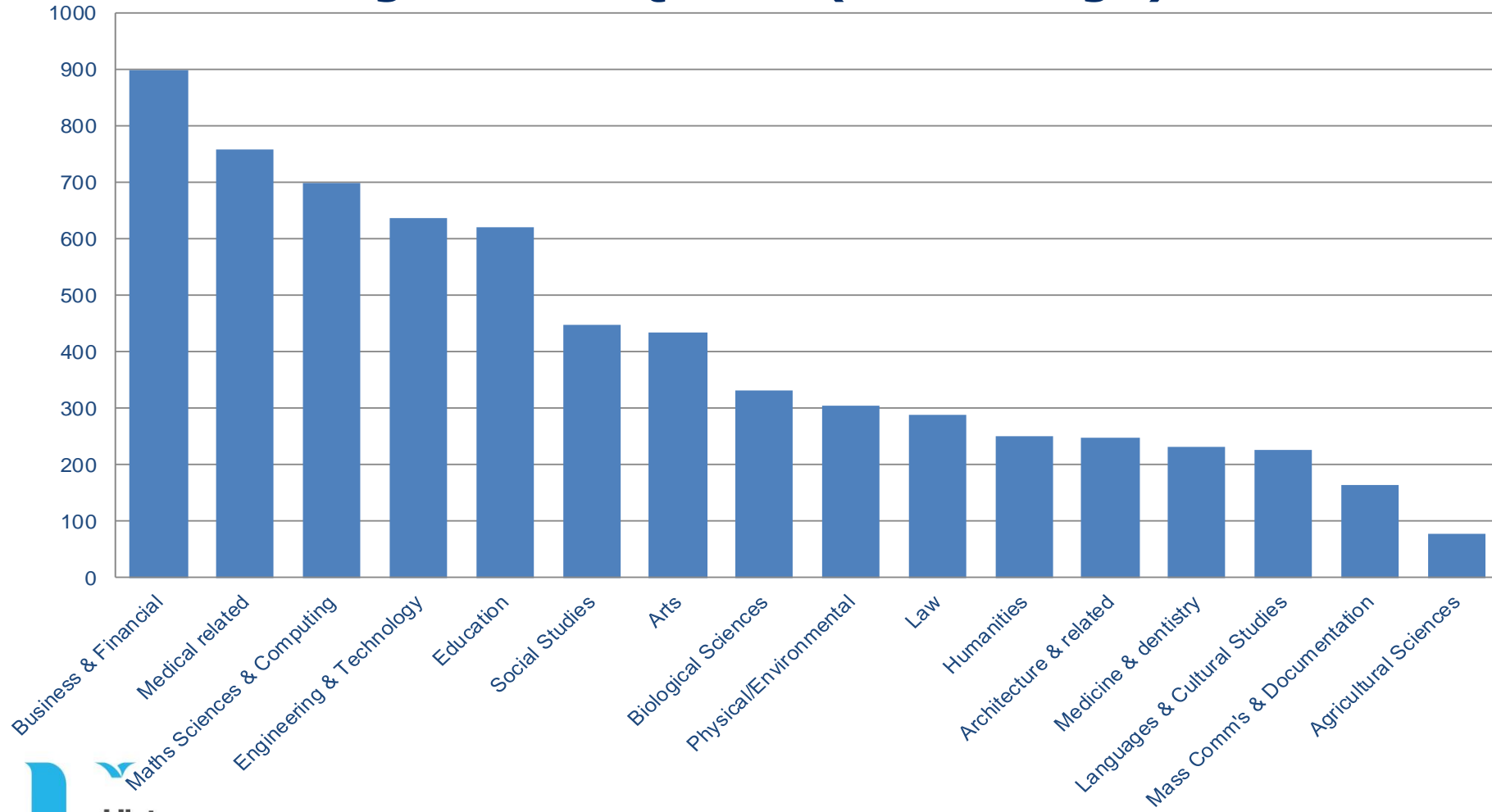
Top 10 Industry Sectors (SIC 2 digit)

Net Requirement from Education and Migration



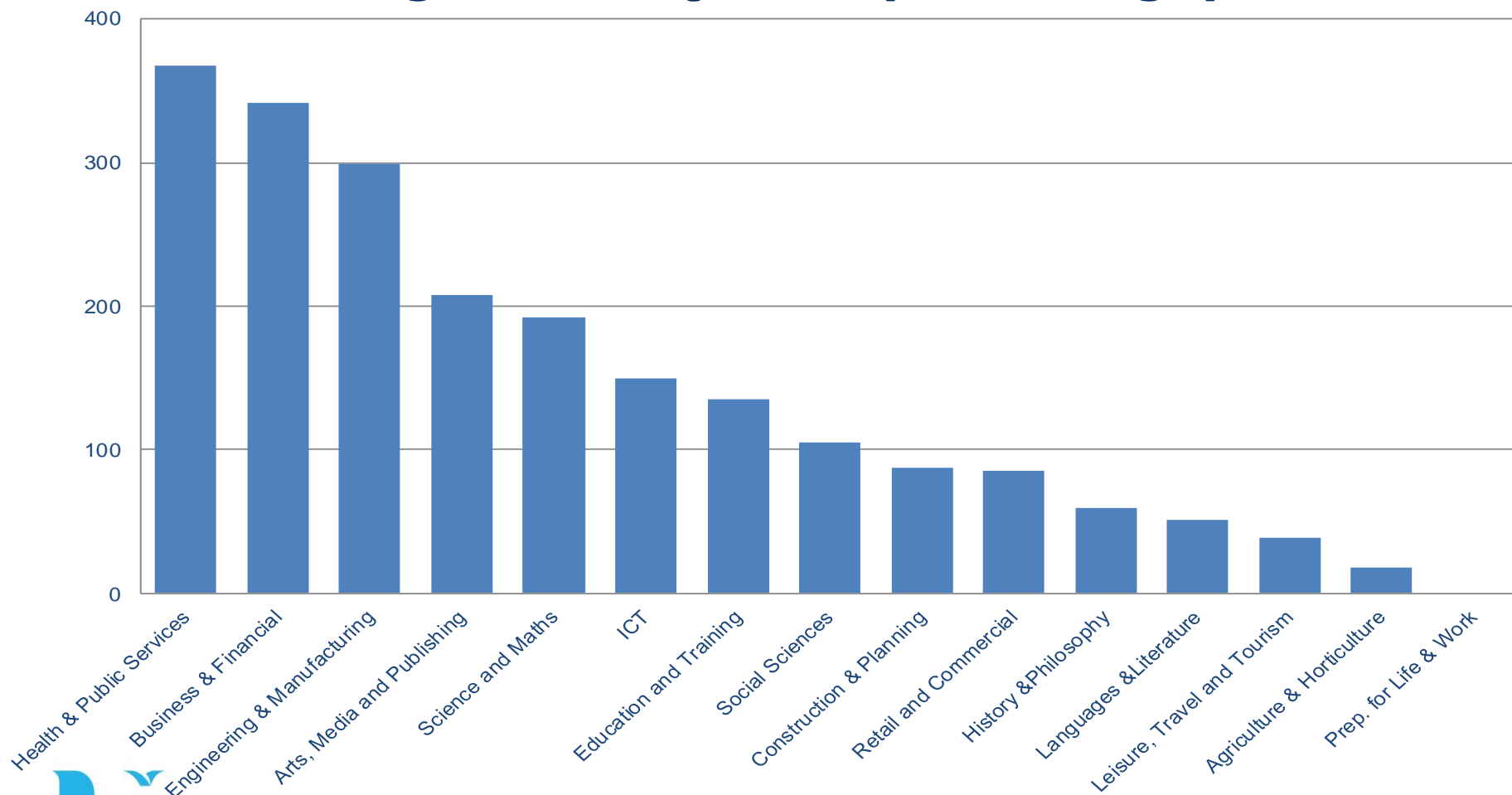
Demand for L6+ qualifications

Annual Average Skills NQF L6+ (JACS 1 Digit)



Demand for L4-5 qualifications

Annual Average Skills NQF L4-5 (SSAs 1 Digit)



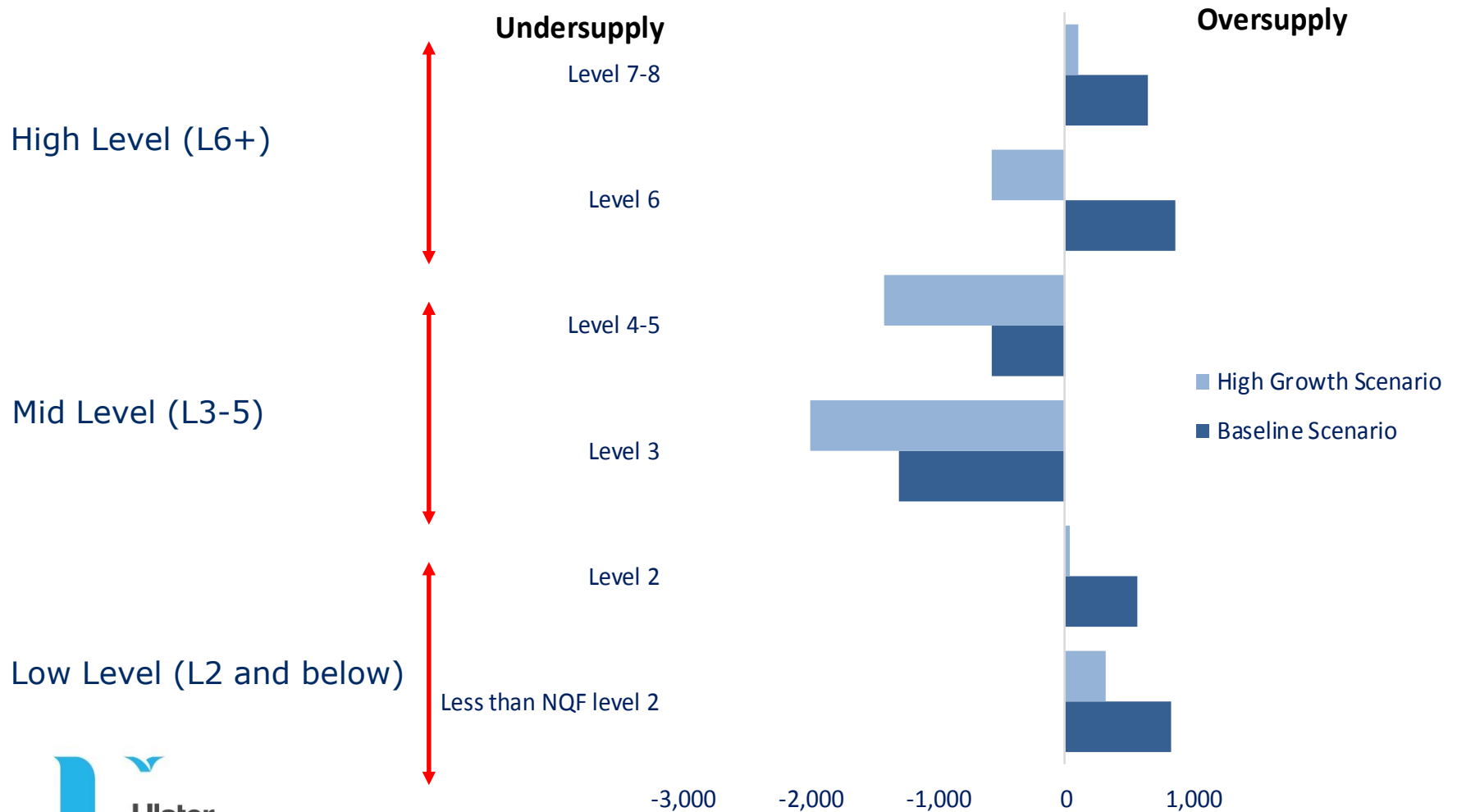


Annex B2 – Baseline Scenario vs. High Growth Scenario

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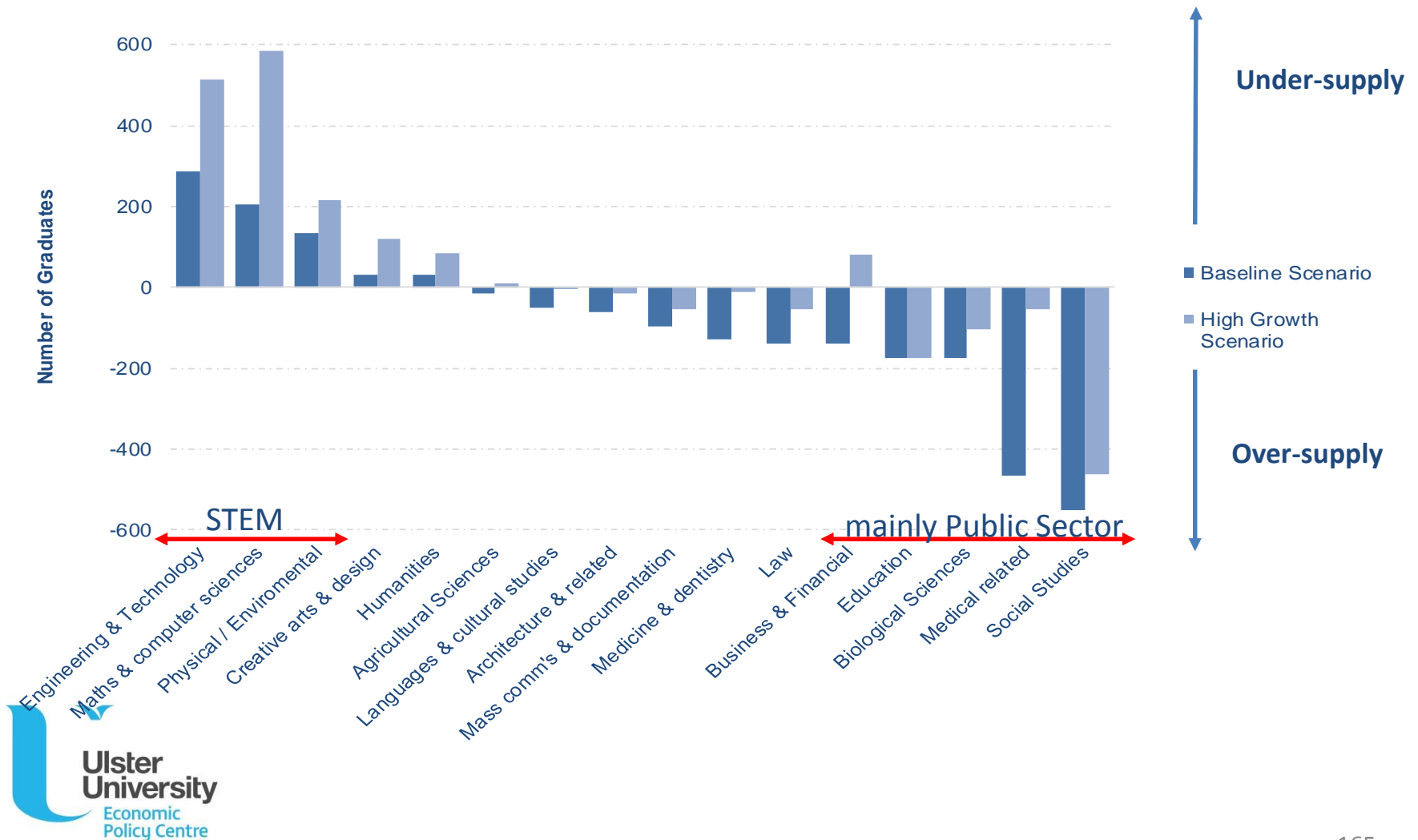
Supply Gap – NQF Level

Annual labour market supply gap (NQF L1 to L8)



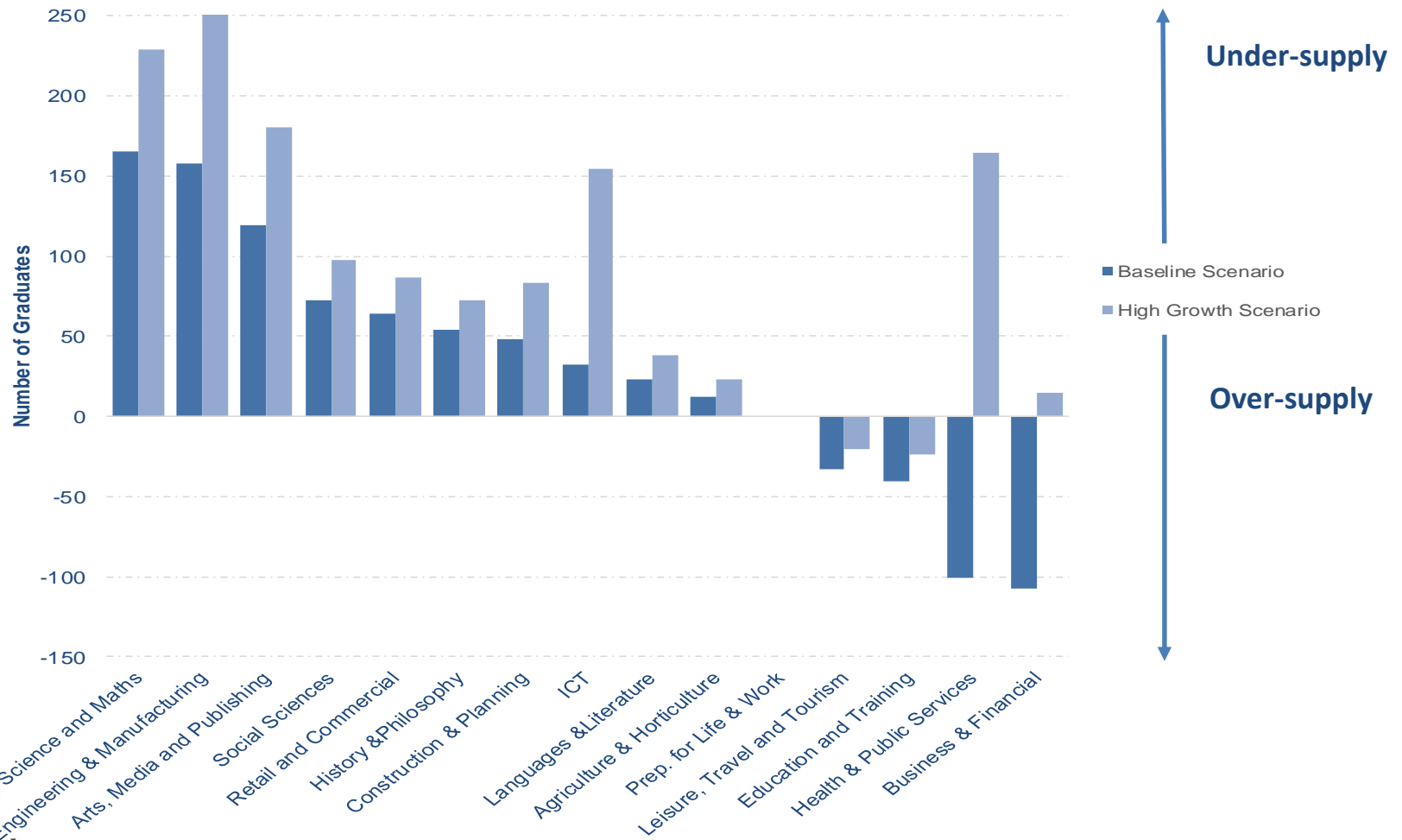
NQF level 6+ Effective Supply Gap

Annual Effective Supply Gap NQF L6+ (JACS 1 digit)



NQF level 4-5 Effective Supply Gap

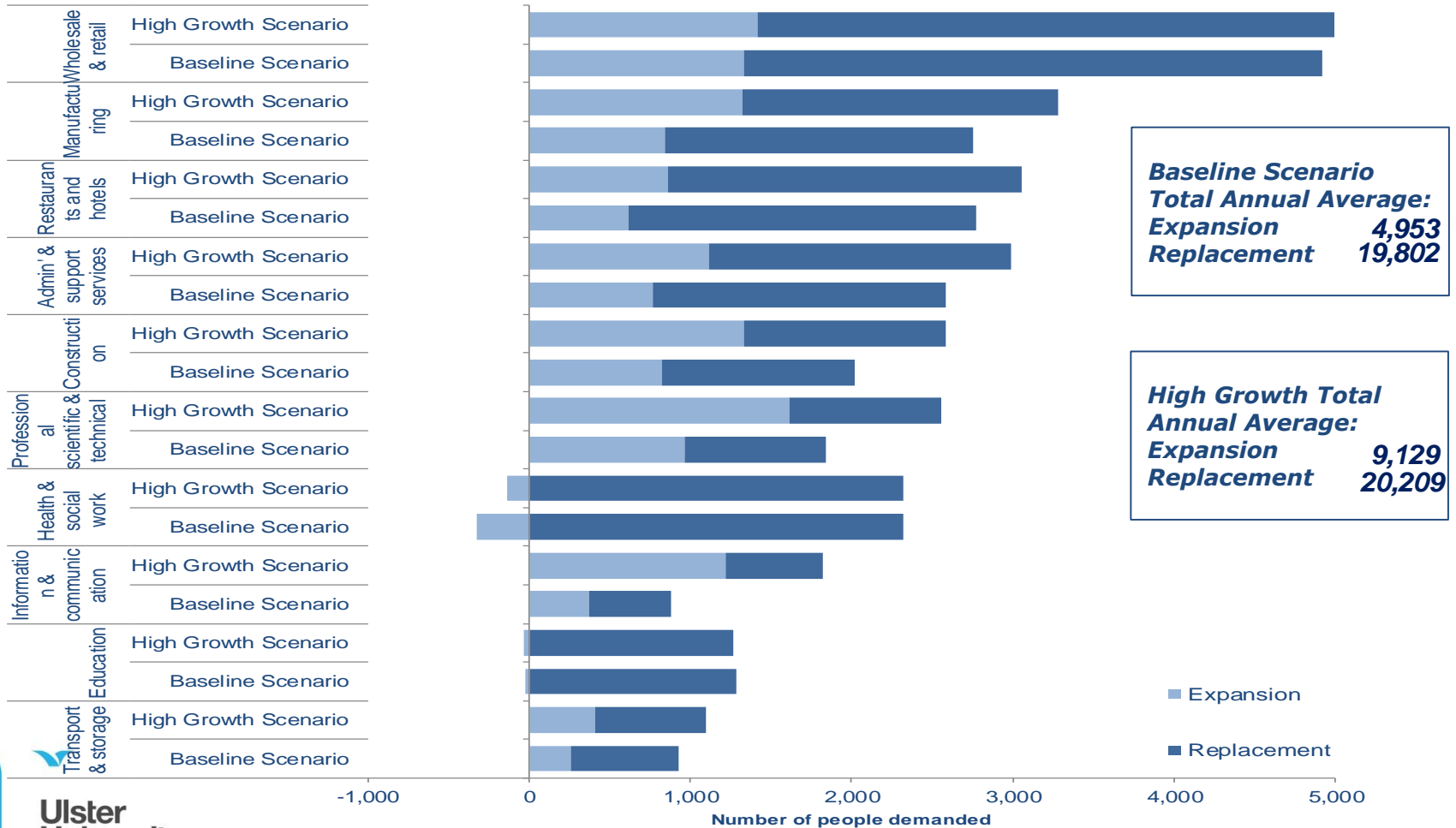
Annual Effective Supply Gap NQF L4-5 (SSAs 1 digit)



Employment projections by sector

Annual average requirement by industry (SIC 1 digit)

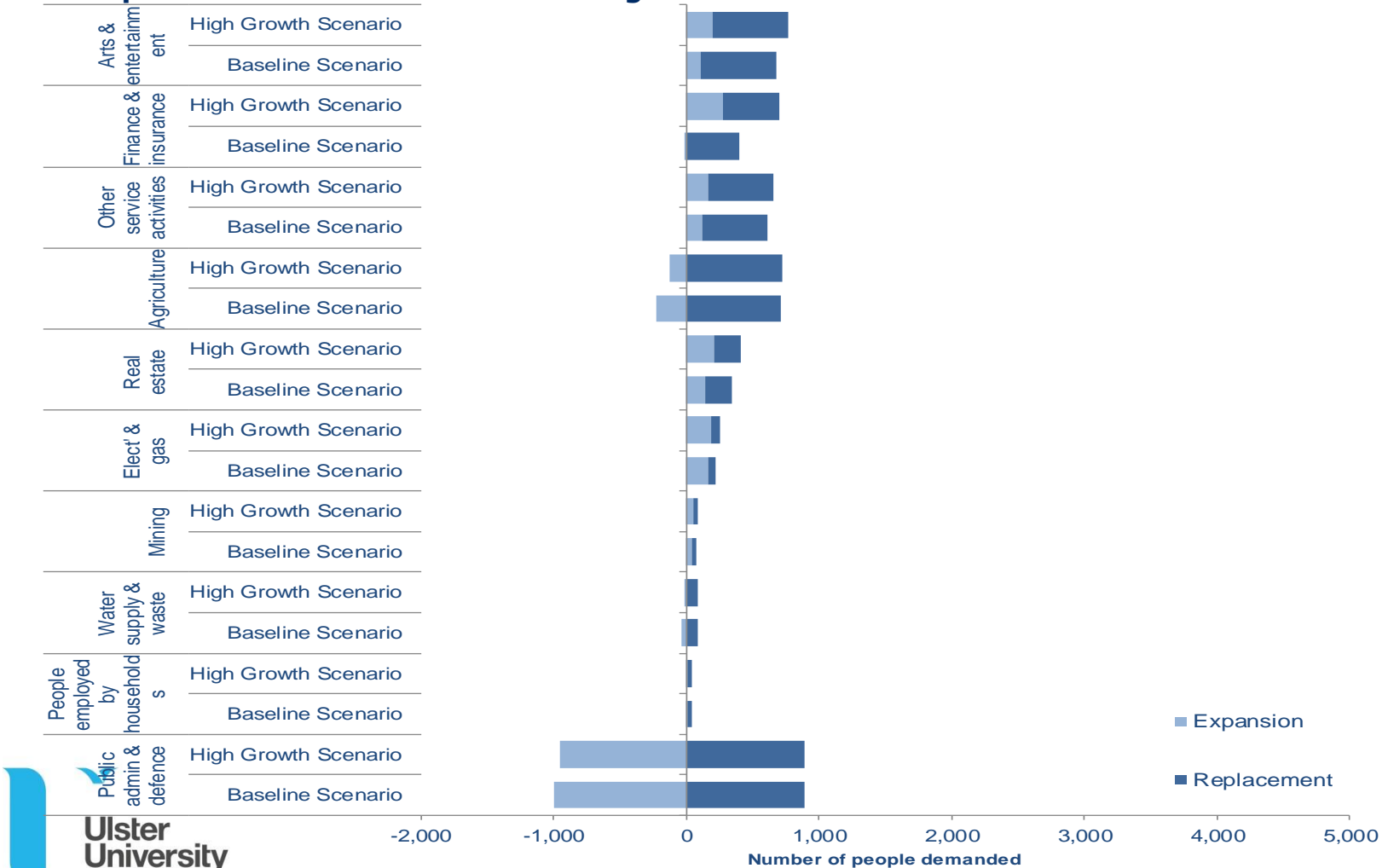
Net Requirement from Education and Migration



Employment projections by sector

Annual average requirement by industry (SIC 1 digit)

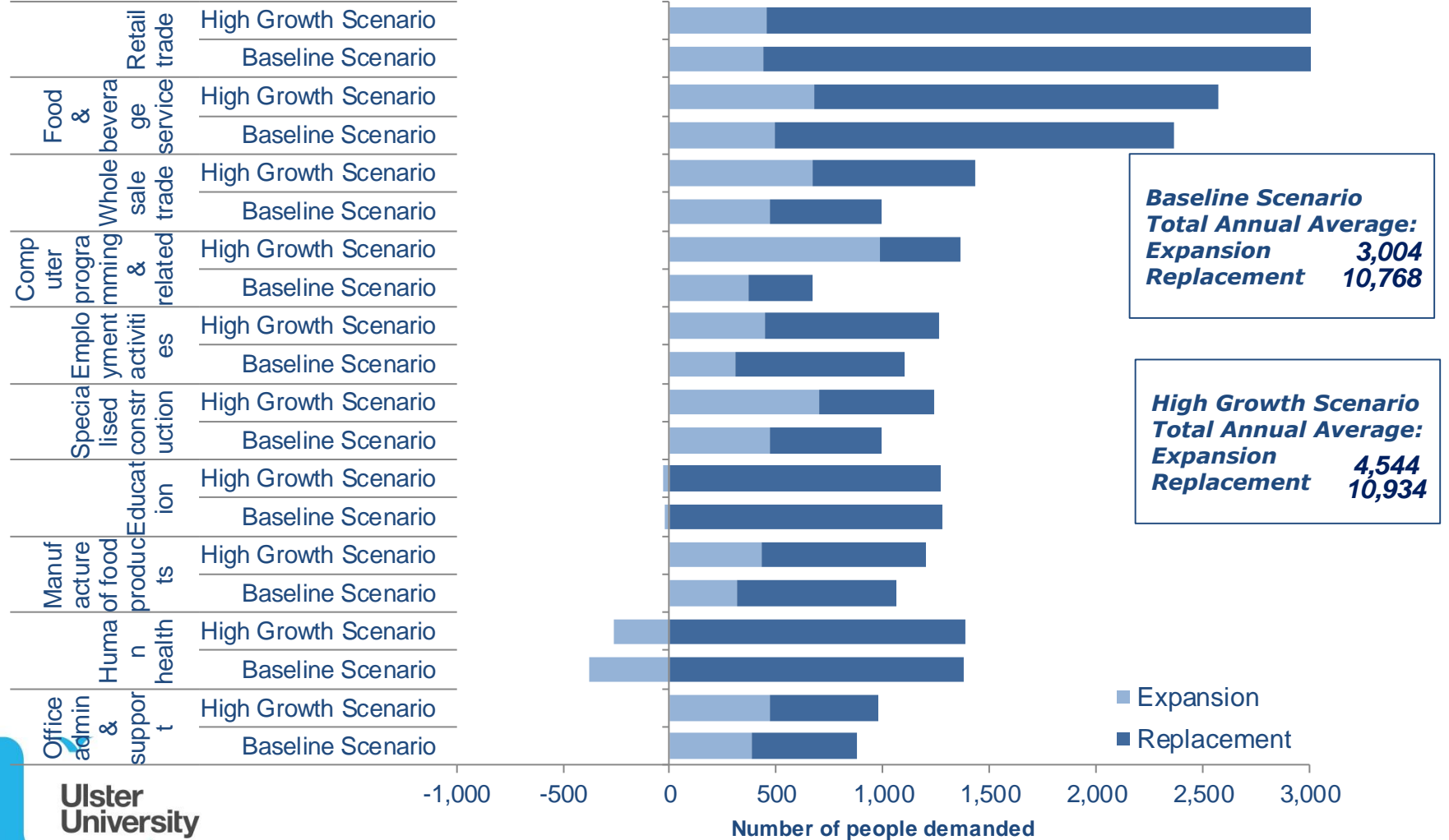
Net Requirement from Education and Migration



Employment projections by sector

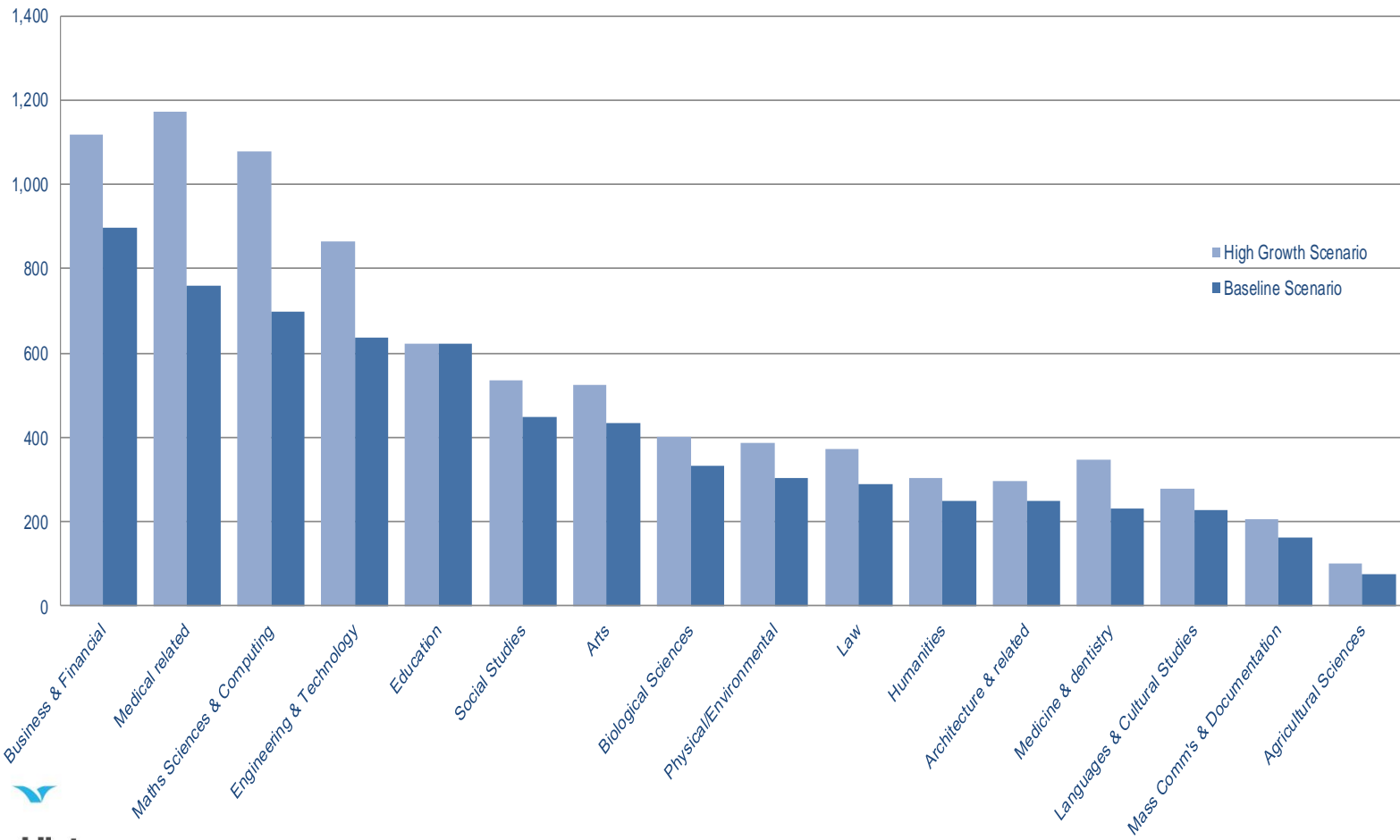
Top 10 Industry Sectors (SIC 2 digit)

Net Requirement from Education and Migration



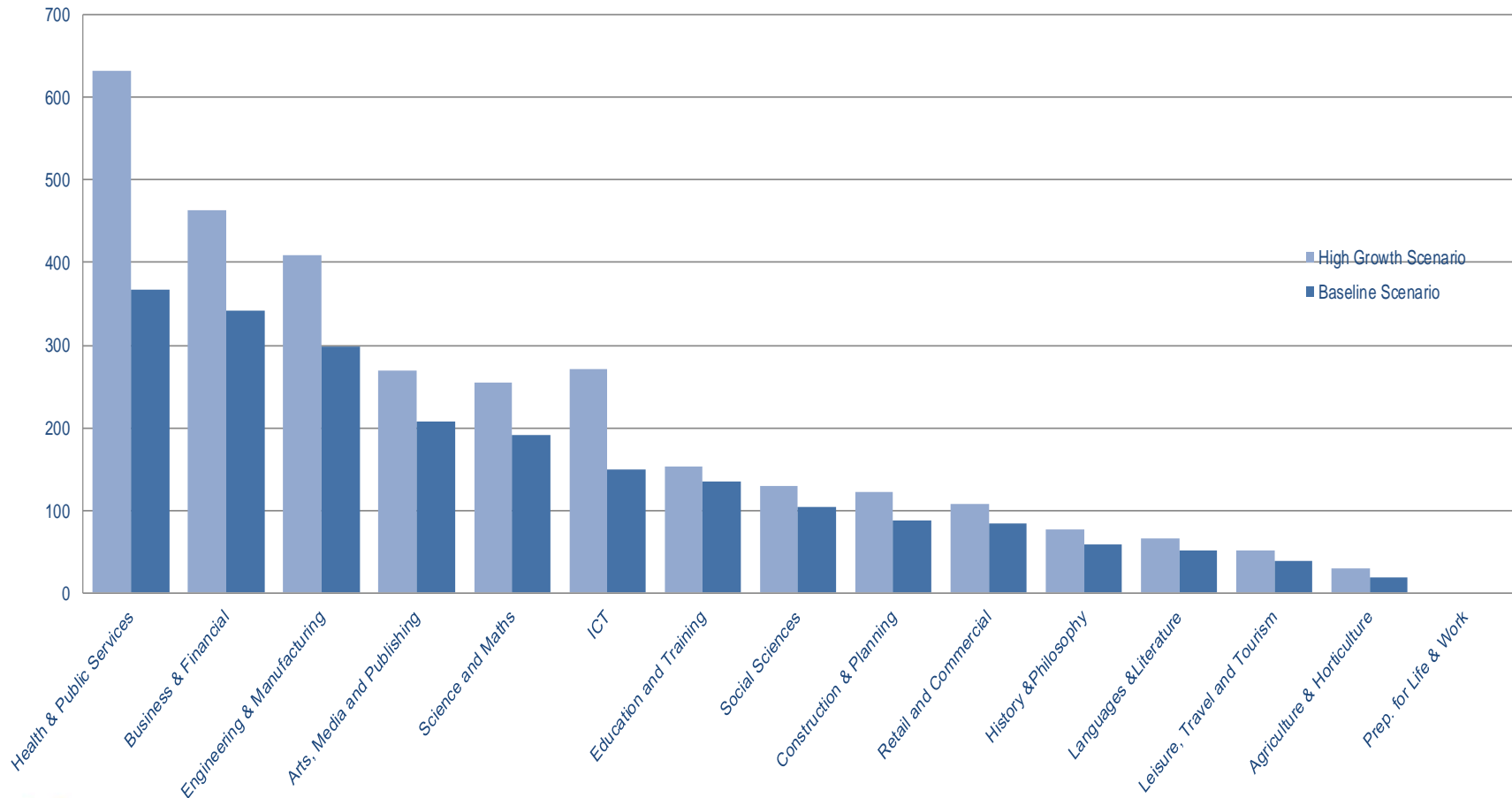
Demand for L6+ qualifications

Annual Average Skills NQF L6+ (JACS 1 Digit)



Demand for L4-5 qualifications

Annual Average Skills NQF L4-5 (SSAs 1 Digit)





Annex C – Comparisons with previous DEL modelling

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Differences from previous work (1)

DEL's most recent skills forecasting project was undertaken by Oxford Economics (OE). The associated report, '*Preparing for a lower corporation tax environment*', was published in 2012. There are a number of differences between the current project and the modelling undertaken in 2012:

- **Different underlying model of the economy:** The Skills Barometer is based upon the UUEPC economic model. This is a new economic model developed with Cambridge Business School. All workings of the model are based on recently estimated equations. Therefore a given scenario will result in different impacts compared to the OE model.
- **Weaker economic outlook:** The baseline UUEPC model is associated with a challenging jobs outlook. To place this in context, the NI economy created 13.7k jobs p.a. in 2012-14. The UUEPC model forecasts annual job growth of 3.9k jobs per annum over the coming decade. [N.B. this skills barometer also applies a High Growth Scenario].
- **Improved data usage:** Additional years of LFS data have been integrated within the analysis to improve robustness. Furthermore, data has also been linked, where possible, to the 2011 Census which was unavailable at the time of the OE study.

Differences from previous work (2)

Different Corporation Tax (CT) modelling:

- The most recent OE skills modelling used a CT model which projected an impact of 58k jobs above the baseline by 2030. The Skills Barometer high growth scenario is informed by more recent corporation tax modelling where the projected impact is lower. It is now estimated at approximately 34k jobs above the baseline by 2033.
- The impact is lower because of the reduction in UK Corporation Tax rate. The current rate of UK Corporation Tax is 20% falling to 19% in 2017 and 18% in 2020, which compares to a rate of 28% in 2010.
- The skills barometer also reflects changes to the baseline scenario to account for wider announcements in the July 2015 Budget.
- The Skills Barometer uses a 10 year forecasting horizon, this is deemed an appropriate time period for planning skills policy. Only 15k of the total projected employment growth from CT is expected to be created in the period 2015 to 2025. It is important to note that the high growth scenario assumes a greater level of job creation than would be achieved through a reduction in CT alone.

Differences from previous work (3)

- **Skills modelling:** A new skills forecasting model has been developed as part of the Skills Barometer. There are some differences in approach, notably that the new model is a 'stock-flow' model where all outputs are linked within a single system.
- **Level of detail:** Previous modelling for DEL has been undertaken at a relatively high level. Outputs from the Skills Barometer include estimates for every 2 digit SIC code and every 3 digit SOC code in the economy.
- **Enhanced subject information:** The Skills Barometer includes more detailed subject information compared to previous research. Further Education output has been included within the supply side analysis.
- **Wider NQF analysis:** The UUEPC model includes analysis by each NQF level. Previous modelling for DEL for high skills was undertaken at a subject level on an NQF level 4+ basis. The UUEPC model considers the subject balance at NQF level 4-5 on a SSAs basis, and an NQF level 6+ basis on a JACS basis. Therefore, the UUEPC model and previous modelling undertaken for DEL are not comparable on a subject basis.

Differences from previous work (4)

- **Different replacement demand assumptions:** More recent LFS data is available, which will result in an a different replacement demand calculation. In addition an assumption has been made under the high growth scenario that over time less labour will be available from the pool of unemployed/inactive due to increased labour demand under the scenario.
- **Supply side analysis for Further Education:** The supply side analysis has used preliminary data from the FE Leavers Survey, which was unavailable when the previous research was undertaken. The leavers survey highlighted a high levels of 'upskilling' by people currently in employment within FE. Upskilling will not have been accounted for in previous work, resulting in a lower 'effective supply' within the UUEPC model.
- **Supply side analysis for Higher Education:** An assumption has been made to account for upskilling within the HE sector, with a proportion of level 4-5 qualifications and level 7-8 qualifications assumed to be 'upskilling'. This assumption has been made to reflect the high level of part-time activity, indicating a reasonable level of upskilling. Previous skills forecasting project will not have made an adjustment for upskilling.

Differences in demand

Net requirement (000s)	Oxford Economics		UUEPC
	Aspiration	CTax	High Growth
	2009 (2010-20)	2012 (2011-20)	2015 (2015-25)
Low (NQF 1 and below)	6.2	5.9	4.6
Intermediate (NQF 2)	2.7	2.6	7.3
Intermediate (NQF 3)	7	4.3	6.1
First degree and sub degree (NQF 4-6)	9.5	6.1	9.0
Postgraduate (NQF 7-8)	2.4	1.8	2.4
Low (NQF 1 and below)	22%	28%	16%
Intermediate (NQF 2)	10%	13%	25%
Intermediate (NQF 3)	25%	21%	21%
First degree and sub degree (NQF 4-6)	34%	29%	31%
Postgraduate (NQF 7-8)	9%	9%	8%

- Leavers survey data provides evidence that few people leave education with 'low qualifications' to fulfil demand for low skill occupations.

FE leavers data indicates that the majority of people in employment 6 months after qualifying from a 'low skill' qualification were already in employment prior to commencing study.

This indicates that 'low skill' positions are mostly filled by people already in the labour market. Therefore a lower proportion of the 'net requirement' from education will be for persons with low qualifications.

- A higher replacement demand is the driving factor causing overall demand to be larger than in the 2012 work.

Differences in stock

Stock	Oxford Economics		UUEPC		
	Aspiration (2009)	12.5% CT rate (2012)	High Growth		
	2020	2020	Today	2020	2025
Low (NQF 1 and below)	10%	20%	25%	23%	19%
Intermediate (NQF 2)	14%	14%	17%	19%	20%
Intermediate (NQF 3)	24%	24%	22%	22%	21%
First degree and sub degree (NQF 4-6)	39%	32%	28%	29%	31%
Postgraduate (NQF 7-8)	13%	10%	8%	8%	8%

- The 2009 OE scenario is not directly comparable as it was based on the then PSA1 target to halve the productivity gap. Therefore job creation for low and intermediate skills occupations was very low. The UUEPC and 2012 OE modelling are based on a wider profile of job creation.
- Stock is calculated within the overall 'stock flow' nature of the UUEPC model. It is calculated exogenously within the OE framework.
- Due to the slow nature of change within the stock profile, NI will have a 'low qualifications' structure for a longer period of time. This finding is consistent with the most recent supply data.



Annex D – Individual Sector Comments

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Sector comments

Introduction

A large number of sector/ industry bodies were consulted as part of the research programme. These organisations were asked to provide a range of both qualitative and quantitative information in relation to the skills requirements for their sectors. This section sets out a summary of those comments.

Aerospace

- **Potential for significant growth** – the aerospace sector is anticipating very significant growth in NI over the next 10 years. The sector's stated mission is to double revenues to £2bn p.a and increase employment by 50% from 8,000 to 12,000 (as per NI Partnering for Growth). Achieving this growth is linked to the success of Bombardier (as the sector's largest employer) and their C-Series, but the sector locally also works extensively with Boeing and Airbus providing diversification.
- **Skills requirements** – in addition to the strong focus on engineering, the following skills needs were also highlighted:
 - Technical sales and marketing – with aerospace knowledge/ expertise;
 - Commercial and contract skills;
 - CNC (Computer Numerical Control) machinists.

Sector comments

Retail/ Hospitality

- **Customer service skills** – increased emphasis must be placed on developing future employees with customer service skills.
- **Key employment sector in the economy** – the retail and hospitality sectors are very large employers across the economy and is key employer for people with low levels of formal qualifications.
- **Provision of employability skills** – the sector also provides many people with higher levels of formal qualifications with their first employment experience. It is therefore important in terms of providing the opportunity for people to develop employability and customer service skills which can be taken to other occupations.

Justice

- **In-house training** – specifically police, prisons and fire service – there is a tradition of recruiting staff at a junior level with limited formal qualifications and providing training on-the-job throughout their careers. Furthermore there is limited, if any, recruitment at a senior level in these sectors. This places a very significant emphasis on in-house training rather than a requirement on the education system (HE and FE).

Sector comments

Creative industries

- **Commercial and business acumen skills** – The work profile of the sector is volatile and therefore employment is much more freelance based than other sectors. This in turn creates a demand for commercial/ business acumen skills as well as industry technical skills.
- **Multi-skilling** – employees in the creative industries increasingly need a broad range of both creative and technical skills and must be able to deliver on multiple platforms. The nature of the work requires employers to be flexible and agile.
- **On-the-job training** – The sector covers activities such as delivering live events, theatre productions, music and other entertainment and demands technical skills in areas such as lighting, sound, stage management, rigging and the use of digital technologies. Employers report that these skills are much better learned “on-the-job” rather than through formal education routes. As a result, the needs of the sector are suited to the apprenticeship model.
- **Skills required in the L3 to L5 range** – moving forward the skills requirements for the sector are forecast to be at the NQF L3 to L5 range and given the growing appetite for on-the-job training, as stated above the industry lends itself to the apprenticeship model being developed by DEL.

Sector comments

Legal sector

- **Emphasis on Commercial Law** – as the economy seeks to shift its emphasis from the public to private sector, there is increasing demand for commercial law experience. This is an emerging trend driven by demand from Foreign Direct Investors but also indigenous companies seeking to export their services.
- **The need for business awareness skills** – new ownership structures within the legal profession have provided opportunities for legal entrepreneurs to emerge. As a result there is a need for business awareness to complement legal knowledge.
- **Greater awareness of the nature of the role** – young people can often make career decisions and subject choices based on their perception of the profession rather than first hand experience of the working environment. As a result there needs to be greater awareness of the role before career decisions are taken.
- **A law degree provides a broad skills set** – a law degree provides graduates with a broad range of skills suitable for employment across many sectors and not just employment in the legal sector. It develops many of the wider employability skills employers demand, such as good communication, critically appraise information and develops the ability to absorb knowledge rather than having acquired technical knowledge which will be used in the workplace.

Sector comments

Construction sector

- **Technical skills shortages still exist** – although the sector has reduced in size significantly following the global financial crisis, the supply of technical skills remains tight across the sector. One reason is that many employees have chosen to leave the sector and have found employment elsewhere. As a result, these skills have been lost.
- **Trend of increased working in GB** – in response to the significant downturn in construction activity locally, many NI based construction firms started to bid for construction contracts in GB (and also internationally). As a result, there is an increasing trend of construction workers travelling overseas to work on large projects. Anecdotally, locally based construction firms have indicated that they intend to continue bidding for overseas work even when growth returns to the local market.

Agriculture/ Land Management

- **Increased need for science and ICT skills in the sector** – increased sophistication in the agricultural sector is increasing the demand for ICT skills. In addition, science/ environmental management qualifications are likely to become more important in response to trends in the sector.

Sector comments

Health sector

- **Currently no requirement for doctors to work in the UK after graduation** – health differs from all other sectors in that the employer (the HSC) funds the HE medical degree courses. Having made this significant investment in the development of future staff, there is no requirement for graduates to stay within the sector or work in the UK. As a result it is more difficult to forecast training requirements.
- **Skills of medical graduates is less of an issue** – this research identified an issue around the wider skills of students leaving HE and FE and their work readiness. Consultations indicated this was less of an issue in the health sector.
- **Forecasts are very policy sensitive** – the health sector is facing increasing demand at a time of austerity, therefore significant reform is required to meet the challenges of an aging demographic. The scale and nature of reform implemented will directly influence the skills required e.g. changing the balance of cases seen by doctors and those dealt with by other health professionals could change the skills sets required. This may require significant change in current working practices and therefore may be implemented more slowly than anticipated.
- **The potential of new technology** – the introduction of new technology has the potential to transform the delivery of health services, however it is very difficult to forecast the rate of technological development and subsequent uptake. This in turn makes skills forecasting in this area difficult to anticipate.

Sector comments

IT sector

- **Significant growth potential** – the sector has indicated there is an IT skills shortage globally, therefore if additional skills are supplied in NI, the potential for growth could be significant. Recent employment growth has been 8% p.a. Consultees also indicated that firms in the sector in NI are turning away work from their parent companies because they do not have the available resource.
- **Low skills of many graduates** – there has been anecdotal evidence suggesting that many graduates with the appropriate technical qualifications are still unsuitable for appointment because they lack other more generic employability skills.
- **Maths & Computer Science and Engineering are the main skills/ qualifications requirements** – the sector recruits from a wide range of degree subject areas because of shortages in the core subject areas of Mathematics & Computer Science and Engineering. Many graduates from other degree disciplines often complete a conversion course prior to joining the sector.

Sector comments

Agri-food sector

- **Largest export generator and significant local employer** – the agri-food sector is, by a significant margin, the largest generator of export revenues for the local economy and is a very large employer.
- **Wide range of skills levels employed** – the sector may have a reputation for employing high numbers of people with low skills but given its scale it also requires relatively large numbers of staff with higher level skills.
- **Language and Sales** – given the export (and international outlook) nature of the industry combining language with sales skills is seen as critically important.
- **Logistics and Distribution Skills** – supply chain structures across the industry requires skills in logistics and distribution.
- **Mathematics, Science and IT also in demand** – similar to most other industries demand for many STEM related subjects is high.

Sector comments

Financial Services

- **Downsizing in traditional areas** – employment in the financial services sector has been on a downward trend over the medium term. This reflects challenges following the global financial crisis but also more fundamental changes in the sector. In particular retail banking has seen a significant number of job losses linked to branch closures as customers move to on-line platforms.
- **Growth identified in other areas** – FinTech is a key focus of FDI growth in the coming years and combines both the need for financial as well as technology related skills. Other areas of anticipated FDI growth within Financial Services includes Funds Management and Business Analytics.

Utility sector

- **There are a number of investment projects currently driving growth** – two large scale projects are driving significant investment in the sector and in turn employment opportunities. These projects are the: Ten Towns project and the Gas to the West project.
- **Project Management and Business Acumen skills are essential** – in addition to the technical engineering skills, project management and business acumen skills are also important in this sector. There should be greater emphasis on developing these skills in the curriculum.

Sector comments

Life and Health Sciences

- **Strong growth has been experienced and is anticipated which is creating skills shortages** – many parts of the sector have grown significantly in recent years and this is forecast to continue. A major constraint to growth is skills shortages in the sciences subjects and some indigenous firms are already looking overseas both in terms of making investments but also to recruit for positions in NI.
- **R&D is an important part of future growth** – the drive up the value chain will increase the demand for R&D skills and in turn PhD level qualifications.
- **Technology driven** – the use of technology is increasing significantly both in terms of the development of solutions/ treatments and also in terms of health care delivery. This covers areas such as connected health, diagnostics and data analytics. This also has an impact in terms of the skills required in future and increase the demand for research skills.

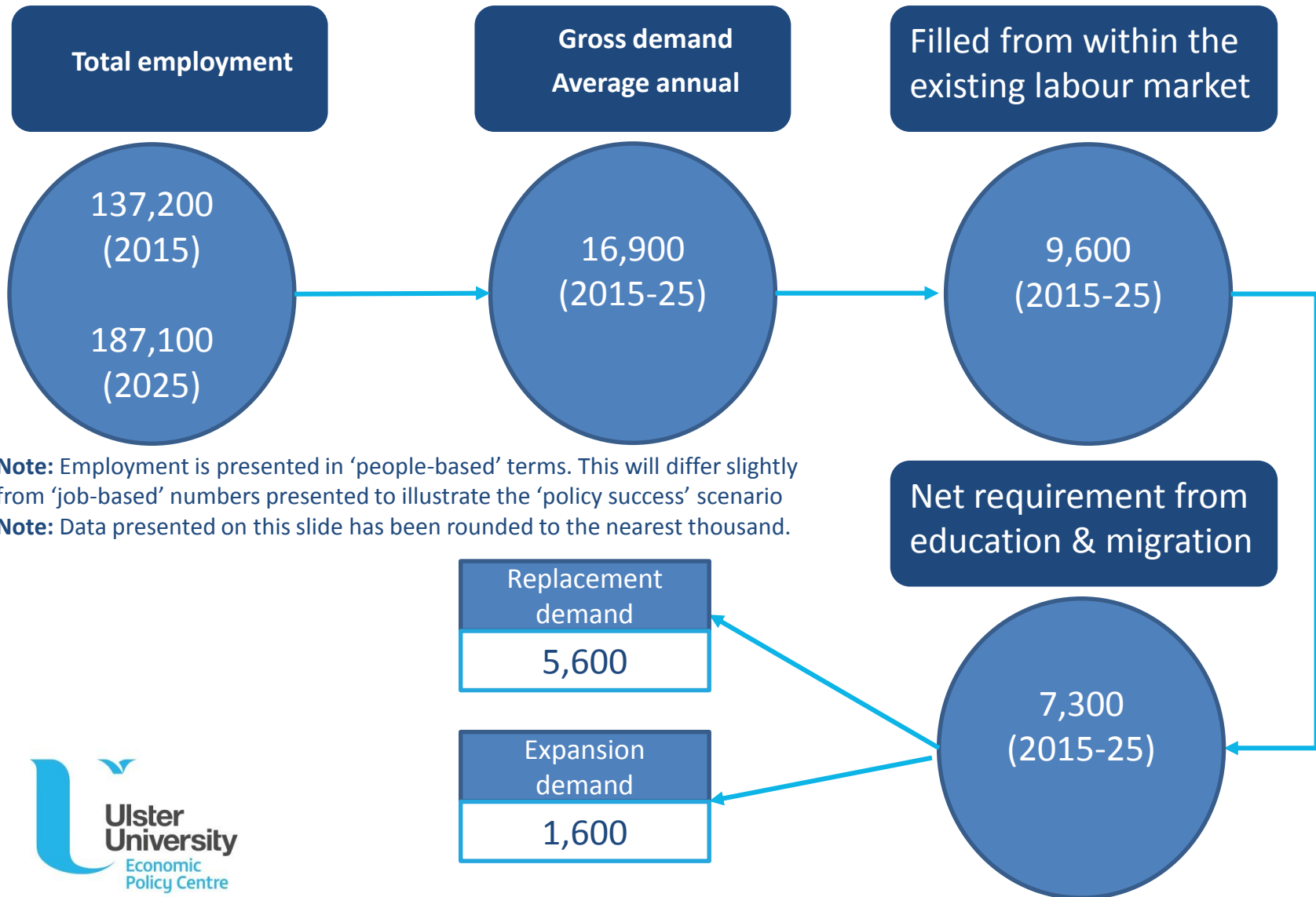


Annex E

NQF Level 2 analysis

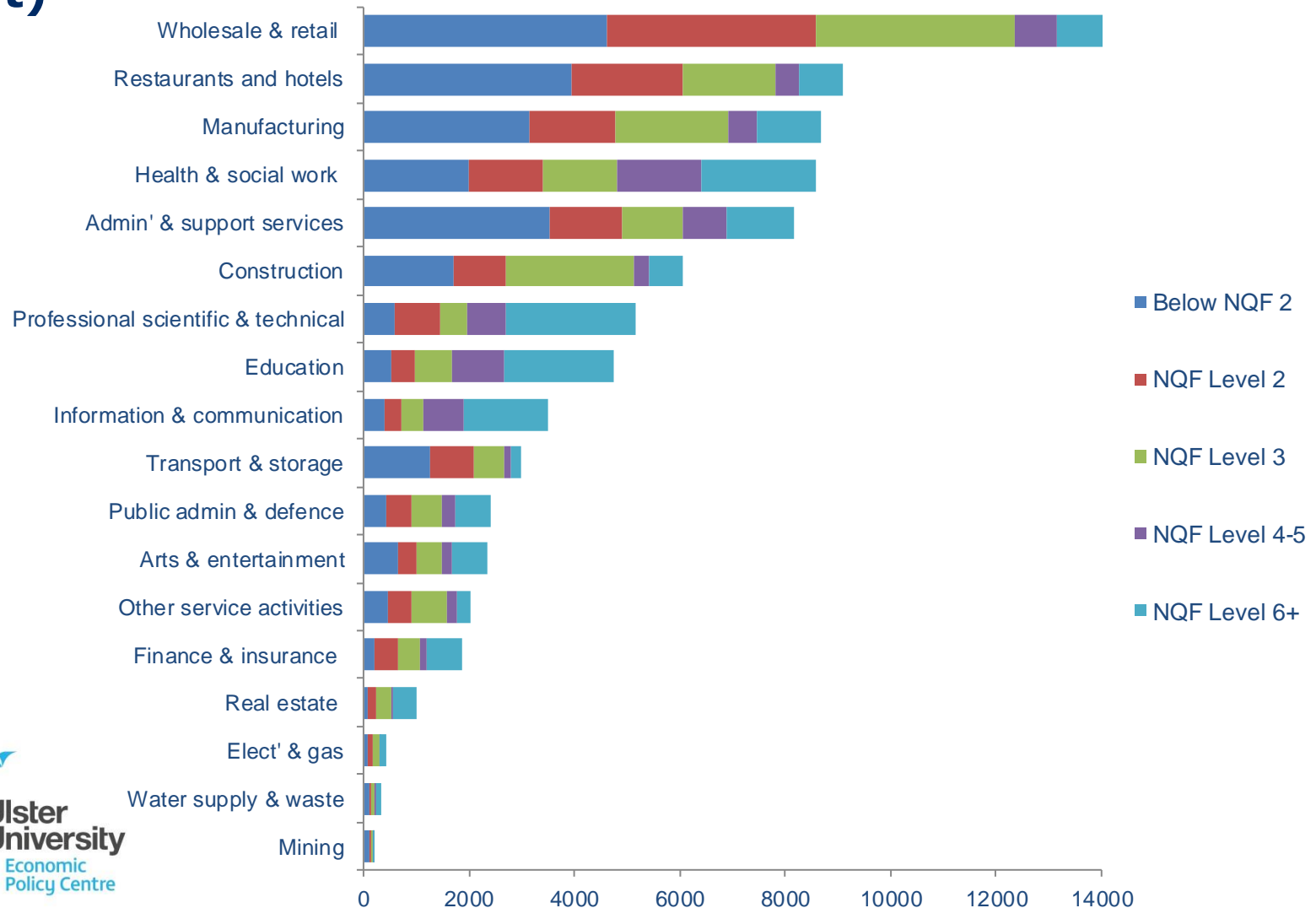
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Overview of demand and supply for NQF level 2



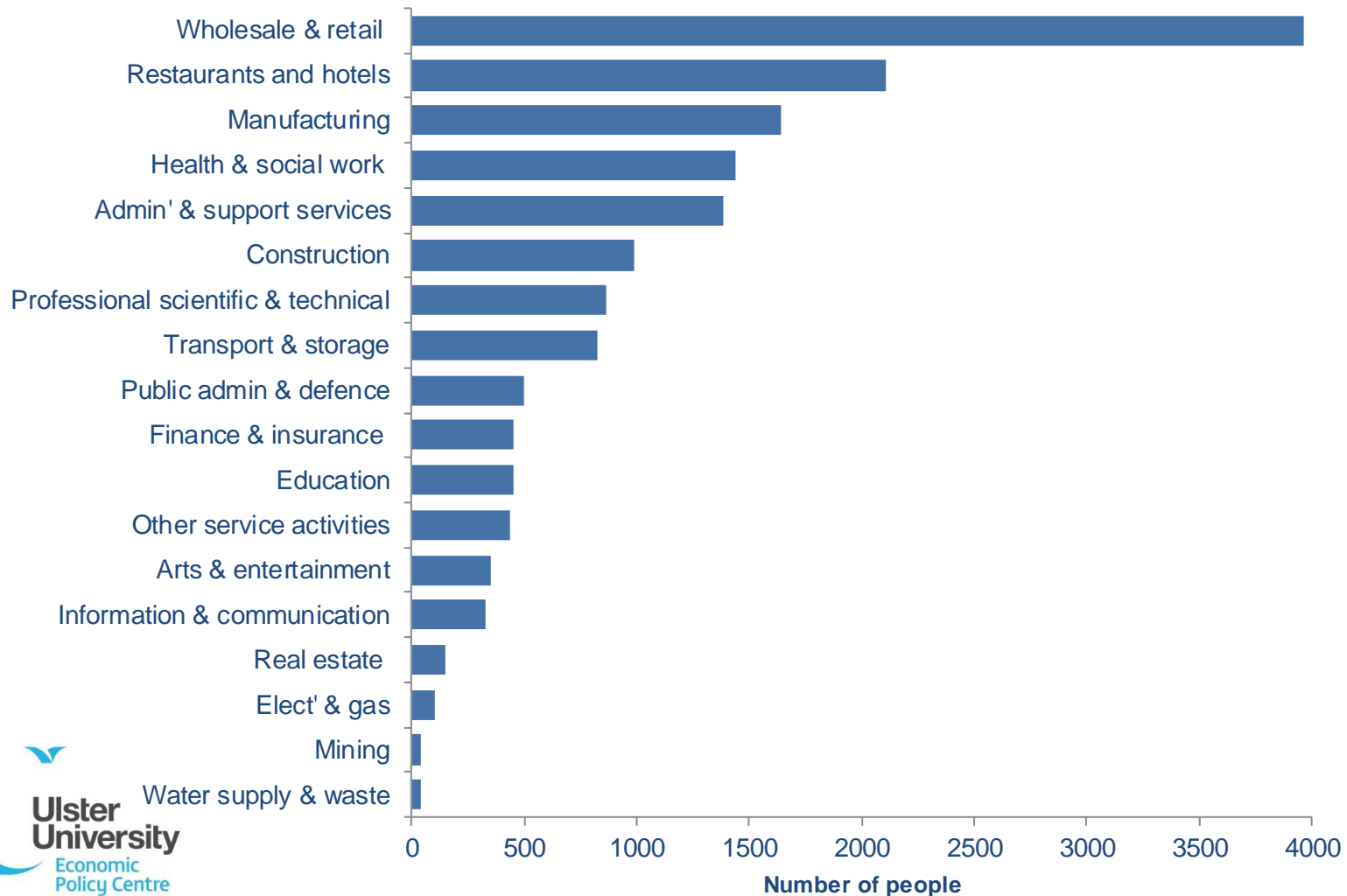
Gross demand skills mix by sector

Average 2015-25 gross demand skills mix (SIC 1 digit)



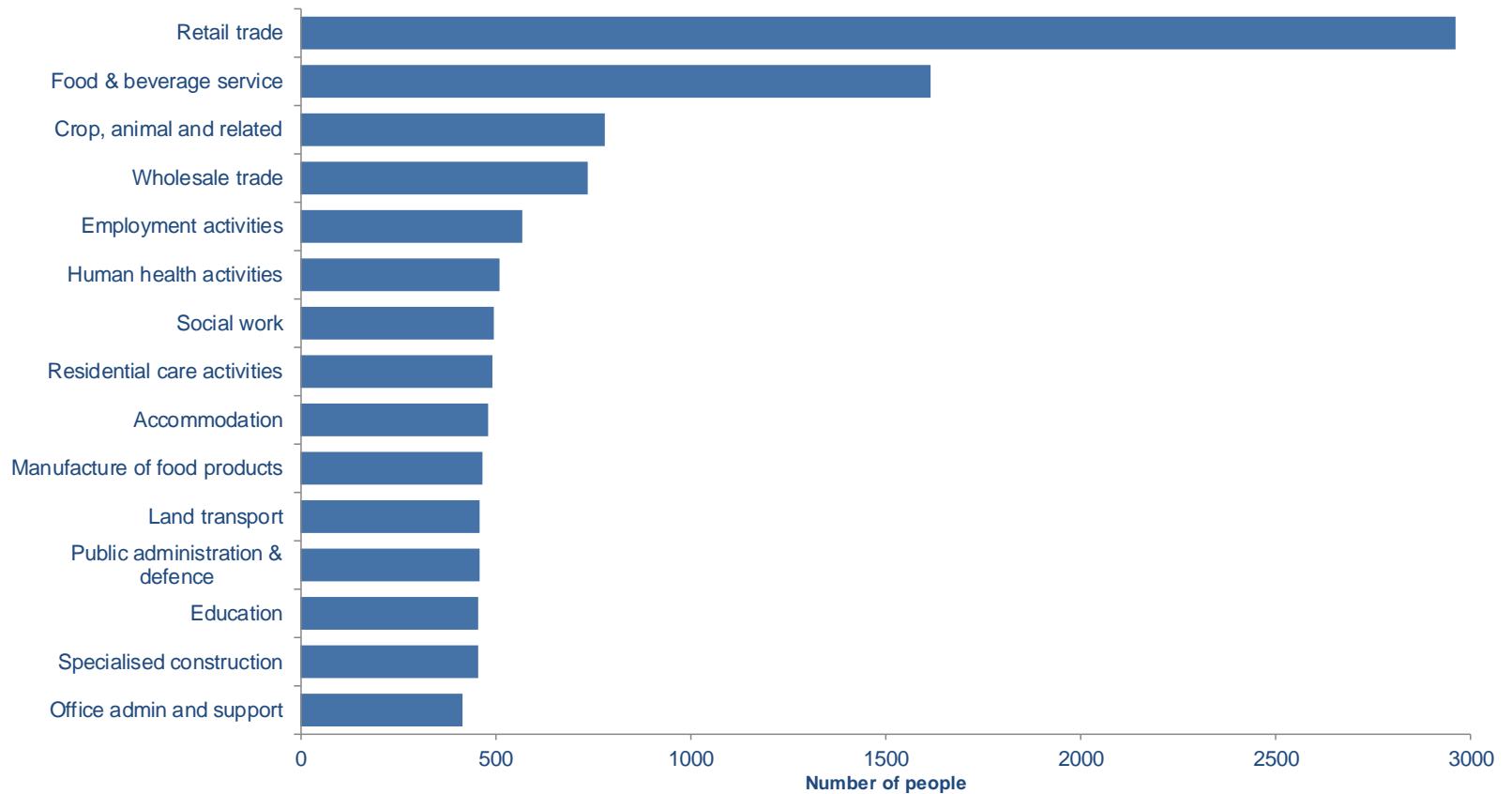
Gross demand for Level 2 (by industry)

Average 2015-25 gross demand for Level 2 by industry (SIC 1 digit)



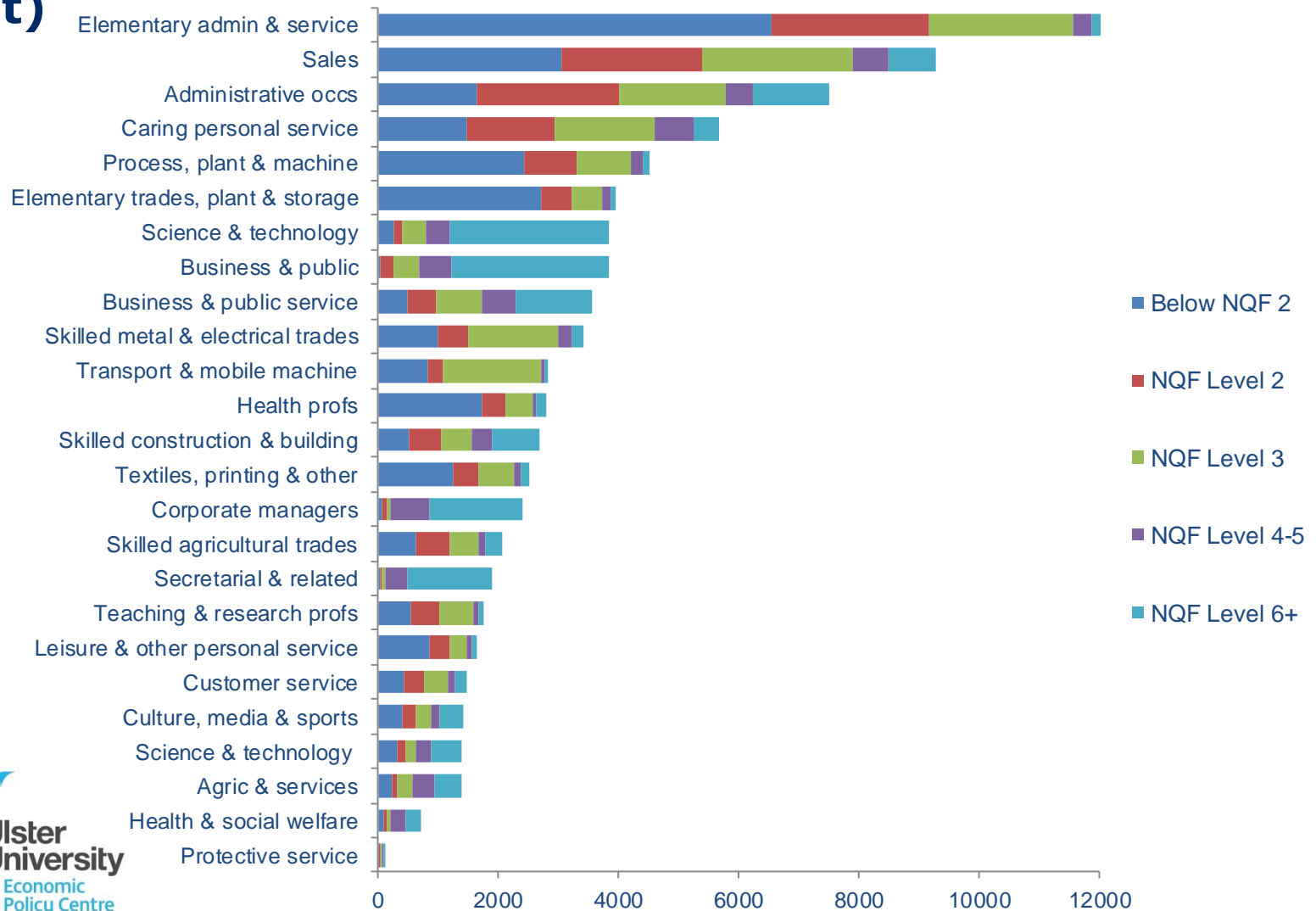
Gross demand for Level 2 (by industry)

Top 15 average 2015-25 gross demand for Level 2 by industry (SIC 2 digit)



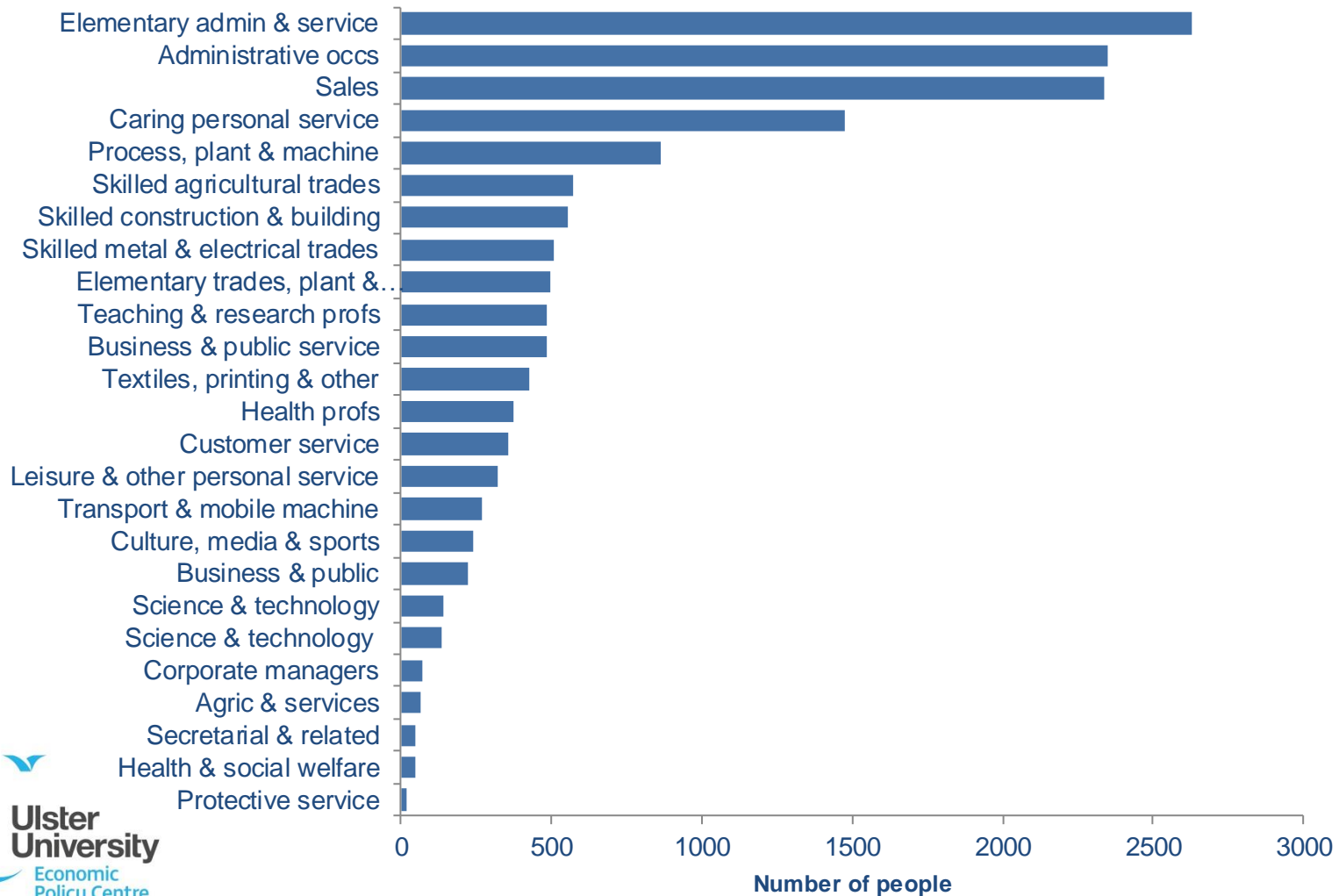
Gross demand skills mix by occupation

Average 2015-25 gross demand skills mix(SOC 2 digit)



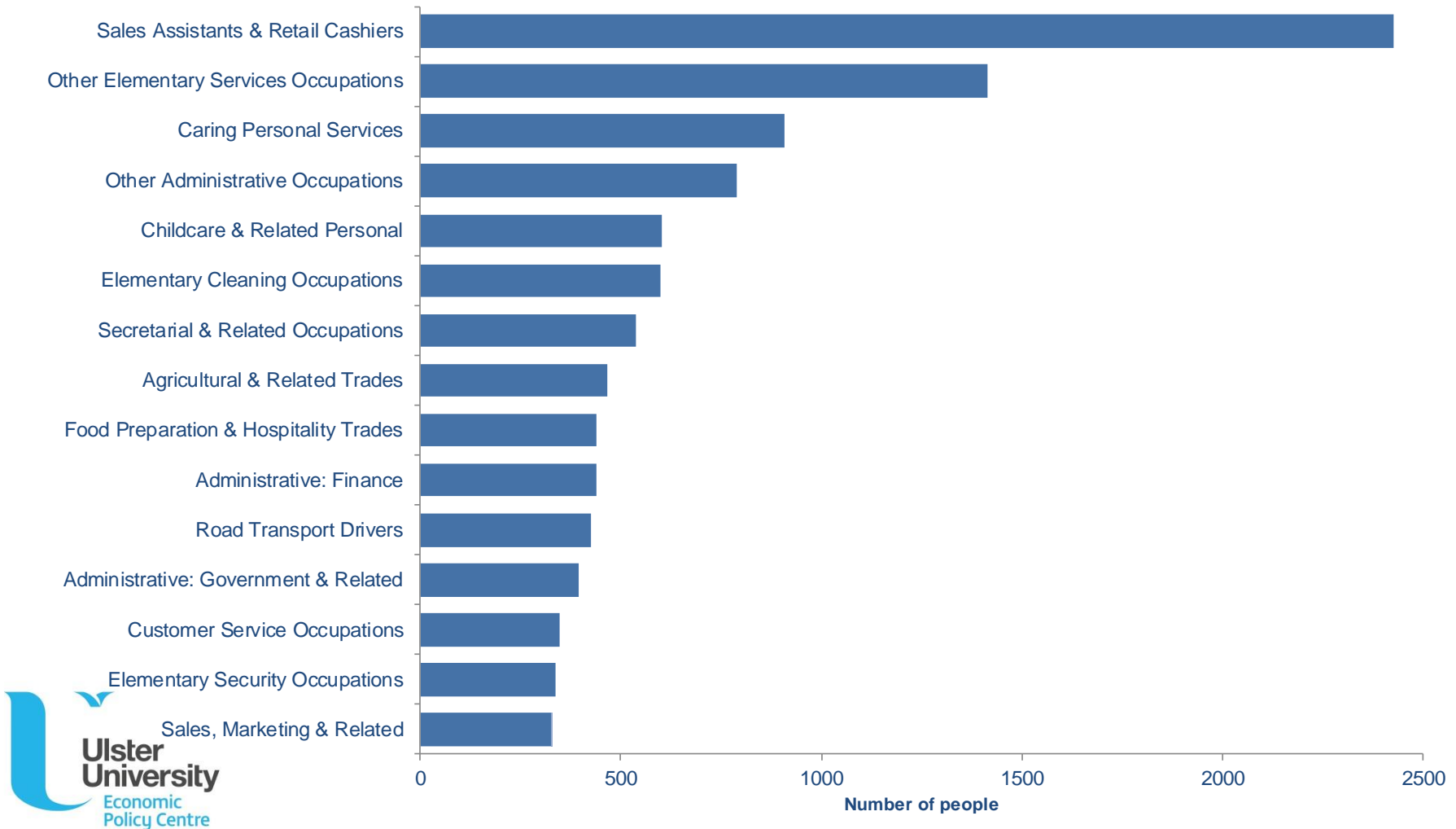
Gross demand for Level 2 (by occupation)

Average 2015-25 gross demand for Level 2 by occupation (SOC 2 digit)



Gross demand for Level 2 (by occupation)

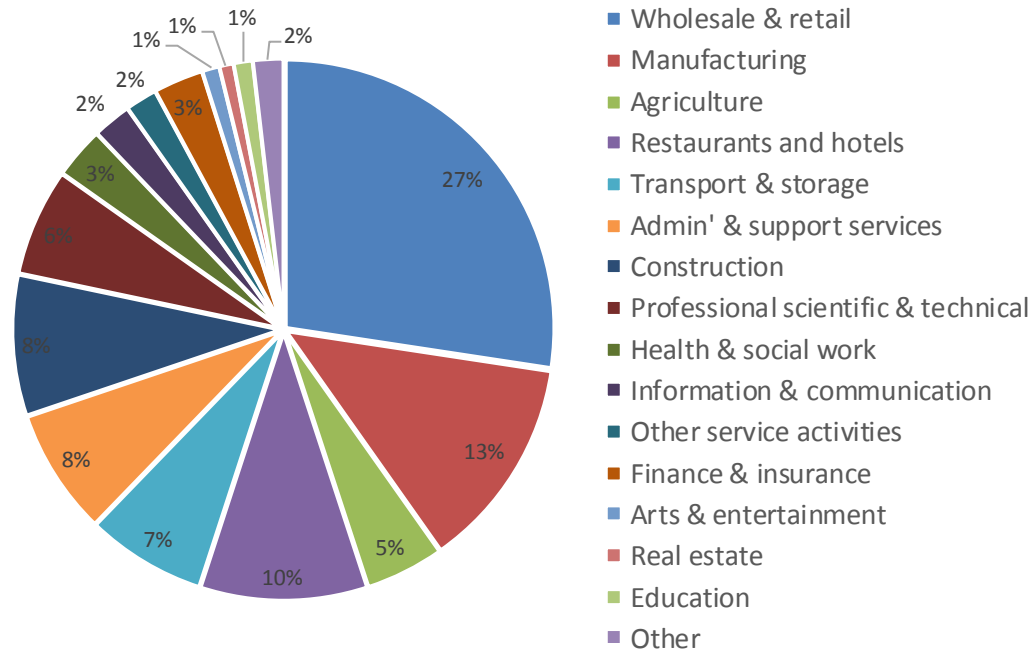
Top 15 average 2015-25 gross demand for Level 2 by occupation (SOC 3 digit)



Sectoral demand (net requirement) by skills level

Which sectors recruit low skilled (L2) people?

Level 2 skills requirement

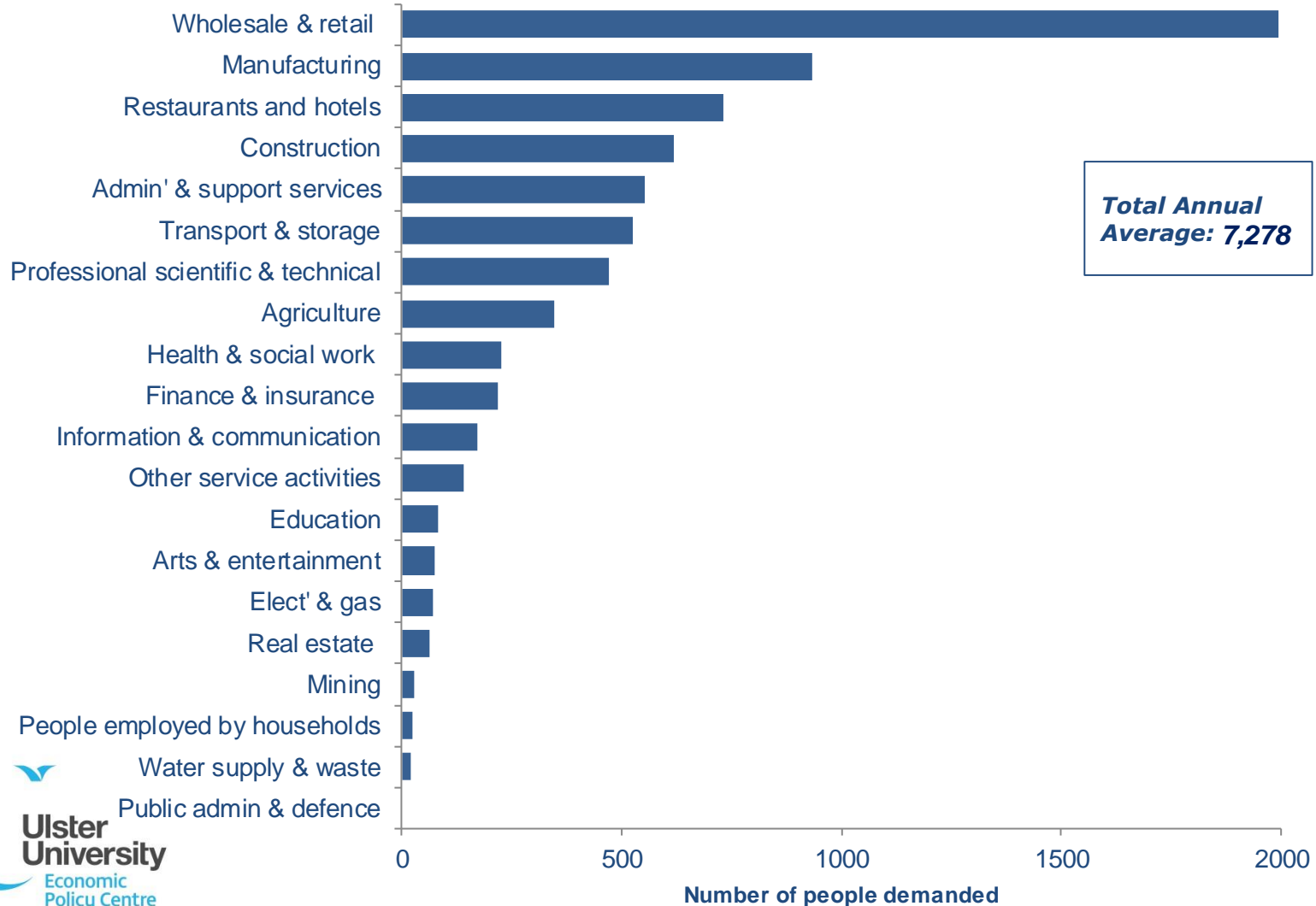


Other sectors in Mid to low level skills include: Other service activities, Restaurants and hotels, Real estate, Agriculture, Water supply & waste, Transport & storage, Mining, Elect' & gas and People employed by households

Employment projections by sector

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

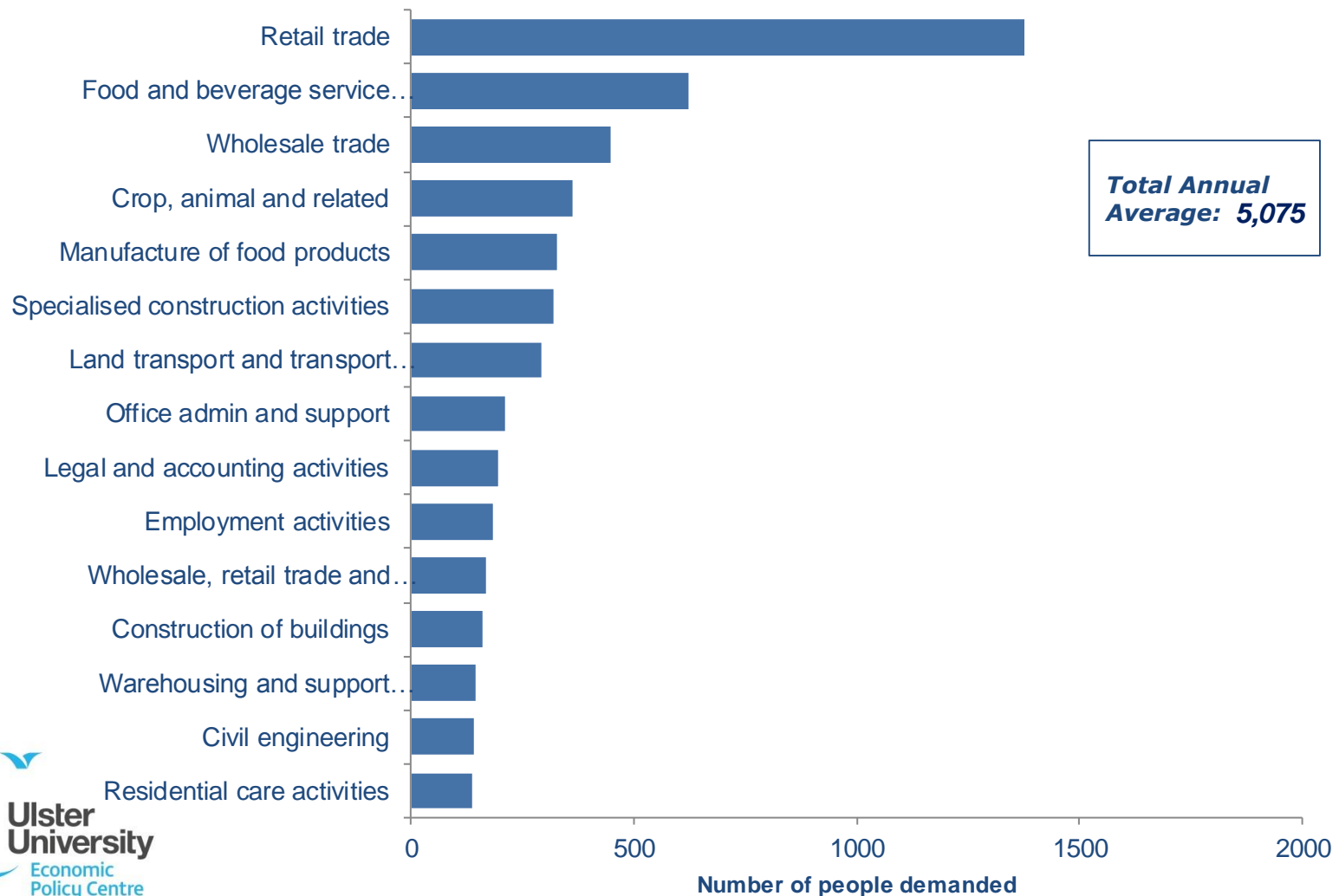
Net Requirement from Education and Migration



Employment projections by sector

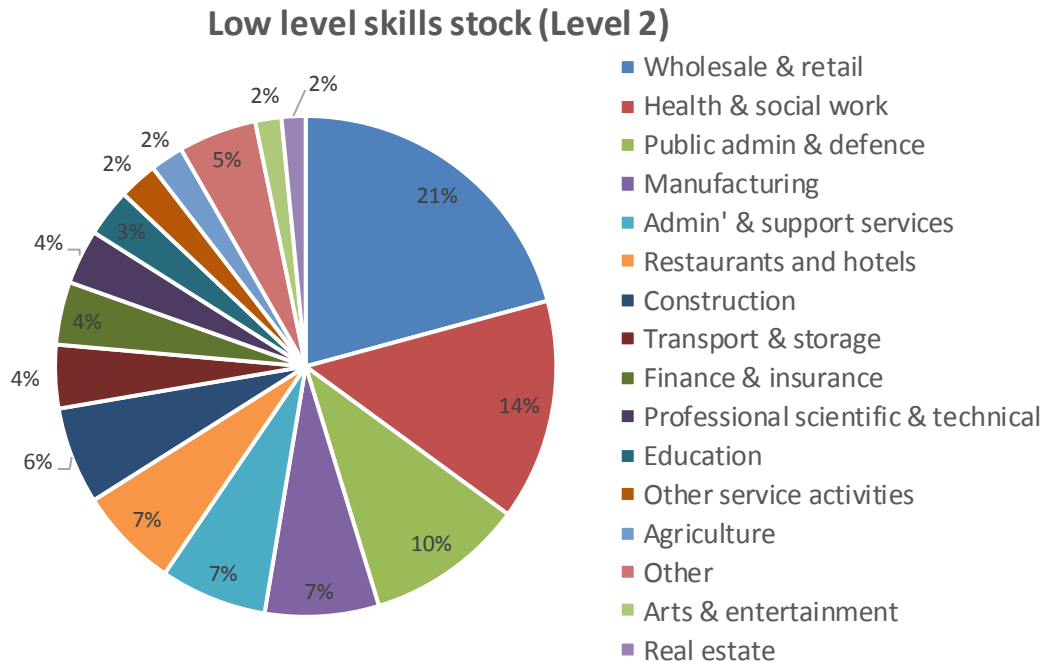
Top 15 Industry Sectors for L2 (SIC 2 digit)

Net Requirement from Education and Migration



Where are skilled people employed?

Where do low skilled (L2) people work?



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

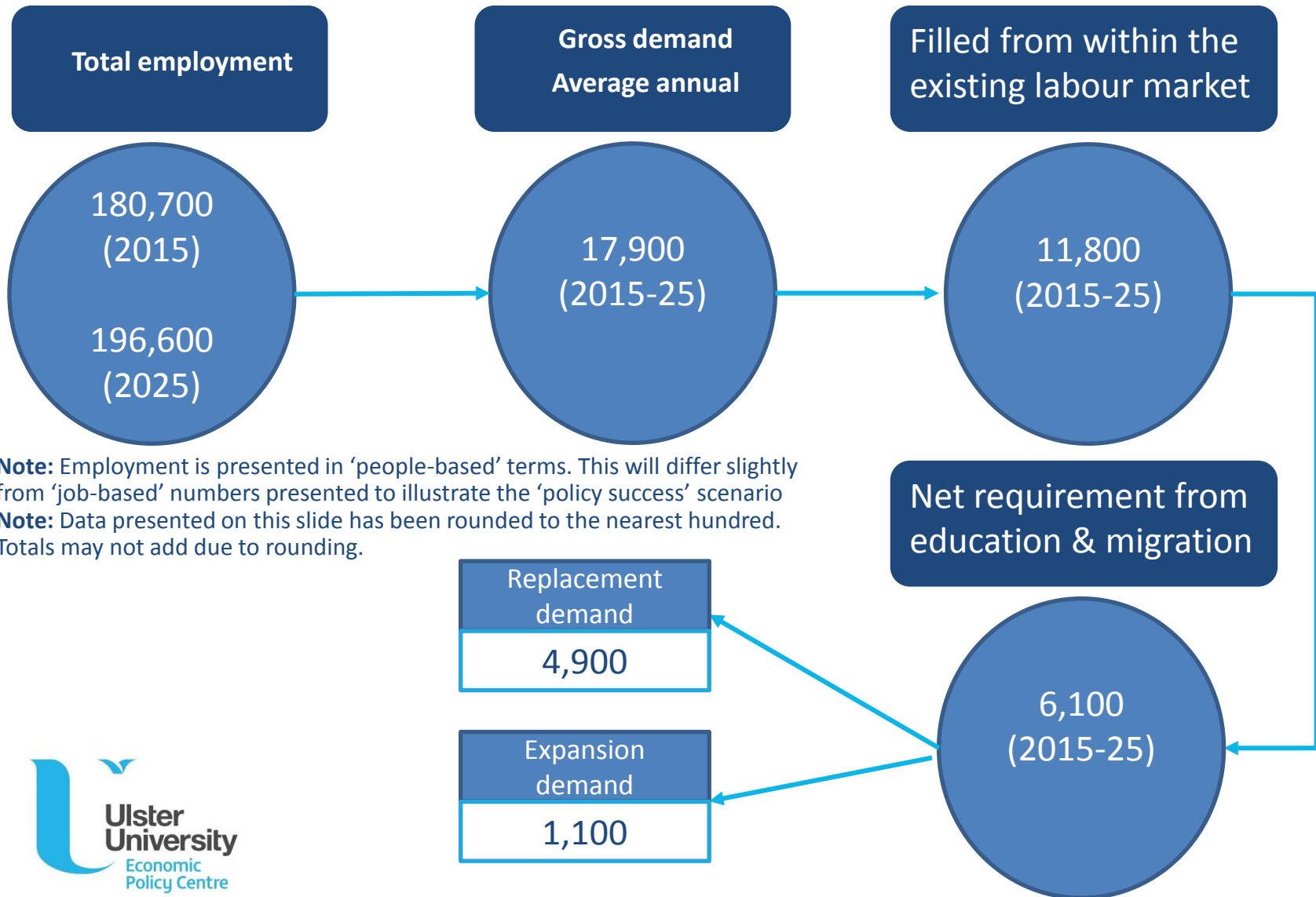


Annex F

NQF Level 3 analysis

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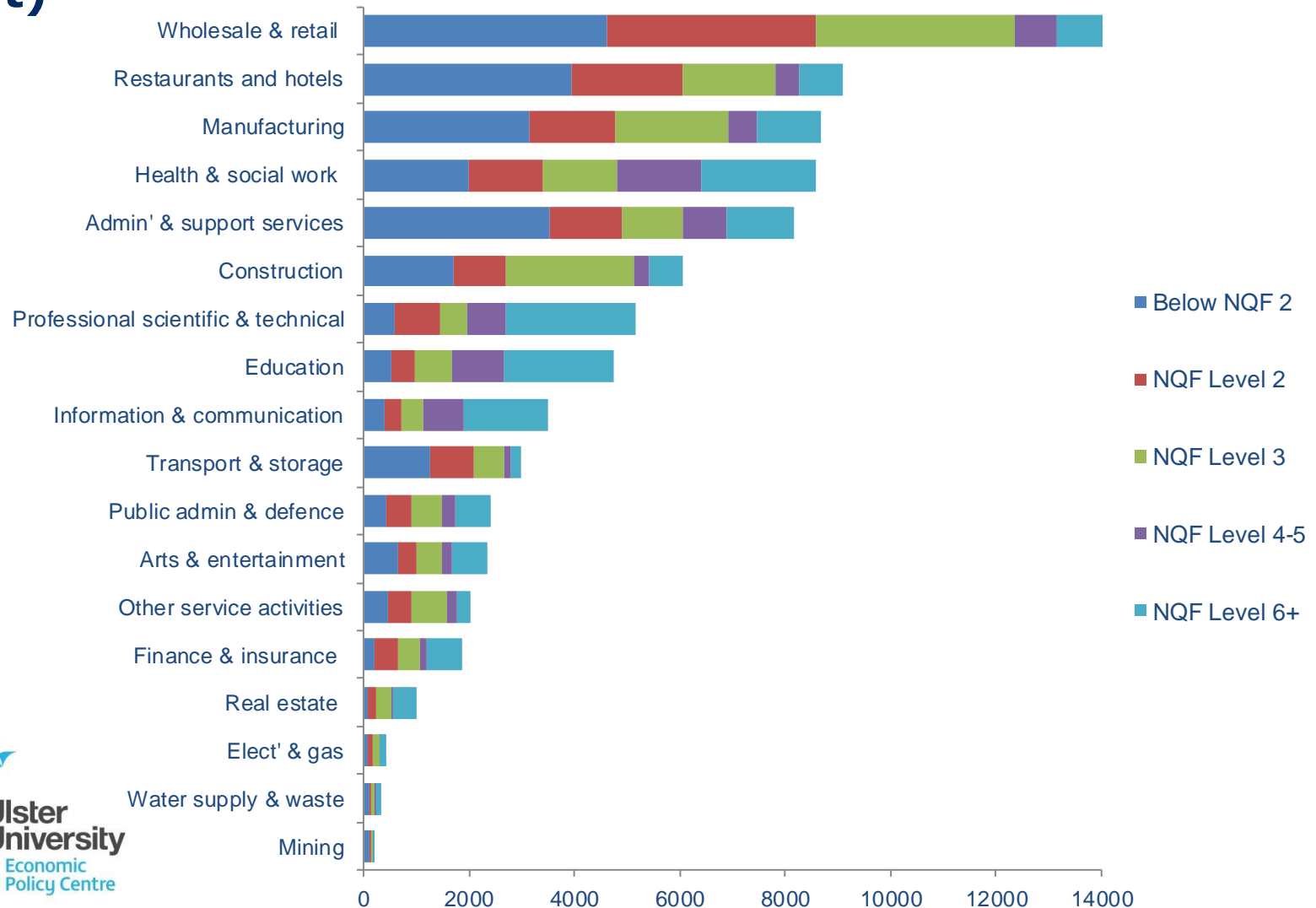
Overview of demand and supply for NQF level 3



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.

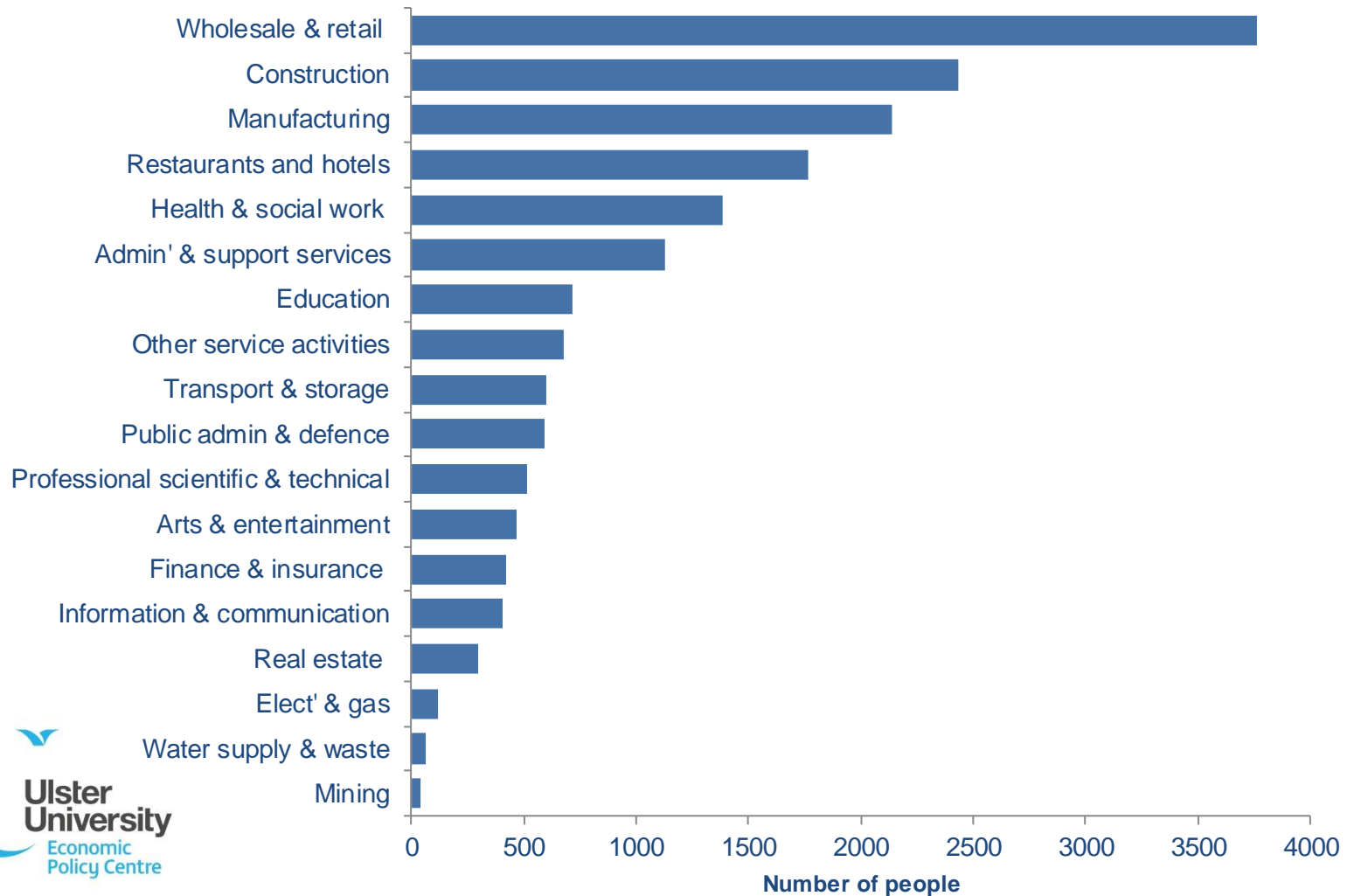
Gross demand skills mix by sector

Average 2015-25 gross demand skills mix (SIC 1 digit)



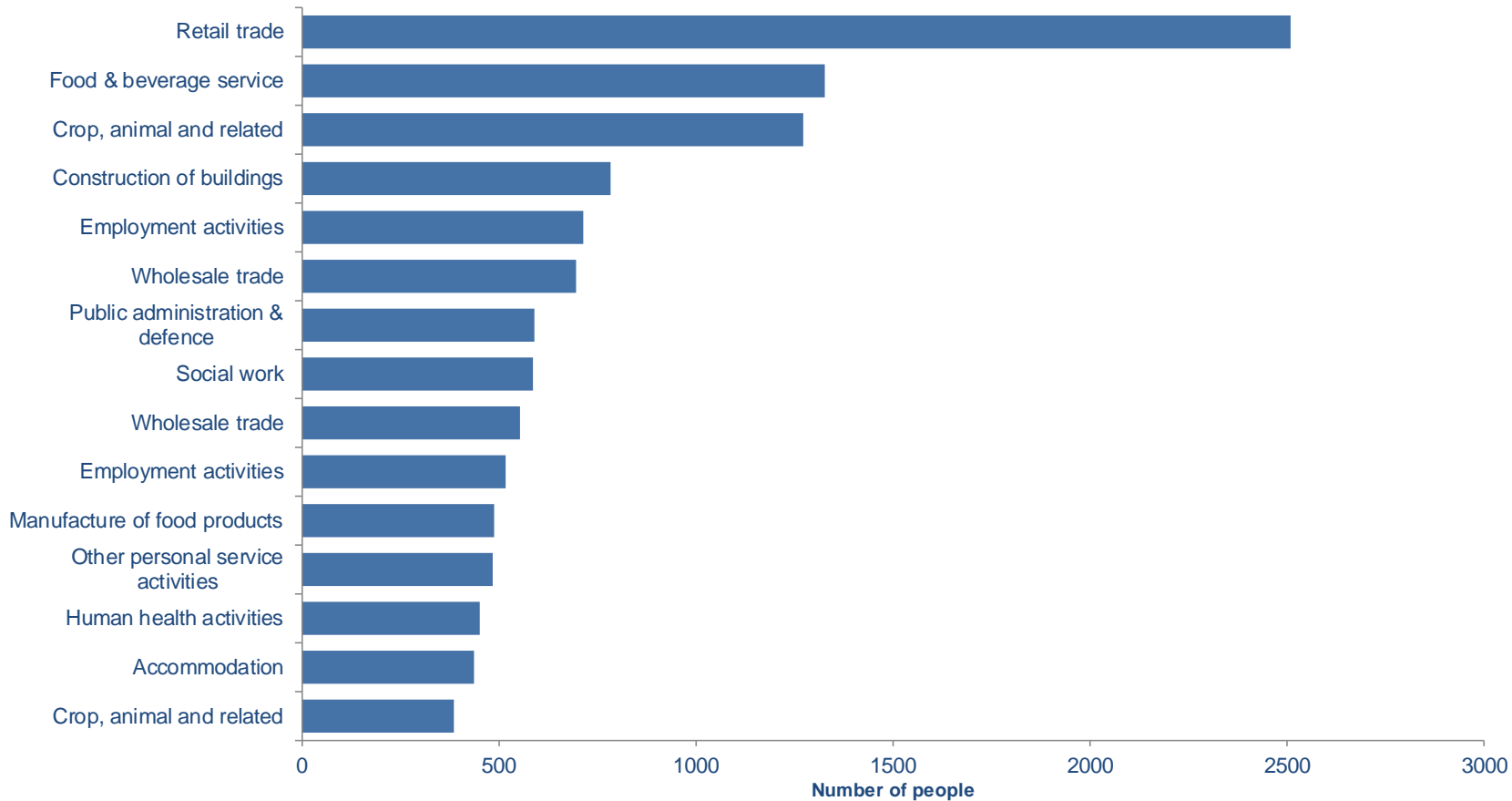
Gross demand for Level 3 (by industry)

Average 2015-25 gross demand for Level 3 by industry (SIC 1 digit)



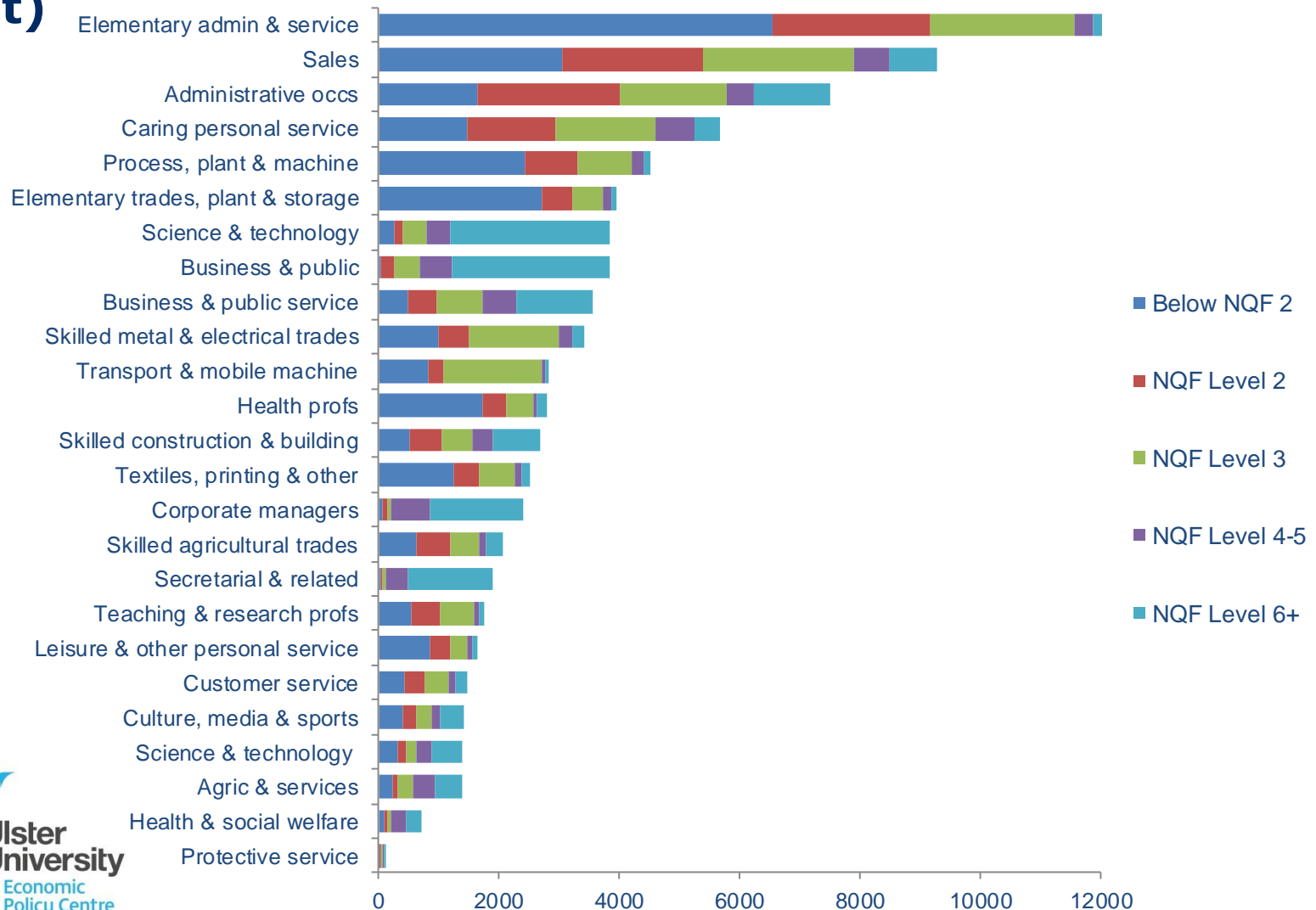
Gross demand for Level 3 (by industry)

Top 15 average 2015-25 gross demand for Level 3 by industry (SIC 2 digit)



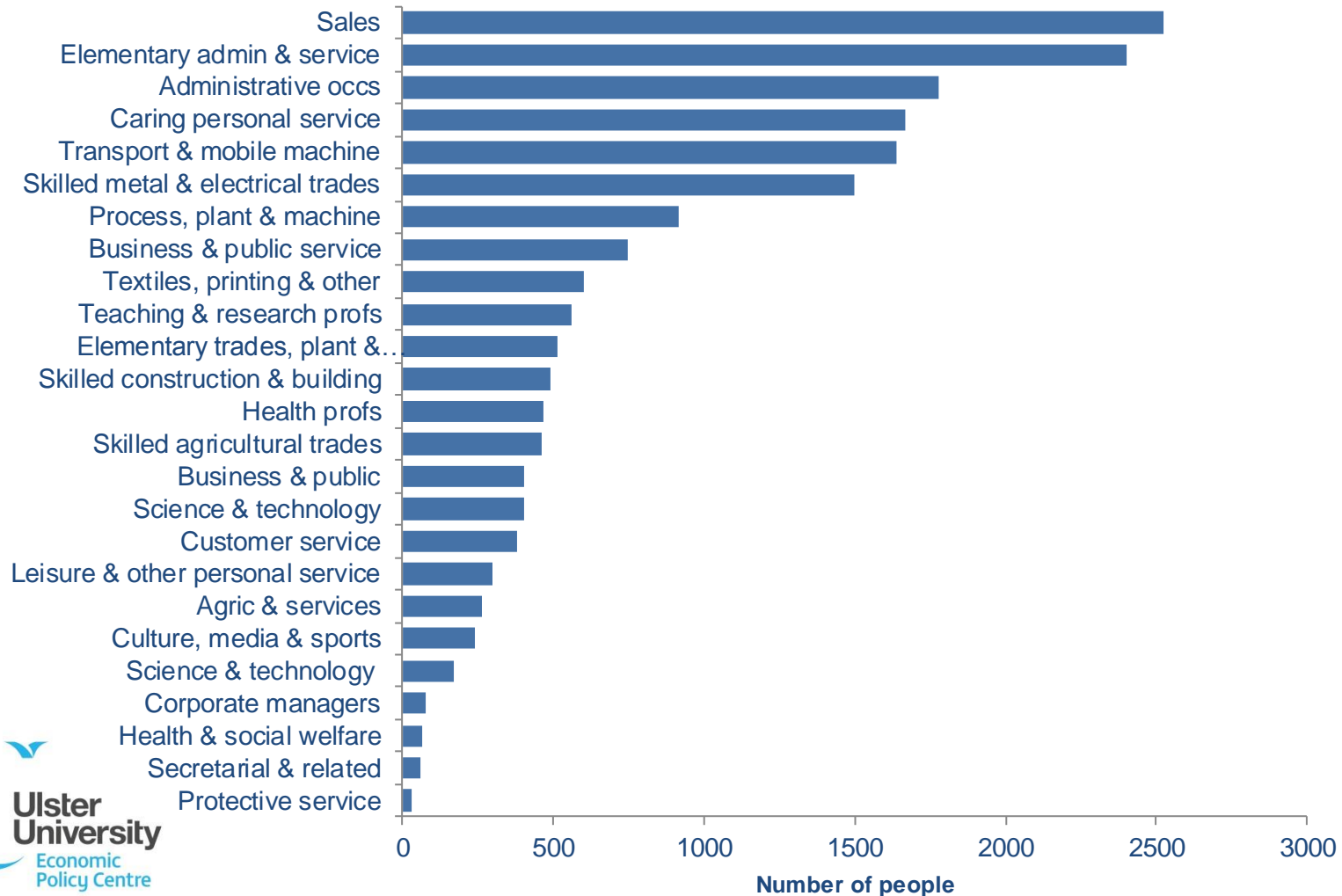
Gross demand skills mix by occupation

Average 2015-25 gross demand skills mix (SOC 2 digit)



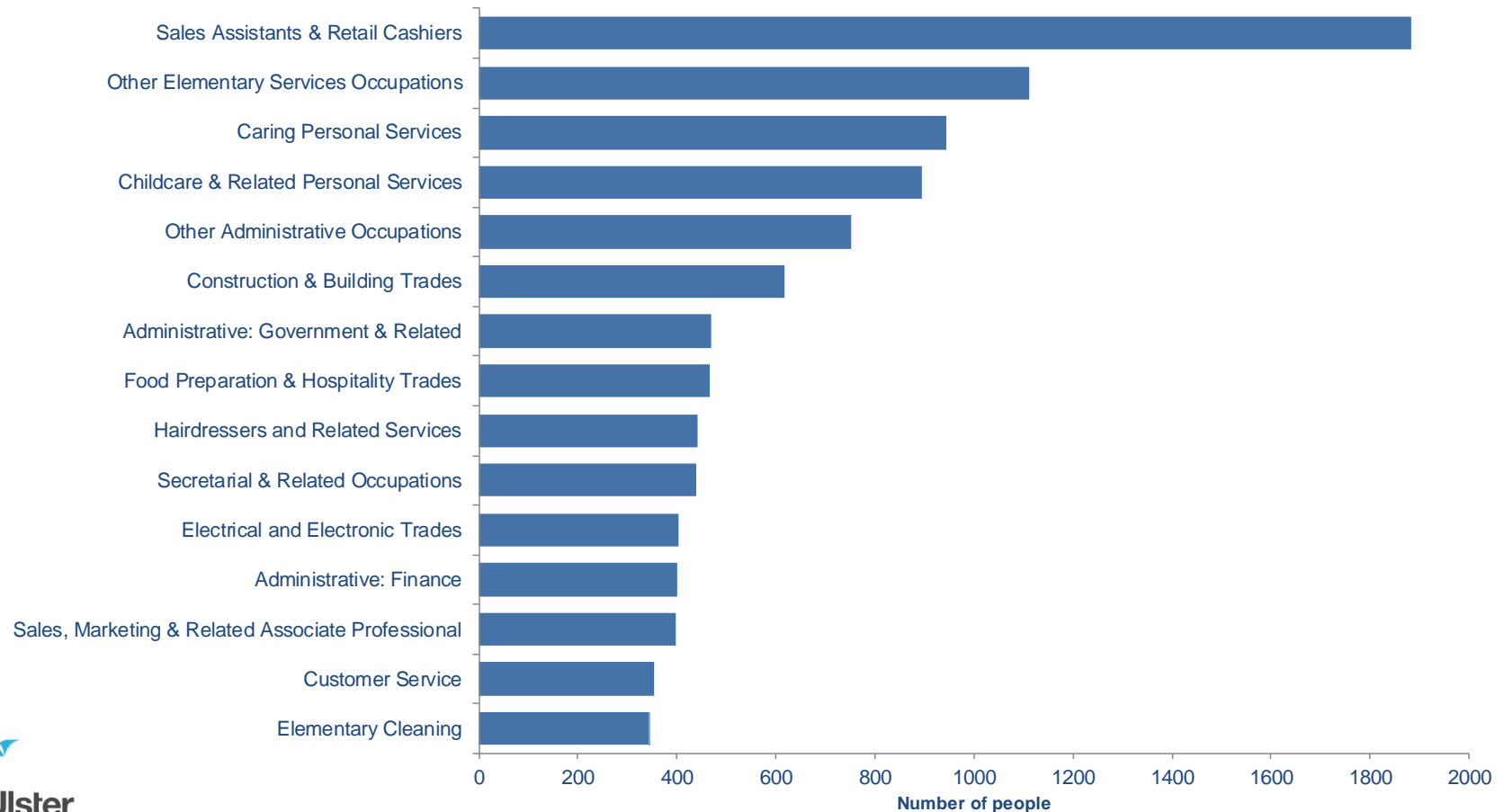
Gross demand for Level 3 (by occupation)

Average 2015-25 gross demand for Level 3 by occupation (SOC 2 digit)



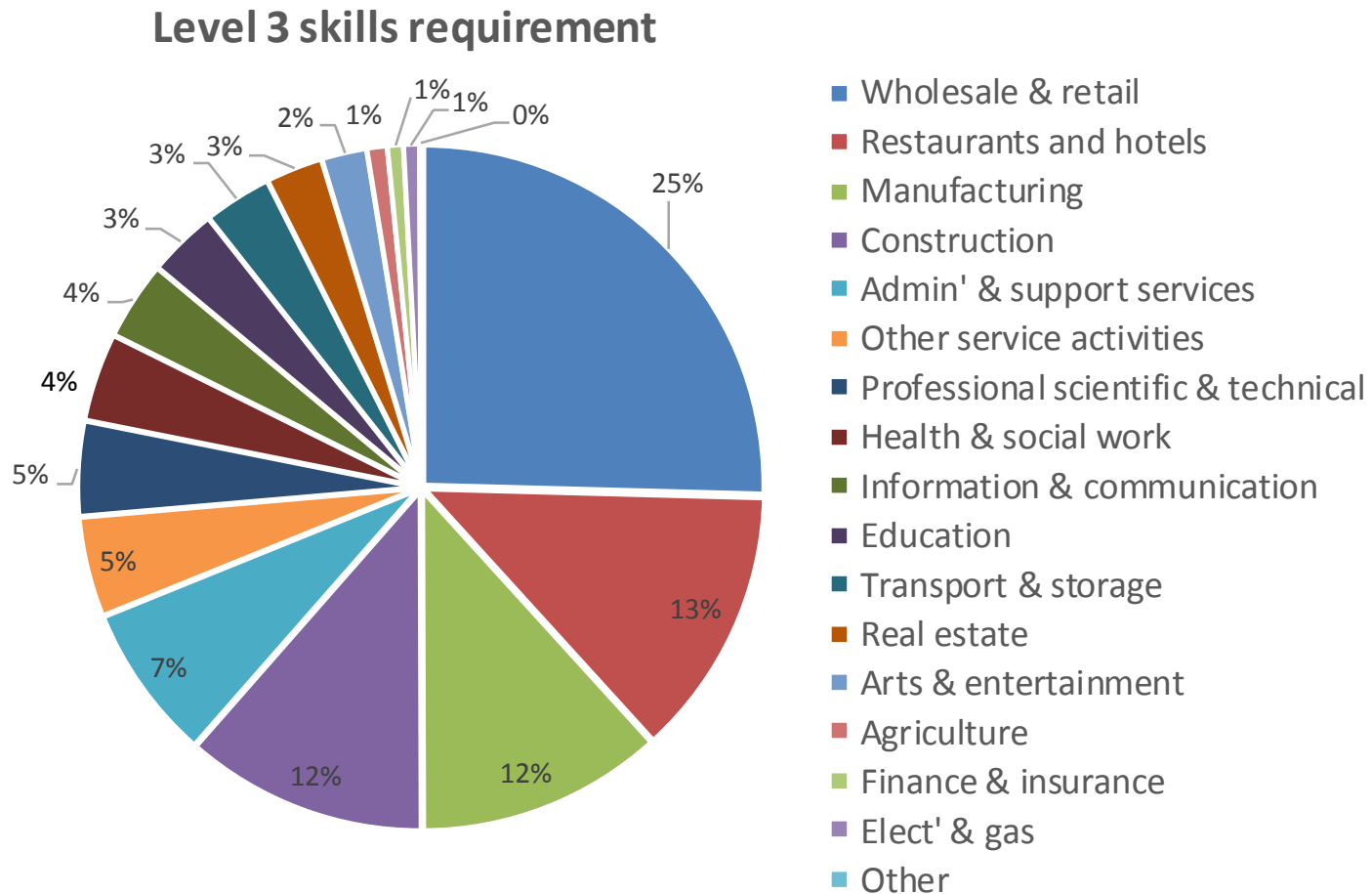
Gross demand for Level 3 (by occupation)

Top 15 average 2015-25 gross demand for Level 3 by occupation (SOC 3 digit)



Sectoral demand (net requirement) by skills level

Which sectors recruit Level 3 people?

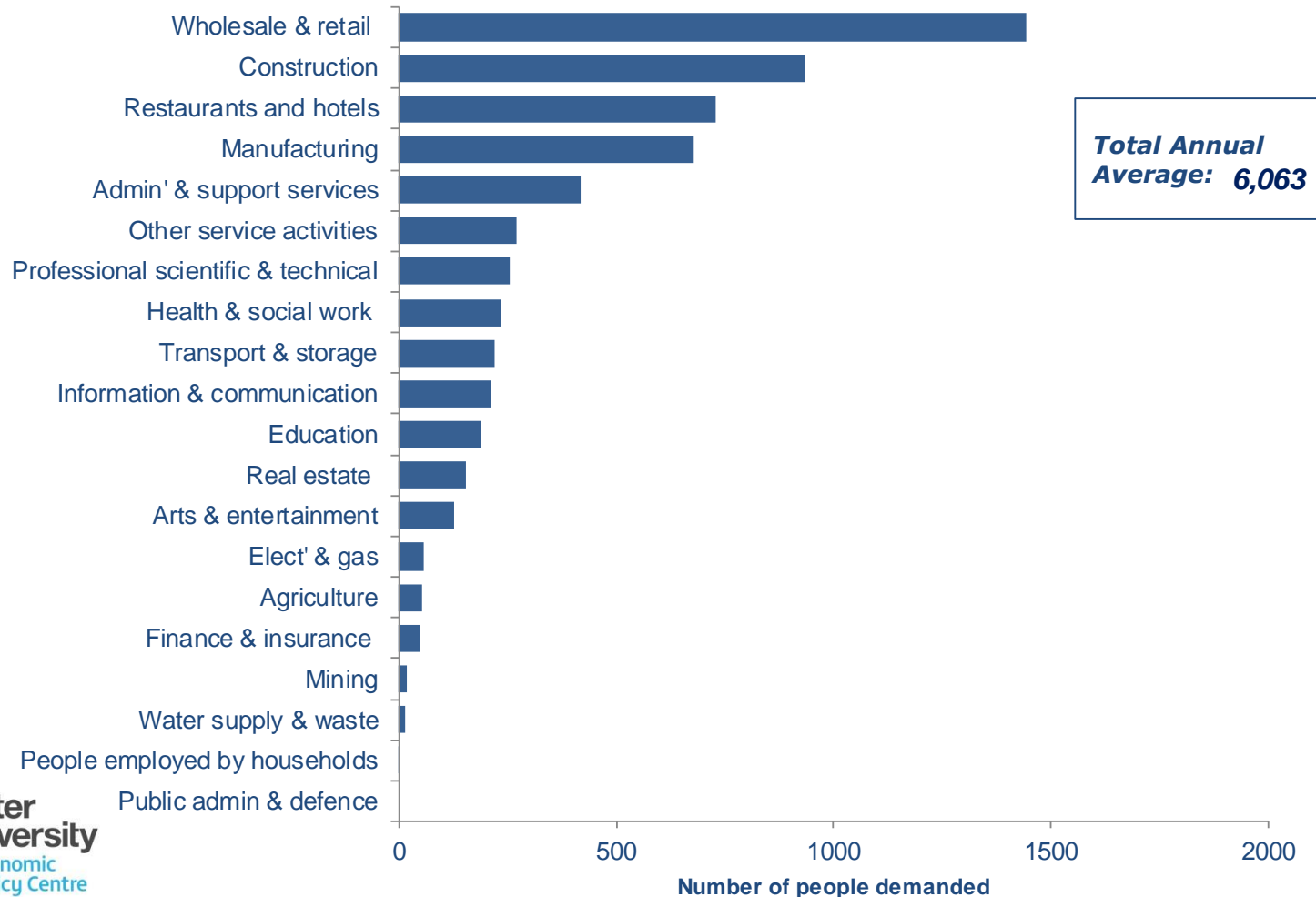


Other sectors in Mid to low level skills include: Other service activities, Restaurants and hotels, Real estate, Agriculture, Water supply & waste, Transport & storage, Mining, Elect' & gas and People employed by households

Employment projections by sector

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

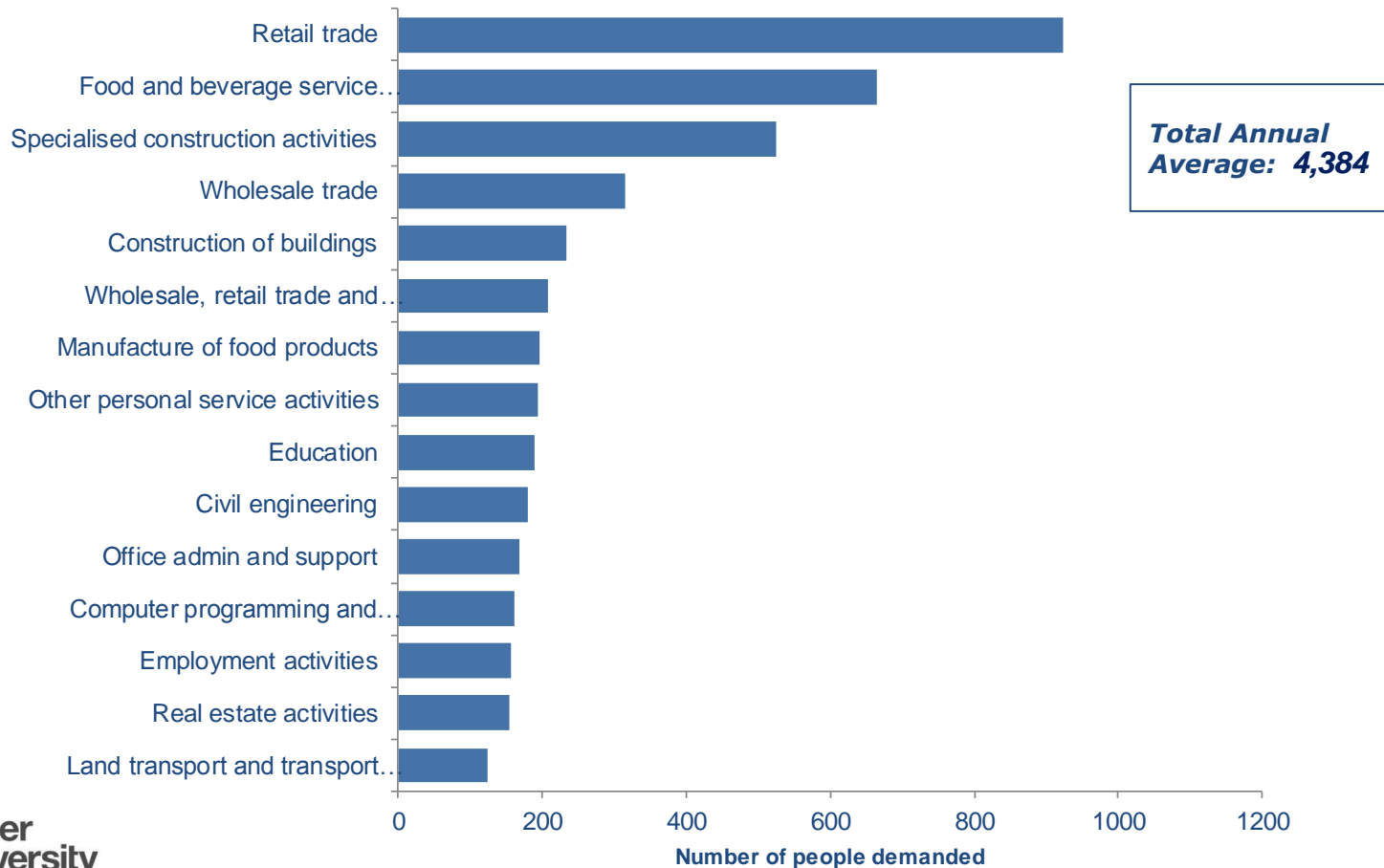
Net Requirement from Education and Migration



Employment projections by sector

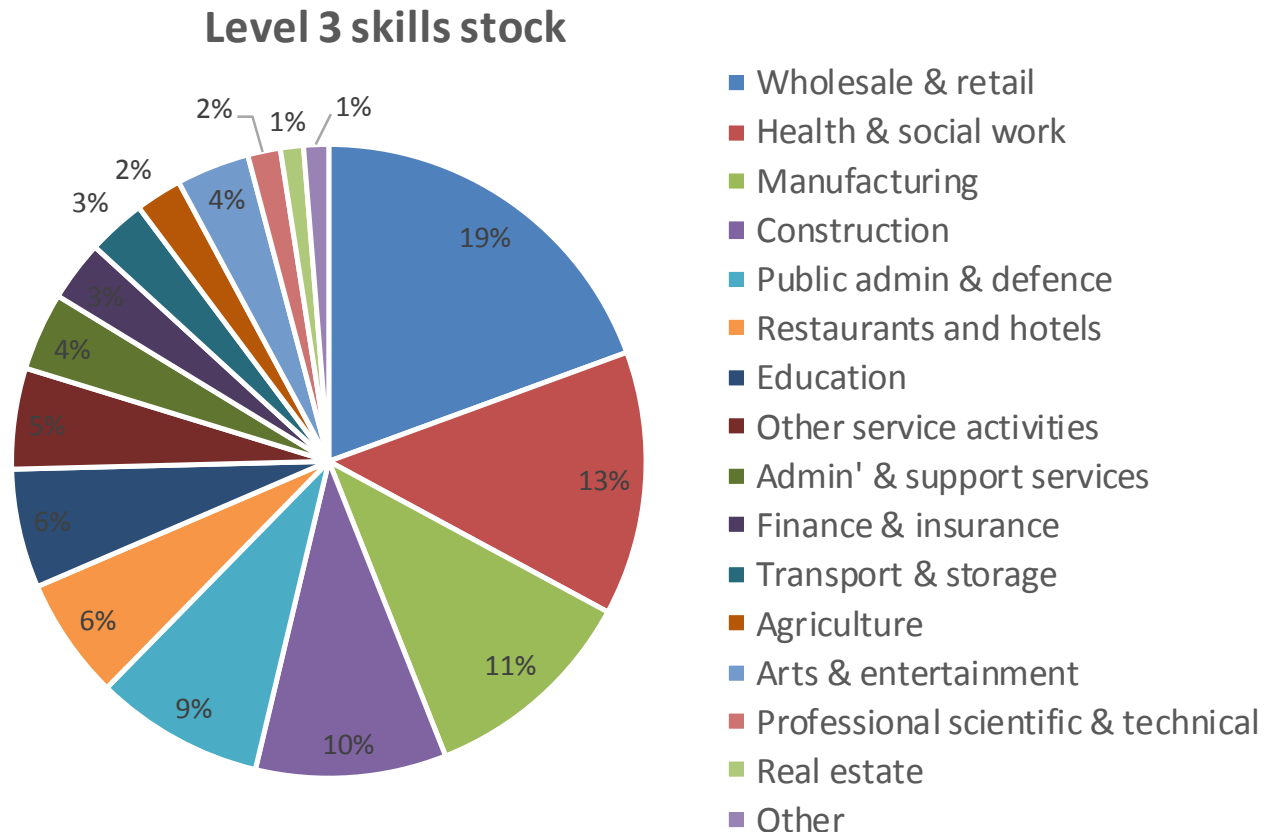
Top 15 L3 Industry Sectors (SIC 2 digit)

Net Requirement from Education and Migration



Where are skilled people employed?

Where do level 3 people work?



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

Annex G – Key Supply side assumptions

Supply side assumptions - Upskilling

- 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'.
- The model currently makes the assumption that:
 - In FE 60% of the people who indicated they were in employment before starting their course are assumed to be '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'.
- If further data is available to inform these assumptions the model can be adjusted accordingly.



End

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