



Northern Ireland Skills Barometer

Summary report

July 2019

Ulster University
Economic Policy Centre



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Acronyms and skills classification

Acronyms

Acronym	Full title
UUEPC	Ulster University Economic Policy Centre
NI	Northern Ireland
GB	Great Britain
NQF	National Qualifications Framework
SIC	Standard Industrial Classification
SOC	Standard Occupational Classification
LFS	Labour Force Survey
DfE	Department for the Economy
JACS	Joint Academic Coding System
SSA	Sector Subject Area
HE	Higher Education
FE	Further Education
HND	Higher National Diploma
HNC	Higher National Certificate
FSME	Free School Meal Entitlement
OECD	Organisation for Economic Cooperation and Development
HEI	Higher Education Institution
FLU	Funded Learning Unit

Skills Classification

1. The skills level used in the analysis will be based on the National Qualification Framework (NQF) which aligns to qualification levels as set out in Table 1.

Table 1: National Qualification Framework (NQF) scale

NQF level	Description
Level 0	Below level 1 qualifications/no qualifications
Level 1	5 GCSEs Grades D-G (or equivalent)
Level 2	5 GCSEs Grades A*-C (or equivalent)
Level 3	A-level or equivalent
Level 4-5	Foundation degree/HND/HNC (or equivalent)
Level 6	Degree (or equivalent)
Level 7	Masters (or equivalent)
Level 8	PhD (or equivalent)

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Skills Barometer

High growth scenario

How many jobs will be created?



- 85K new jobs between 2018-28.
- Two thirds of the number of jobs created in the pre-recession decade (1998-2008).
- A 74% employment rate by 2028 - an improvement on the baseline but still below where the strongest performing UK regions are today.

What skill levels are demanded from education leavers?



- Only one in ten vacancies for education leavers will be accessible for people with qualifications below NQF level 2.
- One in three vacancies for education leavers will require at least an undergraduate degree.

How will the sectors perform?



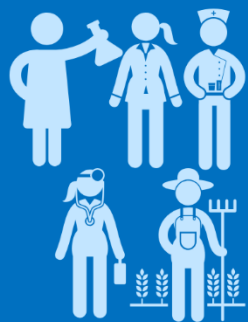
- The information and communications sector will grow by 50%.
- The most additional jobs will be in professional, scientific & technical services (12k).
- An improved budget associated with a high growth scenario will enable extra resources to be allocated to the health sector (11K extra jobs).
- Manufacturing to continue recent growth trends and create 10k additional jobs.

What skills do we currently supply?



- Two-fifths of education leavers entering the labour market have at least an undergraduate degree.
- Less than one-tenth of education leavers entering the labour market have a NQF L4-5 qualification which, represents a limited supply of professional and technical skills.
- Approximately 14% of education leavers entering the labour market have a qualification below NQF level 2. The majority of low achievers proceed to further study/training.

What type of jobs will be created?



- Managers, professionals & associate professionals are the main source of occupation growth accounting for almost half of total employment growth.
- Science & technology professionals will grow by almost one-third.
- Lower skilled occupations including sales, agricultural trades & secretarial & related occupations face a more subdued growth outlook.

What subjects do we currently supply at NQF L6+ ?



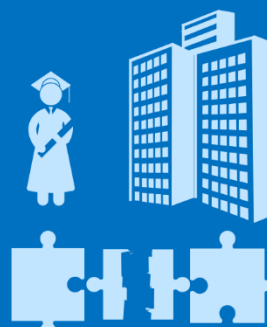
- The most popular subject areas are medical and related subjects (17% of the total net supply); business and financial studies (13%); social studies (11%); education (9%) & maths & computer science (9%).
- In the past 10 years the number of maths & computer science qualifiers entering the labour market has almost doubled.

How many vacancies per year for education leavers & migrants?



- Relative to sector growth, replacement demand creates a higher number of job opportunities. Replacement demand vacancies are more widely spread across occupations.
- Relative to sector growth, 26k vacancies per year for education leavers & migrants over the 2018-28 period compared to 25k education leavers projected to annually enter the labour market.

Are there supply gaps for subjects at NQF L6+ ?



- The most undersupplied subject groups are engineering & technology; mathematical & computer science; & physical/environmental sciences.
- The most oversupplied subject groups are education; social studies; and medical related subjects.

1. Introduction

1. The sectoral and occupational distribution of employment creation is constantly changing, and, as a result, the demand for skills is variable. Changes in skills demand are challenging labour market and training policies and contributing to skills mismatches. The most recent Pearson/CBI education and skills survey for Northern Ireland (NI) identified that almost **three-quarters of businesses lack confidence they can fill highly skilled roles**.
2. Some degree of misalignment is inevitable, particularly in the short-run. However, the cost of persistent mismatches and shortages are substantial. For instance, **competitiveness can be eroded as skills mismatches constrain labour productivity** due to a misallocation of workers to jobs.
3. Public policy intervention can help address skills mismatches and/or shortages, but doing so relies upon having accurate information on current and future trends. In recognition of the importance of planning for the economy's future skill requirements, the Department for the Economy (DfE) commissioned Ulster University Economic Policy Centre (UUEPC) to develop a 'Skills Barometer'. This involved the development of a model to estimate the 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 2-year intervals.
4. 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.
5. This report summarises the key results and messages from the assessment of future skills demand, and a review of supply side indicators. The report also provides background economic context which underpins the skills forecasts. A more detailed information pack of slides has been produced and is published alongside this report.

2. NI economy: High growth scenario

Introduction

1. This chapter provides an overview of UUEPC's high growth scenario. This will include an overview of growth patterns for both sectors and occupations.

Skills planning under a high growth scenario

2. 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.
3. 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. With this in mind, this summary report outlines skills demand based on the high growth scenario¹.

How many jobs will be created?

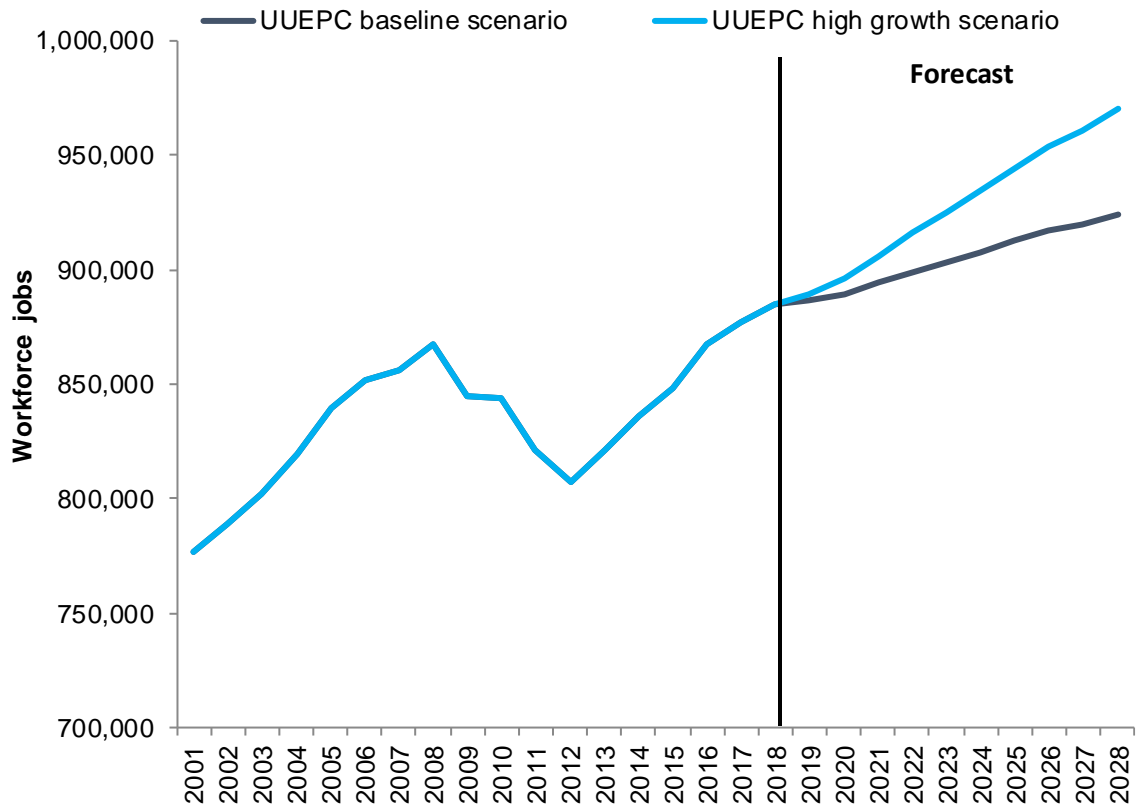
4. The baseline scenario represents what UUEPC considers to be the 'most likely' economic outcome. **Under this baseline scenario total net employment growth over the next decade to 2028 is forecast to be 39,130 jobs.** This is approximately half of the number of jobs created in the 2012-18 period, and therefore represents a much slower annual rate of job creation. The weaker economic outlook is driven by a number of factors including a weaker global outlook, uncertainty regarding the UK's future trading relationships and sustainability of continued growth in consumer spending.
5. In 2017 the DfE published its Draft Industrial Strategy for Northern Ireland². It is important that this update to the Skills Barometer reflects the priorities and milestones identified in the strategy.
6. UUEPC has developed a high growth scenario which is more consistent with NI achieving its economic ambitions. In this scenario NI achieves an employment rate of 74% amongst the 16-64 population by 2028, from a base of 70% in 2018. This will narrow the gap in the employment rate between NI and the UK, where the 16-64 employment rate stood at 76% in the UK in 2018. The scenario also assumes **higher growth in higher value added areas of the economy identified in the Draft Industrial Strategy such as professional services and ICT.** Additional jobs have also been allocated to the health sector, which would benefit from increased government spending under a high growth scenario which generates higher tax revenues.

¹ Information on skills demands under the baseline scenario are provided within the slide pack, which accompanies this report.

² DfE (2017) Economy 2030 – An Industrial Strategy for Northern Ireland. Available via: <https://www.economy-ni.gov.uk/consultations/industrial-strategy>

7. **In this high growth scenario employment in NI will grow from 885,290 in 2018 to 970,670 in 2028.** Although this is an ambitious rate of growth it is not inconsistent with growth rates achieved over the 2012-18 period.

Figure 2.1: Workforce jobs, high growth and baseline, (2001-28)



Source: UUEPC

8. It is estimated that under this high growth scenario total workforce jobs will be 46,250 above the baseline in 2028. In other words, **under a high growth scenario the NI economy will create 2.2 times as many additional jobs than it would in a baseline scenario.**

How will sectors perform?

9. The sectors contributing the largest absolute increase in jobs over the period 2018-28 are professional scientific and technical services (11,780); information and communication (11,360); and health and social work (11,320).

Table 2.1: Comparison of baseline and high growth scenario by sector (2018-28)

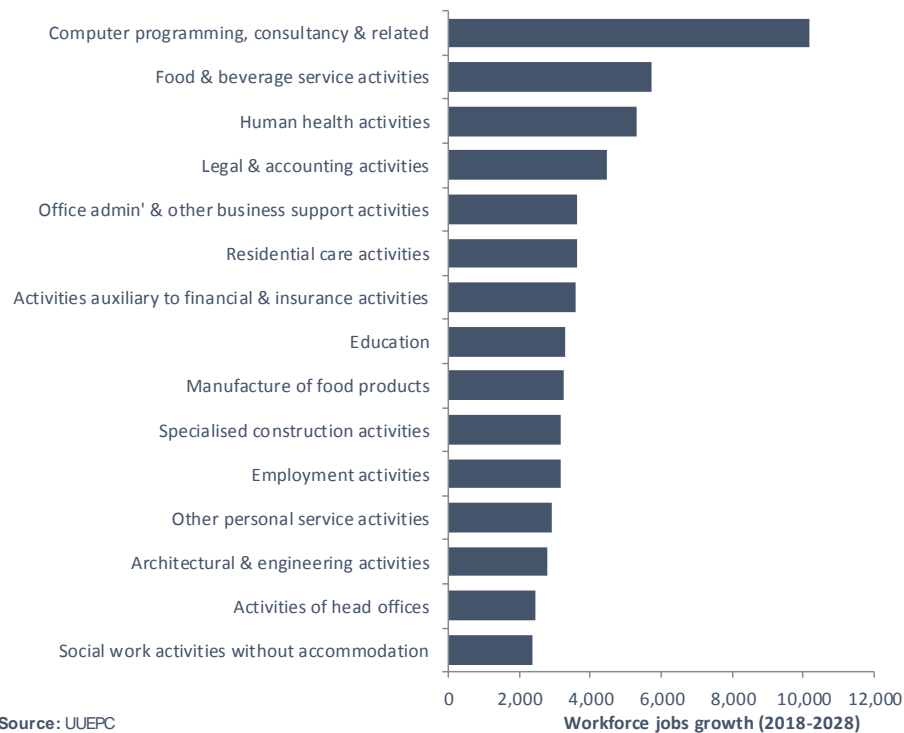
Industry	Total jobs 2018 baseline	Job growth (absolute terms) 2018-2028		Job growth (p.a.)	
		Baseline scenario	High growth scenario	High growth scenario (2018-2028)	Actual (1997-2007)
Agriculture	29,640	-1,110	-250	-0.1%	-3.1%
Mining	2,150	-30	-30	-0.2%	5.3%
Manufacturing	95,190	+5,480	+10,430	1.0%	-2.4%
Electricity & gas	2,280	-80	+100	0.4%	-5.5%
Water supply & waste	6,740	+180	+350	0.5%	1.9%
Construction	56,490	+3,910	+6,630	1.1%	4.6%
Wholesale & retail	139,790	+560	+2,410	0.2%	2.4%
Transport & storage	31,130	+1,020	+2,010	0.6%	1.8%
Restaurants and hotels	52,990	+3,190	+6,660	1.2%	2.7%
Information & communication	22,500	+4,430	+11,360	4.2%	6.3%
Finance & insurance	20,620	+730	+4,350	1.9%	2.1%
Real estate	10,420	-90	+260	0.2%	12.6%
Professional scientific & technical	44,860	+5,470	+11,780	2.4%	7.0%
Administrative & support services	61,040	+5,130	+8,230	1.3%	7.1%
Public admin & defence	53,430	-900	+590	0.1%	-0.2%
Education	74,780	+1,270	+3,290	0.4%	1.1%
Health & social work	134,840	+6,550	+11,320	0.8%	1.8%
Arts & entertainment	20,710	+1,600	+3,080	1.4%	2.8%
Other service activities	25,680	+1,830	+2,820	1.1%	-0.2%
Total	885,290	+39,130	+85,380	0.9%	1.6%

Source: UUEPC

Note: Figures may not sum to total due to rounding

10. The fastest rates of growth in the high growth scenario are recorded in information and communication (4.2% p.a.), professional, scientific and technical services (2.4% p.a.) and finance and insurance (1.9% p.a.). However, it should be noted that although rates of job growth are much lower in some of NI’s staple sectors job growth in absolute terms is still significant (e.g. health and manufacturing).

Figure 2.2: Workforce jobs growth, top 15 2 digit SIC (2018-28)



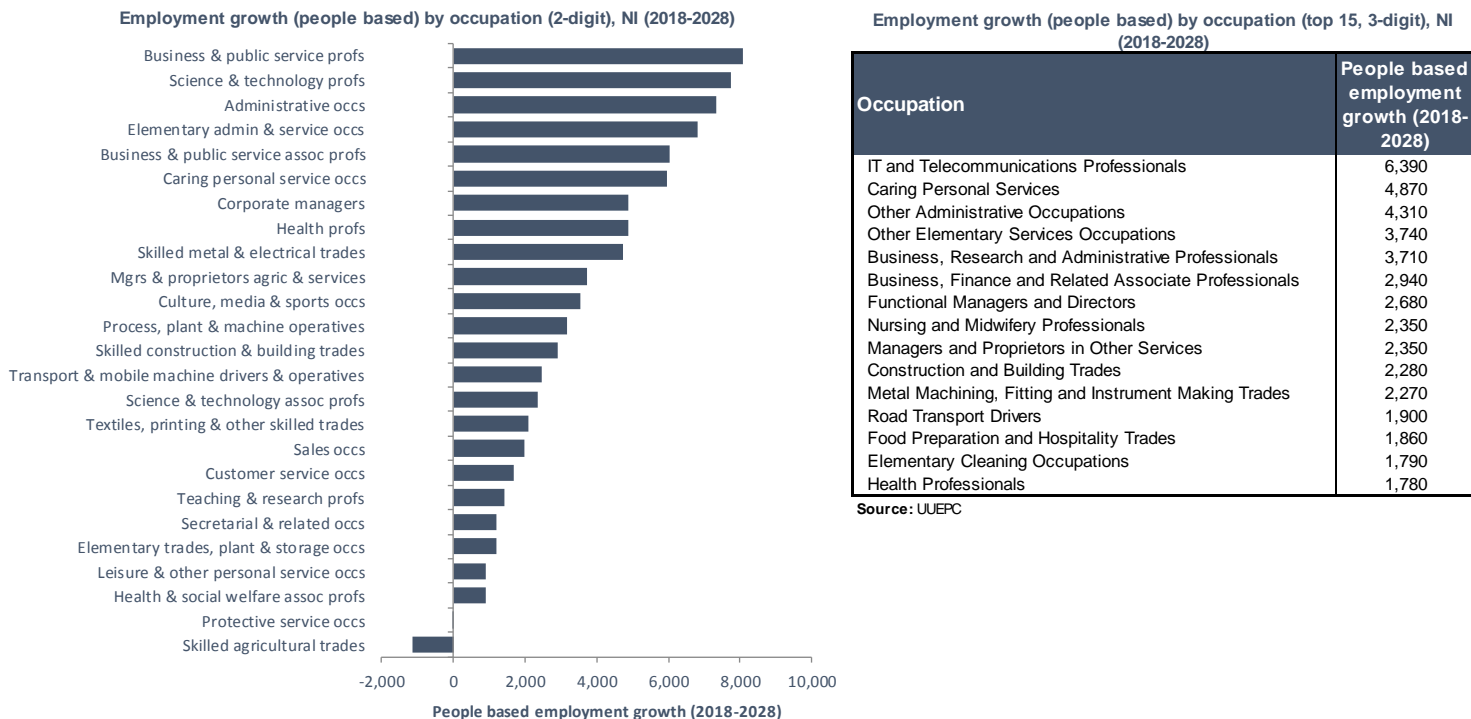
Source: UUEPC

11. At a more granular level the main sectors generating the job growth are: computer programming (10,150); food and beverage service activities (5,740); human health activities (5,320); legal and accounting activities (4,450); office administrative and other business support activities (3,640); and residential care activities (3,610).
12. A considerable proportion of growth is concentrated in sectors that are considered to be **tradable**, or linked to operations in a wider **global** firm. This should be considered more sustainable than sectors which fuelled job growth during the pre-recession decade such as retail and public services whereby future job growth is under pressure from squeezed incomes, austerity and advancements in labour saving technologies.

Occupation growth (people-based)

13. The occupations accounting for the majority of the net growth over the 2018-28 period are: business and public service professionals (8,080); science and technology professionals (7,750); administrative occupations (7,350); elementary administration and service occupations (6,820); and business and public service associate professionals occupations (6,040).

Figure 2.3: Employment growth, people based, 2-digit and 3-digit SOC (2018-28)



14. More detailed occupation categories provide a clearer indication of the key growth occupations. The largest contributors to job growth over the next decade are: IT and telecommunications professionals (6,390); caring personal services (4,870); other administrative occupations (4,310); other elementary service occupations (3,740); and business research and administrative professionals (3,710).

3. Skill requirements for tomorrow's economy – High growth scenario

Introduction

1. This chapter provides an overview of future labour demand under the high growth scenario outlined in the previous chapter. All data in the remainder of this report is presented in 'people-based' terms.

Expansion and replacement demand concepts

2. Total labour demand is represented not only by employment growth, but also vacancies created by workers leaving their jobs. The following points below provide key definitions relating to labour demand:
 - **Expansion demand** is the additional jobs created due to growth in a sector.
 - **Replacement demand** refers to the number of positions which become available as a result of staff leaving employment (typically due to retirement, family reasons, ill health or to move to another sector).
 - **Net replacement demand** is the difference between all leavers from employment – to retirement, inactivity, unemployment, other occupations and out migration - and joiners to employment – from unemployment, inactivity (excluding education leavers) and other occupations.
 - **Net requirement from education and migration** indicates the number of vacancies that cannot be filled from within the existing labour market and therefore must be met from those leaving education and/ or from migration. It is calculated by summing expansion demand and net replacement demand.
 - **Annual average gross demand** refers to all vacancies to be filled in a year. It is the total expansion and replacement demand for staff per annum.
3. The figure of most interest is the net requirement from education and migration³. 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.

Demand in the NI labour market

4. While the net change in the stock of jobs – technically termed expansion demand - is often more widely understood and 'visible' within the economy 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.**

³ From this point onwards 'net requirement from education and migration' and 'net requirement' are used interchangeably.

5. Labour demand is estimated based upon an analysis of labour market flows in the Labour Force Survey (LFS). The table below summarises expansion and replacement demand forecasts for the NI economy over the 2013-18 and 2018-28 periods.

Table 3.1: Expansion and replacement demand

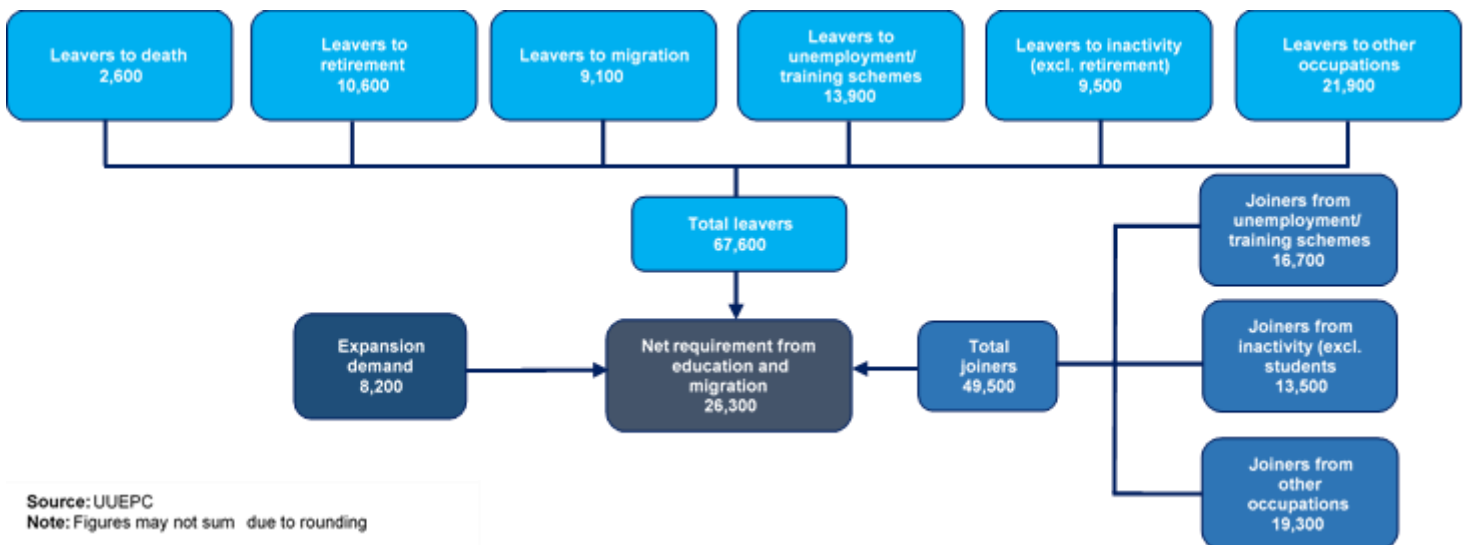
Demand category	2013-2018 (annual)	2018-2028 (annual)
(A) Gross demand	72,650	75,760
(B) Expansion demand	6,880	8,190
(C) Replacement demand	65,770	67,570
(D) Filled from within the existing labour market	49,820	49,460
(E) Net replacement demand	15,950	18,110
(F) Net requirement from education and migration	22,830	26,300

Source: UUEPC

Relationship between rows: A=B+C, E=C-D, F=E+B

6. As is illustrated in the figure below the largest component of labour demand comes from replacing workers who have created a vacancy by leaving their position (for retirement, sickness, moving to another job etc.). However, most of these vacancies are filled by people already in the labour market (e.g. job movers, people leaving the unemployment register etc.).

Figure 3.1: Net requirement from education and migration (2018-28)



Source: UUEPC

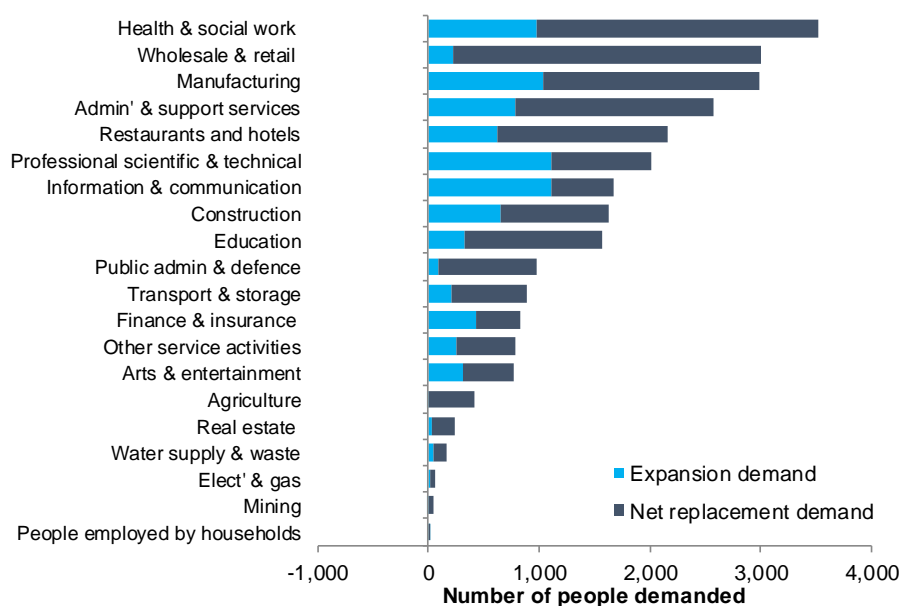
Note: Figures may not sum due to rounding

7. **Vacancies that cannot be filled by people already in the labour market must be filled either by leavers from the education system or by migrants.** This is known as the net requirement from education and migration, and is equivalent to 26,300 people per annum over the 2018-28 period.
8. It is important to note that the largest component of the net requirement from education and migration comes from replacement demand. Even under a high growth scenario net replacement demand over the next ten years (18,100 per annum) is still forecast to be 2.2 times larger than expansion demand (8,200 per annum). In other words, **the labour market will continue to create a plentiful supply of job opportunities even during periods of low growth.**

In what sectors will labour demand be concentrated?

9. Although sectors such as professional services and information and communications are forecast to grow rapidly, total employment remains relatively small. For example, in 2018 the number of people working in restaurants and hotels is approximately double that of the information and communications sector. **As replacement demand is a function of existing jobs, it will be largest in sectors which are already large in scale.**
10. In high growth sectors expansion demand accounts for a more significant proportion of overall labour demand. For example, professional, scientific and technical services is relatively small in scale, but is forecast to experience rapid growth. This leads to expansion demand accounting for a much larger proportion (55% of the sector net requirement) of overall demand when compared to other sectors.
11. In some other sectors there is a sizeable labour demand driven by replacement demand rather than the expansion of the sector. For example, in the wholesale and retail sector over nine-tenths (92%) of labour demand comes from vacancies created by workers who leave their jobs. This is due not only to the fact that retail is a large-scale sector, but also due to the nature of the sector itself. The sector has high entry and exit rates as many people work in the sector on a short-term basis. The sector often acts as a temporary home for people who have been unable to find employment in their desired occupation, or short-term employment for students.

Figure 3.2: Average annual net requirement from education and migration by 1-digit SIC (2018-28)



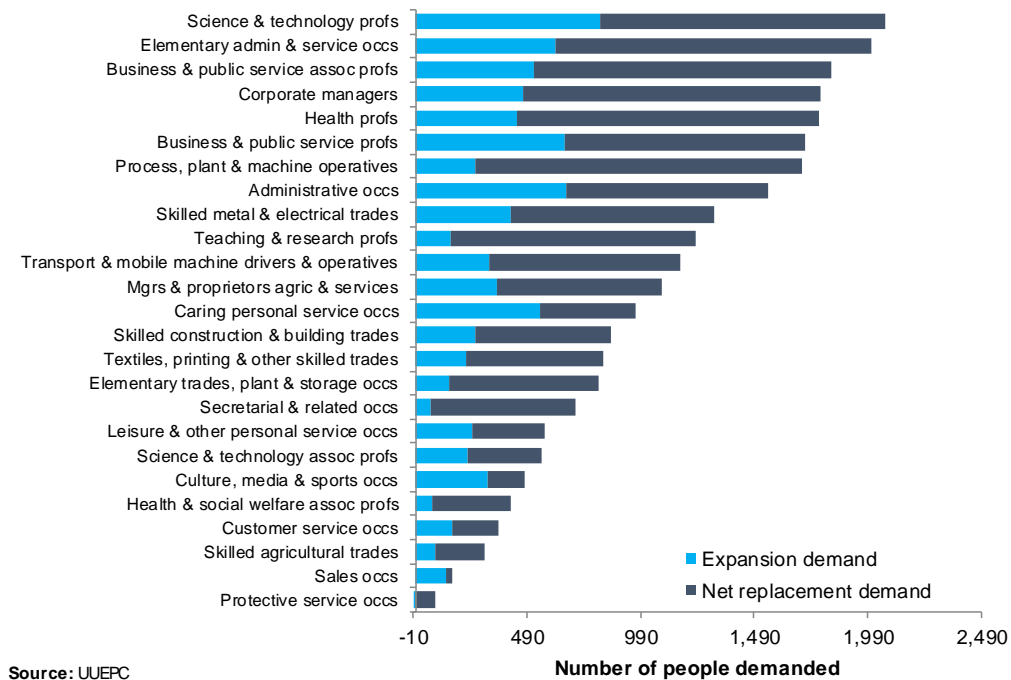
Source: UUEPC

In what occupations will labour demand be concentrated?

12. **Science and technology professionals will provide the most job opportunities over the coming decade** requiring 2,070 people from outside the existing labour market. This represents 8% of the overall net requirement from education and migration.

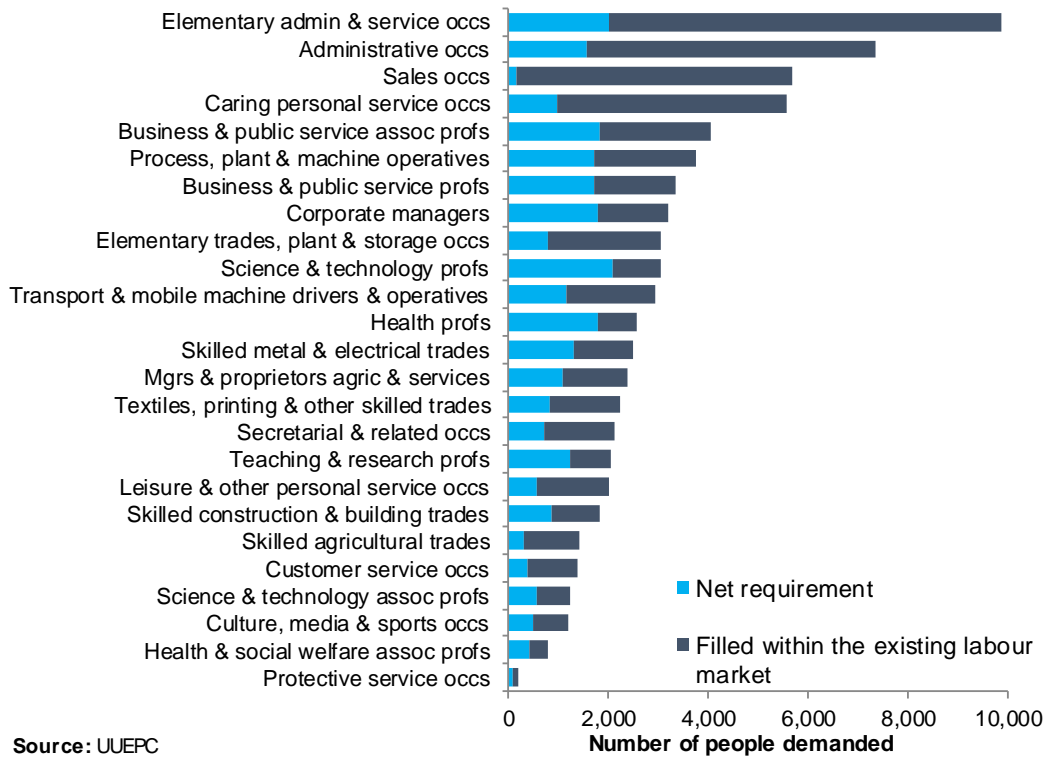
13. The next largest 'high demand' occupations are elementary administration and service occupations (8%); business and public service professionals (7%); corporate managers (7%); and health professionals (7%).

Figure 3.3: Average annual net requirement from education and migration, 2-digit SOC (2018-28)



14. There is a noticeable **squeeze in the expansion demand within occupations which have traditionally been low skilled with regard to formal qualification** (e.g. sales occupations, secretarial and related occupations, elementary trades etc.). Part of the reason for this is slowing labour demand for these occupations alongside advances in labour saving technology.
15. However, although there is little demand for these occupations from the education system that is not to say that there will not be job opportunities. Whilst these jobs are associated with low formal qualifications, they are filled by experienced workers, **who are not necessarily low skilled**, moving between jobs or re-joining the labour market after a period of unemployment or inactivity.

Figure 3.4: Average annual gross demand, 2-digit SOC (2018-28)

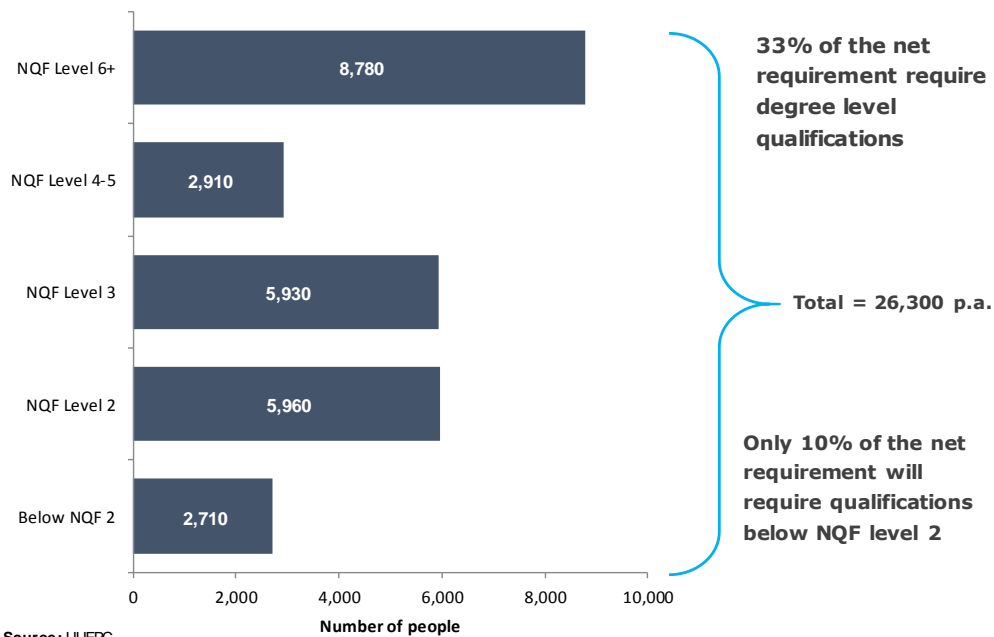


Source: UUEPC

The demand for qualifications

- 16. Using the UUEPC skills model it is possible to estimate the net requirement by the highest NQF level. However, it is important to acknowledge that skills and qualifications are not the same. **Labour can be high skilled yet have a low level of formal qualification.**
- 17. The figure below provides an overview of the demand for skills disaggregated by the highest level of formal qualification according to the NQF classification associated with the UUEPC high growth scenario.

Figure 3.5: Average annual net requirement for skills (2018-28)



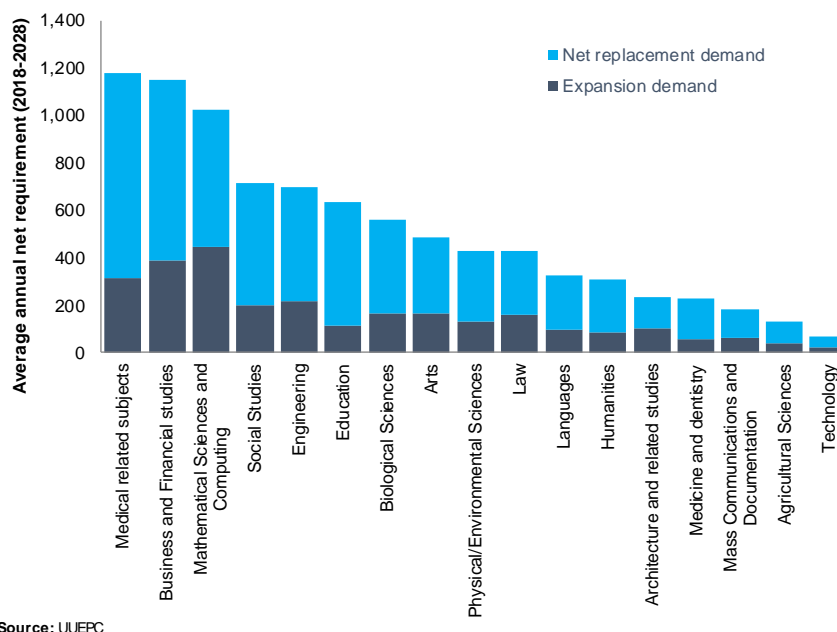
Source: UUEPC

18. Looking forward, it is estimated that **33% of the total demand will require at least an undergraduate degree**. Increases in Higher Education (HE) participation levels and increasingly qualification hungry employers are driving up the qualifications required across the economy. The implication is that **the future skill needs of the economy look very different to the current stock of skills across the entire workforce**, where 23% of people employed currently have at least an undergraduate degree.
19. Only 10% of job opportunities will be available to individuals with a qualification level equivalent to NQF level 2 or below. This highlights the importance of **minimising the number of school children entering the labour market with qualification levels below the minimum level expected for most modern forms of employment**.

Subjects in demand (NQF level 6+)

20. Using UUEPC’s skills forecasting model it is possible to provide an indication of the subjects demanded in high skill occupations. These results should be interpreted as a guide, as not all subjects areas are directly aligned to a specific occupation (e.g. computer science to information technology professions)⁴.
21. Over the next decade the largest subject in demand is medical related subjects at 1,180 persons per annum, representing 13% of the NQF level 6+ demand. Other subjects with a high demand include business and administrative studies (1,150) and mathematical and computer sciences (1,020). Although the sources of demand varies across subjects. For example, 44% of the net requirement is expansion demand for maths and computer science subjects compared to 18% for education subjects.

Figure 3.6: Average annual net requirement for NQF level 6+, 1-digit JACS (2018-28)



Source: UUEPC

⁴ It should be noted that estimates of future sector skills demand are based on historic patterns. It is possible that demand in some sectors may evolve over time to reflect emerging subjects that are not currently offered in NI Higher Education Institutions.

4. Supply side

Introduction

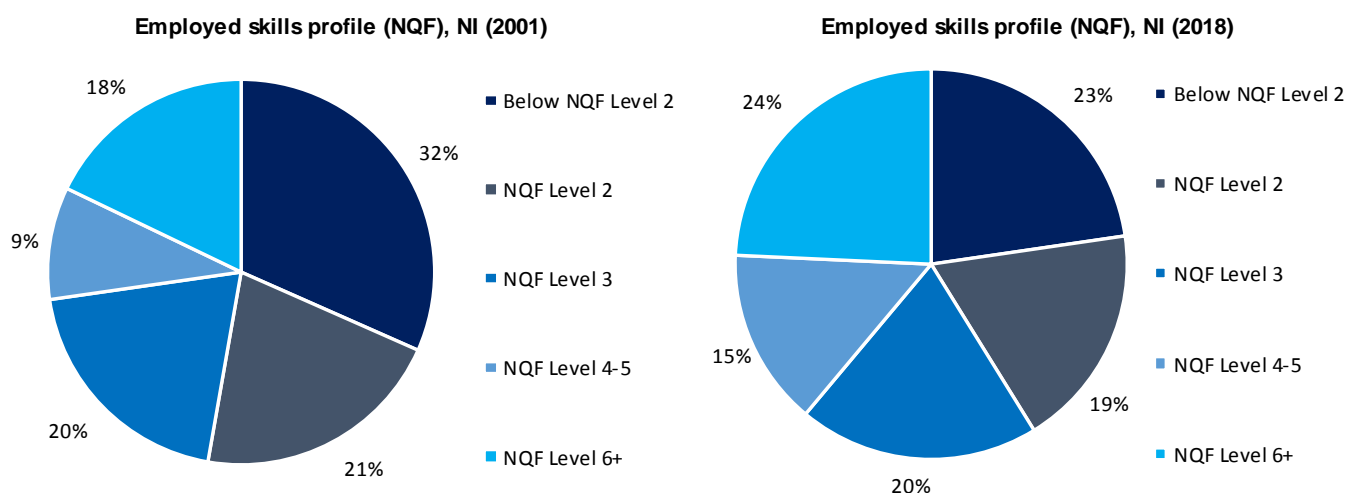
1. This chapter provides an overview of supply side information. This will include trends in school performance and further and HE participation.

Trends in NI's skills profile

Employed residents

2. Qualification levels have improved over the past two decades with the proportion of people in employment with sub-degree, degree and postgraduate qualifications increasing from 18% to 24% between 2001-18. There has been a fall in the proportion of low skilled workers with a highest level of education below NQF level 2. This has fallen from 32% to 23% over the same period.

Figure 4.1: Skills profile of the employed (2001 and 2018)



Source: Labour Force Survey

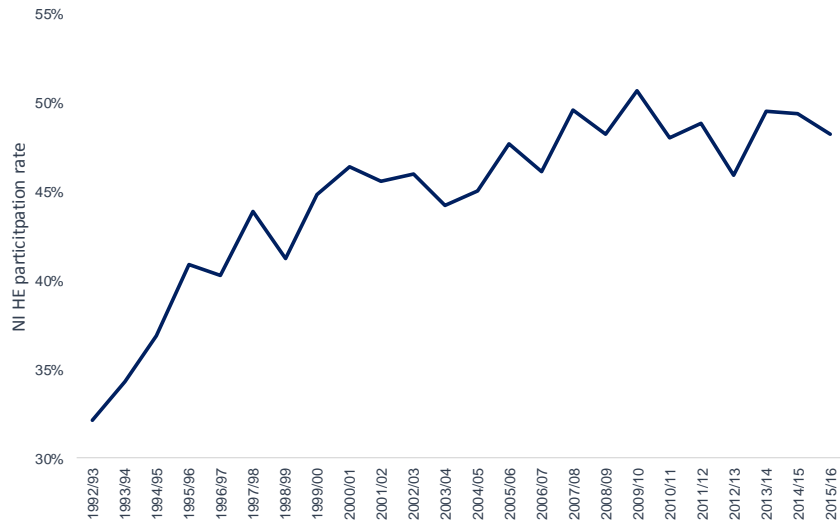
Note: Figures are based on a 4-quarter rolling average to Q1 2002

Source: Labour Force Survey

Note: Figures are based on a 4-quarter rolling average to Q3 2018

3. Part of the change in the skills stock is attributable to a sectoral shift in the economy towards more skill intensive activities, both in the service sector and advanced manufacturing.
4. There is also a generational effect on the skills profile. This involves older less qualified workers leaving the labour force to retirement. Alongside this, **widening access to HE has led to an inflow of more highly qualified young people** with NI's HE participation index increasing from 32% to 48% between 1992/3 and 2015/16. With the exit of older less qualified workers and entry of highly qualified young people, the stock of skills naturally increases over time.

Figure 4.2: Higher Education participation rate (1992/93 - 2015/16)

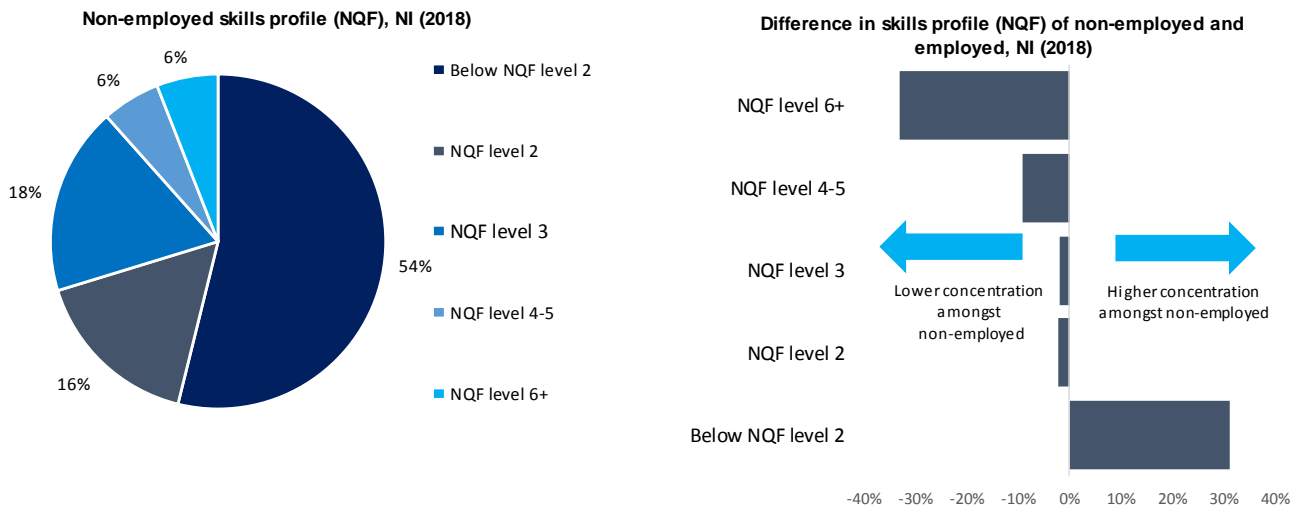


Source: DfE (Higher Education Statistics Agency (HESA), Further Education Statistical Record (FESR), Consolidated Data Return (CDR), Higher Education Authority - Republic of Ireland (HEA), Department for Education, Welsh Government (WG), Scottish Government (SG)
Note: Defined as the number of NI domiciled young entrants (aged under 21) to full-time undergraduate Higher Education (in the UK or Republic of Ireland) as a percentage of the 18 year-old population of Northern Ireland.

Non-employed residents (16-64 population)

5. Within NI’s labour market there are **considerable differences in the skills profile between the employed and non-employed population of working age.** Amongst those of working age who are out of work, only 12% have qualifications equal to NQF level 4 or above. This compares to 39% of people in employment.

Figure 4.3: Comparison of qualifications profile between non-employed and employed, aged 16+ (2018)



Source: Labour Force Survey, UUEPC analysis
Note: Figures are based on a 4-quarter rolling average to q3 2018
Note: Figures refer to unemployed plus government employment and training schemes plus economically inactive excluding students and retirees

Source: Labour Force Survey, UUEPC analysis
Note: Figures are based on a 4-quarter rolling average to q3 2018
Note: Figures refer to unemployed plus government employment and training schemes plus economically inactive excluding students and retirees

6. Conversely, only 23% of people in employment have qualifications equivalent to below NQF level 2, compared to 54% of people out of work.
7. Although the majority of people have acquired an adequate level of literacy and numeracy skills by the time they complete formal education, there is a significant minority who have not. This cohort of working age people are overwhelmingly located

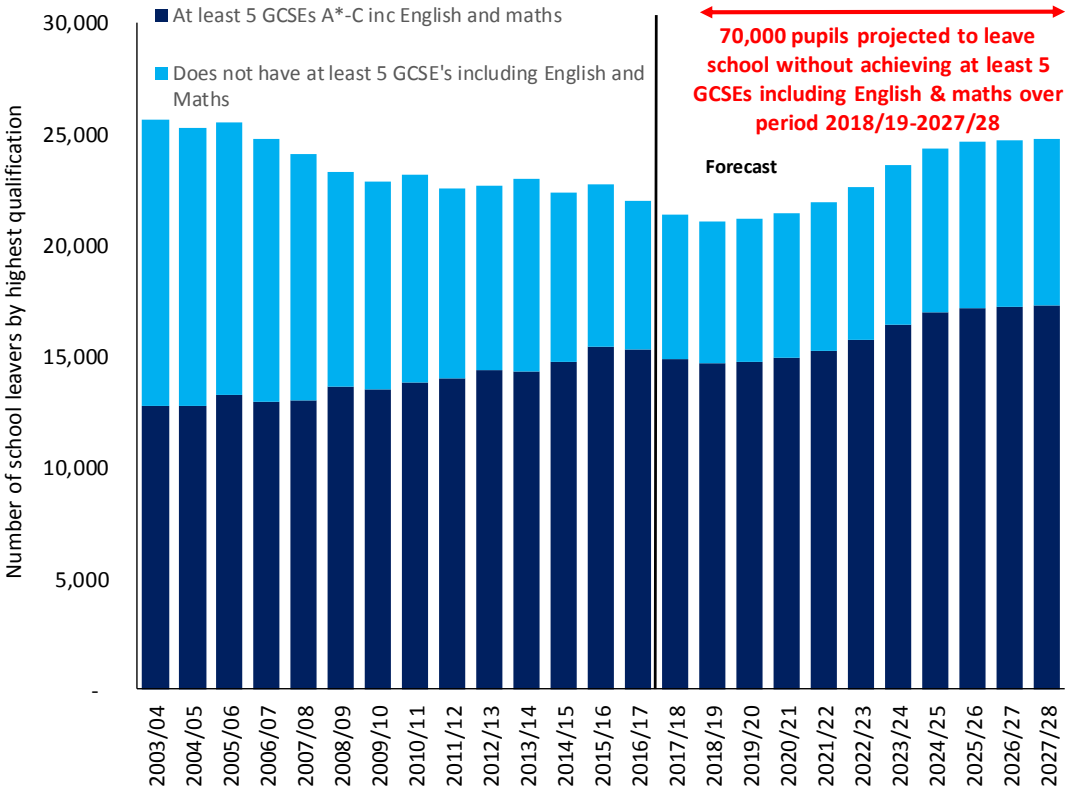
within the out of work population. **From a policy perspective this not only indicates a need to upskill existing employees, but also emphasises the importance of providing learning opportunities for the out of work population.** With a decreasing number of employment opportunities available for those with low level qualifications, a lack of formal qualifications can act as a significant barrier to labour market participation.

Post-primary school

Recent performance

8. The proportion of school leavers who leave school with at least 5 GCSE’s at grades A*-C (including English and maths) was 70% in 2016/17. **This is the highest proportion of school leavers achieving this standard on record**, and has increased rapidly in recent years, from 50% in 2003/04.
9. However, 30% of school leavers failing to achieve this level of education remains too high. Assuming unchanged post-16 school participation and current performance in the school system it is estimated that 70,000 (2018-28) children resident in NI will leave the school system without achieving the minimum standard of education expected by the time they leave school.
10. This is an important point, as **a high proportion of school leavers with low qualifications put pressure on other parts of the education system.** Namely, high enrolment in publically subsidised courses at a relatively low NQF level in Further Education (FE) and participation on publically funded training course such as Essential Skills and Training for Success.

Figure 4.4: Attainment of school leavers (2003/04 – 2027/28)

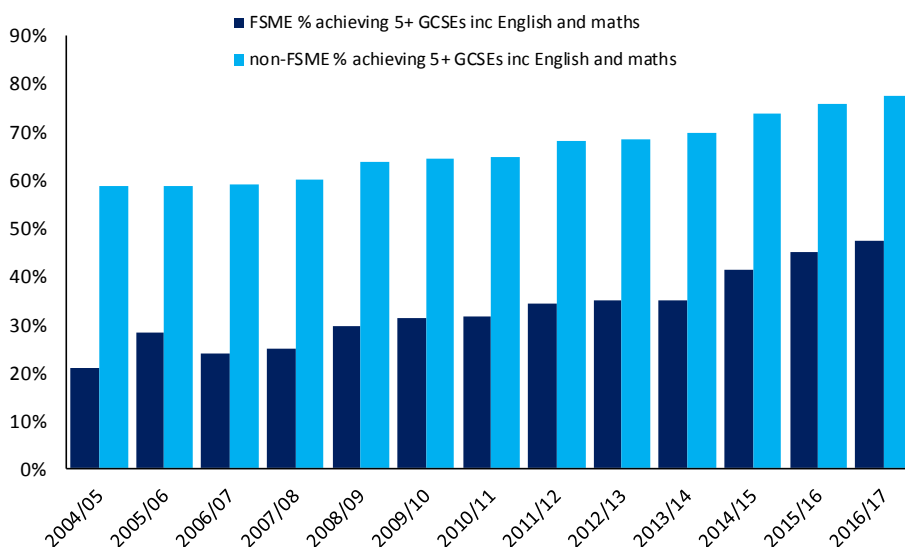


Source: DE, UUEPC forecasts

Post-primary performance and inclusive growth

11. Large differences in education outcomes are observed when considering the socioeconomic status of the families of school leavers. **Children who are entitled to Free School Meals (FSM) achieve a significantly lower level of academic achievement relative to their peers who are not entitled to FSM.** Only 22.6% of non-FSM pupils fail to achieve at least 5 GCSE’s grade A*-C including English and maths, compared to 52.5% of FSM pupils.
12. It should be noted that **although the proportion of FSM pupils achieving at least 5 GCSE grade A*-C including English and maths has improved significantly over the past decade, the gap between FSM and non-FSM children has remained relatively large**⁵.

Figure 4.5: Comparison of school leavers that obtained 5 GCSEs (A* - C) including English and maths, FSME vs non FSME (2003/04-2016/17)



Source: Department of Education

13. Despite the improvement, less than half of disadvantaged pupils (47.5%) achieve a level of education that many employers consider to be the minimum standard of education expected from compulsory education. **A failure to address inequities amongst young people at an early age, and throughout their school journey, causes a long tail of underperformance at GCSE level which perpetuates in the form of worklessness and poverty concentrated in deprived communities in later years.**

Further education

14. FE colleges deliver the largest number of qualifications in the NI education system. In 2017/18 34,300 individuals qualified from Funded Learning Unit (FLU) funded regulated courses at NI FE colleges.
15. **The majority of individuals qualifying from FE colleges qualify from relatively low-level courses.** In 2017/18, 62% of qualifiers completed a course equal to NQF

⁵ It should be noted that the number of pupils entitled to FSM increased in recent years due to a change in eligibility criteria.

level 2 and below. The relatively high number of qualifiers at NQF level 2 and below is concerning from two perspectives.

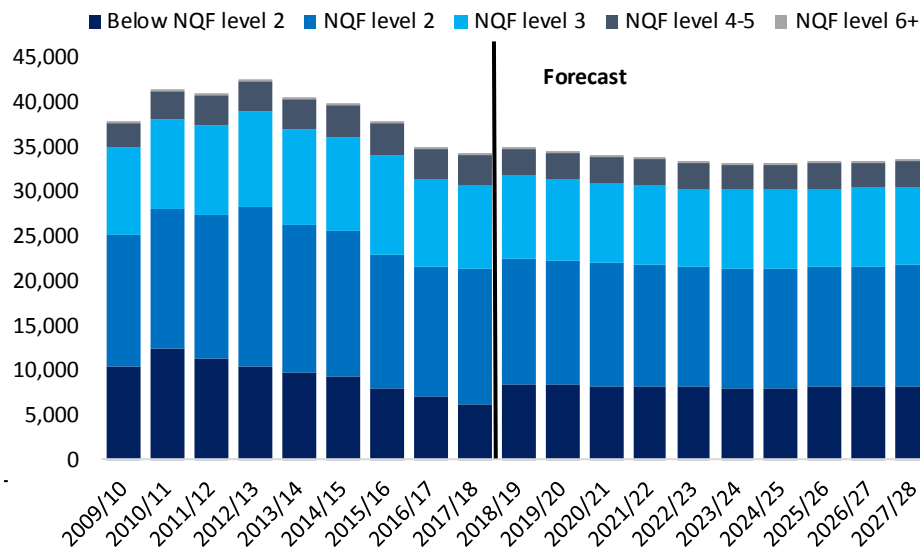
- **Longer term cost of school underachievement.** In NI, 84% of school leavers have achieved NQF level 2 (i.e. 5 GCSE's at grade A*-C) by the time they leave compulsory schooling. However, only 70% achieve NQF level 2 including English and maths. This contributes to the relatively high number of enrolments in FE colleges in low-level courses that often do not involve the participant increasing their level of qualification and moving up the NQF scale. There is a significant fiscal cost associated with delivering low NQF level courses, and must be considered within the context of the long term cost of under achievement in schools. The evidence on this issue is compelling. Indeed, a recent report by the OECD concluded that the economic gains that would accrue solely from eliminating extreme underperformance in high-income OECD countries by 2030 would be sufficient to pay for the primary and secondary education of all students⁶.
- **Limited high-level vocational and technical education.** Only 10% of qualifiers from FLU funded regulated courses were at NQF level 4 or higher. Although this proportion is depressed by the sheer number of people undertaking low-level qualifications. **Vocational and technical education is important from an economic perspective.** Skills demand amongst NI employers is edging higher. If the education system is to meet this demand we need to ensure that a greater proportion of the workforce has higher-level skills. Some of this demand will be fulfilled by graduates. However, less than half of school leavers (43%) pursue the university route⁷. Education and skills policy should be equally concerned about the half of school leavers who do not proceed to HE.

16. Looking forward, based on current levels of participation and enrolment patterns, it is estimated that there will be an average of 33,760 per annum individuals qualifying from FE over the next 10 years.

⁶ OECD (2015) Universal basic skills: what countries stand to gain.

⁷ Although some school leavers do attend university when they are older.

Figure 4.6: Total FE qualifiers by level of NQF achieved (2009/10 – 2027/28)



Source: DfE, UUEPC forecasts

- On average, over the coming decade 8,170 qualifiers will gain a qualification below level 2 at FE, 8,890 will qualify from a NQF level 3 course; and 3,060 will achieve a qualification NQF level 4 or above.

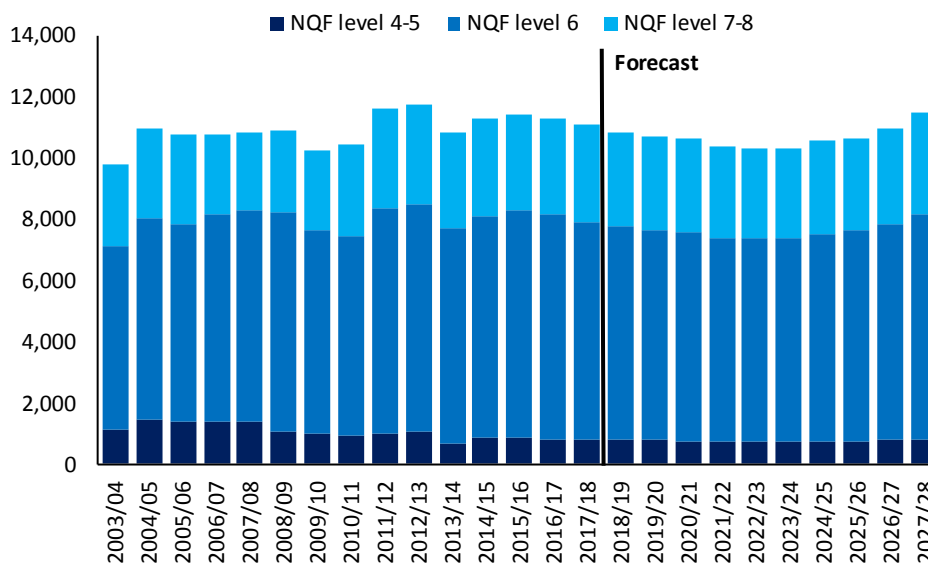
Higher education supply

- When considering the supply for HE it is important to account for those who proceed to further study, the geographic destinations of qualifiers, and their economic status. This results in two estimates of supply:

- Gross Supply** is the number of qualifiers produced across all NI education institutions.
- Net Supply** 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.

- In NI the gross supply from HE is estimated to be 15,000 over the 2018-28 period. However, after accounting for migration flows and subtracting students who chose not to enter the labour market, the resulting net supply to the NI labour market from HE is 10,700 per annum.

Figure 4.7: Net supply from HE by NQF level, (2003/04-2027/28)



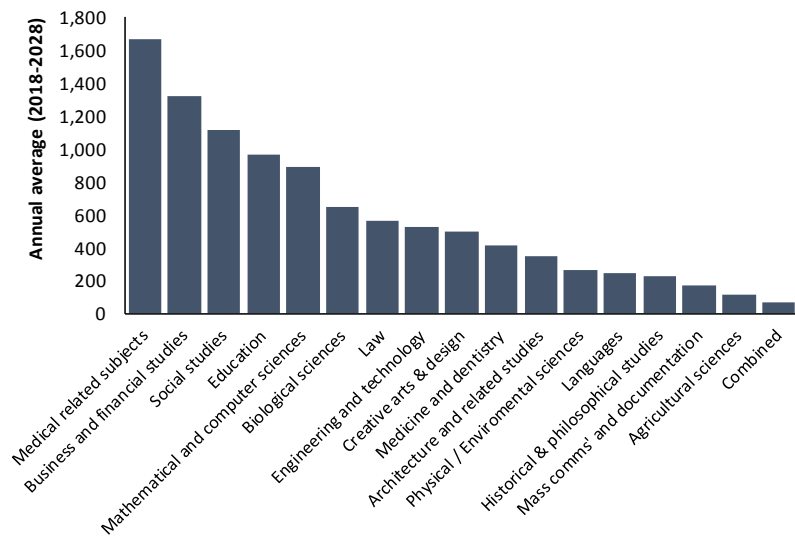
Source: HESA, UUEPC forecasts

20. Based on current enrolment patterns, medical related subjects will produce the largest number of qualifiers from HE over the 2018-28 period (1,670). This is followed by business and administrative studies (1,320) and social studies (1,120).

Figure 4.8: Net supply from HE by subject, (2018-28)

Net supply of NQF level 6+ by subject (JACS, 1-digit), NI (annual average 2018-2028)

Top 15 net supply of NQF level 6+ by subject (JACS, 2-digit), NI (annual average 2018-2028)



Subject	Net supply (2018-2028)
Nursing	840
Computer science	580
Psychology	320
Others in subjects allied to medicine	300
Pharmacology, toxicology & pharmacy	210
Clinical medicine	200
Sport & exercise science	180
Anatomy, physiology & pathology	150
Mechanical engineering	140
Software engineering	130
Civil engineering	110
Information systems	100
General engineering	90
Biology	90
Others in medicine & dentistry	80

Source: UUEPC

Source: UUEPC

21. Using more granular subject classifications the top three studied subjects are: nursing (840); computer science (580)⁸; and psychology (320).

Total supply of skills

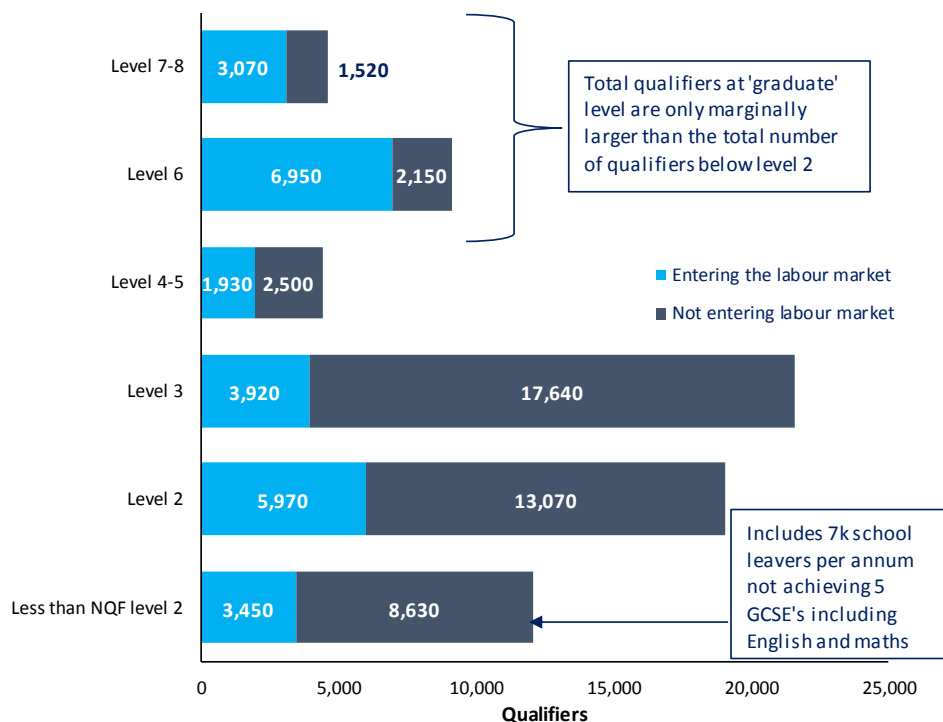
22. In total 70,780 individuals per annum are forecast to gain qualifications over the coming decade. However, it is estimated that only 25,280 people per annum will enter the labour market (i.e. become economically active whereby they are either employed

⁸ This data relates to the JACS level 2 subject classification. The net supply of qualifiers from computer science subjects (software engineering, information systems etc.) is 820 per annum.

or unemployed and actively seeking employment). The majority of the remainder of people gaining qualifications proceed to further study.

- Overall, there are a significant number of qualifiers with low-level skills at NQF level 2 and below. However, relatively few of this cohort enter the labour market, with the majority proceeding to further study and becoming economically active at a later date.

Figure 4.9: Labour market supply by skill level (2018-28, annual average) ⁹



Source: UUEPC

- When assessing the demand and supply of skills in the next chapter, our analysis considers the supply to be those who enter the labour market and are available to fill vacancies.

⁹ Data includes NI residents studying in non-NI HEI's. Entering the labour market refers to education leavers who have become economically active.

5. The demand and supply (Im) balance

Introduction to the supply gap

1. 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 supply adjustment

2. When calculating the demand and supply balance it is important to recognise that a proportion of tertiary 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.
3. A deficit in employability skills has consistently been reported during engagements with local employers. This has been underpinned by 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, that 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 unable to access a high proportion of graduate level vacancies.
4. A supply adjustment is then applied to the net supply to calculate **effective supply**, reflecting that not all tertiary qualifiers will be able to access tertiary level employment. All skills balances presented in the Skills Barometer are based on the balance between the net requirement from education and migration and effective supply.

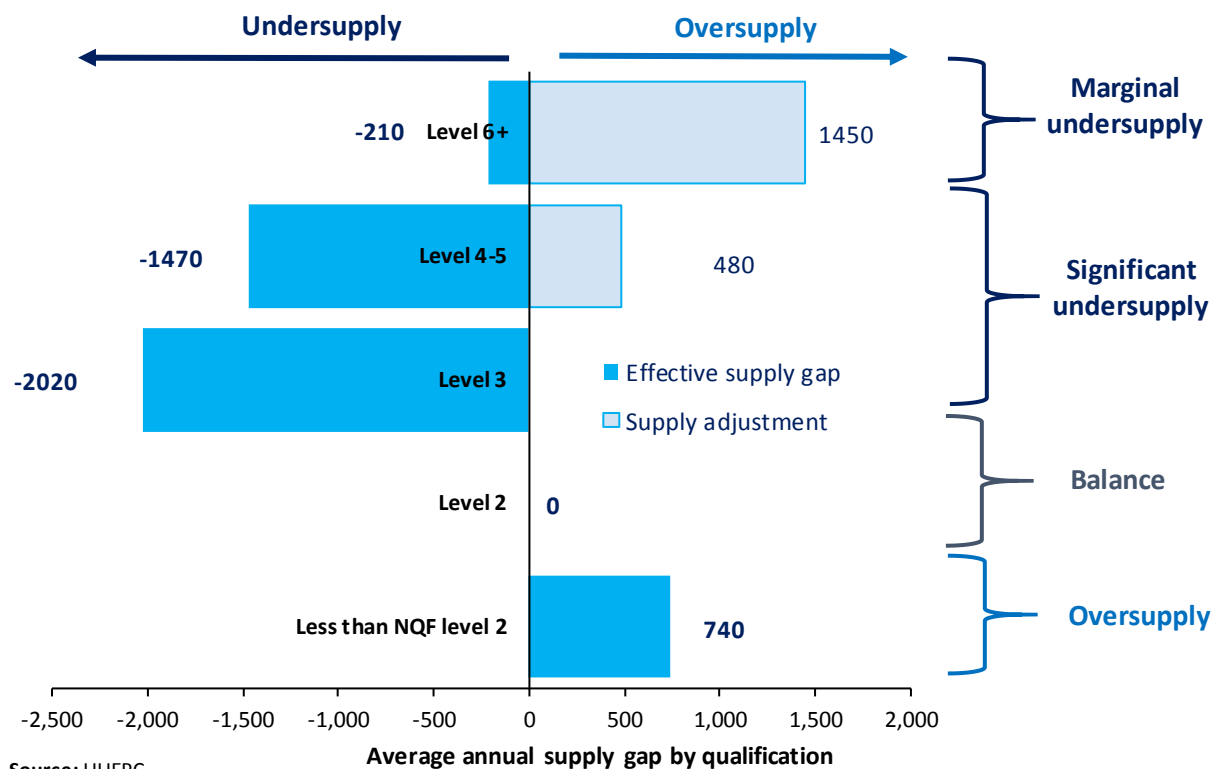
Supply gap – NQF level

5. Based on effective supply, the balance between demand and supply varies across NQF levels. Three broad points emerge from an analysis of balances at the macro level:
 - **An oversupply of low-level qualifications (NQF L2 and below)** – the demand for formal qualifications across all areas of the economy will increasingly impact the employment prospects of people with low or no skills.
 - **A shortage of mid-tier skills (NQF L3 and L4-5)** – the largest supply gaps are at NQF levels 3 and 4-5, driven by supply trends. Typically, most students studying at NQF Level 3 continue their education thereby reducing the supply leaving education at that level. The provision of professional and technical

qualifications in NI is relatively small, and this lack of supply contributes to a shortage of skills at this level.

- **Marginal supply gap at the graduate level (NQF L6+)** – Overall, the effective supply of graduates will fall marginally short of demand under UUEPC’s high growth scenario.

Figure 5.1: Average annual labour market supply gap (2018-28)



- An important point to note is that without a supply adjustment there would be an oversupply of graduates (1,240¹⁰). Survey evidence suggests very high employment rates amongst leavers from HE. Thus, **there are a cohort of people leaving tertiary education to work in non-graduate employment.**
- Employer surveys consistently report a lack of soft skills (e.g. having the right attitude, flexibility, communication, punctuality, team-work and leadership skills) as a major barrier to employing young people. There is often a mismatch between perceived work readiness among employers and students. The OECD¹¹ reported on a study highlighting that **48% of employers considered young people to lack 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.
- In any subject areas where skills shortages exist the policy remedy is not simply an expansion of supply. It is equally important to **tackle the barriers relating to**

¹⁰ This is calculated by adding the net skills balance (-210) and the supply adjustment (1,450).

¹¹ OECD (2016) Soft Skills for the Future. Available at: <https://oecdskillsandwork.wordpress.com/2016/06/17/soft-skills-for-the-future/>

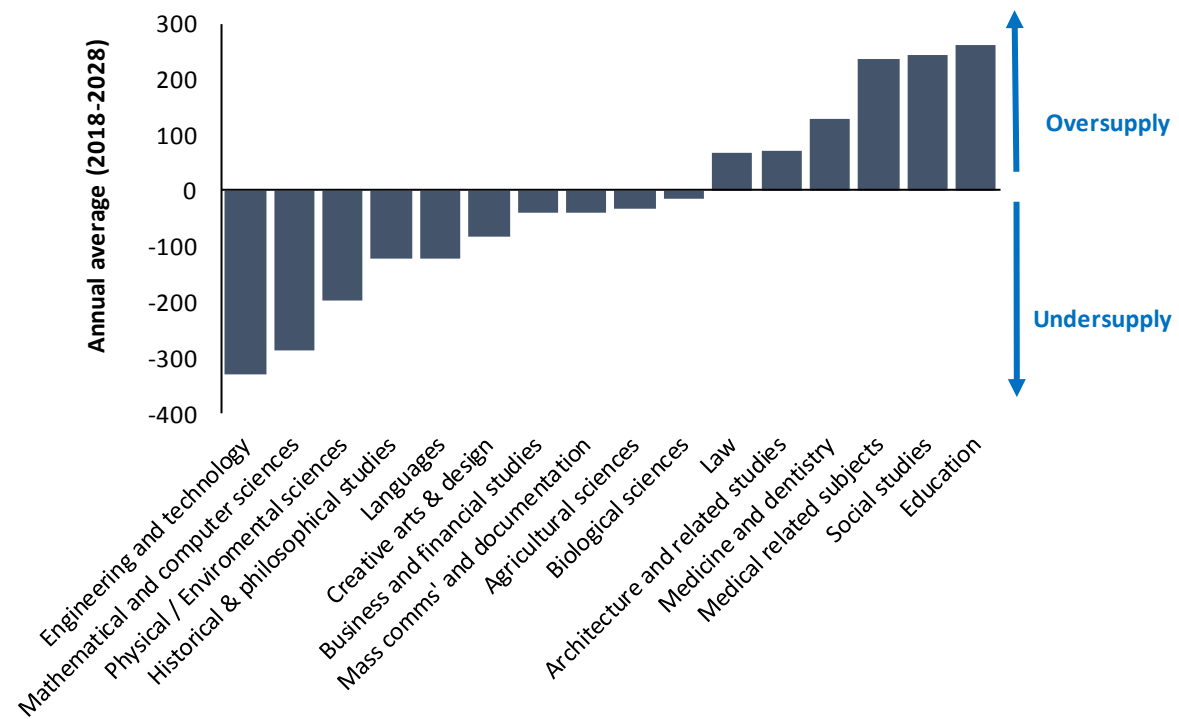
employability skills which are preventing some qualifiers from accessing 'graduate-level' employment.

- 9. Integrating employability skills into the curriculum is a key challenge for education institutions. There are some examples of best practice within current provision to boost soft skills alongside work-based learning teaching methods.
- 10. However, it is also important that young people in education develop their employability skills through work experience, typically through a placement and/ or internship in a role linked to the career they wish to pursue. In a recent survey by High Fliers¹² 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. Therefore, successfully tackling this issue requires a collaborative process involving both education providers and employers.

Supply gap – Subjects

- 11. Whilst the number of graduates and post-graduates combined are marginally undersupplied, there is an imbalance across individual subject areas.
- 12. For many subject areas the over/under-supply is less than 100 and therefore could be broadly considered to be in balance. This analysis should only be considered most relevant in subject areas which have higher levels of over and under-supply.

Figure 5.2: Annual average effective supply gap by NQF level 6+ subject (JACS, 1-digit) (2018-28)

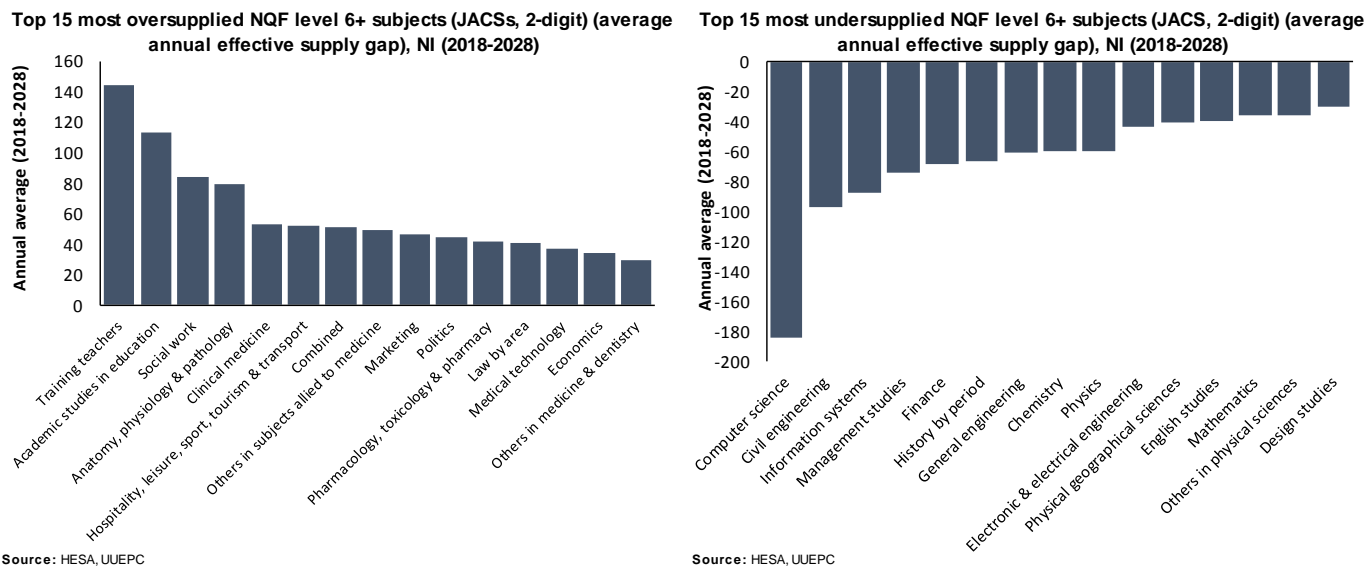


Source: HESA, UUEPC

¹² High Fliers (2019) The Graduate market in 2019. Available at https://www.highfliers.co.uk/download/2019/graduate_market/GMRReport19.pdf

13. This analysis shows there are some subject areas of significant under and over-supply. **Strong demand for STEM related subjects is associated with UUEPC’s high growth scenario.** The subjects forecast to be predominantly under-supplied are engineering and technology, maths and computer sciences and physical and environmental sciences. It is estimated that the economy will require an additional 330 engineering and technology graduates and 290 additional maths and computer science graduates each year. This gap can be closed by either increasing the number of graduates overall, improving the employability skills of graduates who are unable to secure graduate level employment or encouraging applicants to university to change their pattern of subject choices.
14. This trend reflects the growth in the ICT, professional services and advanced manufacturing sectors in the high growth scenario driving demand for qualifications in computer science and engineering subjects. This is also evident when analysing supply gaps using more granular subject classifications. **The largest supply gaps are recorded in computer science, civil engineering and information systems.**
15. In contrast, the low growth in public sector spending and the likely lower levels of recruitment will influence the demand for skills in subject areas popular across the public services. These include subjects such as education and social studies. This is reflected in the supply gaps using more detailed subject categories, with the **top two most oversupplied subjects being training teachers and academic studies in education.**

Figure 5.3: Top 15 most undersupplied and oversupplied NQF level 6+ subjects (JACS, 2-digit), average annual effective supply gap (2018-28)



16. An important point to note is that if a subject area is over-supplied, it does not necessarily mean that a young person should not study in that subject area, particularly if they have a strong interest or aptitude in the subject. However, it is important to communicate areas of over and under supply to young people to ensure that **informed decisions** are made relating to their chosen degree subject.

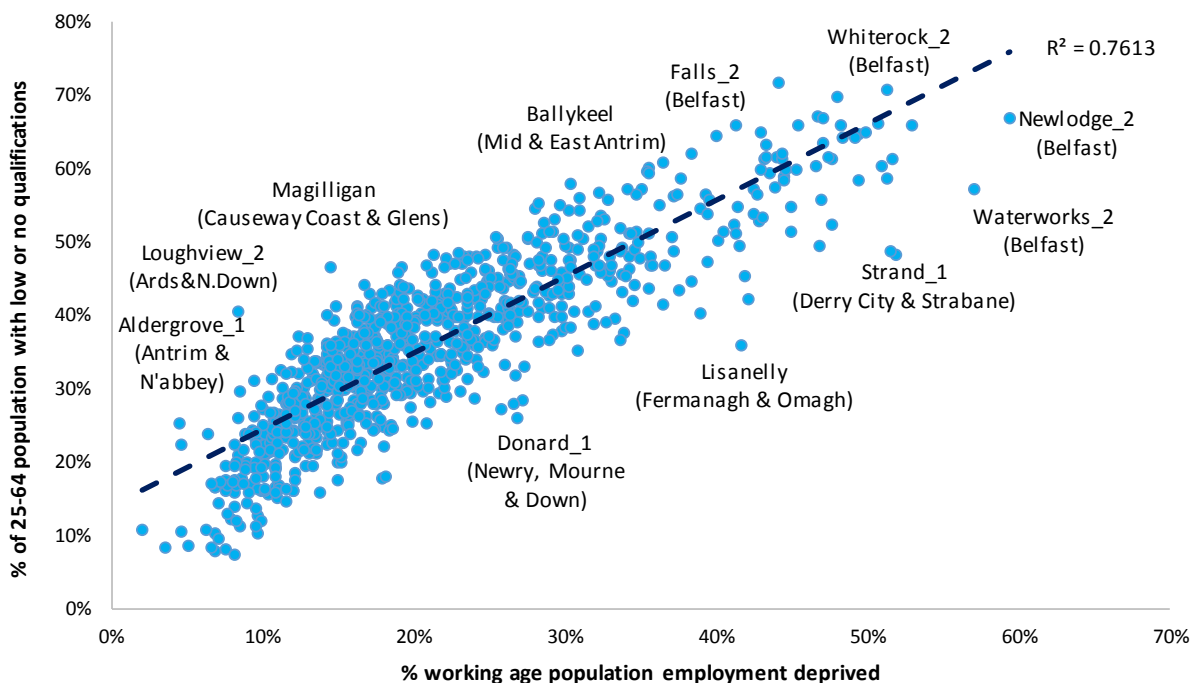
6. Summary and policy remarks

1. This report has provided a review of recent skills trends in NI and developed a model to forecast the demand for skills under a high growth scenario consistent with the spirit of the Draft Industrial Strategy for NI.

The importance of skills

2. Economic and social development are closely related to the skills of the population. The OECD survey of adult skills highlighted that individuals with poorer foundation skills are far more likely than those with advanced literacy skills to report poor health, to believe they have little impact on political processes, and not to participate in volunteer activities¹³.
3. There is a wide range of evidence available in published literature to demonstrate the **importance of formal skills in driving economic growth and providing a return to those investing in higher-level skills**. For example, over 92% of working age people in NI with a NQF 4+ level qualification are in employment compared to 64% amongst working age people with a highest level of qualification below NQF level 3. Skills are undoubtedly the most important driver to increase employability, and this is a key factor in explaining sub-regional economic disparities (see figure below).

Figure 6.1: Proportion of 25-64 year olds with low or no qualifications (2011) versus % of working age population employment deprived (2015/16), SOA



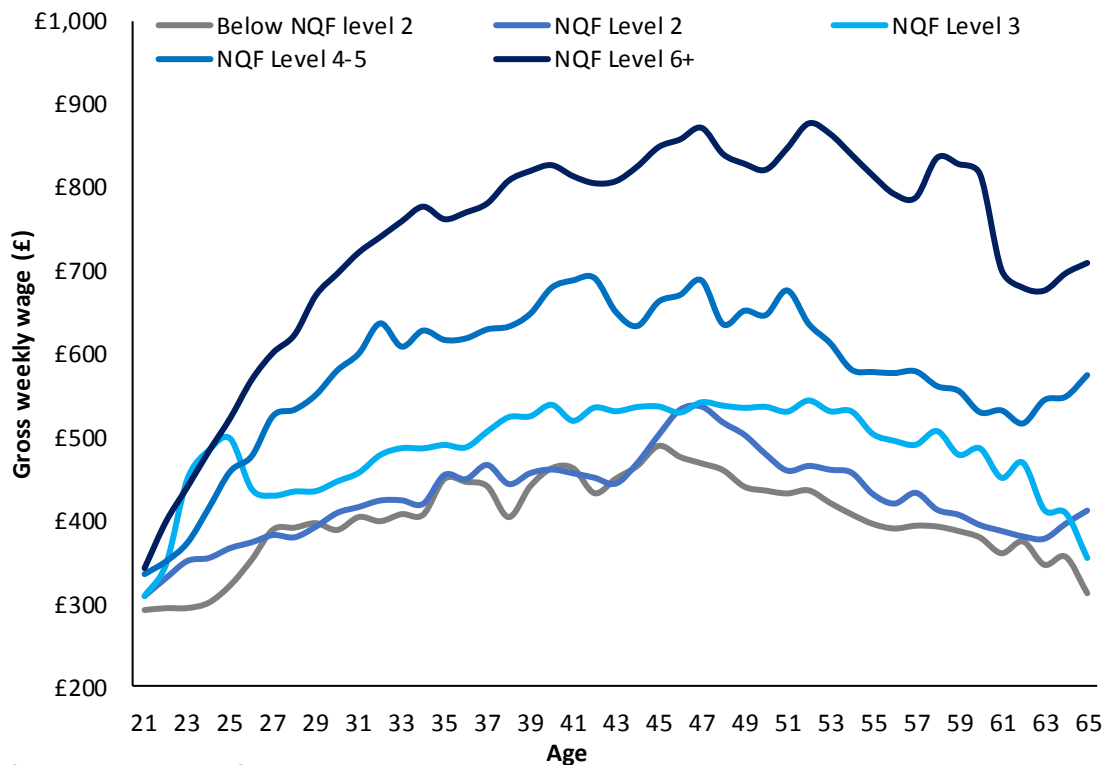
Source: NI Multiple Deprivation Measure

Note: Employment deprived is defined as proportion of working age population who are in receipt of at least one employment related benefit, and individuals who are not in receipt of an employment related benefit, nor have received income from employment

¹³ OECD (2012) The Survey of Adult Skills. Readers companion, second edition.

4. In addition, the average graduate (NQF level 6+) has an earnings premium of more than 100% compared to a person with a highest level of qualification below NQF level 2. However, the scale of the graduate earnings premium varies across the career lifecycle.

Figure 6.2: Gross weekly earnings by age and NQF level, NI (4 quarter rolling average to Q3 2018)



Source: Labour Force Survey

Note: Figures refer to total employment

5. Graduate earnings are broadly similar to non-graduate earnings at age 21, when many young people qualify from three-year undergraduate degree programmes. However, graduate earnings increase significantly over the first two decades of their careers. NQF level 4-5 qualifications are also associated with significant wage growth through qualifiers 20's and 30's. Therefore, **there are significant lifetime benefits associated with continuing to tertiary level education** (i.e. FE or HE), and young people should be encouraged to stay in education for as long as possible.

Expansion demand

6. The UUEPC's baseline macroeconomic forecast is for the NI economy to create 39,130 jobs over the period 2018-28 (a relatively subdued job outlook). To place this in context, the NI economy created almost three times as many jobs in the pre-recession decade.
7. **When focusing on skills forecasting it is prudent to plan for skills needs in an aspirational nature based on the ambitions of economic policy.** There is a risk of oversupplying skills if the aims of economic policy are not achieved. This would involve a personal cost to individual's investing in their skills development who are unable to find suitable employment opportunities. However, this potential cost is relatively lower when considered alongside the potential cost of undersupplying skills. If businesses are

unable to find the skilled labour required to expand their businesses it depresses competitiveness, constrains productive capacity and holds back future job growth.

8. Under a high growth scenario the NI economy will create 85,380 jobs over the coming decade. Job growth (expansion demand) in this scenario will be driven by high-skill sectors such as ICT and professional services. This translates to high growth in science and technology occupations, which highlights the importance of education performance in STEM subject areas.

The importance of replacement demand

9. Although NI experiences rapid employment growth in the UUEPC high growth scenario, **net replacement demand provides more than double the number of job opportunities** (replacing workers who have retired, moved to another position etc.).
10. The largest sectors tend to be associated with the highest levels of replacement demand. Therefore, sectors such as health, retail and manufacturing will have relatively large levels of replacement demand. This is an important point with regard to careers advice, as **sectors do not necessarily have to be growing rapidly in order to provide job opportunities**.

Net requirement from education and migration

11. The net requirement from education and migration is the total number of job opportunities (expansion and replacement) which require labour from either the education system or from migration (i.e. demand that cannot be filled from inside the existing labour market).
12. Of the net requirement from education and migration over the coming decade, 33% of job opportunities will require a degree level qualification (NQF level 6+). Only 10% of the net requirement from education and migration will require qualifications below NQF level 2.
13. Individuals with low levels of education attainment and skills are increasingly disadvantaged in the labour market. **The net requirement skills profile is much more highly skilled than the current stock of workers**. This suggests that it is imperative that the number of young people with low-level qualifications is minimised.

Intra labour market flows

14. **The majority of job vacancies are filled by people already working in the labour market (i.e. job-to-job movements)**. Many of the vacancies requiring lower levels of qualifications are filled within the labour market rather than recruitment from the education system (net requirement).
15. Although there remains a significant proportion of people working in the labour market with low-level qualifications, they have work experience and are not necessarily low skilled. There is an insider-outsider element to the end of the labour market characterised by low qualifications. Individuals inside the labour market have some mobility to move between jobs. However, once a person with low levels of qualifications

is out of work it is difficult for them to find suitable opportunities to re-engage in the labour market.

Underachievement in schools

16. **One method to improve the stock of skills over the long-term is to stem the flow of people with low qualifications entering the labour market.** The data for school leavers is concerning. In NI 70% of school leavers achieved at least five GCSE's A*-C (including English and maths). However, less than half (48%) of students entitled to FSM achieve this education benchmark, compared to more than three-quarters (77%) of non-FSM pupils.
17. Addressing this challenge is particularly difficult as education performance is not just determined by factors within schools. It is influenced by multifarious economic and social factors outside the school environment. A recent literature review highlighted that **the home learning environment is arguably a stronger influence on a child's education performance than the school environment**¹⁴.

Professional and technical skills

18. The NQF profile of qualifiers in FE colleges is weighted towards low-level qualifications. Only 10% of FE qualifiers achieve a qualification higher than NQF level 3, demonstrating the **limited supply of people studying higher level vocational qualifications focussed on professional and technical skills.**
19. Higher level professional and technical skills are important from an economic perspective. In the high growth scenario the supply gap indicated a shortage of mid-level skills.
20. In most other OECD countries a much higher proportion of students enrol in these types of courses compared to NI, and they are valued by firms and students as highly as university qualifications. In NI (and GB) parents, teachers and students seem to view professional and technical qualifications as lower status than degree qualifications. This contributes to students not considering professional and technical path when making decisions related to their tertiary level education, which leads to mid-level skills shortages. **There are clearly efforts required to change these perceptions,** and make young people aware of the higher-level options available to them in NI's post-secondary education and training infrastructure, and the potential economic returns associated with each course offering.

Graduate subject diversity

21. The research has highlighted that STEM related subjects are under-supplied. This is a skills shortage identified across many developed economies and given the likelihood of continued demand for these skills and the FDI potential in these sectors, methods to increase provision in these subject areas (at both FE and HE) should be considered.

¹⁴ Magill, M. & McPeake, M. (2019) Belfast City Council, Future Skill Needs. Ulster University Economic Policy Centre. Available at: https://www.ulster.ac.uk/data/assets/pdf_file/0003/354477/UUEPC-Belfast-City-Council-Skills_FINAL2.pdf

22. There is high growth forecast in a number of specialised sectors/occupations that directly link to degree programmes. It will be important to ensure that supply of graduates is adequate to meet this demand in high growth sectors such as ICT, and to ensure school performance in linked subjects (i.e. STEM) is of a level to enable new university entrants to access degree courses requiring STEM skills.
23. Often certain STEM courses have entrance criteria linked to certain subjects at A-level. Therefore, it is **important to communicate accurate careers information to publicise the benefits of STEM subjects as early as possible**.
24. Aside from providing more degree subject options being available to new university entrants, studying STEM subjects at A-level can also contribute to better labour market outcomes. A recent study found that pupils who achieved a single STEM A-level (possibly amongst others) achieved a wage return of 20% from doing so, the return for those achieving at least 2 A-levels not including a STEM subject was just 5.3%¹⁵.
25. From a policy perspective, it is important not to overreact to areas of over and undersupply. Although there are some clear shortages in STEM related subjects, the majority of opportunities in the economy are not linked to a specific subject.
26. As a wider point, education policy should aspire to deliver world-class careers advice in schools as early as possible. **Pupils should be provided with all the available labour market information in order to make informed career choices (e.g. a careers information portal)**. When choosing degree subjects pupils should at least have an awareness of the number of job opportunities related to their degree before choosing a degree subject. Young people should always be encouraged to study a subject for which they have a passion. However, through careers advice they should understand the supply and demand dynamics of the subject area in which they are choosing to study.

Employability skills

27. The 2018 CBI/Pearson education and skills survey highlighted that in NI more than four in five (83%) local businesses expect to hire high-skilled roles in the next three to five years; only around one in four companies (24%) are confident of having the supply of talent they need to fill them¹⁶.
28. This is a common complaint amongst employers, and **the numbers of employers consistently reporting a lack of basic employability skills amongst graduates is concerning**. Fewer students working in part-time jobs may explain part of this¹⁷ or a lack of work based learning within degree programmes. This issue exists even in undersupplied subjects, and would benefit from further research.
29. There is a legitimate argument that it is not solely the role of education institutions to provide students with these type of workplace skills. Instead, some responsibility should be on employers to train their staff to ensure they have adequate skills for their

¹⁵ Conlon, G., and Patrignani, P. (2015) 'The earnings and employment returns to A-levels', London Economics.

¹⁶ CBI/Pearson (2018) Educating for the modern world; CBI/Pearson Education and skills survey

¹⁷ UKCES (2015) The death of the Saturday job. The decline of learning and earning amongst people in the UK.

workplace. **Improving the soft skills of graduates should be a shared responsibility between education providers and employers.**

30. Many of the competencies and behaviours demanded by employers are difficult to develop outside of a real workplace. For example, attitudes towards work, including taking responsibility, meeting deadlines, and knowing how to act in a given situation. In the classroom, efforts should be made to simulate the work environment through use of solving applied problems that frequently occur in the workplace. If employers want to help shape the skills of the supply of graduates in degree subjects related to their business it can be achieved by developing relationships with education providers and contributing to course design.
31. More than half of firms in the CBI/Pearson survey stated that poor careers advice is a major cause of skills shortages in the NI economy. Over 80% stated that they would be willing to play a greater role in supporting careers advice in schools and colleges. **With such a high proportion of employers stating that they are willing to make a positive contribution towards helping students make good choices, it suggests that there is further scope for enhanced employer involvement in careers advice.**

Work placements

32. Higher participation in HE has created a large group of labour that is relatively homogenous in nature. Recent graduates have relatively similar levels of school achievement and degree classifications awarded have skewed upwards over the past twenty years. For example, of the first degrees awarded in 2017, 23% were awarded first class honours compared to just 7% of a smaller cohort in 1997. Similarly, in 2017 the proportion of first degree qualifiers achieving a third class/pass degree classification was just 2.9% compared to 11.2% in 1997.
33. **With high numbers of qualifiers with relatively similar CV's it is important to stand out from the crowd.** To compliment degree level qualifications employers also expect students to possess wider employability skills. The most effective way for students to improve their employability skills is to undertake a work placement.
34. **The evidence that a placement year improves employability opportunities is strong**^{18,19}. Indeed, a lack of work experience is a key barrier to young people, including graduates, in securing employment. Many recruiters consider that hiring candidates who have proven their abilities during a placement to be a more reliable way of employing graduates²⁰.

Plan for success – but have a back-up plan

35. Although it is advised to plan the supply of skills based on the economy policy seeks to achieve, it is also important to be cognisant of the potential for oversupply. If the NI

¹⁸ Mason G., Williams G. and Cranmer S. (2006) 'Employability skills initiatives in higher education: what effects do they have on graduate labour outcomes?' London: National Institute of Economic and Social Research

¹⁹ Hall M., Higson H. and Bullivant N. (2009) 'The role of the undergraduate work placement in developing employment competences: Results from a five-year study of employers' Aston Business School, Birmingham

²⁰ High fliers (2018) The graduate market in 2018.

economy were to experience a recession, stagnant job growth or a sector shock there is a potential for an oversupply of graduates. Therefore, it is **important to have measures in place to mitigate the potential for an oversupply of skills** (e.g. conversion courses for workers made redundant, training rights for young people unable to secure employment after graduation etc.).

Adapt to labour market change

36. The modern labour force is currently undergoing a period of transformational change, with some occupations being vulnerable to skills-biased technological change²¹. This change highlights the **importance of continued lifelong learning to enable greater occupational mobility within the NI labour market**. A critical point is to ensure lifelong learning opportunities are accessible to all, and understanding the barriers that exist.
37. There are also many people within the existing labour market who have a low level of qualification, yet are highly skilled. In other words, **people employed have accumulated skills on the job but do not have a qualification on the NQF framework to recognise their skill level**.
38. Validating formal and non-formal learning strengthens individual's incentives to invest in training, helps to promote job-to-job transitions, and can reduce the incidence of under-qualification. **A recognition of prior learning would strengthen the signalling power for individuals who are highly skilled but poorly qualified**.

Lifelong learning

39. It is important to recognise that public resources for skills, education and training are finite. Key target groups should be young people (particularly those who are out of work), people with low skills currently excluded from the labour market who would 'like to work' and workers with low level skills who have not continued to advance their skills over the life course through training or other lifelong learning methods. **Addressing changing skill needs in the economy is essential to shield workers with low skills from the negative effects of job loss and structural change**.

More effective use of longitudinal research²²

40. Using longitudinal data can provide clarity on the effectiveness of courses. Better tracking the education journey of learners through all stages the education system can provide huge policy insights.
41. For example, numerous research articles have highlighted the negative consequences of grade repetition in schools²³. Enrolment data in FE suggests a version of this occurs in the post-secondary education system in FE colleges, with a recycling of students who

²¹ This refers to job related tasks that were previously undertaken by labour, but as technology has advanced can now be undertaken with minimal human assistance. Technological change has been skills-biased, causing larger relative returns to qualifications in the upper part of the skills distribution.

²² A longitudinal study is an observational research method in which data are gathered for the same subjects (e.g. people) repeatedly over a period of time. Longitudinal studies can extend over years, or even decades.

²³ OECD (2012), Equity and Quality in Education: Supporting Disadvantaged Students and Schools, OECD Publishing.

undertake multiple courses without moving up the qualifications ladder. While the data indicates that this is likely to occur, there is no conclusive statistical evidence base. **By better tracking students throughout their entire education journey the effectiveness of their courses could be more effectively evaluated, and students course-to-course transitions could be better understood.**

Effective skills planning involves a coordinated approach

42. Many employers report difficulties finding workers with the skills they require, and a high share of adults are working in jobs that are not well matched to their qualifications. Skill imbalances can lead to lower earnings and job satisfaction at an individual level alongside stunted productivity growth and lower economic growth at a macro level. Therefore, effective planning of skill needs is of critical importance.

43. Policy should not rely purely on quantitative modelling. When undertaking skills planning it is **important to gather qualitative views from employers relating to skill needs**. This can take the form of a consultation exercise, or an independent body. For example, in Ireland the Expert Group on Future Skills Needs is an independent non-statutory body that includes representatives from the business community, education and training providers, trade unions, and a small number of Government Agencies.

Improving labour market intelligence in tertiary education

44. The need to better quantify student outcomes also applies to tertiary education. By linking student information to tax and benefit records it is possible to gain insight in a number of areas:

- **Graduate underemployment:** There is some evidence of graduates being employed in non-graduate occupations in recent years. This could be either a demand side weakness, the expansion of HE participation or students lacking employability skills. This is an area requiring further research. Linking to tax records would provide insight that is currently unavailable from published data sources.
- **Course value:** Earnings data available at the UK level highlights a diverse earnings profile across degree subject areas. Linking to tax records could potentially quantify differences in earning potential across degree courses.
- **Returns to FE:** Currently very little data is available relating to the long-term returns to a qualification obtained in a FE institution. Tracking earnings in the years following the successful completion of a FE course could provide valuable data that would help to change perceptions amongst parents and students regarding FE. This would be a helpful addition to the available research and could help effectively communicate the positive economic outcomes associated with professional and technical qualifications.

45. The range of research possibilities from linking education data to tax records is almost limitless. The data gathered from this undertaking could inform careers information and improve student's ability to make informed career choices. The data could also be used to inform funding decisions. For example, in 2017 Estonia introduced a new funding

model for HE based on performance with one of the assessment indicators being the labour market outcomes of graduates²⁴.

46. Many of the systems to undertake this type of analysis are in place. In England, Scotland and Wales it has been possible to chart the career paths of children from school to work since 2015. However, work on the creation of a Longitudinal Educational Outcomes database for NI was delayed whilst the legal basis for data sharing was established. Legal gateways are now in place and work is ongoing to develop data sharing agreements. Therefore, the barriers to undertaking this type of valuable research have been removed, and facilitated the potential for the development of a wide range of evidence-based labour market intelligence.

Understanding what works

47. With better, and more integrated, systems of data collection it should be possible to undertake a **meta-evaluation of all forms of public intervention relating to skills**. To effectively evaluate policy impacts a record should be developed which holds data on each individual, the assistance they received and the outcomes associated with the intervention. This approach will avoid the problem of double counting individuals who have participated in multiple education and skills initiatives. **Before any significant new interventions are introduced it is important to understand what has worked best within the publically funded education and skills system.**

Concluding remarks

48. Achieving success across all aspects of the education and training system is an extremely difficult challenge. The Skills Barometer is one resource that can be drawn upon, alongside many others, to inform policy. This information should be utilised by policy officials, teachers, students, careers advisors and employers. It is important that stakeholders across the education and training system move forward with a common vision to develop policy that will equip individuals across NI with the skills to succeed.

²⁴ MoER (2018), Ministry of Education and Research, Summary of the Ministry of Education and Research's annual report for 2017.