



Overqualified third-level graduates in the Irish labour market¹

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A man wearing a cap and a long-sleeved shirt is standing in a greenhouse, holding a hose and spraying water onto a row of plants. The greenhouse structure is visible in the background, and the overall scene is bathed in a teal color.

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Introduction

The term skills mismatch is a broad concept and takes several forms. They include vertical mismatch, skill gaps, skill shortages, field of study (horizontal) mismatch and skill obsolescence. Some relate to mismatches experienced by employees, while others relate to employers and firm-level difficulties in accessing appropriate skilled labour. Mismatch on an individual level relates to the degree to which workers have skill or education levels that are above, below or unrelated to the requirements of their current employment (Cedefop, 2010, 2015). On the firm side, mismatch generally refers to the supply of suitably skilled job applicants as they relate to demand for skills.

With a huge shift in the share of school leavers deciding on tertiary education over recent decades and the share of graduates among the adult population in Ireland is among the highest in the EU, this report considers the supply of tertiary graduates in relation to the demand for skills in the Irish labour market between 2008 and 2019 using the job evaluation approach. The analysis begins in 2008 for purely practical reasons due to a revision to the International Standard of Classifications (ISCO) that year by the International Labour Organisation (ILO). As such, trends over a longer time-period are more difficult to compare in a robust manner. The year 2012 was chosen as the bottom of the recession and the turnaround point back to growth in employment and 2019 is the test 'normal' year of data available, given covid related lockdown and issues related to data collection and comparability thrown up by the pandemic.

ISCO-08 major groups	Skill level
Managers	3+4
Professionals	4 (ISCED level 5a or higher)
Technician and Associate Professional	3 (ISCED level 5b)
Clerical support workers	2 (ISCED level 2, 3, 4)
Service and sales workers	
Skilled agricultural, forestry, & fishery workers	
Craft and related trades workers	
Plant and machine operators, and assemblers	
Elementary occupations	1 (ISCED level 1)

For the purpose of this report, an individual is overqualified if they have a tertiary education as set out in the International Standard Classification of Education (ISCED)² designed by UNESCO but work in an occupation that does not require that level of training (ISCO categories 4-9). For example, an MA graduate in Finance (or any subject) working on the shop floor of a supermarket is overqualified for their position. An individual can also be overqualified with various post-secondary and specialist training though this group are not included in this report.

This report first estimates the share of tertiary graduates among the population, the working population, by gender and for the youngest cohort. In addition, the report presents the occupational breakdown of Irish employment by gender and for younger workers. The analysis also identifies overqualification among younger workers, by gender, by economic activity or sector (NACE), by field of Education and by Nationality.

The analysis found that since 2008, there has been a large increase in the share of working age adults with tertiary qualifications in Ireland and the share of those in work with higher education also shot up. At the same time, since the collapse of Construction and return to growth in 2012, the breakdown of Irish employment by broad occupational group as categorised by the level of investment in education required has changed little, with the share of 'high-skill' jobs remaining largely static. The share of jobs in *Skilled Trades* for instance, increased by just over 1 percentage point in those seven years, the biggest change of nine broad groups.

In addition, approximately 3 in 10 third level graduates employed in Ireland are working in occupations where their qualifications go unused with higher incidence for young workers. Approximately 333,500 workers were overqualified third level graduates in 2019, around 15 percent of employment. Women are also more likely to be overqualified among third level graduates and make up a higher share of all overqualified workers (185,000 or 56 percent).

In 2019, more than half of all overqualified tertiary graduates in Ireland were working in four out of 14 economic sectors; *Industry, Wholesale/Retail, Other Service Activities and Human Health and Social Work Activities*.

The lion's share of overqualified workers studied in four broad areas; *Business, admin and law, Arts and humanities, Engineering, construction and manufacturing and Health and welfare*. Graduates in Education, Natural sciences, mathematics and statistics, Information and communications technologies and Health and welfare are least likely to be working in occupations with lower skills requirements. The report also examined overqualification rates of workers experiencing various conditions of precarious

2 ISCED-11

0. Early childhood education
3. Upper secondary education
5. Short-cycle tertiary education
8. Doctoral or equivalent level

1. Primary education
4. Post-secondary non-tertiary education
6. Bachelor's or equivalent level

2. Lower secondary education
7. Master's or equivalent level

employment and found much higher rates of overqualified third level graduates among each of these workers. Almost three quarters (73.9 percent) or 90,000 of the net increase in overall employment between 2008 and 2019 (123,000) were taken by tertiary graduates underutilising their skills.

Literature review

Overeducation/skill underutilisation/vertical mismatch, which this research will focus on, can be costly for individuals, potentially undermines productivity and growth at a firm level and by extension at the macro level. Overqualification can negatively affect workers through lower job satisfaction and is associated with lower returns to education in the form of earnings. Lower job satisfaction in turn affects firms through staff turnover and productivity. There is also some evidence to suggest that overeducation is associated with lower productivity as it may represent a shortage of skills supply available for employers. At a macroeconomic level, national welfare, potential growth and productivity are all undermined without full utilisation of skills available within the economy. From a spending perspective, revenue is potentially wasted on non-productive education with policy implications for utilising and targeting the existing skills of the labour force more efficiently (McGuinness 2006).

A considerable amount of literature focuses on the returns to education in relation to overqualified workers in terms of earnings. For workers, being mismatched likely results in lower returns to their investment in education through lower wages relative to similarly educated individuals in matched employment. There is a consensus in the rich mismatch/returns to education literature that individuals whose education is not fully utilised in their employment suffer a wage penalty relative to those in matched employment (McGuinness and Sloane, 2011). At the same time over-qualified workers tend to earn a wage premium relative to their matched counterparts doing the same type of job (Lindley, 2009). As such, the wage returns to each additional year of training education are lower than those for matched employees but still positive, even for those with higher levels of education/training than that required for their current employment. This evidence tends to support Human Capital Theory.

Overeducation at lower levels of educational attainment has not been given as much attention in the literature. However, several authors have noted that workers in the middle of the skills distribution are more likely to be overeducated and that this may relate to the education regime, specifically the vocational specificity of education and training (VET) systems (Lessaer, Pasimeni, & Pouliakas et al., 2015; Pouliakas, 2012). Other research suggests that overskilled workers with a higher academic degree tend to have the highest persistence of mismatch however, while workers with vocational education are found to exit mismatch more quickly (Mavromaras and McGuinness, 2012).

Much of literature on overqualification rates across countries has focused on testing neoclassical model predictions on whether labour markets adapt to changes in the educational capital of the workforce (Daly et al 2000). If labour markets do adapt then mismatch must be short-run as employers invest in technology to maximise returns from a more educated work force. If, however, production technologies are unable to exploit the human capital of more educated workers, then surplus education should be associated with zero returns.

Duncan and Hoffman (1981) revealed considerable levels of overeducation in the US. Daly et al (2000) compare returns to 'surplus' and 'deficit' education in Germany and the US with particular attention given to contextual variables, in particular, Germany's more structured education system and 'more regulated and less flexible' labour market. With this dynamic research, they consider how structural changes to the US labour market between the 70's and 80's (increases in both the supply of and demand for highly skilled or educated workers, significant increases in the returns to schooling, and technology development that disproportionately benefits more educated individuals) may have impacted returns for those with too much or too little education/training and examine the same for Germany. Though they find much more infrequent mismatch in Germany, the patterns of surplus and deficit education by gender, job tenure, and work experience are similar. German men are about half as likely to be overeducated and about 60% less likely to be undereducated than working men in the United States. The same pattern holds for German women. In contrast, women, rather than men are more likely to be over- or undereducated in Germany. In contrast to US men, education returns are relatively higher per year than experience for Germans. Similar to US non-black women, German women get a larger return from additional years of schooling than from additional years of work experience. Surplus and required education increase hourly earnings, while deficit education decreases hourly earnings. Among both men and women in the US, the reward for required education is larger than for surplus education. Similarly, the penalty for deficit education is smaller than the reward for either required or completed education. Overall, the research found more similarities between countries at a point in time than within a country across time.

McGuinness et al. (2018a) present evidence that overeducation rates have changed little over time in many EU countries and are falling in others. Ordine and Rose (2017) find no strong relationship between the overeducation rate and the share of working age adults with third level education. The paper also argues that in regions with lower levels of higher education investment and lower incentives for university attendance are associated with lower levels of overeducation.

Verhaest and Van der Velden (2013) find that vocational specificity in education regimes is an important predictor of the level of graduate overeducation across countries. They find that the incidence is lower in countries with a more occupational specific bent (such as Germany), rather than a general skills approach (Ireland for example). They also found that overeducation rates can be partly explained by business cycle variations, with overeducation increasing during recessions as demand for skilled labour falls and the supply

of skilled labour increases with unemployment. Croce and Ghignoni (2012), also present evidence that business cycle effects play a role in explaining cross-country variation in overeducation rates.

Davia, McGuinness, and O'Connell (2017) find that overeducation rates are lower for females in regions with strong levels of employment protection legislation. Similarly, McGuinness et al. (2018), find that overeducation is lower in EU countries where female participation is higher and argue that equality legislation and affordable childcare that support females to fully participate in the labour market are important policy levers for preventing overeducation as women are forced to downgrade occupations when childcare services act as a barrier to full participation in the labour market. The research also found that the sectoral composition of the labour market is important, with countries with strong manufacturing associated with lower rates. Davia, McGuinness and O'Connell (2017) also find higher rates in countries with more migrant labour.

Ortiz and Kucel (2008) find higher rates of overeducation is more prevalent among social science, service and humanities graduates while McGowan et al. (2015) find overeducation to be higher in some regions. Belfield (2010) find that part-time workers are more likely to be overeducated. Some evidence suggests that certain personality characteristics can impact the likeliness of being overqualified (Blazquez and Budria, 2012). Budría and Moro-Egido (2018) report that lower rates of overeducation are associated with higher shares of part-time employment, public sector employment, a higher relative share of high skilled workers and lower activity and temporary contract rates.

Redmond and Whelan (2017) find that Ireland has the third highest overqualification rate in the EU.

Data

The Labour Force Survey (LFS) is the official survey for labour markets in Europe with a large survey sample of households nationwide. In 2019, in the Irish case over 148,000 observations are available in the data. It is designed to produce quarterly labour force estimates that include the official measure of employment and unemployment in the state (International Labour Organisation classification).

Tertiary Educated by age, gender and in Employment status

Table 1 Employment (ooo's)

	2008	2012	2019
Employment	2,199	1,880	2,322
Employment 20+	2,099	1,837	2,261
Employment 20+ Male	1,178	981	1,223
Employment 20+ Female	921	856	1,038
Employment 20-34	897	666	692
Population 20-34	1151.4	1020.6	918.1

Source: Eurostat, *Employment by sex, age and citizenship (1 000)*, [lfsa_egan]

Source: Eurostat, *Population by sex, age, citizenship and labour status (1 000)*, [lfsa_pganws]

In 2008, employment in the Irish economy was just under 2.2 million, falling to 1.88 by 2012. Employment recovered around 2018 and surpassed the height of the Celtic Tiger by 2019 to 2.32 million (Table 1). As this report focuses on tertiary education graduates in Ireland, the focus will be on those over 19 (discounting those who are too young to have completed higher education). For this group employment fell from 2.1 million in 2008 to 1.84 million in 2012 (-14.3 percent), recovering to 2.26 million in 2019.

For the younger group in this report (20-34 years), there was a hugely disproportionate decline in employment. Eighty-eight percent of the net employment loss of those over 20 (72 percent of net employment overall) between 2008 and 2012 occurred within the youngest group; a decline of 231,000 or 34.7 percent of employment for people in this age bracket. At the same time, the population of this group declined by 131,000 (from 1.15 to 1.02 million). Though the data for exact matching age brackets is unfortunately unavailable, net migration was around 40,000 for 15-24 year olds and in excess of 40,000 for 25-44 year olds during this period.

In recovery, only 26,000 out of 424,000 net new jobs between 2012 and 2019 went to those between 20 and 34 years old as the population in this age bracket fell by a further 100,000, to 918,000 in 2019. Concurrently, the share of Irish employment fell for this younger group of workers from 42.7 percent in 2008 to 30.6 percent in 2019. There were 200,000 fewer 20-34 year olds in employment in 2019 than in 2008, down 29.6 percent.

Table 2 Employment rate by age, sex (%)

All	2008	2012	2019
15-74 yrs	65.1	55.5	63.7
20-24 yrs	75.9	54.2	64.9
25-29 yrs	79.3	67.3	79.5
30-34 yrs	79.6	72.0	81.1
35-39 yrs	78.1	71.5	81.8
40-64 yrs	68.0	61.9	73.3
Male			
15-74 yrs	72.6	59.5	69.3
20-24 yrs	77.1	50.2	65.8
25-29 yrs	83.0	67.4	83.2
30-34 yrs	86.8	75.4	88.4
35-39 yrs	87.5	78.3	89.3
40-64 yrs	79.0	68.5	80.7
Female			
15-74 yrs	57.6	51.6	58.3
20-24 yrs	74.7	58.1	64.0
25-29 yrs	75.5	67.2	75.7
30-34 yrs	72.4	68.6	74.3
35-39 yrs	68.4	64.8	74.7
40-64 yrs	56.9	55.3	66.1

Source: Eurostat, *Employment rates by sex, age and citizenship (%)* [lfsa_ergan]



Table 3 Shares and estimates of tertiary graduates by broad group (ISCED5+), %'s, 000's

	2008	2012	2019
All adults (20+) (%)	28.5	32.6	37
20- 34yrs (%)	32.5	34.1	34.1
Male (%)	26.4	30.1	34.3
Female (%)	30.6	35	39.6
Male, 20-34yrs (%)	26.9	28.8	31
Female, 20-34yrs (%)	38	39.2	37.1
in employment (ILO=1) (%)	38.0	46.8	49.0
in employment (ILO=1) (000's)	797	859	1,107
20-34yrs, in employment (%)	45.6	53.8	52.8
20-34yrs, in employment (000's)	409	358	365
Male, in employment (%)	32.7	41.5	43.6
Male, in employment (000's)	385	407	533
Female, in employment (%)	44.6	52.8	55.3
Female, in employment (000's)	410	452	574

Source: CSO, Labour Force Survey, author's calculations

Though the employment rate also fell disproportionately for younger groups after the banking crash and bailout, by 2019 the share of the 25 to 34 year old group in Ireland in employment had recovered (Table 2). For under 25's the share remained down significantly relative to the Celtic Tiger era, however (75.9 percent compared to 64.9 percent in 2019). By contrast, groups over 35 increased their employment rate by 2019 relative to 2008, driven by increasing shares of women.

Employment for women (20+) fell by 7.1 percent between 2008 and 2012 but 16.7 percent for men. In 2019, women made up 45.9 percent of Irish employment (20+), up from 43.8 percent in 2008.

Table 3 shows the growth in the share of adults and workers in Irish society since the financial crisis who have completed a level 5 or above in the International Standard Classification of Education (ISCED). This group includes those with ISCED 5 (Short-cycle tertiary education), ISCED 6 (Bachelor's or equivalent level), ISCED 7 (Master's or equivalent level) and ISCED 8 (Doctoral or equivalent level).

The data show that in the years between 2008 and 2019, the share of adults (20+) with a third level education in Ireland rose by almost a third from 28.5 to 37.0 percent, with particularly strong growth during the recession. Compositional issues around the decline in *Construction*, the resulting mass emigration, mass retraining and the related impact on decisions of school-leavers at the time are all likely to be significant driving factors here.

Interestingly, this was largely driven by the over 35 population. Women were also more likely than men to have completed a level 5 or above in 2019 (39.6 vs 34.3 percent). The gap between young men and women narrowed somewhat with the share of young women holding relatively steady over this period (38.0 to 37.1 percent) and growing for young men (26.9 to 31.0 percent), likely a reflection of the relative unattractiveness of careers in *Construction* as the sector collapsed.

The share of those in employment with a tertiary qualification increased by even more in the same period from 38.0 to 49.0 percent. The majority of this growth also came in the first years of the recession. It is important to note the compositional effect on these figures with the collapse in *Construction* employment post 2008 and to lesser extent in *Retail*, most of whom would not have (required) higher education. That said, it is striking that even as employment fell from 2008 and 2012 by approximately 14.5 percent, the absolute number of workers with a tertiary education increased from about 797,000 to 859,000 or approximately 7.7 percent, continuing to grow up until 2019 to approximately 1.1 million (37 percent higher than in 2008). This was a continuation of a strong trend with just 403,000 graduates employed out of 1.6 million in employment in 2004, or 24 percent.

Though the share of 20-34 year olds with a level 5 or more increased between 2008 and 2019, perhaps not as much as would have been expected given the collapse in the *Construction* sector and lower employment opportunities more generally (32.5 to 34.1 percent), the rate remained flat between 2012 and 2019 for this group. The share of individuals with higher education out of those employed in the younger age group increased more substantially from 45.6 to 53.8 percent in the four short years between 2008 and 2012, underlying the growing importance of education for individuals in securing employment. Compositional issues should also be considered here as employment for people in this age group dropped by approximately 50,000 between 2008 and 2012 from 409,000 to 358,000 and only increased by a further 6,000 in seven years (to 365,000). Overall employment in this age group was over 200,000 lower in 2019 (691,800) than in 2008 (896,700). Tertiary graduates as a share of this group dropped slightly during the economic recovery between 2012 and 2019 to 52.8 percent (likely driven, in part at least, by recovery in *Construction* and other sectors like *Retail*). The share of tertiary graduates in employment (2019) is higher for the younger group than for the general employed population (52.8 vs 49.0 percent). Over half of all workers with a level 5 or more in 2008 were 20-35, compared to just one third in 2019.

The share of women with level 5 or more in employment also rose meaningfully between 2008 and 2012 from 44.6 to 52.8 percent. In this case, the compositional issue in regards to the collapse of *Construction* does not apply showing how important third level education was at the individual level for avoiding the worst of the financial crisis. The share increased again to 55.3 percent in 2019, and was even higher than for younger workers. In 2019, there were approximately 40,000 more women with a level 5 or more in employment than men (574,000 compared to 533,000).

When we consider employment rates by the level of education by broad age group (Table 4), the evidence suggests that the gap in the rate of employment in 2019 relative to 2008 was driven by those without a tertiary education, especially young males without a tertiary education. The employment rate for all males under 40 remained over 6 percentage points below 2008 in 2019 (69.4 compared to 75.6 percent). However, controlling for third-level graduates the data suggest the rate had all-but fully recovered (90.9 vs 91.1 percent). In 2019, despite higher rates of females attaining tertiary qualifications there also remained a significant gender employment gap for under 40's, even among those who've completed third level with the share of younger female graduates in work at 84.1 percent compared to 90.9 for their male counterparts.

Table 4 Employment rate by age, sex and Educational attainment (ISCED) (%)

	2008	2012	2019
All ISCED 2011 levels			
15-64 yrs	69.7	59.9	69.5
15-39 yrs	70.9	58.3	65.8
Tertiary education (levels 5-8)			
15-64 yrs	85.4	79.8	85.2
15-39 yrs	87.1	81.5	87.1
Males			
All ISCED 2011 levels			
15-64 yrs	77.0	63.7	75.0
15-39 yrs	75.6	59.6	69.4
Tertiary education (levels 5-8)			
15-64 yrs	85.4	79.8	85.2
15-39 yrs	91.1	84.3	90.9
Females			
All ISCED 2011 levels			
15-64 yrs	62.2	56.2	64.2
15-39 yrs	66.1	57.0	62.3
Tertiary education (levels 5-8)			
15-64 yrs	81.4	76.7	81.5
15-39 yrs	84.2	79.3	84.1

Source: CSO, Labour Force Survey, author's calculations

Occupational Profile

The International Standard Classification of Occupations divides workers into nine broad groups by the skill/education level required for those jobs. There are four broad skills/education levels. *Professionals* (skill level 4), *Managers* (skill level 3 or 4) and *Technicians and Associate Professionals* (skill level 3) for instance are at the top in terms of human capital investment (usually measure by length of training and opportunity cost of training) and generally require some kind of a tertiary education (ISCED 5+). In some cases, extensive relevant work experience and prolonged on the job training may substitute for the formal education for occupations in the skill level 3 category. For some cases of occupations in the skill level 4 category, experience and on the job training may substitute for the formal education. In many cases appropriate formal qualifications are an essential requirement for entry to the occupation, however.

The next six occupational categories (ISCO 4 through 9) do not require formal third level education. Occupations in ISCO 4 through 8 are categorized as requiring skill level 2 corresponding to ISCED 2 (lower secondary education), 3 (upper secondary education) or 4 (Post-secondary non-tertiary education). *Elementary Occupations* are the sole category of skill level 1 (ISCO category 9) and involve simple and routine physical or manual tasks. ISCO is sometimes used as a broad proxy for socio-economic class in social science research.

Between 2008 and 2012, the collapse of *Construction* is evident in the share of *Craft and Related Trades Workers* in Irish employment falling from 11.9 to 8.4 percent (Table 5). The drop in share was more acute for under 35s (Table 6) and particularly for men (Table 7). Other than *Service and Sales occupations* and *Skilled Agricultural, Fishery and Forestry Workers* (where the share went unchanged), the share of workers in ISCO categories 4-9 (occupations with skills requirements below tertiary education) all fell. At the same time, the top three categories (in terms of investment in training and generally speaking, earnings) all grew in terms of their shares of Irish employment. Much of this was due to compositional effects related to the impact of financial crisis such as the collapse in the construction sector and the fact that occupations with higher skills levels were relatively shielded from the worst of the recession from 2008 through 2012.

The occupational breakdown of Irish employment (20 years and above) changed very little between 2012 and 2019 however, despite the improvements in the educational profile of the population as well as the educational profile of Irish workers. Out of nine categories, only one recorded a difference of more than 1 percentage point over the seven years. This was *Skilled Agricultural, Forestry and Fishery workers* (from 4.8 to 3.7 percent), continuing a downward trend over recent decades. The same applies when examining occupations by age group and gender. The data show slight increases in the share of male workers in *Craft and Related Trades* (14.4 to 15.6 percent) and *Plant and Machine Operators and Assemblers* (8.8 to 9.7 percent) tied in to the partial recovery in construction. There was also an estimated increase in the share of *Professionals* for

workers under 35 (24.5 to 25.7 percent). However, in absolute terms this represents a seven year decline of 15,000 *Professional* positions from 193,000 to 178,000 for young workers or 8.4 percent. Otherwise, over seven years the change in employment share has not exceeded 1 percentage point for any occupation including the breakdown by gender and for younger workers.

Overall, the share of employment in the top three ISCO categories (requiring higher education) is meaningfully higher in 2019 than in 2008 (44.1 vs 37.5 percent), but only slightly higher than in 2012 (43.4 percent) (Table 9). The share remained steady for 20-34 year old workers between 2012 and 2019 (41.1 to 41.2 percent) and increased slightly for women (45.2 to 46.2 percent) who had a higher share of jobs in top skills categories than men in 2019 (42.2 percent). The share of elementary jobs (lowest skill requirements and lowest paid) in male employment was also higher than for women in 2019 (9.8 to 7.3 percent), though this gap has narrowed and come down as a share for all groups.

Table 5 ISCO breakdown of Irish Employment (%)

	2008	2012	2019
1. Managers	6.7	8.3	8.4
2. Professionals	20.7	24.1	24.2
3. Technicians and Associate Professionals	10.1	11.0	11.5
4. Clerical Support Workers	9.9	9.3	8.9
5. Services and Sales Workers	18.6	19.7	19.6
6. Skilled Agricultural, Forestry and Fishery Workers	4.8	4.8	3.7
7. Craft and Related Trades Workers	11.9	8.4	9.1
8. Plant and Machine Operators and Assemblers	6.5	5.5	6.0
9. Elementary Occupations	10.8	8.9	8.6

Source: CSO, Labour Force Survey, author's calculations

Table 6 ISCO breakdown (20-34) (%)

	2008	2012	2019
1. Managers	4.5	5.3	4.4
2. Professionals	21.6	24.5	25.7
3. Technicians and Associate Professionals	10.6	11.4	11.1
4. Clerical Support Workers	11.2	10.0	9.2
5. Services and Sales Workers	20.4	24.6	25.0
6. Skilled Agricultural, Forestry and Fishery Workers	1.8	1.4	1.4
7. Craft and Related Trades Workers	13.5	9.2	9.1
8. Plant and Machine Operators and Assemblers	5.4	4.1	4.5
9. Elementary Occupations	11.1	9.6	9.6

Source: CSO, Labour Force Survey, author's calculations

Table 7 ISCO breakdown (Men) (%)

	2008	2012	2019
1. Managers	8.1	10.5	10.1
2. Professionals	16.8	20.2	21.1
3. Technicians and Associate Professionals	9.6	11.1	11.1
4. Clerical Support Workers	3.5	3.9	4.1
5. Services and Sales Workers	10.8	12.2	12.3
6. Skilled Agricultural, Forestry and Fishery Workers	7.8	8.3	6.3
7. Craft and Related Trades Workers	20.3	14.4	15.6
8. Plant and Machine Operators and Assemblers	10.3	8.8	9.7
9. Elementary Occupations	12.9	10.7	9.8

Source: CSO, Labour Force Survey, author's calculations

Table 8 ISCO breakdown (Women) (%)

	2008	2012	2019
1. Managers	5.0	5.9	6.4
2. Professionals	25.7	28.4	27.9
3. Technicians and Associate Professionals	10.7	10.9	11.9
4. Clerical Support Workers	17.9	15.5	14.5
5. Services and Sales Workers	28.5	28.1	28.2
6. Skilled Agricultural, Forestry and Fishery Workers	1.0	0.9	0.6
7. Craft and Related Trades Workers	1.3	1.6	1.5
8. Plant and Machine Operators and Assemblers	1.7	1.8	1.8
9. Elementary Occupations	8.2	6.9	7.3

Source: CSO, Labour Force Survey, author's calculations

Table 9 Managers, Professionals and Technicians and Associate prof's (% of employment)

	2008	2012	2019
20+	37.5	43.4	44.1
20-34	36.8	41.1	41.2
Men	34.4	41.8	42.3
Women	41.4	45.2	46.2
ISCO 4-9			
All	62.5	56.6	55.9
20-34	63.2	58.9	58.8
Men	65.6	58.2	57.7
Women	58.6	54.8	53.8

Source: CSO, Labour Force Survey, author's calculations

Overqualification

The overqualification rate using the job evaluation method is defined as the share of workers with a tertiary education (*International Standard Classification of Education or ISCED of 5 or more*) working in jobs which do not require tertiary education (*International Standard Classification of Occupations or ISCO 4 through 9*).

ISCO divides occupations based on skills requirements, with *Managers, Professionals and Associate professionals and technicians* making up ISCO categories 1 through 3. Occupations within these broad groups tend to require a tertiary education or an ISCED 5+). Examples of occupations within the broader *Manager* group include *Legislators, Chief Executive Officers and Product Development Managers*. *Teachers, Doctors, Nurses, Software Developers and Civil Engineers* are examples of occupations classified as *Professionals* (the largest occupational group) and *Information and Communications Technicians, Building Surveyors, Pilots and Radiographers* are in the *Associate Professionals and Technicians* group.

An individual is overqualified if they have a short-cycle tertiary education (ISCED 5), Bachelor's or equivalent (ISCED 6), Master's or equivalent (ISCED 7) or Doctorate or equivalent (ISCED 8) and at the same time work in *Clerical support* (ISCO 4), *Service and Sales* (ISCO 5), *Skilled Agriculture, Forestry and Fishing* (ISCO 6), *Craft and Related Trades* (ISCO 7), *Plant and Machine Operators and Assemblers* (ISCO 8) or *Elementary occupations* (ISCO 9).

Table 10 Tertiary education (levels 5–8) of high end occupations

	2008	2012	2019
Managers	48.8%	58.2%	59.6%
Professionals	86.7%	90.4%	90.2%
Technicians and associate professionals	56.7%	57.1%	59.5%
Males			
Managers	46.7%	55.3%	55.2%
Professionals	86.1%	87.4%	87.4%
Technicians and associate professionals	50.6%	56.5%	59.3%
Females			
Managers	51.9%	64.0%	67.6%
Professionals	87.2%	92.8%	92.6%
Technicians and associate professionals	63.2%	57.7%	59.7%

Source: CSO, Labour Force Survey, author's calculations

It's important to note that not all workers in the top three categories have higher education qualifications (Table 10), though the share of these workers in each category has grown since 2008, markedly so in the case of *Managers* (48.8 to 59.6 percent). Nine in ten *Professionals*, but just six in ten *Managers* and *Technicians and Associate Professionals* have completed third level education. The gap may reflect in part, skills shortages with underqualified workers filling vacancies. On the job training, like internships for example may also be a feature in some sectors/firms as an alternative way to fill in skills gaps/requirements for individual workers in high end occupations to formal education tracks. In the case of *Managers*, self-employment is a large feature making up 34.2 percent of the group, and 19.5 percent of all self-employed in Ireland but just 8.4 percent of employment. The issue of signalling training requirements in an interview to a would-be employer is less relevant to the self-employed, especially self-employed *Managers*. Complexities like this illustrate the difficulty in the process of categorising qualifications and occupations and how they relate to each other in an ever-developing labour market.

Interestingly, there is a clear gender gap in the shares of third level graduates in the top three occupational categories, though that gap has closed in the *Technicians and Associate Professionals* categories in the most recent year. Female *Managers* in particular have much higher rates of higher education than their male counterparts (67.6 vs 55.2 percent). Similarly, some of this may be explained by self-employment as there are in the region of four times as many self-employed male *Managers* as female.

No occupations in ISCO categories 4 through 9 require higher education credentials however, and workers in these groups are the focus of this report.

Table 11 presents evidence from the Labour Force Survey on broad overqualification rates by gender and age-group. The share of workers in the Irish labour market with third level qualifications and working in occupations that do not require that level of education/training was broadly similar to 2008 in 2019 (30.4 vs 30.1 percent), having dropped slightly between 2008 and 2012 (29.0 percent). The share of under 35's in this category is higher at 35.0 percent in 2019, an improvement on 2008 (37.2 percent). Almost 4 in 10 (38.4 percent) of all overqualified workers are under 35 compared to 30.6 percent of employment (20+ years). The rate has also improved for men in the workforce, dropping to 28.6 percent in 2019 from 30.6 percent in 2008, though the estimate of the share is slightly relative to 2012 (27.7 percent). The share of overqualified women out of female employment is higher at 31.4 percent of all those with a level 5 or more and employed in 2019, up slightly on 2008 (30.3 percent).

There are approximately 333,500 tertiary graduates in Ireland (2019) employed in positions that do not require that level of training and 90,000 more than in 2008, including 55,000 more overqualified women (Table 12). To put that in perspective, overall employment increased by 123,000 in the same period. Women make up an estimated 56 percent of overqualified tertiary graduates in employment (185,700 compared to 156,300 men), despite their lower share of overall employment and higher numbers of third level graduates.

Almost three quarters (73.9 percent) or 90,000 of the net increase in overall employment between 2008 and 2019 (123,000) were taken by tertiary graduates underutilising their skills.

Table 11 Overqualification rate
(% with tertiary qualifications in ISCO 4–9 positions)

	2008	2012	2019
All (20–64)	30.4	29.0	30.1
Under 35's	37.2	36.4	35.0
Men	30.6	27.7	28.6
Women	30.3	30.1	31.4

Source: CSO, Labour Force Survey, author's calculations

Table 12 Overqualification (ooo's)

	2008	2012	2019
All (20+)	242.6	249.4	333.5
Under 35's	152.2	130.4	127.9
Men	123.3	115.3	156.3
Women	130.7	139.5	185.7

Source: CSO, Labour Force Survey, author's calculations

Overqualification by field of Education

Due to changes in methodology and categorisation in the measurement of *field of the highest level of education or training successfully completed* in the Labour Force Survey, it is not possible to present an appropriate time-series on changes to the shares of graduates with different qualifications or estimates on changing overqualification rates by subject. This section therefore focuses on data from 2019.

Table 13 shows the estimate of the breakdown of subjects for all those who've completed at least an ISCED 3 level of education (a leaving cert in the Irish case). For those who have completed secondary school, about 1 in 3 Irish adults have qualifications in *Generic programmes and qualifications* (mostly covering the leaving cert itself)³. As these numbers refer to the highest level completed, many third level students studying at the time of being sampled contribute to the high share of this particular group.

³ Generic programmes and qualifications are those providing fundamental and personal skills education which cover a broad range of subjects and do not emphasise or specialise in a particular broad or narrow field.

This broad field should not be used as a residual category. Programmes and qualifications with a specific subject emphasis should be classified in broad fields 01 to 10. In particular, education at the tertiary level should only by way of exception be classified here (UNESCO Institute for Statistics)

For those with a tertiary qualification, *Business, administration and law* stands out as the broad subject area most common among Irish graduates (26.6 percent), with *Health and Welfare* graduates making up the second largest group (17.0 percent). Graduates in *Education*, in *Arts and Humanities* and in *Engineering, manufacturing and construction* make up approximately 10 percent each of all Irish third level graduates (10.8, 9.2 and 10.2 percent respectively). *Information and Communication Technologies* graduates make up a further 7.3 percent, and *Natural sciences, mathematics and statistics* a further 6.3 percent (the two together broadly align with what many people might understand as *STEM* subjects).

Looking at the breakdown of graduates by gender, there are some striking differences in subjects completed at third level (Table 14). *Information and Communication Technologies* as well as *Engineering, manufacturing and construction* make up much bigger share of male graduates (11.5 vs 3.9 percent and 19.1 vs 2.7 percent respectively). *Agriculture* is more common among males too, though it makes up a small share of graduates (3.4 vs 1.4 percent). In contrast, female third level graduates are much more likely to have qualified in either *Health and Welfare* (24.0 percent vs 8.7 percent for males) or *Education* (14.9 vs 5.9 percent). The largest group for both however remains *Business, administration and law*, with relatively little difference between graduates of different genders (27.9 percent of males and 25.5 percent of females).

Table 13 Field of Education (ISCED-F), 2019

	All (Leaving cert+)	All (tertiary grads)
Generic programmes and qualifications	34.9	2.2
Education	6.4	10.8
Arts and humanities	5.2	9.2
Social sciences, journalism and information	1.8	3.3
Business, administration and law	16.3	26.6
Natural sciences, mathematics and statistics	3.3	6.3
Information and Communication Technologies (ICTs)	4.5	7.3
Engineering, manufacturing and construction	8.8	10.2
Agriculture, forestry, fisheries and veterinary	2.3	2.3
Health and welfare	11.4	17.0
Services	5.2	4.7

Source: CSO, Labour Force Survey, author's calculations

Looking at the breakdown of graduates by gender, there are some striking differences in subjects completed at third level

Table 14 Field of Education (ISCED-F), Tertiary graduates (ISCED 5+), 2019

	Male	Female	under 35	under 35, Male	under 35, Female
Generic programmes and qualifications	2.2	2.3	2.4	2.9	1.9
Education	5.9	14.9	10.3	5.7	14.1
Arts and humanities	7.7	10.4	9.6	8.4	10.6
Social sciences, journalism and information	2.3	4.2	3.6	2.8	4.2
Business, administration and law	27.9	25.5	25.9	26.3	25.6
Natural sciences, mathematics and statistics	7.1	5.6	7.6	7.4	7.9
Information and Communication Tech... (ICTs)	11.5	3.9	8.9	14.8	4.0
Engineering, manufacturing and construction	19.1	2.7	8.8	15.6	3.1
Agriculture, forestry, fisheries and veterinary	3.4	1.4	2.4	3.5	1.5
Health and welfare	8.7	24.0	16.1	9.4	21.7
Services	4.2	5.2	4.5	3.3	5.5

Source: CSO, Labour Force Survey, author's calculations

Although robust time-series data is unavailable due to a break in series and a change to the categorisation of ISCED in 2013, breaking down the credentials of younger graduates by field of study may give some insight into changing preferences (Table 14). However, the share of graduates by field of education in the younger group broadly aligns with the wider pool. Slightly higher shares of younger graduates have completed *Natural sciences* and *ICT* courses (7.6 percent compared to 6.3 percent and 8.9 percent compared to 7.3 percent), while the estimate of the share of *Engineering, manufacturing and construction* grads in the younger group is the only notable field of education to have fallen relative to the national share (8.8 vs 10.2 percent). This may reflect the relative unattractiveness of a career in *Construction* since the collapse in 2008.

Table 15 presents the shares of employed third level graduates by field of education that work in occupations with lower training/educational requirements. Employed female graduates with qualifications in all but three fields of study are more likely than men to be overqualified; *Social sciences, journalism and information*, *Engineering, manufacturing and construction* and *Health and welfare*. Similarly, younger employed graduates are more likely to be overqualified in every field other than *ICT*, where the estimate is broadly similar and relatively low (22.5 percent).

Employed female graduates with qualifications in all but three fields of study are more likely than men to be overqualified

Table 15 Overqualification rates by Field of Education, 2019 (%)

	All	Male	Female	u35's
Generic programmes and qualifications	39.2	39.1	39.4	45.7
Education	19.0	14.0	20.6	22.3
Arts and humanities	34.9	32.0	36.8	46.2
Social sciences, journalism and information	34.4	36.8	33.3	37.3
Business, administration and law	32.1	25.7	38.1	38.7
Natural sciences, mathematics and statistics	23.7	21.7	26.1	26.9
Information and Communication Tec... (ICTs)	22.7	20.8	28.2	22.5
Engineering, manufacturing and construction	33.3	34.0	28.7	35.4
Agriculture, forestry, fisheries and veterinary	59.4	65.6	46.1	72.4
Health and welfare	21.8	22.2	21.6	25.6
Services	53.6	42.7	61.8	62.2

Source: CSO, Labour Force Survey, author's calculations

Employed third-level *Education* graduates are least likely to be overqualified of 11 wide fields of study at 19.0 percent. This also applied to the younger cohort (22.3 percent). Although more women pursue this area of expertise, they are more likely to be overqualified in employment (20.6 vs 14.0 percent).

Other fields with relatively low overqualified working graduates include *Health and Welfare* (21.8 percent), *Natural sciences, mathematics and statistics* (23.7 percent) and *ICT* (22.7 percent), with similar rankings among the younger group. Employed women with *ICT* qualifications are however, much more likely to be in positions where their skillset is underutilised (28.2 percent), though they are less likely to choose this area in the first place. Above the national average of 30.1 percent are workers with higher education in the most common area of graduation *Business, Administration and Law* (32.1 percent) as well as in *Engineering, manufacturing and construction* (33.3 percent), *Social sciences, journalism and information* (34.4 percent) and *Arts and Humanities* (34.9 percent). The highest rates of overqualified workers are among two relatively small sets of graduates by field; *Agriculture, forestry, fisheries and veterinary* (59.4 percent) and *Services* (53.6 percent).

In terms of changing patterns, the field of *Arts and Humanities* seems to stand out with a particular gap between the overqualification rates of younger working graduates and the rest. They make up almost 1 in 10 third level graduates and almost half (46.2 percent) of the younger tranche of working graduates in this field are overqualified compared to 34.9 percent of the wider sample. Similar gaps relating to younger graduates are also a feature in two other fields, though with smaller numbers of graduates; *Agriculture, forestry, fisheries and veterinary* and *Services*.

Overqualification by sector of employment

Tables 16 through 29 give a breakdown of overqualification rates of workers with tertiary qualifications and estimates by NACE sector using Labour Force Survey data between 2008 and 2019 with additional details for younger workers. The tables also include absolute rough estimates of overqualified workers by the economic activity of their firms using the same LFS data.

The data show overqualification to be a significant feature in some sectors and less so in others, though estimates for all 14 sectors have at least 10,000 workers with tertiary education in positions that do not require that level of training.

Guide to sectoral indicators in tables 16-29:

In the following number of tables, the breakdown of the location of overqualified workers by sector of economic activity is presented using Labour Force Survey data.

Employment refers to the estimate of the absolute number of workers in the sector.

% ISCO 4-9 refers to the share of workers in occupations that do not require tertiary education (the opposite, or 1 minus this share equals the share in occupations requiring tertiary education)

% Employed with tertiary education equals the share of workers in the sector with third level qualifications

Overqualification rate equals the share of tertiary educated workers in the sector who work in occupation that do not require tertiary qualifications (ISCO 4-9)

Overqualification equals the estimate of how many workers in the sector have underutilised tertiary education qualifications

Sectors of economic activity differ in their occupational composition/skills profile. Jobs requiring relatively less training (up to post-secondary non-tertiary or ISCED level 4) make up a small share of employment in sectors like *Information and Communication* (14.2 percent), *Professional, Scientific and Technical* (18.1 percent) and *Education* (22.8 percent) but relatively large in *Agriculture, Forestry and Fishing* (92 percent), *Construction* (80.3 percent), *Transport and Storage* (84.1 percent) and *Wholesale/Retail* (75.4 percent).

In every sector (except for *Human Health*), the share of occupations requiring third level grew between 2008 and 2019 while the share of occupations with lower training requirements fell.

The share of workers with tertiary credentials increased across every sector and across most sectors when controlling for the younger group (12 out of 14), with *Accommodation and Food and Other NACE* sectors the exceptions.

In 2019, more than half of all overqualified workers in Ireland (333,500) were in four out of 14 economic sectors (51,200 in *Industry*, 47,500 in *Wholesale/Retail*, 46,600 in *Other Service Activities* and 40,900 in *Human Health and Social Work Activities*). There were also approximately 28,000 overqualified workers in *Accommodation and Food*, 23,100 in *Public administration and defence; compulsory social security*, 22,700 in *Administrative and support service activities* and 18,000 in *Transportation and Storage* in 2019.

Almost one quarter of the growth of overqualified workers since 2012 (84,000 in total) has occurred in *Industry* (18,500), which, as a sector makes up 12.3 percent of Irish employment. Other sectors with considerable increases in overqualified personnel since 2012 include *Accommodation and Food* (9,200), *Transportation and Storage* (8,600 out of a total of 22,000 total additional jobs in the sector), *Human Health and Social Work Activities* (8,600 out of a total of 33,000 additional jobs), *Administrative and support service activities* (7,200) and *Education* (6,000).

The share of young workers was still significantly lower in 2019 in every one of 14 sectors relative to 2008. Workers under the age of 35 make up approximately 38.4 percent of overqualified workers. Approximately half of all overqualified young people are working in three sectors; *Industry* (18,500, making up 36 percent of the overqualified in the sector), *Wholesale/Retail* (22,800 or 48 percent of overqualified in the sector) and *Accommodation and Food* (20,000 and 71.4 percent of overqualified in the sector).

Table 16 Overqualification by sector, Agriculture, forestry and fishing

	2008	2012	2019
Employment	115,850	108,650	102,750
% ISCO 4-9	96.5	95.1	92.6
% Employed with tertiary education	10.6	12.7	15.9
Overqualification rate	82.5	80.4	83.5
Overqualification	10,107	11,065	13,669
Share of sector under 35	18.4	17.2	15.3
% ISCO 4-9 (under 35's)	94.1	92.6	93.0
% Employed with tertiary education (under 35's)	21.2	23.4	27.9
Overqualification rate (under 35's)	81.4	81.4	89.7
Overqualification (under 35's)	3,677	3,560	3,933

Source: CSO, Labour Force Survey, author's calculations

The share of young workers was still significantly lower in 2019 in every one of 14 sectors relative to 2008

Table 17 Overqualification by sector, Industry

	2008	2012	2019
Employment	302,275	235,525	287,750
% ISCO 4-9	70.8	63.6	64.4
% Employed with tertiary education	32.4	40.7	44.6
Overqualification rate	42.1	35.2	39.9
Overqualification	41,263	33,733	51,179
Share of sector under 35	42.9	36.3	29.8
% ISCO 4-9 (under 35's)	74.3	67.3	68.4
% Employed with tertiary education (under 35's)	38.9	47.3	48.7
Overqualification rate (under 35's)	49.1	40.6	44.2
Overqualification (under 35's)	24,800	16,392	18,416

Source: CSO, Labour Force Survey, author's calculations

Table 18 Overqualification by sector, Construction

	2008	2012	2019
Employment	207,850	83,400	146,980
% ISCO 4-9	90.3	84.1	80.3
% Employed with tertiary education	12.4	15.4	21.3
Overqualification rate	63.1	50.8	42.2
Overqualification	16,300	6,528	13,221
Share of sector under 35	48.3	32.7	28.0
% ISCO 4-9 (under 35's)	93.7	88.3	85.6
% Employed with tertiary education (under 35's)	13.9	15.9	21.9
Overqualification rate (under 35's)	72.2	60.6	50.3
Overqualification (under 35's)	10,047	2,632	4,520

Source: CSO, Labour Force Survey, author's calculations



Table 19 Overqualification by sector, Wholesale and retail trade; repair of motor vehicles

	2008	2012	2019
Employment	326,100	275,000	303,400
% ISCO 4-9	76.4	72.5	75.4
% Employed with tertiary education	20.6	29.7	28.1
Overqualification rate	58.0	51.3	55.7
Overqualification	38,861	41,857	47,479
Share of sector under 35	50.9	45.5	37.8
% ISCO 4-9 (under 35's)	78.2	76.7	82.9
% Employed with tertiary education (under 35's)	27.6	37.8	30.0
Overqualification rate (under 35's)	65.3	60.9	66.4
Overqualification (under 35's)	29,891	28,730	22,799

Source: CSO, Labour Force Survey, author's calculations

Table 20 Overqualification by sector, Transportation and storage

	2008	2012	2019
Employment	91,300	83,300	105,300
% ISCO 4-9	87.7	82.5	84.6
% Employed with tertiary education	15.7	21.3	25.7
Overqualification rate	61.9	54.5	67.7
Overqualification	8,847	9,683	18,303
Share of sector under 35	27.3	22.0	19.4
% ISCO 4-9 (under 35's)	89.4	85.7	85.6
% Employed with tertiary education (under 35's)	24.3	29.4	34.0
Overqualification rate (under 35's)	74.9	65.5	72.9
Overqualification (under 35's)	4,550	3,531	5,066

Source: CSO, Labour Force Survey, author's calculations



Table 21 Overqualification by sector, Accommodation and food service activities

	2008	2012	2019
Employment	136000	123750	178100
% ISCO 4-9	68.3	66.7	67.6
% Employed with tertiary education	25.1	30.7	29.9
Overqualification rate	48.2	49.5	52.5
Overqualification	16,428	18,792	27,912
Share of sector under 35	59.6	56.7	49.9
% ISCO 4-9 (under 35's)	72.2	73.6	77.5
% Employed with tertiary education (under 35's)	33.2	36.6	32.5
Overqualification rate (under 35's)	57.7	60.5	69.2
Overqualification (under 35's)	15,557	15,538	19,976

Source: CSO, Labour Force Survey, author's calculations

Table 22 Overqualification by sector, Information and communication

	2008	2012	2019
Employment	86800	93900	123600
% ISCO 4-9	22.7	18.9	14.2
% Employed with tertiary education	66.4	77.0	82.6
Overqualification rate	13.1	12.6	10.7
Overqualification	7,535	9,126	10,877
Share of sector under 35	48.5	40.2	39.8
% ISCO 4-9 (under 35's)	24.0	22.6	17.8
% Employed with tertiary education (under 35's)	73.0	79.5	82.8
Overqualification rate (under 35's)	14.5	15.6	12.4
Overqualification (under 35's)	4,442	4,675	5,034

Source: CSO, Labour Force Survey, author's calculations



Table 23 Overqualification by sector, Financial, insurance and real estate activities

	2008	2012	2019
Employment	111300	102600	113325
% ISCO 4-9	47.5	40.0	32.2
% Employed with tertiary education	60.3	69.9	77.2
Overqualification rate	33.9	28.9	24.8
Overqualification	22,771	20,709	21,712
Share of sector under 35	55.1	41.8	30.4
% ISCO 4-9 (under 35's)	50.4	45.9	38.4
% Employed with tertiary education (under 35's)	67.8	76.7	80.4
Overqualification rate (under 35's)	40.0	35.3	32.6
Overqualification (under 35's)	16,605	11,616	9,026

Source: CSO, Labour Force Survey, author's calculations

Table 24 Overqualification by sector, Professional, scientific and technical activities

	2008	2012	2019
Employment	125600	107000	138000
% ISCO 4-9	22.4	20.2	18.1
% Employed with tertiary education	75.9	79.6	80.6
Overqualification rate	10.9	10.3	12.3
Overqualification	10,396	8,767	13,696
Share of sector under 35	47.3	39.8	32.4
% ISCO 4-9 (under 35's)	20.0	20.7	19.0
% Employed with tertiary education (under 35's)	80.2	83.1	86.0
Overqualification rate (under 35's)	11.5	11.4	14.7
Overqualification (under 35's)	5,476	4,025	5,662

Source: CSO, Labour Force Survey, author's calculations



Table 25 Overqualification by sector, Administrative and support service activities

	2008	2012	2019
Employment	95700	76700.0	110000
% ISCO 4-9	80.5	76.0	78.3
% Employed with tertiary education	28.6	35.3	35.6
Overqualification rate	60.2	57.1	58.0
Overqualification	16,445	15,442	22,673
Share of sector under 35	44.8	36.5	29.5
% ISCO 4-9 (under 35's)	81.6	58.1	75.7
% Employed with tertiary education (under 35's)	37.5	63.4	43.4
Overqualification rate (under 35's)	66.1	65.1	59.3
Overqualification (under 35's)	10,609	11,555	8,369

Source: CSO, Labour Force Survey, author's calculations

Table 26 Overqualification by sector, Public administration and defence; compulsory social security

	2008	2012	2019
Employment	97500	88300	113000
% ISCO 4-9	43.6	46.2	38.1
% Employed with tertiary education	44.0	53.0	61.3
Overqualification rate	39.0	42.7	33.4
Overqualification	16,694	19,968	23,130
Share of sector under 35	29.6	26.6	16.9
% ISCO 4-9 (under 35's)	50.6	78.6	45.2
% Employed with tertiary education (under 35's)	58.0	41.3	67.4
Overqualification rate (under 35's)	48.7	61.1	37.0
Overqualification (under 35's)	8,146	5,917	4,770

Source: CSO, Labour Force Survey, author's calculations



Table 27 Overqualification by sector, Education

	2008	2012	2019
Employment	142300	138000	183600
% ISCO 4-9	24.2	23.2	22.8
% Employed with tertiary education	78.9	81.0	80.9
Overqualification rate	10.2	9.9	11.5
Overqualification	11,469	11,035	17,117
Share of sector under 35	34.3	31.4	25.5
% ISCO 4-9 (under 35's)	15.9	13.5	11.3
% Employed with tertiary education (under 35's)	89.0	90.6	90.0
Overqualification rate (under 35's)	10.3	8.1	7.1
Overqualification (under 35's)	4,479	3,189	2,983

Source: CSO, Labour Force Survey, author's calculations

Table 28 Overqualification by sector Human health and social work activities

	2008	2012	2019
Employment	242000	256500	290000
% ISCO 4-9	43.8	43.9	44.7
% Employed with tertiary education	56.5	62.0	63.5
Overqualification rate	17.1	20.3	22.2
Overqualification	23,341	32,368	40,892
Share of sector under 35	34.4	28.9	26.8
% ISCO 4-9 (under 35's)	42.0	44.8	45.1
% Employed with tertiary education (under 35's)	66.6	69.5	69.3
Overqualification rate (under 35's)	22.8	28.8	26.3
Overqualification (under 35's)	12,659	14,810	14,161

Source: CSO, Labour Force Survey, author's calculations



Table 29 Overqualification by sector, Other NACE activities

	2008	2012	2019
Employment	110000	105000	119000
% ISCO 4-9	66.1	61.6	64.0
% Employed with tertiary education	33.1	40.6	39.2
Overqualification rate	39.0	37.7	40.9
Overqualification (000)	14,200	16,100	19,100
Share of sector under 35	46.9	43.7	34.2
% ISCO 4-9 (under 35's)	68.0	67.0	68.0
% Employed with tertiary education (under 35's)	38.3	45.3	37.1
Overqualification rate (under 35's)	49.0	44.5	50.0
Overqualification (000) (under 35's)	9,700	9,200	7,600

Source: CSO, Labour Force Survey, author's calculations

Overqualification by Nationality

Table 30 Overqualification by Nationality, Irish

	2008	2012	2019
% ISCO 4-9	61.2	55.3	55.4
% Employed with tertiary education	36.5	45.5	47.4
Overqualification rate	27.5	26.1	28.1
20-34 yrs			
% ISCO 4-9	59.7	55.7	58.9
% Employed with tertiary education	45.4	54.2	50.7
Overqualification rate	32.7	32.4	33.9

Source: CSO, Labour Force Survey, author's calculations

This section examines some of the trends already discussed by nationality.⁴ The share of Irish workers in the three 'high-end' occupational categories (ISCO 1-3) increased during the recession driven in large part by the collapse in *Construction* (where workers are disproportionately in *Craft and Related Trades*) and in some demand led sectors like *Retail*, where less workers are required to have third level credentials to complete their tasks. In 2008, 38.8 percent of Irish workers (compared to 37.5 percent of employment in the Irish labour market) were in the top three skilled professions (61.2 percent weren't), increasing to 44.3

⁴ Although there is some detail on US nationals working in the Irish labour market, the sample of observations are too few in the LFS for this analysis.

percent in 2012 and remaining steady over the next 7 years. At the same time, the share of those employed in ISCO categories 4-9 with tertiary qualifications grew quite quickly (driven by the same factors), from 36.5 percent to 45.5 percent over just 4 years to 2012. By 2019, this grew further to 47.5 percent. For comparison, the overall share of third level graduates in Irish employment grew from 38.0 percent in 2008 to 49.0 percent in 2019.

The overqualification rate for Irish third level graduates fell slightly (likely also impacted by compositional changes to the sectoral breakdown of Irish employment) from 27.5 percent to 26.1 percent between 2008 and 2012, returning to and even marginally surpassing the rate in 2008 by 2019 to 28.1 percent (lower than the national rate of 30.1 percent). Almost three in ten Irish born workers with tertiary education work in positions where this level of education is not a requirement.

Turning now to the younger group, there was less change and the share of those in occupations requiring less investment in education was broadly similar in 2019 compared to 2008 (59.7 vs 58.9 percent). At the same time the share in employment with tertiary qualifications increased significantly between 2008 and 2012 from 45.4 to 54.2 percent (again, driven in large part by the compositional effect of the collapse in Construction). This figure fell again to just over half (50.7 percent) between 2012 and 2019 with disproportionate growth in employment outside of the three groups with the highest training/education requirements. Meanwhile, the share of tertiary graduates in work but overqualified increased slightly by 2019 to 33.9 percent compared to 32.7 percent in 2008.

Table 31 Overqualification by Nationality, UK

	2008	2012	2019
% ISCO 4-9	49.4	41.2	47.5
% Employed with tertiary education	49.4	65.2	59.4
Overqualification rate	23.6	24.8	27.5
20-34 yrs			
% ISCO 4-9	51.2	42.2	59.2
% Employed with tertiary education	52.3	66.0	55.1
Overqualification rate	33.2	30.0*	34.1*
Note: *=sample observations between 30 & 50			

Source: CSO, Labour Force Survey, author's calculations

The share of workers from the UK in high-end employment is higher than the national average at 52.5 percent (compared to 44.1 percent) and those with tertiary education make up 59.4 percent of employment for that group (Table 31). UK graduates employed in Ireland also have a lower probability of being in occupations where their skills are unutilised, though this is higher in 2019 than in 2008 (27.5 percent compared to 23.6 percent).

Table 32 Overqualification by Nationality, EU 15 (excluding IRE, UK)

	2008	2012	2019
% ISCO 4-9	48.1	39.6	42.0
% Employed with tertiary education	67.1	78.2	76.3
Overqualification rate	33.6	30.9	31.9
20-34 yrs			
% ISCO 4-9	54.5	44.8	46.0
% Employed with tertiary education	66.7	78.0	83.9
Overqualification rate	41.0	36.5	37.0

Source: CSO, Labour Force Survey, author's calculations

Workers from the EU-15 in Ireland, excluding Ireland and the UK (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden) are much more likely to have third level qualifications than any group examined so far (Table 32). This applies to more than three quarters (76.3 percent) of this group and 83.9 percent of younger workers from these countries. They also are more likely to work in high end employment (58.0 percent compared to 51.9 percent in 2008 and 54.0 percent compared to 45.5 percent in 2008 for the younger group). The overqualification rates for this group, both the wider and younger group are slightly higher than the national average however at 31.9 percent (30.1 percent national rate) and 37.0 percent (35.0 percent for all 20-34 year olds), respectively.

Table 33 Overqualification by Nationality, Central and Eastern bloc of EU members

	2008	2012	2019
% ISCO 4-9	87.1	85.2	77.5
% Employed with tertiary education	31.8	37.4	39.7
Overqualification rate	72.0	71.3	59.1
20-34 yrs			
% ISCO 4-9	86.0	83.6	77.11
% Employed with tertiary education	34.7	39.9	36.1
Overqualification rate	72.1	71.8	56.7

Source: CSO, Labour Force Survey, author's calculations

Table 33 presents the estimates of overqualification among graduates from the Central and Eastern bloc of EU countries. Over three quarters (77.5 percent) of workers from these countries work in occupations that do not require formal third level credentials, down from 87.1 percent in 2008. This compares to 55.9 percent of the labour market as a whole. Just under 4 in 10 (39.7 percent) Central and Eastern European workers have third level qualifications, up from 31.8 percent in 2008.

This group has, by far the highest rates of third level graduates working in occupations that do not require higher education qualifications. This is despite a large decline, likely in part driven by emigration since 2012 (71.3 to 59.1 percent). For the younger group, the dynamic we have seen to date is flipped, with younger Central and Eastern Europeans less likely on average to be overqualified.

Table 34 Overqualification by Nationality, Rest of world

	2008	2012	2019
% ISCO 4-9	56.6	53.9	47.7
% Employed with tertiary education	64.4	67.3	70.0
Overqualification rate	39.4	37.9	31.8
20-34 yrs			
% ISCO 4-9	58.7	53.8	47.1
% Employed with tertiary education	64.2	70.6	74.0
Overqualification rate	41.9	39.3	31.7

Source: CSO, Labour Force Survey, author's calculations

Table 34 shows the estimates for the Rest of the World (everywhere other than the EU, UK and the USA). The overqualification rate is slightly higher than the labour market rate (31.8 vs 30.1 percent), though it has come down recently from 39.4 percent in 2008. The share working in ISCO categories 4 through 9 is lower than the national rate of 55.9 percent at 47.7 percent down from 56.6 percent in 2008. Seventy percent of those employed have higher education, with an even higher share among young workers (74.0 percent). The overqualification rate for the younger group is broadly equal, with the prevalence of overqualification also down significantly since 2008 (31.7 percent vs 41.9 percent).



Overqualification for precarious workers

Table 35 Overqualification rate:

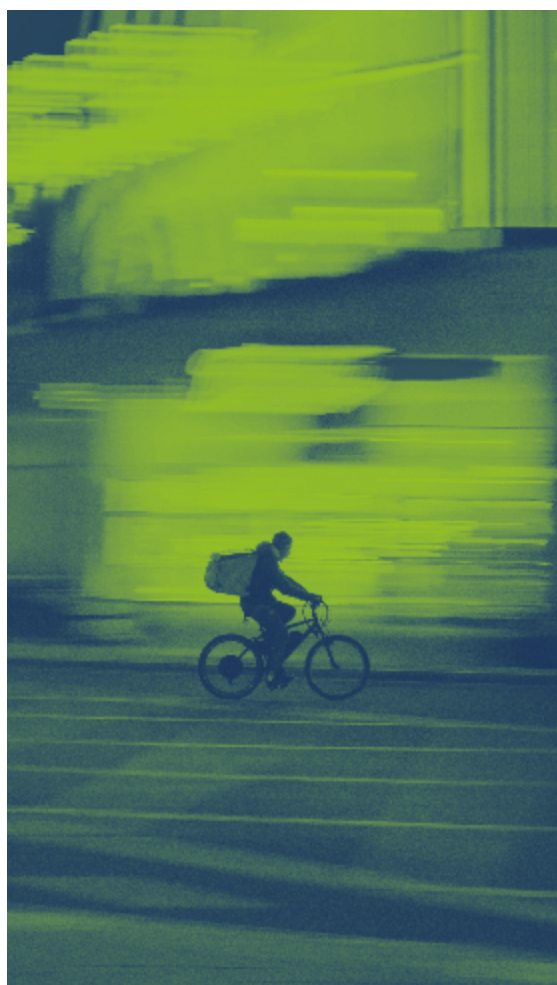
(% of people aged 20+ with tertiary education in ISCO 4-9)

	2008	2012	2019
Part-time workers	41.9	46.1	45.9
Part-time due to caring responsibilities	37.0	33.5	42.9
Underemployed	57.0	58.3	58.5
Would like more hours	38.2	38.7	42.2
Temporary contracts	36.8	37.0	38.3
Involuntarily temporary	37.0	41.0	37.4

Source: CSO, Labour Force Survey, author's calculations

This final section examines overqualification rates among workers in various categories of precarious employment. All third level graduates in these scenarios are more likely than average to have underutilised third level qualifications.

Almost half of all part-time workers with third level qualifications were working in positions with lower training requirements (45.9 percent), up from 41.9 percent in 2008. For those who work part-time due to caring responsibilities, a growing share of part-time workers (mostly women and in the range of 100,000 in Ireland in 2019) the rate has risen from 37.0 percent to 42.9 percent between 2008 and 2019, having initially fallen during the recession to 33.5 percent. A relatively high share of part-time underemployed workers (those who can't find a full-time job) with tertiary education are underutilising their qualifications at 58.5 percent. Similarly, the share of workers who would like to work more hours if they could (14.7 percent of all employment in 2019), is significantly above average (42.2 percent). Just under 4 in 10 (38.3 percent) of third level graduate employees on temporary contracts are overqualified, with a slightly lower rate (surprisingly) for those who would prefer to be in permanent positions.



Conclusion

The value of education and returns to investment in education to individuals in wider society is not captured by simple measures estimating how many graduates utilise the skillset that both they and the state have invested in.

However, my findings indicate that Irish people and the Irish state often invest resources in skills that could (arguably) be better spent, both in terms of their individual earnings potential and the long-run productivity and resilience of the Irish economy.

Since 2008, there has also been a large increase in the share of working age adults with tertiary qualifications and share of those in work with higher education also increased. At the same time, since the collapse of *Construction* and return to growth in 2012, the breakdown of Irish employment by broad occupational group as categorised by the level of investment in education required has only marginally changed, with the share of 'high-skill' jobs remaining largely static. The share of jobs in *Skilled Trades* increased by just over 1 percentage point in those seven years, the biggest difference of nine groups.

I estimate that almost three quarters (73.9 percent) or 90,000 of the net increase in overall employment between 2008 and 2019 (123,000) were taken by tertiary graduates underutilising their skills. A reassessment of our approach to further education spending and incentives for school-leavers would be welcome.

Approximately 3 in 10 third level graduates employed in Ireland are working in occupations where their qualifications go unused or underused with higher incidence for young workers. Approximately 333,500 workers were overqualified third level graduates in 2019, around 15 percent of employment. Women are also more likely to be overqualified among third level graduates and make up a higher share of all overqualified workers (185,000 or 56 percent).

In 2019, more than half of all overqualified tertiary graduates in Ireland were in four out of 14 economic sectors; *Industry, Wholesale/Retail, Other Service Activities* and *Human Health and Social Work Activities*. The majority of overqualified workers in Ireland studied in four broad areas; *Business, admin and law, Arts and humanities, Engineering, construction and manufacturing* and *Health and welfare*. Graduates in *Education, Natural sciences, mathematics and statistics, Information and communications technologies* and *Health and welfare* are least likely to be working in occupations with lower skills requirements.

The report also examined overqualification rates of workers experiencing various conditions of precarious employment and found much higher rates among each of these groups.

The entrepreneurial state could have a role on the demand side to fill gaps and create employment in strategic areas where the market cannot, such as in the *Just Transition* to a low carbon economy and long-term energy security. Some of the tens of thousands of *Business, administration and law* as well as *Engineering, construction and manufacturing* with underutilised skills could be activated more appropriately with government intervention in the roll out of renewable energy and the retrofitting of the built environment.

Where skill shortages are a problem as is the case currently in *Construction*, secure and decent work in a state home building agency could attract more school leavers to a higher education to pursue a career in a sector renowned for its precariousness, while addressing competitiveness issues related to the high cost of housing in Ireland. This would maximise returns to Irish state revenue spending through higher productivity, through the creation of more high paying jobs and by extension, increase collective welfare, material living standards and contribute to more job satisfaction generally.

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