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Contacts

Mark Magill
Senior Economist
Ulster University Economic Policy Centre
Email: md.magill@ulster.ac.uk

Marguerite McPeake
Assistant Economist
Ulster University Economic Policy Centre
Email: m.mcpeake@ulster.ac.uk
# Acronyms and NQF qualification classifications

## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>Northern Ireland</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UUEPC</td>
<td>Ulster University Economic Policy Centre</td>
</tr>
<tr>
<td>DfE</td>
<td>Department for the Economy</td>
</tr>
<tr>
<td>HE</td>
<td>Higher Education</td>
</tr>
<tr>
<td>FE</td>
<td>Further Education</td>
</tr>
<tr>
<td>NQF</td>
<td>National Qualification Framework</td>
</tr>
<tr>
<td>JACS</td>
<td>Joint Academic Coding System</td>
</tr>
<tr>
<td>SSA</td>
<td>Sector Subject Area</td>
</tr>
<tr>
<td>SIC</td>
<td>Standard Industrial Classification</td>
</tr>
<tr>
<td>SOC</td>
<td>Standard Occupational Classification</td>
</tr>
<tr>
<td>GCSE</td>
<td>General Certificate of Secondary Education</td>
</tr>
<tr>
<td>HESA</td>
<td>Higher Education Statistics Agency</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
</tr>
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</table>

## NQF scale

<table>
<thead>
<tr>
<th>NQF level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 8</td>
<td>PhD (or equivalent)</td>
</tr>
<tr>
<td>Level 7</td>
<td>Masters (or equivalent)</td>
</tr>
<tr>
<td>Level 6</td>
<td>Undergraduate degree (or equivalent)</td>
</tr>
<tr>
<td>Level 5-5</td>
<td>Foundation degree/HND/HNC (or equivalent)</td>
</tr>
<tr>
<td>Level 3</td>
<td>A-level (or equivalent)</td>
</tr>
<tr>
<td>Level 2</td>
<td>5 GCSEs A*-C (or equivalent)</td>
</tr>
<tr>
<td>Level 1</td>
<td>5 GCSEs D-G (or equivalent)</td>
</tr>
<tr>
<td>Level 0</td>
<td>Below NQF level 1/no qualifications</td>
</tr>
</tbody>
</table>
Introduction
NI Skills Barometer background and economic modelling approach
NI Skills Barometer background

NI Skills Barometer 2019

Ulster University Economic Policy Centre (UUEPC) were commissioned by Department for the Economy (DfE) to report on the quantum of future skill requirements for Northern Ireland (NI).

The NI Skills Barometer involved the development of an economic model to forecast future skills needs and skills gaps by qualification level, subject area and sector. The project was originally commissioned in 2015 and has been updated at two year intervals.

The quantitative findings of the research have benefitted a wide range of stakeholders including: careers advisors, young people and parents; teachers and schools; business groups; DfE; and wider government.

This update report is the third publication in relation to the NI Skills Barometer and provides contextual analysis which underpins skills forecasts, outputs from the assessment of future skills demand, a review of supply side indicators and overall skill balances.
Methodological approach
Identify demand and supply side factors

Demand side indicators
• Demand for jobs (by sector and occupation)
  • Expansion demand
  • Replacement demand
• Demand for skills (by NQF and subject area)
  • Current skills mix
  • Projected skills mix

Supply side indicators
• Supply of people (by age)
  • Demographics of NI population
• Supply of qualifications (by subject area and NQF)
  • Gross supply
  • Net supply
  • Effective supply

Supply/Demand (im)balance
• Identify the annual average supply gap
  • By NQF level
  • By subject studied (JACS and SSAs)

Plan for high growth
Modelling approach – high growth
Skills planning under an aspirational scenario

It is prudent to plan for skill needs in an aspirational nature based on economic ambitions of an economy. The economic cost of skills shortages and skills mismatches can be substantial.

For example, if businesses are unable to meet their demand for skilled labour the competitiveness of an economy will fall, productive capacity decreases ultimately dampening future job growth.

Likewise, it is important to have in place measures to offset any potential individual costs if policy ambitions are not met leading to an oversupply of skills.

For example, a contingency plan may include conversion courses for redundant workers or training rights for young people unable to secure employment after graduation.
UUEPC economic model

The NI economy is to create 8.5k additional jobs per annum under UUEPC’s high growth scenario

UUEPC produces regular economic forecasts for NI under three scenarios: lower scenario; baseline scenario; and high growth scenario.

The baseline scenario outlines the most likely economic outcome for NI. Whereas, the high growth scenario is aligned to outcomes associated with NI achieving future policy success.

This report will focus on outcomes associated with a high growth scenario as it is prudent to plan for skill needs in an aspirational nature based on economic ambitions of an economy.
UUEPC’s high growth scenario

NI Skills Barometer 2019

UUEPC produces regular economic forecasts outlining the most likely economic outcome (baseline scenario) and an aspirational economic outcome based on NI achieving its economic ambitions (high growth scenario)*.

At the macro level, the assumptions applied to the high growth scenario are based on the following principles:

• **The NI employment rate will converge but not completely reach the current United Kingdom (UK) employment rate** (assumed to increase from 70% to 74%). Overall the level of job creation from 2018-2028 under the high growth scenario is lower than the ten year period to 2008 (9.6% compared to 18.8%). In contrast the baseline forecast employment growth over the coming decade is 4.4%.

• **The largest growth is applied to the higher value added sectors** as identified in the Draft Industrial Strategy (i.e. professional services, ICT and manufacturing). Although growth in ICT, professional services and finance is ambitious it remains lower than growth over the period 1997-2008.

• **A significant number of additional jobs have also been allocated to the health sector**, which is expected to benefit from additional government spending. Whereas, lower but appropriate levels of growth are applied to the wider supporting sectors such as hospitality, construction, administration and support services and retail.

*Annex A1 and Annex A2 provide a detailed analysis of economic outputs under the baseline scenario and the high growth scenario.*
## High growth versus baseline jobs

UUEPC’s high growth scenario creates 46k jobs above the baseline by 2028 in NI

<table>
<thead>
<tr>
<th>Industry</th>
<th>Total jobs 2018 baseline</th>
<th>Baseline scenario</th>
<th>High growth scenario</th>
<th>Job growth (absolute terms) 2018-2028</th>
<th>High growth (% change) Actual (1997-2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>29,640</td>
<td>-1,110</td>
<td>-250</td>
<td>-0.8%</td>
<td>-27.0%</td>
</tr>
<tr>
<td>Mining</td>
<td>2,150</td>
<td>-30</td>
<td>-30</td>
<td>-1.6%</td>
<td>67.8%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>95,190</td>
<td>+5,480</td>
<td>+10,430</td>
<td>11.0%</td>
<td>-21.3%</td>
</tr>
<tr>
<td>Electricity &amp; gas</td>
<td>2,280</td>
<td>-80</td>
<td>+100</td>
<td>4.2%</td>
<td>-43.0%</td>
</tr>
<tr>
<td>Water supply &amp; waste</td>
<td>6,740</td>
<td>+180</td>
<td>+350</td>
<td>5.2%</td>
<td>20.7%</td>
</tr>
<tr>
<td>Construction</td>
<td>56,490</td>
<td>+3,910</td>
<td>+6,630</td>
<td>11.7%</td>
<td>57.3%</td>
</tr>
<tr>
<td>Wholesale &amp; retail</td>
<td>139,790</td>
<td>+560</td>
<td>+2,410</td>
<td>1.7%</td>
<td>27.3%</td>
</tr>
<tr>
<td>Transport &amp; storage</td>
<td>31,130</td>
<td>+1,020</td>
<td>+2,010</td>
<td>6.5%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Restaurants and hotels</td>
<td>52,990</td>
<td>+3,190</td>
<td>+6,660</td>
<td>12.6%</td>
<td>31.0%</td>
</tr>
<tr>
<td>Information &amp; communication</td>
<td>22,500</td>
<td>+4,430</td>
<td>+11,360</td>
<td>50.5%</td>
<td>84.9%</td>
</tr>
<tr>
<td>Finance &amp; insurance</td>
<td>20,620</td>
<td>+730</td>
<td>+4,350</td>
<td>21.1%</td>
<td>23.4%</td>
</tr>
<tr>
<td>Real estate</td>
<td>10,420</td>
<td>-90</td>
<td>+260</td>
<td>2.5%</td>
<td>227.2%</td>
</tr>
<tr>
<td>Professional scientific &amp; technical</td>
<td>44,860</td>
<td>+5,470</td>
<td>+11,780</td>
<td>26.3%</td>
<td>96.1%</td>
</tr>
<tr>
<td>Administrative &amp; support services</td>
<td>61,040</td>
<td>+5,130</td>
<td>+8,230</td>
<td>13.5%</td>
<td>98.1%</td>
</tr>
<tr>
<td>Public admin &amp; defence</td>
<td>53,430</td>
<td>-900</td>
<td>+590</td>
<td>1.1%</td>
<td>-1.9%</td>
</tr>
<tr>
<td>Education</td>
<td>74,780</td>
<td>+1,270</td>
<td>+3,290</td>
<td>4.4%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Health &amp; social work</td>
<td>134,840</td>
<td>+6,550</td>
<td>+11,320</td>
<td>8.4%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Arts &amp; entertainment</td>
<td>20,710</td>
<td>+1,600</td>
<td>+3,080</td>
<td>14.9%</td>
<td>31.4%</td>
</tr>
<tr>
<td>Other service activities</td>
<td>25,680</td>
<td>+1,830</td>
<td>+2,820</td>
<td>11.0%</td>
<td>-2.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>885,290</strong></td>
<td><strong>+39,130</strong></td>
<td><strong>+85,380</strong></td>
<td><strong>9.6%</strong></td>
<td><strong>17.3%</strong></td>
</tr>
</tbody>
</table>

Source: UUEPC

Note: Figures may not sum to total due to rounding

**Note:** The labour market outlook is presented in 'job-based' terms and therefore differs from forecasts calculated on 'people-based' terms (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.
Key findings
NI Skills Barometer 2019
### Key findings - Skills Barometer 2019

Over the next decade 33% of job opportunities will require at least degree level qualifications.

#### Average annual net requirement from education and migration by qualification (NQF), NI (2018-2028)

<table>
<thead>
<tr>
<th>Qualification Level</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below NQF 2</td>
<td>2,710</td>
</tr>
<tr>
<td>NQF Level 2</td>
<td>5,960</td>
</tr>
<tr>
<td>NQF Level 3</td>
<td>5,930</td>
</tr>
<tr>
<td>NQF Level 4-5</td>
<td>2,910</td>
</tr>
<tr>
<td>NQF Level 6+</td>
<td>8,780</td>
</tr>
</tbody>
</table>

- **Total = 26,300 p.a.**
- **33% of the net requirement require degree level qualifications**
- **Only 10% of the net requirement will require qualifications below NQF level 2**

*Source: UU EPC*
Key findings - Skills Barometer 2019

Undersupply of NQF level 3-5 qualifications

Note: The supply gaps in the above chart have been calculated based on 'effective supply'. This takes account of migration patterns amongst qualifiers at NI institutions and NI domiciled qualifiers qualifying from GB institutions, in addition to labour force participation. A supply adjustment is then applied to subtract tertiary qualifiers who require additional skills development to effectively fulfil the requirements of tertiary level employment.
Key findings - Skills Barometer 2019

Engineering and technology is the most undersupplied degree subject grouping

Annual average effective supply gap by NQF level 6+ subject (JACS, 1-digit), NI (2018-2028)

Source: HESA, UUEPC
Key findings - Skills Barometer 2019

Engineering and manufacturing is the most undersupplied sub-degree grouping

Source: DfE, UUEPC

Annual average effective supply gap by NQF level 4-5 subject (SSAs, 1-digit), NI (2018-2028)
Demand side
Demand side concepts
Demand side concepts

Key definitions

**Expansion demand** is the additional jobs created due to growth in a sector.

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

**Net replacement demand** is the difference between all leavers from employment – to retirement, inactivity, unemployment, other jobs and out migration - and joiners to employment – from unemployment, inactivity (excluding education leavers) and other jobs.

**Net requirement from education and migration** indicates the number of vacancies that can not be filled from within the existing labour market and therefore must be met from those leaving education and/or from migration. The annual average net requirement does not include the positions to be filled by labour market participants from other sectors, from unemployment or from economic inactivity.

**Annual average gross demand** in simple terms, refers to all vacancies to be filled in a year. It is the total expansion and replacement demand for staff per annum and the jobs are filled by those currently working in the labour market, those currently out of work and also those from education and migration.
Demand side concepts

Net requirement from education and migration

The figure of most interest is the **net requirement from education and migration** (net replacement demand plus expansion demand). This measures the quantum of vacancies for education leavers and migrants.

It takes account of ‘churn’ in the labour market. Skills demand associated with replacement demand is dependent largely on the existing stock and skill needs of current jobs. It can be compared directly to education outputs and the level of migrant inflows and is therefore useful for skills and wider workforce planning.

The focus on vacancies for education leavers and migrants should not be interpreted to mean that job opportunities for those out of work are ignored. Rather it is the case that joiners from unemployment and inactivity are already factored into replacement demand assumptions, and will essentially compete with education leavers and migrants for total arising vacancies.

The expansion demand (net change in the stock of jobs) is often more widely understood as a driver of future demand, it remains the case that, future skills and employability demand will still be significantly determined by net replacement demand.
Demand side concepts
Labour market flows determine skills demand

- Leavers to death: 2,600
- Leavers to retirement: 10,600
- Leavers to migration: 9,100
- Leavers to unemployment/training schemes: 13,900
- Leavers to inactivity (excl. retirement): 9,500
- Leavers to other occupations: 21,900

Total leavers: 67,600

Net requirement from education and migration: 26,300

Expansion demand: 8,200

Total joiners: 49,500

Joiners from unemployment/training schemes: 16,700

Joiners from inactivity (excl. students): 13,500

Joiners from other occupations: 19,300

Source: UUEPC
Note: Figures may not sum due to rounding
Demand side concepts
An overview of the NI labour market

Total employment
841,300 (2018)
923,200 (2028)

Annual average gross demand
75,800 (2018-2028)

Filled from within the existing labour market
49,500 (2018-2028)

Net requirement from education & migration
26,300 (2018-2028)

Replacement demand
18,100

Expansion demand
8,200

Note: Employment is presented in ‘people-based’ terms. This will differ slightly from ‘job-based’ numbers presented to illustrate the ‘high growth’ scenario.
Note: Data presented on this slide has been rounded to the nearest hundred.
Gross demand for skills

A significant proportion of jobs are filled from those within the labour market, across the qualification spectrum.

Average annual gross demand by qualification (NQF), 2018-2028

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Filled from within existing labour market</th>
<th>Net requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below NQF 2</td>
<td>15,130</td>
<td>2,710</td>
</tr>
<tr>
<td>NQF Level 2</td>
<td>8,960</td>
<td>5,960</td>
</tr>
<tr>
<td>NQF Level 3</td>
<td>11,430</td>
<td>5,930</td>
</tr>
<tr>
<td>NQF Level 4-5</td>
<td>6,180</td>
<td>2,910</td>
</tr>
<tr>
<td>NQF Level 6+</td>
<td>7,750</td>
<td>8,780</td>
</tr>
</tbody>
</table>

Source: UUEPC

Note: There are still opportunities in the labour market for those with low level qualifications. However, experience is desired and a majority of job openings are filled within the existing labour market.
Demand side
Sectors and occupations
Sector and occupation demand

Demand side analysis

To determine the (im)balance of qualifications and subjects a detailed analysis of the demand for labour at both sector and occupation level has been conducted. The analysis is based on employment forecasts across sectors and occupations from both the high growth scenario and baseline scenario.

This section will present the following:
1. Gross demand for jobs (total recruitment) by sector and occupation.
2. Net requirement from education and migration by sector and occupation.

Recall, expansion demand is directly related to the growth (or reduction) in size of the sector and net replacement demand refers to the number of positions which cannot be filled 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.
Gross demand by sector

Wholesale and retail requires the largest gross demand

Gross demand includes recruitment from the labour market (other sectors, unemployment and economic inactivity) as well as recruitment from education institutions and migrants. It is a proxy measure for all vacancies.

Source: UUEPC
Net requirement by sector

Health and social work requires the largest volume of qualifiers and migrants (net requirement)

Average annual net requirement from education and migration by sector (1-digit), NI (2018-2028)

- Health & social work
- Wholesale & retail
- Manufacturing
- Admin' & support services
- Restaurants and hotels
- Professional scientific & technical
- Information & communication
- Construction
- Education
- Public admin & defence
- Transport & storage
- Finance & insurance
- Other service activities
- Arts & entertainment
- Agriculture
- Real estate
- Water supply & waste
- Elect' & gas
- Mining
- People employed by households

Net requirement from education and migration refers only to the number of people required to meet demand from education institutions and migration flows.

Source: UUEPC
Net requirement by detailed sector

Retail trade accounts for the largest proportion of net requirement

The top 15 sectors (2-digit) account for 64% of the overall net requirement.
Gross demand by occupation

Elementary admin and service occupations require the largest quantum of qualifiers and migrants (net requirement)

**Average annual gross demand by occupation (2-digit), NI (2018-2028)**

- Elementary admin & service occs
- Administrative occs
- Sales occs
- Caring personal service occs
- Business & public service assoc profs
- Process, plant & machine operatives
- Business & public service profs
- Corporate managers
- Elementary trades, plant & storage occs
- Science & technology profs
- Transport & mobile machine drivers & operatives
- Health profs
- Skilled metal & electrical trades
- Mgrs & proprietors agric & services
- Textiles, printing & other skilled trades
- Secretarial & related occs
- Teaching & research profs
- Leisure & other personal service occs
- Skilled construction & building trades
- Skilled agricultural trades
- Customer service occs
- Science & technology assoc profs
- Culture, media & sports occs
- Health & social welfare assoc profs
- Protective service occs

**Gross demand** includes recruitment from the labour market (other sectors, unemployment and economic inactivity) as well as recruitment from education institutions and migrants. It is a proxy measure for all vacancies.

Source: UUEPC

---

**Net requirement**

**Filled within the existing labour market**
Net requirement by occupation

Science and technology professionals require the largest quantum of qualifiers and migrants (net requirement)

Average annual net requirement from education and migration by occupation (2-digit), NI (2018-2028)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Expansion demand</th>
<th>Net replacement demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science &amp; technology profs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary admin &amp; service occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business &amp; public service assoc profs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate managers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health profs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business &amp; public service profs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process, plant &amp; machine operatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skilled metal &amp; electrical trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching &amp; research profs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport &amp; mobile machine drivers &amp; operatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mgrs &amp; proprietors agric &amp; services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caring personal service occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skilled construction &amp; building trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textiles, printing &amp; other skilled trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary trades, plant &amp; storage occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secretarial &amp; related occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure &amp; other personal service occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science &amp; technology assoc profs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culture, media &amp; sports occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health &amp; social welfare assoc profs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer service occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skilled agricultural trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales occs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective service occs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Net requirement from education and migration refers only to the number of people required to meet demand from education institutions and migration flows.

Source: UUEPC
Net requirement by detailed occupation

IT and telecommunications professionals requires the largest net requirement.

The top 15 occupations (3-digit) account for 48% of the overall net requirement.

Source: UUEPC
Demand side
Qualifications by sector and occupation
Sector and occupation demand

Net requirement from education and migration by sector and occupation

To determine the (im)balance of qualifications and subjects within the future labour market a detailed analysis of the demand for qualifications at both sector and occupation level has been conducted.

The analysis is based current and projected skills mix across sectors and occupations* under both a high growth scenario and baseline scenario. As well as jobs forecasts across sectors and occupations from both the high growth scenario and baseline scenario.

This section will present the following:
1. Net requirement (demand) by qualification (NQF).
2. Net requirement by sector and qualification (NQF level 6+ and NQF level 4-5).
3. Net requirement by occupation and qualification (NQF level 6+ and NQF level 4/5).

*Annex B1 and Annex B2 provide a detailed list of the current and projected skills mix by sector and occupation.
Net requirement by qualification

Over the next decade 33% of job opportunities will require at least degree level qualifications

Average annual net requirement from education and migration by qualification (NQF), NI (2018-2028)

Source: UUEPC

- NQF Level 6+: 8,780
- NQF Level 4-5: 2,910
- NQF Level 3: 5,930
- NQF Level 2: 5,960
- Below NQF 2: 2,710

33% of the net requirement require degree level qualifications

Total = 26,300 p.a.

Only 10% of the net requirement will require qualifications below NQF level 2
The health and social work sector requires the largest quantum of NQF level 6+ qualifiers, accounting for 16% of the net requirement. This is followed by professional services (13%), IT (12%) and admin' and support (11%).
Net requirement by qualification and occupation (NQF level 6+)

Science and technology professionals require the largest quantum of NQF level 6+ qualifiers, accounting for 17% of the total net requirement. This is followed by business and public service professionals (16%) and health professionals (14%).
The health and social work sector requires the largest quantum of NQF level 4-5 qualifiers, accounting for 22% of the total net requirement. This is followed by education (15%), manufacturing (14%) and professional services (12%).

<table>
<thead>
<tr>
<th>2 digit SIC</th>
<th>% of NQF level 4-5 net requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human health activities</td>
<td>17.7%</td>
</tr>
<tr>
<td>Education</td>
<td>15.1%</td>
</tr>
<tr>
<td>Computer programming, consultancy and related activities</td>
<td>7.4%</td>
</tr>
<tr>
<td>Public administration and defence; compulsory social security</td>
<td>6.3%</td>
</tr>
<tr>
<td>Employment activities</td>
<td>4.7%</td>
</tr>
<tr>
<td>Legal and accounting activities</td>
<td>4.6%</td>
</tr>
<tr>
<td>Residential care activities</td>
<td>4.2%</td>
</tr>
<tr>
<td>Manufacture of food products</td>
<td>3.8%</td>
</tr>
<tr>
<td>Architectural and engineering activities; technical testing and analysis</td>
<td>3.1%</td>
</tr>
<tr>
<td>Manufacture of other transport equipment</td>
<td>2.5%</td>
</tr>
<tr>
<td>Land transport and transport via pipelines</td>
<td>2.2%</td>
</tr>
<tr>
<td>Other personal service activities</td>
<td>2.2%</td>
</tr>
<tr>
<td>Construction of buildings</td>
<td>1.9%</td>
</tr>
<tr>
<td>Activities of head offices; management consultancy activities</td>
<td>1.6%</td>
</tr>
<tr>
<td>Specialised construction activities</td>
<td>1.6%</td>
</tr>
</tbody>
</table>
Health professionals require the largest quantum of NQF level 4-5 qualifiers, accounting for 14% of the total net requirement. This is followed by corporate managers (13%) and science and technology professionals (6%).

### NQF level 4-5 net requirement by occupation (top 15, 3-digit), NI (annual average 2018-2028)

<table>
<thead>
<tr>
<th>3 digit SOC</th>
<th>% of NQF level 4-5 net requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing and midwifery professionals</td>
<td>7.1%</td>
</tr>
<tr>
<td>Health professionals</td>
<td>5.5%</td>
</tr>
<tr>
<td>Caring personal services</td>
<td>4.7%</td>
</tr>
<tr>
<td>Teaching and educational professionals</td>
<td>4.6%</td>
</tr>
<tr>
<td>Information technology and telecommunications professionals</td>
<td>4.2%</td>
</tr>
<tr>
<td>Functional managers and directors</td>
<td>4.2%</td>
</tr>
<tr>
<td>Managers and directors in retail and wholesale</td>
<td>3.4%</td>
</tr>
<tr>
<td>Welfare and housing associate professionals</td>
<td>2.9%</td>
</tr>
<tr>
<td>Agricultural and related trades</td>
<td>2.9%</td>
</tr>
<tr>
<td>Production managers and directors</td>
<td>2.7%</td>
</tr>
<tr>
<td>Science, engineering and production technicians</td>
<td>2.4%</td>
</tr>
<tr>
<td>Managers and proprietors in hospitality and leisure services</td>
<td>2.3%</td>
</tr>
<tr>
<td>Sales, marketing and related associate professionals</td>
<td>2.3%</td>
</tr>
<tr>
<td>Metal machining, fitting and instrument making trades</td>
<td>2.3%</td>
</tr>
<tr>
<td>Construction and building trades</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

Source: UUEPC
The wholesale and retail sector requires the largest quantum of NQF level 3 and below qualifiers, accounting for 17% of the total net requirement. This is followed by manufacturing (14%), restaurants and hotels (12%) and health and social work (10%).
Net requirement by qualification and occupation (NQF level 3 and below)

Elementary admin’ and service occupations require the largest quantum of below NQF level 3 qualifiers, accounting for 13% of total. This is followed by process, plant and machine operatives (11%) and skilled metal and electrical trades (8%).

Source: UUEPC

Elementary admin & service occs
Process, plant & machine operatives
Skilled metal & electrical trades
Administrative occs
Transport & mobile machine drivers & operatives
Business & public service assoc profs
Skilled construction & building trades
Corporate managers
Textiles, printing & other skilled trades
Elementary trades, plant & storage occs
Caring personal service occs
Leisure & other personal service occs
Secretarial & related occs
Mgrs & proprietors agric & services
Science & technology profs
Other

Source: UUEPC
Demand side
Subjects
Demand for subjects

Net requirement from education and migration by subject

To determine the (im)balance of qualifications and subjects within the future labour market a detailed analysis of the demand for subjects has been conducted*.

The analysis is based on employment forecasts, replacement demand and recruitment patterns by subject, sector and occupation from both the high growth scenario and baseline scenario.

Subjects are categorised as the following:

1. **Joint Academic Coding System (JACS)** which refers to the coding system used to group Higher Education (HE) subjects (NQF level 6+). The ‘1-digit’ breakdown is the broad grouping of subjects and ‘2-digit’ is a more detailed grouping of subjects.

2. **Sector Subject Areas (SSAs)** which refers to the coding system used to group Further Education (FE) subjects (predominantly NQF level 4-5). The ‘1-digit’ breakdown is the broad grouping of subjects and ‘2-digit’ is a more detailed grouping of subjects.

It should be noted, the annual average requirements for skills at NQF Level 3 and below have not been identified at subject level because students typically study a wide range of subjects at these NQF levels. As a result demand at NQF level 3 and below has been identified by industry and occupation only**.

*Annex C1 provides a detailed list of the JACS (NQF level 6+) subject mix by sector (1-digit)

**Annex D1 provides a range of demand side outputs for below NQF level 3
Demand for subjects

Net requirement from education and migration by subject

Estimates of future skill/subject demands are based on historic patterns. Therefore it is possible demand in some sectors has the potential to evolve over time changing the required subject mix within sectors (e.g. artificial intelligence where there are currently zero enrolments in NI).

This section will present the following:
1. Net requirement (demand) by NQF level 6+ subject (JACs, 1-digit).
2. Net requirement (demand) by NQF level 6+ subject (JACs, 2-digit).
3. Net requirement (demand) by NQF level 4-5 subject (SSAs, 1-digit).
4. Net requirement (demand) by NQF level 4-5 subject (SSAs, 2-digit).

It is important to state that although some subject areas may rank amongst the most in-demand in the NI economy, they can still be oversupplied. The demand and supply balances are explained within the ‘(im)balances’ section beginning slide 61 in this report.
Demand for graduates by subject

Medical and related subjects is the most ‘in-demand’ degree subject group

Source: UUEPC

Average annual net requirement for NQF level 6+ by subject (JACS, 1-digit), NI (2018-2028)

- Medical related subjects
- Business and Financial studies
- Mathematical Sciences and Computing
- Social Studies
- Engineering
- Education
- Biological Sciences
- Arts
- Physical/Environmental Sciences
- Law
- Languages
- Humanities
- Architecture and related studies
- Medicine and dentistry
- Mass Communications and Documentation
- Agricultural Sciences
- Technology

Source: UUEPC
Demand for graduates by detailed subject

Nursing is the most ‘in-demand’ detailed degree subject

Average annual net requirement for NQF level 6+ by subject (JACS, 2-digit), NI (2018-2028)

Source: UUEPC
Demand for sub-degrees by subject

Health, public services and care is the most ‘in-demand’ sub-degree subject group

<table>
<thead>
<tr>
<th>Subject</th>
<th>Average annual net requirement (2018-2028)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health, public services and care</td>
<td>800</td>
</tr>
<tr>
<td>Business, administration, finance and law</td>
<td>400</td>
</tr>
<tr>
<td>Engineering and manufacturing technologies</td>
<td>300</td>
</tr>
<tr>
<td>Science and Mathematics</td>
<td>200</td>
</tr>
<tr>
<td>Arts, media and publishing</td>
<td>100</td>
</tr>
<tr>
<td>Information and Communication Technology</td>
<td>90</td>
</tr>
<tr>
<td>Education and training</td>
<td>80</td>
</tr>
<tr>
<td>Construction, planning and the built environment</td>
<td>70</td>
</tr>
<tr>
<td>Social sciences</td>
<td>60</td>
</tr>
<tr>
<td>Leisure, travel and tourism</td>
<td>50</td>
</tr>
<tr>
<td>History, philosophy and theology</td>
<td>40</td>
</tr>
<tr>
<td>Agriculture, horticulture and animal care</td>
<td>30</td>
</tr>
<tr>
<td>Languages, literature and culture</td>
<td>20</td>
</tr>
<tr>
<td>Retail and commercial technology</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: UUEPC
Demand for sub-degrees by detailed subject

Nursing and related subjects is the most ‘in-demand’ detailed sub-degree subject

Source: UUEPC
Supply side
Supply side concepts
Supply side concepts

Gross, net and effective supply

The supply forecast is based on current participation rates in education and NISRA demographic projections. It does not assume a change in policy. Therefore highlighting areas where under or over supply could become an issue.

Supply estimates consider a number of factors (e.g. students leaving NI, students returning to NI etc.) therefore a number of supply estimates are calculated:

1. **Gross Supply** which is the number of qualifiers produced across all NI education institutions.
2. **Net Supply** which includes all students educated in NI institutions plus NI domiciled students returning from education at GB HEI’s minus students educated in NI who then leave minus students who proceed to further study.
3. **Effective Supply** which is calculated using the net supply but applies a ‘supply adjustment’. The adjustment factor is applied at NQF level 4+ qualifiers from FE and HE.
Supply side concepts

Gross supply versus net supply

The difference between gross supply and net supply can be explained by the following concepts.

1. **Migration flows** - A number of students qualifying from NI education institutions will leave NI to live and work elsewhere. This trend has increased in recent years as the number of international students has increased (i.e. international students study in NI then return home). Similarly, there are a number of NI domiciled students qualifying from institutions outside NI who return to NI upon graduating. Net supply accounts for these flows by netting out the qualifiers that leave NI and adding in those who return to NI (and enter the labour market).

2. **Labour market participation** - Students are only counted as part of the net supply if they leave an education institution to actively participate in the labour market (i.e. either employed or unemployed after six months). The difference between gross supply and net supply is more significant in FE than HE as greater proportions of FE students continue to further study (as opposed to entering the labour market) compared to HE.
Supply adjustment – effective supply

Applied to both higher education and further education leavers

This adjustment is to recognise that a proportion of graduates and other qualifiers (NQF level 4+) require additional skills development before they would be capable of taking employment opportunities at a grade for which they are qualified.

The supply adjustment is then applied to the net supply to calculate **effective supply**. This concept is an important element in understanding the skills challenges faced by local employers.

Consultations undertaken during the initial NI Skills Barometer research highlighted a requirement for a supply adjustment to reduce the quantum of qualifiers from FE and HE at NQF level 4+, referred to as **effective supply**.
Supply adjustment – effective supply
Applied to both higher education and further education leavers

These findings have been underpinned by more recent survey evidence:
• The latest CBI/Pearson to skills survey identified that three-quarters of NI employers lacked confidence that they would be able to find sufficiently skilled people for new vacancies.
• The 2017 employer skills survey highlighted that 37% of NI firms identified an incidence of skills underutilisation (employees with qualifications and skills more advanced than required for their current job role). This indicates that there are likely a number of graduates, although employed, have been unable to access graduate level employment.
• Data from the Institute of Student Employers and the Graduate Recruitment Bureau indicated a high proportion of employers use a 2:1 classification as a minimum entry requirement. In NI 76% of qualifiers from first degrees achieve a 2:1 or above degree classification. Therefore, there are a number of qualifiers who are unable to access graduate level vacancies.

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 side
People and qualifications from education institutions
Supply side – school leavers

70,000 pupils are expected to leave school without achieving 5+ GCSEs including English and maths over the next decade.

Source: DE, UUEPC forecasts
Supply side – quantum and qualifications of FE leavers

High concentration of NQF level 2 qualifiers from FE

Further Education qualifiers by NQF, NI (2017/18)

Further Education qualifiers by NQF, NI (2009/10-2027/28)

Forecast

Source: DfE, UUEPC forecasts
Supply side – quantum and qualifications of HE leavers

Undergraduate degrees dominate HE qualifiers

Net supply from higher education qualifiers by NQF, NI (2017/18)

Net supply from higher education by NQF, NI (2003/04-2027/28)

Source: HESA, UUEPC analysis

Forecast
Demographic profile by industry

Restaurants and hotels is the most youthful sector

Demographics by sector (1-digit), NI (4 quarter rolling average to Q3 2018)

Source: Labour Force Survey
Note: 4 quarter rolling average to Q3 2018
Destination of leavers by NQF level

Almost three quarters of NQF L6+ qualifiers enter the labour market.

<table>
<thead>
<tr>
<th>Qualification Level</th>
<th>Entering the labour market</th>
<th>Not entering labour market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than NQF level 2</td>
<td>3,450</td>
<td>8,630</td>
</tr>
<tr>
<td>Level 2</td>
<td>5,970</td>
<td>13,070</td>
</tr>
<tr>
<td>Level 3</td>
<td>3,920</td>
<td>17,640</td>
</tr>
<tr>
<td>Level 4-5</td>
<td>1,930</td>
<td>2,500</td>
</tr>
<tr>
<td>Level 6</td>
<td>6,950</td>
<td>2,150</td>
</tr>
<tr>
<td>Level 7-8</td>
<td>3,070</td>
<td>1,520</td>
</tr>
</tbody>
</table>

Total qualifiers at 'graduate' level are only marginally larger than the total number of qualifiers below level 2.

Includes 7k school leavers per annum not achieving 5 GCSE's including English and maths.

Source: UUEPC

Annual average destination of leavers by qualification (NQF), NI (2018-2028)
Gross supply of NQF level 6+

Medical related subjects provide the largest supply of graduates

Source: HESA, UUEPC
Gross, net and effective supply of NQF level 6+

Supply adjustment reduces the volume of graduates across subjects

Source: HESA, UUEPC

Gross, net and effective supply by NQF level 6+ subject (JACS, 1-digit), NI (2018)
Gross supply of NQF level 4-5

Health and public services provide the largest supply of NQF level 4-5

Source: DfE, UUEPC

Gross supply by NQF level 4-5 subject (SSAs, 1-digit), NI (2018 versus 2028)
Gross, net and effective supply of NQF level 4-5

Supply adjustment reduces the volume of graduates across subjects

Source: DfE, UUEPC

Gross, net and effective supply by NQF level 4-5 subject (SSAs, 1-digit), NI (2018)
(Im) balance
Demand side versus supply side concepts
The supply/demand (im)balance

Introduction to the “supply gap”

The supply/demand (im)balance or “supply gap” represents the net requirement of individuals from education and migration (demand) minus qualifiers from education institutions entering the labour market at a level on par with their qualifications (supply) i.e. demand net supply.

The information presented within this section is based on an annual average over the 10 year period 2018-2028 under the high growth scenario. For example, if medical related subjects is oversupplied by +200, that represents an average annual oversupply of 200 per annum within that subject group over the ten year period 2018-2028. Similarly if math’s and computer science graduates are undersupplied by -150 graduates, that represents an average annual undersupply of 150 graduates within that subject group over the next decade. This concept is referred to as the average annual supply gap.

This section identifies the annual average supply gap by qualification level (NQF) and subject studied at NQF level 4 and above (JACS and SSAs). As students tend to study more than one subject area at NQF level 3 and below, demand is only presented at a sector level (and not a subject level). Therefore, subject supply gaps are not produced at NQF level 3 and below.
Supply gap by NQF level

Significant undersupply of NQF level 3-5 qualifications

**Note:** The supply gaps in the above chart have been calculated based on ‘effective supply’. This takes account of migration patterns amongst qualifiers at NI institutions and NI domiciled qualifiers qualifying from GB institutions, in addition to labour force participation. A supply adjustment is then applied to subtract tertiary qualifiers who require additional skills development to effectively fulfil the requirements of tertiary level employment.

Source: UUEPC
Supply gap by degree subject

Engineering and technology is the most undersupplied subject grouping

Source: HESA, UUEPC

*Annex E1 provides supply gap estimates for each detailed JACS subject (2-digit)
Undersupplied degree subjects (detailed)

Computer science remains the most undersupplied degree subject

The top 5 undersupplied subjects (JACS, 2-digit) account for 34% of total undersupplied subjects.

*Source:* HESA, UUEPC
Oversupplied degree subjects (detailed)

Training teachers are the most oversupplied degree subject

The top 5 oversupplied subjects (JACS, 2-digit) account for 37% of total oversupplied subjects.
Supply gap by sub-degree subject

Engineering and manufacturing is the most undersupplied sub-degree grouping

*Annex E2 provides supply gap estimates for each detailed SSAs subject (2-digit)
Undersupplied sub-degree subjects (detailed)
Nursing and related subjects is the most under supplied sub-degree subject.

Source: DfE, UUEPC

The top 3 undersupplied subjects (SSAs, 2-digit) account for 42% of total undersupplied subjects.
Oversupplied sub-degree subjects (detailed)

Health and social care is the most oversupplied sub-degree subject.

Top 10 most oversupplied NQF level 4-5 subjects (SSAs, 2-digit) (average annual effective supply gap), NI (2018-2028)

The top 3 oversupplied subjects (SSAs, 2-digit) account for 72% of total oversupplied subjects.

Source: DfE, UUEPC
Careers information

Earnings and employment prospects
Decisions and choices made by young people during their journey in education shapes their labour market prospects (e.g. employment and earnings prospects).

For example, the higher a person’s qualifications, the higher their earnings and employment prospects are likely to be. With that, employment opportunities and earnings prospects differ by subject area studied. Finally, a person’s qualification level and subject studied may impact the sector they are most likely seek an employment opportunity within.

To adequately prepare young people for their future career it is important such careers information is widely accessible.

This section seeks to identify headline careers information including:
1. Earnings prospects by level of education.
2. Employment prospects by level of education.
3. Location (sector) of HEI qualifiers (6 months after graduating).
Earnings progression by age and qualification

Earnings increase as qualification levels increase

Gross weekly earnings progression by NQF qualifications, NI (4 quarter rolling average to Q3 2018)

Source: Labour Force Survey

Note: Figures refer to total employment

Gross weekly wage (£)

Age

Below NQF level 2
NQF Level 2
NQF Level 3
NQF Level 4-5
NQF Level 6+

Source: Labour Force Survey

Note: Figures refer to total employment
Earnings progression by qualification

Undergraduate earnings are 34% above the NI average

Average weekly earnings (gross) by qualification (NQF), NI (4 quarter rolling average to Q3 2018)

Source: Labour Force Survey
Note: 4 quarter rolling average to Q3 2018
Employment rate by qualification
The undergraduate employment rate is 15 percentage points above the NI average

Employment rate (%) by qualification level, NI (4 quarter rolling average to 2018)

Source: Labour Force Survey
Note: 4 quarter rolling average to Q3 2018
Note: The employment rate is based upon the 16-64 population (excluding full-time students and retirees).
Location of HEI qualifiers (6 months after graduating)

Medicine and dentistry and subjects allied to medicine

**Note:** Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

**Source:** HESA

---

**Note:** Other includes; Admin & support services, Public admin & defence, Restaurants & hotels, Agriculture, Construction, Transport & storage and Information & communication.

**Note:** Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

**Source:** HESA
Location of HEI qualifiers (6 months after graduating)

Biological sciences and agriculture and related subjects

**Note**: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

**Source**: HESA
Location of HEI qualifiers (6 months after graduating)

Physical sciences and mathematical sciences subjects

Note: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

Source: HESA
Location of HEI qualifiers (6 months after graduating)

Computer science and engineering and technology subjects

Note: Other includes; Public admin’ & defence, Arts & entertainment, Electricity & gas, Construction, Transport & storage, Real Estate and Other services

Note: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

Source: HESA
Location of HEI qualifiers (6 months after graduating)

Architecture, building and planning and social studies subjects

Note: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

Source: HESA
Location of HEI qualifiers (6 months after graduating)

Law and business and administrative studies subjects

Note: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.
Note: Other includes; Manufacturing, Transport & storage, Arts & entertainment and Other services.

Source: HESA

Note: Other includes; Transport & storage, Electricity & gas, Water supply & waste and Mining.
Note: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.
Source: HESA
Location of HEI qualifiers (6 months after graduating)

Mass communications and documentation and languages subjects

**Note**: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

**Source**: HESA

---

**Note**: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

**Source**: HESA
Location of HEI qualifiers (6 months after graduating)

Historical and philosophical and creative arts and design subjects

Note: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

Source: HESA
Location of HEI qualifiers (6 months after graduating)

Education subjects

Note: Other includes; Admin & support, Public admin & defence, Other services, Wholesale & retail, Professional scientific and technical and Arts & entertainment.

Note: Sectors which have had no Higher Education leavers join within 6 months of graduating have been excluded.

Source: HESA
Sector mix by subject studied (NQF level 6+) - stock

Medicine and dentistry and medical related subjects

Note: Other includes; Professional scientific & technical, Mining, Other service activities, Manufacturing, Information & communication, Construction, Admin’ & support, Restaurants and hotels, Transport & storage, Agriculture, Arts & entertainment, Finance & insurance, Real estate, Electricity & gas, People employed by households and Water supply & waste.
Source: Labour Force Survey, UUEPC Analysis

Note: Other includes; Professional, scientific & technical, Restaurants & hotels, Other service activities, Real estate, Construction, Information & communication, Finance & insurance, Transport & storage, Agriculture, Arts & entertainment, Water supply & waste, Electricity & gas, People employed by households and Mining.
Source: Labour Force Survey, UUEPC Analysis
Sector mix by subject studied (NQF level 6+) - stock

Biological sciences and agricultural sciences subjects

**Note:** Other includes; Agriculture, Transport & Storage, Water supply & waste, Mining, Electricity & gas and People employed by households.

**Source:** Labour Force Survey, UUEPC Analysis

---

**Note:** Other includes; Transport & storage, Information & communications, Water supply & waste, Electricity & gas, People employed by households and Mining.

**Source:** Labour Force Survey, UUEPC Analysis
Sector mix by subject studied (NQF level 6+) - stock

Physical/environmental sciences and mathematical sciences and computing subjects

**Note:** Other includes; Agriculture, Water supply & waste, Arts & entertainment, Mining, Electricity & gas and People employed by households.

**Source:** Labour Force Survey, UUEPC Analysis
Sector mix by subject studied (NQF level 6+) - stock
Engineering and technology subjects

Note: Other includes; Real estate, Arts & entertainment, Electricity & gas, Water supply & waste, Agriculture, and People employed by households.

Source: Labour Force Survey, UUEPC Analysis

Note: Other includes; Restaurants & hotels, Other services activities, Real estate, Mining, Electricity & gas, Water supply & waste, Agriculture, Arts & entertainment and People employed by households.

Source: Labour Force Survey, UUEPC Analysis
Sector mix by subject studied (NQF level 6+) - stock

Architecture and related studies and social studies subjects

Note: Other includes; Transport & storage, Finance & insurance, Information & communication, Arts & entertainment, Agriculture, Electricity & gas, Water supply & waste, Mining and People employed by households.

Source: Labour Force Survey, UUEPC Analysis

Note: Other includes; Arts & entertainment, Agriculture, Water supply & waste, Electricity & gas, People employed by households and Mining.

Source: Labour Force Survey, UUEPC Analysis
### Sector mix by subject studied (NQF level 6+) - stock

**Law and business and financial studies subjects**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business and financial studies</td>
<td>38%</td>
</tr>
<tr>
<td>Construction</td>
<td>21%</td>
</tr>
<tr>
<td>Wholesale &amp; retail</td>
<td>14%</td>
</tr>
<tr>
<td>Education</td>
<td>12%</td>
</tr>
<tr>
<td>Professional scientific &amp; technical</td>
<td>10%</td>
</tr>
<tr>
<td>Public admin &amp; defence</td>
<td>9%</td>
</tr>
<tr>
<td>Health &amp; social work</td>
<td>7%</td>
</tr>
<tr>
<td>Admin' &amp; support services</td>
<td>5%</td>
</tr>
<tr>
<td>Finance &amp; insurance</td>
<td>5%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>4%</td>
</tr>
<tr>
<td>Information &amp; communication</td>
<td>2%</td>
</tr>
<tr>
<td>Real estate</td>
<td>2%</td>
</tr>
<tr>
<td>Other service activities</td>
<td>2%</td>
</tr>
<tr>
<td>Restaurants and hotels</td>
<td>2%</td>
</tr>
<tr>
<td>Construction</td>
<td>2%</td>
</tr>
</tbody>
</table>

**Note:** Other includes; Transport & storage, Arts & entertainment, Agriculture, Electricity & gas, Water supply & waste, People employed by households and Mining.

**Source:** Labour Force Survey, UUEPC Analysis
Sector mix by subject studied (NQF level 6+) - stock

Mass communications and documentation and Linguistics, English, Celtic and ancient subjects

Note: Other includes: Agriculture, Electricity & gas, Water supply & waste, People employed by households and Mining.

Source: Labour Force Survey, UUEPC Analysis
Sector mix by subject studied (NQF level 6+) - stock

European languages and Eastern, Asiatic, African, American and Australasian languages and literature subjects

Note: Other includes; Agriculture, Transport & storage, Water supply & waste, Electricity & gas, People employed by Households and Mining.

Source: Labour Force Survey, UUEPC Analysis
Sector mix by subject studied (NQF level 6+) - stock

Humanities and arts subjects

Note: Other includes; Transport & storage, Agriculture, Electricity & gas, Water supply & waste, Mining and People employed by households.

Source: Labour Force Survey, UUEPC Analysis
Sector mix by subject studied (NQF level 6+) - stock

Education subjects

Education - Sector mix (NQF level 6+), NI (2018)

- Education: 73%
- Other: 10%
- Health & social work: 7%
- Admin' & support services: 4%
- Public admin & defence: 4%
- Wholesale & retail: 3%

Note: Other includes; Professional scientific and technical, Restaurants and hotels, Other service activities, Manufacturing, Information and Communication, Real estate, Construction, Arts & entertainment, Finance & insurance, Transport & storage, Agriculture, Water supply & waste, People employed by households, Electricity & gas and Mining.

Source: Labour Force Survey, UUEPC Analysis
Careers information
Work experience and soft skills
What are “soft skills”?

Soft skills in the 21st century

Employers have always placed value on individuals with “soft skills”. However in recent years technological advancements which automate routine tasks have significantly enhanced the requirement for businesses to have employees with strong non-cognitive skills (as they are much less likely to be automated).

According to a study reported on by the OECD* employers reported that a lack of soft skills (e.g. having the right attitude, flexibility, communication, punctuality and the ability to make a professional introduction) can be a reason not to employ young candidates.

Soft skills are typically described as a mix of interpersonal skills and character traits.

Soft skills include skills such as:

- People skills
- Communication skills
- Teamwork
- Problem solving
- Adaptability
- Time management
- Self-confidence
- Strong work ethic
- Leadership

“57% of business reported soft skills are more important than hard skills”

Soft skills most in need are:

- Leadership
- Communication
- Collaboration
- Time management

Source: LinkedIn Learning (survey of 2000+ businesses)

*OECD (2016) Soft Skills for the Future, Available at: https://oecdskillsandwork.wordpress.com/2016/06/17/soft-skills-for-the-future/
Soft skills – Areas for improvement

Time management and prioritisation tops the list

Soft skills that employers with skills-shortages found difficult to obtain from applicants, NI, 2016

Source: Employer Skills Survey
Skills gained from work experience

Work experience provides individuals with sought after soft skills

It is widely recognised work experience or on the job training can be invaluable in providing young people with a range of skills and attributes, specifically soft skills that employers report as hard to obtain in candidates.

Work experience can enhance students skills in the following areas:

- Interpersonal skills
- Problem solving
- Commercial awareness
- Team work
- Self-confidence
- Organisation
- Time management

Over one-third of employers stated that a graduate with no previous work experience would not be successful during their selection process, regardless of their academic qualification (The Graduate Market, 2019).
Importance of work experience

Relevant work experience is the most important factor looked for in job applicants.

Source: Employer Perspectives Survey

Important factors looked for in candidates, NI, 2016

Having relevant work experience: 70%
Having Maths and English to at least Level 2 or GCSE A*-C: 60%
Having a relevant vocational qualification: 50%
Having particular academic qualifications: 40%

% of total establishments

Source: Employer Perspectives Survey

Importance of candidates having relevant work experience, NI, 2016

Critical: 5%
Significant: 45%
Small amount of value: 25%
No value: 10%
Work experience opportunities are available
Based on leading UK employers

Number of paid university work placements, UK, 2011-2019

Type of work experience placements available, UK, 2019

- Paid internships or vacation placements for penultimate year undergraduates
- Course placements as part of degree course, typically lasting 6-12 months
- Open days, introductory course or taster experiences for first year undergraduates
- Paid internships or vacation placements for first year undergraduate students
- Paid internships or work placements for recent graduates
- Pre-university placements available for students during year out

Source: The Graduate Market, 2019

Note: Figures refer to results from a survey of UK leading employers and are implied based on annual percentage changes reported.
Preparedness for work

FE college leavers are more prepared for work compared to school leavers of the same age

There is often a mismatch between perceived work readiness among employers and students. The OECD* reported on a study which found 48% of employers reported young people lacked written communication skills. However, only 6% of young people recognised lacking these skills. Similar mismatches emerged for being self-critical, knowing one’s own strengths and weaknesses, conflict management and knowing when to listen and when to speak.

*OECD (2016) Soft Skills for the Future, Available at: https://oecdskillsandwork.wordpress.com/2016/06/17/soft-skills-for-the-future/
Soft skills compliment hard skills

Provision of soft skills

Employers will need individuals with a combination of both soft skills and hard skills (e.g. specific job related abilities/qualifications). These two categories of skills compliment one another in the workplace.

Whilst hard skills are most typically gained through the education system it is important that students are also able to acquire soft skills throughout their educational journey. Therefore, education institutions should continue to integrate the development of soft skills to the curriculum.

Soft skills are often initially be built through extracurricular activities and part-time employment, however as students move through their education it is important they are provided with opportunities to gain work experience relevant to their career path.

Given employers report soft skills as lacking among education leavers there is a onus on employers to provide opportunities for young people to gain these skill requirements within their organisations through work experience opportunities.
Employment forecast under baseline scenario

Health and social work remains the largest employment sector

Employment (jobs) baseline scenario, NI (2018 versus 2028)

Source: UUEPC

Number of jobs

2028

2018

Source: UUEPC
Net requirement by sector

Health and social work sector requires the largest net requirement.

Average annual net requirement from education and migration by sector (1-digit), NI (2018-2028)

- Health & social work
- Wholesale & retail
- Manufacturing
- Admin’ & support services
- Restaurants and hotels
- Education
- Professional scientific & technical
- Construction
- Information & communication
- Public admin & defence
- Transport & storage
- Other service activities
- Arts & entertainment
- Finance & insurance
- Agriculture
- Real estate
- Water supply & waste
- Elect’ & gas
- Mining
- People employed by households

Expansion demand accounts for a higher proportion of the net requirement in high growth sectors.

Source: UUEPC
Net requirement by occupation
Science and technology professionals require the largest net requirement

Source: UUEPC

Average annual net requirement from education and migration by occupation (2-digit), NI (2018-2028)

- Science & technology profs
- Health profs
- Elementary admin & service occs
- Corporate managers
- Business & public service assoc profs
- Process, plant & machine operatives
- Business & public service profs
- Teaching & research profs
- Skilled metal & electrical trades
- Transport & mobile machine drivers & operatives
- Administrative occs
- Mgrs & proprietors agric & services
- Elementary trades, plant & storage occs
- Skilled construction & building trades
- Caring personal service occs
- Textiles, printing & other skilled trades
- Secretarial & related occs
- Leisure & other personal service occs
- Science & technology assoc profs
- Health & social welfare assoc profs
- Culture, media & sports occs
- Customer service occs
- Skilled agricultural trades
- Protective service occs
- Sales occs
Net requirement by degree subject

Medical related subjects is the most demanded subject at NQF level 6+

Source: UUEPC

Average annual net requirement for NQF level 6+ by subject (JACS, 1-digit), NI (2018-2028)

- Medical related subjects
- Business and Financial studies
- Mathematical Sciences and Computing
- Engineering
- Education
- Social Studies
- Biological Sciences
- Arts
- Law
- Humanities
- Languages
- Medicine and dentistry
- Architecture and related studies
- Mass Communications and Documentation
- Agricultural Sciences
- Technology

Net replacement demand
Expansion demand

Source: UUEPC
Net requirement by sub-degree subject

Health and public services is the most demanded subject at NQF level 4-5

Source: UUEPC
Supply gap by NQF level

Significant oversupply of NQF level 6+

Average annual labour market supply gap by qualification (NQF), NI (2018-2028)

- Level 6+: 2080
- Level 4-5: 910
- Level 3: -920
- Level 2: -710
- Less than NQF level 2: 1200

Source: UUEPC

Note: The supply gaps in the above chart have been calculated based on ‘effective supply’. This takes account of migration patterns amongst qualifiers at NI institutions and NI domiciled qualifiers qualifying from GB institutions, in addition to labour force participation. A supply adjustment is then applied to subtract tertiary qualifiers who require additional skills development to effectively fulfil the requirements of tertiary level employment.
Supply gap by degree subject

Engineering and technology is the most undersupplied subject area at NQF level 6+

Source: HESA, UUEPC
Supply gap by degree subject
Baseline scenario – top 15 oversupplied degree subjects

Top 15 most oversupplied NQF level 6+ subjects (JACS, 2-digit) (average annual effective supply gap), NI (2018-2028)

- Nursing
- Training teachers
- Social work
- Academic studies in education
- Computer science
- Law by area
- Business studies
- Politics
- Psychology
- Clinical medicine
- Law by topic
- Software engineering
- Architecture

Source: HESA, UUEPC
Supply gap by degree subject
Baseline scenario – top 15 undersupplied degree subjects

Top 15 most undersupplied NQF level 6+ subjects (JACS, 2-digit) (average annual effective supply gap), NI (2018-2028)

Source: HESA, UUEPC
Supply gap by sub-degree subject

Engineering and manufacturing is the most undersupplied subject at NQF level 6+

Source: DfE, UUEPC
Supply gap by sub-degree subject
Baseline scenario – top 10 oversupplied sub-degree subjects

Top 10 most oversupplied NQF level 4-5 subjects (SSAs, 2-digit) (average annual effective supply gap), NI (2018-2028)

Source: DfE, UUEPC
Supply gap by sub-degree subject
Baseline scenario – top 10 undersupplied sub-degree subjects

Top 10 most undersupplied NQF level 4-5 subjects (SSAs, 2-digit) (average annual effective supply gap), NI (2018-2028)

Source: DfE, UUEPC
Annex A2
Baseline scenario versus high growth scenario
High growth versus baseline jobs
Health and social sector to remain largest employer by 2028

Employment (jobs) by sector (1-digit), high growth scenario versus baseline scenario, NI (2028)

- Health & social work
- Wholesale & retail
- Manufacturing
- Education
- Administrative & support services
- Construction
- Restaurants and hotels
- Professional scientific & technical
- Public admin & defence
- Information & communication
- Transport & storage
- Agriculture
- Other service activities
- Finance & insurance
- Arts & entertainment
- Real estate
- Water supply & waste
- Electricity & gas
- Mining

Source: UUEPC
High growth versus baseline jobs
Professional services forecasts contribute 11.8k jobs by 2028 under the high growth scenario
Supply gap by NQF level
Baseline scenario versus high growth scenario

Average annual net requirement by qualification, baseline versus high growth scenario’s, NI (2018-2028)

- **NQF Level 6+**
  - Baseline: 6,500
  - High growth: 8,780

- **NQF Level 4-5**
  - Baseline: 2,160
  - High growth: 2,910

- **NQF Level 3**
  - Baseline: 4,830
  - High growth: 5,930

- **NQF Level 2**
  - Baseline: 5,060
  - High growth: 5,960

- **Below NQF 2**
  - Baseline: 2,250
  - High growth: 2,710

31% of the net requirement in the baseline scenario require degree level qualifications.

Total **baseline** = 20,800 p.a.

Only 11% of the net requirement under the baseline scenario will require qualifications below NQF level 2.

Source: UUEPC
Net requirement by degree subject
Baseline scenario versus high growth scenario

Average annual net requirement by NQF level 6+ subject (JACS, 1-digit), baseline versus high growth scenario's, NI (2018-2028)

Source: UUEPC
Net requirement by sub-degree subject

Baseline scenario versus high growth scenario

Average annual net requirement by NQF level 4-5 subject (SSA, 1-digit), baseline versus high growth scenario’s, NI (2018-2028)

Source: UUEPC

Average annual net requirement (2018-2028)
Supply gap by degree subject
Baseline scenario versus high growth scenario

Annual average effective supply gap by NQF level 6+ subject (JACS, 1-digit), baseline versus high growth, NI (2018-2028)

Source: HESA, UUEPC
Supply gap by sub-degree subject
Baseline scenario versus high growth scenario

Annual average effective supply gap by NQF level 4-5 subject (SSAs, 1-digit), baseline versus high growth, NI (2018-2028)

Source: HESA, UUEPC
Annex A3

2017 publication versus 2019 publication
## Differences between publications

### NI Skills Barometer 2017 versus NI Skills Barometer 2019

Employment (people based) differences between baseline scenario and high growth scenario, NI Skills Barometer publications 2017 and 2019

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>-600</td>
<td>-1,110</td>
<td>-510</td>
<td>370</td>
<td>-250</td>
<td>-620</td>
</tr>
<tr>
<td>Mining</td>
<td>10</td>
<td>-30</td>
<td>-40</td>
<td>10</td>
<td>-30</td>
<td>-40</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2,620</td>
<td>5,480</td>
<td>2,860</td>
<td>9,260</td>
<td>10,430</td>
<td>1,170</td>
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<tr>
<td>Electricity &amp; gas</td>
<td>-40</td>
<td>-80</td>
<td>-40</td>
<td>160</td>
<td>100</td>
<td>-60</td>
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<tr>
<td>Water supply &amp; waste</td>
<td>0</td>
<td>180</td>
<td>180</td>
<td>200</td>
<td>350</td>
<td>150</td>
</tr>
<tr>
<td>Construction</td>
<td>4,100</td>
<td>3,910</td>
<td>-190</td>
<td>6,590</td>
<td>6,630</td>
<td>40</td>
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<tr>
<td>Wholesale &amp; retail</td>
<td>10</td>
<td>560</td>
<td>550</td>
<td>2,780</td>
<td>2,410</td>
<td>-370</td>
</tr>
<tr>
<td>Transport &amp; storage</td>
<td>2,140</td>
<td>1,020</td>
<td>-1,120</td>
<td>2,970</td>
<td>2,010</td>
<td>-960</td>
</tr>
<tr>
<td>Restaurants and hotels</td>
<td>3,740</td>
<td>3,190</td>
<td>-550</td>
<td>7,620</td>
<td>6,660</td>
<td>-960</td>
</tr>
<tr>
<td>Information &amp; communication</td>
<td>3,780</td>
<td>4,430</td>
<td>650</td>
<td>12,280</td>
<td>11,360</td>
<td>-920</td>
</tr>
<tr>
<td>Finance &amp; insurance</td>
<td>-400</td>
<td>730</td>
<td>1,130</td>
<td>3,760</td>
<td>4,350</td>
<td>590</td>
</tr>
<tr>
<td>Real estate</td>
<td>790</td>
<td>-90</td>
<td>-880</td>
<td>1,180</td>
<td>260</td>
<td>-920</td>
</tr>
<tr>
<td>Professional scientific &amp; technical</td>
<td>6,690</td>
<td>5,470</td>
<td>-1,220</td>
<td>16,480</td>
<td>11,780</td>
<td>-4,700</td>
</tr>
<tr>
<td>Administrative &amp; support services</td>
<td>6,910</td>
<td>5,130</td>
<td>-1,780</td>
<td>9,740</td>
<td>8,230</td>
<td>-1,510</td>
</tr>
<tr>
<td>Public admin &amp; defence</td>
<td>-3,900</td>
<td>-900</td>
<td>3,000</td>
<td>-2,800</td>
<td>590</td>
<td>3,390</td>
</tr>
<tr>
<td>Education</td>
<td>-1,450</td>
<td>1,270</td>
<td>2,720</td>
<td>-60</td>
<td>3,290</td>
<td>3,350</td>
</tr>
<tr>
<td>Health &amp; social work</td>
<td>3,940</td>
<td>6,550</td>
<td>2,610</td>
<td>9,470</td>
<td>11,320</td>
<td>1,850</td>
</tr>
<tr>
<td>Arts &amp; entertainment</td>
<td>2,500</td>
<td>1,600</td>
<td>-900</td>
<td>4,710</td>
<td>3,080</td>
<td>-1,630</td>
</tr>
<tr>
<td>Other service activities</td>
<td>1,590</td>
<td>1,830</td>
<td>240</td>
<td>2,170</td>
<td>2,820</td>
<td>650</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32,430</strong></td>
<td><strong>39,140</strong></td>
<td><strong>6,710</strong></td>
<td><strong>86,890</strong></td>
<td><strong>85,390</strong></td>
<td><strong>-1,500</strong></td>
</tr>
</tbody>
</table>

Source: UUEPC
Annex B1

Current and projected skills mix by sector
## Current and projected skills mix

### Skills mix by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Current skills mix</th>
<th>Projected skills mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mining</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric &amp; gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water supply &amp; waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholesale &amp; retail</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Stock of qualifications (NQF) by sector (1-digit), current versus projected, NI (2018 versus 2028)

- Below NQF 2
- NQF Level 2
- NQF Level 3
- NQF Level 4-5
- NQF Level 6+

Source: Labour Force Survey, UUEPC
## Current and projected skills mix

### Skills mix by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Current Skills Mix</th>
<th>Projected Skills Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional, scientific &amp; technical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admin &amp; support services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real estate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance &amp; insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information &amp; communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restaurants &amp; hotels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport &amp; storage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Stock of qualifications (NQF) by sector (1-digit), current versus projected, NI (2018 versus 2028)**

![Bar chart showing current and projected skills mix across sectors with NQF levels](chart.png)

**Source:** Labour Force Survey, UUEPC
Current and projected skills mix
Skills mix by sector

Stock of qualifications (NQF) by sector (1-digit), current versus projected, NI (2018 versus 2028)

Source: Labour Force Survey, UUEPC
Annex B2

Current and projected skills mix by occupation
Current and projected skills mix
Skills mix by occupation

Stock of qualifications (NQF) by occupation (2-digit), current versus projected, NI (2018 versus 2028)

Source: Labour Force Survey
Current and projected skills mix

Skills mix by occupation

Stock of qualifications (NQF) by occupation (2-digit), current versus projected, NI (2018 versus 2028)

Source: Labour Force Survey

- Skilled agricultural trades
- Protective service occs
- Secretarial & related occs
- Administrative occs
- Business & public service assoc profs
- Culture, media & sports occs
- Health & social welfare assoc profs

Below NQF 2  NQF Level 2  NQF Level 3  NQF Level 4-5  NQF Level 6+
Current and projected skills mix
Skills mix by occupation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Current Skills Mix</th>
<th>Projected Skills Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled metal &amp; electrical trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skilled construction &amp; building trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textiles, printing &amp; other skilled trades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure &amp; other personal service occupations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caring personal service occupations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Labour Force Survey
Current and projected skills mix
Skills mix by occupation

Stock of qualifications (NQF) by occupation (2-digit), current versus projected, NI (2018 versus 2028)

Source: Labour Force Survey
Annex C1
JACS (NQF level 6+) subject mix by sector (stock)
Subject mix (stock) by sector
NQF level 6+ - degree level and above

The following charts provide an overview of the mix subjects studied at NQF level 6+ (or equivalent) recruited into each sector (1-digit). This mix is used to inform the demand for NQF level 6+ subjects across the economy.

It is evident there is a strong link between some degree subjects and industry sectors. For example, medical related subjects is the largest degree subject within the health and social work sector, agricultural sciences is the largest degree subject within the agriculture sector and education is the largest degree subject in the education sector etc.

However, there are some degree subjects that are highly represented among a number of sectors. For example, business and finance degrees’ accounts for a significant proportion of wholesale and retail, transport and storage, finance and insurance, real estate sector etc. This pattern reflects the a high demand for skills acquired within these degree subjects across the economy.
Degree subject mix by sector
Agriculture sector and mining sector

Agriculture - subject mix (NQF level 6+), UK (2018)

Mining - subject mix (NQF level 6+), UK (2018)

Note: Other includes; European languages, Mass communications and documentation, Medicine and dentistry, Technology and Eastern, Asiatic, African, American and Australasian Languages and Literature.
Source: Labour Force Survey, UUEPC Analysis

Note: Other includes, Humanities, Social Studies, Law, Education, Linguistics, English, Celtic and Ancient, Architecture and related studies, Medical related subjects, Arts, European languages, Agricultural Sciences and Mass communications and documentation.
Source: Labour Force Survey, UUEPC Analysis
Degree subject mix by sector

Manufacturing sector and electricity and gas sector

**Manufacturing - subject mix (NQF level 6+), UK (2018)**

- Engineering: 24%
- Business and Financial studies: 22%
- Physical/Environmental Sciences: 10%
- Arts: 7%
- Biological Sciences: 4%
- Mathematical Sciences and Computing: 3%
- Social Studies: 2%
- Medical related subjects: 2%
- Other: 2%
- Agricultural Sciences: 8%
- Humanities: 8%
- Law: 5%
- Technology: 4%
- Linguistics, English, Celtic and Ancient: 3%

**Electricity and gas - subject mix (NQF level 6+), UK (2018)**

- Engineering: 30%
- Business and Financial studies: 28%
- Physical/Environmental Sciences: 10%
- Medical related subjects: 3%
- Other: 2%
- Architectural and related studies: 9%
- Mass Communications and Documentation: 6%
- Linguistics, English, Celtic and Ancient: 5%
- Medical related subjects: 4%
- Technology: 2%
- Other: 2%

**Note:** Other includes; Education, Agricultural Sciences, European Languages and Medicine and dentistry

**Source:** Labour Force Survey, UUEPC Analysis
Degree subject mix by sector

Water supply and waste sector and construction sector

**Water supply and waste - subject mix (NQF level 6+), UK (2018)**

- Engineering: 22%
- Physical/Environmental Sciences: 3%
- Business and Financial studies: 3%
- Social Studies: 3%
- Biological Sciences: 2%
- Humanities: 2%
- Education: 2%
- Medical related subjects: 2%
- Mathematical Sciences and Computing: 2%
- Arts: 2%
- Linguistics, English, Celtic and Ancient: 2%
- Agricultural Sciences: 3%
- Law: 3%
- Architecture and related studies: 4%
- Other: 8%

**Construction - subject mix (NQF level 6+), UK (2018)**

- Engineering: 30%
- Architecture and related studies: 14%
- Business and Financial studies: 6%
- Physical/Environmental Sciences: 5%
- Arts: 5%
- Social Studies: 5%
- Mathematical Sciences and Computing: 5%
- Other: 4%
- Biological Sciences: 3%
- Humanities: 3%
- Law: 2%
- Education: 2%
- Medical related subjects: 2%
- Agricultural Sciences: 2%

**Note:** Other includes; Technology, Mass communications and documentation, European languages, Eastern, Asiatic, African, American and Australasian Languages and Literature, Medicine and dentistry

**Source:** Labour Force Survey, UUEPC Analysis
Degree subject mix by sector

Wholesale and retail sector and transport and storage sector

Wholesale and retail - subject mix (NQF level 6+), UK (2018)

- Business and Financial studies
- Arts
- Medical related subjects
- Biological Sciences
- Social Studies
- Mathematical Sciences and Computing
- Physical/Environmental Sciences
- Engineering
- Humanities
- Mass Communications and Documentation
- Other
- Law
- Education
- Linguistics, English, Celtic and Ancient
- Agricultural Sciences

Note: Other includes; Technology, Architecture and related studies, European Languages, Medicine and dentistry and Eastern, Asiatic, African, American and Australasian Languages and Literature.

Source: Labour Force Survey, UUEPC Analysis

Transport and storage - subject mix (NQF level 6+), UK (2018)

- Business and Financial studies
- Engineering
- Social Studies
- Mathematical Sciences and Computing
- Physical/Environmental Sciences
- Arts
- Biological Sciences
- Humanities
- Law
- Other
- Medical related subjects
- Education
- Architecture and related studies
- Mass Communications and Documentation
- Agricultural Sciences

Note: Other, Linguistics, English, Celtic and Ancient, Technology, European Languages, Eastern, Asiatic, African, American, and Australasian Languages and Literature and Medicine and dentistry

Source: Labour Force Survey, UUEPC Analysis
Degree subject mix by sector
Restaurants and hotels sector and IT sector

Restaurants and hotels - subject mix (NQF level 6+), UK (2018)

- Business and Financial studies
- Arts
- Biological Sciences
- Social Studies
- Medical related subjects
- Law
- Mathematical Sciences and Computing
- Physical/Environmental Sciences
- Education
- Mass Communications and Documentation
- Humanities
- Engineering
- Linguistics, English, Celtic and Ancient
- Architecture and related studies
- Agricultural Sciences

Note: Other includes; European Languages, Eastern, Asiatic, African, American and Australasian Languages and Linguistics and Medicine and dentistry
Source: Labour Force Survey, UUEPC Analysis

Information and communication - subject mix, (NQF level 6+), UK, 2018

- Mathematical Sciences and Computing
- Business and Financial studies
- Engineering
- Arts
- Mass Communications and Documentation
- Physical/Environmental Sciences
- Other
- Social Studies
- Biological Sciences
- Linguistics, English, Celtic and Ancient
- Humanities

Note: Other includes; Education, Medical related subjects, Technology, European Languages, Architecture and related studies, Agricultural Sciences, Medicine and dentistry and Eastern, Asiatic, African, American and Australasian Languages and Literature
Source: Labour Force Survey, UUEPC Analysis
Degree subject mix by sector
Finance and insurance sector and real estate sector

Finance and insurance - subject mix, (NQF level 6+), UK, 2018
- Business and Financial studies: 30%
- Social Studies: 5%
- Mathematical Sciences and Computing: 5%
- Biological Sciences: 5%
- Other: 5%
- Physical/Environmental Sciences: 5%
- Humanities: 3%
- Law: 3%
- Engineering: 3%
- Arts: 3%
- Mass Communications and Documentation: 3%

Source: Labour Force Survey, UUEPC Analysis

Real estate - subject mix, (NQF level 6+), UK, 2018
- Business and Financial studies: 24%
- Architecture and related studies: 3%
- Social Studies: 3%
- Arts: 3%
- Biological Sciences: 3%
- Law: 3%
- Physical/Environmental Sciences: 3%
- Humanities: 1%
- Engineering: 1%
- Linguistics, English, Celtic and Ancient: 1%
- Medical related subjects: 1%
- Education: 1%
- Mass Communications and Documentation: 1%
- Agricultural Sciences: 1%
- European Languages: 1%

Source: Labour Force Survey, UUEPC Analysis

Note: Other includes; European Languages, Medical related subjects, Education, Architecture and related studies, Technology, Agricultural Sciences, Eastern, Asiatic, African, American and Australasian Languages and Literature
Degree subject mix by sector

Professional services sector and administration sector

Professional scientific and technical - subject mix, (NQF level 6+), UK, 2018

- Law: 21%
- Business and Financial studies: 18%
- Engineering: 9%
- Social Studies: 7%
- Architecture and related studies: 6%
- Physical/Environmental Sciences: 6%
- Arts: 6%
- Biological Sciences: 6%
- Mathematical Sciences and Computing: 3%
- Humanities: 3%
- Other: 4%
- Agricultural Sciences: 3%
- Linguistics, English, Celtic and Ancient: 3%
- Medical related subjects: 3%
- Mass Communications and Documentation: 2%

Administration and support - subject mix, (NQF level 6+), UK, 2018

- Business and Financial studies: 22%
- Biological Sciences: 9%
- Social Studies: 9%
- Arts: 8%
- Medical related subjects: 7%
- Humanities: 7%
- Education: 7%
- Mathematical Sciences and Computing: 6%
- Law: 6%
- Linguistics, English, Celtic and Ancient: 5%
- Physical/Environmental Sciences: 5%

Note: Other includes; Education, European Languages, Technology, Medicine and Dentistry, Eastern, Asiatic, African, American and Australasian Languages and Literature

Source: Labour Force Survey, UUEPC Analysis
Degree subject mix by sector
Public admin’ sector and education sector

**Public admin and defence - subject mix, (NQF level 6+), UK, 2018**

- Business and Financial studies: 15%
- Social Studies: 3%
- Law: 3%
- Medical related subjects: 9%
- Biological Sciences: 7%
- Physical/Environmental Sciences: 6%
- Engineering: 5%
- Mathematical Sciences and Computing: 5%
- Humanities: 5%
- Education: 4%
- Other: 2%

**Education - subject mix, (NQF level 6+), UK, 2018**

- Education: 38%
- Biological Sciences: 12%
- Arts: 14%
- Social Studies: 15%
- Business and Financial studies: 9%
- Mathematical Sciences and Computing: 6%
- Humanities: 8%
- Linguistics, English, Celtic and Ancient: 8%
- Physical/Environmental Sciences: 7%
- Other: 5%
- Medical related subjects: 5%
- Mass Communications and Documentation: 5%
- European Languages: 5%
- Engineering: 3%

**Note:** Other includes; Law, Agricultural Sciences, Technology, Eastern, Asiatic, African, American, and Australasian Languages and Literature

**Source:** Labour Force Survey, UUEPC Analysis
Degree subject mix by sector

Health and social work sector and arts and entertainment sector

Health and social work - subject mix, (NQF level 6+), UK, 2018

- Medical related subjects
- Social Studies
- Medicine and dentistry
- Biological Sciences
- Other
  - Business and Financial studies
- Education
- Arts
- Humanities
- Law
- Physical/Environmental Sciences

Note: Other includes; Mathematical sciences and computing, Linguistics, English, Celtic, and Ancient, Mass communications and documentation, Engineering, Agricultural Sciences, European Languages, Architecture and related studies, Technology and Eastern, Asiatic, African, American and Australasian Languages and Literature

Source: Labour Force Survey, UUEPC Analysis

Arts and entertainment - subject mix, (NQF level 6+), UK, 2018

- Arts
- Business and Financial studies
- Biological Sciences
- Humanities
- Mass Communications and Documentation
- Social Studies
- Linguistics, English, Celtic and Ancient
- Education
- Mathematical Sciences and Computing
- Physical/Environmental Sciences
- Law
- Engineering
- Medical related subjects
- Agricultural Sciences
- Architecture and related studies

Note: Other includes; European Languages, Technology, Eastern, Asiatic, African, American and Australasian Languages and Literature and Medicine and dentistry.

Source: Labour Force Survey, UUEPC Analysis
Degree subject mix by sector
Other services sector and people employed by households sector

**Note:** Other includes; Medicine and dentistry, European Languages, Technology, Eastern, Asiatic, African, American and Australasian Languages and Literature

**Source:** Labour Force Survey, UUEPC Analysis
Annex D1
NQF level 3 and below demand side outputs
Stock of NQF level 3 and below qualifiers within the labour market

Highest qualification NQF level 3 or below by sector (1-digit), NI (2018)

- Wholesale & retail: 19%
- Manufacturing: 14%
- Health & social work: 12%
- Construction: 8%
- Restaurants and hotels: 7%
- Admin’ & support services: 7%
- Public admin & defence: 5%
- Transport & storage: 5%
- Education: 4%
- Professional scientific & technical: 4%
- Agriculture: 3%
- Other service activities: 2%
- Arts & entertainment: 2%
- Information & communication: 2%
- Other: 4%

Source: Labour Force Survey
Gross demand by sector and NQF

Average annual gross demand by sector (1-digit) and NQF, NI (2018-2028)

Source: UUEPC

Average annual gross demand (2018-2028)
Gross demand by occupation and NQF

Average annual gross demand by occupation (2-digit), NI (2018-2028)

Source: UUEPC
NQF level 3 and below gross demand by sector

Source: UUEPC

Average annual NQF level 3 and below gross demand by sector (1-digit), NI (2018-2028)

- Wholesale & retail
- Manufacturing
- Health & social work
- Restaurants and hotels
- Admin' & support services
- Construction
- Transport & storage
- Public admin & defence
- Professional scientific & technical
- Education
- Other service activities
- Agriculture
- Arts & entertainment
- Information & communication
- Finance & insurance
- Real estate
- Water supply & waste
- Elect' & gas
- Mining
- People employed by households

Average annual net requirement (2018-2028)
NQF level 3 and below gross demand by detailed sector

Average annual NQF level 3 and below gross demand by sector (top 15, 2-digit), NI (2018-2028)

- Retail trade, except of motor vehicles and motorcycles
- Food and beverage service activities
- Residential care activities
- Employment activities
- Manufacture of food products
- Specialised construction activities
- Public administration and defence; compulsory social security
- Human health activities
- Social work activities without accommodation
- Education
- Wholesale trade, except of motor vehicles and motorcycles
- Land transport and transport via pipelines
- Crop and animal production, hunting and related service activities
- Other personal service activities
- Office administrative, office support and other business support activities

Source: UUEPC
NQF level 3 and below gross demand by occupation

Average annual NQF level 3 and below gross demand by occupation (2-digit), NI (2018-2028)

Source: UUEPC

Average annual net requirement (2018-2028)
NQF level 3 and below gross demand by detailed occupation

Average annual NQF level 3 and below gross demand by occupation (top 15, 3-digit), NI (2018-2028)

- 711 'Sales Assistants and Retail Cashiers'
- 927 'Other Elementary Services Occupations'
- 614 'Caring Personal Services'
- 923 'Elementary Cleaning Occupations'
- 415 'Other Administrative Occupations'
- 821 'Road Transport Drivers'
- 543 'Food Preparation and Hospitality Trades'
- 421 'Secretarial and Related Occupations'
- 811 'Process Operatives'
- 913 'Elementary Process Plant Occupations'
- 511 'Agricultural and Related Trades'
- 926 'Elementary Storage Occupations'
- 531 'Construction and Building Trades'
- 622 'Hairdressers and Related Services'
- 412 'Administrative Occupations: Finance'

Source: UUEPC
NQF level 3 and below net requirement by sector

Average annual NQF level 3 and below net requirement by sector (1-digit), NI (2018-2028)

Source: UUEPC

Average annual net requirement (2018-2028)
NQF level 3 and below net requirement by detailed sector

Average annual NQF level 3 and below net requirement by sector (top 15, 2-digit), NI (2018-2028)

- Retail trade, except of motor vehicles and motorcycles
- Food and beverage service activities
- Specialised construction activities
- Manufacture of food products
- Residential care activities
- Human health activities
- Employment activities
- Other personal service activities
- Land transport and transport via pipelines
- Office administrative, office support and other business support activities
- Wholesale trade, except of motor vehicles and motorcycles
- Construction of buildings
- Crop and animal production, hunting and related service activities
- Social work activities without accommodation
- Wholesale and retail trade and repair of motor vehicles and motorcycles

Average annual net requirement (2018-2028)

Source: UUEPC
NQF level 3 and below net requirement by sector (%)

Source: UUEPC

Average annual NQF level 3 and below net requirement by sector (1-digit), NI (2018-2028)

- Wholesale & retail: 17%
- Manufacturing: 14%
- Restaurants and hotels: 12%
- Health & social work: 10%
- Admin' & support services: 10%
- Construction: 8%
- Transport & storage: 5%
- Other service activities: 4%
- Professional scientific & technical: 4%
- Finance & insurance: 3%
- Agriculture: 2%
- Arts & entertainment: 2%
- Information & communication: 2%
- Public admin & defence: 2%
- Education: 1%
- Other: 1%
Demand side concepts NQF level 3 and below
An overview of the NI labour market

**Total employment**
- 522,500 (2018)
- 551,300 (2028)

**Annual average gross demand**
- 50,100 (2018-2028)

**Filled from within the existing labour market**
- 35,500 (2018-2028)

**Net requirement from education & migration**
- 14,600 (2018-2028)

**Replacement demand**
- 10,500

**Expansion demand**
- 4,100

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

**Note:** Data presented on this slide has been rounded to the nearest hundred.
Annex E1
Supply gap by NQF level 6+ - detailed subjects
Supply gap by degree subject
Engineering and physical/environmental sciences

Average annual effective supply gap within NQF level 6+ engineering subjects (JACS, 2-digit), NI (2018-2028)

- Civil engineering
- General engineering
- Electronic & electrical engineering
- Mechanical engineering
- Chemical process & energy engineering
- Aerospace engineering
- Broadly-based programmes within engineering & technology
- Production & manufacturing engineering
- Others in engineering

Source: DfE, UUEPC

Average annual effective supply gap within NQF level 6+ physical/environmental sciences subjects (JACS, 2-digit), NI (2018-2028)

- Chemistry
- Physics
- Others in physical sciences
- Forensic & archaeological sciences
- Astronomy
- Broadly-based programmes within physical sciences
- Geology
- Materials science
- Science of aquatic & terrestrial environments

Source: DfE, UUEPC
Supply gap by degree subject
Historical and philosophical studies and business and finance

Average annual effective supply gap within NQF level 6+ historical & philosophical studies (JACS, 2-digit), NI (2018-2028)

Source: DfE, UUEPC

Average annual effective supply gap within NQF level 6+ business and financial studies subjects (JACS, 2-digit), NI (2018-2028)

Source: DfE, UUEPC
Supply gap by degree subject
Languages and creative arts and design

Average annual effective supply gap NQF level 6+ within languages subjects (JACS, 2-digit), NI (2018-2028)

- French studies
- Spanish studies
- German studies
- Others in European languages, literature & related subjects
- Russian & East European studies
- European studies

Annual average (2018-2028)

Source: DfE, UUEPC

Average annual effective supply gap within NQF level 6+ creative arts & design subjects (JACS, 2-digit), NI (2018-2028)

- Design studies
- Music
- Fineart
- Others in creative arts & design
- Drama
- Imaginative writing
- Dance
- Crafts
- Cinematics & photography

Annual average (2018-2028)

Source: DfE, UUEPC
Supply gap by degree subject
Mathematical and computer sciences and agricultural sciences

Average annual effective supply gap within NQF level 6+ mathematical and computer sciences subjects (JACS, 2-digit), NI (2018-2028)

<table>
<thead>
<tr>
<th>Degree Subject</th>
<th>Annual Average (2018-2028)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer science</td>
<td>-160</td>
</tr>
<tr>
<td>Information systems</td>
<td>-120</td>
</tr>
<tr>
<td>Artificial intelligence</td>
<td>-100</td>
</tr>
<tr>
<td>Games</td>
<td>-60</td>
</tr>
<tr>
<td>Software engineering</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: DfE, UUEPC

Average annual effective supply gap within NQF level 6+ agricultural sciences subjects (JACS, 2-digit), NI (2018-2028)

<table>
<thead>
<tr>
<th>Degree Subject</th>
<th>Annual Average (2018-2028)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>-180</td>
</tr>
<tr>
<td>Food &amp; beverage studies</td>
<td>-140</td>
</tr>
<tr>
<td>Animal science</td>
<td>-100</td>
</tr>
<tr>
<td>Forestry &amp; arboriculture</td>
<td>-60</td>
</tr>
<tr>
<td>Agricultural sciences</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: DfE, UUEPC
Supply gap by degree subject
Mass comms’ and documentation and biological sciences

Average annual effective supply gap within NQF level 6+ mass communications & documentation subjects (JACS, 2-digit), NI (2018-2028)

Average annual effective supply gap within NQF level 6+ biological sciences subjects (JCAS, 2-digit), NI (2018-2028)

Source: DfE, UUEPC
Supply gap by degree subject
Law and architecture and related studies

Average annual effective supply gap within NQF level 6+ law subjects
(JACS, 2-digit), NI (2018-2028)

Average annual effective supply gap within NQF level 6+ architecture and
related subjects (JACS, 2-digit), NI (2018-2028)

Source: DfE, UUEPC
Supply gap by degree subject
Medicine and dentistry and education

Average annual effective supply gap within NQF level 6+ medicine & dentistry subjects (JACS, 2-digit), NI (2018-2028)

- Oversupply
- Undersupply

Annual average (2018-2028)

Source: DfE, UUEPC

Average annual effective supply gap within NQF level 6+ education subjects (JACS, 2-digit), NI (2018-2028)

- Oversupply
- Undersupply

Annual average (2018-2028)

Source: DfE, UUEPC
Supply gap by degree subject
Social studies and medical related subjects

Average annual effective supply gap within NQF level 6+ social studies
subjects (JACS, 2-digit), NI (2018-2028)

Source: DfE, UUEPC

Average annual effective supply gap within NQF level 6+ medical related
subjects (JACS, 2-digit), NI (2018-2028)

Source: DfE, UUEPC
Annex E2
Supply gap by NQF level 4-5 - detailed subjects
Supply gap by sub-degree subject

Engineering and manufacturing and business and financial

Average annual effective supply gap within engineering and manufacturing subjects, NI (2018-2028)

-180
-160
-140
-120
-100
-80
-60
-40
-20
0
20
40

Engineering
Manufacturing Technologies
Transportation Operations and Maintenance

Undersupply

Average annual effective supply gap within business and financial subjects, NI (2018-2028)

-80
-60
-40
-20
0
20
40

Law and Legal Services
Business Management
Marketing and Sales
Administration
Accounting and Finance

Oversupply
Undersupply

Source: DfE, UUEPC
Supply gap by sub-degree subject
Science and maths and health and public services

Average annual effective supply gap within science and maths subjects, NI (2018-2028)

Science
Mathematics and Statistics

Average annual effective supply gap within health and public services subjects, NI (2018-2028)

Nursing and Subjects and Vocations Allied to Medicine
Medicine and Dentistry
Public Services
Child Development and Well Being
Health and Social Care

Source: DfE, UUEPC
Supply gap by sub-degree subject

Education and training and arts, media and publishing

Average annual effective supply gap within education and training subjects, NI (2018-2028)

Average annual effective supply gap within arts, media and publishing, NI (2018-2028)

Source: DfE, UUEPC
Supply gap by sub-degree subject
ICT and construction and planning

**Average annual effective supply gap within ICT subjects, NI (2018-2028)**

-80
-70
-60
-50
-40
-30
-20
-10
0
10
20

**Source:** DfE, UUEPC

**Average annual effective supply gap within construction and planning subjects, NI (2018-2028)**

-35
-30
-25
-20
-15
-10
-5
0

**Source:** DfE, UUEPC
Supply gap by sub-degree subject
Retail and commercial and social sciences

Average annual effective supply gap within retail and commercial
subjects, NI (2018-2028)

- Oversupply
- Undersupply

Average annual effective supply gap within social science subjects,
NI (2018-2028)

- Oversupply
- Undersupply

Source: DfE, UUEPC
Supply gap by sub-degree subject
Languages and literature and history and philosophy

Average annual effective supply gap within language and literature subjects, NI (2018-2028)

Average annual effective supply gap within history and philosophy subjects, NI (2018-2028)

Source: DfE, UUEPC
Supply gap by sub-degree subject
Agriculture and horticulture and leisure, travel and tourism

Average annual effective supply gap within agriculture and horticulture subjects, NI (2018-2028)

-70
-60
-50
-40
-30
-20
-10
0
10
Agriculture
Animal Care and Veterinary Science
Horticulture and Forestry
Environmental Conservation

Average annual effective supply gap within leisure, travel and tourism subjects, NI (2018-2028)

-30
-25
-20
-15
-10
-5
0
5
10
Sport, Leisure and Recreation
Travel and Tourism

Source: DfE, UUEPC
Contacts

Mark Magill
Senior Economist
Ulster University Economic Policy Centre
Email: md.magill@ulster.ac.uk

Marguerite McPeake
Assistant Economist
Ulster University Economic Policy Centre
Email: m.mcpeake@ulster.ac.uk

Anastasia Desmond
Assistant Economist
Ulster University Economic Policy Centre
Email: a.desmond@ulster.ac.uk